CITY OF
Albuquerque

December 23, 1996

Martin J. Chávez, Mayor

Joe Kelley
Chavèz-Grieves
5639 Jefferson NE
Albuquerque, NM 87109

RE: S.O. 19 APPROVAL FOR UNM CONTINUING EDUCATION ADDITION (J15-D43) ENGINEER'S STAMP DATED 12/9/96.

Dear Mr. Kelley:

Based on the information provided on your December 16, 1996 submittal, the above referenced site is approved for S.O. 19 permit.

Please be advised that a separate permit is required for construction within City Right-of-Way. A copy of this approval letter must be on hand when applying for the excavation permit.

Engineer Certification per the D.P.M. checklist will be required.

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

Sincerely,

Bernie J. Montoya, CE
Engineering Associate

BJM/dl

c: Andrew Garcia
Arlene Portillo
File

DRAINAGE INFORMATION

PROJECT TITLE: UNM CONTINUING EDUCATION ADDITION ZONE ATLAS/DRNG. FILE #: J-15 /1043

DRB#: N/A EPC #: N/A WORK ORDER #: N/A

LEGAL DESCRIPTION: LOT 3, PLAT OF LOT 2 LAND OF GRAND LODGE OF N.M.A.F. & A.M. TOGETHER WITH LOTS 1 AND 3 OF LANDS OF MASONIC TEMPLE LODGE NO. 6 A.F. AND A.M. FILED 10/25/84 BK. C25, PG89.

CITY ADDRESS: 1634 University Blvd. N.E.

ENGINEERING FIRM: Chavez-Grieves CONTACT: JAMES ALARID, E.I.T

ADDRESS: 5639 Jefferson NE PHONE: 344-4080

OWNER: University of New Mexico CONTACT: Steve Borbas

ADDRESS: 1841 Lomas Blvd. N.E. PHONE: 277-2236

ARCHITECT: Flatow Moore Shcaffer McCabe Arcts. CONTACT: Kevin Koernig

ADDRESS: 809 Copper N.W. PHONE: 766-6610

SURVEYOR: CONTACT:

ADDRESS: PHONE:

CONTRACTOR: CONTACT:

ADDRESS: PHONE:

TYPE OF SUBMITTAL:

X DRAINAGE REPORT

X DRAINAGE PLAN

___ CONCEPTUAL GRADING & DRAINAGE PLAN

X GRADING PLAN

X EROSION CONTROL PLAN

___ ENGINEER'S CERTIFICATION

___ OTHER

PRE-DESIGN MEETING:

___ YES

X NO

___ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

___ SKETCH PLAT APPROVAL

___ PRELIMINARY PLAT APPROVAL

___ S. DEV. PLAN FOR SUB'D. APPROVAL

___ S. DEV. PLAN FOR BLDG. PRMT. APPROVAL

___ SECTOR PLAN APPROVAL

___ FINAL PLAT APPROVAL

___ FOUNDATION PERMIT APPROVAL

___ BUILDING PERMIT APPROVAL

___ CERTIFICATE OF OCCUPANCY APPROVAL

___ GRADING PERMIT APPROVAL

___ PAVING PERMIT APPROVAL

___ S.A.D. DRAINAGE REPORT

___ DRAINAGE REQUIREMENTS

X OTHER S.O. 19 (SPECIFY)

RECEIVED DEC 16 HYDROLOGY DIVISION

DATE SUBMITTED: December 16, 1996

BY: JAMES ALARID E.I.T.

CHAVEZ · GRIEVES
CONSULTING ENGINEERS, INC.
THE ENGINEERING FIRM OF CHOICE
5639 JEFFERSON STREET NE · ALBUQUERQUE, NEW MEXICO 87109 · PHONE (505) 344-4080 · FAX (505) 343-8759

GRADING AND DRAINAGE PLAN

FOR

UNM CONTINUING EDUCATION BUILDING

ALBUQUERQUE, NEW MEXICO

DECEMBER 1996

GRADING AND DRAINAGE PLAN

UNM CONTINUING EDUCATION BUILDING

JOE P. KELLEY
NEW MEXICO
9996
REGISTERED PROFESSIONAL ENGINEER
Joe Kelley
12/9/96

RECEIVED
DEC 16
HYDROLOGY DIVISION

DECEMBER 1996

PROJECT LOCATION

This site is located on University Boulevard just north of the intersection of University Boulevard and Indian School Road.

LEGAL DESCRIPTION

The legal description of the property is Lot 3, Plat of Lot 2 Land of Grand Lodge of N.M.A.F. & A.M. together with Lots 1 & 3 Lands of Masonic Temple Lodge No. 6 A.F. & A.M. Filed 10/25/84, BK. C25, pg. 89. The property is located on City of Albuquerque Zone Atlas Map J-15-Z.

FLOOD HAZARD ZONES

As indicated by National Flood Insurance Rate Map number 350002-0029C for the City of Albuquerque, October 14, 1983, the property does not lie in a designated flood zone.

EXISTING SITE CONDITIONS AND DRAINAGE PATTERN

The site is comprised of the existing continuing education building in the center of the property and paved parking lots on the east, west and south sides of the building. There are also six portable trailers which are east of the building beyond the paved parking lot. All of the runoff from the building, the west parking lot, the south parking lot, and approximately half of the east parking lot flows into University Boulevard via surface sheet flow. The runoff from the northern portion of the east parking lot flows offsite at the northern most corner of the property via surface sheet flow. This flow then discharges across the adjacent property to University Boulevard via a swale at the edge of the neighboring property. Total offsite runoff from the existing site is 21.36 cfs. Refer to Figure 1 for a detailed layout of the existing drainage conditions.

PROPOSED SITE CONDITIONS AND DRAINAGE PATTERN

Improvements to the site will include a new two level office/classroom addition, additional paved parking and landscape improvements. The existing portable trailers will be removed from the site and the space they occupied will become a paved parking lot. The new classroom/office addition will be located directly south of the existing building with a concrete walkway between the two buildings. A new driveway will be constructed along the south edge of the property to provide access between the east and west parking lots. Runoff from the new building and the southern portion of the east parking lot will be routed through the new driveway to University Boulevard. Two new sidewalk culverts will be constructed in the City right of way. The runoff from the

existing building and west parking lot will continue to flow as in the existing conditions. A detention pond will be constructed in the northern edge of the property in the existing parking lot. The pond will detain the increased flow from the new paved parking area where the portables were located. Total offsite runoff from the developed site is 20.65 cfs. Refer to Figure 2 for a detailed layout of the developed drainage conditions.

STREET CAPACITY ANALYSIS

The half-street capacity for University Boulevard was determined from Plate 22.3, D-4, of the City of Albuquerque Development Process Manual. The half-street capacity was found to be 26 cfs. A topographic map of the area was acquired from the Master Drainage Plan for the City of Albuquerque to determine the drainage basin contributing to the portion of University Boulevard to which we propose to discharge two new sidewalk culverts. The basin consists primarily of the Continuing Education site plus a portion of the neighboring property which occupies the northeast corner of the Indian School and University Boulevard intersection. The peak discharge for the basin was found to be 16.10 cfs. University Boulevard will continue to have 9.90 cfs of excess capacity. See appendices for calculations.

HYDROLOGY

The runoff calculations and design have been done in accordance with Section 22.2 of the Development Process Manual of the City of Albuquerque, January 1993. The 100-year, 6-hour storm was used to determine the design discharges.

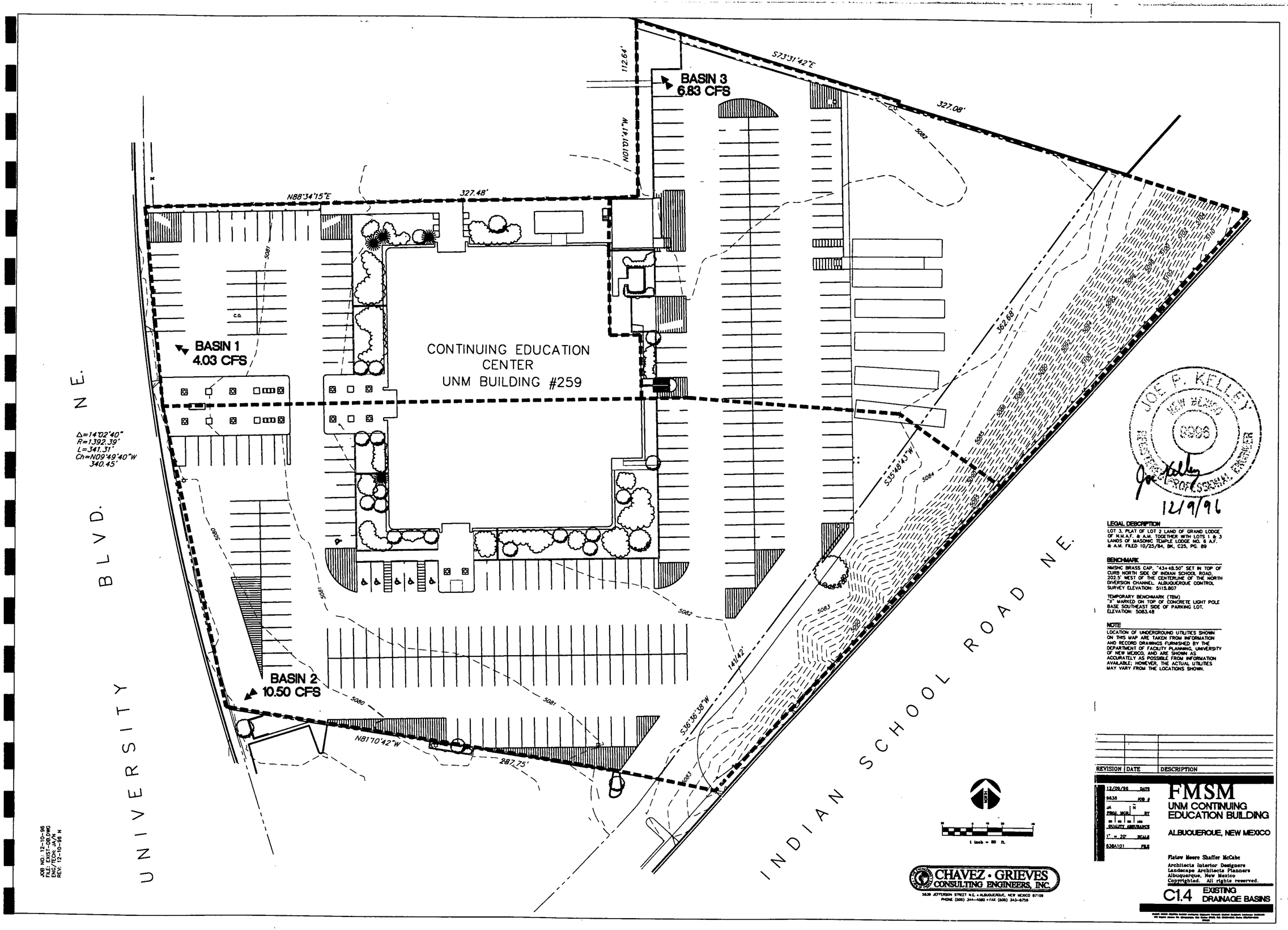
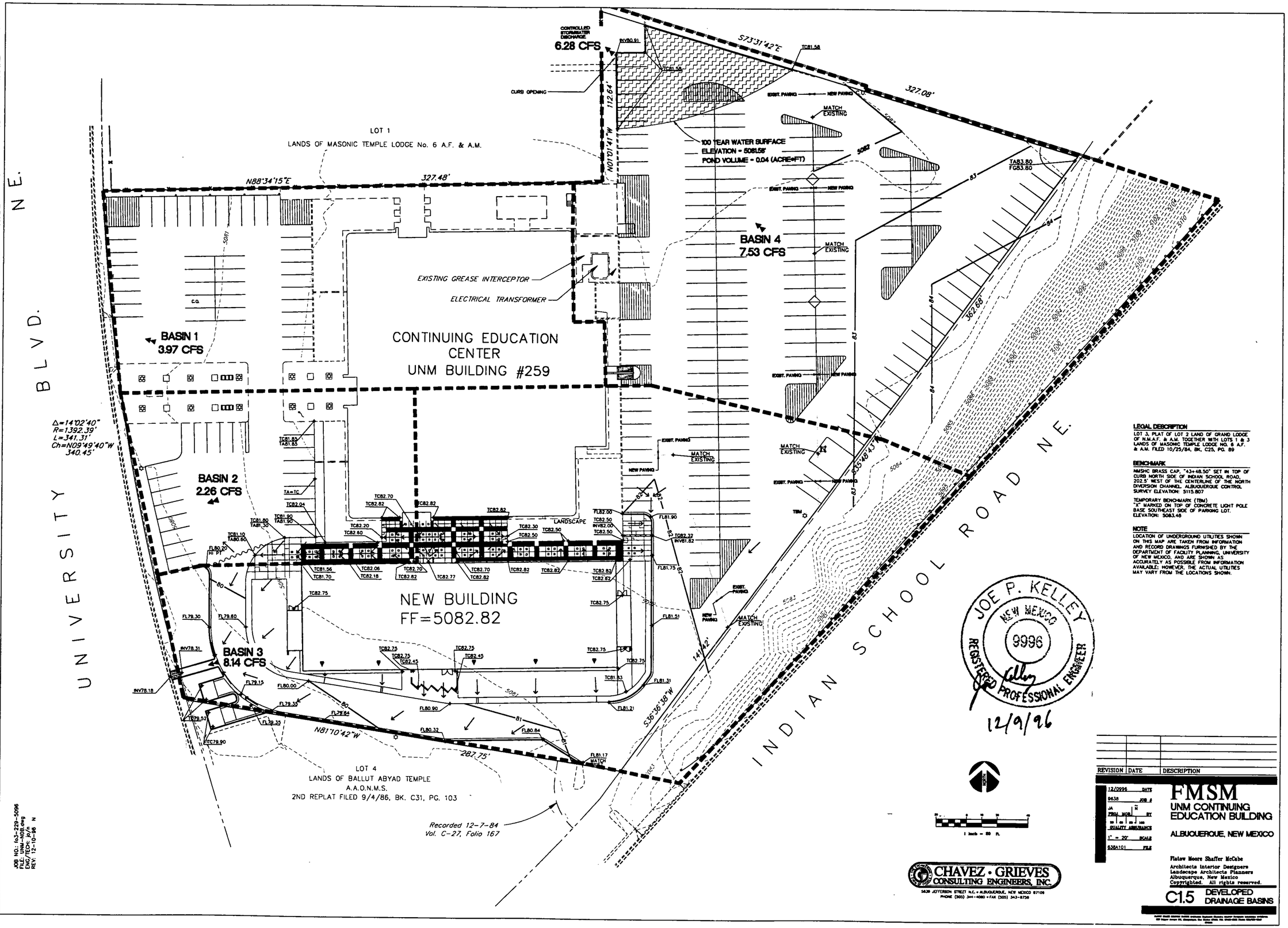

BASIN 1
4.03 CFS
BASIN 2
10.50 CFS
BASIN 3
6.83 CFS
CONTINUING EDUCATION
CENTER
UNM BUILDING #259
N88°34'15"E
327.48'
112.64'
N01°01'41"W
S73°31'42"E
327.08'
362.68'
S35°48'43"W
141.42'
S36°36'36"W
N81°10'42"W
287.75'
Δ=14°02'40"
R=1,392.39'
L=341.31'
Ch=N09°49'40"W
340.45'
UNIVERSITY BLVD.
INDIAN SCHOOL ROAD NE.
N.E.
JOE P. KELLEY
NEW MEXICO
8996
PROFESSIONAL ENGINEER
12/9/96
LEGAL DESCRIPTION
LOT 3, PLAT OF LOT 2 LAND OF GRAND LODGE OF N.M.A.F. & A.M. TOGETHER WITH LOTS 1 & 3 LANDS OF MASONIC TEMPLE LODGE NO. 6 A.F. & A.M. FILED 10/25/84, BK. C25, PG. 89
BENCHMARK
NMSHC BRASS CAP, "43+48.50" SET IN TOP OF CURB NORTH SIDE OF INDIAN SCHOOL ROAD, 202.5' WEST OF THE CENTERLINE OF THE NORTH DIVERSION CHANNEL. ALBUQUERQUE CONTROL SURVEY ELEVATION: 5115.807
TEMPORARY BENCHMARK (TBM)
"X" MARKED ON TOP OF CONCRETE LIGHT POLE BASE SOUTHEAST SIDE OF PARKING LOT. ELEVATION: 5083.48
NOTE
LOCATION OF UNDERGROUND UTILITIES SHOWN ON THIS MAP ARE TAKEN FROM INFORMATION AND RECORD DRAWINGS FURNISHED BY THE DEPARTMENT OF FACILITY PLANNING, UNIVERSITY OF NEW MEXICO, AND ARE SHOWN AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE; HOWEVER, THE ACTUAL UTILITIES MAY VARY FROM THE LOCATIONS SHOWN.
REVISION | DATE | DESCRIPTION
12/09/96 DATE
9438 JOB #
PROJ. MGR. BY
QUALITY ASSURANCE
1" = 20' SCALE
938A101 FILE
FMSM
UNM CONTINUING EDUCATION BUILDING
ALBUQUERQUE, NEW MEXICO
Flatow Moore Shaffer McCabe
Architects Interior Designers
Landscape Architects Planners
Albuquerque, New Mexico
Copyrighted. All rights reserved.
C1.4 EXISTING DRAINAGE BASINS
NORTH
1 inch = 20 ft.
CHAVEZ · GRIEVES
CONSULTING ENGINEERS, INC.
3638 JEFFERSON STREET N.E. • ALBUQUERQUE, NEW MEXICO 87109
PHONE (505) 344-4080 • FAX (505) 343-8756
JOB NO.: 12-10-96
FILE: EXIST-DB.DWG
ENG/TECH: JA/N
REV: 12-10-96 N

FIGURE 1



LEGAL DESCRIPTION

LOT 3, PLAT OF LOT 2 LAND OF GRAND LODGE OF N.M.A.F. & A.M. TOGETHER WITH LOTS 1 & 3 LANDS OF MASONIC TEMPLE LODGE NO. 6 A.F. & A.M. FILED 10/25/84, BK. C25, PG. 89

BENCHMARK

NMSHC BRASS CAP, "43+48.50" SET IN TOP OF CURB NORTH SIDE OF INDIAN SCHOOL ROAD, 202.5' WEST OF THE CENTERLINE OF THE NORTH DIVERSION CHANNEL. ALBUQUERQUE CONTROL SURVEY ELEVATION: 5115.807

TEMPORARY BENCHMARK (TBM)
"X" MARKED ON TOP OF CONCRETE LIGHT POLE BASE SOUTHEAST SIDE OF PARKING LOT.
ELEVATION: 5083.46

NOTE

LOCATION OF UNDERGROUND UTILITIES SHOWN ON THIS MAP ARE TAKEN FROM INFORMATION AND RECORD DRAWINGS FURNISHED BY THE DEPARTMENT OF FACILITY PLANNING, UNIVERSITY OF NEW MEXICO, AND ARE SHOWN AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE; HOWEVER, THE ACTUAL UTILITIES MAY VARY FROM THE LOCATIONS SHOWN.

REVISION	DATE	DESCRIPTION

12/09/96	DATE
9638	JOB #
JA / FROJ. MGR.	DR / BY
30 / 60 / 90 / 100 QUALITY ASSURANCE	
1" = 20'	SCALE
538A101	FILE

FMSM

UNM CONTINUING EDUCATION BUILDING

ALBUQUERQUE, NEW MEXICO

Flatow Moore Shaffer McCabe
Architects Interior Designers
Landscape Architects Planners
Albuquerque, New Mexico
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C1.5 DEVELOPED DRAINAGE BASINS

FIGURE 2

APPENDIX A

HYDRAULIC COMPUTATIONS

```
    AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
         RUN DATE (MON/DAY/YR) = 12/09/1996
         START TIME (HR:MIN:SEC) = 14:50:10     USER NO.= CHVZ_GNM.I01
         INPUT FILE = G:\\ELVIS\DATA\F03\229\DOCUMENT\AHYMO.IN

*S*************************************************************************
*S*************     CHAVEZ-GRIEVES CONSULTING ENGINEERS, INC.    **********
*S*************         UNM CONTINUING EDUCATION BUILDING        ***********
*S*************************************************************************
*S*************************************************************************
*S
*S USE 100 YEAR , 6 HOUR STORM
*
START                0.00
RAINFALL             TYPE=1  RAIN QUARTER=0  RAIN ONE=1.97
                     RAIN SIX=2.29  RAIN DAY=2.6  DT=0.03333

              COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
              DT =    .033330 HOURS        END TIME =     5.999400 HOURS
                 .0000   .0015   .0029   .0045   .0060   .0076   .0092
                 .0109   .0126   .0143   .0161   .0180   .0199   .0218
                 .0238   .0259   .0280   .0302   .0325   .0348   .0372
                 .0397   .0424   .0451   .0479   .0509   .0540   .0572
                 .0607   .0643   .0681   .0736   .0794   .0856   .0989
                 .1288   .1748   .2409   .3311   .4496   .6008   .7889
                1.0186  1.2318  1.3208  1.3960  1.4629  1.5237  1.5797
                1.6317  1.6802  1.7258  1.7686  1.8091  1.8473  1.8834
                1.9177  1.9501  1.9809  2.0102  2.0380  2.0443  2.0501
                2.0556  2.0609  2.0659  2.0707  2.0754  2.0798  2.0841
                2.0882  2.0922  2.0960  2.0998  2.1034  2.1069  2.1103
                2.1137  2.1169  2.1201  2.1232  2.1262  2.1292  2.1321
                2.1349  2.1377  2.1404  2.1431  2.1457  2.1482  2.1508
                2.1532  2.1557  2.1581  2.1604  2.1627  2.1650  2.1672
                2.1695  2.1716  2.1738  2.1759  2.1780  2.1800  2.1821
                2.1841  2.1860  2.1880  2.1899  2.1918  2.1937  2.1955
                2.1974  2.1992  2.2010  2.2027  2.2045  2.2062  2.2079
                2.2096  2.2113  2.2130  2.2146  2.2162  2.2178  2.2194
                2.2210  2.2226  2.2241  2.2257  2.2272  2.2287  2.2302
                2.2317  2.2331  2.2346  2.2360  2.2375  2.2389  2.2403
                2.2417  2.2431  2.2444  2.2458  2.2472  2.2485  2.2498
                2.2511  2.2525  2.2538  2.2550  2.2563  2.2576  2.2589
                2.2601  2.2614  2.2626  2.2638  2.2650  2.2663  2.2675
                2.2687  2.2698  2.2710  2.2722  2.2734  2.2745  2.2757
                2.2768  2.2779  2.2791  2.2802  2.2813  2.2824  2.2835
                2.2846  2.2857  2.2868  2.2878  2.2889  2.2900

*S
*S***********    COMPUTE RUNOFF FROM EXISTING BASINS    **********************
*S
*S  COMPUTE RUNOFF FROM EXISTING BASIN_1
COMPUTE NM HYD       ID=1  HYD=EXST_BASIN_1   DA=.0014 SQ MI
                     PER A=0.0  PER B=0.0  PER C=7.9   PER D=92.1
                     TP=0.1333  RAINFALL=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   5.0906    CFS   UNIT VOLUME =    .9973       B =   526.28      P60 = 1.9700
    AREA =      .001289 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330


    K =   .106995HR    TP =   .133300HR    K/TP RATIO =   .802661     SHAPE CONSTANT, N =  4.461616
    UNIT PEAK =   .31931    CFS   UNIT VOLUME =    .9616       B =   384.85      P60 = 1.9700
    AREA =      .000111 SQ MI    IA =    .35000 INCHES    INF =    .83000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

PRINT HYD            ID=1  CODE=1

                                        HYDROGRAPH FROM AREA EXST_BASIN_1
```

```
    RUNOFF VOLUME =     1.97925 INCHES     =        .1478 ACRE-FEET
    PEAK DISCHARGE RATE =       4.03 CFS  AT   1.500 HOURS   BASIN AREA =   .0014 SQ. MI.


*S
*S  COMPUTE RUNOFF FROM EXISTING BASIN_2
COMPUTE NM HYD      ID=2  HYD=EXST_BASIN_2   DA=.0038 SQ MI
                    PER A=0.0  PER B=0.0  PER C=18.8  PER D=81.2
                    TP=0.1333  RAINFALL=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   12.182    CFS   UNIT VOLUME =    .9984       B =   526.28      P60 = 1.9700
    AREA =      .003086 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330


    K =   .106995HR    TP =   .133300HR    K/TP RATIO =   .802661     SHAPE CONSTANT, N =  4.461616
    UNIT PEAK =   2.0625    CFS   UNIT VOLUME =    .9945       B =   384.85      P60 = 1.9700
    AREA =      .000714 SQ MI    IA =    .35000 INCHES    INF =    .83000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

PRINT HYD           ID=2  CODE=1

                                        HYDROGRAPH FROM AREA EXST_BASIN_2


    RUNOFF VOLUME =     1.87328 INCHES     =        .3796 ACRE-FEET
    PEAK DISCHARGE RATE =      10.50 CFS  AT   1.500 HOURS   BASIN AREA =   .0038 SQ. MI.


*S *S  COMPUTE RUNOFF FROM EXISTING BASIN_3
COMPUTE NM HYD      ID=3  HYD=EXST_BASIN_3   DA=.0028 SQ MI
                    PER A=0.0  PER B=0.0  PER C=51.7   PER D=48.3
                    TP=0.1333  RAINFALL=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   5.3393    CFS   UNIT VOLUME =    .9973       B =   526.28      P60 = 1.9700
    AREA =      .001352 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330


    K =   .106995HR    TP =   .133300HR    K/TP RATIO =   .802661     SHAPE CONSTANT, N =  4.461616
    UNIT PEAK =   4.1793    CFS   UNIT VOLUME =    .9972       B =   384.85      P60 = 1.9700
    AREA =      .001448 SQ MI    IA =    .35000 INCHES    INF =    .83000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

PRINT HYD           ID=3  CODE=1

                                        HYDROGRAPH FROM AREA EXST_BASIN_3


    RUNOFF VOLUME =     1.55341 INCHES     =        .2320 ACRE-FEET
    PEAK DISCHARGE RATE =       6.83 CFS  AT   1.500 HOURS   BASIN AREA =   .0028 SQ. MI.


*S
*S**********    COMPUTE RUNOFF FROM DEVELOPED BASINS     *****************
*S
*S  COMPUTE RUNOFF FROM DEVELOPED BASIN 1
COMPUTE NM HYD      ID=4  HYD=DEVEL_BASIN_1   DA=.0014 SQ MI
                    PER A=0.0  PER B=0.0  PER C=12.6   PER D=87.4
                    TP=0.1333  RAINFALL=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   4.8308    CFS   UNIT VOLUME =    .9969       B =   526.28      P60 = 1.9700
    AREA =      .001224 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330
```

```
    K =   .106995HR    TP =   .133300HR    K/TP RATIO =   .802661     SHAPE CONSTANT, N =  4.461616
    UNIT PEAK =   .50928    CFS   UNIT VOLUME =    .9748       B =   384.85      P60 = 1.9700
    AREA =      .000176 SQ MI    IA =    .35000 INCHES    INF =    .83000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

PRINT HYD           ID=4  CODE=1

                                        HYDROGRAPH FROM AREA DEVEL_BASIN_1

    RUNOFF VOLUME =     1.93356 INCHES     =        .1444 ACRE-FEET
    PEAK DISCHARGE RATE =       3.97 CFS  AT   1.500 HOURS   BASIN AREA =   .0014 SQ. MI.

*S
*S COMPUTE RUNOFF FROM DEVELOPED BASIN 2
COMPUTE NM HYD      ID=5  HYD=DEVEL_BASIN_2   DA=.0008 SQ MI
                    PER A=0.0  PER B=0.0  PER C=14.3   PER D=85.7
                    TP=0.1333  RAINFALL=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   2.7068    CFS   UNIT VOLUME =    .9949       B =   526.28      P60 = 1.9700
    AREA =      .000686 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

    K =   .106995HR    TP =   .133300HR    K/TP RATIO =   .802661     SHAPE CONSTANT, N =  4.461616
    UNIT PEAK =   .33028    CFS   UNIT VOLUME =    .9616       B =   384.85      P60 = 1.9700
    AREA =      .000114 SQ MI    IA =    .35000 INCHES    INF =    .83000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

PRINT HYD           ID=5  CODE=1

                                        HYDROGRAPH FROM AREA DEVEL_BASIN_2

    RUNOFF VOLUME =     1.91703 INCHES     =        .0818 ACRE-FEET
    PEAK DISCHARGE RATE =       2.26 CFS  AT   1.500 HOURS   BASIN AREA =   .0008 SQ. MI.

*S
*S COMPUTE RUNOFF FROM DEVELOPED BASIN 3
COMPUTE NM HYD      ID=6  HYD=DEVEL_BASIN_3   DA=.0030 SQ MI
                    PER A=0.0  PER B=0.0  PER C=24.0   PER D=76.0
                    TP=0.1333  RAINFALL=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   9.0016    CFS   UNIT VOLUME =    .9981       B =   526.28      P60 = 1.9700
    AREA =      .002280 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

    K =   .106995HR    TP =   .133300HR    K/TP RATIO =   .802661     SHAPE CONSTANT, N =  4.461616
    UNIT PEAK =   2.0787    CFS   UNIT VOLUME =    .9945       B =   384.85      P60 = 1.9700
    AREA =      .000720 SQ MI    IA =    .35000 INCHES    INF =    .83000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

PRINT HYD           ID=6  CODE=1

                                        HYDROGRAPH FROM AREA DEVEL_BASIN_3

    RUNOFF VOLUME =     1.82272 INCHES     =        .2916 ACRE-FEET
    PEAK DISCHARGE RATE =       8.14 CFS  AT   1.500 HOURS   BASIN AREA =   .0030 SQ. MI.

*S
*S COMPUTE RUNOFF FROM DEVELOPED BASIN 4
```

```
COMPUTE NM HYD       ID=7  HYD=DEVEL_BASIN_4   DA=.0028 SQ MI
                     PER A=0.0  PER B=0.0  PER C=26.4   PER D=73.6
                     TP=0.1333  RAINFALL=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   8.1361    CFS   UNIT VOLUME =    .9981       B =   526.28      P60 = 1.9700
    AREA =      .002061 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330


    K =   .106995HR    TP =   .133300HR    K/TP RATIO =   .802661     SHAPE CONSTANT, N =  4.461616
    UNIT PEAK =   2.1341    CFS   UNIT VOLUME =    .9945       B =   384.85      P60 = 1.9700
    AREA =      .000739 SQ MI    IA =    .35000 INCHES    INF =    .83000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

PRINT HYD            ID=7  CODE=1

                                        HYDROGRAPH FROM AREA DEVEL_BASIN_4

    RUNOFF VOLUME =     1.79938 INCHES     =        .2687 ACRE-FEET
    PEAK DISCHARGE RATE =       7.53 CFS  AT   1.500 HOURS   BASIN AREA =   .0028 SQ. MI.


*S
*S ROUTE BASIN 4 TO DETENTION POND IN PARKING LOT
COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=1 MIN EL=0.0 MAX EL=0.667
                     CH SLP=.01   FP SLP=.01  N=-.013  DIST=1.0
                     DIST   EL
                     0.0    0.5
                     25.0   0.0
                     50.0   0.5
```

RATING CURVE VALLEY SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS	TOP WIDTH FT
.00	.00	.00	.00
.04	.03	.02	1.76
.07	.12	.15	3.51
.11	.28	.45	5.27
.14	.49	.96	7.02
.18	.77	1.74	8.78
.21	1.11	2.83	10.53
.25	1.51	4.26	12.29
.28	1.97	6.09	14.04
.32	2.50	8.34	15.80
.35	3.08	11.04	17.55
.39	3.73	14.23	19.31
.42	4.44	17.95	21.06
.46	5.21	22.22	22.82
.49	6.04	27.08	24.57
.53	6.91	33.55	25.00
.56	7.79	40.94	25.00
.60	8.67	48.91	25.00
.63	9.55	57.44	25.00
.67	10.43	66.50	25.00

```
*S
COMPUTE TRAVEL TIME ID=8 REACH=1 VS NO=1  L=50  SLP=.010
```

TRAVEL TIME TABLE

REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.035	.031	.02	.0180
.070	.123	.15	.0113
.105	.277	.45	.0086
.140	.493	.96	.0071

.176	.770	1.74	.0062
.211	1.109	2.83	.0054
.246	1.510	4.26	.0049
.281	1.972	6.09	.0045
.316	2.496	8.34	.0042
.351	3.081	11.04	.0039
.386	3.728	14.23	.0036
.421	4.437	17.95	.0034
.456	5.207	22.22	.0033
.491	6.039	27.08	.0031
.527	6.914	33.55	.0029
.562	7.792	40.94	.0026
.597	8.670	48.91	.0025
.632	9.547	57.44	.0023
.667	10.425	66.50	.0022

```
*S
*S ROUTE RUNOFF FROM BASIN 4 TO POND IN PARKING LOT
ROUTE                ID=8 HYD=POND INFLOW ID=7 DT=0.0
PRINT HYD            ID=8 CODE=1

                                HYDROGRAPH FROM AREA POND

    RUNOFF VOLUME =      1.79946 INCHES     =        .2687 ACRE-FEET
    PEAK DISCHARGE RATE =        7.52 CFS  AT   1.500 HOURS   BASIN AREA =   .0028 SQ. MI.


*S
*S COMPUTE THE STORAGE NECESSARY TO CONTROL OFFSITE DISCHARGE TO 6.0 CFS
*S
ROUTE RESERVOIR      ID=9  HYD=POND  INFLOW ID=8  CODE=10
                     OUTFLOW      STORAGE      ELEVATION
                      0              0           80.91
                      6.3             0.04         81.58

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

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

      .00        .00      80.91       .000        .00
      .33        .00      80.91       .000        .00
      .67        .00      80.91       .000        .00
     1.00        .00      80.91       .000        .00
     1.33       1.86      81.00       .005        .81
     1.67       3.91      81.46       .033       5.18
     2.00       1.73      81.13       .013       2.08
     2.33        .37      80.97       .004        .56
     2.67        .14      80.93       .001        .18
     3.00        .07      80.92       .001        .08
     3.33        .04      80.92       .000        .05
     3.67        .04      80.91       .000        .04
     4.00        .03      80.91       .000        .03
     4.33        .03      80.91       .000        .03
     4.67        .03      80.91       .000        .03
     5.00        .03      80.91       .000        .03
     5.33        .03      80.91       .000        .03
     5.67        .04      80.91       .000        .04
     6.00        .04      80.91       .000        .04
     6.33        .00      80.91       .000        .01
     6.67        .00      80.91       .000        .00
 PEAK DISCHARGE =        6.281 CFS - PEAK OCCURS AT HOUR    1.57
 MAXIMUM WATER SURFACE ELEVATION =       81.578
 MAXIMUM STORAGE =          .0399 AC-FT      INCREMENTAL TIME=     .033330HRS

PRINT HYD            ID=9  CODE=1

                                HYDROGRAPH FROM AREA POND
```

```
RUNOFF VOLUME =      1.79929 INCHES      =         .2687 ACRE-FEET
PEAK DISCHARGE RATE =       6.28 CFS  AT    1.567 HOURS   BASIN AREA =   .0028 SQ. MI.


*S
FINISH

NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 14:50:12
```

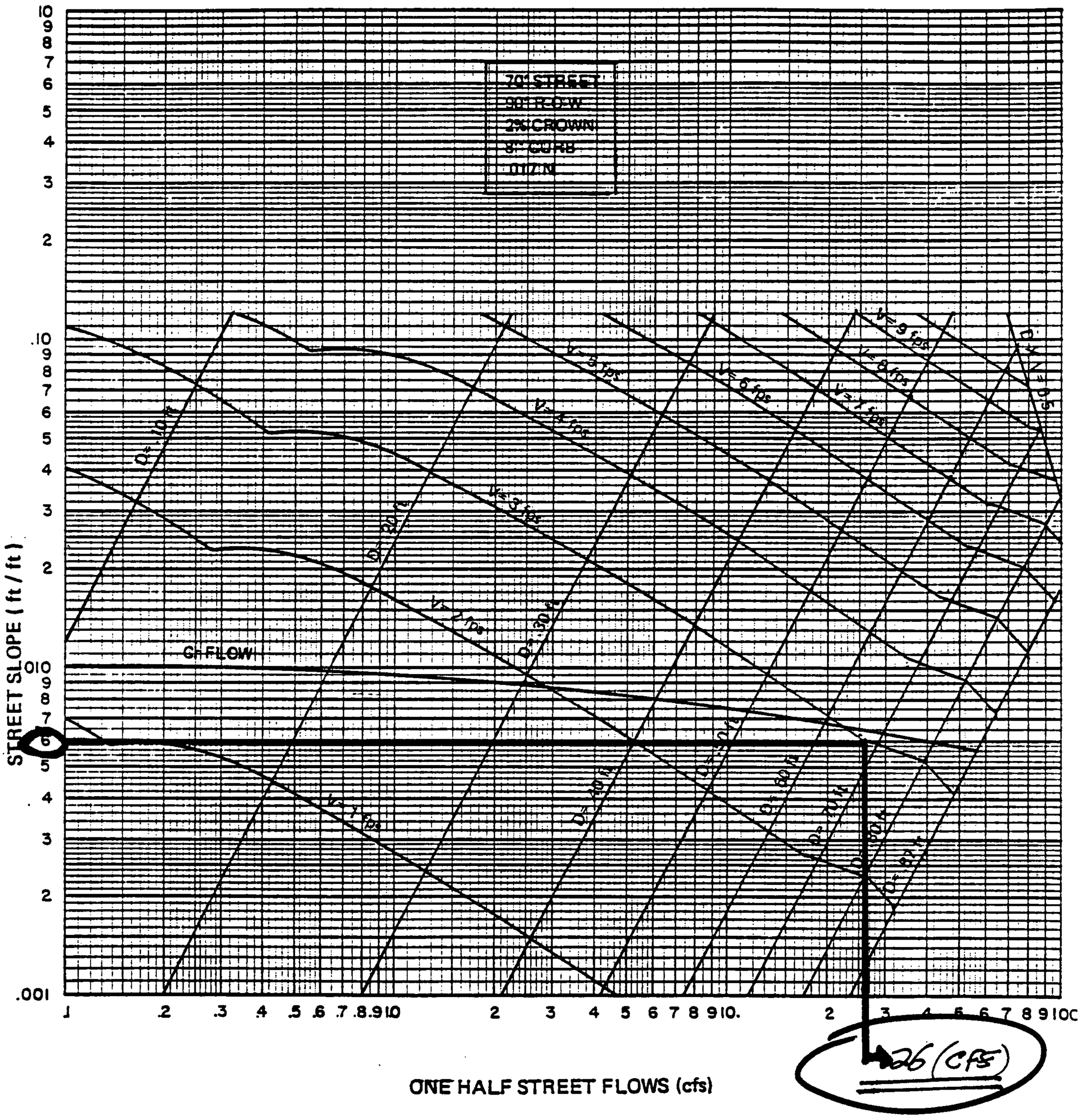
CURB CUT TO CONTROL DISCHARGE FROM POND
Worksheet for Rectangular Channel

Project Description	
Project File	untitled.fm2
Worksheet	UNM CONTINUING ED.
Flow Element	Rectangular Channel
Method	Manning's Formula
Solve For	Bottom Width

Input Data		
Mannings Coefficient	0.013	
Channel Slope	0.009000	ft/ft
Depth	0.67	ft
Discharge	6.28	cfs

Results		
Bottom Width	1.68	ft
Flow Area	1.12	ft^2
Wetted Perimeter	3.01	ft
Top Width	1.68	ft
Critical Depth	0.76	ft
Critical Slope	0.006367	ft/ft
Velocity	5.61	ft/s
Velocity Head	0.49	ft
Specific Energy	1.16	ft
Froude Number	0.00	

STREET CAPACITY



REV. 3-83

PLATE 22.3 D-4

CHAVEZ • GRIEVES
CONSULTING ENGINEERS, INC.
5639 JEFFERSON STREET N.E. • ALBUQUERQUE, NEW MEXICO 87109
PHONE (505)344-4080 • FAX (505)343-8759
cgmail@cg-engrs.com

SHEET NO.	Page1	OF	Page1
PROJECT	UNM Continuing Ed. Bldg.		
SUBJECT	Street Capacity - Basin		
CLIENT	FMSM	JOB NO.	F03-229-5096
BY	JA	DATE	12/09/96
CHECKED BY		DATE	

Street Capacity

Determine peak discharge from basin.

Developed discharge form UNM Cont. Ed. Site (See AHYMO calculations)

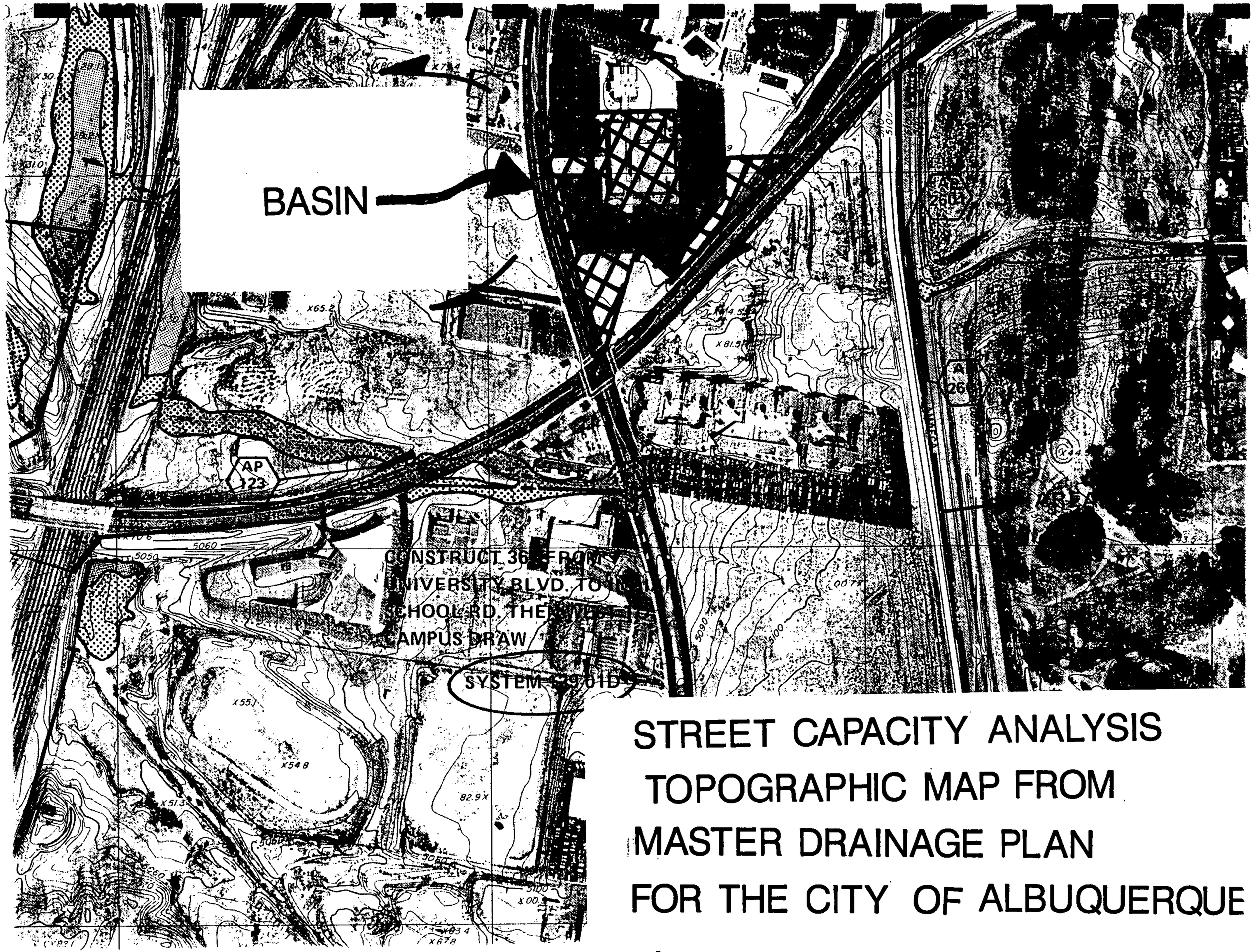
Basin ID	Qp(cfs)
Basin #1	3.97
Basin #2	2.26
Basin #3	8.14

Discharge from property south of Cont. Ed. Bldg.
(All Type D - Impervious)

Basin ID	Area (ac)	Qpd	Qp (cfs)
South	0.37	4.7	1.73

Total Qp = 16.10 (cfs)

Qp
16.10 (cfs)



STREET CAPACITY ANALYSIS TOPOGRAPHIC MAP FROM MASTER DRAINAGE PLAN FOR THE CITY OF ALBUQUERQUE

APPENDIX B

DESIGN DRAWINGS