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

KEN SCHULTZ
MAYOR

RECEIVED
DEC 15 1988
HYDROLOGY SECTION

December 14, 1988

REVISED
CERTIFICATE OF COMPLETION AND ACCEPTANCE

Donald Morgan
Muchmore Morgan, Inc.
11197 Montgomery N.E.
Albuquerque, NM 87111

RE: PROJECT NO. 3325, SANDIA RESEARCH PARK, (MAP NO. M-21) PDS

Dear Mr. Morgan:

This is to certify that the City of Albuquerque accepts Project No. 3325 as being completed according to approved plans and construction specifications. If all required right-of-ways 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. 3325. If the required right-of-ways 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. When a final plat has been filed it will be the developer's responsibility to provide the Construction Management Division with a copy, at which time the City will fully accept Project No. 3325.

The project is described as follows:

- Installed water, sanitary sewer, storm drainage and paving improvements within Sandia Research Park as well as offsite sanitary sewer and waterline improvements within Eubank Blvd., alignment.

- The contractor's warranty begins on October 31, 1988, and will be effective for a period of one (1) year.

Sincerely,

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

RBG:tjp

xc: AVID Engineering
C.C.M., Inc.
Fred Aguirre, Engineering Group, PWD
Phil Fischer, Engineering Group, PWD
Ray Pang, Engineering Group, PWD
Terri Martin, Engineering Group, PWD
Jeanette Barrett, Special Assessments
Jim Olsen, Operations Group, PWD
Sam Cummins, Operations Group, PWD
Jim Fink, Operations Group, PWD
Anthony Lopez, Operations Group, PWD
Jon Ertsgaard, Engineering Group, PWD
Dave Parks, Engineering Group, PWD
Tom Kennerly, Operations Group, PWD
Josie Gutierrez, New Meter Sales, Finance Group, PWD
Claudia Gallegos, Standby Clerk, Finance Group, PWD
Della Gallegos, Engineering Group, PWD
Terry Schultz, Engineering Group, PWD
Fred Gomez, Engineering Group, PWD
Judy Aguilar, Engineering Group, PWD
f/Project 3325
f/Warranty
f/Readers

FILE COPY

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

KEN SCHULTZ
MAYOR

April 7, 1989

Fred Arfman, P.E.
Isaacson & Arfman, P.A.
128 Monroe Street, NE
Albuquerque, New Mexico 87108

RE: REVISED DRAINAGE PLAN FOR OFFICE BUILDING @ SANDIA RESEARCH PARK
LOT 1, BLOCK 1 (M-21/D5D) ENGINEER'S STAMP DATED MARCH 10, 1989

Dear Mr. Arfman:

Based on the information provided on your submittal of March 13, 1989, the above referenced plan is approved for Building Permit.

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

If I can be of further assistance, please feel free to call me at 768-2650.

Cordially,

Bernie J. Montoya

Bernie J. Montoya, C.E.
Engineering Assistant

BJM/bsj
(WP+952)

FILE COPY

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

KEN SCHULTZ
MAYOR

December 6, 1988

Fred Arfman, P.E.
Isaacson & Arfman, P.A.
128 Monroe Street, NE
Albuquerque, New Mexico 87108

RE: DRAINAGE PLAN FOR OFFICE BUILDING @ SANDIA RESEARCH PARK
LOT 1, BLOCK 1 (M-21/D5D)
ENGINEER'S STAMP DATED SEPTEMBER 23, 1988

Dear Mr. Arfman:

Based on the information provided on your submittal of November 29, 1988, the above referenced drainage plan is approved for Site Development.

Please be advised that prior to Building Permit approval, certain concerns will need to be addressed.

1. Master Drainage Plan indicates that the design criteria to be used is a C = .40 for undeveloped and a C = .80 for developed. Your calculations indicate different composites.

2. Increase in your composite for the developed condition may have little effect on the downstream conditions without having to control the excess amount. Please address.

Should you have any questions or comments, please call me at 768-2650.

Cordially,

Bernie J. Montoya

Bernie J. Montoya, C.E.
Engineering Assistant

BJM/bsj
(WP+952)

FILE COPY

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

Ken Schultz
Mayor

UTILITY DEVELOPMENT DIVISION
HYDROLOGY SECTION
(505) 768-2650

April 28, 1987

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

RE: DRAINAGE REPORT SUBMITTAL OF SANDIA RESEARCH PARK RECEIVED APRIL 13, 1987 FOR FINAL PLAT AND ROUGH GRADING PERMIT APPROVAL (M-21/D5)

Dear John:

The above referenced submittal dated April 13, 1987, is approved for Final Plat purposes. Prior to Final Plat sign-off by the City Engineer, an executed Subdivision Improvements agreement is required.

A Grading Permit can be issued by this office after submittal, review, and approval of a detailed Grading Plan in accordance with the DPM outline. Earthwork specifications and note to contractor requiring a Topsoil Disturbance Permit should be included.

If you have any questions, call me at 768-2650.

Cordially,

Roger A. Green, PE

Roger A. Green, P.E.
C.E./Hydrology Section

cc: M.B. Ford, Theatre Joint Venture

RAG/bsj

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 13 1987
HYDROLOGY SECTION

April 10, 1987

Mr. Fred Aguirre
Utility Development Division
Hydrology Section
Public Works Department
City of Albuquerque
P.O. Box 1293
Albuquerque, New Mexico 87103

ATTN: ROGER GREEN

SUBJECT: SANDIA RESEARCH PARK
DRAINAGE REPORT

Dear Mr. Aguirre:

Transmitted herewith is a drainage report for subject project for review.

The initial review of drainage for this project was made with Billy Goolsby; however, I have had detailed discussions with Roger Green relative to the drainage requirements for the development of this subdivision.

Your early review of this report will be appreciated.

Very truly yours,

JOHN A. ANDREWS, P.E.

caf-458
Enclosure
cc: Mr. M. B. "Pete" Ford

DRAINAGE REPORT

for

SANDIA RESEARCH PARK
Albuquerque, New Mexico

January, 1988

RECEIVED
JAN 20 1988
HYDROLOGY SECTION

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

1-20-88

Prepared by
Andrews, Asbury & Robert, Inc.
Consulting Engineers
Albuquerque, New Mexico

TABLE OF CONTENTS

		Page
I	Introduction	1
	A. General	
II	Existing Conditions	
	A. General	2
	B. Offsite and Onsite Drainage	3
III	Developed Conditions	
	A. Offsite	4
	B. Onsite	4
IV	Future Storm Drain Construction	6
V	Erosion Control	7
	Map No. 1 - Location Map	8
VI	Drainage Analysis	9
	Calculations	

Enclosures

Map No. 2 - Existing Conditions

Map No. 3 - Onsite Developed Conditions-
Grading & Drainage Plan

Plat of Sandia Research Park

Storm Drain Plan & Profile Sheet 25 of 34 (Hydraulic Gradient)

I

INTRODUCTION

A. GENERAL

This report, with the enclosed maps, provides a Drainage Plan for the Sandia Research Park Subdivision. The project is located in the Southeast Quadrant of the Albuquerque Metropolitan Area. The subdivision consists of approximately 40 acres that lies approximately one mile south of Central Avenue and directly east of Eubank Boulevard SE. (See enclosed Location Map, Map No. 1, Zone Atlas Map M-21.)

Kirtland Air Force Base is located west of the subdivision. An Industrial Park type of development is proposed for this tract and it is the intent of this report to provide a drainage plan for the development of the 40 acre site.

Guidelines for the analysis included herein are based on the City of Albuquerque's Development Process Manual, Volume 2, Design Criteria, Section 22.

II

EXISTING CONDITIONS

A. GENERAL

The subject property is presently undeveloped with a general slope from northeast to southwest of slightly more than one percent (1%).

The site has previously been utilized as a dirt race track for racing cars and was known as Speedway Park. However, all improvements were removed several years ago.

The tract is bounded on the west by Eubank Boulevard SE which has been improved with a four lane paved roadway without curb and gutter and is one of the main accesses to Kirtland Air Force Base.

Along the north side of the site a bladed dirt road exists and was formerly known as Gibson Boulevard; however, with the platting of the property for this development, the street has been named Opportunity Avenue.

Adjacent property to the northeast and south is presently undeveloped.

B. OFFSITE AND ONSITE DRAINAGE

Presently the adjacent offsite areas to the east of subject property flow across the east boundary of the property as generally sheet flow. (See Map No. 2 enclosed and Table No. 1 of the Drainage Analysis.)

The storm water runoff from Area A offsite and Area E-1 and E-2 onsite flows to the westerly boundary of the property and the east side of Eubank Boulevard where it is directed southerly to the southwest corner of the site and away from the site.

Storm water runoff from Area B offsite and Area E-3 onsite flows to the southerly boundary of the site then continues southwesterly away from the site.

III

DEVELOPED CONDITIONS

A. OFFSITE

Flows from offsite Area A will be directed northerly by raising the grade along the east boundary of the subdivision slightly. This water will be received by Opportunity Avenue which will be paved and curbed and guttered on the southerly half of the street.

Flows from offsite Area B will be directed to Research Road again by raising the grade along the easterly boundary of the subdivision slightly. Research Road will be paved and curb and gutter installed.

See Map No. 3 enclosed.

B. ONSITE

This subdivision is to be developed as an Industrial Park; however, it is not known at the time of the writing of this report what the actual type, size or location of the buildings will be or the actual type ground cover proposed in the ultimate development. It was therefore assumed that in the final developed conditions the subdivision will have a coefficient of runoff of 0.80 and it is proposed to allow for total runoff from the developed lots without detention of waters on individual lots.

The runoff generated from the site will be conveyed in the streets to a site retention pond located at the southwest corner of the subdivision. (See Map No. 3 enclosed.)

The initial phase of development will consist of improvements to the streets and public drainage easements only. Street improvements will include the construction of curb and gutter and pavement and the installation of water and sewer lines. Drainage improvements include the construction of a retention pond on Lot 1, Block 4; the installation of a storm drain system on Research Road to collect and direct the flows on Research Road to the retention pond; and a concrete rundown near the south end of Eubank Boulevard to direct the flows on Eubank to the retention pond. This concrete rundown will also act as an overflow from the retention pond when the pond becomes full.

The drainage plan as provided herein provides for conveyance of storm waters from all developed lots except for the lot to be used as a retention pond, and is to be used as a basis for drainage plans of individual sites as the area develops.

As site development occurs, drainage plans for each specific development site will be required.

IV

FUTURE STORM DRAIN CONSTRUCTION

As shown on Map No. 3, a future major storm drain is proposed to be constructed by the City, located east and parallel to Eubank Boulevard. It is proposed that at the time this storm drain is constructed, catch basins and piping will be installed in Opportunity Avenue and Development Road to collect and carry the flows from these streets to the proposed storm drain. The outlet from the storm drain system installed under this development in Research Road can be redirected to this proposed storm drain.

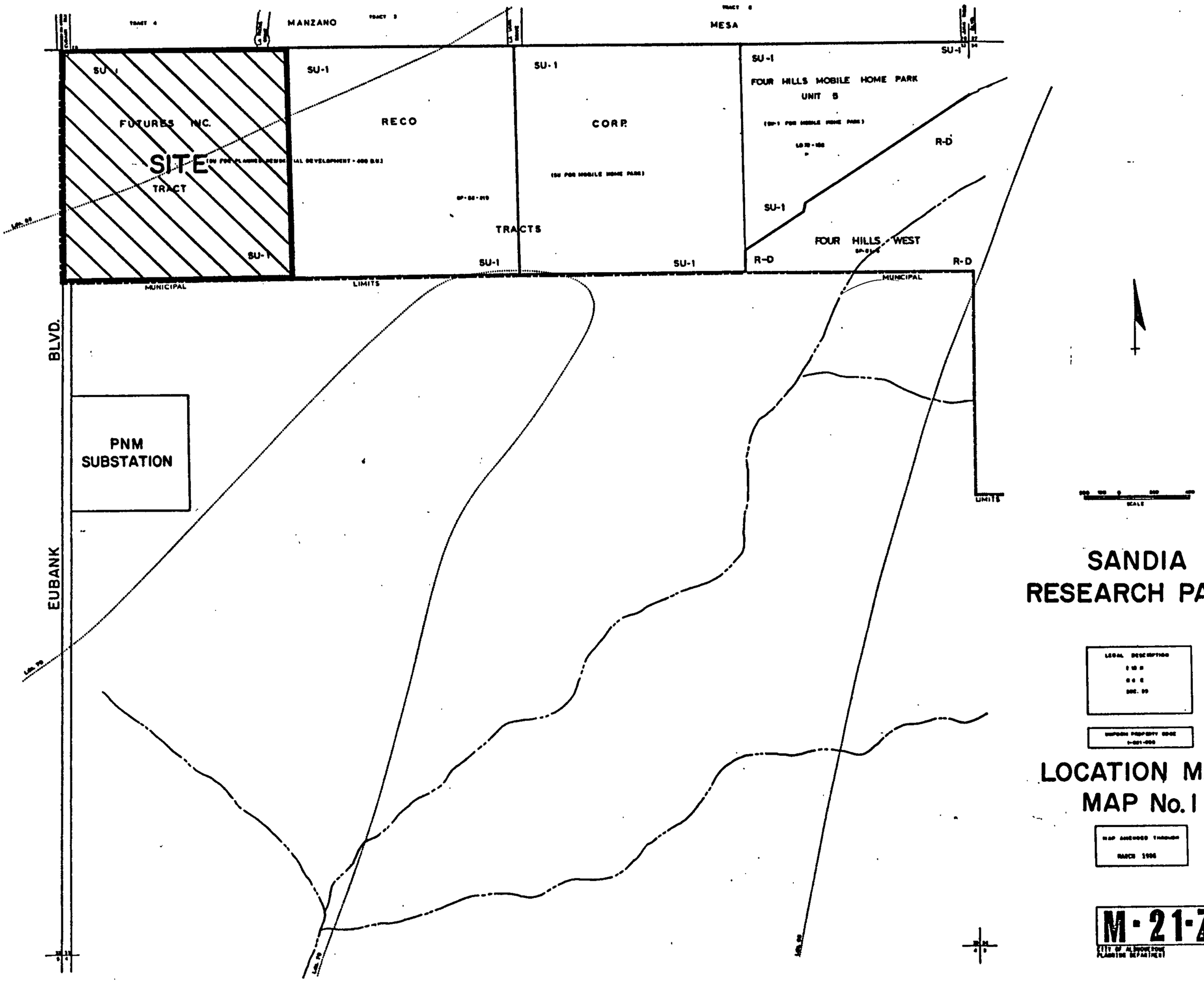
Upon completion of construction of this future storm drain by the City the retention pond can be eliminated by filling, and the lot on which the retention pond is located will be developed.

V

EROSION CONTROL

The contractor for the project will be responsible for soil migration during the construction phase. This can be accomplished by the grading of windrows in a north-south direction.

After development of the individual tracts, erosion will be controlled by landscaping of all areas not covered by buildings and pavement.


MANZANO
MESA
SU-1
FUTURES INC.
SITE
TRACT
RECO
CORP.
TRACTS
FOUR HILLS MOBILE HOME PARK
UNIT 5
R-D
FOUR HILLS WEST
MUNICIPAL
LIMITS
BLVD.
EUBANK
PNM
SUBSTATION
SANDIA
RESEARCH PARK
LOCATION MAP
MAP No. I
M-21-Z

VI

DRAINAGE ANALYSIS

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

Table 1 - Existing Conditions	Sheets 2 & 3
Table 2 - Onsite Developed Conditions	Sheets 4 & 5
Table 3 - Onsite Developed Conditions and Offsite Undeveloped	Sheets 6 & 7
Table 4 - Onsite Developed Conditions and Offsite Developed Conditions	Sheet 10
Hydraulic Gradient	Sheet 16

DRAINAGE ANALYSIS

CRITERIA

City of Albuquerque
Development Process Manual
Volume 2 - Section 22

DESIGN PARAMETERS

Peak Runoff Rate
Rational Formula - $Q = CIA$

Assume Developed Conditions and allowing total Runoff
"C" = 0.80

For Existing Conditions -
"C" = 0.40

$I_{100} = (2.4)(6.84)(t_c)^{-0.51}$

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

Travel time determined from Plates 22.2 B-1 & 22.2 B-2

TABLE 1

EXISTING CONDITIONS - See MAP No. 2

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 OFFSITE	21.1	1300	1.31	0.66 overland	32.83	0.40	1.82	2.77	15.4	23.4
	E-1 ON SITE	18.4 0.9-offsite	1350	1.15	0.62 Overland	36.29	0.40	1.73	2.63	12.7	19.4
	From A.P. 1 to A.P. 2		1250' - channel, 350'-Ditch	1.12 045	3.5 2.5	5.95 2.33 } 8.28					
2	A & E-1	39.5	—	—	—	32.83+8.28 = 41.11	0.40	1.62	2.47	25.6	39.0
	E-2 ON-SITE	15.8	1500	1.53	0.73 Overland	34.25	0.40	1.78	2.71	11.2	17.1
	From A.P. 2 to A.P 3		1000' Ditch.	0.45	2.5	6.67					
3	A, E-1 & E-2	55.3	—	—	—	41.11+6.67 47.78	0.40	1.50	2.28	33.1	50.4

ANDREWS, ASBURY & ROBERT, INC.
CONSULTING ENGINEERS
149 Jackson, N.E., Albuquerque, N.M. 87108
Telephone (505) 265-6631

Project Sandia Research Park
Sheet 2 of 16
Job No. 458
By JA
Chk'd
Date 12-7-86

TABLE 1- Cont'd.

EXISTING CONDITIONS - Cont'd.

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	B OFFSITE	14.5	1230	1.38	0.68 Overland	30.14	0.40	1.90	2.89	11.0	16.8
	E-3 ON SITE	7.2	750	1.27	0.65 Overland	19.23	0.40	2.38	3.63	6.9	10.5
5	B & E-3	21.7	—	—	—	30.14+19.23 49.37	0.40	1.48	2.25	12.8	19.5

ANDREWS, ASBURY & ROBERT, INC.
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149 Jackson, N.E., Albuquerque, N.M. 87108
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Project Sandia Research Park
Sheet 3 of 16
By JA
Job No. 458
Chk'd
Date 12-2-86

TABLE 2

ONSITE - DEVELOPED CONDITIONS - See Map No. 3

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)	C-1	8.21	310' Overland 450' st. 940' st.	1.61 0.50 0.82	1.75 1.90 2.45	2.95 3.95 6.39 } 13.29	0.80	2.88	4.39	18.9	28.8
	C-2	1.27	250' Overland 120' st.	1.68 0.30	1.77 1.50	2.35 1.33 } use 10	0.80	3.33	5.07	3.4	5.2
	System to AP (B)	AP (A)	330' st.	0.30	1.50	3.67					
(B)	C-1 & C-2	9.48	--	--	--	13.29 3.67 } 16.96	0.80	2.54	3.87	19.3	29.4
	C-3	8.54	380 Overland 80 st. 600 st.	0.85 1.60 1.10	0.55 3.30 2.80	11.51 0.40 3.57 } 15.48	0.80	2.67	4.06	18.2	27.7
	system to AP-(C)	AP (B)	150' st.	0.54	2.0	1.25					
(C)	C-1 thru C-3	18.02	--	--	--	16.96 1.25 } 18.44	0.80	2.44	3.71	35.1	53.5

ANDREWS, ASBURY & ROBERT, INC.
CONSULTING ENGINEERS
149 Jackson, N.E., Albuquerque, N.M. 87108
Telephone (505) 265-6631

Project: Sandia Research Park
Sheet 4 of 16
Job No. 458
By: JA
Chk'd:
Date: 12-8-86

TABLE 2 Cont'd.

ONSITE - DEVELOPED CONDITIONS - Cont'd.

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)
	C-4	2.54	240' Overland 440' St.	2.30 0.54	2.0 2.0	2.00 3.67 } Use 10	0.80	3.33	5.07	6.8	10.3
	System-to AP-	AP (C) (D)	630' St.	0.54	2.0	5.25					
(D)	C-1 thru C-4	20.56	— —	— —	— —	18.46 5.25 } 23.71	0.80	2.15	3.27	35.3	53.8
(E)	D-1	17.56	430' Overland 400' Overland 670' St.	- 1.38 - 0.67 - 1.25	1.60 1.15 3.00	4.48 5.80 3.72 } 14.0	0.80	2.80	4.27	39.4	60.0
		38.12									

ANDREWS, ASBURY & ROBERT, INC.
CONSULTING ENGINEERS
149 Jackson, N.E., Albuquerque, N.M. 87108
Telephone (505) 265-6631

Project Sandia Research Park
Sheet 5 of 16
By JA
Chk'd
Job No. 458
Date 12-8-86

TABLE 3

ON-SITE - DEVELOPED & OFFSITE UNDEVELOPED - See Map No. 2 & 3

ANALYSIS POINT	DRAINAGE AREA DESIGNATION	AREA (Ac)	LENGTH OF TRAVEL (Ft)	SLOPE (%)	VELOCITY (FPS)	TRAVEL TIME (Tc) (Mins.)	C	I 10 (IN/Hr)	I 100 (IN/Hr)	Q 10 (CFS)	Q 100 (CFS)
1	A OFFSITE	21.1	See Existing Conditions			32.83	0.40	1.82	2.77	15.4	23.4
	System from A.P. 1 to	A.P. A	320' St. 940' St.	- 1.3 0.82	- 3.1 2.45	1.72 6.39 } 8.11					
A	A & C-1	29.31	—	—	—	32.83 8.11 } 40.94	0.51	1.62	2.47	24.2	36.9
	System AP A to	AP B	See On-Site Developed Conditions			3.67					
B	A, C-1 & C-2	30.58				40.94 3.67 } 44.61	0.53	1.56	2.37	25.2	38.4
	System AP B to	AP C				1.25					
C	A & C-1 thru C-3	39.12				44.61 1.25 } 45.86	0.58	1.53	2.33	34.8	52.9
	System AP C to	AP D				5.25					
D	A & C-1 thru C-4	41.66				45.86 5.25 } 51.11	0.60	1.45	2.21	36.3	55.2

ANDREWS, ASBURY & ROBERT, INC.
CONSULTING ENGINEERS
149 Jackson, N.E., Albuquerque, N.M. 87108
Telephone (505) 265-6631

Project Sandia Research Park
Sheet 16 of 458
By JA
Chk'd
Job No.
Date 12-10-86

TABLE 3 Cont'd.

ON SITE DEVELOPED & OFF SITE UNDEVELOPED Cont'd.

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)	B OFFSITE	14.5	See existing Conditions			30.14	0.40	1.90	2.89	11.0	16.8
	System AP (4) to	From AP (E)	320' St.	1.50	3.3	1.62 } 6.06					
			800' St.	1.25	3.0	4.44					
(E)	B & D-1	32.06	--	--	--	30.14 } 36.20 6.06	0.62	1.73	2.63	34.4	52.3

ANDREWS, ASBURY & ROBERT, INC.
CONSULTING ENGINEERS
149 Jackson, N.E., Albuquerque, N.M. 87108
Telephone (505) 265-6631

Project Sandia Research Park Sheet 7 of 16
By JA Chk'd — Job No. 458
Date 12-10-86

CONDITIONS- ONSITE DEVELOPED & OFFSITE UNDEVELOPED

Determine if proposed streets will have capacity to carry runoff flows for on site developed conditions & offsite undeveloped conditions

Opportunity Ave. @ A.P. (A)

From Table 3, Q = 36.9 cfs.

Temporary street Section is Std. curb & gutter and 22 ft. of paving. (½ street)

Street Area @ 0.20' above Top of Curb = 13.40 ft²

street Slope = 0.82%, $R = \frac{13.4}{25.3} = 0.53$

$V = (99)(0.53)^{2/3}(.0082)^{1/2} = 5.87$ fps

Street Capacity = Q = AV = (13.40)(5.87) = 78.7 cfs

OK

Eubank Blvd @ A.P. (B)

From Table 3; Q = 38.4 CFS

Temporary street section is Std. Curb & Gutter and 22' of paving adjacent & Connected to existing 48' Wide paved Roadway

Street Area @ 0.20' above Top of Curb = 15.80

street Slope = 0.30%, $R = \frac{15.80}{40.80} = 0.39$

$V = (99)(0.39)^{2/3}(.003)^{1/2} = 2.90$ fps

Street Capacity = Q = AV = (15.80)(2.90) = 45.8 cfs

OK

Eubank Blvd @ A.P. (D)

From Table 3, Q = 55.2 cfs

Temporary street Section - Same as at A.P. (B).

street Area @ 0.20' above Top of Curb = 15.80

Street Slope = 0.54%, $R = \frac{15.80}{40.80} = 0.39$

$V = (99)(.39)^{2/3}(.0054)^{1/2} = 3.88$ fps

street Capacity = Q = AV = (15.80)(3.88) = 61.3 cfs

ok

Research Road @ A.P. (E)

From Table 3, Q = 52.3 cfs.

street Section is Std. 40 ft wide Street

street Area @ 0.20' above Top of Curb = 24.00 ft²

street Slope = 1.25%, $R = \frac{24.00}{42.58} = 0.56$

$V = (99)(.56)^{2/3}(.0125)^{1/2} = 7.52$ fps

Street Capacity = Q = AV = (24.00)(7.52) = 180.5 cfs

ok

TABLE 4

ON SITE DEVELOPED CONDITIONS - OFF SITE DEVELOPED CONDITIONS
(See Map No. 2 & 3)

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	21.1	450' Overland 600' Street 750' Street	1.44 0.50 1.23	1.65 1.9 3.0	4.55 5.26 4.17 } 13.98	0.80	2.81	4.28	47.4	72.2
	AP (1) to	AP (A)				8.11					
(A)	A & C-1	29.31	--	--	--	13.98 8.11 } 22.09	0.80	2.23	3.39	52.2	79.5
(4)	B	14.5	450' Overland 300' Street 750' Street	1.44 0.50 1.40	1.65 1.9 3.2	4.55 2.63 3.91 } 11.09	0.80	3.16	4.81	36.7	55.8
	AP (4) to	AP (E)				6.06					
(E)	B & D-1	32.06	---	---	---	11.09 6.06 } 17.15	0.80	2.53	3.85	64.8	98.7

ANDREWS, ASBURY & ROBERT, INC.
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Project: Sandia Research Park
Sheet 10 of 16
Job No. 458
By: JA
Chk'd: —
Date: 12-10-86

CONDITIONS - ONSITE DEVELOPED & FUTURE OFFSITE DEVELOPED

Determine if proposed streets will have capacity to carry runoff flows for on-site developed conditions & "future" off site developed conditions

Opportunity Ave. @ A.P. (A)

From Table 4; Q = 79.5 cfs.

Assume full street section is constructed. with Std. 40' Street.

Street Area @ 0.20' above Top of Curb = 24.00 ft²

Street Slope = 0.82%, $R = \frac{24}{42.58} = 0.56$

$V = (99)(0.56)^{2/3}(0.0082)^{1/2} = 6.09$ fps

Street Capacity = Q = AV = (24.00)(6.09) = 146.2 cfs

OK

Research Road. @ A.P. (E)

From Table 4, Q = 98.7 cfs

Street section is Std. 40' wide street

Street Area @ 0.20' above Top of Curb = 24.00

Street Slope = 1.25%, $R = \frac{24.00}{42.58} = 0.56$

$V = (99)(0.56)^{2/3}(0.0125)^{1/2} = 7.52$ fps

Street Capacity = Q = AV = (24.00)(7.52) = 180.5 cfs

OK

CONDITIONS - ONSITE DEVELOPED & "FUTURE" OFFSITE DEVELOPED - Cont'd.

Only the Street Capacities at Analysis Point (A) on Opportunity Ave and at Analysis Point (E) on Research Road were checked for capacity because:

1. Prior to the time that offsite developed flows will be allowed to flow through the Sandia Reseach Park subdivision the proposed major Storm Drain Line will be installed in the Drainage Easement located east of Eubank Blvd.

2. The installation of this Major storm Drain will collect the flows on Opportunity Ave and on Research Road East of Eubank Blvd. Therefore, the flows on these streets will not flow onto Eubank Blvd.

ANDREWS, ASBURY & ROBERT, INC.
CONSULTING ENGINEERS
149 Jackson, N.E., Albuquerque, N.M. 87108
Telephone (505) 265-6631

VOLUME OF TEMPORARY RETENTION POND REQUIRED

CONDITIONS - ONSITE DEVELOPED & OFFSITE UNDEVELOPED

CRITERIA

1. Develop Inflow hydrograph to Retention Pond for above Conditions
2. Allow offsite flow rates, under existing conditions, to flow through the Retention Pond. - Area "A" = 23.4 + Area "B" = 16.8 = 40.2 cfs
3. Determine total Area contributing to volume & runoff rate, & "C" value

Offsite	Area "A"	= 21.1 Acres	C = 0.40
"	Area B	= 14.5 Acres	C = 0.40
Sub-Total		35.6 Acres	@ C = 0.40
Onsite	Area C-1	8.21 Acres	C = 0.80
	C-2	1.27 "	C = 0.80
	C-3	8.54 "	C = 0.80
	C-4	2.54 "	C = 0.80
	D-1	17.56 "	C = 0.80
	E-1	1.92 "	C = 0.40
	F-1	0.40 "	C = 0.80
Subtotal		40.44 "	@ C = 0.78

Total Area = 76.04

Combined "C"

$= (35.6)(0.40)/76.04 + (40.44)(.78)/76.04$

$= 0.60$

ANDREWS, ASBURY & ROBERT, INC.
CONSULTING ENGINEERS
149 Jackson, N.E., Albuquerque, N.M. 87108
Telephone (505) 265-6631

4. Use Tc for Analysis Point "D" (51.11 min.), see Table 3, as this is the time required for runoff flows to reach the ponding area from the most remote point of the overall combined drainage areas.

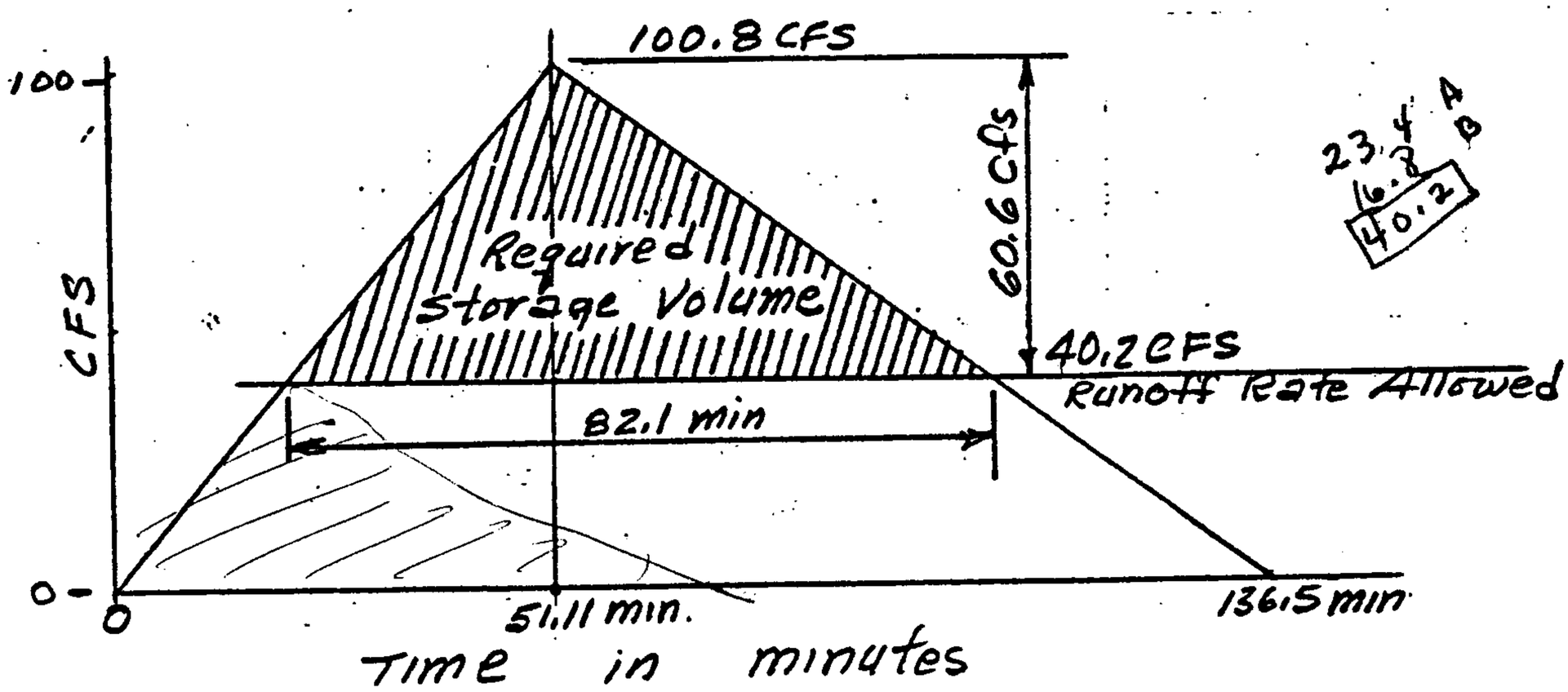
Must use 24 hr storm

Therefore I = 2.21 See Table 3

$$Q = CIA = (0.60)(2.21)(76.04) = 100.8 \text{ CFS}$$

From USDA - Soil Conservation Service
National Engineering Handbook,
Section 4, Hydrology
Supplemental A, "The Hydrology Guide"

Triangular Hydrograph Base = 2.67 (Tp)
= 2.67 (51.11) = 136.5 min.



23.4 A
16.8 B
40.2

Volume of Storage Req'd.

= 82.1 min × 60 × 60.6 / 2 = 149,258 ft³ = 3.43 AF

Need Pond Volume calculations

ANDREWS, ASBURY & ROBERT, INC.
CONSULTING ENGINEERS
149 Jackson, N.E., Albuquerque, N.M. 87108
Telephone (505) 265-6631

RESEARCH AVENUE - STORM DRAIN

A storm drain with inlets will need to be installed in Research Avenue, East of Eubank Blvd. to Collect the Flows from Drainage Area D-1 and OFFSITE AREA B.

This stormdrain is required to divert the flows on Research Ave to the Temporary Retention Pond.

From Table 3 - Q = 52.3 cfs.

Use 6 - Curb inlets - Ea. to collect 10cfs±

4 - Inlets upstrem to Collect 40cfs.

Pipe size Req'd = 30" @ 1.2%±; Q = 42cfs OK

From 6 - Inlets to Pond -

Pipe Size Req'd = 36" @ 1.0%±; Q = 65 CFS OK

SUMMARY OF HYDRAULIC CALCULATIONS

STAT.	STRUC	D	Q	A	V	K	S_f	L	Δ	JUNCTION D	JUNCTION θ	LOSSES h_f	h_b	h_j	h_{MH}	h_T	h_{MS}	Σ	EG	h_v	HG
2+46	Outlet	36"	53.2	6.75	7.88	1.00											0.96	0.96	66.00	0	66.00
2+46	Outlet	36"	53.2	6.75	7.88							0.28						0.28	66.96	0.96	66.00
2+96	45° MH	36"	53.2	5.58	9.53	0.14			45°				0.20					0.20	67.24	1.4	67.31
																			67.44		
			Free Discharge Into MH Yc upstream																67.57	1.17	66.40
2+96	MH	30"	40	4.62	8.67			40'				0.34						0.34	67.91	1.03	67.02
3+36	MH	30"	40	4.91	8.15																

ANDREWS, ASBURY & ROBERT, INC.
CONSULTING ENGINEERS
149 Jackson, N.E., Albuquerque, N.M. 87108
Telephone (505) 265-6631

Project Sandia Research Park
By JM
Chk'd
Date 01.20.88
Sheet 16 of 16
Job No. 458

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

September 30, 2002

Ronald R. Bohannan, P.E.
Tierra West, LLC
8509 Jefferson NE
Albuquerque, New Mexico 87113

RE: MPCL Building (Basins 1 & 2 Lot 6) (Sandia Res. Park) (M-21/D12)
(10241 Development Road SE)
ENGINEERS CERTIFICATION FOR CERTIFICATE OF OCCUPANCY
ENGINEERS STAMP DATED 6/25/2002
ENGINEERS CERTIFICATION DATED 9/27/2002

Dear Mr. Bohannan:

Based upon the information provided in your Engineers Certification submittal dated 9/27/2002, the above referenced site is approved for Permanent Certificate of Occupancy Basins 1 & 2).

If I can be of further assistance, please contact me at 924-3981.

Sincerely,

Teresa A. Martin

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

C: Certificate of Occupancy Clerk, COA
drainage file
approval file

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

DRAINAGE AND TRANSPORTATION SHEET

(REV. 1/11/2002)

PROJECT TITLE: MPCL Building, Sandia Research Park

ZONE MAP/DRG. FILE #: M-21/D12

DRB #: _____ EPC #: _____

WORK ORDER #: _____

LEGAL DESCRIPTION: Lot 6, Block 1, Sandia Research park

CITY ADDRESS: 10241 Development Road, SE

ENGINEERING FIRM:	Tierra West, LLC	CONTACT:	RONALD R. BOHANNAN
ADDRESS:	8509 Jefferson NE	PHONE:	(505) 858-3100
CITY, STATE:	Albuquerque, NM	ZIP CODE:	87113
OWNER:	AMC Development Services	CONTACT:	Jeff Jesionowski
ADDRESS:	400 Gold SW, Suite 750	PHONE:	338-2285
CITY, STATE:	Albuquerque, NM	ZIP CODE:	87102
ARCHITECT:	JLS Architects	CONTACT:	Joe Slagle
ADDRESS:	1600 Rio Grande Blvd. NW	PHONE:	246-0870
CITY, STATE:	Albuquerque, NM	ZIP CODE:	87104
SURVEYOR:	Precision Surveys	CONTACT:	Larry Medrano
ADDRESS:	8414-D Jefferson NE	PHONE:	856-5700
CITY, STATE:	Albuquerque, NM	ZIP CODE:	87113
CONTRACTOR:	Jaynes Coporation, Inc.	CONTACT:	Jerry Lucero
ADDRESS:	PO Box 26841	PHONE:	345-8591
CITY, STATE:	Albuquerque, NM	ZIP CODE:	87107

CHECK TYPE OF SUBMITTAL:

- ____ DRAINAGE REPORT
- ____ DRAINAGE PLAN
- ____ CONCEPTUAL GRADING & DRAINAGE PLAN
- ____ GRADING PLAN
- ____ EROSION CONTROL PLAN
- X ENGINEER'S CERTIFICATION (HYDROLOGY)
- ____ CLOMR/LOMR
- ____ TRAFFIC CIRCULATION LAYOUT (TCL)
- ____ ENGINEERS CERTIFICATION (TCL)
- ____ ENGINEERS CERTIFICATION (DRB APPR. SITE PLAN)
- ____ OTHER

CHECK TYPE OF APPROVAL SOUGHT:

- ____ SIA / FINANACIAL GUARANTEE RELEASE
- ____ PRELIMINARY PLAT APPROVAL
- ____ S. DEV. PLAN FOR SUB'D. APPROVAL
- ____ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
- ____ SECTOR PLAN APPROVAL
- ____ FINAL PLAT APPROVAL
- ____ FOUNDATION PERMIT APPROVAL
- ____ BUILDING PERMIT APPROVAL
- X CERTIFICATE OF OCCUPANCY (PERM.)
- ____ CERTIFICATE OF OCCUPANCY (TEMP.)
- ____ GRADING PERMIT APPROVAL
- ____ PAVING PERMIT APPROVAL
- ____ WORK ORDER APPROVAL
- ____ OTHER (SPECIFY)

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ____ YES
- X NO
- ____ COPY PROVIDED

RECEIVED SEP 27 2002 HYDROLOGY SECTION

DATE SUBMITTED: 9/27/2002 BY: Ronald Wright

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

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

TIERRA WEST, LLC

8509 Jefferson NE
Albuquerque, NM 87113

(505) 858-3100
fax (505) 858-1118

twllc@tierrawestllc.com
1-800-245-3102

September 27, 2002

Mrs. Teresa Martin
City of Albuquerque
Hydrology Department
PO Box 1293
Albuquerque, NM 87103

RE: Final Certification of Drainage for Certificate of Occupancy
MPCL Building, Lot 6 of the Sandia Research Park
10241 Development Boulevard, SE, (M21/D12)

Dear Terri:

Enclosed please find one copy of the As-Built Grading and Drainage Plan and Information Sheet for the MPCL Building located at 10241 Development Boulevard SE. Jaynes Corporation completed the on-site paving and curb and gutter. Landscaping for the site is complete. All work is in substantial compliance with the approved plans. As-Built information was supplied by Precision Surveys. We are, therefore, requesting Final Certification of Drainage for Certificate of Occupancy. Certification of the remaining lots will be completed as each lot develops.

If you have any questions regarding this matter, please do not hesitate to call me.

Sincerely,

Ronald R. Bohannan, PE

Enclosures

cc: Jerry Lucero
Jeff Jesionowski

JN: 220013
RRB/rw

RECEIVED
SEP 27 2002
HYDROLOGY SECTION

220013 Final CO hydrology.ltr

CITY OF ALBUQUERQUE

May 22, 2013

David Soule, PE
Rio Grande Engineering
PO Box 67305
Albuquerque, NM 87199

Re: KTECH Corp., 1300 Eubank Blvd NE
Addition
Request for Permanent C.O. –Accepted
Engineer's Stamp dated: 3-24-13, (M21/D012)
Certification dated: 5-17-13

Dear Mr. Soule,

Based upon the information provided in the Certification received 05-21-13, the above referenced Certification is acceptable for a release of a Permanent Certificate of Occupancy by Hydrology.

Hydrology is asking for an electronic copy, in .pdf format, of this certification for our records. This certification can be e-mailed to me at: ccherne@cabq.gov or tsims@cabq.gov.

If you have any questions, you can contact me at 924-3695 or Rudy Rael at 924-3977.

Sincerely,

Shahab Biazar, P.E.
Senior Engineer—Hydrology Section
Development and Review Services

PO Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov

RR/SB
C: CO Clerk—Katrina Sigala
e-mail

BetterHealth
Better you.

M21/D12
Darrel w/ James Corp
CO Ques
KTech - 1300 Eubank
5/16/13 263-9812
11:30 OK - Have Consultant Engr
CITY OF ALBUQUERQUE AND
PARTICIPATING GOVERNMENT ENTITIES
Request for C.O. ← Provided

City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV 02/2013)

which is this for... BLDG.

Project Title: Broadstone Santa Monica Building Permit #: _____ City Drainage #: D-18/D054

DRB#: 1003916 EPC#: _____ Work Order#: 689983

Legal Description: Tract 2, Santa Monica Place

City Address: 6401 Santa Monica Ave. NE

Engineering Firm: Isaacson & Arfman, P.A. Contact: Fred C. Arfman

Address: 128 Monroe Street NE, Albuquerque, NM 87108

Phone#: 268-8828 Fax#: N/A E-mail: freda@iacivil.com

Owner: Broadstone Santa Monica, LLC Contact: Kurt Browning

Address: 6300 Riverside Plaza Lane NW, Suite 200, Albuquerque, NM 87120

Phone#: 889-3061 Fax#: _____ E-mail: kbrowning@titan-development.com

Architect: ORB Architecture, LLC Contact: Richard Barber

Address: _____

Phone#: (602) 957-4530 Fax#: _____ E-mail: rab@orbarch.com

Surveyor: Surv-Tek, Inc. Contact: Russ Hugg

Address: 9384 Valley View Drive NW, Albuquerque, NM 87114

Phone#: 897-3366 Fax#: 897-3377 E-mail: hugg@swcp.com

Contractor: Alliance Residential Company Contact: Kim Weisenburger

Address: 2415 E. Camelback Road, Suite 600, Phoenix, AZ 85016

Phone#: (602) 522-5763 Fax#: _____ E-mail: kburger@allresco.com

TYPE OF SUBMITTAL:

- ____ DRAINAGE REPORT
- ____ DRAINAGE PLAN 1st SUBMITTAL
- ____ DRAINAGE PLAN RESUBMITTAL
- ____ CONCEPTUAL G & D PLAN
- ____ GRADING PLAN
- ____ EROSION & SEDIMENT CONTROL PLAN (ESC)
- X ENGINEER'S CERT (HYDROLOGY) (RE-SUBM)
- ____ CLOMR/LOMR
- ____ TRAFFIC CIRCULATION LAYOUT (TCL)
- ____ ENGINEER'S CERT (TCL)
- ____ ENGINEER'S CERT (DRB SITE PLAN)
- ____ ENGINEER'S CERT (ESC)
- ____ SO-19
- ____ OTHER (SPECIFY)

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

- ____ SIA/FINANCIAL GUARANTEE RELEASE
- ____ PRELIMINARY PLAT APPROVAL
- ____ S. DEV. PLAN FOR SUB'D APPROVAL
- ____ S. DEV. FOR BLDG. PERMIT APPROVAL
- ____ SECTOR PLAN APPROVAL
- ____ FINAL PLAT APPROVAL
- ____ CERTIFICATE OF OCCUPANCY (PERM)
- ____ CERTIFICATE OF OCCUPANCY (TCL TEMP)
- ____ FOUNDATION PERMIT APPROVAL
- ____ BUILDING PERMIT APPROVAL
- ____ GRADING PERMIT APPROVAL
- ____ PAVING PERMIT APPROVAL
- ____ WORK ORDER APPROVAL
- ____ GRADING CERTIFICATION
- ____ SO-19 APPROVAL
- ____ ESC PERMIT APPROVAL
- ____ ESC CERT. ACCEPTANCE
- ____ OTHER (SPECIFY)

WAS A PRE-DESIGN CONFERENCE ATTENDED: ____ Yes ____ No ____ Copy Provided

DATE SUBMITTED: 05-20-13 By: Fred C. Arfman, PE

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

1. **Conceptual Grading and Drainage Plan**: Required for approval of Site Development Plans greater than five (5) acres and Sector Plans
2. **Drainage Plans**: Required for building permits, grading permits, paving permits and site plans less than five (5) acres
3. **Drainage Report**: Required for subdivision containing more than ten (10) lots or constituting five (5) acres or more
4. **Erosion and Sediment Control Plan**: Required for any new development and redevelopment site with 1-acre or more of land disturbing area, including project less than 1-acre than are part of a larger common plan of development

RECEIVED MAY 20 2013 LAND DEVELOPMENT SECTION

LAND DEVELOPMENT SECTION

DAILY INSPECTION REPORT

ISAACSON & ARFMAN, P.A.
Consulting Engineering Associates
128 Monroe Street N.E.
Albuquerque, New Mexico 87108
Ph. 505-268-8828 Fax. 505-268-2632

PROJECT: Broadstone Santa Monica Apartments
CONTRACTOR: Alliance Residential Builders
OWNER: Broadstone Santa Monica LLC

DATE: May 21, 2013
WEATHER: Clear & Cool (7;40 AM)

TOTAL MEN AND EQUIPMENT ON JOB (BY TRADE)

1 - Water Wagon
1 - Backhoe w/ operator
1 - Project Superintendent

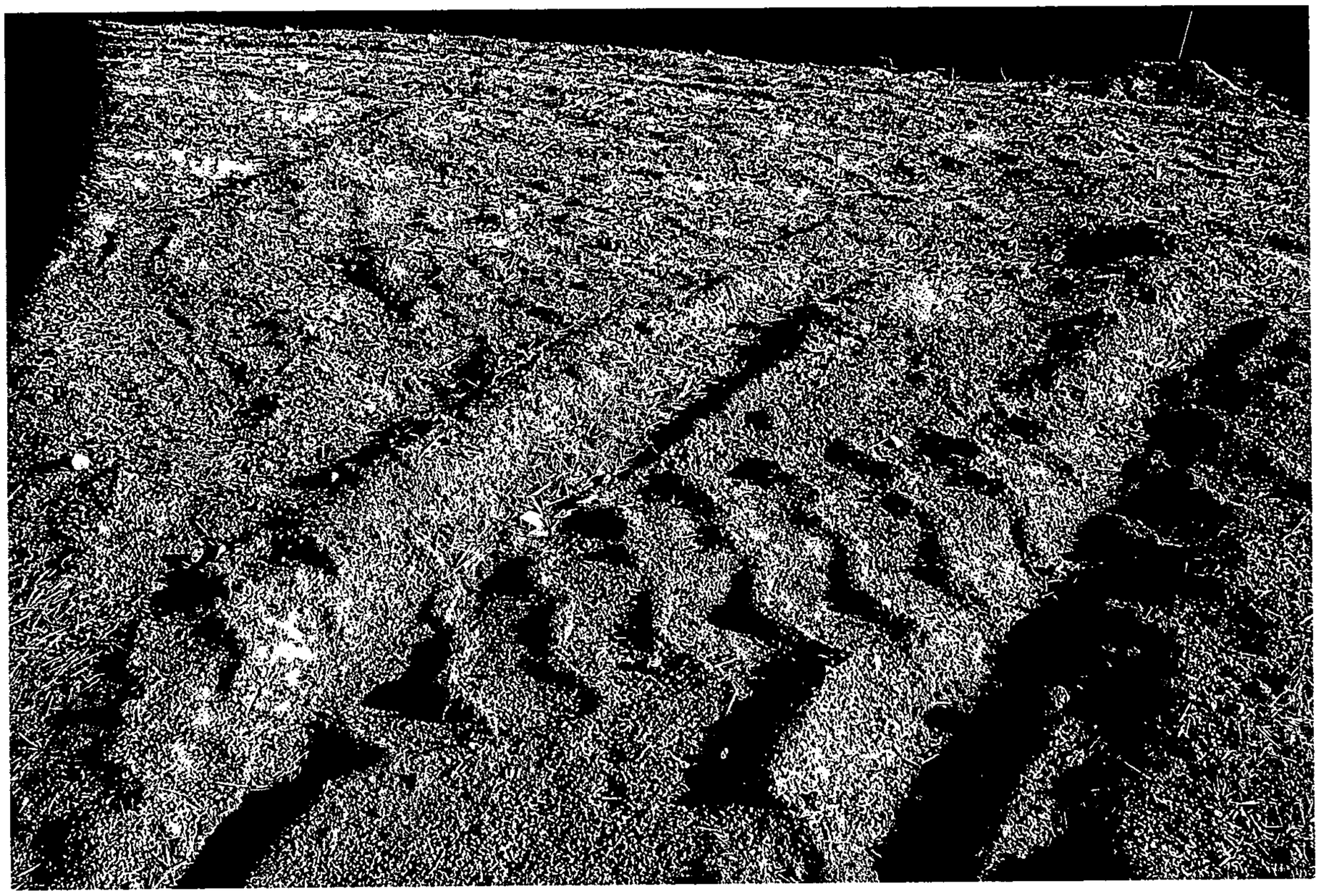
WORK ACCOMPLISHED TODAY

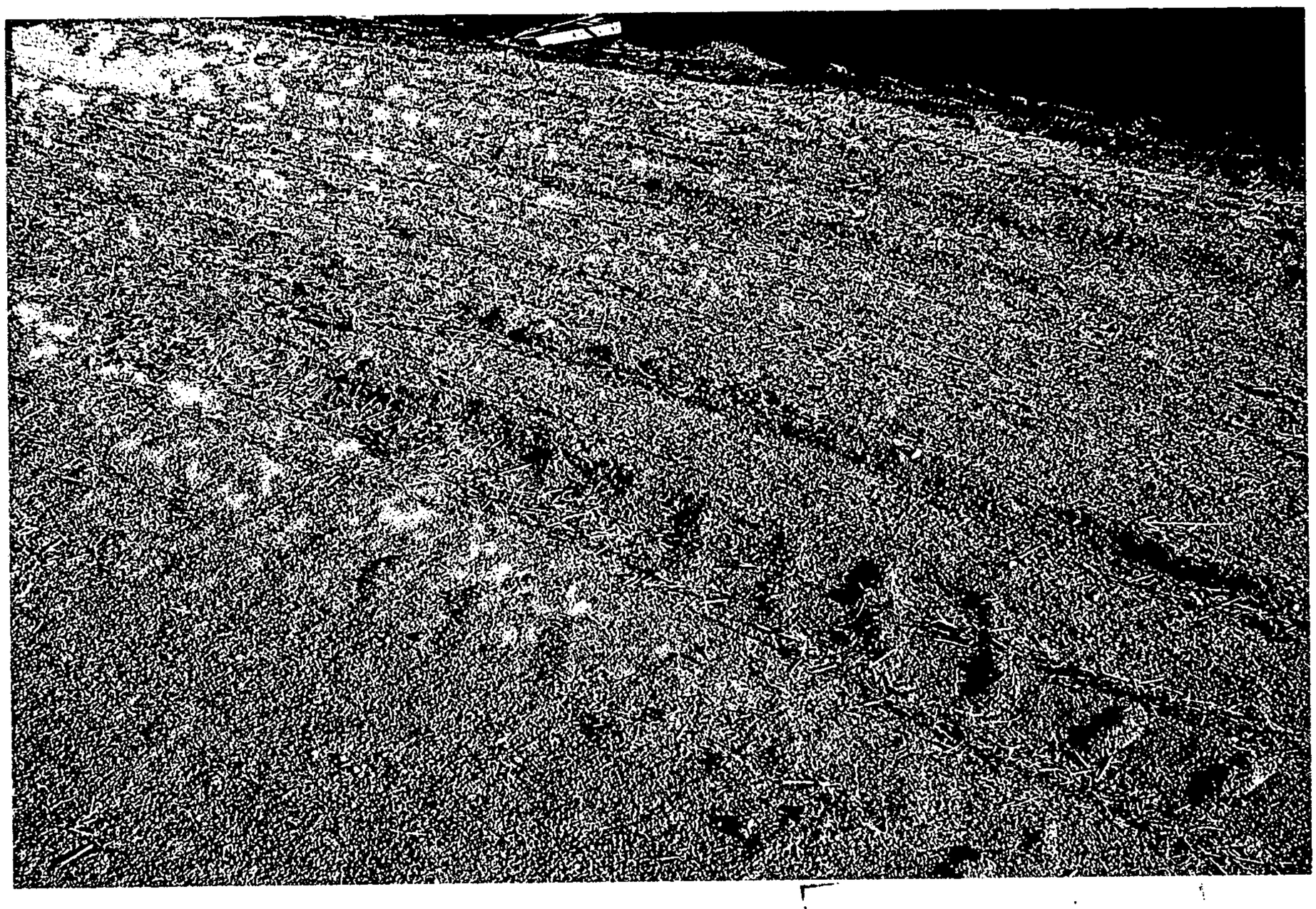
Shaping of a minor drainage swale to supllemnet the major swale to convey storm water flows from the east to the westerly pond and the interim storm water inlet structure.
Inspected the compaction of the north berm alond Derickson. It was found to be compacted and stable. The berm was previously straw crimped per the SWPPP and the sides were lose down to a depth of 2" - 4".
Attached are two photos of the top of berm showing the marking of the wheels of the equipment used in shaping/compacting the berms.

REPORT PREPARED BY: Fred C. Arfman, PE 05-21-13
TITLE: Project ~~Inspector~~ for ISAACSON AND ARFMAN, PA
ENGINEER

MAY 21 2013
LAND DEVELOPMENT SECTION

Phone: 505-268-8828 Fax: 505-268-2632 email: EddieR@iacivil.com





MAY 2 1
LAND DEVELOPMENT SEC

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV. 01/28/2003rd)

PROJECT TITLE: *Ktech kauai* ZONE MAP/DRG. FILE #: M21-D12

DRB #: EPC #: WORK ORDER #:

LEGAL DESCRIPTION: TR 1A1 SANDIA SCIENCE &TECHNOLOGY PARK

CITY ADDRESS: 1300 GIBSON SE

ENGINEERING FIRM: Rio Grande Engineering CONTACT: David Soule, PE

ADDRESS: PO BOX 67305 PHONE: (505)321-9099

CITY, STATE: Alb ZIP CODE: 87199

OWNER: KTECH/COA CONTACT:

ADDRESS: PO BOX 1293 PHONE:

CITY, STATE: ALB, NM ZIP CODE: 87103

ARCHITECT: CONTACT:

ADDRESS: PHONE:

CITY, STATE: ZIP CODE:

SURVEYOR: cst CONTACT: David Vigil

ADDRESS: PHONE:

CITY, STATE: ZIP CODE:

CONTRACTOR: CONTACT:

ADDRESS: PHONE:

CITY, STATE: ZIP CODE:

CHECK TYPE OF SUBMITTAL:

- ____ DRAINAGE REPORT
- ____ DRAINAGE PLAN 1st SUBMITTAL, ***REQUIRES TCL or equal***
- ____ DRAINAGE PLAN RESUBMITTAL
- ____ CONCEPTUAL GRADING & DRAINAGE PLAN
- ____ GRADING PLAN
- ____ EROSION CONTROL PLAN
- x ENGINEER'S CERTIFICATION (HYDROLOGY)
- ____ CLOMR/LOMR
- ____ TRAFFIC CIRCULATION LAYOUT (TCL)
- ____ ENGINEERS CERTIFICATION (TCL)
- ____ ENGINEERS CERTIFICATION (DRB APPR. SITE PLAN)
- ____ OTHER

CHECK TYPE OF APPROVAL SOUGHT:

- ____ SIA / FINANACIAL GUARANTEE RELEASE
- ____ PRELIMINARY PLAT APPROVAL
- ____ S. DEV. PLAN FOR SUB'D. APPROVAL
- ____ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
- ____ SECTOR PLAN APPROVAL
- ____ FINAL PLAT APPROVAL
- ____ FOUNDATION PERMIT APPROVAL
- ____ BUILDING PERMIT APPROVAL
- X CERTIFICATE OF OCCUPANCY (PERM.)
- ____ CERTIFICATE OF OCCUPANCY (TEMP.)
- ____ GRADING PERMIT APPROVAL
- ____ PAVING PERMIT APPROVAL
- ____ WORK ORDER APPROVAL
- ____ OTHER (SPECIFY)

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ____ YES
- x NO
- ____ COPY PROVIDED

Rec 5/21/13

DATE SUBMITTED: 5/17/2013 BY: David Soule

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a dranage submittal.
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3. **Drainage Report**: Required for subdivisions containing more than ten (10) lots or constituting five (5) acres or more.

CITY OF ALBUQUERQUE

PLANNING DEPARTMENT – Development & Building Services

Richard J. Berry, Mayor

March 27, 2013

David Soule, P.E.
Rio Grande Engineering
P.O. Box 93924
Albuquerque, New Mexico 87199

RE: **KTech Building Addition** – 1300 Eubank SE
Grading & Drainage Plan
Tract 1A1, Sandia Science & Technology Park

File **M21-D012**
PE Stamp: 3/26/13

Dear Mr. Soule,

Based upon the information provided in your submittal received 3/26/13, the above referenced plan is approved for **Grading & Paving Permit** and **Building Permit**.

Please attach a copy of this approved Grading and Drainage Plan to each of the Building Permit sets, prior to approval by Hydrology section.

Prior to Certificate of Occupancy release, an Engineer Certification of the as-constructed, Grading and Drainage Plan, will be required, per the DPM checklist.

If you have any questions, please contact me at grolson@cabq.gov, or phone 505-924-3695.

Sincerely,

3/27/13

Gregory R. Olson, P.E.
Senior Engineer

Orig: Drainage file M21-D012
c.pdf Addressee via Email: david@riograndeengineering.com

PO Box 1293
Albuquerque
NM 87103
www.cabq.gov

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV. 01/28/2003rd)

PROJECT TITLE: ***Ktech kauai*** ZONE MAP/DRG. FILE #: M21 D012.

DRB #: EPC #: WORK ORDER #:

LEGAL DESCRIPTION: TR 1A1 SANDIA SCIENCE &TECHNOLOGY PARK

CITY ADDRESS: ~~1300 GIBSON SE~~ 1300 EUBANK.

ENGINEERING FIRM:	Rio Grande Engineering	CONTACT:	David Soule, PE
ADDRESS:	PO BOX 67305	PHONE:	(505)321-9099
CITY, STATE:	Alb	ZIP CODE:	87199
OWNER:	KTECH/COA	CONTACT:	
ADDRESS:	PO BOX 1293	PHONE:	
CITY, STATE:	ALB, NM	ZIP CODE:	87103
ARCHITECT:		CONTACT:	
ADDRESS:		PHONE:	
CITY, STATE:		ZIP CODE:	
SURVEYOR:	cst	CONTACT:	David Vigil
ADDRESS:		PHONE:	
CITY, STATE:		ZIP CODE:	
CONTRACTOR:		CONTACT:	
ADDRESS:		PHONE:	
CITY, STATE:		ZIP CODE:	

CHECK TYPE OF SUBMITTAL:

- ___ DRAINAGE REPORT
- X DRAINAGE PLAN 1st SUBMITTAL, ***REQUIRES TCL or equal***
- ___ DRAINAGE PLAN RESUBMITTAL
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- X GRADING PLAN
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- ___ ENGINEER'S CERTIFICATION (HYDROLOGY)
- ___ CLOMR/LOMR
- ___ TRAFFIC CIRCULATION LAYOUT (TCL)
- ___ ENGINEERS CERTIFICATION (TCL)
- ___ ENGINEERS CERTIFICATION (DRB APPR. SITE PLAN)
- ___ OTHER

CHECK TYPE OF APPROVAL SOUGHT:

- ___ SIA / FINANACIAL GUARANTEE RELEASE
- ___ PRELIMINARY PLAT APPROVAL
- ___ S. DEV. PLAN FOR SUB'D. APPROVAL
- ___ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
- ___ SECTOR PLAN APPROVAL
- ___ FINAL PLAT APPROVAL
- ___ FOUNDATION PERMIT APPROVAL
- X BUILDING PERMIT APPROVAL
- ___ CERTIFICATE OF OCCUPANCY (PERM.)
- ___ CERTIFICATE OF OCCUPANCY (TEMP.)
- x GRADING PERMIT APPROVAL
- x PAVING PERMIT APPROVAL
- ___ WORK ORDER APPROVAL
- ___ OTHER (SPECIFY)

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ___ YES
- x NO
- ___ COPY PROVIDED

— FASTRAX —

RECEIVED MAR 26 2013

paid $50.00

DATE SUBMITTED: 3/26/2013 BY: David Soule

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

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

RIO GRANDE ENGINEERING OF NEW MEXICO, LLC

March 26, 2013

Mr. Shahab Biazar,PE
Senior Engineer
Planning Department
City of Albuquerque

RE: Grading and Drainage Plan

Dear Shahab:

The purpose of this letter is to accompany the enclosed grading plan for the referenced project. This plan shows the required adjustments to the current site grading to allow for a 1500 sf addition to an existing 80,000 sf facility. The area of improvement is currently entirely paved; therefore no hydraulic calculations were prepared. The modifications do not alter the drainage patterns and are minor enough, we felt a report not warranted. We have attached and expert of the original site grading plan showing the drainage basins and general flow patterns.

Should you have any questions regarding this submittal, please do not hesitate to call me.

Sincerely,

David Soule, PE

Enclosures

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MAR 2 4 2013

CITY OF ALBUQUERQUE

Planning Department
Transportation Development Services Section

May 23, 2013

Daniel Herr, R.A.
SlagleHerr Architects
413 2nd Street SW
Albuquerque, NM 87102

Re: **Certification for Permanent Certificate of Occupancy (C.O.)**
KTech Kauai Addition (M-21/D012)
1300 Eubank NE
Architect's Stamp dated 05-20-13

Dear Mr. Herr,

Based upon the information provided in your submittal received 05-21-13, Transportation Development has no objection to the issuance of a Permanent Certificate of Occupancy. This letter serves as a "green tag" from Transportation Development for a Permanent Certificate of Occupancy to be issued by the Building and Safety Division.

If you have any questions, please contact me at (505)924-3630.

Sincerely,

Nilo E. Salgado-Fernandez, P.E.
Senior Traffic Engineer
Development Review Services
Planning Department

c: Engineer
Hydrology file
CO Clerk

PO Box 1293

Albuquerque

New Mexico 87103

www.cabq.gov

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV. 1/28/2003rd)

PROJECT TITLE: KTECH KAUAI ADDITION
DRB #: 1001719 EPC#:_____

ZONE MAP/DRG. FILE #: M-21 D012
WORK ORDER#:_____

LEGAL DESCRIPTION: LOT 1A - BLOCK 1, SANDIA RESEARCH PARK
CITY ADDRESS: 1300 EUBANK BLVD SE

ENGINEERING FIRM: RIO GRANDE ENGINEERING
ADDRESS: SUITE 201 1606 CENTRAL AVE SE
CITY, STATE: ALBUQUERQUE NM
CONTACT: DAVID SOULE
PHONE: 872-0999
ZIP CODE: 87106

OWNER: KTECH CORP.
ADDRESS: 1300 EUBANK SE
CITY, STATE: ALBUQUERQUE NM
CONTACT: MARY CLUM
PHONE: 998-6004
ZIP CODE: 87123

ARCHITECT: SLAGLE HERR ARCHITECTS
ADDRESS: 413 2ND ST. SW
CITY, STATE: ALBUQUERQUE NM
CONTACT: DAN HERR
PHONE: 246-0870
ZIP CODE: 87102

SURVEYOR: PRECISION SURVEYS
ADDRESS: 8500 JEFFERSON ST NE
CITY, STATE: ALBUQUERQUE NM
CONTACT: LARRY MEDRANO
PHONE: 856-5700
ZIP CODE: 87113

CONTRACTOR: JAYNES CORPORATION
ADDRESS: 2906 BROADWAY NE
CITY, STATE: ALBUQUERQUE NM
CONTACT: JESUS ORTIZ
PHONE: 345-8591
ZIP CODE: 87107

430
4312

CHECK TYPE OF SUBMITTAL:

- ☐ DRAINAGE REPORT
- ☐ DRAINAGE PLAN 1st SUBMITTAL, ***REQUIRES TCL or equal***
- ☐ DRAINAGE PLAN RESUBMITTAL
- ☐ CONCEPTUAL GRADING & DRAINAGE PLAN
- ☐ GRADING PLAN
- ☐ EROSION CONTROL PLAN
- ☐ ENGINEER'S CERTIFICATION (HYDROLOGY)
- ☐ CLOMR/LOMR
- ☐ TRAFFIC CIRCULATION LAYOUT (TCL)
- ☒ ENGINEERS CERTIFICATION (TCL) (AA)
- ☒ ENGINEERS CERTIFICATION (DRB APPR. SITE PLAN)
- ☐ OTHER

CHECK TYPE OF APPROVAL SOUGHT:

- ☐ SIA / FINANCIAL GUARANTEE RELEASE
- ☐ PRELIMINARY PLAT APPROVAL
- ☐ S. DEV. PLAN FOR SUB'D. APPROVAL
- ☐ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
- ☐ SECTOR PLAN APPROVAL
- ☐ FINAL PLAT APPROVAL
- ☐ FOUNDATION PERMIT APPROVAL
- ☐ BUILDING PERMIT APPROVAL
- ☒ CERTIFICATE OF OCCUPANCY (PERM.)
- ☐ CERTIFICATE OF OCCUPANCY (TEMP.)
- ☐ GRADING PERMIT APPROVAL
- ☐ PAVING PERMIT APPROVAL
- ☐ WORK ORDER APPROVAL
- ☐ OTHER (SPECIFY)

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ☐ YES
- ☒ NO
- ☐ COPY PROVIDED

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MAY 21 2013
LAND DEVELOPMENT SECTION

DATE SUBMITTED: 5-20-13

BY: DAN HERR

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

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slagleherrarchitects

FINAL TRAFFIC CERTIFICATION FOR BUILDING PERMIT

RE: KTECH KAUAI PROJECT, 1300 EUBANK SE, ALBUQUERQUE, NM 87123

I, Dan Herr, NMRA 3076, of the firm Slagle Herr Architects, hereby certify that this project is in substantial compliance with and in accordance with the design intent of the AA approved plan dated 4-1-13. I certify that I have personally visited the project site on 4-17-13 and have determined by visual inspection that the survey data provided is representative of actual site conditions and is true and correct to the best of my knowledge and belief. This certification is submitted in support of a request for certificate of occupancy.

The record information presented hereon is not necessarily complete and intended only to verify substantial compliance of the traffic aspects of this project. Those relying on the record document are advised to obtain independent verification of its accuracy before using it for any other purpose.

Dan Herr, Architect

5-20-13
Date

STATE OF NEW MEXICO
DANIEL HERR
NO. 3076
5-20-13
REGISTERED ARCHITECT

RECEIVED
MAY 21 2013
LAND DEVELOPMENT SECTION

413 second street sw
albuquerque new mexico 87102
505 246 0870 slagleherr.com

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

November 1, 2002

Ron Bohannan, PE
Tierra West LLC
8509 Jefferson NE
Albuquerque, NM 87113

Re: MPCL Building Drainage Report
Lots 1A, 2, 3, 6, 7 & 8A, Block 1 Sandia Research Park
Engineer's Stamp dated 10-28-02, (M21/D12)

Dear Mr. Bohannan,

Based upon the information provided in your submittal dated 10-28-02, the above referenced report is approved for Site Development Plan for Subdivision, Site Development Plan for Building Permit, Building Permit and SO#19 Permit. Please attach a copy of this approved plan to the construction sets prior to sign-off by Hydrology.

A separate permit (SO#19) is required for construction within City R/W. A copy of this approval letter must be on hand when applying for the excavation permit.

Also, prior to Certificate of Occupancy release, Engineer Certification per the DPM checklist will be required.

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

Sincerely,

Bradley L. Bingham

Bradley L. Bingham, PE
Sr. Engineer, Planning Dept.
Development and Building Services

C: file

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

DRAINAGE AND TRANSPORTATION SHEET

(REV. 1/11/2002)

PROJECT TITLE: Lots 1A, 2, 3, 6, 7 & 8A, Block 1 Sandia Research Park, MPCL Building

ZONE MAP/DRG. FILE #: M-21/D12

DRB #: _____ EPC #: _____

WORK ORDER #: _____

LEGAL DESCRIPTION: Lots 1A, 2, 3, 6, 7 & 8A, Block 1 Sandia Research Park,

CITY ADDRESS: Southeast corner of Gibson Blvd.and Eubank Blvd.

ENGINEERING FIRM:	Tierra West, LLC	CONTACT:	RONALD R. BOHANNAN
ADDRESS:	8509 Jefferson NE	PHONE:	(505) 858-3100
CITY, STATE:	Albuquerque, NM	ZIP CODE:	87113
OWNER:	AMC Development Services	CONTACT:	Jeff Jesionowski
ADDRESS:	400 Gold SW, Suite 750	PHONE:	338-2285
CITY, STATE:	Albuquerque, NM	ZIP CODE:	87102
ARCHITECT:	JLS Architects	CONTACT:	Joe Slagle
ADDRESS:	1600 Rio Grande Blvd. NW	PHONE:	246-0870
CITY, STATE:	Albuquerque, NM	ZIP CODE:	87104
SURVEYOR:	Surv-Tek	CONTACT:	Russ Hugg
ADDRESS:	5643 Paradise Blvd. NW	PHONE:	897-336
CITY, STATE:	Albuquerque, NM	ZIP CODE:	87114
CONTRACTOR:		CONTACT:	
ADDRESS:		PHONE:	
CITY, STATE:		ZIP CODE:	

CHECK TYPE OF SUBMITTAL:

- X DRAINAGE REPORT
- ___ DRAINAGE PLAN
- ___ CONCEPTUAL GRADING & DRAINAGE PLAN
- X GRADING PLAN
- ___ EROSION CONTROL PLAN
- ___ ENGINEER'S CERTIFICATION (HYDROLOGY)
- ___ CLOMR/LOMR
- ___ TRAFFIC CIRCULATION LAYOUT (TCL)
- ___ ENGINEERS CERTIFICATION (TCL)
- ___ ENGINEERS CERTIFICATION (DRB APPR. SITE PLAN)
- ___ OTHER

CHECK TYPE OF APPROVAL SOUGHT:

- ___ SIA / FINANACIAL GUARANTEE RELEASE
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- X S. DEV. PLAN FOR SUB'D. APPROVAL
- X S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
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- ___ FOUNDATION PERMIT APPROVAL
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- ___ CERTIFICATE OF OCCUPANCY (PERM.)
- ___ CERTIFICATE OF OCCUPANCY (TEMP.)
- X GRADING PERMIT APPROVAL
- ___ PAVING PERMIT APPROVAL
- ___ WORK ORDER APPROVAL
- ___ OTHER (SPECIFY)

RECEIVED
OCT 29 2002
HYDROLOGY SECTION

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ___ YES
- X NO
- ___ COPY PROVIDED

DATE SUBMITTED: 10/29/2002 BY: Ron R. Bohannan, PE

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

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TIERRA WEST, LLC

8509 Jefferson NE
Albuquerque, NM 87113

(505) 858-3100
fax (505) 858-1118

twllc@tierrawestllc.com
1-800-245-3102

October 29, 2002

Mr. Bradley Bingham, PE
Sr. Engineer, PWD
Development and Building Services
City of Albuquerque
P.O. Box1293
Albuquerque, NM 87103

RE: Responses to comments referencing MPCL Building Drainage Report Lots 1A, 2, 3, 6, 7 & 8A, Block 1 Sandia Research Park, (M21/D12)

Dear Mr. Bingham:

Tierra West, LLC on behalf of Sandia Research Park is resubmitting the Drainage Report for the MPCL Building and referencing your comments dated 6/18/02 with the following responses:

1.) The report states that Basin 5 drains north to Gibson but the grading plan shows it draining to the west through Basin 6. Please revise the grading plan to match report.

We modified the grading plan to drain to a sidewalk culvert on Gibson Avenue.

2.) The report has a number of inconsistencies that should be addressed. The master plan for the area of interest was prepared by Brasher and Lorenz under M21/D5D. The site is bounded on the west by Eubank Blvd. The "future" Eubank storm drain is in the ground and actually appears on your grading plan. There is a paragraph that references a lot that drains to Research Rd (?). Basin 6 drains to Eubank. There are six basins in this analysis.

We addressed all of the changes in the report.

3.) If the connection to the manhole is to be done by SO#19, please include invert and all applicable notes and signature block.

An appropriate title block was added.

If you have any questions or need additional information regarding this matter, please do not hesitate to call me.

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OCT 29 2002
HYDROLOGY SECTION

Sincerely,

Ronald R. Bohannan, PE

Enclosure/s

JN: 220013
RRB/dg

220013bingham10282002

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OCT 29 2002
HYDROLOGY SECTION

DRAINAGE REPORT
FOR

LOTS 1A, 2, 3, 6, 7 & 8A, BLOCK 1 SANDIA RESEARCH PARK

MPCL BUILDING

Prepared by:

Tierra West, LLC
8509 Jefferson NE
Albuquerque, New Mexico 87113

Prepared for:
AMC Development Services

October, 2002

I certify that this report was prepared under my supervision, and I am a registered professional engineer in the State of New Mexico in good standing.

RONALD R. BOHANNAN
NEW MEXICO
7868
REGISTERED PROFESSIONAL ENGINEER
10/28/02

Ronald R. Bohannan
PE NO. 7868

Job No 220013

RECEIVED
OCT 29 2002
HYDROLOGY SECTION

TABLE OF CONTENTS

SECTION I - REPORT
Location 4
Purpose 4
Existing Drainage Conditions 4
Vicinity Map 5
Existing Basins Map 6
Flood Plain and Soil Conditions 7
Proposed Conditions and On-Site Drainage Management 8
Proposed Basins Map 9
Flood Insurance Rate Map 10
Soil Map 11
Summary 12
Infrastructure List 12

SECTION II - RUNOFF CALCULATIONS
Runoff Calculation Results 14
Runoff Calculations 15
Driveway Opening Capacity 20
Drainage Sidewalk Culvert 21
Exiting Basins Map 24
Proposed Basins Map 25

MAP POCKET A
Grading and Drainage Plan

MAP POCKET B
Master Utility Plan

Section I

Report

Prelude

This report is being prepared at the request of the current owner. The owner proposes to build a 80,500 square foot two story manufacturing building on lot 6 in addition to the previously approved 10, 000 square foot manufacturing building. This new building will be located on lots 1A, 2, 3, 6, 7 & 8A, Block 1.

Location

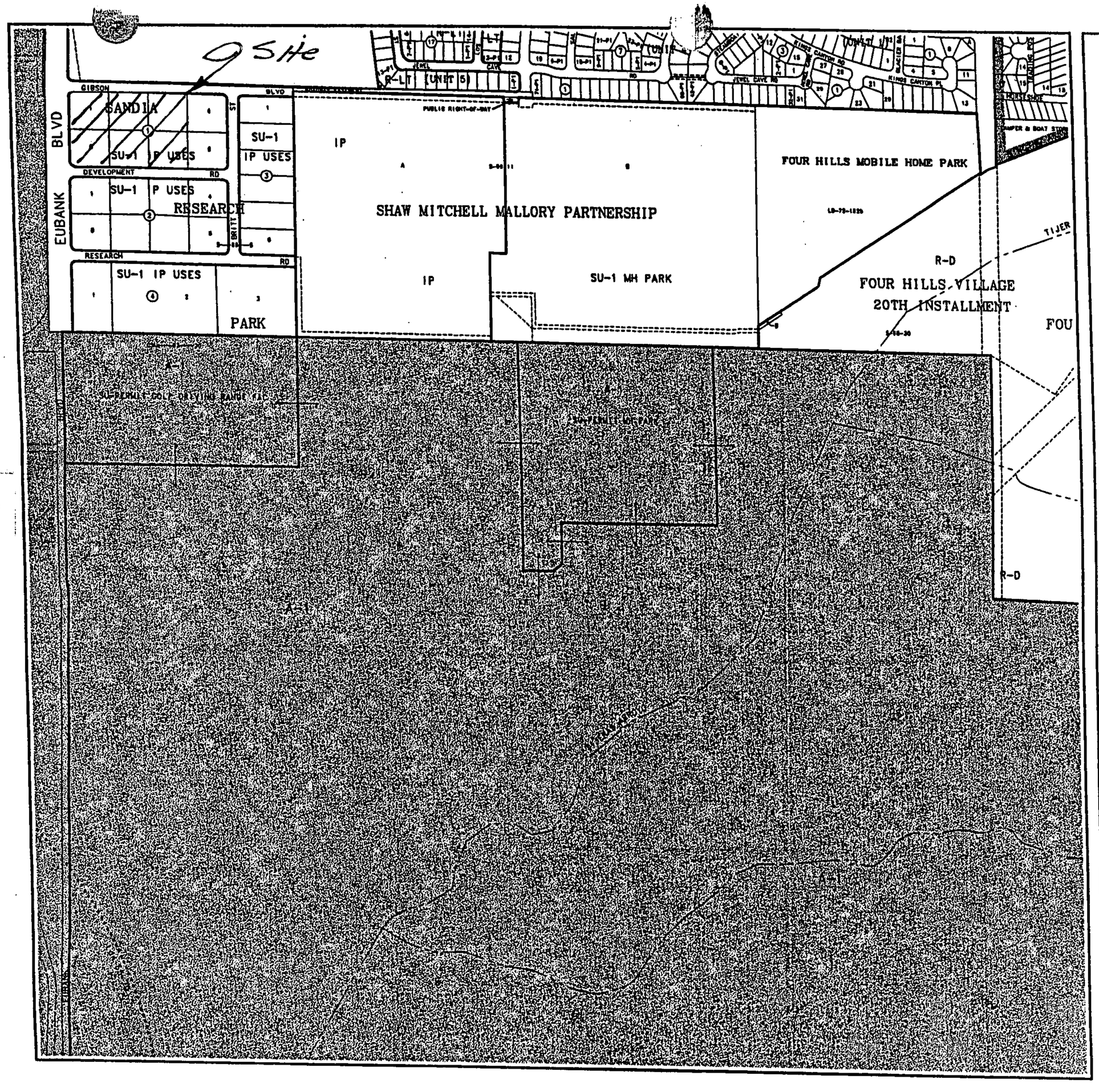
The project is part of the Sandia Research Park and is located at the southeast corner of Gibson Boulevard and Eubank Boulevard in the southeast quadrant of Albuquerque. The site is shown highlighted and is shown on the enclosed Zone Atlas page, number M-21-Z, is situated on Development Road, mid-block between Britt Street and Eubank Boulevard. The owners of the project propose to construct two new research warehouse buildings on the site to be built in one phase. The site contains 5.9507 acres.

Purpose

The purpose of this drainage report is to present a grading and drainage solution for subdivision and building permit purposes. We request grading approval, Site Development Plan for subdivision and Site Plan for Building Permit at this time.

Existing Drainage Conditions

The site falls within the approved Sandia Research Park Drainage Report, and it is currently undeveloped. Development Road, and all of the roads surrounding the site, were constructed but the individual parcels are being developed on a lot by lot basis. The existing condi-



CITY OF
Albuquerque
Albuquerque Geographic Information System
PLANNING DEPARTMENT

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GRAPHIC SCALE IN FEET

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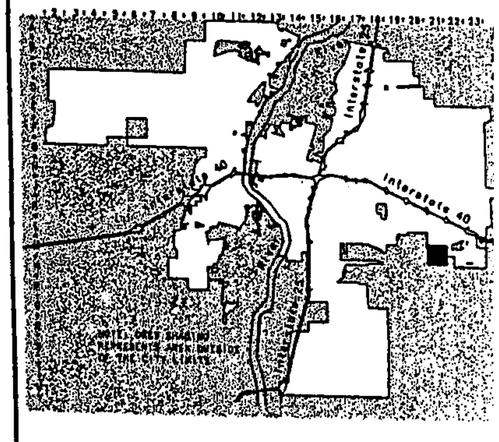
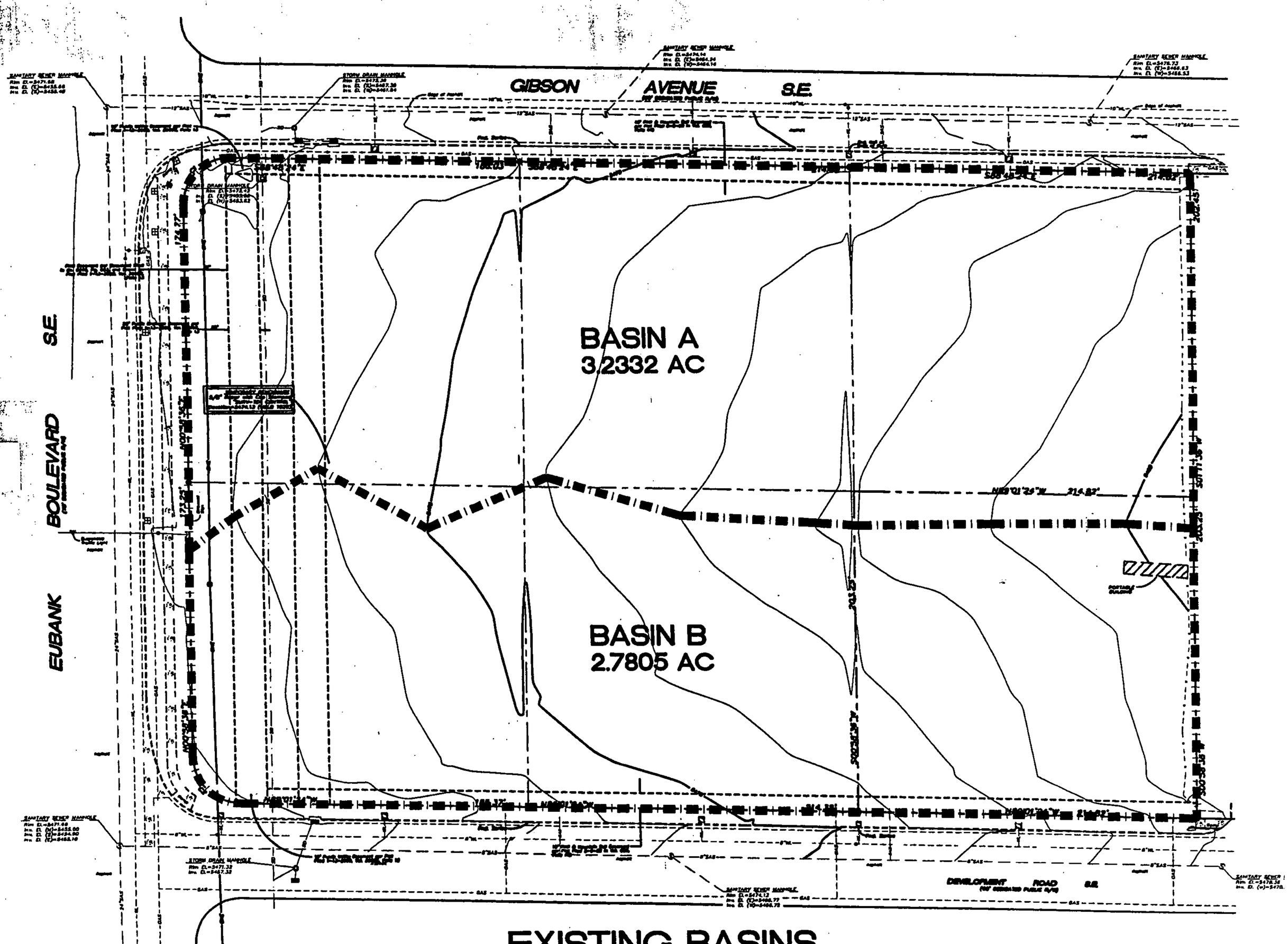


Zone Atlas Page
M-21-Z

Map Amended through
September 17, 1999



EXISTING BASINS

tions for the entire site were originally analyzed under the Drainage Report for Sandia Research Park prepared by Brasher & Lorenz under M21/D5D.

The site does not have any offsite developed flows that impact the project. The proposed project lies within the park and is bounded on the east by lots that will drain to Development Road. The site falls east to west at around 2%.

The approved drainage plan proposes to direct all the developed flow to the streets within Development Road then draining to the Eubank Boulevard storm drain. These flows are then collected by an existing storm sewer collection system, which collects the entire flow and directs it to the Eubank Storm System which will intercept and remove the flows. The site was analyzed under two basins for existing flows. The weighted e-method was used to calculate the flows. Basin A has a 6.04 cfs and 1.87 cfs for the 100-year and 10-year existing flows. Basin B has a 5.20 cfs and 1.61 cfs for the 100-year and 10-year existing flows respectively.

Flood Plain and Soil Condition

The site is located on FEMA Map No. 350002 panel 37 as shown on the attached excerpt. The map shows that the site does not lie within any 100-year flood plains.

The site contains two soil types: Madurez Wink (MWA) and Tijeras (TgB) as indicated on the Soil Map (sheet #42) from the Soil Conservation Service Survey of Bernalillo County. The Tijeras is gentle sloping old allivate fan material with moderate runoff and soil erosion. The Madurez Wink series is a sandy loam with slow runoff and moderate to severe soil erosion. (See attached soil map for site location).

Proposed Conditions and On-Site Drainage Management Plan

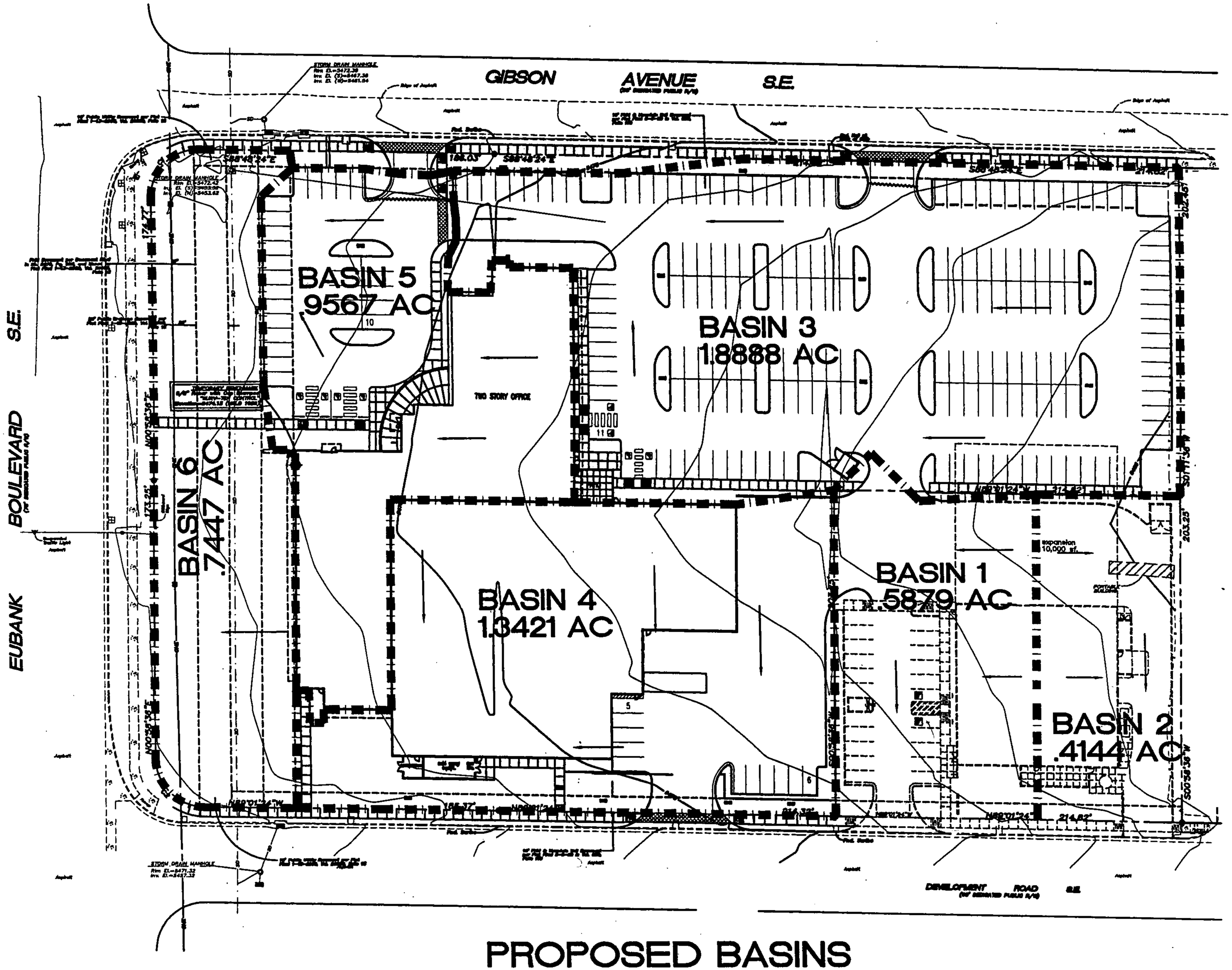
The entire site will be graded and all of the surface improvements will be built out in their

entirety, with the exception of a future parking lot (it was computed as fully developed). The enclosed grading plan (in the map pocket) shows the grades for the entire project. Basins 1 and 2 are proposed for the MPCL Building that was previously submitted and approved. Four other basins mark the balance of the site. Basins 3 and 5 drain north to Gibson Boulevard. Basins 4 drains south to Development Road. Basin 6 sheet flows to Eubank Boulevard. The grading plan identifies the respective land treatments for each zone.

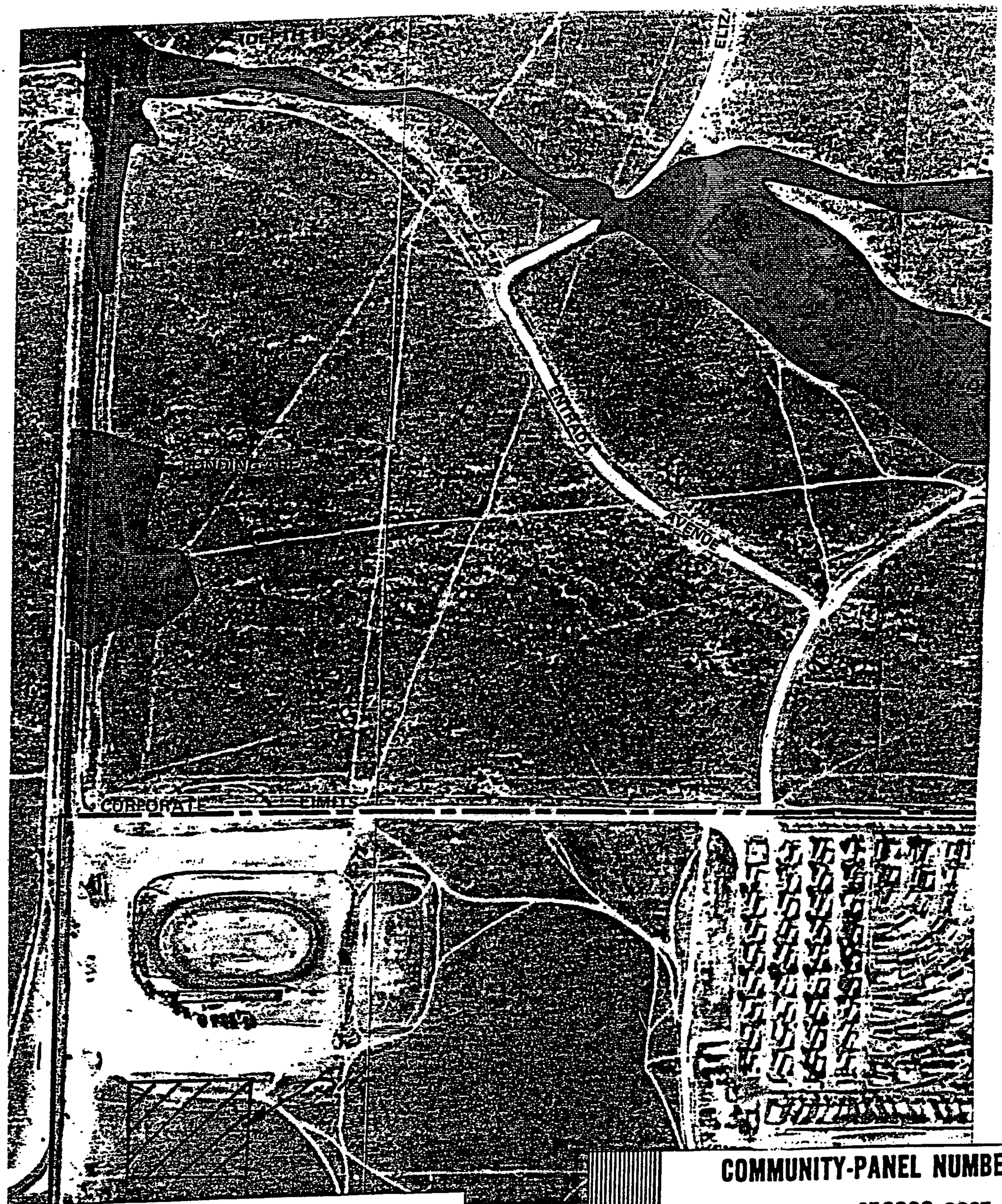
Basin 3 is routed to the parking lot to a single drop inlet, which collects the water, and routes to the existing manhole on the property containing the 2.72 cfs. Basin 5 drains north to the entrance on Gibson and out the main drive through a sidewalk culvert at 4.71 cfs. Basin 4 has a water block located at the east entrance and routes all of the flow to the western most entrance to Development Road at 6.40 cfs. Basin 6 contains the landscape area and sheet that flows to Gibson Boulevard. The entire site runoff will continue to drain, per the Sandia Research Park Master Drainage Plan, which calls for free discharge from the site.

Basin 1 consists of one-half of the roof and predominantly the western half of the site. The flow is routed through the parking lot to the western most entrance discharging 2.716 cfs. Basin 2 contains the remaining part of the roof and the eastern half of the site. These flows are routed to the parking lot then south and to the eastern most entrance. These flows leave the site at the east entrance and discharge to Research Road at 1.9250 cfs.

The Sandia Research Park was originally analyzed using the rational method for all of the basins. We included a copy of the report from the file in the appendix. The new flows were analyzed under City of Albuquerque, Development Process Manual, Section 22.2, Hydrology Section, revised January 1993.



PROPOSED BASINS



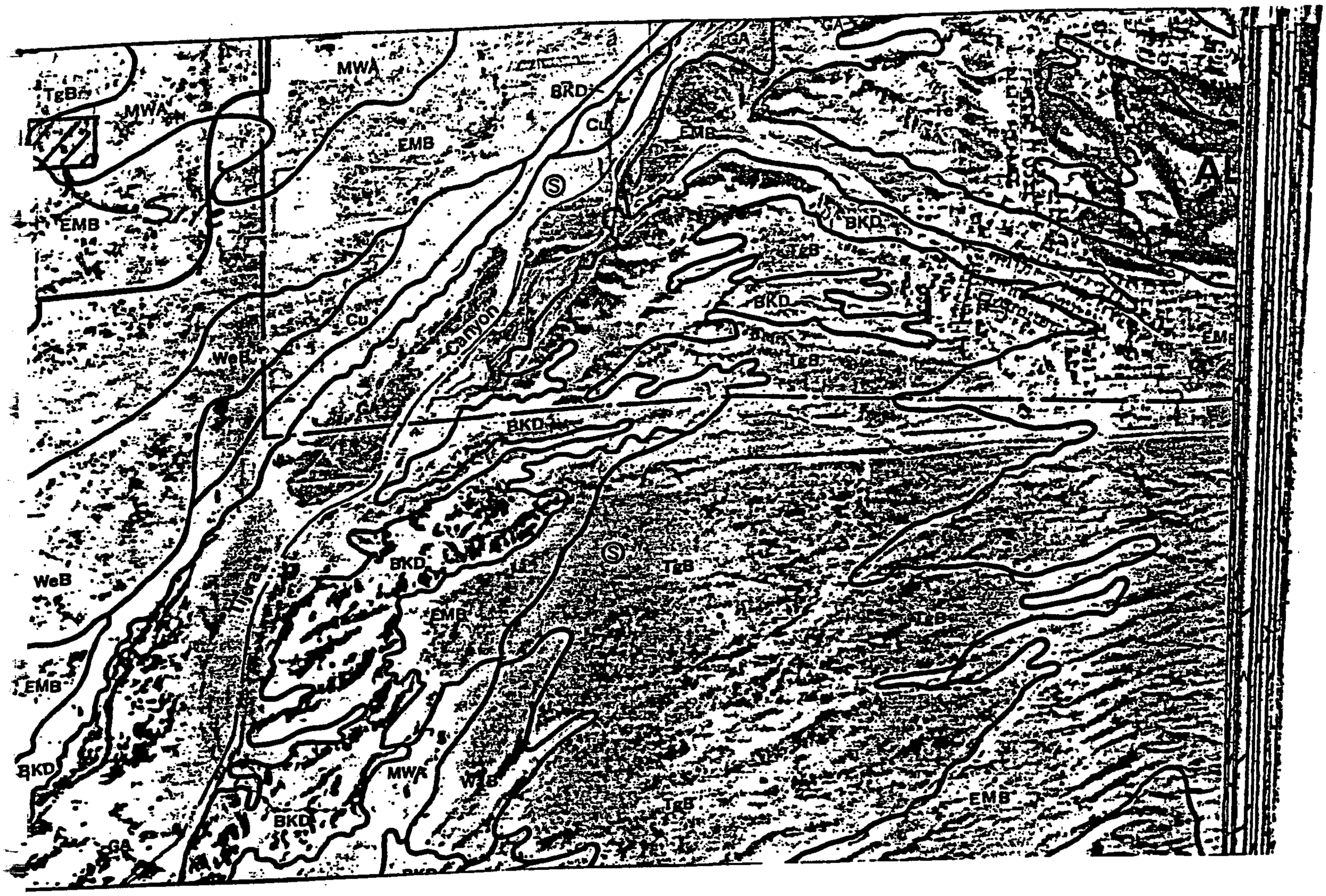
FIRM
FLOOD INSURANCE RATE MAP

COMMUNITY-PANEL NUMBER

350002 0037 C

EFFECTIVE DATE:

OCTOBER 14, 1983



SOIL SURVEY OF

Bernalillo County and Parts of Sandoval and Valencia Counties, New Mexico

Summary

Lot 6, Block 1 proposes to discharge a 100-year flow at 2.7166 cfs for Basin 1 and 1.9250 cfs for Basin 2 from a 1.0023 acre site to Development Road per the approved Drainage Master Plan prepared by Andrews, Asbury, and Robert under M-15/D5. Basin 3 will discharge 9.14 cfs and 6.40 cfs to a new drop inlet which will tie to the existing storm sewer. Basin 4 drains to the driveway with a peak discharge of 6.40 cfs. Basin 5 drains north to the entrance on Gibson at a rate of 4.71 cfs 100 year. Basin 6 is a natural vegetation that sheet flows at 1.39 cfs and 0.43 cfs to Gibson Boulevard. The flows enter Research Road where they are picked up by an existing storm sewer and conveyed to a retention pond on Lot 1 Block 4. This pond will be removed when the City and AMAFCA construct the Eubank Storm Drain. The developed basins were separated into three basins.

Infrastructure List

We propose all drainage to be routed out the entrance or into drop inlets using the S019 procedure. As such, no infrastructure list is required. All remaining work will be performed under the building permit.

Section II

Runoff Calculations

RUNOFF CALCULATIONS

The site is @ Zone 3

LAND TREATMENT

Proposed	*Existing*
B = 10%	A = 100%
D = 90%	

DEPTH (INCHES) @ 100-YEAR STORM

P_{60}	= 2.14 inches
P_{360}	= 2.60 inches
P_{1440}	= 3.10 inches

DEPTH (INCHES) @ 10-YEAR STORM

P_{60} = 1.427 inches	= 2.14 x 0.667
P_{360} = 1.734	= 2.60 x 0.667
	= 2.068

Precipitation Zone Zone 3

$P_{60} = 2.14$ in

$P_{1440} = 3.10$ in

$P_{10\ Days} = 4.90$ in

Existing Basin

Basin A = 3.2332 Ac

Basin B = 2.7805 Ac

Soil Treatment A

Excess Precipitation Table A-8

Zone 3 A 0.66 in (100 yr.) 0.19in (10yr.)

Weighted E Method

$$E = \frac{E_A A_A}{A} = \frac{(0.66)(3.2332)}{3.2332} = 0.66$$

$$V_{A100} = (0.66)(3.2322)/12 = 0.1778 \text{ Ac Ft}$$

$$V_{B100} = (0.66)(2.7805)/12 = 0.1529 \text{ Ac Ft}$$

Peak Discharge Table A-9 Zone 3

A = 1.87 cfs /Ac 100yr. 0.58 cfs/Ac 10yr.

$$Q_{A\ 100} = (1.87)(3.2332) = 6.04 \text{ cfs } 100$$

$$Q_{B\ 100} = (1.87)(2.7805) = 5.20 \text{ cfs } 100$$

$$Q_{A\ 10} = (0.58)(3.2332) = 1.87 \text{ cfs } 10$$

$$Q_{B\ 10} = (0.58)(2.7805) = 1.61 \text{ cfs } 10$$

Developed Flows

Basin 3

Land Treatment

A = 0.0 Ac Ft

B = 0.0638 Ac Ft

C = 0.1184 Ac Ft

D = 1.7066 Ac Ft

Weighted E Table A-8

B = 0.92/0.36

C = 1.29/0.62

D = 2.36/1.50

$$\text{Weighted } E_{100} = \frac{0.92\,(0.0638) + 1.29\,(.1184) + 2.36\,(1.7066)}{1.8888}$$

$$E_{100} = \frac{4.2400}{1.8888} = 2.2448$$

$$V_{3(100)} = (2.2448)\,(1.8888)/12 = 0.3533 \text{ Ac Ft}$$

$$\text{Weighted } E_{10} = \frac{0.36\,(0.0638) + 0.62\,(.1184) + 1.50\,(1.7066)}{1.8888}$$

$$E_{10} = 1.4063$$

$$V_{3(10)} = (1.4063)\,(1.8888)/12 = 0.2214 \text{ Ac Ft}$$

Peak Discharge

B = 2.60/1.45

C = 3.45/2.00

D = 5.02/3.39

$$Q_{3(100)} = 2.60\,(0.0638) + 3.45\,(.1184) + 5.02\,(1.7066) = 9.14 \text{ cfs}$$

$$Q_{3(10)} = 1.45\,(0.0638) + 2.00\,(.1184) + 3.39\,(1.7066) = 6.11 \text{ cfs}$$

Basin 4

B = 0.0432

C = 0.1500

D = 1.1489

Weighted E

B = 0.92/0.36

C = 1.29/0.62

D = 2.36/1.50

$$\text{Weighted } E_{100} = \frac{0.92(.0432) + 1.29(.1500) + 2.36(1.1489)}{1.3421}$$

$$= 2.1941$$

$$E_{10} = \frac{0.36(.0432) + 0.62(.1500) + 1.50(1.1489)}{1.3421}$$

$$= 1.3650$$

V_{100} = (2.1941)(1.3421)/12 = 0.2454 Ac Ft
V_{10} = (1.3650)(1.3421)/12 = 0.1527 Ac Ft

Peak Discharge

B = 2.60/1.45
C = 3.45/2.00
D = 5.02/3.39

$Q_{4(100)}$ = 2.60(.0432) + 3.45(.1500) + 5.02(1.1489) = 6.40 cfs
$Q_{4(10)}$ = 1.45(.0432) + 2.00(.1500) + 3.39(1.1489) = 4.25 cfs

Basin 5

B = 0.0100 Total = .8506 A

C = 0.0460

D = 0.9007

Weighted E

B = 0.92/0.36

C = 1.29/0.62

D = 2.36/1.50

$$\text{Weighted } E_{100} = \frac{0.92(.0100) + 1.29(.046) + 2.36(.9007)}{0.9567}$$

$$= 2.2935$$

$$E_{10} = \frac{0.36(.0100) + 0.62(.046) + 1.50(.9007)}{0.9567}$$

$$= 1.4458$$

V_{100} = (2.2935)(.9567)/12 = 0.1828 Ac Ft
V_{10} = (1.4458)(.9567)/12 = 0.1153 Ac Ft

Peak Discharge

B = 2.60/1.45
C = 3.45/2.00
D = 5.02/3.39

$Q_{5(100)}$ = (2.60)(.0100) + 3.45(.0476) + (5.02) + (.9007) = 4.71 cfs

$Q_{5(10)}$ = 1.45(.0100) = 2.00(.0476) + 3.39(.9007) = 3.16 cfs

Basin 6

A = .7447 Ac

Land Treatment

0.66/0.19

Weighted E_{100} $\frac{(0.66)(.7447)}{.7447} = 0.66$

$V_{100} = (0.66)(.7447)/12 = 0.0409$ Ac Ft

$E_{10} = \frac{0.19(.7447)}{.7447} = 0.19$

$V_{10} = 0.A(.7447)/12 = 0.012$ Ac Ft

Peak Drainage

$Q_{100} = (1.87)(.7436) = 1.39$ cfs

$Q_{10} = (0.58)(.7436) = 0.43$ cfs

Driveway Opening Capacity

Manning's Equation:

Equation 7-366

Handbook of Hydraulics

Braten and King

$$Q = \frac{1.49}{n} A R^{2/3} S^{1/2}$$

Where
Q = Flow (cfs)
n = 0.017

Roughness located

page 7-22
A = Area
R = Hydraulic Radius
S = Slope

$$A = 0.24 + 24 * 0.5 = 12.00$$

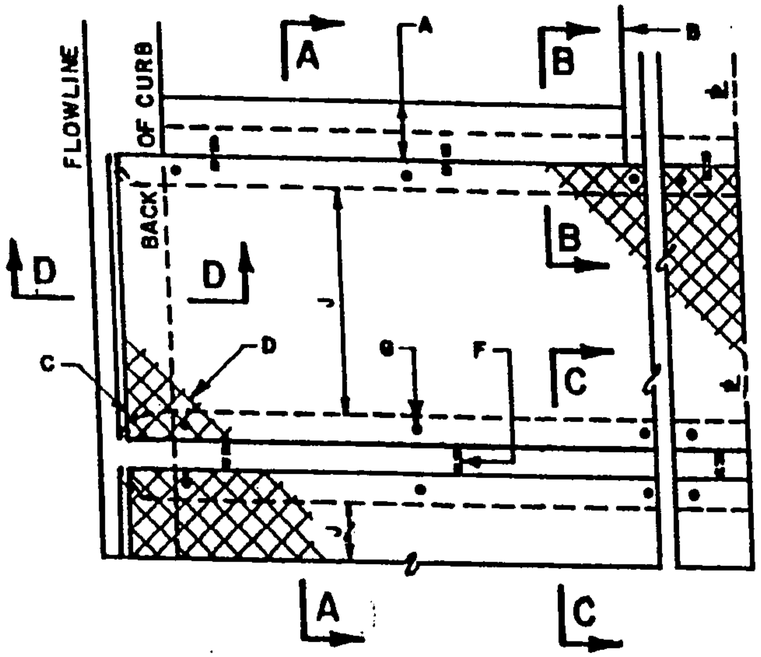
$$WP = 2 * 0.5 + 24 = 25$$

$$R = \frac{A}{WP} = \frac{12}{25} = 0.480$$

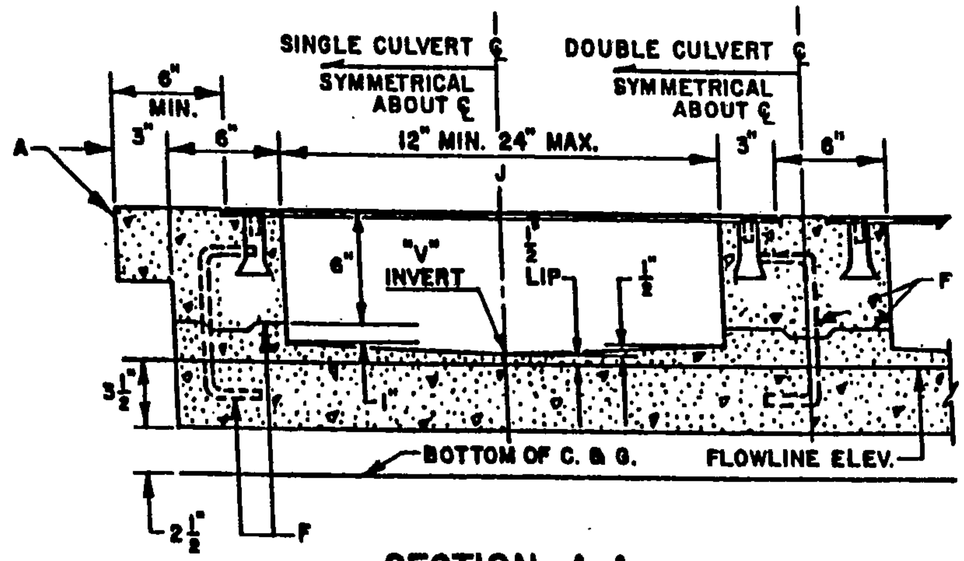
Manning's Equation:

$$Q = \frac{1.49}{0.017} * 12 * 0.48^{2/3} * 0.028^{1/2}$$

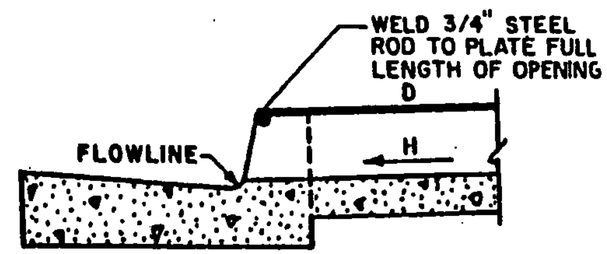
Capacity of curb cut open = 107.87 cfs



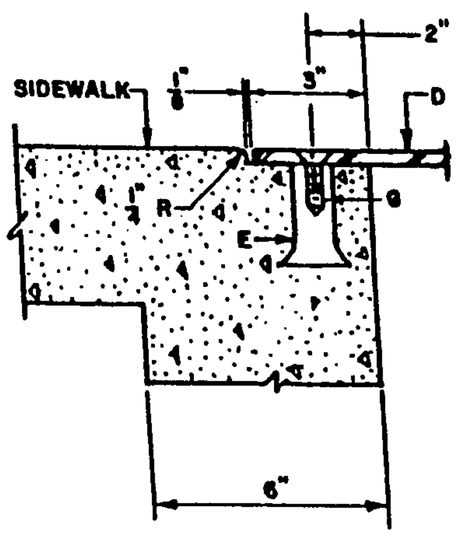
PLAN
SINGLE AND OR MULTIPLE CULVERT



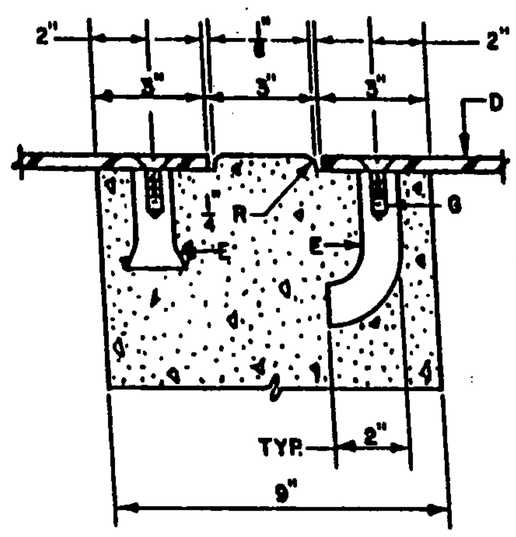
SECTION A-A



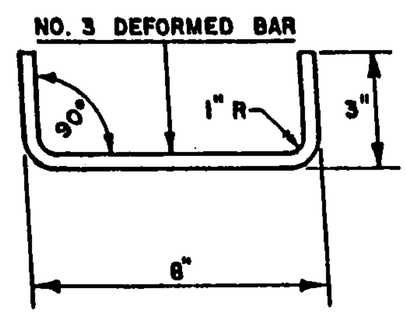
SECTION D-D



SECTION B-B



SECTION C-C



DOWEL DETAIL

GENERAL NOTES:

1. PLACING OF DRAIN THRU EXIST. SIDEWALK AND CURB & GUTTER REQUIRES THAT ENTIRE SIDEWALK AND C & G STONES BE REMOVED AND REPLACED AS DETAILED HEREIN.
2. BOTTOM SLAB OF CULVERT SHALL BE POURED MONOLITHICALLY WITH NEW GUTTER.
3. THE INVERT SHALL BE TROWELED TO PRODUCE A HARD POLISHED SURFACE OF MAX DENSITY AND SMOOTHNESS. INVERT SHALL BE V-SHAPED TO WITHIN 3" OF OUTLET, THEN WARPED TO PARALLEL FLOWLINE AT OUTLET, UNLESS OTHERWISE SHOWN.
4. ALL EXPOSED CONC. SURFACE SHALL MATCH GRADE, COLOR, FINISH AND SCORING OF ADJACENT CURB AND SIDEWALK.
5. SIDEWALK REPLACED DURING CONSTRUCTION SHALL BE POURED MONOLITHICALLY WITH CULVERT WALLS.
6. IF ROD ANCHORS ARE USED, DRILL & TAP FOR F.H. MACHINE SCREW. ATTACH ANCHORS TO PLATE AND SECURE PLATE IN PLACE PRIOR TO POURING OF WALLS.
7. LENGTH OF EACH PLATE SHALL BE SUCH THAT THE WEIGHT WILL NOT EXCEED 300 LBS. AND SHALL BE STRESS RELIEVED AFTER FABRICATION. CLEAN SURFACE OF PLATE AND FRAMING MEMBERS AND PAINT W/ ONE SHOP COAT RED OXIDE AND TWO FINISH COATS ALUMINUM PAINT (AASHTO M 69).
8. THE CITY WILL NOT ASSUME RESPONSIBILITY FOR MAINTENANCE OF ANY SIDEWALK CULVERT INSTALLED BY OR FOR PRIVATE PROPERTY OWNERS.

CONSTRUCTION NOTES:

A. MATCH NEAREST CONTROL JOINT, INSTALL 1/2" EXPANSION JOINT.
B. EDGE OF SIDEWALK OR SETBACK (VARIABLE).
C. 3" RADIUS (TYPICAL).
D. 3/8" CHECKERED STEEL PLATE (PAINT PER NOTE 7, ABOVE).
E. FOR SECURING PLATE USE 1"X 5" S.S. ROD ANCHOR, "RED HEAD MULTI-SET II SRM-38 ANCHOR" OR APPROVED EQUAL. INSTALL PER MANUFACTURER'S INSTRUCTIONS AT MAX. 24" O.C., A MINIMUM OF 2 PER SIDE AND ONE WITHIN 6" OF EACH END.
F. CONSTRUCTION JOINT IS OPTIONAL. IF USED, SPACE DOWELS AT 18" O.C. MAX., 1 1/2" MINIMUM FROM FACE OF CONCRETE.
G. 3/8" - 16 x 1 1/4" COUNTERSUNK, F.H., STAINLESS STEEL, MACHINE SCREW.
H. SLOPE 1/4" PER FT. MIN.
J. DRAIN WIDTH PER PLAN (12" MIN., 24" MAX).

CITY OF ALBUQUERQUE

REVISIONS

DRAINAGE
SIDEWALK CULVERT
WITH STEEL PLATE TOP
DWG. 2236

AUG.1986

Sidewalk Culvert

Weir Equation:

$$Q = CLH^{3/2}$$

Equation 5-10 Handbook of Hydraulics King and Brater

Basin 2:

Where

Q= Flow (cfs)

Q = Flow in cubic feet per second

C = 2.95

C = Coefficient for Broad Crested Weirs

Table 5-3 King and Brater

H = 0.67 ft

H = Height of the water

L = 2.0 ft

L = Width of the weir

$$Q = 2.95 * 2.0 * \ 0.67^{3/2}$$

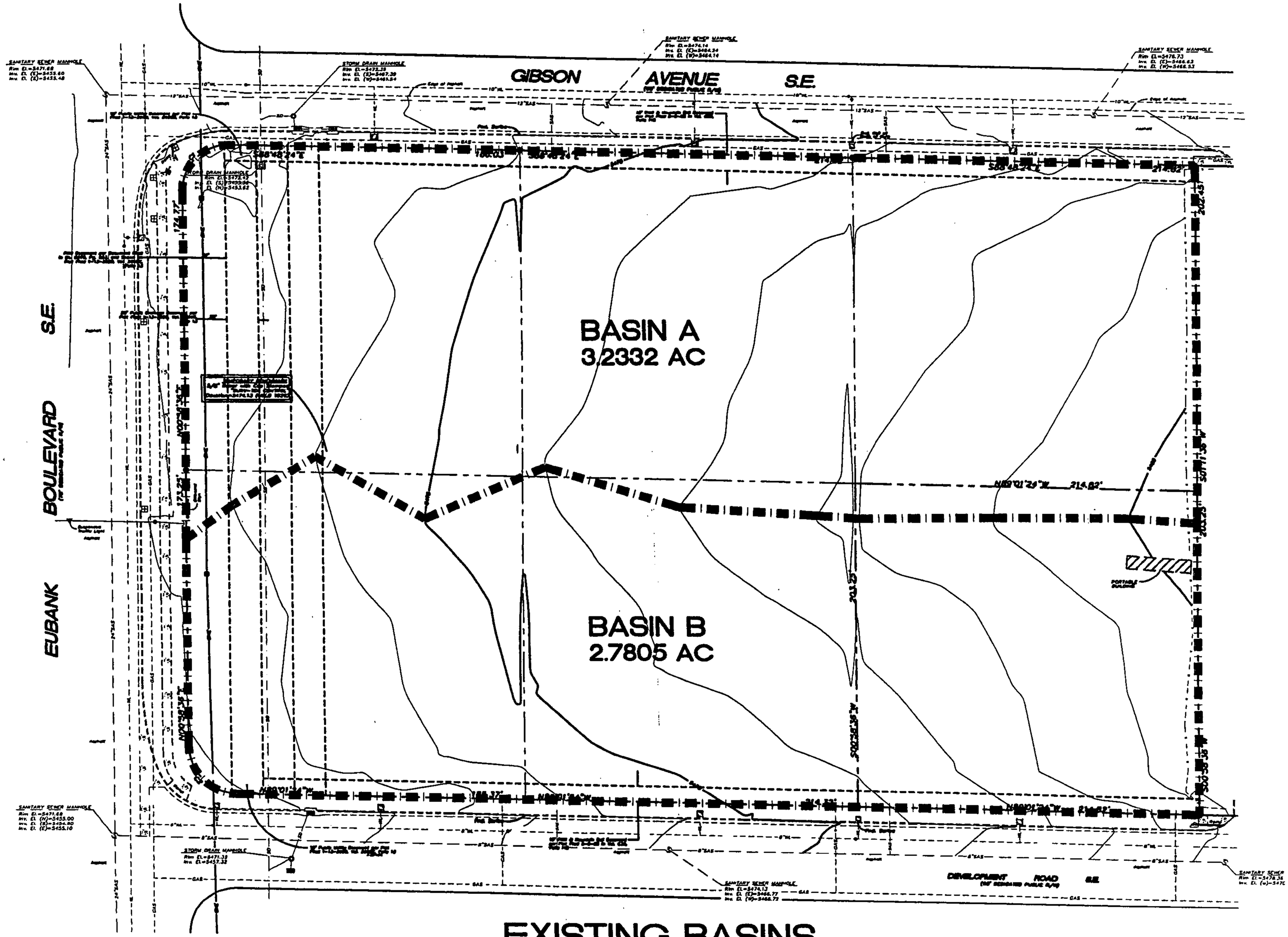
Q = 3.24 cfs

Build 4 Sidewalk

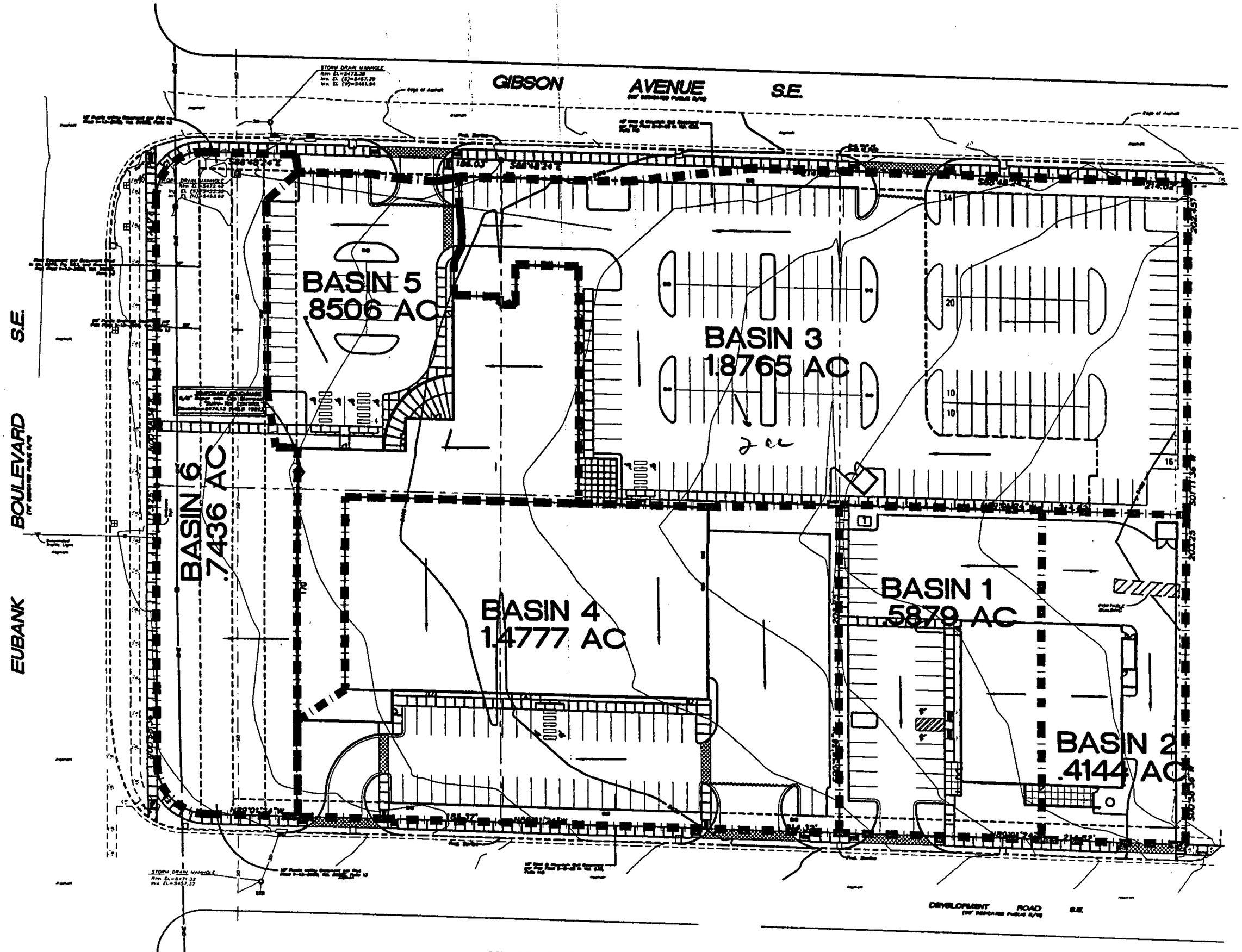
Culverts

12.94 cfs >

12.76cfs



EXISTING BASINS



PROPOSED BASINS

MAP POCKET A

GRADING AND DRAINAGE PLAN

For

Sandia Research Park

MAP POCKET B

MASTER UTILITY PLAN

For

Sandia Reseach Park

CITY OF ALBUQUERQUE

Planning Department
Transportation Development Services Section

June 21, 2007

Joe L. Slagle, Registered Architect
1600 Rio Grande NW
Albuquerque, NM 87104

Re: Certification Submittal for Final Building Certificate of Occupancy for MPCL Expansion, [M-21 / D12]
10421 ~~1041~~2 Development Rd SE
Architect's Stamp Dated 05/31/07

Dear Mr. Slagle:

The TCL / Letter of Certification submitted on June 21, 2007 is sufficient for acceptance by this office for final Certificate of Occupancy (C.O.). Notification has been made to the Building and Safety Section.

Sincerely,

Nilo E. Salgado-Fernandez, P.E.
Senior Traffic Engineer
Development and Building Services
Planning Department

c: Engineer
Hydrology file
CO Clerk

P.O. Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov

DRAINAGE AND TRANSPORTATION INFORMATION SHEET
(Rev. 12/05)

PROJECT TITLE: MPCL EXPANSION ZONE MAP/DRG. FILE # M-21-Z D012
DRB#: 601719 EPC#: WORK ORDER#:

LEGAL DESCRIPTION:
CITY ADDRESS: 10412 DEVELOPEMENT Rd. SE

ENGINEERING FIRM: ALSED / DESERT EAGLE CONTACT: PAT SEDILLO / JEFF HANKS
ADDRESS: PHONE: 761-3100 / 342-0161
CITY, STATE: ZIP CODE:

OWNER: K TECH CORP. CONTACT: PETE KASKEY
ADDRESS: 1300 EUBANK SE PHONE: 338-2285
CITY, STATE: ALBUQ., NM ZIP CODE: 87123

ARCHITECT: JS ARCHITECTS CONTACT: JARROD CLINE
ADDRESS: 1609 RIO GRANDE NW PHONE: 246-0870
CITY, STATE: ALB, NM ZIP CODE: 871-4

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

CONTRACTOR: HART CONSTRUCTION CONTACT: ANDY HART
ADDRESS: 2919 2ND ST. NW SUITE B PHONE: 345-4001
CITY, STATE: ALBUQ., NM ZIP CODE: 87107

TYPE OF SUBMITTAL:
- ____ DRAINAGE REPORT
- ____ DRAINAGE PLAN 1st SUBMITTAL
- ____ DRAINAGE PLAN RESUBMITTAL
- ____ CONCEPTUAL G & D PLAN
- ____ GRADING PLAN
- ____ EROSION CONTROL PLAN
- ____ ENGINEER'S CERT (HYDROLOGY)
- ____ CLOMR/LOMR
- ✓ TRAFFIC CIRCULATION LAYOUT
- ____ ENGINEER/ARCHITECT CERT (TCL)
- ____ ENGINEER/ARCHITECT CERT (DRB S.P.)
- ____ ENGINEER/ARCHITECT CERT (AA)
- ____ OTHER (SPECIFY)

CHECK TYPE OF APPROVAL SOUGHT:
- ____ SIA/FINANCIAL GUARANTEE RELEASE
- ____ PRELIMINARY PLAT APPROVAL
- ____ S. DEV. PLAN FOR SUB'D APPROVAL
- ____ S. DEV. FOR BLDG. PERMIT APPROVAL
- ____ SECTOR PLAN APPROVAL
- ____ FINAL PLAT APPROVAL
- ____ FOUNDATION PERMIT APPROVAL
- ____ BUILDING PERMIT APPROVAL
- ✓ CERTIFICATE OF OCCUPANCY (PERM)
- ____ CERTIFICATE OF OCCUPANCY (TEMP)
- ____ GRADING PERMIT APPROVAL
- ____ PAVING PERMIT APPROVAL
- ____ WORK ORDER APPROVAL
- ____ OTHER (SPECIFY)

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

RECEIVED JUN 21 2007 HYDROLOGY SECTION

RECEIVED ~~JUN 01 2007~~ HYDROLOGY SECTION

SUBMITTED BY: Shelley M Hughes DATE: 6/21/07

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

1. **Conceptual Grading and Drainage Plan:** Required for approval of Site Development Plans greater than five (5) acres and Sector Plans.

2. **Drainage Plans:** Required for building permits, grading permits, paving permits and site plans less than five (5) acres.

3. **Drainage Report:** Required for subdivision containing more than ten (10) lots or constituting five (5) acres or more.

.600 rio grande nw
albuquerque
new mexico 87104
505 246 0870
fax 505 246 0437
www.jlsarchitects.com

RE: MPCL Expansion
10412 Development Rd SE
Suite B
Albuquerque, NM 87123

TRAFFIC CERTIFICATION

I, Joe L. Slagle, NMRA 2284, of the firm JLS Architects, hereby certify that this project is in substantial compliance with and in accordance with the design intent of the Administrative Amendment to DRB case #1001719 approved plan dated 05.09.02. I certify that I have personally visited the project site on 05.31.07 and have determined by visual inspection that the survey data provided is representative of actual site conditions and is true and correct to the best of my knowledge and belief. This certification is submitted in support of a request for certificate of occupancy.

The record information presented hereon is not necessarily complete and intended only to verify substantial compliance of the traffic aspects of this project. Those relying on the record document are advised to obtain independent verification of its accuracy before using it for any other purpose.

Signature of Architect — Architect's Stamp

5.31.07
Date

STATE OF NEW MEXICO
JOEL L. SLAGLE
No. 2284
REGISTERED ARCHITECT
5.31.07

RECEIVED
JUN 21 2007
HYDROLOGY SECTION

JLS

RE: MPCL Expansion
10412 Development Rd SE
Suite B
Albuquerque, NM 87123

TRAFFIC CERTIFICATION

I, Joe L. Slagle, NMRA 2284, of the firm JLS Architects, hereby certify that this project is in substantial compliance with and in accordance with the design intent of the Administrative Amendment to DRB case #1001719 approved plan dated 05.09.02. I certify that I have personally visited the project site on 05.31.07 and have determined by visual inspection that the survey data provided is representative of actual site conditions and is true and correct to the best of my knowledge and belief. This certification is submitted in support of a request for certificate of occupancy.

The record information presented hereon is not necessarily complete and intended only to verify substantial compliance of the traffic aspects of this project. Those relying on the record document are advised to obtain independent verification of its accuracy before using it for any other purpose.

Signature of Architect — Architect's Stamp

6.21.07
Date

STATE OF NEW MEXICO
JOE L. SLAGLE
No. 2284
REGISTERED ARCHITECT
6.21.07

RECEIVED
JUN 21 2007
HYDROLOGY SECTION

1600 rio grande nw
albuquerque
new mexico 87104
505 246 0870
fax 505 246 0437
www.jlsarchitects.com

JLS
ARCHITECTS

CITY OF ALBUQUERQUE

Planning Department
Transportation Development Services Section

June 4, 2007

Joe Slague, R.A.
JLS Architects
1600 Rio Grande NW
Albuquerque, NM 87104

Re: Certification Submittal for Final Building Certificate of Occupancy for MPCL Building [M-21/D012]
10412 Development Rd. SE
Architect's Certification dated 5-31-07

Dear Mr. Slague:

P.O. Box 1293

Albuquerque

New Mexico 87103

www.cabq.gov

The Letter of Certification submitted on June 4, 2007 is not sufficient for acceptance by this office for final Certificate of Occupancy (CO). The TCL or DRB Site Plan approved for this site must be included in the CO package. This must be the ***exact*** copy of the approved TCL or DRB site plan that was included in the plan set approved for building permit. This will be the latest edition, which may have redlined comments, initialed and dated by the designer-of-record.

Please resubmit an acceptable package along with fully completed Drainage Information Sheet to front counter personnel for log in and evaluation by Transportation.

Sincerely,

Kristal D. Metro, P.E.
Senior Engineer, Planning Dept.
Development and Building Services

C: File

RECEIVED
JUN 21 2007
HYDROLOGY SECTION

EXIST. KTECH PARKING

10'-0" 9'-0" R=15' 20'-0" 24'-0" 18'-0" 10'-0" R=15'

25 SPACES ALLOTTED FOR MPCL EXPANSION

9'-0"

R=15' R=15' 32'-6" 9'-2"

FLUSH CONC. WALK

R=15' SIGN "DO NOT ENTER" (TYP.)

NEW FLUSH CONC. WALK

ONE WAY ONLY

6'-0" 20'-8"

ONE WAY

PAVEMENT MARKINGS

R=40'

EXIST. DUMSTER TO REMAIN

CONC. BOLLARDS (TYP.)

TRASH TRUCK RADIUS

R=15'

R=15' 14'-3"

6'-0" FLUSH CONC. WALK

33'-4"

R=10'

2 STORY EXPANSION
7000 S.F. (4000 S.F. FOOTPRINT)

NEW MPCL PARKING

13'-4"

5'-6" FLUSH CONC. WALK

25 SPACES PROVIDED ON MPCL PROPERTY

MPCL

EXISTING 2 STORY
RESEARCH INDUSTRIAL BUILDING
13,000 S.F.

EXIST. MPCL PARKING

ONE WAY

EXIST. F.H.

NEW F.H.

DEVELOPMENT RD.

ADMINISTRATIVE AMENDMENT

File # 06AA-00270 Project # 1001719

7,000 sq.ft. (4,000 sq.ft. footprint) building expansion.

Russell Brito — 3 Apr 2006

APPROVED BY — DATE

MPCL MATERIALS PROCESSING DATA LAB

0 2' 5' 10' 15' 20' 25'

Ktech CORP.

MPCL BUILDING EXPANSION

Development Road SE
Albuquerque, NM

JIS ARCHITECTS

1600 rio grande nw
albuquerque
new mexico 87104
505 246 0870
fax 505 246 0437

SITE PLAN

STATE OF NEW MEXICO — JOE L. SLAGLE — NO. 2284 — REGISTERED ARCHITECT — 3-22-06

REVISIONS

ARCHITECT

North

1 Site Plan
1 of 2 1"=30'-0"

DATE 03-27-06

SHEET 1 of 2

CITY OF ALBUQUERQUE

May 16, 2006

Martin Garcia, PE
ABQ Engineering, Inc.
6739 Academy Road NE Suite 130
Albuquerque, NM 87109

Re: MPCL Building Grading and Drainage Plan
Engineer's Stamp dated 4-13-06 (M21/D12)

Dear Mr. Garcia,

P.O. Box 1293

Albuquerque

New Mexico 87103

www.cabq.gov

Based upon the information provided in your submittal dated 4-13-06, the above referenced plan is approved for Building Permit. Please attach a copy of this approved plan to the construction sets prior to sign-off by Hydrology.

Also, prior to Certificate of Occupancy release, Engineer Certification per the DPM checklist will be required.

In the future, please add the panel number for the FIRM that is relevant to your site location.

If you have any questions, you can contact me at 924-3695.

Sincerely,

Curtis A. Cherne

Curtis A. Cherne, E.I.
Engineering Associate, Planning Dept.
Development and Building Services
BLD

C: file

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV. 1/28/2003rd)

PROJECT TITLE: MPCL Bldg Sandia Research Park - ZONE MAP/DRG. FILE #: M-21/D12

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

LEGAL DESCRIPTION: LOT 6, BLOCK 1, SANDIA RESEARCH & TECHNOLOGY PARK

CITY ADDRESS: 10421 Development Rd SE

ENGINEERING FIRM: ABQ Engineering, Inc
ADDRESS: 6739 Academy Road NE Suite 130
CITY, STATE: Albuquerque, NM

CONTACT: Martin J. Garcia
PHONE: 255-7802
ZIP CODE: 87109

OWNER: KTech Corporation
ADDRESS: 10421 Development Rd
CITY, STATE: Albuquerque, NM

CONTACT: Cathy Jesionowski
PHONE: 998-6062
ZIP CODE: _____

ARCHITECT: _____
ADDRESS: _____
CITY, STATE: _____

CONTACT: _____
PHONE:
ZIP CODE: _____

SURVEYOR: _____
ADDRESS: _____
CITY, STATE: _____

CONTACT: _____
PHONE: _____
ZIP CODE: _____

CONTRACTOR: _____
ADDRESS: _____
CITY, STATE: _____

CONTACT: _____
PHONE: _____
ZIP CODE: _____

CHECK TYPE OF SUBMITTAL:

- ☐ DRAINAGE REPORT
- ☐ DRAINAGE PLAN 1st SUBMITTAL, ***REQUIRES TCL or equal***
- ☐ DRAINAGE PLAN RESUBMITTAL
- ☐ CONCEPTUAL GRADING & DRAINAGE PLAN
- ☒ GRADING PLAN
- ☐ EROSION CONTROL PLAN
- ☐ ENGINEER'S CERTIFICATION (HYDROLOGY)
- ☐ CLOMR/LOMR
- ☐ TRAFFIC CIRCULATION LAYOUT (TCL)
- ☐ ENGINEERS CERTIFICATION (TCL)
- ☐ ENGINEERS CERTIFICATION (DRB APPR. SITE PLAN)
- ☐ OTHER

fee paid

CHECK TYPE OF APPROVAL SOUGHT:

- ☐ SIA / FINANCIAL GUARANTEE RELEASE
- ☐ PRELIMINARY PLAT APPROVAL
- ☐ S. DEV. PLAN FOR SUB'D. APPROVAL
- ☐ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
- ☐ SECTOR PLAN APPROVAL
- ☐ FINAL PLAT APPROVAL
- ☐ FOUNDATION PERMIT APPROVAL
- ☑ BUILDING PERMIT APPROVAL
- ☐ CERTIFICATE OF OCCUPANCY (PERM.)
- ☐ CERTIFICATE OF OCCUPANCY (TEMP.)
- ☐ GRADING PERMIT APPROVAL
- ☐ PAVING PERMIT APPROVAL
- ☐ WORK ORDER APPROVAL
- ☐ OTHER (SPECIFY)

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ☐ YES
- ☐ NO
- ☐ COPY PROVIDED

RECEIVED
APR 13 2006
HYDROLOGY SECTION

DATE SUBMITTED: April 11, 2006 BY: Martin J. Garcia

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

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

ABQ Engineering, Inc.
Engineers • Planners • Construction Services

April 13, 2006

Mr. Brad Bingham
City of Albuquerque Development Services
600 2nd Street NW
Albuquerque, NM 87102

RE: MPCL Building

Mr. Bingham:

Enclosed is one blueline copy of the Grading and Drainage Plan for the MPCL Building addition for your review and approval. The site is located on the north side of development road, East of Eubank int the Sandia Research and Technology Park (M-21). The proposed plan is to accommodate an addition to the existing office building. No other site changes are anticipated.

Please call me at 255-7802 if you have any questions or require additional information.

Sincerely,

Martin J. Garcia, PE
ABQ Engineering, Inc.
26065

6739 Academy Rd. NE, Suite 130 ▪ Albuquerque, New Mexico 87109 ▪ (505) 255-7802 ▪ Fax (505) 255-7902

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

March 3, 2004

Ronald Bohannan, P.E.
Tierra West, LLC
8509 Jefferson NE
Albuquerque, NM 87113

Re: Ktech Corp at Sandia Research Park, 1300 Eubank Blvd. SE, Certificate of Occupancy

Engineer's Stamp dated 10-28-02 (M21/D12)

Certification dated 3-01-04

Dear Mr. Bohannan,

Based upon the information provided in your submittal received 3-02-04, the above referenced certification is approved for release of permanent Certificate of Occupancy by Hydrology.

If you have any questions, you can contact me at 924-3981.

Sincerely,

Kristal D. Metro
Engineering Associate, Planning Dept.
Development and Building Services

C: Phyllis Villanueva
file

M-21/D12

DRAINAGE AND TRANSPORTATION SHEET

(REV. 1/28/2003rd)

PROJECT TITLE: Ktech Corp @ Sandia Research Park
ZONE MAP/DRG. FILE #: M-21 / D-12
DRB #: 1001719
EPC #:
WORK ORDER #: N/A

LEGAL DESCRIPTION: Tract 1-A-1, Sandia Research Park
CITY ADDRESS: 1300 Eubank Boulevard SE

ENGINEERING FIRM:	Tierra West, LLC	CONTACT:	RONALD R. BOHANNAN
ADDRESS:	8509 Jefferson NE	PHONE:	(505) 858-3100
CITY, STATE:	Albuquerque, NM	ZIP CODE:	87113
OWNER:	Ktech Corp	CONTACT:	Jeff Jesionowski
ADDRESS:	2201 Buena Vista SE	PHONE:	505-998-3830
CITY, STATE:	Albuquerque, NM	ZIP CODE:	87106
ARCHITECT:	JLS Architects	CONTACT:	Joe Slagle
ADDRESS:	1600 Rio Grande Blvd NW	PHONE:	246-0870
CITY, STATE:	Albuquerque, NM	ZIP CODE:	87104
SURVEYOR:	Precision Surveys	CONTACT:	Larry Medrano
ADDRESS:	8414-D Jefferson NE	PHONE:	856-5700
CITY, STATE:	Albuquerque, NM	ZIP CODE:	87113
CONTRACTOR:	Jaynes Corporation, Inc.	CONTACT:	Jerry Lucero
ADDRESS:	P.O. Box 26841	PHONE:	345-8591
CITY, STATE:	Albuquerque, NM	ZIP CODE:	87107

CHECK TYPE OF SUBMITTAL:

- ___ DRAINAGE REPORT
- ___ DRAINAGE PLAN 1st SUBMITTAL, ***REQUIRES TCL or equal***
- ___ DRAINAGE PLAN RESUBMITTAL
- ___ CONCEPTUAL GRADING & DRAINAGE PLAN
- ___ GRADING PLAN
- ___ EROSION CONTROL PLAN
- X ENGINEER'S CERTIFICATION (HYDROLOGY)
- ___ CLOMR/LOMR
- ___ TRAFFIC CIRCULATION LAYOUT (TCL)
- ___ ENGINEERS CERTIFICATION (TCL)
- ___ ENGINEERS CERTIFICATION (DRB APPR. SITE PLAN)
- ___ OTHER

(S019 Awarded per Matt Cline)

CHECK TYPE OF APPROVAL SOUGHT:

- ___ SIA / FINANACIAL GUARANTEE RELEASE
- ___ PRELIMINARY PLAT APPROVAL
- ___ S. DEV. PLAN FOR SUB'D. APPROVAL
- ___ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
- ___ SECTOR PLAN APPROVAL
- ___ FINAL PLAT APPROVAL
- ___ FOUNDATION PERMIT APPROVAL
- ___ BUILDING PERMIT APPROVAL
- X CERTIFICATE OF OCCUPANCY (PERM.)
- ___ CERTIFICATE OF OCCUPANCY (TEMP.)
- ___ GRADING PERMIT APPROVAL
- ___ PAVING PERMIT APPROVAL
- ___ WORK ORDER APPROVAL
- ___ OTHER (SPECIFY)

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ___ YES
- X NO
- ___ COPY PROVIDED

Need stamp date → 10/28/02
Cert Date → 3/1/04
by Ron Bohannan

RECEIVED
MAR 02 2004
HYDROLOGY SECTION

DATE SUBMITTED: 3/1/2004
BY: Ron Wright (259-5635)

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

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

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

Planning Department
Transportation Development Services Section

October 31, 2003

Joe L. Slagle, Registered Architect
1600 Rio Grande NW
Albuquerque, NM 87104

Re: Certification Submittal for Final Building Certificate of Occupancy for
K-Tech Corporation, [M-21 / D12]
1300 Eubank
Architect's Stamp Dated 10/29/03

Dear Mr. Slagle:

The TCL / Letter of Certification submitted on October 29, 2003 is sufficient for acceptance by this office for final Certificate of Occupancy (C.O.). Notification has been made to the Building and Safety Section.

Sincerely,

Nilo E. Salgado-Fernandez, P.E.
Senior Traffic Engineer
Development and Building Services
Planning Department

c: Engineer
Hydrology file
CO Clerk

October 29, 2003

Mr. Nilo Salgado-Fernandez
City of Albuquerque
Transportation Development Department
600 2nd Street SW
Albuquerque, NM 87102

RE: Traffic Certification Submittal for K-Tech Corporation
1300 Eubank Boulevard SE.

1600 rio grande nw
albuquerque
new mexico 87104
505 246 0870
fax 505 246 0437
www.jlsarchitects.com

Mr. Nilo Salgado-Fernandez:

This letter is to certify that the traffic circulation for the above referenced project has been constructed in substantial compliance with the City approved construction drawings (permit).

Please contact me if you have any questions.

Sincerely,

Joe L. Slagle
JLS Architects

RECEIVED
OCT 30 2003
HYDROLOGY SECTION

JLS ARCHITECTS

DRAINAGE INFORMATION SHEET
(REV. 11/01/2001)

M-21|D12

PROJECT TITLE: K-Tech Corporation **ZONE MAP/DRG. FILE #:** M-21-Z
DRB #: Project # 1001719 **EPC #:** Project # 1001719 **WORK ORDER#:**

LEGAL DESCRIPTION: Lot 1A-1, Block One of Sandia Research Park
CITY ADDRESS: 1300 Eubank Boulevard

ENGINEERING FIRM: Tierra West LLC.
ADDRESS: 8509 Jefferson NE.
CITY, STATE: Albuquerque, NM
CONTACT: Ron Bohannon
PHONE: 858-3100
ZIP CODE: 87113

OWNER: AMC Development
ADDRESS: 400 Gold Street SW.
CITY, STATE: Albuquerque, NM
CONTACT: Jeff Jesionowski
PHONE: 338-2285
ZIP CODE: 87102

ARCHITECT: JLS Architects
ADDRESS: 1600 Rio Grande Blvd. NW
CITY, STATE: Albuquerque, NM
CONTACT: Joe Slagle
PHONE: 246-0870
ZIP CODE: 87104

SURVEYOR: Surv-Tek Inc.
ADDRESS: 5643 Paradise Boulevard NW.
CITY, STATE: Albuquerque, NM
CONTACT: Russ Hugg
PHONE: 897-3366
ZIP CODE: 87114

CONTRACTOR: Jaynes Construction
ADDRESS: 2906 Broadway NE.
CITY, STATE: Albuquerque, NM
CONTACT: Jerry Lucero
PHONE: 345-8591
ZIP CODE: 87125

CHECK TYPE OF SUBMITTAL:

_____ DRAINAGE REPORT
_____ DRAINAGE PLAN
_____ CONCEPTUAL GRADING & DRAINAGE PLAN
_____ GRADING PLAN
_____ EROSION CONTROL PLAN
_____ ENGINEER'S CERTIFICATION (HYDROLOGY)
_____ CLOMR/LOMR
XX TRAFFIC CIRCULATION LAYOUT (TCL)
_____ ENGINEER'S CERTIFICATION (TCL)
_____ ENGINEER'S CERTIFICATION (DRB APPR. SITE PLAN)
_____ OTHER

CHECK TYPE OF APPROVAL SOUGHT:

_____ SIA/FINANCIAL GUARANTEE RELEASE
_____ PRELIMINARY PLAT APPROVAL
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_____ S. DEV PLAN FOR BLDG. PERMIT APPROVAL
_____ SECTOR PLAN APPROVAL
_____ FINAL PLAT APPROVAL
_____ FOUNDATION PERMIT APPROVAL
_____ BUILDING PERMIT APPROVAL
XX. CERTIFICATE OF OCCUPANCY (PERM.)
_____ CERTIFICATE OF OCCUPANCY (TEMP.)
_____ GRADING PERMIT APPROVAL
_____ PAVING PERMIT APPROVAL
_____ WORK ORDER APPROVAL
_____ OTHER (SPECIFY)

RECEIVED
OCT 30 2003
HYDROLOGY SECTION

WAS A PRE-DESIGN CONFERENCE ATTENDED:

_____ YES
XX NO
_____ COPY PROVIDED

DATE SUBMITTED: 10·29·03 BY:

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

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

October 29, 2003

Mr. Nilo Salgado-Fernandez
City of Albuquerque
Transportation Development Department
600 2nd Street SW
Albuquerque, NM 87102

1600 rio grande nw
albuquerque
new mexico 87104
505 246 0437
fax 505 246 0437
www.jlsarchitects.com

RE: Traffic Certification Submittal for K-Tech Corporation
1300 Eubank Boulevard SE.

Mr. Nilo Salgado-Fernandez:

This letter is to certify that the traffic circulation for the above referenced project has been constructed in substantial compliance with the City approved construction drawings (permit).

Please contact me if you have any questions.

Sincerely,

Joe L. Slagle
JLS Architects

STATE OF NEW MEXICO
JOEL L. SLAGLE
No. 2284
10-31-03
REGISTERED ARCHITECT

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

April 25, 2002

Ron Bohannan, PE
Tierra West LLC
8509 Jefferson NE
Albuquerque, NM 87113

Re: MPCL Building Drainage Report
Lots 6, Block 1 Sandia Research Park
Engineer's Stamp dated 4-24-02, (M21/D12)

Dear Mr. Bohannan,

Based upon the information provided in your submittal dated 4-25-02, the above referenced report is approved for Site Development Plan for Building Permit action by the DRB and Building Permit.

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

Also, prior to Certificate of Occupancy release, Engineer Certification per the DPM checklist will be required.

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

Sincerely,

Bradley L. Bingham, PE
Sr. Engineer, PWD
Development and Building Services

C: file

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

DRAINAGE AND TRANSPORTATION SHEET

(REV. 1/11/2002)

M-21/D12

PROJECT TITLE: Lot 6, Block 1 Sandia Research Park, MPCL Building
ZONE MAP/DRG. FILE #: M-21
DRB #: _____ EPC #: _____
WORK ORDER #: _____

LEGAL DESCRIPTION: Lot 6, Block 1 Sandia Research Park
CITY ADDRESS: Southeast corner of Research Road and Eubank Boulevard

ENGINEERING FIRM:	Tierra West, LLC	CONTACT:	RONALD R. BOHANNAN
ADDRESS:	8509 Jefferson NE	PHONE:	(505) 858-3100
CITY, STATE:	Albuquerque, NM	ZIP CODE:	87113
OWNER:	AMC Development Services	CONTACT:	Jeff Jesionowski
ADDRESS:	400 Gold SW, Suite 750	PHONE:	338-2285
CITY, STATE:	Albuquerque, NM	ZIP CODE:	87102
ARCHITECT:	JLS Architects	CONTACT:	Joe Slagle
ADDRESS:	1600 Rio Grande Blvd. NW	PHONE:	246-0870
CITY, STATE:	Albuquerque, NM	ZIP CODE:	87104
SURVEYOR:	Surv-Tek	CONTACT:	Russ Hugg
ADDRESS:	5643 Paradise Blvd. NW	PHONE:	897-3366
CITY, STATE:	Albuquerque, NM	ZIP CODE:	87114
CONTRACTOR:		CONTACT:	
ADDRESS:		PHONE:	
CITY, STATE:		ZIP CODE:	

CHECK TYPE OF SUBMITTAL:

- X DRAINAGE REPORT
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- X GRADING PLAN
- ___ EROSION CONTROL PLAN
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- ___ CLOMR/LOMR
- ___ TRAFFIC CIRCULATION LAYOUT (TCL)
- ___ ENGINEERS CERTIFICATION (TCL)
- ___ ENGINEERS CERTIFICATION (DRB APPR. SITE PLAN)
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- ___ PAVING PERMIT APPROVAL
- ___ WORK ORDER APPROVAL
- ___ OTHER (SPECIFY)

RECEIVED
APR 1 0 2002
HYDROLOGY SECTION

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ___ YES
- X NO
- ___ COPY PROVIDED

DATE SUBMITTED: 4/9/02 BY: RONALD R. BOHANNAN, P.E.

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TIERRA WEST, LLC

8509 Jefferson NE
Albuquerque, NM 87113

(505) 858-3100
fax (505) 858-1118

twllc@tierrawestllc.com
1-800-245-3102

April 9, 2002

Mr. Brad Bingham, PE
Sr. Engineer, Hydrology
City of Albuquerque
PO Box 1293

RE: Lot 6, Block 1 Sandia Research Park, MPCL Building Zone Atlas Page M-21

Dear Mr. Bingham:

Enclosed, please find a Grading and Drainage Plan for the above referenced project. The enclosed drainage report for Lot 6 is submitted to you for approval. We are requesting Site Plan for building approval, a Building Permit and Grading Permit approval.

If you have any questions or need additional information regarding this request, please do not hesitate to call me.

Sincerely,

Donna J Bohannan

for Ronald R. Bohannan, P.E.

RECEIVED
APR 10 2002
HYDROLOGY SECTION

Enclosure/s

cc: Mr. Jeff Jesionowski

JN: 220013
RRB/dg

2002:220013B.BINGHAM040902

DRAINAGE REPORT
FOR

LOT 6 BLOCK 1
SANDIA RESEARCH PARK

MPCL BUILDING

Prepared by:

Tierra West, LLC
8509 Jefferson NE
Albuquerque, New Mexico 87113

Prepared for:
AMC Development Services

April, 2002

I certify that this report was prepared under my supervision, and I am a registered professional engineer in the State of New Mexico in good standing.

RONALD RAY BOHANNAN
NEW MEXICO
7868
REGISTERED PROFESSIONAL ENGINEER

4/24/02

Ronald R. Bohannan
PE NO. 7868

Job No 220013

RECEIVED
APR 1 0 2002
HYDROLOGY SECTION

TABLE OF CONTENTS

SECTION I - REPORT
Location 4
Purpose 4
Existing Drainage Conditions 4
Vicinity Map 5
Flood Plain and Soil Conditions 6
Proposed Conditions and On-Site Drainage Management 7
Flood Insurance Rate Map 8
Soil Map 9
Summary 10
Infrastructure List 10

SECTION II - RUNOFF CALCULATIONS
Drainage Basin 12
Runoff Calculation Results 12
Runoff Calculations 13
Drainage Sidewalk Culvert 14
Driveway Opening Capacity 15

MAP POCKET
Grading and Drainage Plan

APPENDIX I
Sandia Research Park Master Drainage Plan

Section I

Report

Prelude

This report is being prepared at the request of the current owner. The owner is proposing to build a 10,000 square foot manufacturing building.

Location

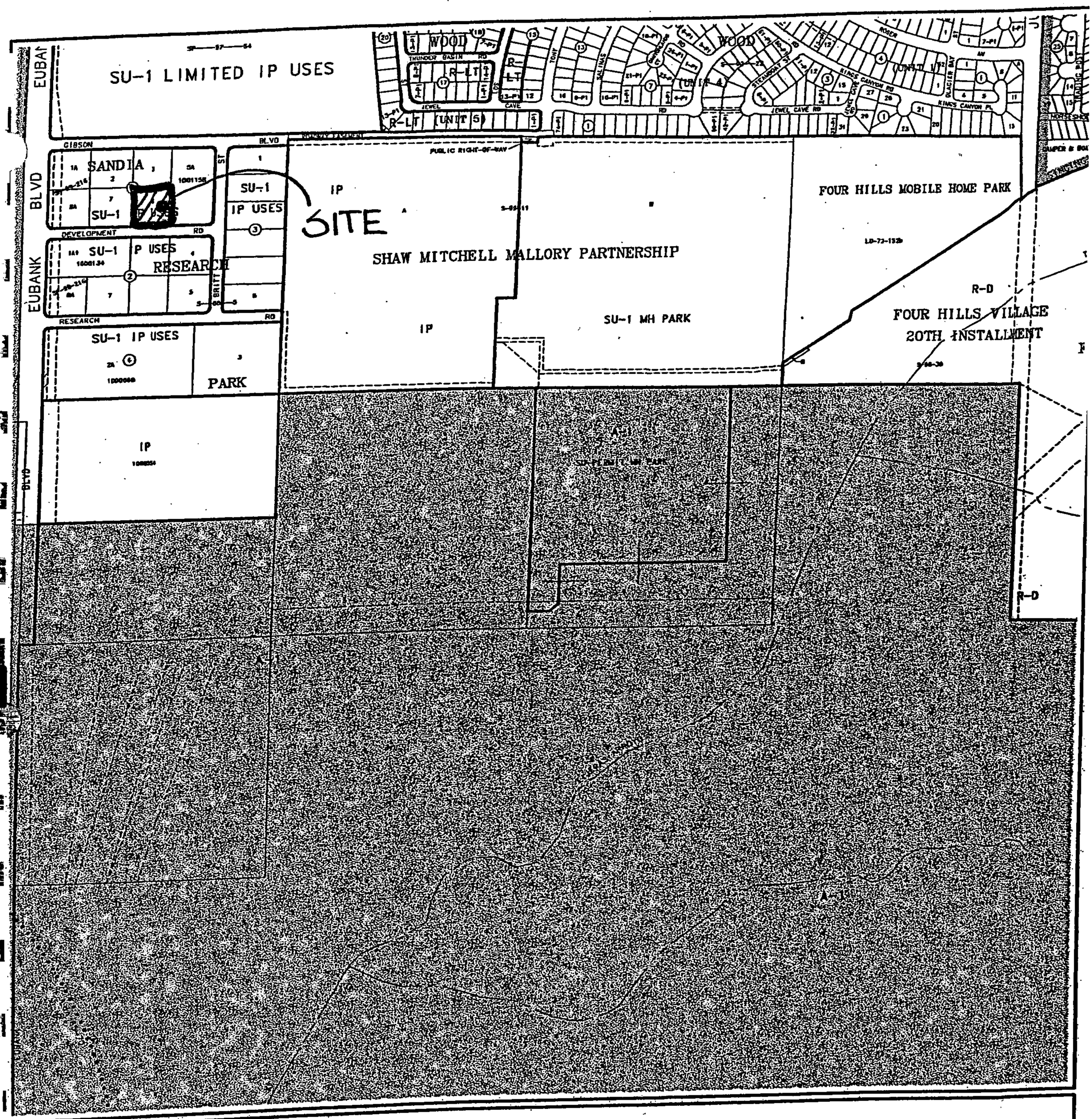
Lot 6, Block 1 of the Sandia Research Park is located at the southeast corner of Research Road and Eubank Boulevard in the southeast quadrant of Albuquerque. The site has been highlighted and shown on Zone Atlas page number M-2 for the exact location, but is situated on Development Road mid block between Britt Street and Eubank Boulevard. The owners of the project are proposing to construct a new research warehouse building on the site to be built in one phase. The site contains 1.0023 acres.

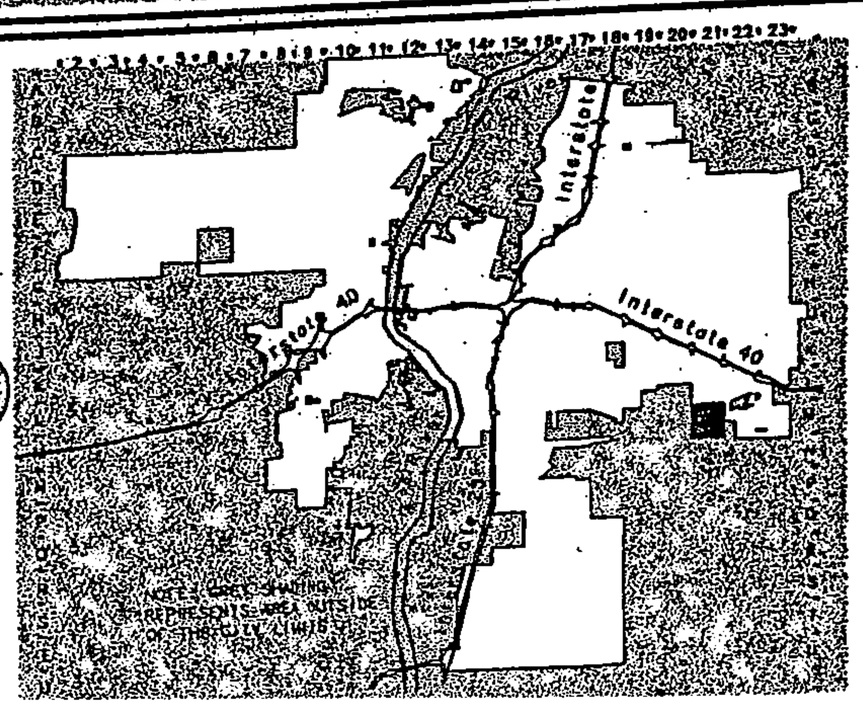
Purpose

The purpose of this drainage report is to present a grading and drainage solution for the proposed building. We are requesting grading approval, Site Development Plan for Building Permit, and Building Permit at this time.

Existing Drainage Conditions

The site falls within the approved Sandia Research Park Drainage Report, and it is currently undeveloped. Development Road, and all of the roads, were constructed but the individual parcels are being developed on a lot by lot basis. The existing conditions for the entire site were originally analyzed under the





CITY OF Albuquerque

Albuquerque Geographic Information System

PLANNING DEPARTMENT

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GRAPHIC SCALE IN FEET

250 0 750 1000

Zone Atlas Page

M-21-Z

Map Amended through July 18, 2001

Drainage Report for Sandia Research Park prepared by Andrews, Asbury, & Robert under M-15/D5, a copy of which is attached in the appendix.

The site does not have any developed flows that impact the project. The proposed project lies within the park and is bounded on the west and east by lots that will drain to Development Road. The site falls east to west at around 2%. The property to the east will direct all of the developed runoff to Development Road.

The approved drainage plan proposes to direct all the developed flow to the streets within Development Road coming to Eubank Boulevard. These flows are then collected by an existing storm sewer collection system. This storm sewer system collects the entire flow directing it to a temporary retention pond located on Lot 1, Block 4. The future Eubank storm system will intercept the flows and remove the need for the retention basin on Lot 1, Block 4. The site was analyzed under one basin for existing flows. The weighted e-method was used to calculate the flows. These flows which resulted in 2.7166 cfs and 1.7819 cfs for Basin 1, with Basin 2 had a 100-year and 10-year flow of 1.9250 cfs and 1.2652 cfs respectively. The existing 100 year flow using soil treatment A is 3.45 cfs.

Flood Plain and Soil Condition

The site is located on FEMA Map No. 350002 panel 37 as shown on the attached excerpt. The map shows that the site does not lie within any 100-year flood plains.

The site contains two soil types: Madurez Wink (MWA) and Tijeras (TgB) as indicated on the Soil Map (sheet #42) from the Soil Conservation Service Survey of Bernalillo County. The Tijeras is gentle sloping old allivate fan material with moderate runoff and soil erosion. The Madurez Wink series is a sandy loam with slow runoff and moderate to severe soil erosion. (See

attached soil map for site location).

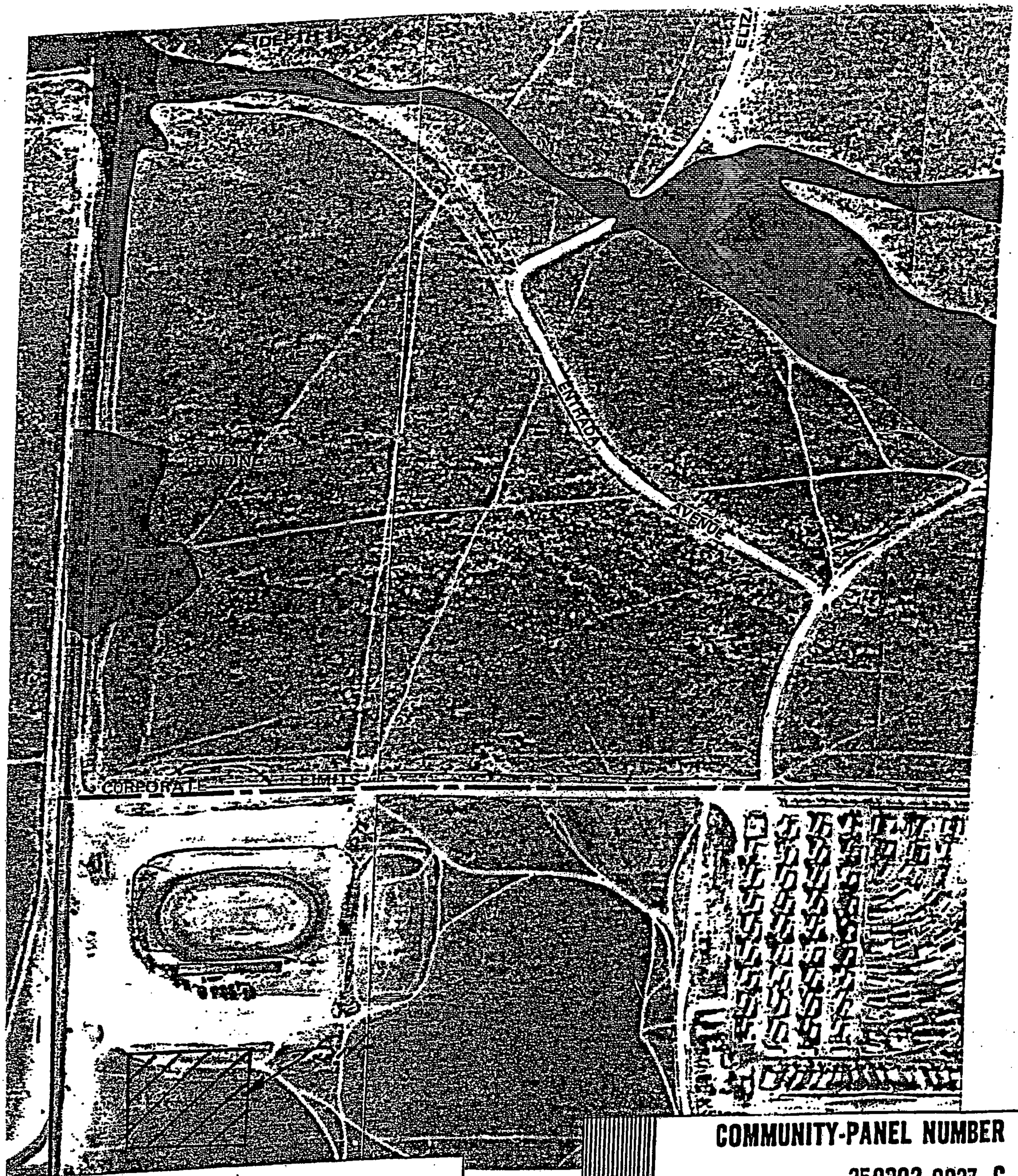
Proposed Conditions and On-Site Drainage Management Plan

The entire site will be graded and all of the surface improvements will be built out in their entirety. The enclosed grading plan in the map pocket shows the grades for the entire project.

Flows were routed to the two entrances to ensure the grades are met and that positive drainage is achieved. The entire site runoff will continue to drain, per the Sandia Research Park Master Drainage Plan, which calls for free discharge from the site. The developed flows were broken up into two basins. Therefore, the developed discharge rate for the entire site (containing 1.0023 acres) is 4.4985 cfs for the 100-year and 3.0471 for the 10-year flow. The two basins drain to the paved parking areas which drain west and north to Research Road. Basin 1 consists of one-half of the roof and predominantly the eastern half of the site. The flow is routed through the parking lot to the eastern most entrance discharging 2.716 cfs.

Basin 2 contains the remaining part of the roof and the western half of the site. These flows are routed to the parking lot then south and to the western most entrance. These flows leave the site at the west entrance and discharge to Research Road at 1.9250 cfs.

The Sandia Research Park was originally analyzed using the rational method for all of the basins. We included a copy of the report from the file in the appendix. The new flows were analyzed under City of Albuquerque, Development Process Manual, Section 22.2, Hydrology Section, revised January, 1993, was used for runoff calculations.



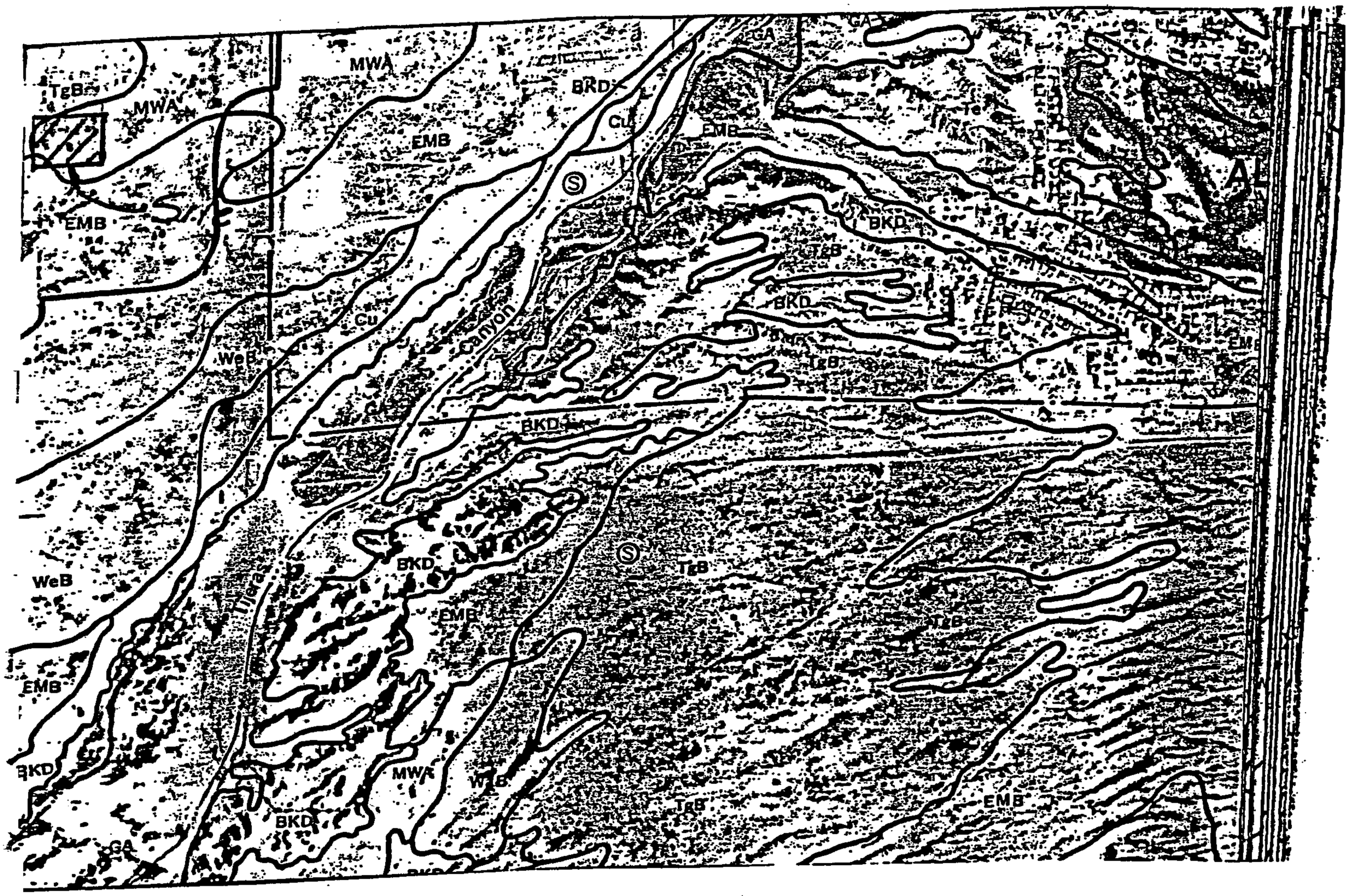
FIRM
FLOOD INSURANCE RATE MAP

COMMUNITY-PANEL NUMBER

350002 0037 C

EFFECTIVE DATE:

OCTOBER 14, 1983



SOIL SURVEY OF

Bernalillo County and Parts of Sandoval and Valencia Counties, New Mexico

Summary

Lot 6, Block 1 proposes to discharge a 100-year flow at 2.7166 cfs for Basin 1 and 1.9250 cfs for Basin 2 from a 1.0023 acre site to Development Road per the approved Drainage Master Plan prepared by Andrews, Asbury, and Robert under M-15/D5. The flows enter Research Road where they are picked up by an existing storm sewer and conveyed to a retention pond on Lot 1 Block 4. This pond will be removed when the City and AMAFCA construct the Eubank Storm Drain. The developed basins were separated into three basins.

Infrastructure List

We are proposing all drainage to be routed out the entrance and no infrastructure list is required. All remaining work will be performed under the building permit.

Section II

Runoff Calculations

Drainage Basins

Developed Basins

BASIN	AREA (SF)	AREA (AC)	AREA (MI^2)
1	25608.92	0.5879	0.000919
2	18051.26	0.4144	0.000648

Runoff Calculation Results

Developed

BASIN	Q-100 CFS	Q-10 CFS	V-100 AC-FT	V-10 AC-FT
1	2.72	1.78	0.103	0.064
2	1.93	1.27	0.073	0.048

RUNOFF CALCULATIONS

The site is @ Zone 3

LAND TREATMENT

Proposed	*Existing*
B = 10%	A = 100%
D = 90%	

DEPTH (INCHES) @ 100-YEAR STORM

P_{60} = 2.14 inches

P_{360} = 2.60 inches

P_{1440} = 3.10 inches

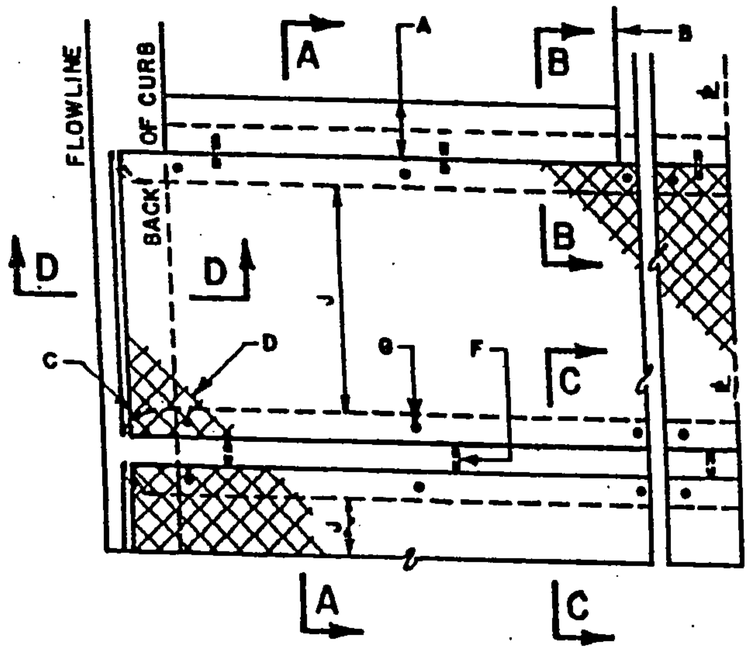
DEPTH (INCHES) @ 10-YEAR STORM

P_{60} = 2.14 x 0.667
= 1.427 inches

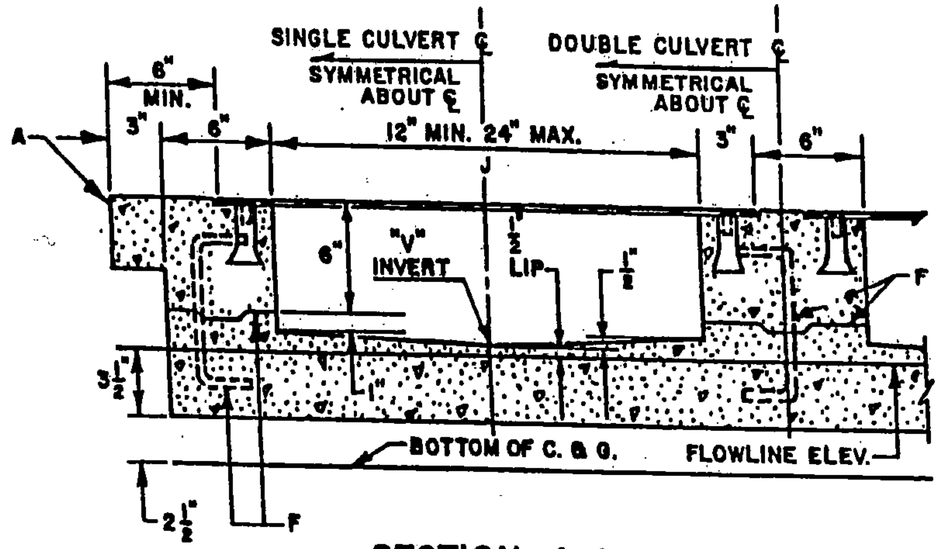
P_{360} = 2.60 x 0.667
= 1.734

P_{1440} = 2.068

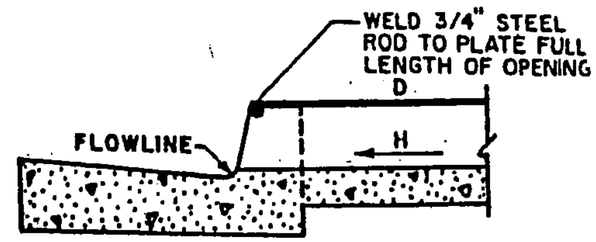
See the summary output from AHYMO calculations.



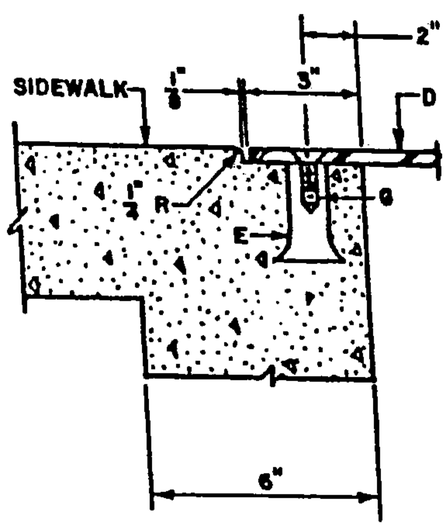
PLAN
SINGLE AND OR MULTIPLE CULVERT



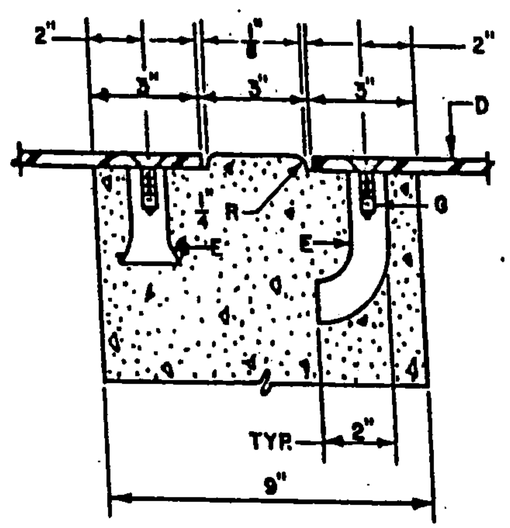
SECTION A-A



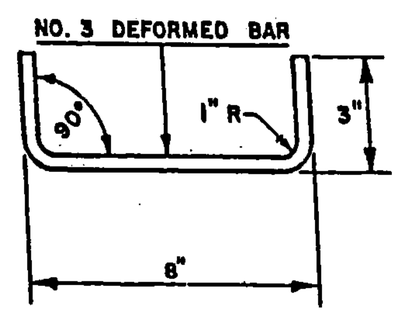
SECTION D-D



SECTION B-B



SECTION C-C



DOWEL DETAIL

GENERAL NOTES:

1. PLACING OF DRAIN THRU EXIST. SIDEWALK AND CURB & GUTTER REQUIRES THAT ENTIRE SIDEWALK AND C & G STONES BE REMOVED AND REPLACED AS DETAILED HEREIN.
2. BOTTOM SLAB OF CULVERT SHALL BE POURED MONOLITHICALLY WITH NEW GUTTER.
3. THE INVERT SHALL BE TROWELED TO PRODUCE A HARD POLISHED SURFACE OF MAX DENSITY AND SMOOTHNESS. INVERT SHALL BE V-SHAPED TO WITHIN 3' OF OUTLET, THEN WARPED TO PARALLEL FLOWLINE AT OUTLET, UNLESS OTHERWISE SHOWN.
4. ALL EXPOSED CONC. SURFACE SHALL MATCH GRADE, COLOR, FINISH AND SCORING OF ADJACENT CURB AND SIDEWALK.
5. SIDEWALK REPLACED DURING CONSTRUCTION SHALL BE POURED MONOLITHICALLY WITH CULVERT WALLS.
6. IF ROD ANCHORS ARE USED, DRILL & TAP FOR F.H. MACHINE SCREW. ATTACH ANCHORS TO PLATE AND SECURE PLATE IN PLACE PRIOR TO POURING OF WALLS.
7. LENGTH OF EACH PLATE SHALL BE SUCH THAT THE WEIGHT WILL NOT EXCEED 300 LBS. AND SHALL BE STRESS RELIEVED AFTER FABRICATION. CLEAN SURFACE OF PLATE AND FRAMING MEMBERS AND PAINT W/ ONE SHOP COAT RED OXIDE AND TWO FINISH COATS ALUMINUM PAINT (AASHTO M 69).
8. THE CITY WILL NOT ASSUME RESPONSIBILITY FOR MAINTENANCE OF ANY SIDEWALK CULVERT INSTALLED BY OR FOR PRIVATE PROPERTY OWNERS.

CONSTRUCTION NOTES:

A. MATCH NEAREST CONTROL JOINT, INSTALL 1/2" EXPANSION JOINT.
B. EDGE OF SIDEWALK OR SETBACK (VARIABLE).
C. 3" RADIUS (TYPICAL).
D. 3/8" CHECKERED STEEL PLATE (PAINT PER NOTE 7, ABOVE).
E. FOR SECURING PLATE USE 1"X 5" S.S. ROD ANCHOR, "RED HEAD MULTI-SET II SRM-38 ANCHOR" OR APPROVED EQUAL. INSTALL PER MANUFACTURER'S INSTRUCTIONS AT MAX. 24" O.C., A MINIMUM OF 2 PER SIDE AND ONE WITHIN 6" OF EACH END.
F. CONSTRUCTION JOINT IS OPTIONAL. IF USED, SPACE DOWELS AT 18" O.C. MAX., 1 1/2" MINIMUM FROM FACE OF CONCRETE.
G. 3/8" - 16 x 1 1/4" COUNTERSUNK, F.H., STAINLESS STEEL, MACHINE SCREW.
H. SLOPE 1/4" PER FT. MIN.
J. DRAIN WIDTH PER PLAN (12" MIN., 24" MAX).

CITY OF ALBUQUERQUE

REVISIONS

DRAINAGE
SIDEWALK CULVERT
WITH STEEL PLATE TOP
DWG. 2236

AUG.1986

Driveway Opening Capacity

Equation 7-366 Handbook of Hydraulics
Braten and King

Manning's Equation:

$$Q = \frac{1.49}{n} A R^{2/3} S^{1/2}$$

Where
Q = Flow (cfs)
n = 0.017
A = Area
R = Hydraulic Radius
S = Slope

Roughness located page 7-22

$$A = 0.24 + 24 * 0.5 = 12.00$$

$$WP = 2 * 0.5 + 24 = 25$$

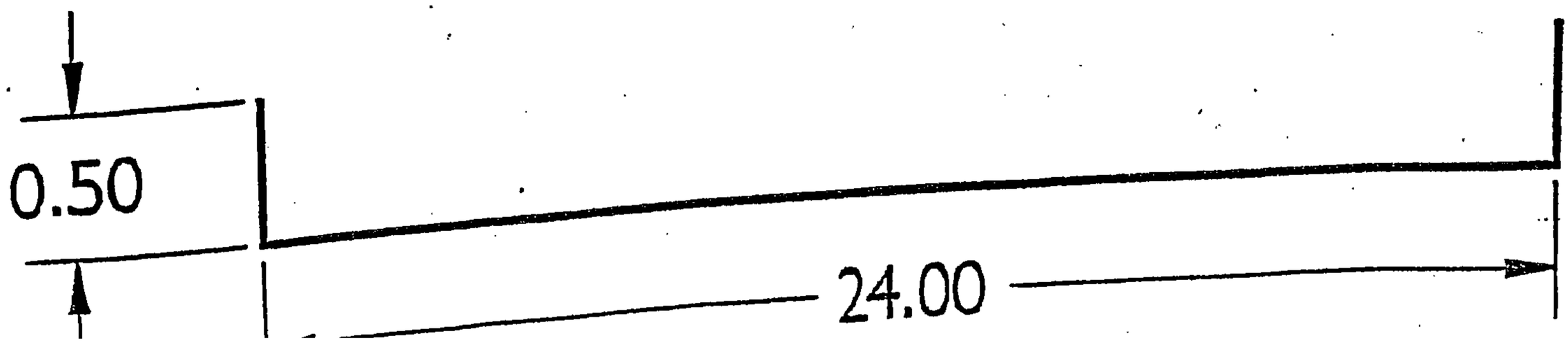
$$R = \frac{A}{WP} = \frac{12}{25} = 0.480$$

Manning's Equation:

$$Q = \frac{1.49}{0.017} * 12 * 0.48^{2/3} * 0.028^{1/2}$$

$$Q = 107.89 \ cfs$$

Capacity of curb cut open = 107.87 cfs



Appendix I

Drainage Report
For
Sandia Research Park
(M-15/D5)

DRAINAGE REPORT

for

SANDIA RESEARCH PARK
Albuquerque, New Mexico

January, 1988

REGISTERED PROFESSIONAL ENGINEER
STATE OF NEW MEXICO
No. 5960
JOHN A. ANDREWS

1-20-88

Prepared by
Andrews, Asbury & Robert, Inc.
Consulting Engineers
Albuquerque, New Mexico

TABLE OF CONTENTS

		Page
I	Introduction	1
	A. General	
II	Existing Conditions	
	A. General	2
	B. Offsite and Onsite Drainage	3
III	Developed Conditions	
	A. Offsite	4
	B. Onsite	4
IV	Future Storm Drain Construction	6
V	Erosion Control	7
	Map No. 1 - Location Map	8
VI	Drainage Analysis	9
	Calculations	

Enclosures

Map No. 2 - Existing Conditions

Map No. 3 - Onsite Developed Conditions-
Grading & Drainage Plan

Plat of Sandia Research Park

Storm Drain Plan & Profile Sheet 25 of 34 (Hydraulic Gradient)

TABLE 3 Cont'd.

ON SITE DEVELOPED & OFF SITE UNDEVELOPED Cont'd.

LYSIS INT	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	B OFFSITE	14.5	See existing Conditions			30.14	0.40	1.90	2.89	11.0	16.8
	System AP 4 to	From AP E	320' St.	1.50	3.3	1.62 } 6.06					
			800' St.	1.25	3.0	4.44					
E	B & D-1	32.06	--	--	--	30.14 } 36.20 6.06	0.62	1.73	2.63	34.4	52.3

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Telephone (505) 265-6631

Project Sandia Research Park
By JA Ck'd — Date 12-10-
Sheet 7 of
Job No. 45

CONDITIONS- ONSITE DEVELOPED & OFFSITE UNDEVELO

Determine if proposed streets will have capacity to carry runoff flows for on site developed conditions & offsite undeveloped conditions

Opportunity Ave. @ A.P. (A)

From Table 3, Q = 36.9 cfs.

Temporary street Section is Std. curb & gutter and 22 ft. of paving. (½ street)

Street Area @ 0.20' above Top of Curb = 13.40 f

Street Slope = 0.82%, $R = \frac{13.4}{25.8} = 0.53$

$V = (99)(0.53)^{2/3}(.0082)^{1/2} = 5.87$ fps

Street Capacity = $Q = AV = (13.40)(5.87) = 78.7$ cf

OK

Eubank Blvd @ A.P. (B)

From Table 3; Q = 38.4 CFS

Temporary street section is Std. Curb & Gutter and 22' of paving adjacent & Connected to existing 48' Wide paved Roadw

Street Area @ 0.20' above Top of Curb = 15.80

Street Slope = 0.30%, $R = \frac{15.80}{40.80} = 0.39$

$V = (99)(0.39)^{2/3}(.003)^{1/2} = 2.90$ fps

Street Capacity = $Q = AV = (15.80)(2.90) = 45.8$ cf

ok

Eubank Blvd @ A.P. (D)

From Table 3, Q = 55.2 cfs

Temporary street Section - Same as at A.P. (B).

street Area @ 0.20' above Top of Curb = 15.80

Street Slope = 0.54%, $R = \frac{15.80}{40.80} = 0.39$

$V = (99)(.39)^{2/3}(.0054)^{1/2} = 3.88$ fps

street Capacity = Q = AV = (15.80)(3.88) = 61.3 cfs

ok

Research Road @ A.P. (E)

From Table 3, Q = 52.3 cfs

street Section is Std. 40 ft wide street

street Area @ 0.20' above Top of Curb = 24.00 ft

street Slope = 1.25%, $R = \frac{24.00}{42.58} = 0.56$

$V = (99)(.56)^{2/3}(.0125)^{1/2} = 7.52$ fps

Street Capacity = Q = AV = (24.00)(7.52) = 180.50

ok

TABLE 4

ON SITE DEVELOPED CONDITIONS - OFF SITE DEVELOPED CONDITIONS
(See Map No. 2 & 3)

LYSIS INT	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	21.1	450' Overland 600' Street 750' Street	1.44 0.50 1.23	1.65 1.9 3.0	4.55 5.26 4.17 } 13.98	0.80	2.81	4.28	47.4	72.2
	AP 1 to	AP A				8.11					
A	A & C-1	29.31	--	--	--	13.98 8.11 } 22.09	0.80	2.23	3.39	52.2	79.5
4	B	14.5	450' Overland 300' Street 750' Street	1.44 0.50 1.40	1.65 1.9 3.2	4.55 2.63 3.91 } 11.19	0.80	3.16	4.81	36.7	55.8
	AP 4 to	AP E				6.06					
E	B & D-1	32.06	---	---	---	11.09 6.06 } 17.15	0.80	2.53	3.85	64.8	98.7

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Project: Sandia Research Park
By: JA
Chk'd: —
Date: 12-10
Job No.: 45
Sheet: 10 of

CONDITIONS - ONSITE DEVELOPED & FUTURE OFFSITE DEVELOPED

Determine if proposed streets will have capacity to carry runoff flows for on-site developed conditions & "future" off site developed conditions

Opportunity Ave. @ A.P. (A)

From Table 4; Q = 79.5 cfs.

Assume full street section is constructe with Std. 40' street.

Street Area @ 0.20' above Top of Curb = 24.00 ft

Street Slope = 0.82%, $R = \frac{24}{42.58} = 0.56$

$V = (99)(0.56)^{2/3}(0.0082)^{1/2} = 6.09$ fps

Street Capacity = Q = AV = (24.00)(6.09) = 146.2 c

OK

Research Road: @ A.P. (E)

From Table 4, Q = 98.7 cfs

Street section is std. 40' wide street

Street Area @ 0.20' above Top of Curb = 24.00

Street Slope = 1.25%, $R = \frac{24.00}{42.58} = 0.56$

$V = (99)(0.56)^{2/3}(0.0125)^{1/2} = 7.52$ fps

Street Capacity = Q = AV = (24.00)(7.52) = 180.5 cfs

ok

CONDITIONS - ONSITE DEVELOPED & FUTURE OFFSIT DEVELOPED - Cont'd,

Only the Street Capacities at Analysis Point (D on Opportunity Ave and at Analysis Point (E) on Research Road were checke for capacity because:

1. Prior to the time that offsite developed flows will be allowed to flow through the Sandia Reseach Park subdivision the proposed major Storm Drain Line will be installed in the Drainage Easemen located east of Eubank Blvd.

2. The installation of this Major Storm Drain will collect the flows on Opportunity Ave and on Research Road East of Eubank Blvd. Therefore, the flows on these streets will not flow onto Eubank Blvd.

VOLUME : OF TEMPORARY RETENTION POND REQUIRED

CONDITIONS - ONSITE DEVELOPED & OFFSITE UNDEVELOPED

CRITERIA

1. Develop Inflow hydrograph to Retention Pond for above Conditions
2. Allow offsite flow rates, under existin Conditions, to flow through the Retention Pond. - Area "A" = 23.4 + Area "B" = 16.8 = 40.
3. Determine total Area Contributing to Volume & runoff rate, & "C" Value

Offsite Area "A"	= 21.1 Acres		C = 0.40
" Area B	= 14.5 Acres		C = 0.40
Sub-Total	35.6 Acres	@	C = 0.40
Onsite Area C-1	8.21 Acres		C = 0.80
C-2	1.27 "		C = 0.80
C-3	8.54 "		C = 0.80
C-4	2.54 "		C = 0.80
D-1	17.56 "		C = 0.80
E-1	1.92 "		C = 0.40
F-1	0.40 "		C = 0.80
Subtotal	40.44 "	@	C = 0.78

Total Area = 76.04

Combined "C"

$= (35.6)(0.40)/76.04 + (40.44)(.78)/76.04$

$= 0.60$

4. Use Tc for Analysis Point "D" (51.11 min) see Table 3, as this is the time required for runoff flows to reach the ponding area from the most remote point of the overall combined drainage areas.

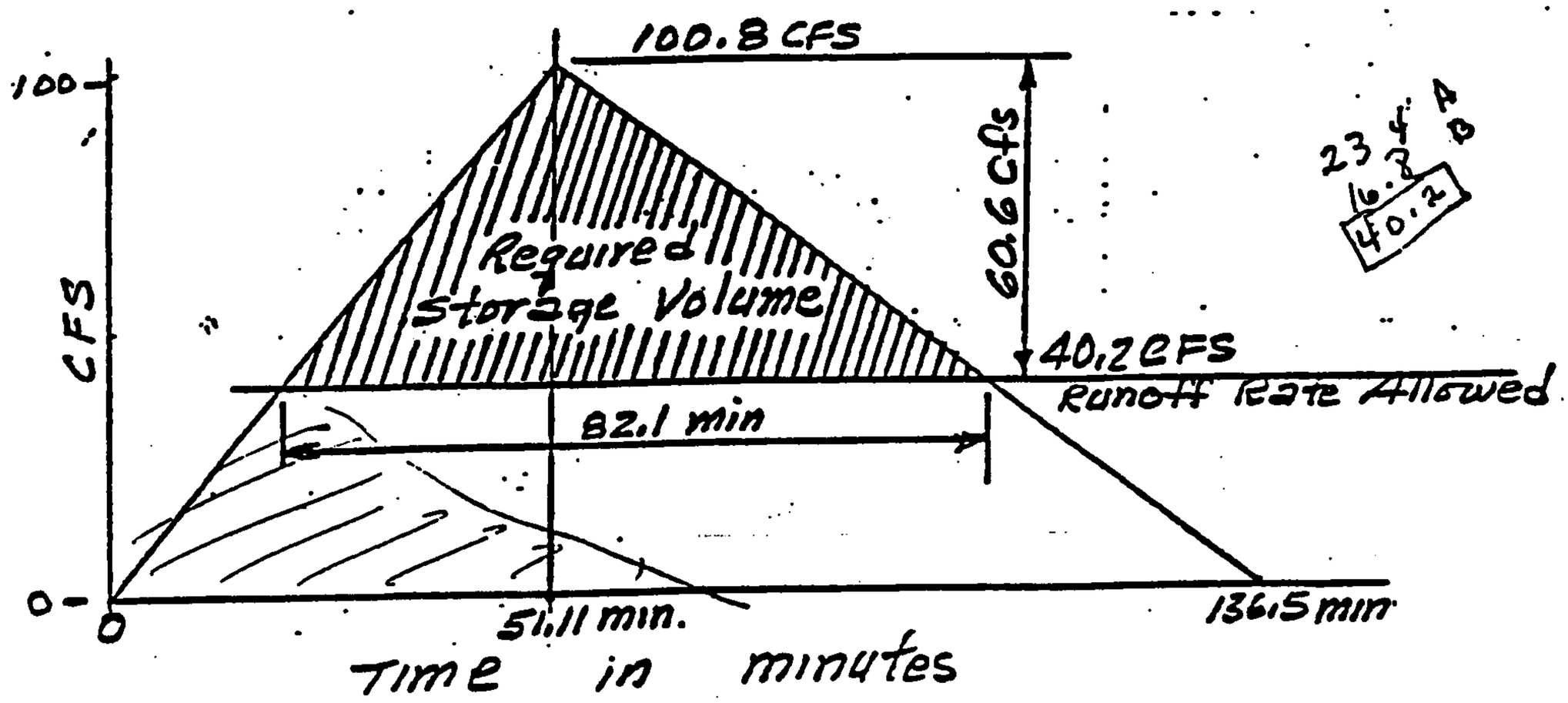
Must use 24 hr storm

Therefore I = 2.21 - See Table 3

$$Q = CIA = (0.60)(2.21)(76.04) = 100.8 \text{ CFS}$$

From USDA - Soil Conservation Service
National Engineering Handbook,
Section 4, Hydrology
Supplemental A, "The Hydrology Guide

Triangular Hydrograph Base = 2.67 (Tp)
= 2.67 (51.11) = 136.5 min



23.4 A
16.3 D
40.2

Volume of Storage Req'd.

= 82.1 min × 60 × 60.6 cfs /2 = 149,258 ft³ = 3.43 AF

Need for Volume calculations

RESEARCH AVENUE - STORM DRAIN

A storm drain with inlets will need to be installed in Research Avenue, East of Eubank Blvd. to Collect the Flows from Drainage Area D-1 and OFFSITE AREA B.

This stormdrain is required to divert the flows on Research Ave. to the Temporary Retention Pond.

From Table 3 - Q = 52.3 cfs.

Use 6 - Curb inlets - Ea. to collect 10cfs

4 - Inlets upstrem to Collect 40cfs.

Pipe size Req'd = 36" @ 1.2%±; Q = 42cfs OK

From 6 - Inlets to Pond -

Pipe Size Req'd = 36" @ 1.0%±; Q = 65 CF OK

SUMMARY OF HYDRAULIC CALCULATIONS

STAT.	STRUC	D	Q	A	V	K	S_f	L	Δ	JUNCTION D	JUNCTION θ	LOSSES h_f	h_b	h_j	h_{MH}	h_T	h_{MS}	Σ	EG	h_v	HG
2+46	Outlet	36"	53.2	6.75	7.88	1.00											0.96	0.96	66.00	0	66.00
2+46	Outlet	36"	53.2	6.75	7.88							0.28						0.28	66.96	0.96	66.00
2+96	45° MH	36"	53.2	5.58	9.53	0.14			45°				0.20					0.20	67.24	1.4	67.31
																			67.44		
			Free Discharge Into MH Yc upstream																		
2+96	MH	30"	40	4.62	8.67			40'				0.34						0.34	67.57	1.17	66.40
+36	MH	30"	40	4.91	8.15														67.91	1.03	67.02

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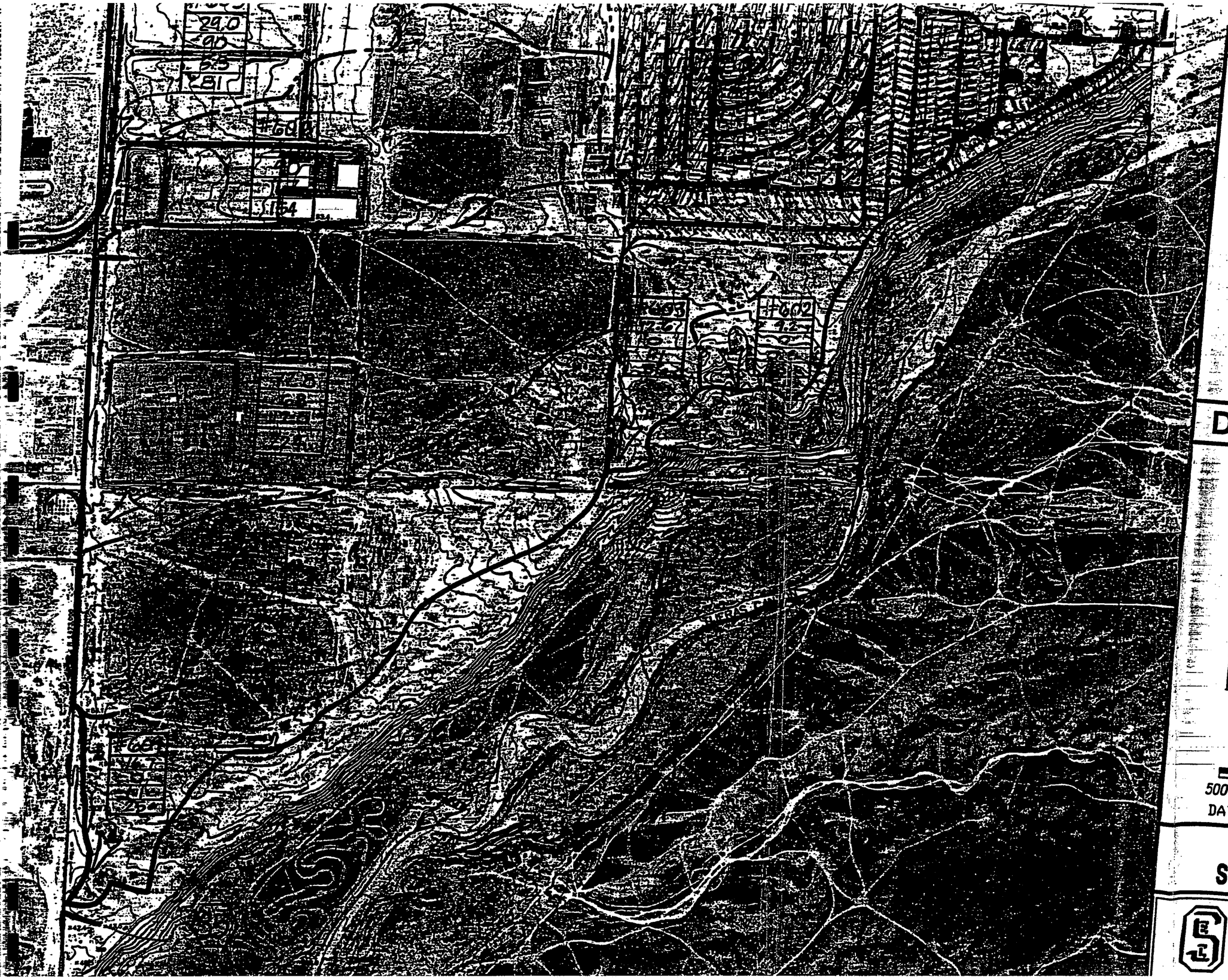
Project Sandia Resources
Park
By JM
Chk'd
Date 01.20.88
Sheet 16 of 16
Job No. 45-2



NOTES

LEGEND

34 — ANALYSIS POINT WITH LOCATION

STUDY BOUNDAR

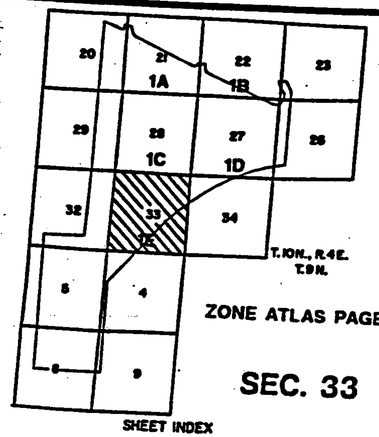
BASIN BOUNDARY

SUB-BASIN BOUN

SUB-BASIN NUMBER
AREA (ACRES)
% IMPERVIOUS
100-YEAR RUNOFF VOLUME (AC-FT)
100-YEAR PEAK RUNOFF FLOW (CFS)

SUB-BASIN D

DRAINAGE BASIN M



ZONE ATLAS PAGE M-21

SEC. 33

SHEET INDEX

THE AERIAL PHOTOGRAPH ON THIS SHEET HAS BEEN RECTIFIED TO SELECTED PLANIMETRIC DETAIL OBTAINED DURING MAP COMPILATION. CONSEQUENTLY, THE PHOTO IMAGES FALLING OUTSIDE OF THE MAPPING AREA ARE UNCONTROLLED.

500 250 0 500 1000

DATE OF PHOTOGRAPHY: MARCH 2, 1994

SOUTH EUBANK AREA STORM DRAINAGE ANALYSIS

PROJ. # 4

89-01-

Smith Engineering Company

A Full Service

PADS

EXISTING	PROPOSED	DIFFERENCE
5304	5314.97	−10.97
5305	5324.16	−19.16
5307	5328.88	−21.88
5319	5330.78	−11.78
5330	5330.51	−0.51
5330	5329	1
5325	5329.35	−4.35
5324	5330.56	−6.56
5320	5329.44	−9.44
5315	5319.1	−4.1
5323	5329.45	−6.45
5326	5329.45	−3.45
5327	5327	0
5330	5325.8	4.2
5323	5322.88	0.12
5330	5327.58	2.42
5328	5327.58	0.42
5322	5325	−3
5323.25	5324.75	−1.5
5324	5322.06	1.94
5325	5320.08	4.92
5322.5	5318.84	3.66
5325	5321.81	3.19
5324	5320.9	3.1
5320	5317.94	2.06
5320	5317.95	2.05
5317	5318.18	−1.18
5316.5	5317.41	−0.91
5315	5318.07	−3.07
5315	5317.16	−2.16
5314	5319.74	−5.74
5315	5320.62	−5.62
5315	5315.59	−0.59
5313	5317.62	−4.62
5312	5319.19	−7.19
5311	5320.04	−9.04
5312	5321.4	−9.4
5312	5321.56	−9.56
5315	5321.18	−6.18
		−3.57

STREETS

EXISTING	PROPOSED	DIFFERENCE
5311.5	5318.9	−7.4
5313	5317.62	−4.62
5315	5319.62	−4.62
5315	5320.21	−5.21
5315	5321.03	−6.03
5316	5320.34	−4.34
5316	5317.56	−1.56
5315	5315.4	−0.4
5310	5311	−1
5310.5	5312	−1.5
5312	5313	−1
5314	5314	0
5314.25	5314.38	−0.13
5317	5313.2	3.8
5321	5315.14	5.86
5322	5319.24	2.76
5328	5327.36	0.64
5329	5327.2	1.8
5330	5330	0
5329	5325.46	3.54
5329	5328.63	0.37
5329	5328.7	0.3
5323	5324.2	−1.2
5310	5310	0
5325	5328.14	−3.14
5320	5329.71	−9.71
5312	5319.96	−7.96
		−1.51

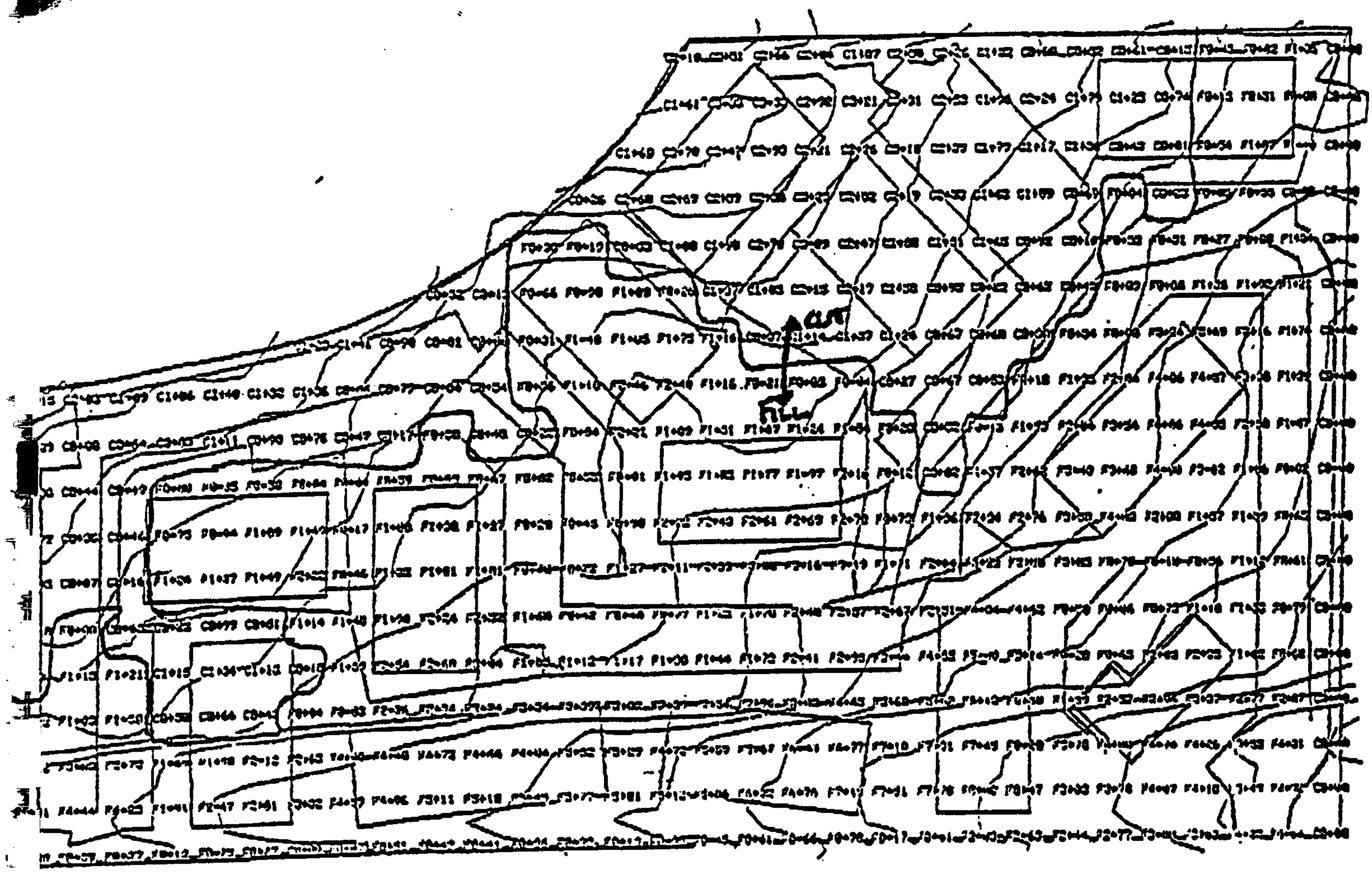
VOLUMES REPORT
JOB NAME : 263.EAS Ladera Apts
PRINTED : 05/31/1995 02:19:35 PM

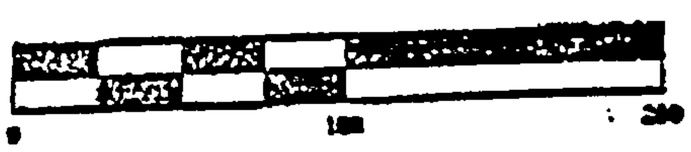
(NO STRIPPING REGIONS SPECIFIED)

REGION	LAYER	MATERIAL	SECT	AREA, SF TOTAL	AREA, SF CUT	AREA, SF FILL	VOLUMES, CY (AFTER STRIPPING) CUT	VOLUMES, CY (AFTER STRIPPING) FILL
Total Site	NAT'L GROUND	SUITABLE	var	267878	80527	187351	4002	16546
JOB TOTAL	NAT'L GROUND	SUITABLE		267878	80527	187351	4002	16546

SITE AREA: 274954
UNSPECIFIED: 7076

These volumes were calculated using the AVERAGE END AREA method.
839 cross sections were computed at an average separation of 0.52 feet.





4,415.1)
35.4,-85.9) C=(418.6,-85.9)

:Ladera Apts

I

INTRODUCTION

A. GENERAL

This report, with the enclosed maps, provides a Drainage Plan for the Sandia Research Park Subdivision. The project is located in the Southeast Quadrant of the Albuquerque Metropolitan Area. The subdivision consists of approximately 40 acres that lies approximately one mile south of Central Avenue and directly east of Eubank Boulevard SE. (See enclosed Location Map, Map No. 1, Zone Atlas Map M-21.)

Kirtland Air Force Base is located west of the subdivision. An Industrial Park type of development is proposed for this tract and it is the intent of this report to provide a drainage plan for the development of the 40 acre site.

Guidelines for the analysis included herein are based on the City of Albuquerque's Development Process Manual, Volume 2, Design Criteria, Section 22.

II

EXISTING CONDITIONS

A. GENERAL

The subject property is presently undeveloped with a general slope from northeast to southwest of slightly more than one percent (1%).

The site has previously been utilized as a dirt race track for racing cars and was known as Speedway Park. However, all improvements were removed several years ago.

The tract is bounded on the west by Eubank Boulevard SE which has been improved with a four lane paved roadway without curb and gutter and is one of the main accesses to Kirtland Air Force Base.

Along the north side of the site a bladed dirt road exists and was formerly known as Gibson Boulevard; however, with the platting of the property for this development, the street has been named Opportunity Avenue.

Adjacent property to the northeast and south is presently undeveloped.

B. OFFSITE AND ONSITE DRAINAGE

Presently the adjacent offsite areas to the east of subject property flow across the east boundary of the property as generally sheet flow. (See Map No. 2 enclosed and Table No. 1 of the Drainage Analysis.)

The storm water runoff from Area A offsite and Area E-1 and E-2 onsite flows to the westerly boundary of the property and the east side of Eubank Boulevard where it is directed southerly to the southwest corner of the site and away from the site.

Storm water runoff from Area B offsite and Area E-3 onsite flows to the southerly boundary of the site then continues southwesterly away from the site.

III

DEVELOPED CONDITIONS

A. OFFSITE

Flows from offsite Area A will be directed northerly by raising the grade along the east boundary of the subdivision slightly. This water will be received by Opportunity Avenue which will be paved and curbed and guttered on the southerly half of the street.

Flows from offsite Area B will be directed to Research Road again by raising the grade along the easterly boundary of the subdivision slightly. Research Road will be paved and curb and gutter installed.

See Map No. 3 enclosed.

B. ONSITE

This subdivision is to be developed as an Industrial Park; however, it is not known at the time of the writing of this report what the actual type, size or location of the buildings will be or the actual type ground cover proposed in the ultimate development. It was therefore assumed that in the final developed conditions the subdivision will have a coefficient of runoff of 0.80 and it is proposed to allow for total runoff from the developed lots without detention of waters on individual lots.

The runoff generated from the site will be conveyed in the streets to a site retention pond located at the southwest corner of the subdivision. (See Map No. 3 enclosed.)

The initial phase of development will consist of improvements to the streets and public drainage easements only. Street improvements will include the construction of curb and gutter and pavement and the installation of water and sewer lines. Drainage improvements include the construction of a retention pond on Lot 1, Block 4; the installation of a storm drain system on Research Road to collect and direct the flows on Research Road to the retention pond; and a concrete rundown near the south end of Eubank Boulevard to direct the flows on Eubank to the retention pond. This concrete rundown will also act as an overflow from the retention pond when the pond becomes full.

The drainage plan as provided herein provides for conveyance of storm waters from all developed lots except for the lot to be used as a retention pond, and is to be used as a basis for drainage plans of individual sites as the area develops.

As site development occurs, drainage plans for each specific development site will be required.

IV

FUTURE STORM DRAIN CONSTRUCTION

As shown on Map No. 3, a future major storm drain is proposed to be constructed by the City, located east and parallel to Eubank Boulevard. It is proposed that at the time this storm drain is constructed, catch basins and piping will be installed in Opportunity Avenue and Development Road to collect and carry the flows from these streets to the proposed storm drain. The outlet from the storm drain system installed under this development in Research Road can be redirected to this proposed storm drain.

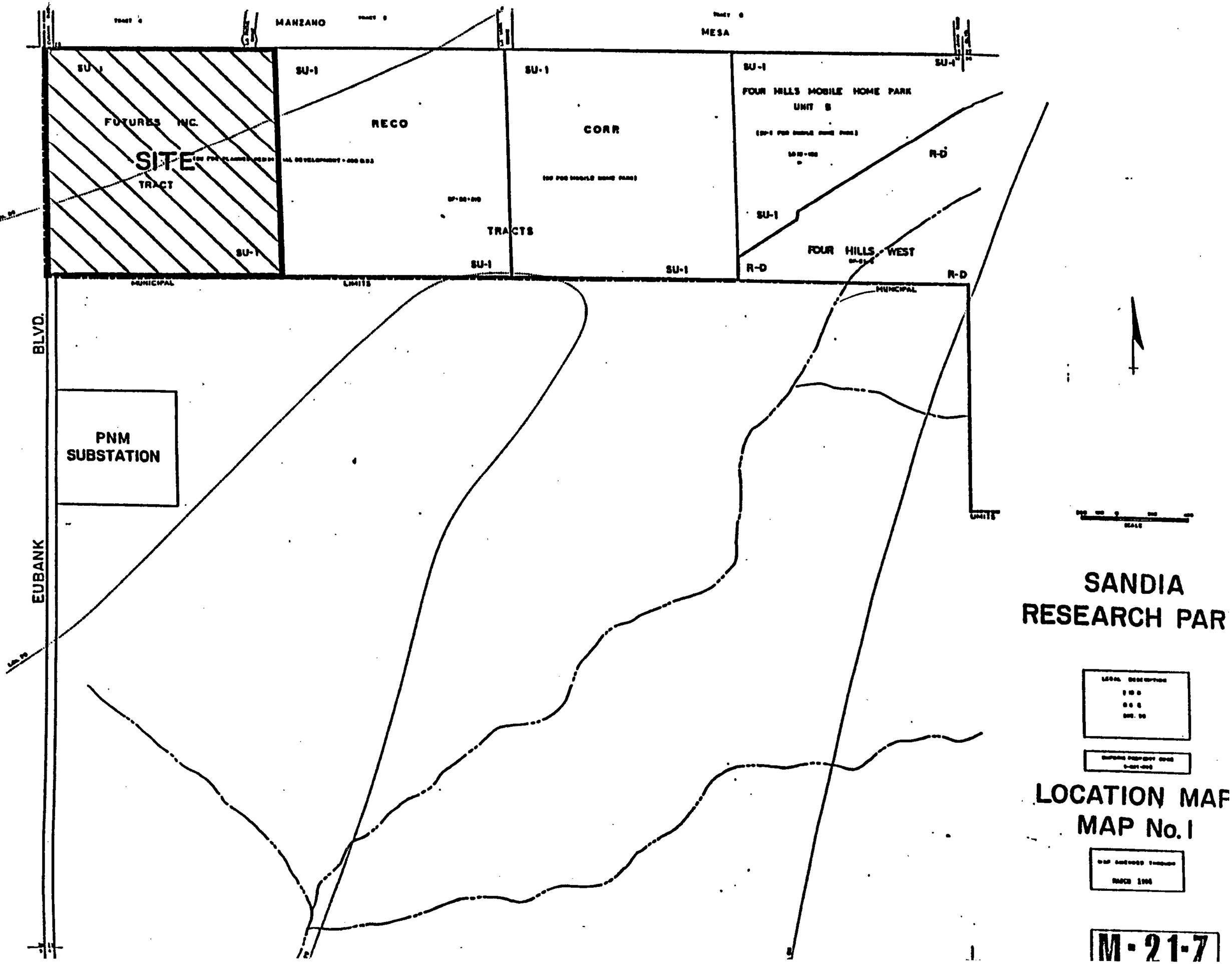
Upon completion of construction of this future storm drain by the City the retention pond can be eliminated by filling, and the lot on which the retention pond is located will be developed.

V

EROSION CONTROL

The contractor for the project will be responsible for soil migration during the construction phase. This can be accomplished by the grading of windrows in a north-south direction.

After development of the individual tracts, erosion will be controlled by landscaping of all areas not covered by buildings and pavement.


MANZANO
MESA
SU-1
FUTURES INC.
SITE
TRACT
RECO
CORR
TRACTS
FOUR HILLS MOBILE HOME PARK
UNIT 8
R-D
FOUR HILLS WEST
MUNICIPAL
LIMITS
BLVD.
EUBANK
PNM
SUBSTATION
SANDIA
RESEARCH PAR
LOCATION MAF
MAP No. I
M-21-7

VI

DRAINAGE ANALYSIS

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

Table 1 - Existing Conditions	Sheets 2 & 3
Table 2 - Onsite Developed Conditions	Sheets 4 & 5
Table 3 - Onsite Developed Conditions and Offsite Undeveloped	Sheets 6 & 7
Table 4 - Onsite Developed Conditions and Offsite Developed Conditions	Sheet 10
Hydraulic Gradient	Sheet 16

ANDREWS, ASBURY & ROBERT, INC.
CONSULTING ENGINEERS
149 Jackson, N.E., Albuquerque, N.M. 87108
Telephone (505) 265-6631

DRAINAGE ANALYSIS

CRITERIA

City of Albuquerque
Development Process Manual
Volume 2 - Section 22

DESIGN PARAMETERS

Peak Runoff Rate
Rational Formula - $Q = CIA$

Assume Developed Conditions and allowing total Runoff
"C" = 0.80

For Existing Conditions -
"C" = 0.40

$I_{100} = (2.4)(6.84)(t_c)^{-0.51}$

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

Travel time determined from Plates 22.2 B-1 & 22.2 B-2

TABLE 1

EXISTING CONDITIONS - See MAP No. 2

ALYSIS OINT	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 OFFSITE	21.1	1300	1.31	0.66 overland	32.83	0.40	1.82	2.77	15.4	23.4
	E-1 ON SITE	18.4 0.9-offsite	1350	1.15	0.62 Overland	36.29	0.40	1.73	2.63	12.7	19.4
	From A.P. (1) to A.P. (2)		1250'-Channel, 350'-Ditch	1.12 045	3.5 2.5	5.95 2.33 } 8.28					
(2)	A & E-1	39.5	—	—	—	32.83+8.28 = 41.11	0.40	1.62	2.47	25.6	39.0
	E-2 ON-SITE	15.8	1500	1.53	0.73 Overland	34.25	0.40	1.78	2.71	11.2	17.1
	From A.P. (2) to A.P (3)		1000' Ditch.	0.45	2.5	6.67					
(3)	A, E-1 & E-2	55.3	—	—	—	41.11+6.67 47.78	0.40	1.50	2.28	33.1	50.4

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Telephone (505) 265-6631

Project Sandia Research Park
By JA Ch'd Date 12-7-84
Job No. 45 Sheet 2 of

TABLE 1- Cont'd.

EXISTING CONDITIONS - Cont'd.

ALYSIS 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	B OFFSITE	14.5	1230	1.38	0.68 Overland	30.14	0.40	1.90	2.89	11.0	16.8
	E-3 ON SITE	7.2	750	1.27	0.65 Overland	19.23	0.40	2.38	3.63	6.9	10.5
5	B & E-3	21.7	—	—	—	30.14+19.23 49.37	0.40	1.48	2.25	12.8	19.5

ANDREWS, ASBURY & JBERT, INC.
CONSULTING ENGINEERS
149 Jackson, N.E., Albuquerque, N.M. 87108
Telephone (505) 265-6631

Project Sandia Park search Sheet 3 of 45
By JA Ck'd Date 12-2-86 Job No.

TABLE 2

ONSITE - DEVELOPED CONDITIONS - See Map No. 3

ALYSIS OINT	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)	C-1	8.21	310' Overland 450' st. 940' st.	1.61 0.50 0.82	1.75 1.90 2.45	2.95 3.95 6.39 } 13.29	0.80	2.88	4.39	18.9	28.8
	C-2	1.27	250' Overland 120' st.	1.68 0.30	1.77 1.50	2.35 1.33 } use 10	0.80	3.33	5.07	3.4	5.2
	System to AP (B)	AP (A)	330' st.	0.30	1.50	3.67					
(B)	C-1 & C-2	9.48	--	--	--	13.29 3.67 } 16.96	0.80	2.54	3.87	19.3	29.4
	C-3	8.54	380 Overland 80 st. 600 st.	0.85 1.60 1.10	0.55 3.30 2.80	11.51 0.40 3.57 } 15.48	0.80	2.67	4.06	18.2	27.7
	system to AP (C)	AP (B)	150' st.	0.54	2.0	1.25					
(C)	C-1 thru C-3	18.02	--	--	--	16.96 1.25 } 18.44	0.80	2.44	3.71	35.1	53.5

ANDREWS, ASBURY & JOBERT, INC.
CONSULTING ENGINEERS
149 Jackson, N.E., Albuquerque, N.M. 87108
Telephone (505) 265-6631

Project Sandia Research Park
By JA Ck'd
Date 12-8-8
Job No. 453
Sheet 4 of

TABLE 2 Cont'd.

ONSITE - DEVELOPED CONDITIONS - Cont'd.

ALYSIS OINT	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)
	C-4	2.54	240' Overland 440' St.	2.30 0.54	2.0 2.0	2.00 3.67 } Use 10	0.80	3.33	5.07	6.8	10.3
	System-to AP-	AP (C) (D)	630' St.	0.54	2.0	5.25					
(D)	C-1 thru C-4	20.56	— —	— —	— —	18.46 5.25 } 23.71	0.80	2.15	3.27	35.3	53.8
(E)	D-1	17.56	430' Overland - 1.38 400' Overland - 0.67 670' St. - 1.25	1.60 1.15 3.00	4.48 5.80 3.72 } 14.0		0.80	2.80	4.27	39.4	60.0
		38.12									

ANDREWS, ASBURY & ..OBERT, INC.
CONSULTING ENGINEERS
149 Jackson, N.E., Albuquerque, N.M. 87108
Telephone (505) 265-6631

Project Sandia Research Park
By JA Ch'd. Date 12-8-
Sheet 5 of
Job No. 45

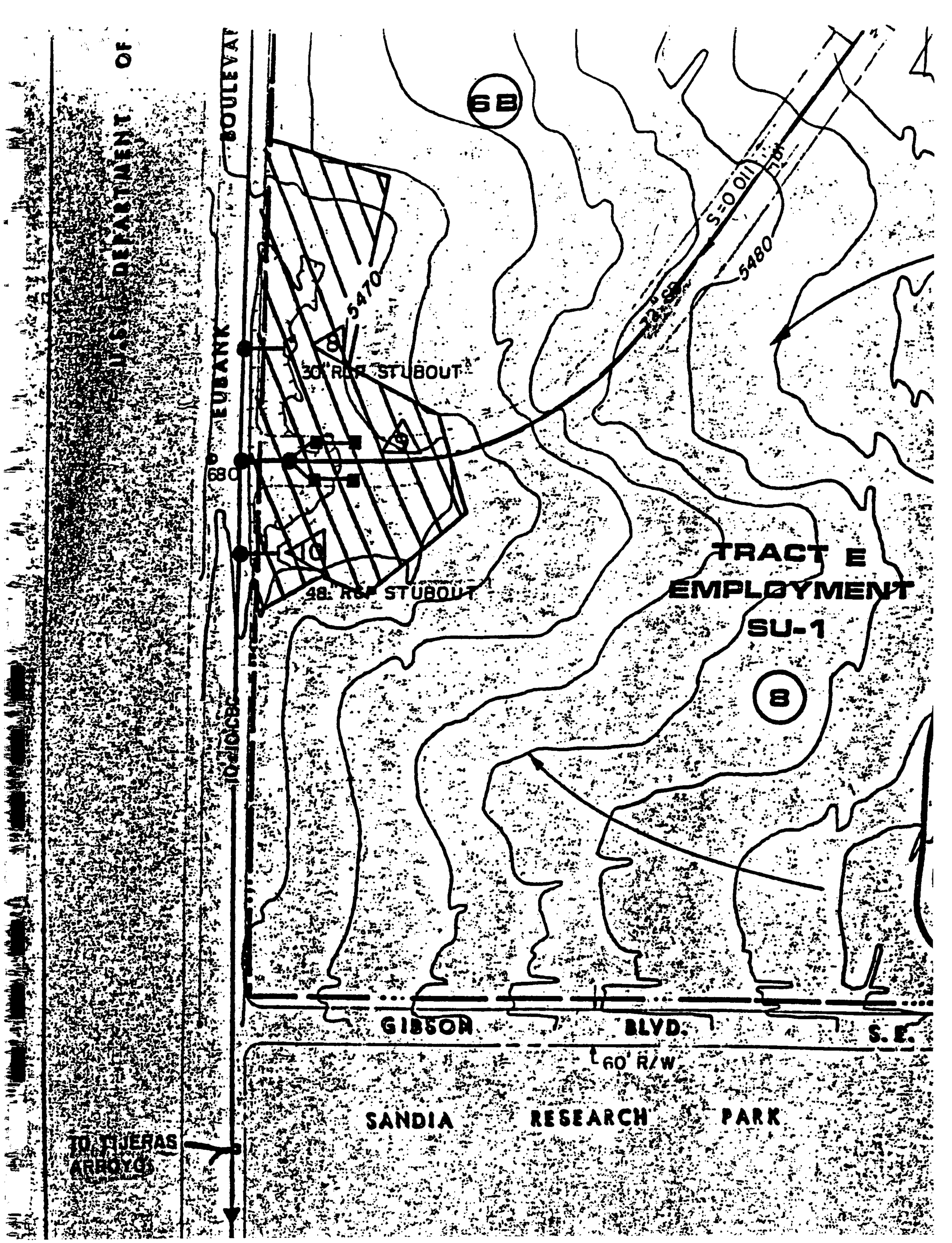
TABLE 3

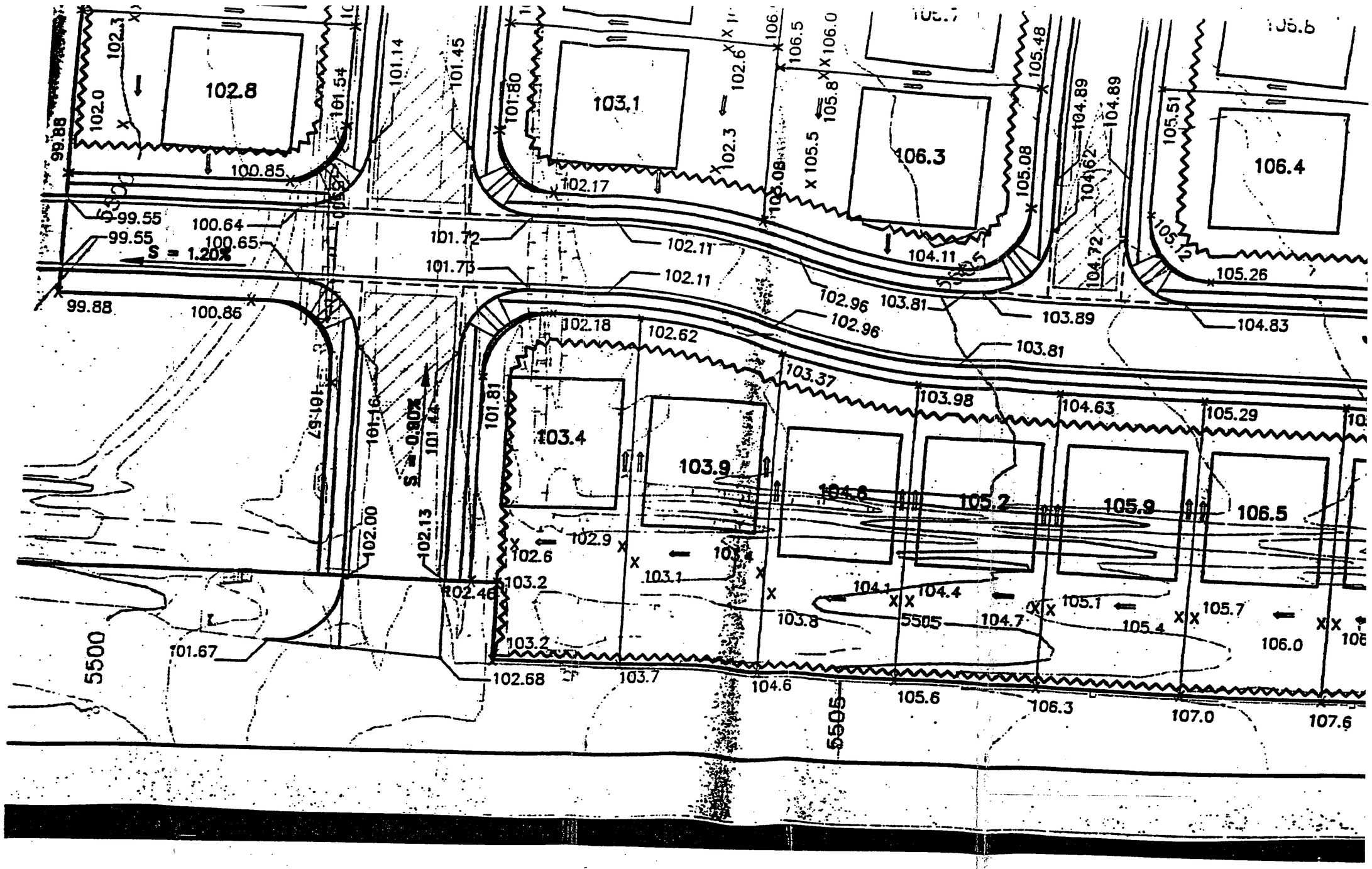
ON-SITE - DEVELOPED & OFFSITE UNDEVELOPED - See Map No. 2 & 3

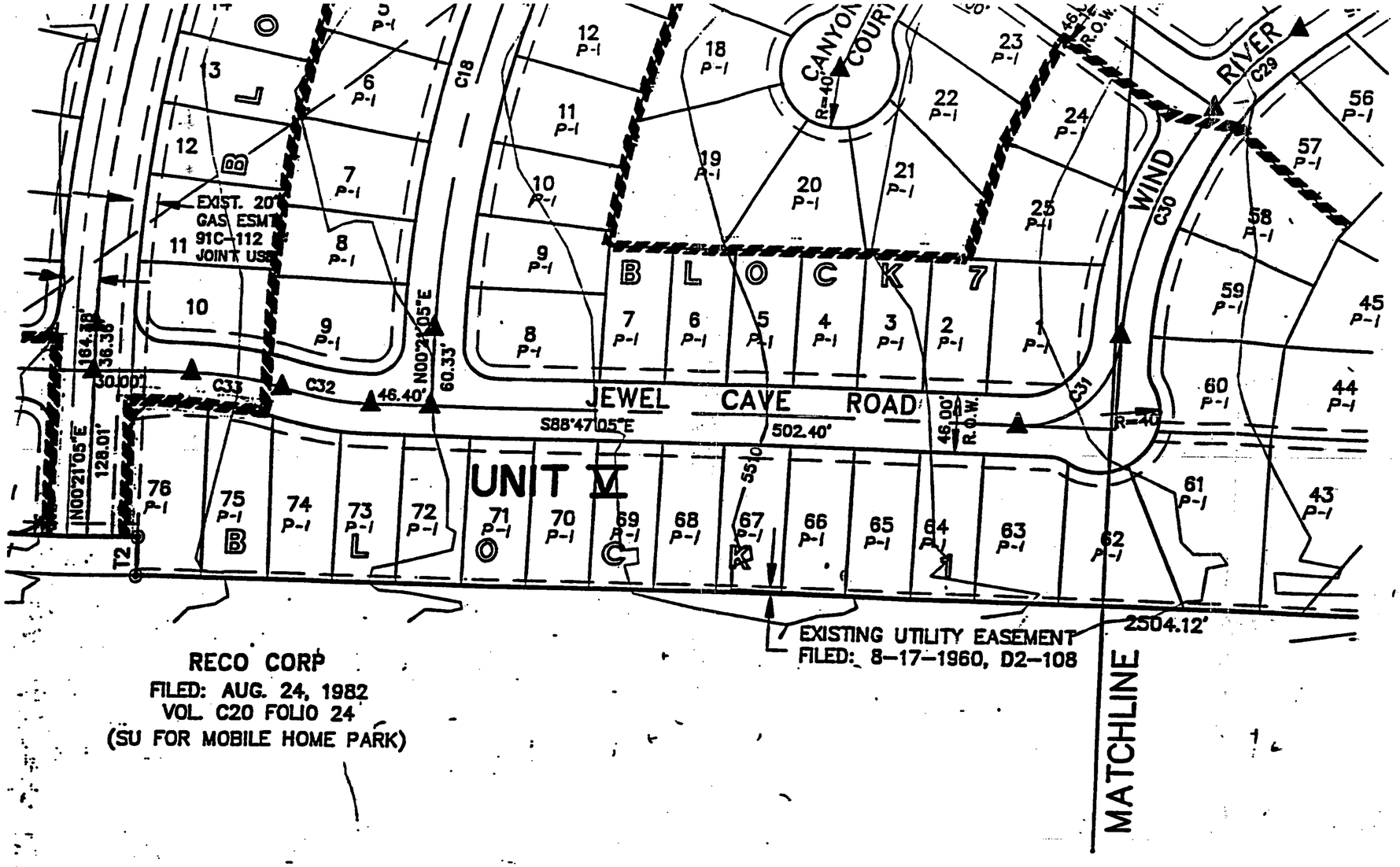
ALYSIS POINT	DRAINAGE AREA DESIGNATION	AREA (Ac)	LENGTH OF TRAVEL (Ft)	SLOPE (%)	VELOCITY (FPS)	TRAVEL TIME (T_c) (Mins.)	C	I_{10} (IN/Hr)	I_{100} (IN/Hr)	Q_{10} (CFS)	Q_{100} (CFS)
(1)	A OFFSITE	21.1	See Existing Conditions			32.83	0.40	1.82	2.77	15.4	23.4
	System from A.P. (1) to	A.P. (A)	320' st. 940' st.	-1.8 0.82	-3.1 2.45	1.72 6.39 } 8.11					
(A)	A & C-1	29.31	—	—	—	32.83 8.11 } 40.94	0.51	1.62	2.47	24.2	36.9
	System AP (A) to	AP (B)	See On-Site Developed Conditions			3.67					
(B)	A, C-1 & C-2	30.58				40.94 3.67 } 44.61	0.53	1.56	2.37	25.2	38.4
	System AP (B) to	AP (C)				1.25					
(C)	A & C-1 thru C-3	39.12				44.61 1.25 } 45.86	0.58	1.53	2.33	34.8	52.9
	System AP (C) to	AP (D)				5.25					
(D)	A & C-1 thru C-4	41.66				45.86 5.25 } 51.11	0.60	1.45	2.21	36.3	55.2

ANDREWS, ASBURY & ABERT, INC.
CONSULTING ENGINEERS
149 Jackson, N.E., Albuquerque, N.M. 87108
Telephone (505) 265-6631

Project Sandia Research Park
By JA Ch'd Date 12-10-
Job No. 458 Sheet 6 of


U.S. DEPARTMENT OF
EUBANK BOULEVAR
6B
5470
30" RGP STUBOUT
680
48" RGP STUBOUT
S=0.011
5480
TRACT E
EMPLOYMENT
SU-1
8
GIBSON BLVD. S.E.
60' R/W
SANDIA RESEARCH PARK
TO TIJERAS ARROYOS

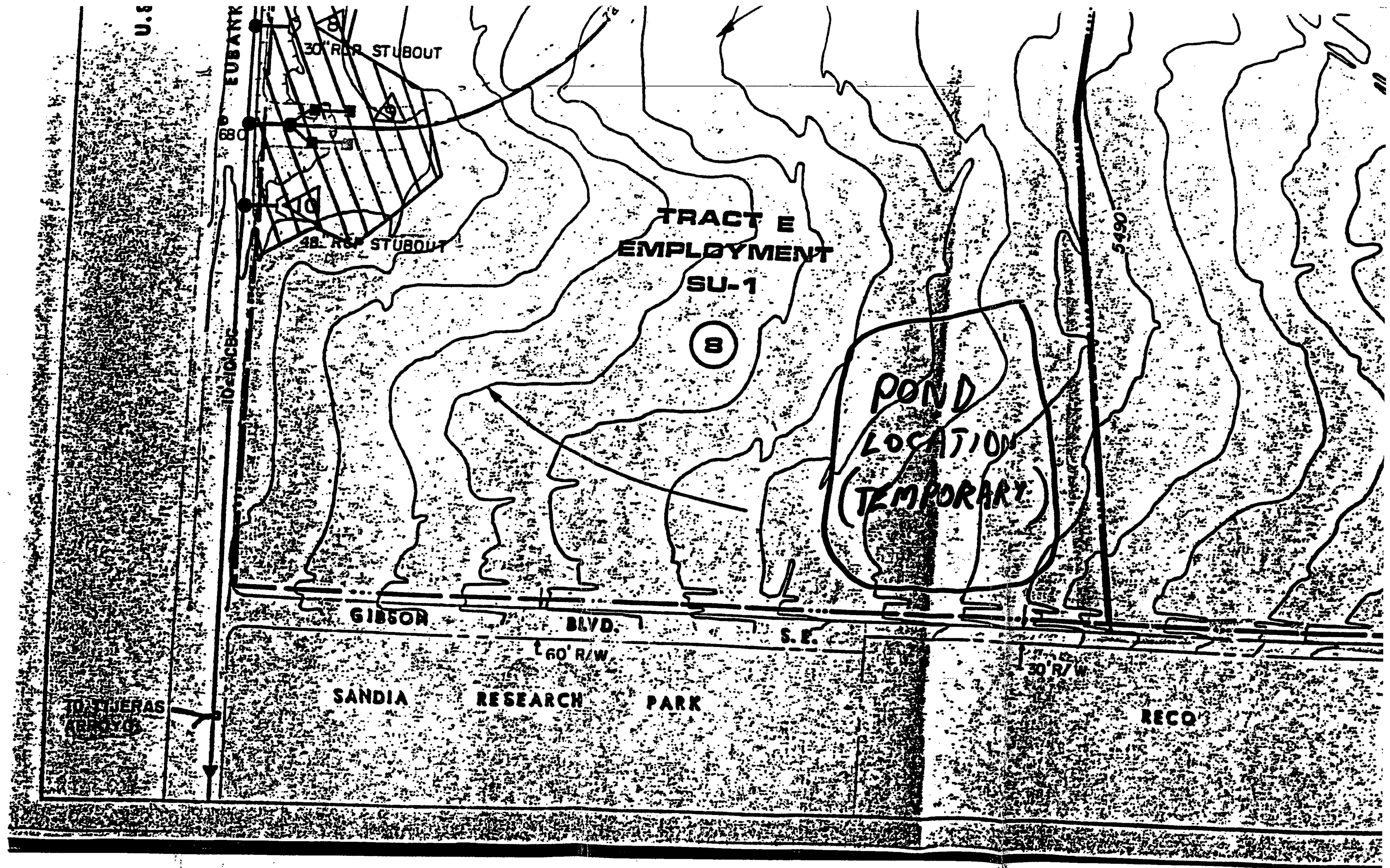

102.8
103.1
106.3
106.4
103.4
103.9
104.6
105.2
105.9
106.5
S = 1.20%
S = -0.80%
5500
5505
99.88
100.85
99.55
100.64
100.65
100.86
101.72
101.73
102.11
102.17
104.11
105.26
103.81
103.89
104.83
102.96
102.18
102.62
103.37
103.98
104.63
105.29
101.81
102.9
102.6
103.2
102.46
103.1
103.8
104.1
104.4
104.7
105.1
105.4
105.7
106.0
101.67
102.68
103.7
104.6
105.6
106.3
107.0
107.6

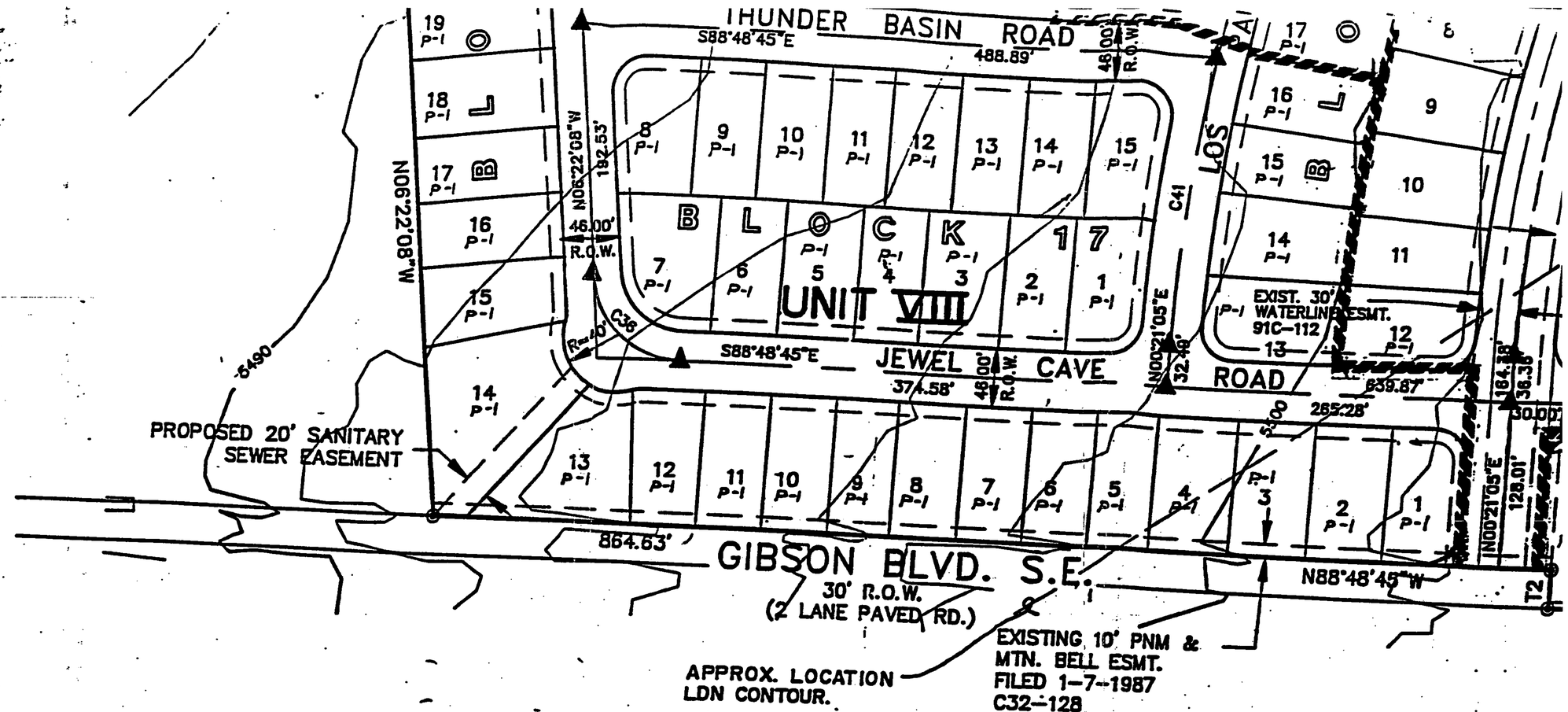


RECO CORP
FILED: AUG. 24, 1982
VOL. C20 FOLIO 24
(SU FOR MOBILE HOME PARK)

APPROVED F

CITY SURVEY


30" RGP STUBOUT
48" RGP STUBOUT
TRACT E
EMPLOYMENT
SU-1
8
POND
LOCATION
(TEMPORARY)
5490
GIBSON
BLVD.
S.E.
60' R/W
30' R/W
SANDIA
RESEARCH
PARK
TO TIJERAS
ARROYO


THUNDER BASIN ROAD
S88°48'45"E
488.89'
46.00' R.O.W.
N06°22'08"W
192.53'
46.00' R.O.W.
BLOCK 17
UNIT VIII
S88°48'45"E
JEWEL CAVE ROAD
374.58'
46.00' R.O.W.
N00°21'05"E
32.46'
639.87'
265.28'
LOS
C41
EXIST. 30' WATERLINE ESMT. 91C-112
184.38'
38.36'
30.00'
128.01'
N00°21'05"E
PROPOSED 20' SANITARY SEWER EASEMENT
5490
C36
R=40'
N06°22'08"W
864.63'
GIBSON BLVD. S.E.
30' R.O.W.
(2 LANE PAVED RD.)
N88°48'45"W
EXISTING 10' PNM & MTN. BELL ESMT. FILED 1-7-1987 C32-128
APPROX. LOCATION LDN CONTOUR.

PROJECT TITLE: SHAW MHP ZONE ATLAS/DRNG. FILE #: M21-D6

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

LEGAL DESCRIPTION: RECO CORP

CITY ADDRESS: 11100 GIBSON SE

ENGINEERING FIRM: BRASHER ENGR CONTACT: D. LORENZ

ADDRESS: 11930 MENAUL NE PHONE: 296 0422

OWNER: G. MITCHELL CONTACT: SAME

ADDRESS: 11100 GIBSON SE PHONE: _____

ARCHITECT: NA CONTACT: _____

ADDRESS: _____ PHONE: _____

SURVEYOR: NA CONTACT: _____

ADDRESS: _____ PHONE: _____

CONTRACTOR: NA CONTACT: _____

ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:

___ DRAINAGE REPORT
___ DRAINAGE PLAN
___ CONCEPTUAL GRADING & DRAINAGE PLAN
___ GRADING PLAN
___ EROSION CONTROL PLAN
___ ENGINEER'S CERTIFICATION
X OTHER TOPIC FOR DISCUSSION

RE-DESIGN MEETING:

X YES
___ NO
___ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

___ SKETCH PLAT APPROVAL
___ PRELIMINARY PLAT APPROVAL
___ S. DEV. PLAN FOR SUB'D. APPROVAL
___ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
___ SECTOR PLAN APPROVAL
___ FINAL PLAT APPROVAL
___ FOUNDATION PERMIT APPROVAL
___ BUILDING PERMIT APPROVAL
___ CERTIFICATE OF OCCUPANCY APPROVAL
___ GRADING PERMIT APPROVAL
___ PAVING PERMIT APPROVAL
___ S.A.D. DRAINAGE REPORT
___ DRAINAGE REQUIREMENTS
X OTHER SET UP (SPECIFY)
MEETING WITH HYDROLOGY STAFF. NO APPROVAL OR ACTION REQUESTED.

ATE SUBMITTED: 1-27-92

BY: D. LORENZ

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

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

November 19, 1986

Charles T. Asbury, P.E.
Andrews, Asbury & Robert, Inc.
149 Jackson, NE
Albuquerque, New Mexico 87108

RE: CONCEPTUAL GRADING & DRAINAGE PLAN SUBMITTAL OF SANDIA RESEARCH PARK RECEIVED NOVEMBER 10, 1986 FOR PRELIMINARY PLAT APPROVAL (M-21/D5)

Dear Ted:

I have reviewed the above referenced submittal dated July 1986 and have the following comments to be addressed before review can continue:

1. Provide a complete watershed map to verify the off-site watershed drainage areas.

2. Off-site flows from the intersection of Eubank and Gibson must be accounted for in the existing and future conditions.

3. No reference is made to the proposed AMDS drainage channel within the existing 40' wide drainage easement. After discussions with Dwayne Sheppard, it appears that the City may propose a storm drain in this easement in lieu of an open channel. This item should be further coordinated with Dwayne Sheppard in Special Projects Hydrology Section of PWD Planning Division, with your plans reflecting some type of future facilities.

4. Your Grading Plan implies that in the developed condition the project site may discharge 89.9 cfs.

4. (cont'd.)

   This is incorrect since the Drainage Ordinance allows no discharge with developed conditions unless downstream drainage facilities exist and capacity is available, which is not the case for this site. 100% of the runoff must be retained until downstream facilities are in place.

5. This office does not recognize calculating volumes of runoff using the Rational Method. I recommend that DPM plates 22.2 C-2, C-3 and C-4 be used to calculate the volume of direct runoff for ponding requirement. You will find that the method you are using is very conservative and requires much greater pond volumes.

6. Offsite drainage basins must also have runoff calculations for the developed condition with the onsite facilities, such as the streets, analyzed for capacity with developed offsite flows. This would not apply if, under developed conditions, the offsite flows would be diverted away from your project site, but your Grading Plan does not imply this.

7. Provide the following information on the Grading and Drainage Plan as required by the DPM submittal check list to increase clarity:

   A. Legal description.
   B. Flood Hazard map or reference.
   C. Date with the Engineer's stamp.

A Conceptual Grading and Drainage Plan is not usually of enough detail to determine all the infrastructure requirements for an Infrastructure Listing for sign-off by the DRB. Your Grading and Drainage Plan must have adequate Hydrologic and Hydraulic calculations to demonstrate that all required infrastructures are identified and sized adequately. The only information not needed is design details which are reviewed at DRC for Work Order purposes.

If you have any questions, call me at 768-2650.

Cordially,

Roger A. Green, PE

Roger A. Green, P.E.
C.E./Hydrology Section

Standard Form Letter to:

Pete Ford, Theatre Joint Venture

RECEIVED
NOV 10 1986
HYDROLOGY SECTION

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 - 198
James E. Millington, P.E. - V.P.

October 23, 1986

Mr. Fred Aguirre
Hydrology Section
Public Works Department
Engineering Group
City of Albuquerque
P. O. Box 1293
Albuquerque, New Mexico 87103

SUBJECT: PRELIMINARY DRAINAGE PLAN

Dear Mr. Aguirre:

Recently, you and I informally discussed the general requirements for hydrology sign-off for Preliminary Plat approval.

I am enclosing a copy of the conceptual grading and drainage plan which depicts onsite, offsite, undeveloped and developed conditions, which I hope is suitable for your concurrence for preliminary plat approval.

If additional information is required, please contact me.

Very truly yours,

Ted

CHARLES TED ASBURY

jtg-458
Enclosure: Sheet 3

M21/1

PROJECT TITLE: SANDIA RESEARCH PARK ZONE ATLAS/DRNG. FILE #: DRB 86-

LEGAL DESCRIPTION:

CITY ADDRESS: SOUTH EUBANK BLVD.

ENGINEERING FIRM: ANDREWS ASBURY & ROBERT JAC CONTACT: TED ASBURY

ADDRESS: 149 JACKSON NE PHONE: 265-6631

OWNER: THEATRE JOINT VENTURE CONTACT: PETE FORD

ADDRESS: 707 BROADWAY N.W. PHONE: 242-5241

ARCHITECT: N/A. CONTACT:

ADDRESS: PHONE:

SURVEYOR: AA&R CONTACT:

ADDRESS: PHONE:

CONTRACTOR: N/A. CONTACT:

ADDRESS: PHONE:

RECEIVED
NOV 10 1986
HYDROLOGY SECTION

PRE-DESIGN MEETING:

____ YES

____ NO

____ COPY OF CONFERENCE RECAP SHEET PROVIDED

DRB NO. 86-284 - 712913

EPC NO.

PROJ. NO.

TYPE OF SUBMITTAL:

____ DRAINAGE REPORT.

____ DRAINAGE PLAN

X CONCEPTUAL GRADING & DRAINAGE PLAN

____ GRADING PLAN

____ EROSION CONTROL PLAN

____ ENGINEER'S CERTIFICATION

CHECK TYPE OF APPROVAL SOUGHT:

____ SKETCH PLAT APPROVAL

X 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 _____ (SPECIFY)

DATE SUBMITTED: NOV 10, 1986

MUNICIPAL DEVELOPMENT DEPARTMENT
ENGINEERING DIVISION/DESIGN HYDROLOGY SECTION

CONFERENCE RECAP

DRAINAGE FILE/ZONE ATLAS PAGE NO.: M-21 DATE: 5/8/90 @ 10:00

PLANNING DIVISION NOS: EPC: _____ DRB: 90-254

SUBJECT: Sandia Research Park

STREET ADDRESS (IF KNOWN): NW [illegible] NW 1/2 Sec 15 T 10 N R

SUBDIVISION NAME: _____

APPROVAL REQUESTED:

X	PRELIMINARY PLAT		FINAL PLAT
X	SITE DEVELOPMENT PLAN		BUILDING PERMIT
	OTHER		ROUGH GRADING

ATTENDANCE:	WHO	REPRESENTING
	Jim Millington	[illegible]
	[illegible]	Hydrology Section
	Ted Ashburn	[illegible]

FINDINGS:

- Interim solution will need to be presented to address the ultimate drainage scheme and show how the runoff will be controlled until the ultimate outfall becomes available.

- Individual Tract Drainage Plans will be required for approval at time of building permits.

- Partial or small treatment ponds are not integrated designs in the adopted drainage master plan and are not acceptable for maintenance responsibility.

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: [illegible] SIGNED: [illegible]

TITLE: [illegible] TITLE: [illegible]

BRASHER
ENGINEERING
INC.

January 23, 1991

Mr. Fred Aguirre, P.E.
City Hydrologist
Public Works Department
PO Box 1293
Albuquerque, New Mexico

SUBJECT: SHAW MOBILE HOME PARK OUTFALL
BEI JOB 91-002

Dear Fred:

Submitted herewith for Discussion is one copy of the conceptual drainage plan for Shaw Mobile Home Park. As we discussed on January 21, 1992, our original plan to discharge directly to the Tijeras Arroyo has been vetoed by downstream property owners. We therefore are pursuing connection to the future Eubank Storm Drainage System. Before we develop our plans any further we need to know the implications of utilizing the Eubank system. Specifically, what is the project schedule and will Shaw Mobile Home Park be required to participate financially?

Please plan a meeting with the appropriate City personnel to discuss the pertinent issues. If you have any questions and if I can help, please call.

Sincerely,

Dennis A. Lorenz, P.E.

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

MAYOR
KEN SCHULTZ

CHIEF ADMINISTRATIVE OFFICER
GENE ROMO

DEPUTY CAO DEVELOPMENT & ENTERPRISE SERVICES
LARRY LARRANAGA

DEPUTY CAO PUBLIC SERVICI
DAN WEAK

July 6, 1988

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

RE: SANDIA RESEARCH PARK RETENTION POND SIZING CALCULATIONS (M-21/D5) (CITY PROJECT NO. 3325)

Dear Mr. Andrews:

It has recently come to my attention that the Drainage Report for Sandia Research Park, dated January 1988, uses an improper method to determine the minimum volume of storage required for the retention pond.

Sheet 14 of 16 of the above referenced report uses a SCS triangular hydrograph and routing techniques to determine the required storage volume. The flaw with this is that it assumes an outflow simultaneous with inflow with a maximum outflow being allowed. This application is correct when there is a detention pond with a riser type or staged weir outlet, which is not the case with this project. The other problem is that a volume of runoff greater than the off-site volume is allowed to pass by the retention pond. Normally with a retention pond condition, we must provide storage volume equal to the runoff from the entire project site.

Please reanalyze the retention pond design requirements and make any recommendations as to the adequacy of the current design or required changes.

I apologize for not recognizing this discrepancy earlier, and please contact me to further discuss this.

Cordially,

Roger A. Green, PE

Roger A. Green, P.E.
C.E./Hydrology Section

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 - 198
James E. Millington, P.E. - V.P.

February 9, 1988

RECEIVED
FEB 09 1988
HYDROLOGY SECTION

Mr. Roger Green
Hydrology Section
Public Works Department
Engineering Group
City of Albuquerque
Post Office Box 1293
Albuquerque, New Mexico 87103

HAND DELIVERED

SUBJECT: SANDIA RESEARCH PARK
CITY PROJECT NO. 3325

Dear Mr. Green:

Transmitted herewith are the pond volume calculations for the subject project.

Very truly yours,

ROBERT S. FOGLESONG, P.E. & L.S.

kat/458
Enclosure

No written response required.
2/24/88

PROJECT TITLE: Sandia Research Park ZONE ATLAS/DRNG. FILE #: M-21 / ~ ~

LEGAL DESCRIPTION: Sandia Research Park

CITY ADDRESS:

ENGINEERING FIRM: Andrews, Asbury & Robert, Inc. CONTACT: James E. Millington,

ADDRESS: 149 Jackson NE, Alb. NM, 87108 PHONE: 265-6631

OWNER: Opportunity Research Park Partnership CONTACT:

ADDRESS PHONE:

ARCHITECT: CONTACT:

ADDRESS: PHONE:

SURVEYOR: CONTACT:

ADDRESS: PHONE:

CONTRACTOR: CONTACT:

ADDRESS: PHONE:

PRE-DESIGN MEETING:

X YES

____ NO

____ COPY OF CONFERENCE RECAP SHEET PROVIDED

RECEIVED FEB 09 1988 HYDROLOGY SECTION

DRB NO. 86-284

EPC NO.

PROJECT NO. 3325

TYPE OF SUBMITTAL:

____ DRAINAGE REPORT

____ 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

X ROUGH GRADING PERMIT APPROVAL

____ GRADING/PAVING PERMIT APPROVAL

OTHER ____ (SPECIFY)

DATE SUBMITTED: February 9, 1988

BY:

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 - 198
James E. Millington, P.E. - V.P.

RECEIVED
FEB 08 1988
HYDROLOGY SECTION

February 8, 1988

Mr. Rodger Green
Hydrology Section
Public Works Department
Engineering Group
City of Albuquerque
Post Office Box 1293
Albuquerque, New Mexico 87103

SUBJECT: SANDIA RESEARCH PARK
CITY PROJECT NO. 3325

Dear Mr. Green:

Research in the NOAA Atlas indicates that the precipitation for a 24 hour - 100 year storm is 2.8 inches for the subject project. The precipitation for a 6 hour - 100 year storm is 2.4 inches. The volume of runoff during a 24 hr. precipitation vs. a 6 hr. precipitation would be approximately 16.6 percent larger.

The volume of runoff for a 6 hr. - 100 year storm for the subject project is 3.43 acre feet, from the drainage report. The volume of runoff for a 24 hour precipitation is approximately 4.00 acre feet. The retention pond will be enlarged to accommodate 4.00 acre feet.

Very truly yours,

ROBERT S. FOGLESONG, P.E. & L.S.

kat/458

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

MAYOR
KEN SCHULTZ

CHIEF ADMINISTRATIVE OFFICER
GENE ROMO

DEPUTY CAO PUBLIC SERVICES
FRANK MARTINEZ

DEPUTY CAO PLANNING/DEVELOPMENT
BILL MUELLER

February 2, 1988

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

RE: DRAINAGE REPORT SUBMITTAL OF SANDIA RESEARCH PARK RECEIVED JANUARY 20, 1988 FOR ROUGH GRADING PERMIT AND FINAL PLAT APPROVAL (M-21/D5) (W.O.#3325)

Dear Mr. Andrews:

I have the following comments in regard to the above referenced submittal revised on January 29, 1988.

1. The Drainage Ordinance requires that all detention ponds not drained within 6 hours be sized to hold the runoff from the 24 hour duration storm, not the 6 hour. This requirement was overlooked in my previous review and approval. An alternative to calculating the volume of runoff by a hydrograph, is to determine a composite runoff curve number (RCN) for the site and calculate the direct runoff value with the SCS formula or Plate 22.2 C-4 of the DPM.

2. The site can be approved for rough grading with the addition of construction notes referencing earthwork specifications, and the requirement that the contractor obtain a "Topsoil Disturbance Permit". Bring in the grading plan mylars for approval signature with the above notes added.

3. Final Plat may be signed off by the City Engineer after execution of a Subdivision Improvements Agreement, and Drainage Covenant for the retention pond.

Specific design details and street grades will be reviewed and commented on by the DRC.

If you should have any questions, call me at 768-2650.

Cordially,

Roger A. Green, PE

Roger A. Green, P.E.
C.E./Hydrology Section

RAG/bsj

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 - 198
James E. Millington, P.E. - V.P.

RECEIVED
JAN 20 1988
HYDROLOGY SECTION

January 19, 1988

Mr. Roger Green
Public Works Department
City of Albuquerque
Post Office Box 1293
Albuquerque, New Mexico 87103

SUBJECT: SANDIA RESEARCH PARK

Dear Mr. Green:

Attached is a revised Drainage Report for Sandia Research Park for your review and approval.

If you need any further information, please contact me.

Very truly yours,

JAMES E. MILLINGTON, P.E.

kat/458
Enclosure
cc: Don Morgan

PROJECT TITLE: Sandia Research Park ZONE ATLAS/DRNG. FILE #: M-21 / U-3

LEGAL DESCRIPTION: Sandia Research Park

CITY ADDRESS:

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

ADDRESS: 149 Jackson NE PHONE: 265-6631

OWNER: Opportunity Research Park Partnership CONTACT:

ADDRESS PHONE:

ARCHITECT: CONTACT:

ADDRESS: PHONE:

SURVEYOR: CONTACT:

ADDRESS: PHONE:

CONTRACTOR: CONTACT:

ADDRESS: PHONE:

PRE-DESIGN MEETING:

RECEIVED JAN 20 1988 HYDROLOGY SECTION

X YES

___ NO

___ COPY OF CONFERENCE RECAP SHEET PROVIDED

DRB NO. 86-284

EPC NO.

PROJECT NO. 3325

TYPE OF SUBMITTAL:

X DRAINAGE REPORT

___ DRAINAGE PLAN

___ 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

X FINAL PLAT APPROVAL

___ BUILDING PERMIT APPROVAL

___ FOUNDATION PERMIT APPROVAL

___ CERTIFICATE OF OCCUPANCY APPROVAL

X ROUGH GRADING PERMIT APPROVAL

X GRADING/PAVING PERMIT APPROVAL

OTHER _____ (SPECIFY)

DATE SUBMITTED: January 20, 1988

BY:

Rev. 11/84

FILE CO

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

Ken Schultz
Mayor

UTILITY DEVELOPMENT DIVISION
HYDROLOGY SECTION
(505) 768-2650

April 28, 1987

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

RE: DRAINAGE REPORT SUBMITTAL OF SANDIA RESEARCH PARK RECEIVED APRIL 13, 1987 FOR FINAL PLAT AND ROUGH GRADING PERMIT APPROVAL (M-21/D5)

Dear John:

The above referenced submittal dated April 13, 1987, is approved for Final Plat purposes. Prior to Final Plat sign-off by the City Engineer, an executed Subdivision Improvements agreement is required.

A Grading Permit can be issued by this office after submittal, review, and approval of a detailed Grading Plan in accordance with the DPM outline. Earthwork specifications and note to contractor requiring a Topsoil Disturbance Permit should be included.

If you have any questions, call me at 768-2650.

Cordially,

Roger A. Green, PE

Roger A. Green, P.E.
C.E./Hydrology Section

cc: M.B. Ford, Theatre Joint Venture

RAG/bsj

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 - 198
James E. Millington, P.E. - V.P.

RECEIVED
APR 13 1987

April 10, 1987

Mr. Fred Aguirre
Utility Development Division
Hydrology Section
Public Works Department
City of Albuquerque
P.O. Box 1293
Albuquerque, New Mexico 87103

ATTN: ROGER GREEN

SUBJECT: SANDIA RESEARCH PARK
DRAINAGE REPORT

Dear Mr. Aguirre:

Transmitted herewith is a drainage report for subject project for review.

The initial review of drainage for this project was made with Billy Goolsby; however, I have had detailed discussions with Roger Green relative to the drainage requirements for the development of this subdivision.

Your early review of this report will be appreciated.

Very truly yours,

JOHN A. ANDREWS, P.E.

caf-458
Enclosure
cc: Mr. M. B. "Pete" Ford

PROJECT TITLE: Sandia Research Park

LEGAL DESCRIPTION: Sandia Research Park Subdivision

CITY ADDRESS: Eubank Boulevard, SE

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

ADDRESS: 149 Jackson NE Albuquerque, NM 87108 PHONE: (505) 265-6631

OWNER: Theatre Joint Venture CONTACT: M. B. "Pete" Ford

ADDRESS 707 Broadway NE, Suite 303 Albuquerque, NM 87102 PHONE: (505) 242-5241

ARCHITECT: N/A CONTACT:

ADDRESS: PHONE:

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

ADDRESS: 149 Jackson NE Albuquerque, NM 87108 PHONE: (505) 265-6631

CONTRACTOR: New Concepts Inc. & Interwest Ltd. A Joint Venture CONTACT: Tom Lakeman

ADDRESS: P.O. Box 6128 Albuquerque, NM 87197 PHONE: (505) 821-9504

PRE-DESIGN MEETING:

X YES w/ Billy Goolsby and Roger Green

___ NO

___ COPY OF CONFERENCE RECAP SHEET PROVIDED

DRB NO. 86-284

EPC NO.

PROJECT NO.

TYPE OF SUBMITTAL:

X DRAINAGE REPORT

___ DRAINAGE PLAN

___ 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

X FINAL PLAT APPROVAL

___ BUILDING PERMIT APPROVAL

___ FOUNDATION PERMIT APPROVAL

___ CERTIFICATE OF OCCUPANCY APPROVAL

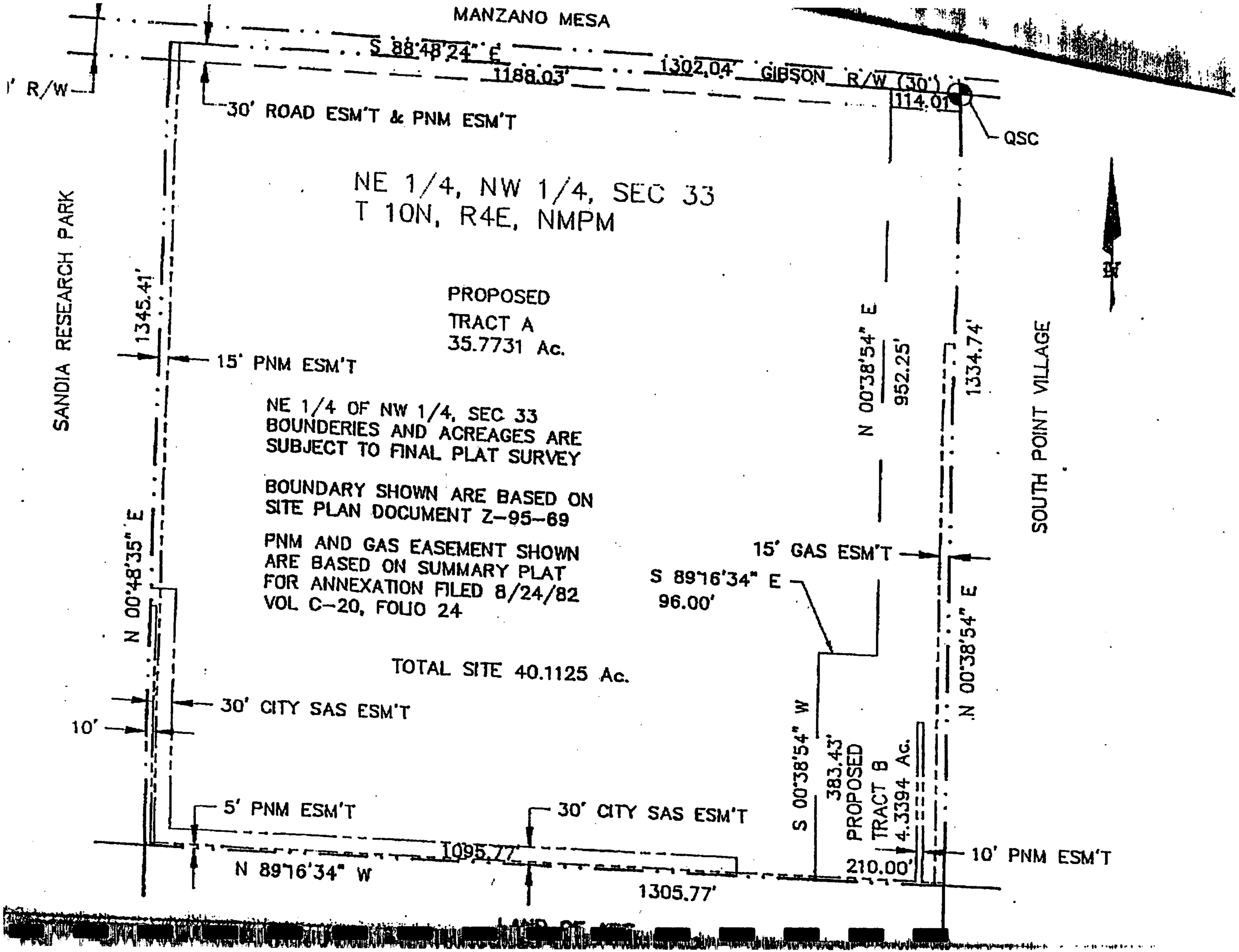
X ROUGH GRADING PERMIT APPROVAL

___ GRADING/PAVING PERMIT APPROVAL

OTHER _____ (SPECIFY)

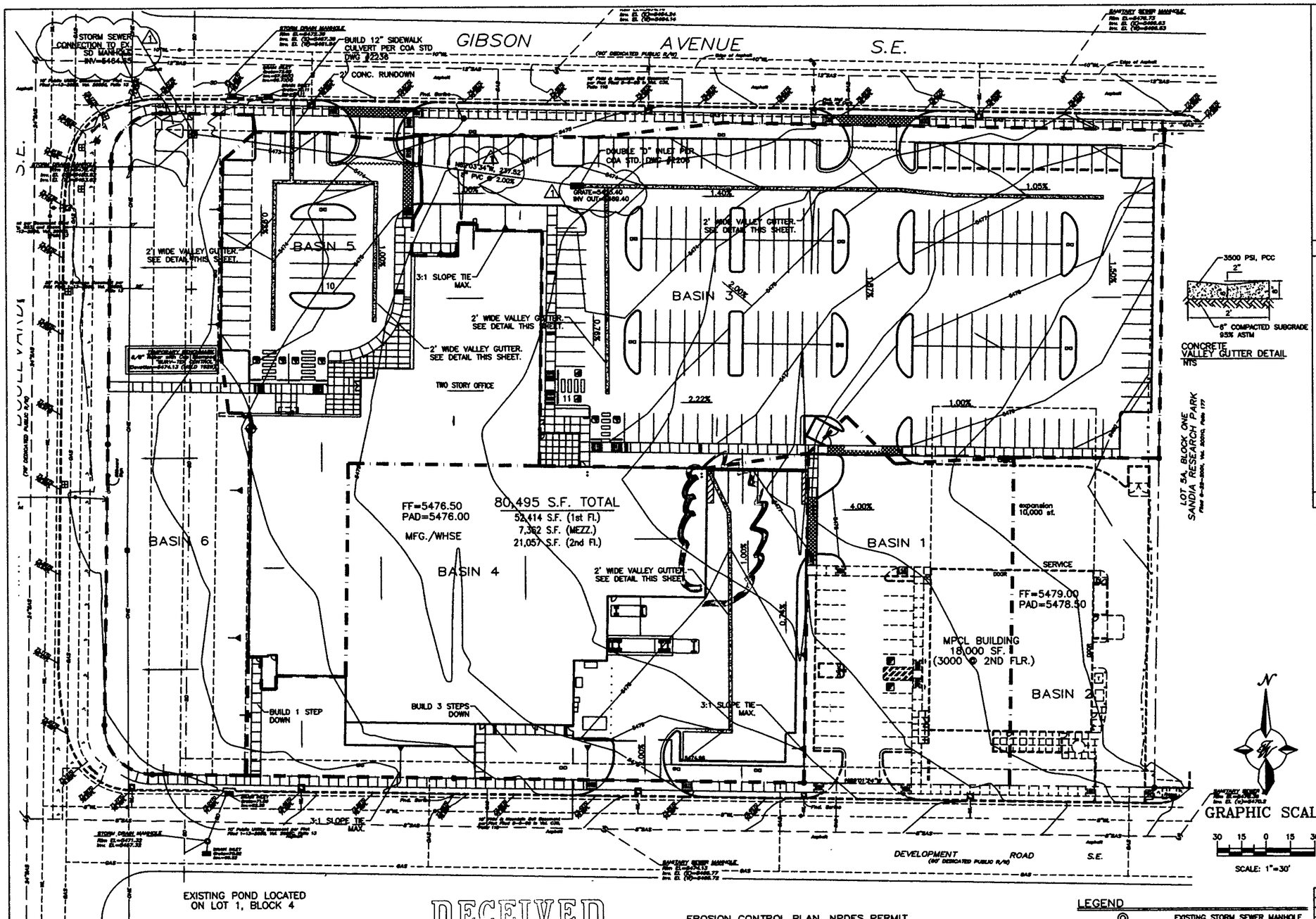
DATE SUBMITTED: April 10, 1987

BY:


MANZANO MESA
S 88°48'24" E
1188.03'
1302.04'
GIBSON R/W (30')
114.01
QSC
1' R/W
30' ROAD ESM'T & PNM ESM'T
NE 1/4, NW 1/4, SEC 33
T 10N, R4E, NMPM
SANDIA RESEARCH PARK
1345.41'
15' PNM ESM'T
PROPOSED
TRACT A
35.7731 Ac.
NE 1/4 OF NW 1/4, SEC 33
BOUNDERIES AND ACREAGES ARE
SUBJECT TO FINAL PLAT SURVEY
BOUNDARY SHOWN ARE BASED ON
SITE PLAN DOCUMENT Z-95-69
PNM AND GAS EASEMENT SHOWN
ARE BASED ON SUMMARY PLAT
FOR ANNEXATION FILED 8/24/82
VOL C-20, FOLIO 24
N 00°38'54" E
952.25'
1334.74'
SOUTH POINT VILLAGE
N 00°48'35" E
15' GAS ESM'T
S 89°16'34" E
96.00'
N 00°38'54" E
TOTAL SITE 40.1125 Ac.
30' CITY SAS ESM'T
10'
S 00°38'54" W
383.43'
PROPOSED
TRACT B
4.3394 Ac.
5' PNM ESM'T
30' CITY SAS ESM'T
1095.77'
N 89°16'34" W
210.00'
10' PNM ESM'T
1305.77'

MAP POCKET

Grading and Drainage Plan



CONCRETE VALLEY GUTTER DETAIL
NTS

VICINITY MAP: M-21-Z

FEMA MAP: 35001C0367

LEGAL DESCRIPTION:
LOT 1, 2, 3, 6, 7, AND 8A, BLOCK ONE, SANDIA RESEARCH PARK

NOTICE TO CONTRACTORS

1. AN EXCAVATION/CONSTRUCTION PERMIT WILL BE REQUIRED BEFORE BEGINNING ANY WORK WITHIN CITY RIGHT-OF-WAY.
2. ALL WORK DETAILED ON THESE PLANS TO BE PERFORMED, EXCEPT AS OTHERWISE STATED OR PROVIDED HEREON, SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF ALBUQUERQUE INTERIM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 1985.
3. TWO WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT LINE LOCATING SERVICE, 765-1234, FOR LOCATION OF EXISTING UTILITIES.
4. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL CONSTRUCTIONS. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE ENGINEER SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY.
5. BACKFILL COMPACTION SHALL BE ACCORDING TO TRAFFIC/STREET USE.
6. MAINTENANCE OF THESE FACILITIES SHALL BE THE RESPONSIBILITY OF THE OWNER OF THE PROPERTY SERVED.
7. WORK ON ARTERIAL STREETS SHALL BE PERFORMED ON A 24-HOUR BASIS.

APPROVAL	NAME	DATE
INSPECTOR		

GENERAL NOTES:
1. SEE ARCH. PLANS SHEET C2 FOR CURB AND GUTTER DETAILS.

ROUGH GRADING APPROVAL

RECEIVED
MAR 2 0 2013

DEVELOPED LAND TREATMENTS

BASIN	AREA	A	B	C	D	WEIGHTED "E" (100 YR)	WEIGHTED "E" (10 YR)	V100	V10	Q100	Q10
BASIN 1	.5879 AC	0	.0588 AC	.0588 AC	.4703 AC	2.10	1.30	0.103	0.064	2.72	1.78
BASIN 2	.4144 AC	0	.0373 AC	.0414 AC	.3357 AC	2.12	1.38	0.073	0.048	1.93	1.27
BASIN 3	1.8888 AC	0	.0638 AC	.1184 AC	1.7066 AC	2.25	1.41	0.353	0.222	9.14	6.11
BASIN 4	1.3421 AC	0	.0432 AC	.1500 AC	1.1489 AC	2.19	1.37	0.245	0.153	6.40	4.25
BASIN 5	.9567 AC	0	.0100 AC	.0460 AC	.9007 AC	2.29	1.44	0.183	0.115	4.71	3.16
BASIN 6	.7447 AC	.7447 AC	0	0	0	1.00	0.41	0.041	0.012	1.39	0.43

ZONE 3 P10year 1.7342 IN
P100year 2.60 IN

EROSION CONTROL PLAN, NPDES PERMIT AND POLLUTION PREVENTION NOTES

1. CONTRACTOR IS RESPONSIBLE FOR OBTAINING A TOPSOIL DISTURBANCE PERMIT PRIOR TO BEGINNING WORK.
2. CONTRACTOR IS RESPONSIBLE FOR CLEANING ALL SEDIMENT OUT OF EXISTING RIGHT-OF-WAY.
3. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ALL STORM RUN OFF ON SITE.
4. REPAIR OF DAMAGED FACILITIES AND CLEAN-UP OF SEDIMENT ACCUMULATION ON ADJACENT PROPERTIES AND IN PUBLIC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR.
5. ALL EXPOSED EARTH SURFACES MUST BE PROTECTED FROM WIND AND WATER EROSION PRIOR TO FINAL ACCEPTANCE OF ANY PROJECT.
6. CONTRACTOR IS RESPONSIBLE FOR OBTAINING NPDES PERMIT FOR THE SITE

LEGEND

- EXISTING STORM SEWER MANHOLE
- EXISTING STORM SEWER LINE
- PROPOSED STORM SEWER MANHOLE
- EXISTING STORM SEWER LINE
- EXISTING CURB & GUTTER
- EXISTING CONTOUR (MAJOR)
- EXISTING CONTOUR (MINOR)
- BOUNDARY LINE
- EASEMENT
- PROPOSED SIDEWALK
- GRADING HIGH POINT
- TEMP. ASPHALT CURB

NO.	DATE	REMARKS	BY
1	03/04/03	CHANGED SD INVERTS AND SLOPE	BDG

REVISIONS

ENGINEER'S SEAL

RONALD R. BOHANNAN P.E. #7868

SANDIA RESEARCH PARK

GRADING AND DRAINAGE PLAN

TIERRA WEST, LLC
8509 JEFFERSON NE
ALBUQUERQUE, NEW MEXICO 87113
(505)858-3100

DRAWN BY BDG
DATE 01/16/03
22130VGR4.DWG
SHEET # C3
JOB # 21098