PRELIMINARY DRAINAGE REPORT
Senior Living Scottsdale + Osborn

3380 N Scottsdale Road, Scottsdale AZ 85251

Prepared For:

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GROUP OF COMPANIES

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1. INTRODUCTION

This Preliminary Drainage Report represents the storm water analysis for a multi-family residential development proposed in Scottsdale, Arizona. The purpose of this report is to provide the hydrologic and hydraulic analysis, 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 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 I[2] and Volume II[3].

2. LOCATION AND PROJECT DESCRIPTION

2.1 LOCATION:

The subject property consists of land located in a portion of the Southeast Quarter of Section 27, Township 2 North, Range 4 East of the Gila and Salt Meridian, Maricopa County Arizona:

- Parcel ID: Parcel 130-16-114; Zoning is D/DMU-2 (Downtown Multiple Use)
- Address: 3380 N. Scottsdale Road, Scottsdale 85251

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:

- South:
  The site is bound to the south by the following properties:
  - Parcel 130-16-115; The Carter (apartment complex); Zoning is C-3
- North: Across Osborn Road
  - Parcel 130-13-316; Ten Wife Lofts (apartments/condominiums); Zoning is D/OC-2.
  - Parcel 130-13-046 and 130-13-044A; Walgreens Drug Store; Zoning is C-3.
- West: Across 71st Street
  - Parcel 130-16-087; First Baptist Church of Scottsdale; Zoning is R-5
- East: Across Scottsdale Road
  - Parcel 130-21-001U; Gasoline Service Station and a convenience market; Zoning is C-3.

2.3 EXISTING SITE DESCRIPTION:

The project area includes approximately 2.57 acres of land and is designated with zoning D/DMU-2. The site is currently developed as an Olive Garden restaurant with associated parking lot, driveways, and landscape areas.

Per Topographic Survey prepared by AW Land Surveying, LLC., the site slopes from north to south at approximately less than 1%. The site drains south into existing catch basins along the property line.

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

2.4 PROPOSED SITE DEVELOPMENT:

Site development includes the demolition of existing structures and designated parking lots for the construction of a new high density multifamily project. The development will include two access points proposed at Osborn Road and 71st Street.

Refer to **Appendix III** – Grading and Drainage Plan for site layout.

2.5 FLOOD HAZARD ZONE:

FIRM Map Number 04013C2235M dated September 18, 2020 indicates the site is 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 provides the following information for offsite drainage:

- *North*: Half of the runoff from Osborn Road flows towards the site, where it is conveyed through curb and gutter into an existing catch basin, EX-CB-6, located northeast of the site at the SWC of Osborn Road and Scottsdale Road. No offsite flows from the north affect the site.
- *East*: Half of the runoff from Scottsdale Road flows towards the site, where it is conveyed through curb and gutter and flows southerly away from the site. No offsite flows from the east affect the site.
- *West*: Half of the runoff from N. 71st is also conveyed via existing curb and gutter. Approximately half of this runoff is collected by an existing catch basin, EX-CB-7, located near the southwestern corner of the property. The other half of the runoff flows north into Osborn Road. No offsite flows from the west affect the site.
- *South*: Runoff from the apartment complex south of the site is captured by existing catch basins inside the apartment complex's property. No offsite flows from the south affect the site.

3.2 ON-SITE DRAINAGE

Based on the topographic information, the historical outfalls are as follows:

- Flows from drainage areas EX-A1 through EX-A4 are collected by existing catch basins located at the south along the property line and retained in existing underground basin (Ex-Basin 1). Flows from drainage area EX-5 is collected by existing catch basin EX-CB-5 and retained by existing underground retention basin (Ex-Basin 2). According to Plan C1.4 "Stormdrain Plan" by Hilgart Wilson, Ex-Basin 1 and Ex-Basin 2 provide a volume of 4,516 cf and 4,123 cf respectively. Refer to Appendix IV for Plan C1.4 "Stormdrain Plan" by Hilgart Wilson.
- Drainage area EX-B1 is self-retaining.
- Runoff from drainage area EX-C1 flows into Osborn Road, where it is ultimately collected by EX-CB-6.
- All flows draining into existing on-site catch basins are stored in two underground storage tanks located south of the property (Ex-Basin 1 and Ex-Basin 2).

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

Table 1 below is a summary of existing conditions runoff calculations:

TABLE 1:

EXISTING SITE DISCHARGES									
	TOTAL AREA	Cwt	Intensity 10 yr 5-min	Q 10	Intensity 100 yr 5-min	Q 100	Control Point	Total flows Q10	Total flows Q100
	(ac)	(-)	(in/hr)	(cfs)	(in/hr)	(cfs)	CP#	(cfs)	(cfs)
	1.34		4.68	-	7.43	-	-	-	-
EX-A1	0.32	0.87	4.68	1.30	7.43	2.06	EX-CB-1	11.07	17.58
EX-A2	0.33	0.90	4.68	1.40	7.43	2.22	EX-CB-2		
EX-A3	0.36	0.88	4.68	1.50	7.43	2.38	EX-CB-3		
EX-A4	0.33	0.89	4.68	1.37	7.43	2.17	EX-CB-4		
EX-A5	0.93	0.87	4.68	3.77	7.43	5.99	EX-CB-5		
EX-B1	0.04	0.45	4.68	0.09	7.43	0.14	EX-CB-1		
EX-C1	0.26	0.61	4.68	0.75	7.43	1.19			
OFF-2	0.11	0.83	4.68	0.43	7.43	0.68	Osborn Road		
OFF-1	0.06	0.73	4.68	0.20	7.43	0.32	71st Street		
OFF-3	0.08	0.73	4.68	0.27	7.43	0.43	Scottsdale Road		

Overall project area includes **2.57 Acres at C_{wt} = 0.84** (Existing conditions)
Refer to the **Existing Cwt Exhibit and Existing Conditions Drainage Area Map** in **Appendix II**.

4. PROPOSED STORM WATER MANAGEMENT

4.1 DESIGN INTENT:

Given that the site has been previously developed, on-site retention shall be calculated per City of Scottsdale DSPM 4-1.201. In order to preserve existing drainage patterns, most of the on-site drainage will discharge to the historical outlets, a portion of the site run-off will also be stored in basins to fulfill stormwater retention and first flush requirements. The majority of the building's roof run-off will be directed to existing catch basins south of the site (EX-CB-1 to EX-CB-5) as in existing conditions. A portion of the roof will be drained to a proposed underground storage tank located at the south boundary of the property, which will store the minimum pre-vs-post associated volume of the site. Landscape and sidewalk areas around the project building will discharge minor flows to the right of way. Flows will be conveyed via roof drains, storm pipes and overland flow.

4.2 DESIGN STORM REQUIREMENTS:

In accordance with City of Scottsdale requirements for lots that are already developed, 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 of a multi-family residential building with a restaurant and landscape areas along the perimeter of the structure. 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.

Table 2 below is a summary of proposed conditions runoff calculations:

TABLE 2:

PROPOSED SITE DISCHARGES									
	TOTAL AREA	Cwt	Intensity 10 yr 5-min	Q 10	Intensity 100 yr 5-min	Q 100	Control Point	Total flows Q10	Total flows Q100
	(ac)	(-)	(in/hr)	(cfs)	(in/hr)	(cfs)	CP#	(cfs)	(cfs)
	0.92		4.68	-	7.43	-	-	-	-
DA-A1	0.17	0.95	4.68	0.73	7.43	1.17			
DA-A2	0.26	0.95	4.68	1.17	7.43	1.86	EX-CB-1		
DA-A3	0.18	0.95	4.68	0.81	7.43	1.29			
DA-A4	0.30	0.95	4.68	1.36	7.43	2.15	EX-CB-2		
DA-A5	0.28	0.95	4.68	1.24	7.43	1.96			
DA-A6	0.54	0.95	4.68	2.41	7.43	3.83			
DA-A7	0.26	0.95	4.68	1.14	7.43	1.81	EX-CB-5		
DA-A8	0.08	0.95	4.68	0.37	7.43	0.59	EX-CB-4		
DA-E1	0.21	0.95	4.68	0.95	7.43	1.51		11.99	19.03
DA-E2	0.03	0.95	4.68	0.16	7.43	0.25	Basin 1		
DA-B1	0.06	0.56	4.68	0.17	7.43	0.27			
OFF-1	0.06	0.80	4.68	0.22	7.43	0.36	71st Street		
DA-C1	0.18	0.72	4.68	0.59	7.43	0.94			
OFF-2	0.11	0.70	4.68	0.36	7.43	0.58	Osborn Road		
DA-D1	0.01	0.73	4.68	0.03	7.43	0.04			
OFF-3	0.08	0.73	4.68	0.27	7.43	0.43	Scottsdale Road		

Overall project area includes **2.57 Acres at C_{wt} = 0.92** (Proposed conditions)

Refer to the **Proposed Cwt Exhibit and Proposed Conditions Drainage Area Map** in **Appendix II**.

4.4 STORMWATER RETENTION:

100-YR, 2-HR STORM: Per City of Scottsdale DSPM 4-1.201, development storage requirements for the 100-yr, 2-hr storm event are calculated as follows:

$$V_r = \Delta C \left(\frac{R}{12}\right) A$$

where:
V_r = Required storage (cf)
R = Precipitation amount =2.16 in per NOAA Atlas 14 Precipitation Frequency Estimates
A = Total area of site (sf)
$\Delta C = C_{post} - C_{pre}$

$$V_r = (0.92 - 0.84)\left(\frac{2.16}{12}\right)(112{,}097) = 1{,}615\ cf$$

Since the difference of the weighted coefficients is positive, stormwater flows in the project area will increase, generating additional flow contributions to existing drainage patterns. Therefore, stormwater retention is required for the development following the pre vs. post analysis.

FIRST FLUSH: First Flush storage required is calculated in accordance with City of Scottsdale DSPM 4-1.201. Only the areas where runoff could be affected by vehicular contact are considered in the first flush calculation. The roof drainage is considered to be free of heavy traffic pollutants, therefore, on-site driveway areas and sidewalks will be considered for the calculation. As shown in the Proposed Conditions Cwt Exhibit, first flush area is calculated as the total project area (112,097 sf) minus roof area (89,482 sf) and landscape areas (5821 sf), equating to 16,794 sf.

$$FF_r = C\left(\frac{P}{12}\right) A$$

where:
FF_r = First Flush required storage volume (cf)
P = Precipitation amount =0.5 in per C.O.S. DSPM
A = Area of site excluding roofs and landscape (sf)
C = The weighted average runoff coefficient =0.95

$$FF_r = (0.95)\left(\frac{0.5}{12}\right) 16{,}794 = 665\ cf$$

The above assessment indicates that the required First Flush storage is 665 cf.

Retention shall be provided for the greater of Pre vs Post and First Flush volumes, therefore on-site retention will be designed to store the Pre vs. Post volume. (1,615 cf). The provided storage volume will also fulfill the First Flush requirement. The proposed on-site retention will store flows from drainage areas E-1 and E-2 to (1,856 CF) to comply with Pre vs Post and First Flush volumes. Refer to **Appendix II** for calculations.

Provided storage of *Basin 1*:
Basin 1 will consist of a 6' diameter corrugated metal pipe and will have a length of 70 lf.
$V_P = \pi$* Pipe radius^2 * Pipe length

$V_P = (\pi * 3^2)*(70) = 1{,}979$ cf

The proposed basin has enough capacity to store the required additional volume generated from the Pre vs. Post analysis.

4.6 STORMWATER DISCHARGE

Bleed-off for the underground retention basin (Basin 1) will be provided by an 8" pipe connected to existing catch basin EX-CB-3, which conveys flow to the public storm drain system. A 1.2" orifice plate will be placed on CB-1 to reduce bleed off rate. The bleed-off rate can be calculated by using the following formula:

$$Q = C_d A\sqrt{2gh}$$

where:
Q= Orifice flow (cfs)
C_d= Orifice coefficient = 0.65
A = Area of orifice (sf) =0.01227 for a 1.5" orifice
g = Acceleration from gravity (fps) = 32.2
h = Head (ft)

$$Q = (0.65) * (0.01227)\sqrt{2(32.2)(0.08)} = 0.01811\ cfs$$

The proposed 8" bleed-off pipe at a slope of 1% has a full capacity of 1.21 cfs. Since the calculated orifice flow is smaller than the capacity of the pipe, the orifice flow rate will govern. At this rate, the detention volume will be drained in (V_P/0.1811)/3600 = 30.36 hours

Pre vs post discharges

Proposed conditions will ultimately reduce site flow contributions to the existing public storm drain system. Even though the overall run-off coefficient of the site will be increased by 0.8, provided on-site retention will enable run-off reductions to the public drains.
Table 3 below summarizes the project discharges per outfall for the 10-year and 100-year storm events, providing the differences between existing and proposed peak flows for each case. The overall site contributions to the existing public drain system are also shown for the drainage areas that will ultimately discharge to it either through catch basins or the proposed manhole connection.

TABLE 3:

							Ultimate flows to public storm drain system			
	Q10 (cfs)			Q100 (cfs)			**Q10 (cfs)**		**Q100 (cfs)**	
Outfall	Existing	Proposed	Δ	Existing	Proposed	Δ	Existing	Proposed	Existing	Proposed
N. 71 St	0.29	0.39	0.10	0.46	0.63	0.17	11.08	10.87	17.58	17.30
Osborn Road	1.18	0.95	-0.23	1.87	1.52	-0.35				
Scottsdale Road	0.27	0.30	0.03	0.43	0.47	0.04				
EX-CB-1	1.30	1.90	0.60	2.06	3.03	0.97				
EX-CB-2	1.40	2.17	0.77	2.22	3.44	1.22				
EX-CB-3	1.5	0.00	-1.50	2.38	0.02	-2.36				
EX-CB-4	1.37	0.37	-1.00	2.17	0.59	-1.58				
EX-CB-5	3.77	4.79	1.02	5.99	7.6	1.61				

During the 100-year storm event, discharges to the overall public storm drain system will be decreased by 0.28 cfs. Discharge to N. 71 St will be increased by 0.17 cfs while peak flows to Osborn Road will be decreased by 0.35 cfs. Discharge to Scottsdale Road is increased by 0.04 cfs. Discharge to EX-CB-1 will be increased by 0.97. Discharge to EX-CB-2 will be increased by 1.22. Discharge to EX-CB-3 and EX-CB-4 will be decreased by 2.36 cfs and 1.58 cfs respectively due to the proposed on-site retention. Discharge to EX-CB-5 will be increased by 1.61 cfs. Street and inlet capacities will be verified at later stages of the project with the newly modified peak flows to check hydraulics of existing gutter sections in adjacent streets.

Refer to **Existing Conditions Drainage Area Map** and **Proposed Conditions Drainage Area Map** in **Appendix II**.

4.7 ADEQ WATER QUALITY REQUIREMENTS

The total disturbed area of this site is approximately 2.57 acres. The Arizona Department of Environmental Quality requires that any site disturbance over an acre is required to submit an NOI. A NOI will be submitted to ADEQ for this site after the first submittal of the construction documents as this site disturbance is over 1 acre.

5. FLOOD SAFETY FOR DWELLINGS

5.1 FINISHED FLOOR ELEVATIONS

This project lies in an "X" Flood Zone. Therefore, the proposed building finished floor elevation will be set a minimum of 14 inches above the lot ultimate outfall, located at the southeast corner of the site at an elevation of 1246.88'.

6. CONCLUSIONS

6.1 OVERALL PROJECT:

1. The finish floor elevations will be designed a minimum of 14 inches above the low top of curb of the lot.
2. Most of the historical outfalls will be affected at proposed conditions and overall discharge to the public storm drain system will be reduced.

3. On-site storage facilities will be provided to account for the Pre vs. Post volume and First Flush volumes.

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*

FIGURES

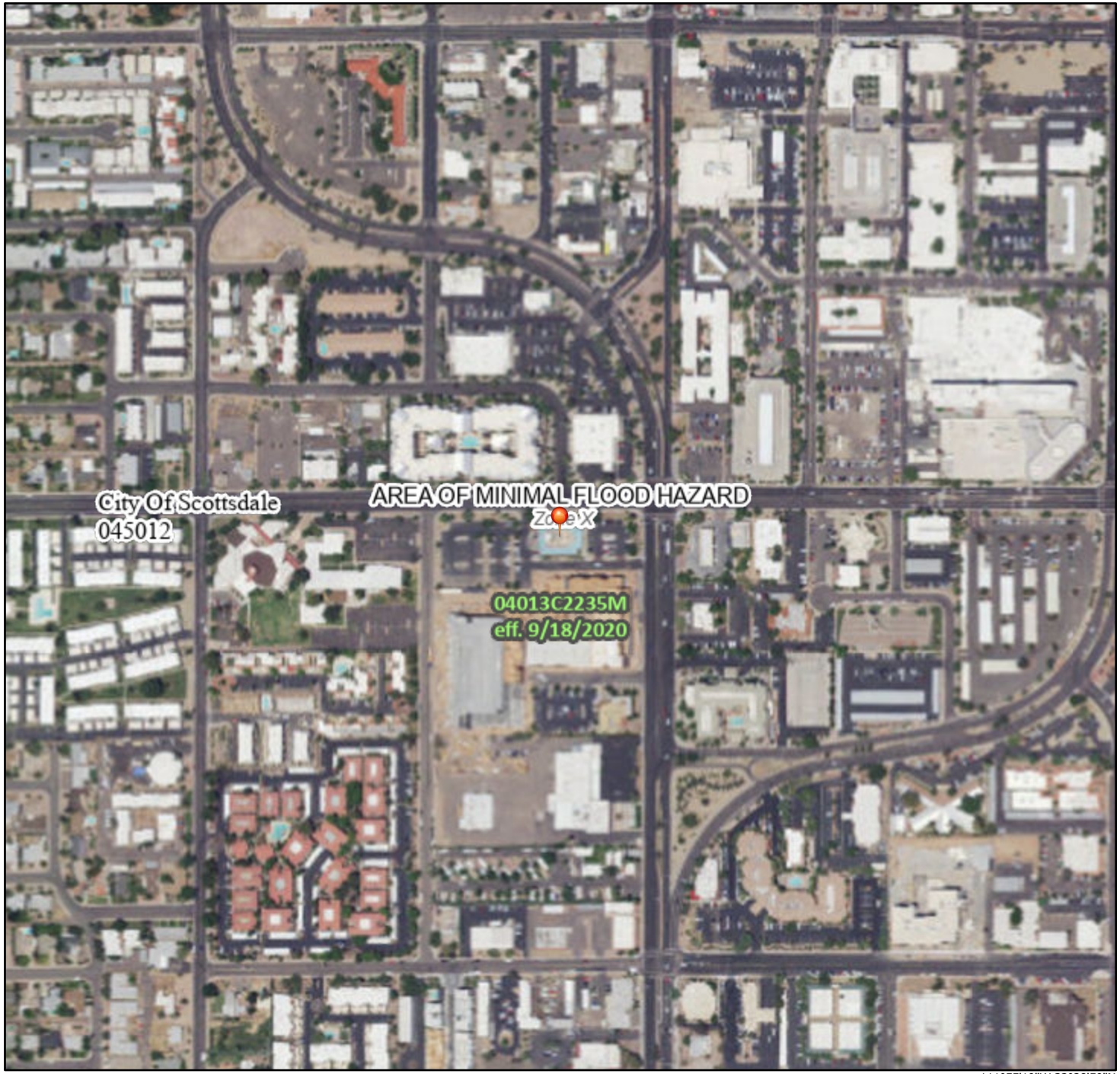
FIGURE 1. VICINITY MAP

FIGURE 2. AERIAL

National Flood Hazard Layer FIRMette

FEMA

111°55'56"W 33°29'29"N



111°55'19"W 33°28'59"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 10/11/2021 at 11:50 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

679_LIBW - South 100YR6HR

October 15, 2021

Peak Discharge

(cfs)

- <1
- >1 - 5
- >5 - 10
- >10 - 25
- >25 - 50
- >50 - 75
- >75 - 100
- >100 - 150
- >150 - 200
- >200 - 500
- >500

1:720

0 45 90 180 ft

0 12.5 25 50 m

FLO-2D MAP

APPENDIX I

RAINFALL DATA

NOAA Atlas 14, Volume 1, Version 5
Location name: Scottsdale, Arizona, USA*
Latitude: 33.4873°, Longitude: -111.9271°
Elevation: 1246.83 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	**0.183** (0.153-0.222)	**0.239** (0.202-0.290)	**0.324** (0.272-0.394)	**0.390** (0.325-0.471)	**0.480** (0.393-0.576)	**0.549** (0.444-0.656)	**0.619** (0.491-0.738)	**0.691** (0.539-0.822)	**0.787** (0.598-0.938)	**0.860** (0.641-1.03)
10-min	**0.278** (0.233-0.338)	**0.363** (0.307-0.442)	**0.494** (0.414-0.599)	**0.594** (0.495-0.717)	**0.730** (0.598-0.876)	**0.835** (0.675-0.998)	**0.941** (0.747-1.12)	**1.05** (0.820-1.25)	**1.20** (0.909-1.43)	**1.31** (0.975-1.56)
15-min	**0.344** (0.289-0.419)	**0.450** (0.380-0.548)	**0.612** (0.513-0.742)	**0.737** (0.613-0.889)	**0.905** (0.741-1.09)	**1.03** (0.837-1.24)	**1.17** (0.926-1.39)	**1.30** (1.02-1.55)	**1.48** (1.13-1.77)	**1.62** (1.21-1.94)
30-min	**0.464** (0.389-0.564)	**0.607** (0.512-0.738)	**0.825** (0.691-1.00)	**0.992** (0.826-1.20)	**1.22** (0.998-1.46)	**1.39** (1.13-1.67)	**1.57** (1.25-1.87)	**1.75** (1.37-2.09)	**2.00** (1.52-2.38)	**2.19** (1.63-2.61)
60-min	**0.574** (0.481-0.698)	**0.751** (0.633-0.913)	**1.02** (0.855-1.24)	**1.23** (1.02-1.48)	**1.51** (1.24-1.81)	**1.73** (1.39-2.06)	**1.95** (1.54-2.32)	**2.17** (1.69-2.59)	**2.47** (1.88-2.95)	**2.71** (2.01-3.23)
2-hr	**0.664** (0.567-0.792)	**0.861** (0.735-1.03)	**1.15** (0.981-1.37)	**1.38** (1.16-1.63)	**1.68** (1.40-1.98)	**1.92** (1.57-2.25)	**2.16** (1.74-2.53)	**2.40** (1.90-2.82)	**2.73** (2.11-3.21)	**2.99** (2.26-3.53)
3-hr	**0.722** (0.613-0.867)	**0.926** (0.790-1.12)	**1.22** (1.03-1.46)	**1.45** (1.22-1.73)	**1.77** (1.47-2.10)	**2.03** (1.66-2.40)	**2.30** (1.85-2.72)	**2.58** (2.04-3.05)	**2.97** (2.27-3.51)	**3.29** (2.45-3.90)
6-hr	**0.869** (0.754-1.02)	**1.10** (0.959-1.30)	**1.41** (1.23-1.66)	**1.66** (1.43-1.94)	**2.00** (1.70-2.32)	**2.27** (1.89-2.62)	**2.55** (2.09-2.94)	**2.83** (2.28-3.27)	**3.22** (2.53-3.73)	**3.52** (2.70-4.10)
12-hr	**0.972** (0.851-1.13)	**1.23** (1.08-1.43)	**1.56** (1.36-1.80)	**1.82** (1.58-2.10)	**2.17** (1.86-2.49)	**2.43** (2.06-2.79)	**2.71** (2.26-3.11)	**2.99** (2.46-3.44)	**3.36** (2.70-3.89)	**3.66** (2.88-4.26)
24-hr	**1.16** (1.04-1.31)	**1.48** (1.32-1.67)	**1.92** (1.71-2.15)	**2.26** (2.01-2.54)	**2.74** (2.42-3.07)	**3.12** (2.74-3.49)	**3.52** (3.06-3.93)	**3.93** (3.39-4.39)	**4.49** (3.84-5.03)	**4.94** (4.18-5.54)
2-day	**1.26** (1.12-1.42)	**1.61** (1.44-1.81)	**2.11** (1.88-2.37)	**2.51** (2.23-2.82)	**3.07** (2.72-3.44)	**3.52** (3.09-3.94)	**3.99** (3.48-4.48)	**4.48** (3.88-5.03)	**5.17** (4.43-5.81)	**5.72** (4.85-6.45)
3-day	**1.33** (1.19-1.50)	**1.70** (1.52-1.91)	**2.24** (1.99-2.51)	**2.67** (2.37-2.99)	**3.28** (2.90-3.67)	**3.77** (3.30-4.21)	**4.28** (3.73-4.80)	**4.83** (4.17-5.41)	**5.60** (4.78-6.28)	**6.21** (5.25-6.99)
4-day	**1.40** (1.25-1.58)	**1.79** (1.60-2.02)	**2.36** (2.10-2.65)	**2.83** (2.51-3.17)	**3.48** (3.07-3.90)	**4.01** (3.52-4.49)	**4.58** (3.98-5.12)	**5.18** (4.47-5.80)	**6.02** (5.13-6.74)	**6.71** (5.66-7.53)
7-day	**1.55** (1.38-1.75)	**1.98** (1.77-2.24)	**2.62** (2.33-2.94)	**3.13** (2.78-3.52)	**3.86** (3.41-4.33)	**4.44** (3.90-4.98)	**5.07** (4.41-5.68)	**5.73** (4.95-6.43)	**6.66** (5.68-7.48)	**7.42** (6.25-8.34)
10-day	**1.69** (1.51-1.90)	**2.16** (1.93-2.43)	**2.85** (2.54-3.20)	**3.41** (3.02-3.81)	**4.18** (3.69-4.67)	**4.81** (4.22-5.37)	**5.47** (4.76-6.11)	**6.16** (5.33-6.89)	**7.14** (6.10-7.99)	**7.92** (6.70-8.88)
20-day	**2.07** (1.86-2.32)	**2.67** (2.39-2.98)	**3.52** (3.15-3.93)	**4.17** (3.71-4.64)	**5.04** (4.47-5.61)	**5.71** (5.05-6.35)	**6.39** (5.62-7.12)	**7.08** (6.20-7.89)	**8.01** (6.95-8.95)	**8.72** (7.51-9.76)
30-day	**2.42** (2.16-2.71)	**3.12** (2.79-3.48)	**4.11** (3.66-4.57)	**4.86** (4.33-5.40)	**5.87** (5.20-6.52)	**6.64** (5.86-7.38)	**7.44** (6.54-8.26)	**8.25** (7.21-9.16)	**9.34** (8.10-10.4)	**10.2** (8.75-11.3)
45-day	**2.81** (2.52-3.13)	**3.62** (3.25-4.03)	**4.76** (4.27-5.31)	**5.61** (5.02-6.25)	**6.73** (6.00-7.49)	**7.57** (6.73-8.43)	**8.42** (7.45-9.38)	**9.27** (8.16-10.3)	**10.4** (9.08-11.6)	**11.2** (9.76-12.6)
60-day	**3.11** (2.80-3.46)	**4.01** (3.61-4.46)	**5.28** (4.74-5.86)	**6.20** (5.55-6.88)	**7.39** (6.61-8.21)	**8.28** (7.37-9.19)	**9.17** (8.13-10.2)	**10.0** (8.87-11.2)	**11.2** (9.81-12.5)	**12.0** (10.5-13.4)

[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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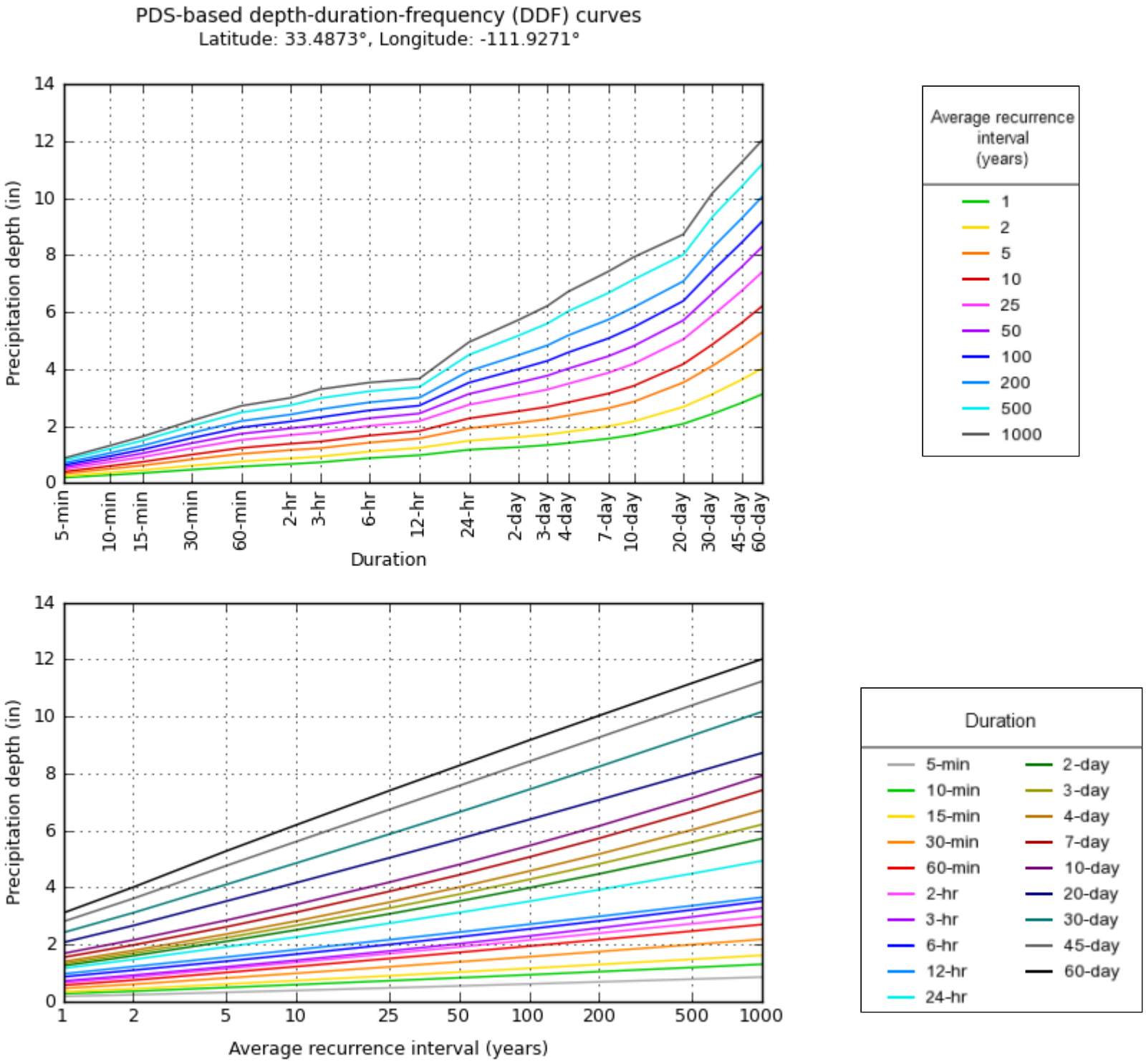
PF graphical



NOAA Atlas 14, Volume 1, Version 5 Created (GMT): Mon Oct 11 17:37:06 2021

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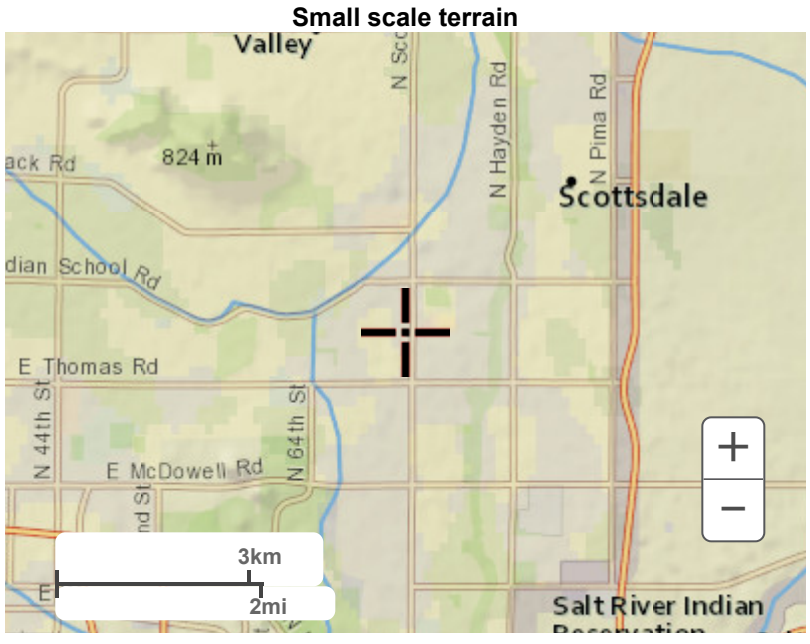
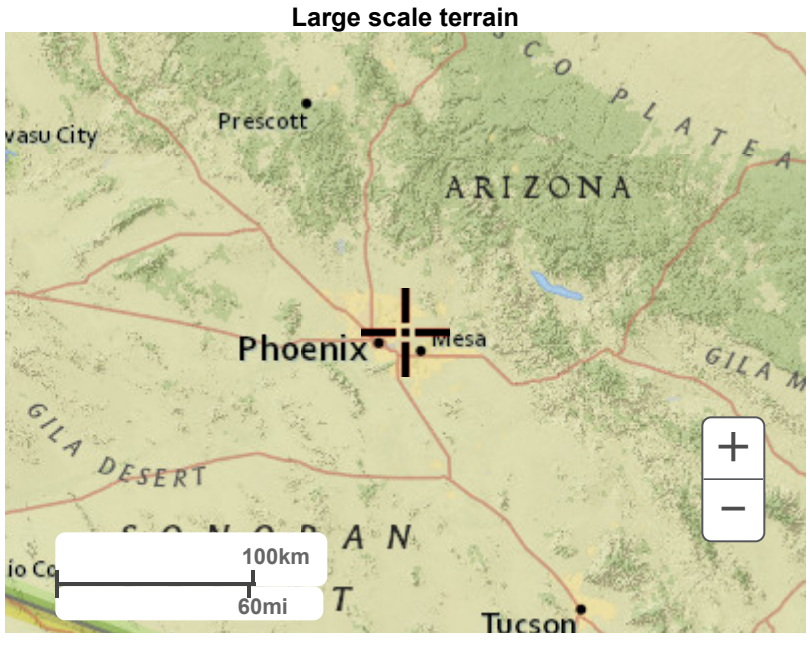
Maps & aerials

Small scale terrain



Large scale terrain



NOAA Atlas 14, Volume 1, Version 5
Location name: Scottsdale, Arizona, USA*
Latitude: 33.4873°, Longitude: -111.9271°
Elevation: 1246.83 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	**2.20** (1.84-2.66)	**2.87** (2.42-3.48)	**3.89** (3.26-4.73)	**4.68** (3.90-5.65)	**5.76** (4.72-6.91)	**6.59** (5.33-7.87)	**7.43** (5.89-8.86)	**8.29** (6.47-9.86)	**9.44** (7.18-11.3)	**10.3** (7.69-12.3)
10-min	**1.67** (1.40-2.03)	**2.18** (1.84-2.65)	**2.96** (2.48-3.59)	**3.56** (2.97-4.30)	**4.38** (3.59-5.26)	**5.01** (4.05-5.99)	**5.65** (4.48-6.73)	**6.31** (4.92-7.51)	**7.18** (5.45-8.57)	**7.85** (5.85-9.38)
15-min	**1.38** (1.16-1.68)	**1.80** (1.52-2.19)	**2.45** (2.05-2.97)	**2.95** (2.45-3.56)	**3.62** (2.96-4.34)	**4.14** (3.35-4.95)	**4.67** (3.70-5.56)	**5.21** (4.07-6.20)	**5.94** (4.51-7.08)	**6.49** (4.84-7.76)
30-min	**0.928** (0.778-1.13)	**1.21** (1.02-1.48)	**1.65** (1.38-2.00)	**1.98** (1.65-2.39)	**2.44** (2.00-2.93)	**2.79** (2.25-3.33)	**3.14** (2.49-3.75)	**3.51** (2.74-4.18)	**4.00** (3.04-4.77)	**4.37** (3.26-5.22)
60-min	**0.574** (0.481-0.698)	**0.751** (0.633-0.913)	**1.02** (0.855-1.24)	**1.23** (1.02-1.48)	**1.51** (1.24-1.81)	**1.73** (1.39-2.06)	**1.95** (1.54-2.32)	**2.17** (1.69-2.59)	**2.47** (1.88-2.95)	**2.71** (2.01-3.23)
2-hr	**0.332** (0.284-0.396)	**0.430** (0.368-0.514)	**0.576** (0.490-0.685)	**0.688** (0.578-0.816)	**0.840** (0.698-0.990)	**0.958** (0.785-1.13)	**1.08** (0.870-1.27)	**1.20** (0.952-1.41)	**1.37** (1.06-1.60)	**1.49** (1.13-1.76)
3-hr	**0.240** (0.204-0.289)	**0.308** (0.263-0.372)	**0.406** (0.344-0.487)	**0.483** (0.405-0.576)	**0.590** (0.489-0.701)	**0.676** (0.552-0.800)	**0.766** (0.615-0.906)	**0.859** (0.678-1.01)	**0.989** (0.757-1.17)	**1.09** (0.816-1.30)
6-hr	**0.145** (0.126-0.171)	**0.184** (0.160-0.216)	**0.236** (0.205-0.277)	**0.278** (0.238-0.324)	**0.334** (0.283-0.387)	**0.379** (0.316-0.437)	**0.425** (0.349-0.491)	**0.472** (0.380-0.547)	**0.537** (0.422-0.623)	**0.588** (0.451-0.684)
12-hr	**0.081** (0.071-0.094)	**0.102** (0.089-0.119)	**0.129** (0.113-0.150)	**0.151** (0.131-0.174)	**0.180** (0.154-0.207)	**0.202** (0.171-0.232)	**0.225** (0.188-0.258)	**0.248** (0.204-0.285)	**0.279** (0.224-0.323)	**0.304** (0.239-0.353)
24-hr	**0.048** (0.043-0.055)	**0.062** (0.055-0.069)	**0.080** (0.071-0.090)	**0.094** (0.084-0.106)	**0.114** (0.101-0.128)	**0.130** (0.114-0.145)	**0.147** (0.128-0.164)	**0.164** (0.141-0.183)	**0.187** (0.160-0.209)	**0.206** (0.174-0.231)
2-day	**0.026** (0.023-0.029)	**0.033** (0.030-0.038)	**0.044** (0.039-0.049)	**0.052** (0.047-0.059)	**0.064** (0.057-0.072)	**0.073** (0.064-0.082)	**0.083** (0.073-0.093)	**0.093** (0.081-0.105)	**0.108** (0.092-0.121)	**0.119** (0.101-0.134)
3-day	**0.018** (0.016-0.021)	**0.024** (0.021-0.027)	**0.031** (0.028-0.035)	**0.037** (0.033-0.042)	**0.046** (0.040-0.051)	**0.052** (0.046-0.059)	**0.060** (0.052-0.067)	**0.067** (0.058-0.075)	**0.078** (0.066-0.087)	**0.086** (0.073-0.097)
4-day	**0.015** (0.013-0.016)	**0.019** (0.017-0.021)	**0.025** (0.022-0.028)	**0.029** (0.026-0.033)	**0.036** (0.032-0.041)	**0.042** (0.037-0.047)	**0.048** (0.041-0.053)	**0.054** (0.047-0.060)	**0.063** (0.053-0.070)	**0.070** (0.059-0.078)
7-day	**0.009** (0.008-0.010)	**0.012** (0.011-0.013)	**0.016** (0.014-0.018)	**0.019** (0.017-0.021)	**0.023** (0.020-0.026)	**0.026** (0.023-0.030)	**0.030** (0.026-0.034)	**0.034** (0.029-0.038)	**0.040** (0.034-0.045)	**0.044** (0.037-0.050)
10-day	**0.007** (0.006-0.008)	**0.009** (0.008-0.010)	**0.012** (0.011-0.013)	**0.014** (0.013-0.016)	**0.017** (0.015-0.019)	**0.020** (0.018-0.022)	**0.023** (0.020-0.025)	**0.026** (0.022-0.029)	**0.030** (0.025-0.033)	**0.033** (0.028-0.037)
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)	**0.010** (0.009-0.012)	**0.012** (0.011-0.013)	**0.013** (0.012-0.015)	**0.015** (0.013-0.016)	**0.017** (0.014-0.019)	**0.018** (0.016-0.020)
30-day	**0.003** (0.003-0.004)	**0.004** (0.004-0.005)	**0.006** (0.005-0.006)	**0.007** (0.006-0.007)	**0.008** (0.007-0.009)	**0.009** (0.008-0.010)	**0.010** (0.009-0.011)	**0.011** (0.010-0.013)	**0.013** (0.011-0.014)	**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)	**0.010** (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.

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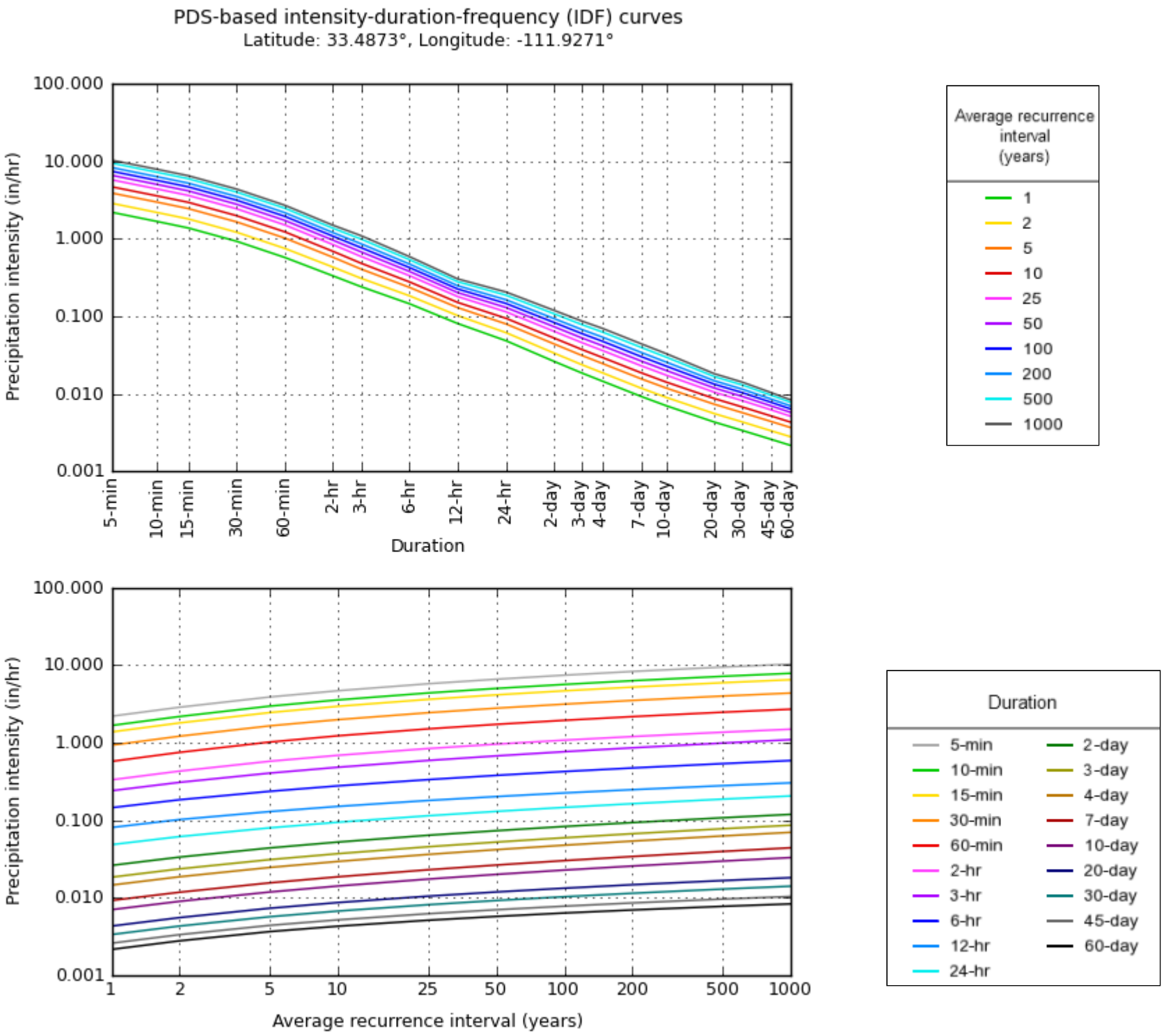
PF graphical



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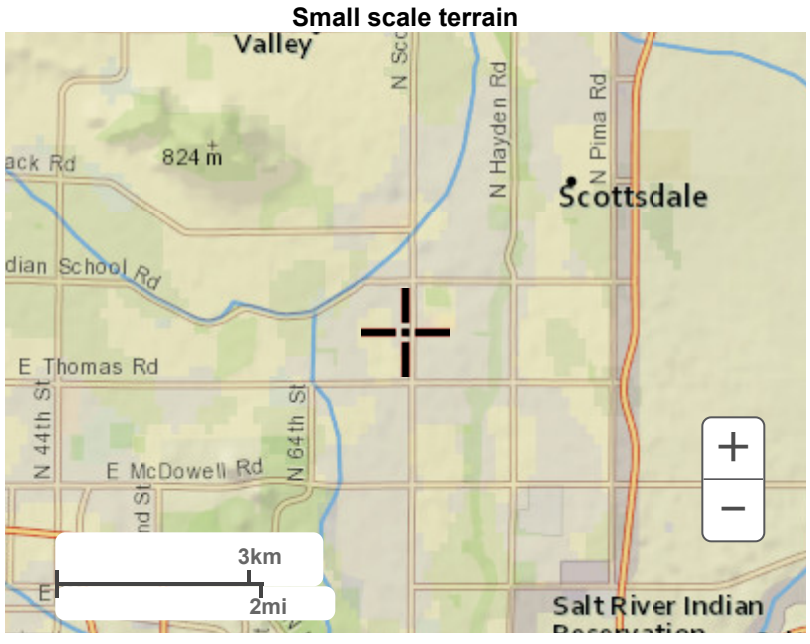
Maps & aerials

Small scale terrain



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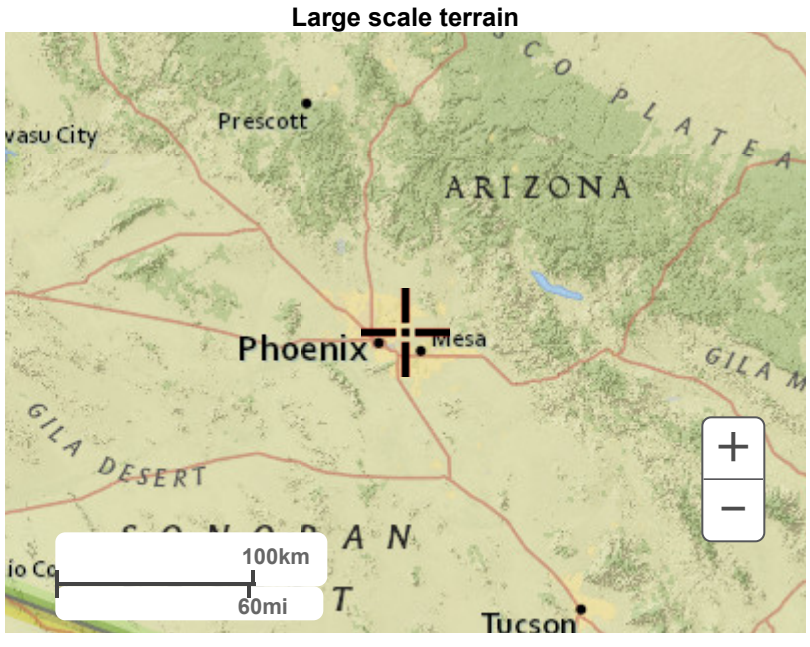


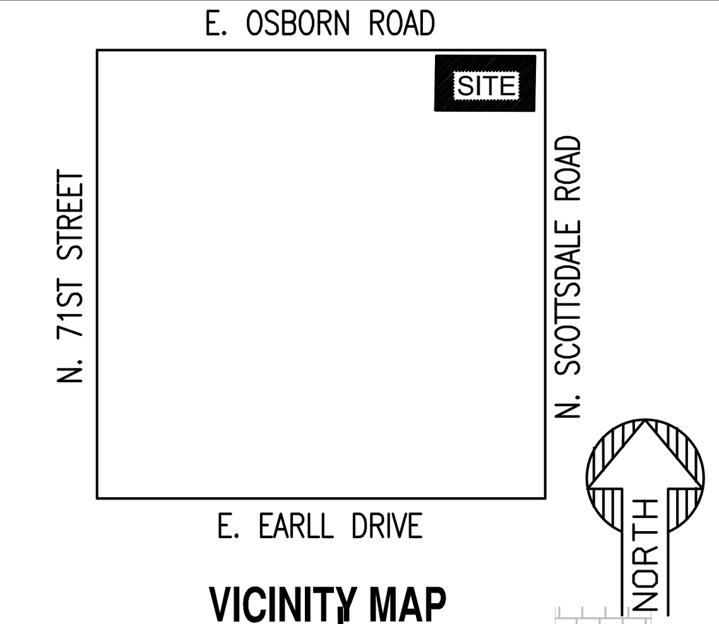
APPENDIX II

CALCULATIONS

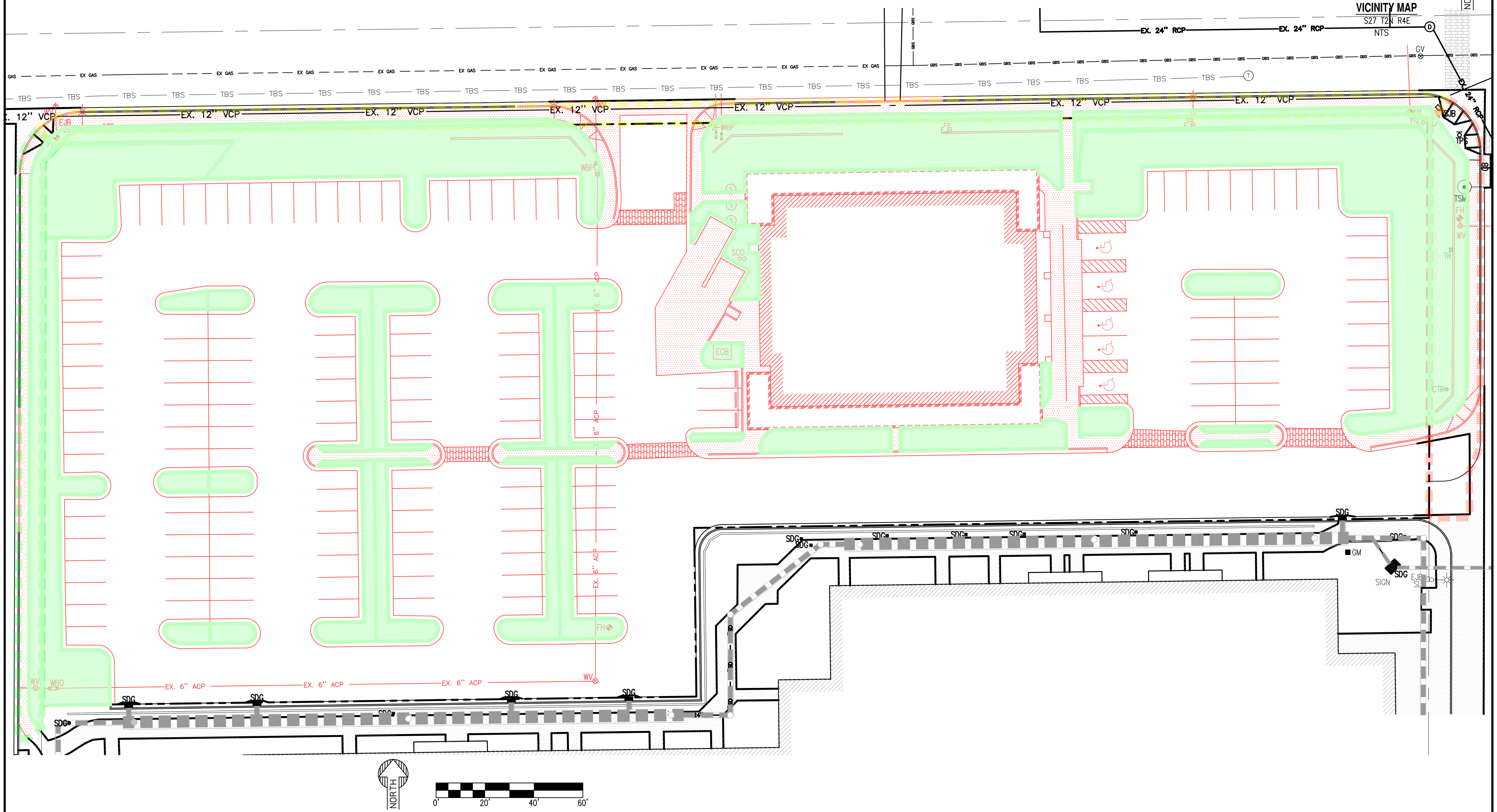
OLIVE GARDEN

EXISTING CONDITIONS C_{WT}

3380 N. SCOTTSDALE ROAD, SCOTTSDALE, AZ



VICINITY MAP
S27 T2N R4E
NTS



0' 20' 40' 60'
SCALE: 1" = 20'

BUILDING/PAVED SURFACE =	88,389 SF (2.03 AC)	@ CWT=0.95
NATURAL DESERT =	23,708 SF (0.54 AC)	@ CWT=0.45
TOTAL ON-SITE CWT =	112,097 SF (2.57 AC)	@ CWT=0.84

PRELIMINARY NOT FOR CONSTRUCTION

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

SEG

EMPIRE

Contact Arizona 811 at least two full working days before you begin excavation. ARIZONA811 Call 811 or click Arizona811.com

PROJECT: SENIOR LIVING SCOTTSDALE + OSBORN

LOCATION: 3380 N. SCOTTSDALE ROAD, SCOTTSDALE, AZ

DRAWN	JC	11/17/2021
DESIGNED	JC	11/17/2021
QC	SC	10/25/2021
FINAL QC		
PROJ. MGR.	AF	11/17/2021

DATE: 11/17/2021

ISSUED FOR: DRB

REVISION NO.: DATE:

JOB NO.: 210126

SHEET TITLE: X-C_{WT}

PAGE NO.: 1 OF 1

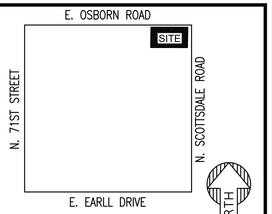
SHEET NO.: X-C_{WT}

LOCATION: Z:\SHARED\PROJECTS\EMPIRE\OLIVE GARDEN - SCOTTSDALE - SWC OSBORN & SCOTTSDALE RD - 210126\11 CAD (SEG)\11.3 ENTITLEMENT-PLANNING\210126-X-CWT.DWG SAVED BY: JUAN CHACÓN DATE: 11/17/2021

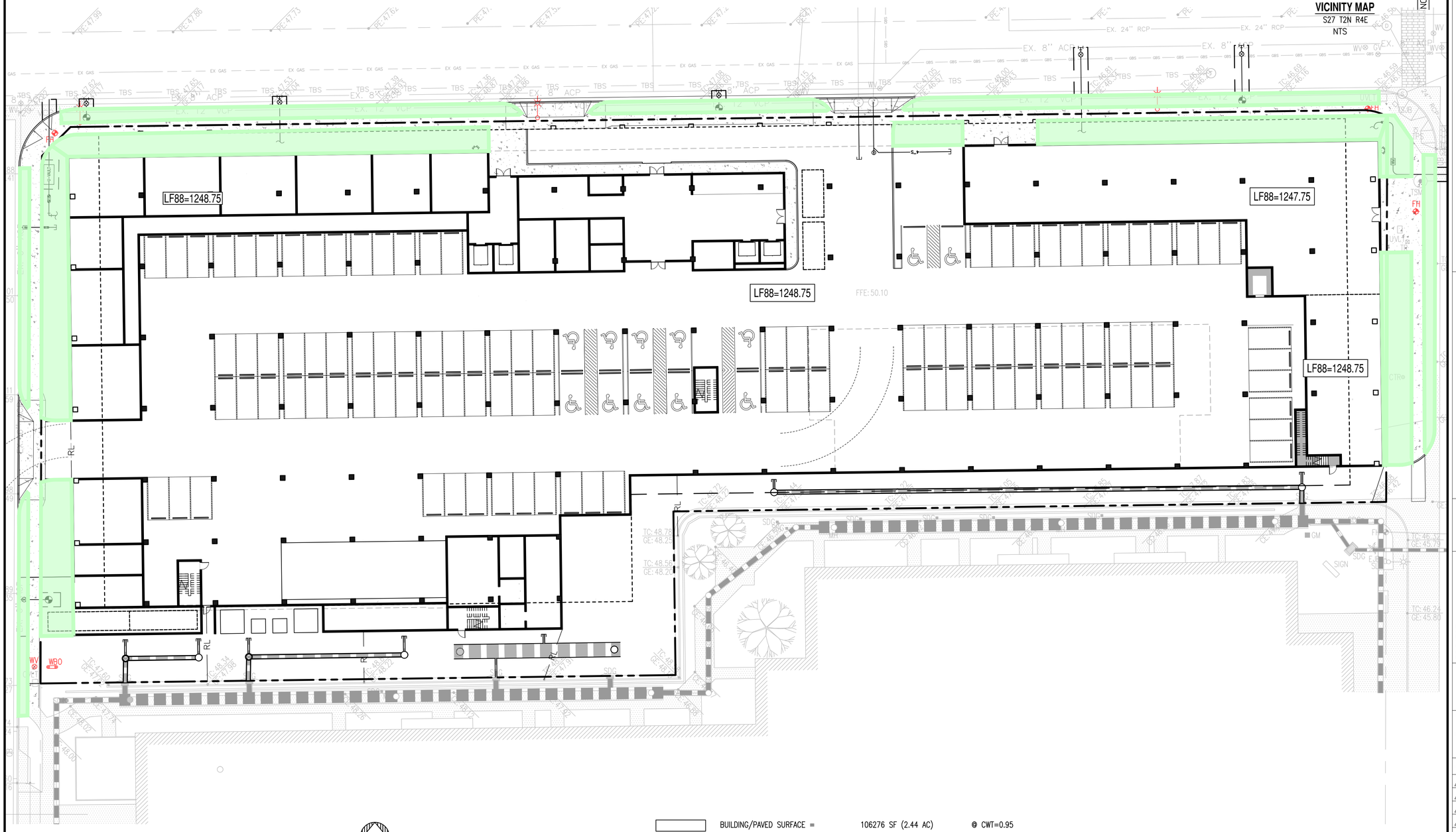
OLIVE GARDEN

PROPOSED CONDITIONS C_{WT}

3380 N. SCOTTSDALE ROAD, SCOTTSDALE, AZ



VICINITY MAP
S27 T2N R4E
NTS



NORTH

0' 20' 40' 60'

SCALE: 1" = 20'

BUILDING/PAVED SURFACE =	106276 SF (2.44 AC)	@ CWT=0.95
NATURAL DESERT =	5,821 SF (0.13 AC)	@ CWT=0.45
TOTAL ON-SITE CWT =	112,097 SF (2.57 AC)	@ CWT=0.92

PRELIMINARY
NOT FOR
CONSTRUCTION

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EMPIRE

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ARIZONA811
Call 811 or click Arizona811.com

PROJECT: SENIOR LIVING SCOTTSDALE + OSBORN

LOCATION: 3380 N. SCOTTSDALE ROAD, SCOTTSDALE, AZ

DRAWN	JC	11/17/2021
DESIGNED	JC	11/17/2021
QC	SC	10/25/2021
FINAL QC		
PROJ. MGR.	AF	11/17/2021

DATE: 11/17/2021

ISSUED FOR: DRB

REVISION NO.:	DATE:
1	
2	
3	
4	

JOB NO.: 210126

SHEET TITLE: P-C_{WT}

PAGE NO.: 1 OF 1

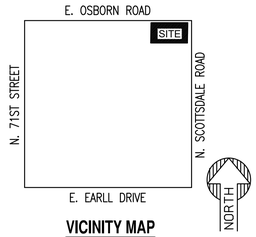
SHEET NO.: P-C_{WT}

LOCATION: Z:\SHARED\PROJECTS\EMPIRE\OLIVE GARDEN - SCOTTSDALE - SWC OSBORN & SCOTTSDALE RD - 210126\11 CAD (SEG)\11.3 ENTITLEMENT-PLANNING\210126-P-CWT.DWG SAVED BY: JUAN CHACON DATE: 11/17/2021

OLIVE GARDEN

EXISTING CONDITIONS DRAINAGE AREA MAP

3380 N. SCOTTSDALE ROAD, SCOTTSDALE, AZ



VICINITY MAP
S27 T2N R4E
NTS

OFF-2 0.11 | 0.83

EX-C1 0.26 | 0.61

EX-B1 0.04 | 0.45

OFF-3 0.08 | 0.73

EX-A5 0.93 | 0.87

EX-A4 0.33 | 0.89

EX-A1 0.32 | 0.87

EX-A2 0.33 | 0.90

EX-A3 0.36 | 0.88

OFF-1 0.06 | 0.73

EX. 24" RCP

EX. 12" VCP

EX. 6" ACP

EX-CB-1 Q_{100}=2.06

EX-CB-2 Q_{100}=2.22

EX-CB-3 Q_{100}=2.38

EX-CB-4 Q_{100}=2.17

EX-CB-5 Q_{100}=5.99

EX-CB-6

EX-CB-7

EX BASIN 1 (5' CMP)
230 LF
V_P=4,516 CF

EX BASIN 2 (5' CMP)
210 LF
V_P=4,123 CF

AREA IN ACRES — DRAINAGE AREA / RUNOFF COEFFICIENT

DRAINAGE AREA KEY

PROPOSED LEGEND

- DRAINAGE AREAS DRAINING SOUTH
- DRAINAGE AREA EX-B1 SELF RETAINING
- DRAINAGE AREA EX-C1 DRAINING TO OSBORN ROAD
- OFFSITE DRAINAGE AREA 1 DRAINING TO 71ST STREET
- OFFSITE DRAINAGE AREA 3 DRAINING TO SCOTTSDALE ROAD
- FLOW ARROW

NORTH

SCALE: 1" = 20'

PRELIMINARY
NOT FOR
CONSTRUCTION

SUSTAINABILITY ENGINEERING GROUP

SEG

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

EMPIRE

Contact Arizona 811 at least two full working days before you begin excavation
Call 811 or click Arizona811.com

PROJECT	LOCATION
SENIOR LIVING SCOTTSDALE + OSBORN	3380 N. SCOTTSDALE ROAD, SCOTTSDALE, AZ

DRAWN	JC	11/17/2021
DESIGNED	JC	11/17/2021
QC		
FINAL QC		
PROJ. MGR.	AF	11/17/2021

DATE: 11/17/2021
ISSUED FOR: DRB

REVISION NO.:	DATE:
1	
2	
3	
4	

JOB NO.: 210126

SHEET TITLE: **X-DAM**

PAGE NO.: 1 OF 1

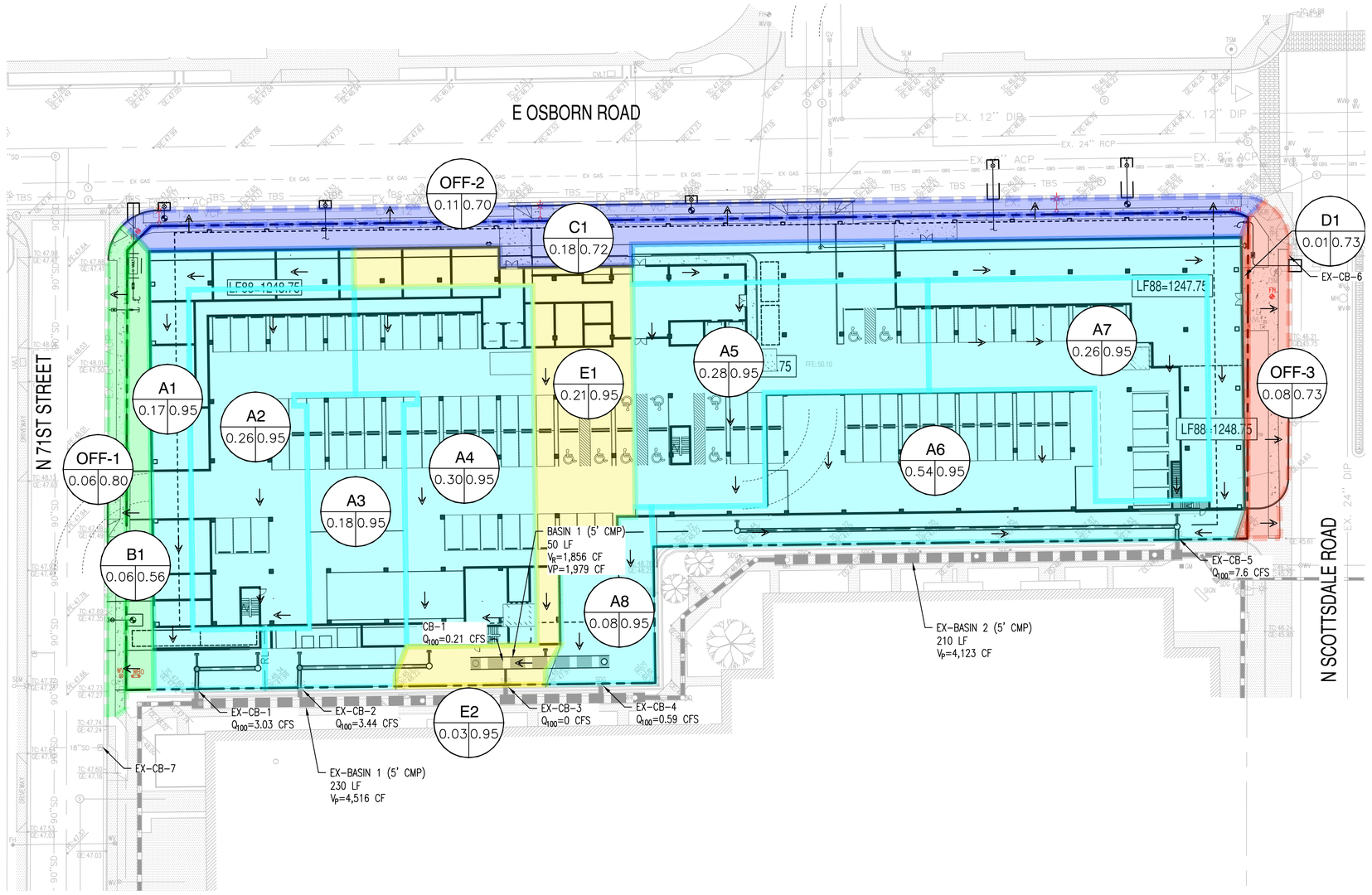
SHEET NO.: **X-DAM**

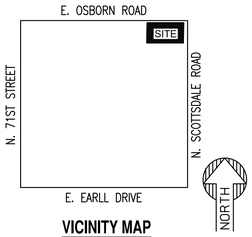
LOCATION: Z:\SHARED\PROJECTS\EMPIRE\OLIVE GARDEN - SCOTTSDALE - SWC OSBORN & SCOTTSDALE RD - 210126\11 CAD (SEG)\11.3 ENTITLEMENT-PLANNING\210126-XDAM.DWGSAVED BY: JUAN CHACÓN DATE: 11/17/2021

OLIVE GARDEN

PROPOSED CONDITIONS DRAINAGE AREA MAP

3380 N. SCOTTSDALE ROAD, SCOTTSDALE, AZ





VICINITY MAP
S27 T2N R4E
NTS

PROPOSED LEGEND

- DRAINAGE AREAS DRAINING TO EXISTING CATCH BASINS
- DRAINAGE AREAS DRAINING TO 71ST STREEET
- DRAINAGE AREAS DRAINING TO OSBORN ROAD
- DRAINAGE AREAS DRAINING TO SCOTTSDALE ROAD
- DRAINAGE AREAS DRAINING TO UNDERGROUND RETENTION BASIN A
- FLOW ARROW

DRAINAGE AREA KEY

PRELIMINARY
NOT FOR
CONSTRUCTION

SUSTAINABILITY ENGINEERING GROUP
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EMPIRE

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ARIZONA811 Call 811 or click Arizona811.com

PROJECT	LOCATION
SENIOR LIVING SCOOTSDALE + OSBORN	3380 N. SCOTTSDALE ROAD, SCOTTSDALE, AZ

DRAWN	JC	11/17/2021
DESIGNED	JC	11/17/2021
QC	SC	10/25/2021
FINAL QC		
PROJ. MGR.	AF	11/17/2021

DATE: 11/17/2021
ISSUED FOR: DRB

REVISION NO.:	DATE:
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JOB NO.: 210126
SHEET TITLE: **P-DAM**

PAGE NO.:	SHEET NO.:
1 OF 1	**P-DAM**

LOCATION: Z:\SHARED\PROJECTS\EMPIRE\OLIVE GARDEN - SCOTTSDALE - SWC OSBORN & SCOTTSDALE RD - 210126\11 CAD (SEG)\11.3 ENTITLEMENT-PLANNING\210126-PDAM.DWG SAVED BY: JUAN CHACON DATE: 11/17/2021

EXISTING OVERALL SITE C_w				
	Pavement	DESERT LANDSCAPE	TOTAL AREA	Cwt
C-VALUE	0.95	0.45		
AREA (ac)	2.03	0.54	**2.57**	0.84
EX-A1	0.27	0.05	0.32	0.87
EX-A2	0.30	0.03	0.33	0.90
EX-A3	0.31	0.05	0.36	0.88
EX-A4	0.29	0.04	0.33	0.89
EX-A5	0.78	0.15	0.93	0.87
EX-B1	0.00	0.04	0.04	0.45
EX-C1	0.09	0.18	0.26	0.61

EXISTING OFFSITE SITE C_w				
	Pavement	DESERT LANDSCAPE	TOTAL AREA	Cwt
C-VALUE	0.95	0.50		
AREA (ac)	0.11	0.06	**0.17**	**0.79**
OFF-1	0.03	0.03	0.06	0.73
OFF-2	0.08	0.03	0.11	0.83
OFF-3	0.04	0.04	0.08	0.73

PROPOSED OVERALL SITE C_w				
	Building/ Pavement	DESERT LANDSCAPE	TOTAL AREA	Cwt
C-VALUE	0.95	0.45		
AREA (ac)	2.44	0.13	**2.57**	**0.92**
DA-A1	0.17	0.00	0.17	0.95
DA-A2	0.26	0.00	0.26	0.95
DA-A3	0.18	0.00	0.18	0.95
DA-A4	0.30	0.00	0.30	0.95
DA-A5	0.28	0.00	0.28	0.95
DA-A6	0.54	0.00	0.54	0.95
DA-A7	0.26	0.00	0.26	0.95
DA-A8	0.08	0.00	0.08	0.95
DA-B1	0.01	0.05	0.06	0.56
DA-C1	0.10	0.08	0.18	0.72
DA-D1	0.00	0.004	0.01	0.73
DA-E1	0.21	0.00	0.21	0.95
DA-E2	0.03	0.00	0.03	0.95

PROPOSED OFFSITE SITE C_w				
	Pavement	DESERT LANDSCAPE	TOTAL AREA	Cwt
C-VALUE	0.95	0.50		
AREA (ac)	0.13	0.12	**0.25**	**0.73**
OFF-1	0.04	0.02	0.06	0.80
OFF-2	0.05	0.06	0.11	0.70
OFF-3	0.04	0.04	0.08	0.73

Required Storage Volume Calculations

					Vr=1*(P/12)*Cw*A
				P=100-yr, 5min = 7.90	P=100-yr,24-hr= 2.16in.
Drainage	Area	C	Depth	Volume Req.	Volume Req.
Area ID	(acres)	(-)	(in)	(acre-ft)	(CF)
ON-SITE RETENTION - BASIN A - UG Storage + Open Retention					
DA-E1	0.21	0.95	2.16	0.037	1,595.86
DA-E2	0.03	0.95	2.16	0.006	260.12
Basin A Total	**0.25**	**0.82**		**0.04**	**1,855.98**

APPENDIX III

PRELIMINARY GRADING PLAN

CIVIL ENGINEER
SUSTAINABILITY ENGINEERING GROUP
8280 E. GELDING DR., SUITE 101
SCOTTSDALE, ARIZONA 85260
PHONE: 480-588-7226
ATTN: ALI FAKIH
EMAIL: ALI@AZSEG.COM

DEVELOPER:
EMPIRE GROUP
6617 N SCOTTSDALE RD, SUITE 101
SCOTTSDALE, ARIZONA 85250

SURVEYOR
AW LAND SURVEYING, LLC
P.O. BOX 2170
CHANDLER, ARIZONA 85244
PHONE: 480-244-7630
ATTN: DANIEL ARMIJO

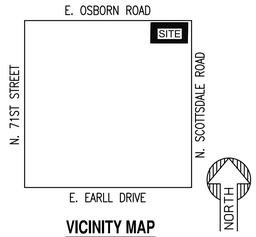
APN: 130-16-114

SENIOR LIVING SCOTTSDALE + OSBORN

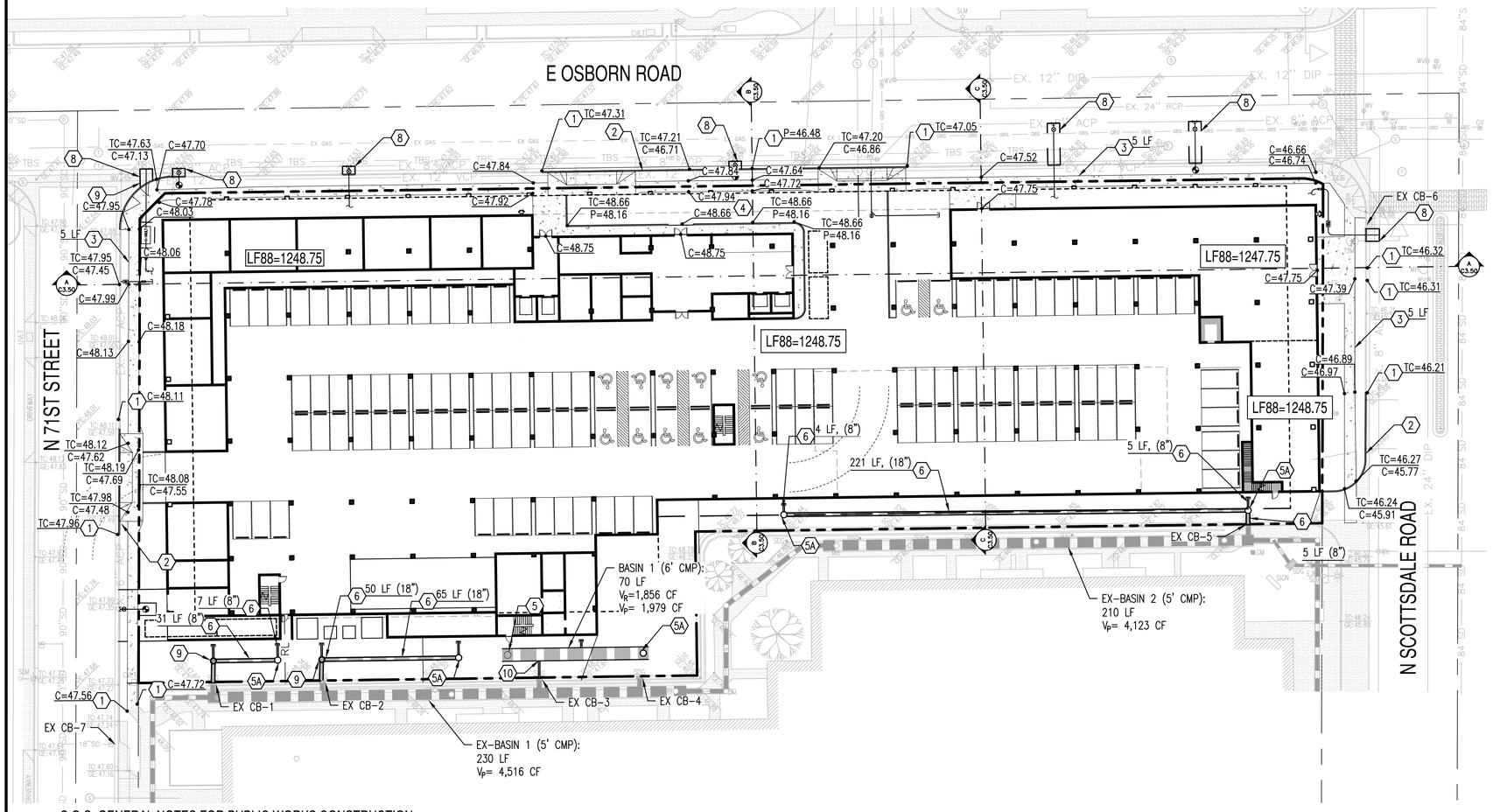
PRELIMINARY GRADING PLAN

3380 N. SCOTTSDALE ROAD, SCOTTSDALE AZ 85250

A PORTION OF THE EAST HALF OF THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 2 NORTH, RANGE 4 EAST OF THE GILA AND SALT RIVER MERIDIAN, MARICOPA COUNTY, ARIZONA.



VICINITY MAP
S27 T2N R4E
NTS



PRELIMINARY GRADING NOTES

1. MATCH EXISTING GRADE.
2. 6" VERTICAL CURB AND GUTTER.
3. CONSTRUCT CONCRETE SIDEWALK. WIDTH PER PLAN.
4. LIGHT DUTY PAVEMENT.
5. INSTALL 30" CMP RISER WITH STANDARD H-20 TRAFFIC GRATED LID.
5A. INSTALL 30" NYLOPLAST DRAIN BASIN WITH SOLID LID.
6. INSTALL HDPE DOUBLE WALL PIPE. LENGTH, SIZE AND SLOPE PER PLAN.
7. INSTALL UNDERGROUND STORMWATER STORAGE SYSTEM.
8. SAWCUT EXISTING PAVEMENT TO PROVIDE STRAIGHT VERTICAL EDGES, FREE FROM IRREGULARITIES. MIN 2' FROM GUTTER.
9. FURNISH AND INSTALL BUBBLER BOX.
10. INSTALL 1.5" ORIFICE CORED IN CAP AT INSERTION OF THE 8" BLEED OFF PIPE.

C.O.S. GENERAL NOTES FOR PUBLIC WORKS CONSTRUCTION

1. ALL CONSTRUCTION IN THE PUBLIC RIGHTS-OF-WAY OR IN EASEMENTS GRANTED FOR PUBLIC USE MUST CONFORM TO THE LATEST MAG UNIFORM STANDARD SPECIFICATIONS AND UNIFORM STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION AS AMENDED BY THE LATEST VERSION OF THE CITY OF SCOTTSDALE SUPPLEMENTAL STANDARD SPECIFICATIONS AND SUPPLEMENTAL STANDARD DETAILS. IF THERE IS A CONFLICT, THE CITY'S SUPPLEMENTAL STANDARD DETAILS WILL GOVERN.
2. THE CITY ONLY APPROVES THE SCOPE, NOT THE DETAIL, OF ENGINEERING DESIGNS; THEREFORE, IF CONSTRUCTION QUANTITIES ARE SHOWN ON THESE PLANS, THEY ARE NOT VERIFIED BY THE CITY.
3. THE APPROVAL OF PLANS IS VALID FOR SIX (6) MONTHS. IF A RIGHT-OF-WAY PERMIT FOR THE CONSTRUCTION HAS NOT BEEN ISSUED WITHIN SIX MONTHS, THE PLANS MUST BE RESUBMITTED TO THE CITY FOR REAPPROVAL.
4. A PUBLIC WORKS INSPECTOR WILL INSPECT ALL WORKS WITHIN THE CITY RIGHTS-OF-WAY AND IN EASEMENTS. NOTIFY INSPECTION SERVICES 24 HOURS PRIOR TO BEGINNING CONSTRUCTION BY CALLING 480-312-5750.
5. WHENEVER EXCAVATION IS NECESSARY, CALL THE BLUE STAKE CENTER, 811, TWO WORKING DAYS BEFORE EXCAVATION BEGINS. THE CENTER WILL SEE THAT THE LOCATION OF THE UNDERGROUND UTILITY LINES IS IDENTIFIED FOR THE PROJECT.
6. RIGHT-OF-WAY PERMITS ARE REQUIRED FOR ALL WORK IN PUBLIC RIGHTS-OF-WAY AND EASEMENTS GRANTED FOR PUBLIC PURPOSES. A RIGHT-OF-WAY PERMIT WILL BE ISSUED BY THE CITY ONLY AFTER THE REGISTRANT HAS PAID A BASE FEE PLUS A FEE FOR INSPECTION SERVICES. COPIES OF ALL PERMITS MUST BE RETAINED ON-SITE AND BE AVAILABLE FOR INSPECTION AT ALL TIMES. FAILURE TO PRODUCE THE REQUIRED PERMITS WILL RESULT IN IMMEDIATE SUSPENSION OF ALL WORK UNTIL THE PROPER PERMIT DOCUMENTATION IS OBTAINED.
7. ALL EXCAVATION AND GRADING THAT IS NOT IN THE PUBLIC RIGHTS-OF-WAY OR NOT IN EASEMENTS GRANTED FOR PUBLIC USE MUST CONFORM TO APPENDIX J, GRADING, OF THE LATEST EDITION OF THE INTERNATIONAL BUILDING CODE. A PERMIT FOR THIS GRADING MUST BE SECURED FROM THE CITY FOR A FEE ESTABLISHED BY THE CITY.

NORTH

0' 30' 60' 90'

SCALE: 1" = 30'

EXISTING LEGEND:

EX. MAJOR CONTOURS; EX. MINOR CONTOURS; EX. SPOT ELEVATION (TC:XX.XX GE:XX.XX); EASEMENT LINE AS NOTED; EX. S SEWER LINE; SEWER MANHOLE; EX. W WATER LINE; WATER VALVE; FIRE HYDRANT; STORM DRAIN LINE; CB STORM CATCH BASIN; STORM MANHOLE; GAS GAS LINE; X X FENCE; SIGN; STREET LIGHT; TREE; ROAD CENTERLINE

PROPOSED GRADING LEGEND:

G=XX.XX GUTTER ELEVATION, TC = G+0.5'
P=XX.XX PAVEMENT ELEVATION TC = P+0.5'
C=XX.XX CONCRETE ELEVATION
PROPERTY LINE; RIGHT OF WAY; CURB AND GUTTER; RL RIDGELINE; SETBACK; FLOW ARROW; CATCH BASIN; STORM PIPE; END SECTION; STORM MANHOLE; NYLOPLAST BASIN; WATER METER; GATE VALVE; FIRE HYDRANT; SEWER MANHOLE; CONCRETE PAVEMENT; HEAVY DUTY PAVEMENT; LIGHT DUTY PAVEMENT

PRELIMINARY
NOT FOR
CONSTRUCTION

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

PROJECT: SENIOR LIVING SCOTTSDALE + OSBORN
LOCATION: 3380 N. SCOTTSDALE ROAD, SCOTTSDALE, AZ

DRAWN	JC	11/17/2021
DESIGNED	JC	11/17/2021
QC	SC	10/25/2021
FINAL QC		
PROJ. MGR.	AF	11/17/2021

DATE: 11/17/2021
ISSUED FOR: DRB

REVISION NO.:	DATE:
1	
2	
3	
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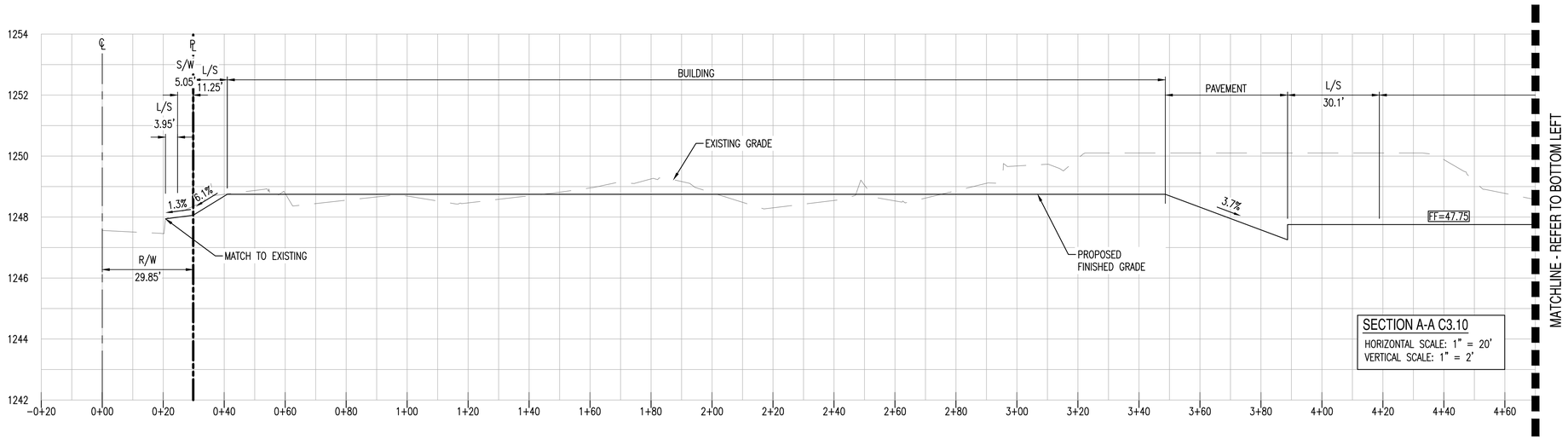
JOB NO.: 210126

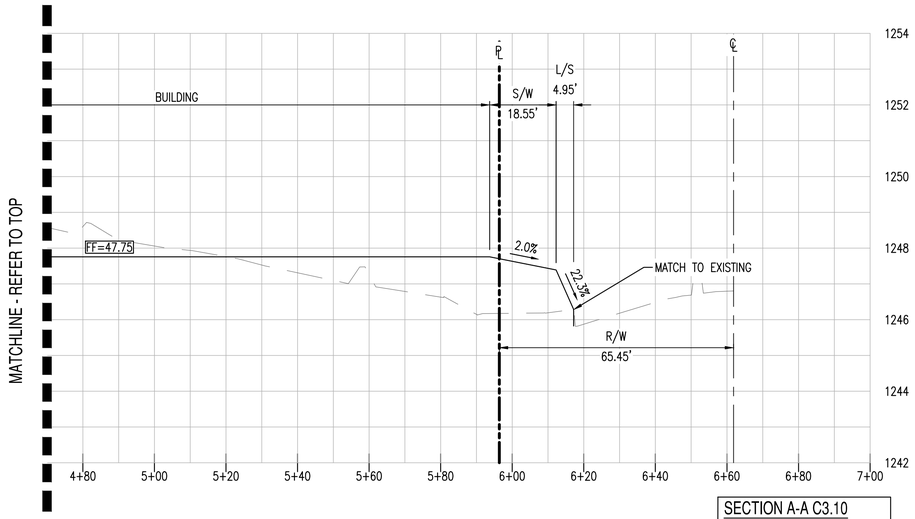
SHEET TITLE: **PRELIMINARY GRADING PLAN**

PAGE NO.: 1 OF 3
SHEET NO.: **C3.10**

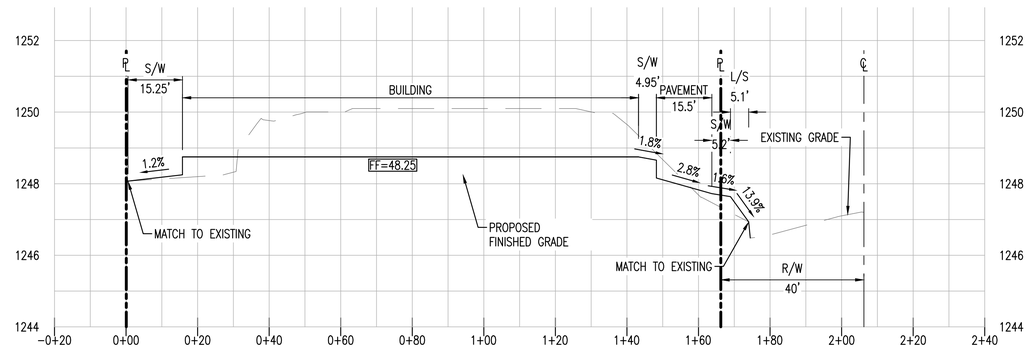
LOCATION: Z:\SHARED\PROJECTS\EMPIRE\OLIVE GARDEN - SCOTTSDALE - SWC OSBORN & SCOTTSDALE RD - 210126\11 CAD (SEG)\11.3 ENTITLEMENT-PLANNING\210126-C3.00.DWG SAVED BY: JUAN CHACON DATE: 11/17/2021



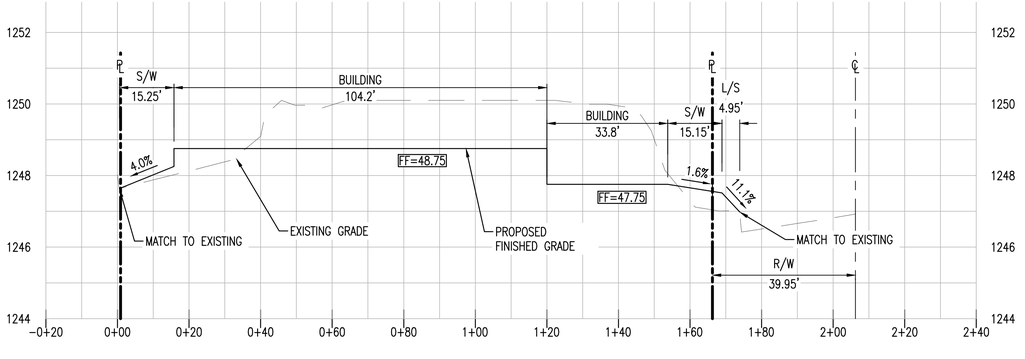
SECTION A-A C3.10
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 2'



SECTION A-A C3.10
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 2'



SECTION B-B C3.10
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 2'



SECTION C-C C3.10
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 2'

PRELIMINARY
NOT FOR
CONSTRUCTION

SUSTAINABILITY ENGINEERING GROUP
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EMPIRE

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PROJECT
SENIOR LIVING
SCOTTSDALE + OSBORN

LOCATION
3380 N. SCOTTSDALE
ROAD, SCOTTSDALE, AZ

DRAWN	JC	11/17/2021
DESIGNED	JC	11/17/2021
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FINAL QC		
PROJ. MGR.	AF	11/17/2021

DATE:
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ISSUED FOR:
DRB

REVISION NO.:	DATE:
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JOB NO.:
210126

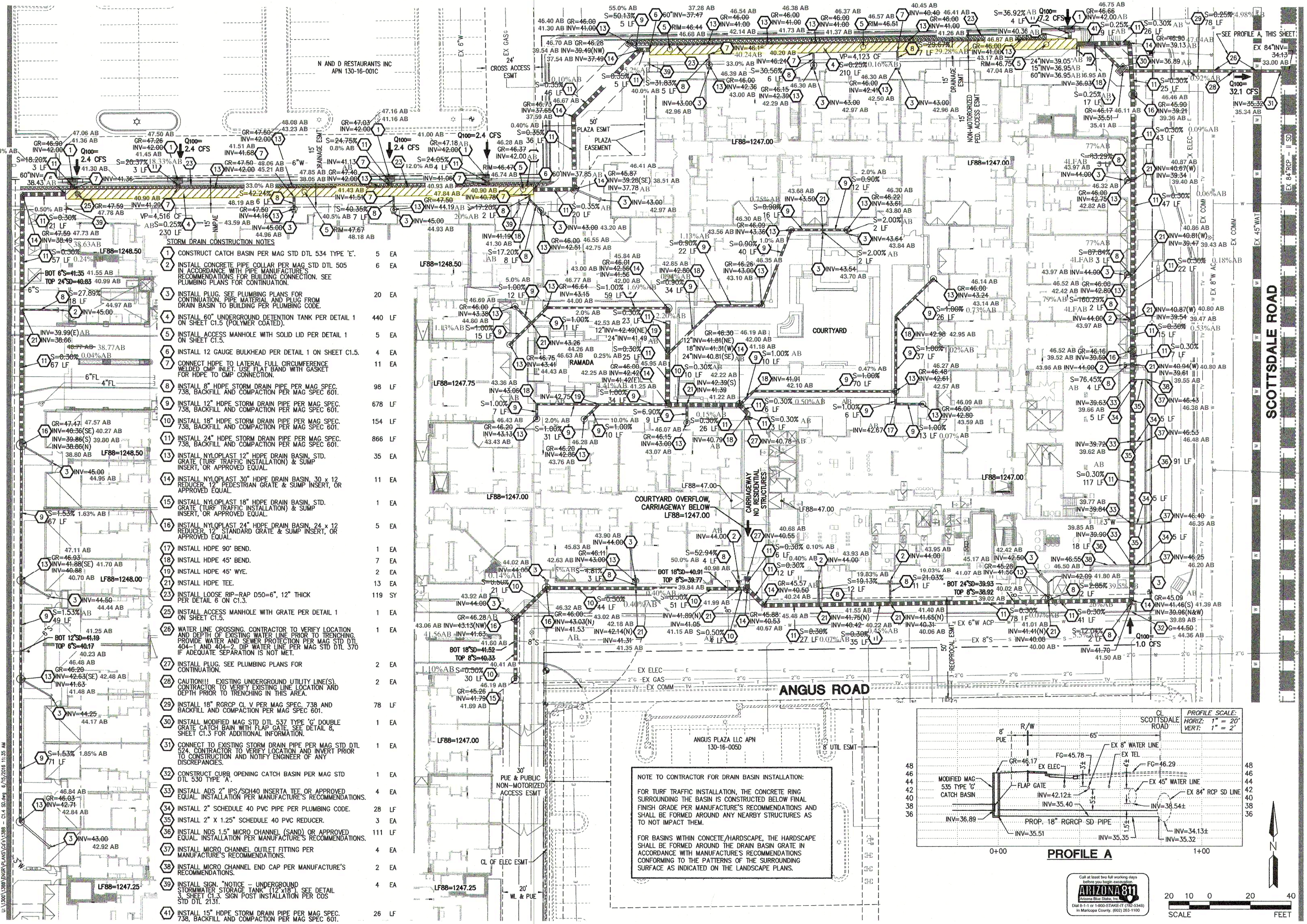
SHEET TITLE:
PRELIMINARY GRADING CROSS SECTIONS

PAGE NO.: 2 OF 3
SHEET NO.: **C3.50**

LOCATION: Z:\SHARED\PROJECTS\EMPIRE\OLIVE GARDEN - SCOTTSDALE - SWC OSBORN & SCOTTSDALE RD - 210126\11 CAD (SEG)\11.3 ENTITLEMENT-PLANNING\210126-C3.00.DWG SAVED BY: JUAN CHACON DATE: 11/17/2021

APPENDIX IV

Plan C1.4 "Stormdrain Plan" – Hilgart Wilson



STORM DRAIN CONSTRUCTION NOTES

1	CONSTRUCT CATCH BASIN PER MAG STD DTL 534 TYPE 'E'.	5	EA
2	INSTALL CONCRETE PIPE COLLAR PER MAG STD DTL 505 IN ACCORDANCE WITH PIPE MANUFACTURE'S RECOMMENDATIONS FOR BUILDING CONNECTION. SEE PLUMBING PLANS FOR CONTINUATION.	6	EA
3	INSTALL PLUG. SEE PLUMBING PLANS FOR CONTINUATION. PIPE MATERIAL AND PLUG FROM DRAIN BASIN TO BUILDING PER PLUMBING CODE.	20	EA
4	INSTALL 60" UNDERGROUND DETENTION TANK PER DETAIL 1 ON SHEET C1.5 (POLYMER COATED).	440	LF
5	INSTALL ACCESS MANHOLE WITH SOLID LID PER DETAIL 1 ON SHEET C1.5.	5	EA
6	INSTALL 12 GAUGE BULKHEAD PER DETAIL 1 ON SHEET C1.5.	4	EA
7	CONNECT HDPE TO LATERAL FULL CIRCUMFERENCE WELDED CMP INLET. USE FLAT BAND WITH GASKET FOR HDPE TO CMP CONNECTION.	11	EA
8	INSTALL 8" HDPE STORM DRAIN PIPE PER MAG SPEC. 738, BACKFILL AND COMPACTION PER MAG SPEC 601.	98	LF
9	INSTALL 12" HDPE STORM DRAIN PIPE PER MAG SPEC. 738, BACKFILL AND COMPACTION PER MAG SPEC 601.	678	LF
10	INSTALL 18" HDPE STORM DRAIN PIPE PER MAG SPEC. 738, BACKFILL AND COMPACTION PER MAG SPEC 601.	154	LF
11	INSTALL 24" HDPE STORM DRAIN PIPE PER MAG SPEC. 738, BACKFILL AND COMPACTION PER MAG SPEC 601.	866	LF
13	INSTALL NYLOPLAST 12" HDPE DRAIN BASIN, STD. GRATE (TURF TRAFFIC INSTALLATION) & SUMP INSERT, OR APPROVED EQUAL.	35	EA
14	INSTALL NYLOPLAST 30" HDPE DRAIN BASIN, 30 x 12 REDUCER, 12" PEDESTRIAN GRATE & SUMP INSERT, OR APPROVED EQUAL.	11	EA
15	INSTALL NYLOPLAST 18" HDPE DRAIN BASIN, STD. GRATE (TURF TRAFFIC INSTALLATION) & SUMP INSERT, OR APPROVED EQUAL.	1	EA
16	INSTALL NYLOPLAST 24" HDPE DRAIN BASIN, 24 x 12 REDUCER, 12" STANDARD GRATE & SUMP INSERT, OR APPROVED EQUAL.	5	EA
17	INSTALL HDPE 90° BEND.	1	EA
18	INSTALL HDPE 45° BEND.	7	EA
19	INSTALL HDPE 45° WYE.	2	EA
21	INSTALL HDPE TEE.	13	EA
23	INSTALL LOOSE RIP-RAP D50=6", 12" THICK PER DETAIL 6 ON C1.3.	119	SY
25	INSTALL ACCESS MANHOLE WITH GRATE PER DETAIL 1 ON SHEET C1.5.	1	EA
26	WATER LINE CROSSING. CONTRACTOR TO VERIFY LOCATION AND DEPTH OF EXISTING WATER LINE PRIOR TO TRENCHING. PROVIDE WATER AND SEWER PROTECTION PER MAG STD DTL 404-1 AND 404-2. DIP WATER LINE PER MAG STD DTL 370 IF ADEQUATE SEPARATION IS NOT MET.	1	EA
27	INSTALL PLUG. SEE PLUMBING PLANS FOR CONTINUATION.	2	EA
28	CAUTION!!! EXISTING UNDERGROUND UTILITY LINE(S). CONTRACTOR TO VERIFY EXISTING LINE LOCATION AND DEPTH PRIOR TO TRENCHING IN THIS AREA.	2	EA
29	INSTALL 18" RGRCP CL V PER MAG SPEC. 738 AND BACKFILL AND COMPACTION PER MAG SPEC 601.	78	LF
30	INSTALL MODIFIED MAG STD DTL 537 TYPE 'G' DOUBLE GRATE CATCH BAIN WITH FLAP GATE, SEE DETAIL 8, SHEET C1.3 FOR ADDITIONAL INFORMATION.	1	EA
31	CONNECT TO EXISTING STORM DRAIN PIPE PER MAG STD DTL 524. CONTRACTOR TO VERIFY LOCATION AND INVERT PRIOR TO CONSTRUCTION AND NOTIFY ENGINEER OF ANY DISCREPANCIES.	1	EA
32	CONSTRUCT CURB OPENING CATCH BASIN PER MAG STD DTL 530 TYPE 'A'.	1	EA
33	INSTALL ADS 2" IPS/SCH40 INSERTA TEE OR APPROVED EQUAL. INSTALLATION PER MANUFACTURE'S RECOMMENDATIONS.	4	EA
34	INSTALL 2" SCHEDULE 40 PVC PIPE PER PLUMBING CODE.	28	LF
35	INSTALL 2" X 1.25" SCHEDULE 40 PVC REDUCER.	3	EA
36	INSTALL NDS 1.5" MICRO CHANNEL (SAND) OR APPROVED EQUAL. INSTALLATION PER MANUFACTURE'S RECOMMENDATIONS.	111	LF
37	INSTALL MICRO CHANNEL OUTLET FITTING PER MANUFACTURE'S RECOMMENDATIONS.	4	EA
38	INSTALL MICRO CHANNEL END CAP PER MANUFACTURE'S RECOMMENDATIONS.	2	EA
39	INSTALL SIGN. "NOTICE – UNDERGROUND STORMWATER STORAGE TANK" (12"x18"). SEE DETAIL 3, SHEET C1.3. SIGN POST INSTALLATION PER COS STD DTL 2131.	4	EA
41	INSTALL 15" HDPE STORM DRAIN PIPE PER MAG SPEC. 738, BACKFILL AND COMPACTION PER MAG SPEC 601.	26	LF

NOTE TO CONTRACTOR FOR DRAIN BASIN INSTALLATION:

FOR TURF TRAFFIC INSTALLATION, THE CONCRETE RING SURROUNDING THE BASIN IS CONSTRUCTED BELOW FINAL FINISH GRADE PER MANUFACTURE'S RECOMMENDATIONS AND SHALL BE FORMED AROUND ANY NEARBY STRUCTURES AS TO NOT IMPACT THEM.

FOR BASINS WITHIN CONCETE/HARDSCAPE, THE HARDSCAPE SHALL BE FORMED AROUND THE DRAIN BASIN GRATE IN ACCORDANCE WITH MANUFACTURE'S RECOMMENDATIONS CONFORMING TO THE PATTERNS OF THE SURROUNDING SURFACE AS INDICATED ON THE LANDSCAPE PLANS.

Project No. 1388

Drawn By: Jesse Weber
PLOT DATE: 6/15/2016

ISSUE FOR PERMIT:
JUNE 15, 2016
REVISIONS PER CITY COMMENTS.

ISSUE FOR CONSTRUCTION.

Revisions:

The Agave Residences

Scottsdale, Arizona
JLB PARTNERS

REGISTERED PROFESSIONAL ENGINEER (CIVIL)
CERTIFICATE NO. 47372
CASEY R. WHITEMAN
Date Signed 6/15/16
ARIZONA U.S.A.
Expires 03/31/2017

CASE HISTORY:
CASE NO.: # 38-DR-2015
CASE NO.: # 2-AB-2014
CASE NO.: # 695-PA-2015
CASE NO.: # 1-ZN-2014

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STORMDRAIN PLAN

PLAN REVIEW# 6929-15-5 QS# DR# 38-DR-2015

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