CITY OF ALBUQUERQUE

January 4, 2006

James D. Hughes, P.E.
Mark Goodwin & Associates, PA
P.O. Box 90606
Albuquerque, NM 87199

Re: Avalon Office Building, Northeast Corner Unser & Tower SW
Grading & Drainage Plan-Engineer's Stamp dated 12-21-05 (L10-D29)

Dear Mr. Hughes,

Based upon the information provided in your submittal dated 12-21-05, the above referenced plan is approved for Building Permit. Please attach a copy of this approved plan to the construction sets prior to sign-off by Hydrology. Additionally, prior to release of the Certificate of Occupancy an Engineer's Certification of the grading plan per the DPM checklist will be required.

This project requires a National Pollutant Discharge Elimination System (NPDES) permit. Refer to the attachment that is provided with this letter for details. If you have any questions please feel free to call the Municipal Development Department Hydrology section at 768-3654 (Charles Caruso).

If you have any questions, you can contact me at 924-3990.

Sincerely,

Phillip J. Lovato, E.I., C.F.M.
Engineering Associate, Hydrology,
Development and Building Services,
Planning Department

cc: Charles Caruso, DMD
file

P.O. Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV. 1/28/2003rd)

PROJECT TITLE: Avalon Office Building
DRB #: _____ EPC#:_____

ZONE MAP/DRG. FILE #:L-10/D29
WORK ORDER#:_____

LEGAL DESCRIPTION: Tract 3B, Town of Atrisco Grant, Unit 2.
CITY ADDRESS:Tower Rd. S.W.

ENGINEERING FIRM: Mark Goodwin & Associates, PA
ADDRESS: PO Box 90606
CITY, STATE: Albuquerque, NM

CONTACT: Pavan K. Toleti
PHONE: 828-2200
ZIP CODE: 87199

OWNER: Empire Southwest Ltd. Co
ADDRESS: 7620 jefferson NE
CITY, STATE: ALbuquerque, NM

CONTACT: Mr. Doug
PHONE: 268-4144
ZIP CODE: 87109

ARCHITECT: Mullen Heller Architecture, PC
ADDRESS: 1015 Tijeras NW, Suite 220
CITY, STATE: Albuquerque, NM

CONTACT: Mr. Doug
PHONE: 268-4144
ZIP CODE: 87102

SURVEYOR: _____
ADDRESS: _____
CITY, STATE: _____

CONTACT: _____
PHONE: _____
ZIP CODE: _____

CONTRACTOR: _____
ADDRESS: _____
CITY, STATE: _____

CONTACT: _____
PHONE: _____
ZIP CODE: _____

CHECK TYPE OF SUBMITTAL:

- ☒ DRAINAGE REPORT
- ☐ DRAINAGE PLAN 1st SUBMITTAL, ***REQUIRES TCL or equal***
- ☒ DRAINAGE PLAN RESUBMITTAL
- ☒ CONCEPTUAL GRADING & DRAINAGE PLAN
- ☒ GRADING PLAN
- ☐ EROSION CONTROL PLAN
- ☐ ENGINEER'S CERTIFICATION (HYDROLOGY)
- ☐ CLOMR/LOMR
- ☐ TRAFFIC CIRCULATION LAYOUT (TCL)
- ☐ ENGINEERS CERTIFICATION (TCL)
- ☐ ENGINEERS CERTIFICATION (DRB APPR. SITE PLAN)
- ☐ OTHER

Resub

CHECK TYPE OF APPROVAL SOUGHT:

- ☐ SIA / FINANCIAL GUARANTEE RELEASE
- ☐ PRELIMINARY PLAT APPROVAL
- ☐ S. DEV. PLAN FOR SUB'D. APPROVAL
- ☐ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
- ☐ SECTOR PLAN APPROVAL
- ☐ FINAL PLAT APPROVAL
- ☐ FOUNDATION PERMIT APPROVAL
- ☒ BUILDING PERMIT APPROVAL
- ☐ CERTIFICATE OF OCCUPANCY (PERM.)
- ☐ CERTIFICATE OF OCCUPANCY (TEMP.)
- ☒ GRADING PERMIT APPROVAL
- ☐ PAVING PERMIT APPROVAL
- ☐ WORK ORDER APPROVAL
- ☐ OTHER (SPECIFY)

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ☐ YES
- ☒ NO
- ☐ COPY PROVIDED

DATE SUBMITTED: December 1, 2005 BY: PAVAN K. TOLETI (Pavan)

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature , location and scope ot the proposed development defines the degree of drainage detail. One or more of the following levels of submittal may be required based on the following:

1. **Conceptual Grading and Drainage Plan**: Required for approval of Site Development Plans greater than five (5) acres and Sector Plans.
2. **Drainage Plans**: Required for building permits, grading permits, paving permits and site plans less than five (5) acres.
3. **Drainage Report**: Required for subdivisions containing more than ten (10) lots or constituting five (5) acres or more.

D. Mark Goodwin & Associates, P.A.
Consulting Engineers
P.O. BOX 90606, ALBUQUERQUE,NM 87199
(505) 828-2200 FAX 797-9539

December 1, 2005

Bradley L. Bingham, PE
Principal Engineer, Planning Department
Development and Building Services
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

Re: Avalon Office Building, Tower and Unser Blvd., Grading and Drainage Plan (L10-D29)

Dear Mr. Bingham:

Our office has received your comments letter, dated November 22, 2005, which asks for more information to be provided on our grading and drainage plan for the referenced site.

Your itemized comments have been addressed as follows:

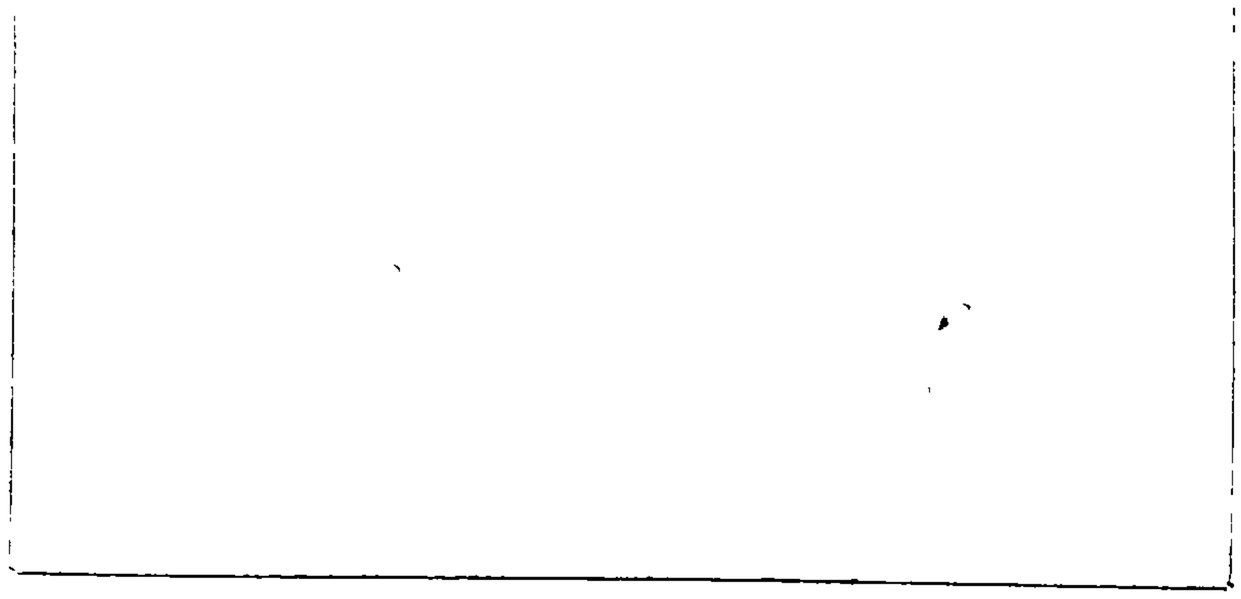
- *The removal of cap in Uncer Blvd and construction of new 54" RCP in Tower Rd are called out in the plans as a separate work order from city,*
- *The water surface elevation is labeled on the plans (80.30),*
- *We also showed how we are going to connect new storm inlet to existing stub coming from Tower Rd (for future connection when the retention pond is removed), and*
- *We changed the paragraph IV of drainage report as per your comments.*

We are also providing the revised drainage report (Paragraph 5) and grading plan for your approval. Please contact our office if you have any questions.

Sincerely,
MARK GOODWIN & ASSOCIATES, P.A.

Pavan K. Toleti
Project Engineer

Attachment



MARK GOODWIN & ASSOCIATES
CONSULTING ENGINEERS

DRAINAGE REPORT

for

AVALON OFFICE BUILDING

Prepared for

Mullen Heller Architecture, PC
1015 Tijeras NW, Suite 220
Albuquerque, NM 87102

Prepared by

Mark Goodwin & Associates, PA
P.O. Box 90606
Albuquerque, NM 87199
(505) 828-2200

11-15-05

November, 2005

TABLE OF CONTENTS

I. PROJECT DESCRIPTION

The proposed site area comprises approximately 4.30 acres and is located at the intersection of Tower Rd and Unser Blvd. The current legal description of the site is Tract 3B, Town of Atrisco Grant, Unit 2.

The Purpose of this report is to present the drainage management plan for the new office building and warehouse in order to obtain the conceptual grading and drainage plan and building permit approval. All applicable ordinances, the DPM and AHYMO were utilized to prepare this plan.

II. DRAINAGE DESIGN CRITERIA

The design criteria used in this report was in accordance with Section 22.2 Hydrology of the Development Process Manual. The 100-year, 6-hour storm event was utilized to determine site runoff rates using P(1 hr) = 1.66", P(6 hr)=2.12"and P(24 hr) = 2.46", obtained from the latest NOAA Precipitation Atlas. The on-site land treatment values used were type B=5% and D=95% for Basin A , B 15% and D= 85% and B=15% for Basin B and B= 15 % and D= 85% for Basin C (Pond). AHYMO printouts are provided in Appendix A.

III. EXISTING DRAINAGE CONDITION

The site presently consists of undeveloped land divide into 3 basins, all the basins sloping predominantly toward the south of the site. At present there is no offsite runoff entering into the existing site. The developed runoff discharging from this site is designed to be discharged into onsite retention pond which is maintained privately.

IV. DRAINAGE MANAGEMENT PLAN

The total developed conditions flow from this site is 15.18 cfs. The grading and drainage plan for the new development proposes to split the site into 3 basins According to AHYMO the individual basin flows generated within the site during the 100-year storm are 5.34 cfs for Basin A which is conveyed into retention pond by a new storm inlet as shown in plans, 6.86 cfs for Basin B, this 6.86 cfs will drain to temporary onsite retention pond with the help of new concrete rundown and 2.98 cfs for Basin C which serve as a onsite retention pond. In future the pond is removed and the discharge is taken by the existing 24 "RCP storm drain in the south entrance of the site with the help of inlet and storm drains (as shown in plan) ultimately connecting to 54 "storm sewer in Tower Road after separate construction by others extend that pipe to the Amole Del North channel in accordance with the Southyard Drainage Report (L-10/D-20).

Wynd

V. CONCLUSIONS

The proposed drainage scheme for the new buildings can be readily accommodated through the implementation of this plan. It has been adequately shown in this report that the internal conveyance of storm water to off-site facilities can be accomplished while meeting all current City requirements.

K-10-Z

K-9-Z

K-11-Z

L-9-Z

L-11-Z

Z-9-Z

M-11-Z

M-10-Z

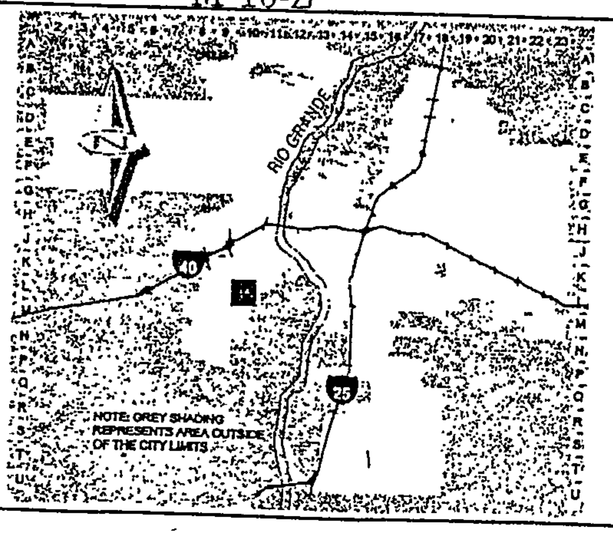
Zone Atlas Page: **L-10-Z**

Map amended through: **Aug 06, 2004**

Selected Symbols

- Unincorporated Areas
- Sector Plan Boundaries
- Parcel Boundaries
- Easement Lines
- Freeway Lanes
- Jurisdictional Boundaries
- Westgate Wall
- Escarpment
- Grant Boundaries
- Petroglyph
- H-1 Buffer Zone
- Arroyos
- LDN Noise Level
- Airport Clearance Zone
- Design Overlay Zones

0 750 1,500 Feet



CITY OF ALBUQUERQUE 1706 THREE HUNDRED YEARS 1706 • 2006 ALBUQUERQUE Haciendo Historia

AGIS Albuquerque Geographic Information System

PLANNING DEPARTMENT

APPENDIX A

HYDROLOGY

Precipitation Frequency Estimates (inches)																	
ARI* (years)	5 min	10 min	15 min	30 min	60 min	120 min	3 hr	6 hr	12 hr	24 hr	48 hr	4 day	7 day	10 day	20 day	30 day	45 day	60 day
2	0.21	0.32	0.40	0.53	0.66	0.76	0.81	0.93	1.03	1.16	1.30	1.58	1.78	1.96	2.45	2.92	3.55	4.10
5	0.28	0.43	0.54	0.72	0.89	1.00	1.06	1.20	1.31	1.45	1.63	1.94	2.18	2.40	2.98	3.53	4.24	4.90
10	0.34	0.52	0.64	0.86	1.07	1.19	1.26	1.40	1.53	1.69	1.88	2.23	2.49	2.75	3.38	3.98	4.74	5.48
25	0.41	0.63	0.78	1.05	1.30	1.46	1.52	1.69	1.82	1.99	2.23	2.62	2.90	3.22	3.90	4.54	5.35	6.18
50	0.47	0.71	0.89	1.19	1.48	1.67	1.74	1.90	2.03	2.23	2.49	2.92	3.21	3.57	4.27	4.95	5.78	6.66
100	0.53	0.80	0.99	1.34	1.66	1.88	1.96	2.12	2.25	2.46	2.75	3.22	3.52	3.93	4.64	5.34	6.16	7.11
200	0.59	0.89	1.11	1.49	1.85	2.11	2.19	2.35	2.47	2.70	3.01	3.52	3.81	4.28	4.98	5.71	6.51	7.51
500	0.67	1.01	1.25	1.69	2.09	2.41	2.50	2.65	2.77	3.02	3.36	3.92	4.21	4.73	5.42	6.15	6.92	7.98
1000	0.73	1.10	1.37	1.84	2.28	2.64	2.74	2.88	2.99	3.25	3.62	4.23	4.50	5.08	5.74	6.47	7.18	8.29

AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) - - VERSION: 1997.02d RUN DATE (MON/DAY/YR) =12/01/2005
INPUT FILE = C:\DOCUME~1\pavan\Desktop\PAVAN\AVALON~1.DOC USER NO.= AHYMO-I-9702dGoodwinM-AH

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=	2.120
COMPUTE NM HYD	100.30	-	3	.00220	5.34	.212	1.80492	1.500	3.790	PER IMP=	95.00
COMPUTE NM HYD	100.40	-	4	.00300	6.86	.268	1.67447	1.500	3.575	PER IMP=	85.00
COMPUTE NM HYD	100.50	-	5	.00130	2.98	.116	1.67447	1.500	3.584	PER IMP=	85.00
FINISH											

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         RUN DATE (MON/DAY/YR) = 12/01/2005
         START TIME (HR:MIN:SEC) = 16:03:28     USER NO.= AHYMO-I-9702dGoodwinM-AH
         INPUT FILE = C:\DOCUME~1\pavan\Desktop\PAVAN\AVALON~1.DOC


START                TIME=0.0
*****    AVALON N.M.
*****    FILE: c:\AHYMO\Avalon    November 14, 2005 BY PAVAN
*****
*****    100-YEAR 6-HOUR STORM EVENT
*****
***** DEVELOPED CONDITIONS
*****
RAINFALL             TYPE=1 RAIN QUARTER=0.0 IN
                     RAIN ONE=1.66 IN RAIN SIX=2.12 IN
                     RAIN DAY=2.46 IN  DT=0.033333 HR


                COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
                DT =     .033333 HOURS       END TIME =     5.999940 HOURS
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.0000	.0035	.0070	.0106	.0143	.0181	.0220
.0259	.0299	.0340	.0383	.0426	.0470	.0516
.0563	.0611	.0661	.0712	.0764	.0819	.0875
.0933	.0993	.1056	.1121	.1189	.1260	.1334
.1412	.1494	.1580	.1626	.1675	.1728	.1841
.2093	.2481	.3038	.3799	.4799	.6074	.7661
.9598	1.1389	1.2139	1.2772	1.3335	1.3848	1.4319
1.4757	1.5166	1.5550	1.5911	1.6252	1.6574	1.6878
1.7167	1.7440	1.7700	1.7946	1.8180	1.8241	1.8298
1.8353	1.8406	1.8458	1.8507	1.8555	1.8601	1.8646
1.8690	1.8732	1.8774	1.8814	1.8854	1.8893	1.8930
1.8967	1.9004	1.9039	1.9074	1.9109	1.9142	1.9175
1.9208	1.9240	1.9271	1.9302	1.9333	1.9363	1.9393
1.9422	1.9451	1.9479	1.9507	1.9535	1.9562	1.9589
1.9616	1.9643	1.9669	1.9695	1.9720	1.9745	1.9770
1.9795	1.9819	1.9844	1.9868	1.9891	1.9915	1.9938
1.9961	1.9984	2.0007	2.0029	2.0052	2.0074	2.0095
2.0117	2.0139	2.0160	2.0181	2.0202	2.0223	2.0244
2.0264	2.0285	2.0305	2.0325	2.0345	2.0365	2.0384
2.0404	2.0423	2.0442	2.0461	2.0480	2.0499	2.0518

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                2.0536  2.0555  2.0573  2.0592  2.0610  2.0628  2.0646
                2.0663  2.0681  2.0699  2.0716  2.0734  2.0751  2.0768
                2.0785  2.0802  2.0819  2.0836  2.0853  2.0869  2.0886
                2.0902  2.0919  2.0935  2.0951  2.0967  2.0983  2.0999
                2.1015  2.1031  2.1047  2.1062  2.1078  2.1093  2.1109
                2.1124  2.1140  2.1155  2.1170  2.1185  2.1200

****** BASIN A - (1.46 ACRES)

COMPUTE NM HYD      ID=3 HYD NO=100.3 AREA=0.0022 SQ MI
                    PER A=0 PER B=05 PER C=0 PER D=95
                    TP=0.1333 HR MASS RAINFALL=-1

     K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =   8.2514    CFS   UNIT VOLUME =    .9981       B =   526.28      P60 = 1.6600
     AREA =      .002090 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


     K =   .134687HR    TP =   .133300HR    K/TP RATIO =  1.010405     SHAPE CONSTANT, N =  3.493654
     UNIT PEAK =   .26396    CFS   UNIT VOLUME =    .9469       B =   319.87      P60 = 1.6600
     AREA =      .000110 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD           ID=3 CODE=1

                                  PARTIAL HYDROGRAPH   100.30

    RUNOFF VOLUME =     1.80492 INCHES     =        .2118 ACRE-FEET
    PEAK DISCHARGE RATE =       5.34 CFS  AT   1.500 HOURS   BASIN AREA =   .0022 SQ. MI.


***** BASIN B (1.95 AC)

COMPUTE NM HYD      ID=4 HYD NO=100.4 AREA=0.0030 SQ MI
                    PER A=0 PER B=15 PER C=0 PER D=85
                    TP=0.1333 HR MASS RAINFALL=-1
```

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     K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =   10.068    CFS   UNIT VOLUME =    .9982       B =   526.28      P60 = 1.6600
     AREA =      .002550 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


     K =   .134687HR    TP =   .133300HR    K/TP RATIO =  1.010405     SHAPE CONSTANT, N =  3.493654
     UNIT PEAK =   1.0798    CFS   UNIT VOLUME =    .9872       B =   319.87      P60 = 1.6600
     AREA =      .000450 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD           ID=4 CODE=1

                                  PARTIAL HYDROGRAPH   100.40

    RUNOFF VOLUME =     1.67447 INCHES     =        .2679 ACRE-FEET
    PEAK DISCHARGE RATE =       6.86 CFS  AT   1.500 HOURS   BASIN AREA =   .0030 SQ. MI.

***** BASIN C (0.84 AC.)

COMPUTE NM HYD      ID=5 HYD NO=100.5 AREA=0.0013 SQ MI
                    PER A=0 PER B=15 PER C=0 PER D=85
                    TP=0.1333 HR MASS RAINFALL=-1

     K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =   4.3626    CFS   UNIT VOLUME =    .9969       B =   526.28      P60 = 1.6600
     AREA =      .001105 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


     K =   .134687HR    TP =   .133300HR    K/TP RATIO =  1.010405     SHAPE CONSTANT, N =  3.493654
     UNIT PEAK =   .46792    CFS   UNIT VOLUME =    .9703       B =   319.87      P60 = 1.6600
     AREA =      .000195 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD           ID=5 CODE=1
```

PARTIAL HYDROGRAPH 100.50

RUNOFF VOLUME = 1.67447 INCHES = .1161 ACRE-FEET
PEAK DISCHARGE RATE = 2.98 CFS AT 1.500 HOURS BASIN AREA = .0013 SQ. MI.

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 16:03:28

POND-2 Version: 4.01
S/N: 88020607

CALCULATED 12-01-2005 16:20:14
DISK FILE : F:AVALON .VOL

Planimeter scale: 1 inch = 1 ft.

Elevation (ft)	Planimeter (sq.in.)	Area (acres)	A1+A2+sqr(A1*A2) (acres)	Volume * (acre-ft)	Volume Sum (acre-ft)
76.00	8,712.00	0.20	0.00	0.00	0.00
81.00	17,590.00	0.40	0.89	1.48	1.48
		Elevations With Areas Interpolated From The Closest Two Planimeter Readings			
77.00	-----	0.24	0.65	0.22	0.22
78.00	-----	0.27	0.71	0.47	0.47
79.00	-----	0.31	0.76	0.76	0.76
80.00	-----	0.36	0.82	1.10	1.10
80.25	-----	0.37	0.84	1.19	1.19
80.30	-----	0.37	0.84	1.21	1.21
80.50	-----	0.38	0.86	1.28	1.28

$$IA = (sq.rt(Area1) + ((Ei-E1)/(E2-E1))*(sq.rt(Area2)-sq.rt(Area1)))^2$$

where: E1, E2 = Closest two elevations with planimeter data
Ei = Elevation at which to interpolate area
Area1,Area2 = Areas computed for E1, E2, respectively
IA = Interpolated area for Ei

* Incremental volume computed by the Conic Method for Reservoir Volumes.

$$Volume = (1/3) * (EL2-EL1) * (Area1 + Area2 + sq.rt.(Area1*Area2))$$

where: EL1, EL2 = Lower and upper elevations of the increment
Area1,Area2 = Areas computed for EL1, EL2, respectively
Volume = Incremental volume between EL1 and EL2

D. Mark Goodwin & Associates, P.A.
Consulting Engineers
P.O. BOX 90606, ALBUQUERQUE,NM 87199
(505) 828-2200 FAX 797-9539

PROJECT Avalon office Building
SUBJECT Pond calc
BY P.V.n DATE 07/10/05.
CHECKED _____ DATE _____
SHEET ____ OF ____

Volume calculations

$$V_{10days} = V_{360} + A_{D4}\left(P_{10days} - P_{360}\right)/12 \text{ in/ft}$$

$$P_{10days} = 3.93.$$

$$V_{10days} = 0.596 + 3.91\left[3.93 - 2.12\right]/12.$$

$$= 1.18 \text{ AC.FT.}$$

Total Volume provided = 1.48 AC.FT > 1.18 Ac.Ft (Required)

$$V_{Provided} > V_{Required} \quad (O.K)$$

CITY OF ALBUQUERQUE

November 22, 2005

James D. Hughes, P.E.
Mark Goodwin & Associates, PA
PO Box 90606
Albuquerque, NM 87199

Re: Avalon Office Building, Tower Rd. SW
Grading and Drainage Plan
Engineer's Stamp dated 11-14-05 (L10-D29)

Dear Mr. Hughes,

Based upon the information provided in your submittal received 11-16-05, the above referenced plan is approved for Site Development Plan for Building Permit action by DRB. However; this plan cannot be approved for Building Permit or Grading Permit until the following comments are addressed:

1. The cap in Unser Blvd. must be removed by city work order.
2. The construction of the new 54" RCP in Tower Rd. must be done by city work order.
3. What is the Water Surface Elevation for the pond in basin C?
4. Show a pipe connection in the south entry/exit driveway connecting the new storm inlet to the stub coming from Tower Road for the future connection, which has been proposed. It also appears that the pipe is too flat and adequate coverage is not established. Please check this situation.
5. Paragraph IV of the Drainage Report is not consistent with what has been calculated. The amount of acreage, the number of basins and the name of the drainage report information was gathered from.

If you have any questions, you can contact me at 924-3986.

Sincerely,

Bradley L. Bingham, PE
Principal Engineer, Planning Dept.
Development and Building Services

C: File

P.O. Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV. 1/28/2003rd)

PROJECT TITLE: Avalon Office Building
DRB #: _____ EPC#:_____

ZONE MAP/DRG. FILE #:L-10-Z (L10-D29)
WORK ORDER#:_____

LEGAL DESCRIPTION: Tract 3B, Town of Atrisco Grant, Unit 2.
CITY ADDRESS:Tower Rd. S.W.

ENGINEERING FIRM: Mark Goodwin & Associates, PA
ADDRESS: PO Box 90606
CITY, STATE: Albuquerque, NM

CONTACT: Pavan K. Toleti
PHONE: 828-2200
ZIP CODE: 87199

OWNER: Empire Southwest Ltd. Co
ADDRESS: 7620 jefferson NE
CITY, STATE: ALbuquerque, NM

CONTACT: Mr. Doug
PHONE: 268-4144
ZIP CODE: 87109

ARCHITECT: Mullen Heller Architecture, PC
ADDRESS: 1015 Tijeras NW, Suite 220
CITY, STATE: Albuquerque, NM

CONTACT: Mr. Doug
PHONE: 268-4144
ZIP CODE: 87102

SURVEYOR: _____
ADDRESS: _____
CITY, STATE: _____

CONTACT: _____
PHONE: _____
ZIP CODE: _____

CONTRACTOR: _____
ADDRESS: _____
CITY, STATE: _____

CONTACT: _____
PHONE: _____
ZIP CODE: _____

CHECK TYPE OF SUBMITTAL:

- ☒ DRAINAGE REPORT
- ☐ DRAINAGE PLAN 1st SUBMITTAL, ***REQUIRES TCL or equal***
- ☒ DRAINAGE PLAN RESUBMITTAL
- ☒ CONCEPTUAL GRADING & DRAINAGE PLAN
- ☒ GRADING PLAN
- ☐ EROSION CONTROL PLAN
- ☐ ENGINEER'S CERTIFICATION (HYDROLOGY)
- ☐ CLOMR/LOMR
- ☐ TRAFFIC CIRCULATION LAYOUT (TCL)
- ☐ ENGINEERS CERTIFICATION (TCL)
- ☐ ENGINEERS CERTIFICATION (DRB APPR. SITE PLAN)
- ☐ OTHER

CHECK TYPE OF APPROVAL SOUGHT:

- ☐ SIA / FINANCIAL GUARANTEE RELEASE
- ☐ PRELIMINARY PLAT APPROVAL
- ☐ S. DEV. PLAN FOR SUB'D. APPROVAL
- ☐ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
- ☐ SECTOR PLAN APPROVAL
- ☐ FINAL PLAT APPROVAL
- ☐ FOUNDATION PERMIT APPROVAL
- ☒ BUILDING PERMIT APPROVAL
- ☐ CERTIFICATE OF OCCUPANCY (PERM.)
- ☐ CERTIFICATE OF OCCUPANCY (TEMP.)
- ☒ GRADING PERMIT APPROVAL
- ☐ PAVING PERMIT APPROVAL
- ☐ WORK ORDER APPROVAL
- ☐ OTHER (SPECIFY)

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ☐ YES
- ☒ NO
- ☐ COPY PROVIDED

RECEIVED
NOV 16 2005
HYDROLOGY SECTION

DATE SUBMITTED: 15th Nov 2005

BY: PAVAN K. TOLETI

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature , location and scope ot the proposed development defines the degree of drainage detail. One or more of the following levels of submittal may be required based on the following:

1. **Conceptual Grading and Drainage Plan**: Required for approval of Site Development Plans greater than five (5) acres and Sector Plans.
2. **Drainage Plans**: Required for building permits, grading permits, paving permits and site plans less than five (5) acres.
3. **Drainage Report**: Required for subdivisions containing more than ten (10) lots or constituting five (5) acres or more.

Current DRC
Project Number:_____

FIGURE 12

INFRASTRUCTURE LIST

Date Submitted: 9/20/2005
Date Site Plan Approved:_____
Date Preliminary Plat Approved:_____
Date Preliminary Plat Expires:_____
DRB Project No.: _____
DRB Application No.:_____

EXHIBIT "A"
TO SUBDIVISION IMPROVEMENTS AGREEMENT
DEVELOPMENT REVIEW BOARD (D.R.B.) REQUIRED INFRASTRUCTURE LIST

Avalon Office Building

PROPOSED NAME OF PLAT AND/OR SITE DEVELOPMENT PLAN

Tract 3B, Town of Atrisco Grant, Unit 2
EXISTING LEGAL DESCRIPTION PRIOR TO PLATTING ACTION

Following is a summary of PUBLIC/PRIVATE Infrastructure required to be constructed or financially guaranteed for the above development. This Listing is not necessarily a complete listing. During the SIA process and/or in the review of the construction drawings, if the DRC Chair determines that appurtenant items and/or unforeseen items have not been included in the infrastructure listing, the DRC Chair may include those items in the listing and related financial guarantee. Likewise, if the DRC Chair determines that appurtenant or non-essential items can be deleted from the listing, those items may be deleted as well as the related portions of the financial guarantees. All such revisions require approval by the DRC Chair, the User Department and agent/owner. If such approvals are obtained, these revisions to the listing will be incorporated administratively. In addition, any unforeseen items which arise during construction which are necessary to complete the project and which normally are the Subdivider's responsibility will be required as a condition of project acceptance and close out by the City.

SIA Sequence #	COA DRC Project #	Size	Type of Improvement PAVING	Location	From	To	Private Inspector	City Inspector	City Cnst Engineer
		29' FF	29 ' FF New Arterial Paving, 6 ' Side walk, C&G (1 side)	Tower Road	Unser Blvd S.W	East End of property	/	/	/
		54"	54" Storm Drain	Tower Road	Unser Blvd S.W	East End of property	/	/	/
							/	/	/
							/	/	/

revised 09/05

Project name: Avalon Office Building

Notes: Storm Drain to includes inlets, manholes

The items listed below are on the CCIP and approved for Impact Fee credits. Signatures from the Impact Fee Administrator and the City User Department is required prior to DRB approval of this listing. The Items listed below are subject to the standard SIA requirements.

Financially Guaranteed DRC #	Constructed Under DRC #	Size	Type of Improvement	Location	From	To	Construction Certification: Private Inspector P.E.	Construction Certification: City Cnst Engineer
							/ /	/ /
							/ /	/ /

Approval of Creditable Items:

Impact Fee Admistrator Signature Date

Approval of Creditable Items:

City User Dept. Signature Date

AGENT / OWNER	DEVELOPMENT REVIEW BOARD MEMBER APPROVALS	
Doug Hughes NAME (print)	DRB CHAIR - date	PARKS & GENERAL SERVICES - date
MARK GOODWIN & ASSOCIATES FIRM	TRANSPORTATION DEVELOPMENT - date	AMAFCA - date
SIGNATURE - date	UTILITY DEVELOPMENT - date	_____ - date
MAXIMUM TIME ALLOWED TO CONSTRUCT THE IMPROVEMENTS WITHOUT A DRB EXTENSION: N/A	CITY ENGINEER - date	_____ - date

DESIGN REVIEW COMMITTEE REVISIONS

REVISION	DATE	DRC CHAIR	USER DEPARTMENT	AGENT /OWNER

revised 09/05

D. Mark Goodwin & Associates, P.A.
Consulting Engineers
P.O. BOX 90606, ALBUQUERQUE,NM 87199
(505) 828-2200 FAX 797-9539

November 15, 2005

Bradley L. Bingham, PE
Principal Engineer, Planning Department
Development and Building Services
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

Re: Avalon Office Building, Tower and Unser Blvd., Grading and Drainage Plan (L10-D29)

Dear Mr. Bingham:

Our office has received your comments letter, dated October 19, 2005, which asks for more information to be provided on our grading and drainage plan for the referenced site.

Your itemized comments have been addressed as follows:

- *In future the free discharge is going to be collected trough an inlet and connected to the 54" RCP on Tower road with the help of existing 24" RCP on south entrance as shown in the plan.*
- *We also provided the grade points along the East and North Perimeters of the property.*
- *We made the submittal to the DRB on Nov 15th and the infrastructure list is attached with this submittal.*
- *The leader arrow pointing on Pronghorn Rd. SW is an existing sewer line.*

We are also providing the revised drainage report and grading plan for your approval. Please contact our office if you have any questions.

Sincerely,
MARK GOODWIN & ASSOCIATES, P.A.

T. Pavankumar
Pavan K. Toleti
Project Engineer

PKT/wp

Attachment

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NOV 16 2005
HYDROLOGY SECTION

CITY OF ALBUQUERQUE

October 19, 2005

James D. Hughes, P.E.
Mark Goodwin & Associates, PA
PO Box 90606
Albuquerque, NM 87199

Re: Avalon Office Building, Tower and Unser Blvd.,
Grading and Drainage Plan
Engineer's Stamp dated 10-13-05 (L10-D29)

Dear Mr. Hughes,

Based upon the information provided in your submittal received 10-13-05, the above referenced plan cannot be approved for Site Development Plan for Building Permit, Building Permit and Grading Permit until the following comments are addressed:

1. When the 54" RCP is completed in Tower Road, how is the free discharge going to reach the 54" RCP storm drain in Tower Rd.?
2. Grade points are needed along the East and North perimeters of the property.
3. Need to submit a site plan through DRB. Infrastructure is needed for DRB.
4. What is the leader arrow pointing to on Pronghorn Rd. SW?

If you have any questions, you can contact me at 924-3986.

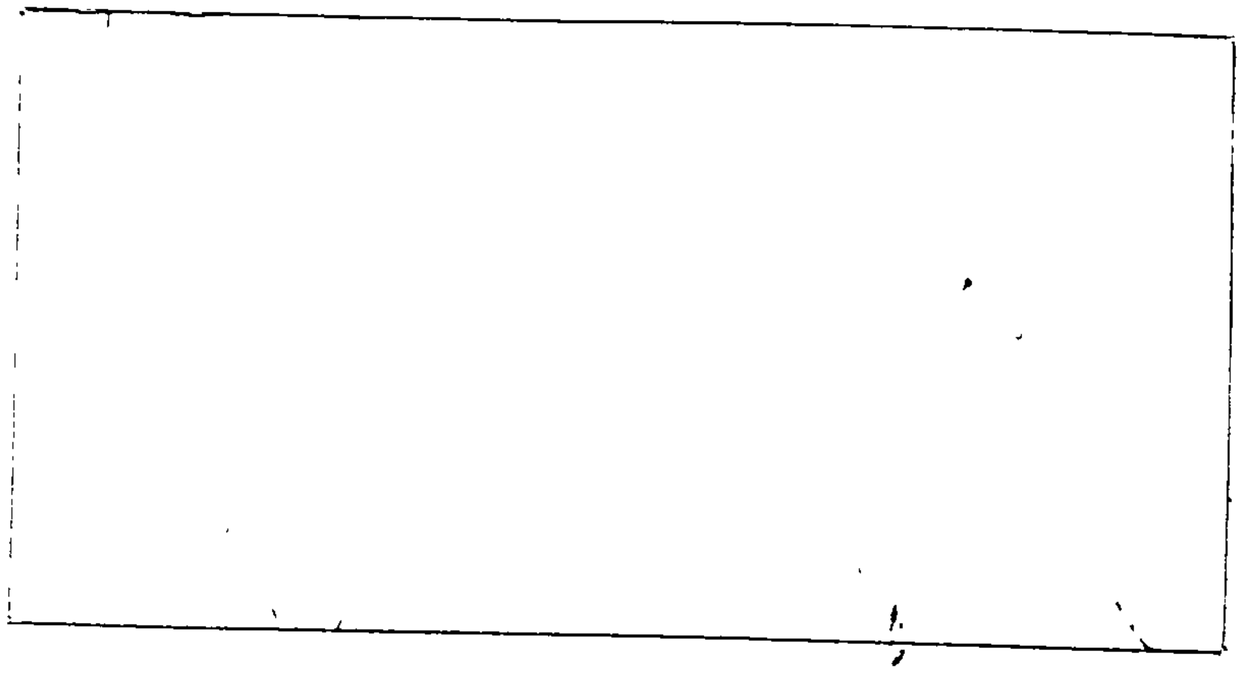
Sincerely,

Bradley L. Bingham, PE
Principal Engineer, Planning Dept.
Development and Building Services

C: file

RECEIVED
NOV 16 2005
HYDROLOGY SECTION

P.O. Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov



DRAINAGE REPORT

for

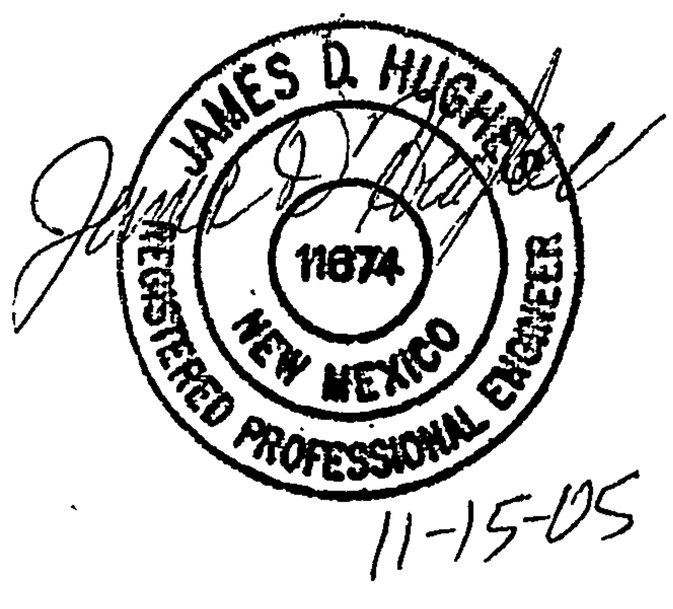
AVALON OFFICE BUILDING

Prepared for

Mullen Heller Architecture, PC
1015 Tijeras NW, Suite 220
Albuquerque, NM 87102

Prepared by

Mark Goodwin & Associates, PA
P.O. Box 90606
Albuquerque, NM 87199
(505) 828-2200



November, 2005

TABLE OF CONTENTS

I. PROJECT DESCRIPTION

The proposed site area comprises approximately 4.30 acres and is located at the intersection of Tower Rd and Unser Blvd. The current legal description of the site is Tract 3B, Town of Atrisco Grant, Unit 2.

The Purpose of this report is to present the drainage management plan for the new office building and warehouse in order to obtain the conceptual grading and drainage plan and building permit approval. All applicable ordinances, the DPM and AHYMO were utilized to prepare this plan.

II. DRAINAGE DESIGN CRITERIA

The design criteria used in this report was in accordance with Section 22.2 Hydrology of the Development Process Manual. The 100-year, 6-hour storm event was utilized to determine site runoff rates using P(1 hr) = 1.66", P(6 hr)=2.12"and P(24 hr) = 2.46", obtained from the latest NOAA Precipitation Atlas. The on-site land treatment values used were type B=5% and D=95% for Basin A , B 15% and D= 85% and B=15% for Basin B and B= 15 % and D= 85% for Basin C (Pond). AHYMO printouts are provided in Appendix A.

III. EXISTING DRAINAGE CONDITION

The site presently consists of undeveloped land divide into 3 basins, all the basins sloping predominantly toward the south of the site. At present there is no offsite runoff entering into the existing site. The developed runoff discharging from this site is designed to be discharged into onsite retention pond which is maintained privately.

Only 2 Basins

IV. DRAINAGE MANAGEMENT PLAN

The total developed conditions flow from this site is 18.10 cfs. The grading and drainage plan for the new development proposes to split the site into 3 basins According to AHYMO the individual basin flows generated within the site during the 100-year storm are 5.34 cfs for Basin A which is conveyed into retention pond by the concrete rundown. 6.41 cfs for Basin B, this 6.41 acre site will drain to temporary onsite retention pond with the help of new storm inlet as shown in the plans. In future the pond is removed and the discharge is taken by the existing 24 " RCP storm drain in the south entrance of the site(as shown in plan) ultimately connecting to 54 " storm sewer in Tower Road after separate construction by others extend that pipe to the Amole Del North channel in accordance with the Southwyne Drainage Report (L-10/D-20).

Only 4.48 acres Calculated

V. CONCLUSIONS

The proposed drainage scheme for the new buildings can be readily accommodated through the implementation of this plan. It has been adequately shown in this report that the internal conveyance of storm water to off-site facilities can be accomplished while meeting all current City requirements.

K-10-Z

K-9-Z

K-11-Z

J-9-Z

J-11-Z

M-9-Z

M-11-Z

M-10-Z

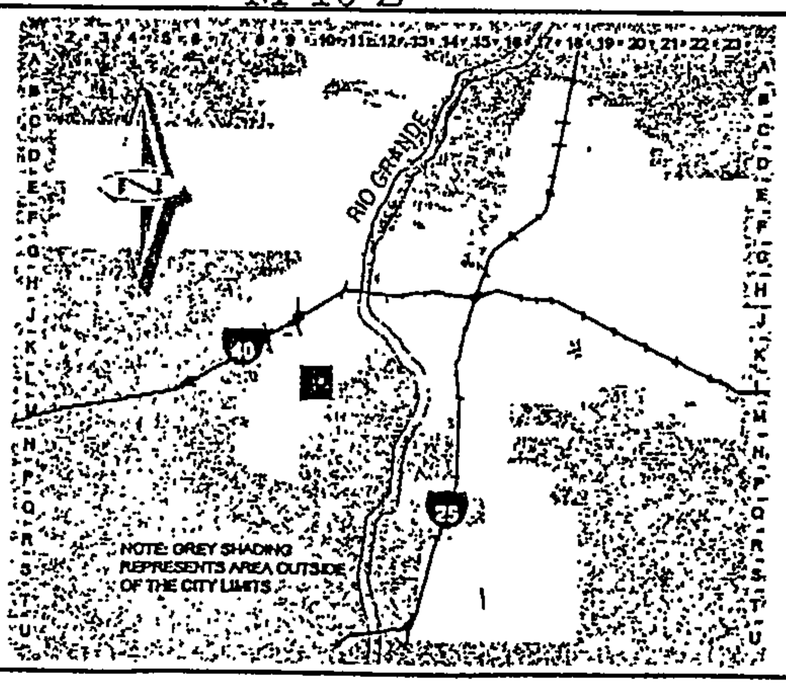
Zone Atlas Page: **L-10-Z**

Map amended through: **Aug 06, 2004**

Selected Symbols

- Unincorporated Areas
- Sector Plan Boundaries
- Parcel Boundaries
- Easement Lines
- Freeway Lanes
- Jurisdictional Boundaries
- Westgate Wall
- Escarpment
- Grant Boundaries
- Petroglyph
- H-1 Buffer Zone
- Arroyos
- LDN Noise Level
- Airport Clearance Zone
- Design Overlay Zones

0 750 1,500 Feet



CITY OF ALBUQUERQUE 1706 THREE HUNDRED YEARS 1706 • 2006 ALBUQUERQUE Haciendo Historia

A lbuquerque G eographic I nformation S ystem

PLANNING DEPARTMENT

APPENDIX A

HYDROLOGY

Precipitation Frequency Estimates (inches)																	
ARI* (years)	5 min	10 min	15 min	30 min	60 min	120 min	3 hr	6 hr	12 hr	24 hr	48 hr	4 day	7 day	10 day	20 day	30 day	45 day	60 day
2	0.21	0.32	0.40	0.53	0.66	0.76	0.81	0.93	1.03	1.16	1.30	1.58	1.78	1.96	2.45	2.92	3.55	4.10
5	0.28	0.43	0.54	0.72	0.89	1.00	1.06	1.20	1.31	1.45	1.63	1.94	2.18	2.40	2.98	3.53	4.24	4.90
10	0.34	0.52	0.64	0.86	1.07	1.19	1.26	1.40	1.53	1.69	1.88	2.23	2.49	2.75	3.38	3.98	4.74	5.48
25	0.41	0.63	0.78	1.05	1.30	1.46	1.52	1.69	1.82	1.99	2.23	2.62	2.90	3.22	3.90	4.54	5.35	6.18
50	0.47	0.71	0.89	1.19	1.48	1.67	1.74	1.90	2.03	2.23	2.49	2.92	3.21	3.57	4.27	4.95	5.78	6.66
100	0.53	0.80	0.99	1.34	1.66	1.88	1.96	2.12	2.25	2.46	2.75	3.22	3.52	3.93	4.64	5.34	6.16	7.11
200	0.59	0.89	1.11	1.49	1.85	2.11	2.19	2.35	2.47	2.70	3.01	3.52	3.81	4.28	4.98	5.71	6.51	7.51
500	0.67	1.01	1.25	1.69	2.09	2.41	2.50	2.65	2.77	3.02	3.36	3.92	4.21	4.73	5.42	6.15	6.92	7.98
1000	0.73	1.10	1.37	1.84	2.28	2.64	2.74	2.88	2.99	3.25	3.62	4.23	4.50	5.08	5.74	6.47	7.18	8.29

AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) - - VERSION: 1997.02d RUN DATE (MON/DAY/YR) =11/14/2005
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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											
RAINFALL TYPE= 1										TIME=	.00
										RAIN6=	2.120
COMPUTE NM HYD	100.30	-	3	.00220	5.34	.212	1.80492	1.500	3.790	PER IMP=	95.00
COMPUTE NM HYD	100.40	-	4	.00280	6.41	.250	1.67447	1.500	3.575	PER IMP=	85.00
COMPUTE NM HYD	100.50	-	5	.00190	4.35	.170	1.67447	1.500	3.579	PER IMP=	85.00
FINISH						.632					

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START                TIME=0.0
*****    AVALON N.M.
*****    FILE: c:\AHYMO\Avalon    November 14, 2005 BY PAVAN
*****
*****    100-YEAR 6-HOUR STORM EVENT
*****
***** DEVELOPED CONDITIONS
*****
RAINFALL             TYPE=1 RAIN QUARTER=0.0 IN
                     RAIN ONE=1.66 IN RAIN SIX=2.12 IN
                     RAIN DAY=2.46 IN  DT=0.033333 HR


               COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
               DT =     .033333 HOURS       END TIME =     5.999940 HOURS
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.0000	.0035	.0070	.0106	.0143	.0181	.0220
.0259	.0299	.0340	.0383	.0426	.0470	.0516
.0563	.0611	.0661	.0712	.0764	.0819	.0875
.0933	.0993	.1056	.1121	.1189	.1260	.1334
.1412	.1494	.1580	.1626	.1675	.1728	.1841
.2093	.2481	.3038	.3799	.4799	.6074	.7661
.9598	1.1389	1.2139	1.2772	1.3335	1.3848	1.4319
1.4757	1.5166	1.5550	1.5911	1.6252	1.6574	1.6878
1.7167	1.7440	1.7700	1.7946	1.8180	1.8241	1.8298
1.8353	1.8406	1.8458	1.8507	1.8555	1.8601	1.8646
1.8690	1.8732	1.8774	1.8814	1.8854	1.8893	1.8930
1.8967	1.9004	1.9039	1.9074	1.9109	1.9142	1.9175
1.9208	1.9240	1.9271	1.9302	1.9333	1.9363	1.9393
1.9422	1.9451	1.9479	1.9507	1.9535	1.9562	1.9589
1.9616	1.9643	1.9669	1.9695	1.9720	1.9745	1.9770
1.9795	1.9819	1.9844	1.9868	1.9891	1.9915	1.9938
1.9961	1.9984	2.0007	2.0029	2.0052	2.0074	2.0095
2.0117	2.0139	2.0160	2.0181	2.0202	2.0223	2.0244
2.0264	2.0285	2.0305	2.0325	2.0345	2.0365	2.0384
2.0404	2.0423	2.0442	2.0461	2.0480	2.0499	2.0518

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     2.0536  2.0555  2.0573  2.0592  2.0610  2.0628  2.0646
     2.0663  2.0681  2.0699  2.0716  2.0734  2.0751  2.0768
     2.0785  2.0802  2.0819  2.0836  2.0853  2.0869  2.0886
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     2.1015  2.1031  2.1047  2.1062  2.1078  2.1093  2.1109
     2.1124  2.1140  2.1155  2.1170  2.1185  2.1200

****** BASIN A - (1.46 ACRES)

COMPUTE NM HYD       ID=3 HYD NO=100.3 AREA=0.0022 SQ MI
                     PER A=0 PER B=05 PER C=0 PER D=95
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     K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =   8.2514    CFS   UNIT VOLUME =    .9981       B =   526.28      P60 = 1.6600
     AREA =      .002090 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
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     AREA =      .000110 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
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PRINT HYD            ID=3 CODE=1

                                   PARTIAL HYDROGRAPH   100.30

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     PEAK DISCHARGE RATE =      5.34 CFS AT    1.500 HOURS    BASIN AREA =    .0022 SQ. MI.


***** BASIN B (1.79 AC)

COMPUTE NM HYD       ID=4 HYD NO=100.4 AREA=0.0028 SQ MI
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                     TP=0.1333 HR MASS RAINFALL=-1
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UNIT PEAK =   9.3964    CFS   UNIT VOLUME =    .9982       B =   526.28      P60 = 1.6600
AREA =      .002380 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


K =   .134687HR    TP =   .133300HR    K/TP RATIO =  1.010405     SHAPE CONSTANT, N =  3.493654
UNIT PEAK =   1.0078    CFS   UNIT VOLUME =    .9860       B =   319.87      P60 = 1.6600
AREA =      .000420 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD          ID=4 CODE=1

                                PARTIAL HYDROGRAPH   100.40

RUNOFF VOLUME =     1.67447 INCHES      =         .2501 ACRE-FEET
PEAK DISCHARGE RATE =      6.41 CFS  AT   1.500 HOURS   BASIN AREA =    .0028 SQ. MI.
```

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***** BASIN C (1.23 AC.) ?

COMPUTE NM HYD      ID=5 HYD NO=100.5 AREA=0.0019 SQ MI
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     UNIT PEAK =   6.3761    CFS   UNIT VOLUME =    .9976       B =   526.28      P60 = 1.6600
     AREA =      .001615 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


     K =   .134687HR    TP =   .133300HR    K/TP RATIO =  1.010405     SHAPE CONSTANT, N =  3.493654
     UNIT PEAK =   .68389    CFS   UNIT VOLUME =    .9805       B =   319.87      P60 = 1.6600
     AREA =      .000285 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
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PRINT HYD          ID=5 CODE=1
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PARTIAL HYDROGRAPH 100.50

RUNOFF VOLUME = 1.67447 INCHES = .1697 ACRE-FEET
PEAK DISCHARGE RATE = 4.35 CFS AT 1.500 HOURS BASIN AREA = .0019 SQ. MI.

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 10:39:28

D. Mark Goodwin & Associates, P.A.
Consulting Engineers
P.O. BOX 90606, ALBUQUERQUE,NM 87199
(505) 828-2200 FAX 797-9539

PROJECT Avalon office Building
SUBJECT Pond calc
BY P.Nan DATE 07/10/05
CHECKED _____ DATE _____
SHEET ____ OF ____

Volume calculations

$$V_{10days} = V_{360} + A_{D4}\left(P_{10days} - P_{360}\right)/12 \text{ in/ft}$$

$$P_{10days} = 3.93.$$

$$V_{10days} = 0.632 + 3.91\left[3.93 - 2.12\right]/12.$$

$$= 1.220 \text{ AC.FT.}$$

Total Volume provided = 1.82 AC.FT > 1.220 Ac.Ft (Required)

$$V_{Provided} > V_{Required} \quad (O.K)$$

POND-2 Version: 4.01
S/N: 88020607

CALCULATED 11-14-2005 13:44:07
DISK FILE : F:AVALON .VOL

Planimeter scale: 1 inch = 1 ft.

Elevation (ft)	Planimeter (sq.in.)	Area (acres)	A1+A2+sqr(A1*A2) (acres)	Volume * (acre-ft)	Volume Sum (acre-ft)
74.00	6,030.00	0.14	0.00	0.00	0.00
81.00	17,590.00	0.40	0.78	1.82	1.82
		Elevations With Areas Interpolated From The Closest Two Planimeter Readings			
75.00	-----	0.17	0.46	0.15	0.15
76.00	-----	0.20	0.50	0.34	0.34
77.00	-----	0.24	0.55	0.55	0.55
78.00	-----	0.27	0.61	0.81	0.81
79.00	-----	0.31	0.66	1.10	1.10
80.00	-----	0.36	0.72	1.44	1.44
80.50	-----	0.38	0.75	1.62	1.62

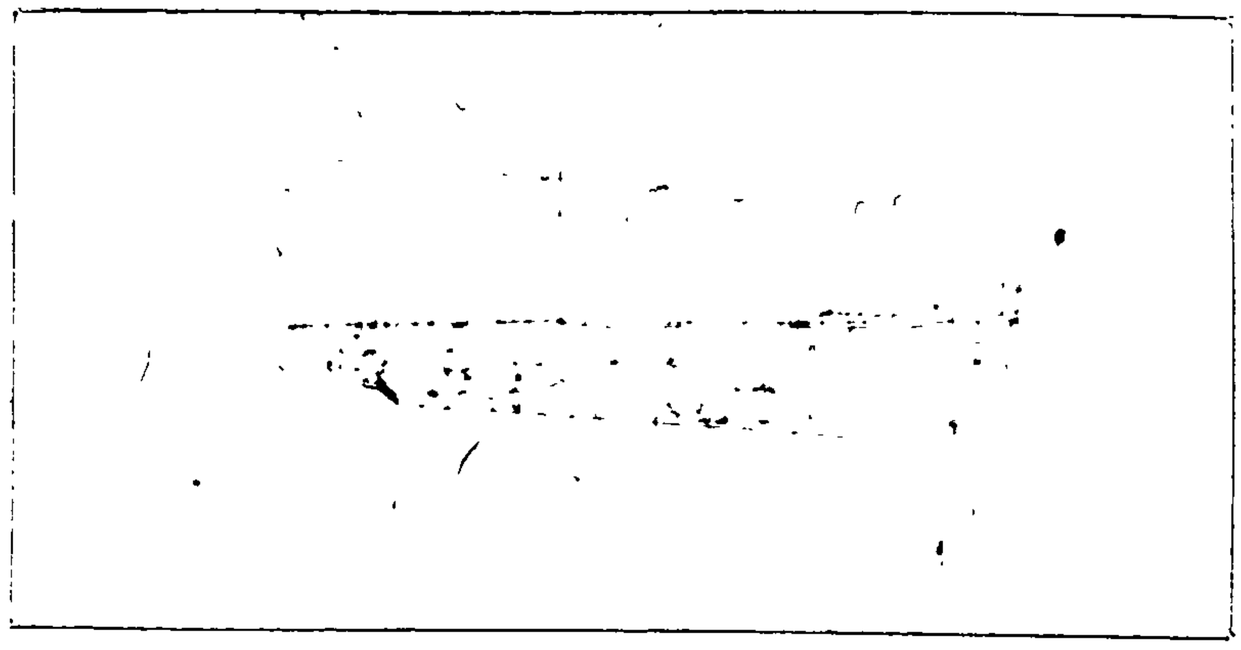
$$IA = (sq.rt(Area1) + ((Ei-E1)/(E2-E1))*(sq.rt(Area2)-sq.rt(Area1)))^2$$

where: E1, E2 = Closest two elevations with planimeter data
Ei = Elevation at which to interpolate area
Area1,Area2 = Areas computed for E1, E2, respectively
IA = Interpolated area for Ei

* Incremental volume computed by the Conic Method for Reservoir Volumes.

$$Volume = (1/3) * (EL2-EL1) * (Area1 + Area2 + sq.rt.(Area1*Area2))$$

where: EL1, EL2 = Lower and upper elevations of the increment
Area1,Area2 = Areas computed for EL1, EL2, respectively
Volume = Incremental volume between EL1 and EL2



MARK GOODWIN
& ASSOCIATES
CONSULTING ENGINEERS

CITY OF ALBUQUERQUE

October 19, 2005

James D. Hughes, P.E.
Mark Goodwin & Associates, PA
PO Box 90606
Albuquerque, NM 87199

Re: Avalon Office Building, Tower and Unser Blvd.,
Grading and Drainage Plan
Engineer's Stamp dated 10-13-05 (L10-D29)

Dear Mr. Hughes,

Based upon the information provided in your submittal received 10-13-05, the above referenced plan cannot be approved for Site Development Plan for Building Permit, Building Permit and Grading Permit until the following comments are addressed:

1. When the 54" RCP is completed in Tower Road, how is the free discharge going to reach the 54" RCP storm drain in Tower Rd.?
2. Grade points are needed along the East and North perimeters of the property.
3. Need to submit a site plan through DRB. Infrastructure is needed for DRB.
4. What is the leader arrow pointing to on Pronghorn Rd. SW?

If you have any questions, you can contact me at 924-3986.

Sincerely,

Bradley L. Bingham, PE
Principal Engineer, Planning Dept.
Development and Building Services

C: file

P.O. Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV. 1/28/2003rd)

PROJECT TITLE: Avalon Office Building
DRB #: _____ EPC#: _____

ZONE MAP/DRG. FILE #: L-10-Z/D29
WORK ORDER#: _____

LEGAL DESCRIPTION: Tract 3B, Town of Atrisco Grant, Unit 2.
CITY ADDRESS: Tower Rd. S.W.

ENGINEERING FIRM: Mark Goodwin & Associates, PA
ADDRESS: PO Box 90606
CITY, STATE: Albuquerque, NM

CONTACT: Pavan K. Toleti
PHONE: 828-2200
ZIP CODE: 87199

OWNER: Empire Southwest Ltd. Co
ADDRESS: 7620 jefferson NE
CITY, STATE: ALbuquerque, NM

CONTACT: Mr. Doug
PHONE: 268-4144
ZIP CODE: 87109

ARCHITECT: Mullen Heller Architecture, PC
ADDRESS: 1015 Tijeras NW, Suite 220
CITY, STATE: Albuquerque, NM

CONTACT: Mr. Doug
PHONE: 268-4144
ZIP CODE: 87102

SURVEYOR: _____
ADDRESS: _____
CITY, STATE: _____

CONTACT: _____
PHONE: _____
ZIP CODE: _____

CONTRACTOR: _____
ADDRESS: _____
CITY, STATE: _____

CONTACT: _____
PHONE: _____
ZIP CODE: _____

CHECK TYPE OF SUBMITTAL:

- ☒ DRAINAGE REPORT
- ☐ DRAINAGE PLAN 1st SUBMITTAL, ***REQUIRES TCL or equal***
- ☐ DRAINAGE PLAN RESUBMITTAL
- ☐ CONCEPTUAL GRADING & DRAINAGE PLAN
- ☒ GRADING PLAN
- ☐ EROSION CONTROL PLAN
- ☐ ENGINEER'S CERTIFICATION (HYDROLOGY)
- ☐ CLOMR/LOMR
- ☐ TRAFFIC CIRCULATION LAYOUT (TCL)
- ☐ ENGINEERS CERTIFICATION (TCL)
- ☐ ENGINEERS CERTIFICATION (DRB APPR. SITE PLAN)
- ☐ OTHER

BP paid

CHECK TYPE OF APPROVAL SOUGHT:

- ☐ SIA / FINANCIAL GUARANTEE RELEASE
- ☐ PRELIMINARY PLAT APPROVAL
- ☐ S. DEV. PLAN FOR SUB'D. APPROVAL
- ☒ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
- ☐ SECTOR PLAN APPROVAL
- ☐ FINAL PLAT APPROVAL
- ☐ FOUNDATION PERMIT APPROVAL
- ☒ BUILDING PERMIT APPROVAL
- ☐ CERTIFICATE OF OCCUPANCY (PERM.)
- ☐ CERTIFICATE OF OCCUPANCY (TEMP.)
- ☒ GRADING PERMIT APPROVAL
- ☐ PAVING PERMIT APPROVAL
- ☐ WORK ORDER APPROVAL
- ☒ OTHER (SPECIFY)

RECEIVED
OCT 13 2005
HYDROLOGY SECTION

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ☐ YES
- ☒ NO
- ☐ COPY PROVIDED

DATE SUBMITTED: 10/13/2005 BY: PAVAN K. TOLETI

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature , location and scope ot the proposed development defines the degree of drainage detail. One or more of the following levels of submittal may be required based on the following:

1. **Conceptual Grading and Drainage Plan**: Required for approval of Site Development Plans greater than five (5) acres and Sector Plans.
2. **Drainage Plans**: Required for building permits, grading permits, paving permits and site plans less than five (5) acres.
3. **Drainage Report**: Required for subdivisions containing more than ten (10) lots or constituting five (5) acres or more.

DRAINAGE REPORT

for

Avalon Office Building

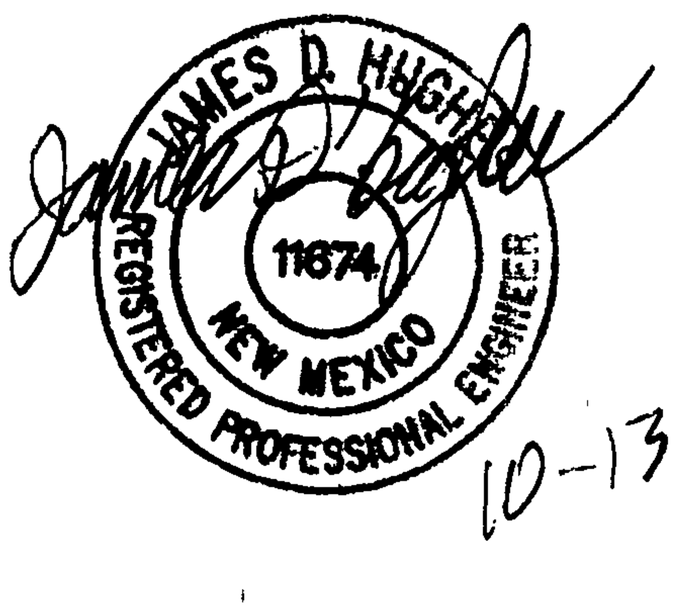
Prepared for

Mullen Heller Architecture, PC
1015 Tijeras NW, Suite 220
Albuquerque, NM 87102

Prepared by

Mark Goodwin & Associates, PA
P.O. Box 90606
Albuquerque, NM 87199
(505) 828-2200

October, 2005



10-13-05

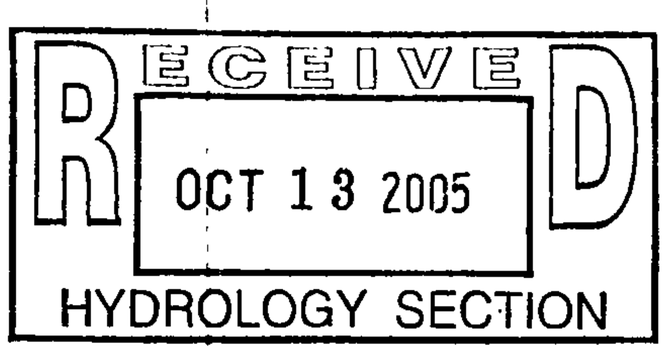


TABLE OF CONTENTS

I. PROJECT DESCRIPTION

The proposed site area comprises approximately 4.30 acres and is located at the intersection of Tower Rd and Unser Blvd. The current legal description of the site is Tract 3B, Town of Atrisco Grant, Unit 2.

The Purpose of this report is to present the drainage management plan for the new office building and warehouse in order to obtain the conceptual grading and drainage plan and building permit approval. All applicable ordinances, the DPM and AHYMO were utilized to prepare this plan.

II. DRAINAGE DESIGN CRITERIA

The design criteria used in this report was in accordance with Section 22.2 Hydrology of the Development Process Manual. The 100-year, 6-hour storm event was utilized to determine site runoff rates using P(1 hr) = 1.66", P(6 hr)=2.12"and P(24 hr) = 2.46", obtained from the latest NOAA Precipitation Atlas. The on-site land treatment values used were type B=12% and D=88% for Basin A (office) and B=15% and D= 85% for Basin B (Pond). AHYMO printouts are provided in Appendix A.

III. EXISTING DRAINAGE CONDITION

The site presently consists of undeveloped land divide into 2 basins, both the basins sloping predominantly toward the south of the site. At present there is no offsite runoff entering into the existing site. The developed runoff discharging from this site is designed to be discharged into onsite retention pond which is maintained privately. The pond calculations are attached in the Appendix.

IV. DRAINAGE MANAGEMENT PLAN

The total developed conditions flow from this site is 15.99 cfs. The grading and drainage plan for the new development proposes to split the site into 2 basins According to AHYMO the individual basin flows generated within the site during the 100-year storm are 11.64 cfs for BasinA(office) and 4.35 cfs for Basin 2 . This 4.30 acre site will drain to temporary onsite retention pond sized to hold the 100-yr 10day volume (1.216 ac-ft). It will be allowed to free discharge to the storm sewer in Tower Road after separate construction by others extend that pipe to the Amole Del North channel in accordance with the Southyard Drainage Report (L-10/D-20).

V. CONCLUSIONS

The proposed drainage scheme for the new buildings can be readily accommodated through the implementation of this plan. It has been adequately shown in this report that the internal conveyance of storm water to off-site facilities can be accomplished while meeting all current City requirements.

K-10-Z

K-9-Z

K-11-Z

L-9-Z

L-11-Z

M-9-Z

M-11-Z

M-10-Z

Zone Atlas Page: **L-10-Z**

Map amended through: **Aug 06, 2004**

Selected Symbols

- Unincorporated Areas
- Sector Plan Boundaries
- Parcel Boundaries
- Easement Lines
- Freeway Lanes
- Jurisdictional Boundaries
- Westgate Wall
- Escarpment
- Grant Boundaries
- Petroglyph
- H-1 Buffer Zone
- Arroyos
- LDN Noise Level
- Airport Clearance Zone
- Design Overlay Zones

0 750 1,500 Feet

NOTE: GREY SHADING REPRESENTS AREA OUTSIDE OF THE CITY LIMITS

THREE HUNDRED YEARS 1706 • 2006

ALBUQUERQUE

Haciendo Historia

Albuquerque Geographic Information System

PLANNING DEPARTMENT

APPENDIX A

HYDROLOGY

AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) - - VERSION: 1997.02d RUN DATE (MON/DAY/YR) =08/23/2005

INPUT FILE = C:\DOCUME~1\pavan\Desktop\PAVAN\INCOME~1.TXT USER NO.= AHYMO-I-9702dGoodwinM-AH

CFS PAGE = 1

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)	PER ACRE NOTATION
START TIME= .00									
RAINFALL TYPE= 1 RAIN6= 2.120									
COMPUTE NM HYD	100.20	-	2	.00500	11.64	.457	1.71348	1.499	3.636 PER IMP= 88.00
COMPUTE NM HYD	100.20	-	3	.00190	4.35	.170	1.67434	1.499	3.579 PER IMP= 85.00
FINISH									

```
    AHYMO PROGRAM (AHYMO_97) -                          - Version:  1997.02d
         RUN DATE (MON/DAY/YR) = 08/23/2005
         START TIME (HR:MIN:SEC) = 13:05:01     USER NO.= AHYMO-I-9702dGoodwinM-AH
         INPUT FILE = C:\DOCUME~1\pavan\Desktop\PAVAN\INCOME~1.TXT

START                                              TIME=0.0
****** AHYMO -INCOME SUPPORT.DAT
****** August 23, 2005
****** HYDOLOGY FOR THE INCOME SUPPORT DIVISION OFFICE

RAINFALL            TYPE=1 RAIN QUARTER=0.0 IN
                    RAIN ONE=1.66 IN RAIN SIX=2.12 IN
                    RAIN DAY=2.46 IN DT=0.0333 HR


                 COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
                 DT =    .033300 HOURS       END TIME =     5.994000 HOURS
                    .0000   .0035   .0070   .0106   .0143   .0181   .0219
                    .0259   .0299   .0340   .0382   .0426   .0470   .0515
                    .0562   .0610   .0660   .0711   .0763   .0818   .0874
                    .0932   .0992   .1055   .1120   .1187   .1258   .1332
                    .1410   .1491   .1578   .1625   .1674   .1726   .1834
                    .2082   .2465   .3015   .3767   .4755   .6018   .7590
                    .9510  1.1353  1.2109  1.2746  1.3311  1.3825  1.4298
                   1.4737  1.5147  1.5531  1.5893  1.6234  1.6557  1.6862
                   1.7151  1.7425  1.7685  1.7932  1.8167  1.8237  1.8295
                   1.8350  1.8403  1.8454  1.8504  1.8552  1.8598  1.8643
                   1.8687  1.8729  1.8771  1.8812  1.8851  1.8890  1.8928
                   1.8965  1.9001  1.9037  1.9072  1.9106  1.9139  1.9173
                   1.9205  1.9237  1.9269  1.9300  1.9330  1.9360  1.9390
                   1.9419  1.9448  1.9477  1.9505  1.9532  1.9560  1.9587
                   1.9614  1.9640  1.9666  1.9692  1.9717  1.9743  1.9768
                   1.9792  1.9817  1.9841  1.9865  1.9889  1.9912  1.9936
                   1.9959  1.9982  2.0004  2.0027  2.0049  2.0071  2.0093
                   2.0115  2.0136  2.0157  2.0179  2.0200  2.0220  2.0241
                   2.0262  2.0282  2.0302  2.0322  2.0342  2.0362  2.0382
                   2.0401  2.0420  2.0440  2.0459  2.0478  2.0497  2.0515
                   2.0534  2.0552  2.0571  2.0589  2.0607  2.0625  2.0643
                   2.0661  2.0679  2.0696  2.0714  2.0731  2.0748  2.0765
                   2.0783  2.0800  2.0816  2.0833  2.0850  2.0867  2.0883
                   2.0900  2.0916  2.0932  2.0949  2.0965  2.0981  2.0997
                   2.1013  2.1028  2.1044  2.1060  2.1075  2.1091  2.1106
                   2.1122  2.1137  2.1152  2.1167  2.1182  2.1197
```

****** BASIN A - (3.250 ACRES)

COMPUTE NM HYD ID=2 HYD NO=100.2 AREA=0.0050 SQ MI
PER A=0 PER B=12 PER C=0 PER D=88
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 17.371 CFS UNIT VOLUME = .9987 B = 526.28 P60 = 1.6600
AREA = .004400 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033300

K = .134687HR TP = .133300HR K/TP RATIO = 1.010405 SHAPE CONSTANT, N = 3.493654
UNIT PEAK = 1.4398 CFS UNIT VOLUME = .9908 B = 319.87 P60 = 1.6600
AREA = .000600 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033300

PRINT HYD ID=2 CODE=24

PARTIAL HYDROGRAPH 100.20

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS
.000	.0	1.998	2.8	3.996	.1	5.994	.1			
.666	.0	2.664	.3	4.662	.1	6.660	.0			
1.332	3.4	3.330	.1	5.328	.1					

RUNOFF VOLUME = 1.71348 INCHES = .4569 ACRE-FEET
PEAK DISCHARGE RATE = 11.64 CFS AT 1.499 HOURS BASIN AREA = .0050 SQ. MI.

****** BASIN B - (1.2373 ACRES)

COMPUTE NM HYD ID=3 HYD NO=100.2 AREA=0.0019 SQ MI
PER A=0 PER B=15 PER C=0 PER D=85
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420

UNIT PEAK = 6.3761 CFS UNIT VOLUME = .9975 B = 526.28 P60 = 1.6600
AREA = .001615 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033300

K = .134687HR TP = .133300HR K/TP RATIO = 1.010405 SHAPE CONSTANT, N = 3.493654
UNIT PEAK = .68389 CFS UNIT VOLUME = .9804 B = 319.87 P60 = 1.6600
AREA = .000285 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033300

PRINT HYD ID=3 CODE=24

PARTIAL HYDROGRAPH 100.20

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.998	1.0	3.996	.0	5.994	.0		
.666	.0	2.664	.1	4.662	.0	6.660	.0		
1.332	1.3	3.330	.0	5.328	.0				

RUNOFF VOLUME = 1.67434 INCHES = .1697 ACRE-FEET
PEAK DISCHARGE RATE = 4.35 CFS AT 1.499 HOURS BASIN AREA = .0019 SQ. MI.

FINISH

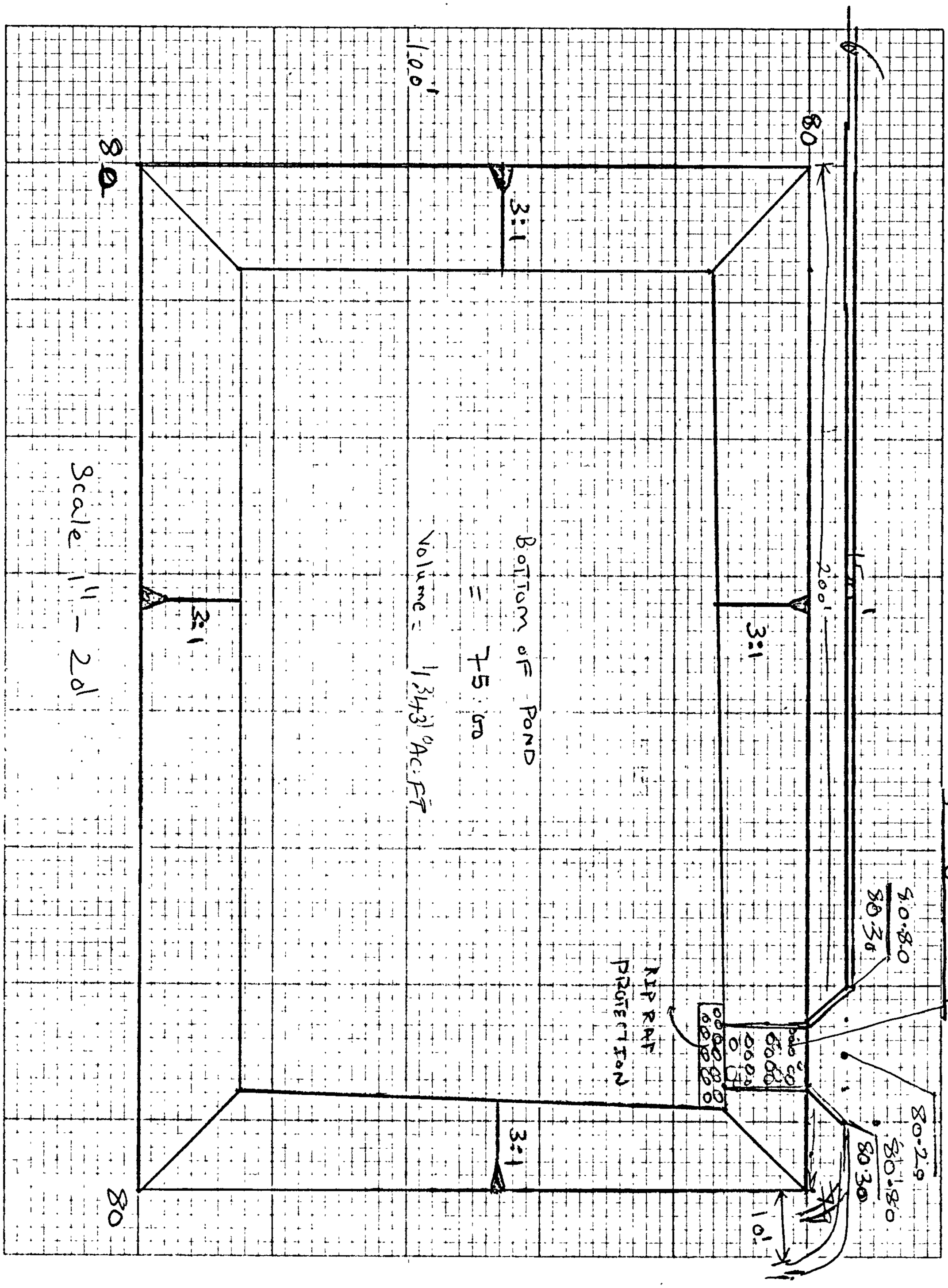
NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 13:05:01

Precipitation Frequency Estimates (inches)

ARI* (years)	5 min	10 min	15 min	30 min	60 min	120 min	3 hr	6 hr	12 hr	24 hr	48 hr	4 day	7 day	10 day	20 day	30 day	45 day	60 day
2	0.21	0.32	0.40	0.53	0.66	0.76	0.81	0.93	1.03	1.16	1.30	1.58	1.78	1.96	2.45	2.92	3.55	4.10
5	0.28	0.43	0.54	0.72	0.89	1.00	1.06	1.20	1.31	1.45	1.63	1.94	2.18	2.40	2.98	3.53	4.24	4.90
10	0.34	0.52	0.64	0.86	1.07	1.19	1.26	1.40	1.53	1.69	1.88	2.23	2.49	2.75	3.38	3.98	4.74	5.48
25	0.41	0.63	0.78	1.05	1.30	1.46	1.52	1.69	1.82	1.99	2.23	2.62	2.90	3.22	3.90	4.54	5.35	6.18
50	0.47	0.71	0.89	1.19	1.48	1.67	1.74	1.90	2.03	2.23	2.49	2.92	3.21	3.57	4.27	4.95	5.78	6.66
100	0.53	0.80	0.99	1.34	1.66	1.88	1.96	2.12	2.25	2.46	2.75	3.22	3.52	3.93	4.64	5.34	6.16	7.11
200	0.59	0.89	1.11	1.49	1.85	2.11	2.19	2.35	2.47	2.70	3.01	3.52	3.81	4.28	4.98	5.71	6.51	7.51
500	0.67	1.01	1.25	1.69	2.09	2.41	2.50	2.65	2.77	3.02	3.36	3.92	4.21	4.73	5.42	6.15	6.92	7.98
1000	0.73	1.10	1.37	1.84	2.28	2.64	2.74	2.88	2.99	3.25	3.62	4.23	4.50	5.08	5.74	6.47	7.18	8.29

D. Mark Goodwin & Associates, P.A.
Consulting Engineers
P.O. BOX 90606, ALBUQUERQUE,NM 87199
(505) 828-2200 FAX 797-9539

PROJECT _____
SUBJECT _____
BY _____ DATE _____
CHECKED _____ DATE _____
SHEET ____ OF ____



D. Mark Goodwin & Associates, P.A.
Consulting Engineers
P.O. BOX 90606, ALBUQUERQUE,NM 87199
(505) 828-2200 FAX 797-9539

PROJECT Avalon OFFICE BUILDING
SUBJECT POND CALCS
BY P.Van DATE 07/10/05.
CHECKED _____ DATE _____
SHEET ____ OF ____

Volume calculations

$$V_{10days} = V_{360} + A_D \left(P_{10days} - P_{360} \right) / 12 \text{ in/ft}$$

$P_{10days} = 3.93$

$V_{10days} = 0.627 + 3.91 \left[3.93 - 2.12 \right] / 12.$

$= 1.216$ AC.FT.

Total Volume provided $= 1.43$ AC.FT $>$ 1.216 AC.FT (Required)

$V_{provided} > V_{Required}$ (O.K)

POND-2 Version: 4.01
S/N: 88020607

CALCULATED 10-13-2005 08:32:50
DISK FILE : F:AVALON .VOL

Planimeter scale: 1 inch = 1 ft.

Elevation (ft)	Planimeter (sq.in.)	Area (acres)	A1+A2+sqr(A1*A2) (acres)	Volume * (acre-ft)	Volume Sum (acre-ft)
75.00	11,750.00	0.27	0.00	0.00	0.00
79.00	19,750.00	0.45	1.07	1.43	1.43

$$IA = (sq.rt(Area1) + ((Ei-E1)/(E2-E1))*(sq.rt(Area2)-sq.rt(Area1)))^2$$

where: E1, E2 = Closest two elevations with planimeter data
Ei = Elevation at which to interpolate area
Area1,Area2 = Areas computed for E1, E2, respectively
IA = Interpolated area for Ei

* Incremental volume computed by the Conic Method for Reservoir Volumes.

$$Volume = (1/3) * (EL2-EL1) * (Area1 + Area2 + sq.rt.(Area1*Area2))$$

where: EL1, EL2 = Lower and upper elevations of the increment
Area1,Area2 = Areas computed for EL1, EL2, respectively
Volume = Incremental volume between EL1 and EL2