

Drainage Reports

Abbreviated Water & Sewer Need Reports

Water Study

Wastewater Study

Stormwater Waiver Application

Case for [unclear]

PRELIMINARY DRAINAGE REPORT
SCOTTSDALE FASHION SQUARE LUXURY WING ENTRY SITE
7014 E. CAMELBACK ROAD, SCOTTSDALE, ARIZONA
COS CASE NO. 26-DR-2017

PREPARED FOR

Macerich

Phoenix, Arizona

PREPARED BY

Olsson Associates

7250 N. 16th Street, Suite 210

Phoenix, AZ 85020

602-748-1000

*Revise the report
showing stormwater
storage is not required
per previous
Masterplan for
Fashion Square
and that there
is no increase
in run-off.*

Plan #	_____
Case #	<u>26-DR-2017</u>
Q-S #	_____
<input checked="" type="checkbox"/> Accepted	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Corrections	
Reviewed By	<u>DS</u> <u>9/11/2017</u>



EXPIRES 06-30-20

August 2017

Olsson Associates Project No. 016-3809

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EXPIRES 06-30-20



Appendix 4-1A DRAINAGE REPORT OUTLINE

Title Page: Project Name; Location; Type of Drainage Report (Preliminary, Master Plan, Final, etc.); and Engineer's Seal, Signature, and Date.
Table of Contents: Engineer's Seal, Signature, and Date.
1. Introduction <ul style="list-style-type: none">• Project Name, Location, Size, and Brief Description;• Type of Report (Preliminary, Master Plan, and Final, etc.); and• Purpose and Objectives.
2. Description of Existing Drainage Conditions and Characteristics <ul style="list-style-type: none">• On-site drainage:• Existing drainage network, patterns, and watershed and floodplain boundaries.• Off-site watershed:• Existing conditions and the drainage network entering and existing the project site.• Context relative to adjacent projects and improvements;• Flood Hazard Zones on the property, FIRM maps.• Site-specific photographs to support parameter selection.
3. Proposed Drainage Plan <ul style="list-style-type: none">• General description of proposed drainage system and components; including conveyance of off-site flows;• Future conditions; including development of adjacent properties;• Stormwater storage requirements:<ul style="list-style-type: none">- Volume required, volume provided, and basin locations.• Pre- and post- runoff characteristics at concentration points exiting the property;• Proposed drainage structures or special drainage facilities:<ul style="list-style-type: none">- Include design criteria and probable effect on the existing upstream and downstream drainage system.• Project Phasing:<ul style="list-style-type: none">- Improvements to be constructed with each phase, impact of phased construction, and required interim improvements. Development requirements must be met independently for each phase.
4. Special Conditions Project Stipulations, 401 and 404 Permits, AZPDES.
5. Data Analysis Methods <ul style="list-style-type: none">• Hydrologic procedures, parameter selection and assumptions.• Hydraulic procedures, methods, parameter selection and assumptions.• Stormwater storage calculation methods and assumptions.
6. Conclusions <ul style="list-style-type: none">• Overall Project• Project Phasing
7. Warning and Disclaimer of Liability <ul style="list-style-type: none">• Each drainage report must include a completed Warning and Disclaimer of Liability.
8. References



Appendix 4-1A DRAINAGE REPORT OUTLINE

Appendices - Hydrologic and Hydraulic Data and Calculations, and a signed Warning and Disclaimer of Liability

Electronic Input Files - HEC-1, HEC-HMS, and HEC-2 or HEC-RAS, on Compact Disk (CD), working copy of non-standard software. A PDF file of the drainage report must also be provided that includes all exhibits, plates, figures, etc.

Exhibits

- Vicinity Map
- Existing Conditions
- Topographic Map of Off-Site Watershed;
- Topographic Map of Existing On-site conditions with current 1-foot (minimum) contour mapping based on a current topographic survey.
- Current aerial photo, 800 scale or larger, showing site in context.
- Proposed On-site Drainage Plan
- Scale appropriate to type of drainage report and size of the project.



WARNING & DISCLAIMER OF LIABILITY

The Drainage and Floodplain Regulations and Ordinances of the City of Scottsdale are intended to "minimize the occurrence of losses, hazards and conditions adversely affecting the public health, safety and general welfare which might result from flooding caused by the surface runoff of rainfall" (Scottsdale Revised Code §37-16).

As defined in S.R.C. §37-17, a flood plain or "Special flood hazard area means an area having flood and/or flood related erosion hazards as shown on a FHBM or FIRM as zone A, AO, A1-30, AE, A99, AH, or E, and those areas identified as such by the floodplain administrator, delineated in accordance with subsection 37-18(b) and adopted by the floodplain board." It is possible that a property could be inundated by greater frequency flood events or by a flood greater in magnitude than a 100-year flood. Additionally, much of the Scottsdale area is a dynamic flood area; that is, the floodplains may shift from one location to another, over time, due to natural processes.

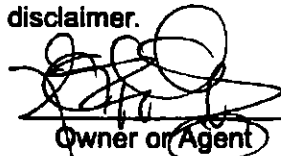
WARNING AND DISCLAIMER OF LIABILITY PURSUANT TO S.R.C §37-22

"The degree of flood protection provided by the requirements in this article is considered reasonable for regulatory purposes and is based on scientific and engineering considerations. Floods larger than the base flood can and will occur on rare occasions. Floodwater heights may be increased by man-made or natural causes. This article (Chapter 37, Article II) shall not create liability on the part of the city, any officer or employee thereof, or the federal government for any flood damages that result from reliance on this article or any administrative decision lawfully made thereunder."

Compliance with Drainage and Floodplain Regulations and Ordinances does not insure complete protection from flooding. The Floodplain Regulations and Ordinances meet established local and federal standards for floodplain management, but neither this review nor the Regulations and Ordinances take into account such flood related problems as natural erosion, streambed meander or man-made obstructions and diversions, all of which may have an adverse affect in the event of a flood. You are advised to consult your own engineer or other expert regarding these considerations.

I have read and understand the above. If I am an agent for an owner I have made the owner aware of and explained this disclaimer.

26-DR-2017
Plan Check No.


Owner or Agent

8/8/17
Date

1.0 INTRODUCTION

1.1 Purpose of Report

The purpose of this preliminary drainage report is to provide hydrologic and hydraulic documentation for the proposed Scottsdale Fashion Square Luxury Wing commercial site. More specifically, a design review of surface grading, retention with bleed off and offsite flows that impact the site. The project will be designed and developed in accordance with the City of Scottsdale and Maricopa County's current development standards and client requirements. The project will follow City of Scottsdale stormwater storage redevelopment policies.

1.2 Site Description and Project Location

The proposed Scottsdale Fashion Square Luxury Wing Site (hereinafter referred to as the Project) consists of a commercial development with project zoning D/RCO-2 PBD covering approximately 4.81 acres. The Project is located within a portion of the Northeast Quarter of Section 22, Township 2 North, Range 4 East of the Gila and Salt River Meridian, Maricopa County, Arizona. More specifically, the project is located near the northwest corner of Camelback Road and Goldwater Boulevard in Scottsdale Fashion Square (see **Figure 1. Vicinity Map** below).



Figure 1: Vicinity Map

The site is currently developed as part of the greater Scottsdale Fashion Square Shopping Mall. Buildings, parking lot, and open space area will be redeveloped in multiple phases including restaurants, valet services and retail stores. This report accounts for the complete buildout of the 4.81-acre site, as provided in **Table 1** below (also refer to **Figure 6**). The Project is bounded by Highland Avenue to the north, Goldwater Boulevard to the east, Scottsdale Fashion Square Shopping Mall to the south and the mall's purple parking garage to the west. Site access to the public street system will be provided along Goldwater Boulevard.

Table 1. Final Buildout Gross Floor Area

Area ID	Use	Gross Floor Area (SF)	Building Cover (SF)
PAD A	Restaurant	12,335 SF	12,335 SF
PAD B	Restaurant	7,100 SF	7,100 SF
PAD C	Restaurant/Retail	9,215 SF	12,371 SF
PAD F	Restaurant	3,900 SF	3,900 SF
BOLT-ON	Shops- Mall addition	14,100 SF	14,131 SF

1.3 Topographic Conditions

The existing ground slopes from Northwest to southeast direction at a 0.9 % slope. **Figure 3** in **Appendix B** presents the existing topographic conditions for the Project. Both Goldwater Boulevard and Highland Avenue have been fully improved with catch basin inlets for stormwater runoff.

1.4 FEMA Flood Insurance Rate Map

The project is entirely located within Zone "X" according to Flood Insurance Rate Map (FIRM) Panel 04013C1770L which is effective October 16, 2013 (REF 1). Zone X is defined as: "Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood." (Please refer to the **Figure 2**, Flood Insurance Rate Map in **Appendix A**).

2.0 OFFSITE DRAINAGE

Offsite watersheds conditions have been detailed within the existing Master Drainage Report from Collar, Williams & White Engineering, and will not be modified by this project.

Both Goldwater Boulevard and Highland Avenue are fully improved with catch basin inlets. Since these adjacent streets have been fully improved and the Project is not proposing to do street modifications, no analysis of street capacity or inlet capacity is presented with this report.

In the current condition runoff from Highland Avenue is carried east in the gutter and then passes through a scupper and then into an existing storm system that crosses Goldwater Boulevard that eventually heads to Scottsdale Road.

Goldwater Boulevard runoff drains south and collects runoff in inlets south of the project site, which then drains south via storm sewer to Camelback Road.

Based on the existing Master Drainage Report (REF 6) from Collar, Williams & White Engineering, date May 10, 1988 (Appendix E), the runoff collected from the site discharge into an existing 84-inch storm drain pipe in Camelback Road and an existing 42-inch storm drain pipe located in Scottsdale Road. These two pipes connect to a 144-inch storm drain pipe which ultimately drain to Indian Bend Wash (See **Existing Conditions Drainage Map** in **Appendix B** for more details).

The Project site outfall will be at the southeast corner of the site onto Goldwater Boulevard as it has been historically directed.

Offsite drainage does not affect this project.

3.0 ONSITE DRAINAGE

The existing developed site has a storm sewer system that collects runoff that discharges into various storm water systems along Goldwater Boulevard. There are also three (3) above ground retention basins, 1-foot deep or less, that catch drainage that directly fall in the area as well as bypass parking lot runoff through curb openings. (See **Figure 3. Existing Conditions Drainage Map** in **Appendix B** for layout).

The City of Scottsdale requires that a redeveloped site retain the pre-vs-post difference or its own first flush volume (first half inch of rainfall) before directing runoff to the offsite roads and storm systems. To calculate these volumes the rational method was used. Land use areas for the site were determined for the existing and proposed condition (see **Figure 5** and **Figure 6** in **Appendix B**) and used to find a weighted C coefficient for the both conditions. The assumptions are summarized in **Table 1.** below and calculated weighted values are shown in **Appendix C.**

Table 1. Land Use 'C' Coefficient Assumptions

Land Use	Building Area	Paved Area	Desert Landscape Area	Grassed Area
C=	0.95	0.95	0.83	0.30

The results show that the project will have no overall change in land use with the pre and post 'C' coefficient both equaling 0.91. This means that a pre-vs-post comparison will show no net change and first flush volume will be used to provide retention. The first flush volume for the site was calculated to be 7,946 cubic feet. In addition to this volume, two (2) of the three-existing above ground retention basins, existing Basin B1 and B2, will be removed at final build-out. The lost volume from this removal will also be provided in the underground storage system along with the first flush volume. This equates to an additional 3,379 cubic feet of volume, bringing the total underground storage volume to 11,325 cubic feet. The underground storage tank will drain through a proposed dual chamber drywell. For storms exceeding the first flush volume, an outlet pipe set above the water surface elevation of the required storage volume of 11,325 cubic feet, will be stubbed in the storage tank for overflow.

In addition to providing more onsite retention, analysis was done to ensure that site modifications will not alter existing drainage patterns in a negative way. Sub-areas are shown in **Figures 3 and 4** showing a site breakdown of drainage patterns for both pre and post conditions (see **Table 2. Analysis Focus Points Summary** for results).

Table 2. Analysis Focus Points Summary

Area ID	Outlet Point	Existing Area (Acres)	Proposed Area (Acres)	Difference (Acres)
A	Existing 18" storm sewer	3.14	3.31	+0.17
B	Existing grate inlets south of site	0.84	0.54	-0.30
C	Existing storm sewer crossing Goldwater	0.23	0.16	-0.07
D	Goldwater Boulevard street gutter	0.61	0.81	+0.20

The table shows that inlets for areas A and D will take on a small additional volume in the post condition. Based on our calculations, the additional volumes present no issue.

3.1 Design Standards

Onsite drainage will be designed and constructed to conform to the City of Scottsdale *Design Standards & Policies Manual, Chapter 4* (REF 2) and the Flood Control District of Maricopa County's *Drainage Design Manual for Maricopa County, Arizona, Volume 1, Hydrology and Volume II, Hydraulics* (Ref 4 & 5).

3.2 Finished Floor Elevations

The proposed finish floor elevation for all phases of the project will be much greater than 14" above the site outfall. The ultimate outfall for the site is at a 1270.70 while the minimum finished floor elevation will be set at 1291.00.

3.3 Storm System Maintenance

Ongoing maintenance of the designed drainage systems is required to preserve their design integrity. Poor maintenance can prevent the system from performing to its intended design purpose and can result in reduced performance. Maintenance is the responsibility of the property owner for facilities on private property. A regular maintenance program is required to have drainage systems perform to the level of protection or service as presented in this report and the project's plans and specifications.

4.0 CONCLUSIONS

The following conclusions have been reached as a result of this drainage investigation, in support of the proposed Scottsdale Fashion Square Luxury Wing Project:

- This drainage report was prepared in accordance with the recommendations and design parameters from the City of Scottsdale *Design Standards & Policies Manual, Chapter 4* (REF 2), and *MCFCD Drainage Design Manuals, Volume I and II* (REF 4&5).
- The proposed Drainage plan maintains the existing drainage patterns and flows. The proposed drainage will continue to drain to the existing storm system as outlined in the *Master Drainage Plan for Scottsdale Fashion Square* approved August 18, 1986, revised May 10, 1988, by Collar, Williams & White Engineering (Appendix B).
- The required retention volume is held within retention basins based on first flush volume, per City of Scottsdale redevelopment requirements and designed to drain within 36 hours via drywells or surface percolation.
- The project is entirely located within Zone "X" according to FIRM Panel 04013C1770L. Zone X is defined as: "Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood."

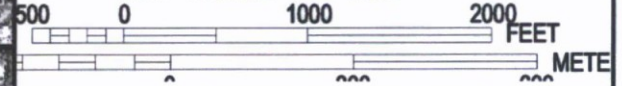
5.0 REFERENCES

1. Flood Insurance Rate Map, Maricopa County, Arizona, Map Number 04013C1770L, Federal Emergency Management Agency, Washington DC, October 16, 2013.
2. City of Scottsdale Design Standards & Policies Manual, Chapter 4, City of Scottsdale, AZ, January 2010.
3. MAG Uniform Standard Details for Public Works Construction, Maricopa Association of Governments, Phoenix, AZ, 2015 Revision.
4. Drainage Design Manual for Maricopa County, Arizona – Hydrology, 4th Edition, Flood Control District of Maricopa County, Phoenix, AZ, August 15, 2013.
5. Drainage Design Manual for Maricopa County, Arizona – Hydraulics, 3rd Edition, Flood Control District of Maricopa County, Phoenix, AZ, August 15, 2013.
6. Master Drainage Plan for Scottsdale Fashion Square, Collar, Williams & White Engineering, May 10, 1988.

APPENDIX A
FEMA FIRM MAP



MAP SCALE 1" = 1000'



915000 FT



910000 FT

33°30'00.0"
111°56'15.0"
413 000m E

414 000m E

NFIP

PANEL 1770L

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP
MARICOPA COUNTY,
ARIZONA
AND INCORPORATED AREAS

PANEL 1770 OF 4425

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
MARICOPA COUNTY	040037	1770	L
PARADISE VALLEY, TOWN OF	040049	1770	L
SCOTTSDALE, CITY OF	045012	1770	L

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.



MAP NUMBER
04013C1770L

MAP REVISED
OCTOBER 16, 2013

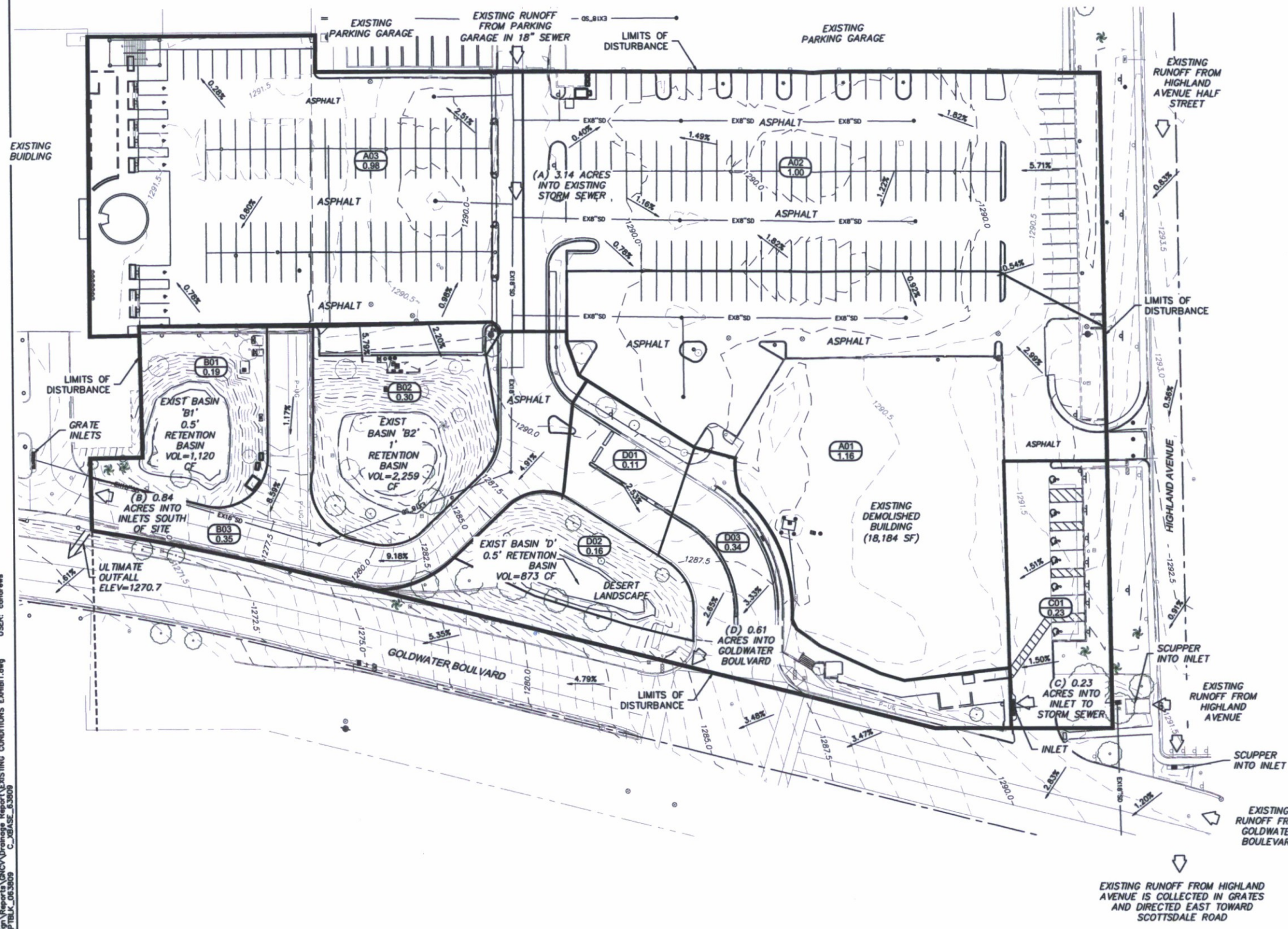
Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

**APPENDIX B
DRAINAGE MAP(S)**

F:\2016\3501-4000\016-3609\40-Design\Reports\GRCV\Drainage_Report\EXISTING CONDITIONS EXHIBIT.dwg
 USER: condrews
 DATE: Aug 17, 2017 4:05pm
 XREFS: C:\PUBLK_063609 C:\BASE_03809

Call at least two full working days before you begin construction.
ARIZONA 811



DRAINAGE MAP LEGEND

DRAINAGE AREA ID	B05
DRAINAGE AREA (ACRES)	2.13
SLOPE DIRECTION	→
MINOR-SUB MASIN	—
MAJOR-SUB MASIN	—
ANALYSIS FOCUS POINT	◊
CONTOUR LINES TYPES	
EXISTING MAJOR CONTOUR	-1085-
EXISTING MINOR CONTOUR	-1086-



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 www.molssonassoc.com

MOLSSON ASSOCIATES ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS (HORIZONTAL OR VERTICAL). THE EXISTING UTILITIES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. IT IS HOWEVER THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES.

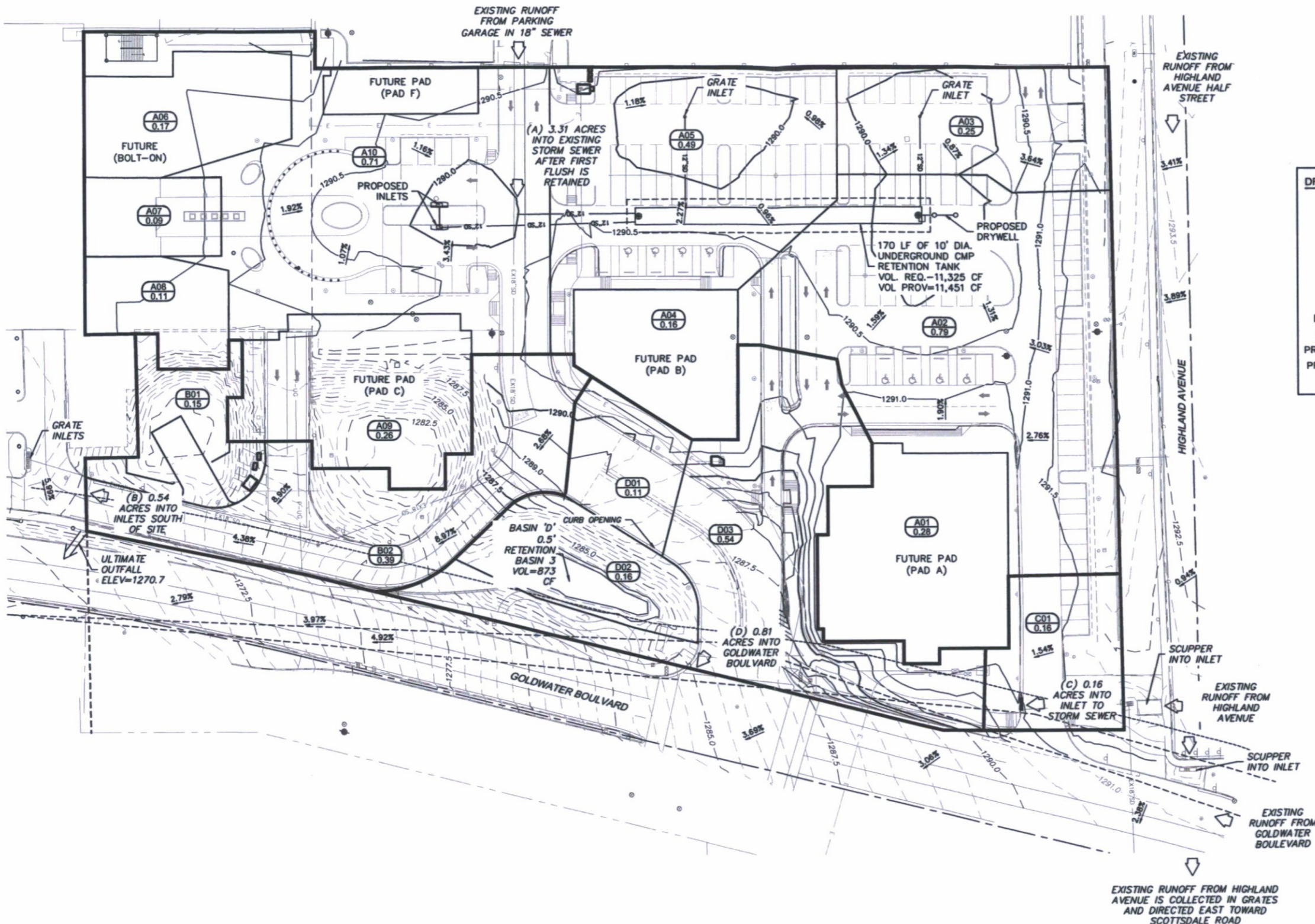
REV. NO.	DATE	REVISIONS DESCRIPTION

EXISTING CONDITIONS DRAINAGE MAP	2017
SCOTTSDALE FASHION SQUARE LUXURY WING ENTRY	
SCOTTSDALE, ARIZONA 85251	

drawn by: THW
 designed by: SNV
 checked by: AP
 QA/QC by: CAR
 project no.: 016-3609
 date: 08.17.17

FIGURE 3

F:\2016\3501-4000\016-3809\40-Design\Reports\DR\Drainage Map_53809.dwg
 Aug 17, 2017 5:38pm
 USER: condrwrs
 C:\PHE_PBASE_53809 C:\PHE_PBASE_53809



DRAINAGE MAP LEGEND

DRAINAGE AREA ID	
DRAINAGE AREA (ACRES)	
SLOPE DIRECTION	
MINOR-SUB MASIN	
MAJOR-SUB MASIN	
ANALYSIS FOCUS POINT	
CONTOUR LINES TYPES	
EXISTING MAJOR CONTOUR	
EXISTING MINOR CONTOUR	
PROPOSED MAJOR CONTOUR	
PROPOSED MINOR CONTOUR	

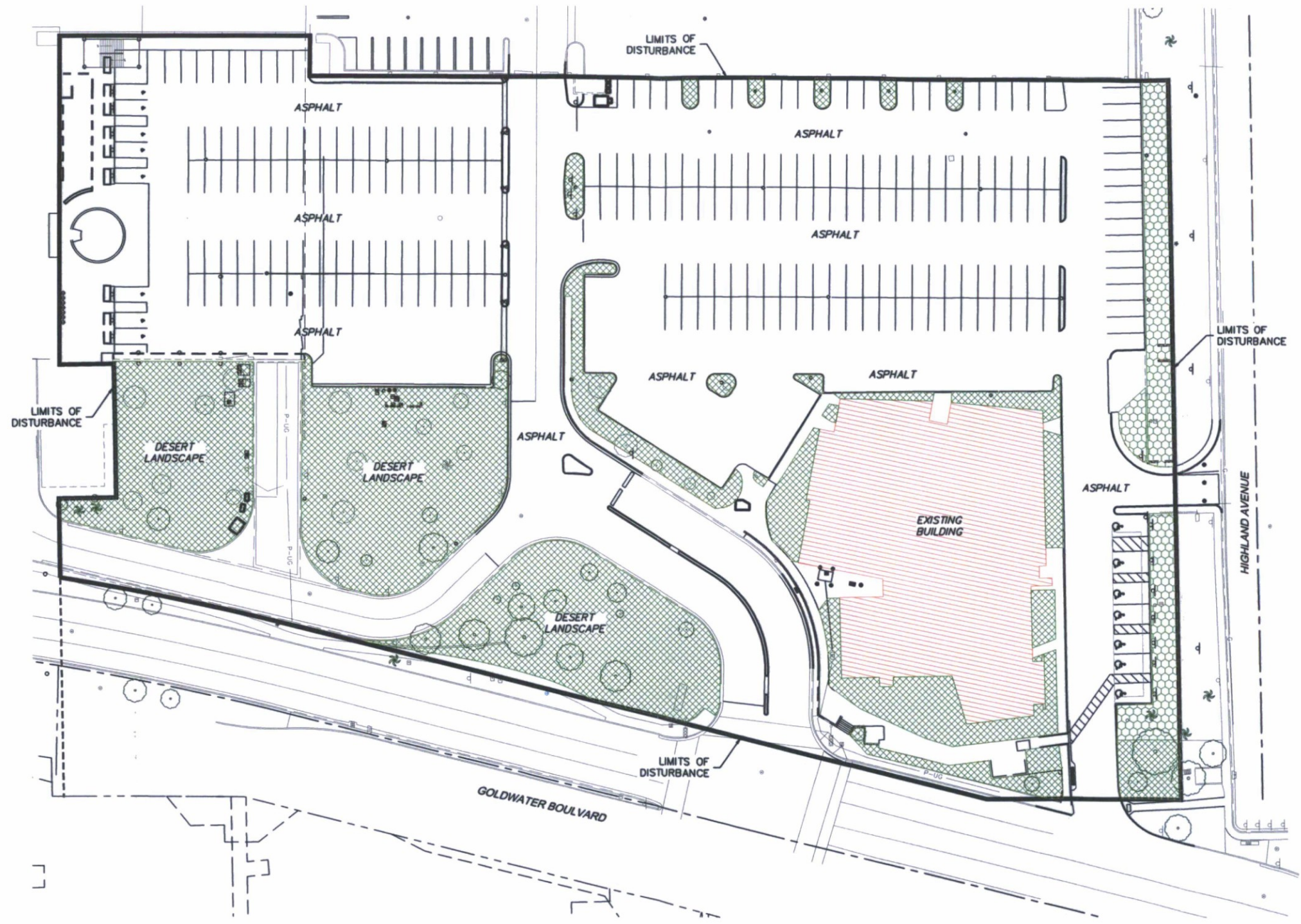
MOLSSON ASSOCIATES ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS (HORIZONTAL OR VERTICAL). THE EXISTING UTILITIES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. IT IS HOWEVER THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES.

REV. NO.	DATE	REVISIONS DESCRIPTION

DRAINAGE MAP	REVISIONS
SCOTTSDALE FASHION SQUARE LUXURY WING ENTRY	2017
SCOTTSDALE, ARIZONA 85251	

drawn by: THW
 designed by: SIV
 checked by: AP
 QA/QC by: CAM
 project no.: 516-3809
 date: 08.17.17

Call at least two full working days before you begin excavation.



RESULTS SUMMARY

BUILDING AREA - C=.95		18,477 SF
DESERT LANDSCAPE AREA - C=.83		39,968 SF
GRASSED AREA - C=.30		5,695 SF
SIDEWALK/PATIO/ASPHALT - C=.95		145,564 SF
C WEIGHTED - Cw=0.91		209,704 SF



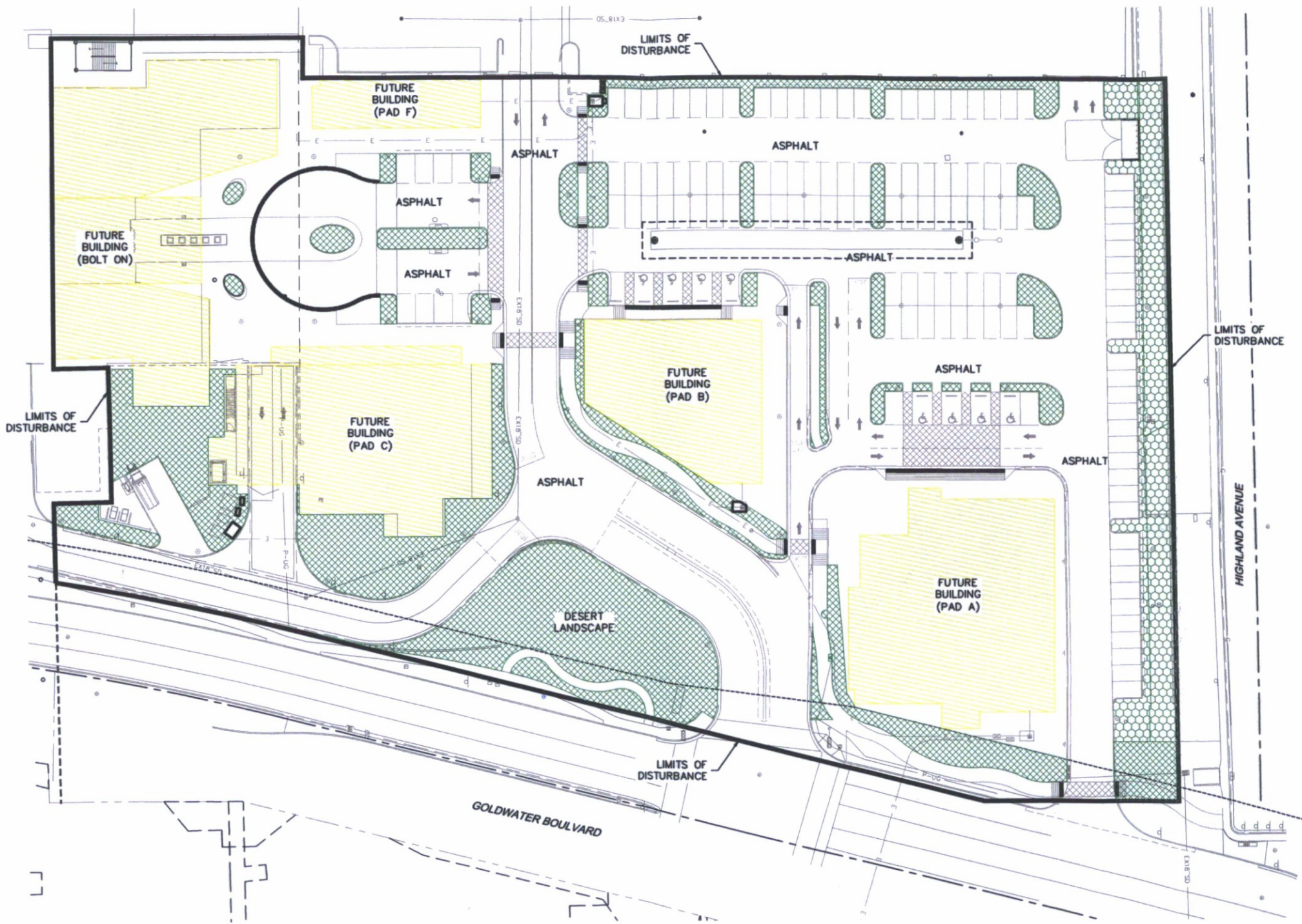
MOLSSON ASSOCIATES ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS (HORIZONTAL OR VERTICAL). THE EXISTING UTILITIES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. IT IS HOWEVER THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES.

REV. NO.	DATE	REVISIONS DESCRIPTION

PRE 'C' AREA EXHIBIT	2017
SCOTTSDALE FASHION SQUARE LUXURY WING ENTRY	
SCOTTSDALE, ARIZONA 85251	

drawn by: THW
 designed by: JAV
 checked by: JAP
 QA/QC by: CHM
 project no.: 016-3809
 date: 09.17.17

F:\2016\3501-4000\016-3609\40-Design\Reports\PROPOSED IMPERVIOUS EXHIBIT.dwg
 USER: cmc@ms
 C:\PREL\063609 C:\PREL\063609



RESULTS SUMMARY

BUILDING AREA - C=.85		45,492 SF
DESERT LANDSCAPE AREA - C=.83		29,786 SF
GRASSED AREA - C=.30		7,216 SF
SIDEWALK/PATIO/ASPHALT - C=.95		127,210 SF
C WEIGHTED - Cw=0.91		209,704 SF



MOLSSON ASSOCIATES ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS (HORIZONTAL OR VERTICAL). THE EXISTING UTILITIES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. IT IS HOWEVER THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES.

REV. NO.	DATE	REVISIONS DESCRIPTION

POST 'C' AREA EXHIBIT	2017
SCOTTSDALE FASHION SQUARE LUXURY WING ENTRY	
SCOTTSDALE, ARIZONA 85251	

drawn by: THW
 designed by: BMY
 checked by: ABP
 project no.: 016-3609
 date: 08.17.17



APPENDIX C
DRAINAGE CALCULATIONS

Scottsdale Fashion Square - Luxury Wing Entry
Preliminary Drainage Calcs

Aug-17

BY: SJV

Pre vs Post - "C" Coefficient Calculations

Area Condition	Total Area (sf)	Total Area (ac)	Building (C=.95) (sf)	Paved (C=.95) (sf)	Desert Landscape (C=0.83) (sf)	Grassed (C=0.30) (sf)	Weighted C
Pre	209,704	4.81	18,477	145,564	39,968	5,695	0.91
Post	209,704	4.81	45,492	127,210	29,786	7,216	0.91
						Difference	0.00

Pre vs Post - Runoff Volume

$V_r = A * C * P$

Area Condition	Total Area (sf)	Total Area (ac)	Weighted C	P (2.82 in) (ft)	Required Volume V _r (cf)
Pre	209,704	4.81	0.91	0.235	44,819
Post	209,704	4.81	0.91	0.235	44,874
				Difference	55

"FFV" First Flush Volume

$FFV = A * C * P$

Area Condition	Total Area (sf)	Total Area (ac)	Weighted C	P (0.5 in) (ft)	FFV (cf)
Post	209,704	4.81	0.91	0.042	7,956

Retention Calculations

Retention	Pipe Diameter (in)	Storage WSEL* (ft)	Pipe Area (sf)	Storage Length (lf)	Tank Volume Provided At Outlet Depth (cf)*	Volume Provided (cf)	Volume Required (cf)
Ex. Basin D		0.5				873	873
Ex. Basin B1**							1120
Ex. Basin B2**							2259
First Flush Volume							7946
Proposed Tank*	120	8	67.36	170	11451	11451	
					Total:	12324	12198

*The underground tank will have an outlet pipe lower than the crown of the tank. This means that storage will discharge before the tank is full. This calculation accounts for this factor and only calculates volume for storage below the outlet point.

**Basin to be removed as part of project



POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypala, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchon

NOAA, National Weather Service, Silver Spring, Maryland

[PF tabular](#) | [PF graphical](#) | [Maps & aerals](#)

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour) ¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	2.21 (1.86-2.70)	2.89 (2.44-3.53)	3.94 (3.28-4.78)	4.73 (3.92-5.71)	5.81 (4.74-6.98)	6.64 (5.35-7.94)	7.48 (5.92-8.93)	8.35 (6.49-9.95)	9.50 (7.20-11.4)	10.4 (7.70-12.4)
10-min	1.69 (1.41-2.05)	2.20 (1.85-2.69)	2.99 (2.50-3.63)	3.59 (2.99-4.35)	4.42 (3.61-5.31)	5.05 (4.07-6.04)	5.69 (4.51-6.80)	6.35 (4.94-7.57)	7.23 (5.48-8.63)	7.90 (5.87-9.46)
15-min	1.39 (1.17-1.70)	1.82 (1.53-2.22)	2.47 (2.06-3.00)	2.97 (2.47-3.59)	3.65 (2.98-4.39)	4.17 (3.36-4.99)	4.70 (3.72-5.62)	5.25 (4.08-6.26)	5.98 (4.53-7.14)	6.53 (4.85-7.81)
30-min	0.936 (0.786-1.14)	1.22 (1.03-1.49)	1.66 (1.39-2.02)	2.00 (1.66-2.42)	2.46 (2.01-2.96)	2.81 (2.26-3.36)	3.17 (2.51-3.78)	3.53 (2.75-4.21)	4.02 (3.05-4.81)	4.40 (3.26-5.26)
60-min	0.579 (0.486-0.707)	0.757 (0.638-0.925)	1.03 (0.860-1.25)	1.24 (1.03-1.50)	1.52 (1.24-1.83)	1.74 (1.40-2.08)	1.96 (1.55-2.34)	2.19 (1.70-2.61)	2.49 (1.89-2.97)	2.72 (2.02-3.26)
2-hr	0.336 (0.286-0.402)	0.436 (0.370-0.522)	0.582 (0.494-0.694)	0.694 (0.582-0.826)	0.848 (0.704-1.00)	0.966 (0.790-1.14)	1.09 (0.876-1.28)	1.21 (0.957-1.42)	1.38 (1.06-1.62)	1.50 (1.14-1.78)
3-hr	0.244 (0.207-0.295)	0.313 (0.267-0.380)	0.412 (0.348-0.496)	0.490 (0.410-0.587)	0.599 (0.494-0.713)	0.685 (0.558-0.814)	0.776 (0.620-0.921)	0.871 (0.684-1.03)	1.00 (0.763-1.19)	1.11 (0.823-1.32)
6-hr	0.148 (0.128-0.174)	0.187 (0.162-0.220)	0.240 (0.207-0.281)	0.282 (0.241-0.329)	0.339 (0.286-0.394)	0.384 (0.319-0.445)	0.431 (0.352-0.498)	0.478 (0.384-0.555)	0.543 (0.425-0.631)	0.595 (0.455-0.693)
12-hr	0.082 (0.072-0.095)	0.104 (0.090-0.121)	0.131 (0.114-0.152)	0.153 (0.132-0.177)	0.182 (0.156-0.210)	0.205 (0.173-0.236)	0.228 (0.189-0.263)	0.251 (0.206-0.290)	0.283 (0.226-0.328)	0.307 (0.241-0.359)
24-hr	0.049 (0.044-0.056)	0.063 (0.055-0.071)	0.081 (0.072-0.092)	0.096 (0.084-0.109)	0.116 (0.102-0.131)	0.132 (0.115-0.149)	0.149 (0.129-0.168)	0.166 (0.142-0.188)	0.190 (0.161-0.215)	0.209 (0.175-0.237)
2-day	0.027 (0.024-0.030)	0.034 (0.030-0.039)	0.045 (0.040-0.050)	0.053 (0.047-0.060)	0.065 (0.057-0.073)	0.074 (0.065-0.084)	0.084 (0.073-0.095)	0.095 (0.082-0.107)	0.109 (0.093-0.124)	0.121 (0.102-0.138)
3-day	0.019 (0.017-0.021)	0.024 (0.021-0.027)	0.032 (0.028-0.036)	0.038 (0.033-0.043)	0.046 (0.041-0.052)	0.053 (0.046-0.060)	0.061 (0.052-0.068)	0.068 (0.059-0.077)	0.079 (0.067-0.090)	0.088 (0.074-0.100)
4-day	0.015 (0.013-0.017)	0.019 (0.017-0.022)	0.025 (0.022-0.028)	0.030 (0.026-0.034)	0.037 (0.032-0.042)	0.043 (0.037-0.048)	0.049 (0.042-0.055)	0.055 (0.047-0.062)	0.064 (0.054-0.072)	0.071 (0.060-0.081)
7-day	0.009 (0.008-0.011)	0.012 (0.011-0.014)	0.016 (0.014-0.018)	0.019 (0.017-0.022)	0.024 (0.021-0.027)	0.027 (0.024-0.031)	0.031 (0.027-0.035)	0.035 (0.030-0.040)	0.041 (0.034-0.046)	0.045 (0.038-0.052)
10-day	0.007 (0.006-0.008)	0.009 (0.008-0.010)	0.012 (0.011-0.014)	0.015 (0.013-0.016)	0.018 (0.016-0.020)	0.021 (0.018-0.023)	0.023 (0.020-0.026)	0.026 (0.023-0.030)	0.031 (0.026-0.034)	0.034 (0.028-0.038)
20-day	0.004 (0.004-0.005)	0.006 (0.005-0.006)	0.008 (0.007-0.008)	0.009 (0.008-0.010)	0.011 (0.009-0.012)	0.012 (0.011-0.014)	0.014 (0.012-0.015)	0.015 (0.013-0.017)	0.017 (0.015-0.019)	0.019 (0.016-0.021)
30-day	0.003 (0.003-0.004)	0.004 (0.004-0.005)	0.006 (0.005-0.007)	0.007 (0.006-0.008)	0.008 (0.007-0.009)	0.009 (0.008-0.011)	0.011 (0.009-0.012)	0.012 (0.010-0.013)	0.013 (0.011-0.015)	0.015 (0.012-0.016)
45-day	0.003 (0.002-0.003)	0.003 (0.003-0.004)	0.005 (0.004-0.005)	0.005 (0.005-0.006)	0.006 (0.006-0.007)	0.007 (0.006-0.008)	0.008 (0.007-0.009)	0.009 (0.008-0.010)	0.010 (0.009-0.011)	0.011 (0.009-0.012)
60-day	0.002 (0.002-0.002)	0.003 (0.003-0.003)	0.004 (0.003-0.004)	0.004 (0.004-0.005)	0.005 (0.005-0.006)	0.006 (0.005-0.007)	0.007 (0.006-0.007)	0.007 (0.006-0.008)	0.008 (0.007-0.009)	0.009 (0.007-0.010)

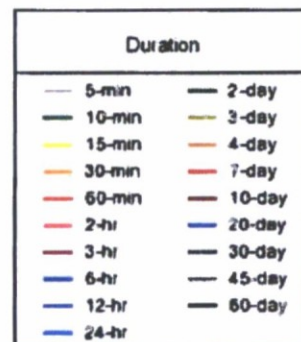
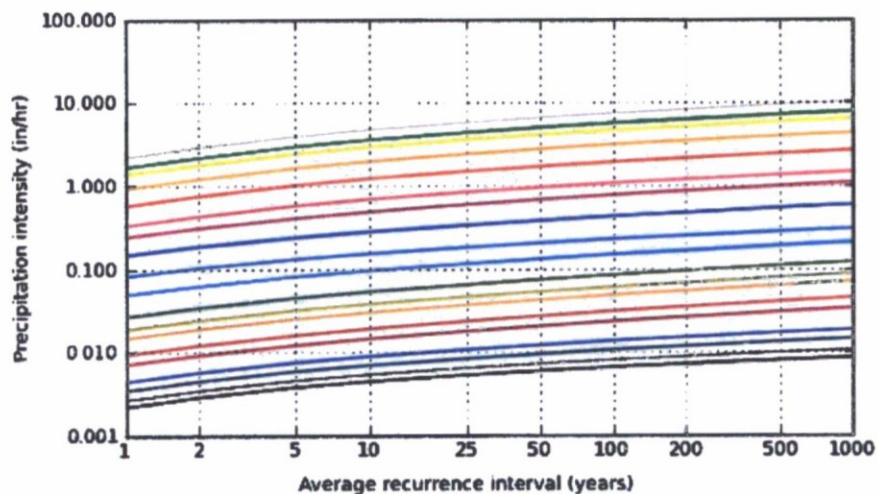
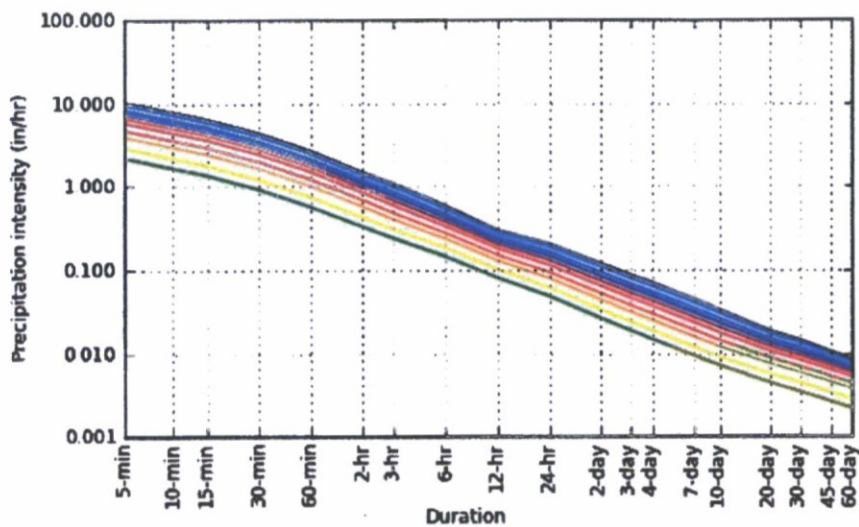
¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.

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PF graphical

PDS-based intensity-duration-frequency (IDF) curves

Latitude: 33.5043°, Longitude: -111.9314°

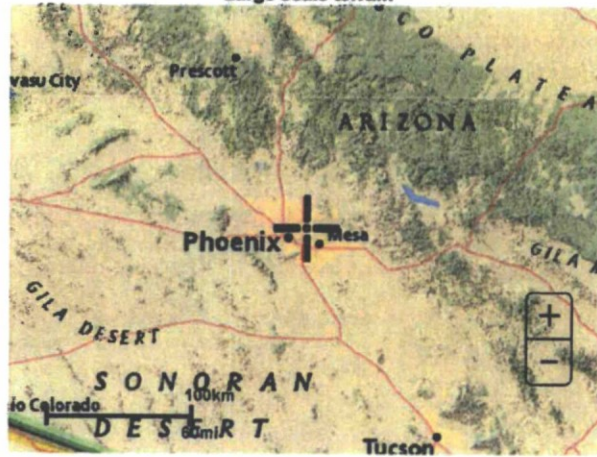


Maps & aerials

Small scale terrain



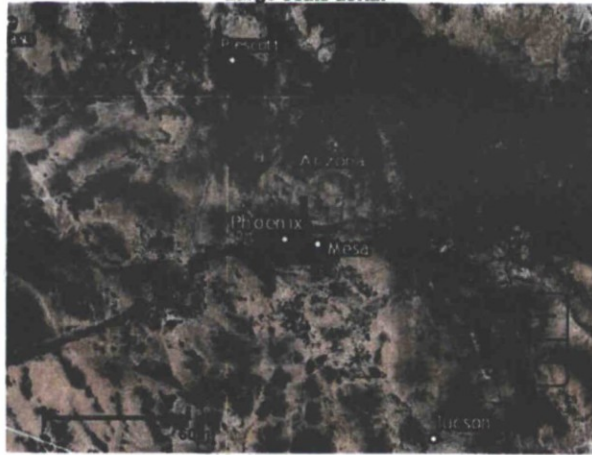
Large scale terrain



Large scale map



Large scale aerial



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Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

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NOAA Atlas 14, Volume 1, Version 5
 Location name: Scottsdale, Arizona, USA*
 Latitude: 33.5043°, Longitude: -111.9314°
 Elevation: 1290.29 ft**
 * source: ESRI Maps
 ** source: USGS



POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

[PF tabular](#) | [PF graphical](#) | [Maps & aerals](#)

PF tabular

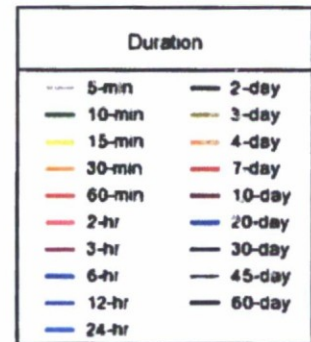
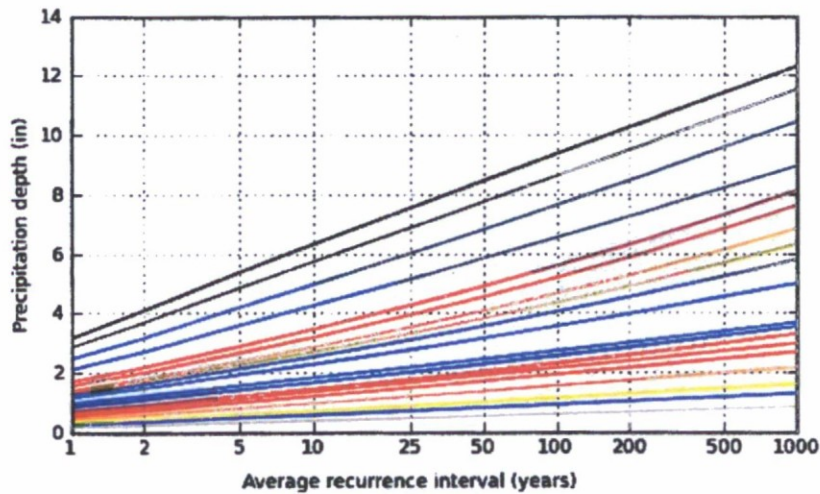
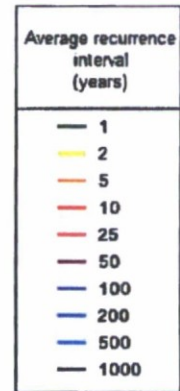
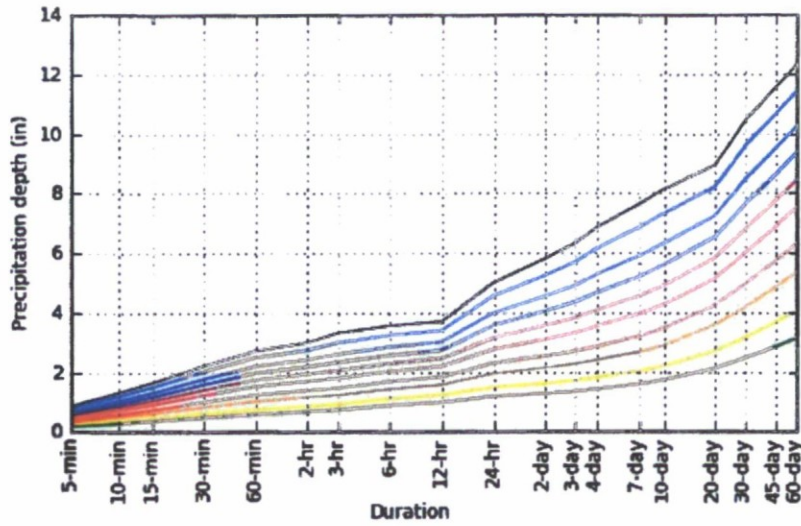
PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches) ¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.184 (0.155-0.225)	0.241 (0.203-0.294)	0.328 (0.273-0.398)	0.394 (0.327-0.476)	0.484 (0.395-0.582)	0.553 (0.446-0.662)	0.623 (0.493-0.744)	0.696 (0.541-0.829)	0.792 (0.600-0.946)	0.866 (0.642-1.04)
10-min	0.281 (0.235-0.342)	0.367 (0.309-0.448)	0.498 (0.416-0.605)	0.599 (0.498-0.725)	0.736 (0.601-0.885)	0.841 (0.678-1.01)	0.949 (0.751-1.13)	1.06 (0.823-1.26)	1.21 (0.913-1.44)	1.32 (0.978-1.58)
15-min	0.348 (0.292-0.424)	0.455 (0.383-0.555)	0.618 (0.516-0.751)	0.743 (0.617-0.898)	0.912 (0.745-1.10)	1.04 (0.841-1.25)	1.18 (0.930-1.40)	1.31 (1.02-1.57)	1.49 (1.13-1.78)	1.63 (1.21-1.95)
30-min	0.468 (0.393-0.572)	0.612 (0.516-0.747)	0.832 (0.695-1.01)	1.00 (0.831-1.21)	1.23 (1.00-1.48)	1.41 (1.13-1.68)	1.58 (1.25-1.89)	1.77 (1.37-2.11)	2.01 (1.52-2.40)	2.20 (1.63-2.63)
60-min	0.579 (0.486-0.707)	0.757 (0.638-0.925)	1.03 (0.860-1.25)	1.24 (1.03-1.50)	1.52 (1.24-1.83)	1.74 (1.40-2.08)	1.96 (1.55-2.34)	2.19 (1.70-2.61)	2.49 (1.89-2.97)	2.72 (2.02-3.26)
2-hr	0.673 (0.572-0.803)	0.871 (0.741-1.04)	1.17 (0.988-1.39)	1.39 (1.17-1.65)	1.70 (1.41-2.00)	1.93 (1.58-2.28)	2.18 (1.75-2.56)	2.42 (1.91-2.85)	2.75 (2.12-3.24)	3.01 (2.27-3.56)
3-hr	0.734 (0.622-0.885)	0.941 (0.801-1.14)	1.24 (1.05-1.49)	1.47 (1.23-1.76)	1.80 (1.48-2.14)	2.06 (1.68-2.44)	2.33 (1.86-2.77)	2.62 (2.06-3.10)	3.01 (2.29-3.57)	3.33 (2.47-3.95)
6-hr	0.884 (0.764-1.04)	1.12 (0.970-1.32)	1.44 (1.24-1.69)	1.69 (1.44-1.97)	2.03 (1.71-2.36)	2.30 (1.91-2.66)	2.58 (2.11-2.99)	2.86 (2.30-3.32)	3.25 (2.55-3.78)	3.66 (2.72-4.15)
12-hr	0.988 (0.863-1.15)	1.26 (1.09-1.45)	1.58 (1.37-1.83)	1.84 (1.59-2.13)	2.20 (1.87-2.53)	2.47 (2.08-2.84)	2.75 (2.28-3.16)	3.03 (2.48-3.49)	3.41 (2.73-3.95)	3.70 (2.91-4.32)
24-hr	1.18 (1.05-1.34)	1.50 (1.33-1.71)	1.94 (1.72-2.21)	2.30 (2.03-2.61)	2.78 (2.44-3.16)	3.17 (2.76-3.58)	3.57 (3.09-4.04)	3.99 (3.42-4.51)	4.56 (3.87-5.16)	5.02 (4.21-5.69)
2-day	1.28 (1.13-1.45)	1.63 (1.45-1.85)	2.14 (1.90-2.42)	2.55 (2.25-2.88)	3.12 (2.74-3.52)	3.57 (3.12-4.04)	4.05 (3.52-4.58)	4.55 (3.92-5.15)	5.25 (4.47-5.95)	5.81 (4.90-6.61)
3-day	1.36 (1.20-1.53)	1.73 (1.53-1.96)	2.28 (2.01-2.57)	2.72 (2.39-3.07)	3.34 (2.93-3.77)	3.83 (3.34-4.33)	4.36 (3.78-4.93)	4.92 (4.22-5.56)	5.70 (4.84-6.45)	6.34 (5.32-7.19)
4-day	1.43 (1.26-1.62)	1.83 (1.62-2.07)	2.41 (2.13-2.72)	2.88 (2.54-3.26)	3.55 (3.11-4.01)	4.09 (3.56-4.62)	4.67 (4.04-5.27)	5.29 (4.53-5.97)	6.16 (5.20-6.94)	6.86 (5.74-7.76)
7-day	1.59 (1.41-1.81)	2.03 (1.80-2.31)	2.69 (2.37-3.05)	3.22 (2.83-3.64)	3.97 (3.46-4.49)	4.57 (3.97-5.16)	5.21 (4.49-5.89)	5.90 (5.04-6.67)	6.86 (5.79-7.76)	7.64 (6.39-8.66)
10-day	1.72 (1.53-1.95)	2.21 (1.95-2.50)	2.91 (2.57-3.29)	3.49 (3.07-3.93)	4.28 (3.75-4.82)	4.93 (4.28-5.53)	5.61 (4.84-6.30)	6.32 (5.42-7.12)	7.33 (6.21-8.25)	8.14 (6.82-9.18)
20-day	2.12 (1.89-2.39)	2.73 (2.42-3.07)	3.61 (3.20-4.05)	4.27 (3.78-4.79)	5.16 (4.55-5.79)	5.85 (5.14-6.56)	6.55 (5.72-7.35)	7.26 (6.31-8.16)	8.22 (7.08-9.26)	8.96 (7.66-10.1)
30-day	2.48 (2.19-2.79)	3.19 (2.83-3.59)	4.21 (3.72-4.73)	4.98 (4.40-5.59)	6.02 (5.29-6.75)	6.82 (5.96-7.64)	7.64 (6.65-8.55)	8.47 (7.34-9.48)	9.59 (8.25-10.8)	10.5 (8.93-11.8)
45-day	2.87 (2.55-3.22)	3.69 (3.29-4.15)	4.87 (4.33-5.47)	5.74 (5.09-6.44)	6.89 (6.09-7.72)	7.75 (6.83-8.70)	8.63 (7.57-9.68)	9.50 (8.30-10.7)	10.7 (9.25-12.0)	11.5 (9.94-13.0)
60-day	3.17 (2.83-3.55)	4.09 (3.66-4.58)	5.39 (4.80-6.02)	6.33 (5.63-7.06)	7.55 (6.70-8.44)	8.46 (7.48-9.46)	9.37 (8.25-10.5)	10.3 (9.00-11.5)	11.4 (9.97-12.8)	12.3 (10.7-13.9)

¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.

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PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 33.5043°, Longitude: -111.9314°



Maps & aerials

Small scale terrain



Large scale terrain



Large scale map



Large scale aerial



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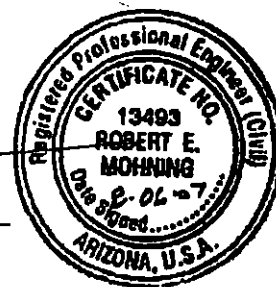
APPENDIX D
SUPPLEMENTAL INFORMATION

SCOTTSDALE FASHION SQUARE
PHASE 10

PRELIMINARY GRADING AND DRAINAGE REPORT

PREPARED FOR:

WESTCOR
1411 North Tatum Boulevard
Phoenix, Arizona 85028
(602) 953-6379



Robert E. Mohning, P.E., R.L.S.

August 7, 2007

RICK ENGINEERING COMPANY
6150 North 16TH Street
Phoenix, Arizona 85016-1705

JOB NUMBER 3750

TABLE OF CONTENTS

1.0	INTRODUCTION	1
2.0	EXISTING DRAINAGE CONDITIONS AND CHARACTERISTICS	1
3.0	PROVIDED DRAINAGE PLAN	1
4.0	SPECIAL CONDITIONS	1
5.0	CONCLUSIONS.....	2

APPENDIX A VICINITY MAP

APPENDIX B FEMA FLOOD INSURANCE RATE MAP

APPENDIX C MASTER DRAINAGE PLAN FOR SCOTTSDALE FASHION SQUARE

MAP POCKET 1 AERIAL PHOTOGRAPH OF AREA AND SITE

MAP POCKET 2 PRELIMINARY GRADING AND DRAINAGE PLAN

1.0 INTRODUCTION

Scottsdale Fashion Square is located at the northwest corner of Scottsdale Road and Camelback Road. This preliminary drainage report addresses drainage for redevelopment of the easterly portion of Scottsdale Fashion Square bounded on the east by Scottsdale Road, on the south by Camelback Road, on the west by Goldwater Boulevard, and on the north by Highland Avenue, see vicinity map Appendix A

The total net area of this area within the four street rights of way is 35.33 acres. The purpose of this report is to discuss the existing and proposed onsite and offsite drainage for the redevelopment. The redevelopment will remove the former Robinson's-May store and adjoining parking structure, and add two new anchors, new retail and restaurant spaces, and underground parking.

2.0 EXISTING DRAINAGE CONDITIONS AND CHARACTERISTICS

The Scottsdale Fashion Square site is fully developed with the retail mall, restaurants, a Days Inn Motel, office, and parking structures, see aerial photograph, Map Pocket 1.

Onsite drainage flows are generally from northwest to southeast. Onsite flows are intercepted by onsite catch basins or perimeter catch basins and are discharged into an existing 84 inch storm drain in Camelback Road and an existing 42 inch storm drain in Scottsdale Road. These two storm drain pipes connect to a 144 inch storm drain which drains east to the Indian Bend Wash.

All but a small portion of the site lies within Flood Zone "X" (textured) according to map number 04013C1695H of the FEMA Flood Information Map, dated September 30, 2005. A small area at the southeast corner of the site is within Flood Zone "A" because of the ponding of offsite flows against The Arizona Canal. An office building is located in this area and its finish floor is above the depth of the ponding.

Offsite drainage is from northwest to southeast toward the Arizona Canal. The site is higher than the elevation of the ponding at The Arizona Canal as described above.

3.0 PROPOSED DRAINAGE PLAN

The drainage patterns of the redevelopment will be consistent with the existing drainage. No retention will be provided per the approved Master Drainage Plan for Scottsdale Fashion Square, Appendix C, and the site's location within the City of Scottsdale Downtown Infrastructure Master Plan Volume 3 Drainage Study. This study was prepared in December 1986 by Boyle Engineering Corporation and concludes that no detention/retention be provided for the downtown study area. The proposed redevelopment will not alter the amount of impervious area nor the volume or direction of storm water flows. See Preliminary Grading and Drainage Plan in Map Pocket 2.

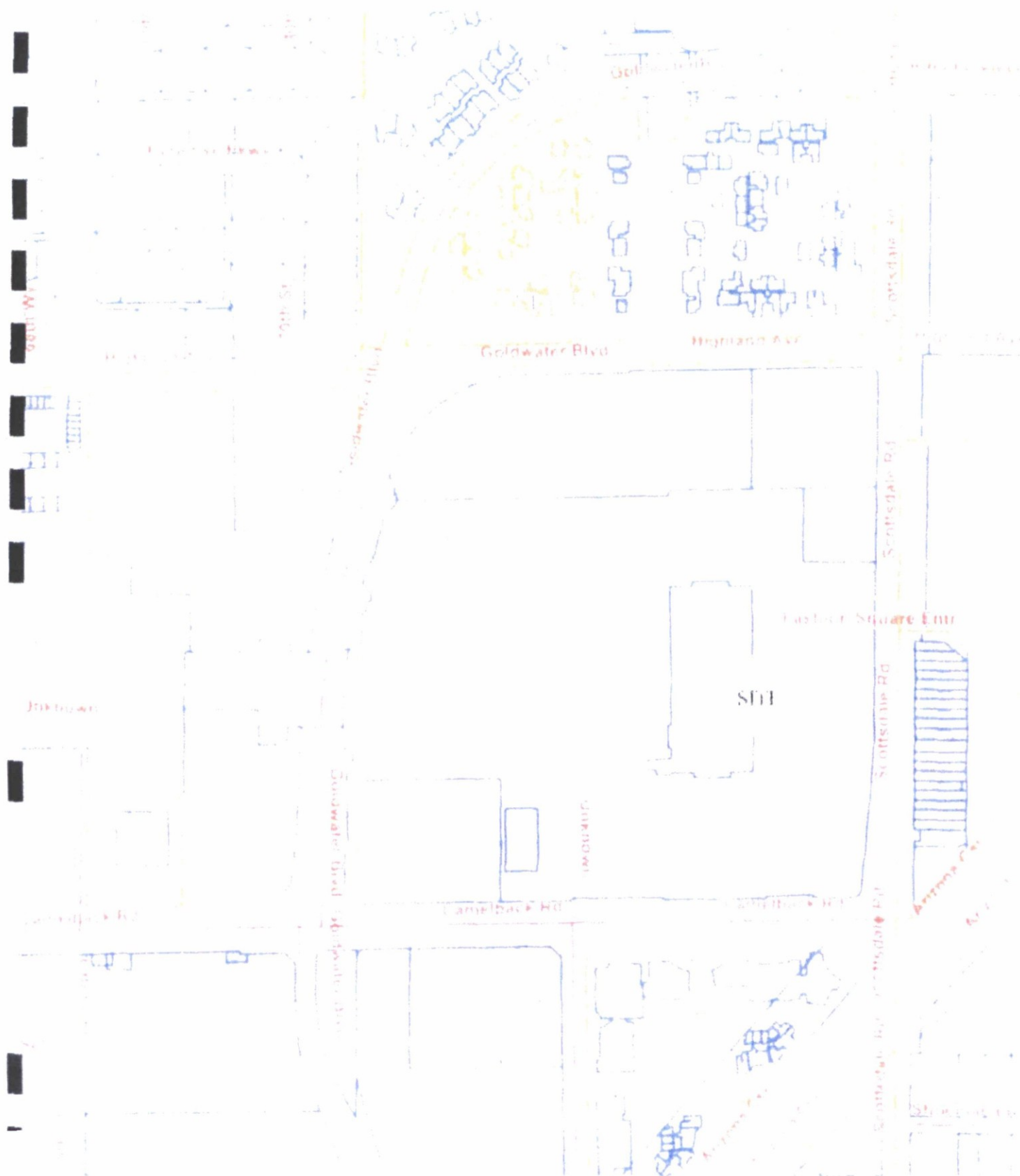
4.0 SPECIAL CONDITIONS

There are no special site conditions or need for a 404 permit. A Storm Water Pollution Prevention Plan will be prepared

5.0 CONCLUSIONS

The proposed redevelopment will not alter the existing storm water drainage and is drainage study consistent with the City of Scottsdale Downtown Infrastructure Master Plan Volume 3.

County Parcels



APPENDIX B

PANEL 1695H

**FIRM
FLOOD INSURANCE RATE MAP
MARICOPA COUNTY,
ARIZONA
AND INCORPORATED AREAS**

PANEL 1695 OF 4350

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

<u>COMMUNITY</u>	<u>NUMBER</u>	<u>PANEL</u>	<u>SUFFIX</u>
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PARADISE VALLEY, TOWN OF	040048	1695	H
SCOTTSDALE, CITY OF	048012	1695	H

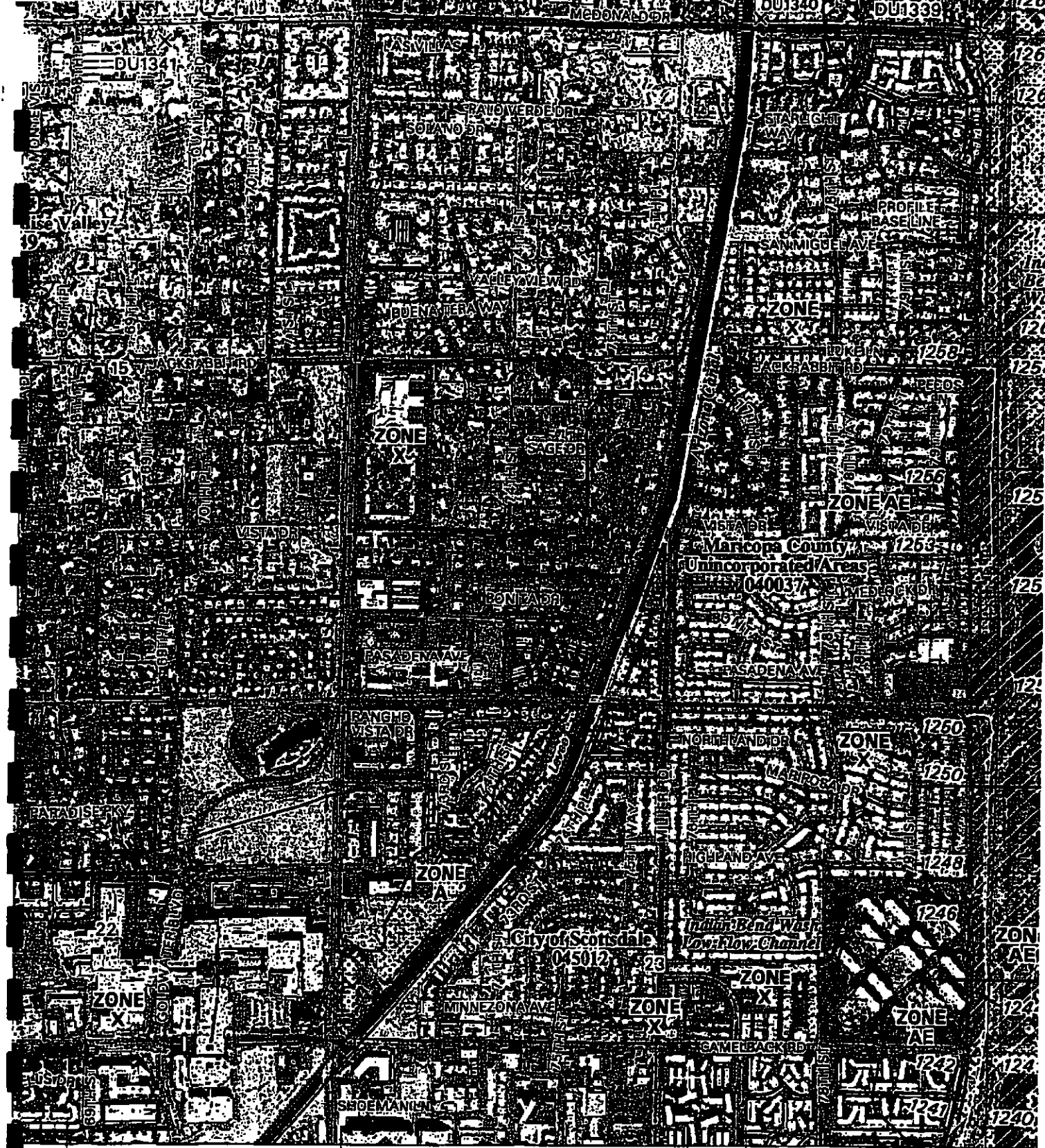
Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.



**MAP NUMBER
04013C1695H
MAP REVISED**

SEPTEMBER 30, 2005

Federal Emergency Management Agency



14^{000m}E

15^{000m}E

JOINS PAN

APPENDIX C

**MASTER DRAINAGE PLAN
FOR
SCOTTSDALE FASHION SQUARE
C.W.W. No. 831114-21**

Prepared for:
THE WESTCOR COMPANY II, LIMITED PARTNERSHIP
11411 North Tatum Boulevard
Phoenix, Arizona 85028

Prepared by:
COLLAR, WILLIAMS & WHITE ENGINEERING
2702 North 44th Street, Suite 205-B
Phoenix, Arizona 85008

**RECEIVED
MASTER PLANNING**

MAY 10 1988

BY FIRST REVIEW

April, 1986

Approved by City of Scottsdale, August 18, 1986
Revised May 10, 1988



COLLAR, WILLIAMS & WHITE ENGINEERING

Drainage System

Scottsdale Fashion Square is an existing 35.0 acre shopping center located at the northwest corner of Camelback Road and Scottsdale Road in the City of Scottsdale, Arizona.

New development will occur on this site in multiple phases. These phases will include the demolition of some existing buildings, renovations to existing buildings, new office and commercial building construction, construction of new underground and elevated parking levels, and construction of a new "retail bridge" to connect Scottsdale Fashion Square to Camelview Plaza to the west. In addition, the proposed "West Couplet Roadway" alignment will be along the westerly boundary of the project.

Existing on-site surface drainage flows are, in general, from the northwest towards the south and east. All existing drainage flows are intercepted by existing on-site catch basins and discharged into an existing 84 inch diameter storm drain in Camelback Road and an existing 42 inch diameter storm drain in Scottsdale Road. These two storm drains connect at the intersection of Camelback and Scottsdale Roads and empty into an existing 144 inch diameter storm drain which conveys the water under the Arizona Canal and to the East towards Indian Bend Wash.

Existing building roof drainage is presently routed via vertical roof drain leader lines to either existing on-site underground storm drainage systems or is discharged at existing grade and directed through existing curbing to the adjacent asphalt paved surfaces, where it sheet flows to existing storm drain inlets bordering the site.

As a part of the remodeling/renovating of existing buildings, additional floors will be added to the buildings. As additional floors are constructed, the existing vertical roof drain leader lines will be extended to the new roof levels. Future roof drainage from all new and renovated buildings will be connected

to on-site underground storm drainage systems, and all on-grade discharges will be eliminated.

There are no existing on-site storm water retention/detention facilities presently provided, and the new site development and modifications will not necessitate new on-site storm water retention/detention facilities (See attached letter from the City of Scottsdale dated December 8, 1987). Since the site is essentially impervious at this time, and will remain so after the redevelopment, no additional drainage flows will be generated.

A field survey made by Collar, Williams & White Engineering, of the top of the existing west bank of the Arizona Canal, indicates the elevations along the top of the existing west bank presently vary from 1378.0 feet to 1375.4 feet between the canal crossing at Highland Avenue and 500 feet south of the intersection of Scottsdale and Camelback Roads. With one foot of freeboard required above the maximum top of existing canal bank elevations, all new first floor building elevations have been established at no less than 1379.0. All existing building elevations are above this elevation. Both Camelback Road and Scottsdale Road are lower than elevation 1379.0.

New site development and modifications have incorporated adequate design measures to assure that no overflow of the Arizona Canal from a 100 year flood event will inundate any existing or proposed on-site building.

In addition, the new development has made adequate provisions to prevent any storm water from a 100 year event, which would flood the intersection of Camelback Road and Scottsdale Road from entering any underground basement or lower parking level.

This assurance has been achieved by denying direct driveway access from Scottsdale Road or Camelback Road to the new underground parking levels, and by construction of walls around the office building at the southeast corner of the site to prevent flooding of the basement area.



December 8, 1987

Mr. William R. Kendall
Collar, Williams and White Engineering
2702 North 44th Street, Suite 100A
Phoenix, Arizona 85008

Dear Mr. Kendall:

This letter is to notify you that the City of Scottsdale will not require Scottsdale Fashion Square redevelopment (104-Z-85 and 59-Z-87) to provide any new onsite retention or detention facilities.

It is our understanding that the existing onsite catch basin and storm drain network which conveys stormwater runoff to the underground storm sewers in Camelback and Scottsdale Roads, will remain intact. These guidelines conform to the master drainage report for Scottsdale Fashion Square, approved by the City on August 18, 1986.

Sincerely,

John Faramelli
John Faramelli
Project Review Director

cc: John Smetana, Project Review Manager
Dick Crew, Planning and Zoning Manager
Randy Grant, Project Review Manager

JF:sw

RECEIVED

DEC 15 1987

C.W.W. B.R.