#3199

Pioneer East
C12/D1C

DRAINAGE COVENANT

This Drainage Covenant, between [state the name of the present real property owner exactly as shown on the real estate document conveying title to the present owner and state the legal status of the owner, for example, "single person," "husband and wife," "corporation of the State of X," "partnership":] Paseo del Norte Joint Venture, a New Mexico general partnership ("Owner"), whose address is 6121 Indian School N.E., Albuquerque, NM 87110, and the City of Albuquerque, a New Mexico municipal corporation ("City"), whose address is P. O. Box 1293, Albuquerque, New Mexico 87103, is made in Albuquerque, Bernalillo County, New Mexico and is entered into as of the date Owner signs this Easement.

1. Recital. Owner is the owner of certain real property located at [give general description, for instance, subdivision, lot and block or street address:] Riverview Parcel H-28 in Bernalillo County, New Mexico (the "Property").

Pursuant to City ordinances, regulations and other applicable laws, the Owner is required to construct and maintain certain drainage facilities on the Property, and the parties wish to enter into this agreement to establish the obligations and responsibilities of the parties.

2. Description and Construction of Drainage Facilities. Owner shall construct the following "Drainage Facility" within the Property at Owner's sole expense in accordance with the standards, plans and specifications approved by the City: an interim retention pond.

The Drainage Facility is more particularly described in the attached Exhibit A. The Owner will not permit the Drainage Facility to constitute a hazard to the health or safety of the general public.

3. Maintenance of Drainage Facility. The Owner will maintain the Drainage Facility at Owner's cost in accordance with the approved Drainage Report and plans.

4. City's Right of Entry. The City has the right to enter upon the Property at any time and perform whatever inspection of the Drainage Facility it deems appropriate, without liability to the Owner.

5. Demand for Construction or Repair. The City may send written notice ("Notice") to the Owner requiring the Owner to construct or repair the Drainage Facility within 30 days ("Deadline") of receipt of the Notice, as provided in Section 12, and the Owner will comply promptly with the requirements of

the Notice. The Owner will perform all required work by the Deadline, at Owner's sole expense.

6. Failure to Perform by Owner and Emergency Work by City. If the Owner fails to comply with the terms of the Notice by the Deadline, or if the City determines that an emergency condition exists, the City may perform the work itself. The City then may assess the Owner for the cost of the work and for any other expenses or damages which result from Owner's failure to perform. The Owner agrees promptly to pay the City the amount assessed. If the Owner fails to pay the City within thirty (30) days after the City gives the Owner written notice of the amount due, the City may impose a lien against Owner's Property for the total resulting amount.

7. Liability of City for Repair after Notice or as a Result of Emergency. The City shall not liable to the Owner for any damages resulting from the City's repair or maintenance following notice to the Owner as required in this agreement or in an emergency unless the damages are the result of the reckless conduct or gross negligence of the City.

8. Indemnification. As a part of the consideration for this grant, subject to the provisions of the New Mexico Tort Claims Act and all other applicable New Mexico laws, the City agrees to save Owner harmless from any and all liability arising from the City's negligent use of the Drainage Facility. The City does not agree to save Owner harmless from any liability which may arise from Owner's use of the Drainage Facility and the Property.

9. Cancellation of Agreement and Release of Covenant. This agreement may be cancelled and Owner's covenants released by the City following by the City's mailing to the Owner notice of the City's intention to record a Cancellation and Release with the Bernalillo County Clerk. The Cancellation and Release will be effective thirty (30) days after the date of mailing the notice to the User unless a later date is stated in the notice or in the Cancellation and Release. After the effective date, the City will record the Cancellation and Release with the Bernalillo County Clerk.

10. Assessment. Nothing in this agreement shall be construed to relieve the Owner, his heirs, assigns and successors from an assessment against Owner's Property for improvements to the Property under a duly authorized and approved Special Assessment District. The parties specifically agree that the value of the (Drainage Facility) will not reduce the amount assessed by the City.

(Approved by Legal Dept.
as to form only-5/28/86)

11. Notice. For purposes of giving formal written notice to the Owner, Owner's address is:

Paseo del Norte Joint Venture %
Bellamah Community Development
6121 Indian School N.E.
Albuquerque, New Mexico 87110

Notice may be given to the Owner either in person or by mailing the notice by regular U.S. mail, postage paid. Notice will be considered to have been received by the Owner within 6 days after the notice is mailed if there is no actual evidence of receipt. The Owner may change Owner's address by giving written notice of the change by certified mail, return receipt requested, to the City Public Works Department, P.O. Box 1293, Albuquerque, New Mexico 87103.

12. Term. This agreement shall continue until terminated by the City pursuant to Section 7 above.

13. Binding on Owner's Property. The covenants and obligations of the Owner set forth herein shall be binding on Owner, his heirs, assigns and successors and on Owner's Property and constitute covenants running the Owner's Property until released by the City.

14. Entire Agreement. This agreement contains the entire agreement of the parties and supersedes any and all other agreements or understandings, oral or written, whether previous to the execution hereof or contemporaneous herewith.

15. Changes to Agreement. Changes to this agreement are not binding unless made in writing, signed by both parties.

16. Construction and Severability. If any part of this agreement is held to be invalid or unenforceable, the remainder of the agreement will remain valid and enforceable if the remainder is reasonably capable of completion.

17. Captions. The captions to the sections or paragraphs of this agreement are not part of this agreement and will not affect the meaning or construction of any of its provisions.

18. Form Not Changed. Owner agrees that changes to the wording of this form are not binding upon the City unless initialed by the Owner and approved and signed by the City Legal Department in writing on this form.

OWNER:

By: _____
Its: Sr. VP/Regional Manager
Dated: 6/10/87

(Approved by Legal Dept.
as to form only-5/28/86)

STATE OF New Mexico)
) ss
COUNTY OF Bernalillo)

The foregoing instrument was acknowledged before me this _____ day of _____, 198___, by [name of person signing:] D.T. Robertson, [title or capacity, for instance, "President" or "Owner":] Sr. VP/Regional Manager of [name of the entity which owns the Property if other than the individual signing, for instance, the name of the corporation, partnership, or joint venture:] Paseo del Norte Joint Venture.

Mary L. Snyder
Notary Public

My Commission Expires:
4-12-88

CITY OF ALBUQUERQUE:

Approved:

CAM By: _____
Title: _____
Dated: _____

(EXHIBIT A ATTACHED)

(Approved by Legal Dept.
as to form only-5/28/86)

TEMPORARY EASEMENT

This grant of Temporary Easement, between [state the name of the present real property owner exactly as shown on the real estate document coveying title to the present owner and state the legal status of the owner, for example, "single person," "husband and wife," "corporation of the State of X," "partnership":] Paseo del Norte Joint Venture, a New Mexico general partnership ("Grantor"), whose address is 6121 Indian School N.E., Albuquerque, New Mexico 87110, and the City of Albuquerque, a New Mexico municipal corporation ("City"), whose address is P. O. Box 1293, Albuquerque, New Mexico 87103, is made in Albuquerque, Bernalillo County, New Mexico and is entered into as of the date Grantor signs this Temporary Easement.

1. Recital. Grantor is the owner of certain real property located at [give general description, for instance, subdivision, lot and block or street address:] Riverview Parcel H-28 in Bernalillo County, New Mexico (the "Property").

2. Grant of Easement. The Grantor grants to the City a temporary easement ("Temporary Easement") in, over, upon and across the Property for [state the kind of easement, for example, "public street and highway purposes (including all utilities)," "water line," "sewer line," etc.:] the purpose of providing a blanket drainage easement across the property and an interim retention pond. The Temporary Easement is more particularly described in the attached Exhibit A. [State on the exhibit either the metes and bounds description of the Temporary Easement or state the exact dimensions and location in a manner which would enable a surveyor to locate the Temporary Easement on the ground.]

The grant of the Temporary Easement includes the right of the City to enter upon the Temporary Easement at any time for inspection, installation, maintenance, repair or modification and the right to remove trees, bushes, undergrowth and any other obstacles if the City determines they interfere with the appropriate use of the Temporary Easement. This grant includes the right of access to the easement across the Grantor's adjoining property.

Grantor agrees for itself and its successors in interest that it has been paid in valuable consideration and that the grant of this Temporary Easement is not a gift or donation.

This Temporary Easement is worded pursuant to the provisions of §§47-1-27 to 47-1-44, NMSA 1978 or successor statutes.

3. Ownership Offer. Grantor states that it is the owner in fee simple of the Property and that it has a good lawful right to convey the Property or any part thereof.

(Approved by Legal Dept.
as to form only-6/15/86)

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

5. Termination of Temporary Easement. This Temporary Eastment shall remain in effect until [state date of termination or event which will cause Temporary Easement to end:] the permanent drainage improvements are in place ("Termination"). Upon Termination and demand by the Grantor the City will execute and deliver to Grantor a release of this Temporary Easement.

6. Indemnification. As a part of the consideration for this grant, subject to the provisions of the New Mexico Tort Claims Act and all other applicable New Mexico laws, the City agrees to save Grantor harmless from any and all liability arising from the City's negligent use of the Temporary Easement for the purposes set forth herein. The City does not agree to save Grantor harmless from any liability which may arise from Grantor's use of the Temporary Easement and the Property.

7. Form Not Changed. Grantor agrees that changes to this form are not binding upon the City unless initialed by the Grantor and approved and signed by the City Legal Deparment in writing on this form.

CITY OF ALBUQUERQUE

Approved:

CAM By: _____
Title: CITY ENGINEER
Dated: 6-19-87

GRANTOR:

By: _____
Its: Sr. VP and Regional Manager
Dated: 6/10/87

STATE OF New Mexico)
) ss
COUNTY OF Bernalillo)

The foregoing instrument was acknowledged before me this _____ day of _____, 198___, by [name of person signing:] D.T. Robertson, [title or capacity, for instance, "President" or "Owner":] Senior Vice President /Reg. Mgr. of [name of the entity which owns the Property if other than the individual signing, for instance, the name of the corporation, partnership, or joint venture:] Paseo del Norte Joint Venture.

_____
Notary Public

My Commission Expires:
4-15-88

(Approved by Legal Dept.
as to form only-6/15/86)

FILE CC

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

Ken Schultz
Mayor

UTILITY DEVELOPMENT DIVISION
HYDROLOGY SECTION
(505) 768-2650

April 10, 1987

Dorothy Chavez-Dolan
Tierra Engineering
105 Sixth Street, SW Suite 202
Albuquerque, New Mexico 87102

RE: DRAINAGE REPORT FOR PIONEER EAST
(C-12/D1C) RECEIVED APRIL 2, 1987

Dear Ms. Dolan:

The above referenced plan dated March 31, 1987, is approved.

Prior to final plat approval, we will require easements and covenants for the retention pond.

If you should have any questions, please call me at 768-2650.

Cordially,

Carlos A. Montoya, P.E.
City/County Floodplain Administrator

CAM/bsj

DRAINAGE INFORMATION SHEET

C2/016

PROJECT TITLE: Pioneer East ZONE ATLAS/DRNG. FILE #: D-11-Z

LEGAL DESCRIPTION: Parcel H-27 Riverview

CITY ADDRESS: n/a

ENGINEERING FIRM: Tierra Engineering CONTACT: Dorothy Chavez-Dolan

ADDRESS: 105 6th St. SW Suite 202 PHONE: 242-2280

OWNER: Bellamah Community Development CONTACT: BobRyals

ADDRESS: Box 3300, Alb. NM PHONE: 884-6608

ARCHITECT: n/a CONTACT:

ADDRESS: PHONE:

SURVEYOR: n/a CONTACT:

ADDRESS: PHONE:

CONTRACTOR: n/a CONTACT:

ADDRESS: PHONE:

RECEIVED
APR 02 1987
HYDROLOGY SECTION

PRE-DESIGN MEETING:

X YES

____ NO

____ COPY OF CONFERENCE RECAP SHEET PROVIDED

DRB NO. 86-802

EPC NO.

PROJ. NO. 3199

TYPE OF SUBMITTAL:

X DRAINAGE REPORT (revisions)

____ DRAINAGE PLAN

____ CONCEPTUAL GRADING & DRAINAGE PLAN

X GRADING PLAN

____ EROSION CONTROL PLAN

____ ENGINEER'S CERTIFICATION

CHECK TYPE OF APPROVAL SOUGHT:

____ SKETCH PLAT APPROVAL

____ PRELIMINARY PLAT APPROVAL

____ SITE DEVELOPMENT PLAN APPROVAL

X FINAL PLAT APPROVAL

____ BUILDING PERMIT APPROVAL

____ FOUNDATION PERMIT APPROVAL

____ CERTIFICATE OF OCCUPANCY APPROVAL

X ROUGH GRADING PERMIT APPROVAL

____ GRADING/PAVING PERMIT APPROVAL

____ OTHER _____ (SPECIFY)

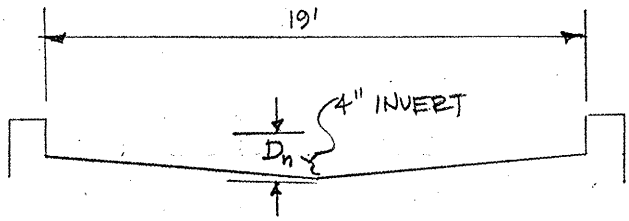
DATE SUBMITTED: April 2, 1987

BY: Dorothy Chavez-Dolan

APRIL 2, 1987
REVISIONS TO
PIONEER EAST
DRAINAGE
REPORT

DRAINAGE CHANNEL BETWEEN LOTS 59, 60 & HOMESTEAD HILLS SUBDIVISION

Q_{100} = 39.3 CFS

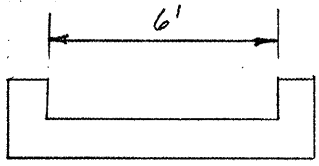


CONC. CHANNEL

℄STA	Dn	V	A
0+00	0.95'	2.63 fps	14.92 SF
0+25	0.45'	7.25 fps	5.42 SF
0+76.23	0.60'	4.75 fps	8.27 SF

FOR FURTHER INFORMATION CONCERNING THIS CHANNEL REFERENCE DRAINAGE REPORT FOR PRAIRIE RIDGE UNIT THREE

DRAINAGE CHANNEL BETWEEN LOTS 43 & 44



Q_{100} = 9.1 CFS S = 0.5%

$$Q = \frac{1.486\ R^{2/3} S^{1/2}}{0.013} A$$

$$R = \frac{bd}{b+2d} = \frac{6d}{6+2d} \qquad A = 6d$$

$$1.1259 = \left[\frac{6d}{6+2d}\right]^{2/3} 6d$$

	Trial	d	1.1259
	1	6"	1.7059
	2	5"	1.2788
	3	4"	0.8963
*	4	4½"	1.0817

CHECK $$Q = \frac{1.486}{0.013}\left[\frac{6 \times .38}{6+(2 \times .38)}\right]^{2/3} (0.005)^{1/2} 6(38) = 8.93 \text{ CFS}$$

d = 4.8 Q = 9.69 cfs

APRIL 2, 1987
REV. TO
PIONEER EAST
DRAINAGE
REPORT

DRAINAGE CHANNEL BETWEEN LOTS 43 & 44
CON'T

@ d_n = 0.38' V = 3.57 FPS

INTERIM DRAINAGE SOLUTION UNTIL DEVELOPMENT OF PARCEL H-28.

SEE HYDROGRAPH IN APPENDIX B

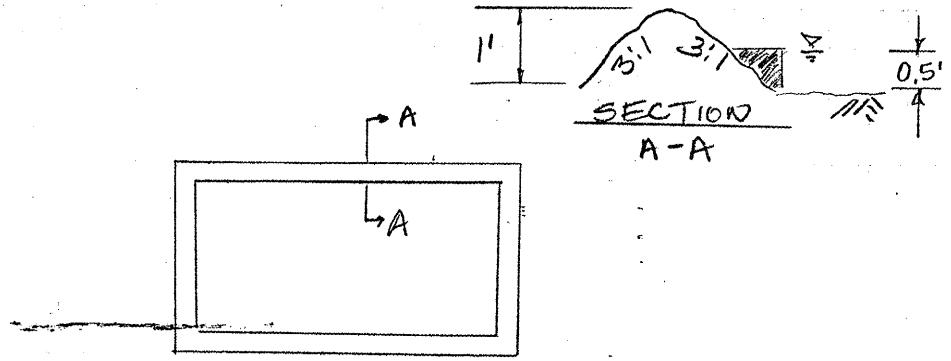
$VOLUME_{100}$ = 26,310 CF

RETENTION POND MUST CONTAIN THIS VOLUME.

FOR A DEPTH OF 0.5', A POND SURFACE AREA OF 52,620 SF NECESSARY

A 1 FT HIGH BERM WITH 3:1 SIDESLOPES WILL SURROUND RETENTION POND

THE FOLLOWING CALCULATIONS FOR SIZE OF POND INCORPORATE VOLUME OF WATER WHICH WOULD BE AGAINST THE BERM.



DIMENSIONS	AREA	VOLUME ALONG BERM	TOTAL VOLUME
230 x 225	51,750 SF	339 CF	26,214 CF
* 300 x 175	52 500 SF	354 CF	26,604 CF
300 x 170	51000 SF	350 CF	25,850 CF

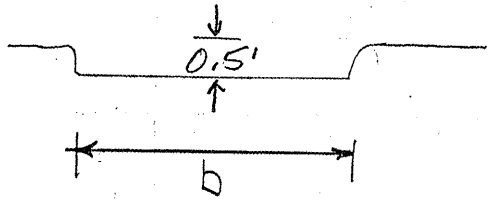
* DIMENSION SELECTED

APRIL 2, 1987
Rev to
PIONEER EAST
DRAINAGE
REPORT

ASPHALT CURB CUT

Q_{100} = 28.4 CFS d = 0.5' = Ht of asph. cb.

n = 0.016



$Q = VA = \frac{1.486}{0.016} R^{2/3} S^{1/2} A$

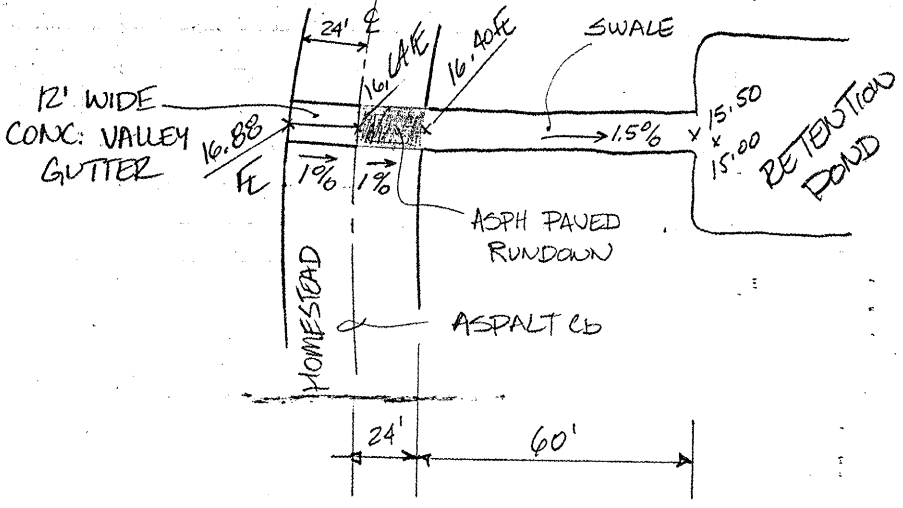
Solve for b

P = 2d + b
A = bd
R = A/P

b	d	Q
10'	0.5	27.4 CFS
* 12'	0.5	33.28

* depth of flow using this width is actually less than 6"

SWALE TO RETENTION POND



ASPHALT PAVED RUNDOWN (FIRST PORTION OF SWALE)

Q_{100} = 28.4 CFS n = 0.016 (asph) S = 1%

With b = 12', Find depth of FLOW

APRIL 2, 1987
REV. TO
PIONEER EAST
DRAINAGE
REPORT

ASPH. PAVED RONDN CON'T

$$Q = \frac{1.486\ R^{2/3}(.01)^{1/2}}{.016}\ A$$

assuming trapezoidal section

d(trial)	Q
4"	18.32 CFS
6"	36.55
5½"	31.50
✱ 5 ¼"	29.09 CFS

AT $d = 5\frac{1}{4}" = 0.44'$, $V = 4.88$ FPS

CHECK FOR HYDRAULIC JUMP

$$F = \frac{V}{\sqrt{gD}} = \frac{4.88}{\sqrt{32.2 \times 5\frac{1}{4}/12}} = 1.30 > 1$$

SUPERCRITICAL FLOW

LENGTH OF JUMP (PLATE 22.3E-2 DPM)
$= 3.75'$

DEPTH $\frac{D_2}{D_1} \quad \frac{1}{2}\sqrt{1+8F^2}-1$

$$D_2 = (0.44')\ \tfrac{1}{2}\sqrt{1+8(1.30)^2}-1$$

$$= 0.90'$$

- note height of berm provides sufficient free board!

APRIL 2, 1987
REV TO
PIONEER EAST
DRAINAGE
REPORT

SWALE - NOT PAVED

Q_{100} = 28.4 cfs b = 12 z = 3

n = 0.03 s = 1.5%

d (trial)	Q (CFS)	V
8"	31.99	
6"		
7½"	28.61	3.30 FPS

note 4½" of freeboard provided by berm

TIERRA
ENGINEERING
CONSULTANTS,
INC.

CIVIL AND SOILS
ENGINEERING
LAND SURVEYS AND
DEVELOPMENTS

DRAINAGE REPORT

for

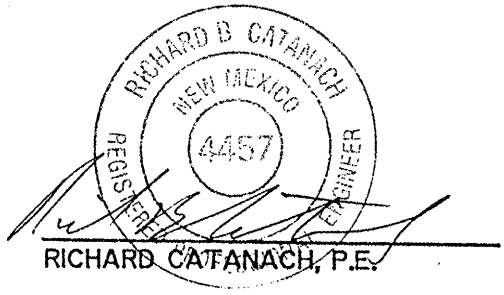
PIONEER EAST SUBDIVISION

prepared for:

BELLAMAH COMMUNITY DEVELOPMENT

prepared by:

TIERRA ENGINEERING CONSULTANTS, INC.



RICHARD CATANACH, P.E.

632 PASEO DE PERALTA SANTA FE, NEW MEXICO 87501 505/982-2845

105 6TH STREET SW ALBUQUERQUE, NEW MEXICO 87102 505/242-2270

FILE COPY

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

Ken Schultz
Mayor

UTILITY DEVELOPMENT DIVISION
HYDROLOGY SECTION
(505) 768-2650

February 23, 1987

Dorothy Chavez-Dolan
Tierra Engineering
105 Sixth Street, SW Suite 202
Albuquerque, New Mexico 87102

RE: DRAINAGE REPORT FOR PIONEER EAST
(C-12/D1C) RECEIVED FEBRUARY 17, 1987

Dear Ms. Dolan:

The above referenced plan dated February 13, 1987, is approved for Preliminary Plat.

Prior to Final Plat approval, the interim retention pond will need a public easement and drainage covenant. The northeast concrete rundown should be financially guaranteed with this development. The 20 foot easement should be changed to the necessary right-of-way width.

Please submit the final grading plan to Hydrology prior to our sign-off at DRC.

If you have any questions, please call me at 768-2650.

Cordially,

Carlos A. Montoya, P.E.
City/County Floodplain Administrator

CAM/bsj

DRAINAGE INFORMATION SHEET

C12/D1C

PROJECT TITLE: Pioneer East ZONE ATLAS/DRNG. FILE #: ~~D-11-Z~~ D1

LEGAL DESCRIPTION: Parcel H-27 Riverview

CITY ADDRESS: N/A

ENGINEERING FIRM: Tierra Engineering CONTACT: Dorothy Chavez-Dolan

ADDRESS: 105 6th Street S.W. Suite 202 PHONE: 242-2270

OWNER: Bellamah Community Development CONTACT: Bob Ryals

ADDRESS: Box 3300, Albuquerque, New Mexico PHONE: 884-6608

ARCHITECT: N/A CONTACT: N/A

ADDRESS: PHONE:

SURVEYOR: N/A CONTACT: N/A

ADDRESS: PHONE:

CONTRACTOR: N/A CONTACT: N/A

ADDRESS: PHONE:

RECEIVED
FEB 17 1987
HYDROLOGY SECTION

PRE-DESIGN MEETING:

X YES

___ NO

X COPY OF CONFERENCE RECAP SHEET PROVIDED

DRB NO.: 86-802

EPC NO. ___

PROJ. NO. ___

TYPE OF SUBMITTAL:

X DRAINAGE REPORT

___ DRAINAGE PLAN

___ CONCEPTUAL GRADING & DRAINAGE PLAN

___ GRADING PLAN

___ EROSION CONTROL PLAN

___ ENGINEER'S CERTIFICATION

CHECK TYPE OF APPROVAL SOUGHT:

___ SKETCH PLAT APPROVAL

X PRELIMINARY PLAT APPROVAL

___ SITE DEVELOPMENT PLAN APPROVAL

___ FINAL PLAT APPROVAL

___ BUILDING PERMIT APPROVAL

___ FOUNDATION PERMIT APPROVAL

___ CERTIFICATE OF OCCUPANCY APPROVAL

___ ROUGH GRADING PERMIT APPROVAL

___ GRADING/PAVING PERMIT APPROVAL

___ OTHER ___ (SPECIFY)

DATE SUBMITTED: February 13, 1987

BY: Dorothy Chavez-Dolan

TABLE OF CONTENTS

PIONEER EAST DRAINAGE REPORT

A) INTRODUCTION

Bellamah Community Development is currently planning development of Riverview Parcel H-27, consisting of 9.38 acres. The development will be known as Pioneer East and will have approximately 64 lots intended for single family housing. The purpose of this report is to present a drainage plan for the proposed development which is acceptable to both the City of Albuquerque and the Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA).

B) SITE DESCRIPTION

Pioneer East is located northwest of Golf Course Road. It is bordered on the north by the Homestead Hills East Subdivision; on the west by Taylor Ranch Drive; on the south by the undeveloped Parcel H-28, and on the east by the undeveloped Parcel H-26 (See Plate 1).

The parcel slopes from the north to the south ranging in slope from 0.4% to 4.0%. Soils consist of gravel and silty sand which fall into hydrologic soils group B.

Zoning for Pioneer East is R-T and requirements for development specify 35' building setback (See Plate 3). As per the Riverview Sector Plan, the north half of Homestead Circle (a major local street) will be extended to the northeast corner of the subject property.

C) ENGINEERING PARAMETERS

In accordance with the City of Albuquerque and AMAFCA design criteria, all hydrological analysis is based on the 100 year-6 hour duration storm as shown on Plate 22.2 D-1 of the Development Process Manual (DPM). The applicable rainfall for this Parcel is 2.2 inches.

A weighted runoff coefficient value of 0.70 was calculated for the onsite lots (See Appendix A).

D) COMPUTATIONAL PROCEDURES

The rational method was used to determine the peak flow for onsite drainage basins. Onsite sub-drainage basins were added together to derive a commulative peak flow (See Basin D of Table 1).

E) OFFSITE DRAINAGE

Offsite flow entering the parcel is shown on Plate 2. A 10' drainage easement in the southeast corner of Homestead Hills East Subdivision diverts offsite flow into the Parcel. This offsite flow was addressed in the Drainage Report of Prairie Ridge Unit 3, the proposed development of Parcel H-26. Table 1 of this referenced report presents a calculated flow of Q_{100}= 39.3 cfs. A concrete lined R.O.W. channel was proposed to convey the flow through the 20' drainage easement, into Parcel H-26 Prairie Ridge Unit 3, into the street network, then diverted with storm sewer into the proposed pond at the southeast corner of Prairie Ridge, Unit 3.

Should construction of this drainage structure not preceed or coincide with construction of Parcel H-27/Pioneer East, an interim measure will be built. The interim measure will consist of the same concrete channel in the portion of the 20' drainage easement which lies within Parcel H-27. At the outfall of the channel, riprap will be provided as an erosion protection measure.

F) ONSITE DRAINAGE

The onsite drainage management plan and conceptual grading plan is shown on Plate 2.

Basins A and B will drain to Homestead Circle via Wagon Trail Court and Rough Rock Court. A waterblock at Homestead Circle and Golden Point Court prevent Basin C flows from entering Homestead Circle and traveling east. Consequenty Basin C will drain west through Golden Point Court and is proposed to be conveyed through a concrete lined R.O.W. rundown, into Homestead Circle. The rundown is located between lots 45 and 46.

Once in Homestead Circle, the flows from Basins A, B & C will be carried by the north half of Homestead Circle to a low point between Rough Rock Court and the rundown.

This portion of Homestead Circle will be superelevated to convey the flow into the 25' temporary drainage easement traversing Parcel H-28. The flow will then be released into a riprap section as an erosion control measure, then drain into the proposed retention pond located at the north half of Parcel H-28. Plate 3 illustrates this proposed interim solution.

It is not in the scope of this Drainage Report to develop Parcel H-28. Therefore, the proposed retention pond is an interim measure to be replaced by a permanent plan with the development of Parcel H-28. Development of Parcel H-28 will need to comply with the Riverview Bulkland Plat Drainage Report.

Refer to Appendix B for the Retention Pond sizing calculations and to Plate 2 for the proposed design.

G. EROSION CONTROL

Temporary water-trap berms at lot lines will be provided to control excessive soil erosion into City Streets. The berms will be placed following mass grading and remain until each home is constructed and sold. Plate 4 illustrate the dimensions of the berms which will be located along the boundary of each lot common to City of Albuquerque rights of way or public easement.

REFERRENCES

Community Sciences Corporation, Update of Drainage Management Plan for Bulk Land Parcelization of Portions of Taylor Ranch, August 1986.

Community Sciences Corporation, Riverview Sector Development Plan, January 29, 1986.

TABLE 1

ONSITE PEAK FLOW PARAMETERS

BASIN	A	B	C	D
AREA	3.36	2.44	2.81	9.38
TRAVEL LENGTH	600'	415'	760	885
HIGH ELEV	21.71'	19.57'	21.50	21.50
LOW ELEV	18.97'	17.71'	18.15	18.00
SLOPE (%)	0.46	0.45	0.44	0.40
Tc (minutes)	8.56	6.49	10.41	12.20
C runoff	0.70	0.70	0.70	0.72
I_{100} (IN/HR)	4.65	4.65	4.65	4.20
Q_{100} (CFS)	7.94	10.94	9.15	28.38
Q_{10}	5.22	7.19	6.00	18.64

APPENDIX A

LOT PONDING CALCULATIONS

AREA OF LOT DRAINING TO POND

$(1600 \div 2) + (35 \times 33) =$ 1955 SF

% IMPERVIOUSNESS

$\frac{1200 + 1825}{4653} = 0.65$ 65%

% PERVIOUSNESS CN = 61 (PLATE 22.2 C-2)

COMPOSITE RUNOFF CURVE = 82 (PLATE 22.2 C-3)

DIRECT RUNOFF (Q) :

P = 2.2"

$S = \frac{1000}{CN} - 10 = 2.20$

$Q = \frac{(P - 0.2S)^2}{P + 0.8S} = \frac{[2.2 - 0.2(2.20)]^2}{2.2 + 0.8(2.2)} = 0.78$ INCHES

VOLUME OF RUNOFF = QA

$\frac{0.78}{12} \times 1955$ SF = 127.70 CF

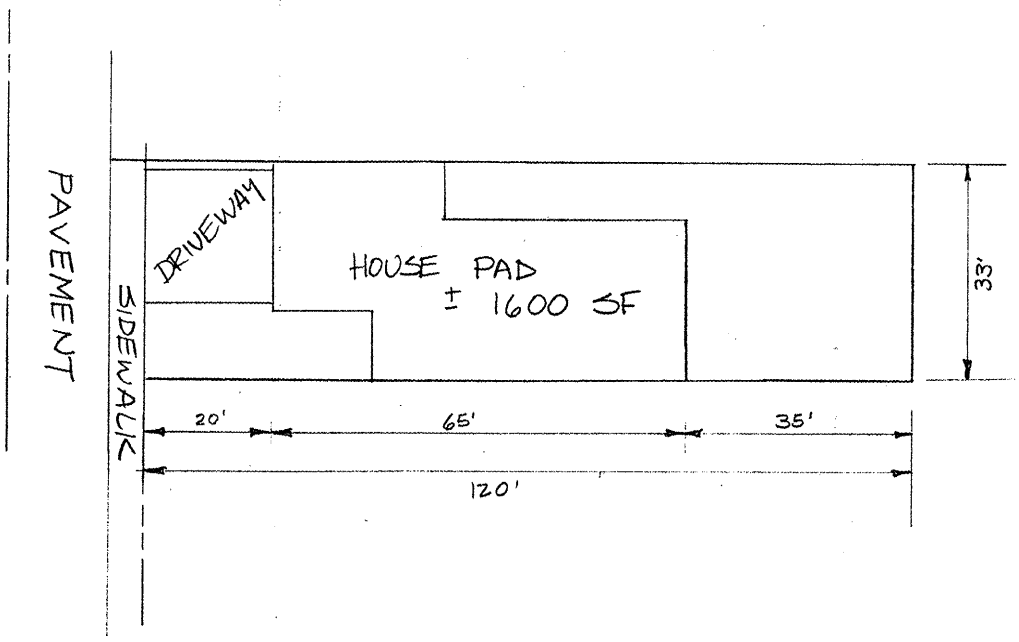
@ 0.5' MAX DEPTH (FHA STDS.)

255.41 SF SURFACE AREA

* 23' x 11'

20' x 13'

COMPUTATION OF WEIGHTED C FACTOR



TOTAL AREA = 33' x 141' = 4653 SF

C FACTOR	DESCRIPTION	AREA
0.95	STREETS/DRIVES/WALKS	1200 SF
0.90	ROOFS/PATIO	1825 SF
0.25	LAWNS/LANDSCAPING	1116 SF
0.40	UNDEVELOPED	512 SF

$$C_{WEIGHTED} = \frac{1200}{4653}(0.95) + \frac{1825}{4653}(0.90) + \frac{1116}{4653}(0.25) + \frac{512}{4653}(0.40)$$

$$C_W = 0.7020$$

**** RATIONAL METHOD *****

Basin A

AREA IN ACRES	=	3.36
6-HR RAINFALL IN INCHES	=	2.2
TIME TO CONCENTRATION IN MINUTES	=	10
INTENSITY IN INCHES/HOUR	=	4.650277

***** USING WEIGHTED C METHOD *****

TOTAL BASIN AREA IN ACRES	=	3.36
AREA IN ACRES FOR SURACE TYPE	=	3.36
CORRESPONDING SURFACE TYPE C FACTOR	=	.7
SUM TOTAL OF AREAS TO THIS POINT	=	3.36
THE WEIGHTED C VALUE	=	.7
THE PEAK DISCHARGE IN CFS	=	10.93745

**** RATIONAL METHOD *****

Basin B

AREA IN ACRES	=	2.44
6-HR RAINFALL IN INCHES	=	2.2
TIME TO CONCENTRATION IN MINUTES	=	10
INTENSITY IN INCHES/HOUR	=	4.650277

***** USING WEIGHTED C METHOD *****

TOTAL BASIN AREA IN ACRES	=	2.44
AREA IN ACRES FOR SURACE TYPE	=	2.44
CORRESPONDING SURFACE TYPE C FACTOR	=	.7
SUM TOTAL OF AREAS TO THIS POINT	=	2.44
THE WEIGHTED C VALUE	=	.7
THE PEAK DISCHARGE IN CFS	=	7.942673

**** RATIONAL METHOD *****

Basin C

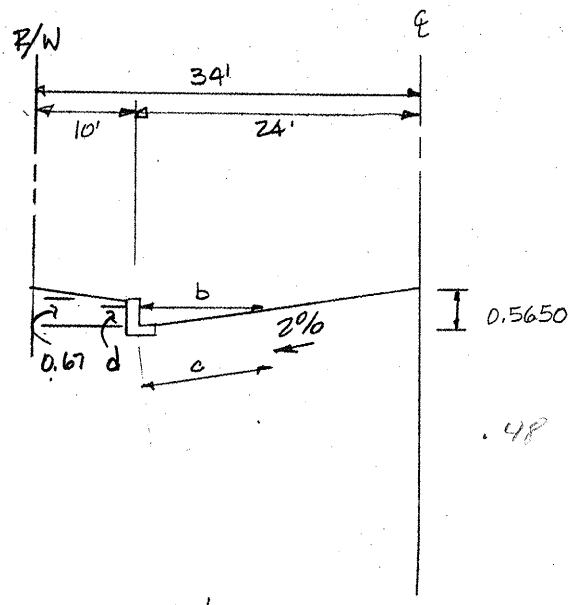
AREA IN ACRES	=	2.81
6-HR RAINFALL IN INCHES	=	2.2
TIME TO CONCENTRATION IN MINUTES	=	10
INTENSITY IN INCHES/HOUR	=	4.650277

***** USING WEIGHTED C METHOD *****

TOTAL BASIN AREA IN ACRES	=	2.81
AREA IN ACRES FOR SURACE TYPE	=	2.81
CORRESPONDING SURFACE TYPE C FACTOR	=	.7
SUM TOTAL OF AREAS TO THIS POINT	=	2.81
THE WEIGHTED C VALUE	=	.7
THE PEAK DISCHARGE IN CFS	=	9.147094

STREET HYDRAULICS

Homestead Circle
(Std. curb & gutter)



$b = \frac{24d}{0.5650} = 42.4779\,d$

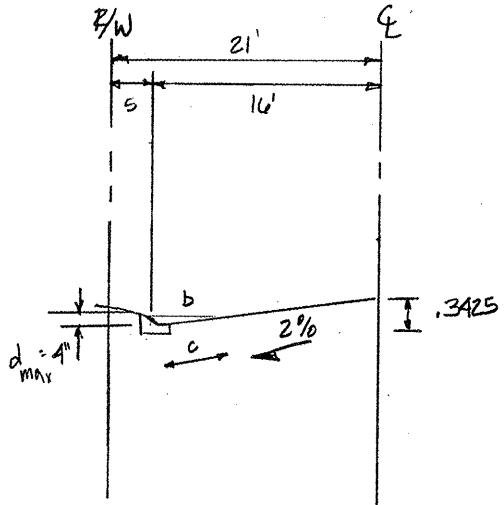
$c = \sqrt{b^2+d^2} = 42.4896\,d$

$P = d+c = 43.4896\,d$

$A = \frac{1}{2}db = \frac{1}{2}d(42.4779d) = 21.2389\,d^2$

$R = A/P = 21.2389\,d^2/43.4896 = 0.4884\,d = d/2.0476$

Interior Streets A, B & C
(mountable curb & gutter)



$b = \frac{16d}{.3425} = 46.7153\,d$

$c = \sqrt{b^2+d^2} = 46.7260\,d$

$P = d+c = 47.7260\,d$

$A = \frac{1}{2}db = \frac{1}{2}d(46.7153d) = 23.3577\,d^2$

$R = A/P = 23.3577\,d^2/47.7260d = 0.4894d = d/2.0433$

STREET	½ STREET FLOW, CFS	MAX. DEPTH (d) OF FLOW, FT	VELOCITY (V) FPS	d x V < 6.5
A	5.46	0.35 < 0.53	1.91	0.67
B	3.97	0.31 < 0.53	1.76	0.55
C	4.58	0.33 < 0.53	1.85	0.61
HOMESTEAD CIRCLE (bef. Sqwrelv)	10.91	0.47 < 0.87	2.32	1.09

NOTE: 0.53 & 0.87 are Top of curb plus .2 ft for 100 yr. storm

Street Intersection Analysis

Basin A & Homestead Circle Intersection

$Q_{HC} = CIA = 0.95 \times 4.64 \text{ in/hr} \times (65 \times 34 \div 43560) = 0.22 \text{ CFS}$

$Q_A = 10.91 \text{ CFS}$

Q_A	Q_{HC}
$n = .017$	
$S = .5\%$	
$d_A = 0.35 \text{ FT}$	$d_{HC} = 0.1$
$V_A = 1.91 \text{ FPS}$	$V_{HC} = .83 \text{ fps}$

Check Depth of Jump

$$D = -\frac{d_A}{2} + \sqrt{\frac{d_A}{2} + \frac{2V_A^2 d_A}{g}}$$

$$= -\frac{0.35}{2} + \sqrt{\frac{0.35}{2} + \frac{2(1.91)^2 .35}{32.2}} = 0.3293 \quad < 0.53 \text{ MOUNTABLE } +0.2'$$

$$< 0.87 \text{ STD } +0.2'$$

Check Pool Depth

Assume Q_{HC} loss of 50% Momentum

$$Q_A V_A + 0.5 Q_{HC} V_{HC} = Q_3 V_3$$

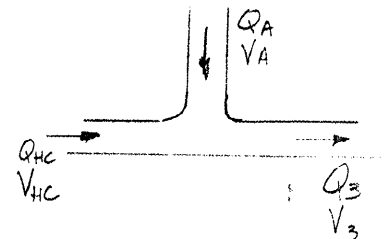
$$V_3 = \frac{Q_A V_A + 0.5 Q_{HC} V_{HC}}{Q_3} = \frac{10.91 \times 1.91 + [0.5(0.22)(0.83)]}{11.13} = 1.88 \text{ FPS}$$

By Mannings EQ $Q_3 = 11.13 \text{ CFS}$; $V = 2.35 \text{ FPS}$; $d = .48$

Pool Depth = $0.48 + \frac{1.25 \Delta V^2}{2g}$ $\quad \Delta V = 2.35 - 1.88 = 0.47$

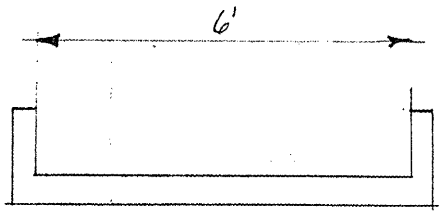
$0.48 + .0043 \quad < \quad 0.87$

0.48



1-2-87

SIZING OF RUNDOWN



$A = bd = 6d$

$R = \frac{bd}{b+2d} = \frac{6d}{6+2d}$

$Q = 8.97$ CFS

ASSUME $S = 0.5\%$

$$8.97 = \frac{1.486}{0.013}\left[\frac{6d}{6+2d}\right]^{2/3}[0.005]^{1/2}\,6d$$

$$0.1850 = \left[\frac{6d}{6+2d}\right]^{2/3} d$$

Trial		d	0.1850
1	6"	.5	0.2842
2	4"	.33	0.1470
3	5"	0.42	0.2158
*	4½"	0.38	0.1841

Check

$$Q = \frac{1.486}{0.013}\left[\frac{6 \times .38}{6+(2 \times .38)}\right]^{2/3}(.005)^{1/2}\,6(.38) = 8.93 \text{ CFS}$$

$V = 3.92$ fps

FREEBOARD = 8" − 4½" = 3½"

CONCRETE RUNDOWN INTERIOR: 6'-0" x 0'-8"
WITHIN A 8' DRAINAGE EASMT

APPENDIX B

**** RATIONAL METHOD *****

Basin D

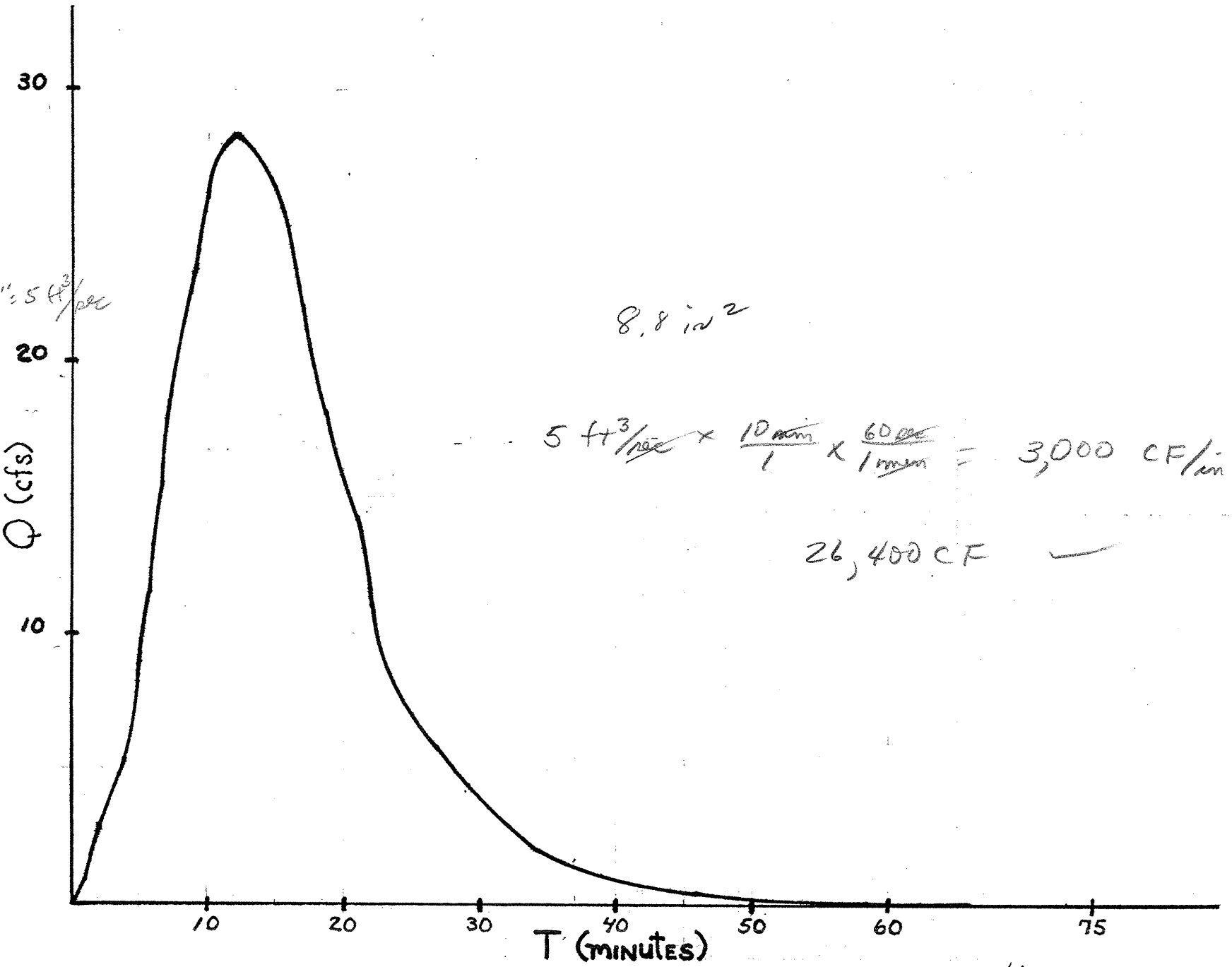
AREA IN ACRES	=	9.38
6-HR RAINFALL IN INCHES	=	2.2
TIME TO CONCENTRATION IN MINUTES	=	12.2
INTENSITY IN INCHES/HOUR	=	4.2018

***** USING WEIGHTED C METHOD *****

TOTAL BASIN AREA IN ACRES	=	9.38
AREA IN ACRES FOR SURACE TYPE	=	9.38
CORRESPONDING SURFACE TYPE C FACTOR	=	.72
SUM TOTAL OF AREAS TO THIS POINT	=	9.38
THE WEIGHTED C VALUE	=	.72
THE PEAK DISCHARGE IN CFS	=	28.37727

Basin D Rational Runoff Hydrograph

TIME	Q VALUES IN cfs
0	0.00
1	0.85
2	2.83
4	5.39
5	8.79
6	13.33
7	18.72
9	23.26
10	26.39
11	28.09
12	28.37
13	28.09
15	26.39
16	24.40
17	22.13
18	19.29
20	15.89
21	13.05
22	11.06
23	9.36
24	7.94
27	5.87
29	4.17
32	3.03
34	2.18
37	1.56
39	1.13
41	0.82
44	0.59
46	0.42
49	0.31
55	0.14
61	0.11
67	0.02
73	0.02



1" = 5 ft³/sec

8.8 in²

5 ft³/sec × 10 min / 1 × 60 sec / 1 min = 3,000 CF/in²

26,400 CF

1" = 10 min

Appendix B Hydrograph

ASPHALT CURB CUT

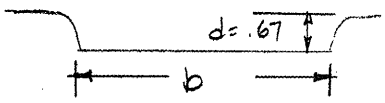
$Q_{100} = 28.4$ cfs

$n = 0.017$

$S = 0.02$ (SUPERELEV)

$d = 0.67' = 8''$ = ht. asph. cb.

$$Q = VA = \frac{1.486}{0.017} R^{2/3} S^{1/2} A$$



$A = bd$

$$R = \frac{bd}{b+2d}$$

SOLVE FOR b

b	d	Q
10'	0.67	57.9 cfs
5'	0.67	26.9 cfs
6'	0.67	33.0 cfs

* USE 6' WIDE CURB CUT

$V_1 = 6.7$ fps

SWALE TO RETENTION POND

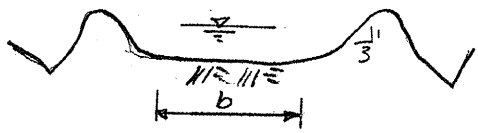
$Q_{100} = 28.4$ cfs

$n = 0.03$

$S = 1.18\%$

$A = bd + zd^2$

$$R = \frac{bd + zd^2}{b + 2\sqrt{z^2+1}}$$



$z = 3$

$b = 10'$

d	Q
8''	29.30 cfs

$V_2 = 3.6$ fps

CHECK FOR HYDRAULIC JUMP:

$$F = \frac{V_1}{\sqrt{g D_1}} = \frac{6.7}{\sqrt{32.2 \times 0.67}} = 1.44 > 1$$ SUPERCRITICAL FLOW

LENGTH OF JUMP PLATE 22.3 E-2 $L < 5'$, WILL USE 5' TO BE CONSERVATIVE

CHECK DEPTH $\frac{D_2}{D_1} = \frac{1}{2}\sqrt{1 + 8F^2} - 1$

$D_2 = 1.07'$

VOLUME OF RUNOFF

= AREA UNDER HYDROGRAPH

FROM HYDROGRAPH :

$$\text{VOLUME} = 5 \frac{FT^3}{SEC} \times 10\,MIN \times 60 \frac{SEC}{MIN} \times n$$

(VERTICAL SCALE) (HORIZONTAL SCALE)

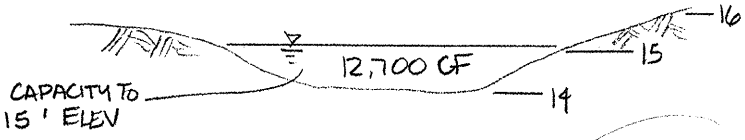
WHERE N = AREA IN INCHES^2

= 8.77 IN^2

VOLUME = 26,310 CF ✓

RETENTION POND

SIZING OF RETENTION POND WILL INCORPORATE THE EXISTING LOW SPOT (SEE PLATE 3)



BOTTOM OF POND : 230 x 140 = 32,200 SF

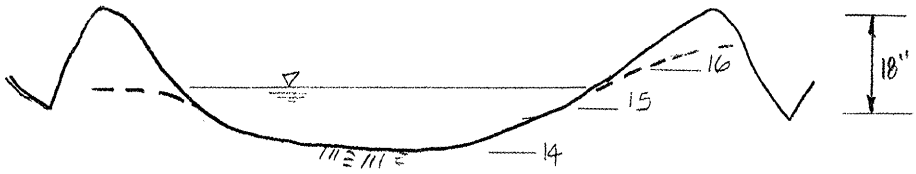
26,310
- 12,700
13,610 CF

DEPTH OF POND FROM 15' ELEV CONTOUR = $\frac{13\,610}{32200}$

= 0.42' FT

= 5 INCHES

MINIMUM DEPTH OF POND = 0'-5"
MAXIMUM DEPTH OF POND = 1'-5"



FREEBOARD = 18" - 5" = 1'-1"

PLATE 3

OFFSITE AND ONSITE DRAINAGE

MANAGEMENT PLANS

RECOMMENDED DRAINAGE IMPROVEMENTS

AND CONCEPTUAL GRADING PLAN

PIONEER EAST

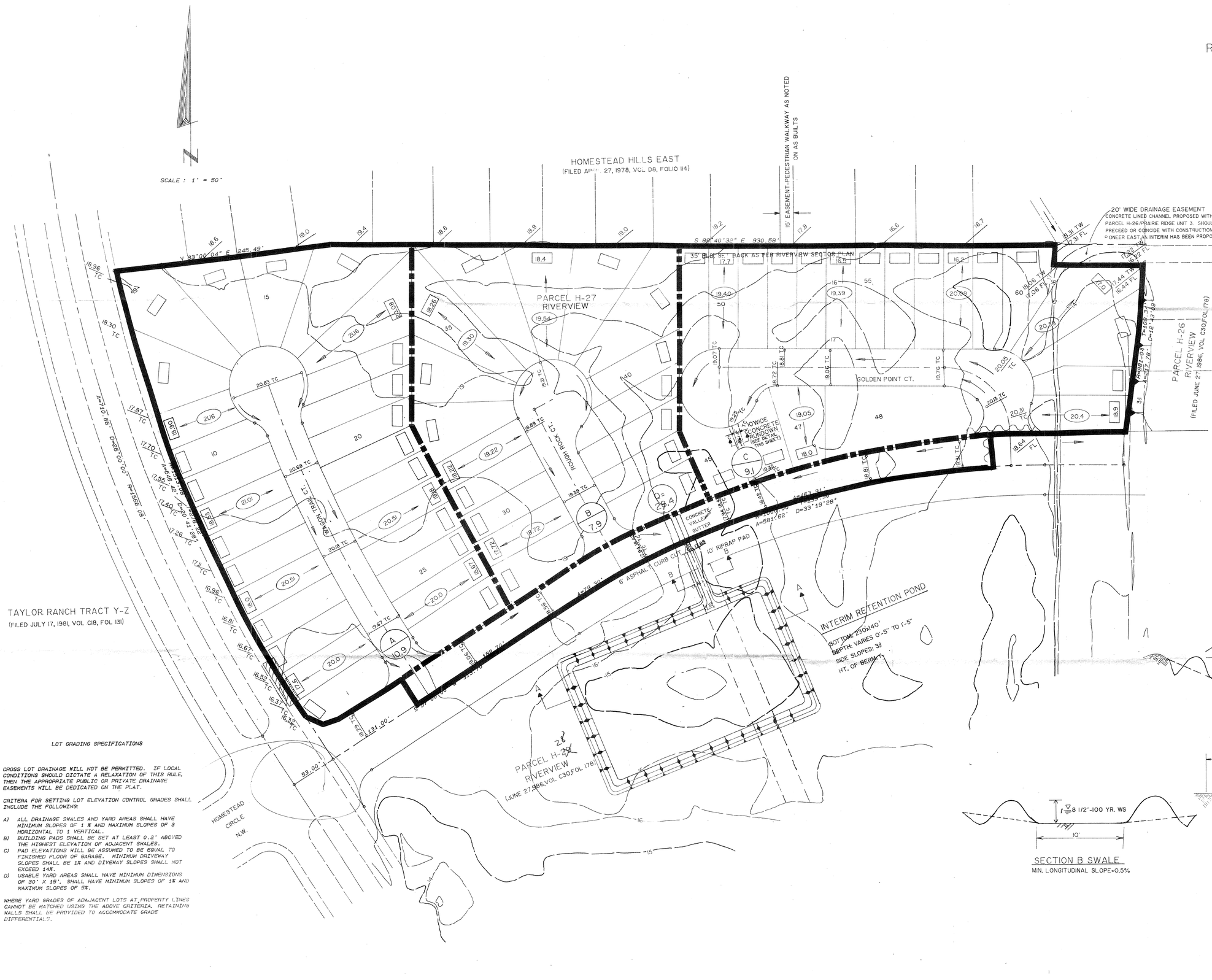
PARCEL H-27

RIVERVIEW

CITY OF ALBUQUERQUE

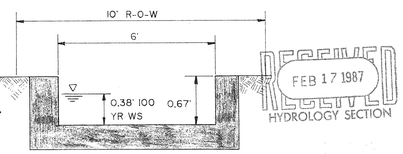
BERNALILLO COUNTY, NEW MEXICO

JANUARY, 1987



SECTION A-A
RETENTION POND
N.T.S.

SECTION B SWALE
MIN. LONGITUDINAL SLOPE=0.5%



SECTION C-C
CONCRETE RUNDOWN
PER DWG K-23
N.T.S.

RECEIVED
FEB 17 1987
HYDROLOGY SECTION

REV 2-12-87

FEB 13 1987

LOT GRADING SPECIFICATIONS

1) CROSS LOT DRAINAGE WILL NOT BE PERMITTED. IF LOCAL CONDITIONS SHOULD DICTATE A RELAXATION OF THIS RULE, THEN THE APPROPRIATE PUBLIC OR PRIVATE DRAINAGE EASEMENTS WILL BE DEDICATED ON THE PLAT.

2) CRITERA FOR SETTING LOT ELEVATION CONTROL GRADES SHALL INCLUDE THE FOLLOWING:

   A) ALL DRAINAGE SWALES AND YARD AREAS SHALL HAVE MINIMUM SLOPES OF 1 % AND MAXIMUM SLOPES OF 3 HORIZONTAL TO 1 VERTICAL.
   B) BUILDING PADS SHALL BE SET AT LEAST 0.2' ABOVED THE HIGHEST ELEVATION OF ADJACENT SWALES.
   C) PAD ELEVATIONS WILL BE ASSUMED TO BE EQUAL TO FINISHED FLOOR OF GARAGE. MINIMUM DRIVEWAY SLOPES SHALL BE 1% AND DIVEWAY SLOPES SHALL NOT EXCEED 14%.
   D) USABLE YARD AREAS SHALL HAVE MINIMUM DIMENSIONS OF 30' X 15'. SHALL HAVE MINIMUM SLOPES OF 1% AND MAXIMUM SLOPES OF 5%.

3) WHERE YARD GRADES OF ADAJACENT LOTS AT PROPERTY LINES CANNOT BE MATCHED USING THE ABOVE CRITERIA, RETAINING WALLS SHALL BE PROVIDED TO ACCOMMODATE GRADE DIFFERENTIALS.

SHEET 5 OF 5

DATE:	16 JAN. 1986
SCALE:	1" = 50'
DESIGNED BY:	D.C.D.
DRAWN BY:	A.M.
PROJECT #:	

TIERRA ENGINEERING CONSULTANTS INC.

632 Paseo De Peralta
Santa Fe, New Mexico 87501
505/982-2845

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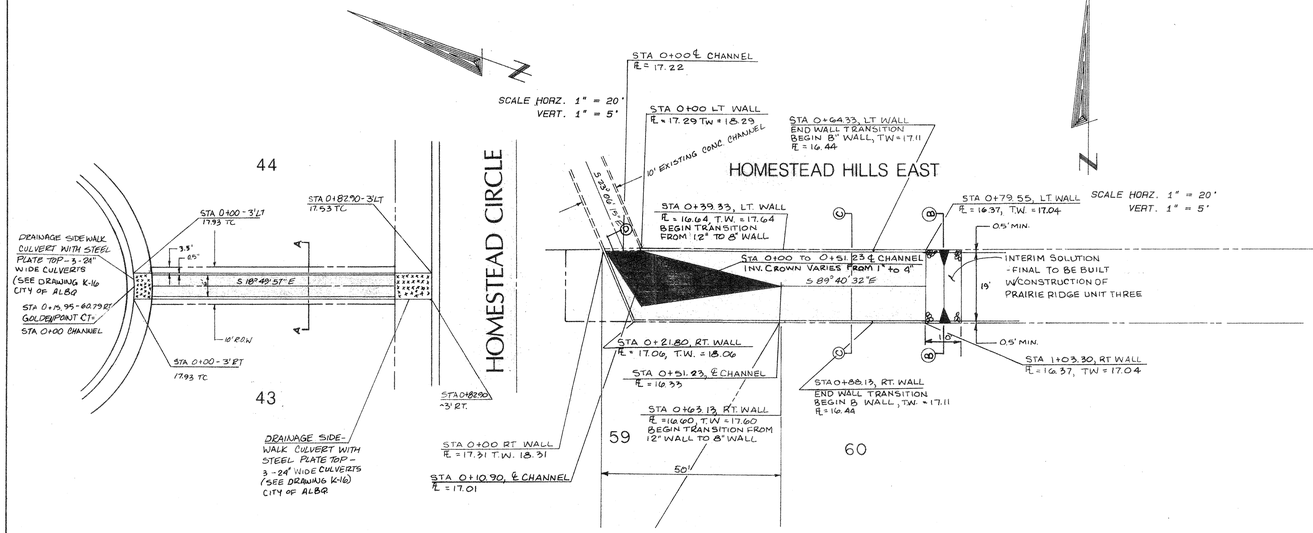
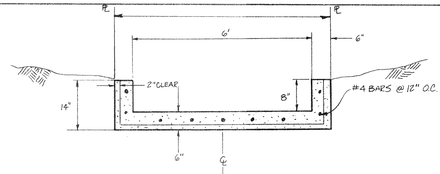
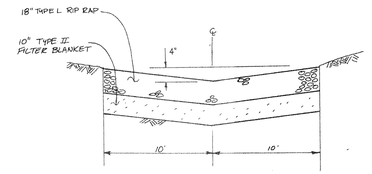


DRAINAGE CHANNEL BETWEEN LOTS 43 AND 44

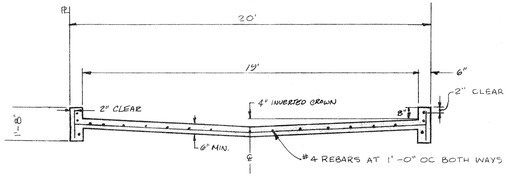
DRAINAGE CHANNEL BETWEEN LOTS 58, 59, & HOMESTEAD HILLS SUBDIVISION



SECTION A-A
CONCRETE RUNDOWN
NTS



SECTION B-B
TEMPORARY RIP RAP EROSION CONTROL BLANKET
NTS

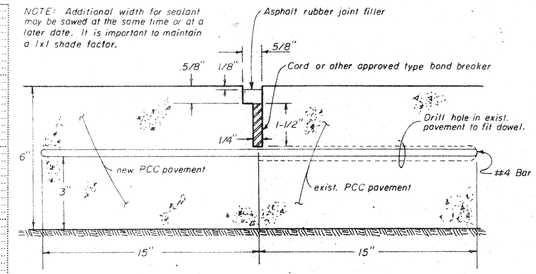


SECTION C-C
CONCRETE CHANNEL
NTS

TYPE L RIPRAP SPECS		
% SMALLER THAN GIVEN SIZE BY WEIGHT	MINIMUM DIMENSION INCHES	*K_m INCHES
100	12	
35-55	9	9
10	2	

TYPE II FILTER SPECS	
SIEVE SIZE	% BY WEIGHT PASSING SQUARE MESH SIEVES
2"	90-100
3/4"	20-90
#4	0-20
#200	0-3
	*K_m = MEDIAN STONE SIZE

RIP RAP SHALL BE HARD, DURABLE, ANGULAR STONE WITH A SPECIFIC GRAVITY OF 2.5 OR GREATER



SECTION D
NEW TO EXISTING PCC PAVEMENT DETAIL
N.T.S.

SURVEY INFORMATION		
FIELD NOTES		
NO.	BY	DATE

BENCH MARKS
BENCHMARK USED FOR THIS PLAT IS A.C.S. "1-D 11." A "X" CHISLED ON TOP OF CURB AT THE W.N.W. CURB RETURN LOCATED IN THE NORTHWEST QUADRANT OF THE INTERSECTION OF TAYLOR RANCH DRIVE AND HOMESTEAD CIRCLE (SOUTH END). ELEV. = 5116.47

AS BUILT INFORMATION		
CONTRACTOR		
WORK STARTED BY		DATE
INSPECTOR'S ACCEPTANCE BY		DATE
VERIFICATION BY		DATE
CORRECTED BY		DATE
MICRO-FILM INFORMATION	RECORDED BY	DATE
	NO.	

ENGINEER'S SEAL

REGISTERED PROFESSIONAL ENGINEER
APR 2 1987

REVISIONS			
NO.	DATE	REMARKS	BY
		DESIGNED BY JRD	DATE 2/27/87
		DRAWN BY DRD	DATE 2/28/87
		CHECKED BY	DATE

RECEIVED
APR 02 1987
HYDROLOGY SECTION

CITY OF ALBUQUERQUE
MUNICIPAL DEVELOPMENT DEPARTMENT APR 2 1987
ENGINEERING DIVISION

TITLE:
PIONEER EAST
DRAINAGE CHANNEL DETAIL

APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
City Engineer			Liquid Waste		
A.C.E.- Design			Traffic		
A.C.E.-Hydrology			Water		

DRAWING NO. 3199 | MAP NO. D - 11 | SHEET 13 OF 13

N65806