HYDROLOGY E17/D2 TWO PLANS

E 17/D3

2 PLANS

Drainage file

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

February 14, 1978

John Esquibel
A & E Engineering
5823 Lomas NE
Albuquerque, New Mexico 87410

RE: Albuquerque, Industrial Park

Dear John:

Please be advised that I have reviewed the drainage report for the Chant Business Center and I am in agreement with the drainage scheme suggested. The site grading plan to be attached to the construction plans will have to indicated clearly the finished grading to be performed to convey the runoff to the ponding areas.

Very truly yours,

Bruno Conegliano
Asst. City Engineer-Hydrology

BC/gm

cc; Jim Smith
V.M. Kimmick
Drainage file

DRAINAGE REPORT

for

ALBUQUERQUE INDUSTRIAL PARK

LOTS D-1 and D-2

CHANT BUSINESS CENTER

in

ALBUQUERQUE, NEW MEXICO

Prepared by
A & E Engineering

DRAINAGE REPORT

FOR

ALBUQUERQUE INDUSTRIAL PARK

TRACTS D-1 AND D-2 IN

ALBUQUERQUE, NEW MEXICO

PREPARED FOR:

GEORGE A. CHANT

6207 PAN AMERICAN FREEWAY N.E.

ALBUQUERQUE, NEW MEXICO 87110

BY:

A & E ENGINEERING, INC.

5823 LOMAS BOULEVARD N.E.

ALBUQUERQUE, NEW MEXICO 87110

JANUARY 30, 1978

Theodore M. Conrardy

THEODORE M. CONRARDY

REGISTERED PROFESSIONAL

ENGINEER NO. 2933

REGISTERED PROFESSIONAL ENGINEER AND LAND SURVEYOR

No. 2933

NEW MEXICO

T. M. CONRARDY

DRAINAGE REPORT

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A&E ENGINEERING INC.
CIVIL ENGINEERING, LAND PLANNING, AND SURVEYING

January 30, 1978

Mr. George A. Chant
6207 Pan American Freeway N.E.
Albuquerque, New Mexico 87110

RE: DRAINAGE REPORT FOR ALBUQUERQUE INDUSTRIAL PARK
TRACTS D-1 AND D-2

Dear Sir:

We are transmitting this drainage report for Tracts D-1 and D-2 of the Albuquerque Industrial Park in Albuquerque New Mexico. The enclosed report is a composite report for both Tracts D-1 and D-2 as was requested by the City of Albuquerque Engineering Department. The control of the runoff shall comply with the requirements of the Albuquerque Metropolitan Arroyo Flood Control Authority and with the present City of Albuquerque drainage policies.

We do appreciate this opportunity to serve you and if any questions develop, we will be available to assist you in any responses regarding this report.

Very truly yours,

A & E ENGINEERING, INC.

John F. Esquibel, President

JFE:mhe

5823 LOMAS N.E. ALBUQUERQUE, NEW MEXICO 87110 505/266-8791

GENERAL

This drainage report consists of a hydrologic study of a probable 100-year storm affecting this proposed development of an existing and a proposed Industrial Park.

LOCATION AND DESCRIPTION:

The property under study is a parcel of land zoned Industrial Park (IP) and contains a total of 7.59 acres. This being 4.10 acres (Lot D-1) of an existing Industrial Park and 3.49 acres (Lot D-2) of a proposed Industrial Park development all contigious. Located about 1000' south of Osuna Road N.E. west of the Pan American Freeway (I.S.R. 25), and east of Kircher Road. This property is more particularly described as Lot D-1 (easterly portion) and Lot D-2 (westerly portion) of the Albuquerque Industrial Park. These parcels are bordered on the north by undeveloped land, on the east by the Pan American Freeway frontage road, on the south by the Rust Tractor Company developed parcel and on the west by Kircher Road.

The terrain for this parcel slopes to the northwest at about 3% grade.

PROPOSED DEVELOPMENT

This parcel of land is to be developed into an Industrial Park comprising of flat roof buildings having office space and shop area within the existing and proposed structures. This development is called the Chant Business Center owned by Mr. George A. Chant of Albuquerque, New Mexico.

The site will be graded, paved and landscaped to retain storm water runoff generated by the existing as well as the proposed development. A pond has been constructed to collect some of the runoff generated in the easternmost portion of the existing (easterly portion) development while ponds on the westernmost portion will be constructed to retain the remaining runoff generated by the existing and proposed developments.

PROPOSED DRAINAGE PLANS

In order to control the onsite drainage runoff developed by this development, the area has been designed with grades, landscaped area and swales to collect the runoff.

The drainage has been divided into two (2) drainage areas to prevent concentration of runoff at only one point. Each of the drainage areas have been designed to drain into the ponds.

The runoff generated by the existing development which drains into an existing pond along the easternmost portion of this parcel is designated as Area "A". Area "A" has an existing pond having a capacity of about 18,000 cubic feet.

The remaining existing developed area as well as the proposed development drains westerly into pond area along the most westerly portion of this development. This drainage area is designated as Area "B".

There is no offsite runoff draining into this development. The offsite runoff that used to traverse across the most northeasterly corner of this development has been diverted to the north along the frontage road drain swale or ditch. This was done as part of the initial development of this parcel.

DISCUSSION OF METHOD

The development of this area will be controlled by the guidelines set forth in the recent Resolutions of the Albuquerque Metropolitan Arroyo Flood Control Authority and the City of Albuquerque.

The amount of storm water is computed by using a 100-year storm, this being a storm consisting of 100-year 6 hours precipitation as shown by the rainfall frequency maps for New Mexico, June 1967, published by the Special Studies Branch, Office of Hydrology, United States Weather Bureau.

The pond area was calculated so that the volume of water ponded would exceed the increased volume runoff resulting from the development.

UNSITE DRAINAGE CALCULATIONS:

The 100-year 6 hour precipitation factor for this area is 2.2 inches.

The area is 7.59 acres = 330,620.4 square feet.

Volume of runoff before development, allowing 60% perculation:

$\frac{2.2}{12}$ x 330,620.4 sq. ft. x 0.40 = 24245 cu. ft.

Volume of runoff after development:

Landscaped areas (grassed and rock gravel)

$\frac{2.2}{12}$ x 41,500 sq. ft. x 0.30 = 2282 cu. ft.

Paved areas (driveways, building, parking lots)

$\frac{2.2}{12}$ x 298,120.4 sq. ft. x 1.0 = 53,005 cu. ft.

Landscaped Islands Area'B'= 2.2/12x 15,000 sq.ft. x 0.30= 825 cu. ft.

Paved area for Area "A" = 39,530 sq. ft.

Runoff = $\frac{2.2}{12}$ x 39,530 sq. ft. x 1.0 = 7115 cu. ft.

Total Runoff After Development

Landscaped Area = 2282 cu. ft.

Paved area, building roofs 53,005 cu. ft.

55,287 cu. ft.

Runoff before development 24,245 cu. ft.

Runoff to be retained onsite and ponded 31,042 cu. ft.

Area "A" ponded Volume retained presently 7,940 cu. ft.(825 +7,115)

Two loading docks

12'X60'X2' = 1440 SF or

$\frac{2.2}{12}$ X 1440 SF X 1' = 264 Cu. Ft.

These additional ponded areas will be pumped after storms and will flow into the ponding areas along the North and South boundaries.

Area "B" ponded volume retained 22,838 cu. ft.

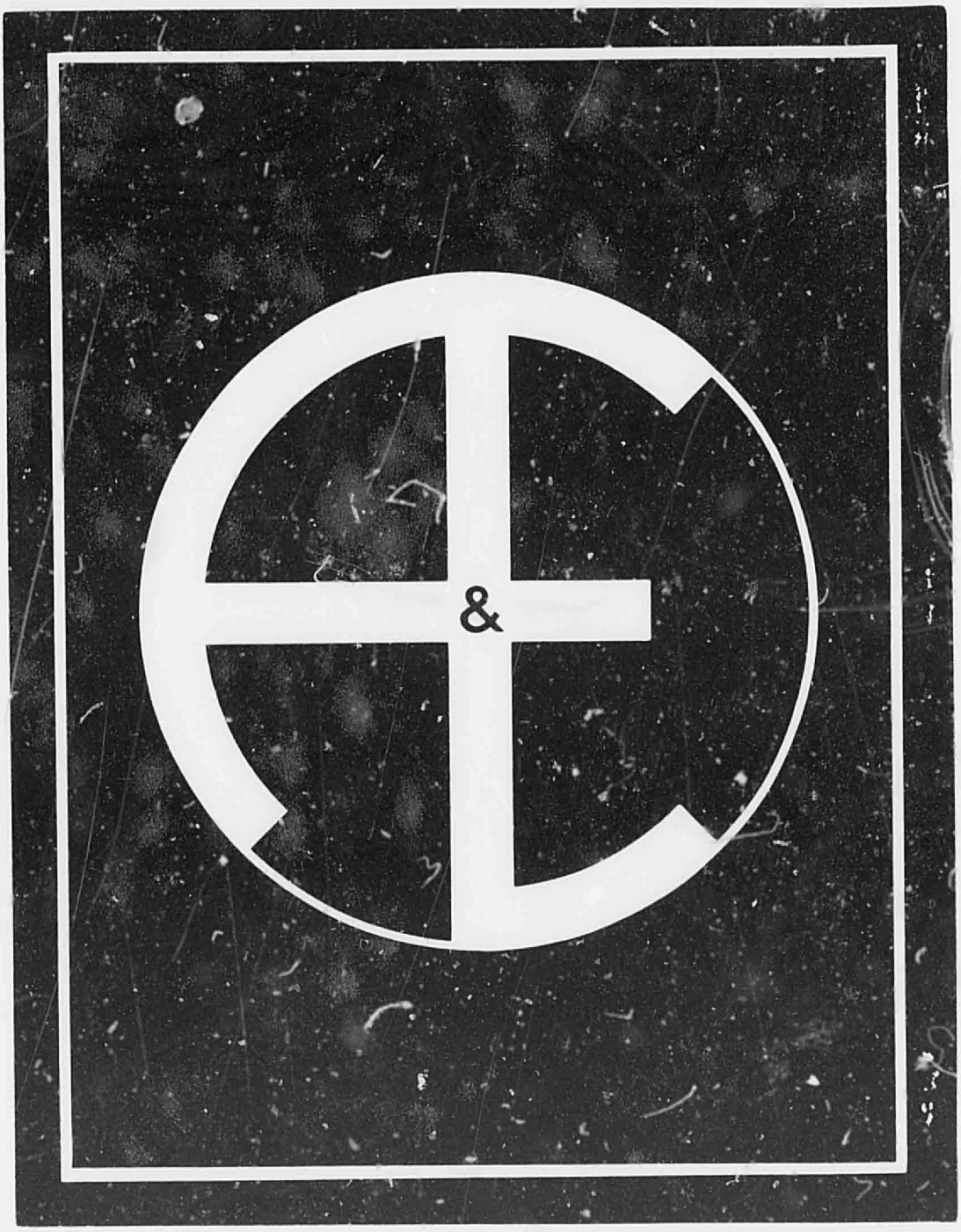
1. Total ponding capacity = 22,971 Cu.ft.
2. Required ponding capacity = 22,838 Cu. ft.
3. Excess ponding capacity = 143 Cu.ft.

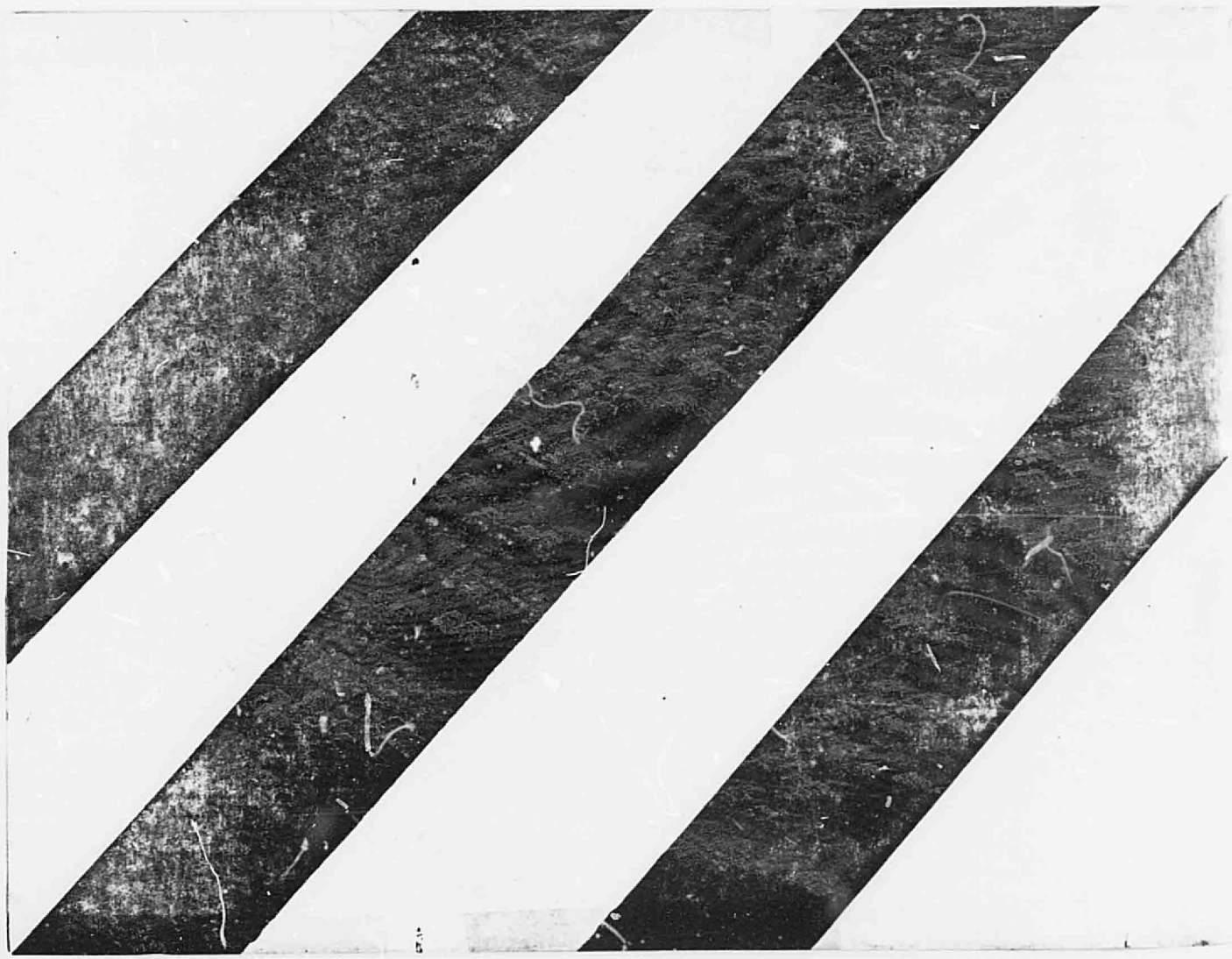
SUMMARY:

It is recommended that this development be approved since the computations show that the proposed design is adequate to satisfactorily handle a 100-year storm.

LOCATION MAP

1198





HYDROLOGY E17/D2 1 of 2 FIVE PLANS

E17/D2

5 PLANS

CLIFFORD PROPERTIES
SAN PEDRO PARK
2201 SAN PEDRO NE
ALBUQUERQUE, NEW MEXICO
87110

(505) 266-5573

June 17, 1975

City of Albuquerque
Box 1293
Albuquerque, New Mexico 87103

Attention: Mr. O. Val Valdez
City Real Estate Officer

Gentlemen:

The City of Albuquerque needs approximately 4.772 acres of land within the Academy Industrial Park to be used for drainage purposes from I-25 to the Inlet Basin on the West.

Presently, we have received confirmation for delivery to the City from present owners who hold title to 2.858 of the above acres and we are in the process of purchasing the additional 1.914 acres from Envirco, Inc. and Morris Steel & Aluminum Company.

The original costs of the 2.858 acres and the costs allocated to the 1.914 acres incurred from the purchases from Morris Steel and Envirco will total a minimum sum of $17,576.92.

We will, after closing of the purchase with Morris Steel and Envirco, convey title to the 4.772 acres to the City of Albuquerque for a total consideration of $17,576.92.

This sum or consideration may be paid by the City of Albuquerque by way of assuming the costs of the benefits assessed against the first 100 feet of Jefferson Street, which benefits will come through Special Assessment District 185. The minimum amount to be assumed shall be $6,004.00. The above first 100 feet shall start from

the presently existing pavement on Jefferson Street.

The balance of $11,572.92 may be paid by vacating the existing drainage easements including, but not limited to, the following easements:

1. Thirty foot drainage easement running north of and parallel to the 200 foot public service easement;

2. All drainage easements shown on the plat of Academy East Industrial Park filed with the County Clerk of Bernalillo County on June 3, 1974.

Very truly yours,

Jack M. Clifford

Jack M. Clifford

JMC:JL:ajd

RECEIVED
JUN 18 1975
CITY REAL ESTATE OFFICE

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

MAYOR
Harry E. Kinney

CHIEF
ADMINISTRATIVE OFFICER
Frank A. Kleinhenz

July 18, 1975

Gordon Herkenhoff & Associates Inc.
302 8th. Street NW
Albuquerque, New Mexico 87103

RE: DRAINAGE REPORT FOR ACADEMY PARK

Gentlemen:

This letter is to confirm my telephone conversation with Ross Schmidt about the subject drainage. All channels must be stabilized and easily maintained. Velocities shall not be erosive in earth channels. Earth channels shall have minimum bottom width of 10 feet and at least 4-1 side slopes.

The proposed 60 foot easement must be improved to a standard established in the Northeast Heights Drainage Management Plan or an equivalent developed by you. Current City policy states the City shall pay 25 percent of the cost of the improvements in this easement exclusive of design, right-of-way, and excavation costs. All other costs shall be at the developers expense.

By agreement, City staff cannot accept a smaller flow through the 6-36" RCP culverts until plans, contracts and financing are available for other improvements. Therefore, you will need to assume those pipes flowing at capacity.

When these changes are made the report may be submitted for approval.

Sincerely,

Kleston H Laws

Kleston H. Laws
Assistant City Engineer-Hydrology

KHL/fs
cc: V. M. Kimmick
John B. Robert

Public Works Department

Director — Erwin F. Hensch, P. E. 766-7467
Engineering 766-7441 — V. M. Kimmick, P. E.
Street Maint. 766-7755 — G. E. Paul, P. E.
Ass't. Director — Harold R. Orr, Jr. P. E.
Liquid Waste 766-7535 — R. P. Lowe, P. E.
Water 766-7437 — W. H. Otto, P. E.

MEMO

TO : Wain Cooper

FROM: Vern Hagen VH

DATE: 10/22/75

RE : Response to Drainage Report for Academy Park

We have conducted an in-house review of the recommendations made in the draft drainage report of 10/10/75. The following points summarize our views and present a position regarding matters affecting drainage in the study area.

1. Jack M. Clifford and Company is representing three separate ownership groups within the study area in an effort to coordinate and simplify the overall planning process. Jack M. Clifford and Company has no ownership rights established in the vast majority of the land included in the study area. Two of the key ownership groups are established as "investment" groups, not as "development" groups for income tax purposes. As investment groups, they are prohibited from engaging in construction or development activities or else face the loss of their investment tax status.

2. For the past 9 years, Jack M. Clifford and Company and related groups have consistently provided easements, rights-of-way, and improvements at substantial expense in accordance with public agency requests.

3. Improvements to the two channels (contained in the report at the City's request) represent substantial benefits to areas outside the study area of the drainage report. These benefitted areas are not owned or controlled by Clifford-related groups. In fact, portions of the channels themselves pass through other ownerships.

4. The design for temporary channel improvements contained in the report represent peak flows that are several times greater than those anticipated after the Pino dam is constructed upstream. Present estimates of construction timing indicate that the Pino dam may be under contract in 2 or 3 years.

5. Industrial land sales during the past year have been very slow. At the present rate of sales, it could be several years before the land affected by the channels will be built on. Also, the slow sales rates have depressed revenue flows so that investor groups are not as liquid at this point in time.

As a result of the above views and conditions, we make the following conclusions:

1. We wish to continue our history of cooperation with the City, but would like to do so under the approach presented below:

2. None of the investor groups has any objection to being included as a part of a drainage assessment district which involves (1) establishment of a benefit area equitable to all affected properties and (2) establishment of a mechanism for including all affected properties in payment for required improvements.

3. Should industrial land sales and building activity pick up in the very near future (prior to upstream improvements on the Pino Arroyo being placed under contract) to an extent which can justify temporary improvements

no development till channels are improved

to the arroyo channels as designed under the terms and conditions called for in the drainage report, construction of improvements in those areas affected by the channels (shown in the report on Plate 20, i.e., all of areas 6, 8, 9; part of areas 5, 7; and all of the area located on the Beta Parcel east of the Beta Channel) shall be prohibited until such time as evidence is presented that the required improvements are under contract. Such restriction would be placed in the drainage report and be referenced by covenant to run with the land.

4. The remaining areas covered by the report (which deal only with local drainage) would then proceed as per the normal review and development process.

5. At such time as upstream improvements are in place, channel improvements would be designed accordingly for the study area. Such new design would then supercede the temporary improvements called for in the drainage report. The report should notethis temporary nature of the design for proposed channel improvements

constructed at time of upstream improvements.

6. Should upstream improvements for whatever reason not be built as now planned, it is then our understanding that the flow volumes are such as to make the desired channel improvements through the study area for the Pino Arroyo a matter of public responsibility under both existing and proposed new local flood plain management legislation. At such time as any determination is made that the public improvements will not be built upstream as currently proposed, we would want a re-evaluation of the commitment contained in item #3 above to determine the responsibility for installation and payment for such improvements as required to allow construction to take place in areas affected by the channels.

Should construction already have been undertaken in reliance on present public plans (which would make payment the property owner's responsibility), and should later changes make or keep such construction as a public responsibility, some recognition should be provided for reimbursement of property owners for such contingency when and if temporary improvements are placed under contract as called for in item #3 above.

We feel the above suggestions represent an equitable approach for dealing with the channel problems in this area. With all the uncertainty involved with flow volumes (public improvements), the establishment of an assessment district, market rates of industrial land use, and with the very high carrying costs associated with unused improvements, we firmly feel that the best approach for now is one that insures that unprotected improvements can not be built in the area while at the same time presenting a range of options for dealing with a very uncertain future. We believe the above suggestions accomplish these objectives, and see no further need to delay completion of the report, platting, and establishment of covenants incorporating these ideas.

If you have questions regarding any of the above observations or suggestions, or if you want us to meet with you or City representatives regarding this memo, we would be most happy to accomodate your request.

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

MAYOR
David Rusk

MAY 03 1979
AMAFCA

May 2, 1979

Asst. Engr.
Engineer
Admin. Asst.
Rel. Eng. Off.
Secretary
Foreman
Return to
File #
Hold Till

Mr. John Andrews
Andrews, Asbury & Robert, Inc.
401 San Pedro N.E.
Albuquerque, New Mexico 87108

Re: PINO ARROYO IMPROVEMENTS

Dear John:

In discussions with AMAFCA on the projected flows that can be expecced in the Pino Arroyo, the following shall be used as your criteria for design.

1)	At Louisiana Blvd.	1300 cfs
2)	At I-25	1300 cfs
	a) design the I-25 crossing for	1450 cfs
3)	At Jefferson Street	
	a) including the Beta Channel	2200 cfs

Please continue your design based on the above. Should you have any questions, feel free to call me.

Very truly yours,

Richard S. Heller

Richard S. Heller
City Engineer

RSH/fs

cc - Rich Leonard, AMAFCA
H. R. Orr, Jr., Deputy Dir. of MDD
Bruno Conegliano, Assist. City Engineer-Hydrology

FRED DENNEY & ASSOCIATES, INC.
CONSULTING ENGINEERS
2400 COMANCHE ROAD, N.E.
ALBUQUERQUE, NEW MEXICO 87107
(505) 345-6852

E17-D2

July 17, 1980

RECEIVED
JUL 21 1980
CITY ENGINEER

Mr. Bruno Conegliano
Drainage Engineer
City of Albuquerque
P.O. Box 1293
Albuquerque, New Mexico 87103

Re: Lot 1, Block A, Interstate Industrial Tract
F.D. Job No. 463.12

Dear Bruno:

Transmitted herewith are two copies of the Drainage Report for Lot 1, Block A, Interstate Industrial Tract, for your review and approval. The tract is located on the Southwest corner of Osuna Boulevard and the AMAFCA North Diversion Channel.

Very truly yours,

Daniel Grochowski

Daniel Grochowski

DG/lm

Enclosures

cc: Knight Seavey/w. Encl.

J.T.A. AUG 13 1980 0082

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

MAYOR
David Rusk

August 1, 1980

Jack M. Clifford & Company
2201 San Pedro Drive NE
Albuquerque, NM 87110

RECEIVED
AUG 12 1980
CITY ENGINEER

REF: S-1512-1

Dear Sir:

At their meeting of July 24, 1980, the Subdivision Review Board approved your request for subdivision approval subject to the following conditions:

1. The drainage plat submitted on 11/10/75 shall be reviewed in light of the new drainage criteria.

2. Documentation of a Public Service agreement to allow the development (drainage) within their easement must be submitted to the Planning Division. City Engr

Should you have any questions regarding this matter, please do not hesitate to contact this office at 766-7422.

Sincerely,

Robert J. Casias
Planner

RJC/lmm

cc: Jack M. Clifford & Company, 2201 San Pedro Drive NE, 87110
City Engineer
Traffic Engineer
Transportation
Public Service Company of New Mexico

Bob — Can you get planning to give us more than Rg. F so we can relate to project.
Thank, Duane 8/11/80

RSH	RSH	ADM	
HRO		SUR	
CDS		COUN	
DES		SEC	
INSP		FILE	
HYDRO	B.C.	RETURN	

MUNICIPAL DEVELOPMENT DEPARTMENT

Laurence J. Frishman, A.P.A.
City Planner

PLANNING DIVISION

Telephone (505) 766-7422

AN EQUAL OPPORTUNITY EMPLOYER

JACK M. CLIFFORD & COMPANY
TWO SAN PEDRO PARK, SUITE 201
2201 SAN PEDRO DRIVE NE
ALBUQUERQUE, NEW MEXICO 87110
PHONE (505) 884-5573

August 4, 1980

AUG 1 1980
AMAFCA

Mr. Richard Leonard
Executive Director
Albuquerque Metropolitan Flood
Control Authority
P. O. Box 25851
Albuquerque, New Mexico 87125

Dear Mr. Leonard:

On July 24, 1980 the City of Albuquerque Subdivision Review Board heard the request by Jack M. Clifford & Co. for approval of subdivision of Tract D, Unit III, Interstate Industrial Tract, as shown on the attached plat. During our brief discussion before the Board we presented problems we believed preempted parts of the 1975 approved drainage plan for the area. Thereafter, the Board recommended approval of the subdivision, subject to approval by AMAFCA and the City Engineer's Office, to changes in the plan which might be required by upstream modifications in the South Pino Arroyo east of I-25. Accordingly, the materials below provide you with a summary of the points we believe central to solution of the problems which may be at issue.

1. In our view, the 1975 drainage plan for the subdivision area, signed and approved by the City of Albuquerque and AMAFCA, represents the basic reference point for negotiations. Nothing our company has done has changed the drainage conditions this plan was directed at meeting.

2. The approved 1975 plan gives our company the right to choose either concrete or earth-lined channel improvements designed to handle a maximum flow of 1350 C.F.S., . . . with such to be installed at our initiative in accord with our industrial park development needs. (We elaborate later on the importance of these two points.)

3. Our company is ready to meet the cost obligations established by the 1975 plan, and we will be opting for installation of facilities incidental to construction of the earth-lined channel alternative therein provided.

4. Information obtained from the City Engineer's Office, and confirmed through consultation with Gordon Herkenhoff and Associates, indicates that our ability to construct earth-lined drainage facilities provided for by the plan, may have been preempted by action in removing the Old Pino Dam from upper reaches of the South Pino Arroyo east of I-25. This information, shown by the attached letter from City Engineer Richard Heller, indicates that related upstream modifications appear to have raised the peak flows from the 1350 C.F.S. provided for by the plan to approximately 2,200 C.F.S.

Our engineers advise that the above flow increases create conditions of erosion which may make the installation of the earth-lined facilities permitted us by the 1975 drainage agreement unworkable. Additionally, the box culvert at Jefferson, the existing use of which is provided for by the plan to handle peak flows of 1350 C.F.S., apparently cannot handle flows substantially larger without major modifications.

5. If changes in the previously approved drainage plan are required, fair treatment determines that the party responsible for changing upstream conditions which result in increased drainage costs should be responsible for such. This is stated only as a matter of information. In fairness to you, we doubt that the equity of this position would be questioned by AMAFCA. Public hearing testimony relating to removal of the Old Pino Dam, as well as wording of AMAFCA resolution 78-10 authorizing its removal, both voice concern for the effect of such upon cost increases for downstream drainage improvements. Additionally, Section 2 of drainage resolution 72-2 states specifically: . . . "Property owners who change the use of land have an inherent responsibility to deal with surface runoff passing through or originating on their land so that other property is not adversely affected by the change in use." This, of course, applies equally to public and private property owners.

5. In determining cost responsibilities which may be at issue in possible change of the 1975 drainage agreement, our legal advice is that public policies governing the agreement when signed should be considered applicable. That is, 1975 drainage agreement provisions were conditioned upon public policies then in effect, and later policy changes should not be made to apply retroactively to a prior agreement. The obvious exception would be where one of the parties changes conditions which would make reasonable change of the agreement as it applied to that party. In brief, if our company has done nothing to change conditions on which the agreement is based, then the party whose interest is served by a proposed change should be responsible for resulting costs.

The above position statements establish the following points as being of special concern:

1. If required by increased arroyo peak flows generated upstream, any modification to the box culvert at the Jefferson St. crossing of the South Pino Arroyo should be a public responsibility.

2. Dedication of right-of-way for drainage improvements should be limited to the 200 feet wide PNM power easement, as provided for in the 1975 drainage plan.

3. Any new costs arising out of modification of the 1975 approved drainage plan should establish the maximum cost to be assumed by the company as equal to the cost of installing facilities incidental to construction of earth-lined channels, as provided for by the agreement. Specifically,

as regards cost assumption, our position is as follows:

a. If negotiations establish that earth-lined channel facilities installed as provided for by the 1975 plan (to handle maximums of 1350 C.F.S.) offer sufficient flood protection to the subdivision, our company agrees to be fully responsible for the costs involved in design and construction of such installation.

b. If, however, modifications are necessary to the above approved earth-lined facility provided for by the 1975 agreement, . . . to enable such to handle flows totaling more than 1350 C.F.S. but less than 2000 C.F.S., . . . our company would be responsible only for costs equivalent to the cost of designing and installing the earth-lined channel facilities therein provided for.

c. If peak volumes generated by upstream arroyo modifications require drainage improvements west of the Beta confluence with the South Pino Arroyo able to handle flows of 2000 C.F.S. or more, then the entire cost of design and construction of such improvements should be a public responsibility.

As to the propriety of public authority assuming full costs under the last condition above, added explanations are needed to evidence our deep concern for the equity considerations at issue. These are as follows:

Of foremost concern is our strong belief that public authority should recognize their obligation to safeguard the two principal benefits conferred upon our company by the 1975 agreement. The first of these, as noted earlier, confers upon us the right to choose between alternative forms of drainage improvements, and limits cost of the chosen facility to that required for improvements capable of carrying a peak load of 1350 C.F.S. The second benefit conferred gives us the right of installing drainage improvements at our own initiative, . . . timing such construction so that it permits optimum development of our properties.

From information cited previously, it now appears probable that drainage improvements west of the Beta Confluence with the South Pino Arroyo, will be required to carry minimum peak flows approximating 2200 C.F.S. Under these circumstances, if present policies are applied without reference to our agreement, our present right of initiative to develop our properties at our own pace in accord with development needs, provided by the 1975 plan, . . . may be exchanged for a series of indefinite postponements, geared to as yet to be determined public construction schedules which experience has shown to be slow in determination. Similarly, again, if our agreement is discarded, applicable policies appear to provide only one means whereby that initiative may be regained . . . e.g. by assuming responsibility for the full costs involved. We believe this to be patently unfair in view of the circumstances at issue.

Should our company lose either of the two benefits noted, serious financial consequences would result. Minimum returns expected by our investor groups, in view

(2) That it is in the public interest for the Authority to amend the Northeast Heights Drainage Management Plan by providing for the deletion of Old Pino Dam.

(3) That the Authority has no objection to the breaching or removal of the Old Pino Dam by the owner of the land upon which the dam is situated, provided that such work is accomplished at private expense and is so performed as to provide for the Arroyo del Pino to flow in its historic water course.

(4) That the Northeast Heights Drainage Management Plan is amended by deleting therefrom all requirements for the acquisition, construction, repair, and upgrading of the Old Pino Dam.

(5) That the designated stream flow below the Old Pino Dam is amended to provide for the consequences of the removal of the Old Pino Dam.

PASSED, ADOPTED AND SIGNED this 26th day of October, 1978.

ALBUQUERQUE METROPOLITAN ARROYO
FLOOD CONTROL AUTHORITY

Chairman, Board of Directors

(SEAL)

ATTEST:

Secretary (Assistant)

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

August 15, 1980

Mr. Ralph P. Maxon
Property Administrator, PNM
Public Service Company of New Mexico
P.O. Box 2267
Albuquerque, NM 87103

Dear Mr. Maxon:

Please find enclosed Exhibit A, attached to the agreement between PNM and the City, dated December 9, 1977.

Very truly yours,

Bruno Coneglia
Assistant City Engineer/Hydrology

BC:lf
Enc.

A G R E E M E N T

This Agreement is made this 9 day of Dec, 1977, by and between PUBLIC SERVICE COMPANY OF NEW MEXICO, a New Mexico corporation (hereinafter called "PNM"), and the CITY OF ALBUQUERQUE, a municipal corporation (hereinafter called "City").

WHEREAS, PNM has a certain 200' wide easement and right-of-way for electrical transmission lines and related facilities; and

WHEREAS, said easement and right-of-way is across certain lands presently owned by City; and

WHEREAS, City has a plan to use a portion of said easement and right-of-way for a permanent drainage channel and related facilities; and

WHEREAS, City has requested that PNM grant it the right to use a portion of said easement and right-of-way in the manner set forth in its proposed plan; and

WHEREAS, PNM has agreed to permit City to use a portion of said easement and right-of-way for a drainage channel and related facilities as set forth in its plan only upon certain terms and conditions being met; and

WHEREAS, PNM and City want to enter into an agreement defining the terms and conditions under which City may encroach upon PNM's easement and right-of-way to construct and maintain the drainage channel and related facilities;

NOW, THEREFORE, in consideration of the mutual promises, covenants, conditions and agreements herein set forth, PNM and City have agreed as follows:

1. That City is presently the owner of certain real estate located in the County of Bernalillo, State of New Mexico,

across which PNM has an easement and right-of-way 200' wide for electrical transmission lines and related facilities by reason of a certain Grant of Right-of-Way dated August 8, 1956, and recorded on August 10, 1956, in Volume D359, Folio 275 of the Records of Bernalillo County, New Mexico, which easement and right-of-way is more particularly described as follows:

> Beginning at a point common to Sections 23 and 26 and the Westerly right-of-way of State Road 422, and running thence N.89°49'W., 3267.5 feet along the North line of Section 26; running thence N.28°52'W, 2467.1 feet; running thence N.0°03'W., 640.0 feet; running thence N.89°43'W., 200.0 feet along the Southerly boundary line of the Public Service Company of New Mexico North Plant Site; running thence S.0°03'E., 692.57 feet; running thence S.28°52'E., 2636.08 feet; running thence S.89°49'E., 3348.78 feet to the Westerly right-of-way line of State Road 422; running thence along said right-of-way line N.10°29'E., 203.28 feet to the place of beginning, containing 29.963 acres more or less.

2. That PNM hereby consents to the use of a portion of said easement and right-of-way by City for a permanent drainage channel and related facilities as shown on the plan attached hereto as Exhibit "A".

3. That City is granted the right to use a portion of PNM's easement and right-of-way solely for the purpose of a permanent drainage channel and related facilities as specifically shown on the plan attached hereto as Exhibit "A" and is not granted the right to construct or erect any other structures thereon or use any portion of the easement and right-of-way for any other purpose.

4. That City, in consideration of PNM's consent to use the easement and right-of-way as shown on the plan attached hereto as Exhibit "A" agrees that it will, at its expense, modify its use of the easement and right-of-way should the use by City conflict in any manner with PNM's utilization of the easement and

right-of-way for electrical transmission line purposes. City acknowledges that PNM may construct additional transmission lines upon the easement and right-of-way and may relocate the existing transmission lines and facilities and that said construction or relocation may require the placement of poles, wires or other structures upon and underneath the easement which could require the temporary removal and relocation of all or a portion of the drainage channel and related facilities shown on the plan attached hereto as Exhibit "A".

5. That City does not agree to bear any of PNM's additional costs incurred in the construction, relocation or maintenance of its electrical transmission lines caused by City's use of a portion of the easement and right-of-way as aforesaid; however, the cost of repairing, replacing, relocating and modifying the drainage channel and related facilities caused by PNM's construction, relocation or maintenance of its electrical transmission lines shall be borne entirely by City.

6. That PNM hereby grants to City the right of reasonable ingress and egress across its easement and right-of-way for the purpose of constructing and maintaining the proposed drainage channel and related facilities.

7. That City, in consideration of PNM granting it permission to use a portion of its easement and right-of-way as aforesaid, subject to the rights of PNM, hereby agrees to indemnify and hold PNM harmless from any and all claims for personal injuries or damage to property when such injuries or damages directly or indirectly arise out of the existence, construction, maintenance, repair, condition, use or presence of the drainage channel and related facilities upon said easement and right-of-way.

8. That City, in consideration of PNM granting it per-

mission to use a portion of its easement and right-of-way as aforesaid, subject to the rights of PNM, hereby agrees to pay and/or reimburse PNM for any damages to its electrical transmission lines and related facilities caused by City's construction, maintenance, repair and/or removal of the drainage channel and related facilities.

9. That this agreement shall be binding upon and inure to the benefit of the parties hereto, their successors and assigns.

IN WITNESS WHEREOF, the undersigned have caused this agreement to be executed effective the day and year first above written.

PUBLIC SERVICE COMPANY OF NEW MEXICO

ATTEST:

Its ASSISTANT SECRETARY

By

Its

CITY OF ALBUQUERQUE

ATTEST:

Its City Clerk/Recorder

By

Its Director, Finance & Mgmt. Dept.

STATE OF NEW MEXICO)
) ss.
COUNTY OF BERNALILLO)

The foregoing agreement was acknowledged before me this 4 day of March, 1977, by [illegible] of PUBLIC SERVICE COMPANY OF NEW MEXICO, a New Mexico corporation, on behalf of said corporation.

NOTARY PUBLIC

My commission expires:
[illegible] 1981

STATE OF NEW MEXICO)
) ss.
COUNTY OF BERNALILLO)

The foregoing agreement was acknowledged before me this 1st day of March, 1978 by Arthur A. Blumenfeld, Dir., Finance&Mgmt. Dept. of the CITY OF ALBUQUERQUE, a municipal corporation, on behalf of said corporation.

NOTARY PUBLIC

My commission expires:
Jan 10, 1982

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

mission to use a portion of its easement and right-of-way as aforesaid, subject to the rights of PNM, hereby agrees to pay and/or reimburse PNM for any damages to its electrical transmission lines and related facilities caused by City's construction, maintenance, repair and/or removal of the drainage channel and related facilities.

9. That this agreement shall be binding upon and inure to the benefit of the parties hereto, their successors and assigns.

IN WITNESS WHEREOF, the undersigned have caused this agreement to be executed effective the day and year first above written.

PUBLIC SERVICE COMPANY OF NEW MEXICO

ATTEST:

Its ASSISTANT SECRETARY

By _____
Its _____

CITY OF ALBUQUERQUE

ATTEST:

Its City Clerk/Recorder

By _____
Its Director, Finance & Mgmt. Dept.

STATE OF NEW MEXICO)
) ss.
COUNTY OF BERNALILLO)

The foregoing agreement was acknowledged before me this 9 day of May, 1977, by _____ of PUBLIC SERVICE COMPANY OF NEW MEXICO, a New Mexico corporation, on behalf of said corporation.

NOTARY PUBLIC

My commission expires:
February 4, 1981

STATE OF NEW MEXICO)
) ss.
COUNTY OF BERNALILLO)

The foregoing instrument was acknowledged before me this 1st day of March, 1978 by Arthur A. Blumenfeld, Dir., Finance&Mgmt. Dept. of the CITY OF ALBUQUERQUE, a municipal corporation, on behalf of said corporation.

NOTARY PUBLIC

My commission expires:
Jan 10, 1982

East Loop
115 KV

GRANT OF RIGHT-OF-WAY

KNOW ALL MEN BY THESE PRESENTS:

ACADEMY FOR BOYS INCORPORATED, a New Mexico corporation, hereinafter called Grantor, in consideration of the sum of One Dollar ($1.00) and other valuable considerations to the grantor in hand paid by PUBLIC SERVICE COMPANY OF NEW MEXICO, a corporation organized and existing under the laws of the State of New Mexico, hereinafter called Grantee, the receipt of which consideration is hereby acknowledged by the grantor, hereby grants to grantee, its successors and assigns, the easement and right-of-way to construct, maintain, change, renew and operate its line or lines for the transmission of electrical energy, and as incident thereto, and in connection therewith, to construct, maintain and operate a telephone line as may be found advisable, including the necessary steel and wood pole towers, poles, wires, guys, stubs and other fixtures, together with the right of ingress and egress and the right to trim or cut down any trees and remove any objects which may interfere with the construction and operation of such lines and structures, together with the right to construct and maintain a road along said right-of-way for the purpose of constructing and maintaining transmission lines over, upon and along certain strips of land situate in Bernalillo County, New Mexico, described as follows:

An easement within Sections 23 and 26, T. 11N., R.3E., N.M.P.M. Bernalillo County, New Mexico and more particularly described as follows:

Beginning at a point on the section line common to the above mentioned sections 23 and 26, whence the corner common to sections 22,23,26 and 27, T.11N.,R.3E., bears N.89°49 W., 1689.55 feet distant; running thence S.0°11'W., 25.00 feet to transmission line survey station 810/89.6, continuing S.0°11'W., 175.00 feet ; thence N.89°49'W., 36.10 feet; thence N.75°53 W., 1376.95 feet; thence

29

505.31

N.0°03'W., 2660.97 feet to the South boundary line of Public Service Company of New Mexico Reeves Station site, whence the Southwest corner of Reeves Station site bears N.89°43'W., 320.50 feet distant; thence S.89°43'E., along the South boundary line of Reeves Station site 200.00 feet; thence S. 0°03'E., 2505.23 feet; thence S.75°53 E., 1196.78 feet; thence S.89°49'E., 11.66 feet to the place of beginning, being an easement 200.0 feet in width and containing 17.897 acres more or less, together with necessary down guy and anchor easements at P.I.811/04.3 and P.I. 823/23.6 all as shown on Public Service Company of New Mexico Drawing No. A-674-D dated January 2, 1959, a copy of which is attached hereto and made a part hereof.

TO HAVE AND TO HOLD said strips of land for so long as the grantee, its successors and assigns, shall use the same for the purposes aforesaid; the easement and right-of-way hereby granted to cease and revert to the grantor, their successors and assigns, if the grantee, its successors and assigns, shall have ceased to use said strips of land for said purposes for a continuous period of two years from and after the date of completion of such transmission lines and structures.

The grantor covenants and agrees for themselves, their successors and assigns, not to erect any building or structure within the limits of said strips of land, and the grantee, its successors and assigns, shall have the right to remove, at grantee's expense, objects interfering with the construction, maintenance, operation, control and use of said lines.

This grant is subject to the right of the grantor, their successors and assigns, to pass over said strips of land from one portion of grantor's land to the other portion thereof, and to otherwise use, pasture and cultivate the surface of said strips of land consistent with the use of said strips of land by the grantee, its successors and assigns, for the purposes aforesaid.

DRAINAGE REPORT

FOR

ACADEMY PARK – UNIT 4

AND

BETA TRACT

A Development of

JACK M. CLIFFORD & CO.

2201 San Pedro N.E.

Albuquerque, New Mexico 87110

505-266-5573

PREPARED BY

GORDON HERKENHOFF & ASSOCIATES, INC.
302 Eighth Street, N.W.
Albuquerque, New Mexico 87102

DRAINAGE REPORT

FOR

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AND

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A Development of

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Albuquerque, New Mexico 87110

505-266-5573

RECEIVED
FEB 14 1980
CITY ENGINEER

PREPARED BY

GORDON HERKENHOFF & ASSOCIATES, INC.
302 Eighth Street, N.W.
Albuquerque, New Mexico 87102

I certify that this drainage report and plan was prepared under my direction, conforms to the Drainage Resolution (1972-2) and is true and correct to the best of my knowledge.

Phillip Herkenhoff

PHILLIP HERKENHOFF

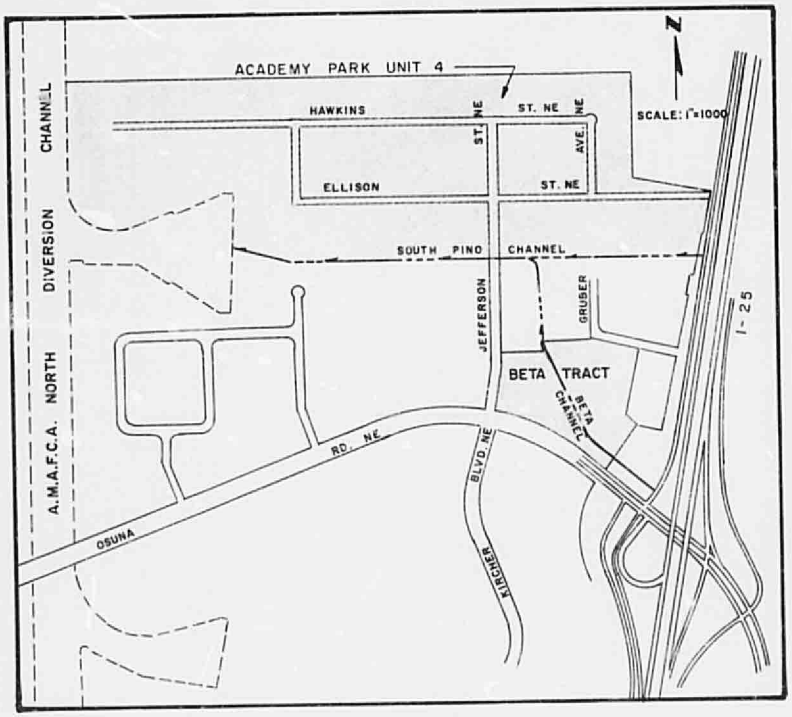
Date: Nov 10, 1975

APPROVED:

Kleston H Lewis

A.M.A.F.C.A.

REGISTERED ENGINEER
STATE OF
4305
NEW MEXICO
P. G. HERKENHOFF



LEGEND

STUDY AREA

ACADEMY PARK - UNIT 4

STUDY AREA
LOCATION MAP

GORDON HERKENHOFF & ASSOCIATES INC.
CONSULTING ENGINEERS
ALBUQUERQUE NEW MEXICO

ENGINEER'S STUDY ON STORM DRAINAGE

FOR

ACADEMY PARK

PURPOSE AND SCOPE: The purpose of this study is to present the results of a drainage analysis performed and to make general recommendations for conveying storm water runoff from the subject area into the North Diversion Channel and the South Pino Channel.

STUDY AREA: The main study area is bounded on the North by a line being 1400 feet North of the section line common to sections 23 and 26, T.11N., R.3E.; on the West by the North Diversion Channel; on the South by the southerly line of a 200-foot Public Service Company easement; and on the East by the West right-of-way line of Interstate 25. In addition to the above tract of land, this report includes a parcel located at the N.E. corner of Osuna Road and Jefferson Street and is identified as the Beta Tract. This tract is bounded on the West by Jefferson Street; on the South by Osuna Road; on the East by the Sawaya Tract and Eberline Tract; on the North by the Morris Steel and Aluminum Company site, the Gruber Manufacturing Tract 1, and Pan American Place. Two flood control channels are discussed with these being the Beta Channel, which runs northwesterly through the Beta Tract; and the South Pino Channel, which runs in a westerly direction within the southerly 60 feet of the 200-foot Public Service Company Easement.

GENERAL: The Jack M. Clifford Company is currently developing Unit 4 into an industrial complex, with tract sizes ranging from 1 acre and

larger. The Beta Tract is planned for a commercial center, with emphasis placed on warehousing and commercial offices. This report consists of determining the peak runoff that can be expected from a 100-year design storm, sizing the required channels and other drainage carriers, and establishing recommendations for the development of the two study areas. Included at the end of this report are the recommended channel sections to be incorporated, design notes, suggested structures to be utilized, and other related data.

HYDROLOGY: The rational formula, Q = AIR, is used in determining the onsite runoff with Q = peak flow, A = area in acres, I = rainfall intensity (in/hr), and R = runoff factor. The 100-year storm curve from the intensity duration frequency curves from the Master Plan of Drainage for Albuquerque and Environs, by Gordon Herkenhoff and Associates, 1963, is used in determining rainfall intensity. The runoff coefficient for the study areas is 0.80; being the weighted average of the runoff coefficients for roof areas (0.95), paved parking areas (0.90), paved streets with curb and gutter (0.90), and unimproved areas (0.30). The initial time of concentration is set at 10 minutes, with longer times calculated from the time required for the runoff water to travel a particular distance.

The drainage areas, as they would appear after development, are delineated on a 1" = 200' scale map included with this report. These maps were traced directly from an Ortho photo topographic map, available from AMAFCA. Offsite runoff enters the main study area at two locations, the northerly one by way of two 36" RCP's, with the southerly area by way of six 36" RCP's. The hydraulic analysis for all storm water carriers is

based on Mannings Formula, $Q = \frac{1.486}{N} S^{1/2} R^{2/3} A$. The value of "N" equals .015 for paved areas, and 0.30 for earth sections, .04 for grass lined. For design aids, three charts were taken from the 1963 Master Plan of Drainage for Albuquerque, and are included with this report.

SITE DEVELOPMENT: The main study area will be developed with proposed streets located as shown on drainage map. These streets will be the carriers of all on-site storm water runoff. As delineated on the drainage map, portions of Ellison and Jefferson Streets have already been established. For each drainage area shown on the map, a set of development guidelines follows:

AREA 1: This area will be developed in a manner such that the site will drain totally into Gruber or Hawkins Streets. The grades for these two streets should be designed so that the top of curb will fall between 0.5 and 1.0 feet below natural ground. This will allow an adequate amount of fill material to be made available for building pads. The buildings shall have a finish floor elevation of 1.5 feet above top of curb. Ponding areas will be allowed in the event it is advantageous to do so, but they will not be mandatory. For the small amount of runoff

entering this area from the East, provision shall be made for accepting this storm water, and carrying it on to Hawkins Street.

AREA 2 AND 3: This area will be developed so that Hawkins Street will receive all runoff. The top of curb elevation should be from 0.5 to 1.0 feet below natural ground so that fill material is readily available. All buildings located within this area shall have a finish floor elevation 1.5 feet above top of curb. Ponding areas will be allowed, but are not mandatory.

AREA 4: This area is immediately adjacent to the North Diversion Channel, and includes a 350-foot Public Service Company easement. This area will drain to the west and into the North Diversion Channel. The runoff coming from Hawkins Street will not immediately require a drainage ditch, but only when development is to a degree to warrant this ditch. At the time of the ditch construction, a new inlet shall be constructed into the North Diversion Channel. Ponding will be allowed, but is not required.

AREA 5: The runoff from this area will be drained onto Gruber or Ellison Streets. The street grades should be such that the top of curb is 0.5 to 1.0 feet below natural ground. All finish floor elevations shall be 1.5 feet above top of curb. Ponding will not be required, but shall be allowed if it is advantageous to do so.

AREA 6: This area shall be developed to drain entirely onto Ellison Street, and then being discharged directly into the inlet

as shown. In the event Ellison Street is not constructed to the AMAFCA inlet, a ditch shall be provided to do so. Buildings shall have finish floor elevations 1.5 feet above the top of curb. A splash wall, as depicted in this report, is required on the downstream side of all driveways in this area. Ponding is not mandatory, but will be allowed.

AREA 7: This area is within the 200-foot Public Service Company easement, and will be graded to drain South into the new South Pino Channel. No buildings will be allowed within this area, with only storage facilities being developed.

AREA 8: This area is within the 200-foot Public Service Company easement, and contains the South Pino Channel. No buildings shall be placed in this area, but storage facilities shall be allowed.

AREA 9: This area shall be developed so that the land drains to the South and into a collection swale, with the swale flowing into Gruber Street. This street shall then carry the runoff North and into the South Pino Channel. All buildings located within this area shall have a finish floor elevation of 2.5 feet above the top of bank elevation of the South Pino Channel. No ponding will be required, but is permissable.

BETA TRACT: This area shall utilize the Beta Channel to convey the runoff from the site, where possible. The remainder of the tract that is downhill from the channel shall be graded in a manner that will allow

all runoff to flow directly onto Jefferson or Osuna. The developer shall have the option of relocating the channel into a more usable location, but must construct the new channel to the guidelines contained herein. Finish floor elevations on the uphill side of the Beta Channel shall be 1.0 higher than surrounding hard surfaced areas, except where placed within 150 feet of Pan American Place, in which case they shall be 2.0 higher than surrounding hard surfaced areas. If conditions warrant, ponding will be allowed on the Beta Tract. Buildings located on the downhill side shall have finish floor elevations at least 1.0 higher than surrounding hard surfaced areas.

CHANNEL DESIGN AND CONSTRUCTION: With the erosive characteristics shown by the existing channels in the study areas, design velocities for soft lined channels shall be between 4 and 8 feet per second, with side slopes being no steeper than 2.5 to 1. For hard lined channels, the design shall be such that the normal flowing depth shall be less than 3.5 feet. The South Pino Channel has been designed for present flows only, and if upstream improvements are constructed, as called for in the Northeast Heights Drainage Management Plan, new designs will be required. No improvements or modifications are planned in the channels until flows are increased by development within the Study Area, or until the upstream improvements are constructed.

SOUTH PINO CHANNEL: This channel shall be hard lined from the existing concrete box culvert under Jefferson Street to a point where the Beta Channel enters. The velocity shall be between 8 and 10 feet per second to insure the suspended materials do not settle in this area; and are carried through the box culvert completely. At the point where the Beta Channel

enters the South Pino Channel, a structure shall be designed to accept water from both channels, with a minimum amount of disturbance to the water surface. The back-water curve for both channels shall be investigated to insure the water surface does not rise above the banks of either channel. Energy dissipators, in the form of obstructions or abrupt drops in the channel bottom, shall be used on the West side of Jefferson at the end of the box culvert to slow the water down to a non-erosive velocity. This channel shall be soft lined, and the cross-section shall utilize only the area within the 60-foot drainage easement. The remainder of the Public Service Company easement shall be excavated to a depth of one foot, to provide additional insurance against flooding of the adjacent areas. The South Pino Channel lying east of the Beta Channel shall be soft lined, be designed for a non-erosive velocity, and utilize drop structure as required. For both sections of the South Pino Channel, the developer shall provide access for maintenance.

BETA CHANNEL: This channel will be within a commercial development, and shall be improved in a manner that will be of benefit to the development. This will allow several alternatives, with the choice left to the developer. A hard lined channel will be costly, will require minor maintenance, and use the least area. A soft lined channel will be the least costly, require the most maintenance, and will become an eyesore to the development. A recommended solution for the channel would be grass lining of the bottom and side slopes, with a small concrete ditch in the bottom to carry small local flows. In the event this solution is carried out, additional protection shall be provided on the outside bank where the channel turns. At the end of the Beta Channel, or the northerly 750 feet, there are different

owners of the adjacent lands. With these outside owners, no immediate improvements to this portion of the Beta Channel will be made, but this area should be included in the suggested Drainage Assessment District.

CHANNEL ADJACENT TO I-25: This channel will serve to carry flows from the two sets of 36" culvert pipes to the South Pino Channel. At each end, an enclosed concrete box structure will be required to turn the water from the 36" culvert pipes, and divert the flow into the South Pino Channel. With the low flows present, an earth lined carrier will be sufficient. At the point where the South Pino Channel begins, a structure will be required to divert the two flows into the South Pino Channel. These improvements will not be required immediately, but only when the adjacent lands are developed.

CHANNEL FOR DRAINAGE AREA 9: This will be a small earth swale, large enough to carry onsite runoff. The swale will terminate at Gruber Street. The extension of Gruber should allow the runoff to flow north into the culde-sac, and then into a small drainage easement into the South Pino Channel. Again, this improvement will not be required until development warrants it.

DRAINAGE DITCH AT END OF HAWKINS STREET: This ditch will serve to carry the runoff collected by Hawkins Street into the North Diversion Channel. An earth lined channel will be adequate in this area. A new inlet will be required at the top of the North Diversion Channel bank, and shall be constructed to AMAFCA's specifications. The location of the inlet should be at a point where both the developer and AMAFCA would receive optimum

utilization. At the end of the roadway, provisions as specified in this report shall be made to prevent the storm water from undercutting the existing pavement and curb and gutter. This ditch will only be required at the time the adjacent area is developed.

STREET DESIGN AND CONSTRUCTION: All streets shall be constructed with a 5" crown and to the grades shown on the drainage map. The intersection of Jefferson and Hawkins shall be such that water can easily flow through, and not become impounded. The Gruber and Hawkins intersection shall be carefully graded to insure that no ponding occurs. In the event that either Hawkins or Ellison is not fully constructed, provision should be made to insure that undercutting of the existing paving and curb and gutter does not occur.

RECOMMENDATIONS: We recommend that the City of Albuquerque approve this drainage report and its development guidelines; and that the developer follow the recommendations as set forth herein. In addition, we recommend the following to be undertaken by the City of Albuquerque, the present or future property owners in the study area and/or adjacent areas:

1. The development within drainage areas 6, 7, 8, 9, the westerly 400 feet of area 5, the easterly 500 feet of areas 5 and 7 be withheld until the channels within the affected areas be improved as specified in this report, and as specified below:

   A. The design and construction of the South Pino Channel from the East R/W line of Jefferson to the Beta Channel proceed only at the time that development within drainage areas 6, 8, the westerly 400 feet of areas 5 and 7, will benefit from such drainage improvements.

   B. The design and construction of the South Pino Channel lying West of Jefferson Street proceed only at the time that development within drainage areas 6 and 8 will benefit from such drainage improvements.

   C. The design and construction of the channel adjacent to I-25 proceed only at the time that development within drainage areas 7, 9, and the easterly 500 feet of area 5 will benefit from such drainage improvements.

   D. The design and construction of the South Pino Channel lying East of the Beta Channel proceed only at the time of development of drainage areas 7 and 9 would benefit from such drainage improvements, or at the time that the channel adjacent to I-25 is completed.

E. The design and construction of the drainage ditch lying at the westerly end of Hawkins Street proceed only at the time that development within drainage area 4 will benefit from such drainage improvements.

F. The design and construction of the Beta Channel proceed only at the time that any development within the Beta Tract lying uphill of the Beta Channel would benefit from such drainage improvements.

G. This drainage report, and all recommendations and guidelines contained therein, become a condition of sale for any property located within the drainage study area.

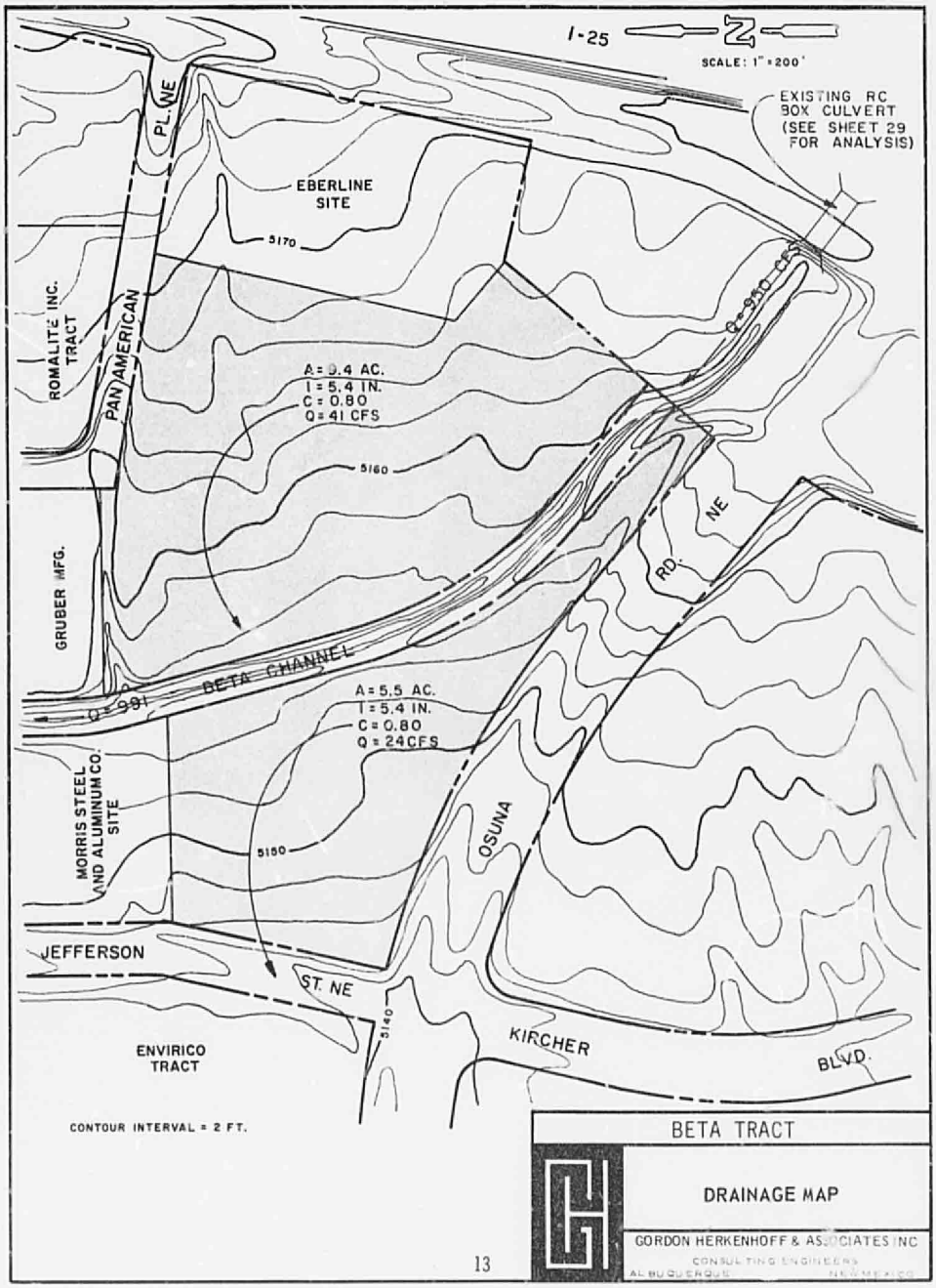
H. The City of Albuquerque provide all labor and materials for maintaining all future drainage channels and improvements located within the study area.

I. The property owners of record within the study area at the time of adoption of this drainage report will not protest a drainage assessment district which may include all portions of study area.

J. The subdivision of lands within the study areas be allowed immediately upon the approval of this report.

LEGEND

	Drainage Area Boundary
5	Drainage Area Number
10 AC / 30 cfs	Accumulated Drainage Area - Acres Accumulated Runoff - cfs
	Developed Area Drainage Flow
	Major Drainage Channel
	Minor Drainage Channel
+0.45%	Minimum Street Grade - percent
23.0 AC	Drainage Area - Acres
5120	Contour line with Elevation
	2 foot contour lines
	Limits of Flood Plain

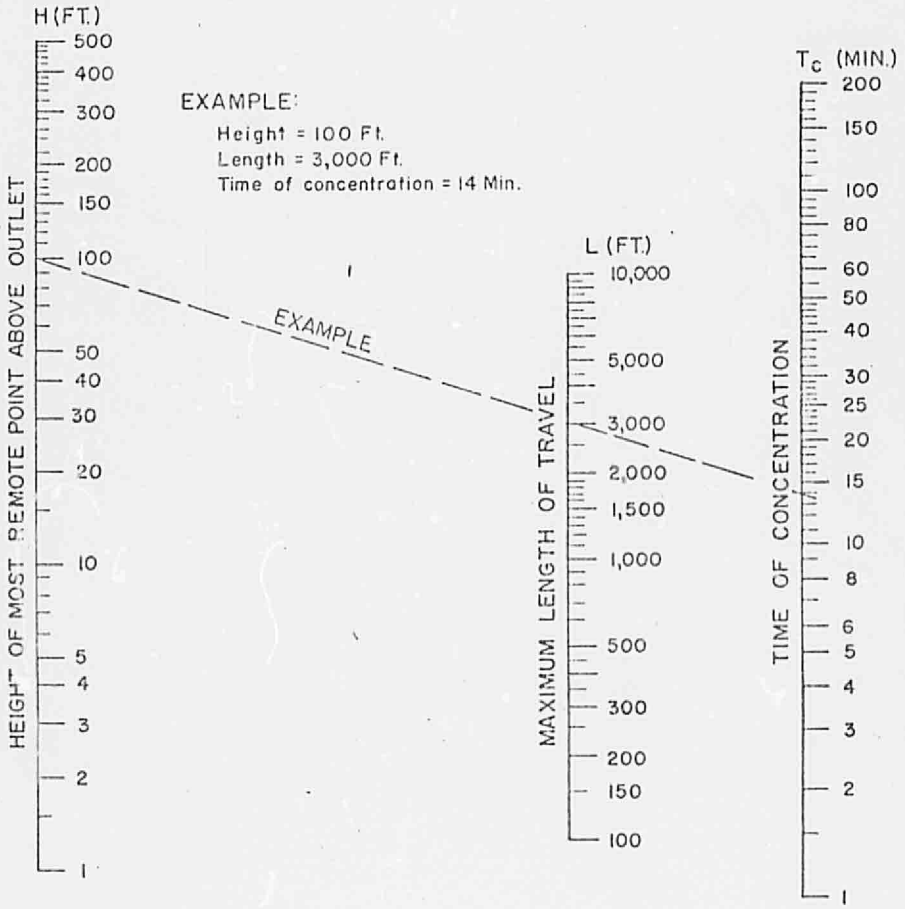

I-25
N
SCALE: 1" = 200'
EXISTING RC BOX CULVERT (SEE SHEET 29 FOR ANALYSIS)
EBERLINE SITE
PL. NE
PAN AMERICAN
ROMALITE INC. TRACT
GRUBER MFG.
MORRIS STEEL AND ALUMINUM CO. SITE
5170
5160
5150
5140
A = 9.4 AC.
I = 5.4 IN.
C = 0.80
Q = 41 CFS
Q = 950 CFS
Q = 981
BETA CHANNEL
A = 5.5 AC.
I = 5.4 IN.
C = 0.80
Q = 24CFS
OSUNA
RD. NE
JEFFERSON
ST. NE
KIRCHER
BLVD.
ENVIRICO TRACT
CONTOUR INTERVAL = 2 FT.
BETA TRACT
DRAINAGE MAP
GORDON HERKENHOFF & ASSOCIATES INC
CONSULTING ENGINEERS
ALBUQUERQUE NEW MEXICO

HYDROLOGY: PROJECT: Academy Park DATE: 10/75

NO.	POINT RUNOFF L	H	T_c	I_{100}	R	A	Q_{100}	CUMULATIVE RUNOFF L	H	Tc	I 100	R	A	Q 100	So	St.	Q_{St}
1.	1500	31	10	5.40	0.80	18.2	78								.0075	40'	81
2.	2200	38	14	4.85	0.80	28.0	109	3350	71	17	4.50	0.80	46.2	166	.0225	40'	139
3.	1100	15	10	5.40	0.80	14.1	61	4150	86	22	4.02	0.80	60.3	194	.0162	40'	119
4.	1850	25	18	4.40	0.35	23.0	35	4850	94	24	3.86	0.80	83.3	257	.0128	Ditch	
5.	2100	46	12	5.11	0.80	29.6	121								.0250	40'	147
6.	2090	42	12	5.11	0.80	22.1	90	3960	88	20	4.20	0.80	51.7	174	.0240	40'	144
7.	1640	40	10	5.40	0.35	5.3	10										
8.	2150	44	12	5.11	0.35	5.6	10										
9.	1250	24	10	5.40	0.80	3.3	14										

L = Length of Travel
H = Elevation Difference
T_c = Time of Concentration
I_{100} = Rainfall Intensity in/Hr for 100-year storm
R = Runoff Coefficient
A = Area, Acres
Q_{100} = Flow, 100-year storm

S_o = Slope
St. = Street Width
Q_{St} = Flow in Street

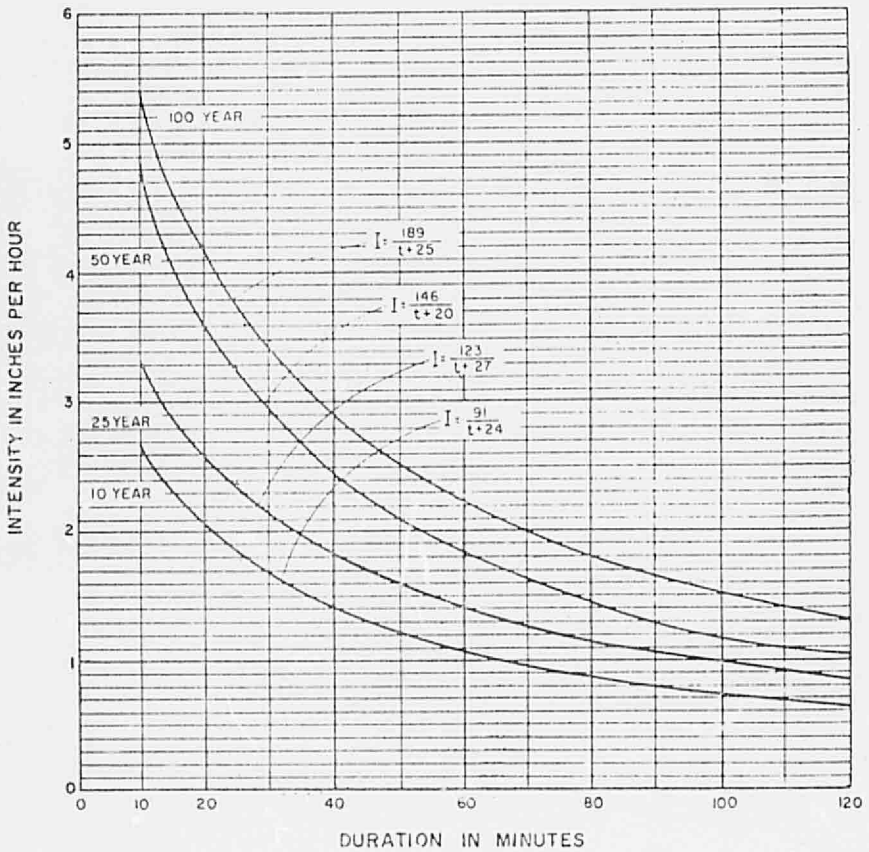


Based on study by P. Z. Kirpich,
Civil Engineering, Vol. 10, No. 6, June 1940, p. 332

FIG. 1 TIME OF CONCENTRATION OF SMALL DRAINAGE BASINS

Reprinted from "Design of Roadside Drainage Channels - Hydraulic Engineering Circular No. 6", April 1962, U. S. Dept.

Plate 2



MASTER PLAN OF DRAINAGE
CITY OF ALBUQUERQUE - NEW MEXICO
AND ENVIRONS

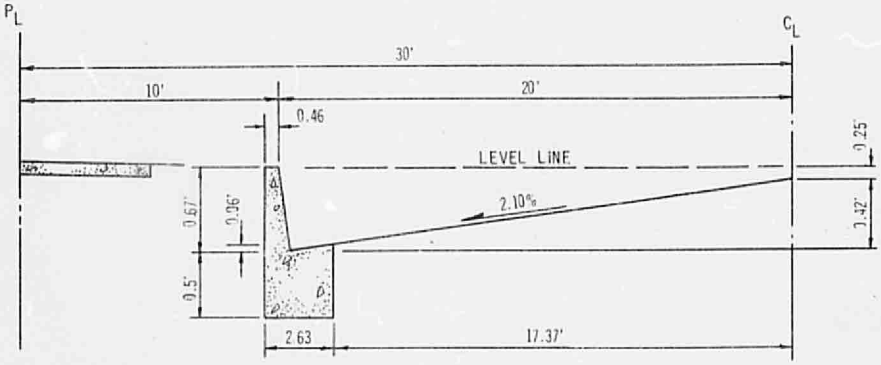
INTENSITY DURATION
FREQUENCY CURVES

(ALBUQUERQUE AREA - 1961)

GORDON HERKENHOFF & ASSOC
CONSULTING ENGINEERS
ALBUQUERQUE, NEW MEXICO

CHART
1

STREET CARRYING CAPACITIES IN C.F.S.



STREET SLOPE	STREET CROWN IN INCHES						
	8"	7"	6"	5"	4"	3"	2"
0.0025	36	45	53	61	72	81	91
0.0050	51	63	75	87	102	116	130
0.0075	63	78	92	107	125	142	159
0.0100	72	89	105	123	143	163	183
0.0125	81	100	118	137	160	182	205
0.0150	89	109	128	150	175	199	223
0.0175	96	118	139	162	189	215	242
0.0200	102	126	148	173	202	229	258
0.0225	108	134	158	184	215	244	274
0.0250	114	141	166	194	226	257	289
0.0275	120	148	175	204	238	270	304
0.0300	125	154	182	212	248	282	317
0.0325	130	160	189	221	258	293	329
0.0350	135	167	197	229	268	304	342
0.0375	140	173	204	238	278	316	355
0.0400	145	178	210	245	286	325	366

NEW CITY STANDARDS USES 5 INCH CROWN

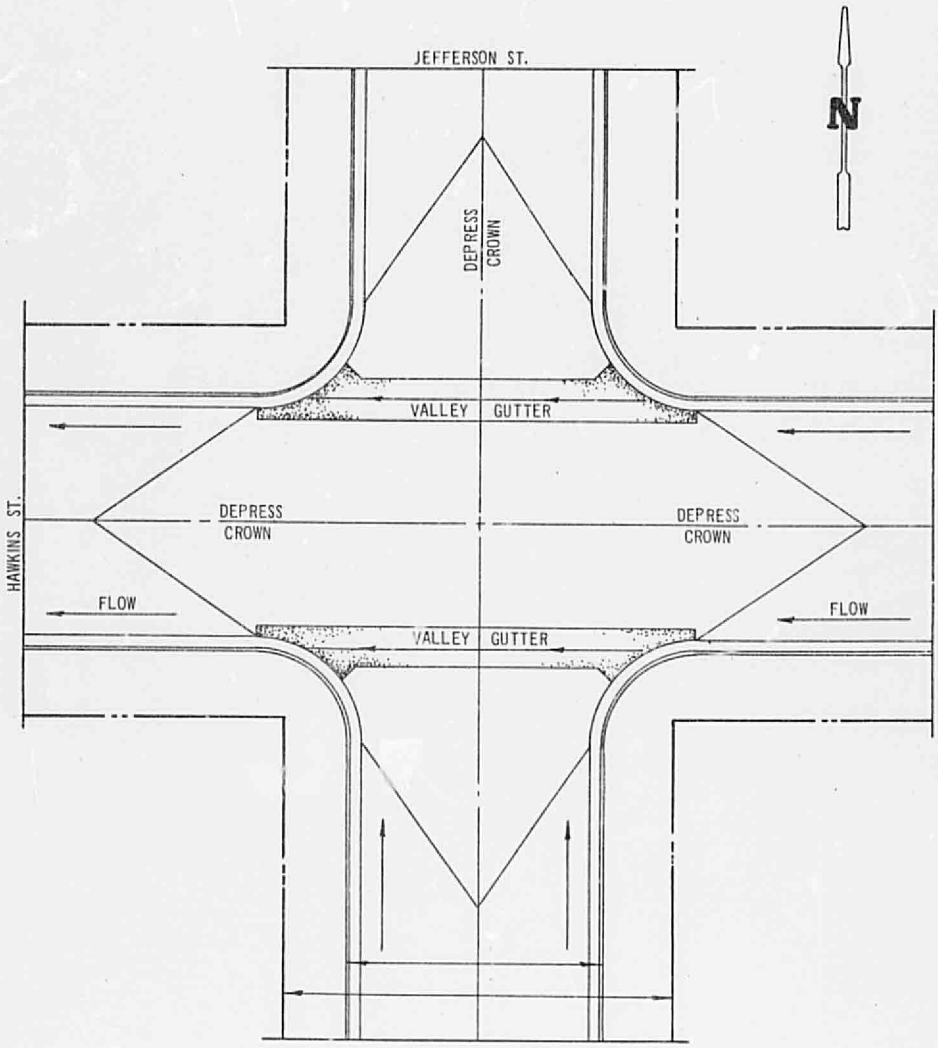
TABLE IV

STREET CARRYING CAPACITIES
(CFS)

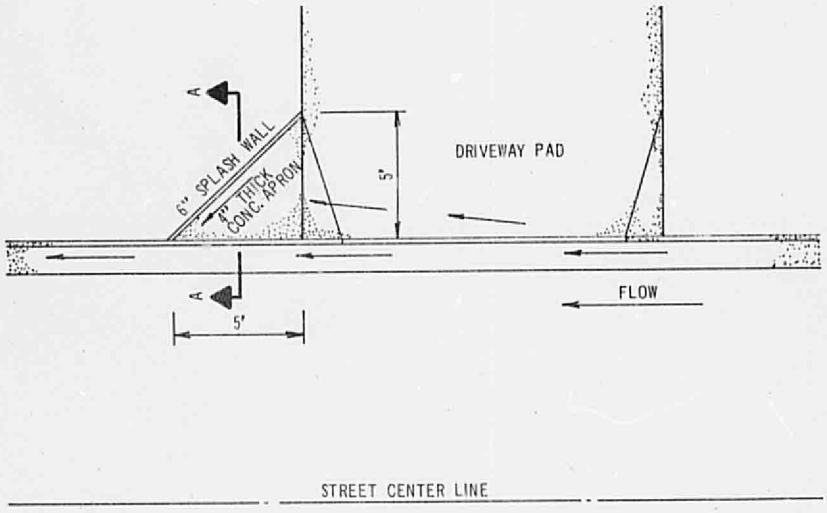
Slope	32' Street 6" Crown at center line or 6" sidehill with no crown	32' Street Flat Cross-section	32' Street 6" Inverted crown at center line	32' Street with 8" sidehill with no crown	32' Street with 12" sidehill with no crown	40' Street 6" Crown at center-line or 6" sidehill with no crown	44' Street 6" Crown at center-line or 6" sidehill with no crown	48' Street 6" Crown at center-line or 6" sidehill with no crown
0.0025	37	78	133	25	17	47	51	56
0.0050	53	111	189	36	23	66	72	79
0.0075	65	136	231	44	29	81	89	97
0.0100	75	156	267	51	33	93	102	112
0.0125	84	175	299	57	37	104	115	125
0.0150	92	193	328	62	41	114	126	138
0.0175	99	207	352	67	44	123	135	148
0.0200	105	221	376	71	47	131	144	159
0.0225	112	235	400	76	50	139	154	168
0.0250	118	247	422	80	52	147	162	177
0.0275	124	260	444	84	55	155	170	186
0.0300	129	271	462	88	57	161	177	193
0.0325	134	282	480	91	59	167	184	202
0.0350	139	292	499	95	62	174	191	209
0.0375	145	304	518	98	64	180	199	217
0.0400	149	313	534	101	66	186	205	224
0.0425	154	322	550	104	68	192	211	231
0.0450	158	332	566	107	70	197	217	237
0.0475	163	341	582	110	72	203	223	244
0.0500	167	350	598	113	74	208	230	251

Coefficient of Roughness = n = 0.015 for all streets.
Carrying Capacity Given in Cubic Feet per Second (C.F.S.)
Arterial Design (Stage & Final) has a +2% Slope from the Top of Curb to the top of Median Curb.
Curb Height = 8"

HAWKINS AND JEFFERSON INTERSECTION
DRAINAGE PATTERN



CONCRETE APRON AND SPLASH WALL DETAIL

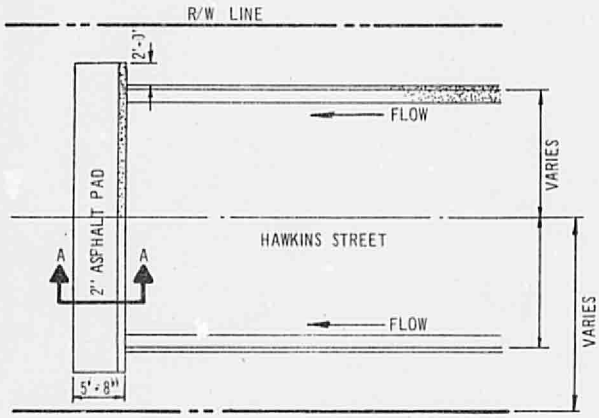


PLAN

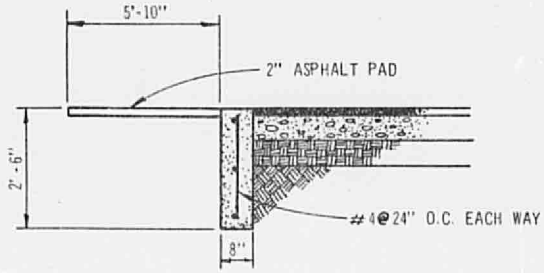
SECTION A - A

This splash wall will be required on downhill side of drive pads on Ellison and Hawkins Streets to prevent eroding soil behind curb.

CUT-OFF WALL AT HAWKINS STREET

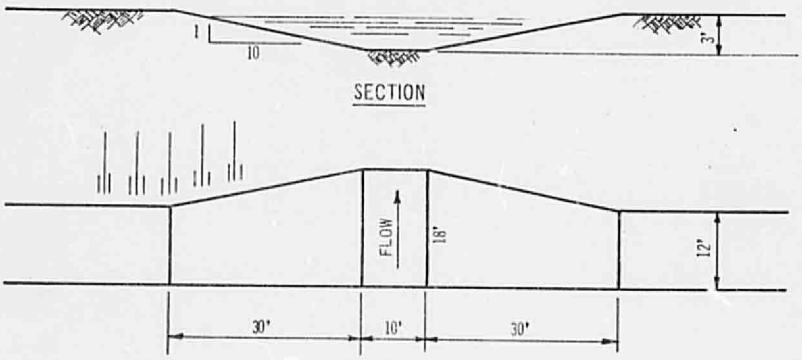


PLAN



SECTION A - A

INLET STRUCTURE INTO THE NORTH DIVERSION CHANNEL



DESIGN DATA ;

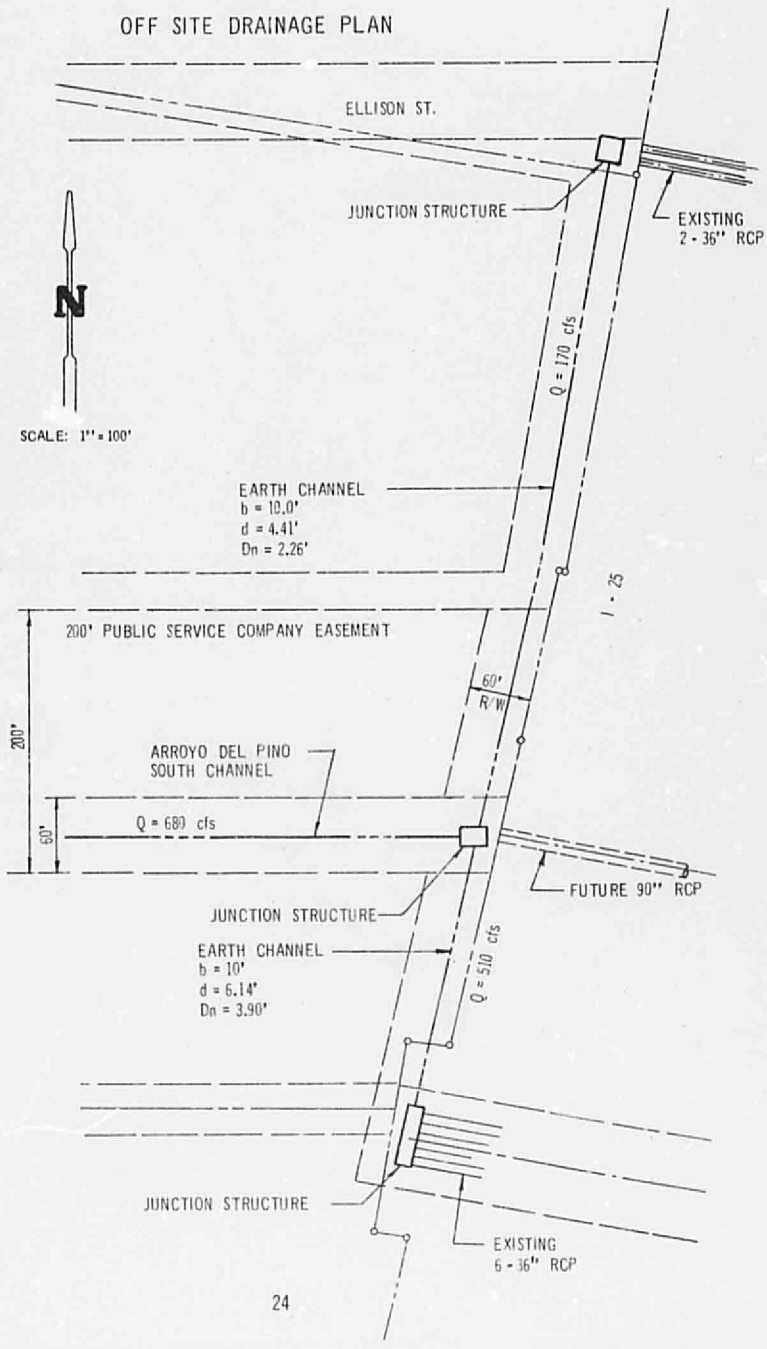
required capacity = 257 cfs
side slopes = 10 : 1
manning 'n' = .014
slope = .02

CALCULATED DATA

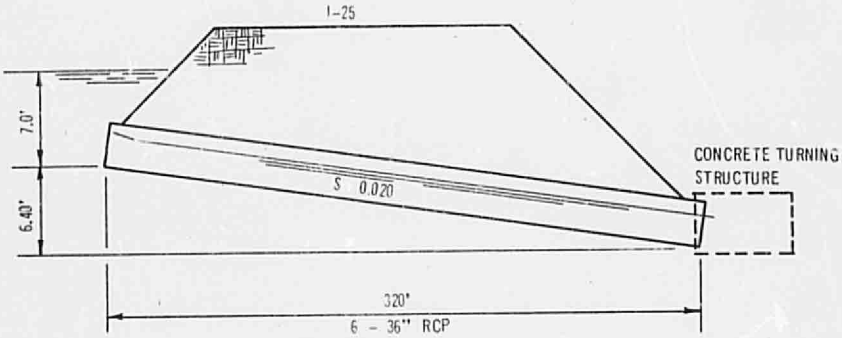
Q = 1680 (total)

RECOMMENDATIONS ;

This inlet structure will be required for the North Diversion Channel, and will be built to the section as shown.


OFF SITE DRAINAGE PLAN
ELLISON ST.
JUNCTION STRUCTURE
EXISTING
2 - 36" RCP
N
SCALE: 1" = 100'
Q = 170 cfs
EARTH CHANNEL
b = 10.0'
d = 4.41'
Dn = 2.26'
I - 25
200' PUBLIC SERVICE COMPANY EASEMENT
60'
R/W
200'
ARROYO DEL PINO
SOUTH CHANNEL
Q = 680 cfs
60'
FUTURE 90" RCP
JUNCTION STRUCTURE
EARTH CHANNEL
b = 10'
d = 6.14'
Dn = 3.90'
Q = 510 cfs
JUNCTION STRUCTURE
EXISTING
6 - 36" RCP

FLOW FROM 36" RCP's UNDER I-25



SECTION

DESIGN DATA ;

pipe diameter = 36"
pipe type = RCP
manning 'n' = .015
slope = .02

CALCULATED DATA ;

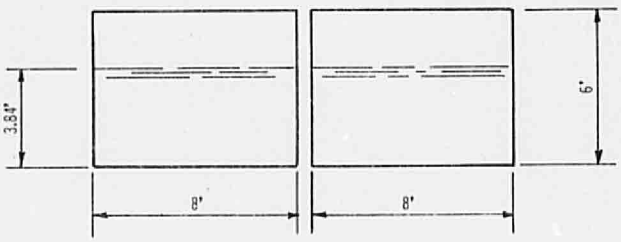
pipe flow = 85 cfs per 36" RCP
normal depth = 2.38'
critical depth = 5.45'
velocity = 12.36 fps

flow in 2-36" RCP = 170 cfs
flow in 6-36" RCP = 510 cfs

RECOMMENDATIONS ;

An enclosed structure will be required at the discharge end of both RCP's. In addition an energy dissipator shall be used to further decrease the velocity to 8 fps or less.

ANALYSIS OF EXISTING RC BOX UNDER JEFFERSON STREET



SECTION

DESIGN DATA :

Q = 1350 c's
side slope = vertical
manning 'n' = .015
slope = .020

CALCULATED DATA :

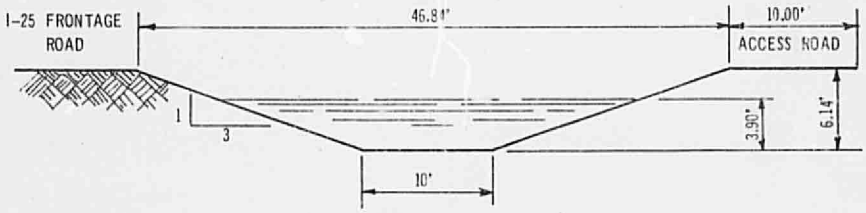
normal depth = 3.84'
critical depth = 6.0'
normal velocity = 21.97 fps
froude number = 2.0

RECOMMENDATIONS :

It is imperative that the water be slowed down before it reaches the earth channel on the West side of Jefferson St. The use of a stilling basin would accomplish this slow down. The entrance to this box is not critical as the channel will be hard lined.

NOTE : The flow conditions, as calculated for this box, will not occur, since there is proposed a stilling basin at the outlet, resulting in critical depth at that point.

CHANNEL ADJACENT TO I-25 - SOUTH OF PINO CHANNEL



SECTION

DESIGN DATA ;

Q = 510 cfs
side slope = 3:1
manning 'n' = .030
slope = .0045

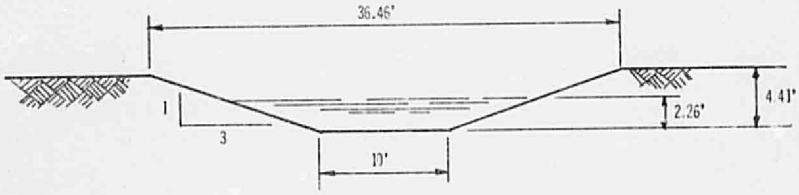
CALCULATED DATA;

normal depth = 3.90'
critical depth = 3.16'
normal velocity = 6.03 fps
froude number = 0.67

RECOMMENDATIONS ;

This channel will be earth lined, built to section as shown, at the indicated slope. No drop structure required.

CHANNEL ADJACENT TO I-25 - NORTH OF PINO CHANNEL



SECTION

DESIGN DATA ;

Q = 170 cfs
side slope = 3 : 1
manning 'n' = .030
slope = .0045

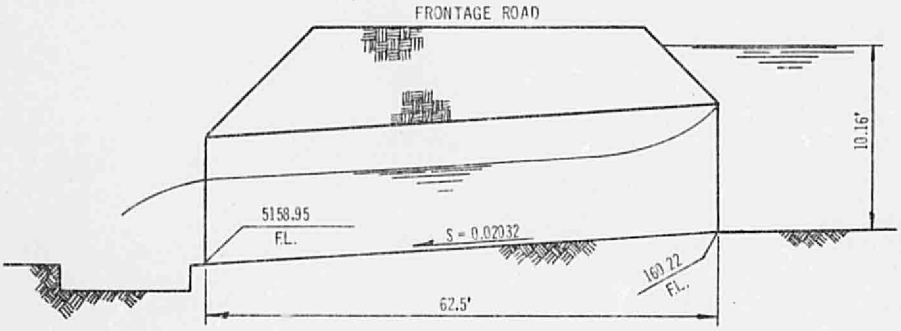
CALCULATED DATA ;

normal depth = 2.26'
critical depth = 1.70'
normal velocity = 4.48 fps
froude number = 0.62

RECOMMENDATIONS ;

This channel will be earth lined, build to section as shown, at the indicated slope. One drop structure will be required, with the height determined by field surveys at the time of design.

ANALYSIS OF EXISTING RC BOX UNDER FRONTAGE ROAD



SECTION

DESIGN DATA :

Q = 950 cfs
side slope = vertical
manning 'n' = .015
slope = .02032

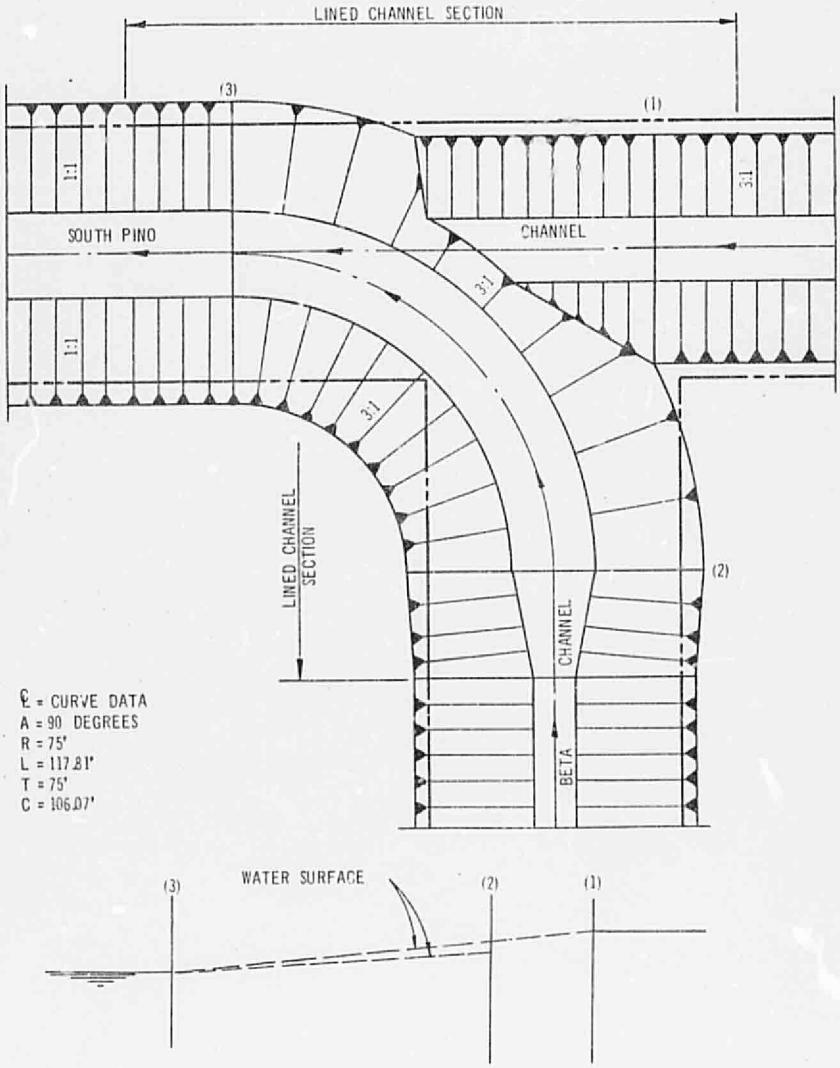
CALCULATED DATA :

normal depth = 3.93'
critical depth = 5.76'
normal velocity = 20.14 fps
froude number = 1.79

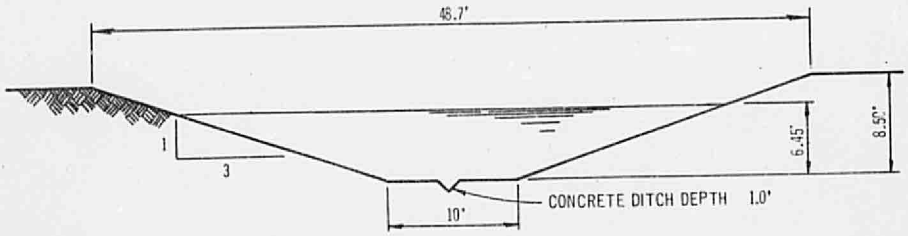
RECOMMENDATIONS :

This box culvert discharges onto lands not a part of the study area. Therefore, no alterations are planned for this box culvert.

SOUTH PINO CHANNEL AND BETA CHANNEL CONFLUENCE



BETA CHANNEL - SUGGESTED SECTION



SECTION

DESIGN DATA :

Q = 950
side slope = 3:1
manning 'n' = .04 (grass slopes)
velocity = 5 fps

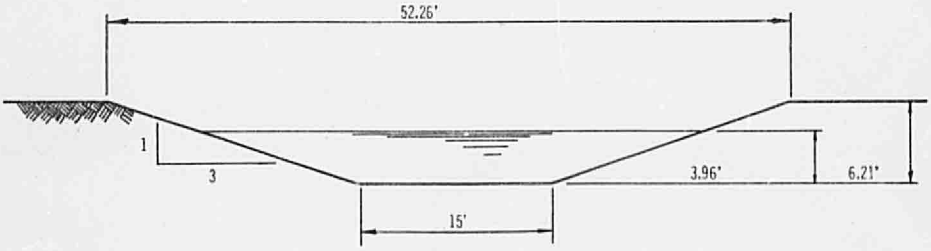
CALCULATED DATA :

normal depth = 6.45'
critical depth = 4.5'
slope = .00314
froude number = 0.2

RECOMMENDATIONS :

This is only a suggested channel section, with the developer retaining the option of changing the section .

SOUTH PINO CHANNEL - EAST OF BETA CHANNEL



SECTION

DESIGN DATA:

Q = 680 cfs
side slope = 3:1
manning 'n' = .030
slope = .0045

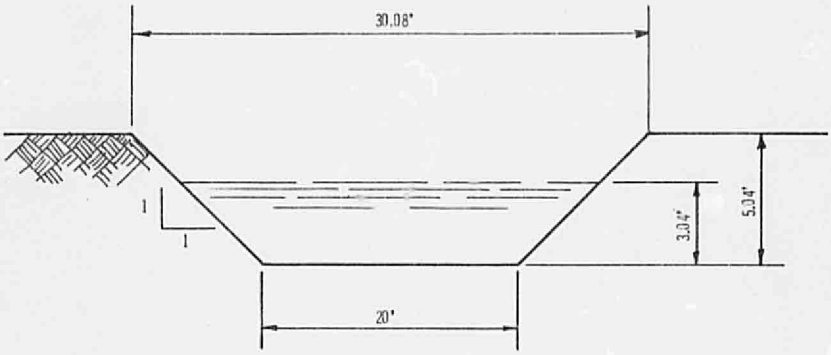
CALCULATED DATA:

normal depth = 3.96'
critical depth = 3.21'
normal velocity = 6.38 fps
froude number = 0.63

RECOMMENDATIONS:

This channel shall be earth lined, and built to section as shown. Drop structures will be required, with the size and number determined by field survey.

SOUTH PINO CHANNEL FROM JEFFERSON STREET TO THE BETA CHANNEL



SECTION

DESIGN DATA ;

Q = 1350 cfs
side slope = 1 : 1
manning 'n' = .015
slope = .0115

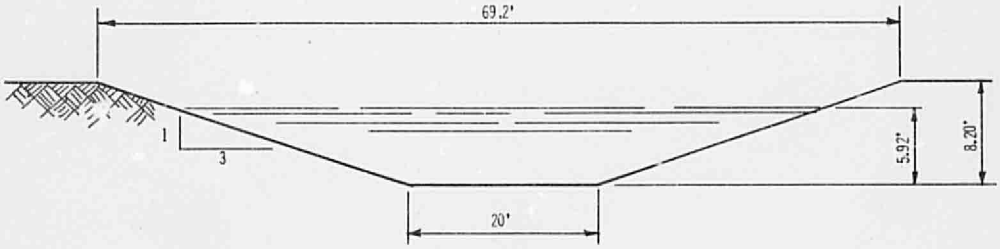
CALCULATED DATA ;

normal depth = 3.04'
critical depth = 5.4'
normal velocity = 19.3 fps
froude number = 2.1

RECOMMENDATIONS ;

This channel will be hard lined, built to the section as shown, at the indicated slope. A slope transition will be required at the middle of the channel, to compensate for the slope of the surrounding area.

SOUTH PINO CHANNEL - WEST OF JEFFERSON STREET



SECTION

DESIGN DATA ;

Q = 1350 cfs
side slope = 3 : 1
manning 'n' = .030
slope = .0025

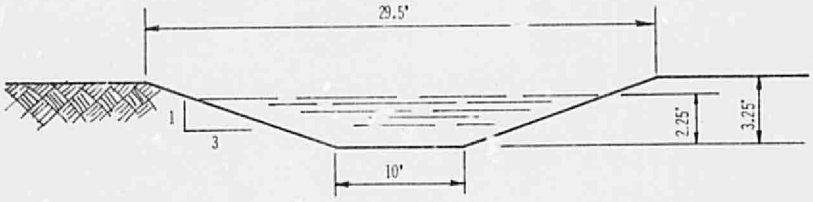
CALCULATED DATA ;

normal depth = 5.92'
critical depth = 4.28'
normal velocity = 6.04 fps
froude number = 0.53

RECOMMENDATIONS ;

This channel will be earth lined, built to section as shown, at the indicated slope. Drop structure will be required, the number and height to be determined at time of design.

EARTH CHANNEL SECTION FROM AREA 3 THROUGH AREA 4 TO THE NORTH DIVERSION CHANNEL



SECTION

DESIGN DATA ;

Q = 194 cfs
side slope = 3 : 1
manning 'n' = .030
slope = .0060

CALCULATED DATA ;

normal depth = 2.25'
critical depth =
normal velocity = 5.15 fps
froude number =

RECOMMENDATIONS ;

This channel will be earth lined, built to section as shown, at the indicated slope. One drop structure will be required, with the height determined by field surveys at time of design.

1185

HYDROLOGY E17/D2 2 of 2 FIVE PLANS

RESOLUTION NO. 1978-10
RELATING TO REMOVAL OF OLD PINO DAM

WHEREAS the Northeast Heights Drainage Management Plan provides for acquiring and upgrading the Old Pino Dam located on the Arroyo Del Pino approximately two-thirds of a mile east of the Albuquerque Academy; and

WHEREAS the Presley Company has purchased the land upon which the Old Pino Dam is situated and has notified the Authority of its intent to breach or remove the dam; and

WHEREAS it is necessary for the Authority to either purchase the dam site and then cause the dam to be extensively repaired and upgraded, or to amend the Norhteast Heights Drainage Management Plan so that the dam may be breached or removed; and

WHEREAS the Board of Directors of the Authority has caused a public hearing to consider the relative merits of acquiring and upgrading the Old Pino Dam, or permitting its removal, and

WHEREAS the need for the Old Pino Dam has been somewhat reduced by the construction of the North Tramway Dam on the Arroyo del Pino; and

WHEREAS it appears that the cost of acquiring the Old Pino Dam site with its related ponding area and repairing and upgrading the dam to meet applicable safety standards would exceed $1,700,000; and

WHEREAS it appears that, if the Old Pino Dam were removed, the cost of improving the Arroyo del Pino channel to meet increased stream flows would be considerably less than $1,700,000.

NOW, THEREFORE BE IT RESOLVED by the Board of Directors of the Albuquerque Metropolitan Arroyo Flood Control Authority,

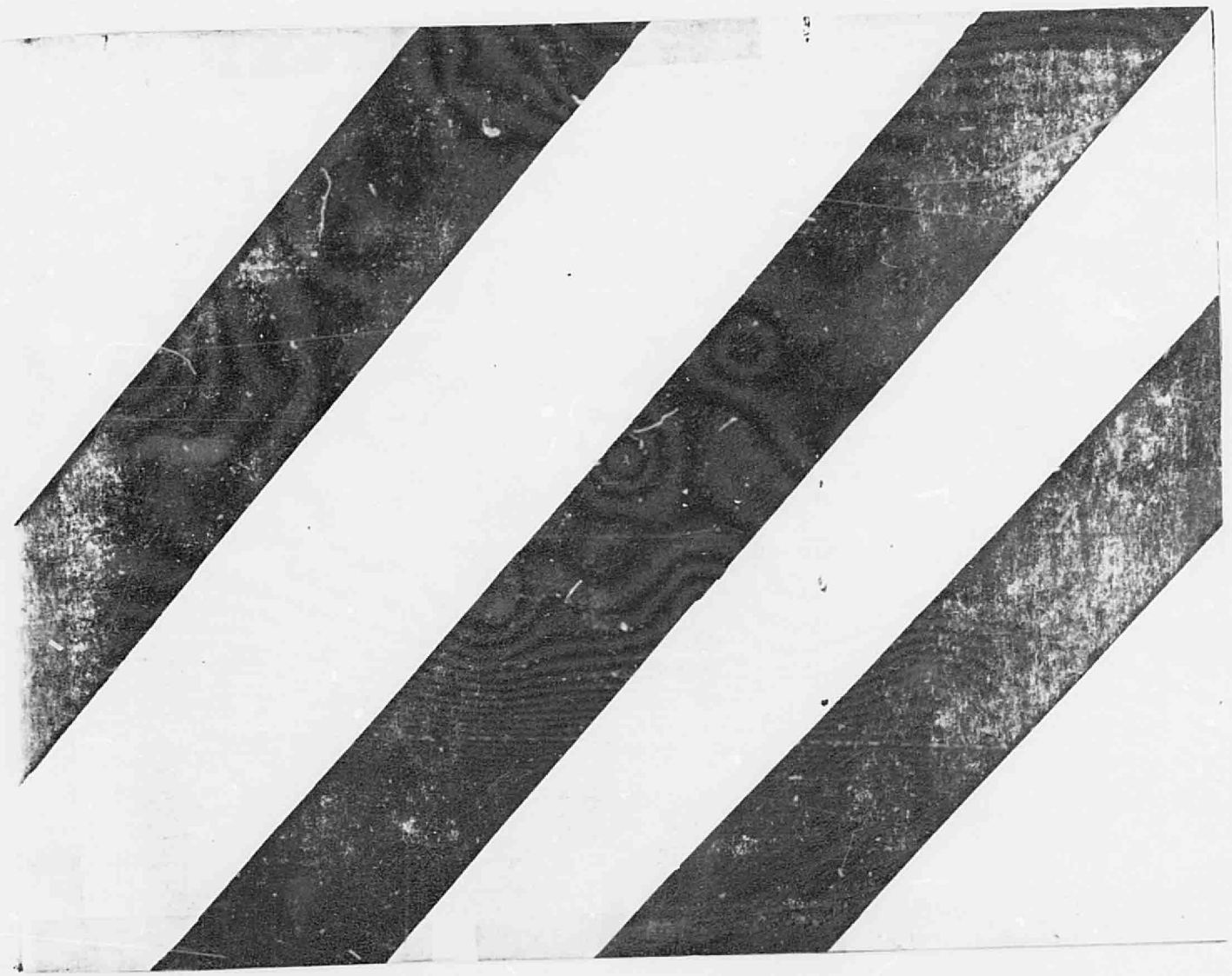
(1) That it is not in the public interest for the Authority to purchase the land upon which the Old Pino Dam and its related ponding area are situated and to repair and upgrade the Old Pino Dam to meet applicable safety standards.

of today's high interest rates, is ten percent on the market value of assets. Applying this rate to the value of the subdivision in question establishes a minimum investor return requirement of $135,000 annually. Furthermore, the foregoing does not include administrative carrying costs, taxes or standby charges. Under these circumstances it is understandable why the prospect of loss of initiative in marketing our properties readily becomes a matter of despair. Accordingly, the picture justifying our evident level of concern becomes complete, when added to the above prospect is that of possibly being required to assume new major drainage costs, required by conditions we had no hand in creating.

As I personally advised you at the time of our last meeting, you have a deserved reputation in Albuquerque for fairness in resolving the many differences which must inevitably arise between "good" as interpreted by public and private viewpoints. Your concern for fairness provides confidence that we can negotiate the problems outlined in an atmosphere of frankness and impartiality.

Yours sincerely,

Howard Leach

Howard Leach
Development Coordinator

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