

Drainage Reports  
Abbreviated Water & Sewer Need Reports  
Water Study  
Wastewater Study  
Stormwater Waiver Application



**ACCEPTED**  
**CITY OF SCOTTSDALE**  
**TRANSPORTATION DEPARTMENT**

5 - UP - 2016  
 22 - DR - 2016

J2 Engineering and Environmental Design, LLC  
 4649 E. Cotton Gin Loop  
 Suite B2  
 Phoenix, Arizona 85040  
 Phone: 602.438.2221  
 Fax: 602.438.2225

DATE: 7/6/16

REVIEWER: Jm PBA

Date: July 5, 2016

To: Bob Machen

From: Jamie Blakeman, PE, PTOE

Job Number: 16.0904.001

RE: Phoenix Seminary  
 Traffic Impact & Mitigation Analysis

Location: 7901 E. Shea Boulevard



**EXPIRES 6-30-19**

**INTRODUCTION**

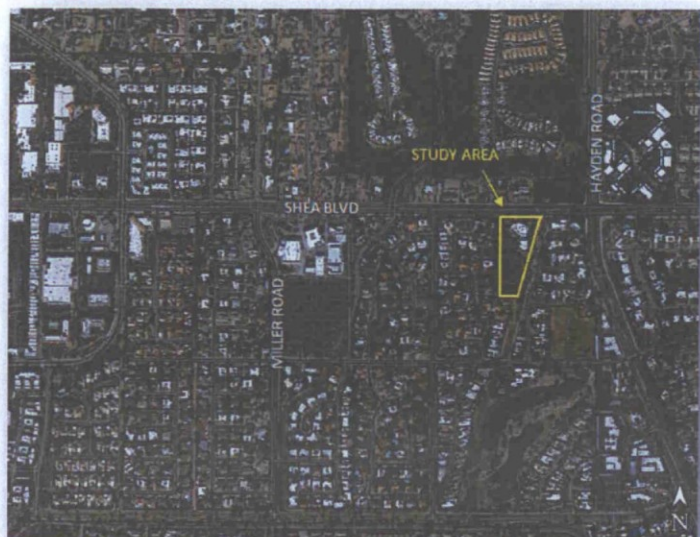
J2 Engineering and Environmental Design (J2) has prepared a Traffic Impact and Mitigation Analysis for the proposed Phoenix Seminary (7901 E. Shea Boulevard) on Shea Boulevard, located approximately an eighth of a mile west of Hayden Road, in Scottsdale, Arizona, see **Figure 1**. See **Attachment A** and **Figure 2** for the proposed site plan.

The objective of this Traffic Impact and Mitigation Analysis is to analyze the traffic related impacts of the proposed development to the adjacent roadway network.

**EXISTING CONDITIONS**

Currently, the property is occupied by a chapel that is used by the Scottsdale Bible Church. The main campus of the Scottsdale Bible Church (7601 E. Shea Boulevard) is located on Shea Boulevard approximately a quarter of a mile west of this site. The chapel is used for various church activities including counseling, classes, and occasionally for hosting weddings and funerals.

The proposed Phoenix Seminary site is bordered by a residential community to the



**Figure 1- Vicinity Map**



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2-09-2016  
SS-DR-2016

1/2/16

DATE:

east, south, and west.

Immediately north of the site is Shea Boulevard, which is an east-west roadway. Shea Boulevard provides three (3) through lanes in each direction of travel, a center two-way left turn lane, and a dedicated right turn lane into the site. There is a posted speed limit of 45 mph. The 2014 Average Daily Traffic (ADT) volume along Shea Boulevard between Scottsdale Road and Hayden Road is 38,700 vehicles per day. The 2008 City of Scottsdale Street Classification map shows Shea Boulevard categorized as a suburban major arterial.



Figure 2- Proposed Site Plan

**PROPOSED DEVELOPMENT**

The proposed Phoenix Seminary development will consist of the existing chapel where one of the two class rooms will be converted to a student lounge. The administrative building will remain. Adjacent to the administrative building will be three (3) new classrooms. To the west of these classrooms, a library building is being added to the site. The existing right-in and right-out driveway off of Shea Boulevard will remain in place for this proposed development. This driveway is located approximately an eighth of a mile west of Hayden Road.

**TRIP GENERATION (EXISTING USE)**

Typically, the traffic volumes generated by a proposed development would be calculated utilizing the Institute of Transportation Engineers (ITE) publication entitled *Trip Generation Manual, 9<sup>th</sup> Edition*. The ITE trip rates and equations are based on studies that measured the trip generation characteristics for various types of land uses. The rates are expressed in terms of trips per unit of land use type. This publication is considered the standard for the transportation engineering profession.

This publication provides data for churches; however, it does not include data for an off-site chapel. Therefore, information was gathered from Scottsdale Bible.





Trips generated by the existing Scottsdale Bible off-site chapel varies from day to day, and are often linked to activities occurring at the main Scottsdale Bible Church campus. Multiple activities often occur each day with a typical week day shown below:

**Table 1 – Existing Scottsdale Bible Chapel Weekly Activities**

Day	Services	Counseling	Hearty Souls	Evening Classes
	8:00 am to 1:00 pm	8:00 am to 8:00 pm	9:30 to 11:30 am	6:00 to 9:00 pm
Sunday	60 to 80 people			
Monday		10 - 15 people		35 to 40 people
Tuesday		10 - 15 people		20 to 30 people
Wednesday		10 - 15 people	45 - 50 people	30 to 50 people
Thursday		10 - 15 people		35 to 50 people
Friday		10 - 15 people		

In addition, the site will occasionally host large events such as weddings and funerals. The trips generated from these events can be upwards of 200 to 300 attendees per event. These events occur at least twice a month, however, they can occasionally occur up to three (3) times in a single week.

Wednesday was shown to have the highest activity at this campus, therefore the Wednesday activities were used to generate the approximate trip generation during a typical weekday for this site. It is assumed each person drives a vehicle to and from the site.

*Counseling*

Counseling occurs one on one or in small groups. Sessions are somewhat distributed over the 12 hours from 8:00 am to 8:00 pm. Assuming counseling sessions are between 30 minutes and 1 hour, a total of 5 vehicles were assumed to arrive during both the AM (7:00 to 9:00 am) and PM (4:00 to 6:00) peak hours, with the same number of vehicles leaving during each peak hour.

*Hearty Souls*

With a 9:30 am start time, it is assumed half of the attendees arrive during the AM peak hour. All attendees are assumed to leave at 11:30 am, when the activity concludes.



*Evening Classes*

With a 6:00 pm start time, it is assumed all of the attendees arrive during the PM peak hour. A total of 10 vehicles were assumed to leave during the PM peak hour to account for those being dropped off.

*Large Events*

The majority of the large events occur outside of weekday AM and PM peak hours and therefore was not included in the AM and PM peak hour trips. Due to the unpredictability of these large events that can range between 200 and 300 attendees, they were not included in the existing typical weekday trip generation as well.

**Table 2 – Trip Generation for the Existing Scottsdale Bible Chapel**

Activity	Weekday Total	AM Peak			PM Peak		
		Total	In	Out	Total	In	Out
Counseling	30	10	5	5	10	5	5
Hearty Souls	100	25	25	0			
Evening Classes	100				60	50	10
Large Events	Due to unpredictability did not include these 200 to 300 attendee events that occurs at a minimum twice a month and up to three times a week.						
TOTAL	230	35	30	5	70	55	15

**TRIP GENERATION (PROPOSED DEVELOPMENT)**

The proposed Phoenix Seminary is a graduate level theological school offering degree programs for Master’s and Doctorate degrees. It is anticipated to have an enrollment of 190 students.

The Institute of Transportation Engineers (ITE) publication entitled *Trip Generation, 9th Edition* provides formulas for calculating trip generation. The ITE rates are based on studies that measured the trip generation characteristics for various types of land uses. The rates are expressed in terms of trips per unit of land use type. This publication is considered to be the standard for the transportation engineering profession.



The closest comparable land uses provided in the *Trip Generation, 9th Edition* include the following:

- Land Use 540 Junior/Community College  
This land use includes two-year junior, community, or technical colleges. These typically have sizable evening programs and the average number of students is over 10,000.
- Land Use 550 University/College  
This land use includes four-year universities or colleges that may or may not offer graduate programs. The average number of students hover around 10,000.

Utilizing these two land use codes, the trip generation for the proposed Phoenix Seminary was calculated for 190 students. See **Table 3** and **Table 4** below. See **Attachment B** for detailed trip generation calculations.

**Table 3 - Trip Generation for Phoenix Seminary - LU 540**

Land Use	ITE Code	Qty	Unit	Weekday Total	AM Peak Hour			PM Peak Hour		
					Total	In	Out	Total	In	Out
Junior/Community College	540	190	Students	234	23	19	4	23	14	8
TOTAL				234	23	19	4	23	14	8

**Table 4 - Trip Generation for Phoenix Seminary - LU 550**

Land Use	ITE Code	Qty	Unit	Weekday Total	AM Peak Hour			PM Peak Hour		
					Total	In	Out	Total	In	Out
University/College	550	190	Students	325	32	25	7	32	10	22
TOTAL				325	32	25	7	32	10	22

Phoenix Seminary is a school specifically for graduate programs with an anticipated enrollment of 190 students. The two land uses above are for much larger schools with an attendance of around 10,000 students and not focused on Master's and Doctorate degrees. Therefore, specific information about the operations of Phoenix Seminary was gathered. Classes occur Monday through Thursday at various times during the day.





**Table 5 – Proposed Phoenix Seminary Weekly Activities**

Day	Staff and Faculty	Classes					
	7:00 to 9:00 am	11:00 am to 1:00 pm	1:00 to 3:00 pm	2:00 to 3:00 pm	3:00 to 4:00 pm	4:00 to 5:00 pm	5:00 to 6:00 pm
Monday	25 staff	30 students		35 students		10 students	50 students
Tuesday	25 staff				10 students	20 students	50 students
Wednesday	25 staff		15 students			20 students	15 students
Thursday	25 staff						35 students

It is assumed each staff and student drives a vehicle to and from the site. Staff arrives between 7:00 and 9:00 am, and leave at the close of the day, whereas students are assumed to arrive and leave during their respective class times. The trips occurring between 7:00 and 9:00 am and 4:00 and 6:00 pm are highlighted in yellow in **Table 5** above.

**Table 6 – Daily Trips for the Phoenix Seminary – School Data**

Time	Monday			Tuesday			Wednesday			Thursday		
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
7 AM-9 AM	25		25	25		25	25		25	25		25
11 AM-1 PM	30	30										
1 PM-3 PM							15	15				
2 PM-3 PM	35	35										
3 PM-4 PM				10	10							
4 PM-5 PM	10	10	20	20	20	40	20	20	40			0
5 PM-6 PM	50	75	125	50	75	125	15	40	55	35	60	95

The highest AM and PM peak hours are highlighted in blue in **Table 6** above.

Based on the information provided, weekday and peak hour trips were generated for the proposed Phoenix Seminary.

**Table 7 – Trip Generation for the Phoenix Seminary – School Data**

Land Use	Weekday Total	AM Peak Hour			PM Peak Hour		
		Total	In	Out	Total	In	Out
Phoenix Seminary	190	25	25	0	125	50	75
TOTAL	190	25	25	0	125	50	75





**TRIP GENERATION COMPARISON**

A comparison between the trips generated by the existing Scottsdale Bible Chapel and the proposed Phoenix Seminary, using the trip generation from the school data, is shown in Table 8 below.

**Table 8 - Trip Generation Comparison (Existing Chapel vs. Phoenix Seminary)**

Land Use	Weekday Total	AM Peak Hour			PM Peak Hour		
		Total	In	Out	Total	In	Out
Scottsdale Bible Chapel	230	35	30	5	70	55	15
Phoenix Seminary	190	25	25	0	125	50	75
<b>TOTAL</b>	<b>-40</b>	<b>-10</b>	<b>-5</b>	<b>-5</b>	55	<b>-5</b>	60

**SUMMARY**

The proposed Phoenix Seminary is anticipated to generate less weekday trips as well as AM peak hour trips. The trips shown for the existing Scottsdale Bible Chapel is also somewhat conservative as it doesn't take into account a 200 to 300 attendee event occurring during the peak hour. These special events occur at a minimum every other week to as often as three times a week. Therefore, the Scottsdale Bible Chapel trips may be much larger than what is shown above.

Additionally, the trip generation derived from the school data for Phoenix Seminary results in higher trips than the trip generation calculations using ITE Land Use 540 and 550. Therefore, a trip generation comparison using the ITE trip generation would show an even greater reduction in trips with the proposed Phoenix Seminary.

The proposed Phoenix Seminary is anticipated to have a total of 190 students with a more consistent weekly travel pattern. With class times starting at 11:00 am, there are minimal trips during the AM peak hour. AM peak hour trips consist of Phoenix Seminary staff arriving to prepare for class and attend meetings. During the PM peak hour, Mondays and Tuesdays are anticipated to have the highest peak hours with a total of 125 trips. This is 55 more trips than the existing Scottsdale Bible Chapel.

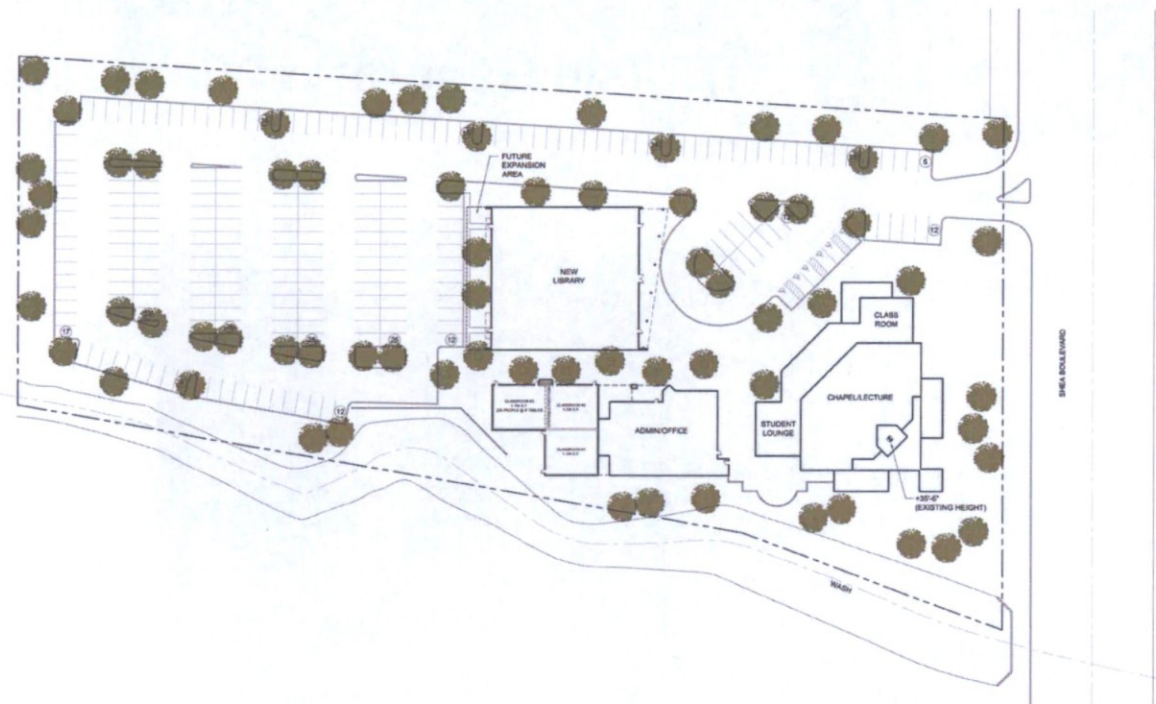
In conclusion, during the weekday and AM peak hour the proposed Phoenix Seminary will have a less impact, and during the PM peak hour minimal increased impact to the traffic operations along the adjacent roadway network in comparison to the existing Scottsdale Bible Chapel.



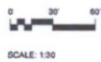


# **Attachment A Proposed Site Plan**





SITE PLAN



TOTAL PARKING SPACES: 239





# **Attachment B**

## **ITE Trip Generation Calculations**



Phoenix Seminary  
Wood Partners

Trip Generation Calculations

Phoenix Seminary

Land Use	ITE Code	Qty	Unit	Weekday			AM Peak Hour			PM Peak Hour			Weekday			AM Peak Hour			PM Peak Hour		
				Rate	% In	% Out	Rate	% In	% Out	Rate	% In	% Out	Total	In	Out	Total	In	Out	Total	In	Out
Junior/Community College	540	190	Students	1.23	50%	50%	0.12	84%	16%	0.12	63%	37%	234	117	117	23	19	4	23	14	8
<b>TOTAL</b>													<b>234</b>	117	117	<b>23</b>	19	4	<b>23</b>	14	8

Phoenix Seminary

Land Use	ITE Code	Qty	Unit	Weekday			AM Peak Hour			PM Peak Hour			Weekday			AM Peak Hour			PM Peak Hour		
				Rate	% In	% Out	Rate	% In	% Out	Rate	% In	% Out	Total	In	Out	Total	In	Out	Total	In	Out
University/College	550	190	Students	1.71	50%	50%	0.17	78%	22%	0.17	32%	68%	325	162	162	32	25	7	32	10	22
<b>TOTAL</b>													<b>325</b>	162	162	<b>32</b>	25	7	<b>32</b>	10	22



Case File Copy

"LEED®ing and Developing Smart Projects"

# PRELIMINARY DRAINAGE REPORT

## Phoenix Seminary Campus Addition / Renovation

7901 E. Shea Blvd.  
Scottsdale, AZ 85260

Prepared For:



(602) 429-4975

Plan #	_____
Case #	22-DR-2016
Q-S #	_____
<input type="checkbox"/> Accepted	
<input checked="" type="checkbox"/> Corrections	
DG	6/13/16
Reviewed By	Date

Prepared by:



EXPIRES 12-31-17



*please revise the drainage report per the redline comments.*

**Sustainability Engineering Group**

8280 E. Gelding Drive, Suite 101  
Scottsdale, AZ 85260  
480.588.7226 [www.azSEG.com](http://www.azSEG.com)

*There no appreciable change in runoff between pre and post development. Therefore, no stormwater storage volume is required.*

*The city decided that stormwater storage volume is ~~not~~ required for this project since the post development runoff is not significantly greater than pre development runoff, less than 1%*

Project Number: 160303  
Submittal Date: May 17, 2016

Case No.: TBD

Plan Check No.: TBD



"LEED®ing and Developing Smart Projects"

## PRELIMINARY DRAINAGE REPORT

### Phoenix Seminary Campus Addition / Renovation

7901 E. Shea Blvd.  
Scottsdale, AZ 85260

Prepared For:



(602) 429-4975

Prepared by:



EXPIRES 12-31-17

### Sustainability Engineering Group

8280 E. Gelding Drive, Suite 101  
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EXPIRES 12-31-17



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- APPENIDX III - Preliminary Grading Plan
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## 1. INTRODUCTION

This 50% Preliminary Drainage Report is being provided in conjunction with a Development Review request, case number TBD. This report represents the storm water analysis for the proposed disturbed area (expansion) for an existing chapel being expanded with 3 classrooms and a stand-alone library. The purpose of this report is to provide the hydrologic and hydraulic analyses, required by the City of Scottsdale, to support the proposed site plan for said development. This report includes discussions and calculations defining the storm water management concepts for collection, conveyance, and detention systems necessary to comply with the drainage requirements of the City of Scottsdale and Maricopa County. Preparation of this report has been done in accordance with the requirements of the City of Scottsdale Design Standards & Policies Manual (DS&PM) 2010<sup>1</sup>, and the Drainage Design Manuals for Maricopa County, Arizona, Volumes I<sup>2</sup> and Volume II<sup>3</sup>.

## 2. LOCATION AND PROJECT DESCRIPTION

### 2.1 LOCATION:

The project property consists of a parcel of land located on the south side of Shea Boulevard approximately 550' west of Hayden Road. It is located in a portion of Section 26, Township 3 North, Range 4 East of the Gila and Salt River Base and Meridian, Maricopa County,

- Arizona Parcel ID numbers APN: 175-47-008
- Street address is 7901 E. Shea Blvd.

Refer to **FIGURE 1 - Vicinity Map** for the project's location with respect to major cross streets.

### 2.2 EXISTING AND PROPOSED DEVELOPMENTS SURROUNDING THE SITE:

Existing site context related to surrounding developments is as follows:

- North: To the north there are two single family residential parcels zoned R1-35 and one commercial parcel zoned O-S belonging to Scottsdale County Club.
- West: The west side is bound by multiple residential single family homes. These homes are part of the La Cuesta Neighborhood.
- South: To south there is one residential single family home part of the La Cuesta Neighborhood and a parcel owned by the City of Scottsdale that is part of a wash to the east.
- East: Directly east of the site is a wash that is owned by the City of Scottsdale. This wash is part of the Fox Hollow Neighborhood.

### 2.3 EXISTING SITE DESCRIPTION:

Land ownership, as defined by ALTA/ACSM Land Title Survey by AW Land Surveying, LLC dated 05/18/16 includes 205,850.8 square feet or 4.726+/- acres of commercially developed land. City of Scottsdale zoning map designates this parcel as R1-35.

This site is fully developed as a chapel. The topography generally slopes from the north to the southwest corner at approximately one percent with a change in elevation of approximately seven (7) feet. Typical desert landscaping exists at the perimeter of the site. Refer to **FIGURE 2** for an aerial of the overall project existing conditions. Refer to **APPENDIX IV** for the ALTA / Topographic Survey.

#### 2.4 PROPOSED SITE DEVELOPMENT:

The project is proposing an addition of buildings. Development will include three new classrooms adjacent to the south of the administration building and a stand-alone library. Parking lot islands will be revised to reflect new building locations. Refer to **FIGURE 5** for proposed site layout.

#### 2.5 FLOOD HAZARD ZONE:

As defined by the Flood Insurance Rate Map (FIRM) for Maricopa County, Arizona, and incorporated areas, Community number 045012, Panel number 1760 of 4425, as shown on Map Number 04013C1760L dated October 16, 2013 this site is designated as **Zone "X" shaded**. As such, it is defined as areas of 0.2-percent-annual-chance (or 500-year) flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and area protected by levees from the 100 year flood. Refer to **FIGURE 3** for the FIRM.

### 3. EXISTING DRAINAGE CONDITIONS

#### 3.1 OFF-SITE DRAINAGE PATTERNS:

This site is bound as follows:

- Screen walls exist to the west and south, protecting the site from runoff from the residential subdivisions.
- To the east by a wash. This wash flows from the north to the south.
- To the north by Shea Boulevard. The flows in the street area conveyed to east in curb and gutters / valley gutters to an existing catch basin that outlets into the wash.

No off-site flows impact the subject parcel. Refer to **FIGURE 4** for the ALTA/topo Map indicating existing conditions.

#### 3.2 ON-SITE DRAINAGE:

This site is fully developed as a chapel. The topography generally slopes from the northeast to the southwest corner at approximately one percent with a change in elevation of approximately seven (7) feet. Typical desert landscaping exists at the perimeter of the site. Runoff from the parcel generally flows overland to the south and west where curb cuts convey all flows from the parking field to retention areas along the perimeter of the site. Ultimately, the runoff is released through a weir structure with an outlet orifice located near the southeast corner of the site, into the adjacent wash.

#### 3.3 EXISTING STORM SEWER SYSTEMS:

There are no apparent storm sewers existing on the parcel. Runoff is conveyed by overland flow to existing ditch / retention areas.

### 4. PROPOSED STORM WATER MANAGEMENT

#### 4.1 DESIGN INTENT:

On-site drainage will be handled within street sections, underground storm systems, onsite channels, or retention basins where necessary. This is an addition to existing buildings, therefore, the City of Scottsdale specifies that on-site retention shall be provided to store the difference between the pre vs. post development runoff from the 100-year 2-hour storm event while maintaining existing storage, if any.

If required, on-site retention will be provided as allowed by site configuration within underground retention, open space, or parking area and have total discharge of the storm water within thirty-six hours. The ultimate outfall to the existing retention areas remains the southwestern curb cut at 1351.88.

The proposed structures will be constructed with consistent finish floor elevations. The surrounding parking area will be graded in the way that flows will go west and south through the existing curb cuts, into the existing retention areas, and ultimately flow into the wash to the east or toward a proposed surface retention area with a drywell discharge structure.

The existing City of Scottsdale wash adjacent along the easterly property line will not be impacted by construction efforts.

Refer to Section 5 below for a discussion on proposed finished floor elevations. Refer to **Appendix III** for the Preliminary Grading & Drainage Plan.

#### 4.2 DESIGN STORM REQUIREMENTS:

In accordance with City of Scottsdale requirements, stormwater storage for the 100-year 2-hour storm event based on pre-development versus post development C values is required.

#### 4.3 CHARACTERISTICS OF BASINS:

The proposed drainage areas are comprised of mixed use buildings and associated parking areas, drives and landscape areas. Based on Figure 4.1-4 of the DS&PM, runoff coefficients for the 100 year storm event used are as follows:

- C=0.30 for grassed areas
- C=0.45 for desert landscaping
- C=0.95 for impervious areas.

**HYDROLOGIC ANALYSIS:** The hydrologic analysis is determined using the procedures in the City of Scottsdale Design Standards & Policies Manual and the Drainage Design Manual for Maricopa County, Arizona, Volume I. The Rational Method was utilized to compute the on-site peak discharges. The following established the Rational Method equation and the basic input data required:

$$Q = C_{wt}IA$$

Where:

- $C_{wt}$  = The runoff coefficient relating runoff to rainfall
- $I$  = Average rainfall intensity in inches/hour, lasting for  $T_c$  (5.70 in/hr)
- $T_c$  = The time of concentration (minutes)- Use 10 minutes
- $A$  = The contributing drainage area in acres

#### $C_{wt}$ CALCULATIONS:

- Pre-development (Refer to EXHIBIT "A" in Appendix II )
  - Landscape area (Desert): 1.633 Ac. @  $C_{wt}=0.45$

- Impervious areas (Roof / Pavement): 3.093 Ac. @  $C_{wt}=0.95$   
 $C_{wt}$ : 4.726 Ac. @  $C_{wt} = 0.777$

➤ Post-development (Refer to EXHIBIT "B" in Appendix II )

- Landscape area (Desert): 1.563 Ac. @  $C_{wt}=0.45$
- Impervious Ares (Roof / Pavement): 3.163 Ac. @  $C_{wt}=0.95$   
 $C_{wt}$ : 4.726 Ac. @  $C_{wt} = 0.785$

**RUNOFF RATE:**

$$Q_{100} \text{ PRE} = 0.777 * 5.70 \text{ in/hr} * 4.726 \text{ ac} = \mathbf{20.93 \text{ CFS}}$$

$$Q_{100} \text{ POST} = 0.785 * 5.70 \text{ in/hr} * 4.726 \text{ ac} = \mathbf{21.15 \text{ CFS}}$$

Proposed development increases runoff by  $21.15 - 20.93 = 0.22 \text{ CFS}$  or 1%.

**4.4 OFF-SITE FLOW :**

No off-site flows contribute to this site.

**4.5 STORMWATER RETENTION:**

Stormwater storage will be provided based on the difference between Pre vs Post development conditions. On-site inspection and review of current topographic survey did not provide evidence that there is existing on-site retention.

**REQUIRED STORAGE (Pre vs Post):**

Stormwater storage required is calculated in accordance with the COS – DS&PM. Required Retention (Acre-Feet) =  $(P/12) * A * (C_{\text{post}} - C_{\text{pre}})$

Where: P = 100 Yr. 2 Hr. Precipitation in Inches (Ref: Isopluvial from DS&PM, Appendix 4-1D, pg. 11)

A = Area (Acres)

C =  $C_{\text{post}} - C_{\text{pre}}$

$$V_{\text{Required}} = (2.20/12) * 4.726 \text{ Ac} * (0.785 - 0.777) = 0.008 \text{ ac-ft or } \mathbf{349 \text{ c.f.}}$$

From Section 4.3 above, the  $C_{wt}$  is increased from 0.78 pre-development to 0.79 post-development (1.3%) therefore additional retention is required as a result of the redevelopment.

**PROVIDED ADDITIONAL STORAGE VOLUME:**

- The volume for open basins and/or pavement surface retention is calculated using the area – sum volume method based on design contours

Based upon topographic survey information and on-site inspections, there is existing stormwater retention provided on this parcel. The runoff is conveyed via sheet flow to the west and south sides of the property where interconnected detention basins ultimately release the water from the southeast corner of the parcel into a large wash adjacent to the east side of the property. This release is accomplished via a concrete weir structure with a one (1) foot diameter opening at the base.

Per Section 4.5 above, the impervious area is increased and retention of an additional 349 c.f. is required. This retention will be stored on the pavement surface. Refer to Table 1 below for storage calculation.

**Table 1 – Stormwater Storage**

<b>STORMWATER STORAGE</b>				
<b>Pond 1</b>				
ELEV. (FT)	AREA (SF)	DEPTH (FT)	AVG VOLUME (CF)	SUM VOLUME (CF)
1351.0	0			
		0.50	388.00	<b>388.00</b>
1351.5	1,552			

- Required storage = 349 c.f. (from Section 4.6 above).
- Surface Storage provided (388 c.f.) > required storage (349 c.f.) therefore OK. Refer to **Appendix III** for the Preliminary Grading & Drainage Plan.

#### 4.6 STORMWATER DISCHARGE:

##### Storage Basin #1:

This surface retention system will provide stormwater disposal through infiltration by a drywell. The calculation for dry-well requirements is as follows:

- Minimum percolating rate of a drywell (for planning purposes) = 0.1 cfs
- Volume to be drained in 36 hours = 0.1 cfs \* 36 hours \* 3600 sec/hour = 12,960 cf = 0.298 acre-feet

Basin "1" Provided storage = 388 cf  
 388 cf / 12,960 cf per drywell = 0.03 = 1 drywell required.  
 One drywell is proposed.

#### 4.7 STREET CAPACITY CALCULATIONS:

No streets are part of this site.

#### 4.8 STORM DRAIN INLET CALCULATIONS:

There are no inlets associated with this project.

## 5. FLOOD SAFETY FOR DWELLINGS

### 5.1 FINISHED FLOOR ELEVATIONS

The ultimate outfall for this project is located at the southwest corner of the parking lot at an elevation of approximately 1351.88. The finished floor of the classrooms attached to the administration building will match the existing building at 1357.32. The library will have a finished floor of 1357.30. All building finished floor elevations will be set a minimum of 14 inches above emergency overflow points, and a

minimum of 12 inches above the 100-year high-water elevation of any adjacent streets and drainage paths. This will ensure that each building will be well above the 100-year water level.

## 6. CONCLUSIONS

### 6.1 OVERALL PROJECT:

1. Off-site storm water does not impact this project
3. The finish floor elevations will be designed a minimum of 12 inches above the 100-year water surface in adjacent streets and drainage paths and a minimum of 14 inches above the historical outlet of the lot.
4. Storm water storage will be provided to, as a minimum, maintain existing conditions and discharge within 36 hours in accordance with City of Scottsdale requirements.

### 6.2 PROJECT PHASING:

This development is anticipated to be constructed in a single phase.

## 7. WARNING AND DISCLAIMER OF LIABILITY

RE: following page.

## 8. REFERENCES

1. *Design Standards & Policies Manual, City of Scottsdale – January 2010*
2. *Drainage Design Manual for Maricopa County, Arizona, Volume I, Hydrology, Flood Control District of Maricopa County, Fourth Edition, November 18, 2009 amended through February 10, 2011*
3. *Drainage Design Manual for Maricopa County, Arizona, Volume II, Hydraulics, Flood Control District of Maricopa County, January 28, 1996*



# 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.

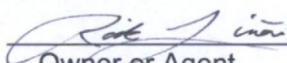
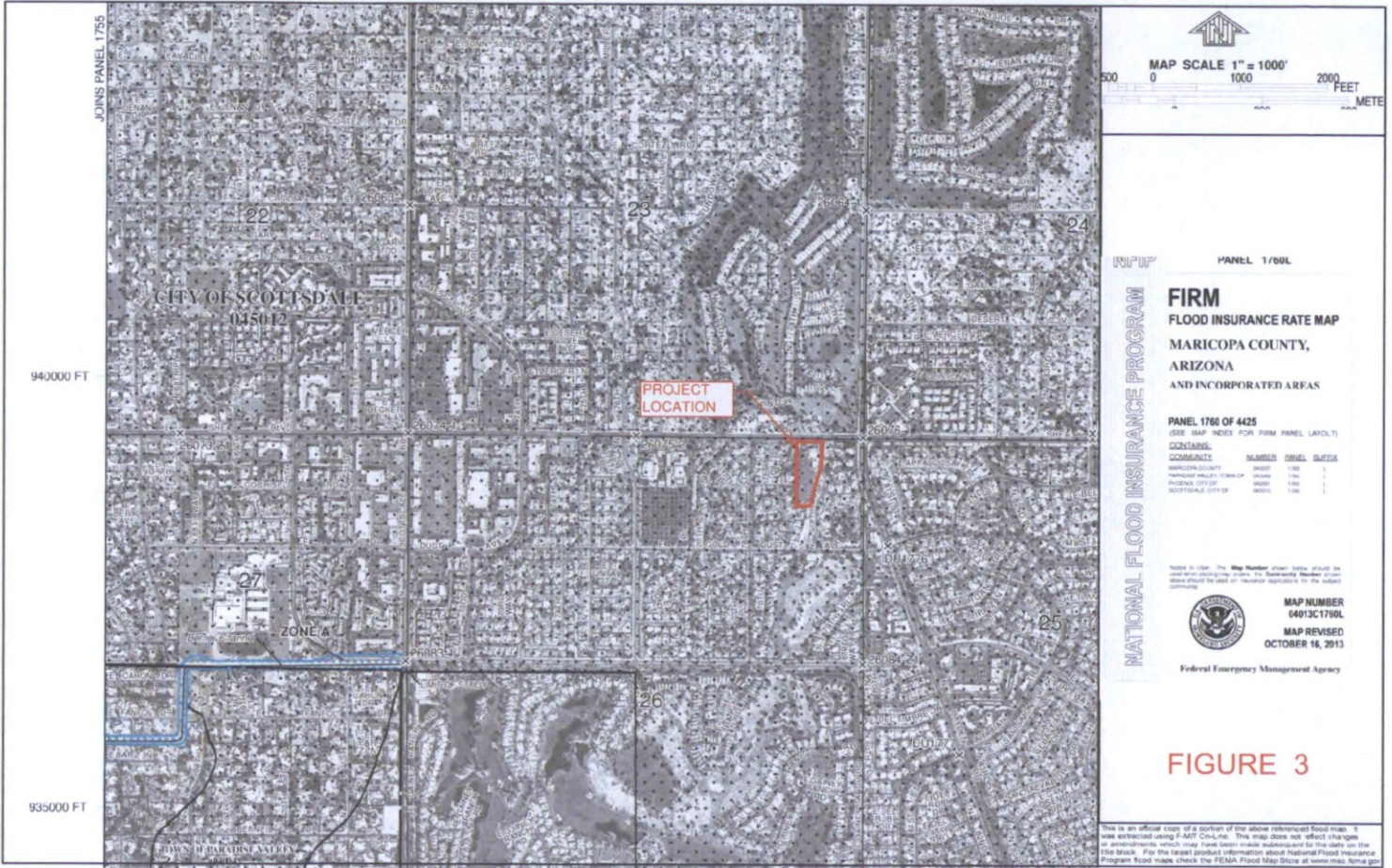
			5/18/16
Plan Check No.	Owner or Agent	Date	







FIGURE 2  
AERIAL

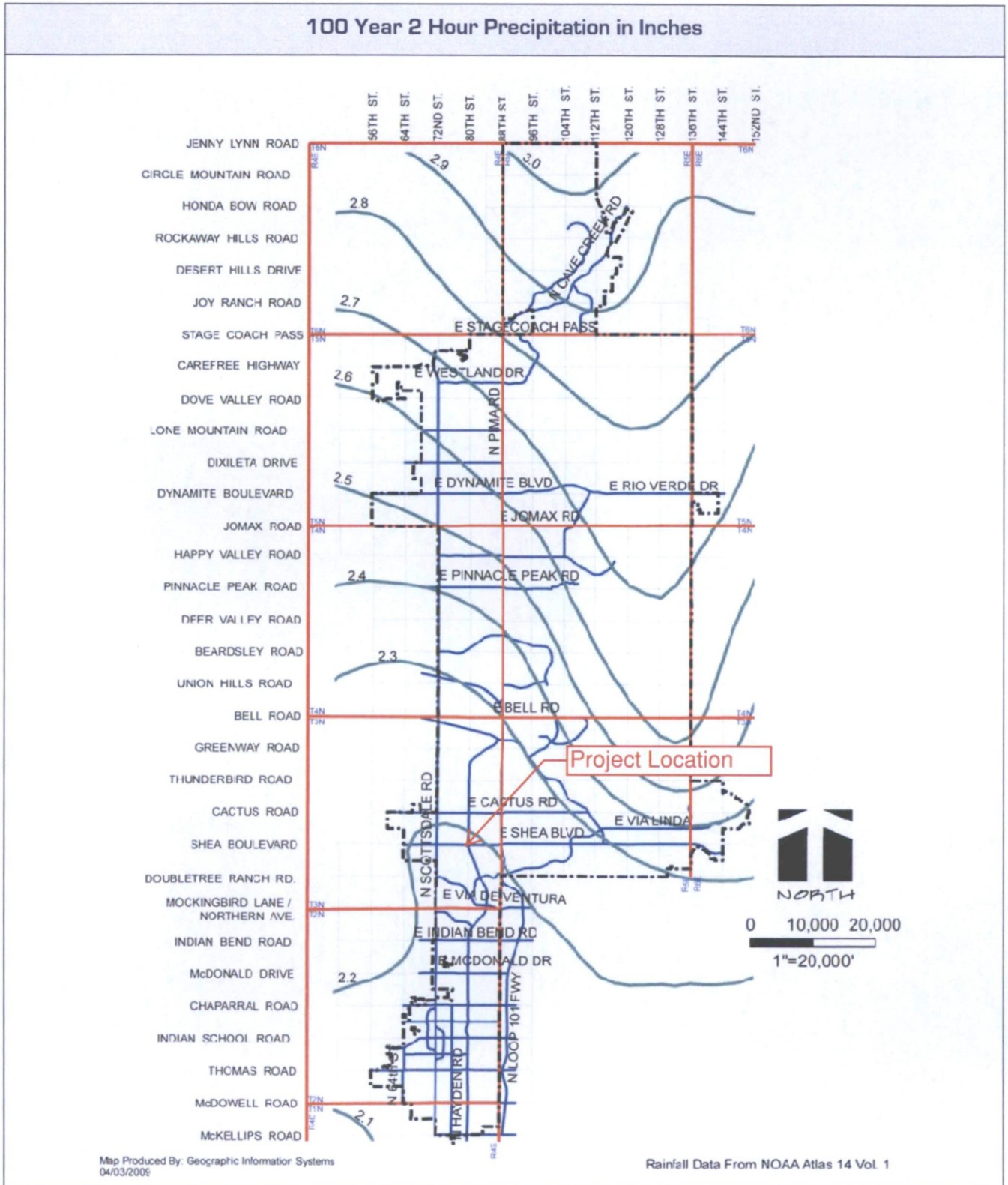






*"LEED®ing and Developing Smart Projects"*

*APPENDIX I*  
*Rainfall Data*





**NOAA Atlas 14, Volume 1, Version 5**  
**Location name: Scottsdale, Arizona, US\***  
**Latitude: 33.5803°, Longitude: -111.9103°**  
**Elevation: 1353 ft\***  
 \* source: Google Maps



**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 & aerials](#)

**PF tabular**

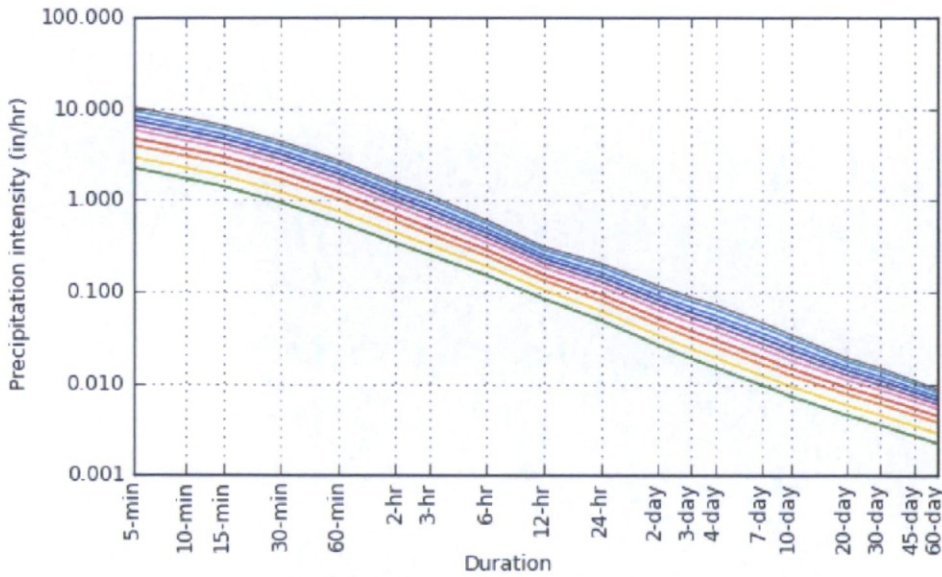
<b>PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)<sup>1</sup></b>										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	2.24 (1.86-2.74)	2.93 (2.45-3.58)	3.95 (3.28-4.81)	4.74 (3.91-5.76)	5.82 (4.72-7.03)	6.64 (5.33-7.98)	7.49 (5.90-8.99)	8.34 (6.46-9.98)	9.49 (7.16-11.4)	10.4 (7.67-12.5)
10-min	1.70 (1.42-2.08)	2.23 (1.86-2.72)	3.01 (2.49-3.67)	3.61 (2.98-4.39)	4.43 (3.59-5.36)	5.05 (4.06-6.07)	5.70 (4.49-6.84)	6.35 (4.91-7.60)	7.22 (5.45-8.67)	7.89 (5.84-9.47)
15-min	1.41 (1.17-1.72)	1.84 (1.54-2.25)	2.48 (2.06-3.03)	2.98 (2.46-3.63)	3.66 (2.97-4.43)	4.17 (3.35-5.02)	4.71 (3.71-5.65)	5.24 (4.06-6.28)	5.97 (4.51-7.16)	6.52 (4.82-7.83)
30-min	0.948 (0.788-1.16)	1.24 (1.04-1.52)	1.67 (1.39-2.04)	2.01 (1.66-2.44)	2.46 (2.00-2.98)	2.81 (2.25-3.38)	3.17 (2.50-3.81)	3.53 (2.73-4.23)	4.02 (3.03-4.82)	4.39 (3.25-5.27)
60-min	0.587 (0.487-0.717)	0.766 (0.641-0.937)	1.03 (0.858-1.26)	1.24 (1.03-1.51)	1.52 (1.24-1.84)	1.74 (1.40-2.09)	1.96 (1.55-2.35)	2.19 (1.69-2.62)	2.49 (1.88-2.98)	2.72 (2.01-3.26)
2-hr	0.343 (0.289-0.410)	0.444 (0.376-0.532)	0.592 (0.498-0.704)	0.704 (0.586-0.838)	0.860 (0.710-1.02)	0.976 (0.794-1.15)	1.10 (0.878-1.29)	1.22 (0.960-1.44)	1.39 (1.07-1.63)	1.52 (1.14-1.79)
3-hr	0.255 (0.215-0.312)	0.327 (0.277-0.401)	0.427 (0.360-0.521)	0.506 (0.422-0.614)	0.618 (0.507-0.745)	0.707 (0.572-0.847)	0.799 (0.635-0.957)	0.896 (0.700-1.07)	1.03 (0.780-1.23)	1.14 (0.841-1.36)
6-hr	0.154 (0.132-0.183)	0.194 (0.167-0.231)	0.248 (0.212-0.293)	0.292 (0.247-0.343)	0.350 (0.293-0.410)	0.396 (0.325-0.462)	0.444 (0.360-0.516)	0.492 (0.392-0.574)	0.559 (0.433-0.651)	0.611 (0.463-0.713)
12-hr	0.085 (0.073-0.100)	0.107 (0.092-0.126)	0.135 (0.116-0.158)	0.157 (0.134-0.183)	0.187 (0.157-0.217)	0.209 (0.175-0.243)	0.233 (0.191-0.270)	0.257 (0.208-0.298)	0.288 (0.228-0.337)	0.313 (0.243-0.368)
24-hr	0.050 (0.044-0.058)	0.063 (0.055-0.073)	0.081 (0.071-0.094)	0.096 (0.083-0.111)	0.116 (0.100-0.134)	0.132 (0.113-0.152)	0.148 (0.126-0.171)	0.165 (0.139-0.191)	0.189 (0.157-0.218)	0.208 (0.170-0.241)
2-day	0.027 (0.023-0.031)	0.034 (0.030-0.039)	0.044 (0.039-0.051)	0.053 (0.046-0.061)	0.064 (0.055-0.074)	0.073 (0.063-0.084)	0.083 (0.070-0.096)	0.093 (0.078-0.107)	0.107 (0.088-0.123)	0.118 (0.096-0.137)
3-day	0.019 (0.017-0.022)	0.024 (0.021-0.028)	0.032 (0.028-0.037)	0.038 (0.033-0.044)	0.047 (0.040-0.053)	0.053 (0.046-0.061)	0.061 (0.052-0.070)	0.068 (0.058-0.079)	0.079 (0.066-0.091)	0.088 (0.072-0.101)
4-day	0.015 (0.013-0.017)	0.019 (0.017-0.022)	0.026 (0.022-0.029)	0.031 (0.027-0.035)	0.038 (0.033-0.043)	0.043 (0.037-0.050)	0.050 (0.042-0.057)	0.056 (0.048-0.064)	0.065 (0.055-0.075)	0.073 (0.060-0.083)
7-day	0.010 (0.009-0.011)	0.012 (0.011-0.014)	0.016 (0.014-0.019)	0.020 (0.017-0.023)	0.024 (0.021-0.028)	0.028 (0.024-0.032)	0.032 (0.027-0.037)	0.036 (0.031-0.042)	0.042 (0.035-0.048)	0.047 (0.039-0.054)
10-day	0.007 (0.006-0.008)	0.009 (0.008-0.011)	0.012 (0.011-0.014)	0.015 (0.013-0.017)	0.018 (0.016-0.021)	0.021 (0.018-0.024)	0.024 (0.020-0.027)	0.027 (0.023-0.031)	0.031 (0.026-0.036)	0.035 (0.029-0.040)
20-day	0.005 (0.004-0.005)	0.006 (0.005-0.007)	0.008 (0.007-0.009)	0.009 (0.008-0.010)	0.011 (0.010-0.013)	0.013 (0.011-0.014)	0.014 (0.012-0.016)	0.016 (0.013-0.018)	0.018 (0.015-0.020)	0.019 (0.016-0.022)
30-day	0.004 (0.003-0.004)	0.005 (0.004-0.005)	0.006 (0.005-0.007)	0.007 (0.006-0.008)	0.009 (0.007-0.010)	0.010 (0.008-0.011)	0.011 (0.009-0.012)	0.012 (0.010-0.014)	0.014 (0.012-0.016)	0.015 (0.013-0.017)
45-day	0.003 (0.002-0.003)	0.004 (0.003-0.004)	0.005 (0.004-0.005)	0.005 (0.005-0.006)	0.007 (0.006-0.007)	0.007 (0.006-0.008)	0.008 (0.007-0.009)	0.009 (0.008-0.010)	0.010 (0.009-0.012)	0.011 (0.009-0.012)
60-day	0.002 (0.002-0.003)	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 (0.006-0.008)	0.007 (0.006-0.008)	0.008 (0.007-0.009)	0.009 (0.007-0.010)

<sup>1</sup> 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.

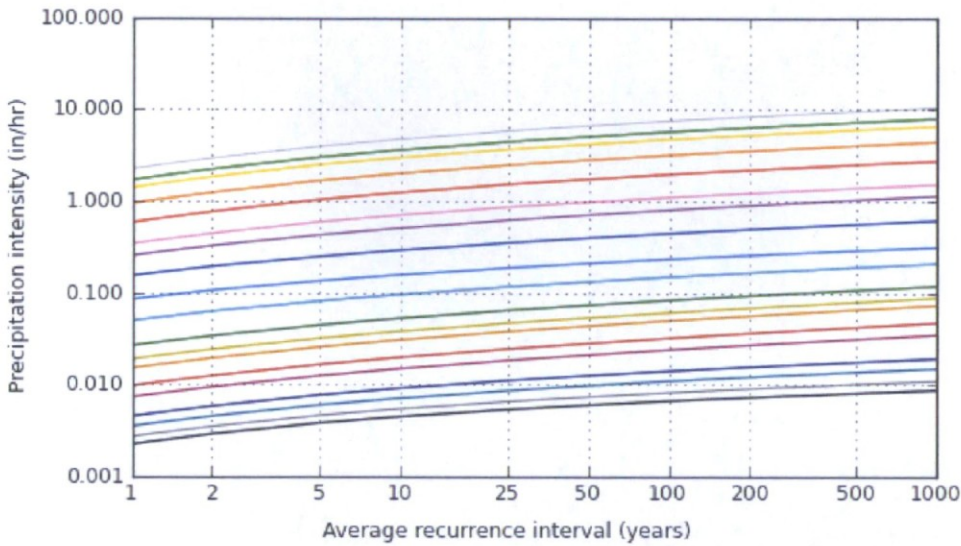
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### PF graphical

PDS-based intensity-duration-frequency (IDF) curves  
Latitude: 33.5803°, Longitude: -111.9103°



Average recurrence interval (years)
1
2
5
10
25
50
100
200
500
1000



Duration
5-min
10-min
15-min
30-min
60-min
2-hr
3-hr
6-hr
12-hr
24-hr
2-day
3-day
4-day
7-day
10-day
20-day
30-day
45-day
60-day

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### Maps & aeriels

#### Small scale terrain

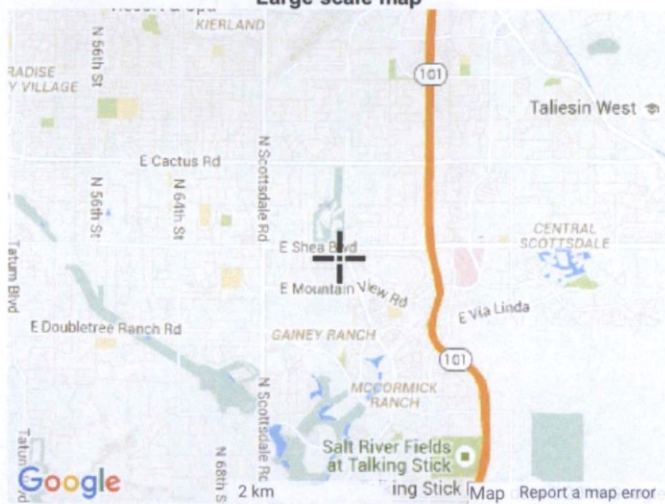




Large scale terrain



Large scale map



Large scale aerial







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1325 East West Highway  
Silver Spring, MD 20910  
Questions?: [HDSC.Questions@noaa.gov](mailto:HDSC.Questions@noaa.gov)

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**Location name: Scottsdale, Arizona, US\***  
**Latitude: 33.5803°, Longitude: -111.9103°**  
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[PF tabular](#) | [PF graphical](#) | [Maps & aerials](#)

**PF tabular**

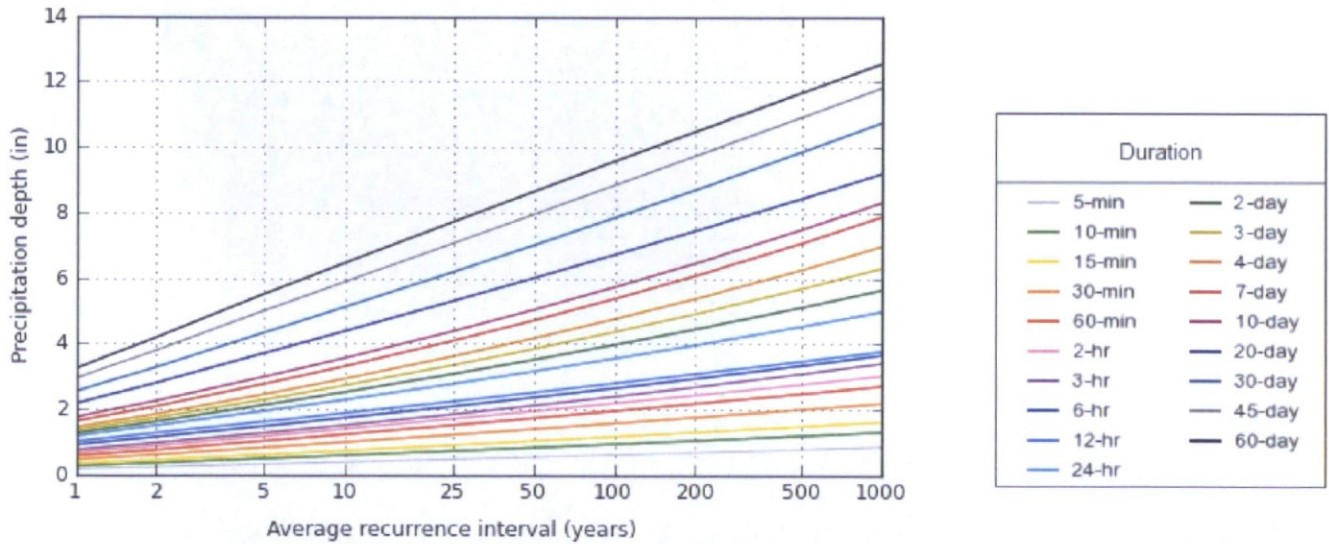
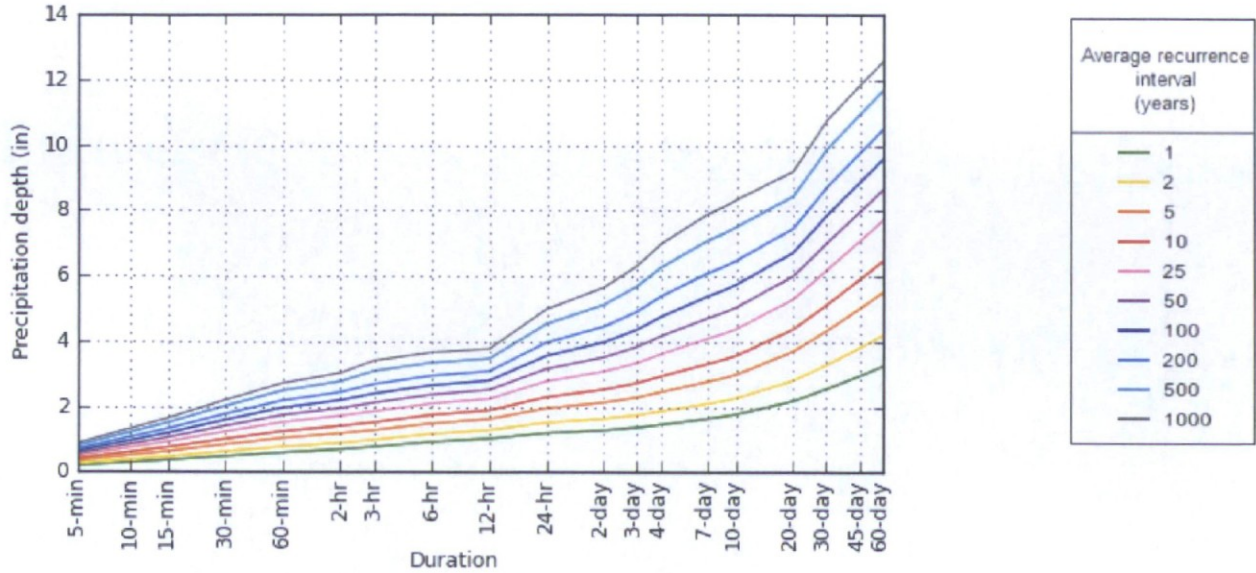
<b>PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)<sup>1</sup></b>										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.187 (0.155-0.228)	0.244 (0.204-0.298)	0.329 (0.273-0.401)	0.395 (0.326-0.480)	0.485 (0.393-0.586)	0.553 (0.444-0.665)	0.624 (0.492-0.749)	0.695 (0.538-0.832)	0.791 (0.597-0.949)	0.864 (0.639-1.04)
10-min	0.284 (0.236-0.347)	0.371 (0.310-0.454)	0.501 (0.415-0.611)	0.602 (0.497-0.731)	0.738 (0.599-0.893)	0.841 (0.676-1.01)	0.950 (0.748-1.14)	1.06 (0.819-1.27)	1.20 (0.909-1.45)	1.31 (0.973-1.58)
15-min	0.352 (0.293-0.430)	0.459 (0.385-0.562)	0.621 (0.515-0.757)	0.745 (0.615-0.907)	0.914 (0.742-1.11)	1.04 (0.837-1.25)	1.18 (0.927-1.41)	1.31 (1.01-1.57)	1.49 (1.13-1.79)	1.63 (1.21-1.96)
30-min	0.474 (0.394-0.580)	0.619 (0.518-0.758)	0.836 (0.693-1.02)	1.00 (0.829-1.22)	1.23 (0.999-1.49)	1.40 (1.13-1.69)	1.58 (1.25-1.90)	1.76 (1.37-2.12)	2.01 (1.52-2.41)	2.19 (1.62-2.64)
60-min	0.587 (0.487-0.717)	0.766 (0.641-0.937)	1.03 (0.858-1.26)	1.24 (1.03-1.51)	1.52 (1.24-1.84)	1.74 (1.40-2.09)	1.96 (1.55-2.35)	2.19 (1.69-2.62)	2.49 (1.88-2.98)	2.72 (2.01-3.26)
2-hr	0.686 (0.578-0.820)	0.887 (0.752-1.06)	1.18 (0.995-1.41)	1.41 (1.17-1.68)	1.72 (1.42-2.03)	1.95 (1.59-2.30)	2.20 (1.75-2.58)	2.44 (1.92-2.87)	2.77 (2.13-3.26)	3.03 (2.28-3.58)
3-hr	0.766 (0.646-0.936)	0.981 (0.831-1.20)	1.28 (1.08-1.56)	1.52 (1.27-1.84)	1.86 (1.52-2.24)	2.12 (1.72-2.54)	2.40 (1.91-2.87)	2.69 (2.10-3.21)	3.09 (2.34-3.69)	3.41 (2.53-4.08)
6-hr	0.922 (0.793-1.09)	1.16 (1.00-1.38)	1.49 (1.27-1.76)	1.75 (1.48-2.05)	2.10 (1.75-2.46)	2.37 (1.95-2.77)	2.66 (2.15-3.09)	2.95 (2.35-3.44)	3.35 (2.59-3.90)	3.66 (2.77-4.27)
12-hr	1.02 (0.881-1.20)	1.29 (1.11-1.51)	1.63 (1.40-1.90)	1.89 (1.61-2.21)	2.25 (1.90-2.62)	2.52 (2.10-2.93)	2.81 (2.31-3.26)	3.09 (2.51-3.59)	3.48 (2.75-4.05)	3.77 (2.93-4.43)
24-hr	1.19 (1.04-1.38)	1.51 (1.33-1.76)	1.95 (1.70-2.27)	2.30 (2.00-2.67)	2.78 (2.40-3.22)	3.16 (2.71-3.65)	3.56 (3.02-4.11)	3.97 (3.34-4.58)	4.54 (3.76-5.23)	4.99 (4.08-5.77)
2-day	1.28 (1.12-1.48)	1.63 (1.42-1.89)	2.13 (1.85-2.46)	2.53 (2.19-2.92)	3.08 (2.65-3.55)	3.52 (3.00-4.05)	3.98 (3.37-4.59)	4.46 (3.74-5.15)	5.12 (4.24-5.92)	5.65 (4.62-6.56)
3-day	1.37 (1.20-1.57)	1.75 (1.53-2.01)	2.29 (2.00-2.64)	2.73 (2.38-3.14)	3.35 (2.90-3.85)	3.84 (3.30-4.41)	4.37 (3.72-5.01)	4.92 (4.16-5.66)	5.69 (4.75-6.55)	6.31 (5.21-7.28)
4-day	1.46 (1.28-1.67)	1.86 (1.64-2.13)	2.46 (2.15-2.81)	2.94 (2.56-3.36)	3.62 (3.14-4.14)	4.17 (3.60-4.77)	4.76 (4.08-5.44)	5.38 (4.57-6.17)	6.26 (5.25-7.17)	6.98 (5.79-8.01)
7-day	1.64 (1.43-1.89)	2.09 (1.83-2.41)	2.77 (2.41-3.19)	3.32 (2.88-3.81)	4.09 (3.53-4.69)	4.71 (4.05-5.40)	5.38 (4.58-6.16)	6.08 (5.14-6.98)	7.08 (5.91-8.12)	7.88 (6.51-9.06)
10-day	1.77 (1.55-2.03)	2.26 (1.98-2.60)	2.99 (2.61-3.42)	3.57 (3.11-4.08)	4.38 (3.80-5.00)	5.04 (4.34-5.74)	5.74 (4.91-6.54)	6.47 (5.49-7.38)	7.49 (6.29-8.56)	8.32 (6.91-9.52)
20-day	2.18 (1.92-2.49)	2.81 (2.47-3.20)	3.71 (3.26-4.22)	4.39 (3.84-4.99)	5.31 (4.63-6.03)	6.01 (5.22-6.83)	6.73 (5.82-7.66)	7.46 (6.41-8.50)	8.44 (7.20-9.64)	9.20 (7.79-10.5)
30-day	2.55 (2.24-2.91)	3.28 (2.89-3.74)	4.33 (3.80-4.92)	5.13 (4.49-5.82)	6.19 (5.40-7.03)	7.01 (6.09-7.95)	7.86 (6.79-8.90)	8.71 (7.49-9.86)	9.87 (8.42-11.2)	10.8 (9.11-12.2)
45-day	2.94 (2.60-3.35)	3.80 (3.35-4.31)	5.00 (4.41-5.67)	5.89 (5.19-6.68)	7.07 (6.20-8.01)	7.96 (6.95-9.01)	8.85 (7.70-10.0)	9.75 (8.44-11.1)	10.9 (9.39-12.4)	11.8 (10.1-13.5)
60-day	3.25 (2.88-3.67)	4.20 (3.72-4.74)	5.51 (4.88-6.23)	6.48 (5.72-7.31)	7.73 (6.80-8.72)	8.65 (7.59-9.77)	9.58 (8.37-10.8)	10.5 (9.13-11.9)	11.7 (10.1-13.2)	12.6 (10.8-14.3)

<sup>1</sup> 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.

[Back to Top](#)

### PF graphical

PDS-based depth-duration-frequency (DDF) curves  
 Latitude: 33.5803°, Longitude: -111.9103°



[Back to Top](#)

### Maps & aerials

#### Small scale terrain





Large scale terrain



Large scale map



Large scale aerial





[Back to Top](#)

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[US Department of Commerce](#)  
[National Oceanic and Atmospheric Administration](#)  
[National Weather Service](#)  
[National Water Center](#)  
1325 East West Highway  
Silver Spring, MD 20910  
Questions?: [HDSC.Questions@noaa.gov](mailto:HDSC.Questions@noaa.gov)

[Disclaimer](#)



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# *APPENDIX II*

## *Calculations*

**2. Time of Concentration**

Time of concentration "Tc" is the total time of travel from the most hydraulically remote part of the watershed to the concentration point of interest. The calculation of "Tc" must follow FCDMC Hydrology Manual procedures.

**\*Note: Do not add a standard set amount of time to the estimated "Tc" for lot runoff delay (such as 5 or 10 minutes).** Natural land slopes are too variable in Scottsdale to add a set amount of time for lot runoff.

**3. Runoff Coefficients**

Use [Figure 4.1-4](#) or equivalent to obtain the runoff coefficients or "C" values. Composite "C" values for the appropriate zoning category or weighted average values calculated for the specific site are both acceptable approaches.

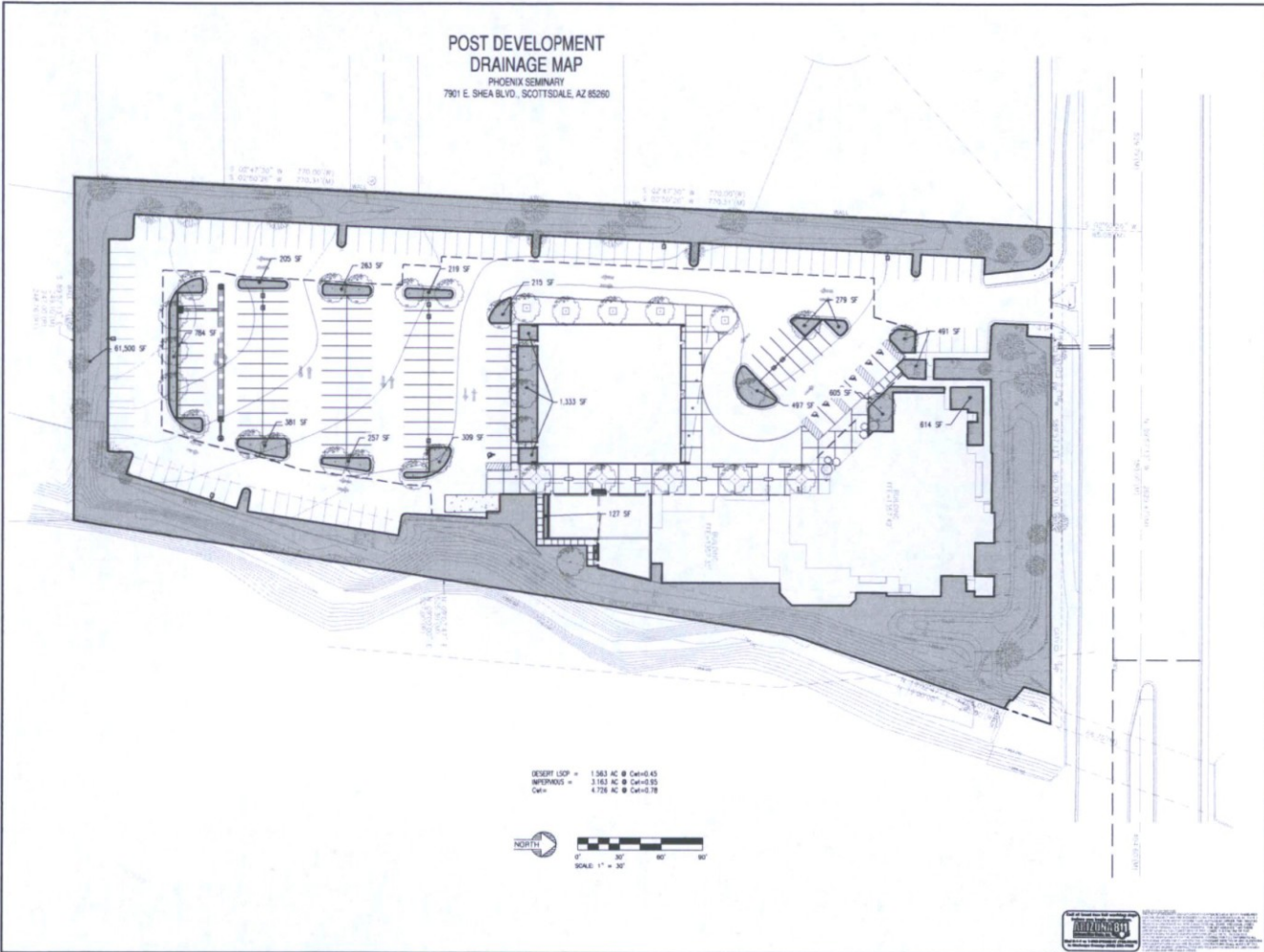
RUNOFF COEFFICIENTS - "C" VALUE			
Land Use	Storm Frequency		
	2-25 Year	50 Year	100 Year
Composite Area-wide Values			
<b>Commercial &amp; Industrial Areas</b>	0.80	0.83	0.86
<b>Residential Areas-Single Family (average lot size)</b>			
R1-1-1901	0.33	0.50	0.53
R1-130	0.35	0.51	0.59
R1-70	0.37	0.52	0.60
R1-43	0.38	0.55	0.61
R1-35 (35,000 square feet/lot)	0.40	0.56	0.62
R1-18 (18,000 square feet/lot)	0.43	0.58	0.64
R1-10 (10,000 square feet/lot)	0.47	0.62	0.67
R1-7 (7,000 square feet/lot)	0.51	0.64	0.94
<b>Townhouses (R-2, R-4)</b>	0.63	0.74	0.94
<b>Apartments &amp; Condominiums (R-3, R-5)</b>	0.76	0.83	0.94
<b>Specific Surface Type Values</b>			
Paved streets, parking lots (concrete or asphalt), roofs, drive-ways, etc.	0.90	0.93	0.95
Lawns, golf courses, & parks (grassed areas)	0.20	0.25	0.30
Undisturbed natural desert or desert landscaping (no impervious weed barrier)	0.37	0.42	0.45
Desert landscaping (with impervious weed barrier)	0.63	0.73	0.83
Mountain terrain – slopes greater than 10%	0.60	0.70	0.80
Agricultural areas (flood-irrigated fields)	0.16	0.18	0.20

FIGURE 4.1-4 RUNOFF COEFFICIENTS FOR USE WITH RATIONAL METHOD





**POST DEVELOPMENT  
DRAINAGE MAP**  
PHOENIX SEMINARY  
7901 E. SHEA BLVD., SCOTTSDALE, AZ 85260



**DESIGNER**  
DAVID J. SMITH  
47621  
MECHANICAL  
STATE OF ARIZONA

**SEG**  
SUSTAINABILITY  
ENGINEERING  
GROUP

10001 N. CENTRAL EXPRESSWAY, SUITE 1000, SCOTTSDALE, AZ 85260  
PH: 480.344.1100 FAX: 480.344.1101

<p><b>PROJECT:</b> PHOENIX SEMINARY CAMPUS ADDITION/REVISION</p> <p><b>LOCATION:</b> 7901 E. SHEA BLVD. SCOTTSDALE, AZ 85260</p>	<p><b>OWNER:</b> POUNDS</p> <p><b>DESIGNER:</b> POUNDS</p> <p><b>APPROVED:</b> COUNSELL</p> <p><b>DATE:</b> 02/16/2016</p> <p><b>SCALE:</b> 0/0</p> <p><b>PROJECT NO.:</b> 140303</p> <p><b>POST DEVELOPMENT DRAINAGE MAP</b></p> <p><b>DATE:</b> 02/16/2016</p> <p><b>POST DWG</b></p>
--	---

THIS DRAWING IS THE PROPERTY OF SUSTAINABILITY ENGINEERING GROUP, AND SHALL REMAIN THEIR PROPERTY. THE USE OF THIS DRAWING SHALL BE RESTRICTED TO THE ORIGINAL USE FOR WHICH IT WAS PREPARED UNLESS EXPRESSLY AGREED TO IN WRITING.



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## *APPENDIX III*

# *Preliminary Grading Plan*



**PROPOSED LEGEND**

- PROPERTY LINE
- LOT LINE
- EXISTENCE LINE
- SANGUIT LINE
- CONCRETE ELEVATION
- PAVEMENT ELEVATION
- TOP OF CURB ELEVATION
- GUTTER ELEVATION IC-G+0.5
- DRAINAGE AIRWAY
- RISE LINE
- CONCRETE CURB & GUTTER
- CATCH BASIN
- STORM MANHOLE
- STORM CLEAN-OUT
- STORM PIPE
- STANDBY GUTTER SLOPE
- REVERSE GUTTER SLOPE
- G' TRANSITION OF GUTTER SLOPE

**KEYNOTES**

- 1) MATCH EXISTING GRADE; CONTRACTOR TO VERIFY IN FIELD ALL GRADES PRIOR TO ANY CONSTRUCTION ACTIVITIES AND TO CONTACT ENGINEER IN CASE OF DISCREPANCIES.
- 2) CONSTRUCT 6" CURB/GUTTER PER MAG STD DET 220-1 TYPE 'X'.
- 3) CONSTRUCT 6" CURB PER MAG STD DET 222 TYPE 'W' WITH TURNDOWN SLAB.
- 4) CONSTRUCT LIGHT DUTY PAVEMENT.
- 5) CONSTRUCT CONCRETE PAD.
- 6) CONSTRUCT SIDEWALK PER MAG STD DET 230, WITH PER PLAN.
- 7) 2% MAXIMUM SLOPE IN ANY DIRECTION AT ACCESSIBLE PARKING STALLS AND 2% MAXIMUM CROSS SLOPE AT ADA ACCESSIBLE ROUTE.
- 8) CONSTRUCT SCREEN WELL PER ARCHITECTURAL PLANS.
- 9) FURNISH & INSTALL DRYWELL.
- 10) TRASH ENCLOSURE; REFER TO ARCHITECTURAL PLANS.



**SUSTAINABILITY ENGINEERING GROUP**  
 1400 E. BROADWAY, SUITE 200, BALTIMORE, MD 21202  
 WWW.SEG-ENG.COM TEL: 410.546.7200



PROJECT: PROPOSED SHARPE CAMPUS  
 ABBOTTSBURY, MARYLAND  
 LOCATION: BALTIMORE, MARYLAND  
 COUNTY: BALTIMORE, MARYLAND

DATE: 05/17/2016  
 DRAWN BY: DPH

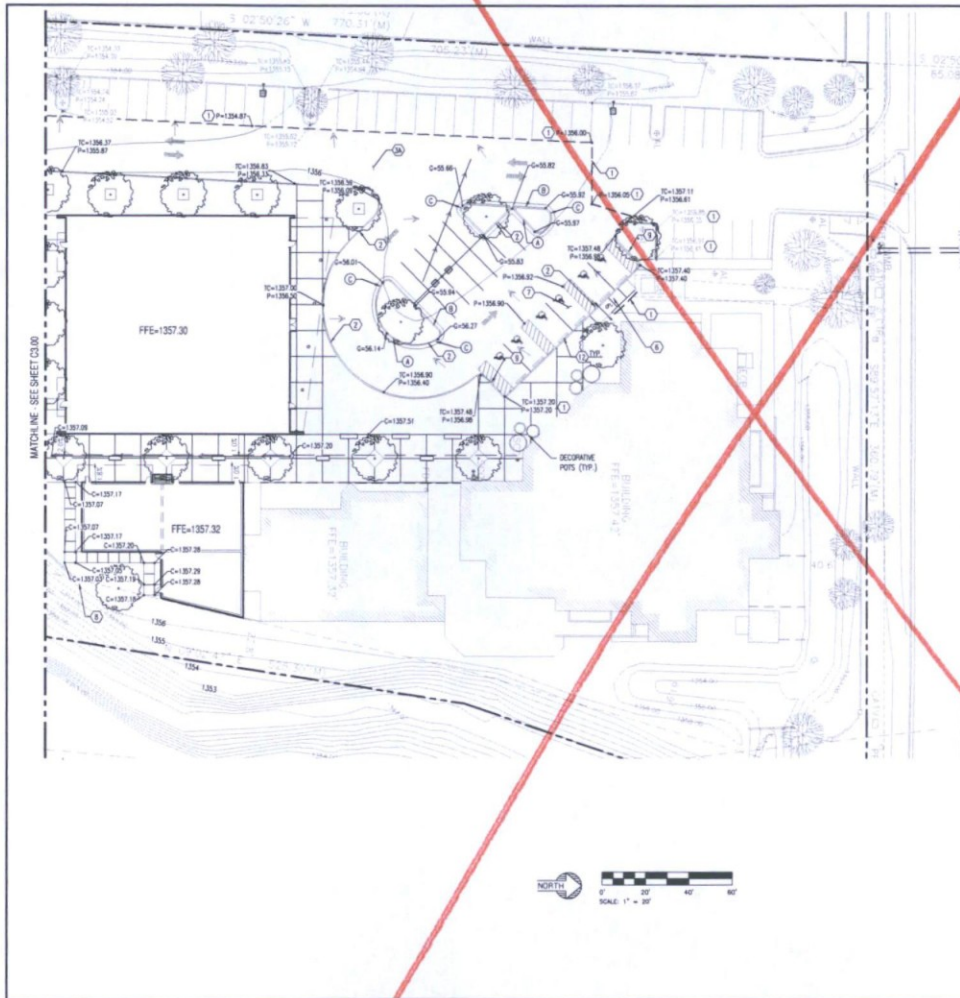
PROJECT NO.: 15033

**PRELIMINARY  
 NOT FOR CONSTRUCTION**



PROJECT TITLE: PRELIMINARY GRADING AND DRAINAGE PLAN  
 SHEET NO.: C3.00

THIS DRAWING IS THE SOLE PROPERTY OF SUSTAINABILITY ENGINEERING GROUP, INC. AND SHALL REMAIN THEIR PROPERTY. THE USE OF THIS DRAWING SHALL BE RESTRICTED TO THE ORIGINAL SITE FOR WHICH IT WAS PREPARED AND NO REUSE OR REPRODUCTION IS PERMITTED WITHOUT THE WRITTEN CONSENT OF SUSTAINABILITY ENGINEERING GROUP, INC.



**PROPOSED LEGEND**

---	PROPERTY LINE
---	LOT LINE
---	EASEMENT LINE
---	SMOULT LINE
C=1257.37	CONCRETE ELEVATION
P=1257.87	PAVEMENT ELEVATION
TC=1257.37	TOP OF CURB ELEVATION
G=1257.37	GUTTER ELEVATION TC+G+0.5
---	DRAINAGE ARROW
---	RIDGE LINE
---	CONCRETE CURB & OUTLET
---	CATCH BASIN
---	STORM MANHOLE
---	STORM CLEAN-OUT
---	STORM PIPE
①	STANDARD GUTTER SLOPE
②	REVERSE GUTTER SLOPE
③	G TRANSITION OF GUTTER SLOPE

- KEYNOTES:**
- 1 MATCH EXISTING GRADE. CONTRACTOR TO VERIFY IN FIELD ALL GRADES PRIOR TO ANY CONSTRUCTION ACTIVITIES AND TO CONTACT ENGINEER IN CASE OF DISCREPANCY.
  - 2 CONSTRUCT 4" CURB/GUTTER PER WAS STD DET 222 TYPE 'K'.
  - 3 CONSTRUCT 4" CURB PER WAS STD DET 222 TYPE 'K' WITH TURNDOWN SLAB.
  - 4 CONSTRUCT FLUSH CURB.
  - 5 CONSTRUCT LIGHT DUTY PAVEMENT.
  - 6 CONSTRUCT SIDEWALK PER WAS STD DET 230, WIDTH PER PLAN.
  - 7 2% MAXIMUM SLOPE IN ANY DIRECTION AT ACCESSIBLE PARKING STALLS AND 2% MAXIMUM CROSS SLOPE AT NON-ACCESSIBLE STALLS.
  - 8 CONSTRUCT SCREEN WALL PER ARCHITECTURAL PLANS.
  - 9 TRANSITION FROM FLUSH CURB TO 4" CURB.
  - 10 CONSTRUCT WHEEL STOP.



SHEA BLVD.



**SUSTAINABILITY ENGINEERING GROUP**  
 10000 W. UNIVERSITY BLVD., SUITE 1000  
 DALLAS, TEXAS 75241  
 WWW.SEG-ENG.COM TEL: 972.988.1000



PROJECT: **POUNCEY SQUARE CHANGING ADDRESS/RENOVATION**  
 LOCATION: **POUNCEY SQUARE COUNSELL PARK**  
 COUNTY: **DALLAS COUNTY, TEXAS**  
 CITY: **DALLAS, TEXAS**

DATE: **05/17/2016**  
 DRAWN BY: **DBH**  
 CHECKED BY: **[Signature]**  
 PROJECT NO.: **160303**

**PRELIMINARY NOT FOR CONSTRUCTION**



PRELIMINARY GRADING AND DRAINAGE PLAN  
 SHEET NO.: **C3.10**

THE DRAWINGS IN THIS PLAN SET AND THE PROPERTY TO WHICH THEY REFER ARE THE PROPERTY OF SUSTAINABILITY ENGINEERING GROUP, AND SHALL REMAIN THE PROPERTY OF SUSTAINABILITY ENGINEERING GROUP. THE USE OF THE DRAWINGS SHALL BE RESTRICTED TO THE ORIGINAL PROJECT AND ANY REVISIONS THEREOF. ANY REUSE OR REPRODUCTION OF THESE DRAWINGS WITHOUT THE WRITTEN CONSENT OF SUSTAINABILITY ENGINEERING GROUP IS STRICTLY PROHIBITED.



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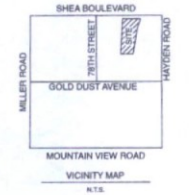
## *APPENDIX IV*

### *ALTA / Topographic Survey*

8280 E. Gelding Dr., Suite 101  
Scottsdale, AZ 85260

# ALTA/ACSM LAND TITLE SURVEY

OF A PORTION OF THE NORTHEAST QUARTER OF SECTION 26,  
TOWNSHIP 3 NORTH, RANGE 4 EAST,  
OF THE GILA AND SALT RIVER BASE AND MERIDIAN,  
MARICOPA COUNTY, ARIZONA.



## SCHEDULE "B" ITEMS

- TAXES WHICH MAY BE ASSESSED OR LEVIED SUBSEQUENT TO THE EFFECTIVE DATE HEREIN, AND SUBSEQUENT YEARS. TAX IDENTIFICATION NO.: 175-47-008
- WATER RIGHTS, CLAIMS OR TITLE TO WATER, WHETHER OR NOT DISCLOSED BY THE PUBLIC RECORDS.
- RESERVATIONS CONTAINED IN THE PATENT

FROM THE UNITED STATES OF AMERICA  
TO: CLARENCE E. HOVER  
RECORDING DATE: MARCH 10, 1917  
RECORDING NO: BOOK 120 OF DEEDS, PAGE 480

WHICH AMONG OTHER THINGS RECITES AS FOLLOWS:

SUBJECT TO ANY VESTED AND ACCRUED WATER RIGHTS FOR MINING, AGRICULTURAL, MANUFACTURING, OR OTHER PURPOSES AND RIGHTS TO DITCHES AND RESERVOIRS USED IN CONNECTION WITH SUCH WATER RIGHTS, AS MAY BE RECOGNIZED AND ACKNOWLEDGED BY THE LOCAL CUSTOMS, LAWS AND DECISIONS OF THE COURTS, AND THE RESERVATION FROM THE LANDS HEREBY GRANTED, A RIGHT OF WAY THEREON FOR DITCHES OR CANALS CONSTRUCTED BY THE AUTHORITY OF THE UNITED STATES.

- RIGHTS OF THE PUBLIC IN AND TO THAT PORTION OF THE HEREIN DESCRIBED LAND AS SHOWN ON THE MAP  
RECORDING NO: BOOK 5 OF ROAD MAPS, PAGE 28
- EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT:  
PURPOSE: ELECTRIC LINES  
RECORDING NO: DOCKET 1444, PAGE 127
- EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT:  
PURPOSE: ELECTRIC LINES  
RECORDING NO: DOCKET 11674, PAGE 12
- EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT:  
PURPOSE: LEVEES, DIKES, CHANNELS AND OTHER WORKS OF DRAINAGE  
RECORDING NO: DOCKET 1642, PAGE 215
- EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT:  
PURPOSE: DRAINAGE  
RECORDING NO: 95-477920
- EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT:  
PURPOSE: DRAINAGE  
RECORDING NO: 95-477921
- EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT:  
PURPOSE: ELECTRIC LINES  
RECORDING NO: 95-588994

11. MATTERS (INCLUDING, BUT NOT LIMITED TO, A REVERSION RIGHT) CONTAINED IN THAT CERTAIN DOCUMENT

ENTITLED: GENERAL WARRANTY DEED  
DATED: DECEMBER 01, 2007  
RECORDING DATE: DECEMBER 03, 2007  
RECORDING NO: 20071274697

REFERENCE IS HEREBY MADE TO SAID DOCUMENT FOR FULL PARTICULARS.

- AN UNRECORDED LEASE WITH CERTAIN TERMS, COVENANTS, CONDITIONS AND PROVISIONS SET FORTH THEREIN AS DISCLOSED BY THE DOCUMENT

ENTITLED: MEMORANDUM OF LEASE  
LESSOR: SHEA CHAPEL, LLC  
LESSEE: SCOTTSDALE BIBLE CHURCH, AN ARIZONA NONPROFIT CORPORATION  
RECORDING DATE: DECEMBER 03, 2007  
RECORDING NO: 20071271158

- MATTERS WHICH MAY BE DISCLOSED BY AN INSPECTION AND/OR BY A CORRECT ALTA/ACSM LAND TITLE SURVEY OF SAID LAND THAT IS SATISFACTORY TO THE COMPANY, AND/OR BY INQUIRY OF THE PARTIES IN POSSESSION THEREOF.
- ANY RIGHTS OF THE PARTIES IN POSSESSION OF A PORTION OF, OR ALL OF, SAID LAND, WHICH RIGHTS ARE NOT DISCLOSED BY THE PUBLIC RECORDS.

## PARCEL DESCRIPTION

THAT PART OF THE NORTHEAST QUARTER OF SECTION TWENTY-SIX (26), TOWNSHIP THREE (3) NORTH, RANGE FOUR (4) EAST OF THE GILA AND SALT RIVER BASE AND MERIDIAN, MARICOPA COUNTY, ARIZONA, DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEAST CORNER OF SAID SECTION 26 AND RUNNING THENCE WEST (ASSUMED BEARING) ALONG THE NORTH LINE OF SAID SECTION 26 A DISTANCE OF 404.80 FEET TO THE NORTHEAST CORNER OF THE PREMISES HEREBY DESCRIBED, SAID POINT BEING IN THE CENTER LINE OF THAT CERTAIN COUNTY ROAD COMMONLY KNOWN AS SHEA BOULEVARD,  
AND ALSO BEING THE TRUE POINT OF BEGINNING;

THENCE CONTINUING WEST ALONG THE NORTH LINE OF SAID SECTION 26 A DISTANCE OF 380 FEET;

THENCE SOUTH 2 DEGREES 47 MINUTES 30 SECONDS WEST A DISTANCE OF 770 FEET;

THENCE EAST PARALLEL TO THE NORTH LINE OF SAID SECTION 26 A DISTANCE OF 247 FEET TO A POINT;

THENCE NORTH 9 DEGREES 00 MINUTES 00 SECONDS EAST A DISTANCE OF 527 FEET TO A POINT;

THENCE NORTH 19 DEGREES 06 MINUTES 00 SECONDS EAST A DISTANCE OF 266 FEET TO THE TRUE POINT OF BEGINNING.

EXCEPT THAT PART CONVEYED TO THE CITY OF SCOTTSDALE IN DEED RECORDED IN DOCKET 1642, PAGE 213, AND MORE PARTICULARLY DESCRIBED AS FOLLOWS:

THE SOUTH 32 FEET OF THE NORTH 86 FEET OF SECTION 26, TOWNSHIP 3 NORTH, RANGE 4 EAST, OF THE GILA AND SALT RIVER BASE AND MERIDIAN, LYING EAST OF AND ADJOINING A LINE DRAWN AT AN ANGLE OF 87 DEGREES 12 MINUTES 30 SECONDS, AS MEASURED FROM WEST TO SOUTH, FROM THE NORTH LINE OF THE NORTHEAST QUARTER OF SAID SECTION 26, AT A POINT ON SAID NORTH LINE BEING 764.8 FEET WEST OF THE NORTHEAST CORNER OF SAID NORTHEAST QUARTER LYING WEST OF AND ADJOINING A LINE DRAWN AT AN ANGLE OF 71 DEGREES, AS MEASURED FROM WEST TO SOUTH, FROM THE NORTH LINE OF SAID NORTHEAST QUARTER, AT A POINT ON SAID NORTH LINE BEING 404.8 FEET WEST OF THE NORTHEAST CORNER OF SAID NORTHEAST QUARTER.

## NOTES: (Table "A" Items")

- SET A 12" REBAR W/ CAP "AWLS 48377" AT PROPERTY CORNERS AS SHOWN HEREON UNLESS OTHERWISE NOTED.
- AREA IS 205,850.8 SQUARE FEET OR 4.726 ACRES, MORE OR LESS.
- THIS SURVEY SHOWS ABOVE GROUND UTILITIES. THE SURVEYOR DOES NOT WARRANT THAT THE UNDERGROUND UTILITY LINES SHOWN HEREON ARE IN THE EXACT LOCATION INDICATED, ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION MADE AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES. THE CLIENT IS HEREBY ADVISED THAT EXCAVATION MAY BE NECESSARY TO EXPOSE UNDERGROUND UTILITIES TO CONFIRM EXACT LOCATION.
- THERE ARE 298 REGULAR PARKING SPACES AND 9 HANDICAP PARKING SPACES.
- ADJOINER INFORMATION IS PER MARICOPA COUNTY ASSESSOR WEBSITE.

## BASIS OF BEARING

THE BASIS OF BEARING AND ALL MONUMENTATION SHOWN HEREON IS BASED ON THE NORTH LINE OF THE NORTHEAST QUARTER OF SECTION 26, TOWNSHIP 3 NORTH, RANGE 4 EAST, USING A BEARING OF NORTH 89°57'13" WEST AS SHOWN ON THE FINAL PLAT OF LA CUESTA II, RECORDED IN BOOK 223, PAGE 1, MARICOPA COUNTY RECORDS.

## BENCHMARK

BENCHMARK IS A CITY OF SCOTTSDALE BRASS CAP IN HANDHOLE, BEING THE NORTH QUARTER CORNER OF SECTION 26, T.3N., R.4E.  
ELEVATION = 1355.13 NAVD 88.

## FLOOD ZONE DESIGNATION

SUBJECT PROPERTY IS LOCATED WITHIN ZONE "X" (DOTTED) AS SHOWN ON FEMA FLOOD INSURANCE RATE MAP NO. 04013C1795L, DATED OCTOBER 16, 2013. ZONE "X" IS DEFINED AS AREAS OF 0.2% ANNUAL 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.

## GENERAL NOTES

- ALL TITLE INFORMATION IS BASED ON A COMMITMENT FOR TITLE INSURANCE PREPARED BY COMMONWEALTH LAND TITLE INSURANCE COMPANY, COMMITMENT NO. 01841980-003-170, WITH AN EFFECTIVE DATE OF DECEMBER 9, 2015.
- A.R.S. 38-181 STATES THAT THE USE OF THE WORD "CERTIFY" OR "CERTIFICATION" BY A PERSON OR FIRM THAT IS REGISTERED OR CERTIFIED BY THE BOARD IS AN EXPRESSION OF PROFESSIONAL OPINION REGARDING THE FACTS OR FINDINGS THAT ARE SUBJECT TO THE CERTIFICATION AND DOES NOT CONSTITUTE A WARRANTY OR GUARANTEE.
- SURVEY FIELD WORK WAS COMPLETED ON APRIL 8, 2016.
- THIS SURVEYOR HAS MADE NO INVESTIGATION OR INDEPENDENT SEARCH FOR EASEMENTS OF RECORD, ENCUMBRANCES, RESTRICTIVE COVENANTS, OWNERSHIP, TITLE EVIDENCE OR ANY OTHER FACTS THAT AN ACCURATE AND CURRENT TITLE SEARCH MAY DISCLOSE.

## CERTIFICATION

TO: PHOENIX BENCHMARK, INC., AN ARIZONA NONPROFIT CORPORATION  
SHEA CHAPEL, LLC, AN ARIZONA NONPROFIT LIMITED LIABILITY COMPANY  
COMMONWEALTH LAND TITLE INSURANCE COMPANY

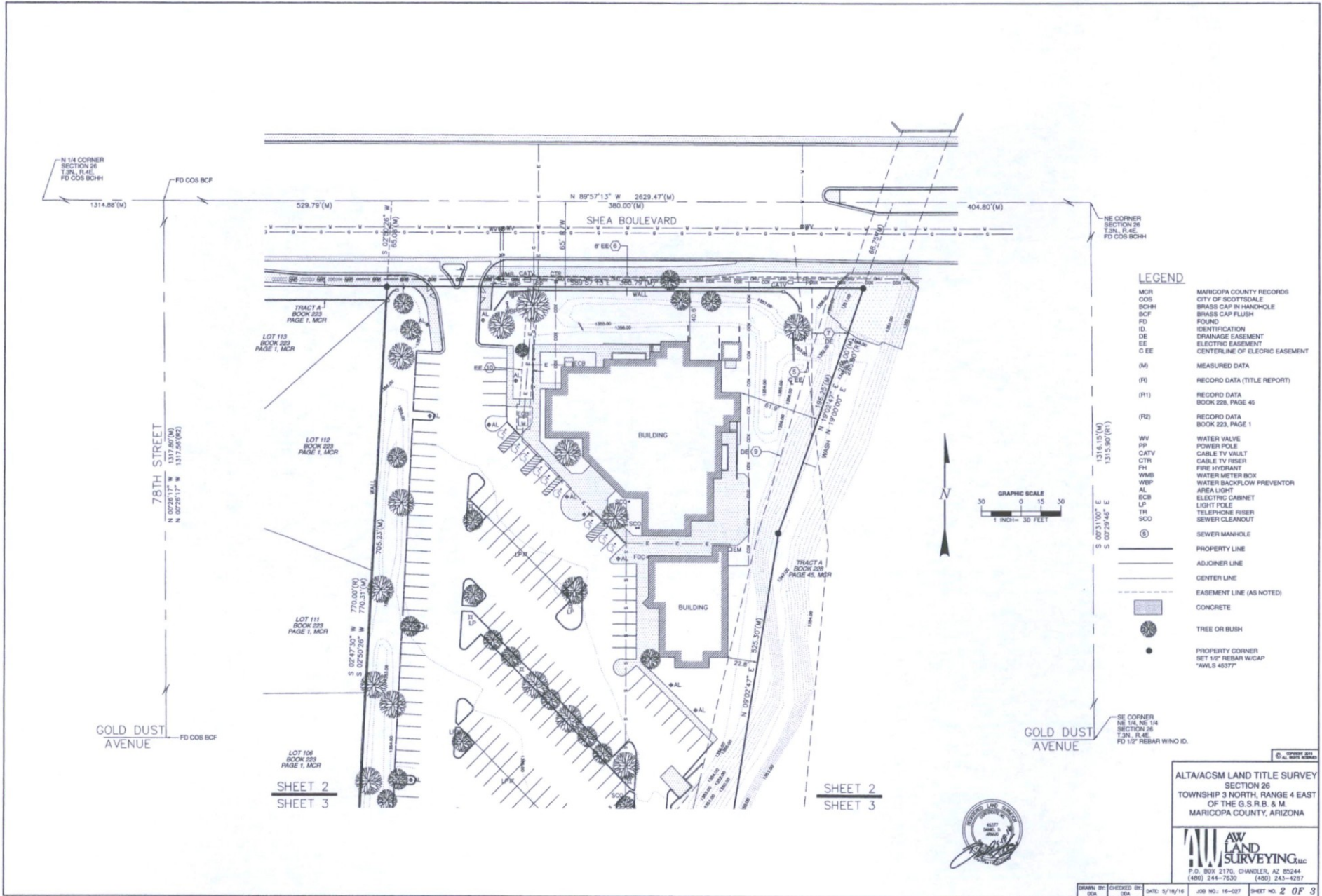
THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/ACSM LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS IN 2016, AND INCLUDES TABLE ITEMS 1-4, 6, 9, 11(A)(B), AND 13 THEREOF, PURSUANT TO THE ACCURACY STANDARDS AS ADOPTED BY ALTA AND NSPS AND IN EFFECT ON THE DATE OF THIS CERTIFICATION. UNDERSIGNED FURTHER CERTIFIES THAT IN MY PROFESSIONAL OPINION, AS A LAND SURVEYOR REGISTERED IN THE STATE OF ARIZONA, THE RELATIVE POSITIONAL ACCURACY OF THIS SURVEY DOES NOT EXCEED THAT WHICH IS SPECIFIED THEREIN.



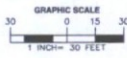
ALTA/ACSM LAND TITLE SURVEY  
SECTION 26  
TOWNSHIP 3 NORTH, RANGE 4 EAST  
OF THE G.S.R.B. & M.  
MARICOPA COUNTY, ARIZONA

AW  
LAND  
SURVEYING, LLC  
P.O. BOX 2170, CHANDLER, AZ 85244  
(480) 244-7632 (480) 244-4287

DRAWN BY: CHECKED BY: DATE: 5/16/18 JOB NO: 18-027 SHEET NO. 1 OF 3



- LEGEND**
- MCR MARICOPA COUNTY RECORDS
  - COS CITY OF SCOTTSDALE
  - BOHM BRASS CAP IN HANDHOLE
  - BCF BRASS CAP FLUSH
  - FD FOUND
  - ID IDENTIFICATION
  - DE DRAINAGE EASEMENT
  - EE ELECTRIC EASEMENT
  - C EE CENTERLINE OF ELECTRIC EASEMENT
  - (M) MEASURED DATA
  - (F) RECORD DATA (TITLE REPORT)
  - (R1) RECORD DATA BOOK 228, PAGE 45
  - (R2) RECORD DATA BOOK 223, PAGE 1
  - WV WATER VALVE
  - PP POWER POLE
  - CATV CABLE TV VAULT
  - CTR CABLE TV RISER
  - PH FIRE HYDRANT
  - WMB WATER METER BOX
  - WBP WATER BACKFLOW PREVENTOR
  - AL AREA LIGHT
  - ECB ELECTRIC CABINET
  - LP LIGHT POLE
  - TR TELEPHONE RISER
  - SCO SEWER CLEANOUT
  - ⊙ SEWER MANHOLE
  - PROPERTY LINE
  - ADJOINER LINE
  - CENTER LINE
  - - - EASEMENT LINE (AS NOTED)
  - CONCRETE
  - TREE OR BUSH
  - PROPERTY CORNER SET 1/2" REBAR W/ CAP "AWLS 4537"



N 1316.15'(M)  
S 1315.90'(R1)  
S 0029'48" E  
S 0023'10" E

N 14 CORNER SECTION 26 T3N, R4E FD COS BOH1

NE CORNER SECTION 26 T3N, R4E FD COS BOH1

GOLD DUST AVENUE

GOLD DUST AVENUE

SHEET 2  
SHEET 3

SHEET 2  
SHEET 3



ALTA/ACSM LAND TITLE SURVEY  
SECTION 26  
TOWNSHIP 3 NORTH, RANGE 4 EAST  
OF THE G.S.R.B. & M.  
MARICOPA COUNTY, ARIZONA

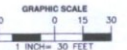
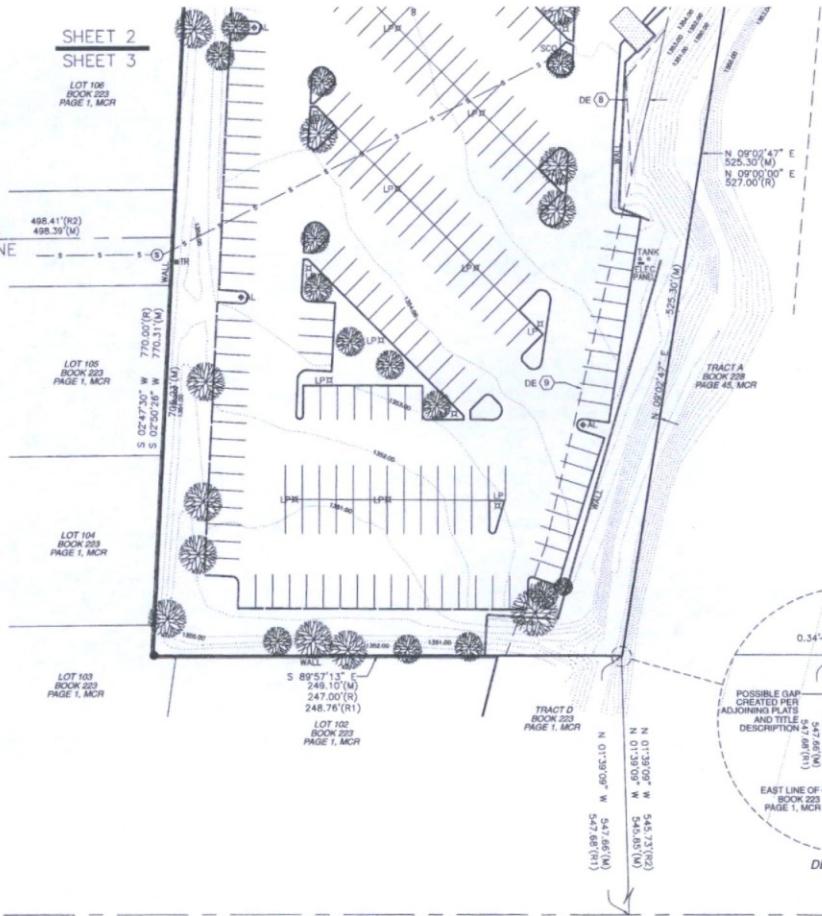
**AW LAND SURVEYING, LLC**  
P.O. BOX 2170, CHANDLER, AZ 85244  
(480) 244-7530 (480) 243-8287

FD COS BCF  
SHEA BOULEVARD

SHEET 2  
SHEET 3

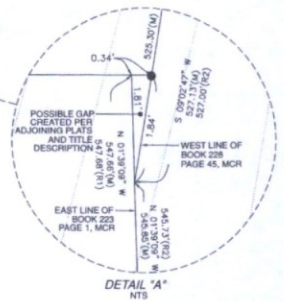
SHEET 2  
SHEET 3

78TH STREET  
N 89°58'17" E 1317.24(M)  
N 89°58'17" W 1317.24(M)  
N 89°58'17" E 1317.24(M)  
N 89°58'17" W 1317.24(M)  
786.56 (BRK)



LEGEND

- MCR MARICOPA COUNTY RECORDS
- COS CITY OF SCOTTSDALE
- BCF BRASS CAP IN HANDHOLE
- BCF BRASS CAP FLUSH
- FD FOLD
- ID IDENTIFICATION
- DE DRAINAGE EASEMENT
- EE ELECTRIC EASEMENT
- CEE CENTERLINE OF ELECTRIC EASEMENT
- (M) MEASURED DATA
- (R) RECORD DATA (TITLE REPORT)
- (R1) RECORD DATA BOOK 228, PAGE 45
- (R2) RECORD DATA BOOK 223, PAGE 1
- WV WATER VALVE
- PP POWER POLE
- CATV CABLE TV VAULT
- CTR CABLE TV RISER
- FH FIRE HYDRANT
- WMB WATER METER BOX
- WBP WATER BACKFLOW PREVENTOR
- AL AREA LIGHT
- ECB ELECTRIC CABINET
- LP LIGHT POLE
- TR TELEPHONE RISER
- SCO SEWER CLEANOUT
- (S) SEWER MANHOLE
- PROPERTY LINE
- ADJOINER LINE
- CENTER LINE
- EASEMENT LINE (AS NOTED)
- CONCRETE
- TREE OR BUSH
- PROPERTY CORNER SET 1/2" REBAR W/ CAP "AWLS 4537"



N 89°58'26" E 1316.36(M) GOLD DUST AVENUE  
SE CORNER NE 1/4, NE 1/4 SECTION 26 T.3N., R.4E. FD 1/2" REBAR W/NO ID.



ALTA/ACSM LAND TITLE SURVEY  
SECTION 26  
TOWNSHIP 3 NORTH, RANGE 4 EAST  
OF THE G.S.R.B. & M.  
MARICOPA COUNTY, ARIZONA

ALTA/ACSM LAND SURVEYING, INC.  
P.O. BOX 2170, CHANDLER, AZ 85244  
(480) 244-7630 (480) 243-4287



**PARKING STUDY / ANALYSIS**

**EXISTING CHAPEL BLDG**

SANCTUARY @1 FOR 4 SEATS 800 SEATS

TOTAL = 200 SPACES REQ'D

**EXISTING ADMIN BLDG**

OFFICES @1/250 SQ FT 2,046 SQ FT

TOTAL = 9 SPACES REQ'D

= 209 TOTAL PARKING SPACES REQUIRED

= 214 TOTAL PARKING SPACES PROVIDED

\* THE LIBRARY BUILDING & CLASSROOM BUILDING IS A  
NON-CONCURRENT USE WITH THE CHAPEL BUILDING.

**NEW LIBRARY BLDG**

LIBRARY @1/300 SQ FT 4,821 SQ FT

CONFERENCE RMS @1/50 SQ FT 982 SQ FT

OFFICE/STUDY RMS @1/250 SQ FT 1,904 SQ FT

TOTAL = 44 SPACES REQ'D

**NEW CLASSROOM BLDG**

CLASSROOMS @1/2 EMPLOYEES 4 EMPLOYEES

@1/4 STUDENTS 190 STUDENTS

TOTAL = 50 SPACES REQ'D

= 94 TOTAL PARKING SPACES REQUIRED

= 214 TOTAL PARKING SPACES ONSITE

**ACCESSIBLE PARKING**

ONSITE PARKING: 214 STALLS x 0.04 ADA = 9 SPACES REQ'D  
10 SPACES PROVIDED

**BICYCLE PARKING**

@1/10 PARKING SPACES 209 SPACES

TOTAL = 21 SPACES REQ'D  
28 SPACES PROVIDED

**PARKING STUDY / ANALYSIS**

**EXISTING CHAPEL BLDG**

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TOTAL = 21 SPACES REQ'D  
28 SPACES PROVIDED

# PRELIMINARY DRAINAGE REPORT

## Phoenix Seminary Campus Addition / Renovation

7901 E. Shea Blvd.  
Scottsdale, AZ 85260

Prepared For:



(602) 429-4975

Prepared by:



EXPIRES 12-31-17

### Sustainability Engineering Group

8280 E. Gelding Drive, Suite 101  
Scottsdale, AZ 85260  
480.588.7226 [www.azSEG.com](http://www.azSEG.com)

Project Number: 160303  
Submittal Date: May 17, 2016  
Resubmittal Date: December 16, 2016

Case No.: 5-UP-2016, 22-DR-2016

Plan Check No.: TBD



EXPIRES 12-31-17

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- FIGURE 4 - Proposed Site Layout

## APPENDIX:

- APPENIDX I - Rainfall Data
- APPENIDX II - Calculations
- APPENIDX III - Preliminary Grading Plan
- APPENIDX IV - ALTA/Topographic Survey

## 1. INTRODUCTION

This 50% Preliminary Drainage Report is being provided in conjunction with a Development Review request, case number TBD. This report represents the storm water analysis for the proposed disturbed area (expansion) for an existing chapel being expanded with 3 classrooms and a stand-alone library. The purpose of this report is to provide the hydrologic and hydraulic analyses, required by the City of Scottsdale, to support the proposed site plan for said development. This report includes discussions and calculations defining the storm water management concepts for collection, conveyance, and detention systems necessary to comply with the drainage requirements of the City of Scottsdale and Maricopa County. Preparation of this report has been done in accordance with the requirements of the City of Scottsdale Design Standards & Policies Manual (DS&PM) 2010<sup>1</sup>, and the Drainage Design Manuals for Maricopa County, Arizona, Volumes I<sup>2</sup> and Volume II<sup>3</sup>.

## 2. LOCATION AND PROJECT DESCRIPTION

### 2.1 LOCATION:

The project property consists of a parcel of land located on the south side of Shea Boulevard approximately 550' west of Hayden Road. It is located in a portion of Section 26, Township 3 North, Range 4 East of the Gila and Salt River Base and Meridian, Maricopa County,

- Arizona Parcel ID numbers APN: 175-47-008
- Street address is 7901 E. Shea Blvd.

Refer to **FIGURE 1 - Vicinity Map** for the project's location with respect to major cross streets.

### 2.2 EXISTING AND PROPOSED DEVELOPMENTS SURROUNDING THE SITE:

Existing site context related to surrounding developments is as follows:

- North: To the north there are two single family residential parcels zoned R1-35 and one commercial parcel zoned O-S belonging to Scottsdale County Club.
- West: The west side is bound by multiple residential single family homes. These homes are part of the La Cuesta Neighborhood.
- South: To south there is one residential single family home part of the La Cuesta Neighborhood and a parcel owned by the City of Scottsdale that is part of a wash to the east.
- East: Directly east of the site is a wash that is owned by the City of Scottsdale. This wash is part of the Fox Hollow Neighborhood.

### 2.3 EXISTING SITE DESCRIPTION:

Land ownership, as defined by ALTA/ACSM Land Title Survey by AW Land Surveying, LLC dated 05/18/16 includes 205,850.8 square feet or 4.726+/- acres of commercially developed land. City of Scottsdale zoning map designates this parcel as R1-35.

This site is fully developed as a chapel. The topography generally slopes from the north to the southwest corner at approximately one percent with a change in elevation of approximately seven (7) feet. Typical desert landscaping exists at the perimeter of the site. Refer to **FIGURE 2** for an aerial of the overall project existing conditions. Refer to **APPENDIX IV** for the ALTA / Topographic Survey.

#### 2.4 PROPOSED SITE DEVELOPMENT:

The project is proposing an addition of buildings. Development will include new classrooms and bathrooms adjacent to the south of the administration building and a stand-alone library. Parking lot islands will be revised to reflect new building locations. Refer to **FIGURE 4** for proposed site layout.

#### 2.5 FLOOD HAZARD ZONE:

As defined by the Flood Insurance Rate Map (FIRM) for Maricopa County, Arizona, and incorporated areas, Community number 045012, Panel number 1760 of 4425, as shown on Map Number 04013C1760L dated October 16, 2013 this site is designated as **Zone "X" shaded**. As such, it is defined as areas of 0.2-percent-annual-chance (or 500-year) flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and area protected by levees from the 100 year flood. Refer to **FIGURE 3** for the FIRM.

### 3. EXISTING DRAINAGE CONDITIONS

#### 3.1 OFF-SITE DRAINAGE PATTERNS:

This site is bound as follows:

- Screen walls exist to the west and south, protecting the site from runoff from the residential subdivisions.
- To the east by a wash. This wash flows from the north to the south.
- To the north by Shea Boulevard. The flows in the street area conveyed to east in curb and gutters / valley gutters to an existing catch basin that outlets into the wash.

No off-site flows impact the subject parcel. Refer to **APPENDIX IV** for the ALTA/topo Map indicating existing conditions.

#### 3.2 ON-SITE DRAINAGE:

This site is fully developed as a chapel. The topography generally slopes from the northeast to the southwest corner at approximately one percent with a change in elevation of approximately seven (7) feet. Typical desert landscaping exists at the perimeter of the site. Runoff from the parcel generally flows overland to the south and west where curb cuts convey all flows from the parking field to retention areas along the perimeter of the site. Ultimately, the runoff is released through a weir structure with an outlet orifice located near the southeast corner of the site, into the adjacent wash.

#### 3.3 EXISTING STORM SEWER SYSTEMS:

There are no apparent storm sewers existing on the parcel. Runoff is conveyed by overland flow to existing ditch / retention areas.

### 4. PROPOSED STORM WATER MANAGEMENT

#### 4.1 DESIGN INTENT:

A majority of the on-site drainage will be conveyed by sheet flow through the parking field to existing retention basins and swales located at the perimeter of site. The small portion of run-off that falls between building will be conveyed over concrete to area drains and ultimately into the adjacent wash through a 12" pipe. This project is an addition to existing buildings and a new building to be constructed

within the existing paved parking lot. Therefore, the City of Scottsdale specifies that on-site retention shall be provided to store the difference between the pre vs. post development runoff from the 100-year 2-hour storm event while maintaining existing storage, if any. For this project, City of Scottsdale staff determined no stormwater storage is required since change in runoff is negligible (less than 1%).

The proposed buildings will be constructed with consistent finish floor elevations. The surrounding parking area will be graded in the way that flows will go west and south through existing and proposed curb cuts, into the existing retention areas, and ultimately flow into the wash to the east.

The existing City of Scottsdale wash adjacent along the easterly property line will not be impacted by construction efforts.

Refer to Section 5 below for a discussion on proposed finished floor elevations. Refer to **Appendix III** for the Preliminary Grading & Drainage Plan.

#### 4.2 CHARACTERISTICS OF BASINS:

The proposed drainage areas are comprised of mixed use buildings and associated parking areas, drives and landscape areas. Based on Figure 4.1-4 of the DS&PM, runoff coefficients for the 100 year storm event used are as follows:

- C=0.30 for grassed areas
- C=0.45 for desert landscaping
- C=0.95 for impervious areas.

**HYDROLOGIC ANALYSIS:** The hydrologic analysis is determined using the procedures in the City of Scottsdale Design Standards & Policies Manual and the Drainage Design Manual for Maricopa County, Arizona, Volume I. The Rational Method was utilized to compute the on-site peak discharges. The following established the Rational Method equation and the basic input data required:

$$Q=C_{wt}IA$$

Where:  $C_{wt}$  = The runoff coefficient relating runoff to rainfall  
 $I$  = Average rainfall intensity in inches/hour, lasting for  $T_c$  (5.70 in/hr)  
 $T_c$  = The time of concentration (minutes)- Use 10 minutes  
 $A$  = The contributing drainage area in acres

#### $C_{wt}$ CALCULATIONS:

- Pre-development (Refer to EXHIBIT "A" in Appendix II )
  - Landscape area (Desert): 1.633 Ac. @  $C_{wt}=0.45$
  - Impervious areas (Roof / Pavement): 3.093 Ac. @  $C_{wt}=0.95$
  - $C_{wt}$ : 4.726 Ac. @  $C_{wt} = 0.777$
  
- Post-development (Refer to EXHIBIT "B" in Appendix II )
  - Landscape area (Desert): 1.607 Ac. @  $C_{wt}=0.45$



- Impervious Ares (Roof / Pavement): 3.119 Ac. @  $C_{wt}=0.95$   
 $C_{wt}$ : 4.726 Ac. @  $C_{wt} = 0.780$

#### **RUNOFF RATE:**

$$Q_{100} \text{ PRE} = 0.777 * 5.70 \text{ in/hr} * 4.726 \text{ ac} = \mathbf{20.93 \text{ CFS}}$$

$$Q_{100} \text{ POST} = 0.780 * 5.70 \text{ in/hr} * 4.726 \text{ ac} = \mathbf{21.01 \text{ CFS}}$$

Proposed development increases runoff by  $21.01 - 20.93 = 0.08 \text{ CFS}$  or 0.4%.

#### **4.3 OFF-SITE FLOW:**

No off-site flows contribute to this site.

#### **4.4 STORMWATER RETENTION:**

Stormwater retention is not required on this project, the increase in runoff is less than 1%.

#### **4.5 STREET CAPACITY CALCULATIONS:**

No streets are part of this site.

#### **4.6 STORM DRAIN INLET CALCULATIONS:**

There are no inlets associated with this project.

## **5. FLOOD SAFETY FOR DWELLINGS**

### **5.1 FINISHED FLOOR ELEVATIONS**

The ultimate outfall for this project is located at the southwest corner of the parking lot at an elevation of approximately 1351.88. The finished floor of the classrooms attached to the administration building will match the existing building at 1357.32. The library will have a finished floor of 1357.30. All building finished floor elevations will be set a minimum of 14 inches above emergency overflow points, and a minimum of 12 inches above the 100-year high-water elevation of any adjacent streets and drainage paths. This will ensure that each building will be well above the 100-year water level.

## **6. CONCLUSIONS**

### **6.1 OVERALL PROJECT:**

1. Off-site storm water does not impact this project
2. The finish floor elevations will be designed a minimum of 12 inches above the 100-year water surface in adjacent streets and drainage paths and a minimum of 14 inches above the historical outlet of the lot.

### **6.2 PROJECT PHASING:**

This development is anticipated to be constructed in a single phase.

## **7. WARNING AND DISCLAIMER OF LIABILITY**

RE: following page.



# 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.

\_\_\_\_\_   
 Plan Check No.

\_\_\_\_\_   
 Owner or Agent

\_\_\_\_\_   
 Date

## 8. REFERENCES

1. *Design Standards & Policies Manual, City of Scottsdale – January 2010*
2. *Drainage Design Manual for Maricopa County, Arizona, Volume I, Hydrology, Flood Control District of Maricopa County, Fourth Edition, November 18, 2009 amended through February 10, 2011*
3. *Drainage Design Manual for Maricopa County, Arizona, Volume II, Hydraulics, Flood Control District of Maricopa County, January 28, 1996*



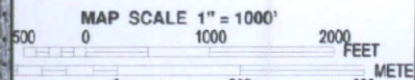
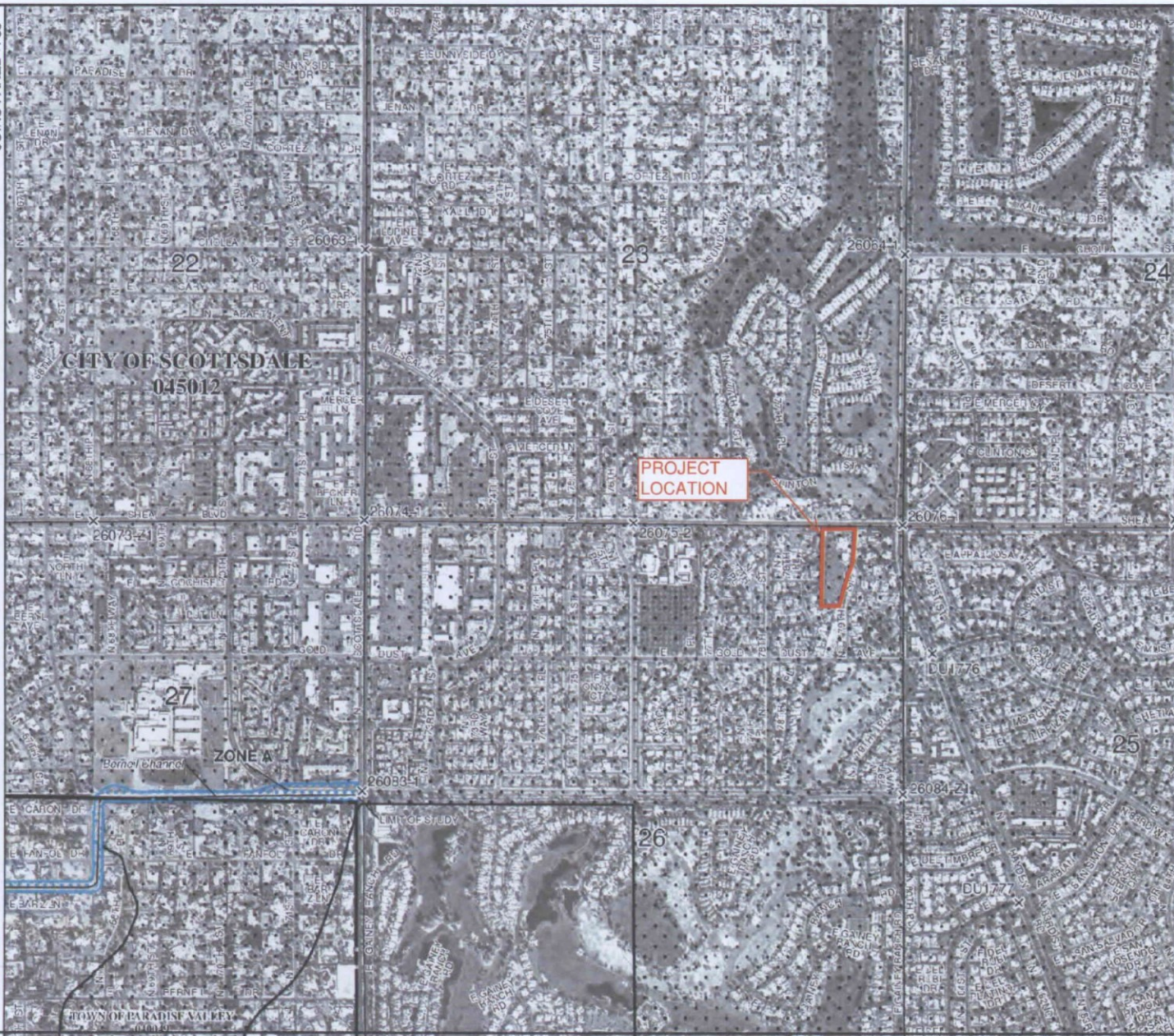
**FIGURE 1  
VICINITY MAP**



JOINS PANEL 1755

940000 FT

935000 FT



NFIP PANEL 1760L

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

PANEL 1760 OF 4425

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

**CONTAINS**

COMMUNITY	NUMBER	PANEL	SUFFIX
MARICOPA COUNTY	045012	1760	
PHOENIX VALLEY CORP OR	045013	1760	
PHOENIX CITY OF	045021	1760	
SCOTTSDALE CITY OF	045042	1760	

NOTICE TO USER: The Map Number shown above should be used when citing map orders. The Community Number shown above should be used on inquiries regarding the subject community.



MAP NUMBER

04013C1760L

MAP REVISED

OCTOBER 16, 2013

Federal Emergency Management Agency

**FIGURE 3**

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

**PROJECT DATA**

**PROJECT CONTACTS** OWNER  
SCOTTSDALE BIBLE CHURCH  
781 E. Shea Blvd  
Scottsdale, AZ 85260

ARCHITECT  
CCBG ARCHITECTS  
130 E. Buchanan St.  
Phoenix, AZ 85004  
602.252.2211  
CONTACT: Paul Ledebach

**PROJECT ADDRESS** 781 E. Shea Blvd  
Scottsdale, AZ 85260

**PROJECT DESCRIPTION** THE EXPANSION WILL INCLUDE A ONE STORY ADDITION TO THE EXISTING ADMINISTRATION BUILDING AND A NEW 19,363 SF ONE STORY LIBRARY. THE EXISTING ADMINISTRATION BUILDING WILL RECEIVE NEW INTERIOR FINISHES. A NEW CENTRAL DROP OFF AREA WILL BE INCORPORATED INTO THE EXISTING PARKING CONFIGURATION. THE ARCHITECTURE OF THE NEW LIBRARY BLENDS WITH THE EXISTING BUILDINGS BOTH IN MASSING AND FORM.

**GOVERNING** ALL CONSTRUCTION SHALL COMPLY WITH THE FOLLOWING

**BUILDING CODES** CODES AND AMENDMENTS PER THEIR ADOPTING ORDINANCES  
2012 Scottsdale Building Safety Administrative Code  
2012 International Energy Conservation Code (IECC)  
2012 International Fire Code (IFC)  
2012 International Existing Building Code (IEBC)  
2012 International Building Code (IBC)  
2012 International Mechanical Code (IMC)  
2011 National Electrical Code (NEC)  
2012 International Plumbing Code (IPC)  
2012 International Fire Code (IFC)  
Current Zoning Ordinances

**ZONING & PERMITS** 175-47-008 (R1-18) & FOOTHILLS OVERLAY

**OCCUPANCY** EXISTING CHAPEL BLDG A-3  
EXISTING ADMIN BLDG B  
NEW LIBRARY BLDG A-3  
NEW CLASSROOM BLDG E

**SITE AREA/COVERAGE** 175-47-008 208,981 SF = 4.73 ACRES (NET)  
226,449 SF, 5.24 ACRES (GROSS)  
31,876 SQ. FT. = 15.5%

**SETBACKS** 175-47-008  
SHEA BLVD 40'-0" SETBACK  
SIDE YARD (EAST) 15'-0" SETBACK  
SIDE YARD (WEST) 15'-0" SETBACK  
REAR YARD 35'-0" SETBACK

**EXISTING CHAPEL BLDG** 13,382 SF  
**EXISTING ADMIN BLDG** 4,838 SF  
**NEW LIBRARY BLDG** 19,363 SF  
**NEW CLASSROOM BLDG** 4,239 SF  
**TOTAL** 31,878 SF

**EXISTING ADMIN BLDG OFFICES** @1250 SQ FT = 2,941 SQ FT  
**TOTAL** = 9 SPACES REQ'D

**NEW LIBRARY BLDG** @1400 SQ FT = 4,893 SQ FT  
**CONFERENCE RMS** @480 SQ FT = 888 SQ FT  
**OFFICE/STUDY RMS** @1250 SQ FT = 1,738 SQ FT  
**TOTAL** = 38 SPACES REQ'D

**NEW CLASSROOM BLDG** @1100 SQ FT = 4,620 SQ FT  
**CLASSROOMS** @144 STUDENTS = 10 STUDENTS  
**TOTAL** = 50 SPACES REQ'D

**ACCESSIBLE PARKING** 214 STALLS @ 0.84 ADA = 9 SPACES REQ'D  
10 SPACES PROVIDED

**BICYCLE PARKING** @1/10 PARKING SPACES = 209 SPACES  
**TOTAL** = 21 SPACES REQ'D  
28 SPACES PROVIDED

**SITE COVERAGE - 20% ALLOWED**  
ACTUAL: 31,876 SQ. FT. = 15.5%

**LIBRARY BLDG HEIGHT:** MAX PER ORDINANCE FOR R1-30: 30'-0"  
F.F. ELEVATION 1357.32' + 29'-10" = 1387.18'  
T.O.C. @ MIDPOINT OF SHEA = 1357.62'  
**TOTAL** = 29.32' + 30'

**ACTUAL NORTH PARAPET OCCUPIED SPACE:** 29'-10"

**CLASSROOM BLDG HEIGHT:** MAX PER ORDINANCE FOR R1-30: 30'-0"  
F.F. ELEVATION 1297.32' + 23'-0" = 1300.32'  
T.O.C. @ MIDPOINT OF SHEA = 1307.62'  
**TOTAL** = 22.7' + 30'

**ACTUAL NORTH PARAPET OCCUPIED SPACE:** 23'-0"

**CONSTRUCTION TYPE** EXISTING CHAPEL BLDG V-8  
EXISTING ADMIN BLDG V-8  
NEW LIBRARY BLDG V-8  
NEW CLASSROOM BLDG V-8

**SPRINKLER SYSTEM** EXISTING CHAPEL BLDG FULLY SPRINKLERED  
EXISTING ADMIN BLDG FULLY SPRINKLERED  
NEW LIBRARY BLDG FULLY SPRINKLERED  
NEW CLASSROOM BLDG FULLY SPRINKLERED

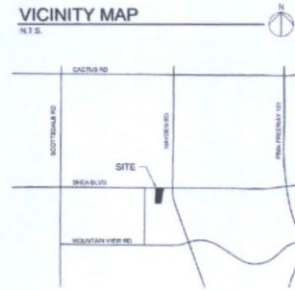
**BUILDING AREA:** EXISTING CHAPEL BLDG 13,382 SF  
EXISTING ADMIN BLDG 4,838 SF  
NEW LIBRARY BLDG 19,363 SF  
NEW CLASSROOM BLDG 4,239 SF

**SENSITIVE BUILDING DESIGN CONCEPT PLAN AND PROPOSED DESIGN GUIDELINES**

- NO REFLECTIVE BUILDING MATERIALS WILL BE USED.
- PAINT COLORS THAT ARE USED FOR THE NEW BUILDINGS WILL NOT EXCEED A LIGHT REFLECTIVE VALUE (LRV) GREATER THAN 45.
- EXTERIOR PAINT AND MATERIAL COLORS WILL NOT EXCEED A VALUE OF 6 AS INDICATED IN THE MURSELL BOOK OF COLOR.
- THE USE OF 'TURF' WILL NOT BE INCORPORATED INTO THE SITE.
- ALL PARKING AND STAGING AREAS WILL BE SCREENED FROM THE STREET AND NEIGHBORING PROPERTIES BY WALLS AND VEGETATION.

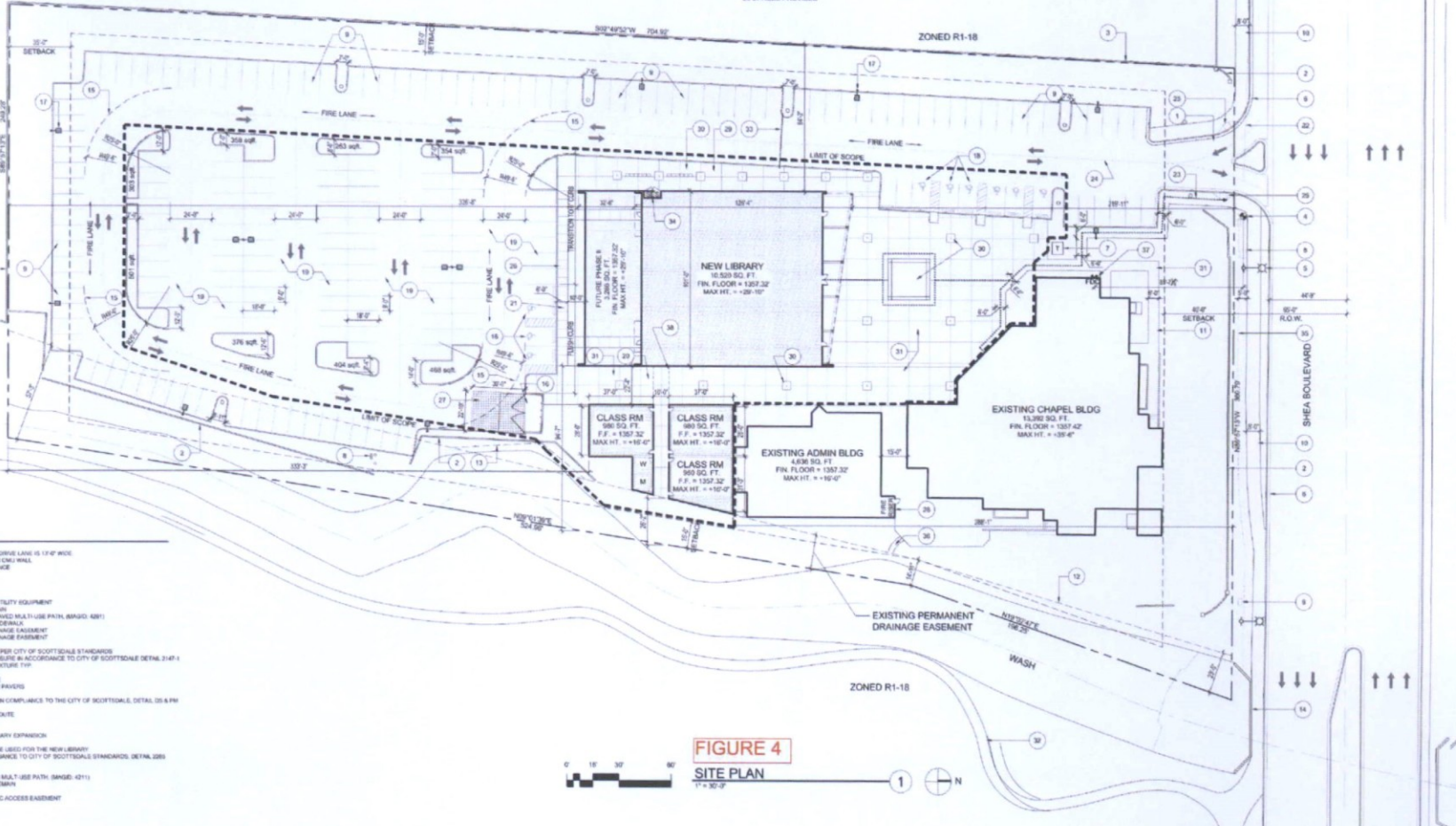
**CONSERVATION AREA, SCENIC CORRIDOR, VISTA CORRIDOR PLAN**

- THE OBJECTIVE FOR THE NEW DESIGN IS TO PRESERVE THE SCENIC CORRIDOR BY PROTECTING THE CHARACTER OF THE NATURAL, SCORPION DESERT LANDSCAPE ALONG THE EXISTING WASH AND SHEA BLVD.
- THE LANDSCAPE ALONG SHEA BLVD. AND THE WASH ARE CURRENTLY IN EXCELLENT CONDITION AND THE GOAL IS TO KEEP THESE AREAS UNDISTURBED.
- THE TWO (2) NEW ACCESSORY BUILDINGS ARE POSITIONED ON THE SITE WITH A GREATER SETBACK WHICH CONTROLS THE VISUAL IMPACT OF THE BUILDINGS HEIGHT AND SIZE FROM THE CORRIDOR.
- THE DESIGN WILL STRENGTHEN THE PEDESTRIAN SCALE ALONG THE CORRIDOR BY PRESERVING THE EXISTING MULTITUDE PATH WITHIN THE SCENIC EASEMENT.
- THE EXISTING WASH WILL REMAIN IN A NATURAL STATE AND OPEN FOR WILDLIFE CORRIDOR AND VISUAL ACCESS.
- ALL NEW PLANTING WILL BE LOW WATER USE PLANT MATERIAL AND IT WILL MATCH THE SURROUNDING NATIVE VEGETATION.



**CCBG**  
Architects, Inc.  
PHOENIX, AZ 85004  
102 E. BUCKHAM BLVD. SUITE 201  
P. 602.252.2211 F. 602.252.0109

**PRELIMINARY NOT FOR CONSTRUCTION**



**KEYNOTES**

- EXISTING DRIVEWAY. EACH DRIVE LANE IS 12'-0" WIDE.
- EXISTING 2'-0" HIGH CONCRETE WALL.
- EXISTING 6'-0" HIGH CHAIN LINK FENCE.
- EXISTING FIRE HYDRANT.
- EXISTING STREET LIGHTS.
- EXISTING CURB & GUTTER.
- EXISTING TRANSFORMER.
- EXISTING ABOVE GROUND UTILITY EQUIPMENT.
- EXISTING PARKING TO REMAIN.
- EXISTING 6'-0" CONCRETE PAVED MULT-USE PATH (BAND: 481).
- EXISTING 6'-0" CONCRETE SIDEWALK.
- EXISTING PERMANENT DRAINAGE EASEMENT.
- EXISTING TEMPORARY DRAINAGE EASEMENT.
- EXISTING CURB CUT.
- FIRE LANE & TURNING RADIUS PER CITY OF SCOTTSDALE STANDARDS.
- NEW DOUBLE WASHING MACHINE IN ACCORDANCE TO CITY OF SCOTTSDALE DETAIL 2147-1.
- NEW PARKING LOT LIGHT FUTURE TYP.
- NEW ACCESSIBLE PARKING.
- NEW PARKING & DRIVE LANE.
- DISCREET CONCRETE DRIVEWAYS.
- NEW CONCRETE SIDEWALK.
- EXISTING WEAR SURFACE IN ACCORDANCE TO THE CITY OF SCOTTSDALE, DETAIL DS & PM FIGURE 6.3.3.
- PROPOSED ACCESSIBLE ROUTE.
- VEHICULAR CIRCULATION.
- EXISTING ADA RAMP.
- FUTURE BOUNDARY OF LIBRARY EXPANSION.
- BENCH TOP.
- EXISTING FIRE RISER WILL BE USED FOR THE NEW LIBRARY.
- BICYCLE PARKING IN COMPLIANCE TO CITY OF SCOTTSDALE STANDARDS, DETAIL 2285.
- PLANTER.
- LANDSCAPE.
- EXISTING CONCRETE PAVED MULT-USE PATH (BAND: 4211).
- EXISTING FENCE (SOUTH TO REMAIN).
- SEED PANEL.
- 6'-0" NON-PERFORATED PUBLIC ACCESS EASEMENT.

**FIGURE 4**  
**SITE PLAN**  
1" = 30'-0"

A REMODEL AND ADDITION FOR  
**PHOENIX SEMINARY**

7801 EAST SHEA BLVD  
SCOTTSDALE, AZ 85260

**ISSUE**

DATE	REV	FOR
7.7.14		

Drawn: RL  
Checked: P.J.L.  
Job Number: 1605  
Drawing: SITE PLAN  
Sheet: **A1.1**



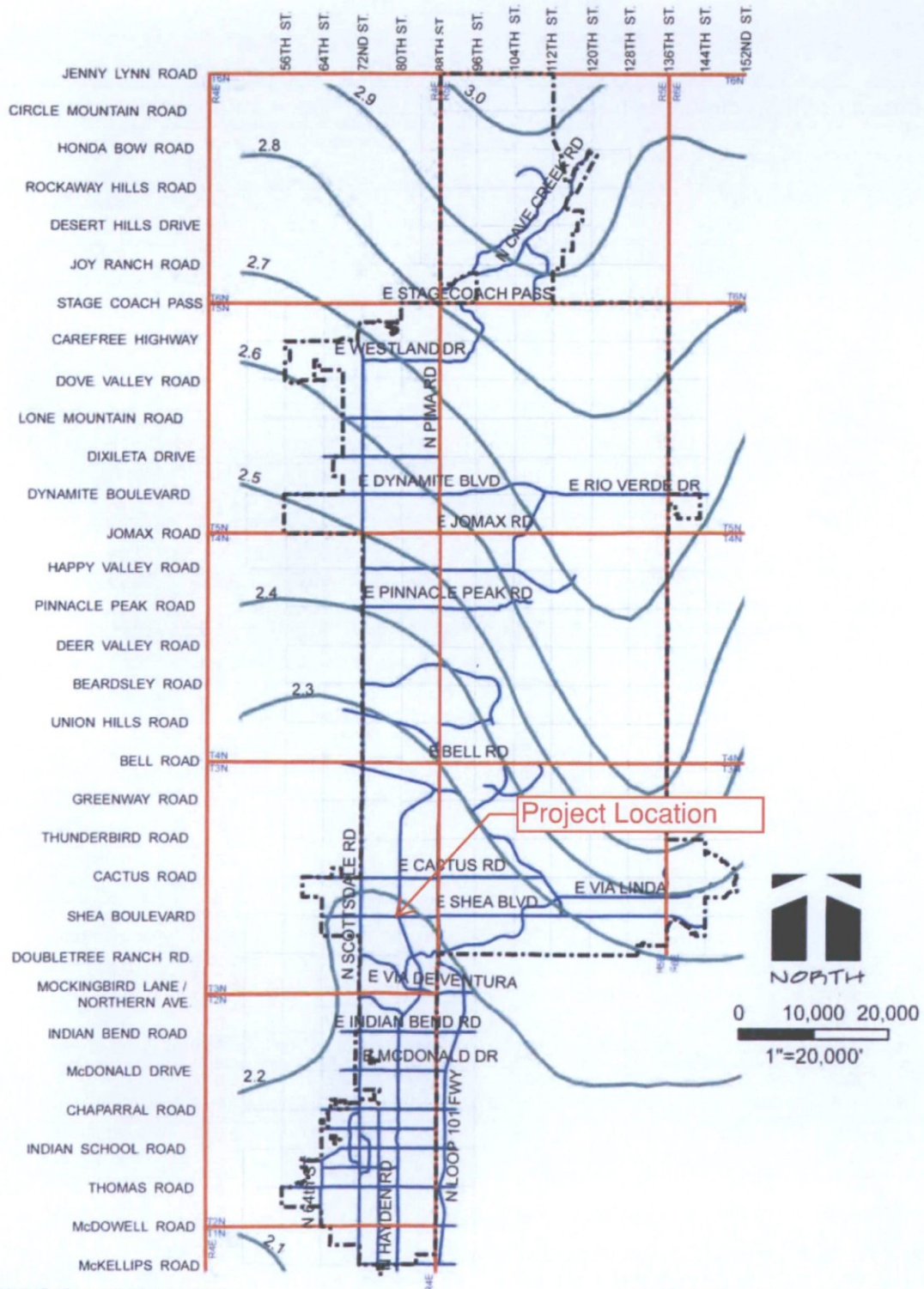
*"LEED®ing and Developing Smart Projects"*

*APPENDIX I*  
*Rainfall Data*

8280 E. Gelding Dr., Suite 101  
Scottsdale, AZ 85260



## 100 Year 2 Hour Precipitation in Inches



Map Produced By Geographic Information Systems  
04/03/2009

Rainfall Data From NOAA Atlas 14 Vol. 1



NOAA Atlas 14, Volume 1, Version 5  
 Location name: Scottsdale, Arizona, US\*  
 Latitude: 33.5803°, Longitude: -111.9103°  
 Elevation: 1353 ft\*  
 \* source: Google Maps



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 & aerials](#)

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour) <sup>1</sup>										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	2.24 (1.86-2.74)	2.93 (2.45-3.58)	3.95 (3.28-4.81)	4.74 (3.91-5.76)	5.82 (4.72-7.03)	6.64 (5.33-7.98)	7.49 (5.90-8.99)	8.34 (6.46-9.98)	9.49 (7.16-11.4)	10.4 (7.67-12.5)
10-min	1.70 (1.42-2.08)	2.23 (1.86-2.72)	3.01 (2.49-3.67)	3.61 (2.98-4.39)	4.43 (3.59-5.36)	5.05 (4.06-6.07)	5.70 (4.49-6.84)	6.35 (4.91-7.60)	7.22 (5.45-8.67)	7.89 (5.84-9.47)
15-min	1.41 (1.17-1.72)	1.84 (1.54-2.25)	2.48 (2.06-3.03)	2.98 (2.46-3.63)	3.66 (2.97-4.43)	4.17 (3.35-5.02)	4.71 (3.71-5.65)	5.24 (4.06-6.28)	5.97 (4.51-7.16)	6.52 (4.82-7.83)
30-min	0.948 (0.788-1.16)	1.24 (1.04-1.52)	1.67 (1.39-2.04)	2.01 (1.66-2.44)	2.46 (2.00-2.98)	2.81 (2.25-3.38)	3.17 (2.50-3.81)	3.53 (2.73-4.23)	4.02 (3.03-4.82)	4.39 (3.25-5.27)
60-min	0.587 (0.487-0.717)	0.766 (0.641-0.937)	1.03 (0.858-1.26)	1.24 (1.03-1.51)	1.52 (1.24-1.84)	1.74 (1.40-2.09)	1.96 (1.55-2.35)	2.19 (1.69-2.62)	2.49 (1.88-2.98)	2.72 (2.01-3.26)
2-hr	0.343 (0.289-0.410)	0.444 (0.376-0.532)	0.592 (0.498-0.704)	0.704 (0.586-0.838)	0.860 (0.710-1.02)	0.976 (0.794-1.15)	1.10 (0.878-1.29)	1.22 (0.960-1.44)	1.39 (1.07-1.63)	1.52 (1.14-1.79)
3-hr	0.255 (0.215-0.312)	0.327 (0.277-0.401)	0.427 (0.360-0.521)	0.506 (0.422-0.614)	0.618 (0.507-0.745)	0.707 (0.572-0.847)	0.799 (0.635-0.957)	0.896 (0.700-1.07)	1.03 (0.780-1.23)	1.14 (0.841-1.36)
6-hr	0.154 (0.132-0.183)	0.194 (0.167-0.231)	0.248 (0.212-0.293)	0.292 (0.247-0.343)	0.350 (0.293-0.410)	0.396 (0.325-0.462)	0.444 (0.360-0.516)	0.492 (0.392-0.574)	0.559 (0.433-0.651)	0.611 (0.463-0.713)
12-hr	0.085 (0.073-0.100)	0.107 (0.092-0.126)	0.135 (0.116-0.158)	0.157 (0.134-0.183)	0.187 (0.157-0.217)	0.209 (0.175-0.243)	0.233 (0.191-0.270)	0.257 (0.208-0.298)	0.288 (0.228-0.337)	0.313 (0.243-0.368)
24-hr	0.050 (0.044-0.058)	0.063 (0.055-0.073)	0.081 (0.071-0.094)	0.096 (0.083-0.111)	0.116 (0.100-0.134)	0.132 (0.113-0.152)	0.148 (0.126-0.171)	0.165 (0.139-0.191)	0.189 (0.157-0.218)	0.208 (0.170-0.241)
2-day	0.027 (0.023-0.031)	0.034 (0.030-0.039)	0.044 (0.039-0.051)	0.053 (0.046-0.061)	0.064 (0.055-0.074)	0.073 (0.063-0.084)	0.083 (0.070-0.096)	0.093 (0.078-0.107)	0.107 (0.088-0.123)	0.118 (0.096-0.137)
3-day	0.019 (0.017-0.022)	0.024 (0.021-0.028)	0.032 (0.028-0.037)	0.038 (0.033-0.044)	0.047 (0.040-0.053)	0.053 (0.046-0.061)	0.061 (0.052-0.070)	0.068 (0.058-0.079)	0.079 (0.066-0.091)	0.088 (0.072-0.101)
4-day	0.015 (0.013-0.017)	0.019 (0.017-0.022)	0.026 (0.022-0.029)	0.031 (0.027-0.035)	0.038 (0.033-0.043)	0.043 (0.037-0.050)	0.050 (0.042-0.057)	0.056 (0.048-0.064)	0.065 (0.055-0.075)	0.073 (0.060-0.083)
7-day	0.010 (0.009-0.011)	0.012 (0.011-0.014)	0.016 (0.014-0.019)	0.020 (0.017-0.023)	0.024 (0.021-0.028)	0.028 (0.024-0.032)	0.032 (0.027-0.037)	0.036 (0.031-0.042)	0.042 (0.035-0.048)	0.047 (0.039-0.054)
10-day	0.007 (0.006-0.008)	0.009 (0.008-0.011)	0.012 (0.011-0.014)	0.015 (0.013-0.017)	0.018 (0.016-0.021)	0.021 (0.018-0.024)	0.024 (0.020-0.027)	0.027 (0.023-0.031)	0.031 (0.026-0.036)	0.035 (0.029-0.040)
20-day	0.005 (0.004-0.005)	0.006 (0.005-0.007)	0.008 (0.007-0.009)	0.009 (0.008-0.010)	0.011 (0.010-0.013)	0.013 (0.011-0.014)	0.014 (0.012-0.016)	0.016 (0.013-0.018)	0.018 (0.015-0.020)	0.019 (0.016-0.022)
30-day	0.004 (0.003-0.004)	0.005 (0.004-0.005)	0.006 (0.005-0.007)	0.007 (0.006-0.008)	0.009 (0.007-0.010)	0.010 (0.008-0.011)	0.011 (0.009-0.012)	0.012 (0.010-0.014)	0.014 (0.012-0.016)	0.015 (0.013-0.017)
45-day	0.003 (0.002-0.003)	0.004 (0.003-0.004)	0.005 (0.004-0.005)	0.005 (0.005-0.006)	0.007 (0.006-0.007)	0.007 (0.006-0.008)	0.008 (0.007-0.009)	0.009 (0.008-0.010)	0.010 (0.009-0.012)	0.011 (0.009-0.012)
60-day	0.002 (0.002-0.003)	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 (0.006-0.008)	0.007 (0.006-0.008)	0.008 (0.007-0.009)	0.009 (0.007-0.010)

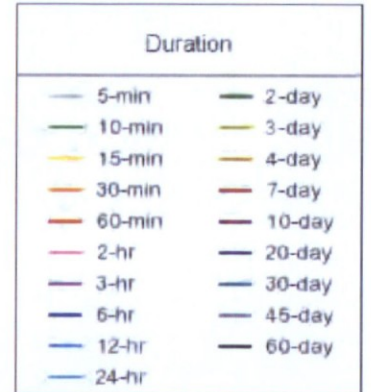
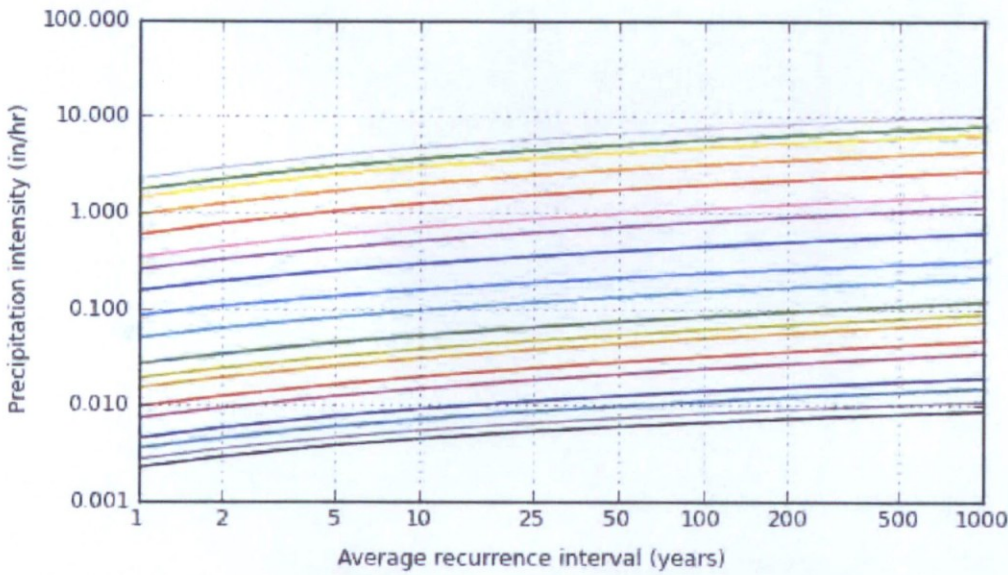
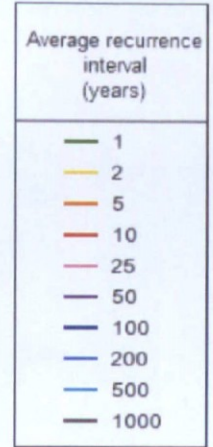
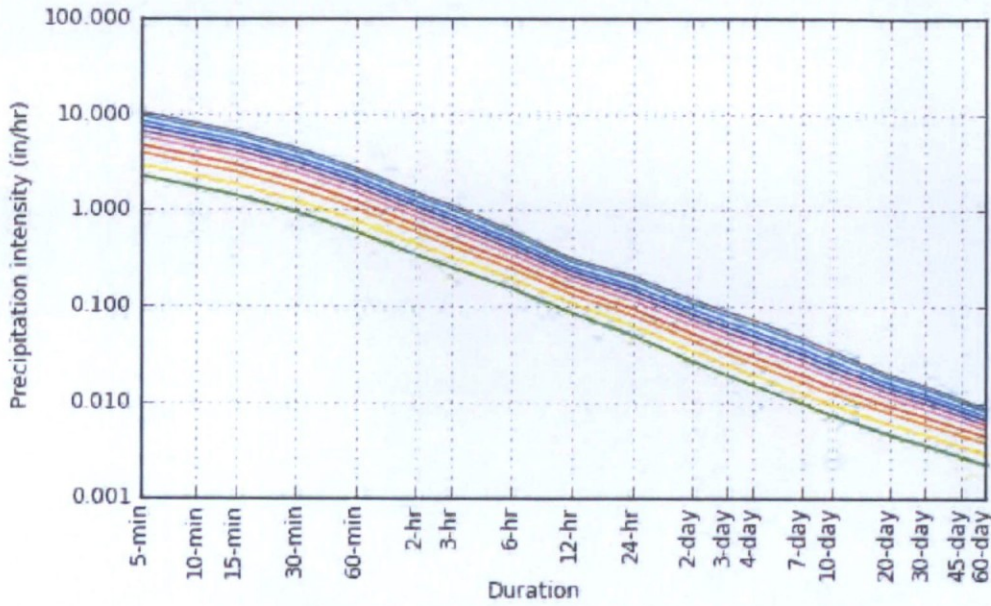
<sup>1</sup> Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration 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: 33.5803°, Longitude: -111.9103°



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## Maps & aerials

Small scale terrain





Large scale terrain



Large scale map



Large scale aerial





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[National Water Center](#)  
1325 East West Highway  
Silver Spring, MD 20910  
Questions?: [HDSC.Questions@noaa.gov](mailto:HDSC.Questions@noaa.gov)

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NOAA Atlas 14, Volume 1, Version 5  
 Location name: Scottsdale, Arizona, US\*  
 Latitude: 33.5803°, Longitude: -111.9103°  
 Elevation: 1353 ft\*  
 \* source: Google Maps



POINT PRECIPITATION FREQUENCY ESTIMATES

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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) <sup>1</sup>										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.187 (0.155-0.228)	0.244 (0.204-0.298)	0.329 (0.273-0.401)	0.395 (0.326-0.480)	0.485 (0.393-0.586)	0.553 (0.444-0.665)	0.624 (0.492-0.749)	0.695 (0.538-0.832)	0.791 (0.597-0.949)	0.864 (0.639-1.04)
10-min	0.284 (0.236-0.347)	0.371 (0.310-0.454)	0.501 (0.415-0.611)	0.602 (0.497-0.731)	0.738 (0.599-0.893)	0.841 (0.676-1.01)	0.950 (0.748-1.14)	1.06 (0.819-1.27)	1.20 (0.909-1.45)	1.31 (0.973-1.58)
15-min	0.352 (0.293-0.430)	0.459 (0.385-0.562)	0.621 (0.515-0.757)	0.745 (0.615-0.907)	0.914 (0.742-1.11)	1.04 (0.837-1.25)	1.18 (0.927-1.41)	1.31 (1.01-1.57)	1.49 (1.13-1.79)	1.63 (1.21-1.96)
30-min	0.474 (0.394-0.580)	0.619 (0.518-0.758)	0.836 (0.693-1.02)	1.00 (0.829-1.22)	1.23 (0.999-1.49)	1.40 (1.13-1.69)	1.58 (1.25-1.90)	1.76 (1.37-2.12)	2.01 (1.52-2.41)	2.19 (1.62-2.64)
60-min	0.587 (0.487-0.717)	0.766 (0.641-0.937)	1.03 (0.858-1.26)	1.24 (1.03-1.51)	1.52 (1.24-1.84)	1.74 (1.40-2.09)	1.96 (1.55-2.35)	2.19 (1.69-2.62)	2.49 (1.88-2.98)	2.72 (2.01-3.26)
2-hr	0.686 (0.578-0.820)	0.887 (0.752-1.06)	1.18 (0.995-1.41)	1.41 (1.17-1.68)	1.72 (1.42-2.03)	1.95 (1.59-2.30)	2.20 (1.75-2.58)	2.44 (1.92-2.87)	2.77 (2.13-3.26)	3.03 (2.28-3.58)
3-hr	0.766 (0.646-0.936)	0.981 (0.831-1.20)	1.28 (1.08-1.56)	1.52 (1.27-1.84)	1.86 (1.52-2.24)	2.12 (1.72-2.54)	2.40 (1.91-2.87)	2.69 (2.10-3.21)	3.09 (2.34-3.69)	3.41 (2.53-4.08)
6-hr	0.922 (0.793-1.09)	1.16 (1.00-1.38)	1.49 (1.27-1.76)	1.75 (1.48-2.05)	2.10 (1.75-2.46)	2.37 (1.95-2.77)	2.66 (2.15-3.09)	2.95 (2.35-3.44)	3.35 (2.59-3.90)	3.66 (2.77-4.27)
12-hr	1.02 (0.881-1.20)	1.29 (1.11-1.51)	1.63 (1.40-1.90)	1.89 (1.61-2.21)	2.25 (1.90-2.62)	2.52 (2.10-2.93)	2.81 (2.31-3.26)	3.09 (2.51-3.59)	3.48 (2.75-4.05)	3.77 (2.93-4.43)
24-hr	1.19 (1.04-1.38)	1.51 (1.33-1.76)	1.95 (1.70-2.27)	2.30 (2.00-2.67)	2.78 (2.40-3.22)	3.16 (2.71-3.65)	3.56 (3.02-4.11)	3.97 (3.34-4.58)	4.54 (3.76-5.23)	4.99 (4.08-5.77)
2-day	1.28 (1.12-1.48)	1.63 (1.42-1.89)	2.13 (1.85-2.46)	2.53 (2.19-2.92)	3.08 (2.65-3.55)	3.52 (3.00-4.05)	3.98 (3.37-4.59)	4.46 (3.74-5.15)	5.12 (4.24-5.92)	5.65 (4.62-6.56)
3-day	1.37 (1.20-1.57)	1.75 (1.53-2.01)	2.29 (2.00-2.64)	2.73 (2.38-3.14)	3.35 (2.90-3.85)	3.84 (3.30-4.41)	4.37 (3.72-5.01)	4.92 (4.16-5.66)	5.69 (4.75-6.55)	6.31 (5.21-7.28)
4-day	1.46 (1.28-1.67)	1.86 (1.64-2.13)	2.46 (2.15-2.81)	2.94 (2.56-3.36)	3.62 (3.14-4.14)	4.17 (3.60-4.77)	4.76 (4.08-5.44)	5.38 (4.57-6.17)	6.26 (5.25-7.17)	6.98 (5.79-8.01)
7-day	1.64 (1.43-1.89)	2.09 (1.83-2.41)	2.77 (2.41-3.19)	3.32 (2.88-3.81)	4.09 (3.53-4.69)	4.71 (4.05-5.40)	5.38 (4.58-6.16)	6.08 (5.14-6.98)	7.08 (5.91-8.12)	7.88 (6.51-9.06)
10-day	1.77 (1.55-2.03)	2.26 (1.98-2.60)	2.99 (2.61-3.42)	3.57 (3.11-4.08)	4.38 (3.80-5.00)	5.04 (4.34-5.74)	5.74 (4.91-6.54)	6.47 (5.49-7.38)	7.49 (6.29-8.56)	8.32 (6.91-9.52)
20-day	2.18 (1.92-2.49)	2.81 (2.47-3.20)	3.71 (3.26-4.22)	4.39 (3.84-4.99)	5.31 (4.63-6.03)	6.01 (5.22-6.83)	6.73 (5.82-7.66)	7.46 (6.41-8.50)	8.44 (7.20-9.64)	9.20 (7.79-10.5)
30-day	2.55 (2.24-2.91)	3.28 (2.89-3.74)	4.33 (3.80-4.92)	5.13 (4.49-5.82)	6.19 (5.40-7.03)	7.01 (6.09-7.95)	7.86 (6.79-8.90)	8.71 (7.49-9.86)	9.87 (8.42-11.2)	10.8 (9.11-12.2)
45-day	2.94 (2.60-3.35)	3.80 (3.35-4.31)	5.00 (4.41-5.67)	5.89 (5.19-6.68)	7.07 (6.20-8.01)	7.96 (6.95-9.01)	8.85 (7.70-10.0)	9.75 (8.44-11.1)	10.9 (9.39-12.4)	11.8 (10.1-13.5)
60-day	3.25 (2.88-3.67)	4.20 (3.72-4.74)	5.51 (4.88-6.23)	6.48 (5.72-7.31)	7.73 (6.80-8.72)	8.65 (7.59-9.77)	9.58 (8.37-10.8)	10.5 (9.13-11.9)	11.7 (10.1-13.2)	12.6 (10.8-14.3)

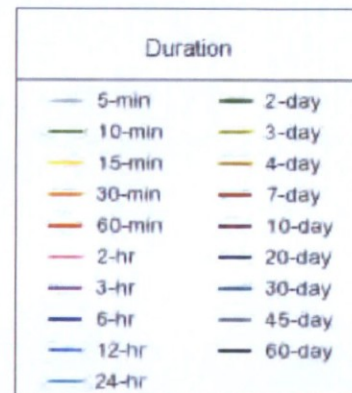
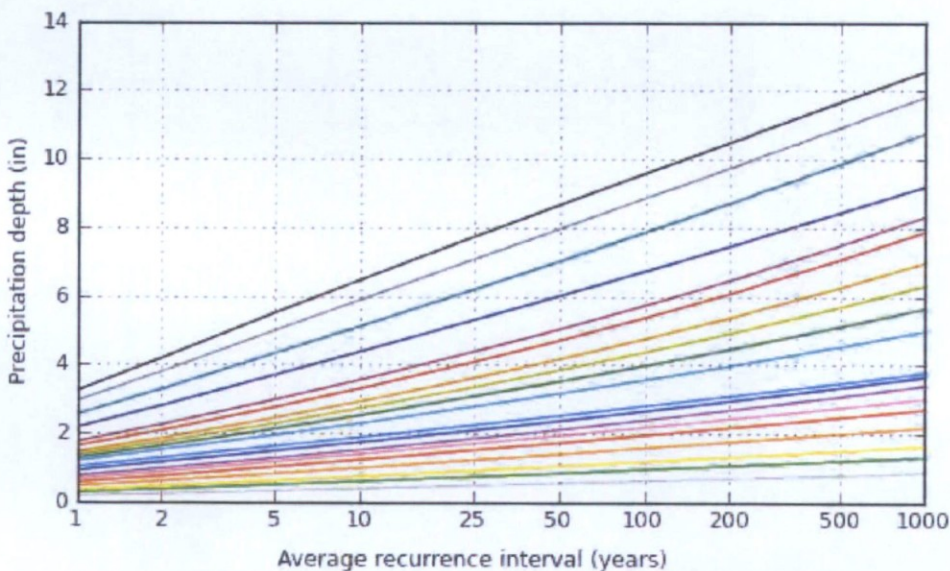
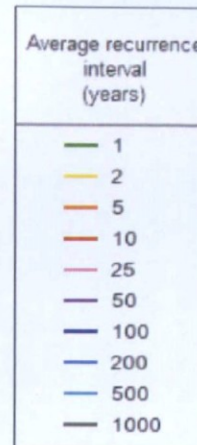
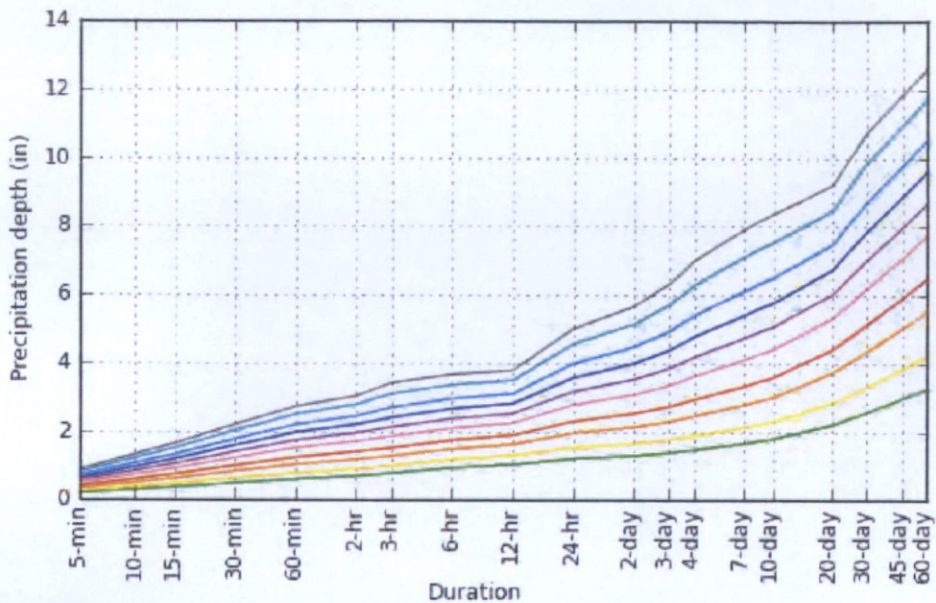
<sup>1</sup> Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration 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: 33.5803°, Longitude: -111.9103°



NOAA Atlas 14, Volume 1, Version 5

Created (GMT): Tue Apr 26 23:58:34 2016

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## Maps & aerials

### Small scale terrain

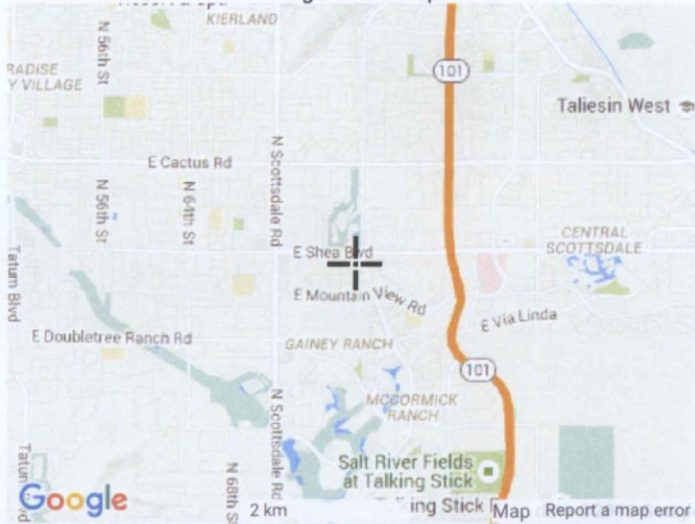




Large scale terrain



Large scale map



Large scale aerial







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Silver Spring, MD 20910  
Questions?: [HDSC.Questions@noaa.gov](mailto:HDSC.Questions@noaa.gov)

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*APPENDIX II*  
*Calculations*

## 2. Time of Concentration

Time of concentration "Tc" is the total time of travel from the most hydraulically remote part of the watershed to the concentration point of interest. The calculation of "Tc" must follow FCDMC Hydrology Manual procedures.

**\*Note:** Do not add a standard set amount of time to the estimated "Tc" for lot runoff delay (such as 5 or 10 minutes). Natural land slopes are too variable in Scottsdale to add a set amount of time for lot runoff.

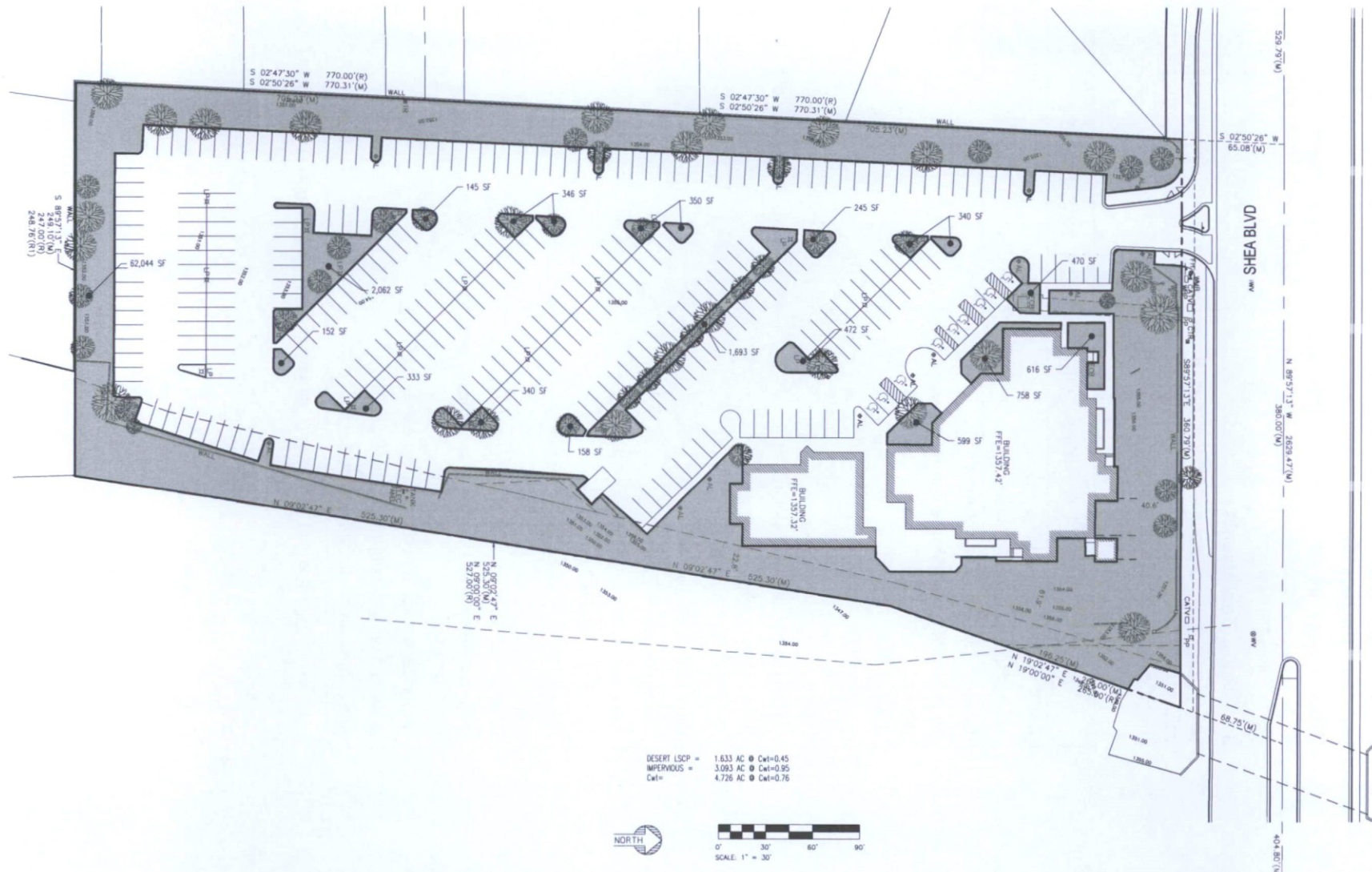
## 3. Runoff Coefficients


Use [Figure 4.1-4](#) or equivalent to obtain the runoff coefficients or "C" values. Composite "C" values for the appropriate zoning category or weighted average values calculated for the specific site are both acceptable approaches.

RUNOFF COEFFICIENTS - "C" VALUE			
Land Use	Storm Frequency		
	2-25 Year	50 Year	100 Year
Composite Area-wide Values			
<b>Commercial &amp; Industrial Areas</b>	0.80	0.83	0.86
<b>Residential Areas-Single Family (average lot size)</b>			
R1-1-1901	0.33	0.50	0.53
R1-130	0.35	0.51	0.59
R1-70	0.37	0.52	0.60
R1-43	0.38	0.55	0.61
R1-35 (35,000 square feet/lot)	0.40	0.56	0.62
R1-18 (18,000 square feet/lot)	0.43	0.58	0.64
R1-10 (10,000 square feet/lot)	0.47	0.62	0.67
R1-7 (7,000 square feet/lot)	0.51	0.64	0.94
<b>Townhouses (R-2, R-4)</b>	0.63	0.74	0.94
<b>Apartments &amp; Condominiums (R-3, R-5)</b>	0.76	0.83	0.94
<b>Specific Surface Type Values</b>			
Paved streets, parking lots (concrete or asphalt), roofs, drive-ways, etc.	0.90	0.93	0.95
Lawns, golf courses, & parks (grassed areas)	0.20	0.25	0.30
Undisturbed natural desert or desert landscaping (no impervious weed barrier)	0.37	0.42	0.45
Desert landscaping (with impervious weed barrier)	0.63	0.73	0.83
Mountain terrain – slopes greater than 10%	0.60	0.70	0.80
Agricultural areas (flood-irrigated fields)	0.16	0.18	0.20

FIGURE 4.1-4 RUNOFF COEFFICIENTS FOR USE WITH RATIONAL METHOD

PRE DEVELOPMENT  
DRAINAGE MAP  
PHOENIX SEMINARY  
7901 E. SHEA BLVD., SCOTTSDALE, AZ 85260





**SEG**  
SUSTAINABILITY  
ENGINEERING  
GROUP

8001 E GILBERT DR #101, SCOTTSDALE, ARIZONA 85260  
WWW.AZSEG.COM TEL: 480.988.1200

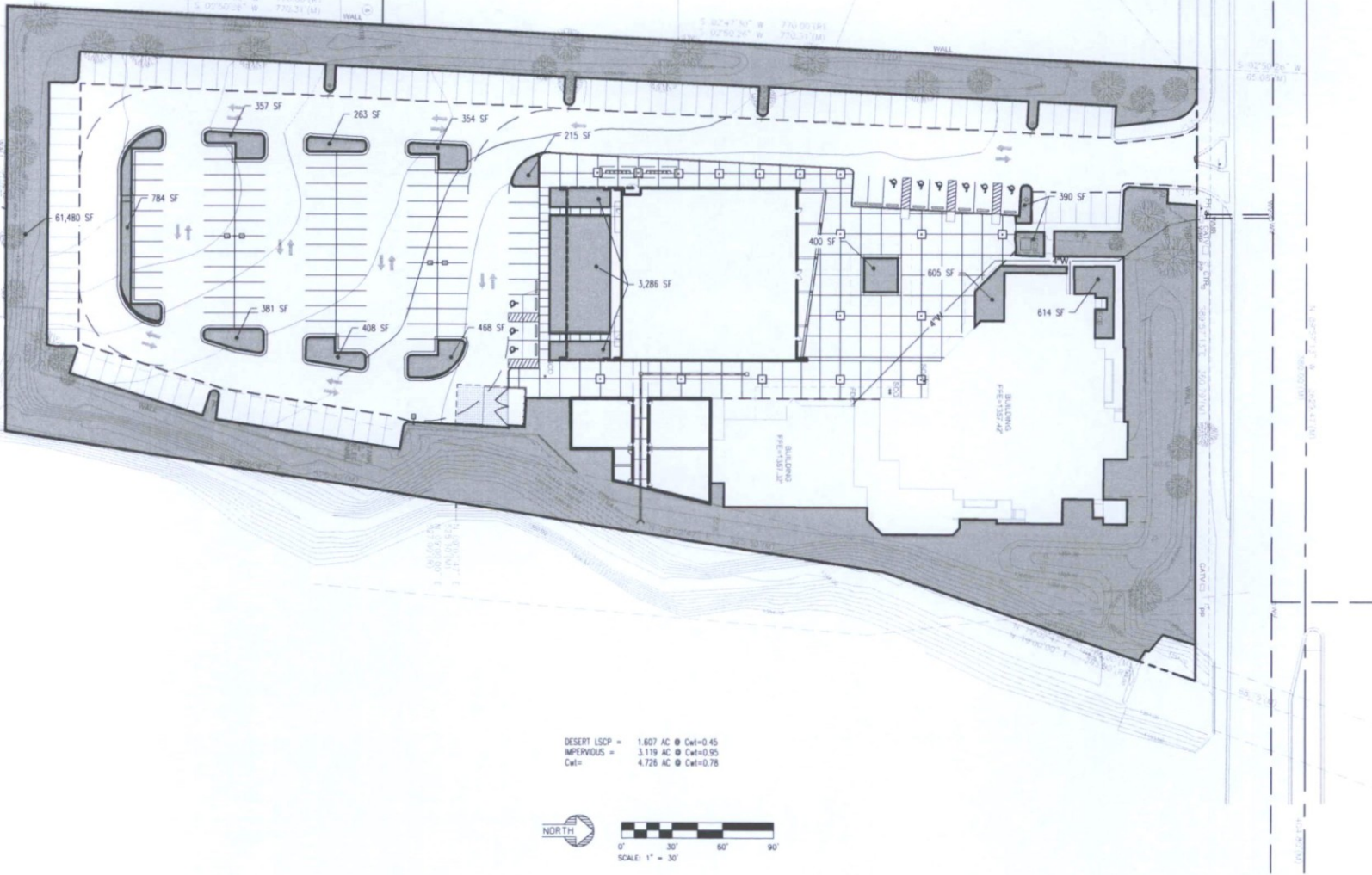
<p>PROJECT: PHOENIX SEMINARY</p> <p>LOCATION: 7901 E SHEA BLVD, SCOTTSDALE, AZ 85260</p> <p>DATE: 04/19/2016</p> <p>ISSUED FOR: REVIEW</p> <p>REVISION NO. _____ DATE _____</p> <p>ASB NO.: 160303</p> <p>WHEET TITLE: PRE DEVELOPMENT DRAINAGE MAP</p> <p>WHEET NO.: PRE DAM</p>	<p>POUNDS: _____</p> <p>POUNDS: _____</p> <p>COUNSELL: _____</p> <p>FAKH: _____</p>
---	---



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# POST DEVELOPMENT DRAINAGE MAP

PHOENIX SEMINARY  
7901 E. SHEA BLVD., SCOTTSDALE, AZ 85260



DESERT LSCP = 1.607 AC @ Cwt=0.45  
 IMPERVIOUS = 3.119 AC @ Cwt=0.95  
 Cwt= 4.726 AC @ Cwt=0.78



SEAL

45821  
ALI SABRI  
Fakhri

DPMS 12-31-17

PHOENIX SEMINARY CAMPUS  
ADDITION/RENOVATION

**SEG**

SUSTAINABILITY  
ENGINEERING  
GROUP

1000 N. CENTRAL AVENUE, SUITE 100  
PHOENIX, ARIZONA 85004  
TEL: 602.955.1234  
WWW.SEG-ENG.COM

PROJECT	PHOENIX SEMINARY CAMPUS ADDITION/RENOVATION	LOCATION	7901 E. SHEA BLVD SCOTTSDALE, AZ 85260
DESIGNED	POUNDS	CHECKED	POUNDS
PROJECT MANAGER	COUNSELL	DATE	12/16/2016
ISSUED FOR	DRB SUBMITTAL	SHEET NO.	160303
POST DEVELOPMENT DRAINAGE MAP		SHEET TITLE	
POST DAM		SHEET NO.	

ARIZONA  
STATE BOARD OF PROFESSIONAL ENGINEERS AND LAND SURVEYORS

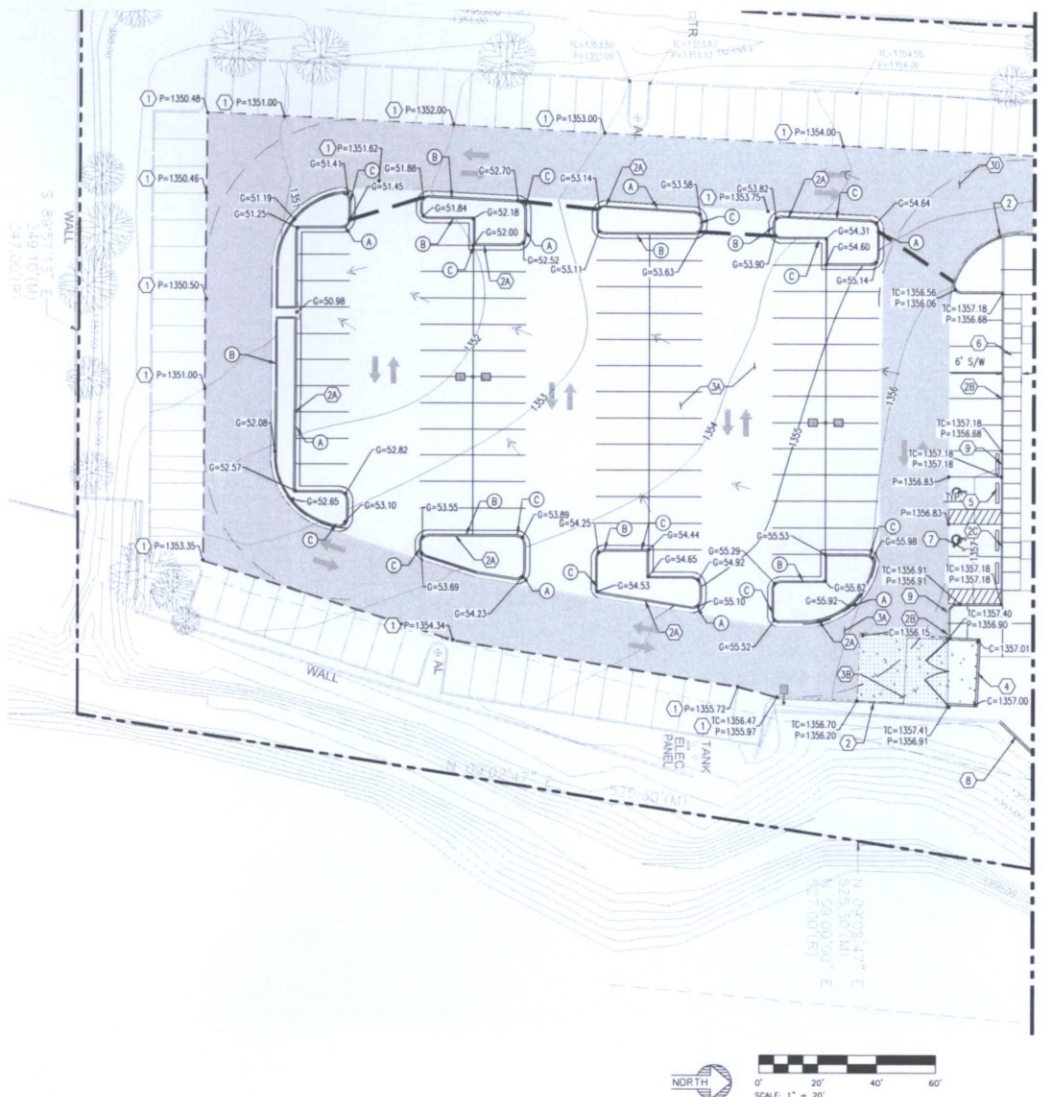
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*APPENDIX III*  
*Preliminary Grading Plan*

# GRADING AND DRAINAGE PLAN

PHOENIX SEMINARY  
7901 E. SHEA BLVD., SCOTTSDALE, AZ 85260



### PROPOSED LEGEND

- PROPERTY LINE
- SAWCUT LINE
- C=XXX.XX CONCRETE ELEVATION
- P=XXX.XX PAVEMENT ELEVATION
- TC=XX.XX TOP OF CURB ELEVATION
- G=XXX.XX GUTTER ELEVATION TC=G+0.5.
- DRAINAGE ARROW
- FLOW LINE
- RIDGE LINE
- CONCRETE CURB & GUTTER
- HEAVY DUTY PAVEMENT
- CONCRETE PAVEMENT
- (A) STANDARD GUTTER SLOPE
- (B) REVERSE GUTTER SLOPE
- (C) 6' TRANSITION OF GUTTER SLOPE

### KEYNOTES:

- (1) MATCH EXISTING GRADE. CONTRACTOR TO VERIFY IN FIELD ALL GRADES PRIOR TO ANY CONSTRUCTION ACTIVITIES AND TO CONTACT ENGINEER IN CASE OF DISCREPANCIES.
- (2A) CONSTRUCT 6" CURB/GUTTER PER MAG STD DET 220-1 TYPE 'A'.
- (2B) CONSTRUCT 6" TURNDOWN SLAB.
- (2C) CONSTRUCT FLUSH CURB.
- (3A) CONSTRUCT LIGHT DUTY PAVEMENT.
- (3B) CONSTRUCT CONCRETE PAD.
- (3C) CONSTRUCT HEAVY DUTY PAVEMENT TO MEET A MINIMUM BEARING CAPACITY AS REQUIRED BY THE CITY OF SCOTTSDALE (83,000LBS GVW). COORDINATE WITH VANN ENGINEERING PROJECT #7273 FOR SOILS INFORMATION AND DRIVE LANE MIX DESIGNS.
- (4) TRASH ENCLOSURE, REFER TO ARCHITECTURAL PLANS.
- (5) CONSTRUCT WHEEL STOP.
- (6) CONSTRUCT SIDEWALK PER MAG STD DET 230. WIDTH PER PLAN.
- (7) 2% MAXIMUM SLOPE IN ANY DIRECTION AT ACCESSIBLE PARKING STALLS AND 2% MAXIMUM CROSS SLOPE AT ADA ACCESSIBLE ROUTE.
- (8) CONSTRUCT SCREEN WALL PER ARCHITECTURAL PLANS.
- (9) TRANSITION FROM FLUSH CURB TO 6" CURB.

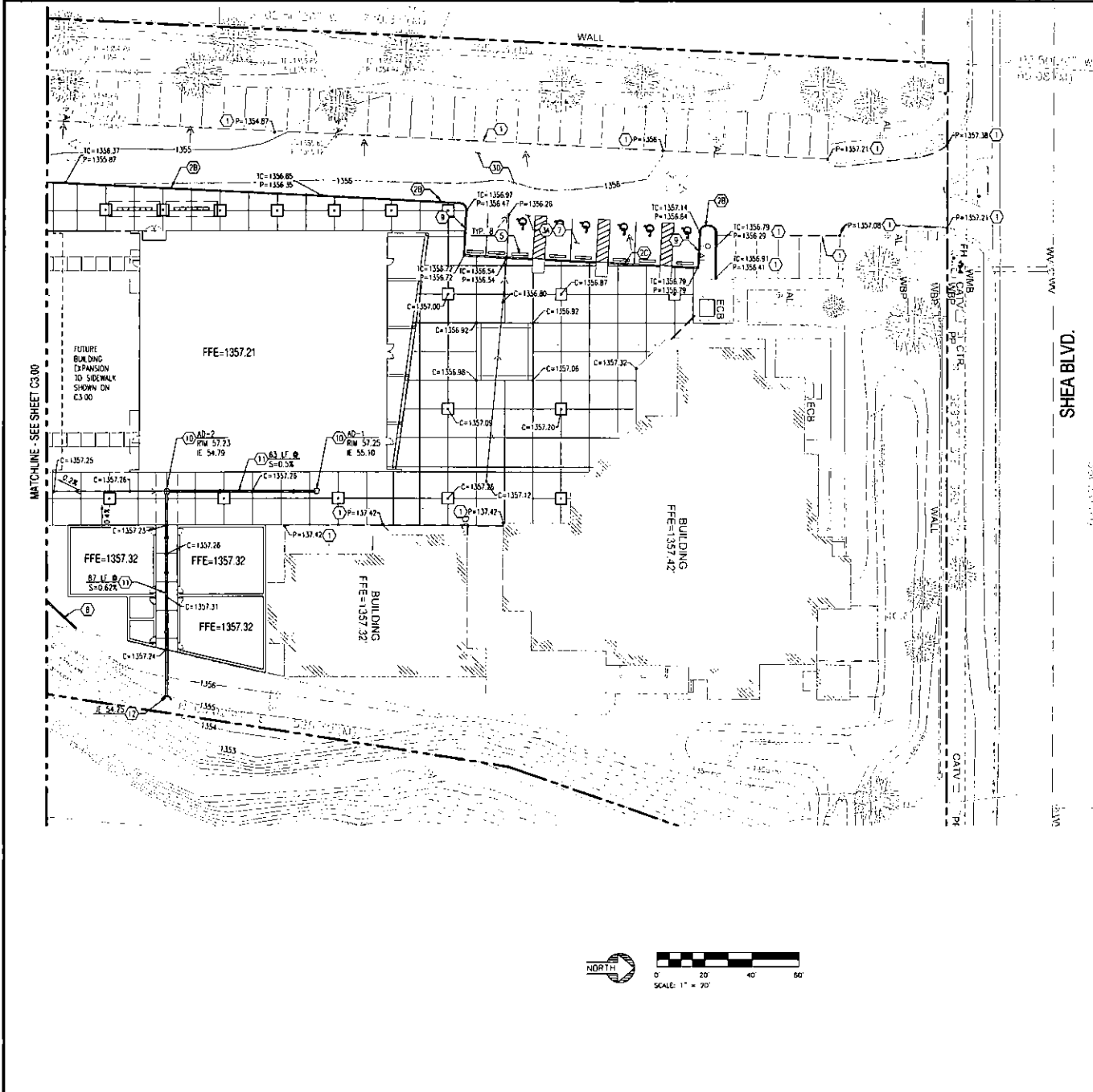


PROJECT	PHOENIX SEMINARY CAMPUS ADDITION/RENOVATION	LOCATION	7901 SHEA BLVD SCOTTSDALE, AZ 85260
DRYING	POUNDS	DESIGNED BY	POUNDS
CHECKED	POUNDS	CHECKED BY	POUNDS
PROJECT MANAGER	POUNDS	PROJECT MANAGER	POUNDS
DATE	12/16/2016	DATE	
ISSUED FOR	DRB SUBMITTAL	ISSUED FOR	
REVISION NO.		DATE	
JOB NO.	160303		
SHEET TITLE	PRELIMINARY GRADING AND DRAINAGE PLAN		
SHEET NO.	C3.00		

**PRELIMINARY  
NOT FOR CONSTRUCTION**



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**PROPOSED LEGEND**

---	PROPERTY LINE
---	SEWCLUT LINE
C=XX.XX	CONCRETE ELEVATION
P=XX.XX	PAVEMENT ELEVATION
TC=XX.XX	TOP OF CURB ELEVATION
G=XX.XX	GUTTER ELEVATION TC=+0.5
→	DRAINAGE ARROW
→	FLOW LINE
---	RIDGE LINE
---	CONCRETE CURB & GUTTER
---	HEAVY DUTY PAVEMENT
---	STANDARD GUTTER SLOPE
Ⓐ	STANDARD GUTTER SLOPE
Ⓑ	REVERSE GUTTER SLOPE
Ⓒ	6" TRANSITION OF GUTTER SLOPE

- KEYNOTES:**
- 1) WATCH EXISTING GRADE. CONTRACTOR TO VERIFY IN FIELD ALL GRADES PRIOR TO ANY CONSTRUCTION ACTIVITIES AND TO CONTACT ENGINEER IN CASE OF DISCREPANCIES.
  - 2) CONSTRUCT 6" TURNDOWN SLAB.
  - 3) CONSTRUCT FLUSH CURB.
  - 4) CONSTRUCT LIGHT DUTY PAVEMENT.
  - 5) CONSTRUCT HEAVY DUTY PAVEMENT TO MEET A MINIMUM BEARING CAPACITY AS REQUIRED BY THE CITY OF SCOTTSDALE (83,000LBS C/W). COORDINATE WITH WANN ENGINEERING PROJECT #7273 FOR SOILS INFORMATION AND DRIVE LANE MIX DESIGNS.
  - 6) CONSTRUCT WHEEL STOP.
  - 7) CONSTRUCT SIDEWALK PER MAD STD DET 230. WIDTH PER PLAN.
  - 8) 2% MAXIMUM SLOPE IN ANY DIRECTION AT ACCESSIBLE PARKING STALLS AND 2% MAXIMUM CROSS SLOPE AT ADA ACCESSIBLE ROUTE.
  - 9) CONSTRUCT SCREEN WALL PER ARCHITECTURAL PLANS.
  - 10) TRANSITION FROM FLUSH CURB TO 6" CURB.
  - 11) FURNISH & INSTALL AREA DRAIN.
  - 12) FURNISH & INSTALL 8" HDPE PIPE.
  - 13) FURNISH & INSTALL CONCRETE END SECTION.

SEAL

**SUSTAINABILITY ENGINEERING GROUP**

**SEG**

4300 E. GARDNER DR #101 SCOTTSDALE, ARIZONA 85004  
WWW.ASEEG.COM TEL: 480.548.8726

**PROJECT:** PHOENIX SEANARY CAMPUS ADDITION/RENOVATION  
**LOC:** TRON PARK E SHEA BLVD SCOTTSDALE, AZ 85259

**DATE:** 12/16/2016  
**ISSUED FOR:** DRB SUBMITTAL

**SCALE:** 1" = 20'

**PRELIMINARY NOT FOR CONSTRUCTION**

**PRELIMINARY GRADING AND DRAINAGE PLAN**

C.S.10

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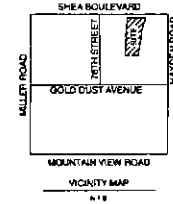
## *APPENDIX III*

### *ALTA / Topographic Survey*

8280 E. Gelding Dr., Suite 101  
Scottsdale, AZ 85260

# ALTA/ACSM LAND TITLE SURVEY

OF A PORTION OF THE NORTHEAST QUARTER OF SECTION 26,  
TOWNSHIP 3 NORTH, RANGE 4 EAST,  
OF THE GILA AND SALT RIVER BASE AND MERIDIAN,  
MARICOPA COUNTY, ARIZONA.



## PARCEL DESCRIPTION

THAT PART OF THE NORTHEAST QUARTER OF SECTION TWENTY SIX (26), TOWNSHIP THREE (3) NORTH, RANGE FOUR (4) EAST OF THE GILA AND SALT RIVER BASE AND MERIDIAN, MARICOPA COUNTY, ARIZONA, DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEAST CORNER OF SAID SECTION 26 AND RUNNING THENCE WEST (ASSUMED BEARING) ALONG THE NORTH LINE OF SAID SECTION 26 A DISTANCE OF 404.80 FEET TO THE NORTHEAST CORNER OF THE PREMISES HEREIN DESCRIBED, SAID POINT BEING IN THE CENTER LINE OF THAT CERTAIN COUNTY ROAD COMMONLY KNOWN AS SHEAR BOULEVARD, AND ALSO BEING THE TRUE POINT OF BEGINNING.

THENCE CONTINUING WEST ALONG THE NORTH LINE OF SAID SECTION 26 A DISTANCE OF 280 FEET.

THENCE SOUTH 2 DEGREES 47 MINUTES 30 SECONDS WEST A DISTANCE OF 770 FEET;

THENCE EAST PARALLEL TO THE NORTH LINE OF SAID SECTION 26 A DISTANCE OF 247 FEET TO A POINT;

THENCE NORTH 8 DEGREES 00 MINUTES 00 SECONDS EAST A DISTANCE OF 527 FEET TO A POINT;

THENCE NORTH 18 DEGREES 30 MINUTES 00 SECONDS EAST A DISTANCE OF 265 FEET TO THE TRUE POINT OF BEGINNING.

EXCEPT THAT PART CONVEYED TO THE CITY OF SCOTTSDALE IN DEED RECORDED IN DOCKET 1840, PAGE 213 AND MORE PARTICULARLY DESCRIBED AS FOLLOWS: THE SOUTH 32 FEET OF THE NORTH 66 FEET OF SECTION 26, TOWNSHIP 3 NORTH, RANGE 4 EAST, OF THE GILA AND SALT RIVER BASE AND MERIDIAN, LYING EAST OF AND ADJOINING A LINE DRAWN AT AN ANGLE OF 87 DEGREES 13 MINUTES 30 SECONDS AS MEASURED FROM WEST TO SOUTH, FROM THE NORTH LINE OF THE NORTHEAST QUARTER OF SAID SECTION 26, AT A POINT ON SAID NORTH LINE BEING 784.8 FEET WEST OF THE NORTHEAST CORNER OF SAID NORTHEAST QUARTER, LYING WEST OF AND ADJOINING A LINE DRAWN AT AN ANGLE OF 71 DEGREES, AS MEASURED FROM WEST TO SOUTH, FROM THE NORTH LINE OF SAID NORTHEAST QUARTER, AT A POINT ON SAID NORTH LINE BEING 404.8 FEET WEST OF THE NORTHEAST CORNER OF SAID NORTHEAST QUARTER.

## NOTES: (Table "A" Items)

- SET A 12" REBAR WCAP "AWLS 4537" AT PROPERTY CORNERS AS SHOWN HEREON UNLESS OTHERWISE NOTED.
- AREA IS 209,860.8 SQUARE FEET OR 4.726 ACRES, MORE OR LESS.
- THIS SURVEY SHOWS ABOVE GROUND UTILITIES. THE SURVEYOR DOES NOT WARRANT THAT THE UNDERGROUND UTILITY LINES SHOWN HEREON ARE IN THE EXACT LOCATION INDICATED, ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION MADE AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES. THE CLIENT IS HEREBY ADVISED THAT EXCAVATION MAY BE NECESSARY TO EXPOSE UNDERGROUND UTILITIES TO CONFIRM EXACT LOCATION.
- THERE ARE 288 REGULAR PARKING SPACES AND 9 HANDICAP PARKING SPACES.
- ADJACENT INFORMATION IS PER MARICOPA COUNTY ASSESSOR WEBSITE.

## SCHEDULE "B" ITEMS

- TAXES WHICH MAY BE ASSESSED OR LEVIED SUBSEQUENT TO THE EFFECTIVE DATE HEREIN, AND SUBSEQUENT YEARS' TAX IDENTIFICATION NO.: 175-47-008.
- WATER RIGHTS, CLAIMS OR TITLE TO WATER, WHETHER OR NOT DISCLOSED BY THE PUBLIC RECORDS.
- RESERVATIONS CONTAINED IN THE PATENT.

FROM THE UNITED STATES OF AMERICA  
TO CLARENCE E. HOVER  
RECORDING DATE: MARCH 10, 1917  
RECORDING NO. BOOK 120 OF DEEDS, PAGE 480

WHICH AMONG OTHER THINGS RECITES AS FOLLOWS:

SUBJECT TO ANY VESTED AND ACCRUED WATER RIGHTS FOR MINING, AGRICULTURAL, MANUFACTURING, OR OTHER PURPOSES AND RIGHTS TO DITCHES AND RESERVOIRS USED IN CONNECTION WITH SUCH WATER RIGHTS, AS MAY BE RECOGNIZED AND ACKNOWLEDGED BY THE LOCAL CUSTOMS, LAWS AND DECISIONS OF THE COURTS, AND THE RESERVATION FROM THE LANDS HEREBY GRANTED, A RIGHT OF WAY THEREON FOR DITCHES OR CANALS CONSTRUCTED BY THE AUTHORITY OF THE UNITED STATES.

- RIGHTS OF THE PUBLIC IN AND TO THAT PORTION OF THE HEREIN DESCRIBED LAND AS SHOWN ON THE MAP.  
RECORDING NO. BOOK 3 OF ROAD MAPS, PAGE 28

- EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT.

PURPOSE: ELECTRIC LINES  
RECORDING NO. DOCKET 1444, PAGE 127

- EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT.

PURPOSE: ELECTRIC LINES  
RECORDING NO. DOCKET 11874, PAGE 17

- EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT.

PURPOSE: LEAVES, DIKES, CHANNELS AND OTHER WORKS OF DRAINAGE  
RECORDING NO. DOCKET 18402, PAGE 216

- EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT.

PURPOSE: DRAINAGE  
RECORDING NO. 95-477820

- EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT.

PURPOSE: DRAINAGE  
RECORDING NO. 95-477820

- EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT.

PURPOSE: ELECTRIC LINES  
RECORDING NO. 86-58594

- MATTERS INCLUDING, BUT NOT LIMITED TO, A REVERSION RIGHT) CONTAINED IN THAT CERTAIN DOCUMENT.

ENTITLED: GENERAL WARRANTY DEED  
DATED: DECEMBER 01, 2007  
RECORDING DATE: DECEMBER 03, 2007  
RECORDING NO. 20071274687

REFERENCE IS HEREBY MADE TO SAID DOCUMENT FOR FULL PARTICULARS.

- AN UNRECORDED LEASE WITH CERTAIN TERMS, COVENANTS, CONDITIONS AND PROVISIONS SET FORTH THEREIN, AS DISCLOSED BY THE DOCUMENT.

ENTITLED: MEMORANDUM OF LEASE  
LESSOR: SHEA CHAPEL, LLC  
LESSEE: SCOTTSDALE BIBLE CHURCH, AN ARIZONA NONPROFIT CORPORATION  
RECORDING DATE: DECEMBER 03, 2007  
RECORDING NO. 20071275158

- MATTERS WHICH MAY BE DISCLOSED BY AN INSPECTION AND/OR BY A CORRECT ALTA/ACSM LAND TITLE SURVEY OF SAID LAND THAT IS SATISFACTORY TO THE COMPANY, AND/OR BY INQUIRY OF THE PARTIES IN POSSESSION THEREOF.

- ANY RIGHTS OF THE PARTIES IN POSSESSION OF A PORTION OF, OR ALL OF, SAID LAND, WHICH RIGHTS ARE NOT DISCLOSED BY THE PUBLIC RECORDS.

## BASIS OF BEARING

THE BASIS OF BEARING AND ALL INSTRUMENTATION SHOWN HEREON IS BASED ON THE NORTH LINE OF THE NORTHEAST QUARTER OF SECTION 26, TOWNSHIP 3 NORTH, RANGE 4 EAST, USING A BEARING OF NORTH 89°57'13" WEST AS SHOWN ON THE FINAL PLAT OF LA CUESTA II, RECORDED IN BOOK 223, PAGE 1, MARICOPA COUNTY RECORDS.

## BENCHMARK

BENCHMARK IS A CITY OF SCOTTSDALE BRASS CAP IN HANDHOLE, BEING THE NORTH QUARTER CORNER OF SECTION 26, T. 3N., R. 4E.  
ELEVATION = 1365.12 NAVD 83

## FLOOD ZONE DESIGNATION

SUBJECT PROPERTY IS LOCATED WITHIN ZONE "X" (DOTTED) AS SHOWN ON FEMA FLOOD INSURANCE RATE MAP NO. 94010C1100, DATED OCTOBER 16, 2013. ZONE "X" IS DEFINED AS AREAS OF 0.2% ANNUAL 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.

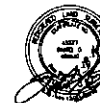
## GENERAL NOTES

- ALL TITLE INFORMATION IS BASED ON A COMMITMENT FOR TITLE INSURANCE PREPARED BY COMMONWEALTH LAND TITLE INSURANCE COMPANY, COMMITMENT NO. 01841800-003-170, WITH AN EFFECTIVE DATE OF DECEMBER 8, 2015.
- A.H.S. 20-151 STATES THAT THE USE OF THE WORD "CERTIFY" OR "CERTIFICATION" BY A PERSON OR FIRM THAT IS REGISTERED OR CERTIFIED BY THE BOARD IS AN EXPRESSION OF PROFESSIONAL OPINION REGARDING THE FACTS OR FINDINGS THAT ARE SUBJECT TO THE CERTIFICATION AND DOES NOT CONSTITUTE A WARRANTY OR GUARANTEE.
- SURVEY FIELD WORK WAS COMPLETED ON APRIL 8, 2018.
- THIS SURVEYOR HAS MADE NO INVESTIGATION OR INDEPENDENT SEARCH FOR EASEMENTS OF RECORD, ENCUMBRANCES, RESTRICTIVE COVENANTS, OWNERSHIP TITLE EVIDENCE OR ANY OTHER FACTS THAT AN ACCURATE AND CURRENT TITLE SEARCH MAY DISCLOSE.

## CERTIFICATION

TO: PHOENIX SEMINARY, INC. AN ARIZONA NONPROFIT CORPORATION  
SHEA CHAPEL, LLC, AN ARIZONA NONPROFIT LIMITED LIABILITY COMPANY  
COMMONWEALTH LAND TITLE INSURANCE COMPANY

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH "MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/ACSM LAND TITLE SURVEYS," JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS IN 2018, AND INCLUDES TABLE ITEMS 1-4, 6, 8, 11(A)(B), AND 13 THEREOF, PURSUANT TO THE ACCURACY STANDARDS AS ADOPTED BY ALTA AND NSPS AND IN EFFECT ON THE DATE OF THIS CERTIFICATION. UNDERSIGNED FURTHER CERTIFIES THAT IN MY PROFESSIONAL OPINION AS A LAND SURVEYOR REGISTERED IN THE STATE OF ARIZONA, THE RELATIVE POSITIONAL ACCURACY OF THIS SURVEY DOES NOT EXCEED THAT WHICH IS SPECIFIED THEREIN.



ALTA/ACSM LAND TITLE SURVEY  
SECTION 26  
TOWNSHIP 3 NORTH, RANGE 4 EAST  
OF THE G.S.R.B. & M.  
MARICOPA COUNTY, ARIZONA

AW  
LAND  
SURVEYING, LLC  
710, BOX 2170, CHANDLER, AZ 85244  
(480) 244-7630 (480) 243-4287

DRAWN BY: CHECKED BY: DATE: 2/7/18 JOB NO: 18-077 SHEET NO: 1 OF 3

N 1/4 CORNER SECTION 26 T3N, R4E FD COS BCF  
1314.86'(W)

529.79'(W) N 88°57'13" W 2829.47'(W) 380.00'(W) SHEA BOULEVARD 404.85'(W)

NE CORNER SECTION 26 T3N, R4E FD COS BCF

78TH STREET  
N 07°28'17" W 1317.80'(W)  
N 07°26'17" W 1317.56'(W)

GOLD DUST AVENUE  
FD COS BCF

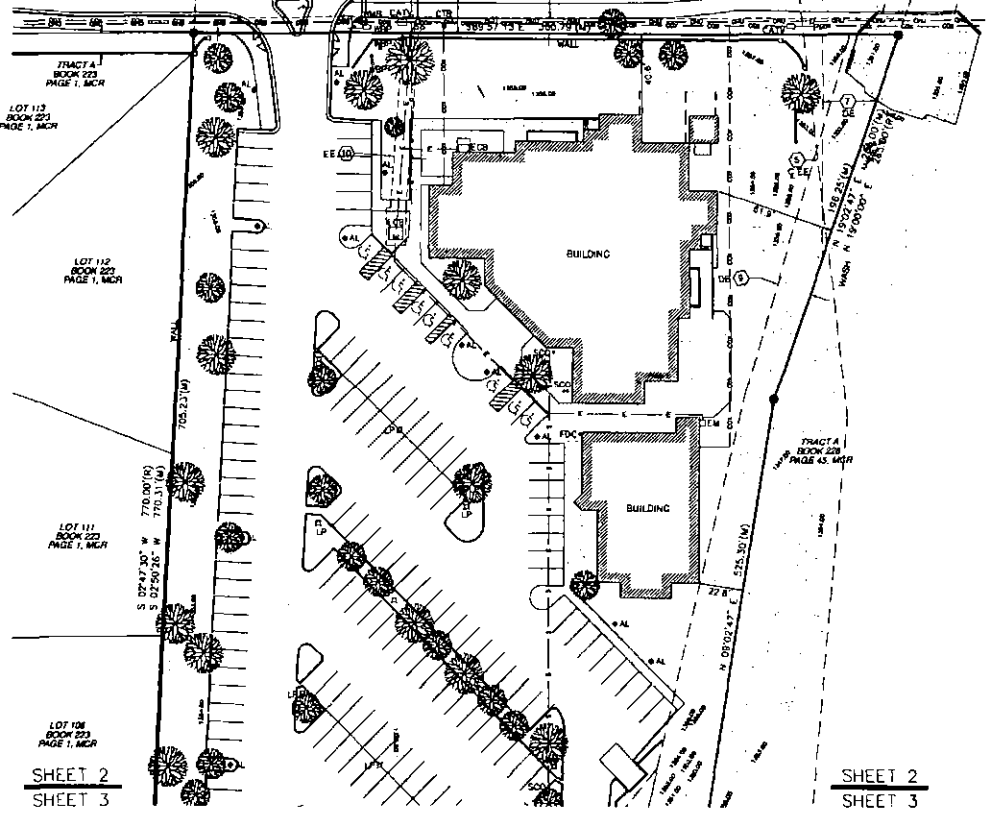
TRACT A BOOK 223 PAGE 1, MCR  
LOT 112 BOOK 223 PAGE 1, MCR

LOT 112 BOOK 223 PAGE 1, MCR

LOT 111 BOOK 223 PAGE 1, MCR

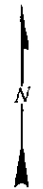
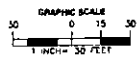
LOT 106 BOOK 223 PAGE 1, MCR

SHEET 2  
SHEET 3



**LEGEND**

- MCR MARICOPA COUNTY RECORDS
- COS CITY OF SCOTTSDALE
- BOFH BRASS CAP IN HANDHOLE
- BOF BRASS CAP FLUSH
- FD FOUND
- ID IDENTIFICATION
- DE ORANGE EASEMENT
- EE ELECTRIC EASEMENT
- CEE CENTERLINE OF ELECTRIC EASEMENT
- MR MEASURED DATA
- (R) RECORD DATA (TITLE REPORT)
- (R1) RECORD DATA BOOK 228, PAGE 45
- (R2) RECORD DATA BOOK 223, PAGE 1
- WV WATER VALVE
- RP POWER POLE
- CAWV CABLE TV WALL
- CTR CABLE TV RISER
- FH FIRE HYDRANT
- WMB WATER METER BOX
- WBP WATER BACKFLOW PREVENTOR
- AL AREA LIGHT
- ECB ELECTRIC CABINET
- LP LIGHT POLE
- TR TELEPHONE RISER
- SOD SEWER CLEANOUT
- ⊙ SAWYER MANHOLE
- PROPERTY LINE
- ADJOINER LINE
- CENTER LINE
- - - EASEMENT LINE (AS NOTED)
- ▭ CONCRETE
- TREE OR BUSH
- PROPERTY CORNER SET 1" REBAR W/ CAP "AWLS 4537"



1316.15'(W)  
1315.50'(R1)

S 00°31'00" E  
S 00°29'45" E

SE CORNER NS 1/4, RS 1/4 SECTION 26 T3N, R4E FD 1/2" REBAR W/NO ID

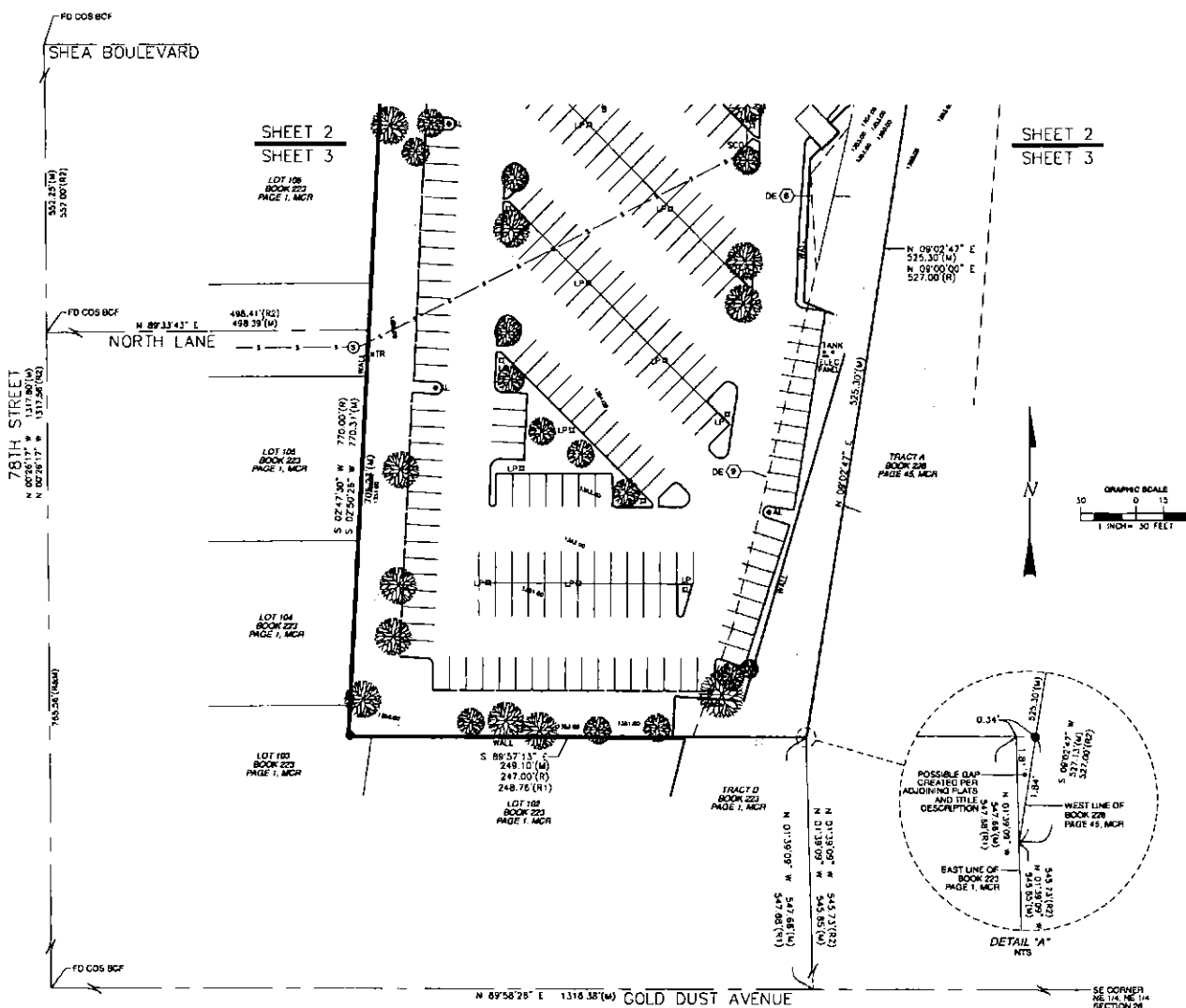
GOLD DUST AVENUE

SHEET 2  
SHEET 3



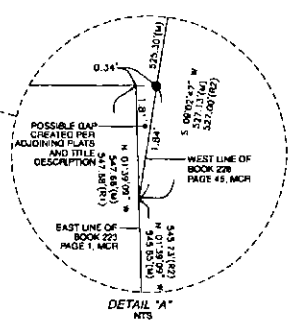
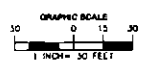
ALTA/ACSM LAND TITLE SURVEY  
SECTION 26  
TOWNSHIP 3 NORTH, RANGE 4 EAST  
OF THE G.S.R.B. & M.  
MARICOPA COUNTY, ARIZONA

**AW LAND SURVEYING, INC.**  
P.O. BOX 2170, CHANDLER, AZ 85244  
(480) 244-7630 (480) 243-4237



**LEGEND**

MCR	MARICOPA COUNTY RECORDS
COS	CITY OF SCOTTSDALE
BCF#1	BRASS CAP IN HANDHOLE
BCF	BRASS CAP FLUSH
FD	FOUNDED
ID	IDENTIFICATION
DE	DRAINAGE EASEMENT
EE	ELECTRIC EASEMENT
C EE	CENTERLINE OF ELECTRIC EASEMENT
(M)	MEASURED DATA
(R)	RECORD DATA (TITLE REPORT)
(R1)	RECORD DATA BOOK 228, PAGE 45
(R2)	RECORD DATA BOOK 223, PAGE 1
WV	WATER VALVE
PP	POWER POLE
CATV	CABLE TV VAULT
CTR	CABLE TV RISER
FH	FIRE HYDRANT
WMB	WATER METER BOX
WBP	WATER BACKFLOW PREVENTOR
AL	AREA LIGHT
ECR	ELECTRIC CABINET
LP	LIGHT POLE
TR	TELEPHONE RISER
BCC	SEWER CLEANOUT
⊙	SEWER MANHOLE
---	PROPERTY LINE
---	ADJOINER LINE
---	CENTER LINE
---	EASEMENT LINE (AS NOTED)
□	CONCRETE
●	TREE OR BUSH
●	PROPERTY CORNER SET 1/2" REBAR W/CAP *HWLS 4377



ALTAVACSM LAND TITLE SURVEY  
SECTION 28  
TOWNSHIP 3 NORTH, RANGE 4 EAST  
OF THE G. S. R. B. & M.  
MARICOPA COUNTY, ARIZONA



**AW LAND SURVEYING, LLC**  
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