HYDROLOGY E17/D19e DELUXE CHECK PRINTERS INC.

E11 / D22E

DELUXE CHECK

PRINTERS, INC.

1 PLAN

CITY OF ALBUQUERQUE
MUNICIPAL DEVELOPMENT DEPARTMENT
ENGINEERING DIVISION

HYDROLOGY SECTION PROJ. NO. E-17 DATE: 3/1/84

PLANNING DIVISION NO. _____

CONFERENCE RECAP

SUBJECT: Deluxe Check Printing Inc.
Tract 3A Balloon Field Industrial Park

WHO	REPRESENTING
ATTENDANCE: Thornton Schwenk	Boyle Engr. Corp.
Billy Goolsby	City Engineering/Hydrology

FINDINGS: ① Drainage Report per DPM required
② No outfall for drainage existing. Plan submitted for review & approval by Park Developer for entire site. Co-ordination recommended prior to approval for this site.
③ Analysis of downstream capacity will dictate discharge rate.
④ Elimination of Tetlines or drainage covenant required.
⑤ Paved access required
~~⑥ Financial~~

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

SIGNED: Billy G. Goolsby SIGNED: Thornton L. Schwenk

TITLE: CE/Hydrology TITLE: SR. ENGINEER

DATE: 3/1/84 DATE: 3-1-84

INFORMATION SHEET

PROJECT TITLE Deluxe-Albuquerque Printing Plant & Office Building TYPE OF SUBMITTAL Drainage Plan

ZONE ATLAS PAGE NO. E-17-Z CITY ADDRESS 4240 Balloon Park Road N.E.

LEGAL DESCRIPTION Lot 3A, Balloon Field Industrial Park

ENGINEERING FIRM Boyle Engineering Corporation CONTACT Thornton D. Schwenk

ADDRESS 3939 San Pedro, N.E., Suite D PHONE (505) 883-7700

OWNER Deluxe Check Printers, Inc. CONTACT Jim Passe

ADDRESS P.O. Box 43468, St. Paul, MN 55164 PHONE

ARCHITECT David Todd Runyan & Associates, Inc. CONTACT Gary Vogel

ADDRESS 2412 Valentine Ave., St. Paul MN 55108 PHONE (612) 645-2700

SURVEYOR Forstbauer Surveying Company CONTACT Ronald A. Forstbauer

ADDRESS 516 Chama, N.E. PHONE L.S. 6126 268-0248

CONTRACTOR N/A CONTACT

ADDRESS PHONE

PRE-DESIGN MEETING:

X YES 3-1-84 (Goolsby)
___ NO
X COPY OF CONFERENCE RECAP SHEET PROVIDED

PLEASE CHECK TYPE OF APPROVAL EXPECTED WITH THIS SUBMITTAL:

___ SKETCH PLAT APPROVAL
___ PRELIMINARY PLAT APPROVAL
___ SITE DEVELOPMENT PLAN APPROVAL
___ FINAL PLAT APPROVAL
X BUILDING PERMIT APPROVAL
___ CERTIFICATE OF OCCUPANCY APPROVAL
___ ROUGH GRADING PERMIT APPROVAL
___ GRADING/PAVING PERMIT APPROVAL
___ OTHER _____ (SPECIFY)

DATE SUBMITTED: April 9, 1984 BY: Thornton D. Schwenk

Boyle Engineering Corporation

Suite D
3939 San Pedro N.E.
Albuquerque, New Mexico 87110

consulting engineers

505 / 883-7700

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

April 13, 1984
AL-R09-100-00

ATTN: Mr. Fred J. Aguirre, Civil Engineer/Hydrology

RE: DRAINAGE REPORT FOR DELUXE CHECK PRINTERS, INC.
4240 BALLOON PARK ROAD, N.E.; LOT 3A, BALLOON PARK, E-17-Z

Dear Fred:

Transmitted herewith is one copy of the subject drainage report.

The findings and recommendations of our Report are in accord with those of the Master Drainage Plan for the Balloon Field Industrial Park (Albuquerque Project No. 1112) which should facilitate review by your staff. It is our understanding that the drainage plan included within that Master Plan was approved by Chuck Easterling on 6-11-81, although the "Approval for Construction" signature has not been issued for the "Re-Entry" of this project.

We would hope that this delay in authorizing Project 1112 will not delay approval of our Report as our Owner is planning to award a construction contract during the first week of May and to occupy his building by January 1, 1985.

Please call if you have any questions regarding this report.

Sincerely,

BOYLE ENGINEERING CORPORATION

Thornton D. Schwenk

Thornton D. Schwenk, P.E.
Senior Civil Engineer

RECEIVED
APR 17 1984
HYDROLOGY SECTION

cc: Glenn Fellows; Stevens, Mallory, Pearl & Campbell
Gary Vogel; David Todd Runyan & Associates, Inc.

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

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

April 20, 1984

Mr. Thornton Schwenk, P.E.
Boyle Engineering Corporation
3939 San Pedro, NE Suite D
Albuquerque, New Mexico 87103

RE: DRAINAGE REPORT FOR DELUXE CHECK PRINTERS, INC.
(F17-D49) RECEIVED APRIL 17, 1984

Dear Thornton,

I have reviewed the above referenced submittal and forward the following comments:

1. Existing off-site flows will have to be accepted and treated on-site. Whereby, these off-site flows will need to be quantified and incorporated as part of the overall discharge quantity.

2. The flow from Area 3 cannot be discharged across the property line without an easement from the adjacent property owner. The Master Plan provided for draining each individual lot by the use of the concrete channel. Therefore, it is unnecessary to discharge across property lines between lots.

3. Please be advised that to obtain a building permit, a detailed construction quality grading plan will be required for submittal to and approval by this office prior to release of the building permit. This plan should be prepared per and will be reviewed in accordance with the DPM criteria.

4. The design construction plans for the improvement of Balloon Park Road and for the construction of the concrete channel and outfall have been approved. It will just be a matter of time before this construction will take place.

It is recommended that coordination be entertained to ensure the interfacing, with respect to elevations and grades, between these proposed improvements and this sites development.

Should you have any questions or comments, please contact me.

Yours truly,

Billy J. Goolsby

Billy J. Goolsby, P.E.
City/County Flood Ordinance Administrator

BJG/ca

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

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

May 11, 1984

Mr. Thornton Schwenk, P.E.
Boyle Engineering Corporation
3939 San Pedro, NE, Suite D
Albuquerque, NM 87103

RE: REVISED GRADING AND DRAINAGE REPORT FOR DELUXE CHECK PRINTERS, INC.
(F17-D49) RECEIVED MAY 4, 1984

Dear Thornton,

The above referenced plan, dated May 2, 1984, is approved.

Please attach a copy of this approved plan to the construction set prior to issuance of the building permit.

If I can be of further assistance, please contact me.

Sincerely yours,

Billy J. Goolsby

Billy J. Goolsby, P.E.
City/County Flood Plain Admin.

BJG/dlw

Rec'd 3/13/85

david todd runyan & associates, inc. architects
2412 valentine avenue
st paul, minnesota 55108 (612) 645-2700

March 7, 1985

Mr. Fred Aguirre
Design Hydrology Section
123 Central N.W.
Albuquerque, New Mexico 87102

Re: Deluxe Check Printers, Inc.
~~8~~4240 Balooon Park Road
Albuquerque, NM

Dear Mr. Aguirre,

Last summer we were informed by our Consultant, Mr. Thornton D. Schwenk of Boyle Engineering that the drainage plan for the above referenced project was approved by the Design Hydrology Section (letter dated May 11, 1984 and signed by Mr. Billy J. Goolsby, P.E.).

4272 Balloon Park Rd NE

It is our understanding that the Suma Medical Facility, which is located east of our property, was last year operating without a Certificate of Occupancy and is, in fact, draining some of their surface water onto our property. On behalf of our client, Deluxe Check Printers, we would request that this situation isn't allowed to continue indefinitely without corrective action required by the city.

We have been told that no building expansion, parking lot expansion, or sale of the property by Suma Medical can take place until this situation is corrected. Once the situation is corrected, a Building Occupancy Certificate will be issued. Deluxe Check Printers has been issued a final Occupancy Certificate by the city after having to comply with several additional requirements of the city.

We feel that the proper drainage of our site, as well as the adjacent sites is important and we hope that the overall drainage plan for the area can be implemented in the near future.

Sincerely,

DAVID TODD RUNYAN & ASSOCIATES, INC. ARCHITECTS

Gary J. Vogel

Gary J. Vogel, AIA

GJV/bl

cc: Gregg Werlein - Deluxe Check Printers, Inc.
Cliff Anderson - Dunham Associates
Glenn Fellows - Stevens, Mallory, Pearl & Campbell
Don Kindler - Page & Wirtz Construction Co.
Thornton Schwenk - Boyle Engineering

david todd runyan & associates, inc. architects
2412 valentine avenue
st. paul, minnesota 55108 (612) 645-2700

March 29, 1985

Mr. Gregg Werlein
Deluxe Check Printers, Inc.
P.O. Box 64468
St. Paul, MN 55164-0468

RECEIVED
APR 02 1985
HYDROLOGY SECTION

Re: Deluxe Check Printers, Inc.
4240 Balloon Park Road
Albuquerque, NM

Dear Gregg,

As a follow up to our letter of March 7, 1985, to Mr. Aguirre in Albuquerque, I contacted Mr. Aguirre again on March 22, 1985 by telephone. His comments regarding the situation were as follows:

He was aware of the problem with the Suma Medical drainage, but had not pushed them to take corrective measures.

The structure of their department does not have any provisions for enforcing private parties to make these adjustments. While Suma, supposedly, does not have a final Certificate of Occupancy, they have occupied the facility and do not seem to care about having the final certificate.

The only time the Department would be able to enforce the certificate is if, and when, Suma Medical should apply for any type of permit for an addition, remodeling, etc. At that time no new permit would be issued until the earlier problems were remedied.

In the meantime, Mr. Aguirre would write a letter to Suma Medical (with a copy of our letter) requesting immediate response to the drainage problem. He will forward a copy to us.

If that does not accomplish anything, then further pursuit may have to be done legally by Deluxe directly with Suma Medical.

I hope the above will be useful to you. A copy of the letter from the City of Albuquerque to Suma Medical will be forwarded to your office.

Sincerely,

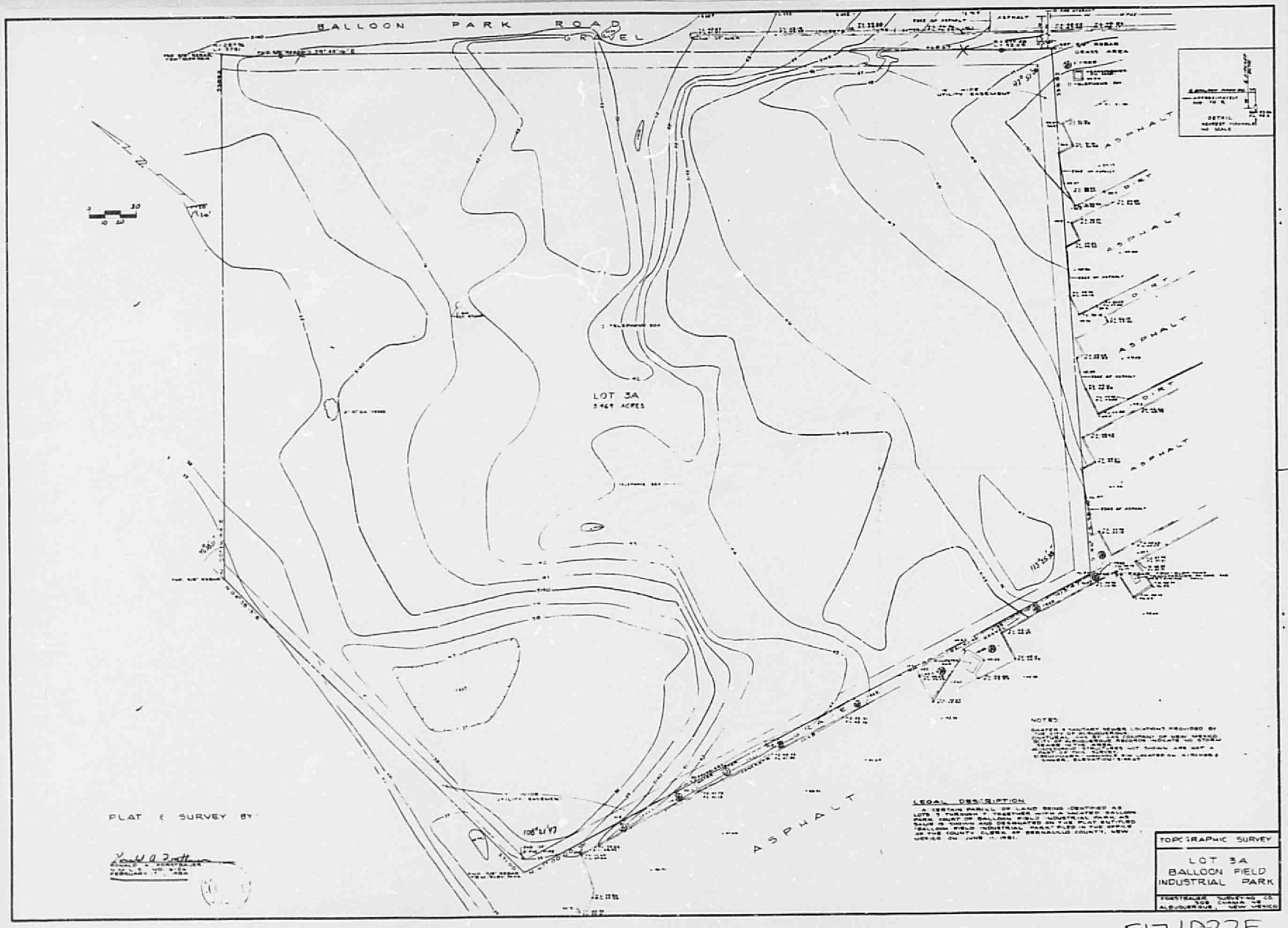
DAVID TODD RUNYAN & ASSOCIATES, INC. ARCHITECTS

Gary J. Vogel

Gary J. Vogel, AIA

GJV/bl

cc: Mr. Fred Aguirre - Design Hydrology Section
Mr. Thornton Schwenk - Boyle Engineering



E17 1D22E

THIS MICROIMAGE IS THE BEST POSSIBLE REPRODUCTION DUE TO THE POOR QUALITY OF THE ORIGINAL DOCUMENT.

Boyle
Engineering
Corporation
consulting engineers
Suite D
3939 San Pedro N.E.
Albuquerque, New Mexico 87110
505/883 7700

DRAINAGE REPORT

for

DELUXE - ALBUQUERQUE
Printing Plant & Office
Deluxe Check Printers, Inc.

Lot 3A, Tract D-1
Balloon Field Industrial Park
4240 Balloon Field Road, N.E.

MAY 04 1984
HYDROLOGY SECTION

Albuquerque, New Mexico

APPROVED FOR DRAINAGE
5/10/84
DATE
Billy J. Gookins
SIGNATURE TITLE
ADVISE DRAINAGE INSPECTOR
WHEN GRADING EXECUTED

E-17-Z

D-49

April 9, 1984

(REV. NO.1 - MAY 2, 1984)

Boyle Engineering Corporation

Suite D
3939 San Pedro N.E.
Albuquerque, New Mexico 87110

consulting engineers

505 / 883-7700

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

May 3, 1984
AL-R09-100-00

ATTN: Mr. Fred J. Aguirre, Civil Engineer/Hydrology

RE: REVISION TO DRAINAGE REPORT FOR DELUXE CHECK PRINTERS, INC.
4240 BALLOON PARK ROAD, N.E.; LOT 3A, BALLOON PARK, E17-D49

Dear Fred:

Transmitted herewith is one copy of the subject drainage report.

Following our discussion of yesterday, I have revised the above referenced Drainage report to address the main points from Billy Goolsby's review. My comments are keyed to his numbered comments in his April 20, 1984 letter.

1. The off-site flows from Lot 2 to the east have been incorporated into the overall discharge quantity. As we discussed, these flows are at variance with the approved Master Drainage Plan for the Balloon Field Industrial Park. We understand that your office will notify the owner regarding this non-compliance.

2. The site grading plan was modified to include a berm at the west property line to prevent site flows from entering Lot 8 to the west.

3. Additional elevations at the top of curb, top of pavement and the top of the channel wall have been added to the grading plan to make it easier for the contractor to set grades in the field. A note was also added to the Site Development Plan submitted by Glenn Fellows to refer to the Drainage Report Grading Plan for detailed grading.

We believe that our report should now meet the DPM criteria and therefore request your approval as soon as possible.

Sincerely,

BOYLE ENGINEERING CORPORATION

Thornton D. Schwenk

Thornton D. Schwenk, P.E.
Senior Civil Engineer

cc: Glenn Fellows; Stevens, Mallory, Pearl & Campbell
Gary Vogel; David Todd Runyan & Associates, Inc.

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LETTER OF TRANSMITTAL

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LISTS

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COMMUNITY PANEL NUMBER 350002 00002B 12-4-79

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SHEET 21, SCS, JUNE 1977

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ALBUQUERQUE PROJECT NO. 1112 (6-1-81)

PLATE I - SITE & DRAINAGE PLAN, APRIL 9, 1984 (Rev. 5-2-84)

INFORMATION SHEET

PROJECT TITLE Deluxe-Albuquerque Printing Plant & Office Building TYPE OF SUBMITTAL Drainage Plan

ZONE ATLAS PAGE NO. E-17-Z CITY ADDRESS 4240 Balloon Park Road N.E.

LEGAL DESCRIPTION Lot 3A, Balloon Field Industrial Park

ENGINEERING FIRM Boyle Engineering Corporation CONTACT Thornton D. Schwenk

ADDRESS 3939 San Pedro, N.E., Suite D PHONE (505) 883-7700

OWNER Deluxe Check Printers, Inc. CONTACT Jim Passe

ADDRESS P.O. Box 43468, St. Paul, MN 55164 PHONE

ARCHITECT David Todd Runyan & Associates, Inc. CONTACT Gary Vogel

ADDRESS 2412 Valentine Ave., St. Paul MN 55108 PHONE (612) 645-2700

SURVEYOR Forstbauer Surveying Company CONTACT Ronald A. Forstbauer

ADDRESS 516 Chama, N.E. PHONE L.S. 6126 268-0248

CONTRACTOR N/A CONTACT

ADDRESS PHONE

PRE-DESIGN MEETING:

X YES 3-1-84 (Goolsby)
__ NO
X COPY OF CONFERENCE RECAP SHEET PROVIDED

PLEASE CHECK TYPE OF APPROVAL EXPECTED WITH THIS SUBMITTAL:

__ SKETCH PLAT APPROVAL
__ PRELIMINARY PLAT APPROVAL
__ SITE DEVELOPMENT PLAN APPROVAL
__ FINAL PLAT APPROVAL
X BUILDING PERMIT APPROVAL
__ CERTIFICATE OF OCCUPANCY APPROVAL
__ ROUGH GRADING PERMIT APPROVAL
__ GRADING/PAVING PERMIT APPROVAL
__ OTHER _____ (SPECIFY)

DATE SUBMITTED: April 9, 1984 BY: Thornton D. Schwenk
RESUBMITTED: May 2, 1984

CITY OF ALBUQUERQUE
MUNICIPAL DEVELOPMENT DEPARTMENT
ENGINEERING DIVISION

HYDROLOGY SECTION PROJ. NO. E-17 DATE: 3/1/84

PLANNING DIVISION NO. _____

CONFERENCE RECAP

SUBJECT: Deluxe Check Printing Inc.
Tract 3A Balloon Field Industrial Park

WHO	REPRESENTING
ATTENDANCE: Thornton Schwenk	Boyle Engr. Corp.
Billy Goolsby	City Engineering/Hydrology

FINDINGS: ① Drainage Report per DPM required
② No outfall for drainage existing. Plan submitted for review & approval by Park Developer for entire site. Co-ordination recommended prior to approval for this site.
③ Analysis of downstream capacity will dictate discharge rate.
④ Elimination of lotlines or drainage covenant required.
⑤ Paved access required
~~⑥ Financial~~

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

SIGNED: Billy J. Goolsby SIGNED: Thornton D. Schwenk

TITLE: CE/Hydrology TITLE: SR. ENGINEER

DATE: 3/1/84 DATE: 3-1-84

DRAINAGE REPORT

FOR

DELUXE - ALBUQUERQUE

Printing Plant & Office Building
Deluxe Check Printers, Inc.

OCCUPYING

LOT 3A, TRACT D-1, BALLOON FIELD INDUSTRIAL PARK

4240 BALLOON FIELD ROAD, N.E.

ALBUQUERQUE, NEW MEXICO

I. PURPOSE:

The purpose of this report is to present information, calculations, and recommendations relative to storm runoff for the site of a 14,738 sq. ft. combined printing plant and office building located at 4240 Balloon Park Road, N.E.

II. SCOPE:

This report is limited to an investigation of the existing and proposed conditions which affect storm flows on the study site. The proposed development is to be protected from flooding due to storm runoff, without increasing the threat of damage to downstream properties. Upstream areas which have been constructed since 1972 are presumed to meet the restrictions of applicable drainage ordinances and resolutions, beginning with AMAFCA Resolution 1972-2. Estimation of maximum runoff is based on the site being developed as proposed.

The report summarizes the drainage calculations for the specific site of Lot 3A and compares them to general calculations reported in the Master Drainage Plan for the entire 15-acre Tract D-1, approved on 6-11-81 as part of City Project No. 1112.

III. LOCATION:

The study site is a 5.469-acre (238,246 sq. ft.) parcel located within a new industrial park area, two-thirds mile south of Osuna Road and one-half mile west of Interstate 25. Legally the parcel is defined as Lot 3A, Tract D-1, of the Balloon Field Industrial Park as shown on the Summary Plat, recorded on February 24, 1984, in Volume C23, Folio 67 of the records of the County Clerk of Bernalillo County. The site is zoned IP, Industrial Park.

The south edge of the property is bounded by Tract D-2, the site of a fully-developed industrial park. To the west is lot B (undeveloped) of the Albuquerque Industrial Park Site. To the northwest is Lot 8 (undeveloped) of the Balloon Field Industrial Park. To the southeast are Lots 2 and 1, the developed site of Summa Medical research and development laboratories. The northeast edge of the property is bounded by Balloon Park Road, presently an unpaved City street having a 60-ft right-of-way. This street dead-ends approximately 1050 ft west of Kirchner Blvd. and 300 ft past the northwest corner of Lot 3A.

IV. EXISTING DRAINAGE CONDITIONS:

A. Topography and Soils

Slopes on the site are generally from east to west. The high point at the east property corner is at elevation 5150 and the low point at the west corner is 5137. The distance between these points is 635 feet, giving an average slope of 2.05%.

The natural soils at the site are described in the SCS Soil Survey of Bernalillo County as "EmB - Embudo: gravelly, fine sandy loam". The Hydrologic Soil Group is "B". (See Figure 3.)

B. On-Site and Off-Site Drainage Conditions

The undeveloped site is sparcely vegetated with native grasses. As shown on the DPM Plate 22.2 C-1, this condition results in a rational formula C-factor of 0.34 for 0% impervious.

There are no flows in Balloon Park Road from the east (Kirchner Blvd.). According to the Master Drainage Plan, flow on the adjacent lot to the east (Lot 2) is directed northward in an inverted-crown driveway, extending to Balloon Park Road. It appears, however, that runoff from approximately one-half acre of the parking lot on Lot 2 flows into Lot 3A instead of into the street. This appears to be at variance with the Master Drainage Plan.

A calculated flow of 36 cfs from Tract D-2 enters an existing temporary retention pond at the southwest corner of Lot 3A. There is presently no outfall for this pond. As shown in the Master Drainage Plan, this pond will be eliminated by the grading associated with Project 1112 and the construction of the proposed 12-ft wide concrete channel. As both the lots to the west and the Balloon Park Road on the north are lower than Lot 3A, there is no flow into the site from those directions.

There are no natural or artificial water courses crossing the site. Moreover, it does not lie in a 100-year flood hazard area as shown in Figure 2.

V. PROPOSED DRAINAGE CONDITIONS:

A. Criteria

The computations, conclusions and recommendations contained in this report are based on criteria found in the City of Albuquerque Development Process Manual, Volume 2, Design Criteria.

B. Off-Site Drainage

During the initial planning conference with the Hydrology section of the City Engineer's office on March 1, 1984, it was determined that free discharge would be allowed from the site once the downstream capacities were analyzed. As noted above, a Master Grading and Drainage Plan was

approved for the entire Balloon Field Industrial Park on 6-11-81. Under this plan all lots except Lots 3A, 8, 9, and 10 were to be graded to drain to Balloon Park Road. The runoff collected in the roadway will be discharged into a new rectangular concrete channel aligned along the west property line of Tract D-1. All flows not routed to the street will be routed directly into this channel. The channel discharges through a 60-inch CMP directly into the Bear Arroyo.

C. On-Site Drainage and Special Features

In order to comply with the Master Drainage Plan, the on-site flows for Lot 3A were calculated as shown the Appendix. These values were compared to the limiting values used in sizing the drainage structures proposed in the approved Master Plan.

The detailed grading and the extent of impervious surfaces proposed for the Lot 3A development result in a discharge of 13.1 cfs, compared to 26.6 cfs calculated in the Master Drainage Plan. (This variance can be attributed in part to an average coefficient of runoff of C = 0.45, used in the present report, compared to a value C = 0.90 used in the Master Plan.) Of this total amount, 1.9 cfs flows to the street rather than directly to the channel as assumed in the Master Plan. Although the net flow in the street was only increased from 46 to 46.3, the depth of flow in the outfall channel at the end of the street was checked.

To prevent gutter flows in Balloon Park Road from entering the site, Albuquerque City standard drive pads will be constructed at the two new driveway entrances into the site. To prevent site flows from Area 3 from crossing the property line into Lot 8, it will be necessary to grade a berm along the west property line. The berm will direct flows to the proposed concrete channel at the southwest corner of the site.

Due to the non-compliance of Lot 2 drainage with the Master Plan, Lot 3A is presently forced to accept approximately 1.6 cfs sheet flow from Lot 2. This situation will have to be remedied so as to avoid potential damage to Lot 3A, especially when expanded development takes place on Lot 3A. As the west edge of the parking lot on Lot 2 has not been completed (the curb has not been built), this edge of Lot 2 could be regraded to direct the flow southward to the southeast corner of Lot 3A. A second alternative for the Lot 2 owner would be to acquire a drainage easement from the Lot 3A owner.

VI. EROSION CONTROL PLAN:

Damage due to soil erosion and deposition from the 10-year storm will be minimal and confined primarily to the site due to the slope of the land toward the rear of the property. Any sediment from these 4.5 acres will be deposited in the temporary pond at the rear. Less than 1.0 acre of land drains toward the street. This area will be landscaped with a 10-ft

sodded "green belt" to eliminate soil erosion to the street. In addition, as shown on the Site Development Plan approved on May 1, 1984, the front portion of the site will be sodded a distance of approximately 80 feet south of the property line.

The existing pavement of Balloon Park Road passes the front of Lot 3A to a point 40 ft west of the northeast corner of the property. Full paved access to the site will be provided by the Balloon Field Industrial Park developer, the CIRTEC Corporation.

VII. FINDINGS AND CONCLUSIONS:

A. The 100-year developed discharge for Lot 3A is 13.1 cfs, which exceeds the undeveloped discharge by only 4.6 cfs.

B. Free discharge to the Bear Arroyo is possible because of the planned drainage improvements approved in the Master Drainage Plan of 6-11-81.

C. All proposed downstream hydraulic structures have sufficient capacity to pass the 100-year storm runoff from Lot 3A and still conform to the flows set forth in the Master Drainage Plan.

D. Drainage from Lot 2 is at variance with the approved Master Plan and the Drainage Ordinance 63-1982 as a result of approximately 1.6 cfs crossing the property line into Lot 3A from a paved parking lot.

VIII. RECOMMENDATIONS:

A. Coordinate with the Balloon Park developer for the rough grading to be done at the rear of the property and during the construction of the 12-ft concrete channel on the west property line.

B. Confine street flows within the gutter of Balloon Park Road using standard City drive pads at new driveway entrances.

C. Confine flows to the site by grading an earthen berm at the west property line and by directing site flows toward the rear of the lot where they can enter the proposed concrete channel.

D. Require the Lot 2 owner to comply with the Master Plan and with applicable City ordinances and to remedy the problem of free dischange across the property line.

Respectfully submitted,

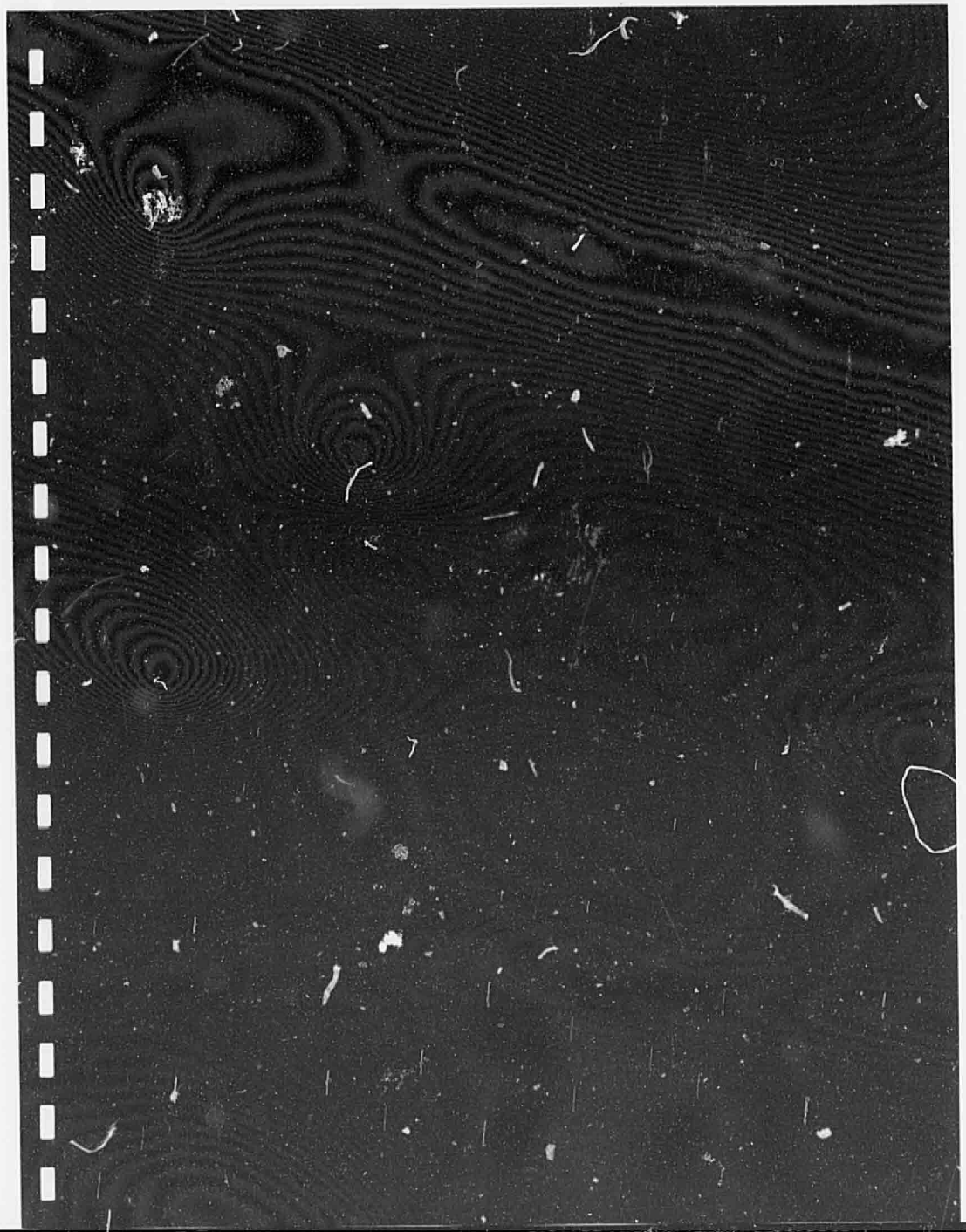
BOYLE ENGINEERING CORPORATION

Thornton D. Schwenk

Thornton D. Schwenk, P.E.
Senior Civil Engineer

STATE OF NEW MEXICO No. 4700

Re-submitted
5-2-84



DRAINAGE CALCULATIONS

DELUXE - ALBUQUERQUE

Printing Plant & Office Building
Deluxe Check Printers, Inc.

occupying

Lot 3A, Balloon Field Industrial Park

4240 Balloon Park Road, N.E.

Albuquerque, New Mexico

E-17-Z

April 9, 1984

(Revision No. 1, May 2, 1984)

I. TIME OF CONCENTRATION:

Basin length, L = 635 ft

Elev. difference = 5150.0 - 5137.0 = 13.0 ft

Slope, S = 13.0/635 = 0.0205 = 2.05%

$T_c = 0.0078\ (L^{0.77}/S^{0.385})$ (P. 22.2-3, DPM)

$= 0.0078\ (635^{0.77}/0.0205^{0.385})$

= 5.01 min. Use minimum T_c = 10 min.

II. RAINFALL INTENSITY: (Ref. Plate 22.2 D-1, DPM)

i_{100} = 2.20 inches (100-year, 6-hour rainfall volume)

$I_{100} = i_{100}\ (6.84)\ T_c^{-0.51}$ (Plate 22.2 D-2, DPM))

$= 2.20\ (6.84)\ 10^{-0.51}$

= 4.65 inches/hr

$I_5 = 0.541\ I_{100}$ (Plate 22.2 D-1, DPM)

= 0.541 (4.65) = 2.52 inches/hr

III. UNDEVELOPED FLOWS AND VOLUMES:

A = 5.469 acres = 238,246 sq ft

C = 0.34 (Soil Group B)

V_{100} = (2.20/12)(238,246)(0.34) = 14,900 cu ft

Q_{100} = 0.34 (4.65)(5.469) = 8.48 cfs

IV. DRAINAGE AREAS AND "C" FACTORS: (Plate 22.2 C-1, DPM)

SCS Soil Group: B

AREA NO.	AREA (acres)	UNDEVL.	PLANTED	IMPERVIOUS	PERCENT IMPERVIOUS	"C" FACTOR
1	2.734	2.734	0.	0.	0.	0.34
2	0.967	0.602	0.468	0.176	18.2	0.42
3	1.768	0.602	0.052	1.114	63.0	0.65
	---			---		
	5.469			1.290		

Percent impervious = 1.290/5.469 x 100 = 23.6

Average "C" Factor = 0.45

V. DEVELOPED FLOWS AND VOLUMES:

If only on-site runoff is considered (Areas 1,2, and 3):

V_{100} = (2.2/12)(238,246)(0.45) = 19,700 cu ft

Q_{100} = 0.45(4.65)(5.469) = 11.44 cfs

The additional sheet flow entering from off-site (lot 2 to the east) is computed as follows:

Area = 19,000 sq ft = 0.436 acres

Percent impervious for asphalt parking lot and landscaped (dirt) medians = 85% (estimated)

Average "C" Factor = 0.81

V_{100} = (2.2/12)(19,000)(0.81) = 2,800 cu ft

Q_{100} = 0.81(4.65)(0.436) = 1.64 cfs

The total developed flow discharged from the site is:

V_{100} = 19,700 + 2,800 = 22,500 cu ft

Q_{100} = 1.44 + 1.64 = 13.08 cfs

VI. NET DISCHARGES:

Developed V_{100} - Undeveloped V_{100}

22,500 - 14,900 = 7,600 cu ft

AREA NO.	AREA (acres)	"C" FACTOR	Q_{100} (cfs)	V_{100} (cu ft)	
1	2.734	0.34	4.3	7,400	To channel
2	0.967	0.42	1.9	3,100	To street
3	1.768	0.65	5.3	9,200	To channel
Off-site	0.436	0.81	1.6	2,800	
			---	---	
			13.1	22,500	

VII. CAPACITY OF 12-FT WIDE CHANNEL ALONG W. PROPERTY LINE:

(Ref. Master Drainage Plan, Balloon Field Industrial Park, City Project No. 1112, approved 6-11-81.)

Manning's n = 0.014 (rough concrete)
Slope, S = 0.005 ft/ft
Bottom width, B = 10.67 ft
Flow depth, D = 1.0 ft

A = (1.0)(10.67) = 10.67 sq ft

P = 1.0 + 10.67 + 1.0 = 12.67 ft

R = 10.67/12.67 = 0.842

$R^{(2/3)} = 0.892$

$S^{(1/2)} = 0.071$

V = (1.486/0.014) (0.892)(0.071) = 6.69 fps

Q = (6.69) (10.67) = 71.4 cfs

From the Master Plan, the calculated flow at the southwest corner of Lot 3A (Reach point I) was Q_{100} = 36 cfs. Using the I_{100} = 5.4 in/hr intensity from the Master Plan, the calculated flow from Lot 3A is

Q_{100} = 0.9 (5.4)(5.469) = 26.6 cfs

and the flow from Lots 8 and 9 is

Q_{100} = 0.9 (5.4)(2.0012) = 9.7 cfs

The total flow between reach points I and III in the 12-ft channel is:

Q_{100} = 36 + 26.6 + 9.7 = 72.3 (cf. 71 cfs stated in the Master Plan)

Now the actual flow for the proposed development on Lot 3A is significantly less than that assumed in the Master Plan: 13.1 cfs < 26.6 cfs. Therefore the total flow in the channel has been reduced to:

Q_{100} = 36 + 13.1 + 9.7 = 58.8 < 71.4 cfs channel capacity

VIII. CAPACITY OF STREET (40-FT FACE TO FACE):

5-in crown
Manning's n = 0.017 (asphalt concrete)
Slope, S = 0.005 ft/ft
Bottom width, B = 40.0 ft
Flow depth, D = 0.67 ft (at top of 8-in curb)

A = 0.5 (2) (0.67 + 0.25)(20) = 18.40 sq ft

P = 0.67 40.0 + 0.67 = 41.34 ft

R = 18.40/41.34 = 0.445

$R^{(2/3)}$ = 0.583

$S^{(1/2)}$ = 0.071

V = (1.486/0.017) (0.583)(0.071) = 3.62 cfs

Q = 3.62 (18.40) = 66.6 cfs

From the Master Plan, the calculated flow in the street from Lots 1, 2, 11-15 is 46 cfs. The proposed grading on Lot 3A introduces an additional 1.9 cfs into the street, instead of forcing all the flow to the channel, as assumed in the Master Plan.

On the other hand, Lot 2 was not graded at the time of its development to allow all its flow to enter the street. The street flow is reduced by the amount of flow entering Lot 3A instead of the street from Lot 2.

46.0 + 1.9 - 1.6 = 46.3 < 66.6 cfs (O.K. But check outfall at end of Balloon Park Road.)

VII. CAPACITY OF 10-FT WIDE CHANNEL BETWEEN LOTS 9 & 10:

Although the calculated flow in the street has increased only slightly from 46 to 46.3 cfs, the capacity of the 10-ft wide rectangular channel outfall between Lots 9 and 10 will be checked to verify the Master Plan value.

Q = 46.3 cfs
Manning's n = 0.014
Bottom width, B = 10.67 ft

Reach I:

Slope, S = 0.0372 ft/ft
Calculated flow depth*, D = 0.465 ft < 1.5 ft channel depth
(cf. depth stated in Master Plan = 0.5 ft)

Reach III:

Slope, S = 0.005 ft/ft
Calculated flow depth*, D = 0.878 ft < 1.5 ft channel depth
(cf. depth stated in Master Plan = 0.9 ft)

*See computer output

BOYLE ENGINEERING CORPORATION
3939-D SAN PEDRO DRIVE, N.E.
ALBUQUERQUE, NEW MEXICO 87110
505 / 883-7700

REACH I

INPUT DATA

n	Q (cfs)	S (ft/ft)	B (ft)	Z	D (ft)
.0140	46.3000	.00500	8.67	.000	Unknown

OUTPUT DATA

Q (cfs)	V (fps)	A (sq ft)	R (ft)	S (ft/ft)	n	B (ft)	Z	Depth (ft)	Crit Depth (ft)
46.3	6.08	7.6	.73	.00500	.0140	8.670	.000	.878	.961

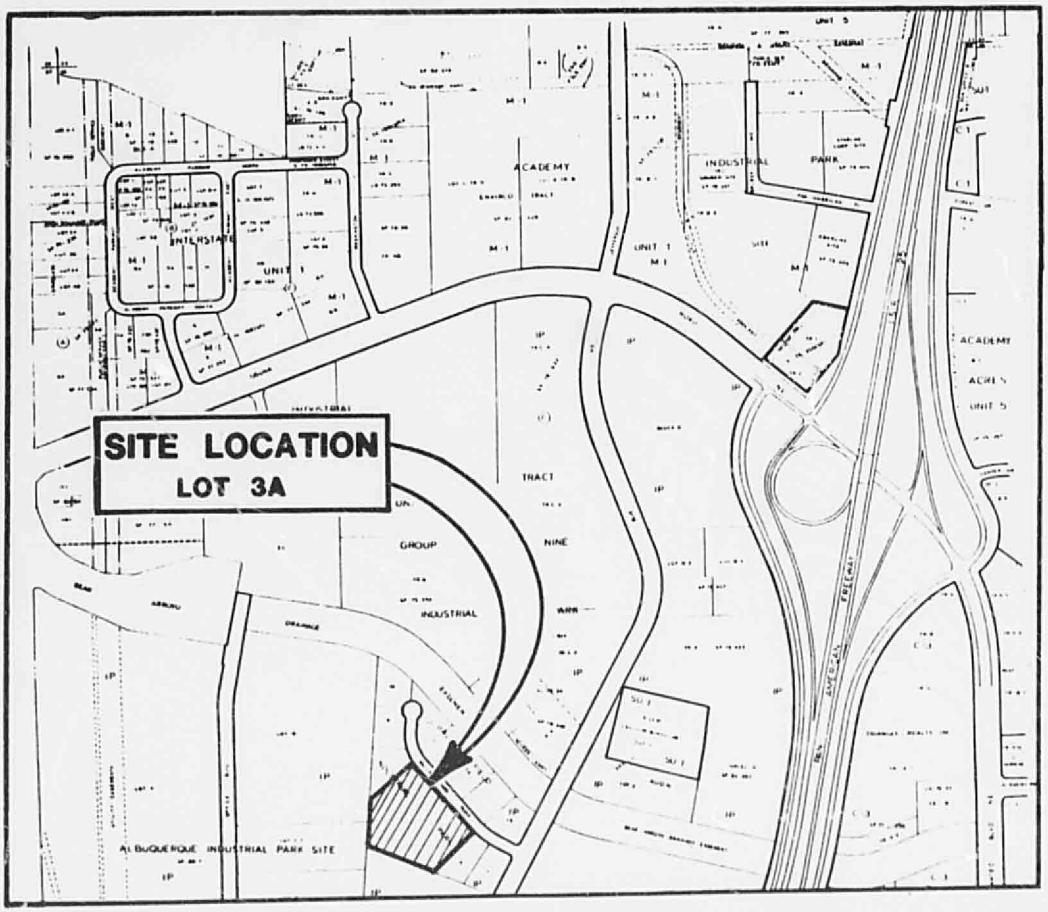
REACH II

INPUT DATA

n	Q (cfs)	S (ft/ft)	B (ft)	Z	D (ft)
.0140	46.3000	.03720	8.67	.000	Unknown

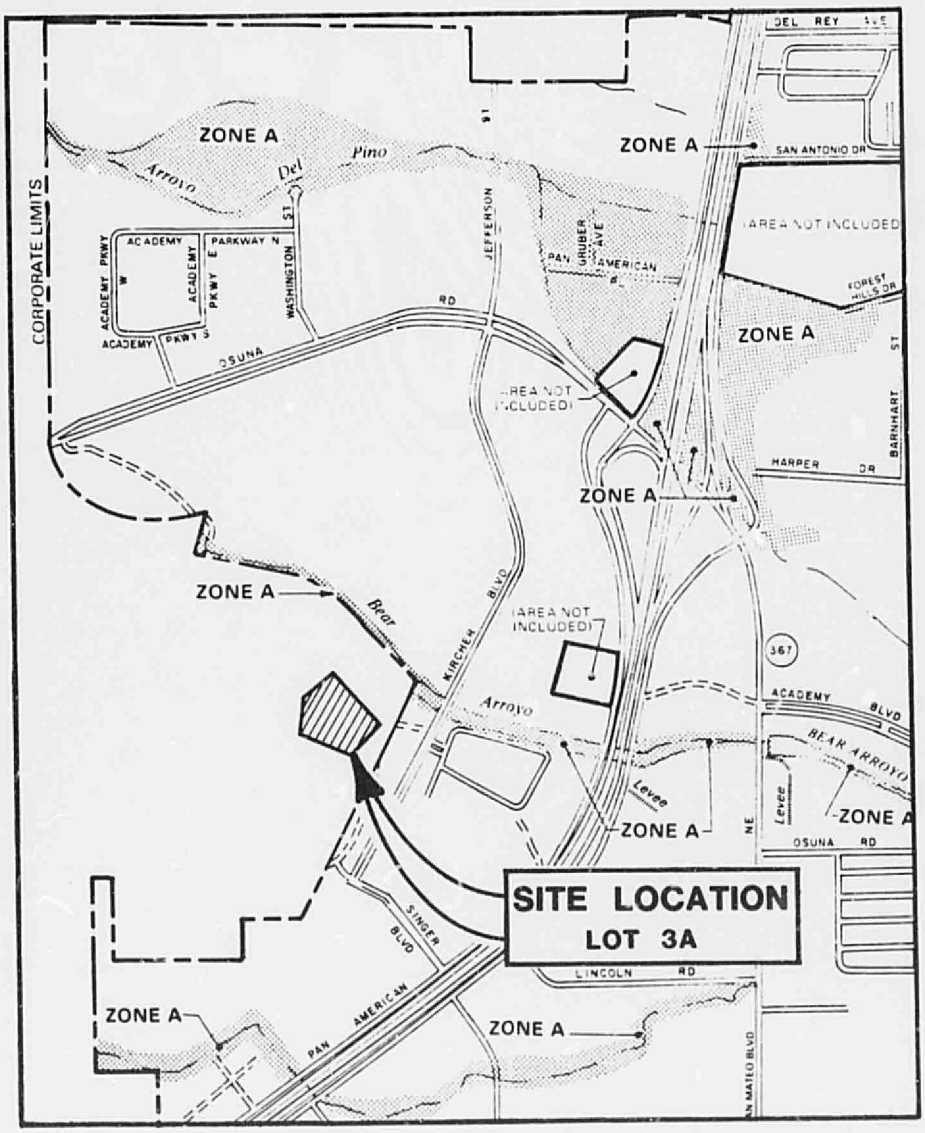
OUTPUT DATA

Q (cfs)	V (fps)	A (sq ft)	R (ft)	S (ft/ft)	n	B (ft)	Z	Depth (ft)	Crit Depth (ft)
46.3	11.48	4.0	.42	.03720	.0140	8.670	.000	.465	.961



E-17-Z

FIGURE 1



FLOOD HAZARD BOUNDARY MAP
COMMUNITY PANEL NUMBER
350002 0002 B 12/4/7[illegible]
FIGURE 2

THIS MICROIMAGE IS THE BEST POSSIBLE REPRODUCTION DUE TO THE POOR QUALITY OF THE ORIGINAL DOCUMENT.

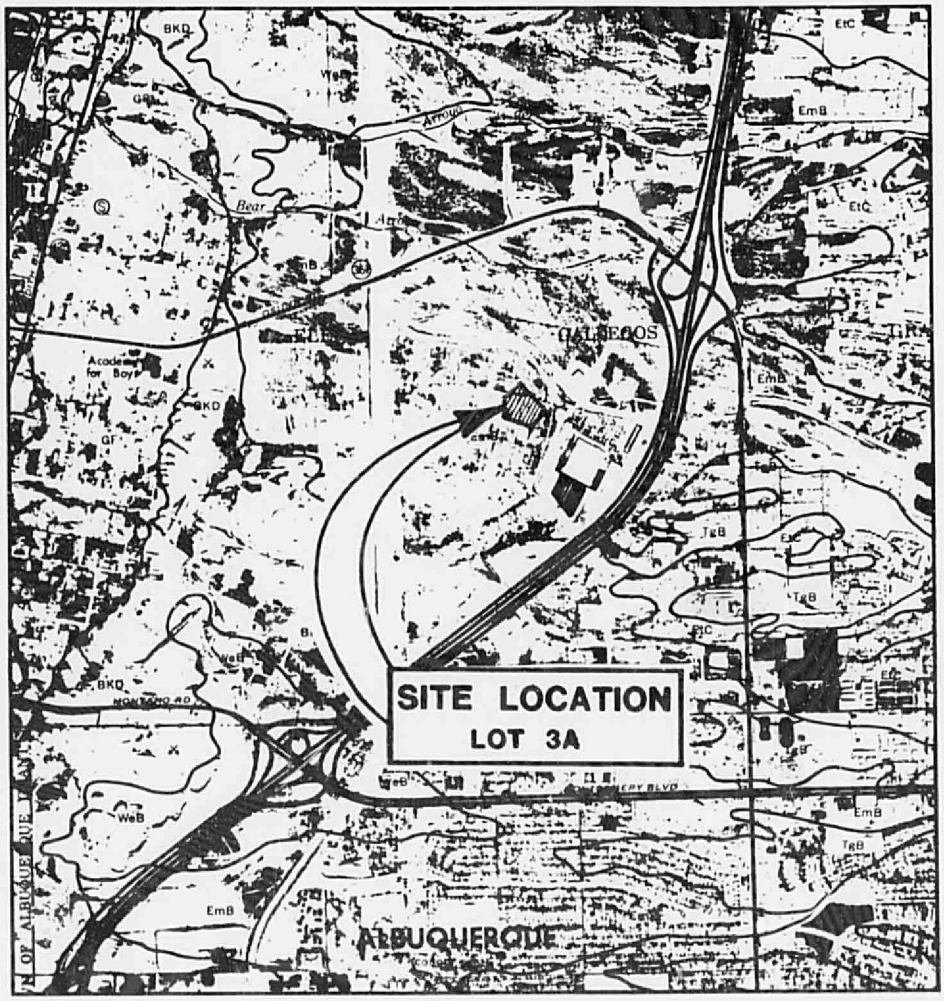

SITE LOCATION
LOT 3A
ALBUQUERQUE
GALLEGOS
Bear
Arroyo
Acoderny for Boys
MONTANO RD
BKD
EtC
EmB
TeB
WeB

FIGURE 3

D-118

BENCH MARK DATA

City of Albuquerque, New Mexico
Public Works Department
Engineering Division

State N.M. County Bernalillo

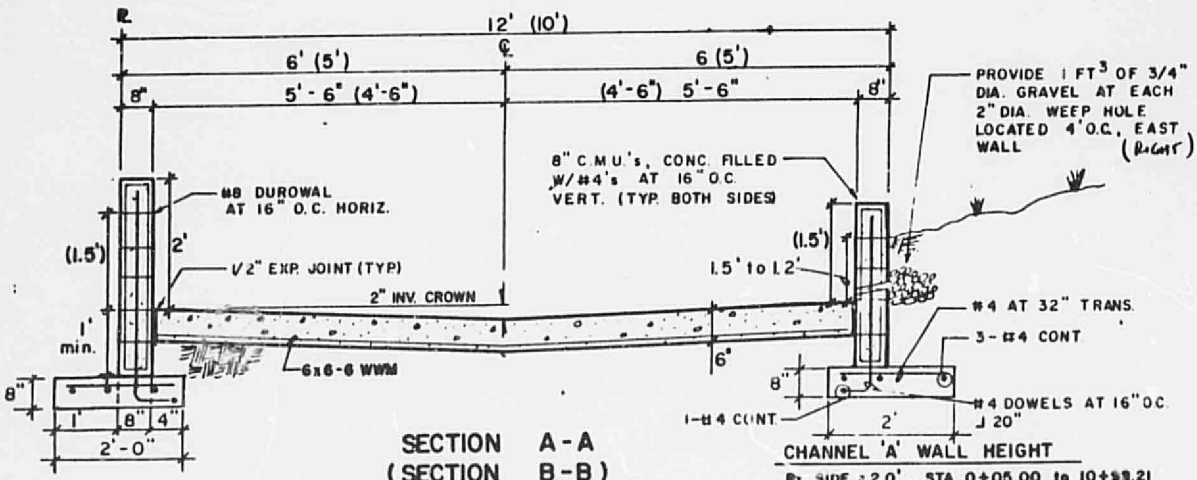
Geographic Quadrant of City: ☐ NW; ☒ NE; ☐ SE; ☐ SW;

Establishing Agency ACS Year 1974

BM. No.	Location	Bench Mark Description	Elevation (MSLD 1929) Ft. / Meters
5-E17	Located on the south side of Osuna Road NE, about 950 ft. east of the crossing of the North Diversion Channel.	A square, ☑, chiseled on top of concrete curb south side of street.	#5099.057 1554.195
6-E17	Located on the south side of Osuna Road NE, 0.40 miles east of the crossing of the North Diversion Channel.	A square, ☑, chiseled on top of concrete curb, south side of street.	#5111.550 1558.003
7-E17	Located on the south side of Osuna Road N.E., 550 ft. west of the intersection of Jefferson Street.	A square, ☑, chiseled on top of concrete curb, south side of street.	#5130.092 1563.655
8-E17	Located at the intersection of Osuna Road and Jefferson St. (also Kircher Blvd.) NE in the southeast quadrant of the intersection.	A square, ☑, chiseled on top of concrete curb at the SSE curb return.	#5140.049 1566.690

(*) = 1st-Order (**) = 2nd-Order ((@)) = 3rd-Order

FIGURE 4



SECTION A-A
(SECTION B-B)

DRAINAGE CHANNEL LINING
CITY STD DWGS K-10, K-11
TYPE 'A' - MODIFIED FOR
BLOCK SIDE WALLS.

CHANNEL 'A' WALL HEIGHT

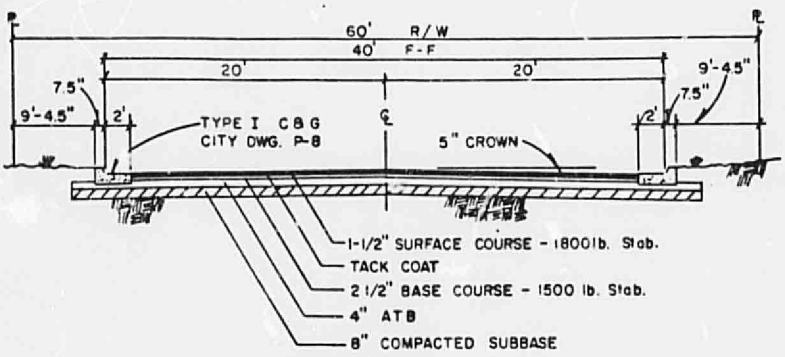
Rt. SIDE = 2.0', STA. 0+05.00 to 10+99.21
Lt. SIDE = 1.5', STA. 0+05.00 to 2+32.00
Lt. SIDE = 1.2', STA. 2+67.00 to 10+98.21

CHANNEL B WALLS HEIGHT

Rt. & Lt. SIDES = 1.5'

CHANNEL CROSS-SECTION (REF: SHT 10 OF 10)
ALBUQUERQUE PROJ. NO. 1112 (6-1-81)
BALLOON FIELD INDUSTRIAL PARK

FIGURE 5



COLLECTOR
STREET SECTION

STREET SECTION (REF. SHT 6 OF 10)
ALBUQUERQUE PROJ. NO. 1112 (6-1-81)
BALLOON FIELD INDUSTRIAL PARK

FIGURE 6