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

B20/D14

November 3, 2000

Angel Gomez, Owner/Builder
9600 Central SW, #104
Albuquerque, NM 87105

RE: **Grading Plan Approval for residential building permit located at 8820 Florence NE, Lot 12, Block 16, Unit 3, North Albuquerque Acres, Engineer's stamped dated June 24, 1999, to address flood plain avulsion #5, NAA DMP.**

Dear Mr. Gomez,

The referenced Grading Plan is approved for Building Permit.

Prior to Certificate of Occupancy, please submit an Engineer's Certification for building finished floor elevation and for lot grading contours/elevations for Hydrology approval.

If you have any questions, please call me at 924-3980.

Sincerely,

Loren D. Meinz, P.E.
Hydrology Division

xc: Whitney Reierson
File

THE CITY OF ALBUQUERQUE IS AN EQUAL OPPORTUNITY/REASONABLE ACCOMMODATION EMPLOYER

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DRAINAGE PLAN

The following items relating to the drainage plan for the property at 8820 Florence Aveuue, N.E. are contained hereon:

1. Vicinity Map
2. Grading Plan
3. Calculations
4. FIRM mapping indicating subject lot.
5. AMAFCA topo map indicating subject lot.
6. AMAFCA mapping indication Avulsion No. 5.

The subject property is located at 8820 Florence Avenue, N.E. The legal description is Lot 12, Block 16, Tract 1, Unit 3 in North Albuquerque Acres. As shown on the Vicinity Map, subject property is the fifth lot west of the intersection of Florence and Ventura on the south side of Florence. The property is undeveloped at this time.

As shown on Panel 4 of 50 of the National Flood Insurance Program's Flood Insurance Rate Map(FIRM) dated October 14, 1983, this site does not lie within a designated flood hazard zone. A flood hazard zone, associated with the El Camino Arroyo, has been identified to the south of the subject property. Based on the above referenced flood map, the north floodplain boundary of said arroyo lies to the south approximately 170 feet from the south property line of this subject site. As calculated herein, the actual setback of the proposed improvements from the floodplain exceed the minimum requirements for erosion setback.

The Grading Plan hereon contains:

1. Existing grades shown by spot elevations with contours on 1.0 foot intervals developed from field topo survey dated 25 October 1998.
2. Proposed final grades with contours at 1.0 foot intervals.
3. Proposed building footprint for single family residence.
4. Limits of gravel surfaced private driveways.
5. Offsite flows.

The calculations shown hereon present an analysis of the existing and proposed future developed conditions anticipated during the 100 year, 6 hour, flood event. Section 22.2, Hydrology, of the Development Process Manual (DPM), Volume 2, Design Criteria, dated January 1993, was used to develop both existing and proposed onsite flow conditions. A negligible increase of flows is anticipated due to the proposed development and will not effect properties downstream of this site.

The subject property, containing 0.89 acres, is within Precipitation Zone 3 as defined in Table A-1 of the DPM. The property generally slopes from the southeast to the northwest at an approximate 4 percent grade and has native ground cover equating to a Land Treatment of "A". Drainage in the area of proposed development is sheet flow with the beginning of channelized flow at the northwest corner. No indication of erosion was evident during the field investigation and topo survey.

Offsite flows indicated hereon generated approximately 3.0 cfs in the developed condition. Offsite drainage basin contributing flows to this property totals approximately 1.0 acres.

CALCULATIONS

ONSITE CONDITIONS - EXISTING

1. Precipitation Zone 3
2. Land Treatment "A"
3. Peak Discharge

$Q_P = Q_{PA}A_A$
$Q_P = Q_{100} = (1.87)(0.89) = 1.66$ cfs, use 2.0 cfs

4. Volume

$E_W = E_A(A_A) / A_T$
$E_W = 0.66(0.89) / 0.89 = 0.59$ in

$V_{100} = (E_W / 12)\ A_T$
$V_{100} = (0.59 / 12)\ 0.89 = 0.0438$ ac ft = 1,906 cu ft

ONSITE CONDITIONS - PROPOSED

From Table A-5, DPM

1. Percent Land Treatment "D" (Impervious)

$D = 7[(N)(N) + 5(N)]^{1/2}$
N = Units / Acre = 1.00

$D = 7[(1)(1) + 5(1)]^{1/2} = 17\ \%$

2. Developed Land Treatments

Treatment	Area (acres)	%
A	0.383	43.0
B	0.178	20.0
C	0.178	20.0
D	0.151	17.0

3. Peak Discharge
From Equation A-10, DPM

$Q_P = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$
$Q_P = Q_{100} = 1.87(0.383) + 2.60(0.178) + 3.45(0.178) + 5.02(0.151)$
$= 2.6$ cfs, use 3.0 cfs

4. Volume

$E_W = [E_AA_A + E_BA_B + E_CA_C + E_DA_D] / A_T$
$E_W = [0.66(0.383) + 6.92(0.178) + 1.29(0.178) + 2.36(0.151)] / 0.89$
$= 1.13$ inches
$V_{100} = (E_W / 12)\ A_T$
$= (1.13 / 12)\ 0.89 = 0.0835$ ac ft = 3,651 cu ft

5. Evaluation

a. Increase in peak discharge

3.0 cfs - 2.0 cfs = 1.0 cfs increase

b. Increase in volume

3,651 cu ft - 1,906 cu ft = 1,745 cu ft increase

OFFSITE FLOWS ONTO SUBJECT PROPERTY

1. For drainage basin affecting subject property see portion of AMAFCA map, Zone Atlas B-20 herein.
2. Total drainage basin area = 0.55 acres, use 1.0 acres.
3. Developed Land Treatments.

Treatment	Area (acres)	%
A	0.43	43.0
B	0.20	20.0
C	0.20	20.0
D	0.17	17.0

4. Peak Discharge
From Equation A-10, DPM;

$Q_P = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$
$Q_P = Q_{100} = 1.87(0.43) + 2.60(0.20) + 3.45(0.20) + 5.02(0.17)$
$= 2.87$ cfs, use 3.0 cfs

4. Volume

$E_W = [E_AA_A + E_BA_B + E_CA_C + E_DA_D] / A_T$
$= [0.66(0.43) + 0.92(0.20) + 1.29(0.20) + 2.36(0.17) / 1.0$
$= 1.13$ inches

$V_{100} = (E_W / 12)\ A_T$
$= 0.0942$ ac ft = 4,102 cu ft

TOTAL OF DEVELOPED ONSITE AND OFFSITE FLOWS

3.0 cfs + 3.0 cfs = 6.0 cfs

EROSION SETBACK FROM EL CAMINO - MAIN CHANNEL

Using the " SEDIMENT AND EROSION DESIGN GUIDE ", prepared for AMAFCA by Muenter, Lagasse and Harvey, dated November 1994, and a 100 year flood event flow of 3,500 cfs in the El Camino Arroyo, the erosion set back is calculated as follows:

Equation 3.80 • Critical Slope = $S_C = 0.037\ Q_D^{-0.133}$
Equation 3.77 • where Q_D = dominant discharge = $0.20Q_{100}$,
therefore, $Q_D = 0.20(3,500) = 700$ cfs,

$S_C = 0.037(700)^{-0.133} = 0.0155$ or 1.6%

Slope in the El Camino Arroyo immediately to the south of this project is approximately 4.0%.

Therefore; The slope in El Camino Arroyo is greater than critical slope, use Equation 3.81b,
Maximum Lateral Erosion Distance = $[0.92+4.60\log(Q_D)]Q_D^{0.4}$ = 192.5 ft , use 200 ft.

Actual setback is approximately 290 feet from the proposed structure to the northernmost floodplain boundary of the El Camino Arroyo.

EROSION SETBACK FROM POTENTIAL AVULSION NO. 5

A potential avulsion has been identified by Resource Technology, Inc. in their " Report on North Albuquerque Acres Arroyo Avulsion Problems" that would affect this property. This potential avulsion is identified as No. 5 on mapping shown in above referenced document and shown hereon. While subject mapping indicates the avulsion would occupy Florence Avenue in the area of subject lot actual field topo indicates that the flow would be north of this property as indicated on the drainage plan herein. Flow in this potential avulsion No. 5 is estimated at 638 cfs as indicated in Table 2, Avulsion Matrix, page 8 of the report.

1. For drainage basin affecting subject property see portion of AMAFCA map, Zone Atlas B-20 herein.
2. Total drainage basin area =30.0 acres.
3. Developed Land Treatments.

Treatment	Area (acres)	%
A	12.9	43.0
B	6.0	20.0
C	6.0	20.0
D	5.1	17.0

4. Peak Discharge
From Equation A-10, DPM;

$Q_P = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$
$Q_P = Q_{100} = 1.87(12.9) + 2.60(6.0) + 3.45(6.0) + 5.02(5.1)$
$= 134.6$ cfs, use 135 cfs

5. Volume

$E_W = [E_AA_A + E_BA_B + E_CA_C + E_DA_D] / A_T$
$= [0.66(12.9) + 0.92(6.0) + 1.29(6.0) + 2.36(5.1) / 30.0$
$= 1.13$ inches

$V_{100} = (E_W / 12)\ A_T$
$= 2.83$ ac ft = 123,057 cu ft

Total flow = $Q_{onsite\#1}$ + Peak discharge (Q_{100}) = 638 cfs + 135 cfs = 773 cfs.

CALCULATION OF EROSION SETBACK FROM AVULSION No. 5

Equation 3.80 • Critical Slope = $S_C = 0.037\ Q_D^{-0.133}$
Equation 3.77 • where Q_D = dominant discharge = $0.20Q_{100}$,
therefore, $Q_D = 0.20(773) = 155$ cfs,

$S_C = 0.037(155)^{-0.133} = 0.0189$ or 1.9%

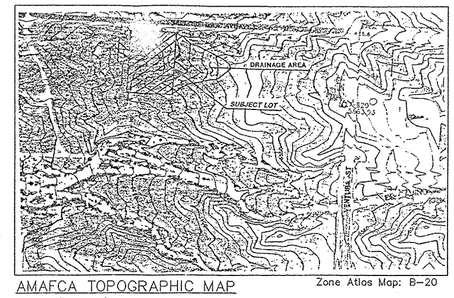
Slope in the arroyo immediately to the north of this project is approximately 4.0%.

Therefore; The slope in subject arroyo is greater than critical slope, use Equation 3.81b,
Maximum Lateral Erosion Distance = $[0.92+4.60\log(Q_D)]Q_D^{0.4}$ =42.6 ft., use 83 ft.

Actual setback is approximately 110 feet from the proposed structure to the southern most floodplain boundary (EGL) of the subject arroyo affected by avulsion No. 5.

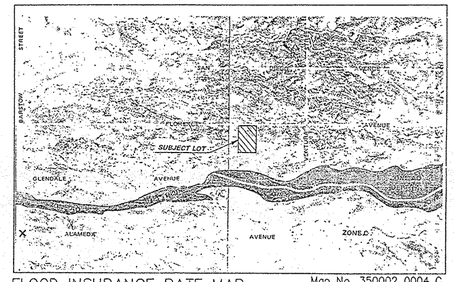
FLOWS IN BARROW DITCH SOUTH SIDE OF FLORENCE AVENUE

Field topographic survey and investigation upstream (east of project site) along with AMAFCA mapping indicate that flows are carried from the south side of Florence Avenue to the north side. No existing culverts were found on the south side of Florence Avenue east of the subject lot to Ventura Street. Crossing from Florence Avenue to driveway across existing road ditch will be by slight swale or dip section. No culvert(s) will be used.



AMAFCA TOPOGRAPHIC MAP
Scale: 1" = 200'

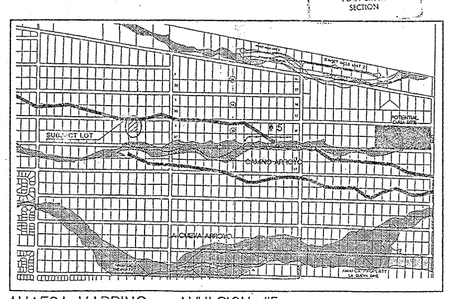
Zone Atlas Map: B-20



FLOOD INSURANCE RATE MAP
Scale: 1" = 500'

Map No. 350002 0004 C
Panel No. 4 of 50

ALBUQUERQUE
BLDG & SAFETY
NOV - 2 2000
U.B.C.
PLAN CHECK
SECTION



AMAFCA MAPPING — AVULSION #5
Not To Scale

THE B.E.A.R. COMPANY
ENGINEERING - SURVEYING
1311 APEX COURT, RIO RANCHO, NM 87124 505-892-0421

ENGINEER'S SEAL

NO.	DATE	DESCRIPTION	BY
1	3 OCT 97	ADDED COMMENT RESPONSES & ADDITIONAL TABLES	MEB

REVISIONS

DESIGNED BY: MICHAEL E. BEYER
DRAWN BY: ALAN R. CISNEROS
CHECKED BY: MICHAEL E. BEYER

DATE: 15 MAY 99
DATE: 16 MAY 99
DATE: 17 MAY 99

DRAINAGE PLAN FOR
8820 FLORENCE AVENUE, N.E.

CALCULATIONS, TOPOGRAPHIC MAP, AND FLOOD INSURANCE RATE MAP

APPROVALS

DATE	ENGINEER
	CITY/COUNTY FLOODPLAIN ADMINISTRATION
	COUNTY SURFACE WATER HYDROLOGIST
	A.M.A.F.C.A. DRAINAGE ENGINEER

DATE: 22 JUNE 1999

SHEET 1 OF 3

DRAINAGE PLAN FOR
8820 FLORENCE AVENUE, N.E.

AVULSION NO. 5 MAPPING, CROSS SECTIONS

APPROVALS		DATE
ENGINEER		
CITY/COUNTY FLOODPLAIN ADMINISTRATOR		
COUNTY SURFACE WATER HYDROLOGIST		
A.M.A.F.C.A. DRAINAGE ENGINEER		

DATE 22 JUNE 1999
SHEET 2 OF 3

REVISIONS			
NO.	DATE	REMARKS	BY
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CHECKED BY: MICHAEL E. DEYER DATE: 17 MAY 99

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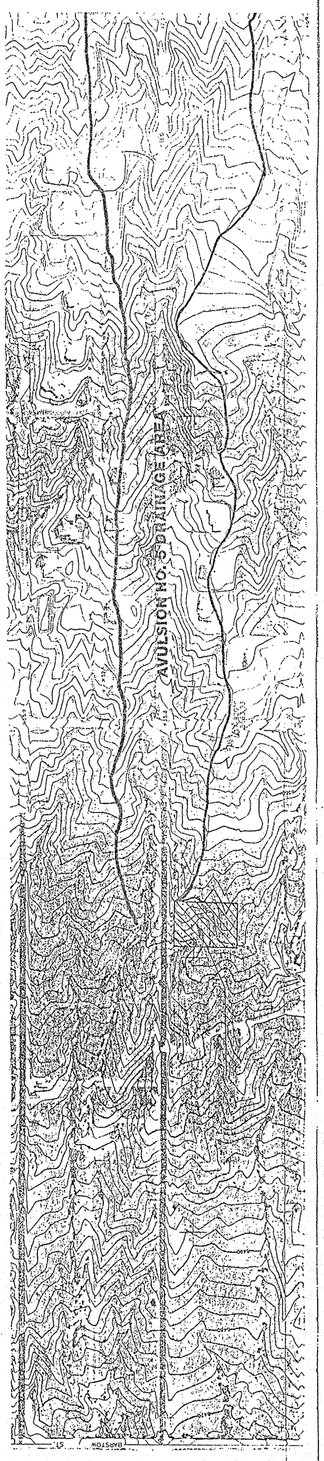
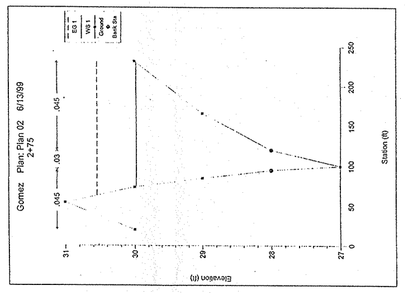
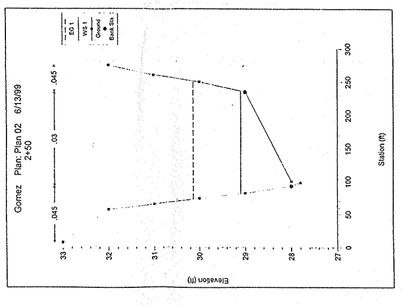
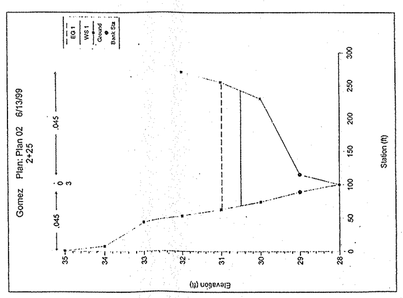
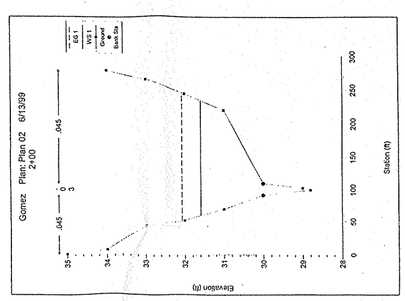
ALBUQUERQUE BLDG & SAFETY
NOV - 2 2000
U.R.C. PLAN CHECK SECTION

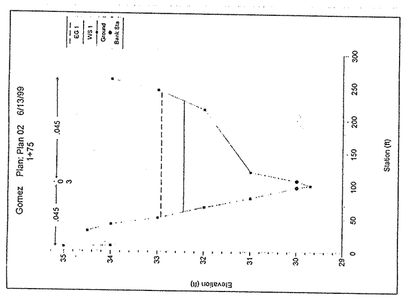


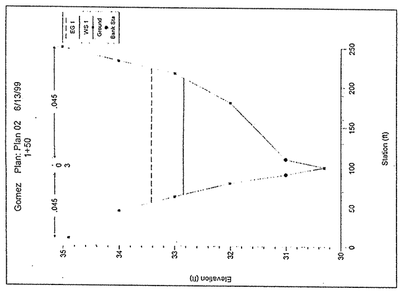


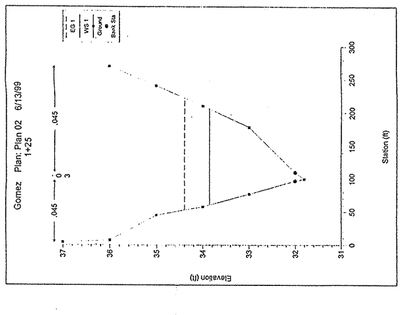


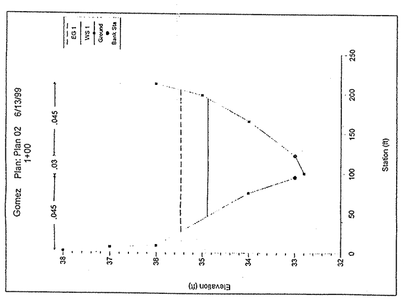


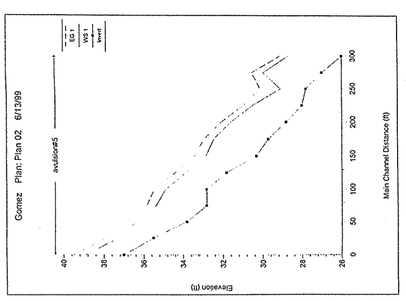


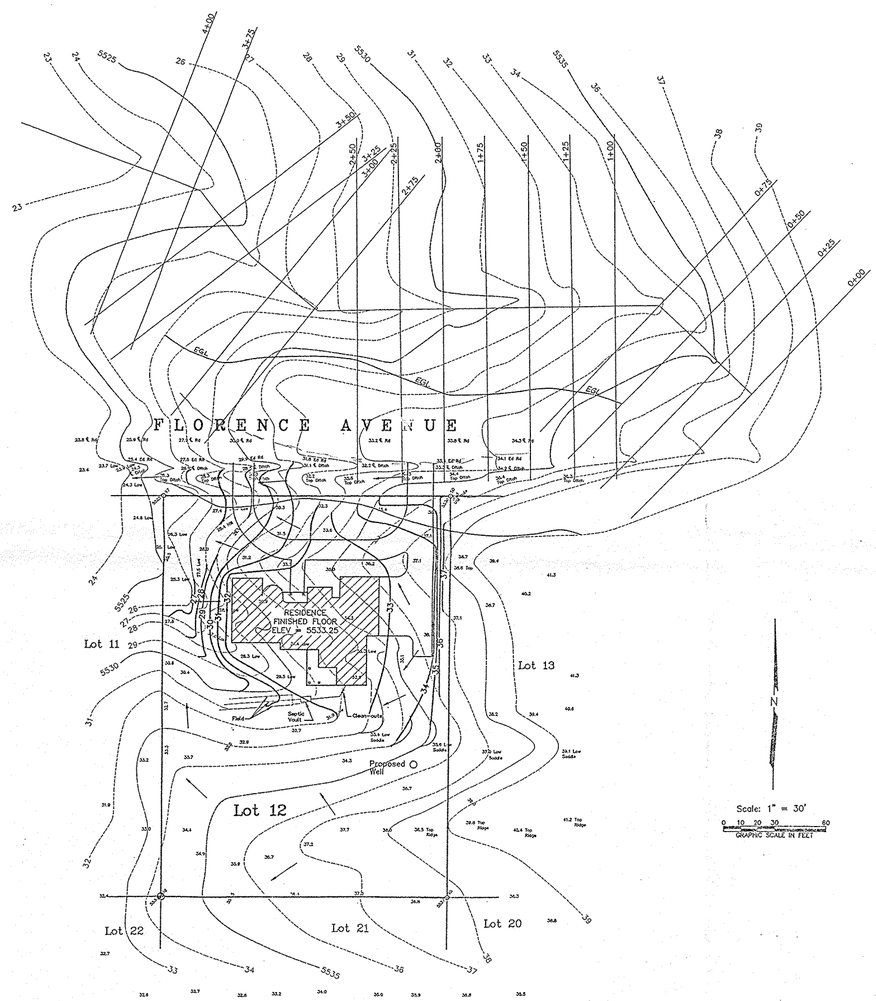


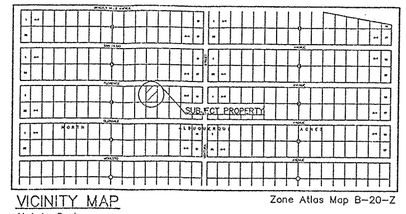












VICINITY MAP
Not to Scale

Zone Atlas Map B-20-Z

LEGAL DESCRIPTION

LOT 12, BLOCK 16, TRACT 1, UNIT 3
NORTH ALBUQUERQUE ACRES

GENERAL NOTES

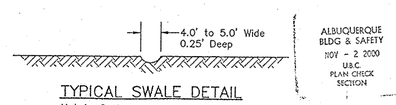
1. THIS IS NOT A BOUNDARY SURVEY, APPARENT PROPERTY CORNERS ARE SHOWN FOR ORIENTATION ONLY. BOUNDARY DATA SHOWN IS FROM FIELD DATA SHOWN HEREON.
2. THE PEAK DISCHARGE AND VOLUME INCREASE OF 3.0 CFS AND 1,745 CFS RESPECTIVELY WILL NOT ADVERSELY AFFECT PROPERTIES DOWNSTREAM OF THIS SITE.
3. NO ADDITIONAL GRADING WILL BE REQUIRED FOR THE DRIVEWAY. CROSSING FROM DRIVEWAY TO FLORENCE AVENUE ACROSS EXISTING DITCH WILL BE BY SLIGHT SWALE OR DIP SECTION. NO CULVERTS WILL BE USED.

ENGINEER'S CERTIFICATION

THIS IS TO CERTIFY THAT I, MICHAEL E. BEYER, A DULY QUALIFIED PROFESSIONAL ENGINEER AND SURVEYOR, LICENSED UNDER THE LAWS OF THE STATE OF NEW MEXICO, HAVE ON 16 MAY 1999 VISITED THE SUBJECT PROPERTY SITE AND DETERMINED THAT NO GRADING, FILLING OR EXCAVATION HAS OCCURED SINCE THE EXISTING CONTOUR MAP WAS PREPARED.

LEGEND

- EXISTING CONTOURS
- NEW CONTOURS
- 98.0 EXISTING SPOT ELEVATION
- BENCH MARK SET ON TOP OF EXISTING 3/8" DIAMETER REBAR LOCATED IN THE SOUTHWEST CORNER OF SUBJECT LOT, ELEVATION 5,531.28 MSL. BASED ON NSC & GS BRASS TABLET, STAMPED "HILE 1969", ELEV = 5416.288, LOCATED NEAR SOUTH BOUNDARY OF SANDIA PUEBLO INDIAN RESERVATION, APPROXIMATELY 600 FEET NORTH OF ELENA DRIVE AND 1,200 FEET WEST OF BARSTOW STREET
- EXISTING MONUMENT
- FLOW DIRECTION
- MAXIMUM LATERAL EROSION LIMIT



TYPICAL SWALE DETAIL
Not to Scale

ALBUQUERQUE
BLDG & SAFETY
NOV - 2 2000
U.B.C.
PLAN CHECK
SECTION

THE B.E.A.R. COMPANY
ENGINEERING - SURVEYING
1311 APEX COURT, RIO RANCHO, NM 87124 505-892-0421

ENGINEER'S SEAL
MICHAEL E. BEYER
NEW MEXICO
10277
REGISTERED PROFESSIONAL ENGINEER
AND LAND SURVEYOR

NO.	DATE	REMARKS / REVISIONS	BY