

PRELIMINARY DRAINAGE REPORT

Maya Hotel

4415 N. Buckboard Trail,
Scottsdale, Arizona 85251

Prepared For:

**NELSEN
PARTNERS**

ARCHITECTS & PLANNERS

15210 N. Scottsdale Rd., Suite 300
Scottsdale, Arizona 85254
480.949.6800



Plan #	_____
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Reviewed By	Date

Prepared by:



Sustainability Engineering Group
8280 E. Gelding Drive, Suite 101
Scottsdale, AZ 85260
480.588.7226 www.azSEG.com

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1. INTRODUCTION

This Preliminary Drainage Report represents the storm water analysis for the Maya Hotel proposed in Scottsdale, Arizona. The purpose of this preliminary report is to provide the hydrologic and hydraulic analysis, required by the City of Scottsdale, to support the proposed rezoning for said development. This report includes discussions and calculations defining the storm water management concepts for the collection and conveyance 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) 2018 ¹, and the Drainage Design Manuals for Maricopa County, Arizona, Volumes I² and Volume II³.

2. LOCATION AND PROJECT DESCRIPTION

2.1 LOCATION:

The subject property consists of land located at the northeast corner of the Saddlebag Trail and Buckboard Trail intersection, on a portion of the southeast 1/4 of Section 23, Township 2 North, Range 4 East of the Gila and Salt River Base and Meridian, Maricopa County, Scottsdale, Arizona.

- Parcel ID: Parcels 173-41-260, -182 and -183 consisting of 16,292 square feet or 0.374 acres more or less.

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:

The site is bound by an alley with the following across as follows:

- West: Across Buckboard Trail, Parcel 173-41-234A; The W Hotel Property; Zoning is D/ or-2
- East: Parcel 173-41-259, Camelback Park Plaza Zoning C-2
- North: Parcel 173-41-212, Tract D
Across Indian Plaza: Parcel 173-41-270; Oasis Café MLD; Zoning is C-2
- South: Across Shoeman Lane are parcels:
Parcel 173-41-265, 173-41-187D; Joes New York Pizza; Zoning is P-2 and C-2, respectively.

2.3 EXISTING SITE DESCRIPTION:

The project area includes approximately 16,292 sq. ft. (0.374 acres) of land designated as C-2. The site is currently developed as an existing commercial site. There is no existing retention system. The existing sidewalk drains towards the existing streets including Indian Plaza, Buckboard Trail and Shoeman Lane. All building roof runoff is conveyed along the alley, and outfalls south to Shoeman Lane, where it is conveyed to the existing catch basin, EX. CB-3, via curb and gutter.

Per Topographic Survey prepared by AWL Land Surveying, the site slopes from north to south at approximately 1.00%. Elevation varies from approximately 1267.98 at the northeast corner to approximately 1265.95 at the southeast corner. The site drains to the perimeter streets and alley.

Refer to **FIGURE 2** attached for an aerial of the site.

2.4 PROPOSED SITE DEVELOPMENT:

The proposed project consists of the redevelopment of an existing commercial site to a 12-story hotel development. The redevelopment includes the abandonment of the alley and connection to the adjacent building. The grading will be designed to match existing pavement grades along adjacent roads and the development west of the project site.

Refer to **Appendix III** for Preliminary Grading and Drainage Exhibit.

2.5 FLOOD HAZARD ZONE:

FIRM Map Number 04013C1770L dated October 16, 2013 indicates the proposed sites are designated as Zone "X". As such, it is defined as areas determined to be outside the 0.2% annual chance floodplain and therefore is not in a special flood hazard area.

Refer to **FIGURE 3** for the FIRM.

3. EXISTING DRAINAGE CONDITIONS

3.1 OFF-SITE DRAINAGE PATTERNS

The topographic survey information as well as information obtained Flo-2D Maps from the Indian Lower Bend wash were obtained and provide the following information for offsite drainage:

- There is an existing 18" R.C.P. storm drain running east along Shoeman Lane conveying runoff from Shoeman Lane south to the 48" RGRCP drain along Wells Fargo Avenue.
- There is an existing 18" H.D.P.E. pipe running from north to south along Buckboard Trail and an existing catch basin, EX. CB-1, located northeast of the Shoeman Lane and Wells Fargo Avenue intersection, EX CB-1.
- The site is not affected by any offsite flows, all offsite runoff is conveyed through curb and gutter to the nearest inlet structure.

Refer to **Figure 4** for **Flo-2D Exhibit**.

3.2 ONSITE DRAINAGE

The existing site is fully developed with minor landscape areas. Based on the topographic information, the building roof drains discharge to the alley which ultimately drains to Shoeman Lane (EX-C4 to EX-C6). Drainage areas EX-C1 through EX-C3 consist of sidewalk and landscape areas that drain to adjacent streets. The ultimate outfall is located at the southeast corner at an elevation of 1265.87

Refer to Appendix II for **Existing Conditions Drainage Area Map (Exhibit C)**.

The Rational Method was utilized to compute the on-site peak discharges. The Rational Method equation is calculated as shown below:

$$Q = C_{wt}IA$$

Where: C_{wt} = The runoff coefficient relating runoff to rainfall

I = Average rainfall intensity in inches/hour, lasting for T_c

T_c = The time of concentration (using five minutes for the developed areas)

A = The contributing drainage area in acres

Refer to section 4.3 for land characteristics. Table 1 be is a summary of existing Q_{100} runoff:

TABLE 1:

Maya Hotel Existing Runoff Calculations				
$Q=I \cdot C_w \cdot A$				
$I=100\text{-yr, 5-min}=7.46 \text{ in.}$				
Drainage	Area	C_w	intensity	Q
<u>Area ID</u>	<u>(acres)</u>	<u>(-)</u>	<u>(in/hr)</u>	<u>(cfs)</u>
Outfall: Indian Plaza				
EX-C1	0.01	0.95	7.46	0.07
Total				0.07
Outfall: Buckboard Trail				
EX-C2	0.05	0.75	7.46	0.28
Total				0.28
Outfall: Shoeman Lane				
EX-C3	0.00	0.70	7.46	0.02
EX-C4	0.15	0.95	7.46	1.06
EX-C5	0.05	0.95	7.46	0.35
EX-C6	0.11	0.95	7.46	0.78
Total				2.22

Overall project area includes **0.37 Acres at $C_{wt} = 0.92$** (Existing conditions, to property line)

Refer to the **Existing Cwt Exhibit (Exhibit A)** and **Existing Conditions Drainage Area Map (Exhibit C)** in **Appendix II**.

4. PROPOSED STORM WATER MANAGEMENT

4.1 DESIGN INTENT:

On-site drainage will be directed off-site via overland flow to the historical outlets. This is a re-development of existing commercial land; therefore, the City of Scottsdale specifies that on-site retention shall be provided as described in Section 4.2 below.

The majority of the entire site is proposed impervious with minor increases in runoff compared to existing conditions.

Refer to **Appendix II** for **Proposed Conditions Drainage Area Map**.

4.2 DESIGN STORM REQUIREMENTS:

In accordance with City of Scottsdale requirements, stormwater storage for the 100-year 2-hour storm event is required based on maintaining existing retention volume plus the difference between the pre vs. post development runoff from the 100-year 2-hour storm event if increased or first flush, whichever is greater.

4.3 LAND CHARACTERISTICS:

The proposed project site consists mainly of roofs and covered gathering areas, sidewalks and minor landscape areas along the south and north boundaries. Based on the DS&PM, runoff coefficients for the 100-year storm event used are as follows:

- C=0.95 for building or concrete
- C=0.95 for paved surface
- C=0.45 for undisturbed natural desert or desert landscape

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 Rational Method equation is displayed as shown below:

$$Q = C_{wt}IA$$

Where: C_{wt} = The runoff coefficient relating runoff to rainfall

I = Average rainfall intensity in inches/hour, lasting for T_c

T_c = The time of concentration (Using Five minutes for the developed areas)

A = The contributing drainage area in acres

Table 2 below is a summary of Proposed Q_{100} runoff.

TABLE 2:

Maya Hotel Proposed Runoff Calculations				
$Q = I * C_w * A$				
$I = 100\text{-yr, } 5\text{-min} = 7.46 \text{ in.}$				
Drainage	Area	C_w	intensity	Q
<u>Area ID</u>	<u>(acres)</u>	<u>(-)</u>	<u>(in/hr)</u>	<u>(cfs)</u>
Outfall: Indian Plaza				
DA-C1	0.01	0.45	7.46	0.02
Total				0.02
Outfall: Buckboard Trail				
DA-C2	0.04	0.83	7.46	0.25
Total				0.25
Outfall: Shoeman Lane				
DA-C3	0.32	0.95	7.46	2.27
Total				2.27

Overall project area includes **0.37 Acres at $C_{wt} = 0.93$** (Proposed conditions, to property line)
Refer to the **Proposed C_{wt} Exhibit (Exhibit B), Proposed Conditions Drainage Area Map (Exhibit D)** and Calculations in **Appendix II**.

Table 3 summarizes the calculated onsite peak flows for the 100-yr storm event under proposed and existing conditions.

TABLE 3:

Maya Hotel Runoff Calculations Summary (Pre-Routing)			
Outfall	Proposed	Existing	Difference
Indian Plaza	0.02	0.07	-0.05
Buckboard Trail	0.25	0.28	0.01
Shoeman Lane	2.27	2.22	0.05

The increase in flow to each outfall is less than 1 cfs and the existing street has the capacity to accommodate the project flow based on calculations in Appendix II and Section 4.6.

4.4 STORMWATER RETENTION:

Based on topographic survey there is no retention provided on the existing development. Based on the performed calculations above, existing condition and proposed development storage requirements for the 100-yr, 2-hr storm event are calculated as follows:

TABLE 4:

Pre vs. Post Required Storage Volume Calculation Summary						
Project Site	Area	C _{wpost}	C _{wpre}	Depth	Volume Req.	
	(acres)	(-)	(-)	(in)	(acre-ft)	(CF)
Maya Hotel	0.37	0.93	0.92	2.17	0.001	29.15

According to the DS&PM, section 4-1.201, item 2d., sites that are less than one acre in size and are not likely to contribute stormwater contaminants are waived from the first flush volume requirement. Since, the majority of the site is covered by Therefore, no onsite storage is required or proposed.

Refer to **Proposed Conditions Heavy Traffic Pollutant Area Exhibit (Exhibit E)** in **Appendix II** for areas considered in the first flush calculation.

4.6 OFFSITE STORM SYSTEM ANALYSIS:

Street capacity along adjacent streets was performed to verify the highwater elevation is well below the proposed finish floor. The 100-year flow was obtained along the adjacent streets (FLO-2D) as well as the contributing site flows (Table 3) and were analyzed at several sections to compare the highwater elevation along the curb and gutter in respect to the finish floor elevations. The curb and gutter analysis was performed for sections A-C (refer to Figure 4). Section analysis was performed through the use of FlowMaster; all sections and outputs for Sections A-C can be found in **Appendix II**. Based on the performed analysis, the existing streets are capable of conveying the proposed peak flows.

4.7 ADEQ WATER QUALITY REQUIREMENTS:

The total disturbed area of this site is approximately 0.37 acres. The Arizona Department of Environmental Quality requires that any site disturbance over an acre is required to submit an NOI. Therefore, an NOI is not required for the site.

5. FLOOD SAFETY FOR DWELLINGS

5.1 FINISHED FLOOR ELEVATIONS

This project lies in an "X" Flood Zone. Therefore, the proposed building finished floor elevations will be set a minimum of 12 inches above the 100-year high-water elevation of any adjacent streets and drainage paths and a minimum of 14 inches above the lowest top of curb of the lot. This will ensure that each building will be well above the 100-year water level. The lowest top of curb is located at the ultimate at the southeast corner at an elevation of 1266.37. The ultimate outfall elevation is greater than 14" below the minimum finish floor elevation.

6. CONCLUSIONS

6.1 OVERALL PROJECT:

1. 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 lowest top of curb of the lot.
2. On-site storm water storage will be not be proposed; first flush volume is not required.

6.2 PROJECT PHASING:

This project will 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 2018*
2. *Drainage Design Manual for Maricopa County, Arizona, Volume I, Hydrology, Flood Control District of Maricopa County, Fourth Edition, December 14, 2018*
3. *Drainage Design Manual for Maricopa County, Arizona, Volume II, Hydraulics, Flood Control District of Maricopa County, December 14, 2018*

GRADING & DRAINAGE LANGUAGE

WARNING AND DISCLAIMER OF LIABILITY

The City's Stormwater and Floodplain Management Ordinance is intended to minimize the occurrence of losses, hazards and conditions adversely affecting the public health, safety and general welfare which might result from flooding. The Stormwater and Floodplain Management Ordinance identifies floodplains, floodways, flood fringes and special flood hazard areas. However, a property outside these areas could be inundated by floods. Also, much of the city is a dynamic flood area; floodways, floodplains, flood fringes and special flood hazard areas may shift from one location to another, over time, due to natural processes.

WARNING AND DISCLAIMER OF LIABILITY

The flood protection provided by the Stormwater and Floodplain Management Ordinance 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 constructed or natural causes. The Stormwater and Floodplain Management Ordinance does not create liability on the part of the city, any officer or employee thereof, or the federal, state or county government for any flood damages that result from reliance on the Ordinance or any administrative decision lawfully made thereunder.

Compliance with the Stormwater and Floodplain Management Ordinance does not ensure complete protection from flooding. Flood-related problems such as natural erosion, streambed meander, or constructed obstructions and diversions may occur and have an adverse effect 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.

Plan Check #

Owner

Date



Figure 2- Aerial Map
Maya Hotel

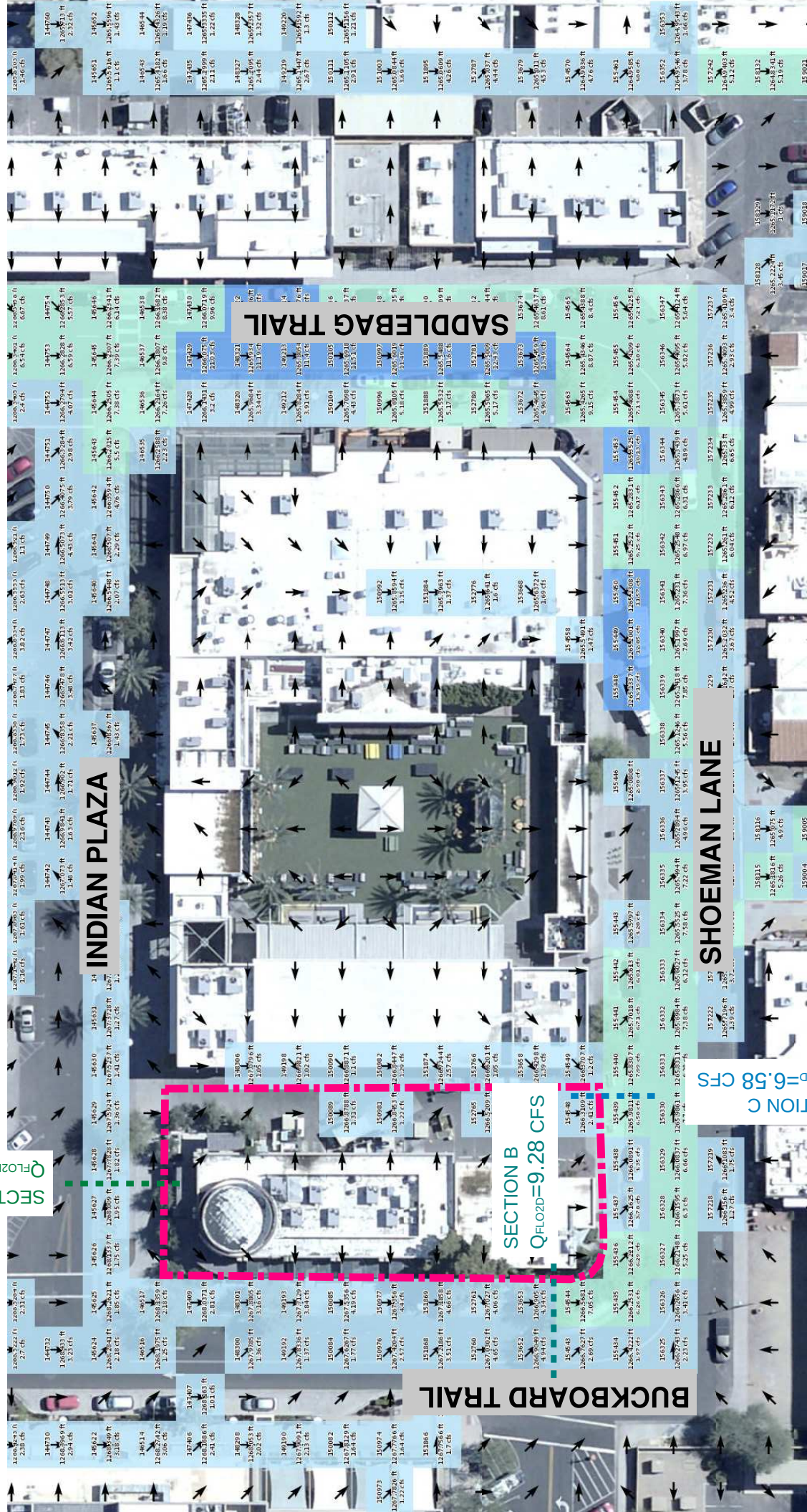
SCALE: N.T.S



Legend
 Property Boundary
 Flow Arrow



SECTION A
 $Q_{FLO2D}=1.95$ CFS



SECTION C
 $Q_{FLO2D}=6.58$ CFS

FIGURE 4
MAYA HOTEL
FLO-2D EXHIBIT

APPENDIX I

RAINFALL DATA



NOAA Atlas 14, Volume 1, Version 5
Location name: Scottsdale, Arizona, USA*
Latitude: 33.501°, Longitude: -111.9234°
Elevation: 1263.43 ft**

* source: ESRI Maps

** source: USGS



POINT PRECIPITATION FREQUENCY ESTIMATES

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

NOAA, National Weather Service, Silver Spring, Maryland

[PF_tabular](#) | [PF_graphical](#) | [Maps_&_aerials](#)

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.184 (0.154-0.224)	0.240 (0.202-0.293)	0.327 (0.273-0.397)	0.393 (0.326-0.475)	0.482 (0.394-0.580)	0.552 (0.445-0.660)	0.622 (0.492-0.742)	0.694 (0.540-0.827)	0.790 (0.598-0.943)	0.864 (0.641-1.03)
10-min	0.280 (0.234-0.341)	0.366 (0.308-0.446)	0.497 (0.415-0.604)	0.598 (0.496-0.722)	0.734 (0.599-0.883)	0.839 (0.677-1.00)	0.947 (0.749-1.13)	1.06 (0.821-1.26)	1.20 (0.911-1.44)	1.32 (0.976-1.57)
15-min	0.347 (0.290-0.423)	0.453 (0.382-0.553)	0.616 (0.515-0.748)	0.741 (0.615-0.895)	0.910 (0.743-1.09)	1.04 (0.839-1.25)	1.17 (0.928-1.40)	1.31 (1.02-1.56)	1.49 (1.13-1.78)	1.63 (1.21-1.95)
30-min	0.467 (0.391-0.569)	0.610 (0.514-0.744)	0.829 (0.693-1.01)	0.998 (0.828-1.21)	1.23 (1.00-1.47)	1.40 (1.13-1.68)	1.58 (1.25-1.89)	1.76 (1.37-2.10)	2.01 (1.52-2.40)	2.19 (1.63-2.63)
60-min	0.578 (0.484-0.704)	0.755 (0.636-0.921)	1.03 (0.858-1.25)	1.24 (1.02-1.49)	1.52 (1.24-1.82)	1.73 (1.40-2.08)	1.96 (1.55-2.33)	2.18 (1.70-2.60)	2.49 (1.88-2.97)	2.72 (2.02-3.25)
2-hr	0.670 (0.571-0.800)	0.867 (0.739-1.04)	1.16 (0.984-1.38)	1.38 (1.16-1.65)	1.69 (1.40-2.00)	1.92 (1.58-2.27)	2.17 (1.75-2.55)	2.41 (1.91-2.84)	2.74 (2.12-3.23)	3.00 (2.27-3.55)
3-hr	0.730 (0.618-0.880)	0.937 (0.797-1.13)	1.23 (1.04-1.48)	1.46 (1.23-1.75)	1.79 (1.48-2.13)	2.05 (1.67-2.43)	2.32 (1.86-2.75)	2.60 (2.05-3.08)	2.99 (2.29-3.55)	3.31 (2.46-3.93)
6-hr	0.879 (0.760-1.03)	1.11 (0.967-1.31)	1.43 (1.23-1.68)	1.68 (1.44-1.96)	2.02 (1.71-2.34)	2.29 (1.90-2.65)	2.57 (2.10-2.97)	2.85 (2.29-3.30)	3.24 (2.54-3.76)	3.55 (2.71-4.13)
12-hr	0.982 (0.859-1.14)	1.24 (1.08-1.44)	1.57 (1.37-1.82)	1.83 (1.58-2.12)	2.18 (1.87-2.52)	2.45 (2.07-2.82)	2.73 (2.27-3.14)	3.01 (2.47-3.47)	3.39 (2.71-3.92)	3.68 (2.90-4.29)
24-hr	1.17 (1.04-1.32)	1.49 (1.32-1.69)	1.93 (1.71-2.18)	2.28 (2.02-2.57)	2.76 (2.43-3.11)	3.14 (2.74-3.53)	3.54 (3.07-3.98)	3.95 (3.40-4.45)	4.52 (3.85-5.09)	4.97 (4.19-5.61)
2-day	1.26 (1.13-1.43)	1.62 (1.44-1.83)	2.12 (1.89-2.40)	2.53 (2.24-2.85)	3.09 (2.73-3.48)	3.54 (3.10-3.99)	4.02 (3.50-4.53)	4.51 (3.90-5.09)	5.20 (4.44-5.88)	5.76 (4.87-6.53)
3-day	1.34 (1.19-1.51)	1.71 (1.52-1.94)	2.25 (2.00-2.54)	2.69 (2.38-3.03)	3.30 (2.90-3.72)	3.80 (3.32-4.27)	4.32 (3.75-4.86)	4.87 (4.19-5.48)	5.64 (4.80-6.36)	6.27 (5.28-7.08)
4-day	1.41 (1.25-1.60)	1.81 (1.60-2.04)	2.38 (2.11-2.69)	2.85 (2.52-3.21)	3.51 (3.08-3.95)	4.05 (3.53-4.55)	4.62 (4.00-5.19)	5.22 (4.48-5.88)	6.08 (5.15-6.84)	6.78 (5.68-7.64)
7-day	1.57 (1.39-1.78)	2.01 (1.78-2.27)	2.65 (2.35-2.99)	3.17 (2.80-3.58)	3.91 (3.43-4.40)	4.50 (3.93-5.06)	5.13 (4.44-5.78)	5.80 (4.98-6.54)	6.75 (5.72-7.61)	7.51 (6.30-8.49)
10-day	1.70 (1.51-1.93)	2.18 (1.94-2.46)	2.88 (2.55-3.24)	3.44 (3.04-3.87)	4.23 (3.71-4.74)	4.86 (4.24-5.44)	5.53 (4.80-6.20)	6.24 (5.37-7.00)	7.22 (6.14-8.11)	8.02 (6.75-9.02)
20-day	2.10 (1.87-2.35)	2.70 (2.40-3.02)	3.56 (3.17-3.99)	4.21 (3.74-4.71)	5.09 (4.50-5.69)	5.77 (5.08-6.45)	6.46 (5.66-7.23)	7.16 (6.24-8.02)	8.10 (7.00-9.10)	8.83 (7.57-9.92)
30-day	2.45 (2.17-2.75)	3.15 (2.80-3.53)	4.15 (3.69-4.65)	4.91 (4.35-5.49)	5.93 (5.23-6.63)	6.72 (5.90-7.50)	7.53 (6.58-8.40)	8.35 (7.26-9.31)	9.45 (8.15-10.6)	10.3 (8.82-11.5)
45-day	2.83 (2.53-3.17)	3.65 (3.26-4.09)	4.81 (4.29-5.38)	5.67 (5.04-6.34)	6.80 (6.03-7.60)	7.65 (6.76-8.55)	8.51 (7.49-9.52)	9.37 (8.21-10.5)	10.5 (9.14-11.8)	11.4 (9.82-12.8)
60-day	3.13 (2.81-3.50)	4.05 (3.62-4.51)	5.32 (4.76-5.94)	6.25 (5.58-6.97)	7.46 (6.64-8.31)	8.35 (7.41-9.31)	9.25 (8.17-10.3)	10.1 (8.91-11.3)	11.3 (9.87-12.6)	12.1 (10.6-13.6)

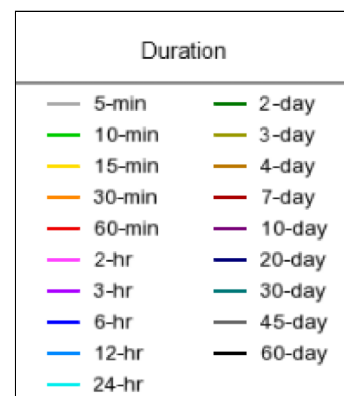
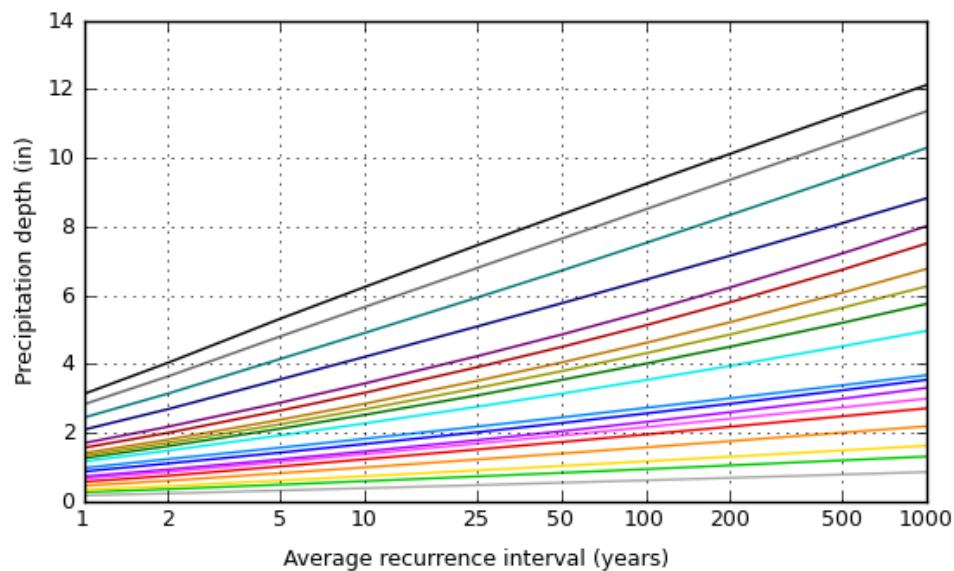
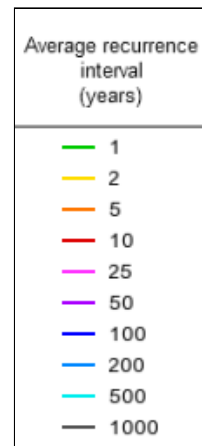
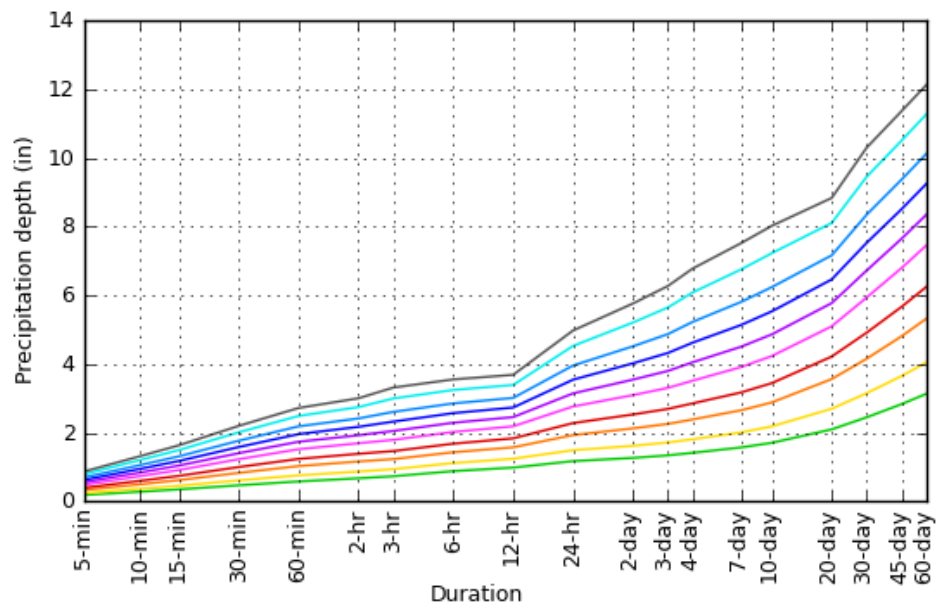
¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).
 Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and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

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PF graphical

PDS-based depth-duration-frequency (DDF) curves

Latitude: 33.5010°, Longitude: -111.9234°



NOAA Atlas 14, Volume 1, Version 5

Created (GMT): Wed May 6 23:29:10 2020

[Back to Top](#)**Maps & aerials**

Small scale terrain



NOAA Atlas 14, Volume 1, Version 5
Location name: Scottsdale, Arizona, USA*
Latitude: 33.501°, Longitude: -111.9234°
Elevation: 1263.43 ft**

* source: ESRI Maps

** source: USGS



POINT PRECIPITATION FREQUENCY ESTIMATES

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

NOAA, National Weather Service, Silver Spring, Maryland

[PF_tabular](#) | [PF_graphical](#) | [Maps_&_aerials](#)

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	2.21 (1.85-2.69)	2.88 (2.42-3.52)	3.92 (3.28-4.76)	4.72 (3.91-5.70)	5.78 (4.73-6.96)	6.62 (5.34-7.92)	7.46 (5.90-8.90)	8.33 (6.48-9.92)	9.48 (7.18-11.3)	10.4 (7.69-12.4)
10-min	1.68 (1.40-2.05)	2.20 (1.85-2.68)	2.98 (2.49-3.62)	3.59 (2.98-4.33)	4.40 (3.59-5.30)	5.03 (4.06-6.02)	5.68 (4.49-6.78)	6.34 (4.93-7.55)	7.22 (5.47-8.62)	7.89 (5.86-9.43)
15-min	1.39 (1.16-1.69)	1.81 (1.53-2.21)	2.46 (2.06-2.99)	2.96 (2.46-3.58)	3.64 (2.97-4.38)	4.16 (3.36-4.98)	4.70 (3.71-5.60)	5.24 (4.07-6.24)	5.96 (4.52-7.12)	6.52 (4.84-7.80)
30-min	0.934 (0.782-1.14)	1.22 (1.03-1.49)	1.66 (1.39-2.01)	2.00 (1.66-2.41)	2.45 (2.00-2.95)	2.80 (2.26-3.35)	3.16 (2.50-3.77)	3.53 (2.74-4.20)	4.02 (3.04-4.79)	4.39 (3.26-5.25)
60-min	0.578 (0.484-0.704)	0.755 (0.636-0.921)	1.03 (0.858-1.25)	1.24 (1.02-1.49)	1.52 (1.24-1.82)	1.73 (1.40-2.08)	1.96 (1.55-2.33)	2.18 (1.70-2.60)	2.49 (1.88-2.97)	2.72 (2.02-3.25)
2-hr	0.335 (0.286-0.400)	0.434 (0.370-0.520)	0.580 (0.492-0.691)	0.692 (0.580-0.823)	0.845 (0.701-0.998)	0.962 (0.788-1.13)	1.08 (0.874-1.28)	1.21 (0.954-1.42)	1.37 (1.06-1.61)	1.50 (1.13-1.78)
3-hr	0.243 (0.206-0.293)	0.312 (0.265-0.377)	0.410 (0.347-0.494)	0.487 (0.409-0.584)	0.596 (0.492-0.709)	0.682 (0.556-0.810)	0.773 (0.618-0.917)	0.867 (0.682-1.03)	0.997 (0.761-1.18)	1.10 (0.821-1.31)
6-hr	0.147 (0.127-0.173)	0.186 (0.161-0.219)	0.238 (0.206-0.280)	0.280 (0.240-0.327)	0.337 (0.285-0.391)	0.382 (0.318-0.442)	0.429 (0.351-0.496)	0.476 (0.382-0.552)	0.541 (0.424-0.628)	0.593 (0.453-0.690)
12-hr	0.082 (0.071-0.095)	0.103 (0.090-0.120)	0.130 (0.113-0.151)	0.152 (0.131-0.176)	0.181 (0.155-0.209)	0.204 (0.172-0.234)	0.227 (0.189-0.261)	0.250 (0.205-0.288)	0.281 (0.225-0.326)	0.306 (0.240-0.356)
24-hr	0.049 (0.043-0.055)	0.062 (0.055-0.070)	0.080 (0.071-0.091)	0.095 (0.084-0.107)	0.115 (0.101-0.130)	0.131 (0.114-0.147)	0.148 (0.128-0.166)	0.165 (0.142-0.185)	0.188 (0.160-0.212)	0.207 (0.175-0.234)
2-day	0.026 (0.023-0.030)	0.034 (0.030-0.038)	0.044 (0.039-0.050)	0.053 (0.047-0.059)	0.064 (0.057-0.073)	0.074 (0.065-0.083)	0.084 (0.073-0.094)	0.094 (0.081-0.106)	0.108 (0.093-0.123)	0.120 (0.101-0.136)
3-day	0.019 (0.017-0.021)	0.024 (0.021-0.027)	0.031 (0.028-0.035)	0.037 (0.033-0.042)	0.046 (0.040-0.052)	0.053 (0.046-0.059)	0.060 (0.052-0.067)	0.068 (0.058-0.076)	0.078 (0.067-0.088)	0.087 (0.073-0.098)
4-day	0.015 (0.013-0.017)	0.019 (0.017-0.021)	0.025 (0.022-0.028)	0.030 (0.026-0.033)	0.037 (0.032-0.041)	0.042 (0.037-0.047)	0.048 (0.042-0.054)	0.054 (0.047-0.061)	0.063 (0.054-0.071)	0.071 (0.059-0.080)
7-day	0.009 (0.008-0.011)	0.012 (0.011-0.014)	0.016 (0.014-0.018)	0.019 (0.017-0.021)	0.023 (0.020-0.026)	0.027 (0.023-0.030)	0.031 (0.026-0.034)	0.035 (0.030-0.039)	0.040 (0.034-0.045)	0.045 (0.038-0.051)
10-day	0.007 (0.006-0.008)	0.009 (0.008-0.010)	0.012 (0.011-0.014)	0.014 (0.013-0.016)	0.018 (0.015-0.020)	0.020 (0.018-0.023)	0.023 (0.020-0.026)	0.026 (0.022-0.029)	0.030 (0.026-0.034)	0.033 (0.028-0.038)
20-day	0.004 (0.004-0.005)	0.006 (0.005-0.006)	0.007 (0.007-0.008)	0.009 (0.008-0.010)	0.011 (0.009-0.012)	0.012 (0.011-0.013)	0.013 (0.012-0.015)	0.015 (0.013-0.017)	0.017 (0.015-0.019)	0.018 (0.016-0.021)
30-day	0.003 (0.003-0.004)	0.004 (0.004-0.005)	0.006 (0.005-0.006)	0.007 (0.006-0.008)	0.008 (0.007-0.009)	0.009 (0.008-0.010)	0.010 (0.009-0.012)	0.012 (0.010-0.013)	0.013 (0.011-0.015)	0.014 (0.012-0.016)
45-day	0.003 (0.002-0.003)	0.003 (0.003-0.004)	0.004 (0.004-0.005)	0.005 (0.005-0.006)	0.006 (0.006-0.007)	0.007 (0.006-0.008)	0.008 (0.007-0.009)	0.009 (0.008-0.010)	0.010 (0.008-0.011)	0.011 (0.009-0.012)
60-day	0.002 (0.002-0.002)	0.003 (0.003-0.003)	0.004 (0.003-0.004)	0.004 (0.004-0.005)	0.005 (0.005-0.006)	0.006 (0.005-0.006)	0.006 (0.006-0.007)	0.007 (0.006-0.008)	0.008 (0.007-0.009)	0.008 (0.007-0.009)

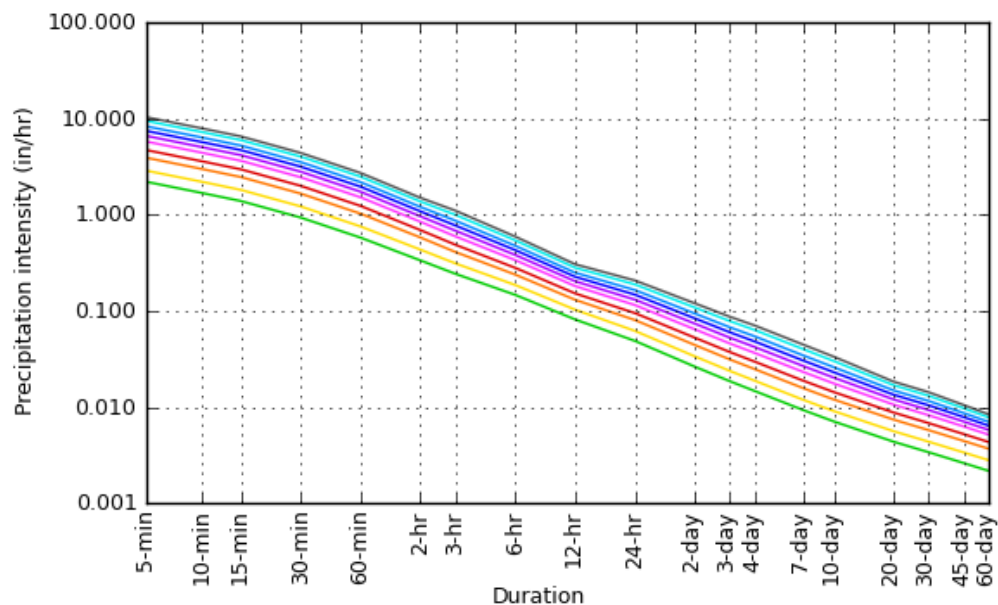
¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).
 Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and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

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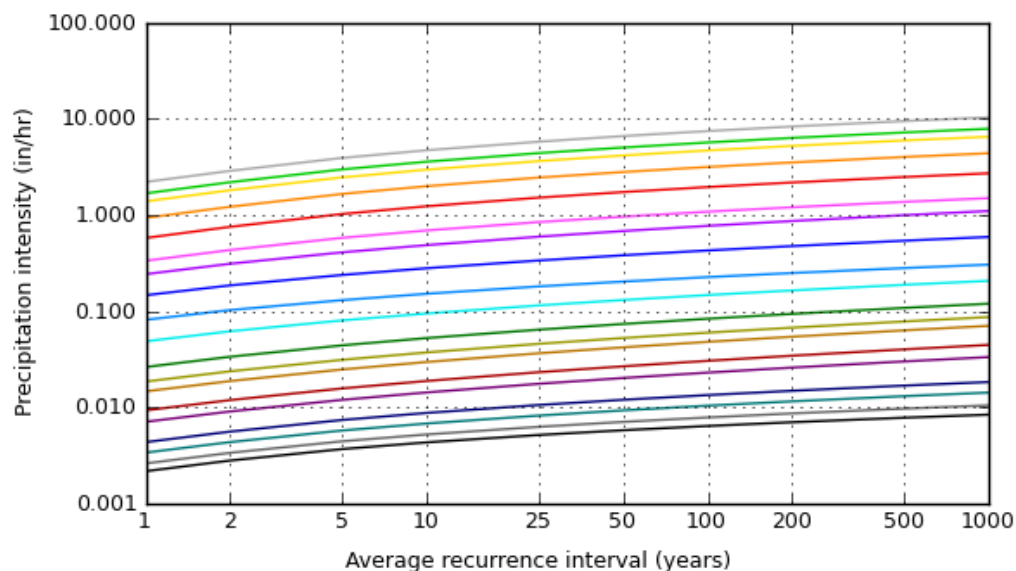
PF graphical

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

Latitude: 33.5010°, Longitude: -111.9234°



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

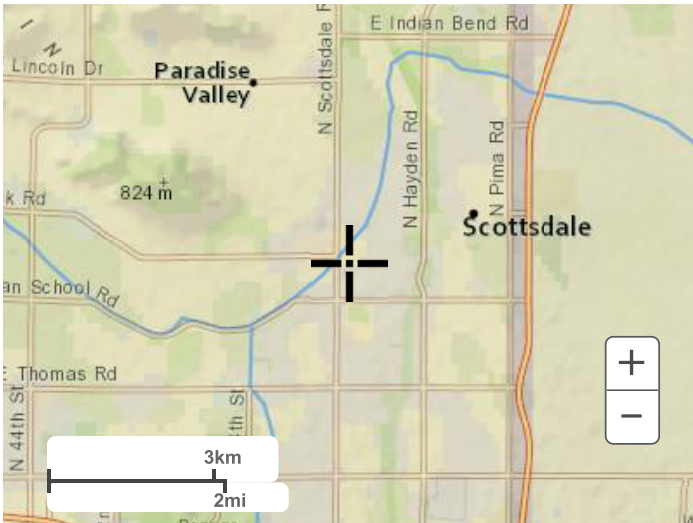
NOAA Atlas 14, Volume 1, Version 5

Created (GMT): Wed May 6 23:31:06 2020

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Maps & aeriels

Small scale terrain



Large scale terrain



Large scale map



Large scale aerial

APPENDIX II

CALCULATIONS

Maya Hotel Weighted Runoff Coefficient-Calculations (C_w)

MAYA HOTEL PROPOSED OVERALL SITE C _w					
	BUILDING CONCRETE	ASPHALT	DESERT LANDSCAPE	TOTAL AREA	Cwt
C-VALUE	0.95	0.95	0.45		
AREA (ac)	0.35	0.00	0.02	0.37	0.93
DA-C1	0.00	0.00	0.006	0.01	0.45
DA-C2	0.03	0.00	0.01	0.04	0.83
DA-C3	0.32	0.00	0.00	0.32	0.95

MAYA HOTEL EXISTING OVERALL SITE C _w					
	BUILDING CONCRETE	ASPHALT	DESERT LANDSCAPE	TOTAL AREA	Cwt
C-VALUE	0.95	0.95	0.45		
AREA (ac)	0.20	0.15	0.02	0.37	0.92
EX-C1	0.00	0.01	0.00	0.01	0.95
EX-C2	0.00	0.03	0.02	0.05	0.75
EX-C3	0.00	0.002	0.002	0.004	0.70
EX-C4	0.15	0.00	0.00	0.15	0.95
EX-C5	0.05	0.00	0.00	0.05	0.95
EX-C6	0.00	0.11	0.00	0.11	0.95

MAYA HOTEL
EXISTING CONDITIONS CWT EXHIBIT

The site plan illustrates the layout of the Maya Hotel, including its building footprint, courtyards, and surrounding streets. The hotel building is situated on a lot bounded by Buckboard Trail to the north, East Indian Plaza to the east, and Shoeman Lane to the south. The plan shows various building sections with their respective floor areas (FFE) and lot areas. Key features include a central courtyard area, a covered patio, and a parking area. The CWT exhibit areas are highlighted in green, showing the distribution of impervious surfaces across the site. The plan also includes dimensions, bearings, and stationing for the property lines and streets.

DESERT LSCP =	911 SF	@ Cwt=0.45
IMPERVIOUS =	15,381 SF	@ Cwt=0.95
Cwt=	16,292 SF	@ Cwt=0.92

PRELIMINARY
NOT FOR
CONSTRUCTION

SUSTAINABILITY
ENGINEERING
GROUP

SEEG

8280 E. GELDING DRIVE SUITE 101, SCOTTSDALE, ARIZONA 85260
WWW.AZSEEG.COM TEL. 480.588.7226 FAX 480.259.3534

PROJECT
MAYA HOTEL

LOCATION
NE CORNER OF BUCKBOARD
TRAIL AND SHOEMAN LANE

DRAWN: KA
DESIGNED: KA
QC: SC
DA: AF
PROJ. MGR: AF

DATE: 09/03/2020
ISSUED FOR: DRB

REVISION NO.:
DATE:

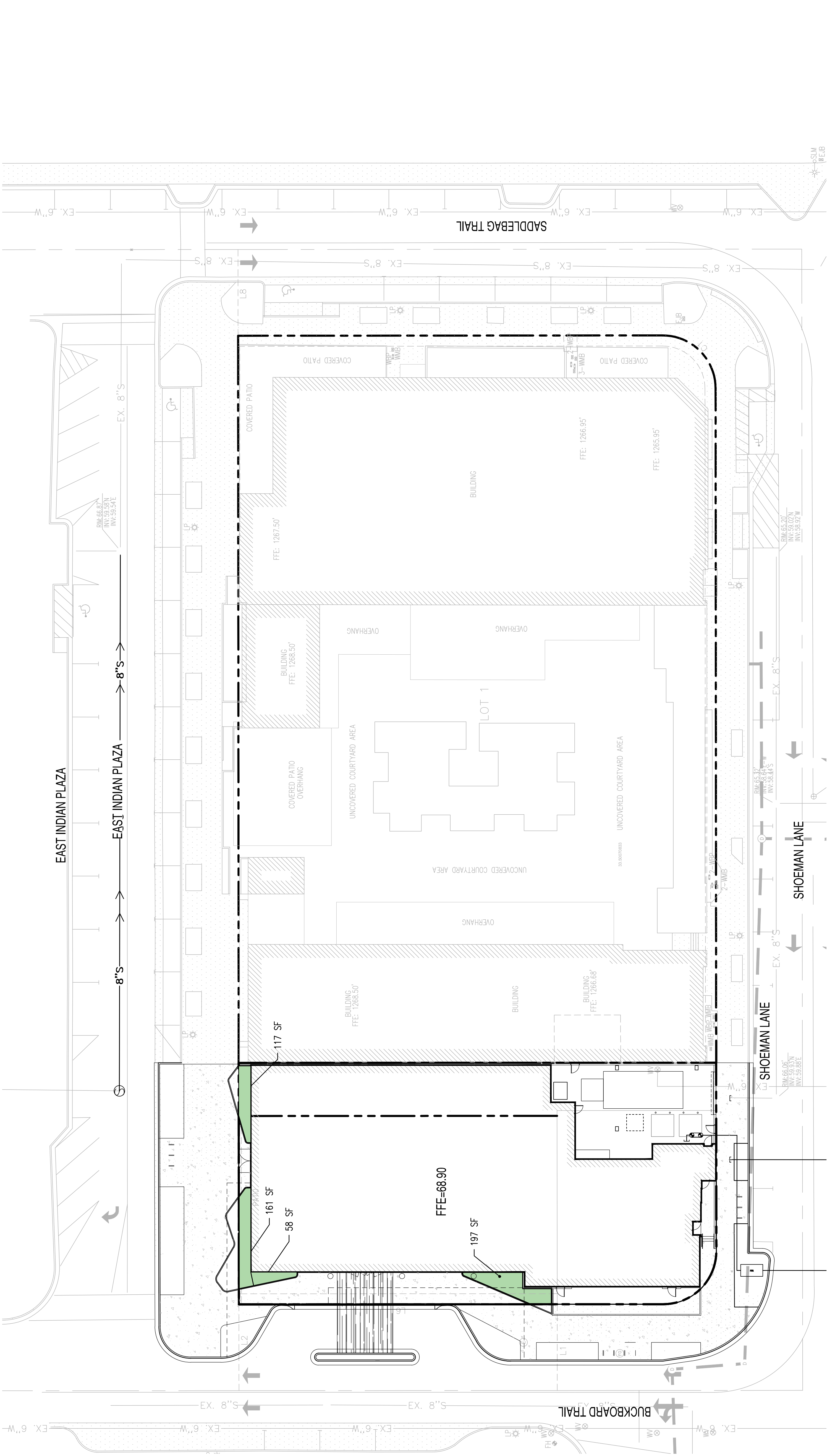
JOB NO.: 200226
SHEET TITLE:

EXISTING CONDITIONS
CWT EXHIBIT

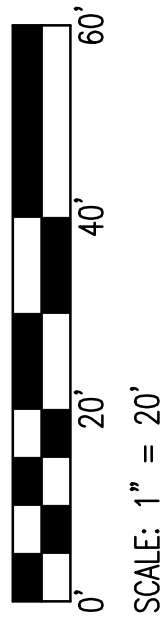
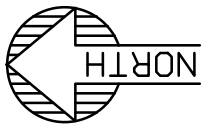
EXHIBIT A

[illegible]

MAYA HOTEL
PROPOSED CONDITIONS CWT EXHIBIT



DESERT LSCP	=	533 SF	@	Cwt=0.45
		(0.01 AC)		
IMPERVIOUS	=	15,759 SF	@	Cwt=0.95
		(0.36 AC)		
Cwt=		16,292 SF	@	Cwt=0.93
		(0.37 AC)		



SCALE: 1" = 20'

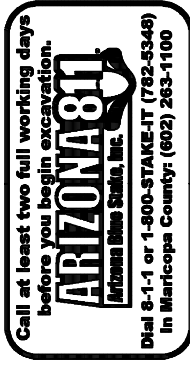
PRELIMINARY
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GROUP

SEG



8280 E. GELDING DRIVE SUITE 101, SCOTTSDALE, ARIZONA 85260
WWW.AZSEG.COM TEL. 480.588.7226 FAX 480.259.3534



PROJECT
MAYA HOTEL
LOCATION
NE CORNER OF BUCKBOARD
TRAIL AND SHOEMAN LANE

DRAWN: KA 09/03/2020
DESIGNED: KA 09/03/2020
CHECKED: SC
BY: AF
PROJECT MGR: AF
DATE: 09/03/2020
ISSUED FOR: DRB

REVISION NO.:
DATE:
A
A
A
A

JOB NO.: 200226

SHEET TITLE:

PROPOSED CONDITIONS
CWT EXHIBIT

SHEET NO.:

EXHIBIT C

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MAYA HOTEL

PRELIMINARY
NOT FOR
CONSTRUCTION



8280 E. GELBING DRIVE SUITE 101, SCOTTSDALE, ARIZONA 85260
WWW.AZSEG.COM TEL. 480.588.7226 FAX 480.259.3534



TEL

PROJECT MAYA HOTEL	LOCATION		NE CORNER	TRAIL AND S
	DRAIN	KA	09/03/2020	
	DESIGNED	KA	09/03/2020	
	QC	SC		
		AF		
	PROJ. MGR.	AF		
DATE:				09/03/2020

DRB REVISION NO.: DATE:

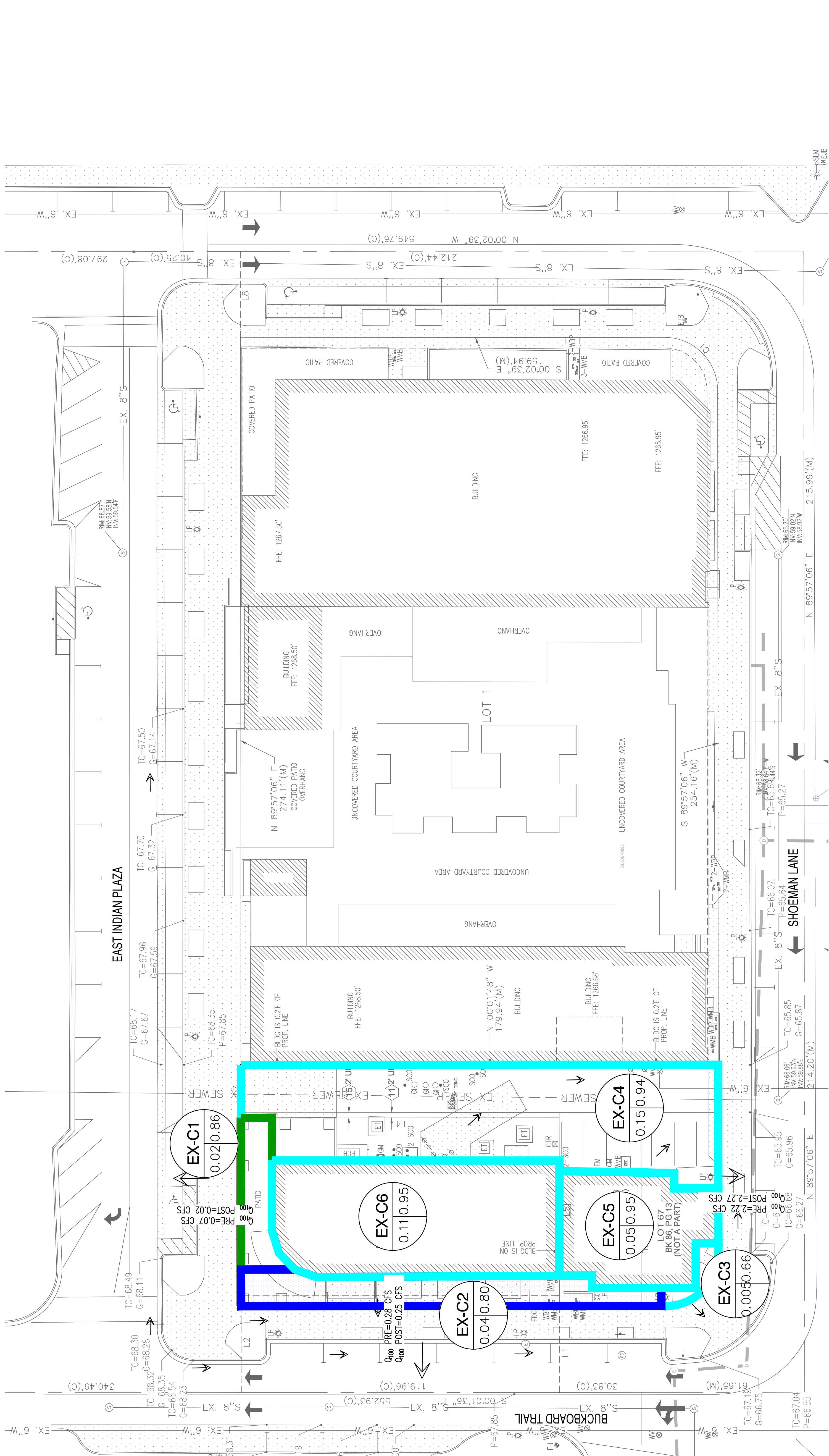
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$\triangle_2$		
$\triangle_3$		

JOB NO.: 200226

SHEET TITLE:

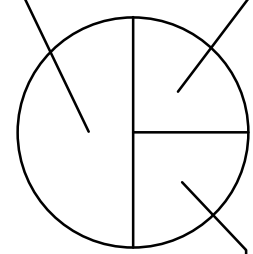
EXISTING CONDITIONS DRAINAGE AREA MAP

SHEET NO.: EXHIBIT B



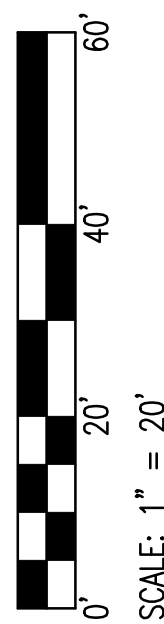
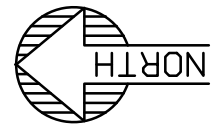
LEGEND

- DRAINAGE AREAS DRAINING TO
BUCKBOARD TRAIL
- DRAINAGE AREAS DRAINING TO
INDIAN PLAZA
- DRAINAGE AREAS DRAINING TO
SHOEMAN LANE



DRAINAGE AREA ID

DRAINAGE AREA KEY



SCALE: 1" = 20'

SECTION A

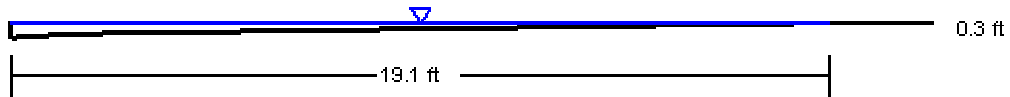
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Solve For	Spread
Input Data	
Channel Slope	0.005 ft/ft
Discharge	1.98 cfs
Gutter Width	1.5 ft
Gutter Cross Slope	0.058 ft/ft
Road Cross Slope	0.013 ft/ft
Spread	12.2 ft
Roughness Coefficient	0.013



V: 1
H: 1

SECTION B

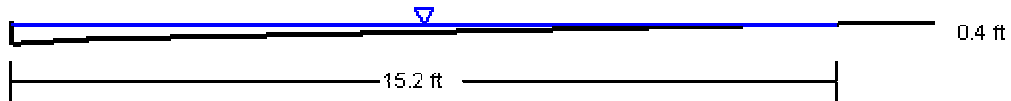
Project Description	
Solve For	Spread
Input Data	
Channel Slope	0.010 ft/ft
Discharge	9.29 cfs
Gutter Width	1.5 ft
Gutter Cross Slope	0.058 ft/ft
Road Cross Slope	0.014 ft/ft
Spread	19.1 ft
Roughness Coefficient	0.013



V: 1
H: 1

SECTION C

Project Description	
Solve For	Spread
Input Data	
Channel Slope	0.005 ft/ft
Discharge	6.63 cfs
Gutter Width	1.5 ft
Gutter Cross Slope	0.058 ft/ft
Road Cross Slope	0.020 ft/ft
Spread	15.2 ft
Roughness Coefficient	0.013



V: 1
H: 1

APPENDIX III

PRELIMINARY GRADING AND DRAINAGE

EXHIBIT

CAMELBACK RD.

INDIAN SCHOOL RD.

MILLER RD.

SITE

NORTH

VICINITY MAP:

SCALE: NTS

SEG
8280 E. GELDING DR, SUITE #101
SCOTTSDALE, AZ 85260
480-588-7226
ATTN: AUI FAKIH

RSP
502 S. COLLEGE AVENUE
TEMPE, AZ 85281
602-253-4900
ATTN: ADAM VALENTE

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

ARIZONA 811
Arizona Blue Sticks, Inc.

Dial 811 or 1-800-STAKE-IT (732-5348) in Maricopa County; (602) 263-1100 in Maricopa County.

REVISION NO.:	DATE:
1	
2	
3	
4	

JOB NO: 200226

SHEET NO. 6

C3.00

GRADING CONSTRUCTION KEY NOTES

- ① MATCH EXISTING GRADE; CONTRACTOR TO VERIFY IN FIELD ALL GRADES PRIOR TO CONSTRUCTION ACTIVITIES AND CONTACT ENGINEER IN CASE OF ANY DISCREPANCIES.
- ② CONSTRUCT ASPHALT PAVEMENT.
- ②A CONSTRUCT STAMPED CONCRETE PAVEMENT.
- ③ CONSTRUCT 6" VERTICAL CURB AND GUTTER PER M.A.G. STD. DET. 220-1 TYPE "A".
- ③A CONSTRUCT 2' RIBBON CURB PER M.A.G. STD. DET. 220-1 TYPE "B".
- ③B CONSTRUCT VERTICAL CURB AND GUTTER TO RIBBON CURB TRANSITION PER M.A.G. STD. DET. 221

EXISTING LEGEND

TC=XX.XX
P=XX.XX

PROPOSED LEGEND

TOP GUTTER ELEVATION, TC (TOP OF CURB) = G+0.5'

PAVEMENT ELEVATION

CONCRETE ELEVATION

FINISH GROUND

SAWCUT

