

**PINNACLE AT
SOUTH MOUNTAIN
APARTMENTS**

**PRELIMINARY
DRAINAGE REPORT**

American Engineering Company

Consulting Engineers



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**PINNACLE AT
SOUTH MOUNTAIN
APARTMENTS**

**PRELIMINARY
DRAINAGE REPORT**

for

THE CITY OF PHOENIX



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AEC Job No. 94040

TABLE OF CONTENTS

	Page #
INTRODUCTION	1
OFF-SITE DRAINAGE	1
ON-SITE RETENTION	2
DROP INLET	3
CONCLUSIONS	3

INTRODUCTION

The Pinnacle at South Mountain Apartments is an apartment project located South of Guadalupe Road and West of Arizona Department of Transportation I-10. This is within the Pointe Resort at South Mountain master planned community. Most of this site is included in the "Drainage Report for Alternations to Guadalupe Flood Retarding Structure". This report was done to show how the proposed golf course would improve the storage within the Guadalupe Flood Retarding Structure (GFRS). The GFRS was built to retain the storm water instead of allowing it to flood the community of Guadalupe. The golf course concept was approved and the golf course was built. The study shows how the water is routed through the golf course and apartment sites into the lakes. Attached to this report is a copy of that report which Don Olsen of Gosnell gave to us. The routing shows that there are three retention basins on the golf course to the West of Pinnacle at South Mountain Apartment site. These basins are to retain the water with overflow from basins 1 and 2 flowing into 3. During the 100 year 24 hour event basin 3 is to flow into basin 4 which is on our site with 6.86 cfs. According to the TR-20 model of Gosnell, the runoff from the apartment site was 33.04 cfs. The retention at an elevation of 1285.03. The retention area at that elevation is 1.39 acre feet.

Therefore to comply with the TR-20 program the 100 year storm must have 1.39 acre feet of retention on the North part of the site.

OFF-SITE DRAINAGE

Along the North side of the project a flow of about 7 cfs needs to be accepted. This will be piped to the first retention basin. Then a pipe will connect the two retention basins, the pipe is capable of carrying the 7 cfs. If more come into the site, it will overflow from golf course basin 3 onto our project and will flow overland in the street to the new retention basin.

The 100-year water surface elevation is 1285.00 ft. The finish floors need to be at least 14

inches above the 100 year high water mark. With the 60" pipe under Guadalupe Road a large flow of water can go under Guadalupe Road. According to our calculations if the water is half foot above the 100 year water level 34.5 cfs would flow through instead of the 18.6 cfs. As another safety, the water would flow over to the off-site area.

The southern area of this project has the possibility of having overflow that will flow through our sites into the retention basins. This basin will then flow against the wall, that is to have an opening going into the 3 x 10 box that flows under the freeway. Gosnell has stated that according to their agreements the wall will be able to have an opening as designed but not yet installed, but will be installed concurrent with our construction.

ON-SITE RETENTION

The required on-site retention for the southern third of the project is the following:

$$V = 7200 CIA \quad (V = \text{Volume Required})$$

$$C = 0.85$$

$$I = 1.25$$

$$A = 4.8 \text{ acres}$$

$$V = 7200(0.85)(1.25)(4.8) = 36,720 \text{ ft}^3 \quad \checkmark$$

The required retention on the northerly 2/3 of the site is 1.39 acre feet or 60,548.4 ft³. Our calculations indicate that a total volume of 63,348 ft³ retention can be provided. This is the area that we are at with two retention basins against Guadalupe Road and the parking lots and common areas with an average of 0.5 feet of water from the 100 year storm. See the attached drainage siteplan for the retention calculations.

DROP INLET

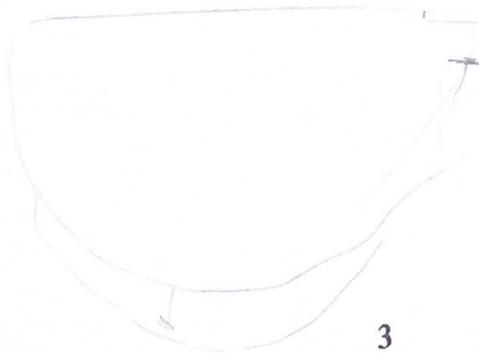
A drop inlet is to be put for the 60' RGRCP under Guadalupe Road. The headwall of the drop inlet is to be placed 0.5 ft below the 100-year water level. With 0.5 ft of the head, the water drop into the inlet is:

$$\begin{aligned} Q &= 3.0 L H^{1.5} \\ &= 3.0 \times 32.5 \times 0.5^{1.5} \\ &= 34.5 \text{ cfs} > 18.6 \text{ cfs} \end{aligned}$$

The geometric dimensions of the inlet will comply with the M.A.G. Standard Detail and to be consistent with the existing one on the other side of Guadalupe Road.

CONCLUSIONS

This project will conform to the Master Drainage report for the Pointe at South Mountain.



Appendix: Retention Basin Calculation:

PINNACLE AT SOUTH MOUNTAIN
RETENTION CALCULATIONS

AEC. NO. 94040
FILE:4040RET1.WB1[A]
DATE: 6/2/94

SOUTH PORTION OF SITE

RETENTION REQUIRED: VR=7200CIA

WHERE:

C= 0.9

I= 1.25 in.

A= 4.568 Acres

THEREFORE: VR= 37000.8 C.F.

RETENTION PROVIDED:

VP= 37900 C.F.

NORTH PORTION OF SITE

RETENTION REQUIRED: 1.39 ACRES FEET

THEREFORE: VR= 60548.4 C.F.

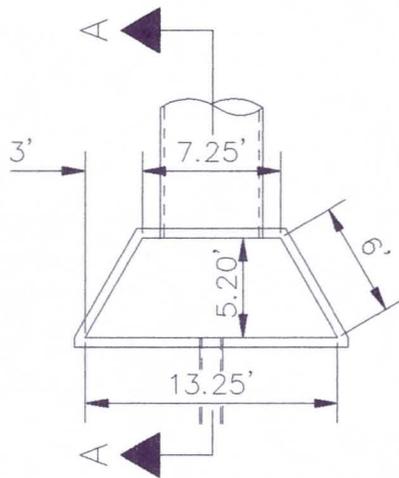
RETENTION PROVIDED:

VP= 63348 C.F.

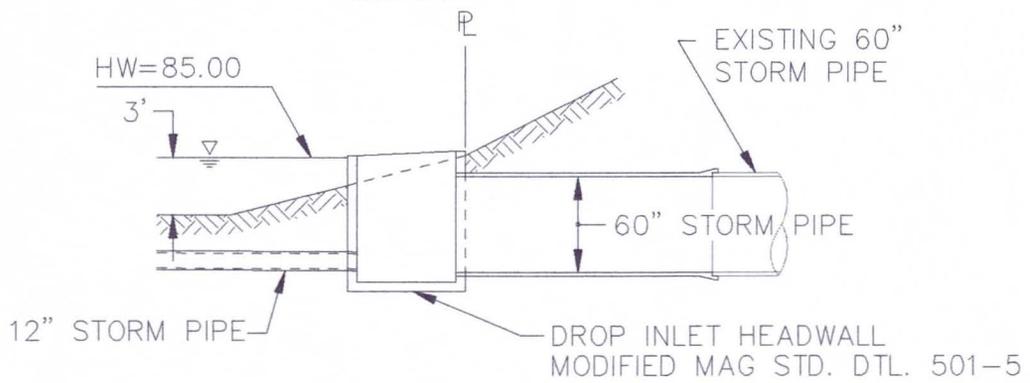
PINNACLE AT SOUTH MOUNTAIN
RETENTION CALCULATIONS

AEC. NO. 940
FILE:4040RE1
DATE: 6/2/94

BASIN	TRIBUTARY AREA(S.F.) @ C=0.9	VOL.(R) CU.FT.	RETEN. PROVIDED(CF)	BALANCE
A			8863.00	1822
B			2050.00	-
C			1569.00	-
D			15000.00	-
E			1188.00	-
F			4102.00	-
G			572.00	-
H			1112.00	-
I			1622.00	-
J			922	-
K			900	-
TOTAL			37900.00	
L			4578	3383
M			16792	15000
N			11550	677
O			487	-
P			7096	-
Q			4949	-
R			626	-
S			14533	-
T			480	-
U			719	-
V			275	-
W			800	-
X			463	-
TOTAL			63,348.0000	



PLAN



SECTION A-A