97036290

9369

EASEMENT

This grant of Easement, between Albuquerque Menaul LLC, ("Grantor"), and the City of Albuquerque, a New Mexico municipal corporation ("City"), whose address is P. O. Box 1293 Albuquerque, New Mexico 87103.

1. Grant of Easement. The Grantor grants to the City an exclusive permanent easement for a Public Waterline ("Public Improvement") on, over, across and through the property described on Exhibit A attached hereto ("Property"), together with the right of the City to operate, maintain, repair, replace and construct the Public Improvement and the right to remove trees, bushes, undergrowth and any other obstacles upon the Property if the City determines they interfere with the appropriate use of the easement.

2. Warranties. Grantor covenants and warrants that it is the owner in fee simple of the Property and that is has a good lawful right to convey the Property or any part thereof and that the Grantor will forever warrant and defend the title to the Property against all claims from all persons or entities.

3. Binding on Grantor's Property. The grant and other provisions of this Easement constitute covenants running with title to the Property for the benefit of the City and its successors and assigns until terminated.

Witness my hand and seal this 13th day of February, 1997.

GRANTOR:

By: [signature]
Its: President
Dated: 2/13/97

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

This instrument was acknowledged before me on February 13th, 1997, by Gary D. Goodman of Albuquerque Menaul LLC on behalf of the President.

[signature]
Notary Public

My Commission Expires:
3/31/2000

OFFICIAL SEAL
DEBBIE L. SCHNEIDER
NOTARY PUBLIC STATE OF ILLINOIS
MY COMMISSION EXP. MAR. 31, 2000

STATE OF NEW MEXICO
COUNTY OF BERNALILLO
FILED FOR RECORD
97 APR 10 PM 2:50
JUDY D. ROMERO
CO CLERK & RECORDER
DEPUTY

j:\rpd4\easement.frm

9370

A CERTAIN TRACT OF LAND SITUATE WITHIN SECTION 10, TOWNSHIP 10 NORTH, RANGE 3 EAST OF THE N.M.P.M., CITY OF ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO BEING A PUBLIC WATERLINE EASEMENT WITHIN TRACT C, AMERICAN SQUARE, AS THE SAME IS SHOWN ND DESIGNATED ON THE PLAT THEREOF, FILED IN THE OFFICE OF THE COUNTY CLERK OF BERNALILLO COUNTY, NEW MEXICO ON MARCH 25, 1988 IN VOLUME C36, FOLIO 33, SAID EASEMENT BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHWEST CORNER OF THE HEREIN DESCRIBED EASEMENT, BEING A POINT ON THE EAST LINE OF RICHMOND DRIVE, WHENCE THE NORTHWEST CORNER OF SAID TRACT C, AMERICAN SQUARE BEARS N. 00° 01' 28" E., A DISTANCE OF 286.00 FEET, RUNNING

THENCE N. 89° 58' 17" E., A DISTANCE OF 184.49 FEET;

THENCE N. 88° 32' 33" E., A DISTANCE OF 100.26 FEET;

THENCE N. 89° 58'17"E., A DISTANCE OF 207.68 FEET TO THE NORTHEAST CORNER, BEING A POINT ON THE WEST LINE OF BRYN MAWR DRIVE;

THENCE ALONG THE WEST LINE OF BRYN MAWR DRIVE, 20.13 FEET ALONG THE ARC OF A CURVE TO THE LET HAVING A RADIUS OF 157.00 FEET AND A CHORD BEARING AND DISTANCE OF S. 06° W., 20.12 FEET TO THE SOUTHEAST CORNER;

THENCE S. 89° 58' 17" W., A DISTANCE OF 127.63 FEET;

THENCE S. 00° 01' 43" E., A DISTANCE OF 10.00 FEET;

THENCE S. 89° 58' 17" W., A DISTANCE OF 10.00 FEET;

THENCE N. 00° 01' 43" W., A DISTANCE OF 10.00 FEET;

THENCE S. 89° 58' 17" W., A DISTANCE OF 67.83 FEET;

THENCE S. 88° 32' 33" W., A DISTANCE OF 81.71 FEET;

THENCE S. 00° 01' 43" E., A DISTANCE OF 15.00 FEET;

THENCE S. 88° 32' 33" W., A DISTANCE OF 10.00 FEET;

THENCE N. 00° 01' 43" W., A DISTANCE OF 15.00 FEET;

THENCE S. 88° 32' 33" W., A DISTANCE OF 8.54 FEET;

THENCE S. 89° 58' 17" W., A DISTANCE OF 156.19 FEET;

THENCE S. 00° 01' 43" E., A DISTANCE OF 20.00 FEET;

THENCE S. 89° 58' 17 W., A DISTANCE OF 10.00 FEET;

THENCE N. 00° 01' 43" W., A DISTANCE OF 20.00 FEET;

THENCE S. 89° 58' 17" W., A DISTANCE OF 18.30 FEET TO THE SOUTHWEST CORNER, BEING A POINT ON THE EAST LINE OF RICHMOND DRIVE;

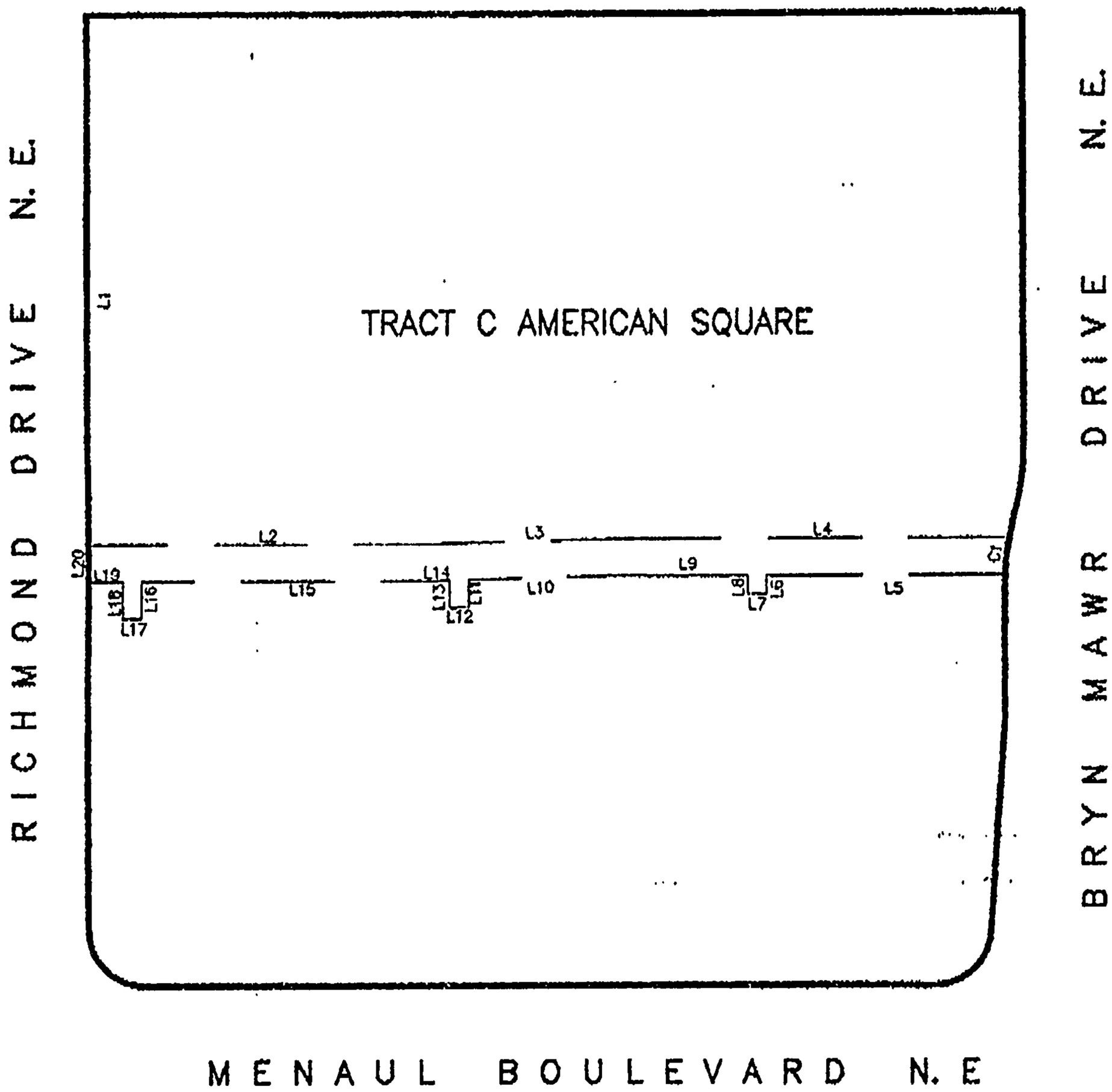
THENCE N. 00° 01' 28" W., ALONG THE EAST LINE OF RICHMOND DRIVE, A DISTANCE OF 20.00 FEET TO THE NORTHWEST CORNER AND PLACE OF BEGINNING.

EXHIBIT 'A'
FOR
WATERLINE EASEMENTS

9371

LEGAL DECRIPTION

SHEET 1 OF 2



CURVE TABLE				
No.	RADIUS	LENGTH	DELTA	CHORD BEARING, DISTANCE
C1	157.00'	20.13'	07° 20' 47"	S 06° 00' 00" W, 20.12'

COURSE	BEARING	DISTANCE
1	S 00°01'28"E	286.00'
2	N 89°58'17"E	184.49'
3	N 88°32'33"E	100.26'
4	N 89°58'17"E	207.68'
5	S 89°58'17"W	127.63'
6	S 00°01'43"E	10.00'
7	S 89°58'17"W	10.00'
8	N 90°00'00"E	0.00'
9	N 81°38'33"W	68.57'
10	S 88°32'33"W	81.71'
11	S 00°01'43"E	15.00'
12	S 88°32'33"W	10.00'
13	N 00°01'43"W	15.00'
14	S 88°32'33"W	8.54'
15	S 89°58'17"W	156.19'
16	S 00°01'43"E	20.00'
17	S 89°58'17"W	10.00'
18	N 00°01'43"W	20.00'
19	S 89°58'17"W	18.30'
20	N 00°01'28"W	20.00'

TRCWESMT.DWG(4-97)

Scale: 1" = 100'
Order No.:
Field Book: Page:
Ordered By:

Anthony L. Harris, N.M.P.S.#11463 HARRIS SURVEYING, INC.
2412-D Monroe Street, NE • Albuquerque, New Mexico 87110
Telephone (505) 889-8066 • FAX (505) 889-8645

The property shown hereon is not within the 100 year flood plain. (Zone" C ", FIRM Panel # 350002-0023 C Dated: 10-14-83

CONTRACT CONTROL FORM

PRELIMINARY REVIEW

Project # 566081

CCN # 9701199

Contact Person TERRI MARTIN

Phone No. 924-3997

New or Ext. #

(FILE W/SIA)

Type of Agreement : PERMANENT EASEMENT (WATERLINE)

Description/Project: J.C. PENNY @ AMERICAN SQUARE

Public Works/Div.: PROJECT REVIEW SECTION

Developer: ALBQ. MONAIL LLC

Contract Amount $ -0-

SIA Contract Period: 5-1-97 - (SEE SIA)

Contract Amount $

SW'S Contract Period: ____ - ____

Project Completed Date: ____

DRAFT CONTRACT:

Rec'd by Legal: ____ Rejected/Returned to Dept.: ____/____

Returned to Legal: ____/____ Approved: ____ Initials: ____

FINANCIAL GUARANTY:

Letter of Credit No.: ____ Date: ____ Attached: Yes___ No___ Initial____

Other: Type ____ Date: ____ Attached: Yes___ No___ Initial____

FINAL CONTRACT REVIEW

APPROVALS REQUIRED:

	Date Delivered	Returned to Dept.	Approved By	Approval Date:
~~Purchasing:~~ WATER:	4-30-97		MS	4/30/97
Asst. City Attorney:	4-30-97 TBL		[illegible]	5/1/97
CIP:				
City Attorney:				
CAO:				
Other:				
Council:	EC No.:	Approved:		Date:

DISTRIBUTION:	Date:	By:
User Department		
Vendor		
City Clerk	5-7-97 TBL	[illegible]
Treasury		

Revised 9/6/95 WP+125805/tsl

97044483

0924

PERMANENT EASEMENT

#5660-81

Grant of Permanent Easement, between Albuquerque Menaul LLC ("Grantor"), whose address is 2835 N. Sheffield Ave. ** and the City of Albuquerque, a New Mexico municipal corporation ("City"), whose address is P.O. Box 1293, Albuquerque, New Mexico, 87103. ** Chicago, IL 60657

Grantor grants to the City an exclusive, permanent easement ("Easement") in, over, upon and across the real property described on Exhibit "A" attached hereto ("Property") for the construction, installation, maintenance, repair, modification, replacement and operation of public water line, together with the right to remove trees, bushes, undergrowth and any other obstacles upon the Property if the City determines they interfere with the appropriate use of this Easement.

In the event Grantor constructs any improvements within the easement, the City has the right to enter upon Grantors property at any time and perform whatever inspection, installation, maintenance, repair, modification or removal ("Work") it deems appropriate without liability to the City. If the work effects any Improvements of Encroachments made by the Grantor, the City will not be financially or otherwise responsible for rebuilding or repairing of Improvements or Encroachments. If in the opinion of the City, the Work to be performed by the City could endanger the structural integrity or otherwise damage the Improvements of Encroachments, the Grantor shall, at its own expense, take whatever protective measures are required to safeguard the Improvements or Encroachments.

Grantor covenants and warrants that Grantor is the owner in fee simple of the Property, that Grantor has a good lawful right to convey the Property or any part thereof and that Grantor will forever warrant and defend the title to the Property against all claims from all persons or entities.

The grant and other provisions of this Easement constitute covenants running with the land for the benefit of the City and its successors and assigns until terminated.

WITNESS my hand and seal this 28 day of April, 1997

GRANTOR:

_____
(Individual)

GRANTOR:

By: _____
Its: _____
(Corporation or Partnership)

STATE OF NEW MEXICO
COUNTY OF BERNALILLO
FILED IN MY OFFICE

97 MAY -2 PM 2:03

97-12-0924-
0927

D. Hernandez

INDIVIDUAL

STATE OF _____)
)ss
COUNTY OF _____)

This instrument was acknowledged before me on _____ day of _____, 19___, by _____.

_____
Notary Public

My Commission Expires:

_____

CORPORATION

STATE OF ILLINOIS)
)ss
COUNTY OF Cook)

This instrument was acknowledged before me on 28th day of April, 1997, by Gary D. Goodman, President Of Albuquerque Mesa LLC, a New Mexico corporation, on behalf of the corporation.

Debbie L. Schneider
Notary Public

My Commission Expires:

March 31, 2000

OFFICIAL SEAL
DEBBIE L. SCHNEIDER
NOTARY PUBLIC STATE OF ILLINOIS
MY COMMISSION EXP MAR 31 2000

PARTNERSHIP

STATE OF _____)
)
COUNTY OF _____)

This instrument was acknowledged before me on ____ day of _____, 19___, by _____,partner(s), on behalf of _____, a partnership.

_____
Notary Public

My Commission Expires:

_____

(EXHIBIT "A" ATTACHED)

LEGAL DESCRIPTION

A CERTAIN TRACT OF LAND SITUATE WITHIN SECTION 10, TOWNSHIP 10 NORTH, RANGE 3 EAST OF THE N.M.P.M., CITY OF ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO BEING A PUBLIC WATERLINE EASEMENT WITHIN TRACT C, AMERICAN SQUARE, AS THE SAME IS SHOWN ND DESIGNATED ON THE PLAT THEREOF, FILED IN THE OFFICE OF THE COUNTY CLERK OF BERNALILLO COUNTY, NEW MEXICO ON MARCH 25, 1988 IN VOLUME C36, FOLIO 33, SAID EASEMENT BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHWEST CORNER OF THE HEREIN DESCRIBED EASEMENT, BEING A POINT ON THE EAST LINE OF RICHMOND DRIVE, WHENCE THE NORTHWEST CORNER OF SAID TRACT C, AMERICAN SQUARE BEARS N. 00° 01' 28" E., A DISTANCE OF 286.00 FEET, RUNNING

THENCE N. 89° 58' 17" E., A DISTANCE OF 184.49 FEET;

THENCE N. 88° 32' 33" E., A DISTANCE OF 100.26 FEET;

THENCE N. 89° 58'17"E., A DISTANCE OF 207.68 FEET TO THE NORTHEAST CORNER, BEING A POINT ON THE WEST LINE OF BRYN MAWR DRIVE;

THENCE ALONG THE WEST LINE OF BRYN MAWR DRIVE, 20.13 FEET ALONG THE ARC OF A CURVE TO THE LET HAVING A RADIUS OF 157.00 FEET AND A CHORD BEARING AND DISTANCE OF S. 06° W., 20.12 FEET TO THE SOUTHEAST CORNER;

THENCE S. 89° 58' 17" W., A DISTANCE OF 127.63 FEET;

THENCE S. 00° 01' 43" E., A DISTANCE OF 10.00 FEET;

THENCE S. 89° 58' 17" W., A DISTANCE OF 10.00 FEET;

THENCE N. 00° 01' 43" W., A DISTANCE OF 10.00 FEET;

THENCE S. 89° 58' 17" W., A DISTANCE OF 67.83 FEET;

THENCE S. 88° 32' 33" W., A DISTANCE OF 81.71 FEET;

THENCE S. 00° 01' 43" E., A DISTANCE OF 15.00 FEET;

THENCE S. 88° 32' 33" W., A DISTANCE OF 10.00 FEET;

THENCE N. 00° 01' 43" W., A DISTANCE OF 15.00 FEET;

THENCE S. 88° 32' 33" W., A DISTANCE OF 8.54 FEET;

THENCE S. 89° 58' 17" W., A DISTANCE OF 156.19 FEET;

THENCE S. 00° 01' 43" E., A DISTANCE OF 20.00 FEET;

THENCE S. 89° 58' 17 W., A DISTANCE OF 10.00 FEET;

THENCE N. 00° 01' 43" W., A DISTANCE OF 20.00 FEET;

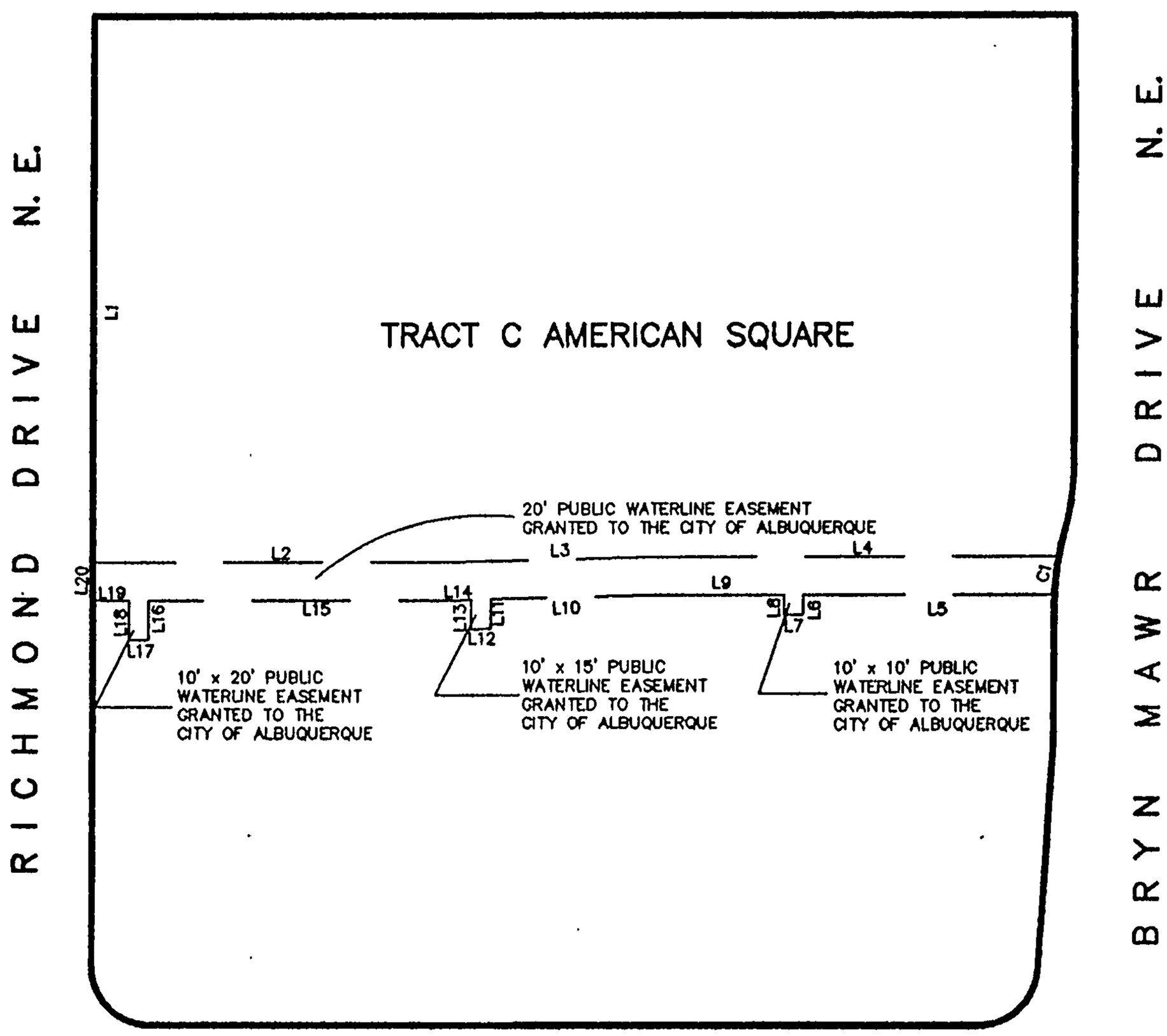
THENCE S. 89° 58' 17" W., A DISTANCE OF 18.30 FEET TO THE SOUTHWEST CORNER, BEING A POINT ON THE EAST LINE OF RICHMOND DRIVE;

THENCE N. 00° 01' 28" W., ALONG THE EAST LINE OF RICHMOND DRIVE, A DISTANCE OF 20.00 FEET TO THE NORTHWEST CORNER AND PLACE OF BEGINNING.

EXHIBIT 'A'
FOR
WATERLINE EASEMENTS

LEGAL DECRIPTION

SEE SHEET 1 OF 2



CURVE TABLE				
No.	RADIUS	LENGTH	DELTA	CHORD BEARING, DISTANCE
C1	157.00'	20.13'	07° 20' 47"	S 06° 00' 00" W, 20.12'

COURSE	BEARING	DISTANCE	COURSE	BEARING	DISTANCE
1	S 00°01'28"E	286.00'	11	S 00°01'43"E	15.00'
2	N 89°58'17"E	184.49'	12	S 88°32'33"W	10.00'
3	N 88°32'33"E	100.26'	13	N 00°01'43"W	15.00'
4	N 89°58'17"E	207.68'	14	S 88°32'33"W	8.54'
5	S 89°58'17"W	127.63'	15	S 89°58'17"W	156.19'
6	S 00°01'43"E	10.00'	16	S 00°01'43"E	20.00'
7	S 89°58'17"W	10.00'	17	S 89°58'17"W	10.00'
8	N 00°01'43"W	10.00'	18	N 00°01'43"W	20.00'
9	N 81°38'33"W	68.57'	19	S 89°58'17"W	18.30'
10	S 88°32'33"W	81.71'	20	N 00°01'28"W	20.00'

N

Scale: 1" = 100'
Order No.:
Field Book: Page:
Ordered By:

TRCWESMT.DWG(4-97)

Anthony L. Harris, N.M.P.S.#11463 HARRIS SURVEYING, INC.
2412-D Monroe Street, NE • Albuquerque, New Mexico 87110
Telephone (505) 889-8056 • FAX (505) 889-8645

97044484

0928

PERMANENT EASEMENT

#5660.81

Grant of Permanent Easement, between Albuquerque Menaul LLC ("Grantor"), whose address is 2835 N. Sheffield Ave ** and the City of Albuquerque, a New Mexico municipal corporation ("City"), whose address is P.O. Box 1293, Albuquerque, New Mexico, 87103. ** Chicago, IL 60657

Grantor grants to the City an exclusive, permanent easement ("Easement") in, over, upon and across the real property described on Exhibit "A" attached hereto ("Property") for the construction, installation, maintenance, repair, modification, replacement and operation of public roadway & sidewalk together with the right to remove trees, bushes, undergrowth and any other obstacles upon the Property if the City determines they interfere with the appropriate use of this Easement.

In the event Grantor constructs any improvements within the easement, the City has the right to enter upon Grantors property at any time and perform whatever inspection, installation, maintenance, repair, modification or removal ("Work") it deems appropriate without liability to the City. If the work effects any Improvements of Encroachments made by the Grantor, the City will not be financially or otherwise responsible for rebuilding or repairing of Improvements or Encroachments. If in the opinion of the City, the Work to be performed by the City could endanger the structural integrity or otherwise damage the Improvements of Encroachments, the Grantor shall, at its own expense, take whatever protective measures are required to safeguard the Improvements or Encroachments.

Grantor covenants and warrants that Grantor is the owner in fee simple of the Property, that Grantor has a good lawful right to convey the Property or any part thereof and that Grantor will forever warrant and defend the title to the Property against all claims from all persons or entities.

The grant and other provisions of this Easement constitute covenants running with the land for the benefit of the City and its successors and assigns until terminated.

WITNESS my hand and seal this 28 day of April, 1997

GRANTOR:

_____
(Individual)

GRANTOR:

By: _____
Its: _____
(Corporation or Partnership)

STATE OF NEW MEXICO
COUNTY OF BERNALILLO
FILED FOR RECORD

97 MAY -2 PM 2:03

97-12-0928-
0931

D. Hernandez

INDIVIDUAL

STATE OF _____)
)ss
COUNTY OF _____)

This instrument was acknowledged before me on _____ day of _____, 19___, by _____.

_____
Notary Public

My Commission Expires:

_____

CORPORATION

STATE OF ILLINOIS)
)ss
COUNTY OF Cook)

This instrument was acknowledged before me on 28th day of April, 1997, by GARY D. Goodman, President of Albuquerque Mexical LLC, a New Mexico corporation, on behalf of the corporation.

Debbie L. Schneider
Notary Public

My Commission Expires:

March 31, 2000

OFFICIAL SEAL
DEBBIE L. SCHNEIDER
NOTARY PUBLIC STATE OF ILLINOIS
MY COMMISSION EXP. MAR. 31, 2000

PARTNERSHIP

STATE OF _____)
)
COUNTY OF _____)

This instrument was acknowledged before me on ____ day of _____, 19___, by _____,partner(s), on behalf of _____, a partnership.

_____
Notary Public

My Commission Expires:

_____

(EXHIBIT "A" ATTACHED)

LEGAL DESCRIPTION

A CERTAIN TRACT OF LAND SITUATE WITHIN SECTION 10, TOWNSHIP 10 NORTH, RANGE 3 EAST OF THE N.M.P.M., ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO BEING A PUBLIC ROADWAY AND SIDEWALK EASEMENT WITHIN TRACT C, AMERICAN SQUARE, AS THE SAME IS SHOWN AND DESIGNATED ON THE PLAT THEREOF, FILED IN THE OFFICE OF THE COUNTY CLERK OF BERNALILLO COUNTY, NEW MEXICO ON MARCH 25, 1988 IN VOLUME C36, FOLIO 33, SAID EASEMENT BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE MOST EASTERLY POINT OF THE HEREIN DESCRIBED EASEMENT, BEING A POINT ON THE NORTH LINE OF MENAUL BOULEVARD, WHENCE THE SOUTHEAST CORNER OF SAID TRACT C, AMERICAN SQUARE BEARS N. 89° 58' 17" E., A DISTANCE OF 15.43 FEET RUNNING THENCE AS AN EASEMENT S. 89° 58' 17" ALONG THE NORTH LINE OF MENAUL BOULEVARD, A DISTANCE OF 235.61 FEET TO THE SOUTHWEST CORNER OF SAID EASEMENT;

THENCE 31.59 FEET ALONG THE ARC OF A CURVE TO THE LEFT HAVING A RADIUS OF 24.00 FEET AND A CHORD BEARING AND DISTANCE OF N. 38° 46' 32" E., 29.36 FEET TO THE NORTHWEST CORNER OF SAID EASEMENT;

THENCE N. 89° 58' 17" E., A DISTANCE OF 55.56 FEET TO THE NORTHEAST CORNER OF SAID EASEMENT;

THENCE 24.47 FEET ALONG THE ARC OF A CURVE TO THE LEFT HAVING A RADIUS OF 24.00 FEET AND A CHORD BEARING AND DISTANCE OF S. 60° 49' 45" W., 23.43 FEET;

THENCE N. 89° 57' 33" E., A DISTANCE OF 69.82 FEET;

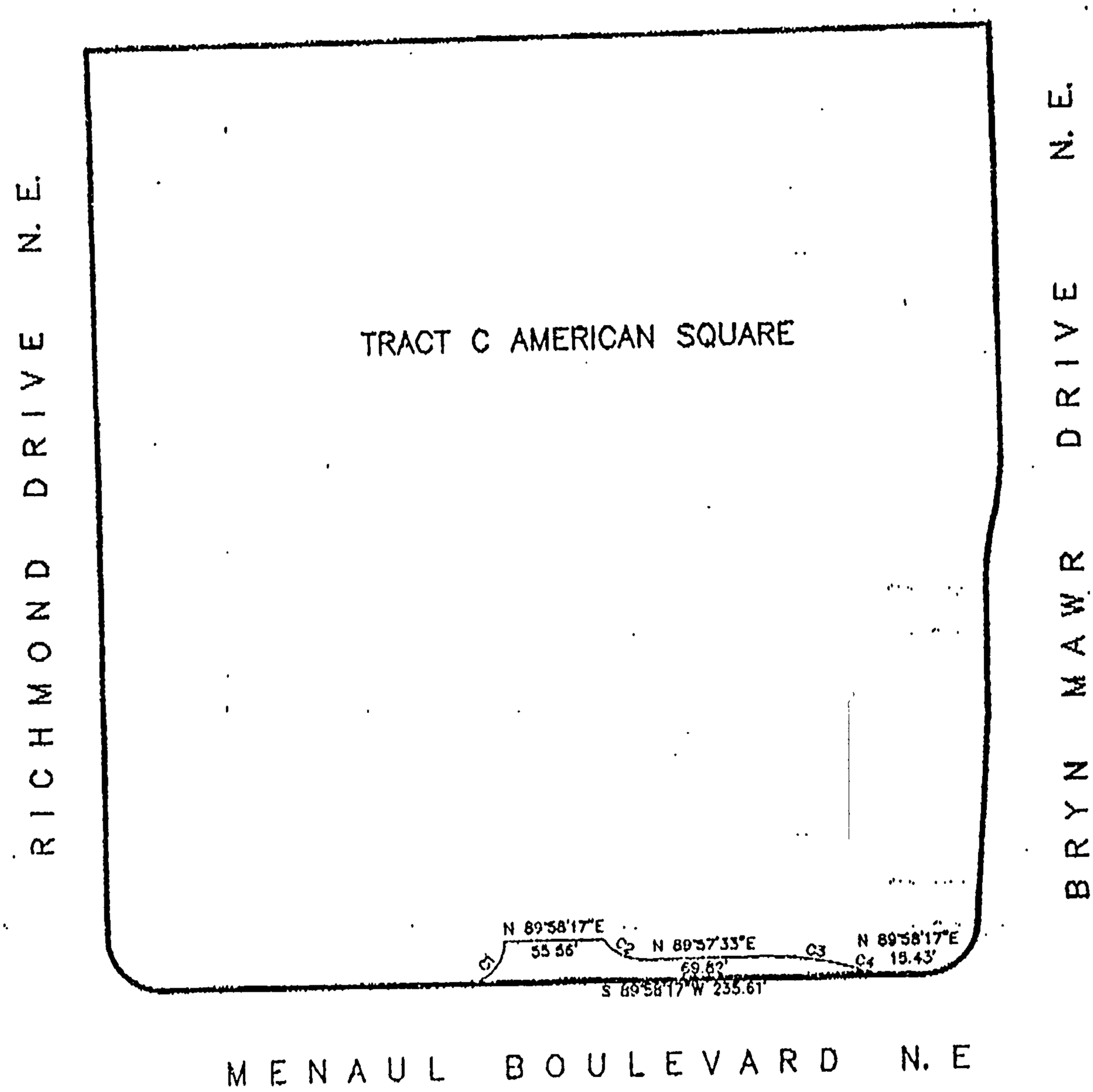
THENCE 45.56 FEET ALONG THE ARC OF A CURVE TO THE RIGHT HAVING A RADIUS OF 156.67 FEET AND A CHORD BEARING AND DISTANCE OF S. 81° 53' 34" E., 44.41 FEET TO A POINT OF REVERSE CURVE;

THENCE 27.95 FEET ALONG THE ARC OF A CURVE TO THE LEFT HAVING A RADIUS OF 143.33 FEET AND A CHORD BEARING AND DISTANCE OF S. 79° 19' 52" E., 27.91 FEET TO THE MOST EASTERLY CORNER OF SAID EASEMENT AND PLACE OF BEGINNING.

EXHIBIT 'A'
FOR
PUBLIC ROADWAY AND SIDEWALK EASEMENTS

LEGAL DESCRIPTION:

SHEET 1 OF 2



N

CURVE TABLE				
No.	RADIUS	LENGTH	DELTA	CHORD BEARING, DISTANCE
C1	24.00'	31.59'	75° 24' 56"	N 38° 46' 32" W, 29.36'
C2	24.00'	24.47'	58° 25' 04"	S 60° 49' 45" W, 23.43'
C3	156.67'	45.56'	16° 39' 42"	S 81° 53' 34" E, 44.41'
C4	143.33'	27.95'	11° 10' 23"	S 79° 19' 52" E, 27.91'

Scale: 1" = 100'
Order No.:
Field Book: Page:
Ordered By:

PRSWSMT.DWG(4-97)

Anthony L. Harris, N.M.P.S.#11463 HARRIS SURVEYING, INC.
2412-D Monroe Street, NE • Albuquerque, New Mexico 87110
Telephone (505) 889-8058 • FAX (505) 889-8646

The property shown hereon is not within the 100 year flood plain. (Zone" C ", FIRM Panel # 350002-0023 C Dated: 10-14-83

CONTRACT CONTROL FORM

PRELIMINARY REVIEW

Project # 566081

CCN # 9701199

Contact Person Terri Martin

Phone No. 924-3997

New or ~~Ext.~~ #

(File w/SIA)

Type of Agreement : Permanent Easement (Roadway + S/W)

Description/Project: J.C. Penny @ American Square

Public Works/Div.: Project Review Section

Developer: Albq. Monal LLC

Contract Amount $ -0-

SIA Contract Period: 5-1-97 - (See SIA)

Contract Amount $

SW'S Contract Period: ____ - ____

Project Completed Date:

DRAFT CONTRACT:

Rec'd by Legal: ____ Rejected/Returned to Dept.: ____/____

Returned to Legal: ____/____ Approved: ____ Initials: ____

FINANCIAL GUARANTY:

Letter of Credit No.: ____ Date: ____ Attached: Yes___ No___ Initial____

Other: Type ____ Date: ____ Attached: Yes___ No___ Initial____

FINAL CONTRACT REVIEW

APPROVALS REQUIRED:

	Date Delivered	Returned to Dept.	Approved By	Approval Date:
~~Purchasing~~: Traffic	4-30-97			4-30-97
Asst. City Attorney:	4-30-97 TL			5/1/97
CIP:				
City Attorney:				
CAO:				
Other:				
Council:	EC No.:	Approved:		Date:

DISTRIBUTION:	Date:	By:
User Department		
Vendor		
City Clerk	5-9-97 TL	
Treasury		

Revised 9/6/95 WP+125805/tsl

CITY OF
Albuquerque

November 6, 1996

Martin J. Chávez, Mayor

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

RE: AMERICAN SQUARE - JC PENNY (H16-D83B). CONCEPTUAL GRADING AND DRAINAGE PLAN FOR SITE DEVELOPMENT FOR BUILDING PERMIT APPROVAL. ENGINEER'S STAMP DATED NOVEMBER 1, 1996.

Dear Mr. Krenik:

Based on the information provided on your November 4, 1996 submittal, the above referenced project is approved for Site Development for Building Permit. With your next submittal, please address the following comments:

1. The master plan uses "old hydrology." By how much will this affect your allowable discharge?

2. As explained in the master plan, all storm water from this basin was intended to discharge south to Menaul.. Is there capacity in the channel along Richmond Drive for this site's storm water? Assume the entire basin is developed. You will need AMAFCA's concurrence to discharge to the channel.

If I can be of further assistance, please feel free to contact me at 768-3622.

Sincerely,

Lisa Ann Manwill
Engineering Assoc./Hyd.

c: Andrew Garcia
File

CITY OF
Albuquerque

October 14, 1997

Martin J. Chávez, Mayor

CERTIFICATE OF COMPLETION AND ACCEPTANCE

Gary Goodman
President
Albuquerque Menaul LLC
2835 N. Sheffield Ave.
Chicago, IL 60657

RE: J.C. PENNEY @ AMERICAN SQUARE; CITY PROJECT NO. 566081; MAP NO. H-16

Dear Mr. Goodman:

This is to certify that the City of Albuquerque accepts the construction of the infrastructure provided in the Work Order Construction Plans, City Project No. 566081 in compliance with the completion of the required public infrastructure listed in the Subdivision Improvements Agreement (SIA) between Albuquerque Menaul LLC and the City of Albuquerque executed on March 10, 1997.

Having satisfied the requirements referenced above, the SIA and any associated Financial Guaranty, held by the City, can now be released. The Contractors one-year warranty period started at the date of acceptance by the Chief Construction Engineer, dated October 1, 1997.

Please be advised this Certificate of Completion and Acceptance shall only become effective upon final plat approval and filing in the office of the Bernalillo County Clerk's Office.

Should you have any questions or issues regarding this project, please contact me.

Sincerely,

Ricardo B. Roybal, P.E.
City Engineer
Dev. & Bld. Services Div.
Public Works Department

c. Greg Krenik, Mark Goodwin & Assoc., P.A.
American National Bank and Trust Co. Of Chicago
Teresa Martin, Project Administrator, Project Review
Theresa Lucero, Assistant Project Administrator , PWD
Fred Aguirre, Hydrology, PWD
Richard Dourte, Transportation Development, PWD
Roger Green, Utility Development, PWD
Ed Stang, Planning Section, CIP
f/Project file

TO: BERNIE MONTOYA
FROM: GREG KRENIK

CITY OF
Albuquerque

September 23, 1997

Martin J. Chávez, Mayor

Bernie J. Montoya C.E.
Associate Engineer
Hydrology

Bernie,

Be advised that ductile iron or cast iron are the only choices for drainage piping under a building whose code type of construction is yet to be determined (per 1991 UPC 401). The line was inspected and approved on May 30, 1997.

If I can be of further assistance, please feel free to call me at 924-3314.

Sincerely,

William L. Jenkins
Supervisor, Mechanical Section

WLJ/bag
cc: Andrew Garcia
File
Gary Goodman
George Rainhart
Greg Krenik

BUILDING SERVICE CENTER
ONE STOP
600 SECOND ST. N.W./2ND FLOOR
ATTENTION: _____
505-924-3900

E-6

Records Withdrawal Form

Project No. H-16/D-83B / DRB-96-590

Date: 12/8/97

Project Title: American Square - J.C. Penny

a. File b. Mylars c. Redlines/Comments

d. Other _____

Requested By: Bohannan-Huston Jean Swalley Phone No.: 823-1000
Company

Anticipated Return Date: ASAP

Receipt Acknowledged

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

Delivery Picked Up By:

Name: BILL ELIAS
Print

Organization: Reliable

14/1X401
1/1X900
24X30

Signed: Bill Elias

Phone No. 2471578

Date: 12-8-97

Office Use Only

Return Acknowledged

Received by: _____
Print

Date: _____

1 copy each - 24" x 30" Grading & Drainage Plan (bond)
- 8½" x 11" marked report pages as follows:

originals returned to Margaret/TINA at City
copies to Jean Swalley at Bohannan Huston

pages 1-6 Drainage Calculations (dated 4.7.97)
pages 1 & 2 Drainage Calculations (dated 11.4.96)
pages 7/17 through 12/17 "Downstream Analysis", Drainage Calcs. (dated 11.4.96)

CITY OF
Albuquerque
Public Works Department

Martin J. Chávez, Mayor

Robert E. Gurulé, Director

August 20,1997

Greg Krenik
D. Mark Goodwin & Associates
P.O. Box 90606
Albuquerque, New Mexico 87199

RE: ENGINEER CERTIFICATION FOR AMERICAN SQUARE - JC PENNY (H16-D83B)
CERTIFICATION STATEMENT DATED 8/13/97

Dear Mr. Krenik:

Based on the information provided on your August 14,1997 submittal, Engineer Certification for the above referenced site is acceptable for a 30-day temporary of occupancy release.

Please be advised that the final C.O. will be issued when our office receives the copy of the letter of acceptance for the work-order. Also, please be advised that the City of Albuquerque plumbing section will need to approve the 12" D.I. pipe which was installed under the future Major 2 building prior to issuance of the building permit.

If I can be of further assistance, please feel free to contact me 924-3986.

Sincerely

Bernie J. Montoya

Bernie J. Montoya CE
Associate Engineer

C: Andrew Garcia
File
Gary Goodman
George Rainhart

DRAINAGE INFORMATION SHEET

PROJECT TITLE: American Square - JC Penny ZONE ATLAS/DRNG,FILE#: H-16 083B

DRB #: 96-590 EPC #: 96-129 WORK ORDER #: 566081

LEGAL DESCRIPTION: American Square Tract C

CITY ADDRESS: 3101 MENAUL BLVD NE

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

ADDRESS: P.O. Box 90606, Alb., NM 87199 PHONE: 345-2010

OWNER: Goodman Investment Co. CONTACT: Gary Goodman

ADDRESS: 2835 N. Sheffield Ave.,Chicago, IL 60657 PHONE: (312) 281-0800

ARCHITECT: George Rainhart Architects CONTACT: George Rainhart

ADDRESS: 2325 San Pedro NE, Suite 2B, Alb., NM 8711 PHONE: 884-9110

SURVEYOR: N/A CONTACT: _____

ADDRESS: _____ PHONE: _____

CONTRACTOR: N/A CONTACT: _____

ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:

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

PRE-DESIGN MEETING:

- ___ YES
- ___ NO
- ___ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

- ___ SKETCH PLAT APPROVAL
- ___ PRELIMINARY PLAT APPROVAL
- ___ S. DEV. PLAN FOR SUB'D APPROVAL
- ___ S. DEV. PLAN FOR BLDG PERMIT APPROVAL
- ___ SECTOR PLAN APPROVAL
- ___ FINAL PLAT APPROVAL
- ___ FOUNDATION PERMIT APPROVAL
- ___ BUILDING PERMIT APPROVAL
- X CERTIFICATION OF OCCUPANCY APPROVAL
- ___ GRADING PERMIT APPROVAL
- ___ PAVING PERMIT APPROVAL
- ___ S.A.D. DRAINAGE REPORT
- ___ DRAINAGE REQUIREMENTS
- X OTHER IMMEDIATE TEMP (Specify)

30-day Temp on Aug 15, 1997 LAM

RECEIVED AUG 14 1997 HYDROLOGY SECTION

DATE SUBMITTED: 8-14-97

BY: Gregory J. Krenik, PE

CITY OF
Albuquerque
Public Works Department

Martin J. Chávez, Mayor

Robert E. Gurulé, Director

April 15, 1997

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

RE: REVISED DRAINAGE PLAN FOR AMERICAN SQUARE-JC PENNY (H16-D83B)
REVISION DATED 4/4/97

Dear Mr. Krenik:

Based on the information provided on your April 7,1997 resubmittal, the above referenced site is approved for Building Permit.

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

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

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

C: Andrew Garcia
File

Sincerely

Bernie J. Montoya CE
Engineering Associate

DRAINAGE INFORMATION SHEET

PROJECT TITLE: American Square - JC Penny ZONE ATLAS/DRNG,FILE#: H-16 / U836

DRB #: _____ EPC #: 96-129 WORK ORDER #: _____

LEGAL DESCRIPTION: American Square Tract C

CITY ADDRESS: _____

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

ADDRESS: P.O. Box 90606, Alb., NM 87199 PHONE: 345-2010

OWNER: Goodman Investment Co. CONTACT: Gary Goodman

ADDRESS: 2835 N. Sheffield Ave.,Chicago, IL 60657 PHONE: (312) 281-0800

ARCHITECT: George Rainhart Architects CONTACT: George Rainhart

ADDRESS: 2325 San Pedro NE, Suite 2B, Alb., NM 87110 PHONE: 884-9110

SURVEYOR: N/A CONTACT: _____

ADDRESS: _____ PHONE: _____

CONTRACTOR: N/A CONTACT: _____

ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:

- ____ DRAINAGE REPORT
- ____ DRAINAGE PLAN
- X CONCEPTUAL GRADING & DRAINAGE PLAN
- ____ GRADING PLAN
- ____ EROSION CONTROL PLAN
- ____ ENGINEER'S CERTIFICATION
- ____ OTHER

PRE-DESIGN MEETING:

- ____ YES
- X NO
- ____ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

- ____ SKETCH PLAT APPROVAL
- ____ PRELIMINARY PLAT APPROVAL
- ____ S. DEV. PLAN FOR SUB'D APPROVAL
- X S. DEV. PLAN FOR BLDG PERMIT APPROVAL
- ____ SECTOR PLAN APPROVAL
- ____ FINAL PLAT APPROVAL
- ____ FOUNDATION PERMIT APPROVAL
- ____ BUILDING PERMIT APPROVAL
- ____ CERTIFICATION OF OCCUPANCY APPROVAL
- ____ GRADING PERMIT APPROVAL
- ____ PAVING PERMIT APPROVAL
- ____ S.A.D. DRAINAGE REPORT
- ____ DRAINAGE REQUIREMENTS
- ____ OTHER _____ (Specify)

DATE SUBMITTED: 11-4-96

BY: _____
Gregory J. Krenik, PE

RECEIVED
NOV - 4 1996
HYDROLOGY DIVISION

DRAINAGE INFORMATION SHEET

D83B

PROJECT TITLE: American Square - JC Penny ZONE ATLAS/DRNG,FILE#: H-16

DRB #: _____ EPC #: 96-129 WORK ORDER #: _____

LEGAL DESCRIPTION: American Square Tract C

CITY ADDRESS: _____

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

ADDRESS: P.O. Box 90606, Alb., NM 87199 PHONE: 345-2010

OWNER: Goodman Investment Co. CONTACT: Gary Goodman

ADDRESS: 2835 N. Sheffield Ave.,Chicago, IL 60657 PHONE: (312) 281-0800

ARCHITECT: George Rainhart Architects CONTACT: George Rainhart

ADDRESS: 2325 San Pedro NE, Suite 2B, Alb., NM 8711 PHONE: 884-9110

SURVEYOR: N/A CONTACT: _____

ADDRESS: _____ PHONE: _____

CONTRACTOR: N/A CONTACT: _____

ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:

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

PRE-DESIGN MEETING:

- ___ YES
- X 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
- X BUILDING PERMIT APPROVAL
- ___ CERTIFICATION OF OCCUPANCY APPROVAL
- ___ GRADING PERMIT APPROVAL
- ___ PAVING PERMIT APPROVAL
- ___ S.A.D. DRAINAGE REPORT
- ___ DRAINAGE REQUIREMENTS
- ___ OTHER _____ (Specify)

DATE SUBMITTED: 2-7-97

BY: _____

Gregory J. Krenik, PE

CITY OF
Albuquerque
Public Works Department

February 18, 1997

Martin J. Chávez, Mayor

Robert E. Gurulé, Director

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

RE: AMERICAN SQUARE - JC PENNY (H16-D83B). DRAINAGE REPORT FOR BUILDING PERMIT APPROVAL. ENGINEER'S STAMP DATED 2-10-97.

Dear Mr. Krenik:

Based on the information provided on your February 7, 1997 submittal, the above referenced project is approved for Building Permit. City Hydrology has the following comments:

1. The installation of the new catch basin (CB #4) will require a Work Order Permit.

2. Include the new catch basin and 10-feet of 18-inch RCP on your infrastructure list.

3. For maintenance purposes, it is strongly recommended that storm drain pipe not be located below the building.

Prior to Certificate of Occupancy, an Engineer's Certification will be required.

If I can be of further assistance, please feel free to contact me at 768-3622.

Sincerely,

Lisa Ann Manwill, P.E.
Engineering Assoc./Hyd.

c: Gary Goodman - Owner
Andrew Garcia - COA
File

CITY OF
Albuquerque

Public Works Department

March 4, 1997

Martin J. Chávez, Mayor

Robert E. Gurulé, Director

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

RE: AMERICAN SQUARE - JC PENNY (H16-D83B). UPDATED GRADING AND DRAINAGE PLAN FOR BUILDING PERMIT APPROVAL. ENGINEER'S STAMP DATED 2-25-97.

Dear Mr. Krenik:

Based on the updated information (sump pump) provided on your February 25, 1997 submittal, the above referenced project is approved for Building Permit. The following comments were made previously and are reiterated with this letter.

1. The installation of the new catch basin (CB #4) will require a Work Order Permit.

2. Include the new catch basin and 10-feet of 18-inch RCP on your infrastructure list.

3. For maintenance purposes, it is strongly recommended that storm drain pipe not be located below the building.

Prior to Certificate of Occupancy, an Engineer's Certification will be required.

If I can be of further assistance, please feel free to contact me at 768-3622.

Sincerely,

Lisa Ann Manwill, P.E.
Engineering Assoc./Hyd.

c: Andrew Garcia
File

DRAINAGE INFORMATION SHEET

PROJECT TITLE: American Square - JC Penny ZONE ATLAS/DRNG,FILE#: H-16 D83B

DRB #: _____ EPC #: 96-129 WORK ORDER #: _____

LEGAL DESCRIPTION: American Square Tract C

CITY ADDRESS: _____

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

ADDRESS: P.O. Box 90606, Alb., NM 87199 PHONE: 345-2010

OWNER: Goodman Investment Co. CONTACT: Gary Goodman

ADDRESS: 2835 N. Sheffield Ave.,Chicago, IL 60657 PHONE: (312) 281-0800

ARCHITECT: George Rainhart Architects CONTACT: George Rainhart

ADDRESS: 2325 San Pedro NE, Suite 2B, Alb., NM 87110 PHONE: 884-9110

SURVEYOR: N/A CONTACT: _____

ADDRESS: _____ PHONE: _____

CONTRACTOR: N/A CONTACT: _____

ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:

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

PRE-DESIGN MEETING:

___ YES
X 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
X BUILDING PERMIT APPROVAL
___ CERTIFICATION OF OCCUPANCY APPROVAL
___ GRADING PERMIT APPROVAL
___ PAVING PERMIT APPROVAL
___ S.A.D. DRAINAGE REPORT
___ DRAINAGE REQUIREMENTS
___ OTHER _____ (Specify)

RECEIVED FEB 25 1997 HYDROLOGY SECTION

Lisa - We added a sump pump at the NE corner of the BLDG to get a ramp up from below grade.

Greg

DATE SUBMITTED: 2-25-97

BY: _____
Gregory J. Krenik, PE

CITY OF
Albuquerque

March 18, 1997

Martin J. Chávez, Mayor

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

RE: AMERICAN SQUARE - JC PENNY (H16-D83B). UPDATED GRADING AND DRAINAGE PLAN FOR BUILDING PERMIT APPROVAL. ENGINEER'S STAMP DATED 3-10-97.

Dear Mr. Krenik:

Based on the updated information provided on your March 10, 1997 submittal, the above referenced project is approved for Building Permit.

Prior to Certificate of Occupancy, an Engineer's Certification will be required. Another requirement for Certificate of Occupancy approval will be concurrence from the Mechanical Division of Code Administration for the storm drain pipe below the building. Prior to laying the storm drain pipe below the building, I strongly suggest your get approval from the Mechanical Division.

If I can be of further assistance, please feel free to contact me at 768-3622.

Sincerely,

Lisa Ann Manwill, P.E.
Engineering Assoc./Hyd.

c: Mike Weix
Andrew Garcia
File

DRAINAGE INFORMATION SHEET

PROJECT TITLE: American Square - JC Penny ZONE ATLAS/DRNG,FILE#: H-16 / D83B

DRB #: 96-590 EPC #: 96-129 WORK ORDER #: 566081

LEGAL DESCRIPTION: American Square Tract C

CITY ADDRESS:

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

ADDRESS: P.O. Box 90606, Alb., NM 87199 PHONE: 345-2010

OWNER: Goodman Investment Co. CONTACT: Gary Goodman

ADDRESS: 2835 N. Sheffield Ave.,Chicago, IL 60657 PHONE: (312) 281-0800

ARCHITECT: George Rainhart Architects CONTACT: George Rainhart

ADDRESS: 2325 San Pedro NE, Suite 2B, Alb., NM 8711 PHONE: 884-9110

SURVEYOR: N/A CONTACT:

ADDRESS: PHONE:

CONTRACTOR: N/A CONTACT:

ADDRESS: PHONE:

TYPE OF SUBMITTAL:

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

PRE-DESIGN MEETING:

___ YES
X 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
X BUILDING PERMIT APPROVAL
___ CERTIFICATION OF OCCUPANCY APPROVAL
___ GRADING PERMIT APPROVAL
___ PAVING PERMIT APPROVAL
___ S.A.D. DRAINAGE REPORT
___ DRAINAGE REQUIREMENTS
___ OTHER ___ (Specify)

DATE SUBMITTED: 4-4-97

BY: Gregory J. Krenik, PE

RECEIVED
APR 07 1997
HYDROLOGY SECTION

[redacted]

RECEIVED
APR 07 1997
HYDROLOGY SECTION

MARK GOODWIN & ASSOCIATES

CONSULTING ENGINEERS

dmg

DRAINAGE CALCULATIONS

for

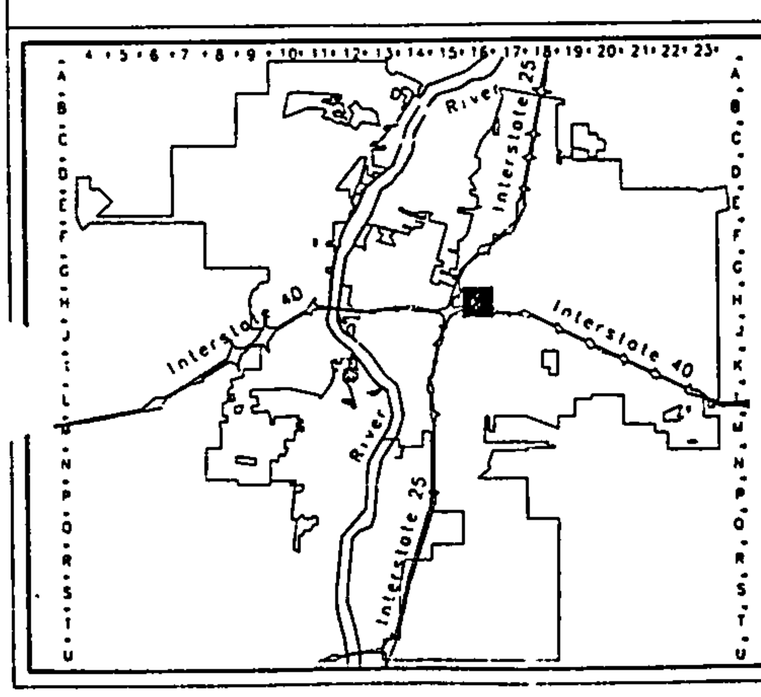
AMERICAN SQUARE
J.C. Penney

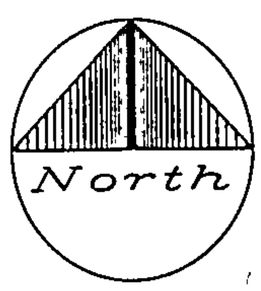
RECEIVED
APR 07 1997
HYDROLOGY SECTION

November 1996

GREGORY JAMES BREMER
NEW MEXICO
11829
11-1-96
REGISTERED PROFESSIONAL ENGINEER

12-19-96
2-7-97
3-28-97





750 375 0 750

Scale: 1" = 750'

Albuquerque Geographic Information System

City of Albuquerque

© Planning Department July 07, 1993

LEGAL DESCRIPTION

T10N

R3E

SEC 10

UNIFORM PROPERTY CODE

1-016-059

H-16-Z

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

PROJECT AMERICAN SQUARE - JC
SUBJECT DRAINAGE CALCS
BY GJK DATE 11-1-96
CHECKED _____ DATE _____
SHEET 1 OF ____

REVISED 12-19-96
2-6-97
3-27-97

- TOTAL SITE = 5.9220 AC.
- THIS SITE IS BASIN "A6" PER THE DRAINAGE REPORT FOR AMERICAN SQUARE Prepared BY ESPEY, HUSTON & ASSOCIATES, INC. - DATED 4-5-89.
- THERE ARE NO OFFSITE FLOWS THAT ENTER THIS SITE.
- IT DOES NOT LIE WITHIN A 100 YR FLOOD ZONE.
- THIS SITE IS TO DRAIN TO MENAUL BLVD THROUGH SIDEWALK CULVERTS PER THE E,H & ASSOC. REPORT.
- THE ALLOWABLE DISCHARGE IS 22.8 CFS DIRECT DISCHARGE
- THE SITE WILL BE SPLIT INTO FIVE DRAINAGE BASINS.

BASIN 1 - DRAINS OFFSITE TO THE NW TO THE CHANNEL AT RICHMOND THAT DRAINS TO THE N. DIVERSION CHANNEL.

BASIN 2 - DRAINS TO THE TRUCK WELL THEN IS PUMPED BY A SUMP PUMP TO BASIN 1.

BASIN 3 - DRAINS TO THE WEST PARKING LOT INLET

BASIN 4 - DRAINS TO THE EAST PARKING LOT INLET

BASIN 5 - DRAINS TO MENAUL THROUGH THE SOUTH ENTRANCE

- $P_1 = 1.97$ in DT = 0.03333 HR
  $P_6 = 2.30$ in TP = 0.1333 HR
  $P_{24} = 2.65$ in

BASIN	AREA	TYPE "B"	TYPE "D"
1	0.9989 AC	0.0878 AC = 8.79%	91.21%
2	0.4220 AC	0.0730 AC = 17.30%	82.70%
3	1.2700 AC	0.1151 AC = 9.07%	90.93%
4	2.3656 AC	0.1159 AC = 4.90%	95.10%
5	0.8655 AC	0.2279 AC = 26.34%	73.66%
	5.9220		

FROM AHYMO OUTPUT - SHEETS 8-22

BASIN	Q (CFS)
1	4.41
2	1.78
3	5.59
4	10.63
5	3.45
	25.86

TOTAL THAT DRAINS TO MENAUL
25.86 - 4.41 - 1.78 = 19.67 CFS < 22.8 CFS
OK

TOTAL THAT DRAINS TO RICHMOND
4.41 + 1.78 = 6.19 CFS

pages 1-6

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

PROJECT AMERICAN SQUARE - JC
SUBJECT DRAINAGE CALCS
BY GJK DATE 12-19-96
CHECKED _____ DATE _____
SHEET 2 OF ____
REVISED 2-6-97

- RUN OLD REPORT WITH NEW HYDROLOGY

FROM THE REPORT (E,H & A)(SHEET 4) TYPE "D" = 83% TYPE "B" = 17% } DEVELOPED CONDITIONS PER: E,H & ASSOC. REPORT

FROM THE AHYMO OUTPUT SHEETS 23-25:

Q = 142.23 CFS

THIS IS LARGER THAN THE 113.1 CFS PER THE E,H & ASSOC REPORT. (SEE SHT 4)

SINCE THE CAPACITY OF THE CHANNEL IS 842 CFS THE FLOW IS WELL WITHIN LIMITS. (SEE SHT 5)

- ALL FLOW FOR THIS BASIN WILL GET TO THE NORTH DIVERSION CHANNEL.

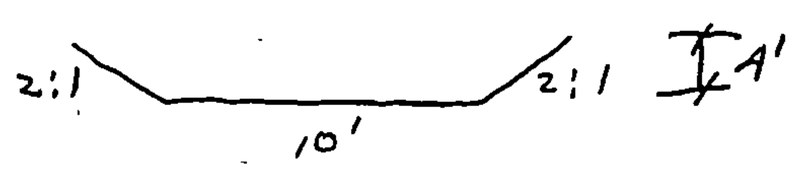
- THE INLET IN MENAUL TIES INTO A 30" STORMDRAIN THAT RUNS TO THE WEST AND DISCHARGES TO THE DIVERSION CHANNEL

- THE CHANNEL RUNNING EAST-WEST ACROSS THE ADJACENT PROPERTY (WHICH IS UNDEVELOPED) RUNS FROM RICHMOND WEST TO THE DIVERSION CHANNEL. THIS EXISTING CHANNEL IS ALREADY ACCEPTING RUNOFF FROM RICHMOND AND CLAREMONT.

- FIND d IN the channel from Richmond TO THE NORTH DIVERSION CHANNEL.

USE UPDATED FLOW

S = 0.009 n = 0.013



d = 1.12
wp = 14.48
A = 13.7088
V = 10.4556 f/s
Q = 143.33 cfs ≈ 142.23 OK

this leaves 4 - 1.12 = 2.88' OF FREEBOARD.

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

PROJECT AMERICAN SQUARE - JC
SUBJECT DRAINAGE CALCS
BY GJK DATE 11-1-96
CHECKED _____ DATE _____
SHEET 3 OF ____

REVISED 12-19-96 3-27-97
2-6-97

- SIZE INLETS FOR SUMP CONDITIONS $Q/P = 3.0 H^{1.5}$

ASSUME 50% clogged

BASIN 3 — $Q = 5.59$ CFS
BASIN 4 — $Q = 10.63$

- USE A DOUBLE "D" INLET $P = 17$

BASIN 3
$H = 0.36' < 0.5$ OK

- USE TWO DOUBLE "D" INLETS $P = 34$

BASIN 4
$H = 0.35' < 0.5$ OK

- ADDED FLOW TO RICHMOND: WILL NOT AFFECT THE CAPACITY OF THE CHANNEL.

EXISTING Q PER EHA REPORT BUT REVISED WITH NEW HYDROLOGY see PAGE 2

$Q = 142.23$ CFS

ADDED FLOW = 6.19 CFS

TOTAL $Q = 148.42$ CFS

FIND NEW d in CHANNEL

$d = 1.14$
$WP = 14.56$
$A = 13.999$
$V = 10.56$ F/S
$Q = 147.88$ CFS ≈ 148.42 OK

THIS LEAVES 2.86' OF FREEBOARD

- SIZE INLET IN SUMP IN TRUCK WELL

$Q = 1.78$ CFS $Q/P = 3.0 H^{1.5}$

USE A 2.5 x 3.0 OPENING
$H = 0.23'$ OK

- SIZE STORMDRAIN PIPES

18" RCP AT 1% CARRIES 10.5 CFS
18" RCP AT 3% CARRIES 18.0 CFS

SEE NOMO SHEET 6

ESPEY, HUSTON & ASSOCIATES INC.
Engineering & Environmental Consultants

AMERICAN SQUARE

SUBJECT CALCULATIONS

SHEET 3 OF 10 BY DL
DATE 8-7-86 CK BY

REVISED AP# 13 8-26-86 DL
* UPDATED: 4-5-89 DL

DEVELOPED CONDITIONS

	AP#	BASIN	AREA AC±	L FT.	H FT.	tc MIN.	%IMP.	'C'	Q_{100} CFS	Q_{10} CFS	CN	RO_{100} IN.	RO_{10} IN	V_{100} CF.	V_{10} CF
	1	A1	2.2	800	10	10	100	0.90	9.2	6.0	89	1.2	0.6	9580	4790
	2	A2	3.7	710	10	10	82	0.82	14.1	9.3	89	1.2	0.6	16,120	8060
*	3	A3	8.0	900	14	10	85	0.83	30.9	20.3	92	1.45	0.75	42,108	21,780
	4	A4	6.4	945	17	10	89	0.87	25.9	17.0	89	1.2	0.6	27,880	13,940
	5	A5	3.9	715	23	10	90	0.88	16.0	10.5	89	1.2	0.6	16,990	8495
JC PENNEY	6	A6	5.9	500	12	10	85	0.83	22.8	15.0	89	1.2	0.6	25,700	12,850
	7	B1	2.6	820	15	10	88	0.84	10.2	6.7	89	1.2	0.6	11,330	5665
*	8	B2	4.0	1000	23	10	82	0.82	15.3	10.0	90	1.3	0.65	18,876	9438
	9	B3	5.6	600	20	10	88	0.86	22.4	14.7	90	1.3	0.65	26,430	13,215
	10	B4	5.3	600	23	10	75	0.76	18.7	12.3	89	1.2	0.6	23,090	11,545
	11	B5	4.2	950	25	10	86	0.84	16.4	10.8	92	1.45	0.75	22,110	11,055
*	12	B1-3 B6	16.5	1345	28	10	85	0.84	64.4	42.3	90	1.3	0.65	77,864	38,932
TOTAL TO CHANNEL *	13	B1-6 OFFSITE	33.9	2000	33	13	83	0.82	113.1	74.3	90	1.3	0.65	159,974	79,987
*	4	A3-4	14.4	1845	34	12	87	0.87	53.1	34.9	91	1.4	0.7	73,180	36,590
*	14	B6	4.3	725	14	10	85	0.83	16.6	10.9	92	1.45	0.75	22,633	11,707

ESPEY, HUSTON & ASSOCIATES INC.
Engineering & Environmental Consultants

AMERICAN SQUARE

SUBJECT CALCULATIONS
SHEET 8 OF 10 BY DL
DATE 8-7-86 CK BY

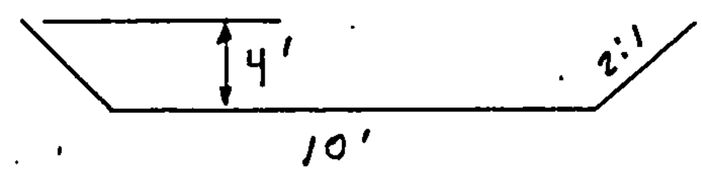
* UPDATED 4-5-89

C. CHECK EXISTING CHANNEL AT RICHMOND FOR CAPACITY (AP # 13)

CHECK CHANNEL :

* $Q_{100} = 113.1$ CFS

WITH FB = 1' :



SECTION

$A = 48$ SF
$P = 10 + 2\sqrt{45} = 23.4$
$R = A/P = 2.05$
$n = 0.013$
$S = 0.009$

$$Q = \frac{1.49}{0.013}(48)(2.05)^{2/3}(0.009)^{1/2}$$

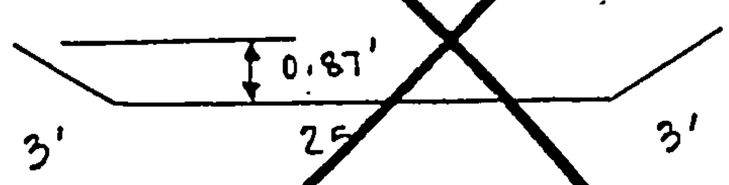
$Q_{max} = 842$ CFS >> Q_{100} (113.1)* ✓

* CHECK INLET - CONCRETE RUNDOWN:

$Q_{100} = 113.1$ CFS

USE WEIR EQN : $Q = 3.33 L H^{3/2}$

$H_{MAX} = 0.87'$ PER ORDINANCE

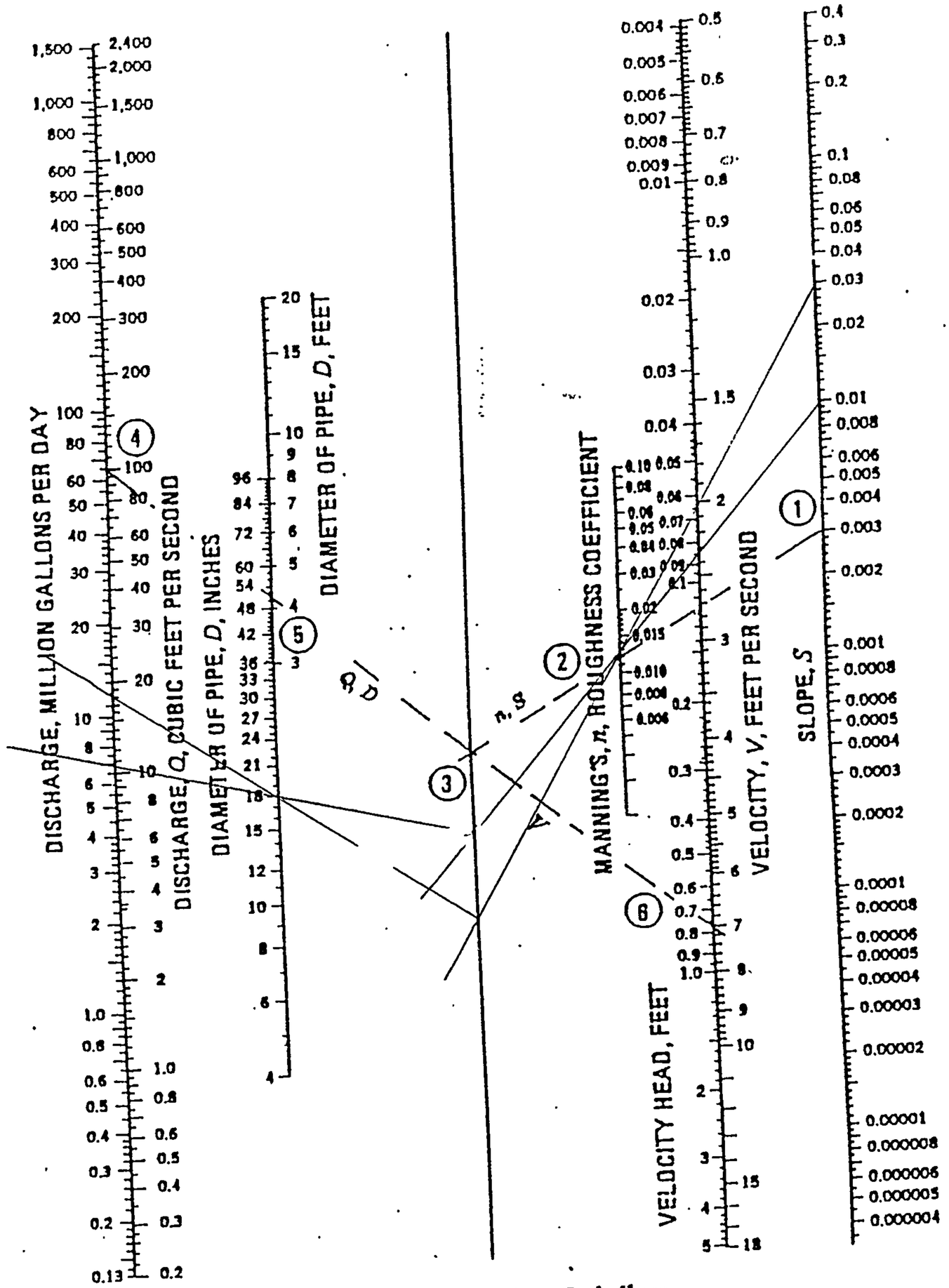


SECTION

$Q_{MAX} = 3.33(25)(0.87)^{3/2} = 67.6$ CFS < Q_{100} (113.1)

→ NEW RUNDOWN REQ'D FOR DEVELOPED FLOWS

Reference: American Concrete Pipe Association (1980).



B) Circular Pipe Solution

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

PROJECT AMERICAN SQUARE - JC
SUBJECT DRAINAGE CALCS
BY GSK DATE 2-6-97
CHECKED _____ DATE _____
SHEET 7 OF ____
REVISED 3-27-97

SIZE SUMP IN TRUCK WELL

V = 0.0646 AC-FT
= 2814 CF

SUMP TO BE 6' x 6' x 5' DEEP

A DUPLEX PUMP STATION WITH 2 - 300 GPM PUMPS

ELEV	OUTFLOW	STORAGE
1.0	0.0	0.0
2.0	0.001	0.000826
3.0	0.01	0.001653
4.0	0.68	0.002479
5.0	0.69	0.003306
6.0	1.32	0.004132
7.0	1.33	0.007415
8.0	1.34	0.016024

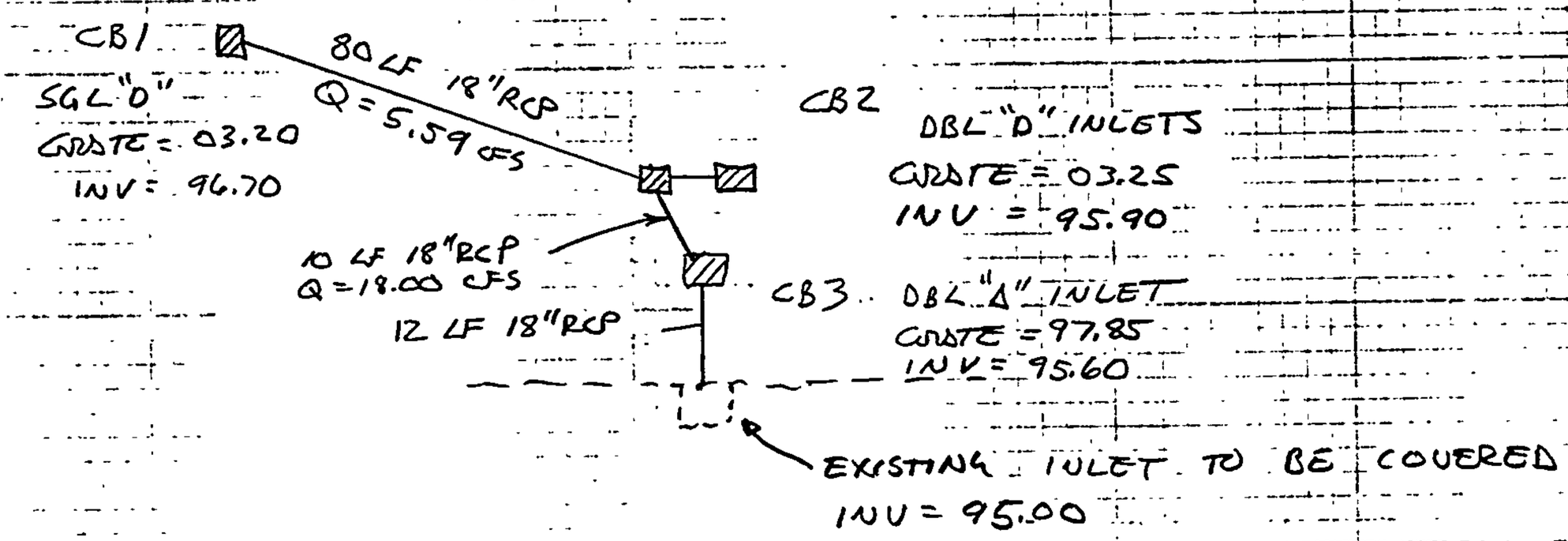
FROM AHYMO OUTPUT SHEETS 26-29

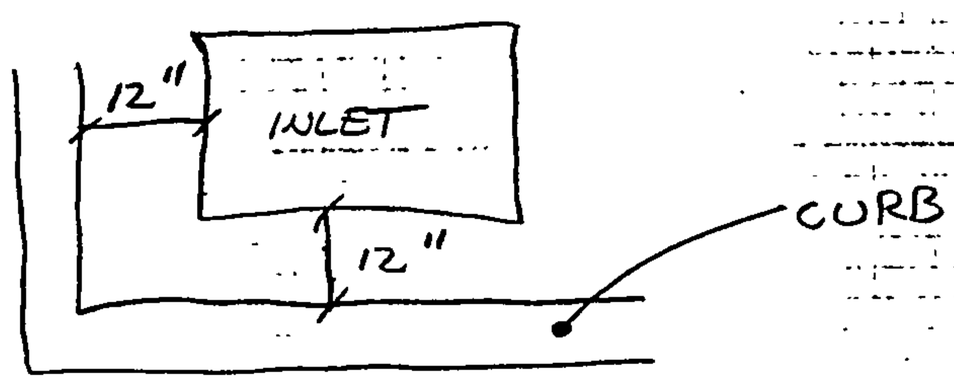
PEAK DISCHARGE = 1.33 CFS

MAXIMUM WATERSURFACE = 7.019

OK

STORMDRAIN SYSTEM LAYOUT





TYPICAL INLET PLACEMENT

```
START                    TIME=0.0
***** HYDROGRAPH FOR AMERICAN SQUARE BASIN 1
RAINFALL                 TYPE=1 RAIN QUARTER=0.0 IN
                         RAIN ONE=1.97 IN RAIN SIX=2.30 IN
                         RAIN DAY=2.65 IN DT=0.03333 HR
COMPUTE NM HYD           ID=1 HYD NO=101.1 AREA=0.001561 SQ MI
                         PER A=0 B=8.79 C=0.0 D=91.21
                         TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD                 ID=1 CODE=1
FINISH
```

8

```
AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
     RUN DATE (MON/DAY/YR) = 02/06/1997
     START TIME (HR:MIN:SEC) = 16:07:20      USER NO.= M_GOODWN.I01
     INPUT FILE = AMSQB1.DAT

START                    TIME=0.0

***** HYDROGRAPH FOR AMERICAN SQUARE BASIN 1

RAINFALL                 TYPE=1 RAIN QUARTER=0.0 IN

                         RAIN ONE=1.97 IN RAIN SIX=2.30 IN

                         RAIN DAY=2.65 IN DT=0.03333 HR
```

EAK AT 1.40 HR.

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 9

DT = .033330 HOURS END TIME = 5.999400 HOURS

.0000	.0015	.0031	.0047	.0064	.0081	.0098
.0116	.0134	.0152	.0171	.0191	.0211	.0232
.0253	.0275	.0297	.0320	.0345	.0369	.0395
.0422	.0450	.0478	.0508	.0540	.0573	.0607
.0644	.0682	.0723	.0777	.0835	.0897	.1031
.1330	.1790	.2450	.3352	.4538	.6049	.7931
1.0228	1.2360	1.3250	1.4002	1.4670	1.5278	1.5838
1.6358	1.6844	1.7299	1.7728	1.8132	1.8514	1.8875
1.9218	1.9543	1.9851	2.0143	2.0421	2.0485	2.0544
2.0600	2.0654	2.0705	2.0754	2.0801	2.0846	2.0889
2.0931	2.0972	2.1011	2.1049	2.1086	2.1122	2.1157
2.1191	2.1224	2.1256	2.1288	2.1319	2.1349	2.1379
2.1408	2.1436	2.1464	2.1491	2.1518	2.1544	2.1570
2.1595	2.1620	2.1644	2.1668	2.1692	2.1715	2.1738
2.1761	2.1783	2.1805	2.1827	2.1848	2.1869	2.1890
2.1911	2.1931	2.1951	2.1971	2.1990	2.2009	2.2028
2.2047	2.2066	2.2084	2.2102	2.2120	2.2138	2.2156
2.2173	2.2190	2.2207	2.2224	2.2241	2.2257	2.2274
2.2290	2.2306	2.2322	2.2338	2.2353	2.2369	2.2384
2.2399	2.2414	2.2429	2.2444	2.2459	2.2474	2.2488
2.2502	2.2517	2.2531	2.2545	2.2559	2.2572	2.2586
2.2600	2.2613	2.2627	2.2640	2.2653	2.2666	2.2679
2.2692	2.2705	2.2718	2.2730	2.2743	2.2755	2.2768
2.2780	2.2792	2.2804	2.2816	2.2828	2.2840	2.2852
2.2864	2.2876	2.2887	2.2899	2.2910	2.2922	2.2933
2.2944	2.2956	2.2967	2.2978	2.2989	2.3000	

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.001561 SQ MI

PER A=0 B=8.79 C=0.0 D=91.21

TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 5.6212 CFS UNIT VOLUME = .9973 B = 526.28
P60 = 1.9700
AREA = .001424 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT .033330

K = .131605HR TP = .133300HR K/TP RATIO = .987285 SHAPE CONSTANT, N = 3.576399
UNIT PEAK = .33543 CFS UNIT VOLUME = .9608 B = 325.86
P60 = 1.9700
AREA = .000137 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT .033330

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.10

RUNOFF VOLUME = 1.94952 INCHES = .1623 ACRE-FEET
PEAK DISCHARGE RATE = 4.41 CFS AT 1.500 HOURS BASIN AREA =

```
FINISH

    NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 16:07:27
```

```
START                    TIME=0.0
**** HYDROGRAPH FOR AMERICAN SQUARE BASIN 2
RAINFALL                 TYPE=1 RAIN QUARTER=0.0 IN
                         RAIN ONE=1.97 IN RAIN SIX=2.30 IN
                         RAIN DAY=2.65 IN DT=0.03333 HR
COMPUTE NM HYD           ID=1 HYD NO=101.1 AREA=0.000659 SQ MI
                         PER A=0 B=17.30 C=0.0 D=82.70
                         TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD                 ID=1 CODE=1
FINISH
```

```
AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
     RUN DATE (MON/DAY/YR) = 02/06/1997
     START TIME (HR:MIN:SEC) = 16:07:53      USER NO.= M_GOODWN.I01
     INPUT FILE = AMSQB2.DAT

START                    TIME=0.0

***** HYDROGRAPH FOR AMERICAN SQUARE BASIN 2

RAINFALL                 TYPE=1 RAIN QUARTER=0.0 IN

                         RAIN ONE=1.97 IN RAIN SIX=2.30 IN

                         RAIN DAY=2.65 IN DT=0.03333 HR
```

EAK AT 1.40 HR.

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 12

DT = .033330 HOURS END TIME = 5.999400 HOURS

.0000	.0015	.0031	.0047	.0064	.0081	.0098
.0116	.0134	.0152	.0171	.0191	.0211	.0232
.0253	.0275	.0297	.0320	.0345	.0369	.0395
.0422	.0450	.0478	.0508	.0540	.0573	.0607
.0644	.0682	.0723	.0777	.0835	.0897	.1031
.1330	.1790	.2450	.3352	.4538	.6049	.7931
1.0228	1.2360	1.3250	1.4002	1.4670	1.5278	1.5838
1.6358	1.6844	1.7299	1.7728	1.8132	1.8514	1.8875
1.9218	1.9543	1.9851	2.0143	2.0421	2.0485	2.0544
2.0600	2.0654	2.0705	2.0754	2.0801	2.0846	2.0889
2.0931	2.0972	2.1011	2.1049	2.1086	2.1122	2.1157
2.1191	2.1224	2.1256	2.1288	2.1319	2.1349	2.1379
2.1408	2.1436	2.1464	2.1491	2.1518	2.1544	2.1570
2.1595	2.1620	2.1644	2.1668	2.1692	2.1715	2.1738
2.1761	2.1783	2.1805	2.1827	2.1848	2.1869	2.1890
2.1911	2.1931	2.1951	2.1971	2.1990	2.2009	2.2028
2.2047	2.2066	2.2084	2.2102	2.2120	2.2138	2.2156
2.2173	2.2190	2.2207	2.2224	2.2241	2.2257	2.2274
2.2290	2.2306	2.2322	2.2338	2.2353	2.2369	2.2384
2.2399	2.2414	2.2429	2.2444	2.2459	2.2474	2.2488
2.2502	2.2517	2.2531	2.2545	2.2559	2.2572	2.2586
2.2600	2.2613	2.2627	2.2640	2.2653	2.2666	2.2679
2.2692	2.2705	2.2718	2.2730	2.2743	2.2755	2.2768
2.2780	2.2792	2.2804	2.2816	2.2828	2.2840	2.2852
2.2864	2.2876	2.2887	2.2899	2.2910	2.2922	2.2933
2.2944	2.2956	2.2967	2.2978	2.2989	2.3000	

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.000659 SQ MI

PER A=0 B=17.30 C=0.0 D=82.70

TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 2.1517 CFS UNIT VOLUME = .9941 B = 526.28
P60 = 1.9700
AREA = .000545 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT .033330

K = .131605HR TP = .133300HR K/TP RATIO = .987285 SHAPE CONSTANT, N = 3.576399
UNIT PEAK = .27870 CFS UNIT VOLUME = .9494 B = 325.86
P60 = 1.9700
AREA = .000114 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT .033330

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.10

RUNOFF VOLUME = 1.83704 INCHES = .0646 ACRE-FEET
PEAK DISCHARGE RATE = 1.78 CFS AT 1.500 HOURS BASIN AREA =

```
FINISH

    NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 16:07:59
```

```
START                    TIME=0.0
**** HYDROGRAPH FOR AMERICAN SQUARE BASIN 3
RAINFALL                 TYPE=1 RAIN QUARTER=0.0 IN
                         RAIN ONE=1.97 IN RAIN SIX=2.30 IN
                         RAIN DAY=2.65 IN DT=0.03333 HR
COMPUTE NM HYD           ID=1 HYD NO=101.1 AREA=0.001984 SQ MI
                         PER A=0 B=9.07 C=0.0 D=90.93
                         TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD                 ID=1 CODE=1
FINISH
```

```
AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
     RUN DATE (MON/DAY/YR) = 02/06/1997
     START TIME (HR:MIN:SEC) = 16:09:29      USER NO.= M_GOODWN.I01
     INPUT FILE = AMSQB3.DAT

START                    TIME=0.0

***** HYDROGRAPH FOR AMERICAN SQUARE BASIN 3

RAINFALL                 TYPE=1 RAIN QUARTER=0.0 IN

                         RAIN ONE=1.97 IN RAIN SIX=2.30 IN

                         RAIN DAY=2.65 IN DT=0.03333 HR
```

- [redacted]EAK AT 1.40 HR.

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2

DT = .033330 HOURS END TIME = 5.999400 HOURS

.0000	.0015	.0031	.0047	.0064	.0081	.0098
.0116	.0134	.0152	.0171	.0191	.0211	.0232
.0253	.0275	.0297	.0320	.0345	.0369	.0395
.0422	.0450	.0478	.0508	.0540	.0573	.0607
.0644	.0682	.0723	.0777	.0835	.0897	.1031
.1330	.1790	.2450	.3352	.4538	.6049	.7931
1.0228	1.2360	1.3250	1.4002	1.4670	1.5278	1.5838
1.6358	1.6844	1.7299	1.7728	1.8132	1.8514	1.8875
1.9218	1.9543	1.9851	2.0143	2.0421	2.0485	2.0544
2.0600	2.0654	2.0705	2.0754	2.0801	2.0846	2.0889
2.0931	2.0972	2.1011	2.1049	2.1086	2.1122	2.1157
2.1191	2.1224	2.1256	2.1288	2.1319	2.1349	2.1379
2.1408	2.1436	2.1464	2.1491	2.1518	2.1544	2.1570
2.1595	2.1620	2.1644	2.1668	2.1692	2.1715	2.1738
2.1761	2.1783	2.1805	2.1827	2.1848	2.1869	2.1890
2.1911	2.1931	2.1951	2.1971	2.1990	2.2009	2.2028
2.2047	2.2066	2.2084	2.2102	2.2120	2.2138	2.2156
2.2173	2.2190	2.2207	2.2224	2.2241	2.2257	2.2274
2.2290	2.2306	2.2322	2.2338	2.2353	2.2369	2.2384
2.2399	2.2414	2.2429	2.2444	2.2459	2.2474	2.2488
2.2502	2.2517	2.2531	2.2545	2.2559	2.2572	2.2586
2.2600	2.2613	2.2627	2.2640	2.2653	2.2666	2.2679
2.2692	2.2705	2.2718	2.2730	2.2743	2.2755	2.2768
2.2780	2.2792	2.2804	2.2816	2.2828	2.2840	2.2852
2.2864	2.2876	2.2887	2.2899	2.2910	2.2922	2.2933
2.2944	2.2956	2.2967	2.2978	2.2989	2.3000	

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.001984 SQ MI

PER A=0 B=9.07 C=0.0 D=90.93

TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE C[redacted]NSTANT, N = 7.106420
UNIT PEAK = 7.1225 CFS UNIT VOLUME = .9978 B = 526.28
P60 = 1.9700
AREA = .001804 SQ MI IA = .10000 INCHES INF = .04000 I[redacted]NCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = [redacted] .033330

K = .131605HR TP = .133300HR K/TP RATIO = .987285 SHAPE C[redacted]NSTANT, N = 3.576399
UNIT PEAK = .43990 CFS UNIT VOLUME = .9697 B = 325.86
P60 = 1.9700
AREA = .000180 SQ MI IA = .50000 INCHES INF = 1.25000 I[redacted]NCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = [redacted] .033330

PRINT HYD ID=1 CODE=1

[redacted]

PARTIAL HYDROGRAPH 101.10

[redacted]

RUNOFF VOLUME = 1.94582 INCHES = .2059 ACRE-FEET
PEAK DISCHARGE RATE = 5.59 CFS AT 1.500 HOURS BASIN AREA =

```
FINISH

    NORMAL PROGRAM FINISH              END TIME (HR:MIN:SEC) = 16:09:36
```

```
START                    TIME=0.0
***** HYDROGRAPH FOR AMERICAN SQUARE BASIN 4
RAINFALL                 TYPE=1 RAIN QUARTER=0.0 IN
                         RAIN ONE=1.97 IN RAIN SIX=2.30 IN
                         RAIN DAY=2.65 IN DT=0.03333 HR
COMPUTE NM HYD           ID=1 HYD NO=101.1 AREA=0.003696 SQ MI
                         PER A=0 B=4.90 C=0.0 D=95.10
                         TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD                 ID=1 CODE=1
FINISH
```

```
AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
     RUN DATE (MON/DAY/YR) = 02/07/1997
     START TIME (HR:MIN:SEC) = 09:01:27      USER NO.= M_GOODWN.I01
     INPUT FILE = AMSQB4.DAT

START                    TIME=0.0

***** HYDROGRAPH FOR AMERICAN SQUARE BASIN 4

RAINFALL                 TYPE=1 RAIN QUARTER=0.0 IN

                         RAIN ONE=1.97 IN RAIN SIX=2.30 IN

                         RAIN DAY=2.65 IN DT=0.03333 HR
```

EAK AT 1.40 HR.

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2

DT = .033330 HOURS END TIME = 5.999400 HOURS

.0000	.0015	.0031	.0047	.0064	.0081	.0098
.0116	.0134	.0152	.0171	.0191	.0211	.0232
.0253	.0275	.0297	.0320	.0345	.0369	.0395
.0422	.0450	.0478	.0508	.0540	.0573	.0607
.0644	.0682	.0723	.0777	.0835	.0897	.1031
.1330	.1790	.2450	.3352	.4538	.6049	.7931
1.0228	1.2360	1.3250	1.4002	1.4670	1.5278	1.5838
1.6358	1.6844	1.7299	1.7728	1.8132	1.8514	1.8875
1.9218	1.9543	1.9851	2.0143	2.0421	2.0485	2.0544
2.0600	2.0654	2.0705	2.0754	2.0801	2.0846	2.0889
2.0931	2.0972	2.1011	2.1049	2.1086	2.1122	2.1157
2.1191	2.1224	2.1256	2.1288	2.1319	2.1349	2.1379
2.1408	2.1436	2.1464	2.1491	2.1518	2.1544	2.1570
2.1595	2.1620	2.1644	2.1668	2.1692	2.1715	2.1738
2.1761	2.1783	2.1805	2.1827	2.1848	2.1869	2.1890
2.1911	2.1931	2.1951	2.1971	2.1990	2.2009	2.2028
2.2047	2.2066	2.2084	2.2102	2.2120	2.2138	2.2156
2.2173	2.2190	2.2207	2.2224	2.2241	2.2257	2.2274
2.2290	2.2306	2.2322	2.2338	2.2353	2.2369	2.2384
2.2399	2.2414	2.2429	2.2444	2.2459	2.2474	2.2488
2.2502	2.2517	2.2531	2.2545	2.2559	2.2572	2.2586
2.2600	2.2613	2.2627	2.2640	2.2653	2.2666	2.2679
2.2692	2.2705	2.2718	2.2730	2.2743	2.2755	2.2768
2.2780	2.2792	2.2804	2.2816	2.2828	2.2840	2.2852
2.2864	2.2876	2.2887	2.2899	2.2910	2.2922	2.2933
2.2944	2.2956	2.2967	2.2978	2.2989	2.3000	

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.003696 SQ MI

PER A=0 B=4.90 C=0.0 D=95.10

TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 13.877 CFS UNIT VOLUME = .9985 B = 526.28
P60 = 1.9700
AREA = .003515 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .131605HR TP = .133300HR K/TP RATIO = .987285 SHAPE CONSTANT, N = 3.576399
UNIT PEAK = .44272 CFS UNIT VOLUME = .9697 B = 325.86
P60 = 1.9700
AREA = .000181 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.10

RUNOFF VOLUME = 2.00094 INCHES = .3944 ACRE-FEET
PEAK DISCHARGE RATE = 10.63 CFS AT 1.500 HOURS BASIN AREA =

```
FINISH

    NORMAL PROGRAM FINISH              END TIME (HR:MIN:SEC) = 09:01:34
```

```
START                    TIME=0.0
**** HYDROGRAPH FOR AMERICAN SQUARE BASIN 5
RAINFALL                 TYPE=1 RAIN QUARTER=0.0 IN
                         RAIN ONE=1.97 IN RAIN SIX=2.30 IN
                         RAIN DAY=2.65 IN DT=0.03333 HR
COMPUTE NM HYD           ID=1 HYD NO=101.1 AREA=0.001352 SQ MI
                         PER A=0 B=26.34 C=0.0 D=73.66
                         TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD                 ID=1 CODE=1
FINISH
```

```
AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
     RUN DATE (MON/DAY/YR) = 02/07/1997
     START TIME (HR:MIN:SEC) = 09:02:01      USER NO.= M_GOODWN.I01
     INPUT FILE = AMSQB5.DAT

START                    TIME=0.0

***** HYDROGRAPH FOR AMERICAN SQUARE BASIN 5

RAINFALL                 TYPE=1 RAIN QUARTER=0.0 IN

                         RAIN ONE=1.97 IN RAIN SIX=2.30 IN

                         RAIN DAY=2.65 IN DT=0.03333 HR
```

EAK AT 1.40 HR.

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2

21

DT = .033330 HOURS END TIME = 5.999400 HOURS

.0000	.0015	.0031	.0047	.0064	.0081	.0098
.0116	.0134	.0152	.0171	.0191	.0211	.0232
.0253	.0275	.0297	.0320	.0345	.0369	.0395
.0422	.0450	.0478	.0508	.0540	.0573	.0607
.0644	.0682	.0723	.0777	.0835	.0897	.1031
.1330	.1790	.2450	.3352	.4538	.6049	.7931
1.0228	1.2360	1.3250	1.4002	1.4670	1.5278	1.5838
1.6358	1.6844	1.7299	1.7728	1.8132	1.8514	1.8875
1.9218	1.9543	1.9851	2.0143	2.0421	2.0485	2.0544
2.0600	2.0654	2.0705	2.0754	2.0801	2.0846	2.0889
2.0931	2.0972	2.1011	2.1049	2.1086	2.1122	2.1157
2.1191	2.1224	2.1256	2.1288	2.1319	2.1349	2.1379
2.1408	2.1436	2.1464	2.1491	2.1518	2.1544	2.1570
2.1595	2.1620	2.1644	2.1668	2.1692	2.1715	2.1738
2.1761	2.1783	2.1805	2.1827	2.1848	2.1869	2.1890
2.1911	2.1931	2.1951	2.1971	2.1990	2.2009	2.2028
2.2047	2.2066	2.2084	2.2102	2.2120	2.2138	2.2156
2.2173	2.2190	2.2207	2.2224	2.2241	2.2257	2.2274
2.2290	2.2306	2.2322	2.2338	2.2353	2.2369	2.2384
2.2399	2.2414	2.2429	2.2444	2.2459	2.2474	2.2488
2.2502	2.2517	2.2531	2.2545	2.2559	2.2572	2.2586
2.2600	2.2613	2.2627	2.2640	2.2653	2.2666	2.2679
2.2692	2.2705	2.2718	2.2730	2.2743	2.2755	2.2768
2.2780	2.2792	2.2804	2.2816	2.2828	2.2840	2.2852
2.2864	2.2876	2.2887	2.2899	2.2910	2.2922	2.2933
2.2944	2.2956	2.2967	2.2978	2.2989	2.3000	

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.001352 SQ MI

PER A=0 B=26.34 C=0.0 D=73.66

TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 3.9318 CFS UNIT VOLUME = .9965 B = 526.28
P60 = 1.9700
AREA = .000996 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .131605HR TP = .133300HR K/TP RATIO = .987285 SHAPE CONSTANT, N = 3.576399
UNIT PEAK = .87056 CFS UNIT VOLUME = .9847 B = 325.86
P60 = 1.9700
AREA = .000356 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.10

RUNOFF VOLUME = 1.71755 INCHES = .1238 ACRE-FEET
PEAK DISCHARGE RATE = 3.45 CFS AT 1.500 HOURS BASIN AREA =

```
FINISH

    NORMAL PROGRAM FINISH              END TIME (HR:MIN:SEC) = 09:02:07
```

```
START                    TIME=0.0
***** HYDROGRAPH FOR AMERICAN SQUARE TOTAL BASIN B
RAINFALL                 TYPE=1 RAIN QUARTER=0.0 IN
                         RAIN ONE=1.97 IN RAIN SIX=2.30 IN
                         RAIN DAY=2.65 IN DT=0.03333 HR
COMPUTE NM HYD           ID=1 HYD NO=101.1 AREA=0.052969 SQ MI
                         PER A=0 B=17 C=0.0 D=83
                         TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD                 ID=1 CODE=1
FINISH
```

```
AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
     RUN DATE (MON/DAY/YR) = 12/18/1996
     START TIME (HR:MIN:SEC) = 15:36:04      USER NO.= M_GOODWN.I01
     INPUT FILE = AMSQTOT.DAT

START                TIME=0.0

***** HYDROGRAPH FOR AMERICAN SQUARE TOTAL BASIN B

RAINFALL             TYPE=1 RAIN QUARTER=0.0 IN
                          :
                     RAIN ONE=1.97 IN RAIN SIX=2.30 IN
                          :
                     RAIN DAY=2.65 IN DT=0.03333 HR

                COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2
- PEAK AT 1.40 HR.
                DT =     .033330 HOURS        END TIME =     5.999400 HOURS
                   .0000   .0015   .0031   .0047   .0064   .0081   .0098
                   .0116   .0134   .0152   .0171   .0191   .0211   .0232
                   .0253   .0275   .0297   .0320   .0345   .0369   .0395
                   .0422   .0450   .0478   .0508   .0540   .0573   .0607
                   .0644   .0682   .0723   .0777   .0835   .0897   .1031
                   .1330   .1790   .2450   .3352   .4538   .6049   .7931
                  1.0228  1.2360  1.3250  1.4002  1.4670  1.5278  1.5838
                  1.6358  1.6844  1.7299  1.7728  1.8132  1.8514  1.8875
                  1.9218  1.9543  1.9851  2.0143  2.0421  2.0485  2.0544
                  2.0600  2.0654  2.0705  2.0754  2.0801  2.0846  2.0889
                  2.0931  2.0972  2.1011  2.1049  2.1086  2.1122  2.1157
                  2.1191  2.1224  2.1256  2.1288  2.1319  2.1349  2.1379
                  2.1408  2.1436  2.1464  2.1491  2.1518  2.1544  2.1570
                  2.1595  2.1620  2.1644  2.1668  2.1692  2.1715  2.1738
                  2.1761  2.1783  2.1805  2.1827  2.1848  2.1869  2.1890
                  2.1911  2.1931  2.1951  2.1971  2.1990  2.2009  2.2028
                  2.2047  2.2066  2.2084  2.2102  2.2120  2.2138  2.2156
                  2.2173  2.2190  2.2207  2.2224  2.2241  2.2257  2.2274
                  2.2290  2.2306  2.2322  2.2338  2.2353  2.2369  2.2384
                  2.2399  2.2414  2.2429  2.2444  2.2459  2.2474  2.2488
                  2.2502  2.2517  2.2531  2.2545  2.2559  2.2572  2.2586
                  2.2600  2.2613  2.2627  2.2640  2.2653  2.2666  2.2679
                  2.2692  2.2705  2.2718  2.2730  2.2743  2.2755  2.2768
                  2.2780  2.2792  2.2804  2.2816  2.2828  2.2840  2.2852
                  2.2864  2.2876  2.2887  2.2899  2.2910  2.2922  2.2933
                  2.2944  2.2956  2.2967  2.2978  2.2989  2.3000

COMPUTE NM HYD       ID=1 HYD NO=101.1 AREA=0.052969 SQ MI

                     PER A=0 B=17 C=0.0 D=83

                     TP=0.1333 HR MASS RAINFALL=-1

        K =    .072649HR     TP =    .133300HR     K/TP RATIO =    .545000     SHAPE
CONSTANT, N =  7.106420
```

```
      UNIT PEAK =    170.37     CFS    UNIT VOLUME =      .9998          B =     325.86
    P60 = 1.9700
      AREA =       .043964 SQ MI     IA =     .10000 INCHES     INF =     .04000 I
NCHES PER HOUR
      RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
=   .033330
```

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```
      K =    .131605HR     TP =    .133300HR     K/TP RATIO =    .987285      SHAPE
CONSTANT, N =  3.576399
      UNIT PEAK =    22.013     CFS    UNIT VOLUME =     .9997          B =    325.86
    P60 = 1.9700
      AREA =       .009005 SQ MI     IA =     .50000 INCHES     INF =    1.25000 I
NCHES PER HOUR
      RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
=   .033330

  PRINT HYD                ID=1 CODE=1

                                          PARTIAL HYDROGRAPH    101.10

      RUNOFF VOLUME =      1.84100 INCHES      =        5.2008 ACRE-FEET
      PEAK DISCHARGE RATE =      142.23 CFS   AT    1.500 HOURS    BASIN AREA =
0530 SQ. MI.

  FINISH

      NORMAL PROGRAM FINISH              END TIME (HR:MIN:SEC) = 15:36:11
```

```
S1 T                    TIME=0.0
**** HYDROGRAPH FOR AMERICAN SQUARE TRUCK WELL
A FALL                  TYPE=1 RAIN QUARTER=0.0 IN
                        RAIN ONE=1.97 IN RAIN SIX=2.30 IN
                        RAIN DAY=2.65 IN DT=0.03333 HR
OMPUTE NM HYD           ID=1 HYD NO=101.1 AREA=0.000659 SQ MI
                        PER A=0 PER B=17.30 PER C=0 PER D=82.70
                        TP=0.1333 HR MASS RAINFALL=-1
RINT HYD                ID=1 CODE=1
*  **RESERVOIR ROUTE THE DEVELOPED STORM
OUTE RESERVOIR          ID=2 HYD NO=101.2 INFLOW ID=1 CODE=24
                        OUTFLOW (CFS)      STORAGE(AC-FT)    ELEVATION(FT)
                           0.0                0.0                1.0
                           0.01               0.000826           2.0
                           0.02               0.001653           3.0
                           0.68               0.002479           4.0
                           0.69               0.003306           5.0
                           1.32               0.004132           6.0
                           1.33               0.007415           7.0
                           1.34               0.016024           8.0
```

JNTSH

```
AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
     RUN DATE (MON/DAY/YR) = 03/23/1997
     START TIME (HR:MIN:SEC) = 08:51:04      USER NO.= M_GOODWN.101
     INPUT FILE = AMSOPND.DAT

START                    TIME=0.0

***** HYDROGRAPH FOR AMERICAN SQUARE TRUCK WELL

RAINFALL                 TYPE=1 RAIN QUARTER=0.0 IN

                         RAIN ONE=1.97 IN RAIN SIX=2.30 IN

                         RAIN DAY=2.55 IN DT=0.03333 HR

                    COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2
- PEAK AT 1.40 HR.
                    DT =     .033330 HOURS        END TIME =     5.999400 HOURS
                      .0000    .0013    .0031    .0047    .0064    .0081    .0098
                      .0116    .0134    .0152    .0171    .0191    .0211    .0232
                      .0253    .0275    .0297    .0320    .0345    .0369    .0395
                      .0422    .0450    .0478    .0508    .0540    .0573    .0607
                      .0644    .0682    .0723    .0777    .0835    .0897    .1031
                      .1330    .1790    .2450    .3352    .4538    .5049    .7931
                     1.0228   1.2360   1.3250   1.4002   1.4670   1.5278   1.5838
                     1.6358   1.6844   1.7299   1.7728   1.8132   1.8514   1.8875
                     1.9218   1.9542   1.9851   2.0143   2.0421   2.0485   2.0544
                     2.0600   2.0654   2.0705   2.0754   2.0801   2.0846   2.0889
                     2.0931   2.0972   2.1011   2.1049   2.1086   2.1122   2.1157
                     2.1191   2.1224   2.1256   2.1288   2.1319   2.1349   2.1379
                     2.1408   2.1436   2.1464   2.1491   2.1518   2.1544   2.1570
                     2.1595   2.1620   2.1644   2.1668   2.1692   2.1715   2.1738
                     2.1761   2.1783   2.1805   2.1827   2.1848   2.1869   2.1890
                     2.1911   2.1931   2.1951   2.1971   2.1990   2.2009   2.2028
                     2.2047   2.2066   2.2084   2.2102   2.2120   2.2138   2.2156
                     2.2173   2.2190   2.2207   2.2224   2.2241   2.2257   2.2274
                     2.2290   2.2306   2.2322   2.2339   2.2353   2.2369   2.2384
                     2.2399   2.2414   2.2429   2.2444   2.2459   2.2474   2.2488
                     2.2502   2.2517   2.2531   2.2545   2.2559   2.2572   2.2586
                     2.2600   2.2613   2.2627   2.2640   2.2653   2.2666   2.2679
                     2.2692   2.2705   2.2718   2.2730   2.2743   2.2755   2.2768
                     2.2780   2.2792   2.2804   2.2816   2.2828   2.2840   2.2852
                     2.2864   2.2876   2.2887   2.2899   2.2910   2.2922   2.2933
                     2.2944   2.2956   2.2967   2.2978   2.2989   2.3000

COMPUTE NM HYD           ID=1 HYD NO=101 AREA=0.000625 SQ MI

                         PER IMP=0.0 PER B=17.30 PER C=0 PER D=82.70

                         TP=0.1333 HR MAGS RAINFALL=-1

     K =    .072545HR     TP =    .133300HR     K/TP RATIO =    .545000     SHAPE CO
NSTANT, N =  7.106470
     UNIT PEAK =    2.1517     CFS     UNIT VOLUME =     .9941        B =    508.75
  P60 = 1.9700
     QPEAK =        .00545 CFS     TP =    .10000 INCHES     INT =    .04000
```

```
ICHES PER HOUR
        RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
=  .033330
```

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```
        K =    .131605HR     TP =    .133300HR     K/TP RATIO =    .987285      SHAPE
CONSTANT, N =  3.576999
        UNIT PEAK =    .27870     CFS    UNIT VOLUME =    .9494        B =    325.86
    P60 = 1.9700
        AREA =       .000114 SQ MI     IA =     .50000 INCHES     INF =    1.25000 I
ICHES PER HOUR
        RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
=  .033330

    PRINT HYD              ID=1 CODE=1
```

PARTIAL HYDROGRAPH 101.10

RUNOFF VOLUME = 1.83704 INCHES = .0646 ACRE-FEET
PEAK DISCHARGE RATE = 1.78 CFS AT 1.500 HOURS BASIN AREA =
.0007 SQ. MI.

*****RESERVOIR ROUTE THE DEVELOPED STORM

ROUTE RESERVOIR ID=2 HYD NO=101.2 INFLOW ID=1 CODE=24

OUTFLOW (CFS)	STORAGE(AC-FT)	ELEVATION(FT)
0.0	0.0	1.0
0.01	0.000874	2.0
0.02	0.001650	3.0
0.68	0.002479	4.0
0.89	0.003306	5.0
1.22	0.004132	6.0
1.33	0.007415	7.0
1.34	0.016024	8.0

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

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	1.00	.000	.00
.80	.00	1.00	.000	.00
1.60	1.24	7.02	.008	1.33
2.40	.06	3.07	.002	.07
3.20	.01	2.58	.002	.02
4.00	.01	2.41	.001	.01
4.80	.01	2.19	.001	.01
5.60	.01	2.03	.001	.01
6.40	.00	1.84	.001	.01
7.20	.00	1.38	.000	.00

PEAK DISCHARGE = 1.330 CFS - PEAK OCCURS AT HOUR 1.60
MAXIMUM WATER SURFACE ELEVATION = 7.019
MAXIMUM STORAGE = .0076 AC-FT INCREMENTAL TIME= .05833HR

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 08:51:10

DRAINAGE INFORMATION SHEET

83B

PROJECT TITLE: American Square - JC Penny ZONE ATLAS/DRNG,FILE#: H-16

DRB #: _____ EPC #: 96-129 WORK ORDER #: _____

LEGAL DESCRIPTION: American Square Tract C

CITY ADDRESS: 3101 Menaul NE

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

ADDRESS: P.O. Box 90606, Alb., NM 87199 PHONE: 345-2010

OWNER: Goodman Investment Co. CONTACT: Gary Goodman

ADDRESS: 2835 N. Sheffield Ave.,Chicago, IL 60657 PHONE: (312) 281-0800

ARCHITECT: George Rainhart Architects CONTACT: George Rainhart

ADDRESS: 2325 San Pedro NE, Suite 2B, Alb., NM 8711 PHONE: 884-9110

SURVEYOR: N/A CONTACT: _____

ADDRESS: _____ PHONE: _____

CONTRACTOR: N/A CONTACT: _____

ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:

- ____ DRAINAGE REPORT
- X DRAINAGE PLAN
- ____ CONCEPTUAL GRADING & DRAINAGE PLAN
- X GRADING PLAN
- ____ EROSION CONTROL PLAN
- ____ ENGINEER'S CERTIFICATION
- ____ OTHER

PRE-DESIGN MEETING:

- ____ YES
- X 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
- X BUILDING PERMIT APPROVAL
- ____ CERTIFICATION OF OCCUPANCY APPROVAL
- ____ GRADING PERMIT APPROVAL
- ____ PAVING PERMIT APPROVAL
- ____ S.A.D. DRAINAGE REPORT
- ____ DRAINAGE REQUIREMENTS
- ____ OTHER _____ (Specify)

RECEIVED MAR 10 1997 HYDROLOGY SECTION

overflows away from structure.

DATE SUBMITTED: 3-10-97

BY: _____

Gregory J. Krenik, PE

RECEIVED MAR 07 1997 HYDROLOGY SECTION

[redacted]

MARK GOODWIN & ASSOCIATES
CONSULTING ENGINEERS

DRAINAGE CALCULATIONS

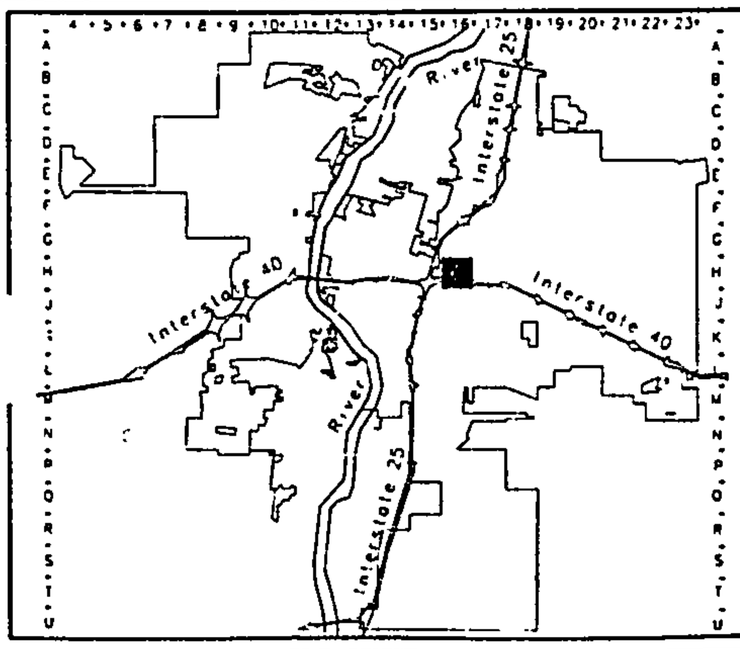
for

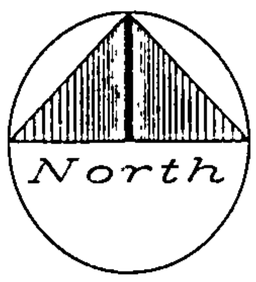
AMERICAN SQUARE
J.C. Penney

RECEIVED
NOV - 4 1996
HYDROLOGY DIVISION

November 1996

GREGORY JAMES BRENNER
11829
11-1-96
REGISTERED PROFESSIONAL ENGINEER





750 375 0 750

Scale. 1" = 750'

Albuquerque Geographic Information System

City of Albuquerque

© Planning Department July 07, 1993

LEGAL DESCRIPTION

T10N

R3E

SEC 10

UNIFORM PROPERTY CODE

1-016-059

H-16-Z

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

PROJECT AMERICAN SQUARE - JC
SUBJECT DRAINAGE CALCS
BY GJK DATE 11-1-96
CHECKED _____ DATE _____
SHEET 1 OF ____

- TOTAL SITE = 5.9220 AC.
- THIS SITE IS BASIN "A6" PER THE DRAINAGE REPORT FOR AMERICAN SQUARE Prepared BY ESPEY, HUSTON & ASSOCIATES, INC. - DATED 4-5-89. (APPENDIX A)
- THERE ARE NO OFFSITE FLOWS THAT ENTER THIS SITE.
- IT DOES NOT LIE WITHIN A 100 YR FLOOD ZONE.
- THIS SITE IS TO DRAIN TO MENAUL BLVD THROUGH SIDEWALK CULVERTS PER THE E,H & ASSOC. REPORT.
- THE ALLOWABLE DISCHARGE IS 22.8 CFS DIRECT DISCHARGE
- THE SITE WILL BE SPLIT INTO TWO DRAINAGE BASIN.

  THE NORTH BASIN WILL DRAIN TO THE CHANNEL AT RICHMOND. (2.6050 AC)

  THE CAPACITY OF THIS CHANNEL IS 842 CFS FROM THE E,H & ASSOC. REPORT.

  THE SOUTH BASIN WILL DRAIN TO THE STORMDRAIN IN MENAUL BLVD. (3.317 AC)

$P_1 = 1.97$ in DT = 0.03333 HR ASSUME 85% "D"
$P_6 = 2.30$ in TP = 0.1333 HR 15% "B"
$P_{24} = 2.65$ in

FOR NORTH BASIN AHYMO OUTPUT SHEETS 3-4
Q = 11.07 CFS
V = 0.4054 AC-FT

FOR SOUTH BASIN AHYMO OUTPUT SHEETS 5-7
Q = 14.09 CFS
V = 0.5162 AC-FT

- SINCE THE South Basin's Discharge is less than THE ALLOWABLE 22.8 CFS THE SYSTEM IS OK
- FOR THE NORTH BASIN THE ADDITIONAL 11.07 CFS ADDED TO THE 113.1 CFS FROM THE E,H & ASSOC. Report IS MUCH LESS THAN THE ALLOWABLE OF THE CHANNELS 842 CFS. THEREFORE OK

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

PROJECT AMERICAN SQUARE - JC
SUBJECT DRAINAGE CALCS
BY GSK DATE 11-1-96
CHECKED _____ DATE _____
SHEET 2 OF ____

- SIZE INLETS FOR 14.09 CFS

  USE TWO DOUBLE "D" INLETS IN SUMP CONDITION

  P = 17 (one inlet)

  $Q/P = 3.0 H^{1.5}$ ASSUME 50% CLOGGED

  H = 0.15' OK

- SIZE PIPE FROM "DBL D" TO INLET IN MENAUL

  45 LF @ 5% SLOPE

  CAPACITY OF 18" RCP = 22 CFS > 14.09 OK
  (NOMO SHEET 8)

```
START                    TIME=0.0
***** HYDROGRAPH FOR AMERICAN SQUARE NORTH BASIN
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                         RAIN ONE=1.97 IN RAIN SIX=2.30 IN
                         RAIN DAY=2.65 IN DT=0.03333 HR
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                         RAIN ONE=1.97 IN RAIN SIX=2.30 IN

                         RAIN DAY=2.65 IN DT=0.03333 HR

                    COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2
PEAK AT 1.40 HR.
                    DT =     .033330 HOURS        END TIME =      5.999400 HOURS
                       .0000    .0015    .0031    .0047    .0064    .0081    .0098
                       .0116    .0134    .0152    .0171    .0191    .0211    .0232
```

.0253	.0275	.0297	.0320	.0345	.0369	.0395
.0422	.0450	.0478	.0508	.0540	.0573	.0607
.0644	.0682	.0723	.0777	.0835	.0897	.1031
.1330	.1790	.2450	.3352	.4538	.6049	.7931
1.0228	1.2360	1.3250	1.4002	1.4670	1.5278	1.5838
1.6358	1.6844	1.7299	1.7728	1.8132	1.8514	1.8875
1.9218	1.9543	1.9851	2.0143	2.0421	2.0485	2.0544
2.0600	2.0654	2.0705	2.0754	2.0801	2.0846	2.0889
2.0931	2.0972	2.1011	2.1049	2.1086	2.1122	2.1157
2.1191	2.1224	2.1256	2.1288	2.1319	2.1349	2.1379
2.1408	2.1436	2.1464	2.1491	2.1518	2.1544	2.1570
2.1595	2.1620	2.1644	2.1668	2.1692	2.1715	2.1738
2.1761	2.1783	2.1805	2.1827	2.1848	2.1869	2.1890
2.1911	2.1931	2.1951	2.1971	2.1990	2.2009	2.2028
2.2047	2.2066	2.2084	2.2102	2.2120	2.2138	2.2156
2.2173	2.2190	2.2207	2.2224	2.2241	2.2257	2.2274
2.2290	2.2306	2.2322	2.2338	2.2353	2.2369	2.2384
2.2399	2.2414	2.2429	2.2444	2.2459	2.2474	2.2488
2.2502	2.2517	2.2531	2.2545	2.2559	2.2572	2.2586
2.2600	2.2613	2.2627	2.2640	2.2653	2.2666	2.2679
2.2692	2.2705	2.2718	2.2730	2.2743	2.2755	2.2768
2.2780	2.2792	2.2804	2.2816	2.2828	2.2840	2.2852
2.2864	2.2876	2.2887	2.2899	2.2910	2.2922	2.2933
2.2944	2.2956	2.2967	2.2978	2.2989	2.3000	

4

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NCHES PER HOUR
        RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
   .033330


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     P60 = 1.9700
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NCHES PER HOUR
        RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
   .033330

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.0041 SQ. MI.


    FINISH
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NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 11:57:12

5

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                         RAIN ONE=1.97 IN RAIN SIX=2.30 IN

                         RAIN DAY=2.65 IN DT=0.03333 HR

                 COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2
PEAK AT 1.40 HR.
                 DT =     .033330 HOURS        END TIME =      5.999400 HOURS
                    .0000    .0015    .0031    .0047    .0064    .0081    .0098
                    .0116    .0134    .0152    .0171    .0191    .0211    .0232
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.0253	.0275	.0297	.0320	.0345	.0369	.0395
.0422	.0450	.0478	.0508	.0540	.0573	.0607
.0644	.0682	.0723	.0777	.0835	.0897	.1031
.1330	.1790	.2450	.3352	.4538	.6049	.7931
1.0228	1.2360	1.3250	1.4002	1.4670	1.5278	1.5838
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2.0600	2.0654	2.0705	2.0754	2.0801	2.0846	2.0889
2.0931	2.0972	2.1011	2.1049	2.1086	2.1122	2.1157
2.1191	2.1224	2.1256	2.1288	2.1319	2.1349	2.1379
2.1408	2.1436	2.1464	2.1491	2.1518	2.1544	2.1570
2.1595	2.1620	2.1644	2.1668	2.1692	2.1715	2.1738
2.1761	2.1783	2.1805	2.1827	2.1848	2.1869	2.1890
2.1911	2.1931	2.1951	2.1971	2.1990	2.2009	2.2028
2.2047	2.2066	2.2084	2.2102	2.2120	2.2138	2.2156
2.2173	2.2190	2.2207	2.2224	2.2241	2.2257	2.2274
2.2290	2.2306	2.2322	2.2338	2.2353	2.2369	2.2384
2.2399	2.2414	2.2429	2.2444	2.2459	2.2474	2.2488
2.2502	2.2517	2.2531	2.2545	2.2559	2.2572	2.2586
2.2600	2.2613	2.2627	2.2640	2.2653	2.2666	2.2679
2.2692	2.2705	2.2718	2.2730	2.2743	2.2755	2.2768
2.2780	2.2792	2.2804	2.2816	2.2828	2.2840	2.2852
2.2864	2.2876	2.2887	2.2899	2.2910	2.2922	2.2933
2.2944	2.2956	2.2967	2.2978	2.2989	2.3000	

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        UNIT PEAK =    17.393     CFS    UNIT VOLUME =     .9988        B =    526.28
    P60 = 1.9700
        AREA =       .004406 SQ MI     IA =     .10000 INCHES     INF =     .04000 I
NCHES PER HOUR
        RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
=   .033330


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        UNIT PEAK =    1.9005     CFS    UNIT VOLUME =     .9930        B =    325.86
    P60 = 1.9700
        AREA =       .000777 SQ MI     IA =     .50000 INCHES     INF =    1.25000 I
NCHES PER HOUR
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=   .033330

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        RUNOFF VOLUME =      1.86744 INCHES      =          .5162 ACRE-FEET
        PEAK DISCHARGE RATE =       14.09 CFS   AT    1.500 HOURS    BASIN AREA =
0052 SQ. MI.


FINISH
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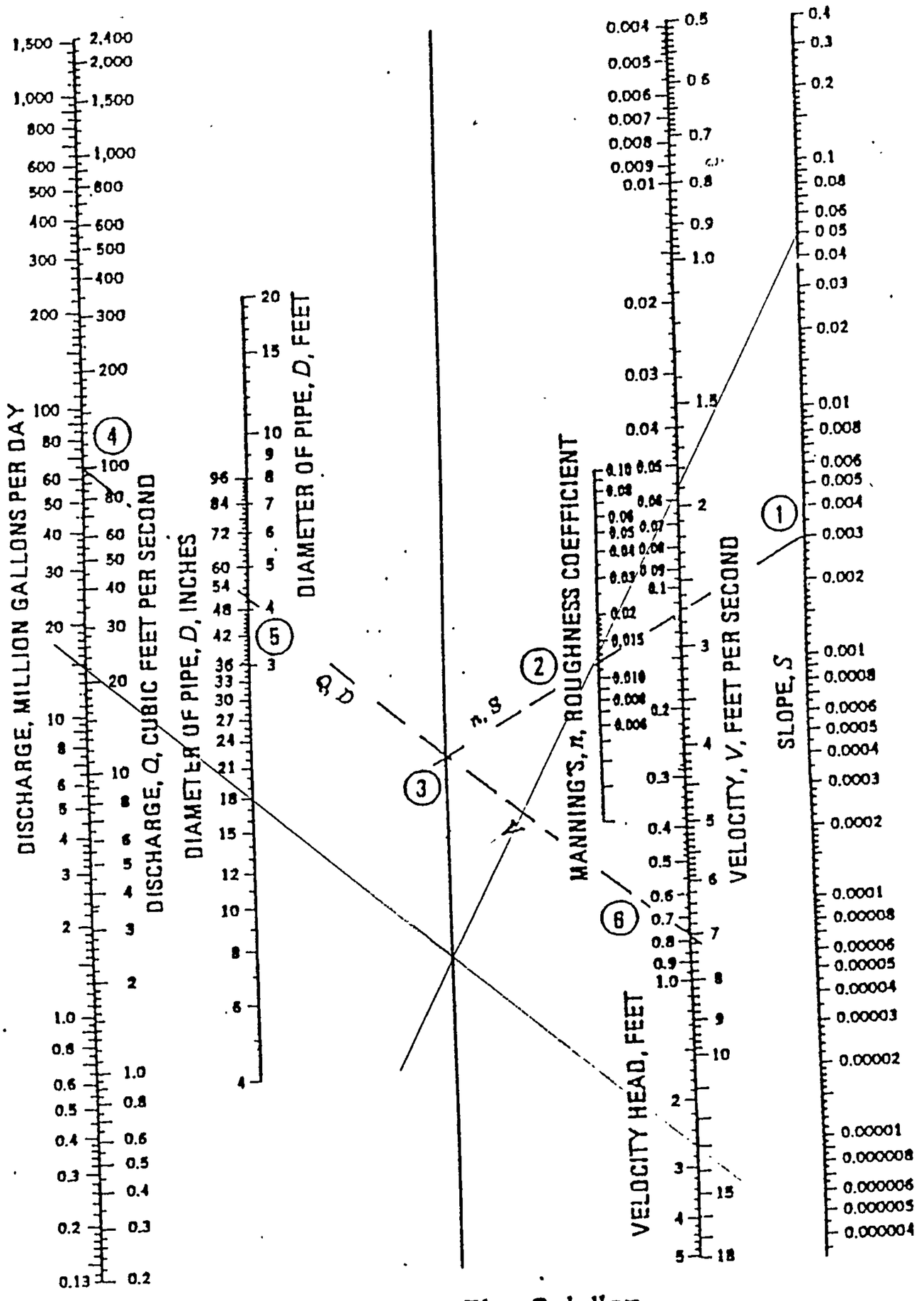
Reference: American Concrete Pipe Association (1980).



B) Circular Pipe Solution

APPENDIX A

DRAINAGE REPORT UPDATE
FOR
AMERICAN SQUARE
BLOCKS A-1A, B-1, E-1, & F-1

Prepared by:

ESPEY, HUSTON & ASSOCIATES, INC.
317 Commercial Street NE
Albuquerque, New Mexico 87102

DENNIS A. LORENZ
NEW MEXICO
8667
REGISTERED PROFESSIONAL ENGINEER
4-5-89

April, 1989

[illegible] INFORMATION SHEET

PROJECT TITLE: AMERICAN SQUARE ZONE ATLAS/DRNG. FILE #: H16-D83

LEGAL DESCRIPTION: AMERICAN SQUARE : BLOCKS A-1, B-

CITY ADDRESS: MENAUL BLVD AT CARLISLE BLVD

ENGINEERING FIRM: ESPEY HUSTON & ASSOC CONTACT: D. LORENZ

ADDRESS: 317 COMMERCIAL NE PHONE: 242 1909

OWNER: BLAUGRUND CHILDRENS TRUST CONTACT: L. BLAUGRUND

ADDRESS: PO BOX 3685, 87190 PHONE:

ARCHITECT: NA CONTACT:

ADDRESS: PHONE:

SURVEYOR: ESPEY HUSTON & ASSOC CONTACT: B. SEITZ

ADDRESS: SAME PHONE:

CONTRACTOR: NA CONTACT:

ADDRESS: PHONE:

PRE-DESIGN MEETING:

X YES

__ NO

X COPY OF CONFERENCE RECAP SHEET PROVIDED

DRB NO. ____

EPC NO. ____

PROJ. NO. ____

TYPE OF SUBMITTAL:

X DRAINAGE REPORT

__ DRAINAGE PLAN

__ CONCEPTUAL GRADING & DRAINAGE PLAN

__ GRADING PLAN

__ EROSION CONTROL PLAN

__ ENGINEER'S CERTIFICATION

CHECK TYPE OF APPROVAL SOUGHT:

__ SKETCH PLAT APPROVAL

__ PRELIMINARY PLAT APPROVAL

X SITE DEVELOPMENT PLAN APPROVAL

X 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: APRIL 6, 1989

BY: D. LORENZ

TABLE OF CONTENTS

	Page
PURPOSE AND SCOPE	1
LOCATION AND DESCRIPTION	2
EXISTING DRAINAGE CONDITIONS	3
PROPOSED DRAINAGE CONDITIONS	4
EROSION CONTROL	8
CONCLUSIONS	9
CALCULATIONS	10
DOWNSTREAM ANALYSIS	11

LIST OF FIGURES AND EXHIBITS

VICINITY MAP - FIGURE 1

SOILS MAP - FIGURE 2

FLOOD HAZARD MAP - FIGURE 3

GRADING AND DRAINAGE PLAN - SHEETS 1 & 2 Pocket

PURPOSE AND SCOPE

The purpose of this report is to establish a Drainage Master Plan for controlling surface runoff from American Square in a manner which is acceptable to the City of Albuquerque and the Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA). The plan determines the excess runoff resulting from 100-year/6-hour and 10-year/6-hour frequency storms falling within the project site and contributing drainage basins under existing and developed conditions.

The scope of this plan is to ensure that the project site will be protected from storm runoff and that the project will not increase the flooding potential to adjacent properties and downstream areas.

This report constitutes an update to the drainage report for American Square, Blocks "A" thru "G", prepared by Espey, Huston and Associates, Inc, August 26, 1986.

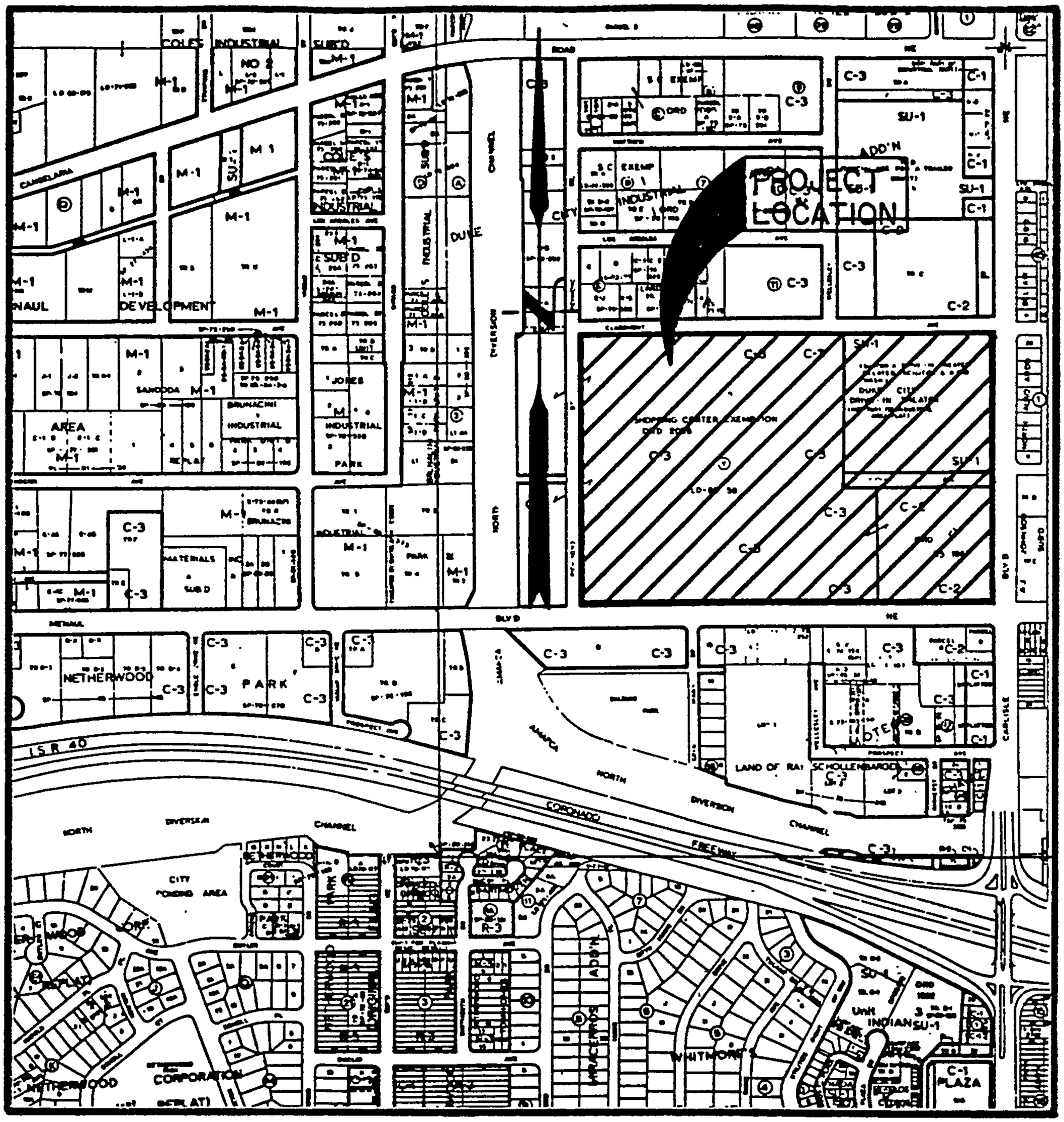
Approval of this report and plan shall facilitate Site Development Plan, final plat, and work order approval.

LOCATION AND DESCRIPTION

American Square is located at the northwest quadrant of the Menaul Boulevard NE and Carlisle Boulevard NE intersection. The site is bounded by Claremont Avenue on the north, Carlisle Boulevard on the east, Menaul Boulevard on the south, and Richmond Drive on the west. The site is more particularly described as Blocks A-1, B through F, American Square. The Vicinity Map (see Figure 1) graphically depicts the location of the site.

The site is approximately 57.1 acres in size and is partially developed. Block A-1 is presently developed as American Furniture with an existing building and adjacent asphalt parking. Block B is the existing American Square Shopping Center which represents Phase I of the project development. Major infrastructure improvements have been provided (City Projects 3031 and 3129) with Phase I development.

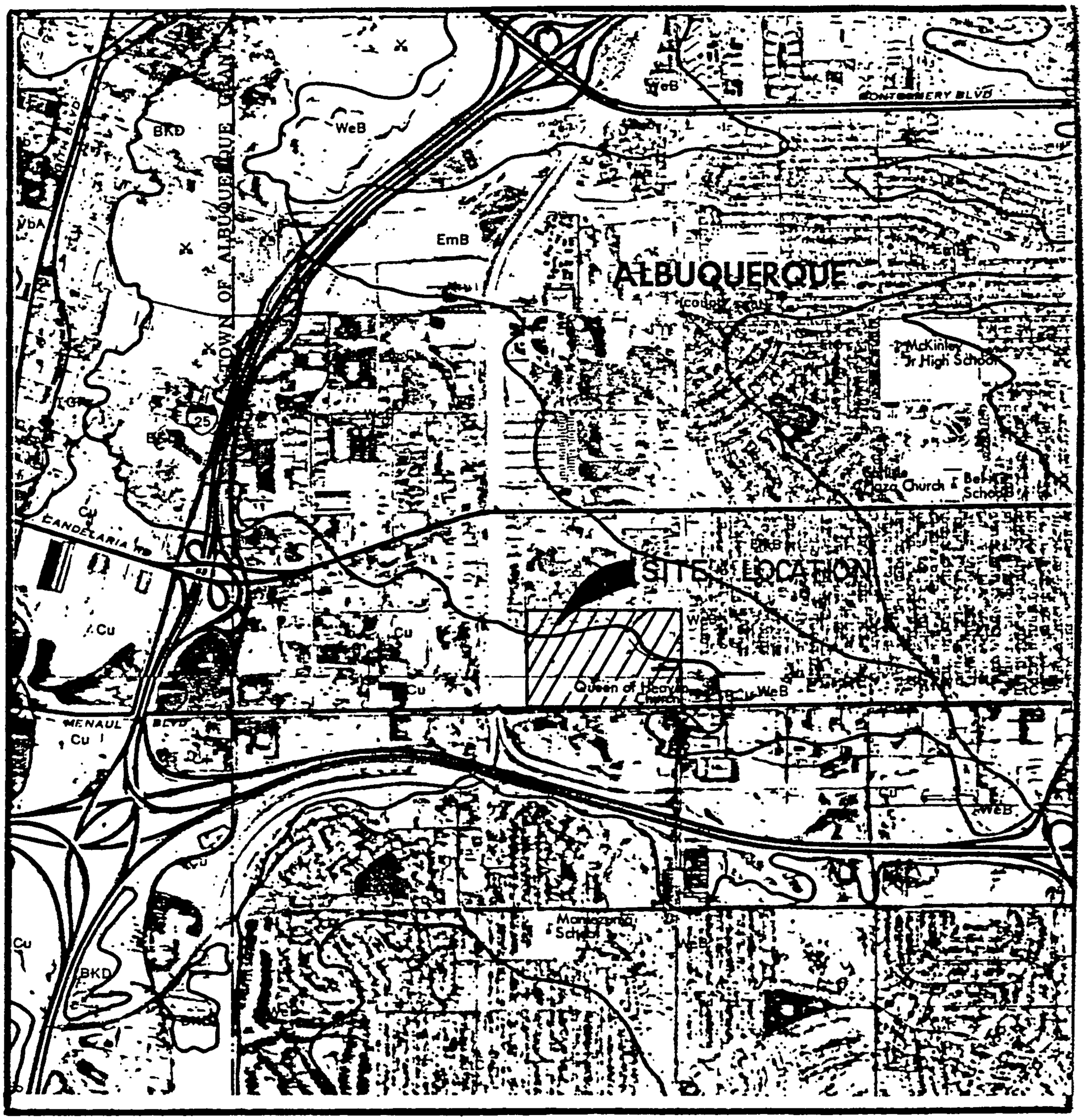
The site topography slopes from east to west at approximately 2%. The major soils groups present on the site are: cut and fill land (Cu) a type "A" soil, and Wink-Embudo Complex (WeB) a type "B" soil, as classified by the USDA Soil Conservation Service. Cut and fill land consists of sandy loam and very gravelly sand that has been mixed by filling for developments. Runoff is slow to very rapid, and the potential of erosion is slight to severe. Wink-Embudo Complex contains about 65% Wink fine sandy loam and 25% Embudo gravelly fine sandy loam. Both soils are found on slight rises and depressions. Runoff is medium and the potential of erosion is moderate.



VICINITY MAP

SCALE: 1" = 800'

FIGURE 1



SOILS MAP

SCALE: 1" = 2000'

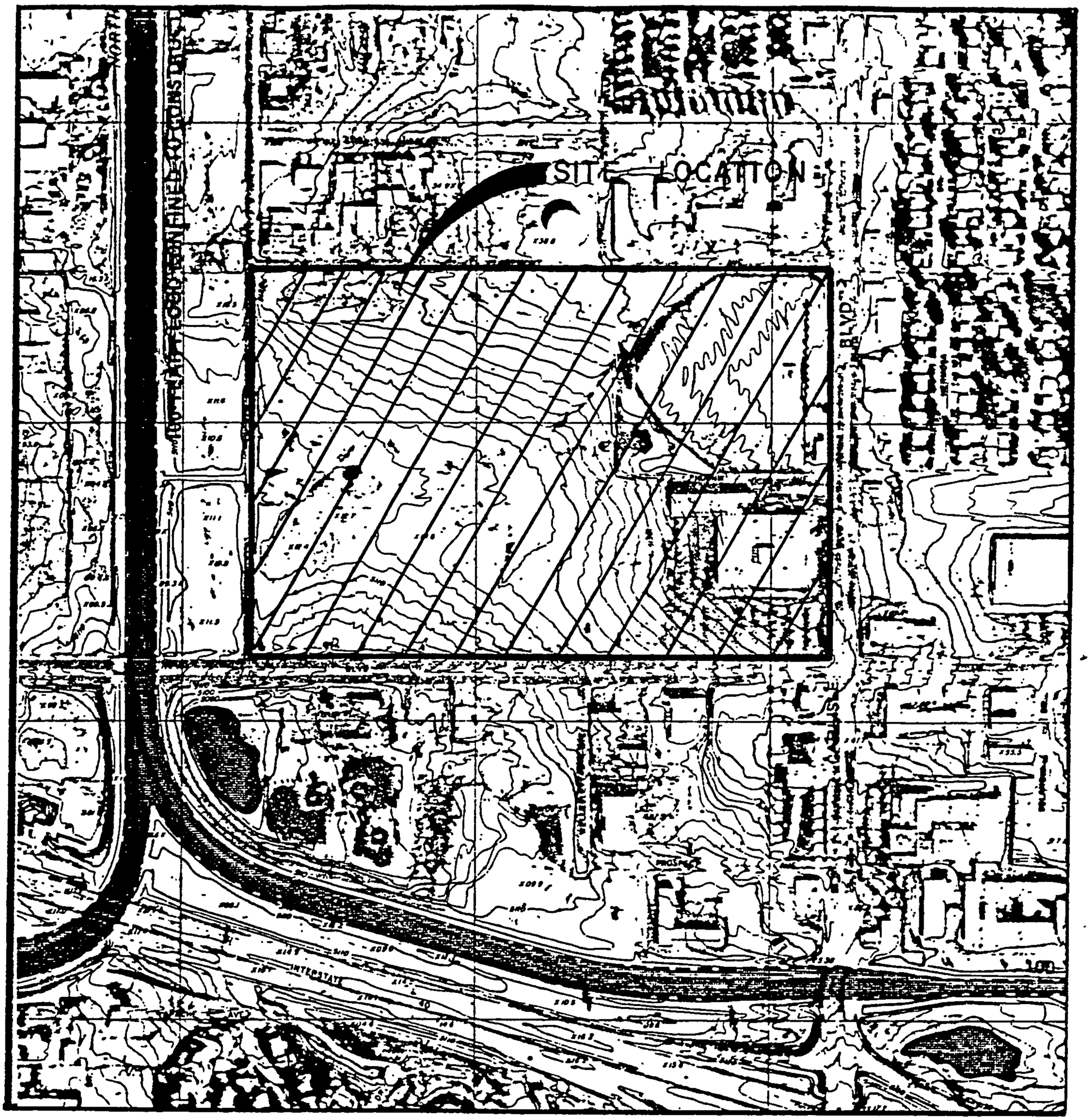
FIGURE 2

EXISTING DRAINAGE CONDITIONS

The project site is located on a parcel of land which has been partially developed. Previous development consists of the existing American Furniture site on Block A-1, American Square Shopping Center on Block B, and the abandoned Duke City Drive-In Theater site on Tract "F". Major infrastructure improvements which consist of water, drainage, sanitary sewer, and paving were provided with Phase I development of the project. The remainder of the site is undeveloped and covered with sparse native vegetation.

The approved downstream analysis provided in this report outlines the existing drainage conditions which effected the site prior to Phase I development. In general, the Menaul Boulevard frontage (approximately ±19 acres), including the American Furniture site, drains southwesterly into the existing storm drainage facilities located in Menaul Boulevard. The remainder of the site (approximnately ± 38 acres) drains westerly to an existing sag point in Richmond Drive where all flows collect and drain through an existing concrete channel to the North Diversion Channel. The site is bounded by Carlisle Boulevard, Menaul Boulevard, Richmond Drive and Claremont Avenue, all improved public streets. Claremont, Carlisle and Menaul all have existing storm sewer improvements. As a result of improvement of these adjoining streets, no offsite flows enter the site.

As shown by Panel 23 of 50 of the Flood Boundary and Floodway maps for the City of Albuquerque (see Figure 3), this site does not lie within a designated flood hazard zone.



FLOOD HAZARD MAP

SCALE: 1" = 500'

FIGURE 3

PROPOSED DRAINAGE CONDITIONS

The proposed drainage plan (see Pocket) identifies the improvements required to manage developed storm runoff from the project site. This plan shows: 1) drainage basins; 2) developed peak flowrates at various analysis points; 3) existing and proposed elevations indicated by spot elevations and contours at 2'-0" intervals; 4) drainage patterns; 5) existing and proposed street and drainage infrastructure improvements; and 6) continuity between existing and proposed elevations.

The proposed development shall occur in several phases. Phase I (existing) consists of the development of Tract "B-1" into a major retail center. Phase I triggered all required infrastructure necessary to support the original subdivision. Phase II (existing) consists of the reconstruction of the existing parking lot of American Furniture (Tract A-1) in accordance with the approved Site Development Plan. The remaining tracts will remain undeveloped until future development schedules are identified.

Pre-design conferences with City Hydrology indicated that in conjunction with the conceptual drainage plan, a downstream analysis would be required to identify onsite ponding requirements, if any. The results of this analysis are included in this report for review. The study, in association with the conceptual report, concluded that downstream capacity exists provided that some minor infrastructure be provided. The required infrastructure was constructed as Phase I and is described on the plan.

As shown by the plan, all stormwater will be routed overland to either existing or proposed drainage facilities. The site is divided into two (2) major drainage basins. The character and management of each basin is described below:

I. BASIN "A"

In general, Basin "A" drains southerly into Menaul Boulevard and the existing storm drainage facilities in Menaul Boulevard. Basin "A" is divided into six (6) sub-basins which are described below:

A. Basin "A-1"

This basin consists of the existing American Furniture building. As-built information indicates that the roof drains by means of a private storm sewer into the existing storm sewer located in Menaul Boulevard (Analysis Point #1).

B. Basin "A-2"

This basin consists of the existing American Furniture parking lot and a portion of Block B-1, which drains through drivepads and sidewalk culverts into Menaul Boulevard (Analysis Point #2).

C. Basin "A-3"

This basin consists of a portion of Block F-1. This basin is programmed to drain into an existing private drop inlet provided by the American Square Shopping Center (Analysis Point #4).

D. Basin "A-4"

This basin, along with Basin "A-3", drains southerly to an existing private drop inlet which is connected to the existing transverse inlet box located in Menaul Boulevard (Analysis Point #4).

E. Basin "A-5"

This basin represents a portion of the American Square Shopping Center parking lot and a portion of Bryn Mawr Drive. This basin drains into Menaul Boulevard through drivepads and sidewalk culverts (Analysis Point #5).

F. Basin "A-6"

This basin consists of Tract "C" which will drain into Menaul Boulevard through sidewalk culverts (Analysis Point #6). Tract "C" will not be developed at this time.

II. BASIN "B"

In general, Basin "B" drains westerly by means of private and public streets to the existing concrete channel located at the sag point of Richmond Drive (Analysis Point #13). The existing channel conveys all stormwater to the North Diversion Channel. Basin "B" is divided into six (6) sub-basins which are described below:

A. Basin "B-1"

This basin consists of a portion of the American Square Shopping Center project and private drive and drains westerly to the sag point of Bryn Mawr Drive (Analysis Point #12).

B. Basins "B-2" and "B-3"

These basins represent portions of Block E-1 and drain westerly by means of public and private streets to the sag point of Bryn Mawr Drive (Analysis Point #12). Basins "B-2" and "B-3" will not be developed at this time. Basins "B-1" thru "B-3" merge at Analysis Point #12 and drain through the existing public channel to Richmond Drive.

C. Basin "B-4"

This basin represents Tract "D" and drains into Richmond Drive by means of drivepads and sidewalk culverts (Analysis Point #10). Basin "B-4" will not be developed at this time.

D. Basin "B-5"

This basin represents a portion of Block E-1 and drains into American Drive and Richmond Drive by means of drivepads and sidewalk culverts (Analysis Point #11). Basin "B-5" will not be developed at this time.

E. Basin "B-6"

This basin represents a portion of Block F-1 and drains to Analysis Point #12 along with Basins "B1-B3".

As shown by the calculations (see page 10 of calculations), the inlet to the existing public channel located on the sag point of Bryn Mawr Drive does not have adequate capacity to accept developed runoff from Basins B1, B2, B3 and B6. The initial Drainage Report sized an inlet facility capable of draining these flows. Design drawings for Project 3031 provided details for the construction of the required facilities. Field design revisions made by the City of Albuqeurque Construction Management Division resulted in a substandard structure. This deficiency was noted by EH&A (see Exhibit "A") after construction. This report recommends reconstruction of the channel inlet to provide downstream capacity.

EROSION CONTROL PLAN

Temporary erosion control facilities will be required on all parcels during construction phase operations. Temporary erosion control facilities required during the construction phase operations of future developments shall be outlined and detailed on the specific grading and drainage plans for each proposed development. Temporary erosion control facilities shall remain in place on each respective tract or development until paving operations are complete.

CONCLUSIONS

The following conclusions can be made regarding the stormwater management of this development:

1. Free discharge of developed stormwater is allowed in accordance with the approved conceptual drainage plan and downstream analysis.

2. The development of Phase I (American Square) will trigger the improvements required by the approved infrastructure listing.

3. This development will not increase the flooding potential of downstream properties.

4. This site does not lie within a designated flood hazard zone.

5. An erosion control plans will be required to prevent erosion and the transport of sediment.

6. Specific grading and drainage plans will be required for the development of each tract or parcel and shall be in compliance with this drainage master plan.

7. The channel inlet at Bryn Mawr Drive must be upgraded to provide adequate capacity.

ESPEY,
HUSTON &
ASSOCIATES, INC.
Engineering & Environmental Consultants

EXHIBIT "A"

July 24, 1987

Mr. Phil Fischer
Senior Civil Engineer
Construction Management
City of Albuquerque
P.O. Box 1293
Albuquerque, New Mexico 87103

SUBJECT: American Square, Phase I
City Project No. 3031
EH&A Job No. 7935

Dear Phil:

Espey, Huston and Associates, Inc. (EH&A) has visually inspected the concrete channel inlet and outlet structures at the subject project and found them not to be in accordance with approved plans. We have also been notified that the Hydrology Section is not satisfied with the as-built condition of the structures. Because the redesign of the structures was done without knowledge or approval by EH&A, we will assume no liability for acceptability or function of the facilities.

Sincerely,

Dennis A. Lorenz, P.E.
Engineering Manager

/kh

cc; Mr. Joe Grevey
Mr. George Rainhart
Mr. George Selvia
Mr. Russell Givler
Mr. Roger Green

317 Commercial N.E. • Albuquerque, New Mexico 87102 • (505) 242-1909

CALCULATIONS

I. DESIGN CRITERIA

THE DESIGN CRITERIA PRESENTED HEREIN IS IN ACCORDANCE WITH THE DEVELOPMENT PROCESS MANUAL, VOLUME II, CHAPTER 22.

HYDROLOGIC METHOD:

A. RATIONAL METHOD FOR FLOWRATES

B. SCS METHOD FOR VOLUMES

THIS IS CONSISTENT WITH THE APPROVED CONCEPTUAL DRAINAGE PLAN AND REPORT, AND DOWNSTREAM ANALYSIS.

SOILS INFORMATION:

CUT AND FILL LAND (CuL) TYPE 'A'

WINK - EMBUDO COMPLEX (WeB) TYPE 'B'

RAINFALL:

$P_{100} = 2.2$ in $P_{10} = 1.44$ in.

* REVISED POINT RAINFALL VALUES WILL NOT BE USED WITH THIS UPDATE TO BE CONSISTENT WITH APPROVED REPORT AND PROJECT NO 3031.

RUNOFF COEFFICIENTS:

A. RATIONAL 'C' FACTORS

$C_L = 0.25$ $C_P = 0.95$

$C_R = 0.90$ $C_{UND.} = 0.40$

B. SCS 'CN'

PER PLATE 22.2 C-2

COMMERCIAL AND BUSINESS AREAS

CN = 89 (TYPE 'A' SOILS)

CN = 92 (TYPE 'B' SOILS)

II RUNOFF

NOTES: 1. INTENSITY $i_{100} = 4.65''/hr$ ($t_c = 10$)

$i_{100} = 4.24''/hr$ ($t_c = 12$)

* $i_{100} = 4.07''/hr$ ($t_c = 13$)

2. ALL RUNOFF COEFFICIENTS ARE DETERMINED USING THE APPROVED SITE DEVELOPMENT PLAN AND ARE SUBJECT TO CHANGE.

ESPEY, HUSTON & ASSOCIATES INC.
Engineering & Environmental Consultants

AMERICAN SQUARE

SUBJECT CALCULATIONS

SHEET 3 OF 10
DATE 8-7-86 BY DL
CK BY

REVISED AP# 13 8-26-86 DL
* UPDATED 4-5-89 DL

DEVELOPED CONDITIONS

	AP#	BASIN	AREA AC±	L FT.	H FT.	tc MIN.	%IMP.	'C'	Q100 CFS	Q10 CFS	CN	RO100 IN.	RO10 IN	V100 CF.	V10 CF
	1	A1	2.2	800	10	10	100	0.90	9.2	6.0	89	1.2	0.6	9580	4790
	2	A2	3.7	710	10	10	82	0.82	14.1	9.3	89	1.2	0.6	16,120	8060
*	3	A3	8.0	900	14	10	85	0.83	30.9	20.3	92	1.45	0.75	42,108	21,780
	4	A4	6.4	945	17	10	89	0.87	25.9	17.0	89	1.2	0.6	27,880	13,940
	5	A5	3.9	715	23	10	90	0.88	16.0	10.5	89	1.2	0.6	16,990	8495
	6	A6	5.9	500	12	10	85	0.83	22.8	15.0	89	1.2	0.6	25,700	12,850
	7	B1	2.6	820	15	10	88	0.84	10.2	6.7	89	1.2	0.6	11,330	5665
*	8	B2	4.0	1000	23	10	82	0.82	15.3	10.0	90	1.3	0.65	18,876	9438
	9	B3	5.6	600	20	10	88	0.86	22.4	14.7	90	1.3	0.65	26,430	13,215
	10	B4	5.3	600	23	10	75	0.76	18.7	12.3	89	1.2	0.6	23,090	11,545
	11	B5	4.2	950	25	10	86	0.84	16.4	10.8	92	1.45	0.75	22,110	11,055
*	12	B1-3 B6	16.5	1345	28	10	85	0.84	64.4	42.3	90	1.3	0.65	77,864	38,932
*	13	B1-6 OFFSITE	33.9	2000	33	13	83	0.82	113.1	74.3	90	1.3	0.65	159,974	79,987
*	4	A3-4	14.4	1845	34	12	87	0.87	53.1	34.9	91	1.4	0.7	73,180	36,590
*	14	B6	4.3	725	14	10	85	0.83	16.6	10.9	92	1.45	0.75	22,633	11,707

III INFRASTRUCTURE SIZING (EXISTING)*

A. PRIVATE DROP INLET AT EXISTING TRANSVERSE INLET (AP #4). THIS IMPROVEMENT SHALL BE PROVIDED BY THE AMERICAN SQUARE SHOPPING CENTER PROJECT (TRACT B-1). THE CONSTRUCTION DETAIL SHALL BE PROVIDED IN THE GRADING AND DRAINAGE PLAN SUBMITTAL FOR THAT PROJECT. THE FOLLOWING CALCULATIONS ARE PROVIDED FOR INFORMATION ONLY.

* $Q_{100} = 53.1$ CFS

<u>CHECK HEAD REQ'D TO PASS Q_{100} THRU GRATING:</u>

* DI W/2 - STD COA STEEL GRATES

* GRATE OPEN AREA = 9.4 SF ±

USING ORIFACE EQN:

$Q = CA\sqrt{2gh}$

WHERE: $C = 0.65$ ‡
$A = 9.4$ SF
$g = 32.2$ F/S²
$Q = 53.1$ CFS *

$h = Q^2/C^2A^2 2g$

* $h = 1.17'$ (1.2' PROVIDED PER AS-BUILT)

‡ COEF OF DISCHARGE FROM "HANDBOOK OF HYDRAULICS" BRATER AND KING, 1976, SECTION 4.

III INFRASTRUCTURE SIZING (EXISTING)*

A. PRIVATE DROP INLET AT EXISTING TRANSVERSE INLET (AP #4). THIS IMPROVEMENT SHALL BE PROVIDED BY THE AMERICAN SQUARE SHOPPING CENTER PROJECT (TRACT B-1). THE CONSTRUCTION DETAIL SHALL BE PROVIDED IN THE GRADING AND DRAINAGE PLAN SUBMITTAL FOR THAT PROJECT. THE FOLLOWING CALCULATIONS ARE PROVIDED FOR INFORMATION ONLY.

* Q_{100} = 53.1 CFS

<u>CHECK HEAD REQ'D TO PASS Q_{100} THRU GRATING:</u>

* DI W/2 - STD COA STEEL GRATES

* GRATE OPEN AREA = 8.8 SF ±

USING ORIFACE EQN:

$Q = CA\sqrt{2gh}$

WHERE: C = 0.80
A = 8.8 SF
g = 32.2 F/S²
Q = 53.1 CFS *

$h = Q^2/C^2A^2 2g$

C = 0.67
h = 1.26'

* h = 0.88' (PROVIDED PER AS-BUILT)
THIS VALUE IS VERIFIED BY BPR FIG 309.4F

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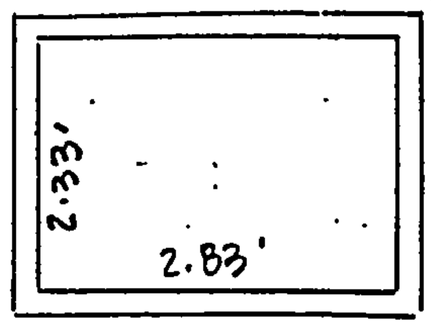
SUBJECT CALCULATIONS

AMERICAN SQUARE

SHEET 5 OF 10 BY DL
DATE 8-7-86 CK BY

* UPDATED 4-5-89 DL

CHECK HEAD REQ'D AT CONDUIT ENTRANCE:



CONDUIT SECTION

① FIND REQ'D h BY ORIFACE:

$Q = CA\sqrt{2gh}$ WHERE: $Q = 53.1$ CFS *
$C = 0.80$
$A = 6.6$ SF
$g = 32.2$ F/S²

* $h = Q^2/C^2A^2 2g = \underline{\underline{1.57'}}$

DETERMINE MINIMUM CONDUIT INVERT ELEV:

GRATE ELEV = 11.00 PER PLAN

* h = 0.88' OVER GRATE ⇒ WS = 11.88

SUBTRACT h = 1.57* (CONDUIT HEAD REQ'D)

LESS 1/2 CONDUIT HEIGHT (2.83/2 = 1.42')

* UPDATED 4-5-89 DL

* ⇒ MINIMUM INV = 11.00 + 0.87 - 1.57 - 1.42 = 8.88

AS SHOWN BY PLAN INV = 8.00 ✓

CHECK CONDUIT CAPACITY & FLOW DEPTH:

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

WHERE: $n = 0.013$
$A = 6.61$
$S = 0.017$
$R = 0.64$

$Q_{MAX} = 73.4$ CFS > Q_{100} (53.1 CFS) *

FOR DEPTH: $A = 2.83Y$
$P = 2.83 + 2Y$
$R = A/P$

BY T:E; $Y_{100} = 1.6' \pm$ *

B. PUBLIC CONCRETE CHANNEL (AP # 12)
*(NOT CONSTRUCTED PER PROJECT 3031)

INLET SIZING - CONCRETE RUNDOWN:

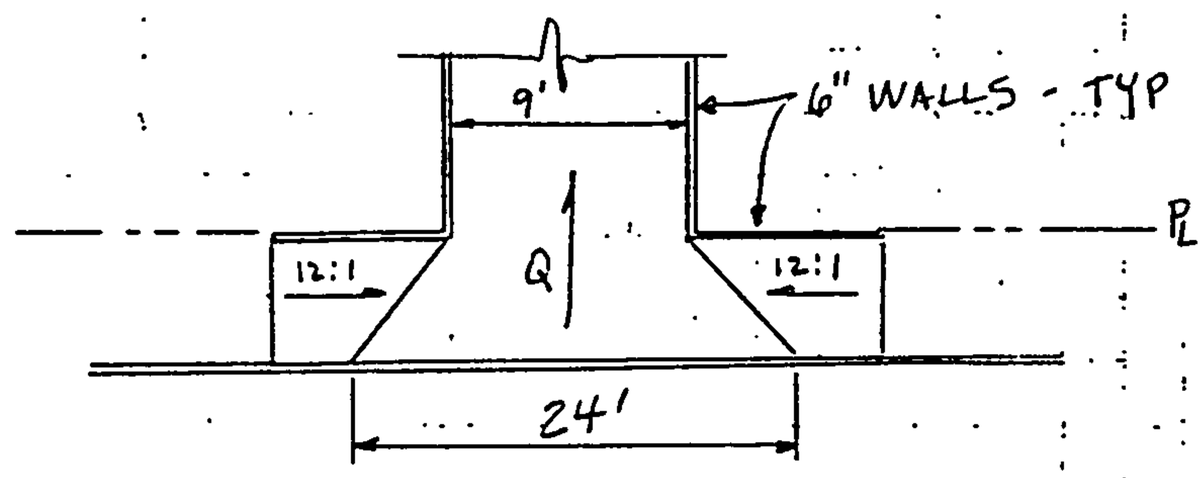
* $Q_{100} = 64.4$ CFS

USE WEIR EQN: $Q = 3.33 L H^{3/2}$

* UPDATED 4-5-89 DL

$H_{max} = 0.87'$ PER ORDINANCE

* $L = Q / 3.33 H^{3/2} = 24' \pm$



PLAN

DETERMINE CHANNEL DEPTH :

* $Q_{100} = 64.4$ CFS

$A = 9Y$

$P = 9 + 2Y$

$S = 0.0088$

$n = 0.013$

$R = A/P$

* $64.4 = \frac{1.49}{0.013}(9Y)(R)^{2/3}(0.0088)^{1/2}$

* $0.67 = YR^{2/3}$

* BY TIE $Y_{100} = 0.85' \pm$ $V = 8.4$ FPS

PER DPM MIN FB = 1.0' IF V < 35 FPS

⇒ MIN CHANNEL DEPTH = 1.8' OK

* SEE PAGE 10 FOR ANALYSIS OF EXISTING CHANNEL INLET.

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SUBJECT CALCULATIONS

AMERICAN SQUARE

SHEET 8 OF 10 BY DL
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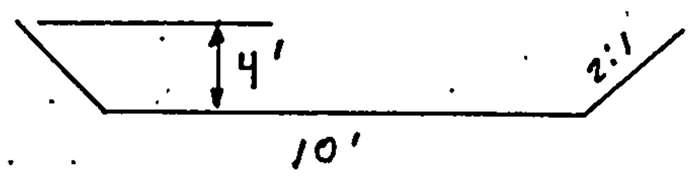
C. CHECK EXISTING CHANNEL AT RICHMOND FOR CAPACITY (AP #13)

CHECK CHANNEL:

* $Q_{100} = 113.1$ CFS

WITH FB = 1':



SECTION

$A = 48$ SF
$P = 10 + 2\sqrt{45} = 23.4$
$R = A/P = 2.05$
$n = 0.013$
$S = 0.009$

$$Q = \frac{1.49}{0.013}(48)(2.05)^{2/3}(0.009)^{1/2}$$

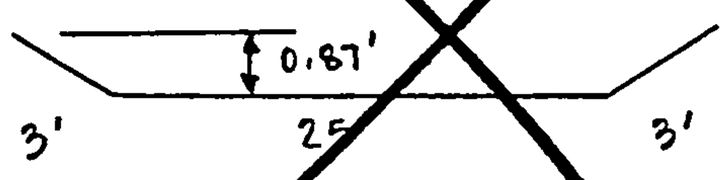
$Q_{MAX} = 842$ CFS >> Q_{100} (113.1)* ✓

* CHECK INLET - CONCRETE RUNDOWN:

$Q_{100} = 113.1$ CFS

USE WEIR EQN: $Q = 3.33 L H^{3/2}$

$H_{MAX} = 0.87'$ PER ORDINANCE



SECTION

$Q_{MAX} = 3.33(25)(0.87)^{3/2} = 67.6$ CFS < Q_{100} (113.1)

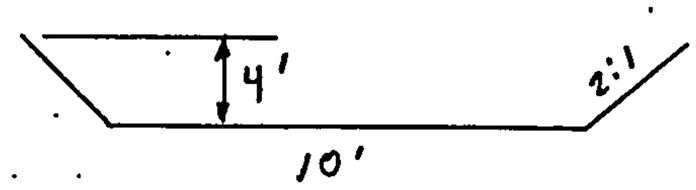
→ NEW RUNDOWN REQ'D FOR DEVELOPED FLOWS

C. CHECK EXISTING CHANNEL AT RICHMOND FOR CAPACITY (AP # 13)

CHECK CHANNEL:

* $Q_{100} = 113.1$ CFS

WITH FB = 1':



SECTION

$A = 48$ SF
$P = 10 + 2\sqrt{45} = 23.4$
$R = A/P = 2.05$
$n = 0.013$
$S = 0.009$

$$Q = \frac{1.49}{0.013}(48)(2.05)^{2/3}(0.009)^{1/2}$$

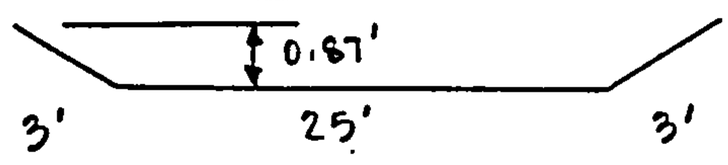
$$Q_{max} = \underline{842 \text{ CFS}} \gg Q_{100}\ (113.1)^{*} \checkmark$$

CHECK INLET - CONCRETE RUNDOWN:

* $Q_{100} = 113.1$ CFS

USE WEIR EQN: $Q = 3.33 L H^{3/2}$

$H_{max} = 0.87'$ PER ORDINANCE



SECTION

$$Q_{max} = 3.33(25)(0.87)^{3/2} = \underline{67.6 \text{ CFS}} < Q_{100}\ (113.1)^{*}$$

⇒ NEW RUNDOWN REQ'D FOR DEVELOPED FLOWS

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SUBJECT CALCULATIONS

AMERICAN SQUARE

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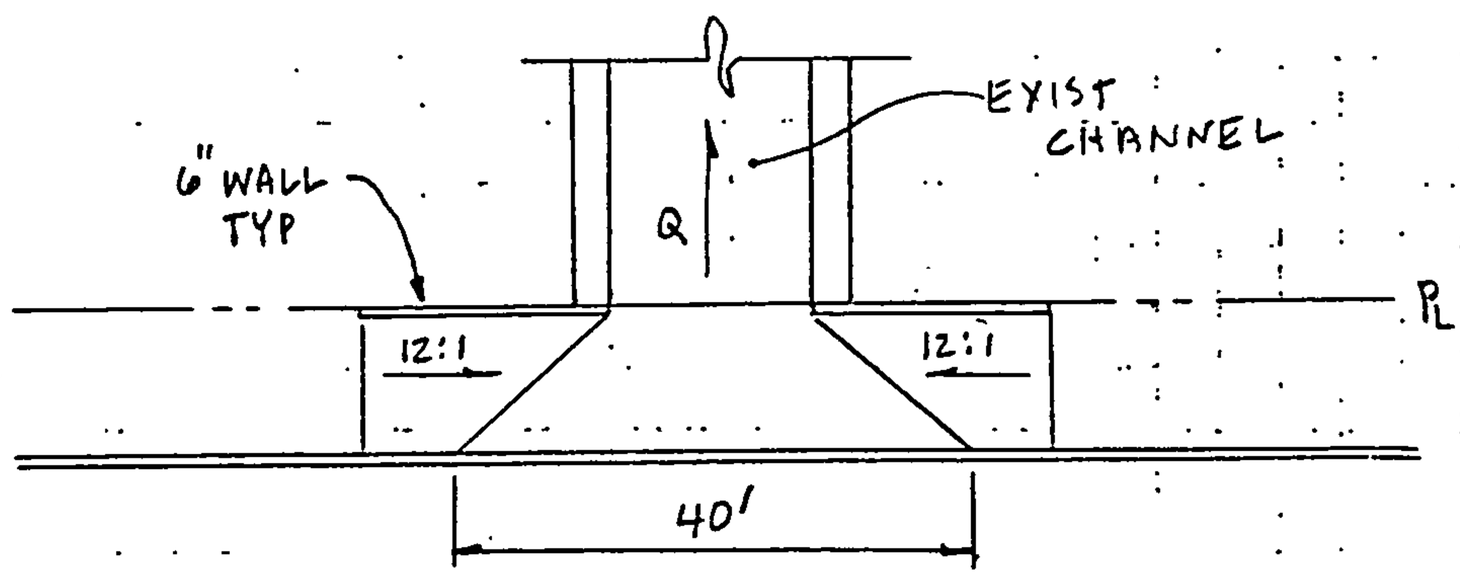
REVISED L, 8-26-86 DL
* UPDATED 4-5-89 DL

DETERMINE REQ'D RUNDOWN WIDTH:

* $Q_{100} = 113.1$ CFS

$H_{max} = 0.87'$

* $L = Q / 3.33 H^{3/2} = \underline{\underline{42}} \pm$



PLAN (EXISTING) *

* CHECK DEPTH AT INLET:

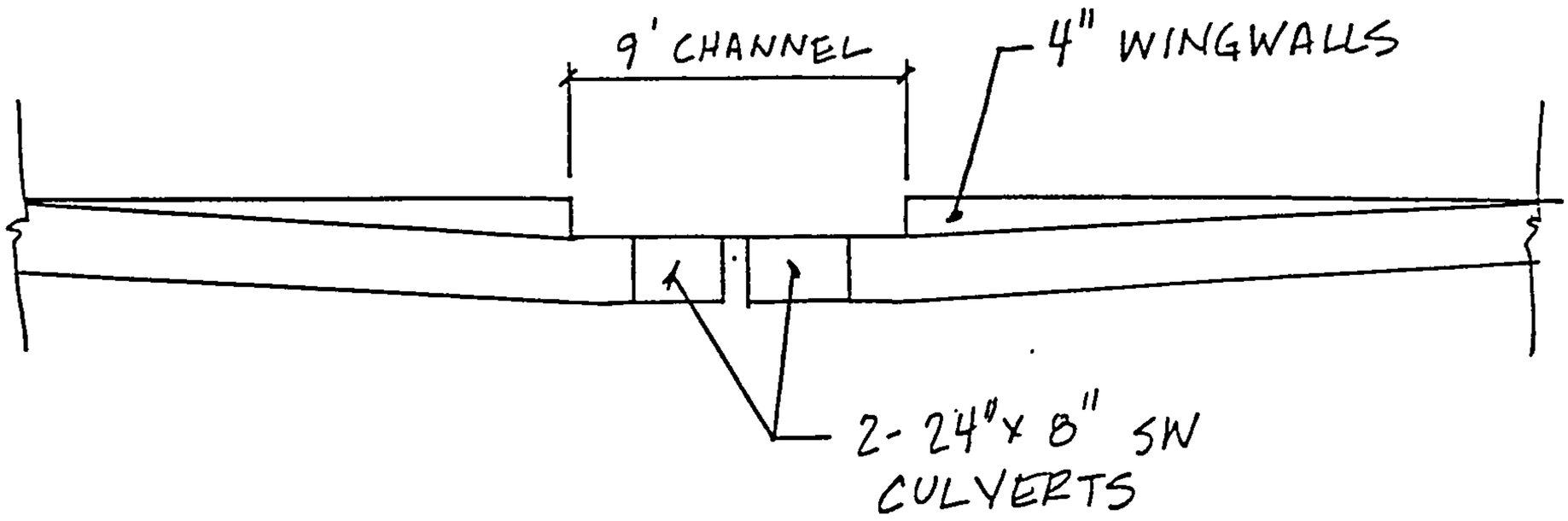
$Q_{100} = 113.1$ CFS

$113.1 = 3.33(40) H^{3/2}$ $H = 0.90' \pm$

ALL FLOWS CONTAINED WITHIN RIGHT-OF-WAY

NO IMPROVEMENT REQUIRED.

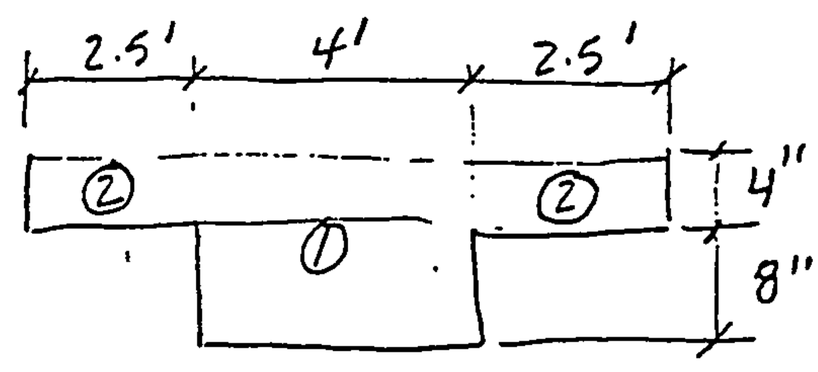
D. ANALYSIS OF EXISTING CHANNEL INLET AT AP # 12:



CHECK CAPACITY BY WEIR EQN:

$Q = 3.33 L H^{3/2}$

FOR SIMPLICITY, IGNORE STEEL SW CULVERT PLATES, USE WEIR ON ENTIRE SECTION



① $L = 4'$ $H = 1'$

$Q_{MAX} = 13.3$ CFS

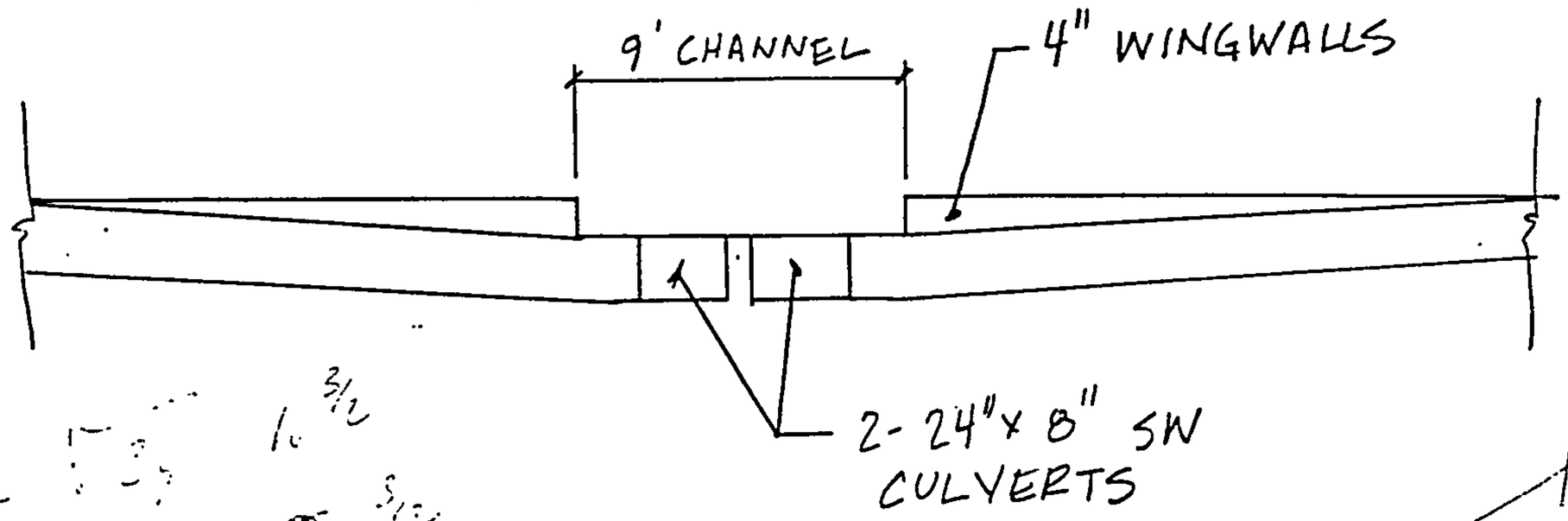
② $L = 2(2.5) = 5'$ $H = .33'$

$Q = 3.2$ CFS

TOTAL CAPACITY = 16.5 CFS ± << Q_{100} (64.4 CFS)

INLET MUST BE RECONSTRUCTED PER SECTION IIIB (PAGE 6) OF THIS DOCUMENT

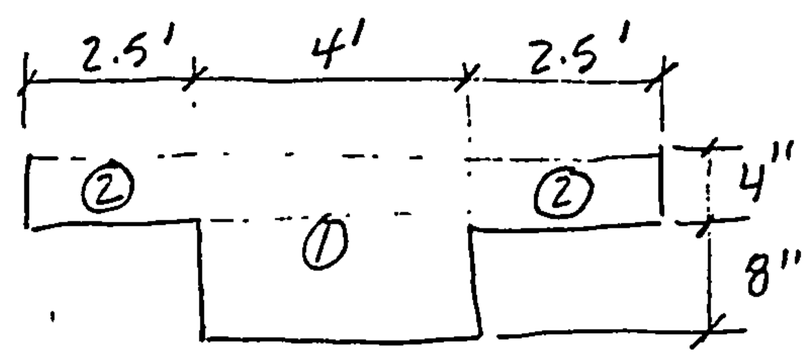
D. ANALYSIS OF EXISTING CHANNEL INLET AT AP # 12:



CHECK CAPACITY BY WEIR EQN:

$Q = 3.33 L H^{3/2}$

FOR SIMPLICITY, IGNORE STEEL SW CULVERT PLATES, USE WEIR ON ENTIRE SECTION



① $L = 4'$ $H = 1'$

$Q_{MAX} = 13.3$ CFS

② $L = 2(2.5) = 5'$ $H = .33'$

$Q = 3.2$ CFS

TOTAL CAPACITY = 16.5 CFS ± << Q_{100} (64.4 CFS)

INLET MUST BE RECONSTRUCTED PER SECTION IIIB (PAGE 6) OF THIS DOCUMENT

DOWNSTREAM ANALYSIS

I. INTRODUCTION

THIS ANALYSIS OUTLINES THE CRITERIA FOR CONTROLLING EXCESS SURFACE STORMWATER RUNOFF FROM THE AMERICAN SQUARE PROJECT. THE SITE LOCATION IS SHOWN ON THE ATTACHED VICINITY MAP. THE LEGAL DESCRIPTION IS: TRACTS W, X, Y & Z, DUKE CITY INDUSTRIAL AREA, AND LANDS OF ALL-STATE THEATERS INC AND VIDEO INDEPENDENT THEATERS, INC. THE PROPOSED ZONING FOR THIS COMMERCIAL AND OFFICE DEVELOPMENT IS C-2 AND C-3 ZONES. THE SITE AREA IS APPROXIMATELY 57 ACRES±.

II ANALYSIS.

THE DRAINAGE BASIN AFFECTING THE PROJECT (SEE BASIN BOUNDARY MAP) DRAINS TO MENAUL BLVD AND THE ARIAFCA NORTH DIVERSION CHANNEL. AS SHOWN BY THE DRAINAGE FACILITIES MAP (ATTACHED), 3 SEPARATE SYSTEMS EXIST TO COLLECT AND CONVEY STORMWATER INTO THE DIVERSION CHANNEL. ANALYSIS POINTS ARE ESTABLISHED AT THESE SYSTEMS TO TEST CAPACITY AND ESTABLISH ALLOWABLE

RUNOFF RATES FROM THE PROJECT SITE.

EACH ANALYSIS POINT IS DISCUSSED BELOW WITH SUPPORTIVE HYDROLOGIC CALCULATIONS. THE RESULTS OF THE STUDY ARE TABULATED IN TABLES 1, 2 & 3.

A. ANALYSIS POINT #1

THIS ANALYSIS POINT IS LOCATED AT THE EXISTING TRANSVERSE INLETS APPROXIMATELY 1100 FEET WEST OF CARLISLE, ON MENAUL. THIS SYSTEM BEGINS WITH BANKS OF INLETS LOCATED EAST OF CARLISLE ON MENAUL, AND NORTH OF MENAUL ON CARLISLE. ADDITIONAL INLETS ARE LOCATED ON MENAUL WEST OF CARLISLE AND EAST OF AP #1. THESE INLETS ARE APPARENTLY INTENDED TO DRAIN ONLY LOW LEVEL STORMS IN THE INTERSECTION AREA, BECAUSE THE MAINLINE SD IS ONLY 21" IN DIAMETER. USING A MINIMUM SLOPE OF 2.6% (AS SHOWN BY AS-BUILTS) THE MAXIMUM SYSTEM CAPACITY IS APPROXIMATELY 25.6 CFS FOR GRAVITY FLOW CONDITIONS.

FOR THIS REASON THE INLET SYSTEM WAS NOT ANALYZED UPSTREAM OF AP #1, BUT THE 25.6 CFS SYSTEM CAPACITY WAS UTILIZED.

AT AP #1 A TRANSVERSE INLET SYSTEM (4'x36' - 2EA) DRAINS TO A 54" SD AND IS CONVEYED TO THE DIVERSION. AT THIS POINT THE SYSTEM GAINS CAPACITY TO DRY UP STREET FLOWS IN MENAUL. AS SHOWN BY TABLE-II THE SYSTEM CAPACITY AT AP #1 EXCEEDS Q100. THE 54" SD AT A MINIMUM SLOPE OF 2.2% CAN CARRY APPROXIMATELY 292 CFS. THE CAPACITY OF THE INLET STRUCTURE IS GREATER THAN Q100.

1. 54" RCP CAPACITY

$A = 15.9\,SF$
$S = 0.022$
$P = 14.14'$
$R = 1.12'$
$n = 0.013$

$$Q = \frac{1.49}{0.013}(15.9)(1.12)^{2/3}(0.022)^{1/2}$$

$$Q_{MAX} = 292\ CFS \gg Q_{100}$$

$$Q_{100} = 104.4\ CFS$$

2. INLET CAPACITY

EACH INLET = 4' x 36' = 144 SF

PER COA DWG K:

EACH GRATE = 48" x 25" = 8.33 SF

W/ STL = 1/2" THK

OPEN AREA = (25" - 13(.5))(48 - 9(.5))

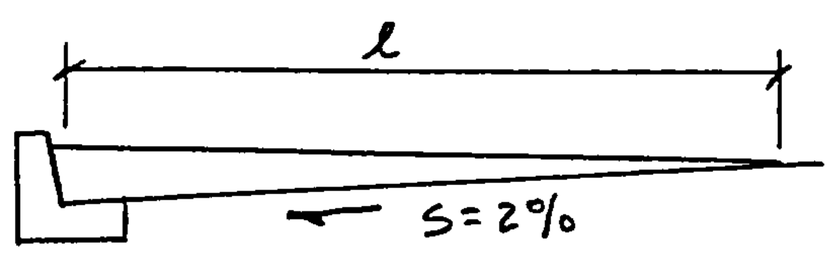
= 5.59 SF / GRATE

% OPEN AREA = $\frac{5.59}{8.33}$ = 68%

⇒ USE ORIFICE TO ESTIMATE CAPACITY

STREET d = 0.7'

⇒ FIND AMOUNT OF WATER OVER GRATE



$\ell = \frac{d}{S} = \frac{0.71}{0.02} = 35'$

LOCATE CENTROID OF AREA

$\bar{X} = \frac{2}{3}\ell = 23.3'$

$d(@\bar{X}) = 23.3(0.02) = 0.47'$

AREA = 35' x 4' x 0.68 = 95.2 SF

BY ORIFICE:

$Q = CAK\sqrt{2gh}$

$Q = 311$ CFS

$C = 0.8$
K (CLOG) $= 0.75$
$h = 0.47'$ (.5 X)
$g = 32.2$
$A = 95.2$

CONSIDERING THE LONGITUDINAL STREET SLOPE OF 3% IT IS UNREASONABLE TO EXPECT THE INLET TO DRAIN 311 CFS. HOWEVER, THE Q100 IN MENAUL (WESTBOUND) IS ONLY 91.6 CFS, WHICH IS $\frac{91.6}{311} = 21\%$ OF THIS ESTIMATED CAPACITY. THIS SEEMS REASONABLE. THEREFORE, WE CAN CONCLUDE THAT THE SYSTEM AT AP #1 WILL DRAIN THE DEVELOPED Q100.

B. ANALYSIS POINT # 2

THIS ANALYSIS POINT IS LOCATED AT THE EXISTING INLETS (SAG POINT) IN MENAUL BLVD APPROXIMATELY 1700 FEET WEST OF CARLISLE. AS PROVEN BY THE PRECEEDING ANALYSIS OF AP#1, THIS SYSTEM INTERCEPTS RUNOFF GENERATED BY BASINS 4 & 5 ONLY.

THE EXISTING SYSTEM CONSISTS OF 2 - DOUBLE 'C' INLETS (ONE EA. SIDE OF STREET) WITH A 30" SD DRAINING TO A DETENTION FACILITY WHICH THEN DISCHARGES TO THE DIVERSION. THE INLETS ARE LOCATED AT A SAG POINT, THEREFORE, AN ORIFICE CALCULATION SHALL DETERMINE CAPACITY:

1. INLET CAPACITY

FOR D/C (2 GRATES): OPEN AREA = 11.18 SF

LET $h = 0.87'$ (PER ORDINANCE)

$Q = CAK\sqrt{2gh}$

$Q = 50.2$ CFS / INLET

$C = 0.8$
$K(\text{CLOG}) = 0.75$
$h = 0.87'$
$g = 32.2$
$A = 11.18$ SF

⇒ INLET CAPACITY EXISTS FOR BASINS 4 & 5.

2. 30" RCP CAPACITY

$A = 4.91$ SF
$S = 0.0185$
$P = 7.85'$
$R = 0.63'$
$n = 0.013$

$$Q = \frac{1.49}{0.013}(4.91)(.63)^{2/3}(0.0185)^{1/2}$$

$Q_{MAX} = 56$ CFS $\gg Q_{100}$

$Q_{100} = 56$ CFS

FROM THIS ANALYSIS WE CAN CONCLUDE THAT THIS SYSTEM CAN ACCEPT DEVELOPED FLOWS FROM BASIN 4, THEREFORE GRANTING FREE DISCHARGE FROM THIS PORTION OF THE PROJECT. IT IS NOT ANTICIPATED THAT THE DEVELOPED BASIN BOUNDARIES WILL CHANGE.

C. ANALYSIS POINT #3.

THIS ANALYSIS POINT IS LOCATED AT THE EXISTING DRAINAGE CHANNEL BETWEEN RICHMOND AND THE DIVERSION CHANNEL. THE CHANNEL PRESENTLY DRAINS 56.9 ACRES ± WHICH COMPRISES A MAJORITY OF THE PROJECT SITE. IT IS PROPOSED THAT THIS FACILITY CONTINUE TO DRAIN THIS AREA ASSUMING CAPACITY EXISTS AND STREET DEPTH CRITERIA IS SATISFIED.

1. CHECK STREET CAPACITY (RICHMOND)

WIDTH = 40' FF

SLOPE (AVE) = 0.025

BY ORDINANCE d_{10} (MAX) = 0.5'
d_{100} (MAX) = 0.87'

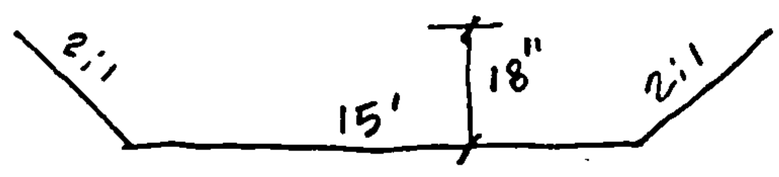
⇒ BY PLATE 22.3 D-2 :

Q_{100} (MAX) = 180 CFS > Q_{100} DEV , $Q_{100\,DEV}$ = 139.1 CFS

Q_{10} (MAX) = 46 CFS. < Q_{10} DEV , $Q_{100\,DEV}$ = 91.5 CFS

IT APPEARS THAT d10 CRITERIA AS ESTABLISHED BY THE DRAINAGE ORDINANCE WILL BE EXCEEDED. IT IS REQUESTED THAT d10 CRITERIA BE WAIVED.

2. CHANNEL CAPACITY



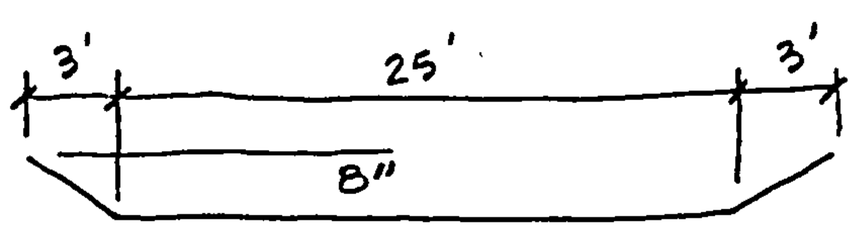
TYP SECTION

A = 27SF
P = 15 + 2(3.35) = 21.7'
R = 1.24'
S = 0.01 (MIN)
n = 0.013

$$Q = \frac{1.49}{0.013}(27)(1.24)^{2/3}(0.01)^{1/2} = 357 \text{ CFS} \gg Q_{100}$$

Q_{100} = 139.1 CFS

3. ENTRANCE CAPACITY



ENTRANCE SECTION

⇒ CHECK CAPACITY BY WEIR EQN

$Q = 3.33 L H^{3/2}$ $\quad L = 28'$, $H = 0.87'$

$Q = 75.7$ CFS $< Q_{100}$, $Q_{100} = 139.1$ CFS

POOR ENTRANCE CONDITION

⇒ CHECK CAPACITY BY MANNINGS:

$Q = \frac{1.49}{0.017}(18.76)(0.6)^{2/3}(0.01)^{1/2}$

$Q_{MAX} = 153.4$ CFS $> Q_{100}$

$Q_{100} = 139.1$ CFS

$A = 18.76$
$P = 31.14$
$R = 0.60$
$S = 1\%$
$n = 0.017$

THIS ANALYSIS SHOWS THAT THE MAIN CHANNEL HAS ADEQUATE CAPACITY FOR DEVELOPED CONDITIONS. HOWEVER, THE ENTRANCE CONDITION IS POOR AND WILL REQUIRE MODIFICATION. IT IS PROPOSED THAT THE WIDTH OF THE ENTRANCE OPENING BE INCREASED TO 55' AND A TRANSITION TO THE EXISTING CHANNEL BE PROVIDED

⇒ CHECK PROPOSED ENTRANCE CONDITIONS BY WEIR EQN.

$Q = 3.33 L H^{3/2}$ $\quad L = 55'$, $H = 0.87'$

$Q = 148.6$ CFS $> Q_{100}$, $Q_{100} = 139.1$ CFS

TABLE I - HYDROLOGIC CALCULATIONS

BASIN	AREA	L	H	t_c	i_{100}	i_{10}	% IMP.	SOILS	C_{DEV}	Q_{100}	Q_{10}
1	44.3	5150	79	28	2.75	1.81	60	15% WEB 85% CU	0.51	62.1	40.8
2	9.7	3600	72	19	3.35	2.20	95	30% WEB 70% CU	0.94	30.5	20.0
3	23.5	1550	37	10	4.65	3.06	90	40% WEB 60% CU	0.80	87.5	57.6
4	14.0	800	15	10	4.65	3.06	90	CU	0.76	49.5	32.6
5	1.4	600	15	10	4.65	3.06	100	WEB	1.00	6.5	4.3
6	37.4	1600	30	10	4.65	3.06	90	40% WEB 60% CU	0.80	139.1	91.5
1+3	67.8	5150	79	28	2.75	1.81	64	27% WEB 73% CU	0.56	104.4	68.7

DESIGN CRITERIA

RAINFALL : $P_{100} = 2.2''$ $P_{10} = 1.45''$

SOILS : CU - GROUP 'A'
WEB - GROUP 'B'

$t_c = 0.0078\, L^{0.77} / S^{0.385}$

$i = P\, 6.84\, t_c^{-0.51}$

$Q = C i A$

$V = C (P_6/12) A$

ALL AS OUTLINED IN THE DPM, CHP 22, VOL II.

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Engineering & Environmental Consultants

AMERICAN SQUARE

SUBJECT DOWNSTREAM ANALYSIS
SHEET 10 OF 17 BY RK
DATE 1-16-86 CK BY JG

TABLE II - SYSTEM CAPACITY FOR 100YR STORM

AP #	CONTRIB BASINS	Q100	STREET SLOPE	STREET d	INLET TYPE	INLET Q	PIPE DIA.	PIPE SLOPE	PIPE QMAX	PIPE Q ACT	Q SYSTEM	Q RESIDUAL
* GIVEN: AS SHOWN BY THE DRAINAGE FACILITIES MAP H-16N, THE EXISTING SYSTEM UPSTREAM OF AP#1 IS LIMITED BY A MAINLINE PIPE DIAMETER OF 21". THIS LIMITS THE SYSTEM CAPACITY TO APPROX. 25.6 CFS UNDER GRAVITY FLOW.												
1 NORTH	1 + 3	91.6‡	0.03	0.70'	TRANSV.	91.6	54"	0.022	292 CFS	91.6	91.6	0
1 SOUTH	2	17.7‡	0.03	0.54'	TRANSV.	17.7	54"	0.022	292 CFS	17.7	109.3	0
* ADD Q SYSTEM FROM ABOVE											134.9	0
2 NORTH	4	49.5	SAG	0.87' MAX	DBL 'C'	49.5	30"	0.0185	56 CFS	49.5	49.5	0
2 SOUTH	5	6.5	SAG	0.87' MAX	DBL 'C'	6.5	30"	0.0185	56 CFS	6.5	56.0	0
3	6	139.1	SAG		CHANNEL	—	—	—	—	—	139.1	0

‡ SUBTRACTED 25.6/2 = 12.8 CFS FROM EACH BASIN

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AMERICAN SQUARE

SUBJECT ANALYSIS DOWNSTREAM
SHEET 17 OF 17 BY DL
DATE 1-16-86 CK BY TKO

TABLE II. SYSTEM ANALYSIS FOR CONTROL TO

AP #	CONTRIB BASINS	Q10	STREET SLOPE	STREET d	INLET TYPE	INLET Q	PIPE DIA.	PIPE SLOPE	PIPE QMAX	PIPE Q ACT	Q SYSTEM	Q RESIDUAL
* GIVEN: AS SHOWN BY THE DRAINAGE FACILITIES MAP H-16N, THE EXISTING SYSTEM UPSTREAM OF AP#1 IS LIMITED BY A MAINLINE PIPE DIAMETER OF 21". THIS LIMITS THE SYSTEM CAPACITY TO APPROX 25.6 CFS UNDER GRAVITY FLOW.												
1 NORTH	1 + 3	55.9†	0.03	0.59'	TRANSV.	55.9	54"	0.022	292 CFS	55.9	55.9	0
1 SOUTH	2	7.2†	0.03	0.35'	TRANSV.	7.2	54"	0.022	292 CFS	7.2	63.1	0
* ADD Q SYSTEM FROM ABOVE											88.7	0
2 NORTH	4	32.6	SAG	0.5' MAX	DBL 'C'	32.6	30"	0.0185	56 CFS	32.6	32.6	0
2 SOUTH	5	4.3	SAG	0.5' MAX	DBL 'C'	4.3	30"	0.0185	56 CFS	4.3	36.9	0
3	6	91.5	SAG		CHANNEL	—	—	—	—	—	91.5	0

† SUBTRACTED 25.6/2 = 12.8 CFS FROM EACH BASIN.

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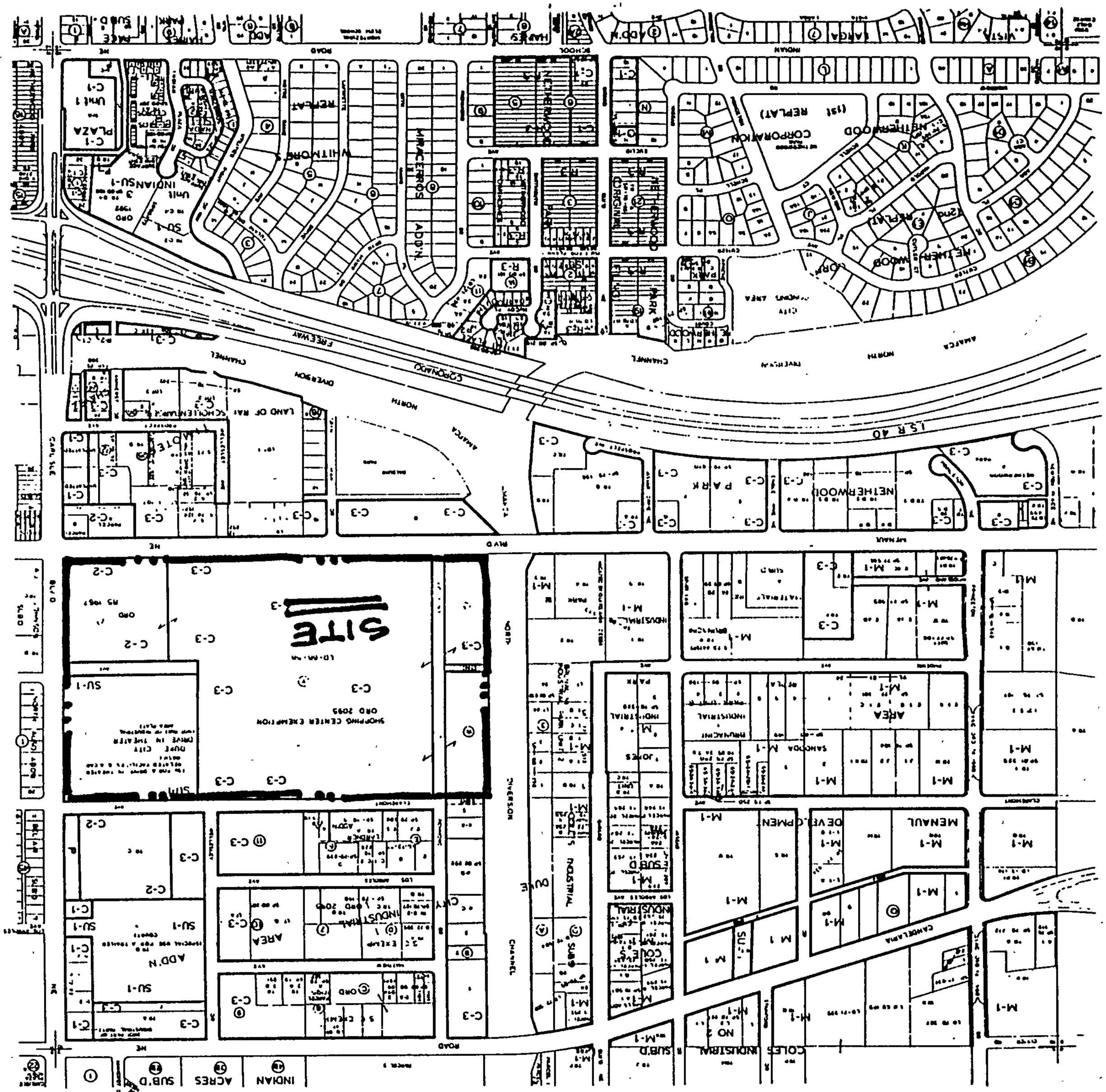
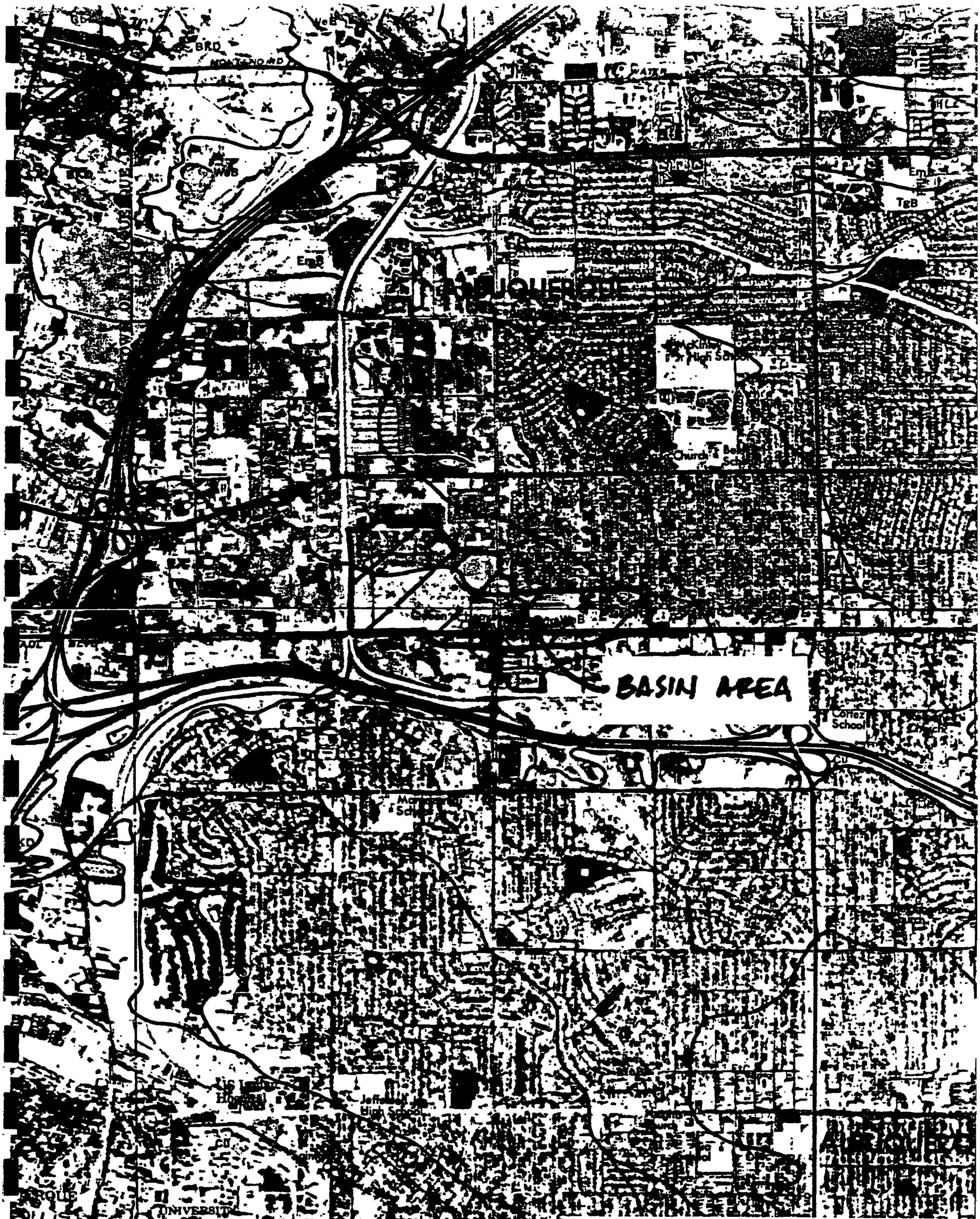
AMERICAN SQUARE

SUBJECT ANALYSIS DOWNSTREAM
SHEET 12 OF 17 BY DL
DATE 1-16-86 CK BY JTO



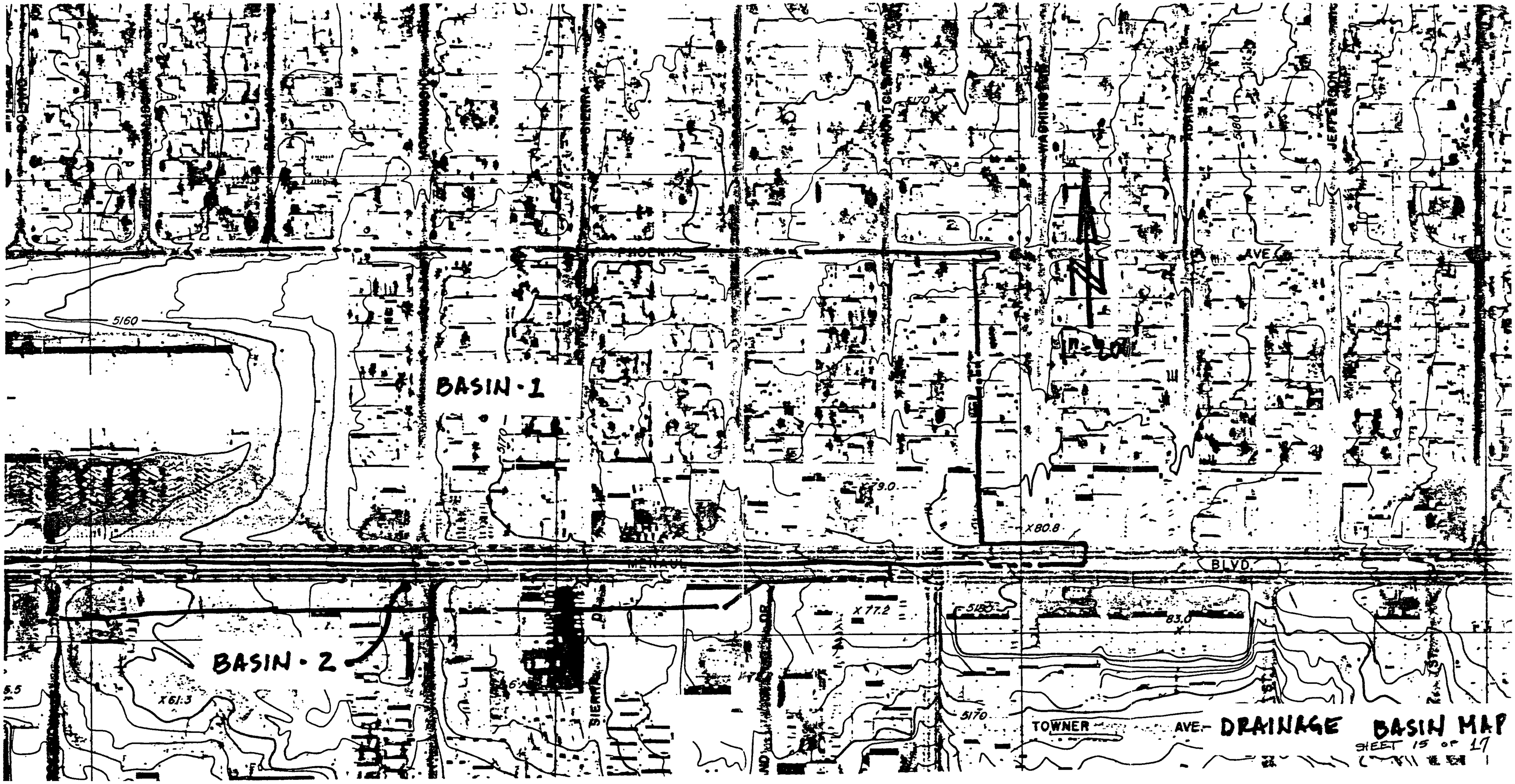
H-16-Z

SHEET 17 OF



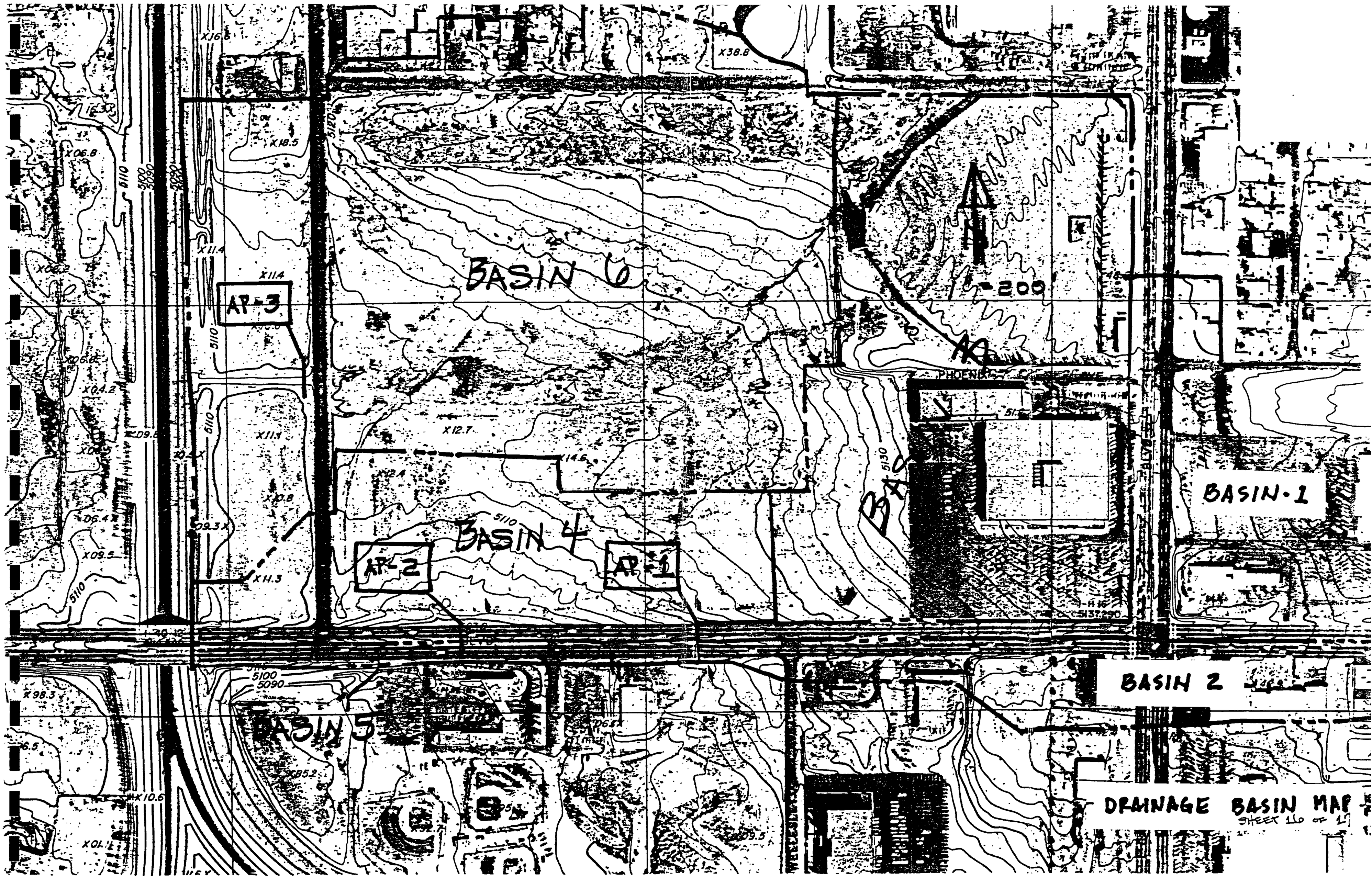
SOILS MAP

SHEET 14 OF 17



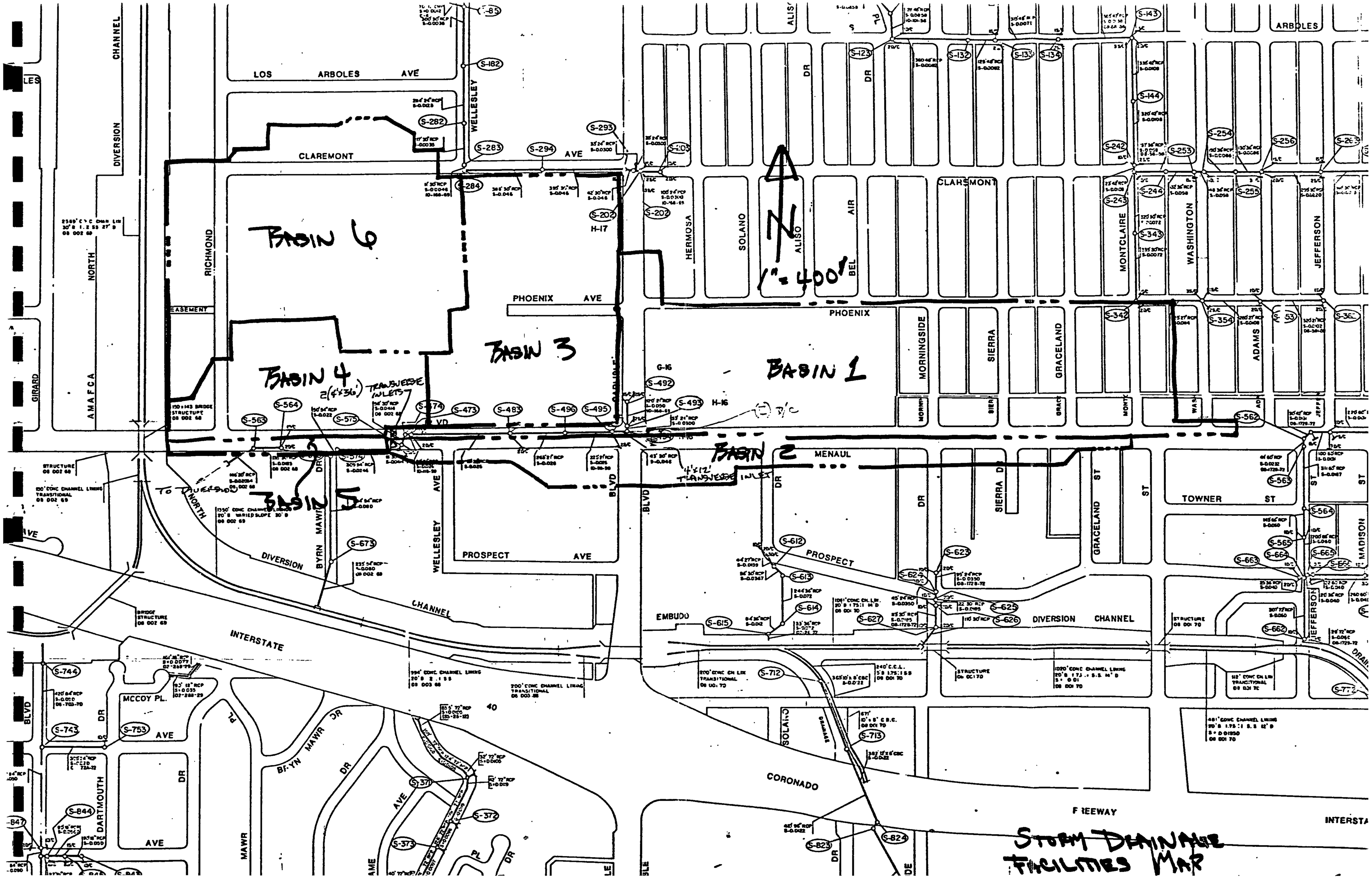
DRAINAGE BASIN MAP

SHEET 15 of 17



DRAINAGE BASIN MAP

SHEET 1 of 1


BASIN 6
BASIN 3
BASIN 4
2(4'x36') TRANSVERSE INLETS
BASIN 1
BASIN 2
4'x12' TRANSVERSE INLET
BASIN 5
1" = 400'
N
LOS ARBOLES AVE
CLAREMONT AVE
PHOENIX AVE
PROSPECT AVE
MENAUL
CLARSMONT
ARBOLES
TOWNER ST
DIVERSION CHANNEL
INTERSTATE
FREEWAY
CORONADO
EMBUDO
MCCOY PL.
RICHMOND
WELLESLEY
HERMOSA
SOLANO
ALISO
MORNINGSIDE
SIERRA
GRACELAND
MONTCLAIRE
WASHINGTON
JEFFERSON
ADAMS
MADISON
DARTMOUTH
BYRN MAWR
NORTH
AMAFCA
GIRARD
STORM DRAINAGE FACILITIES MAP

ESPEY,
HUSTON &
ASSOCIATES, INC.
Engineering & Environmental Consultants

June 25, 1986

Mr. Roger A. Green
City of Albuquerque
Design Hydrology Section
P. O. Box 1293
Albuquerque, New Mexico 87103

SUBJECT: American Square - Conceptual Grading and Drainage Plan (H16/D83)
EH&A Job No. 7935

Dear Roger:

I have reviewed the comments in your letter of June 9, 1986 that shall be required to be addressed in order to approve the Conceptual Grading and Drainage Plan for Preliminary Plat and Site Development Plan approval. I would like to offer the following responses:

1. A downstream slope of 0.0080 ft/ft, the most critical slope, has been used to calculate the pipe capacity or the 54" RCP. The analysis of the pipe capacity is shown in the Supplemental Calculations enclosed with this letter.

2. It has been assumed that Menaul Boulevard would not have capacity to provide one free driving lane under Q_{10} discharge conditions. To resolve this problem, it is proposed to direct the stormwater runoff via surface improvements to a private drop inlet located adjacent to the transverse inlet in Menaul Boulevard. The runoff quantities contributing to this private drop inlet would be those quantities generated by the new construction occurring within the revised Basin II as shown on the plan. Basin II shown on the plan corresponds to Basin 3 in the Downstream Analysis previously submitted. Approximately two-thirds of the area within Basin II will drain to the private drop inlet; the runoff calculations for the subbasin area are shown in the Supplemental Calculations. An analysis of the hydraulic capacities of the drop inlet and the 24" pipe is also shown in the Supplemental Calculations. The private drop inlet, 24" pipe and connection to the transverse inlet in

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Menaul Boulevard are the infrastructures required to discharge to the 54" RCP outfall. The remainder of Basin II consists of the American Furniture store and the small proposed restaurant. It is proposed that the existing American Furniture store be allowed to discharge to Menaul Boulevard via two proposed drivepads. Only minor modifications to the store site, ie. curbs and sidewalk culverts, will be necessary to discharge the runoff through the drivepads. This will be a marked improvement over the existing drainage from the parking lot which now flows across the sidewalk. The small restaurant should also be allowed to discharge to Menaul Boulevard as this are is negligible relative to the size of the overall basin. By diverting runoff from all new construction within Basin II and allowing existing discharge to Menaul Boulevard from the American Furniture store, conditions in Menaul Boulevard under Q_{10} discharge rates shall be maintained at levels already existing or better.

3. The existing 30' wide public drainage easement across the west portion of the project site has been shown on the plan as an existing easement to be vacated. Phoenix Avenue, a 60' right-of-way has also been shown on the plan as existing ROW to be vacated.

It is anticipated that these responses should address your comments and that approval should be forthcoming. Please do not hesitate to call with any questions or comments concerning this information.

Sincerely,

Jay T. Olson

Jay T. Olson
Staff Engineer

Enclosures

ESPEY, HUSTON & ASSOCIATES INC.
Engineering & Environmental Consultants

SUBJECT SUPPLEMENTAL CALCULATIONS

AMERICAN SQUARE

SHEET 1 OF 2 BY J.T.O.
DATE 6/25/86 CK BY

I. 54" RCP PIPE CAPACITY

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

WHERE, Q = CAPACITY, CFS
$n = 0.013$
$W.P. = 2\pi r = 14.14$ FT
$A = \pi r^2 = 15.90$ SF
$S = 0.008$ FT/FT

THEREFORE, $Q = 176.3$ CFS $>$ $Q_{100} = 134.9$ CFS

II. BASIN II (CONCEPTUAL GRADING AND DRAINAGE PLAN)

REVISED RUNOFF CALCULATIONS {PROPOSED}

BASIN	AREA	i_{100}	i_{10}	% IMPERVIOUS	C FACTOR	Q_{100}	Q_{10}
II	24.30 AC	4.65 IN/HR	3.06 IN/HR	90%	0.80	90.4 CFS	59.5 CFS
IIA	16.28	4.65	3.06	90	0.80	60.6 CFS	39.9 CFS
IIB	8.02	4.65	3.06	90	0.80	29.8 CFS	19.6 CFS

NOTE: BASIN IIA IS THE SUBBASIN WHICH WILL CONTAIN ALL AREAS OF NEW CONSTRUCTION WITHIN THE ENTIRE BASIN II WITH THE EXCEPTION OF THE SMALL RESTAURANT.
BASIN IIB IS THE SUBBASIN WHICH CONTAINS THE EXISTING AMERICAN FURNITURE STORE AND WILL CONTAIN THE SMALL RESTAURANT.

RATIONAL METHOD WAS USED TO BE CONSISTENT WITH OTHER SUBMITTALS.

III. PRIVATE DROP INLET

$Q = CA\sqrt{2gh}$ ORIFICE EQUATION

WHERE, Q = CAPACITY, CFS
C = 0.80
A = 4.36 SF {AREA OF 1-TYPE 'D'}
g = 32.2 FT/SEC²
h = 1.25 FT

THEREFORE, Q = 31.3 CFS

NOTES INSTALL 2—C.O.A. TYPE 'D' DROP INLETS

IV. 24" RCP PIPE CAPACITY

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

WHERE, Q = CAPACITY, CFS
n = 0.013
W.P. = 6.28 FT
A = 3.14 SF
S = 0.0200 FT/FT

THEREFORE, Q = 32.0 CFS

NOTES INSTALL 2-PARALLEL 24" RCP PIPES DUE TO PIPE CAPACITY

$Q = CA\sqrt{2gh}$ ORIFICE EQUATION

WHERE, Q = CAPACITY, CFS
C = 0.70
A = 3.14 SF
g = 32.2 FT/SEC²
h = 3.0 FT

THEREFORE, Q = 30.6 CFS

NOTE: INSTALL 2-PARALLEL 24" RCP PIPES DUE TO ENTRANCE CONDITIONS

NOTES IT MAY BE DESIRED TO INSTALL A SINGLE CONNECTION IN PLACE OF 2-24" RCP PIPES WITH AN AREA OF FLOW APPROXIMATELY EQUIVALENT TO 2-24" RCP PIPES.