CITY OF
Albuquerque

June 30,1998

Shahab Biazar
Advanced Engineering & Consulting
10209 Snowflake Ct. NW
Albuquerque, New Mexico 87114

RE: DRAINAGE PLAN FOR WEST MESA MOBILE HOMES (K10-D28) ENGINEER'S STAMP DATED 6/4/98

Dear Mr. Biazar:

Based on the information provided on your June 29,1998 submittal, the above referenced site is approved for Site Development Plan for Building Permit and Building Permit.

Please attach a copy of this approved plan to the construction sets prior to sign-off by Hydrology.

Also, a separate permit is required for construction within City R/W. A copy of this approval letter must be on hand when applying for the excavation permit.

Prior to Certificate of Occupancy release, Engineer Certification per the DPM checklist will be required.

If I can be of further assistance, please feel free to contact me at 924-3986.

C: Andrew Garcia
Arlene Portillo
File

Sincerely

Bernie J. Montoya CE
Associate Engineer

## Location

West Mesa Mobile Homes (Tract B-1-B-1 west 66 addition) contains ±2.16 acres and is found at the northwest corner of Central Avenue and Airport Drive NW. See attached Zone Atlas page number K-10 for location.

## Purpose

The purpose of this drainage report is to present a grading and drainage solution for the proposed sites. We are requesting rough grading approval, site development plan for building permit, paving and building permit.

## Existing Drainage Conditions

The Tract has been partially paved and contains some parked mobile homes on the site. The site drains to the southeast corner of the tract at a flow rate of 7.82 cfs to an existing retention pond. In case of when the pond runs out of storage volume the runoff overflows through an existing concrete spillway into a 20' private drainage easement. Then from there it drains west to Airport Drive. There is an existing concrete overspill that when the runoff volume exceeds the volume of the pond overflows into an existing 20' drainage easement along the westerly property line and then to Airport Drive. There are no offsite runoff that

enters the site. All the offsite runoff to the north and the west drain east and south to Airport Drive and Central Avenue. All the offsite runoff to the south and to the east are intercepted by Central Avenue and Airport Drive.

**Flood Plain**

The site is located on FIRM Map No. 35001C0329 D as shown on the attached excerpt. The map shows that the site does not lie within any 100 year flood plains.

**Proposed Conditions and On-Site Drainage Management Plan**

We are proposing to place an sales/office building of 2432 sf with a parking lot for customers. The drainage pattern will remain the same. The runoff will drain to the existing pond located at the southwest corner of the tract at a developed flow rate of 8.98 cfs. A pump will be placed in the pond to pump the runoff at a maximum flow rate of 120 g.p.m. (0.27 cfs). The pump drains the runoff via a two-inch pipe which will be daylighted into the face of the curb along Airport Drive. The pond has been analyzed using AHYMO for its capacity. Based on the AHYMO summery, by placing a pump, the pond has enough capacity (without an increase in volume) to handle the developed runoff. The 100-year water surface elevation is 5093.6' which is lower than the top of the pond (an elevation of 5094.00'). A water block will be place at the entrance from Central to sales office to keep the runoff in the street.

## Emergency Conditions

In case of an emergency when the pump fails or an event larger than 100-year occurs the pond will over flow through the existing concrete spillway into the existing 20' private drainage easement. Ten from there it drains west to Airport Drive.

## Calculations

City of Albuquerque, Development Process Manuel, Section 22.2, Hydrology Section, revised January, 1993 was used for runoff calculations. See section II of this report for Summary Table for runoff results. See also for AHYMO input and output, and summery output file for runoff and ponding calculations.

## RUNOFF CALCULATIONS

The site is @ Zone 1

## LAND TREATMENT

*Proposed*
D = 90.00 %
B = 10.00 %

*Existing*
B = 20 %
C = 20 %
D = 60 %

## DEPTH (INCHES) @ 100-YEAR STORM

$P_{60}$ = 1.87 inches

$P_{360}$ = 2.20 inches

$P_{1440}$ = 2.66 inches

## DEPTH (INCHES) @ 10-YEAR STORM

$P_{60}$ = 1.87 x 0.667
= 1.25 inches

$P_{360}$ = 1.47

$P_{1440}$ = 1.77

See the summary output from AHYMO calculations.

Also see the following summary tables.

## DRAINAGE BASINS

| BASIN | AREA (SF) | AREA (AC) | AREA ($MI^2$) |
|---|---|---|---|
| 1 | 94478.04 | 2.1689 | 0.003389 |

## BASINS RUNOFF CALCULATION RESULTS
## EXISTING CONDITIONS

| BASIN | Q-100 CFS | Q-10 CFS |
|---|---|---|
| 1 | 7.82 | 4.71 |

## BASINS RUNOFF CALCULATION RESULTS
## PROPOSED CONDITIONS

| BASIN | Q-100 CFS | Q-10 CFS |
|---|---|---|
| 1 | 8.98 | 5.82 |

# *POND VOLUME CALCULATIONS*

Ab - Bottom Of The Pond Surface Area
At - Top Of The Pond Surface Area
D - Water Depth
Dt - Total Pond Depth
C - Change In Surface Area / Water Depth

Volume = $0.5 * Ab * D + 0.5 * C * D^2$

C = (At - Ab) / Dt

Ab = 2,240.00 SF
At = 7,298.00 SF
Dt = 4.00 FT (Ponding depth from top of the inlet to maximum ponding depth
C = 1264.50 FT / LF-DEPTH

| D (FT) | VOLUME (AC-FT) | Q (CFS) | FULL ELEV. |
|---|---|---|---|
| 0.00 | 0.00000 | 0.00 | 5090.00 |
| 1.00 | 0.04023 | 0.264 | 5091.00 |
| 2.00 | 0.10948 | 0.265 | 5092.00 |
| 3.00 | 0.20777 | 0.266 | 5093.00 |
| 4.00 | 0.33508 | 0.267 | 5094.00 |

```
*
* ZONE 1
*
**********************************************************************
*        100-YEAR, 6-HR STORM  (UNDER EXISTING CONDITIONS)       *
**********************************************************************
START               TIME=0.0
*
RAINFALL            TYPE=1 RAIN QUARTER=0.0 IN
                    RAIN ONE=1.87 IN RAIN SIX=2.20 IN
                    RAIN DAY=2.66 IN DT=0.03333 HR
*
COMPUTE NM HYD      ID=1 HYD NO=101.0 AREA=0.003389 SQ MI
                    PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                    TP=0.1333 HR MASS RAINFALL=-1
*
**********************************************************************
*        100-YEAR, 6-HR STORM  (UNDER PROPOSED CONDITIONS)       *
**********************************************************************
*
START               TIME=0.0
*
RAINFALL            TYPE=1 RAIN QUARTER=0.0 IN
                    RAIN ONE=1.87 IN RAIN SIX=2.20 IN
                    RAIN DAY=2.66 IN DT=0.03333 HR
*
COMPUTE NM HYD      ID=1 HYD NO=101.0 AREA=0.003389 SQ MI
                    PER A=0.00 PER B=10.00 PER C=0.00 PER D=90.00
                    TP=0.1333 HR MASS RAINFALL=-1
*
**********************************************************************
*        10-YEAR, 6-HR STORM   (UNDER EXISTING CONDITIONS)       *
**********************************************************************
*
START               TIME=0.0
*
RAINFALL            TYPE=1 RAIN QUARTER=0.0 IN
                    RAIN ONE=1.25 IN RAIN SIX=1.47 IN
                    RAIN DAY=1.77 IN DT=0.03333 HR
*
COMPUTE NM HYD      ID=1 HYD NO=101.0 AREA=0.003389 SQ MI
                    PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                    TP=0.1333 HR MASS RAINFALL=-1
*
**********************************************************************
*        10-YEAR, 6-HR STORM   (UNDER PROPOSED CONDITIONS)       *
**********************************************************************
*
START               TIME=0.0
*
RAINFALL            TYPE=1 RAIN QUARTER=0.0 IN
                    RAIN ONE=1.25 IN RAIN SIX=1.47 IN
                    RAIN DAY=1.77 IN DT=0.03333 HR
*
COMPUTE NM HYD      ID=1 HYD NO=101.0 AREA=0.003389 SQ MI
                    PER A=0.00 PER B=10.00 PER C=0.00 PER D=90.00
                    TP=0.1333 HR MASS RAINFALL=-1

*
FINISH
```

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =06/24/1998
INPUT FILE = WESTMH10 USER NO.= R_BOHANN.I01



| COMMAND | HYDROGRAPH IDENTIFICATION | FROM ID NO. | TO ID NO. | AREA (SQ MI) | PEAK DISCHARGE (CFS) | RUNOFF VOLUME (AC-FT) | RUNOFF (INCHES) | TIME TO PEAK (HOURS) | CFS PER ACRE | NOTATION | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| START | | | | | | | | | | TIME= | .00 |
| RAINFALL TYPE= 1 | | | | | | | | | | RAIN6= | 2.200 |
| COMPUTE NM HYD | 101.00 | - | 1 | .00339 | 7.82 | .272 | 1.50556 | 1.500 | 3.604 | PER IMP= | 60.00 |
| START | | | | | | | | | | TIME= | .00 |
| RAINFALL TYPE= 1 | | | | | | | | | | RAIN6= | 2.200 |
| COMPUTE NM HYD | 101.00 | - | 1 | .00339 | 8.98 | .332 | 1.83567 | 1.500 | 4.142 | PER IMP= | 90.00 |
| START | | | | | | | | | | TIME= | .00 |
| RAINFALL TYPE= 1 | | | | | | | | | | RAIN6= | 1.470 |
| COMPUTE NM HYD | 101.00 | - | 1 | .00339 | 4.71 | .157 | .86984 | 1.500 | 2.172 | PER IMP= | 60.00 |
| START | | | | | | | | | | TIME= | .00 |
| RAINFALL TYPE= 1 | | | | | | | | | | RAIN6= | 1.470 |
| COMPUTE NM HYD | 101.00 | - | 1 | .00339 | 5.82 | .205 | 1.13650 | 1.500 | 2.681 | PER IMP= | 90.00 |
| FINISH | | | | | | | | | | | |

# AHYMO INPUT FILE FOR PONDING CALCULATION

```
*
* ZONE 1
*
START              TIME=0.0
RAINFALL           TYPE=1 RAIN QUARTER=0.0 IN
                   RAIN ONE=1.87 IN RAIN SIX=2.20 IN
                   RAIN DAY=2.66 IN DT=0.03333 HR
*
COMPUTE NM HYD     ID=1 HYD NO=101.0 AREA=0.003389 SQ MI
                   PER A=0.00 PER B=10.00 PER C=0.00 PER D=90.00
                   TP=0.1333 HR MASS RAINFALL=-1
*
ROUTE RESERVOIR    ID=2 HYD NO=501.1 INFLOW ID=1 CODE=24
                   OUTFLOW(CFS)      STORAGE(AC-FT)  ELEVATION(FT)
                      0.000              0.00000       5090.00
                      0.264              0.04023       5091.00
                      0.265              0.10948       5092.00
                      0.266              0.20777       5093.00
                      0.267              0.33508       5094.00
*
FINISH
```

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =06/24/1998

INPUT FILE = westmh USER NO.= R_BOHANN.I01



| COMMAND | HYDROGRAPH IDENTIFICATION | FROM ID NO. | TO ID NO. | AREA (SQ MI) | PEAK DISCHARGE (CFS) | RUNOFF VOLUME (AC-FT) | RUNOFF (INCHES) | TIME TO PEAK (HOURS) | CFS PER ACRE | NOTATION | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| START | | | | | | | | | | TIME= | .00 |
| RAINFALL TYPE= 1 | | | | | | | | | | RAIN6= | 2.200 |
| COMPUTE NM HYD | 101.00 | - | 1 | .00339 | 8.98 | .332 | 1.83567 | 1.500 | 4.142 | PER IMP= | 90.00 |
| ROUTE RESERVOIR | 501.10 | 1 | 2 | .00339 | .27 | .330 | 1.82335 | 2.533 | .123 | AC-FT= | .285 |
| FINISH | | | | | | | | | | | |

```
   AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
        RUN DATE (MON/DAY/YR) = 06/24/1998
        START TIME (HR:MIN:SEC) = 22:16:55     USER NO.= R_BOHANN.I01
        INPUT FILE = westmh

*
* ZONE 1
*
START              TIME=0.0
RAINFALL           TYPE=1 RAIN QUARTER=0.0 IN
                   RAIN ONE=1.87 IN RAIN SIX=2.20 IN
                   RAIN DAY=2.66 IN DT=0.03333 HR

              COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
              DT =    .033330 HOURS       END TIME =     5.999400 HOURS
                 .0000   .0016   .0033   .0050   .0067   .0085   .0103
                 .0122   .0141   .0160   .0180   .0201   .0222   .0243
                 .0266   .0289   .0312   .0337   .0362   .0388   .0415
                 .0443   .0472   .0502   .0534   .0567   .0601   .0637
                 .0675   .0715   .0758   .0809   .0865   .0924   .1050
                 .1334   .1771   .2398   .3254   .4379   .5814   .7600
                 .9780  1.1804  1.2649  1.3363  1.3997  1.4575  1.5106
                1.5600  1.6061  1.6493  1.6900  1.7284  1.7646  1.7989
                1.8314  1.8623  1.8915  1.9193  1.9456  1.9518  1.9576
                1.9630  1.9682  1.9732  1.9780  1.9825  1.9869  1.9912
                1.9953  1.9993  2.0031  2.0068  2.0104  2.0140  2.0174
                2.0207  2.0240  2.0272  2.0303  2.0333  2.0363  2.0392
                2.0420  2.0448  2.0475  2.0502  2.0528  2.0554  2.0580
                2.0605  2.0629  2.0653  2.0677  2.0700  2.0723  2.0746
                2.0768  2.0790  2.0812  2.0833  2.0855  2.0875  2.0896
                2.0916  2.0936  2.0956  2.0976  2.0995  2.1014  2.1033
                2.1051  2.1070  2.1088  2.1106  2.1124  2.1141  2.1159
                2.1176  2.1193  2.1210  2.1227  2.1244  2.1260  2.1276
                2.1292  2.1308  2.1324  2.1340  2.1355  2.1371  2.1386
                2.1401  2.1416  2.1431  2.1446  2.1460  2.1475  2.1489
                2.1504  2.1518  2.1532  2.1546  2.1560  2.1573  2.1587
                2.1600  2.1614  2.1627  2.1640  2.1654  2.1667  2.1680
                2.1692  2.1705  2.1718  2.1731  2.1743  2.1756  2.1768
                2.1780  2.1792  2.1804  2.1817  2.1829  2.1840  2.1852
                2.1864  2.1876  2.1887  2.1899  2.1910  2.1922  2.1933
                2.1944  2.1956  2.1967  2.1978  2.1989  2.2000

*
COMPUTE NM HYD     ID=1 HYD NO=101.0 AREA=0.003389 SQ MI
                   PER A=0.00 PER B=10.00 PER C=0.00 PER D=90.00
                   TP=0.1333 HR MASS RAINFALL=-1

   K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
   UNIT PEAK =   12.042    CFS   UNIT VOLUME =    .9984       B =   526.28      P60 = 1.8700
   AREA =      .003050 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330


   K =   .130992HR    TP =   .133300HR    K/TP RATIO =   .982685     SHAPE CONSTANT, N =  3.593448
   UNIT PEAK =   .83158    CFS   UNIT VOLUME =    .9836       B =   327.09      P60 = 1.8700
   AREA =      .000339 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

*
```

```
ROUTE RESERVOIR     ID=2 HYD NO=501.1 INFLOW ID=1 CODE=24
                    OUTFLOW(CFS)      STORAGE(AC-FT)  ELEVATION(FT)
                       0.000              0.00000      5090.00
                       0.264              0.04023      5091.00
                       0.265              0.10948      5092.00
                       0.266              0.20777      5093.00
                       0.267              0.33508      5094.00

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

    TIME      INFLOW    ELEV      VOLUME    OUTFLOW
    (HRS)     (CFS)     (FEET)    (AC-FT)   (CFS)

      .00        .00   5090.00       .000       .00
      .80        .00   5090.00       .000       .00
     1.60       6.20   5092.45       .154       .27
     2.40        .38   5093.60       .284       .27
     3.20        .07   5093.55       .278       .27
     4.00        .05   5093.44       .264       .27
     4.80        .05   5093.33       .249       .27
     5.60        .06   5093.22       .235       .27
     6.40        .01   5093.10       .221       .27
     7.20        .00   5092.95       .203       .27
     8.00        .00   5092.77       .186       .27
     8.80        .00.  5092.60       .168       .27
     9.60        .00   5092.42       .150       .27
    10.40        .00   5092.24       .133       .27
    11.20        .00   5092.06       .115       .27
    12.00        .00   5091.83       .098       .26
    12.80        .00   5091.58       .080       .26
    13.60        .00   5091.33       .063       .26
    14.40        .00   5091.07       .045       .26
    15.20        .00   5090.74       .030       .19
    16.00        .00   5090.48       .019       .13
    16.80        .00   5090.31       .012       .08
    17.60        .00   5090.20       .008       .05
    18.40        .00   5090.13       .005       .03
    19.20        .00   5090.08       .003       .02
 PEAK DISCHARGE =          .267 CFS - PEAK OCCURS AT HOUR    2.53
 MAXIMUM WATER SURFACE ELEVATION =     5093.605
 MAXIMUM STORAGE =          .2849 AC-FT      INCREMENTAL TIME=     .033330HRS

*
FINISH

    NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 22:16:55
```

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

February 17, 1995

J. Arsenio Martinez
Rodriguez Development Consultant
12800 San Juan NE
Albuquerque, NM 87123

RE: GRADING PLAN FOR TRACT B-1-B-1 WEST 66 ADDITION (K10-D28)
ENGINEER'S STAMP DATED 2/2/95.

Dear Mr. Martinez:

Based on the information provided on your February 13, 1995 submittal, the above referenced site is approved for grading.

Please be advised that Engineer Certification will be required when the grading of ponding area is completed.

If I can be of further assistance, please feel free to contact me at 768-2667.

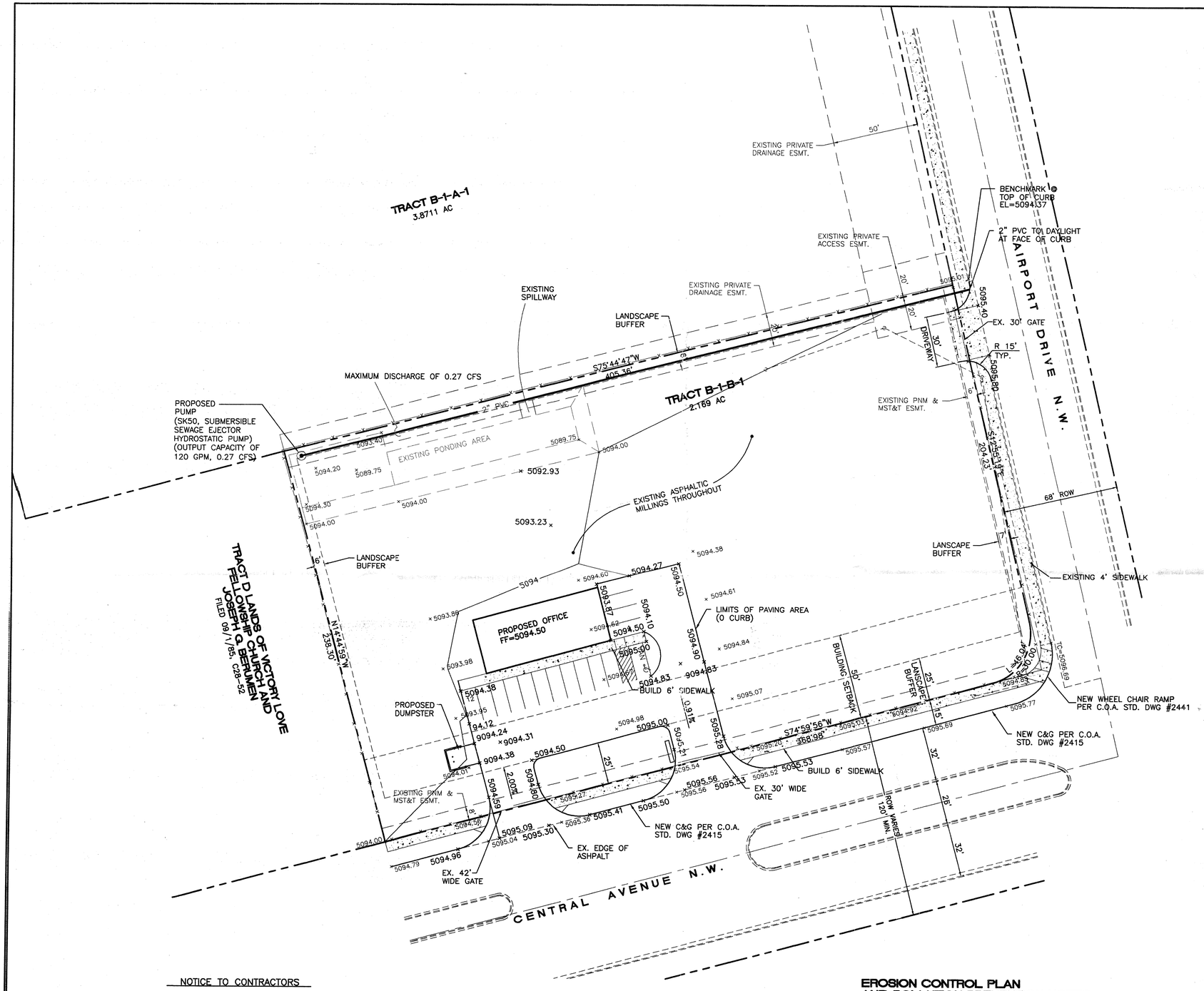
Sincerely,

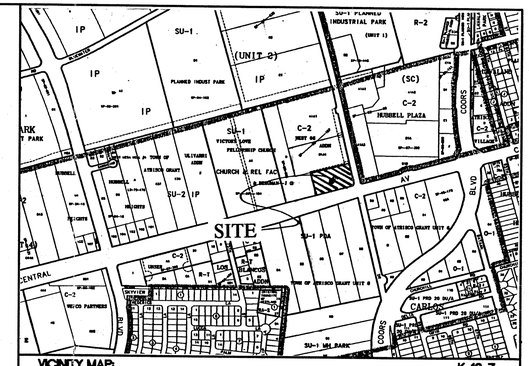
Bernie J. Montoya

Bernie J. Montoya, CE
Engineering Associate

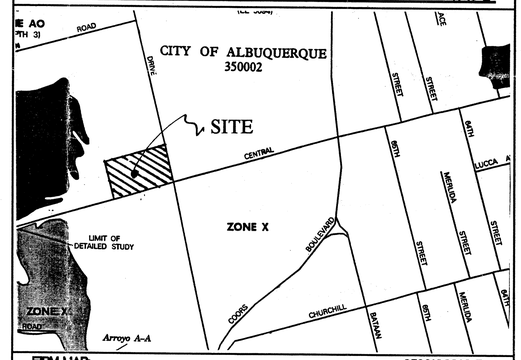
BJM/dl

c: Andrew Garcia
Sergio Reyes 836-9649
File




VICINITY MAP: K-10-Z




FIRM MAP: 35001C0329 D

**LEGAL DESCRIPTION:**
TRACT B-1-B-1 WEST 66 ADDITION, ALBUQUERQUE, NEW MEXICO

**NOTES:**
1. ALL SPOT ELEVATIONS PRESENT THE FLOWLINE ELEVATION UNLESS OTHERWISE NOTED

## LEGEND

- EXISTING FENCE
- EXISTING POWER LINES
- EXISTING CURB & GUTTER
- BOUNDARY LINE
- EASEMENT
- PROPOSED SIDEWALK
- 5095.53 PROPOSED GRADE
- 5095.52 EXISTING GRADE

RECEIVED
JUN 29 1998
HYDROLOGY SECTION

ROUGH GRADING APPROVAL DATE

## NOTICE TO CONTRACTORS

1. AN EXCAVATION/CONSTRUCTION PERMIT WILL BE REQUIRED BEFORE BEGINNING ANY WORK WITHIN CITY RIGHT-OF-WAY. AN APPROVED COPY OF THESE PLANS MUST BE SUBMITTED AT THE TIME OF APPLICATION FOR THIS PERMIT.

2. ALL WORK DETAILED ON THESE PLANS TO BE PERFORMED, EXCEPT AS OTHERWISE STATED OR PROVIDED HEREON, SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF ALBUQUERQUE INTERIM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 1985.

3. TWO WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT LINE LOCATING SERVICE, 765-1234, FOR LOCATION OF EXISTING UTILITIES.

4. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL CONSTRUCTIONS. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE ENGINEER SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY.

5. BACKFILL COMPACTION SHALL BE ACCORDING TO RESIDENTIAL STREET USE.

6. MAINTENANCE OF THESE FACILITIES SHALL BE THE RESPONSIBILITY OF THE OWNER OF THE PROPERTY SERVED.

7. WORK ON ARTERIAL STREETS SHALL BE PERFORMED ON A 24-HOUR BASIS.

| APPROVALS | NAME | DATE |
|---|---|---|
| A.C.E./DESIGN | | |
| INSPECTOR | | |
| A.C.E./FIELD | | |

## EROSION CONTROL PLAN AND POLLUTION PREVENTION NOTES

1. CONTRACTOR IS RESPONSIBLE FOR OBTAINING A TOPSOIL DISTURBANCE PERMIT PRIOR TO BEGINNING WORK.
2. CONTRACTOR IS RESPONSIBLE FOR CLEANING ALL SEDIMENT OUT OF EXISTING RIGHT-OF-WAY.
3. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ALL STORM RUN OFF ON SITE.
4. REPAIR OF DAMAGED FACILITIES AND CLEAN-UP OF SEDIMENT ACCUMULATION ON ADJACENT PROPERTIES AND IN PUBLIC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR.
5. ALL EXPOSED EARTH SURFACES MUST BE PROTECTED FROM WIND AND WATER EROSION PRIOR TO FINAL ACCEPTANCE OF ANY PROJECT.

GRAPHIC SCALE
30 30 0 15 30
SCALE: 1"=30'

30/9829/9829GR.DWG/BDG/6-20-98

# WEST MESA MOBILE HOMES GRADING AND DRAINAGE PLAN

ENGINEER'S SEAL
SHAHAB BIAZAR NEW MEXICO 13479 REGISTERED PROFESSIONAL ENGINEER
SHAHAB BIAZAR P.E. #13479

ADVANCED ENGINEERING and CONSULTING
10209 SNOWFLAKE CT., NW
ALBUQUERQUE, NEW MEXICO 87114
(505)899-5570

DRAWN BY BDG
DATE 6-20-98
9829GR.DWG
SHEET # 2
JOB # 980029