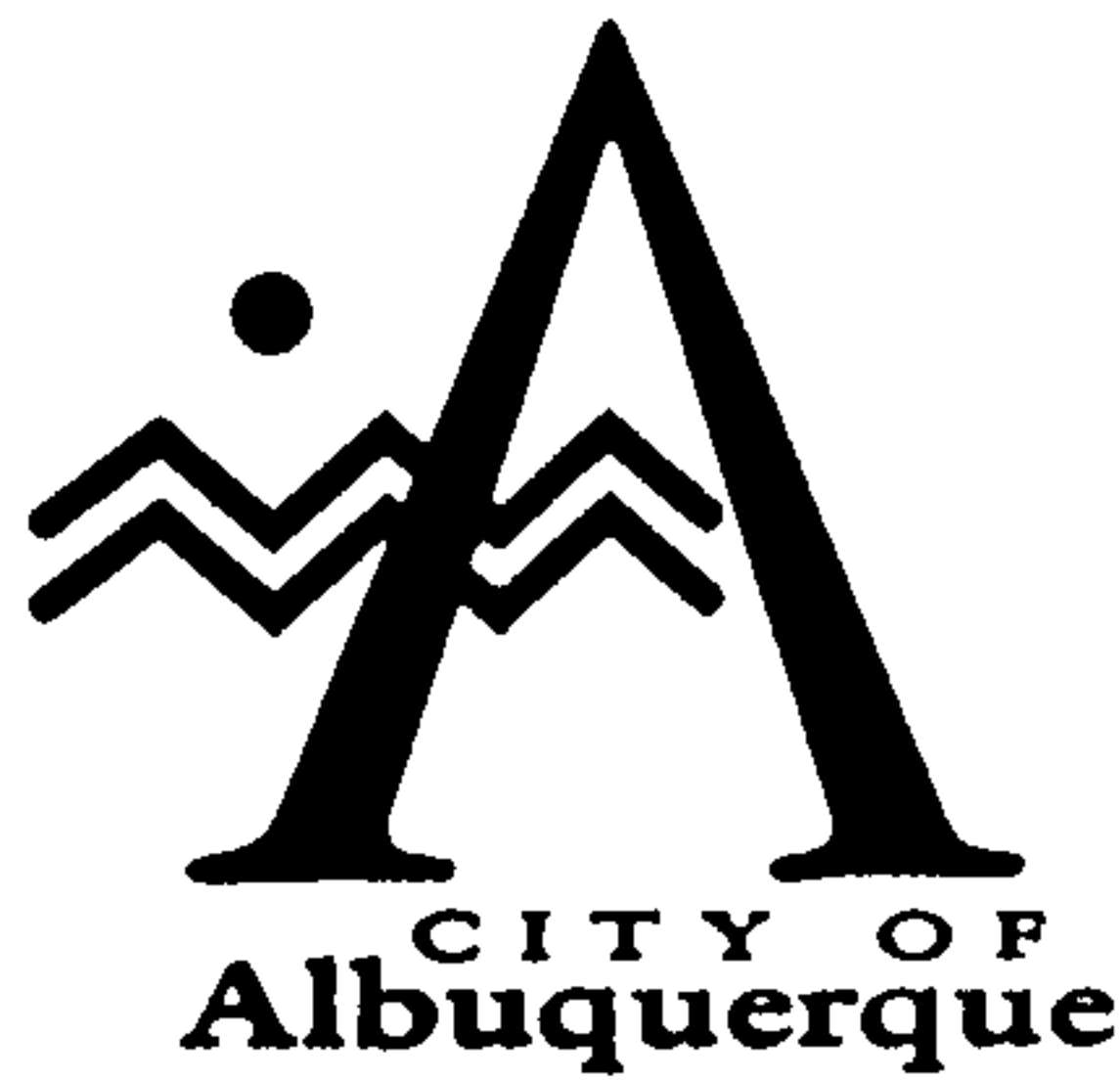




September 22, 1998

Larry Read
Larry Read & Associates
P.O. Box 90233
Albuquerque, New Mexico 87199

RE: ENGINEER CERTIFICATION FOR ZAMZOK OFFICE BUILDING (E10-D10)
CERTIFICATION STATEMENT 7/6/98

Dear Mr. Read:

Based on the information provided on your August 7, 1998 submittal, Engineer Certification for the above referenced site is acceptable.

Please be advised that the Certificate of Occupancy will not be released until a copy of the green tag for the SO19 has been submitted to our office.

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

C: Andrew Garcia

File

Sincerely

Bernie J. Montoya CE
Associate Engineer

Good for You, Albuquerque!





January 27, 1998

Larry Read, P.E.
Larry Read & Associates
P.O. Box 90233
Albuquerque, NM 87199

RE: ZAMZOK OFFICE BUILDING (E10-D10). DRAINAGE REPORT FOR BUILDING AND SO #19 PERMIT APPROVALS. ENGINEER'S STAMP DATED JANUARY 4, 1998.

Dear Mr. Read:

Based on the information provided on your January 7, 1998 submittal, the above referenced project is approved for Building and SO #19 Permits.

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

A separate permit is required for construction within the City right-of-way. A copy of this approval letter must be on hand when applying for the excavation permit.

Prior to Certificate of Occupancy approval, and Engineer's Certification will be required.

If I can be of further assistance, please feel free to contact me at 924-3984.

Sincerely,

Lisa Ann Manwill, P.E.
Hydrology

c: Arlene Portillo
Andrew Garcia

File

Good for You, Albuquerque!



DRAINAGE REPORT

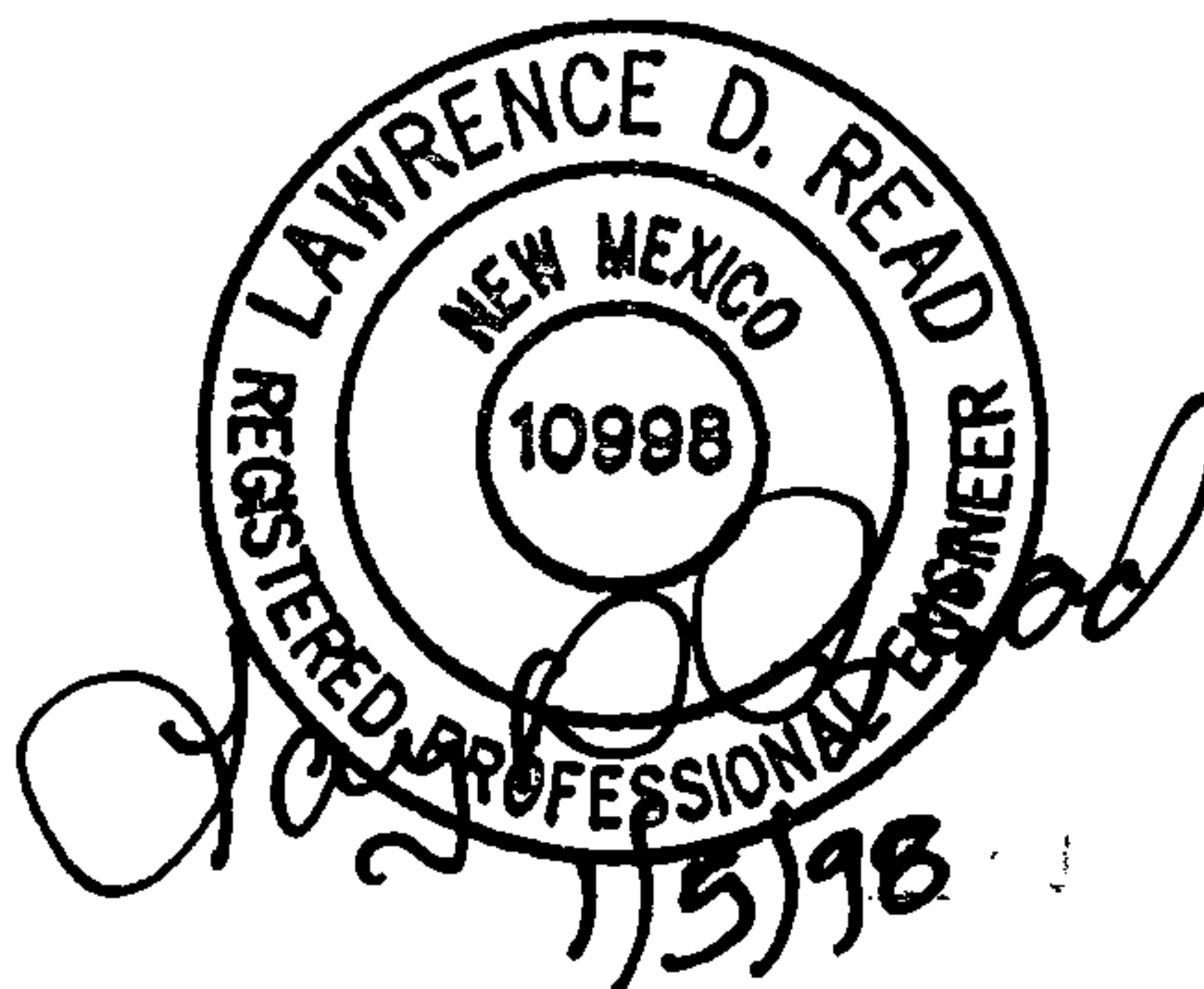
for

ZAMZOK OFFICE BUILDING

6311 Montano Road NW

Albuquerque, New Mexico

December 26, 1997



PREPARED BY
LARRY D. READ, PE
P. O. BOX 90233
ALBUQUERQUE, NEW MEXICO 87199
(505) 857-0863

DRAINAGE REPORT

for

ZAMZOK OFFICE BUILDING

6311 MONTANO ROAD NW

Albuquerque, New Mexico

December 26, 1997

LOCATION & DESCRIPTION

The proposed site is located at 6311 Montano Road NW. The legal description is: Lot 2, Block 7, Volcano Cliffs Unit No. 3.

Currently the site is undeveloped as are all lots that surround it. The owner proposes to construct a 2922 square foot office building on the 0.284 acre site. The proposed construction will provide 3611 square feet of natural grass and shrub landscaping area and 5838 square feet of paved parking and sidewalks.

EXISTING DRAINAGE CONDITIONS

The existing natural site is vegetated with high desert type grasses and weeds and slopes toward the southeast at approximately 5%. The existing drainage is shallow sheet flow toward Montano Road. The sheet flow is intercepted in a shallow channel just north of the north sidewalk on Montano Road. This channel conveys the runoff east, across the lot east of this site, and discharges it into the intersection of Whitman and Montano Road where it enters the Montano Storm Drain system via existing inlets at the intersection. In addition to the on-site runoff, there is a small area (0.91 acres) of undeveloped land west of this site that drains across this lot in the channel discussed above. All existing runoff, on and off-site currently is collected in the existing inlets at the intersection of Whitman and Montano Road approximately 250 east of this site.

OFFSITE DRAINAGE

As discussed above, there is one small 0.91 acre drainage basin of undeveloped land that discharges runoff across this site. This basin includes portions of several lots. The runoff currently concentrates in a shallow channel at the north edge of Montano Road and is discharged to the intersection of Whitman and Montano as discussed above. This report has analyzed the runoff from this area as natural land treatment only since there is no existing development and per current city drainage ordinances, as the lots develop, the runoff should be directed toward Montano Road to eliminate any "cross-lot" drainage.

SAD 221

This lot is adjacent to the west boundary of an area being developed as part of the City's SAD-221 project. The SAD has analyzed the runoff from the off-site contributing basins, including this site, to determine available storm drain capacity. The available capacity analysis utilized a generated runoff of 3.7 cfs per acre. This analysis further showed that the existing 48" storm drain in Montano has a capacity of 88 cfs and a developed contribution of 68 cfs (taken from SAD 219 Drainage Report for the "Montano Basin"). The proposed development on this site generates 1.05 cfs or 3.74 cfs/acre. The additional per acre runoff generation from this site will utilize only a very small percentage (0.04 cfs or about 0.2%) of the additional capacity in the existing 48" Montano Storm Drain.

PROPOSED CONDITIONS

The proposed office building is located in the northwest corner of the site, 10 feet from the north property line and the west wall is placed on the west lot line by variance from the zoning department. The runoff generated in the 10' wide strip between the building and north property line and the building and the east property line is collected in a swale graded at approximately 1% toward the east and south around the building. The runoff in this swale is discharged into the northeast corner of the proposed parking lot through a 2' wide curb cut. The runoff from the building roof is collected in an internal roof drain system that discharges into the proposed parking lot via curb drains. All runoff from the proposed parking lot, the roof area, and the swale north and east of the building, is conveyed in the parking lot toward the southwest as sheet flow. It is discharged into Montano Road via a 2' wide sidewalk culvert and concrete rundown at the southeast corner of the parking lot. Once in Montano Road, the flow runs east in the north curb line to the intersection of Whitman and Montano where it is intercepted in existing storm drain inlets that connect into the existing 48" Montano Storm Drain System discussed above.

The offsite flow from west of the site is proposed to be intercepted in a graded swale within

the existing 25' wide alley adjacent to the west property line of this site. The swale will divert the flow south into Montano to keep it from crossing this proposed development and the adjacent lot east of our site. The slope in the alley, existing and proposed, ranges from 1.5 to over 5%. Since velocities in the channel are below scour velocity, the channel will be allowed to recover vegetation naturally.

This existing alley cannot be used by vehicular traffic now because of the steep existing slope at the north end. In the future, it has been indicated by the developer of the Volcano Cliffs (at the north end of the alley) and City SAD engineer that the alley will be cut off by platted residential lots and the alley easement vacated.

FLOOD PLAIN STATUS

As shown on FEMA Map 35001C0114D, this area is within a zone designated "Zone X" defined as "Areas determined to be outside 500-year floodplain. Additionally, the runoff from this site does not contribute to any undrained flood plains.

METHODOLOGY

The hydrology for this project was analyzed using the January 1993 revision of the City of Albuquerque Development Process Manual, Section 22.2 as follows:

The specific values used for this analysis are as follows:

-Precipitation Zone 1

-Design Storm 100-year, 6-hour duration
 $i = 2.20$ inches ($t_c = 0.2$ hours)

The AHYMO computer model of the runoff volumes and peak flow rates are included in the Appendix B for reference.

NOTE: All on-site landscaping has been considered Type B land treatment since it will be native grasses, shrubs, and bark mulch.

SUMMARY

Results from hydrologic analysis:

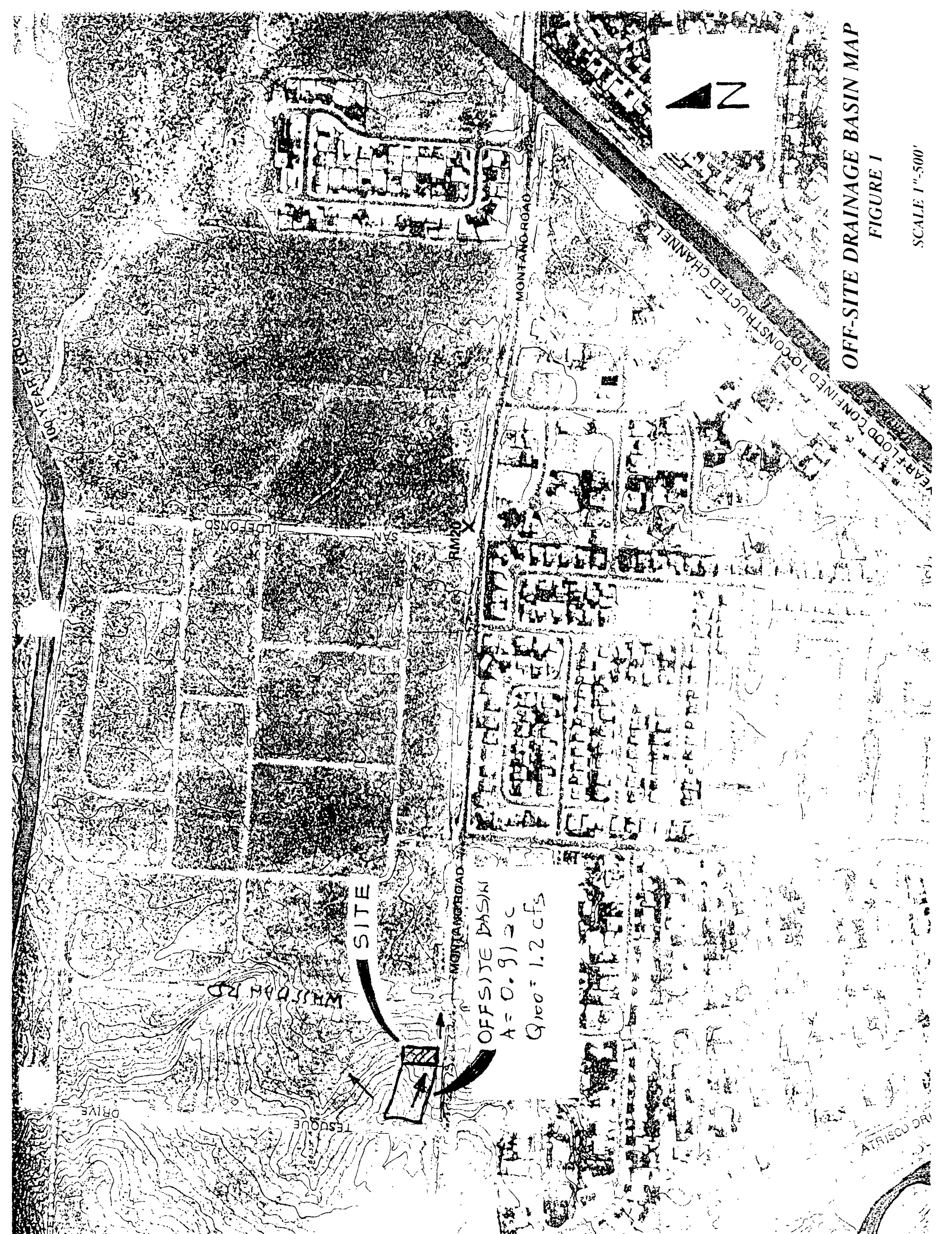
Existing Conditions

Off-site Basin	$Q_{100} = 1.2 \text{ cfs}$	$V_{100} = .034 \text{ ac-ft}$
On-site Basin	$Q_{100} = 0.38 \text{ cfs}$	$V_{100} = .0104 \text{ ac-ft}$
Total Contribution to Montano	$Q_{100} = 1.58 \text{ cfs}$	$V_{100} = .0444 \text{ ac-ft}$

Developed Conditions

Off-site Basin	$Q_{100} = 1.2 \text{ cfs}$	$V_{100} = .034 \text{ ac-ft}$
Basin A	$Q_{100} = 1.05 \text{ cfs}$	$V_{100} = .037 \text{ ac-ft}$
Total Contribution to Montano	$Q_{100} = 2.25 \text{ cfs}$	$V_{100} = .071 \text{ ac-ft}$

APPENDIX A



SITE

OFFSITE BASIN

A = 0.9120

Q100 = 1.2 cfs

OFF-SITE DRAINAGE BASIN MAP

FIGURE 1

SCALE 1"=500'

RUN DATE (MON/DAY/YR) =01/05/1998
USER NO.= CINFRRNM.I01

```

START
*S      COMPUTE 100 YR. 6 HR. HYDROGRAPHS FOR ZAMZOK OFFICE BUILDING
*S      ZAMZOK.DAT      -      HYMO PER JAN 1993 DPM REVISIONS
*S
*S
RAINFALL  TYPE= 1
*S
*S COMPUTE RUNOFF FOR EXISTING CONDITIONS ON-SITE
*S
*S
*S
*S  BASIN A-1
COMPUTE NM HYD      101.10  -      1      .00044      .37      .010      .44014      1.530      1.331 PER IMP=      .00
*S
*S
*S COMPUTE RUNOFF FOR DEVELOPED CONDITIONS ON-SITE
*S
*S
*S
*S  BASIN A-1
COMPUTE NM HYD      102.10  -      2      .00044      1.05      .037      1.58744      1.500      3.738 PER IMP=  70.80
*S
*S
*S
*S ROUTE DEVELOPED FLOWS THROUGH SIDEWALK CULVERT
*S
*S
*S ROUTE RESERVOIR      POND.002      2      6      .00044      1.05      .037      1.58681      1.500      3.738 AC-FT=      .000
*S
*S
*S
*S COMPUTE RUNOFF FOR EXISTING CONDITIONS OFF-SITE
*S
*S
*S
*S  BASIN OFF1
*S
COMPUTE NM HYD      103.10  -      3      .00143      1.20      .033      .44014      1.530      1.315 PER IMP=      .00
*S
*S
*S
FINISH

```

START TIME=0.0 0 -6
*S COMPUTE 100 YR. 6 HR. HYDROGRAPHS FOR ZAMZOK OFFICE BUILDING
*S ZAMZOK.DAT - HYMO PER JAN 1993 DPM REVISIONS

*-----
*-----
RAINFALL TYPE=-1 RAIN QUAR=0 RAIN ONE=1.87 RAIN SIX=2.20
RAIN DAY=2.66 DT=0.03
*-----
*-----

*S
*S COMPUTE RUNOFF FOR EXISTING CONDITIONS ON-SITE
*S
*-----

*S
*S
*S BASIN A-1
COMPUTE NM HYD ID=1 HYD NO= 101.1 DA=0.00044 SQ MI
PER A=100 PER B=0 PER C=0 PER D=0 TP=-.133
RAIN=-1

PRINT HYD ID=1 CODE=10

*S
*-----
*S
*S COMPUTE RUNOFF FOR DEVELOPED CONDITIONS ON-SITE
*S
*-----
*S

- BASIN A-1
COMPUTE NM HYD ID=2 HYD NO= 102.1 DA=0.00044 SQ MI
PER A=0 PER B=29.2 PER C=0 PER D=70.8 TP=-.133
RAIN=-1

PRINT HYD ID=2 CODE=10

*S
*S
*-----
*-----
*S
*S ROUTE DEVELOPED FLOWS THROUGH SIDEWALK CULVERT
*S
*-----

*S
ROUTE RESERVOIR ID=6 HYD=POND.002 INFLOW ID=2 CODE=10
OUTFLOW(CFS) STORAGE(AC-FT) ELEV(FT)
0.0 0.0 51.51
0.2.6 0.0000041 51.71
0.74 0.0000069 51.91

*S
PRINT HYD ID=6 CODE=10

*S
*-----
*-----
COMPUTE RUNOFF FOR EXISTING CONDITIONS OFF-SITE

*S
*-----
*S
*S

*S BASIN OFF1

*S

COMPUTE NM HYD

ID=3 HYD NO= 103.1 DA=0.001427 SQ MI
PER A=100 PER B=0 PER C=0 PER D=0 TP=-.133
RAIN=-1

PRINT HYD

ID=3 CODE=10

*S

*S

*S

FINISH

PROJECT: _____

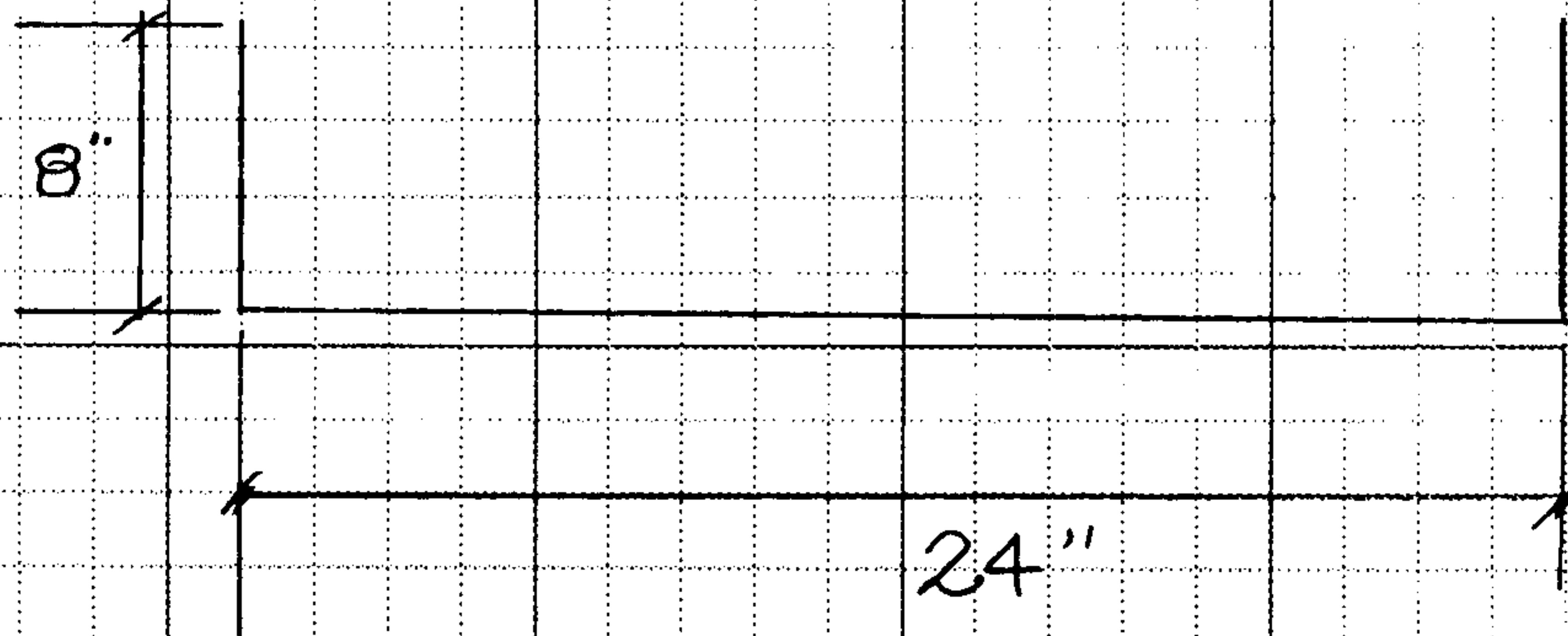
LARRY READ & ASSOCIATES

CALCULATIONS

Civil Engineers

DATE: _____

By: _____ Pg: ____ of ____

SIDEWALK CULVERT CAPACITY

HORIZONTAL FLOW - $Q = CLH^{3/2} + V^2/2g$

V-Street Flow = 2 ft/sec

$C = 2.6$ (Breder & King)

$H = .67/2 = .33'$

$L = 2'$

$Q = 2.6 * 2 * (.33)^{3/2} + (2)^2 / 2 * 32.2 = 1.0 cfs$

$Q_{100} = 1.1 cfs$ say OK