HYDROLOGY J10/D6 3 PLANS

I10/D6

3 Plans

DRAINAGE PLAN

This PLAN TO BE USED UNTIL SUCH time AS FORTUNA RD, 76th ST, & GLENRIO Rd ARE PAVED. At that time they will carry the WATER

MAX RUNOFF FROM WEST OF I-40
145.80 cfs

CAPACITY

32' PAVED BITUMINOUS Rd

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

$A = 32$ sf
$n = .015$
$R = \frac{32}{33} = .969$ $\quad R^{2/3} = .979$
$S = .01$ $\quad S^{1/2} = .1$

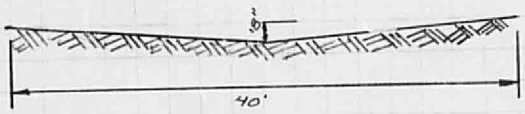
$$Q = \frac{1.49}{.015} \times .979 \times .1 \times 32 = 311.91 \text{ cfs}$$

311.91 cfs FAR EXCEEDS THE 145.80 cfs proposed.

Therefore when streets are paved they will handle the runoff.

PROPOSED TEMPORARY DRAINAGE CHANNEL

This CHANNEL TO BE DUG IN EXISTING R/W OF 76th st AND FORTUNA Rd to MATCH PAVEMENT.



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

$A = 1.5 \times 40 \times .5 = 30 sf$

$n = .025$

$R = \frac{30}{40} = .75 \quad R^{2/3} = .825$

$S = .01 \quad S^{1/2} = .1$

$$Q = \frac{1.49}{.025} \times .825 \times .1 \times 30 = 147.51 cfs$$

147.51 cfs EXCEEDS THE MAX EXPECTED RUNOFF FOR 100 YR RAIN.

DRAINAGE

WEST MESA MANOR

EXISTING GROUND RUNOFF

$Q = IRA = 2.7 \times .3 \times 19.997 = \underline{\underline{16.197 \text{ c.f.s.}}}$

WATER WILL ENTER THE PROPERTY ONLY FROM LOT 180 ON THE WEST DUE TO STREETS SURROUNDING PROPERTY.

$Q_{\text{LOT 180}} = IRA = 2.7 \times .3 \times 5 = 4.049 \text{ c.f.s.}$

TOTAL MAX. NATURAL RUNOFF ACROSS PROPERTY = 16.197 + 4.049 =

<u>20.246 cfs</u>

RUNOFF AFTER DEVELOPMENT

DUE TO THE SAND OVER GRAVEL CONDITION OF THE SOIL, WATER ABSORBTION IS EXCELLENT. WATER THAT FALLS ON THE LOTS WILL BE RETAINED FOR THE MOST PART ON THE LOTS. THIS WILL CUT DOWN DRAINAGE PROBLEMS AND AID LAWN AND OTHER VEGETATION GROWTH.

SIDEWALKS, DRIVEWAYS, AND STREETS WILL DRAIN OFF PROPERTY.

DRAINAGE BY STREET

	I	R	A (ACRES)	Q (cfs)
FREMONT PL.	4.3	.8	.75	2.58
CESARS PL.	4.3	.8	1.1	3.79
LANDMARK ST.	4.3	.8	.85	2.92
ALADDIN CT.	4.3	.8	.55	1.89
THUNDERBIRD CT.	4.3	.8	.55	1.89
MINT PL.	4.3	.8	.85	2.92
TOTAL	4.3 × .8 × 4.65 = 15.99 cfs			

NATURAL RUNOFF AT PRESENT = 16.197 cfs

THIS EXCEEDS THE PROPOSED RUNOFF AFTER DEVELOPMENT OF 15.99 cfs

DRAINAGE EASEMENT

10' DRAINAGE channel MADE OF BITUMINOUS material with 6" CURB

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

$$R = \frac{A}{P} = \frac{5\,sf}{11\,f} = .454 \qquad R^{2/3} = .591$$

$$S = 1\% \qquad S^{1/2} = .1$$

$$n = .015$$

$$A = 5\,sf$$

$$Q = \frac{1.49}{.015} \times .591 \times .1 \times 5 = 29.35\ cfs$$

This will HANDLE THE 10.74 cfs calculated to exit this point.

Presley Company Of New Mexico

February 2, 1978

RECEIVED
FEB 06 1978
CITY ENGINEERS

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

RE: West Mesa Manor

Dear Mr. Kimmick:

This letter summarizes the conclusions of a meeting we held at AMAFCA on February 1, 1978, with Jim Smith and Wylie Smith.

We concluded the Presley Company had fulfilled its drainage commitment in the subject subdivision. We discussed the lease held by Presley Company which expires in May, 1979, and that after that date protection would be provided by local government by providing a permanent solution or exercising the option in the lease to extend or purchase.

If you concur with my summary, please acknowledge below and return a copy in the enclosed stamped addressed envelope.

Very truly yours,

THE PRESLEY COMPANY
OF NEW MEXICO

Kleston H Laws

Kleston H. Laws
Vice President

KHL/rh

encl.

Acknowledged: V. M. Kimmick, City Engr. 2-6-78 Date

1909 Carlisle Blvd., N.E. • Albuquerque, New Mexico 87110 • (505) 265-5811

Bruce

Presley Company Of New Mexico

November 17, 1977

RECEIVED
NOV 21 1977
CITY ENGINEERS

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

RE: West Mesa Manor

Dear Mr. Kimmick:

A review of the Bovay Engineer's preliminary drainage report for the area near the West Mesa Subdivision has raised several questions.

As you know, on June 30, 1975, the drainage report for West Mesa Manor was approved on the condition that Presley Company construct a temporary ponding facility to handle flows coming from across Interstate 40. This concept was based on the proposed Ladera diversion which was to take all flows north of Interstate 40 to the Ladera detention facility as explained in an April 29, 1975 letter written by John B. Robert. The lease on the property of the temporary pond will expire shortly and that facility will need to be removed.

Bovay's report does not mention the concept outlined in Mr. Robert's letter or the Matotan report. In fact, it proposes placing another culvert under Interstate 40 to insure flows will be delivered to the area of West Mesa Manor and the Atrisco Business Park. Such a solution will greatly effect the drainage plans of the business park and the storm drain in Coors Boulevard.

We are concerned about the difference in findings of the Matotan and Bovay reports. Matotan shows an area of 179.2 acres and a flow of 183 c.f.s. reaching the freeway. Bovay's area is 201.3 acres and a flow of 311.6 c.f.s. Bovay has increased the area 12 percent and the flood peak 70 percent. These figures compare to the area of 180 acres and a flow of 146 c.f.s. in the West Mesa report. It seems Bovay has ignored the AMAFCA Drainage Resolution 1972-2, the Matotan study, and the two local drainage reports prepared for the Atrisco Business Park and West Mesa Manor. We urge a careful review of the Bovay study as it relates to decisions made in the recent past.

1909 Carlisle Blvd., N.E. • Albuquerque, New Mexico 87110 • (505) 265-

It appears several courses of action can occur:

1. Implement the diversion concept as proposed by Matotan and Mr. Robert in his letter of April 29, 1975.

2. Have the public acquire the area of the temporary pond so it can become permanent.

3. Have the City or AMAFCA extend the lease until a permanent solution is provided.

4. Let the lease expire and convey the runoff in streets. Generally, it appears the streets would have flow depths greater than two inches above the curb.

5. Acquire and use the ponding area as a facility to modify peak flood flows and control flood flows west of the present pond.

6. Use storage and retention in the area north of the freeway.

7. Continue to allow flows to parallel the freeway along the westbound lanes or down the median as it appears flow greater than the culvert capacity presently do.

8. Use combinations of the above suggestions.

When our lease expires in May, 1979, we shall restore the property as is required in our agreement. Hopefully, an adequate solution will be implemented by then. We feel Bovay should specifically cover this question.

Very truly yours,

THE PRESLEY COMPANY
OF NEW MEXICO

Kleston H Laws

Kleston H. Laws
Vice President

KHL/rh

cc: James Smith, AMAFCA

BENNY E. McMILLAN, P.E
CONSULTING MATERIALS ENGINEER
2821 GIRARD BOULEVARD, N.E.
ALBUQUERQUE, NEW MEXICO 87107

September 22, 1976

Federal Housing Administration
625 Truman, N.E.
Albuquerque, New Mexico 87110

Re: West Mesa Manor

Gentlemen:

From July 7, 1975 to July 25, 1975, the general grading for the referenced project was continuously inspected by personnel under my direct supervision. The inspection and tests performed during construction verified that all earthwork performed for fills and original ground preparation for fills was accomplished as recommended in the Soil and Foundation Investigation Report by Sergent, Hauskins & Beckwith dated June 25, 1974.

My records indicate that the entire project, including drainage retention embankments, has been graded as recommended by the above referenced soil and foundation investigation report. We do not anticipate any detrimental swelling or settlement of the foundation soils under the recommended allowable loads for residential buildings provided recommended parameters for drainage are maintained during and after building construction.

Respectfully submitted,

Benny E. McMillan

REGISTERED PROFESSIONAL ENGINEER
STATE OF NEW MEXICO
NO. 3730
BENNY E. McMILLAN

Copies: Addressee (1)
Presley Company of New Mexico (4)
Kent Nowlin Construction Co. (1)

ENGINEERS & PHOTOGRAMMETRISTS

BOHANNAN WESTMAN HUSTON & ASSOCIATES INC.

4125 CARLISLE BLVD., N.E.
ALBUQUERQUE, NEW MEXICO 87107
PHONE 505 345-2681

May 11, 1976

Mr. Kleston Laws
Assistant City Engineer, Hydrology
City of Albuquerque
P.O. Box 1293
Albuquerque, New Mexico 87103

Re: As-Built Drawing of the Temporary Retention Area West of West Mesa Manor Subdivision

Dear Mr. Laws:

Enclosed for your review is a reproducible copy of the as-built drawing for the referenced facility. Computations based on the as-built condition indicate that the specified storage volume is available.

If you should have further questions concerning this matter, please feel free to contact this office.

Sincerely,

Michial M. Emery

Michial M. Emery
Chief Design Engineer

Enclosure

cc: The Presley Company of New Mexico

MME/sh
Job Number E76-013
File Number E74-156

June 30, 1975

J10-D6

Mr. Michial M. Emery
Bohannon, Westman, Huston & Assoc.
4125 Carlisle Blvd. N.E.
Albuquerque, New Mexico 87107

SUBJECT: DRAINAGE REPORT FOR WEST MESA MANOR SUBDIVISION

Dear Mr. Emery:

The lease agreement received from the Presley Company allows conceptual approval of the subject drainage report. You may develop construction draining and final plat.

Very truly yours,

Kleston H. Laws
Asst. City Engineer - Hydrology

KL: yc

cc: John B. Robert, AMAFCA

Presley Company Of New Mexico

June 23, 1975

RECEIVED
JUN 24 1975
CITY ENGINEERS

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

Gentlemen:

Presley Company, the developer of West Mesa Manor Addition, will maintain, as a ponding area, the five acre tract west and adjacent to West Mesa Manor Addition until such time as the diversion channel is in place and pond is no longer needed.

At that time the tract will be graded and back-filled to approximately the same configuration that presently exists.

Sincerely yours,

THE PRESLEY COMPANY
OF NEW MEXICO

Charles E. Cook
President

CEC/rh

cc: Mr. Ernie Roussos, F.H.A.
Mr. John Roberts, AMAFCA

P.O. Box 11152 Albuquerque, New Mexico 87112 (505) 821-2727

Drainage File

City of Albuquerque

PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION

June 4, 1975

Mr. Michael M. Emery
Bohannon,Westman,Huston & Assoc., Inc.
4125 Carlisle Blvd. N.E.
Albuquerque, New Mexico 87107

RE: AMENDMENT TO DRAINAGE REPORT FOR THE WEST MESA MANOR SUBDIVISION

Dear Mr. Emery:

AMAFCA and the City have an agreement which states "No decision shall be predicated upon the assumption or requirement that an arroyo or other storm drainage facility will be altered or constructed by the City or other governmental entity unless, (a) funds for such construction are available, and contracts for the design of such alteration or construction have been awarded, and contracts for construction thereof have been scheduled for award, or (b) the governing body of either the City or the Authority waves such a requirement."

Mr. Robert's letter, included in your report, states the engineering design has been awarded, implies a construction schedule of within two years and discusses a proposed bond sale to raise funding. Therefore, only one of the three requirements have currently been met. Since we cannot assume, at this time, the diversion channel will be in place, the pond on Lot 180 may be necessary for a period exceeding two years.

The concept presented is acceptable, but before it can be approved, you need to show the pond can remain for an indefinite period. Also, all liability and maintenance, including weed and insect control, shall be accepted by the developer and/or property owner. If percolation does not occur rapidly, insect control measures may be required.

The Environmental Health Department will give advice and recommendation if sought, but will not have any financial or legal obligations.

Very truly yours,

Kleston H Laws

Kleston H. Laws
Assistant City Engineer-Hydrology

KHL/fs

cc: Mr. John Robert, AMAFCA

BOHANNAN WESTMAN HUSTON & ASSOCIATES INC.
ENGINEERS & PHOTOGRAMMETRISTS
4125 CARLISLE BLVD., N.E.
ALBUQUERQUE, NEW MEXICO 87107
PHONE 505 881-2000

May 27, 1975

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

Attention: Mr. Kleston Laws

Re: Amendment to Drainage Report for the West Mesa Manor Subdivision

Gentlemen:

Enclosed for your review are three copies of the Amendment to the Drainage Report for West Mesa Manor, and three copies each of the grading plan for the subject subdivision to show how lot ponding will be accomplished. The most significant revision to the Drainage Report consists of ponding the upland flows for the 100 year storm west of the subdivision, instead of allowing the drainage to flow to the Westland Development property where it ponds at the present time. Included as a portion of the Drainage Report is a plate showing the details of the ponding area.

If you should have any questions concerning this Drainage Report or the history behind this development, please feel free to contact this office and I will be glad to meet with you at any time concerning this subject.

Sincerely yours,

Michial M. Emery

Michial M. Emery
Chief Design Engineer

Enclosures

cc: The Presley Company of New Mexico

MME/sh
Job Number E74-156

JOHN B. ROBERT
EXECUTIVE ENGINEER

B. F. SWINBURNE, CHAIRMAN
FRED LUTHY, JR., VICE-CHAIRMAN
RICHARD H. CLOUGH, SEC.-TREAS.
WILLIAM V. HEREFORD, DIRECTOR
FRANCES McCOY, DIRECTOR

Albuquerque Metropolitan Arroyo Flood Control Authority
2112 GIRARD N.E.
P. O. BOX 25851 - ALBUQUERQUE, N. M. 87125
TELEPHONE 268-4519

Kleetum

RECEIVED
APR 30 1975
CITY ENGINEERS

April 29, 1975

Mr. Charley Cook
Presley Homes
Post Office Box 11152
Albuquerque, New Mexico 57112

Dear Mr. Cook:

Approximately 10 days ago, you and Jim Sutton of Bohannan, Westman, Huston & Associates, visited this office to inquire of the possibility of constructing West Mesa Manor Subdivision 1 & 2, located immediately west of West Mesa High School.

The Board of Directors of the Authority has authorized design engineering contracts for construction of a diversion channel along the general alignment of the 345KV Power Transmission facilities for a distance of approximately four miles west of Coors Road. The purpose of this interceptor channel is to collect the flows from the area to the north and west. In addition, it is planned to construct temporary dikes to collect the runoff which would be created by the diversion channel and the north boundary of Interstate Route 40, and deliver it to the Mirehaven Lake area located approximately one mile northwest of the I-40/Coors Boulevard Interchange.

The design contract with the Leverton-Denney firm requires that the design specifications and contract documents be completed within 200 calendar days from May 1, 1975. The voters, at the November 1974 General Election, authorized the issuance of $15,000,000 bonds to construct flood protection works. The projects outlined above are included in the first $7,000,000 increment of these flood protective works. Assuming that all schedules are adhered to and that the proposed sale of the first $5,000,000 bond increment is affected during the year 1975, and that a contract is awarded, it is my opinion that the completed project will be in place in approximately two years from this date.

The Leverton-Denney firm is under contract to the City of Albuquerque to design and improve Coors Boulevard between US-66 and the south boundary

of the I-40/Coors Boulevard Interchange. I understand that the design includes some storm drainage works which, in my opinion, will further enhance your ability to improve the subdivision referred to above. I am sure that you are aware of an agreement between the Authority and the City of Albuquerque that requires that, before staff can consider a drainage facility in its analysis, that the contract documents must be complete and the contract has been awarded. I further point out however, that this criteria may be waived by the City Council or the Authority's Board of Directors.

If you should need additional information on the work planned in the area, please advise.

Sincerely yours,

John B. Robert
Executive Engineer

cj

cc: Mr. Jim Sutton
Mr. V. Kimmick, City Engineer
Mayor Harry Kinney

City of Albuquerque

November 27, 1972

11-28-72

Bob
Give me status on grades

Mr. Bob Evans, Principal
West Mesa High School
6701 Fortuna Rd. N. W.
Albuquerque, New Mexico 87105

Dear Mr. Evans:

I have talked with Public Works Director, E. F. Hensch and also reviewed your letter to City Manager, Herbert H. Smith regarding the problem on "68th St. N. W.". The street to which you refer I believe is actually 64th St. N. W. between Glenrio & Fortuna. 68th St. does not extend through Fortuna to Glenrio because of the school facility. We agree that 64th St., as a dirt road, is difficult to maintain and unpleasant for travel during wet weather. In order to alleviate the water hole which exists near the Fortuna end on 64th St., it will be necessary to raise the grade of that street possibly one to two feet , and in order to ever establish a permanent pavement grade for that street, wherein curb and gutter would be included , it will be necessary to have a field survey and study of the matter by the City Engineer's Office. I have already talked with V. M. Kimmick, City Engineer several weeks ago when he asked my advice on the matter and he informed me that he would establish the necessary design grade for that section of 64th St. between Fortuna and Glenrio. Once this is done, at least a temporary or "interim" paving may be constructed on that street until such time as future development warrants permanent paving with curb and gutter and possibly a storm sewer system.

Under present City policy, no paving construction work is done in either asphalt or concrete unless the same is paid for by the petitioner requesting the paving. The City has an annual contract known as "Cash Paving" which provides relatively quick paving service to any petitioner after receipt of a check from said petitioner for the estimated amount of the work to be accomplished. Other such methods of obtaining paving include assessment districts (which unfortunately take about one year from inception to completion) and there are also Federally funded projects which are occasionally used to finance paving construction. If the school board has sufficient funds, I would suggest requesting the City Engineer, V. M. Kimmick - P. O. Box 1293 - Albuquerque, New Mex. 87103, to prepare an estimate for cost of construction of a two inch bituminous surfacing on compacted subgrade between existing pavement on Glenrio and Fortuna N. W. along 64th St. This would then give the

school board a reasonable, firm cost for budgetary purposes to accomplish the needed work. Once completed, the City Street Maintenance Division will attempt to keep such roads in a reasonable driving condition.

I will again talk with the City Engineer and determine the status of the design grades for this street and also obtain from him a time frame for preparation of a paving estimate should your office request the same from the City. I am sure Mr. Kimmick's staff will give you the information regarding design and construction schedules as soon as they have reviewed the project.

Very truly yours,

Geo. Paul

G. E. Paul, Street Maint. Engineer
Street Maintenance Division

cc: E. F. Hensch, Director
Public Works

V. M. Kimmick, Engineer
City Engineer's Office

GEP/sgt

JOB. ROBERT
EIVE ENGINEER

CHAIRMAN
VICE-CHAIRMAN
SEC.-TREAS.
DIRECTOR
DIRECTOR

Albuquerque Metropolitan Arroyo Flood Control Authority

2112 GIRARD N.E.
P. O. BOX 241 - ALBUQUERQUE, N. M. 87103
TELEPHONE 266-4519

Francis
File
West Mesa Manor
Drainage Study

Bob

RECEIVED
JUL 21 1972
CITY ENGINEER

June 21, 1972

Mr. John Bettis, P.E.
Enchantment Engineering
3240 Juan Tabo N.E.
Albuquerque, New Mexico 87112

Dear Mr. Bettis:

This office has reviewed the drainage report that you submitted for the West Mesa Manor Subdivision. Section 3 of the Authority's Drainage Resolution #1972-2, a copy of which is attached, requires that natural drainage patterns not be disturbed, or in the alternate, if it is disturbed, that the water be discharged at approximately the same point as prior to development. Your report indicates approximately 170 acres drain under Interstate 40 and continues in a southeasterly direction across the property proposed for development. If you add a contribution of runoff South of Interstate 40 and West of the proposed development, the flow cannot be handled in the street pattern that you propose. The City standard 32 foot wide street with an eight inch curb, a six inch crown and a one percent slope has a capacity of 75 cfs which greatly exceeds the amount of flow that you propose to divert. In addition, an examination of the street pattern indicates that there is no place to discharge the runoff so that it crosses East of Coors Road.

The drainage report for the West Mesa Manor is disapproved for the reasons as stated above. If you desire additional infor-

mation, I will be happy to work with you.

Yours truly,

John B. Robert
Executive Engineer

JBR/cj

Enclosures as indicated

cc: Mr. Kimmick
City Engineering

AMENDMENT TO DRAINAGE REPORT

WEST MESA MANOR SUBDIVISION

PREPARED FOR

THE PRESLEY COMPANY OF NEW MEXICO
6601 Glendora Dr., N.E.
Albuquerque, New Mexico 87112

BY

BOHANNAN WESTMAN HUSTON & ASSOCIATES, INC.
4125 Carlisle Blvd., N.E.
Albuquerque, New Mexico 87107

STATE OF NEW MEXICO
MICHIAL M. EMERY
No. 5194
REGISTERED PROFESSIONAL ENGINEER

Michial M. Emery

MICHIAL M. EMERY, P.E.

AMENDMENT TO DRAINAGE REPORT

WEST MESA MANOR SUBDIVISION

Reference is made to the original report produced by Enchantment Engineering which is attached for reference.

Initially, it was proposed to divert upland drainage coming from above West Mesa Manor south along 76th Street into an existing drainage swale with ultimate disposal in an existing borrow area on Lot 4 of the Atrisco Business Park. This procedure proved unacceptable to the owners of Lot 4 and required an alternate solution to be formulated.

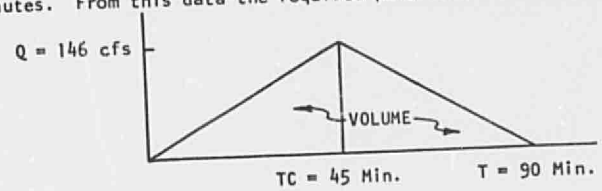
Subsequently, Presley Homes leased Lot 180 due west of West Mesa Manor to develop into a ponding area for the control of upland drainage. This pond will be constructed to hold the entire volume of the 100 year storm runoff. The pond will be a temporary solution until the AMAFCA Diversion Channel is constructed north of the freeway (I-40) and diverts the major portion of the upland flows. The AMAFCA facility should be in place within two years. (See attached letter dated April 29, 1975, from Mr. Robert.)

Shown on Plate I are the locations of the facilities discussed.

Referring to the first page of the Enchantment Engineering report, the upland area consists of 180 acres.

$Q = CIA = (.3)\ (2.7)\ (180) = 145.8$ cfs

Reference to Plate II indicates a concentration time of approximately 45 minutes. From this data the required pond volume can be estimated.



$$\text{Volume} = 1/2 \left[(90 \text{ Min.}) \left(\frac{60 \text{ Sec.}}{\text{Min.}}\right) \left(\frac{146 \text{ Ft.}^3}{\text{Sec.}}\right) \right] = 394{,}200 \text{ Ft.}^3$$

Volume = 9.1 Acre-Ft.

Refer to Sheet 1 of 1 for the ponding area design.

An earth overflow section will be provided at the southwest corner of the pond and water will flow into 76th Street and down Fortuna Road for storms larger than the 100 year event.

Reference is made to the Enchantment Engineering Amendment to West Mesa Manor Drainage Report which is included. This Amendment stipulates that Lots 4 and 5, Block 2, West Mesa Manor No. 1 and Lot 1, Block 1 of West Mesa Manor No. 2 be constructed as ponding areas to limit the volume of flow from the area to those values that are experienced at the present time. Since the present Amendment calls for the total retention of storm waters above the subdivision, or diversion of such to the north in the AMAFCA channels, the total volume of water to reach the corner of Fortuna and 72nd Street will be greatly reduced after development. Therefore, it is proposed that the above lot be used for the construction of single-family dwellings as opposed to ponding areas.

FUTURE DIVERSION CHANNEL
PROPOSED DITCH
TOWN OF ATRISCO GRANT
CORONADO FREEWAY
I-R 40
AIRPORT
WEST MESA
MANOR
NEW PONDING AREA
PREVIOUSLY PROPOSED PONDING AREA
EXISTING DRAINAGE SWALE
ATRISCO
BUSINESS
PARK
YELLOW FREIGHT ADD'N
SU-1
R-2
C-1
C-2
J-10-Z

PLATE I

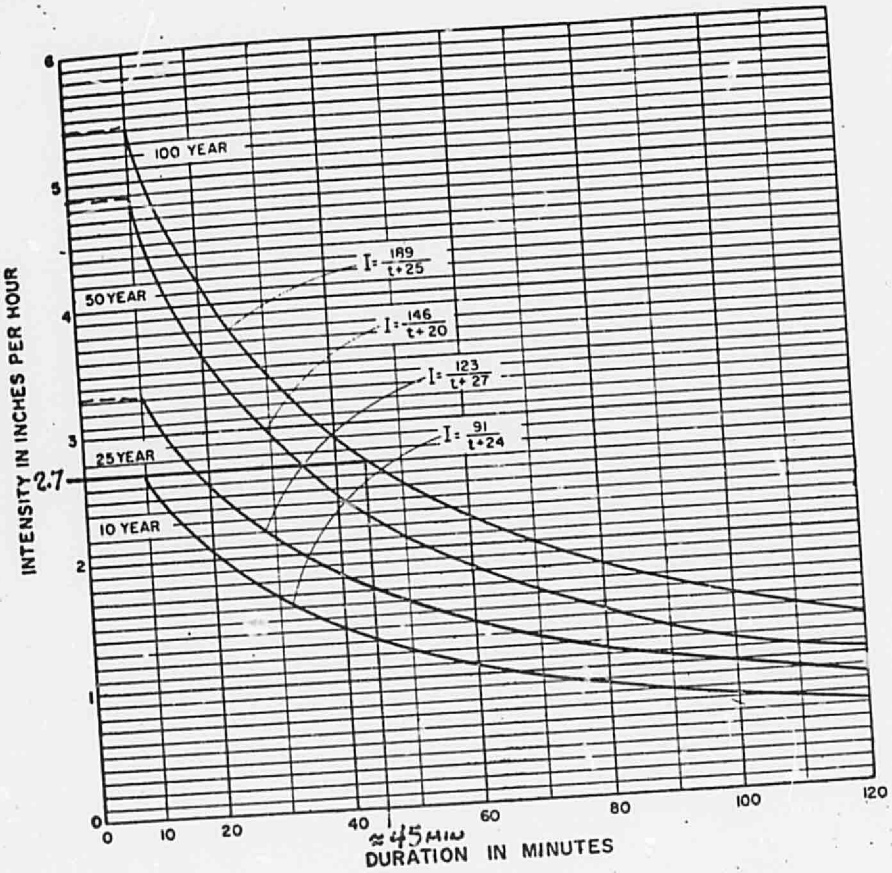


PLATE II

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

Jim Sutton

74-156

JOHN B. ROBERT
EXECUTIVE ENGINEER

B. H. SWINBURNE, CHAIRMAN
FRED LUTHY, JR., VICE-CHAIRMAN
RICHARD H. CLOUGH, SEC.-TREAS.
WILLIAM V. HEREFORD, DIRECTOR
FRANCES McCOY, DIRECTOR

Albuquerque
Metropolitan
Arroyo
Flood
Control
Authority

2112 GIRARD N.E.
P. O. BOX 25851 - ALBUQUERQUE, N. M. 87125
TELEPHONE 268-4519

RECEIVED APR 30 1975

April 29, 1975

Mr. Charley Cook
Presley Homes
Post Office Box 11152
Albuquerque, New Mexico 87112

Dear Mr. Cook:

Approximately 10 days ago, you and Jim Sutton of Bohannan, Westman, Huston & Associates, visited this office to inquire of the possibility of constructing West Mesa Manor Subdivision 1 & 2, located immediately west of West Mesa High School.

The Board of Directors of the Authority has authorized design engineering contracts for construction of a diversion channel along the general alignment of the 345KV Power Transmission facilities for a distance of approximately four miles west of Coors Road. The purpose of this interceptor channel is to collect the flows from the area to the north and west. In addition, it is planned to construct temporary dikes to collect the runoff which would be created by the diversion channel and the north boundary of Interstate Route 40, and deliver it to the Mirehaven Lake area located approximately one mile northwest of the I-40/Coors Boulevard Interchange.

The design contract with the Leverton-Denney firm requires that the design specifications and contract documents be completed within 200 calendar days from May 1, 1975. The voters, at the November 1974 General Election, authorized the issuance of $15,000,000 bonds to construct flood protection works. The projects outlined above are included in the first $7,000,000 increment of these flood protective works. Assuming that all schedules are adhered to and that the proposed sale of the first $5,000,000 bond increment is affected during the year 1975, and that a contract is awarded, it is my opinion that the completed project will be in place in approximately two years from this date.

The Leverton-Denney firm is under contract to the City of Albuquerque to design and improve Coors Boulevard between US-66 and the south boundary

of the I-40/Coors Boulevard Interchange. I understand that the design includes some storm drainage works which, in my opinion, will further enhance your ability to improve the subdivision referred to above. I am sure that you are aware of an agreement between the Authority and the City of Albuquerque that requires that, before staff can consider a drainage facility in its analysis, that the contract documents must be complete and the contract has been awarded. I further point out however, that this criteria may be waived by the City Council or the Authority's Board of Directors.

If you should need additional information on the work planned in the area, please advise.

Sincerely yours,

John B. Robert
Executive Engineer

cj

cc: Mr. Jim Sutton
Mr. V. Kimmick, City Engineer
Mayor Harry Kinney

ENCHANTMENT ENGINEERING

DRAINAGE

WEST MESA MANOR

EXISTING GROUND RUNOFF

Q = IRA = 2.7 x .3 x 19.997 = 16.197 cfs.

WATER WILL ENTER THE PROPERTY ONLY FROM LOT 180 ON THE WEST DUE TO STREETS SURROUNDING PROPERTY.

$Q_{LOT\ 180}$ = IRA = 2.7 x .3 x 5 = 4.049 cfs.

TOTAL MAX. NATURAL RUNOFF ACROSS PROPERTY = 16.197 + 4.049 =

20.246 cfs

RUNOFF FROM OUTSIDE PROPERTY

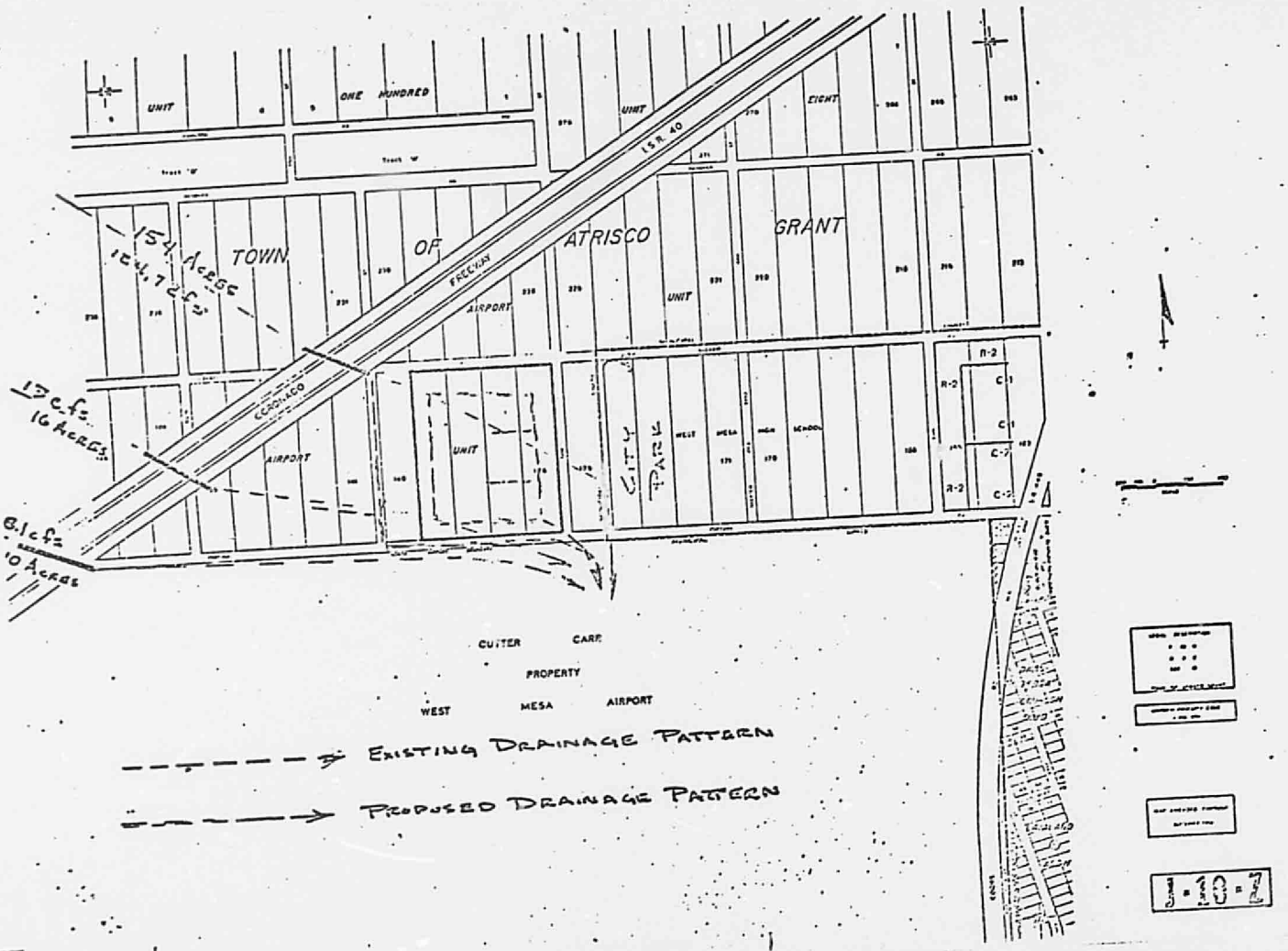
AREA = 180 Acres *

Q = IRA = 2.7 x .3 x 180 = 145.80 cfs

FIGURES for 100 year STORM

* AREAS obtained from Mr ROBERT OF AMAFCA

REGISTERED PROFESSIONAL ENGINEER


UNIT
ONE HUNDRED
UNIT
EIGHT
I.S.R. 40
TOWN OF ATRISCO GRANT
154 Acres
124,72 c.f.s.
FRECKLAN AIRPORT
UNIT
13 c.f.s.
16 Acres
CORDIAGO
AIRPORT
UNIT
CITY PARK
WEST MESA HIGH SCHOOL
R-2
C-1
C-2
CUTTER CARR
PROPERTY
WEST MESA AIRPORT
EXISTING DRAINAGE PATTERN
PROPOSED DRAINAGE PATTERN
1-10-7

RUNOFF AFTER DEVELOPMENT

DUE TO THE SAND OVER GRAVEL CONDITION OF THE SOIL, WATER ABSORBTION IS EXCELLENT. WATER THAT FALLS ON THE LOTS WILL BE RETAINED FOR THE MOST PART ON THE LOTS. THIS WILL CUT DOWN DRAINAGE PROBLEMS AND AID LAWN AND OTHER VEGETATION GROWTH.

SIDEWALKS, DRIVEWAYS, AND STREETS WILL DRAIN OFF PROPERTY.

DRAINAGE BY STREET

	I	R	A (ACRES)	Q (cfs)
FREMONT PL.	4.3	.8	.75	2.58
CESARS PL.	4.3	.8	1.1	3.79
LANDMARK ST.	4.3	.8	.85	2.92
ALADDIN CT.	4.3	.8	.55	1.89
THUNDERBIRD CT.	4.3	.8	.55	1.89
MINT PL.	4.3	.8	.85	2.92
TOTAL	4.3 × .8 × 4.65 = 15.99 cfs			

NATURAL RUNOFF AT PRESENT = 16.197 cfs

THIS EXCEEDS THE PROPOSED RUNOFF AFTER DEVELOPMENT OF 15.99 cfs

DRAINAGE PLAN

THE TEMPORARY PLAN WILL BE USED UNTIL SUCH TIME AS FORTUNA Rd, 76 st, & GLEN RIO Rd ARE PAVED. AT that time they will carry the water.

MAX Runoff FROM WEST OF I-40

145.8 cfs

CAPACITY
42 foot street in a 60 ft R/W
Bituminous Paving
3" Crown 6" CURB

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

$R = \frac{A}{P} = \frac{26}{61.4} = .423$ $R^{2/3} = .563$
$S = .01$ $S^{1/2} = .1$
$n = .015$
$A = 26$ sf

$$Q = \frac{1.49}{n} R^{2/3} S^{1/2} A = \frac{1.49}{.015} \times .563 \times .1 \times 26\text{sf} = 145.4\text{cfs}$$

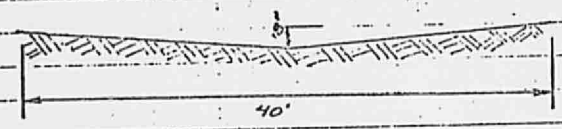
This equals the expected Runoff. Since a 60 foot R/W exists a bigger street could be built to exceed the expected runoff if it were felt necessary.

* 3" crown was STATED TO BE allowable by Bill Stevens City engineering, City of Alb

** Area includes 12 feet above top of curb allowed by city ORDANENCE.

PROPOSED TEMPORARY DRAINAGE CHANNEL

This CHANNEL TO BE DUG IN EXISTING R/W OF 76th st AND FORTUNA Rd to MATCH PAVEMENT.



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

$A = 1.5 \times 40 \times .5 = 30 sf$

$n = .025$

$R = \frac{30}{40} = .75 \quad R^{2/3} = .825$

$S = .01 \quad S^{1/2} = .1$

$$Q = \frac{1.49}{.025} \times .825 \times .1 \times 30 = 147.51 cfs$$

147.51 cfs EXCEEDS THE MAX EXPECTED RUNOFF FOR 100 YR RAIN.

DRAINAGE EASEMENT

10' DRAINAGE channel MADE OF BITUMINOUS material with 6" CURB

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

$R = \frac{A}{P} = \frac{5\,sf}{11\,f} = .454$ $\quad R^{2/3} = .591$

$S = 1\%$ $\quad S^{1/2} = .1$

$n = .015$

$A = 5\,sf$

$$Q = \frac{1.49}{.015} \times .591 \times .1 \times 5 = 29.35\ cfs$$

This will HANDLE THE 10.74 cfs calculated to exit this point.

ENCHANTMENT ENGINEERING
5240 JUAN TABO N.E.
ALBUQUERQUE, N.M.

WEST MESA MANOR

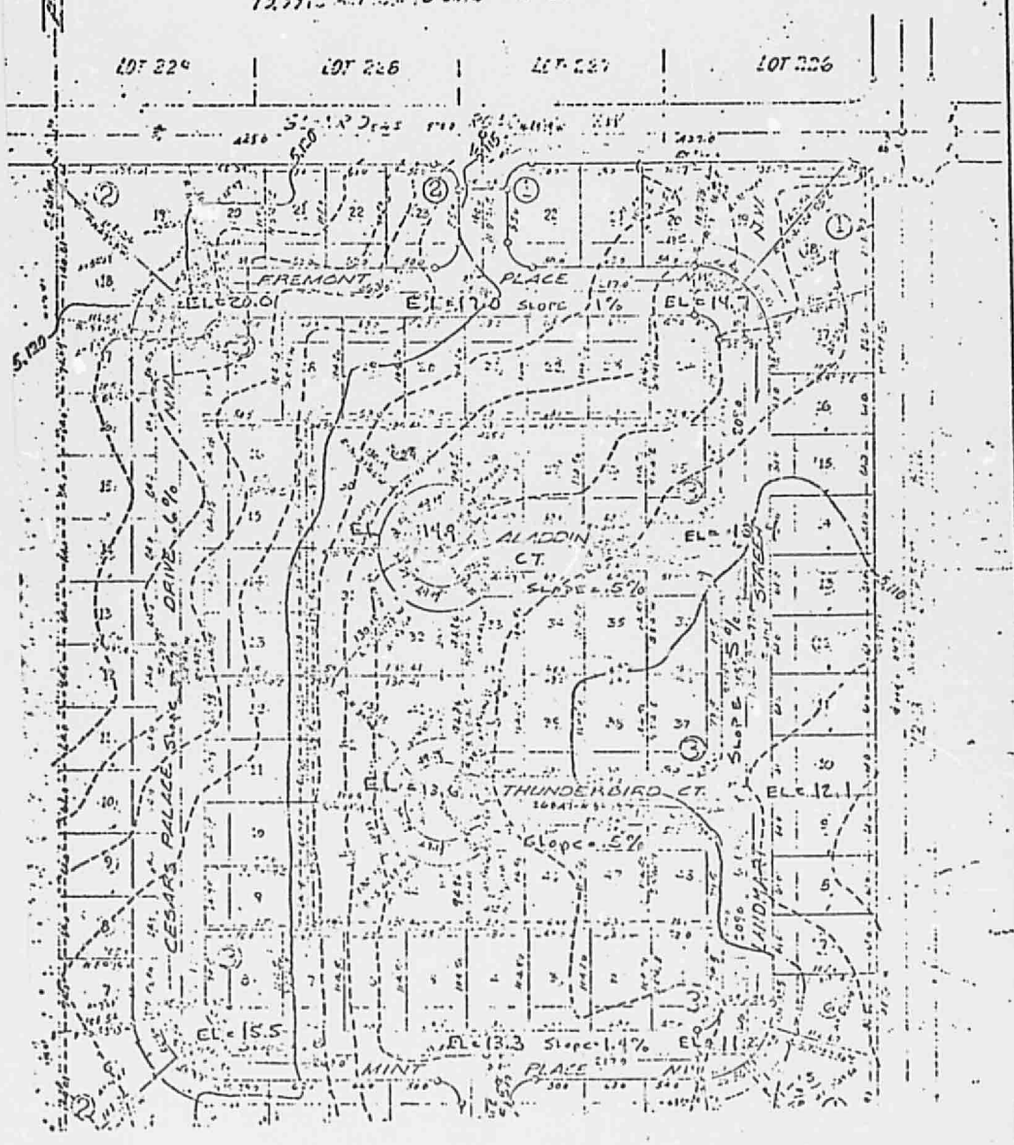
SUBDIVISION LOTS 176, 177, 178 & 179

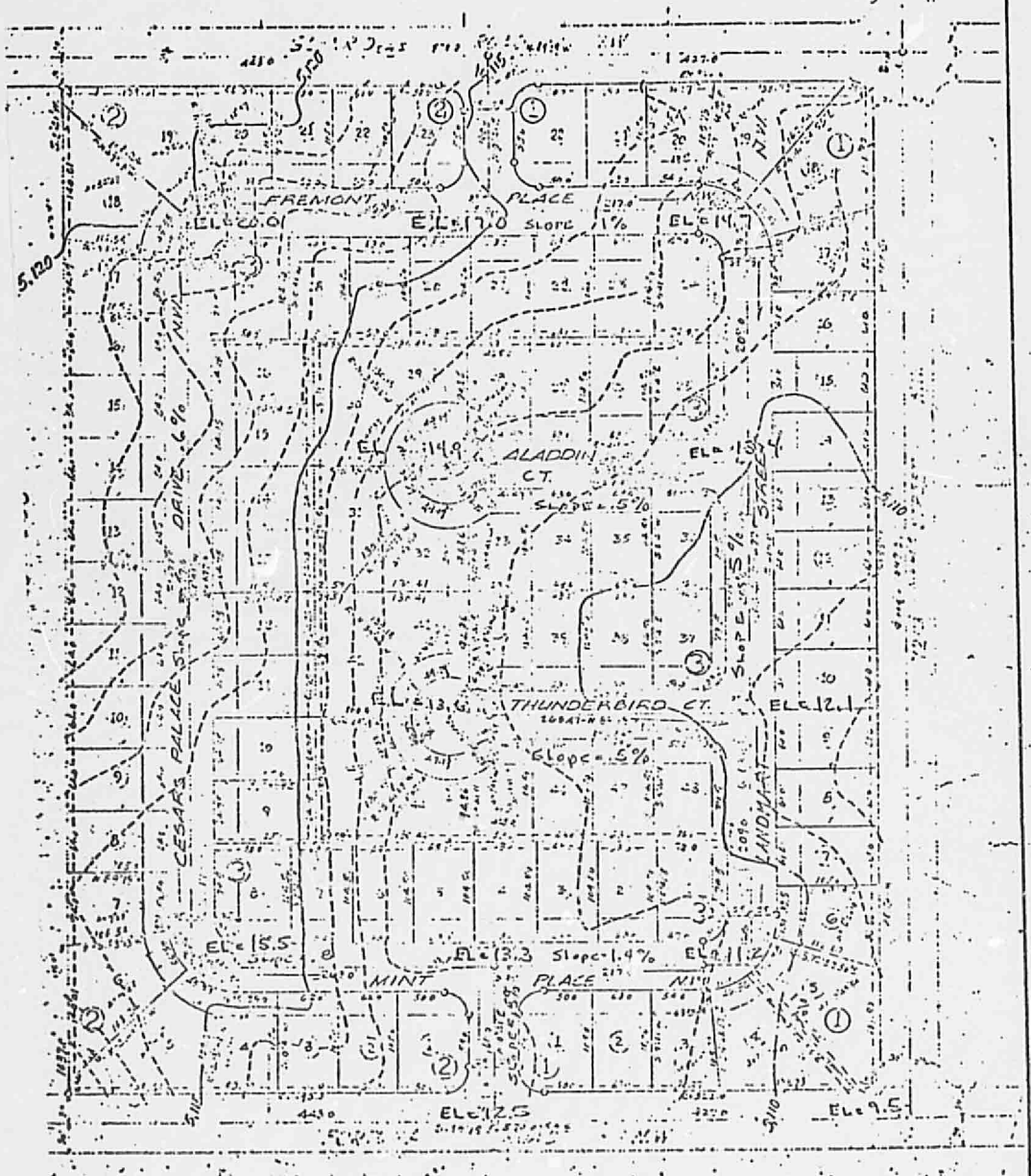
OF

ATRISCO GRANT - AIRPORT UNIT

S-72-5

19.9973 acres 93 LOTS : 465 16.75 acre





Existing Ground. Q=I×R×A = 2.7×.3×19.9972 = 16.197 cfs

Roads, Drives, & Walks Q=I×R×A = 4.3×.8×4.65 = 15.97 cfs

Water on lots to be retained on lots. Street & Alley runoff less

DRAINAGE PLAN ADDITION

WEST MESA MANOR #2

EXISTING Runoff = 2.7 x .3 x 6.43 = 5.21 cfs

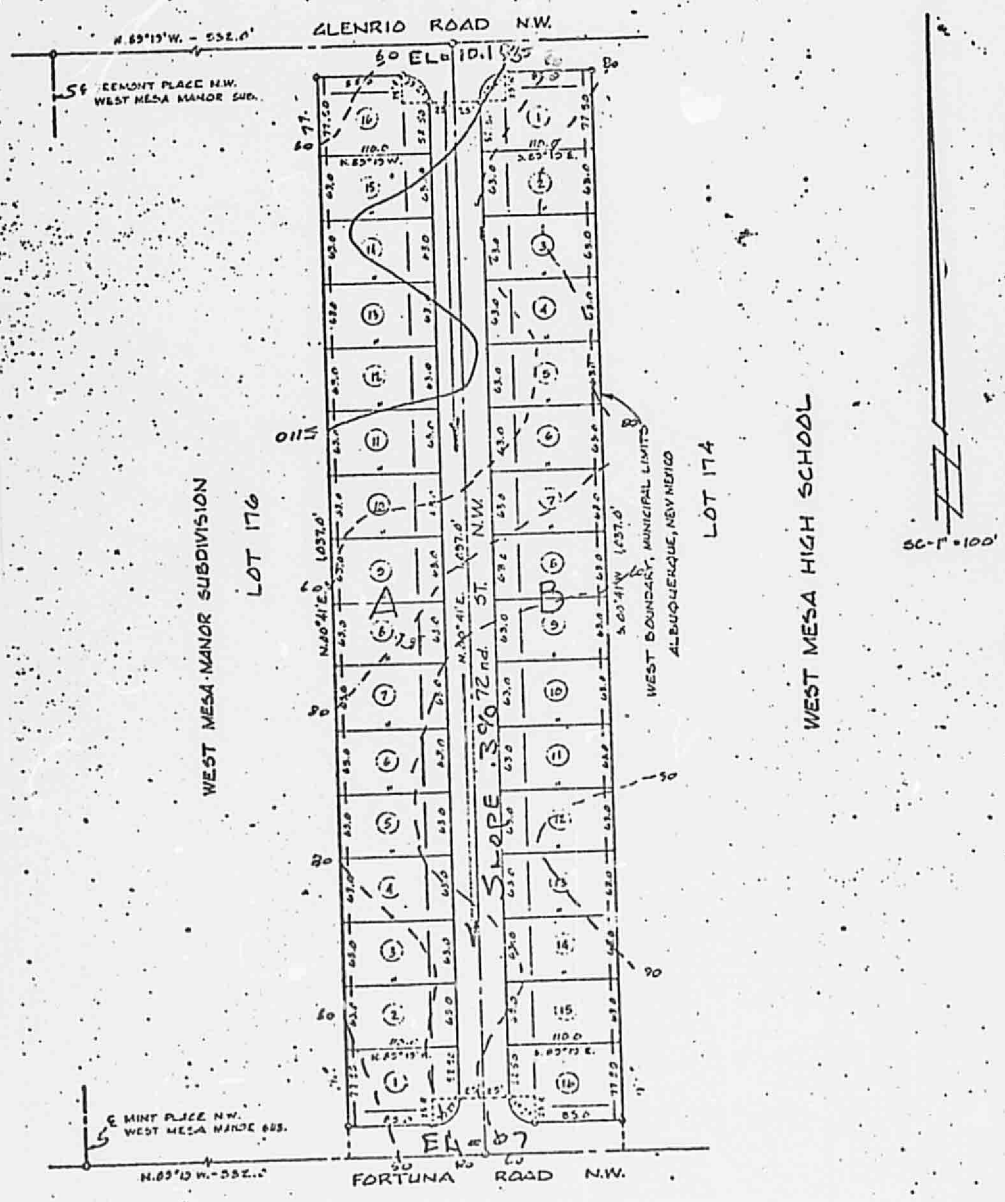
Runoff from street, sidewalk & Drives

4.3 x .8 x 1.31 Ac = 4.5 cfs

4.5 cfs < 5.21 No increase in Runoff

Water on lots kept on lots

Water from outside taken care of in main report.


GLENRIO ROAD N.W.
FORTUNA ROAD N.W.
WEST MESA MANOR SUBDIVISION
LOT 176
LOT 174
WEST MESA HIGH SCHOOL
SLOPE 3%
72nd. ST. N.W.
WEST BOUNDARY, MUNICIPAL LIMITS ALBUQUERQUE, NEW MEXICO
SC-1" = 100'

WEST MESA MANOR #1

Area of Grass/Lot that will runoff = 1350 FT²

93 lots

Total A = $\frac{1350 \times 93}{43560}$ = 2.88 AC.

I = 4.5 in/hr

C = .22

Q = .22 × 2.88 × 4.5 = 2.72 CFS

WEST MESA MANOR #2

GRASS/LOT = 1350 FT²

32 lots

Total A = $\frac{1350 \times 32}{43560}$ = .99 AC.

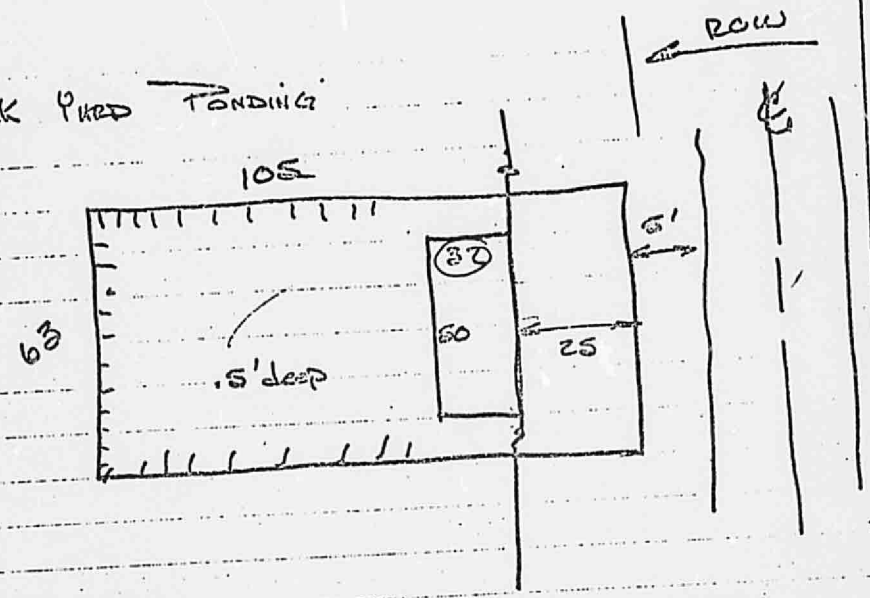
C = .22

I = 4.5 in/hr

Q = .22 × .99 × 4.5 = .94 CFS

Total Additional Q from WMM 1 & 2 = 3.66 CFS

Brick Pier Ponding



Ponding area = 33 × 66 = 2204 FT² = 0.05 AC

Ponding volume = 1102 FT³ = 0.025 AC·FT

Area to be ponded = 80 × 63 = 5040 FT² = .115 AC.

Amount of water = .115 × 2.2* × 1/12 = 0.021 AC·FT

Therefore Pond will contain runoff.

* 100 year 6hr precipitation (HUTCH isopluvials)

WEST MESA MANOR #1

Area of Grass/Lot that will runoff = 1350 ft²

93 lots

Total A = $\frac{1350 \times 93}{43560}$ = 2.88 ac.

I = 4.5 in/hr

C = .22

Q = .22 × 2.88 × 4.5 = 2.72 cfs

WEST MESA MANOR #2

Grass/Lot = 1350 ft²

52 lots

Total A = $\frac{1350 \times 52}{43560}$ = .99 ac.

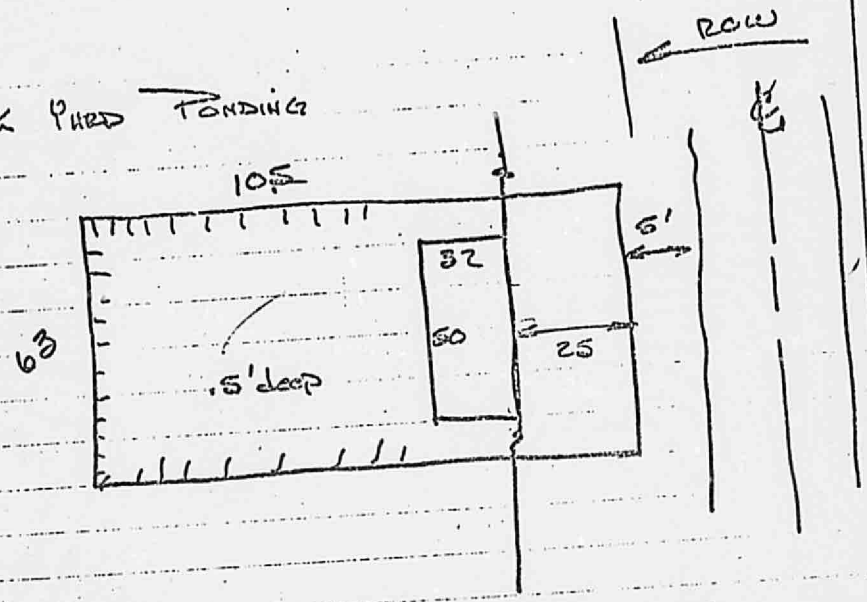
C = .22

I = 4.5 in/hr

Q = .22 × .99 × 4.5 = .94 cfs

Total Additional Q from WMM 1 & 2 = 3.66 cfs

Back Yard Ponding



Ponding area = 32 × 68 = 2204 FT² = 0.05 AC

Ponding volume = 1102 FT³ = 0.025 AC·FT

Area to be ponded = 80 × 63 = 5040 FT² = .115 AC.

Amount of water = .115 × 2.2* × 1/12 = 0.021 AC·FT

Therefore Pond will contain runoff.

* 100 year 6hr precipitation (NOAA isopluvials)

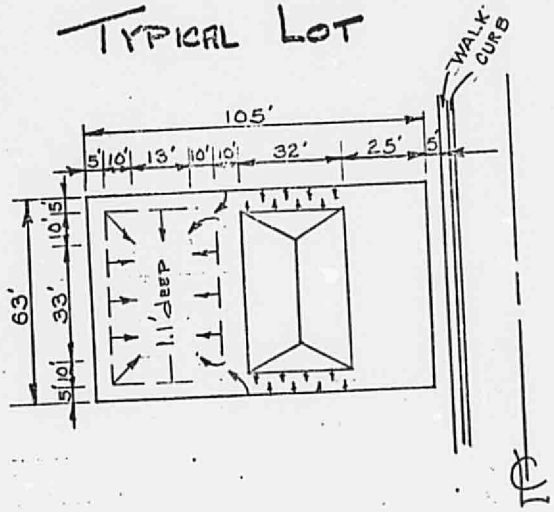
AMENDMENT
TO
WEST MESA MANOR
DRAINAGE
REPORT

REGISTERED PROFESSIONAL ENGINEER AND LAND SURVEYOR
NO. 3441
NEW MEXICO
JOHN W. REITS

ENCHANTMENT ENGINEERING INC.

TO AID IN THE DEVELOPMENT OF THIS TRACT OF LAND IT IS PROPOSED TO LET THE RUNOFF FROM THE FRONT LAWNS DRAIN INTO THE STREETS, WHILE RETAINING THE RAINFALL FROM THE ROOFS AND BACK YARDS IN THE REAR OF THE LOTS. STORM WATER RUNOFF FOR STREETS, CURBS, WALKS AND DRIVES HAVE ALREADY BEEN COMPUTED IN THE MAIN REPORT AND THOSE FIGURES WILL BE USED IN THIS AMENDMENT.

TYPICAL LOT



PONDING VOLUME = 978 FT³ = .022 AC·FT

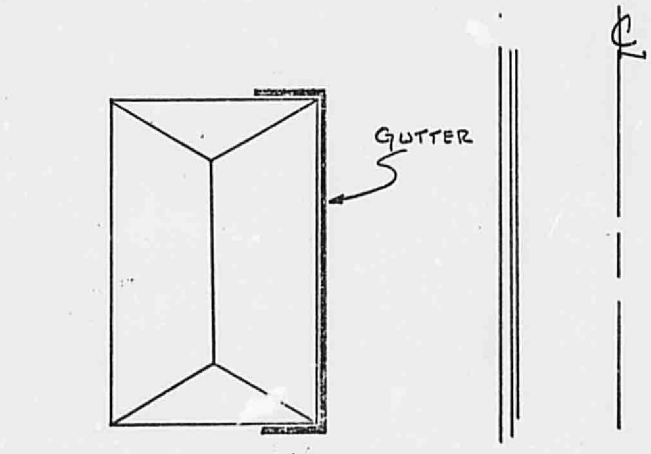
AREA to be PONDED = 80 × 63 = 5040 FT² = .115 AC.

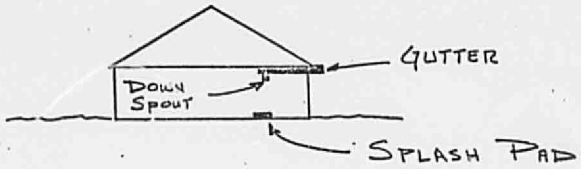
AMOUNT of WATER TO BE PONDED = .115 × 2.2* × 1/12 = 0.021 AC-FT

THEREFORE POND WILL CONTAIN RUNOFF.

* 100 YEAR - 6hr PRECIPITATION (AMWAFCA ISOPLUVIALS)

IN ORDER TO DELIVER THE ROOF WATER RUNOFF TO THE REAR OF THE LOTS IT WILL BE NECESSARY TO PROVIDE EACH HOUSE WITH A ROOF GUTTER AND DOWN SPOUT, AS SHOWN BELOW.





Additional Runoff from Front Lawns:

West Mesa Manor No. 1

Area of Grass/Lot that will runoff = 1350 FT^2

93 lots

Total Area = $\frac{1350 \times 93}{43560}$ = 2.88 ac.

I = 4.3 in/hr

C = 0.22

Q = CIA = 2.72 cfs

West Mesa Manor No. 2

Area of Grass/Lot that will runoff = 1350 FT^2

32 lots

Total Area = $\frac{1350 \times 32}{43560}$ = .99 ac.

I = 4.3 in/hr

C = 0.22

Q = CIA = 0.94 cfs.

DEVELOPED RUNOFF WEST MESA #1 = 15.99 CFS
(MAIN REPORT)

RUNOFF from FRONT LAWNS = 2.72 CFS
Total Discharge = 18.71 CFS

Volumetric RUNOFF FOR A PERIOD OF TIME OF THE GREATEST CONCENTRATION of A 100 year, 6 hr. storm

22450 FT^3

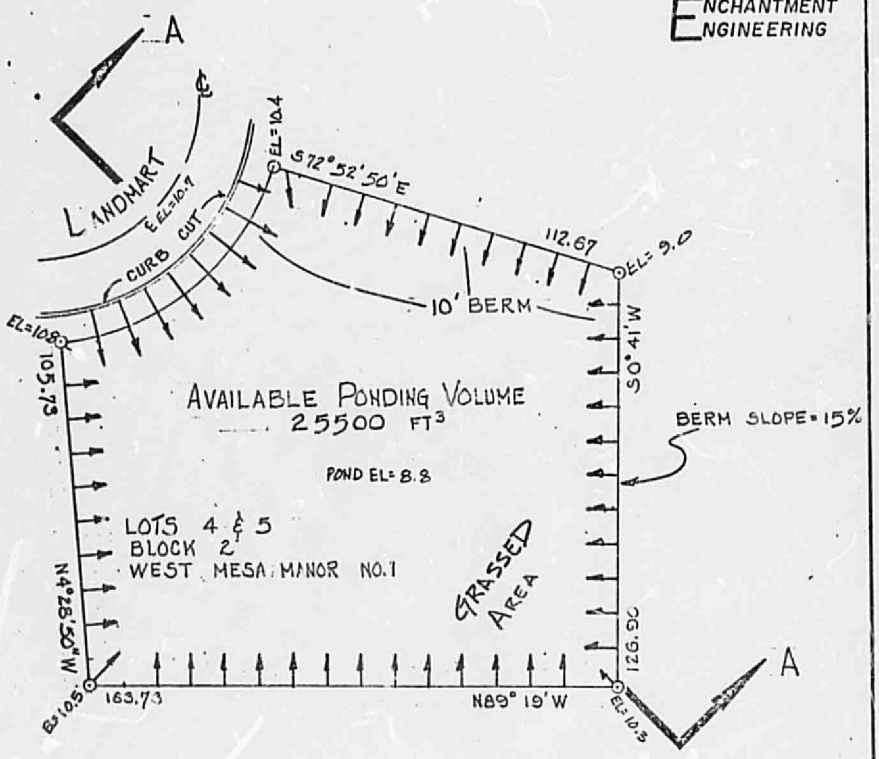
DEVELOPED RUNOFF WEST MESA #2 = 4.5 CFS
(MAIN REPORT)

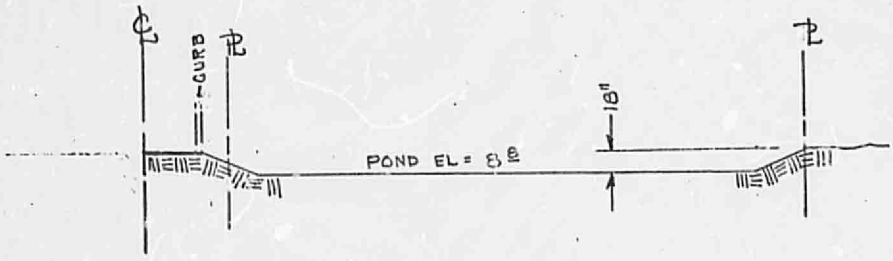
RUNOFF from FRONT LAWNS = 0.94 CFS
Total Discharge = 5.44 CFS

Volumetric RUNOFF = 6528 FT^3

IN ORDER to COMPENSATE FOR THE INCREASED RUNOFF THAT RESULTS FROM THE FRONT LAWNS IT WILL BE NECESSARY to USE LOTS 4 & 5, Block 2, of WEST MESA MANOR Nº 1 AND LOT 1, Block 1, of WEST MESA MANOR Nº 2 AS PONDS. THOSE lots ARE SHOWN ON the following PAGES.

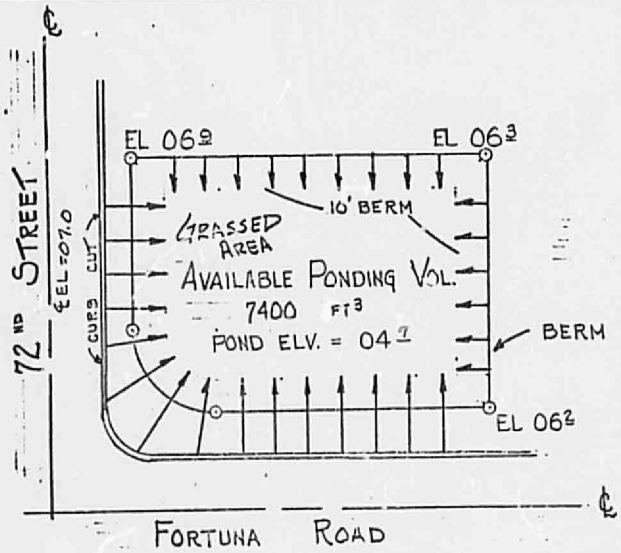
ENCHANTMENT ENGINEERING



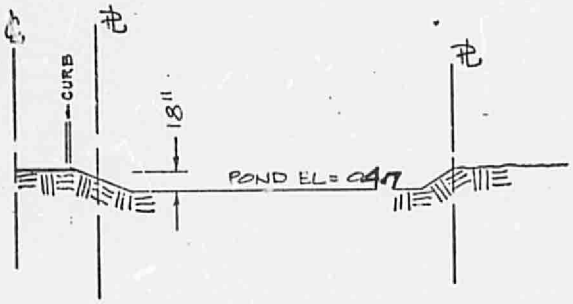


SECTION A-A
POND

ENCHANTMENT ENGINEERING



LOT 1
BLOCK 1
WEST MESA NO 2.



POND SECTION

Therefore it can be concluded that the ponds will be sufficient to contain the storm water runoff for a period of time of the greatest concentration of a 100 year 6 hour project storm.

The lots shown on the preceding pages will remain as permanent structures until such a time when a public drainage facility is constructed to carry the storm water runoff.