LOMA DEL NORTE

UNITS 5, 6, 7, 8 + 9

D19 – D7

1 PLAN

PLANNING DEPARTMENT
CITY OF ALBUQUERQUE

AGENDA ITEM NO. 20

ENVIRONMENTAL PLANNING COMMISSION
September 18, 1973
S-71-48-5, S-71-48-6, S-71-48-7
S-71-48-7

S-71-48-5 Proposed Plat of Loma del Norte Subdivision, Unit 5 - Final
-6 " " " " " " " , " 6 - "
-7 " " " " " " " , " 7 - "
-8 " " " " " " " , " 8 - "

Material: Report, Plats

ENVIRONMENTAL PLANNING COMMISSION ACTION, 7-17-73: (All Members Present)

Mr. Stroup, agent, advised that Barstow Road has been realigned and will be a collector street, noting that there will be 1,500 ft. of collector street through the property. He added that they would like to retain their R-3 request for which the Planning Department has suggested SU zoning.

AT THIS POINT, COMMISSIONER CAMPBELL RETURNED TO THE MEETING.

Commissioner Campbell asked what the applicant proposes to do about the sanitary waste disposal. Mr. Stroup replied that they will install about 2,000 ft. of sanitary sewer line at their cost with pro rata recovery from the City. He added that a street has been eliminated in the R-1 portion, and that the drainage is being worked out with AMAFCA. Mr. Stroup continued that there are 160 acres in all four units.

Commissioner Hertzmark said he is concerned about the density, and about the water supply available. He said he feels that SU zoning would be better, and that he thinks that R-3 density is unreasonably high in this location. Commissioner Hertzmark continued that there is some commercial zoning in the master plan, but that there is no commitment for heavy commercial. He said he feels that the C-2-requested area should be C-1 instead.

Commissioner Jeffers asked about the Wyoming Boulevard right of way. Mr. Stroup replied that 23 ft. is being dedicated by the proposed plat which will make a total of 112 ft. of right of way there. He continued that they want a shopping center similar to Eastdale here. He said they feel that this far north there is a distinct demand for a restaurant and/or a dinner theater which will require a liquor license.

Commissioner Hertzmark said he feels that the amount of C-2 requested here is too much, and repeated that he feels C-1 would be better. He added that R-1 so close to R-3 is not advantageous.

Chairman Gutierrez said that facilities are limited to provide utilities to this area, and that R-3 would be a heavy drain on them. He said he is concerned about enlarging the commercial area.

Mr. Stroup then said he would amend the request to C-1. He continued that there is a 10 acre park in Unit 4, and that they would prefer to pay cash in lieu of land for a small 2 or 3 acre park as suggested by the Planning Department, particularly as it would be across from commercial zoning, but that they would work it in if necessary.

Mr. Carruthers of the Planning Staff said that this would be worked out on the final plat, and that a park on the south side of the subdivision is preferred to connect with a linear open space along the power line easement.

Environmental Planning Commission Action, 7-17-73 (Cont'd):

Mr. Stroup then advised that they will agree to amend the C-2 portion of the request to C-1 and the R-3 portion to R-2, and that they will make every effort to have good access to these areas.

Commissioner Hertzmark said he feels that a buffer between the R-2 and R-1 is advisable, but that it cannot be enforced under R-2 zoning.

Mr. Carruthers advised that the Staff has recommended SU zoning with a maximum density of 8 DU/A, and that the R-1 lots back up to this area. He continued that the Staff still prefers SU instead of R-1.

Commissioner Jeffers said she agrees that there could be a traffic overload, and that she also agrees that SU zoning with a maximum density of 8 DU/A would be much better.

Mr. Stroup objected, stating that east of Tramway Boulevard 12 DU/A has been approved, and that 8 DU/A is almost R-1 development. He said this was master planned as R-3, and asked if 12 DU/A would be acceptable.

Commissioner Bicknell said she agrees with the Staff's recommendation of 8 DU/A.

Mr. Stroup said that they will agree to amend their request to SU-1 for that for which R-3 was requested, and that they will accept the 8 DU/A.

Commissioner Campbell commented that the City is not committed to annexation, and that much time has been spent on what should be done with land east of the city, including the Sandia Foothills Plan. He noted the general uncertainty of sewer and water availability, and the possibilities of air pollution. He said that there is no assurance that the City can provide utilities even for the public parks recommended. He said he recommends deferral of this matter and that no official action be taken without AMAFCA's approval.

The following motion was made:

BE IT RESOLVED THAT S-71-48-5, S-71-48-6, S-71-48-7, S-71-48-8, AX-72-55 & Z-72-227 be deferred and not considered before January 1974.

Moved by Commissioner Campbell

In the ensuing discussion, Commissioner Bicknell asked the significance of the January 1974 date, noting that the City-County consolidation might occur before that time.

Commissioner Hertzmark said that it is generally agreed as to what items should be considered by the Commission and that in the overall plan for development of Albuquerque the Commission has indicated development is desirable here, and that the overall plan has already been approved, now the details are under consideration. He added that this is a long-term development proposal, and that what is submitted is a good plan for development of the area. Commissioner Hertzmark continued that if the Commission records exceptions they can approve this, and the applicant will not take final action until pertinent matters have been resolved. He said that approval will allow the developer to work on his plans, but otherwise he would have too much lag time, and that the Commission's concerns are on record now.

Environmental Planning Commission Action, 7-17-73 (Cont'd):

Chairman Gutierrez then asked if there was a second to the motion for deferral. There being none, the motion was declared to have died for lack of a second.

Commissioner Torres said he feels that there are a number of questions to be answered yet and that he would consider a 30-day deferral.

Commissioner Jeffers commented that the request is only for preliminary approval at this time, and that final plats must be submitted for approval later.

The following findings were determined by the Planning Commission:

1. The revised alignment of Barstow Road substantially improves access to all of the proposed units.
2. Wyoming Boulevard has been recommended for inclusion in a paving district if the annexation is approved.
3. The availability of adequate sanitary sewer capacity depends on a study of the needs by the Liquid Waste Engineer.
4. The annexation conforms with the City's Adopted Annexation Policies.
5. The proposed zoning as amended, i.e., with SU-1 (Special Use for a Planned Residential Development at a Density not to Exceed 8 DU/A) for that portion of the request for which R-3 originally was asked, and C-1 for that portion for which C-2 was requested, is compatible with the surrounding land use.

THEREFORE, BE IT RESOLVED THAT S-71-48-5, S-71-48-6, S-71-48-7 & S-71-48-8 be granted preliminary approval subject to compliance with the Park Dedication Policy as worked out with the Parks & Recreation Department, AND THAT AX-72-55 & Z-72-227 as amended be recommended to the City Commission for approval with the understanding that final approval of the plats will not be given until the sewer problem has been fully resolved, AMAFCA requirements have been met, water revenue bonds have been issued, and the situation regarding payment for hookup to City utilities has been determined and met by the developer, if necessary, thereby annexing Loma del Norte Subdivision, Units 5 thru 8 to the City of Albuquerque and establishing R-1, SU-1 (Special Use for a Planned Residential Development with a Maximum Density of 8 DU/A), and C-1 zoning therefor.

Moved by Commissioner Hertzmark
Seconded by Commissioner Jeffers

Motion Carried 7-to-1 (Commissioner Campbell voted "No")

PLANNING DEPARTMENT COMMENTS TO ENVIRONMENTAL PLANNING COMMISSION, 9-18-73:

At this time, final approval of the plats of Units 5 thru 8, Loma del Norte Subdivision is requested. Preliminary approval, as shown in the foregoing minutes was granted at the July 17 Planning Commission meeting subject to several conditions prior to City Commission action.

The City Engineer and AMAFCA have received the required drainage plan. Comments received from the Liquid Waste Engineer regarding the revised plats are to the effect that sewer service can be extended to Units 7 & 8 (the R-1 area). However, service to Units 5 & 6 (the SU-1 & C-1 portions), comprising 32.3 acres will have a substantial delay due to the incomplete status of the Tijeras Interceptor Study. The applicant understands this limitation, which apparently is not critical insofar as development timing is concerned since only Units 7 & 8 are scheduled for imminent development. Before the residential SU-1 and 13.6 acres of C-1 are developed, plans must be submitted to the Planning Commission for approval. The liquid waste problem can be resolved at that time.

Planning Department Comments to Environmental Planning Commission, 9-18-73 (Cont'd):

As for park dedication, only a 1.8 acre piece is owed to the City due to the reduction of residential acreages in the revised plats. The developer has chosen to pay cash in lieu of a park site, which is acceptable to the Planning Department and the Parks & Recreation Department due to the small size of the park requirement.

FINDINGS:
1. The City Engineer and AMAFCA have received and are reviewing the applicant's drainage study. Approval of that study must be finalized prior to consideration by the City Commission.
2. The Planning Department and the applicant understand that Units 5 & 6 will not receivesewer service until a future time is set as a result of the Tijeras Interceptor Study. Sewer service for Units 7 & 8 will be available on a shorter time frame.
3. Development plans for Units 7 & 8 must be submitted for Planning Commission approval prior to development.
4. The park dedication is resolved to the satisfaction of the Planning and Parks & Recreation Departments.
5. The annexation conforms with the City's Adopted Annexation Policies.

RECOMMENDATION: BASED ON THE ABOVE, APPROVAL OF S-71-48-5, S-71-48-6, S-71-48-7 & S-71-48-8 IS RECOMMENDED.

Theodore Pochter

Theodore Pochter
Planner

TP:new

cc: Larry D. Stroup, P.O. Box 11097, City 87112

Sept. File
planning
20

PLANNING DEPARTMENT
CITY OF ALBUQUERQUE

ENDA ITEM NO. 20

CITY COMMISSION
September 24, 1973
S-69-27-5, AX-73-28, Z-73-135
S-69-27-6, AX-73-27, Z-73-134

S-69-27-5
AX-73-28
Z-73-135

Environmental Planning Commission recommends annexation and simultaneous establishment of R-2 zoning for the proposed Academy Estates Subdivision, Unit 5, located on the east side of Wyoming Boulevard NE between Spain Road & Academy Boulevard, containing approximately 50.5 acres. Request submitted by Ralph K. Hicks & Associates, Inc., agent for Academy Development Co., Inc.

S-69-27-6
AX-73-27
Z-73-134

Environmental Planning Commission recommends annexation and simultaneous establishment of SU-1 zoning (Special Use for a Planned Unit Development) for the proposed Academy Estates Subdivision, Unit 6, located on the northwest corner of Eubank Boulevard & Spain Road NE, containing approximately 30.5 acres. Request submitted by Ralph K. Hicks & Associates, Inc., agent for Academy Development Co., Inc.

PL Map No.: F-20

Material: Report, Sketch, Aerial Photo, Ordinance

COMMENTS FROM OTHER DEPARTMENTS:

City Manager: "Should be reviewed by all concerned with utilities and CIP. If feasible and in phase, no objections."

City Engineer: "1. Require drainage studies for these areas prior to approval of plats.
2. Recommend submittal to Liquid Waste Engineer for review and comments."

Water Engineer: "Water availability must be determined as development becomes imminent as no approved capital improvement program exists after the 1974 construction year which provides for a finite amount of development."

Traffic Engineer: "Until the arterial and collector street system is built, access will be a problem."

Liquid Waste Engineer: "The proposed development is satisfactory based on the City's liquid waste engineering standards and criteria and will not create a need for major expenditures by the City for new facilities."

Public Works Dept: "Sewer available. Note Water Engineer's comments relative to availability of water after 1974 construction year. Drainage studies and plans required. Adequate access will be a problem until the arterial and collector street system in the general area is constructed."

Fire Department: "Completion of fire station No. 15 on Academy Road will provide city class protection for R-3."

Parks & Recreation: "See attachment."

Mountain Bell: "A copy of the plat plan, building plans and the name of the architect should be sent to the Mountain Bell Building Industry Consultant, 625 Silver SW at the preliminary stages of design. Item No. 4 is required in all apartments and commercial buildings."

COG: "Spain Road is plotted as an 86 foot minor arterial east of Eubank and West of Wyoming. To provide for proper intersectional alignment and a smooth traffic flow, an 86 foot right of way should be established for Spain Road between Wyoming and Eubank or, as a minimum, a taper section should be established for a smooth transition from the 86 foot right of way at the Wyoming and Eubank intersections to the 64 foot right of way in the center portion between Wyoming & Eubank."

CITY COMMISSION
September 24, 1973
S-69-27-5, AX-73-28, Z-73-135
S-69-27-6, AX-73-27, Z-73-134

PLANNING DEPARTMENT COMMENTS TO ENVIRONMENTAL PLANNING COMMISSION, 8-21-73:

Zoning Administrator: "R-2 would be more appropriate here."

Unit 5: This request is for annexation and establishment of R-3 zoning for approx. 51 acres of land which was included as part of the Academy Estates Master Plan.

FINDINGS:
1. The request is in general conformance with the approved Academy Estates Master Plan.
2. The property recently annexed to the north includes a regional shopping center as well as R-2 zoning along Moon Street with R-1 to the east.
3. R-3 zoning exists on the south on Spain Road as well as along the west side of Wyoming Blvd north of the subject property.
4. R-1 zoning exists along the eastern boundary on Moon Street as well as along a portion of the southern boundary on Spain Road.
5. As indicated by MTP, Spain Road is dedicated as an 86 ft. arterial east of Eubank and west of Wyoming Blvds. A transition to 64 ft. should be accomplished between Wyoming and Camino Del Sol.
6. The density allowed under R-3 zoning is incompatible with the adjacer R-1 zoning. R-2 zoning would be consistent with recent actions of the City Commission on the land to the north.
7. The area around the intersection of Wyoming and Academy Road is probably the major focal point in this area. R-2 density therefore, would allow a reasonable and appropriate density for this area.
8. A drainage study will be required to be submitted and approved by AMAFCA and the City Engineer prior to issuance of building permits.

RECOMMENDATION: APPROVAL OF AX-73-28, Z-73-135 and S-69-27-5 IS RECOMMENDED SUBJECT TO COMPLIANCE WITH THE PARK DEDICATION POLICY AND THE CONDITIONS SPECIFIED ABOVE, AND WITH THE UNDERSTANDING THAT WATER SERVICE CANNOT BE GUARANTEED AT THIS TIME.

Unit 6: This is a request for annexation and establishment of SU-1 (Special Use for a Planned Unit Development) for a 13 acre tract of land. The subject property was included in the previously approved Academy Estates Master Plan.

FINDINGS:
1. The annexation and zoning request for Unit 6 are reasonable and acceptable inasmuch as they conform with City Annexation Policies and the zoning is consistent with the approved Master Plan.
2. The density for this tract of land was established in the approved Master Plan at eight dwellin units per acre.
3. Water service availability is uncertain at this time and will be dependent on (a) the timing of development and (b) the availability of new revenue sources for the expansion and improvement of the water system.

Planning Department Comments to Environmental Planning Commission, 8-21-73, (Con't)

RECOMMENDATION: THE PLANNING DEPARTMENT RECOMMENDS APPROVAL OF AX-73-27, Z-73-134 AND S-69-27-6 PROVIDED THE DENSITY WILL NOT EXCEED EIGHT (8) DWELLING UNITS PER ACRE AND WITH THE UNDERSTANDING THAT APPROVAL OF THIS REQUEST WILL NOT GUARANTEE THAT WATER SERVICE WILL BE MADE AVAILABLE AT THIS TIME. IT IS FURTHER UNDERSTOOD THAT A DEVELOPMENT PLAN AND A DRAINAGE STUDY WILL BE SUBMITTED AT A LATER DATE:

ENVIRONMENTAL PLANNING COMMISSION ACTION, 8-21-73: (All Members Present)

There were no objectors present. Mr. Hicks, agent, advised that these requests have been submitted in order to place Wyoming Boulevard in a paving district.

Commissioner Torres said he feels that these requests should be deferred to permit further study as he feels there are many questions as to what has been approved in this general area previously. He said he feels a study session is needed on this to determine what actually has been approved.

Chairman Gutierrez said he does not feel that there is a question here as to what has been approved, but rather there is a question of density. He said he feels that there is no reason to defer this as most of the land has already been platted and annexed.

Mr. Carruthers of the Planning Staff added that the land to the north and south was annexed previously.

After considerable discussion, the applicant agreed to R-2 zoning rather than R-3 for Unit 5.

The following findings were determined by the Planning Commission re Unit 5:

1. The request conforms with the approved Academy Estates Master Plan.
2. The annexation conforms with the City's Adopted Annexation Policies, and the zoning as amended to R-2 is consistent with the surrounding area.
3. Determination of the width of Spain Road between Wyoming Boulevard and Camino Del Sol is to be made by the Traffic Engineer.
4. A drainage study satisfactory to the City Engineer and AMAFCA is required prior to issuance of building permits.
5. The developer must comply with the Park Dedication Policy.

THEREFORE, BE IT RESOLVED THAT S-69-27-5, AX-73-28 & Z-73-135 as amended be recommended to the City Commission for approval subject to compliance with Items 3, 4 & 5 above and to securing all required signatures on the plat prior to consideration by the City Commission, thereby platting and annexing Academy Estates Subdivision, Unit 5 to the city and establishing R-1 zoning therefor, further subject to the understanding that water service cannot be guaranteed at this time, and to compliance with all City annexation and hookup policies.

Moved by Commissioner Jeffers
Seconded by Commissioner Bicknell Motion Carried Unanimously

The following findings were determined by the Planning Commission re Unit 6:

1. The request is in general conformance with the approved Academy Estates Master Plan.

Environmental Planning Commission Action, 8-21-73: (Con't)

2. The annexation conforms with the City's Adopted Annexation Policies, and the zoning is consistent with the approved Master Plan provided the density does not exceed 8 DU/A.
3. A drainage study satisfactory to the City Engineer and AMAFCA is required prior to issuance of building permits.
4. A development plan is to be submitted for approval by the Planning Commission at a later date.

THEREFORE, BE IT RESOLVED THAT S-69-27-6, subject to securing all required signatures prior to consideration by the City Commission, AX-73-27 & Z-73-134 be recommended to the City Commission for approval subject to compliance with items 2, 3 & 4 above, thereby platting and annexing Academy Estates Subdivision, Unit 6 and establishing SU-1 zoning (Special Use for a Planned Unit Development) therefor, all further subject to compliance with all City annexation and hookup policies, and with the understanding that water service cannot be guaranteed at this time.

Moved by Commissioner Jeffers
Seconded by Commissioner Hertzmark Motion Carried Unanimously

ADDITIONAL PLANNING DEPARTMENT COMMENTS:

The Planning Department has no further comment.

PUBLICATION OF THE ORDINANCES IS TO BE WITHHELD UNTIL THE RESPECTIVE PLAT HAS BEEN RECORDED.

S. Phil Garcia

S. Phil Garcia
Planner

SPG:jd

cc: Academy Development Co., Inc., 910 Juan Tabo Blvd. NE; 87112
Ralph K. Hicks, c/o McIntyre & Quiros, 1453 Rio Rancho Estates SE, Rio Rancho, NM; 87124

CITY COMMISSION
September 24, 1973
AX-73-28, Z-73-135

ORDINANCE NO. _____

AN ORDINANCE ANNEXING ACADEMY ESTATES SUBDIVISION, UNIT 5 TO THE CITY OF ALBUQUERQUE, NEW MEXICO; AMENDING THE ZONE MAP OF THE CITY OF ALBUQUERQUE AS SHOWN IN ORDINANCE NO. 2726, AS AMENDED; AND DECLARING AN EMERGENCY.

WHEREAS, the owner of the area to be annexed and hereinbelow described in this ordinance, which land is contiguous to the boundaries of the City of Albuquerque, New Mexico, has heretofore presented a petition properly signed, accompanied by a map of said contiguous territory, petitioning the governing body of the City of Albuquerque, New Mexico to pass and adopt an ordinance annexing said land to the city,

NOW, THEREFORE, BE IT ORDAINED BY THE GOVERNING BODY OF THE CITY OF ALBUQUERQUE, NEW MEXICO:

SECTION 1. The following described territory is hereby annexed to and made a part of the City of Albuquerque for all purposes upon filing of a copy of this ordinance and a map of the territory so annexed in the office of the County Clerk of Bernalillo County, New Mexico, and publication of this ordinance according to law:

Academy Estates Subdivision, Unit 5 as filed in the office of the County Clerk of Bernalillo County, New Mexico on _____.

SECTION 2. The zone map referred to in Ordinance No. 2726, as amended, is hereby amended as follows:

Establishment of R-2 zoning for the area described in Section 1 above.

SECTION 3. This ordinance is an emergency measure due to urgent public need and will be effective five days after publication in full in accordance with law.

ADOPTED:_____

Chairman, City Commission, Albuquerque, NM

ATTEST: , City Clerk

APPROVED AS TO FORM

Patricia L. Hedwall

for Frank Horan, City Attorney

CITY COMMISSION
September 24, 1973
AX-73-27, Z-73-134

ORDINANCE NO. _____

AN ORDINANCE ANNEXING ACADEMY ESTATES SUBDIVISION, UNIT 6 TO THE CITY OF ALBUQUERQUE, NEW MEXICO, AMENDING THE ZONE MAP OF THE CITY OF ALBUQUERQUE AS SHOWN IN ORDINANCE NO. 2726, AS AMENDED; AND DECLARING AN EMERGENCY.

WHEREAS: the owner of the area to be annexed and hereinbelow described in this ordinance, which land is contiguous to the boundaries of the City of Albuquerque, New Mexico, has heretofore presented a petition properly signed, accompanied by a map of said contiguous territory, petitioning the governing body of the City of Albuquerque, New Mexico to pass and adopt an ordinance annexing said land to the city,

NOW, THEREFORE, BE IT ORDAINED BY THE GOVERNING BODY OF THE CITY OF ALBUQUERQUE, NEW MEXICO:

SECTION 1. The following described territory is hereby annexed to and made a part of the City of Albuquerque for all purposes upon filing of a copy of this ordinance and a map of the territory so annexed in the office of the County Clerk of Bernalillo County, New Mexico, and publication of this ordinance according to law:

Academy Estates Subdivision, Unit 6 as filed in the office of the County Clerk of Bernalillo County, New Mexico on _____.

SECTION 2. The zone map referred to in Ordinance No. 2726, as amended, is hereby amended as follows:

Establishment of SU-1 (special Use for a Planned Unit Development) zoning for the area described in Section 1 above.

SECTION 3. This ordinance is an emergency measure due to urgent public need and will be effective five days after publication in full in accordance with law.

ADOPTED: _____

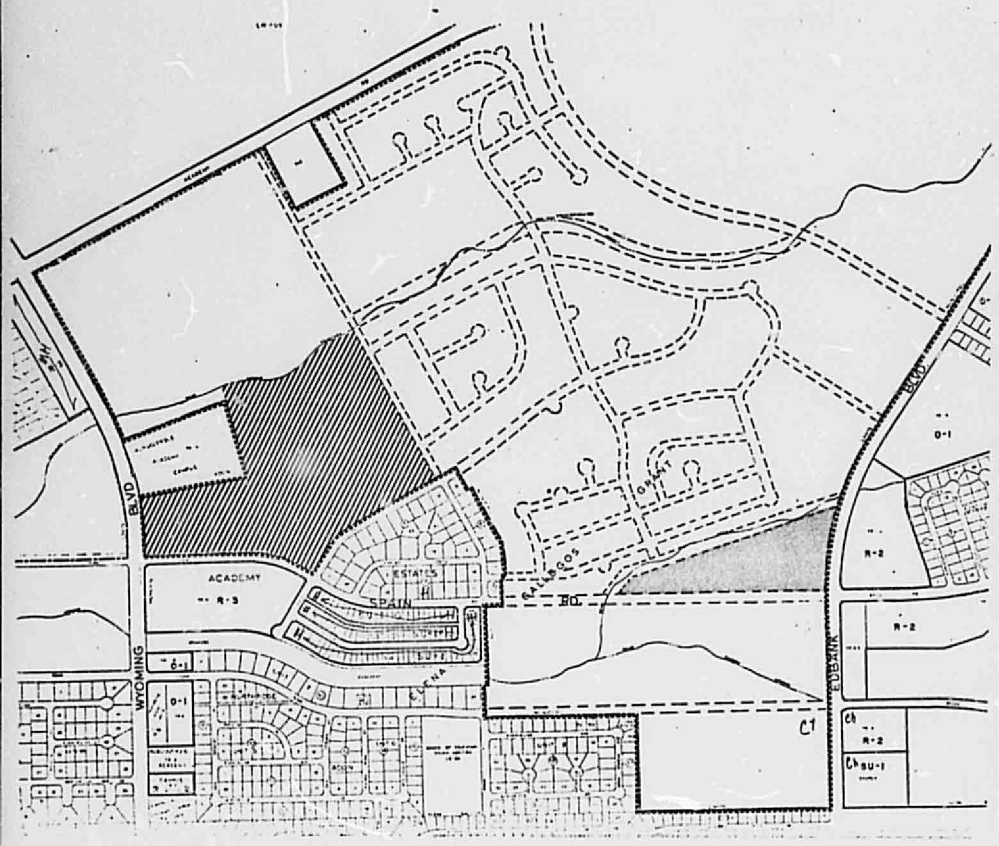
Chairman, City Commission, Albuquerque, NM

ATTEST: , City Clerk

APPROVED AS TO FORM

Peter L. Gilbert

for Frank Horan, City Attorney



STUDY AREA

PROPOSED UNIT 5 - R-2 ZONING
APPROX. 50.7 ACRES
AX-73-27

PROPOSED UNIT 6 - SU-1 ZONING
APPROX. 17.9 ACRES
AX-73-28

MUNICIPAL LIMITS

North

CITY OF ALBUQUERQUE
PLANNING DEPARTMENT

	By:	Date:	Checked:	
Plat:	ALJ	7-30-73	JL	Scale: NONE
Zoning:	"	"	"	Air Photo: NA
Land Use:	"	"	"	Source: ZONE ATLAS

Description:

UNPLATTED PARCELS OF LAND IN THE NE¼ IN SEC. 32 T11N R4E, BEING ACADEMY ESTATES UNITS 5 & 6

Title: ANNEXATION: R-2 & SU-1 ZONE (SU-1 FOR A PLANNED UNIT DEVELOPMENT)

Applicant or Agent: RALPH K. HICKS

EPC Hearing: 8-21-73

CC Hearing: 9-24-73

File Number: AX-73-27, Z-73-134, AX-73-28, Z-73-135

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

WILLIAM MATOTAN & ASSOCIATES • ENGINEERS

230 Truman Street, N.E. Albuquerque, New Mexico 87108 Phone (505) 265-8467

file

November 19, 1973

City of Albuquerque
Post Office Box 1293
Albuquerque, New Mexico 87103

Attention: Mr. V. M. Kimmick

Gentlemen:

Transmitted herewith are two (2) copies of the Drainage Report for Units 5, 6, 7 and 8 Loma del Norte.

Very truly yours,

WILLIAM MATOTAN & ASSOCIATES, INC.

Gilbert D. Gardner
Chief Paving Engineer

GDG:ec

Enclosure

cc: Larry Stroup
Bellamah Co.

Kleston / Kim — / Geo.

July 17, 1975

SUBJECT: FINAL INSPECTION OF NORTH PINO ARROYO CHANNEL IN LOMAS DEL NORTE SUBDIVISION

On 7-15-75, a request was made by the contractor (Nowlin) who constructed the channel facilities, for a final acceptance inspection by the City on 7-16-75. Persons present at the inspection include:

Jim Pond, Engineer for Kent Nowlin Construction
D. Shepphard, Assistant City Engineer (Field)
Kleston Laws, Hydrologist - City Engineering
George E. Paul, Street Maintenance Engineer

In the first place it was difficult to preview the final construction plans as none were available in the City Engineer's Office. Furthermore, no work order was available for this construction as the same was built by the contractor for developer, Dale Bellamah Corp. and involved no design, field survey, or construction inspection by the City. However, this construction was accomplished on dedicated, public right-of-way, namely a City drainage easement.

Using the set of plans furnished by the contractor's engineer, we investigated the project for basic compliance with the plans furnished and found the following conditions existed:

1. The wire-enclosed riprap below the concrete spillway on the east side of Wyoming Blvd. has collapsed .

2. The wire-enclosed slopped riprap on the south side of the channel about 80 feet east of Wyoming has already undercut and started to collapse. The rock filler will soon wash out.

3. The plank check-dams or velocity arrestors are beginning to bulge due to pressure of soil and flow of water. The span between supports on the planking is too great at 10-feet intervals and it is anticipated that the planking will soon tear loose rendering the velocity arrestors worthless.

4. On the velocity arrestors it was noted that the design did not call for upstream slope protection. As a result, water is already beginning to scour the upstream embankment and will soon wash it out, bypassing the velocity arrestors.

5. At the second rundown east of Wyoming, this rundown is already partially washed out and undercut. The entire wire basket will soon fail.

6. The third rundown east of Wyoming Blvd. is nearly totally undercut. The concrete riprap material is washed out and the wire basket enclosure is torn. The concrete slab upstream of the rundown itself is also undermined for 6 feet or more back of the end of the rundown as a result of surface water intrusion from the building lots.

FINAL INSPECTION OF NORTH PINO ARROYO CHANNEL IN LOMAS DEL NORTE SUBDIVISION CONTINUED:

7. At the fourth velocity arrestors east of the third drainage rundown, the rock riprap embankment protection is completely washed out on the north slope of the channel.

8. At the fourth rundown east of Wyoming Blvd. the structure has totally failed. A buried telephone trench north of and parallel to the drainage easement has failed due to lack of embankment and a 3-ft diameter cavity exists underground along this trench with only the surface soil "bridging" the void. The concrete channel leading to the rundown has totally collapsed for a distance exceeding 10 feet upstream from the rundown area. Also, two 4"x4"x3/8" angle iron upright stakes are missing from the riprap in the rundown area. These were called for on the plans but apparently overlooked by the contractor.

If my presence at this inspection was requested for the purpose of recommending this construction for acceptance (maintenance) by the City, I am afraid I cannot do so. I feel that there is no way that this channel should have been constructed on a public easement with plans and specifications not specifically approved by the City and with no work order issued for that construction, with the result that there are no drawing of record at the City Engineer's Office, there are no survey notes of record and there was no inspection during construction. It appears that many items of the construction were ill-conceived and will not function. In fact, many of the facilities have already failed. It is therefore, my recommendation that the City not accept this channel construction for maintenance by City forces and that the developer either agree to accept responsibility for channel maintenance throughout the length of his subdivision or re-design the structures to an approved standard by the City and have the same constructed under a regular City-issued work order.

GEP/sgt

G E Paul
7-16-75

MURRAY-McCORMICK, INC.
ENVIRONMENTAL DESIGN
ARCHITECTURE · ENGINEERING · PLANNING · SURVEYING

March 18, 1976

Mr. V. M. Kimmick
City Engineer
City of Albuquerque
P. O. Box 1293
Albuquerque, New Mexico 87103

Re: Loma Del Norte, Unit 7
Arroyo Del Pino

Dear Mr. Kimmick:

At the request of Mr. Larry Stroup, I am enclosing for your review one print of the construction drawings that pertain to the improvements of Arroyo Del Pino and related storm drain structures for the above referenced subdivision.

Also enclosed is a copy of the drainage report that covers this tract, prepared by William Matotan & Assoc., Inc., entitled "Drainage Report For Units 5, 6, 7 & 8, Loma Del Norte, Albuquerque, New Mexico."

It was my understanding that the improvement drawings were approved and accepted for maintenance by the City of Albuquerque.

I would be pleased to meet with you, at your earliest opportunity, to resolve this matter.

Very truly yours,

Bo K. Johnson, P.E.
Vice President

Encl.

cc: Mr. Larry Stroup
Mr. Joe Fulmer

2601 WYOMING BLVD., NE. SUITE F/ALBUQUERQUE, NEW MEXICO 87110/505-292-1936
CALIFORNIA ALASKA OREGON WASHINGTON TEXAS GEORGIA FLORIDA COLORADO

CITY OF ALBUQUERQUE, NEW MEXICO
CITY ENGINEER'S OFFICE

MEMORANDUM - March 23, 1976

TO: V. M. Kimmick, City Engineer
FROM: Kleston H. Laws, Asst. City Engineer-Hydrology
SUBJECT: NORTH PINO ARROYO THROUGH LOMA DEL NORTE, UNIT 7

On July 16, 1975, a final inspection was made of the subject channel. Mr. Sheppard had not previously seen plans nor had construction been inspected by his staff. George Paul recommended project not be accepted.

On March 18, 1976, we received a letter from Murray-McCormick transmitting drainage study, grading plan and channel PEP sheets with this statement, "It was my understanding that the improvement drawings were approved and accepted for maintenance by the City of Albuquerque."

Finding of Facts:

1. We have three copies of drainage report prepared by Matotan for Units 5,6,7 & 8 Loma Del Norte September, 1973. None are marked approved. One has a few red lines in it. One has a page attached with hand written questions and comments in Mr. Kimmick's writing.

2. Mr. Robert's copy has a date of 9/12/73 with notes and suggested changes and a note: plat approved 11/16/73.

3. None of the drainage or grading plan sheets have signatures of city staff.

4. City staff indicate to me that John Robert handled drainage and therefore drainage improvements were not included in estimates.

5. John Robert says he only approved the concept of the drainage report.

6. Plans are on sheets with a McIntire and Quiros Southwest title block and comply with the Matotan drainage report. The plans are stamped APPROVED FOR CONSTRUCTION.

7. On October 22, 1974, Bob Kielich placed the following note on sheet 24 of 26 of the plans: 12½ ga. hog wire for rip-rap enclosurer use double layer to provide min. 3"X3" openings. That appears to authorize a different wire.

8. I cannot find a "approved for construction" stamp in the design section.

9. The job was constructed. Apparently per the plans, but not inspected.

10. There has been failures of the design and construction.

1. It appears other failures could occur.

POSSIBLE SOLUTIONS:

1. Start over.

2. Repair run downs, provide erosion control up side slopes and groute splash pad.

3. Stabilize the side slopes and let the bottom remain as is.

4. Others

The disadvantage of starting over is the cost and getting a developer to do the work.

The side slopes at the existing drops could be stabilized by pile driving a metal or wood, concrete cut off walls or cut off walls and a section of slope paving.

I suggest we discuss this Wednesday, March 24th in staff meeting.

KL/tl

cc: C.D. Sheppard, Asst. City Engineer-Field

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

MAYOR
Harry E. Kinney

CHIEF
ADMINISTRATIVE OFFICER
Frank A. Kleinhenz

March 26, 1976

Mr. Bo K. Johnson
Murray-McCormick, Inc.
2601 Wyoming Blvd. N.E., Suite F
Albuquerque, New Mexico 87110

RE: LOMA DEL NORTE, UNIT 7
NORTH PINO ARROYO

Dear Mr. Johnson:

We have reviewed the information submitted in your letter of March 18, 1976. We have reviewed our files and talked to the Albuquerque Metropolitan Arroyo Flood Control Authority and concluded neither the City nor AMAFCA approved the improvement drawings nor are these agencies willing to accept the improvement.

We suggest you review the following Federal Highway Administration Hydraulic Engineering Circulars and resubmit a design for approval:

No. 11 - Use of Riprap for Bank Protection.
No. 14 - Hydraulic Design of Energy Dissipators for Culverts and Channels.
No. 15 - Design of Stable Channels with Flexible Linings.

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.

The failures in the existing construction indicate they will not work. We will be happy to discuss any proposal you may make.

Very truly yours,

V. M. Kimmick
City Engineer

VMK/fs

cc: Mr. Kleston Laws
Mr. Larry Stroup
Mr. John Robert

CITY OF ALBUQUERQUE, NEW MEXICO
CITY ENGINEER'S OFFICE

Kielich
Jerry
Dr.

MEMORANDUM - September 9, 1976

TO: Mr. V. M. Kimmick, City Engineer
FROM: C. D. Sheppard, Assist. City Engineer-Field
SUBJECT: PAVING PROJECT P-46-75, LOMA DEL NORTE #8 SUBDIVISION

The referenced project has been held pending resolution of drainage problems in the North Arroyo Del Pino. The Loma Del Norte #8 Subdivision is designed to divert a sizeable portion of surface drainage from the existing normal flow paths through the Loma Del Norte #7 Subdivision and thence into the North Arroyo Del Pino. Since improvements to the drainage discharges from Loma Del Norte #7 have never been accepted and have already failed and since improvements to the North Arroyo Del Pino have also not been accepted and have also failed, it does not seem reasonable to permit the diversion of even more flow into these facilities. I do not recommend release of Loma Del Norte #8 until the problems are resolved. If release of the project is deemed necessary, (I understand it is under other ownership), then I recommend that definite restrictions be placed on final acceptance of the project. I recommend that the City not accept until suitable drainage provisions are provided in Loma Del Norte #7 and the Arroyo Del Pino which is the ultimate receiving facility.

Perhaps, as suggested by others, it would be suitable to preclude issuance of building permits in Loma Del Norte #8 until resolution. I do recommend that the City be definitely saved from any responsibility for further degradation of the Loma Del Norte #7 improvements and those on the North Arroyo Del Pino.

Please advise of further actions desired.

CDS/fs

TELEPHONE 881-3556

MORTGAGE INVESTMENT COMPANY
OF EL PASO, TEXAS

APPROVED FEDERAL HOUSING ADMINISTRATION MORTGAGEE

CAPITAL $1,250,000.00

2727 SAN PEDRO N.E., SUITE 117
P.O. BOX 3189, STATION D. 87110
ALBUQUERQUE, NEW MEXICO

CUTLER REPAVING, INC.

October 5, 1976

RECEIVED
OCT 06 1976
CITY ENGINEERS

Mr. Varne M. Kimmick
City Engineer
City of Albuquerque
400 Marquette Avenue NW
Albuquerque, New Mexico 87102

Dear Mr. Kimmick:

Re: Flood Channel Running South Side of Loma Del Norte Unit No. 7

Please accept this letter as our firm commitment to restore the referenced structure per Alternate No. 1, M&M plans, Dwg. 4-22-74.

In exchange for this guarantee, we look forward to your releasing sewer and paving estimates for Barstow Boulevard and paving estimates for Loma Del Norte Unit No. 8.

Best regards,

for J. D. Fulmer
J. D. Fulmer
Vice President

bf

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

MAYOR
Harry E. Kinney

CHIEF
ADMINISTRATIVE OFFICER
Frank A. Kleinheinz

November 19, 1976

RECEIVED
NOV 22 1976
CITY ENGINEERS

Mr. J. D. Fulmer, Vice President
Associated Investment Company
of El Paso, Texas
Post Office Box 1463
El Paso, Texas 79999

Subject: 12" SANITARY SEWER
LOMA DEL NORTE SUBDIVISION, UNIT NO. 9
ESTIMATE SAS-30B-76-(57)

Dear Mr. Fulmer:

This is in reference to your request of November 11, 1976, to bid separately the above sewer line, rather than include it under the Block-to-Block Contract. I concur with your request and offer the following procedures in carrying out your request:

1. The Engineering Division will prepare specifications and bidding documents, and modify the plans as necessary to receive bids. The project will be advertised for bids by December 3, 1976, with bid letting on December 14, 1976.

2. Prior to award of a construction contract, the Associated Investment Company of El Paso, Texas will deposit with the City the Company's share of the construction cost based on the proposal of the apparent successful bidder plus six percent for engineering services plus two percent for field testing.

3. The Company's share of the construction cost will be initially calculated as the total amount bid less the difference in the unit prices between 12" and 8" diameter vitrified clay sewer pipe of the current City-wide Utilities and Cash Paving No. 26 Contract times the percentage difference for 12" pipe between the Special Contract and the current City-wide Utilities Contract times the lineal feet of pipe.

4. Upon acceptance of the work by the City, the Company will pay to the City, or the City will reimburse the Company, the difference, if any, between the amount the Company deposited with the City and the Company's share of the construction cost based on actual construction quantities plus a six percent Engineering Services Fee plus the actual cost of field testing.

5. City will pay all other costs of the Construction Contract.

6. The Engineering Division will release the work order for the Policy 6a sanitary sewer for Unit No. 9; however, the work will not be accepted until completion of the connecting lines.

If the above procedure is acceptable, please so indicate by signature below and return one copy of this letter.

Very truly yours,

E. F. Hensch
Director of Public Works

EFH:rs

Accepted:

J. D. Fulmer, Vice President
Associated Investment Company
of El Paso, Texas

cc: Mr. V. M. Kimmick, City Engineer
Mr. Ray Dawson, Contract Manager
Mr. Robert P. Lowe, Liquid Waste Engineer
Legal Department (Attn.: Mr. Doug Henson)

Genge, Murray-McCormick
2601 Wyoming Blvd., N.E. Suite F
Albuquerque, N.M. 87110/505 292-1936
Engineering · Surveying · Planning
Tucson · Phoenix · Denver · Pueblo

January 28, 1977

Mr. V. M. Kimmick, City Engineer
City of Albuquerque
Department of Public Works
Engineering Division
P. O. Box 1293
Albuquerque, New Mexico 87103

Re: Loma Del Norte #9
Arroyo Domingo Baca Temporary Pilot Channel

Gentlemen:

Attached is the revised plan for the above improvement. We have added a flow diffuser at the limit of the soil cement treatment and further expanded this treatment to cover the entire channel area above this diffuser.

The diffuser is to be constructed of waste curb and gutter to be laid across the entire arroyo floor and 6' up the side slopes. In so doing, the flow will be distributed across the entire arroyo and further will reduce the velocity to acceptable levels.

Trusting this solution meets with your approval, I remain

Very truly yours,

MURRAY-McCORMICK, INC.

Thomas J. Hack

TJH:dw

Encl.

cc: J. D. Fulmer

LOMA DEL NORTE
UNIT 9

1. Provide concrete block water diversion wall along north boundary of Lots 26 through 36.

2. Provide concrete block water diversion wall along east boundary of Lots 37 through 40.

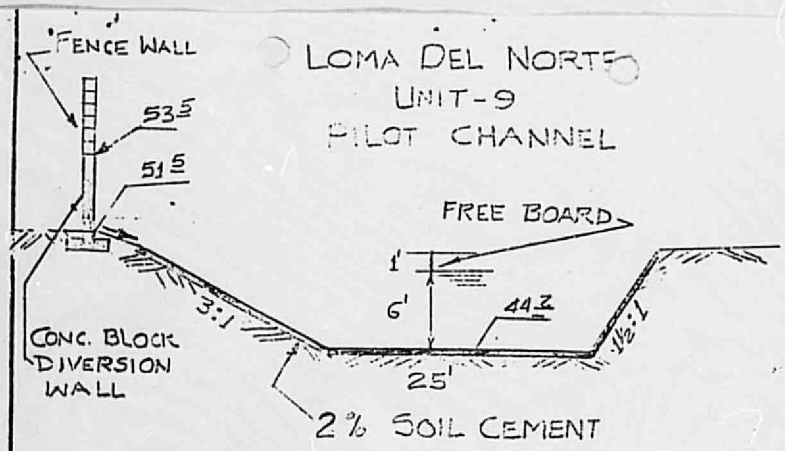
3. The pilot channel shall be lined with 2% soil cement to avoid erosion.

4. Concrete block fence wall may be constructed above diversion wall.

5. Minimum height of diversion wall shall be 2' above ground level unless otherwise shown on the plan.

MURRAY-McCORMICK, INC.
ENVIRONMENTAL DESIGN
ENGINEERING·PLANNING·SURVEYING
2601 WYOMING BLVD., NE SUITE F / ALBUQUERQUE, NEW MEXICO 87110 / 505-292-1936

JOB NO. _____ DATE _____
PROJECT _____
SCALE _____



$$Q = A \times V$$
$$= A \times \frac{1.486}{n} \times R^{2/3} \times S^{1/2}$$
$$= 231 \times \frac{1.486}{0.03} \times 2.61 \times 0.141$$
$$= 231 \times 18.22$$
$$= 4208 \quad \text{c.f.s.}$$

A =	231	ft^2
P =	54.79	ft
R =	4.22	
$R^{2/3}$ =	2.61	
S =	0.02	
$S^{1/2}$ =	0.141	
n =	0.03	

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

MAYOR
Harry E. Kinney

CHIEF
ADMINISTRATIVE OFFICER
Frank A. Kleinhenz

February 1, 1977

Jerry D.

Mr. Thomas Haack
Genge/Murray-McCormick
2601 Wyoming Blvd. N.E., Suite F
Albuquerque, N.M. 87110

SUBJECT: LOMA DEL NORTE #9, DOMINGO BACA
TEMPORARY PILOT CHANNEL

Dear Mr. Haack:

Your letter of January 28, 1977 has been reviewed and approved.

Sincerely,

V. M. Kimmick, P.E.
City Engineer

VMK/fs

cc: Jim Smith
Bob Kielich
Dwayne Sheppard

Public Works Department

Director — Erwin F. Hansch, 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.

February 8, 1977

City of Albuquerque
City Engineers Office
P.O. Box 1293
Albuquerque, NM 87103

ATTENTION: Mr. Kimmick

REFERENCE: Academy Hills Unit #2,
Drainage Addendum #1

Dear Mr. Kimmick:

On Wednesday, February 2, 1977, I met with you and Mr. Jim Smith, of AMAFCA, to discuss a change in the Master Plan of Drainage for Academy Hills Properties as pertains to Academy Hills Unit 2. The change referred to is stated in Addendum No. 1, which accompanies this letter. After discussion, you and Mr. Smith agreed to approve the change.

Upon further review of the plans, you requested a change in the method of handing the surface flow runoff from Area 2, which left the site by way of a 12' wide drainage R.O.W. You suggested a storm sewer pipe in place of the drainage channel. We have changed the plans to reflect your suggestions. The flows from Area 2 will leave the site in a storm drain system which connects directly to the proposed storm drain for Academy Road. Total flows from the storm sewer empty into an existing arroyo on the north side of Academy Road, which crosses land owned by the Boy's Academy Trust. (We have already submitted the corrected plans to Mr. Kielich's office.)

I contacted Mr. Roger Cox, a trustee for the Academy. He has agreed to the release point of the flows and will obtain Mr. Albert Simms approval in a letter of agreement for drainage purposes. We will forward a copy of this agreement to you and Mr. Smith as soon as it becomes available to us.

This will complete all the drainage requirements set forth by you and Mr. Smith. We respectfully request your approval on the plat so that it can be filed.

Thank you for your comments and participation.

Sincerely,

Christopher L. Weiss

Christopher L. Weiss, for
CHAMBERS, CAMPBELL,
ISAACSON & CHAPLIN, INC.

CLW/ple

Enclosures

cc: Mr. Jim Smith, AMAFCA
Mr. Charles Haegelin, AMDEC

ACADEMY HILLS UNIT #2
DRAINAGE ADDENDUM NO. 1

PURPOSE OF ADDENDUM

The original drainage plan for Academy Hills #2* indicated a total ponding area of 7.5 Acres for areas 7-1, 7-2, 7-5 and 5-1. The revised grading plan reflects a total ponding area of 6.10 acres. This is a decrease in ponding area of 1.40 acres. The undeveloped 100 year runoff rate for Academy Hills Unit 2 equals 43 cfs. After development, the runoff rate will equal 49 cfs. This is an increase of 6 cfs, or 12%, over the undeveloped rate.

The decrease in available back yard ponding can be best explained if the reader will refer to the site grading plan. The majority of the site reflects maximum grades between lots which will require the use of retaining walls. Every effort was made to incorporate back yard ponding into the final grading plan. However, the use of back yard ponds on many downhill areas of a row of lots made the elevation differences between rear yards even greater than presently shown. This would require the use of more and higher retaining walls along the rear lot lines.

There is a point reached when the requirements of ponding and the economics of development of a site slide too far out of balance with each other. This point was reached here with the attempt to pond the amount of area required by the master drainage plan. However, this situation is helped by the fact that almost half of the site's runoff empties directly into the Pino Arroyo. Further, half of the increase in unponded lots occurs within this sub-drainage area which drains directly to the Pino Arroyo. Thus a substantial part of the runoff rate increase will be intercepted by a major arroyo rather than burdening a downstream street system.

Because of these parameters - the grading, departure points for the runoff flows, and the amount of increase of flow rate, we feel that this amended drainage plan for Academy Hills Unit #2 is an acceptable alternate to the original flow characteristics presented in the Master Drainage Plan for Academy Hills Properties.

---

*Academy Hills Properties - Master Plan of Drainage, by CCIC, January 1976, Revised July 1976.

February 9, 1977

Mr. Christopher L. Weiss
Chambers,Campbell,Isaacson & Chaplin
3500 Indian School Rd. N.E.
Albuquerque, N.M. 87106

SUBJECT: ACADEMY HILLS SUBDIVISION, UNIT 2

Dear Mr. Weiss:

Your letter of February 8, 1977 has been reviewed. The revised drainage report is acceptable to this office, provided that a satisfactory instrument conveying a drainage easement at the discharge point north of Academy Road (near lots 11 and 12) is obtained and forwarded to this office.

Sincerely,

V. M. Kimmick
City Engineer

VMK/fs

cc: Jim Smith
Bob Kielich
Dwayne Sheppard

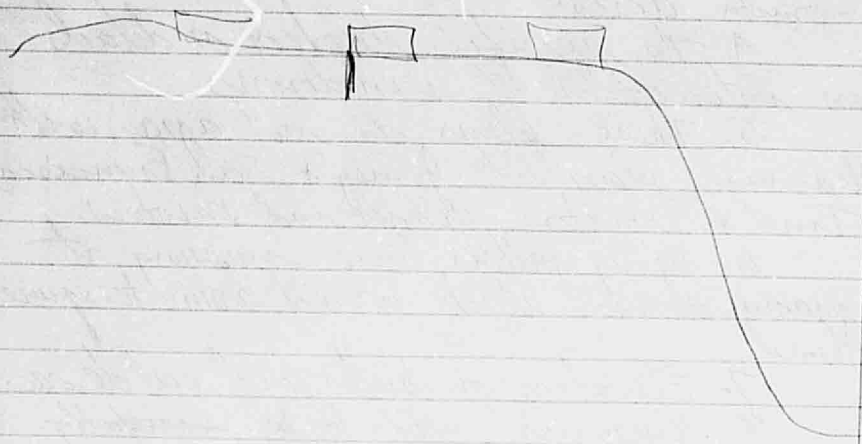
July 22

Q.R. Kielich
KH Laws
Loma Del Norte No 9

The plans submitted for comment on July 9 are the same as those for comment on May 20 1976. According to my records, my comments were discussed with Murray McCormick May 10, 1976. Changes have not been made.

My concerns are:

1. No plans for improvements on Domingo Baca although drainage report and grading plan both call for some work.
2. No grades on San Francisco.
3. How does this subdivision tie to Somita Acres?
4. No specific elevation or details in intersections of sundowns
5. These plans do not agree with drainage plan at Jemez & San Francisco, Tina & Barstow, Yeager and Barstow
6. Valley gutters are missing at many streets which would seem to require them.
7. Elevation on bulbs and cul de sacs.
8. Wyoming needs to be ~~carefully~~ carefully checked.



CITY OF ALBUQUERQUE

ALBUQUERQUE, NEW MEXICO

INTER-OFFICE CORRESPONDENCE

Retyped on
May 9, 1979

REF. NO._____

D19-07

TO: V. M. Kimmick

FROM: K. H. Laws

SUBJECT: North Pino Arroyo through Loma Del Norte Unit 7.

On July 16, 1975, a final inspection was made of the subject channel. Mr. Sheppard had not previously seen plans nor had construction been inspected by his staff. George Paul recommended project not be accepted.

On March 18, 1976, we received a letter from Murray-McCormick transmitting drainage study, grading plan and channel P&P sheets with this statement, "It was my understanding that the improvement drawings were approved and accepted for maintenance by the City of Albuquerque."

Finding of facts.

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11) It appears other failures could occur.
POSSIBLE SOLUTIONS:

11) POSSIBLE SOLUTIONS (continued)

1. Start over.

2. Repair rundowns, provide erosion control up side slopes and groute splash pad.

3. Stabilize the side slopes and let the bottom remain as is.

4. Others -

The disadvantage of starting over is the cost and getting a developer to do the work.

The side slopes at the existing drops could be stabilized by pilesdriving metal or wood, concrete cut off walls or cut off walls and a section of slope paving.

I suggest we discuss thisWednesday March 24th in the staff meeting.

KL/ms

cc - Dwayne Sheppard

CITY OF ALBUQUERQUE, NEW MEXICO
CITY ENGINEER'S OFFICE

Lance

MEMORANDUM - September 9, 1976

TO: Mr. V. M. Kimmick, City Engineer
FROM: C. D. Sheppard, Assist. City Engineer-Field
SUBJECT: PAVING PROJECT P-46-75, LOMA DEL NORTE #8 SUBDIVISION

The referenced project has been held pending resolution of drainage problems in the North Arroyo Del Pino. The Loma Del Norte #8 Subdivision is designed to divert a sizeable portion of surface drainage from the existing normal flow paths through the Loma Del Norte #7 Subdivision and thence into the North Arroyo Del Pino. Since improvements to the drainage discharges from Loma Del Norte #7 have never been accepted and have already failed and since improvements to the North Arroyo Del Pino have also not been accepted and have also failed, it does not seem reasonable to permit the diversion of even more flow into these facilities. I do not recommend release of Loma Del Norte #8 until the problems are resolved. If release of the project is deemed necessary, (I understand it is under other ownership), then I recommend that definite restrictions be placed on final acceptance of the project. I recommend that the City not accept until suitable drainage provisions are provided in Loma Del Norte #7 and the Arroyo Del Pino which is the ultimate receiving facility.

Perhaps, as suggested by others, it would be suitable to preclude issuance of building permits in Loma Del Norte #8 until resolution. I do recommend that the City be definitely saved from any responsibility for further degradation of the Loma Del Norte #7 improvements and those on the North Arroyo Del Pino.

Please advise of further actions desired.

CDS/fs

MEURER, SERAFINI AND MEURER, INC.

CONSULTING ENGINEERS • SURVEYORS • PLANNERS

2601 WYOMING BLVD., N.E., SUITE F • ALBUQUERQUE, NEW MEXICO 87110 • (505) 292-1936

May 25, 1979

Mr. Richard Heller
City Engineer
City of Albuquerque
P. O. Box 1293
Albuquerque, New Mexico 87103

D19-D7

Re: Loma Del Norte, Units No. 8 and 9

Dear Dick:

This is a request for the acceptance of the above referenced development which has been constructed since 1976, except for that portion of Wyoming Boulevard between Drim Drive and the north boundary of the subject project. It is also requested that the remaining escrow for that area south of Krim Drive be released at this time based on the following commitment by Mortgage Investment Company.

Mortgage Investment Company agrees to reconstruct the drop structures in the Arroyo del Pino between Wyoming Boulevard and Barstow to a condition acceptable to the City of Albuquerque and Mortgage Investment Company. Construction will include rebuilding and/or modifying the existing structures, providing erosion protection at the drops and along the side slopes at the drop structures, reconstructing the riprap transition structure at Wyoming Boulevard, and providing erosion protection at the concrete run downs discharging into the channel.

Mortgage Investment Company also agrees to construct an erosion protection transition at the intersection of Barstow and the south side of the Domingo Baca Arroyo. In addition, soil cement will be placed on the south slope of the arroyo at the location shown on the attached exhibit.

The above described construction and/or reconstruction within the Arroyo del Pino and the Domingo Baca Arroyo will be completed by October 1, 1979, contingent upon availability of materials for construction.

MEURER, SERAFINI, AND MEURER, INC.

If the foregoing agreement is satisfactory, please sign the copies and return one copy for our files and one to Mortgage Investment Company located at 2727 San Pedro N.E., Albuquerque, New Mexico 87110

Very truly yours,

MEURER, SERAFINI AND MEURER, INC.

Carl A. Tebbens

Carl A. Tebbens, P.E.
Vice President

Approved and accepted this ____ day of _____, 1979,

by_____ of_____

_____.

CAT:dw

cc: Mr. Joe Wilson, Mortgage Investment Co.
Mr. Duwayne Sheppard, City of Albuquerque

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

MAYOR
David Rusk

June 4, 1979

D19-D7

Mr. Carl Tebbens
Meurer, Serafini and Meurer, Inc.
2601 Wyoming Blvd. N.E. Suite F
Albuquerque, New Mexico 87110

Re: Loma Del Norte, Units No. 8 and 9

Dear Carl:

After staff review of your request dated May 25, 1979, it has been determined that on October 1, this date is totally inadequate. This date will put us beyond this years rainy season and once again the City will have no use of the facilities. For this reason I cannot approve the request. Should an earlier date in the first week of July be provided, this request can be granted. This completion date should not be contingent on the availability of materials for construction,as this is too nebulous a time for the City to accept the release of encumbrance monies.

If you should have any further questions, please feel free to contact me.

Very truly yours,

Richard S Heller

Richard S. Heller
City Engineer

RSH/fs

cc - Dwayne Sheppard
Bob Kielich
Bruno Conigliano

DRAINAGE REPORT
FOR
LOMA DEL NORTE
UNITS 5, 6, 7 and 8

SEPTEMBER 1973

DALE BELLAMAH LAND CO. INC.
ALBUQUERQUE, NEW MEXICO

WILLIAM MATOTAN & ASSOCIATES, INC.
ENGINEERS
ALBUQUERQUE, NEW MEXICO

REGISTERED PROFESSIONAL ENGINEER & L.S.
STATE OF NEW MEXICO
No. 1593
WILLIAM I. MATOTAN

DRAINAGE REPORT
FOR
LOMA DEL NORTE
UNITS 5, 6, 7 AND 8

Prepared for
Dale Bellamah Land Co., Inc.
1329 Eubank Boulevard, N. E.
Albuquerque, New Mexico

Prepared by
William Matotan & Associates, Inc.
Engineers
230 Truman Street, N.E.
Albuquerque, New Mexico

September 1973

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III.	Proposed Drainage Plans	2
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V.	Recommendations	5
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	Layout Plan	Plate 2
	North Arroyo Del Pino Hydrograph	Plate 3
	Typical Lot Ponding Detail	Plate 4

DRAINAGE REPORT FOR UNITS 5, 6, 7 AND 8
LOMA DEL NORTE

I. GENERAL

This drainage report is to present the data and storm drainage analysis resulting from a study made relative to the proposed Loma Del Norte Subdivision lying east of Wyoming Blvd. (See Plate 1) This report is being prepared under the guidelines as set forth the Albuquerque Metropolitan Arroyo Flood Control Authority Resolution 1972-2.

The area proposed for development is located in Section 19, Township 11 North, Range 4 East, New Mexico Principal Meridian. The area is bounded by Wyoming Boulevard on the west, by the east line of Section 19 on the east, by the south line of Section 19 on the south and by North Albuquerque Acres and lands of Dale Bellamah on the north.

II. EXISTING DRAINAGE CONDITIONS

The area proposed for development lies almost entirely within the watershed of the North Arroyo Del Pino. This area is presently undeveloped with sparse vegetation.

The existing runoff conditions of the North Arroyo Del Pino have been determined at the eastern limits of the property by the Corp of Engineers. The values were furnished by the Corp of Engineers on July 9, 1971.

III. PROPOSED DRAINAGE PLANS

The master plan for this area was developed such that the design of the subdivision would adhere to the AMAFCA Resolution 1972-2.

The subdivision has been divided into nine (9) basins. Each basin will empty into the proposed North Arroyo Del Pino Drainage channel in the southern portion of the study area.

It is proposed the streets considered to be water carriers be designed with a minimum slope. This gradient along with detention of storm waters on the individual lots will generate a time of concentration of approximately thirty (30) minutes within the subdivision.

The streets designated as water carriers (Streets A, B, C and D) will discharge into the North Arroyo Del Pino through surface drainage easements as shown on plate 2.

Street F should be designed so that the flows from Drainage Area II outside the subdivision will be diverted to the North Arroyo Del Pino. Since these flows are of greater magnitude than flows generated inside the subdivision the abutting property along Street F should be developed with floor elevations a minimum distance of 18 inches above the top of curb.

The North Arroyo Del Pino is to run through a 100 ft. wide drainage easement. It is proposed that the channel be approximately seventy (70) feet in width 2:1 side slopes. Velocity checks are recommended to control velocities to allow use of an unlined channel.

IV. STORM DRAINAGE ANALYSIS

Included herein is a storm drainage analysis to determine storm drainage requirements for the area under study.

As directed by the Albuquerque Metropolitan Arroyo Flood Control Authority Drainage Resolution 1972-2, the analysis herein is based on a 100-year frequency storm with the rainfall intensity determined from the Intensity Duration Frequency Curves, Albuquerque Area - 1961 as included in Master Plan of Drainage, City of Albuquerque, New Mexico and Environs.

The following criteria and technical references were used in the analysis included herein:

A. Criteria

1. Storm Frequency - 100 years
2. Runoff Coefficient

   Undeveloped c = 0.35
   Developed c = 0.50
3. Method of determining storm water runoff- Rational Formula Q=AIR
4. Method of determining channel and street flow capacities - Mannings Equation

   $$V = \frac{1.486}{17} R^{2/3} S^{1/2}$$
5. Values of constants used

   N = 0.19 - Asphalt surfaced streets
   N = .025 - Earth channels
   N = .013 - Concrete Channels
6. Drainage area characteristics - assume 150 ft. sheet flow for off lot drainage, the remainder curb flow.

B. Technical References

1. Master Plan of Drainage, City of Albuquerque, New Mexico and Environs, 1961.
2. Time of Concentration Nomograph based on study by P. Z. Kirpich published in Civil Engineering, June 1940, and also included in the USDA Soil Conservation Service, National Engineering Handbook, Section 4, Hydrology (Supplement A), as figure 3.15-3.
3. "Essentials of Engineering Fluid Mechanics", R. M. Olsen, International Textbook Company, 1961.

C. Computations

Following are computor computations made to determine the effect of a design storm on the masterplan of the subdivision and the ability of the street system to dispose of storm waters from the area under study without overloading the drainage system down stream.

The hydrographs listed in this report were generated using a computor program developed for subdivisions of this size which simulate a 100 year storm and the resultant runoff.

The flows generated are based on the assumption that the lot grading will incorporate back lot ponding where feasible and that the water carrying streets have a minimum slope in order to reduce time of concentration.

The storm duration chosen for each basin is the one that generates the highest flows at the outfall of the basin.

The maximum flows expected at each joint and at the outfalls are shown on plate 2.

Triangular hydrographs have been developed for the North Arroyo Del Pino and are shown on plate 3.

```
LOM NORTE1 100.0 0.01933301. 0.50    60    10    30    10     2     0
 5.40  4.20  3.44  0.00  0.00  0.00  0.00  0.00  0.00  0.00
    1     2   5.5  0.00       5.0   1810.0   5499.0     60.0    5.     0     0.   0.000
    2    99   3.3  0.00       5.0   2105.0   5497.0    780.0   20.     0     0.   0.000
****     0   0.0  0.00       0.0      0.0      0.0      0.0    0.     0     0.   0.000
```

.00 YEAR STORM -- 10 MINUTE DURATION -- 5.400 IN/HR INTENSITY

FLOW IN CFS X 2

****

100.0 YR STORM AT LOM NORTE1 8.8 ACRES 16.5 CFS AT OUTLET

****

END-JOINTS		DIA-WIDTH	LENGTH	MAX-Q	MAX-V	MAX-DP
1	2	1.C	295.	14.8	2.35	5.12
2	99	20.C	0.	16.5	1.00	22.70

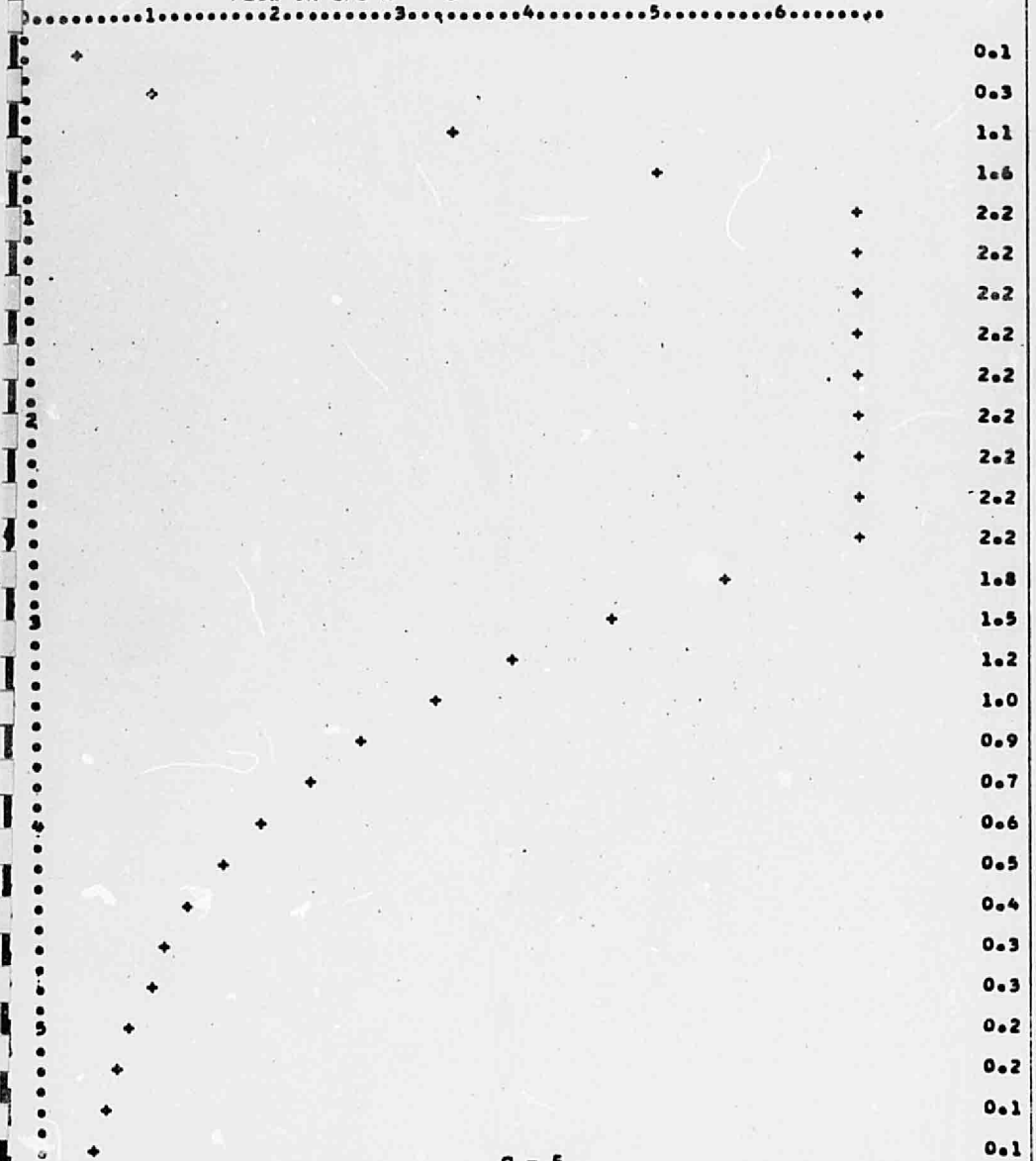
****

END-JOINTS		HD-GRADIENT	TERRAIN-SLOPE	ACRES	C-FAC	CONC-TIME
1	2	0.00677	0.08333	5.5	0.500	5.8
2	99	0.00001	0.02564	3.3	0.500	28.6

```
LOM NORTE2 100.0 0.01933301. 0.50   60   10   10   10    2    0
 5.40 4.20 3.44 0.00 0.00 0.00 0.00 0.00 0.00 0.00
   3  99   2.2 0.00      0.0   795.0  5500.0   400.0   4.   0    0.  0.000
9999   0   0.0 0.00      0.0     0.0     0.0     0.0   0.   0    0.  0.000
```

00 YEAR STORM -- 10 MINUTE DURATION -- 5.400 IN/HR INTENSITY

FLOW IN CFS X 0

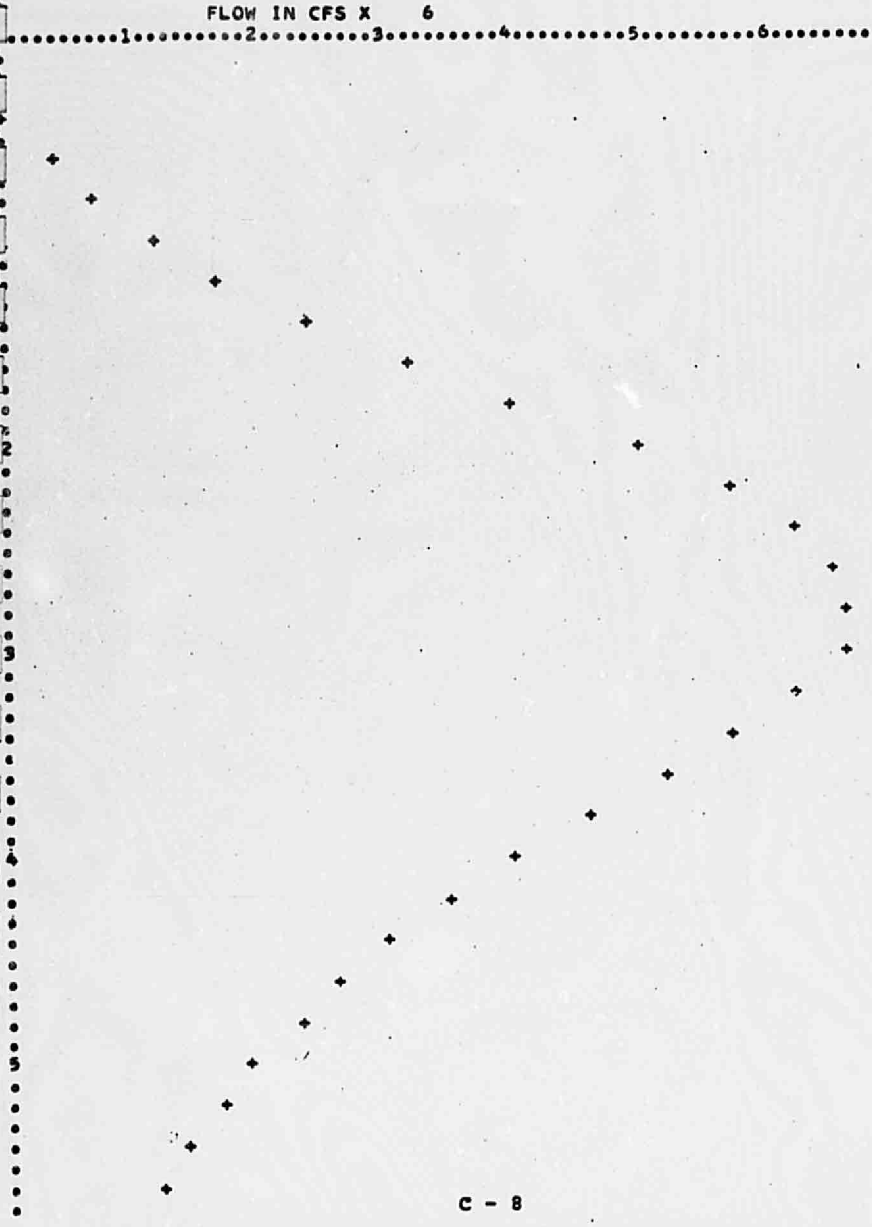


```
*****************************************************************
100.0 YR STORM AT LOM NORTE2        2.2 ACRES        2.2 CFS AT OUTLET
*****************************************************************

     END-JOINTS  DIA-WIDTH   LENGTH      MAX-Q      MAX-V    MAX-DP
*****************************************************************
        3   99       20.C        0.        2.2     1.00      7.47

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

    END-JOINTS  HD-GRADIENT  TERRAIN-SLOPE  ACRES  C-FAC  CONC-TIME
*****************************************************************
        3   99      0.00001      0.01000     2.2   0.500    26.4
```

```
LOM NORTE3 100.0 0.01933301. 0.50   60   20   30   10    2    0
 5.40 4.20 3.44 0.00 0.00 0.00 0.00 0.00 0.00 0.00
   4    5   6.1 0.00   645.0  1990.0  5519.0   875.0  22.    0    0.  0.000
   5    6   5.3 0.00   515.0  1819.0  5518.0   830.0  21.    0    0.  0.000
   6    7   4.3 0.00   305.0  1610.0  5516.0   650.0  16.    0    0.  0.000
   7    8   3.8 0.00   195.0  1325.0  5513.0   600.0  15.    0    0.  0.000
   8    9   1.5 0.00   190.0   885.0  5510.0   440.0   3.    0    0.  0.000
   9   10   2.5 0.00   170.0   850.0  5509.0   490.0  12.    0    0.  0.000
  10   99   0.0 0.00    65.0   780.0  5505.0     0.0   0.    0    0.  0.000
9999    0   0.0 0.00     0.0     0.0     0.0     0.0   0.    0    0.  0.000
```

00 YEAR STORM -- 20 MINUTE DURATION -- 5.400 IN/HR INTENSITY

FLOW IN CFS X 6



****

100.0 YR STORM AT LOM NORTE3 23.5 ACRES 41.1 CFS AT OUTLET

****

END-JOINTS		DIA-WIDTH	LENGTH	MAX-Q	MAX-V	MAX-DP
4	5	1.C	214.	12.6	1.96	5.18
5	6	1.C	296.	20.8	2.55	5.83
6	7	1.C	305.	29.3	3.15	6.06
7	8	1.C	440.	35.6	2.87	6.97
8	9	1.C	40.	37.7	4.82	5.71
9	10	1.C	126.	41.1	5.42	5.67
10	99	20.C	0.	41.1	1.00	39.15

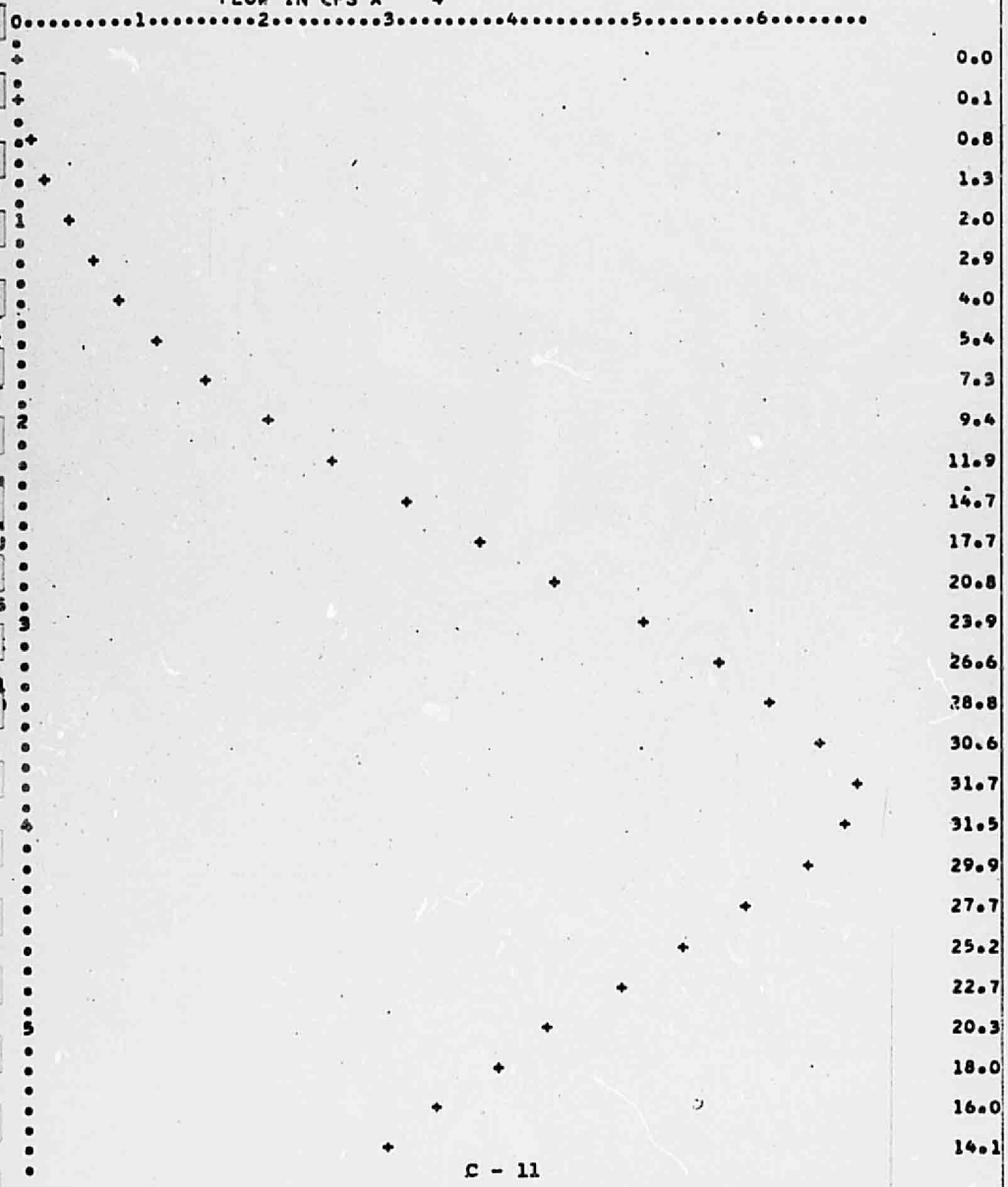
****

END-JOINTS		HD-GRADIENT	TERRAIN-SLOPE	ACRES	C-FAC	CONC-TIME
4	5	0.00465	0.02514	6.1	0.500	30.4
5	6	0.00675	0.02530	5.3	0.500	29.6
6	7	0.00981	0.02461	4.3	0.500	26.4
7	8	0.00681	0.02500	3.8	0.500	25.2
8	9	0.02479	0.00681	1.5	0.500	30.7
9	10	0.03168	0.02448	2.5	0.500	22.9
10	99	0.00001	0.00000	0.0	0.500	0.0

```
LOM NORTE4 100.0 0.01933301. 0.50   60   10   30   10    2    0
 5.40  4.20 3.44 0.00  0.00 0.00 0.00  0.00 0.00  0.00
  11   12   5.7 0.00  2320.0  2055.0  5554.0   550.0   5.   0    0.  0.000
  12   13   4.4 0.00  2070.0  2005.0  5549.0   550.0   6.   0    0.  0.000
  13   14   5.4 0.00  1665.0  2115.0  5540.0   500.0   4.   0    0.  0.000
  14   15   2.1 0.00  1480.0  1810.0  5536.0   400.0   6.   0    0.  0.000
  15   16   2.3 0.00  1110.0  1390.0  5532.0   550.0   4.   0    0.  0.000
  16   17   1.1 0.00   920.0  1385.0  5530.0   200.0   2.   0    0.  0.000
  17   18   4.0 0.00   680.0   740.0  5525.0   700.0   5.   0    0.  0.000
  18   99   0.0 0.00   615.0   615.0  5520.0     0.0   0.   0    0.  0.000
9999    0   0.0 0.00     0.0     0.0     0.0     0.0   0.   0    0.  0.000
```

).00 YEAR STORM -- 30 MINUTE DURATION -- 3.440 IN/HR INTENSITY

FLOW IN CFS X 4



****

100.0 YR STORM AT LOM NORTE4 24.9 ACRES 31.7 CFS AT OUTLET

****

END-JOINTS		DIA-WIDTH	LENGTH	MAX-Q	MAX-V	MAX-DP
11	12	1.C	254.	9.2	3.05	3.37
12	13	1.C	419.	16.1	3.70	4.25
13	14	1.C	356.	23.6	3.14	5.43
14	15	1.C	559.	25.1	2.72	6.19
15	16	1.C	190.	26.8	3.16	5.77
16	17	1.C	688.	27.7	2.81	6.40
17	18	1.C	140.	31.9	5.31	5.02
18	99	20.C	0.	31.7	1.00	32.87

****

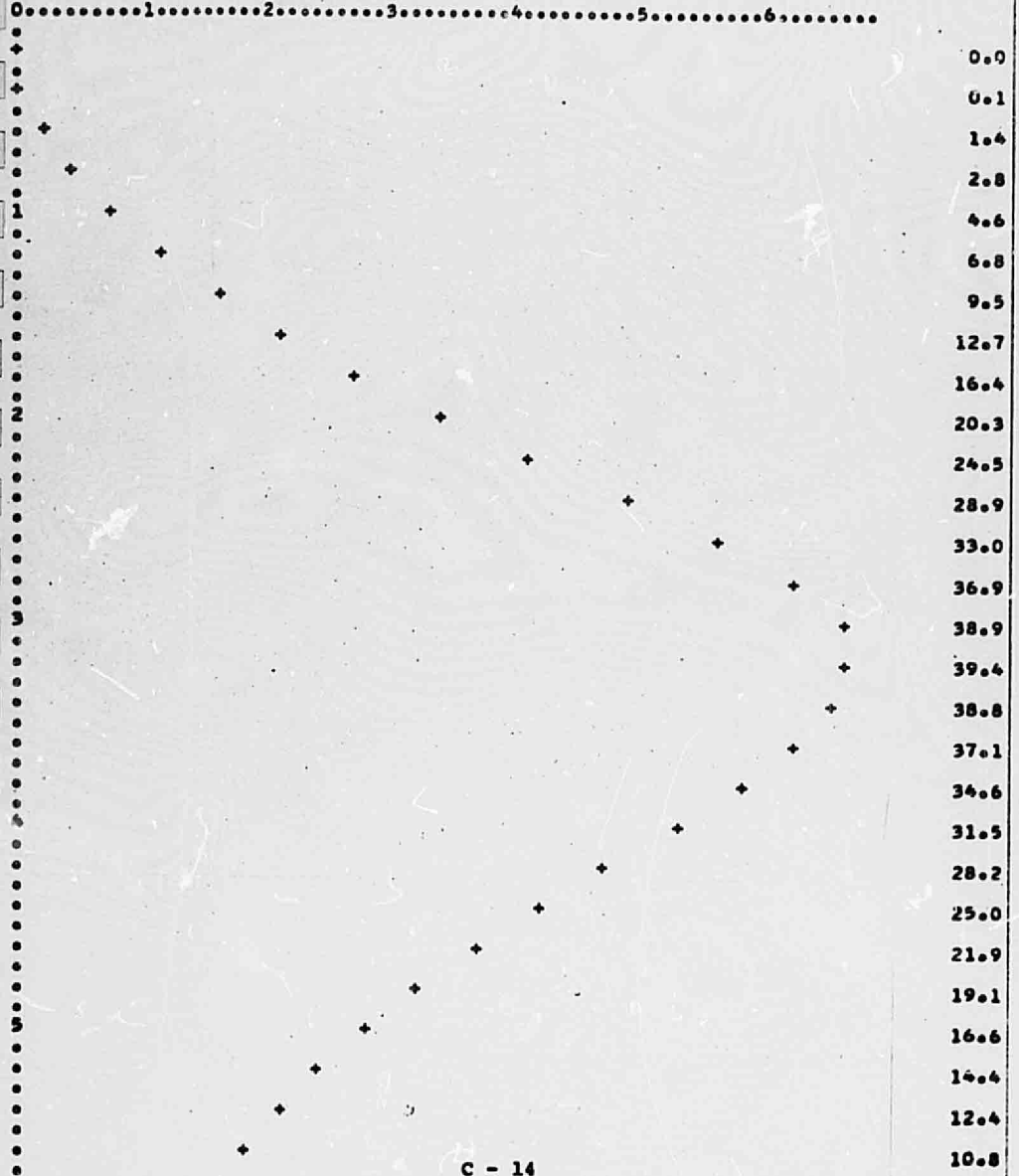
END-JOINTS		HD-GRADIENT	TERRAIN-SLOPE	ACRES	C-FAC	CONC-TIME
11	12	0.01960	0.00909	5.7	0.500	31.8
12	13	0.02144	0.01090	4.4	0.500	30.2
13	14	0.01121	0.00800	5.4	0.500	31.4
14	15	0.00714	0.01500	2.1	0.500	23.6
15	16	0.01052	0.00727	2.3	0.500	33.8
16	17	0.00726	0.01000	1.1	0.500	18.7
17	18	0.03546	0.00714	4.0	0.500	38.3
18	99	0.00001	0.00000	0.0	0.500	0.0

```
LOM NORTE5 100.0 0.01933301. 0.50   60   10   30   10    2    0
 5.40  4.20 3.44 0.00 0.00 0.00 0.00 0.00 0.00 0.00
  19   20   4.3 0.00  2030.0  1280.0  5548.0   600.0  12.   0    0.  0.000
  20   21   7.0 0.00  1710.0  1610.0  5542.0  1100.0  19.   0    0.  0.000
  21   22   6.6 0.00  1490.0  1405.0  5540.0   750.0  15.   0    0.  0.000
  22   23   5.4 0.00  1300.0  1200.0  5538.0   750.0  15.   0    0.  0.000
  23   24   3.6 0.00  1120.0   995.0  5536.0   450.0   9.   0    0.  0.000
  24   25   2.0 0.00   945.0   700.0  5533.0   340.0   3.   0    0.  0.000
  25   26   2.0 0.00   931.0   640.0  5532.0   650.0  13.   0    0.  0.000
  26   99   0.0 0.00   890.0   540.0  5527.0     0.0   0.   0    0.  0.000
9999    0   0.0 0.00     0.0     0.0     0.0     0.0   0.   0    0.  0.000
```

).00 YEAR STORM -- 30 MINUTE DURATION -- 3.440 IN/HR INTENSITY

FLOW IN CFS X 5

0.....1.....2.....3.....4.....5.....6.....



0.0
0.1
1.4
2.8
4.6
6.8
9.5
12.7
16.4
20.3
24.5
28.9
33.0
36.9
38.9
39.4
38.8
37.1
34.6
31.5
28.2
25.0
21.9
19.1
16.6
14.4
12.4
10.8

****

100.0 YR STORM AT LOM NORTE5 30.8 ACRES 39.4 CFS AT OUTLET

****

END-JOINTS		DIA-WIDTH	LENGTH	MAX-Q	MAX-V	MAX-DP
19	20	1.C	459.	7.3	2.52	3.42
20	21	1.C	300.	16.3	2.38	5.32
21	22	1.C	279.	24.1	2.70	6.09
22	23	1.C	272.	31.1	2.85	6.52
23	24	1.C	343.	35.0	3.15	6.63
24	25	1.C	61.	37.0	4.09	6.15
25	26	1.C	108.	39.4	6.09	5.06
26	99	20.C	0.	39.4	1.00	38.33

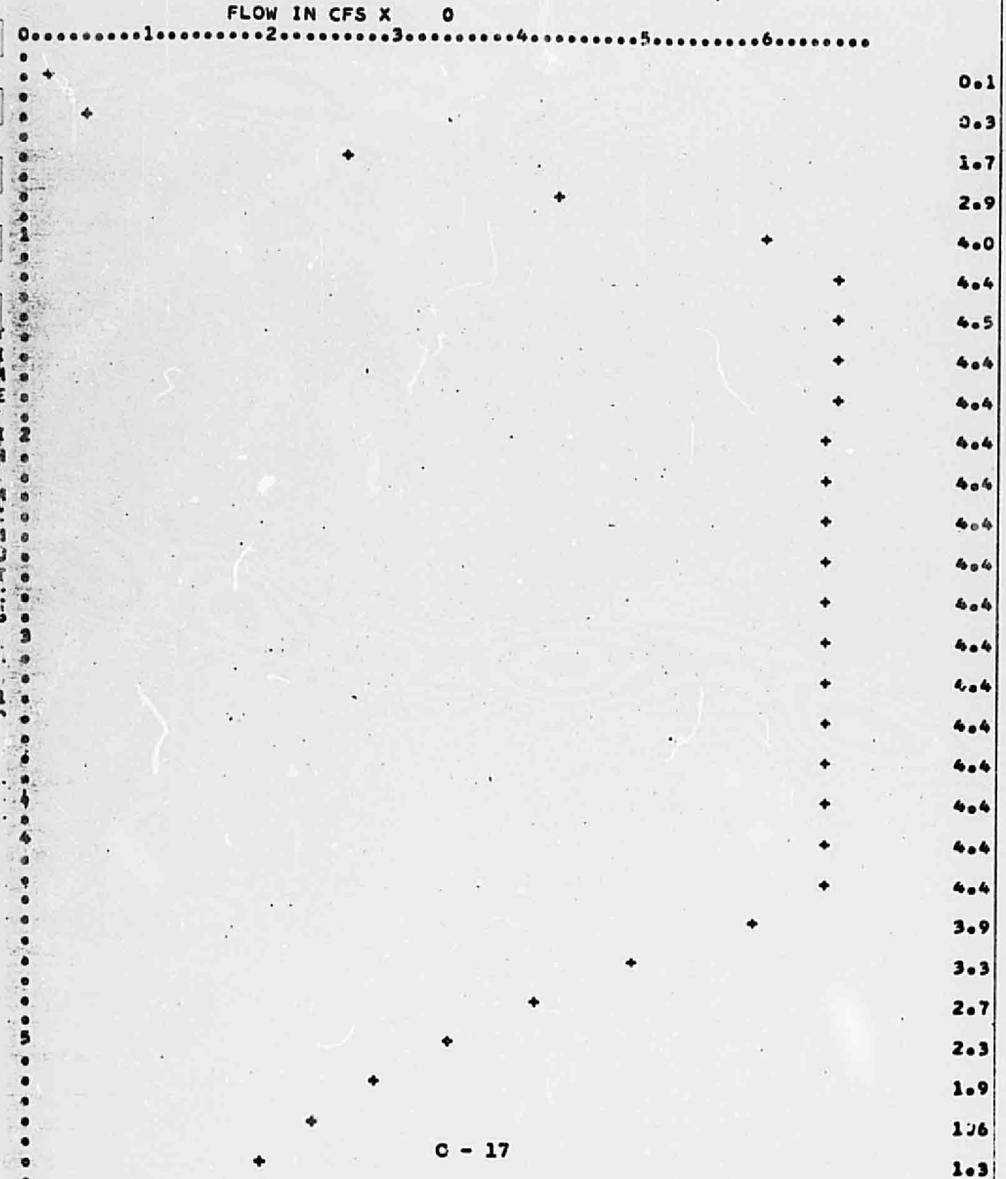
****

END-JOINTS		HD-GRADIENT	TERRAIN-SLOPE	ACRES	C-FAC	CONC-TIME
19	20	0.01305	0.02000	4.3	0.500	26.8
20	21	0.00665	0.01727	7.0	0.500	37.7
21	22	0.00715	0.02000	6.6	0.500	29.9
22	23	0.00733	0.02000	5.4	0.500	29.9
23	24	0.00874	0.02000	3.6	0.500	23.2
24	25	0.01622	0.00882	2.0	0.500	25.2
25	26	0.04621	0.02000	2.0	0.500	27.9
26	99	0.00001	0.00000	0.0	0.500	0.0

```
LOM NORTE6 100.0 0.01933301. 0.50   60   10   10   10   2   0
 5.40 4.20 3.44 0.00 0.00 0.00 0.00 0.00 0.00 0.00
  27  28   7.0 0.00  1505.0   485.0  5549.0  1500.0  30.   0    0.  0.000
  28  99   0.0 0.00  1505.0   355.0  5544.0     0.0   0.   0    0.  0.000
9999   0   0.0 0.00     0.0     0.0     0.0     0.0   0.   0    0.  0.000
```

0.00 YEAR STORM -- 10 MINUTE DURATION -- 5.400 IN/HR INTENSITY

FLOW IN CFS X 0



100.0 YR STORM AT LOM NORTE6 7.0 ACRES 4.5 CFS AT OUTLET

END-JOINTS		DIA-WIDTH	LENGTH	MAX-Q	MAX-V	MAX-DP
27	28	1.C	130.	4.4	3.28	2.21
28	99	20.C	0.	4.5	1.00	10.87

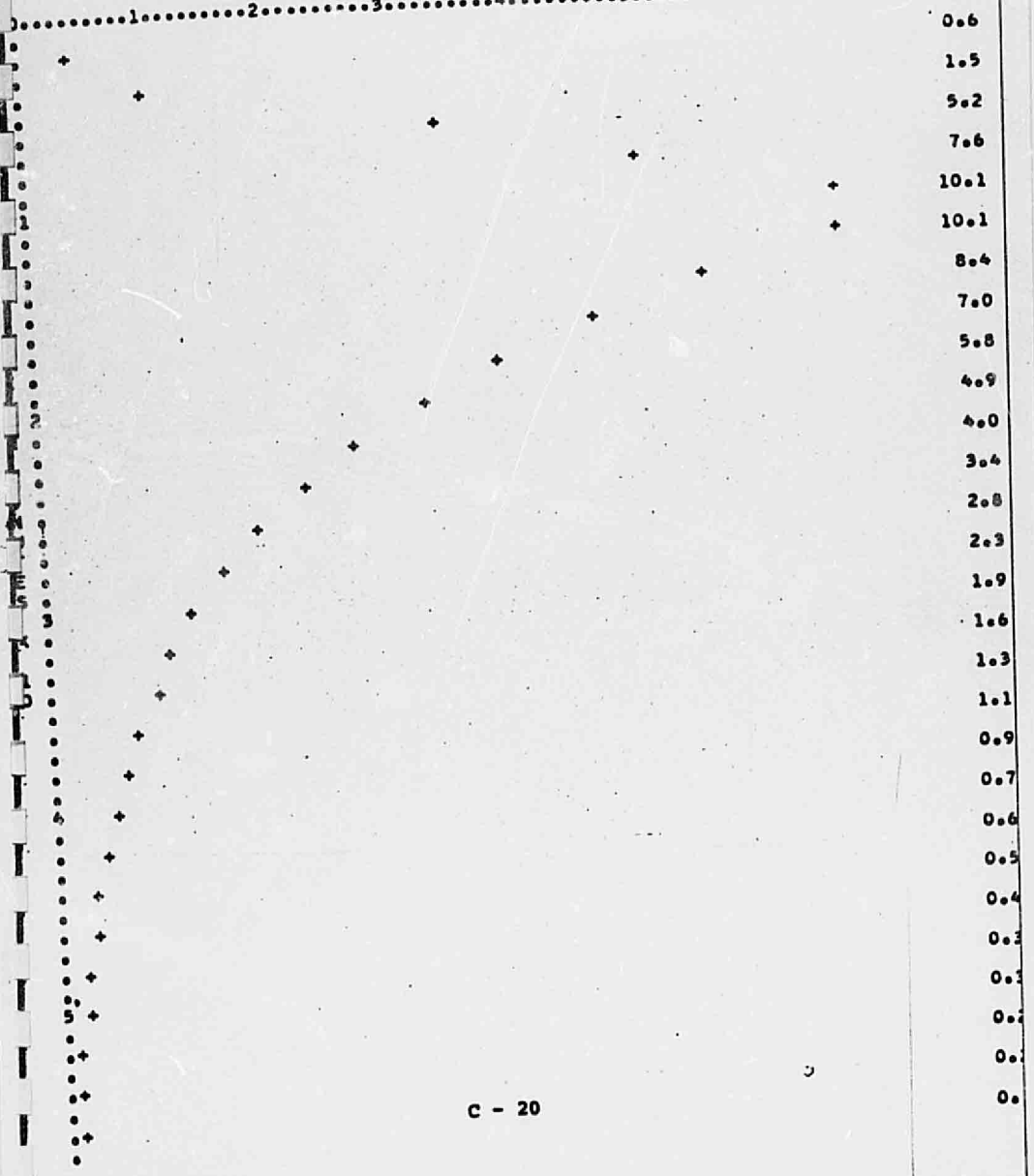
END-JOINTS		HD-GRADIENT	TERRAIN-SLOPE	ACRES	C-FAC	CONC-TIME
27	28	0.03843	0.02000	7.0	0.500	42.4
28	99	0.00001	0.00000	0.0	0.500	0.0

```
LOM NORTE8 100.0 0.01933301. 0.50    60    10    10    10     2     0
 5.40 4.20 3.44 0.00 0.00 0.00 0.00 0.00 0.00 0.00
  32   99    4.6 0.00   1635.0    300.0   5505.0    340.0   50.    0     0.   0.000
9999    0    0.0 0.00      0.0      0.0      0.0      0.0    0.    0     0.   0.000
```

.00 YEAR STORM -- 10 MINUTE DURATION -- 5.400 IN/HR INTENSITY

FLOW IN CFS X 1

0.....1.....2.....3.....4.....5.....6.....



0.6
1.5
5.2
7.6
10.1
10.1
8.4
7.0
5.8
4.9
4.0
3.4
2.8
2.3
1.9
1.6
1.3
1.1
0.9
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.

****
100.0 YR STORM AT LOM NORTE8 4.6 ACRES 10.1 CFS AT OUTLET
****

END-JOINTS		DIA-WIDTH	LENGTH	MAX-Q	MAX-V	MAX-DP
32	99	20.C	0.	10.1	1.00	17.93

****

END-JOINTS		HD-GRADIENT	TERRAIN-SLOPE	ACRES	C-FAC	CONC-TIME
32	99	0.00001	0.14705	4.6	0.500	12.2

```
LOM NORTE9 100.0 0.01933301. 0.50   60   10   10   10    2    0
 5.40 4.20 3.44 0.00 0.00 0.00 0.00 0.00 0.00 0.00
  33   0  17.6 0.00    65.0   780.0  5505.0  3400.0  50.   0    0.  0.000
9999   0   0.0 0.00     0.0     0.0     0.0     0.0   0.   0    0.  0.000
```

00 YEAR STORM -- 10 MINUTE DURATION -- 5.400 IN/HR INTENSITY

FLOW IN CFS X 1

0.....1.....2.....3.....4.....5.....6.....

+	0.4
+	1.0
+	3.5
+	5.1
+	6.8
+	6.8
+	6.8
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+	6.8

****
100.0 YR STORM AT LOM NORTE9 17.6 ACRES 6.8 CFS AT OUTLET
****

END-JOINTS	DIA-WIDTH	LENGTH	MAX-Q	MAX-	MAX-DP
33	0	20.C	0.	6.8	1.00	14.42

****

END-JOINTS	HD-GRADIENT	TERRAIN-SLOPE	ACRES	C-FAC	CONC-TIME
33	0.00001	0.01470	17.6	0.500	69.4

V. RECOMMENDATIONS

The storm waters generated by a design storm may be adequately handled utilizing the street system as masterplanned by incorporating the following recommendations.

1. The street system should be graded to the elevations as shown on plate 2. Street C and Street F should be constructed with one-half the normal crown to carry the expected flows. Provides minimum slopes on water carrying streets to increase Time of Concentration resulting in reduced peak flows.

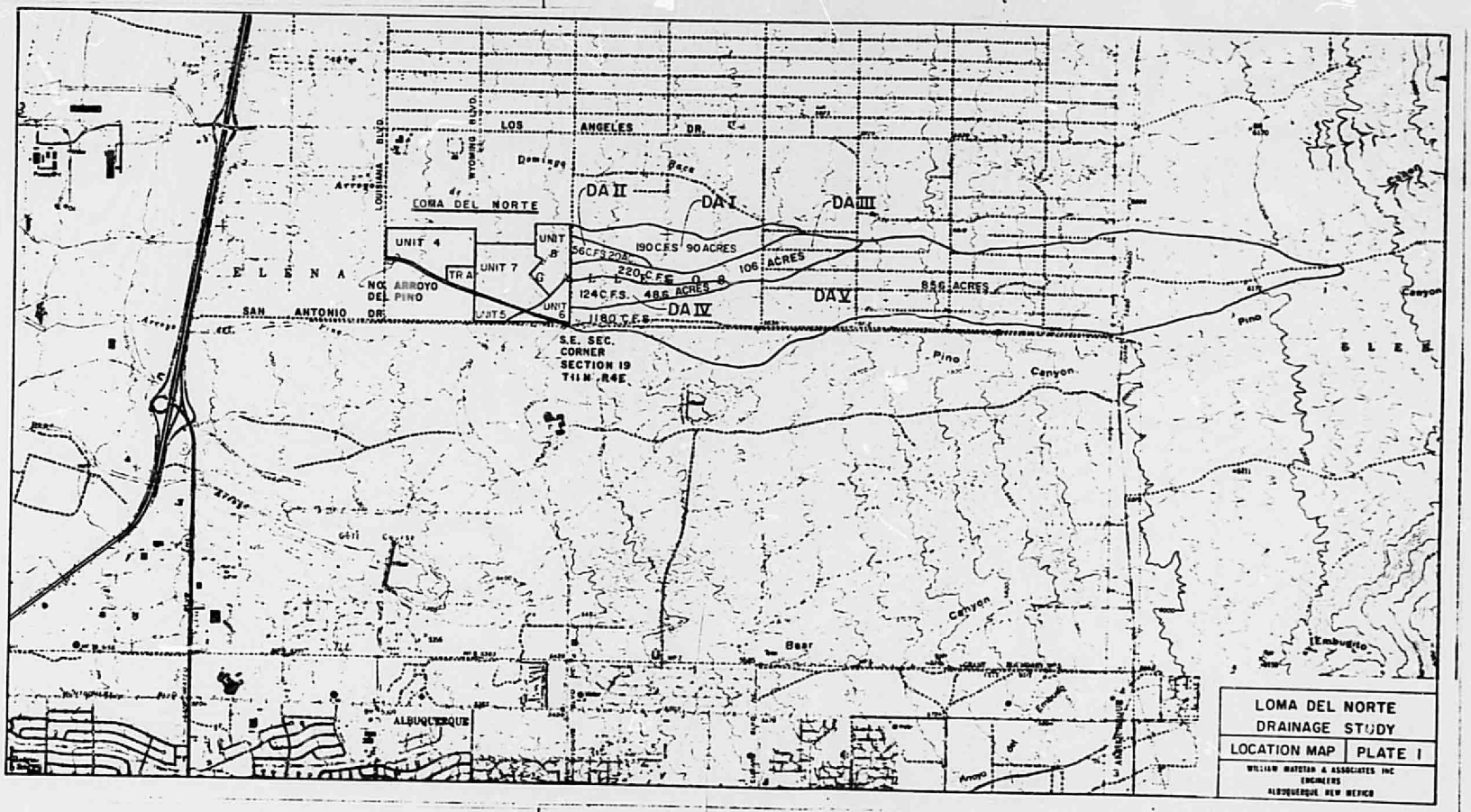
2. The flows from drainage area I should be diverted to the north of the subdivision. Further development to the north of Unit 8 should allow for diversion of this flow to the Arroyo Domingo Baca.

3. Lot ponding should be utilized. (See plate 4 for typical).

4. The North Arroyo Del Pino should be designed with section similar to that shown on plate 2. Erosion checks should be incorporated.

5. Concrete rundowns similar to sections shown on plate 2 should be used to divert water to the channel.

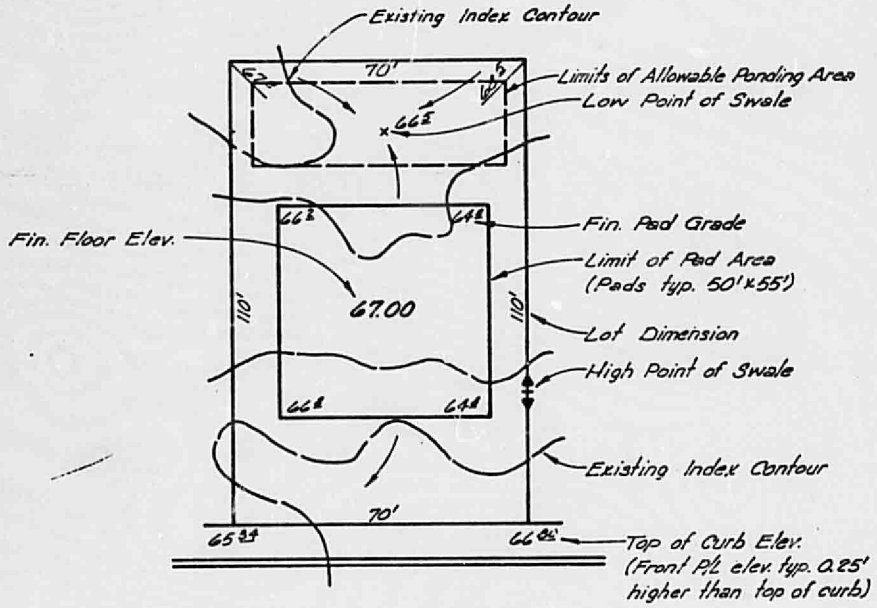
6. Hydraulically efficient dip sections should be constructed where streets cross the North Arroyo Del Pino.



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

WILLIAM MATOTAN & ASSOCIATES
ENGINEERS
ALBUQUERQUE, NEW MEXICO

PROJECT LOMA DEL NORTE SHEET ___ OF ___
TYPICAL LOT PONDING DETAIL JOB NO. 432
BY R. Lucero CHK'D ___ DATE ___



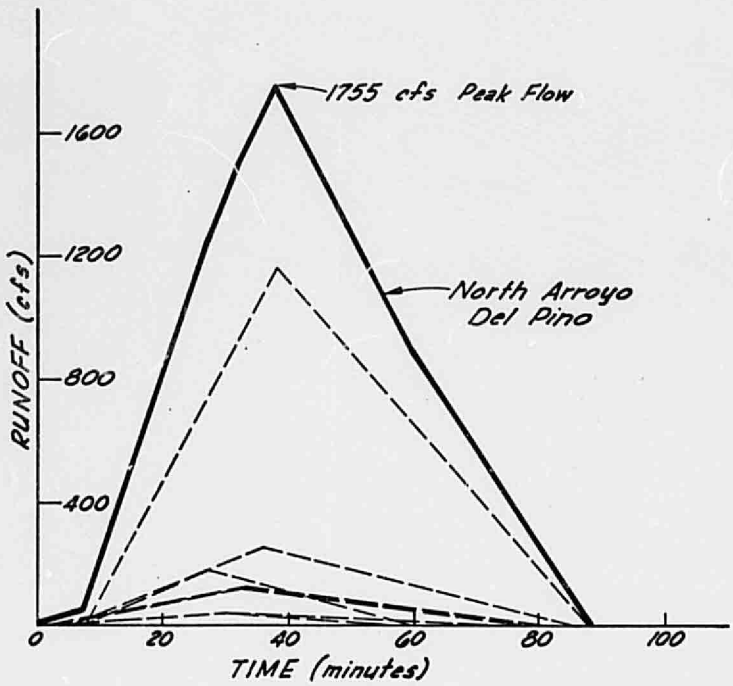
TYPICAL LOT PONDING DETAIL

Total Area Available for Ponding Per Lot = 1200 ft^2
Available Ponding Capacity Per Lot = 200 ft^3
Total Ponding Capacity for Units 7 and 8 = 1.50 Acre ft.
Note: Flows shown on Plate 2 have taken into account the ponding capacity of the subdivision.

LOMA DEL NORTE DRAINAGE STUDY	
LOCATION MAP	PLATE 4
WILLIAM MATOTAN & ASSOCIATES, INC. ENGINEERS ALBUQUERQUE, NEW MEXICO	

Units 5, 6, 7, 8 - Loma del Norte

Composite hydrograph for determining runoff at Wyoming Blvd.; 100 year frequency



LOMA DEL NORTE DRAINAGE STUDY	
LOCATION MAP	PLATE 3
WILLIAM MATOTAN & ASSOCIATES, INC. ENGINEERS ALBUQUERQUE, NEW MEXICO	

1591