PRELIMINARY DRAINAGE REPORT

Case #: 33-DR-2023

Review Cycle: 4

Reviewed By: GA

Date: 09/20/2024

Status: Accepted

FIRST STREET TOWNHOMES

7515 and 7521 E. 1st Street
Scottsdale, Arizona 85251

Prepared For:

Scottsdale Holdings LLC

7515 E. 1st Street

Scottsdale, AZ 85251

Prepared by:

Sustainability Engineering Group
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Phoenix, AZ 85016
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Project Number: 220529
1st Submittal Date: November 27, 2023 (DRB)
2nd Submittal Date: March 13, 2024 (DRB)
3rd Submittal Date: August 6, 2024 (DRB)
4th Submittal Date: September 5, 2024 (DRB)

Case No.: 33-DR-2023

Registered Professional Engineer (Civil)
CERTIFICATE NO.
45621
ALI SAMIH
FAKIH
Date Signed 09/05/2024
ARIZONA, U.S.A.

EXPIRATION DATE: 12-31-2024

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EXPIRATION DATE: 12-31-2024

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1. INTRODUCTION

This Preliminary Drainage Report represents the storm water analysis for a 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 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 26, Township 2 North, Range 4 East of the Gila and Salt River Base and Meridian, Maricopa County Arizona:

- Parcel ID:
  Parcel 130-25-025; Scottsdale Holdings, LLC, Zoning D/OC-2. 3,162 sf office building.
  Parcel 130-25-024; Scottsdale Holdings, LLC, Zoning D/OR-2. 1,042 sf office building.
- Address: 7515 and 7521 E. 1st Street, 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: Across Alley
  - Parcel 130-25-152; The Clayton on 2nd (apartment complex); Zoning D/OR-2.
- North: Across E 1st Street
  - Parcel 130-25-012; Single family residential home; Zoning S-R.
  - Parcel 130-25-013; Single family residential home; Zoning S-R.
- West:
  - Parcel 130-25-026; Medical Spa Center; Zoning S-R.
- East:
  - Parcel 130-25-023; Office; Zoning S-R.

2.3. EXISTING SITE DESCRIPTION:

The project area includes approximately 0.42 acres of land and is designated with zoning D/OC-2 and D/OR-2. The site is currently developed as two office buildings.

Per Topographic Survey prepared by Alliance Land Surveying, LLC., the northern portion of the site slopes approximately 1% to the north and the southern portion of the site slopes approximately 0.5% to the south.

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 12 three-story townhomes. Each unit of the development will have its own access.

The two existing parcels are planned to be combined in a single lot. The lot combo will be approved prior to final CD approval.

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 FIRMette Map.

3. EXISTING DRAINAGE CONDITIONS

3.1. OFF-SITE DRAINAGE PATTERNS:

The project site is located within the watershed of Lower Indian Bend Wash (LIBW), a FLO-2D based study prepared for the FLOOD CONTROL District of Maricopa County. The topographic survey and FLO-2D Map provide the following information for offsite drainage:

- *North*: Approximately half of the runoff from E. 1st Street flows along the site, where it is conveyed through roll curb and gutter easterly away from the site. No offsite flows from the north affect the site.
- *East*: The northern portion of the property to the east flows northerly to E. 1st Street. The southern portion flows southerly to the alley. Flows reaching the alley travel overland easterly away from the site. No flows from the east affect the site.

- *West*: The northern portion of the property to the west flows northerly to E. 1st Street. The southern portion flows southerly to the alley. Flows reaching the alley travel overland easterly away from the site. No flows from the west affect the site.
- *South*: Runoff from the alley south of the site travels overland easterly away from the site. No flows from the south affect the site.

Refer to **FIGURE 4**, FLO-2D MAP for drainage patterns.

3.2. ON-SITE DRAINAGE:

Based on the topographic information and FLO-2D, the historical outfalls are as follows:

- Existing drainage area EX-A (consisting of northern half of parcels 130-25-024 and 130-25-025) drains north towards E. 1st Street. Flow at E. 1st Street is then conveyed to the east. On-site runoff discharged to 1st Street is approximately 1.15 cfs.
- Existing drainage area EX-B (southern half of parcels 130-25-024 and 130-25-025) drains southerly towards the alley south of the site. Flows at the alley to the south are also conveyed to the east. On-site runoff discharged to the southern alley is approximately 1.16 cfs.

Refer to **Appendix II** for **Existing Conditions Drainage Area Map and FIGURE 4**

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

TABLE 1. EXISTING SITE DISCHARGES

SUMMARY OF EXISTING SITE DISCHARGES							
	TOTAL AREA	100-YR Cwt	Intensity 10 yr 5-min	Q 10	Intensity 100 yr 5-min	Q 100	Concentration Point
	(ac)	(-)	(in/hr)	(cfs)	(in/hr)	(cfs)	CP#
	0.42	-	4.70	-	7.45	-	-
EX-A	0.20	0.76	4.70	0.73	7.45	1.15	E 1st Street (CP-1)
EX-B	0.22	0.70	4.70	0.73	7.45	1.16	South Alley (CP-2)

On-site project area includes **0.20 acres at C_{wt} (Cp-1) = 0.76, and 0.22 acres at C_{wt} (Cp-2) = 0.70** (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 as discussed in the following section. 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 a proposed open retention basin to fulfill stormwater retention requirements. The northern portion of the site will drain north, and the southern portion of the site will drain south. Retention will be provided for the middle portion of the site. Excess runoff will overflow via nyloplast catch basins CB-1 and CB-2, through concrete-encased parallel pipes and outflow through bubble-up structures CB-3 and CB-4 located underneath the scupper on the south side of building 3. Flows on the north and south sides of the site will be conveyed overland.

4.2. STORMWATER STORAGE 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 volume from the 100-year 2-hour storm event if increased or first flush, whichever is greater. For drainage sub basins discharging to CP-1 and CP-2, stormwater storage is not needed since the post-development discharge to these concentration points has been reduced due to reduced contributing area. The first hflush is not applicable as discussed in section 4.4. Refer to section 4.4 for pre vs post and first flush volumes comparison. The only retention provided is for the full 100-year, 2-hour storm event is for drainage area DA-B.

4.3. 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:

$$Q = C_w \times I \times A$$

Where: C_{wt} = The runoff coefficient relating runoff to rainfall
I = Average rainfall intensity in inches/hour, lasting for Tc
Tc = The time of concentration (Using Five minutes for the developed areas)
A = The contributing drainage area in acres

The proposed project site consists of 12 three-story townhomes with associated landscape. Based on the City of Scottsdale DSPM, 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

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

TABLE 2. PROPOSED SITE DISCHARGES

SUMMARY OF PROPOSED SITE DISCHARGES							
	TOTAL AREA	100-YR Cwt	Intensity 10 yr 5-min	Q 10	Intensity 100 yr 5-min	Q 100	Concentration Point
	(ac)	(-)	(in/hr)	(cfs)	(in/hr)	(cfs)	CP#
	0.42	-	4.70	-	7.45	-	-
DA-A	0.16	0.92	4.70	0.70	7.45	1.11	E 1st Street (CP-1)
DA-B	0.12	0.68	4.70	0.39	7.45	0.62	BASIN A
DA-C	0.14	0.95	4.70	0.63	7.45	1.00	South Alley (CP-2)

On-site project area includes **0.16 acres at C_{wt} (Cp-1) = 0.92, 0.12 acres at C_{wt} (Basin A) = 0.68, and 0.14 acres at C_{wt} (Cp-2) = 0.95** (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:

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

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)

C = Weighted average runoff coefficient over disturbed area

Since stormwater discharges from concentration points CP-1 and CP-2 are reduced from existing conditions in proposed conditions, storage calculations are not required.

TABLE 3. REQUIRED STORAGE VOLUME CALCULATIONS BASIN A

Required Storage Volume Calculations DA-B					
					Vr=1*(P/12)*Cw*A
					P=100-yr,2-hr= 2.16in.
Drainage Area ID	Area (acres)	C (-)	Depth (in)	Volume Req. (acre-ft)	Volume Req. (CF)
ON-SITE RETENTION - BASIN A - Surface Storage					
DA-B	0.12	0.68	2.16	0.015	654
Total	**0.12**	**0.68**	**2.16**	**0.015**	**654**

Retention for the 100-yr, 2-hr storm event will be provided for the middle of the site (DA-B) to comply with required stormwater storage volume based on pre vs post requirements to prevent any increase in runoff to historical outfalls. The storage is provided with two 1' deep surface basins connected with a 6" equalizer pipe.

FIRST FLUSH: First flush requirement is not applicable since the site will not disturb more than one acre.

A drainage easement will be provided around the basin and the final configuration and dedication will be addressed during final plans preparation.

Refer to **Appendix II** for calculations.

Provided storage of *Basin A*:
Basin A will consist of two open retention basins (Basin A1 and Basin A2) combined through a 6" PVC storm equalizer pipe.

BASIN A1					
ELEV. (FT)	**AREA (SF)**	**DEPTH (FT)**	**AVG VOLUME (CF)**	**SUM VOLUME (CF)**	**COMMENT**
1243.00	257			0.00	Bottom
		0.85	473		
1243.85	767			473	**Volume Provided**
		0.15	58		
1244.00	857			531	Basin Top

BASIN A2					
ELEV. (FT)	AREA (SF)	DEPTH (FT)	AVG VOLUME (CF)	SUM VOLUME (CF)	COMMENT
1243.00	72			0.00	Bottom
		0.85	202		
1243.85	353			**202**	**Volume Provided**
		0.15	57		
1244.00	403			259	Basin Top

The 100-year water surface elevation is below 1243.85 with a total volume of 675 cf, the sum of basins A1 and A2, greater than the required volume of 654 cf.

Overflow from the basin will be directed via catch basins 1 (CB-1) and 2 (CB-2) and discharge into the alley south of the site to catch basins 3 (CB-3) and 4 (CB-4), acting as a bubble-up structure. Catch basins 1 (CB-1) and catch basin 2 (CB-2) will be connected to catch basin 3 (CB-3) and catch basin 4 (CB-4) via dual 8" PVC storm pipes provided under the building and encased in concrete. Runoff directed to the south alley (CP-2) will not be increased during proposed conditions.

TABLE 4. PROPOSED RETENTION BASIN SUMMARY

Proposed Retention Basin Summary					
Basin		TYPE	Vp	Vp Total	Vr
(ID)		(--)	(CF)	(CF)	(CF)
Basin A	Basin A1	OPEN	473	675	654
	Basin A2	OPEN	202		
Total:			**675**	**675**	**654**

4.5. RETENTION BASIN DRAINING:

The city policy per the DSPM:
For Basins with no direct bleed-off available and insufficient natural percolation rate, Drywells are used in the on-site storage facilities to dispose of the stormwater within thirty-six (36) hours. The calculation 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.
- A percolation test will be conducted with the first drywell installation. The number of drywells may be increased if the percolation test indicates the 36-hour drain time cannot be achieved while considering a safety factor required by the City of Scottsdale.

Initial number of drywells needed calculation
Basin A provided storage: 675 cf
675 cf / 12,960 cf = 0.05 = **1 drywell needed**

Basin A Discharge

Proposed Basins A1 and A2 are designed to store the associated 100-year, 2-hour storm volume of the project (675 CF). Excess runoff from Basins A1 and A2 will be discharged via a dual 8" pipe and catch basins CB-3 and CB-4 acting as bubble-up structures into the South Alley (CP-2)

A catch basin CB-2 will be constructed adjacent to CB-1 in the basin to take in any excess flow above CB-1. The CB-1 rim elevation will be at the 100-year, 2-hour high water elevation. The CB-2 rim elevation will be at the top of the basin elevation to ensure back-to-back storms don't overflow into the units.

Pre vs post discharges

Proposed conditions will ultimately decrease site flow contributions to the historical outfalls.
Table 4 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.

TABLE 5. PRE VS POST FLOWS

Outfall	Existing Q10	Proposed Q10	Δ	Existing Q100	Proposed Q100	Δ
E. 1st Street (CP-1)	0.73	0.70	-0.03	1.15	1.11	-0.04
South Alley (CP-2)	0.73	0.63	-0.10	1.16	1.00	-0.16

Discharge to E. 1st Street (CP-1) is reduced by 0.04 cfs. Total discharge to the south Alley (CP-2) is 1.00 cfs. Discharge to CP-2 is reduced by 0.11 cfs during proposed conditions.

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

4.6. INLET CALCULATIONS:

18" Nyloplast catch basins will be used to capture on-site retention basin overflow to prevent ponding on the site. Overflow runoff will be discharged to the alley south of the site. The proposed catch basin inlet can adequately convey overflow runoff from the 100-year storm event.

- The 18" Nyloplast can adequately convey a flow of 0.65 cfs while considering a clogging factor of 0.50 (1.30 cfs no clogging). The proposed catch basin can adequately convey runoff for the 100-year storm event Q_{100}= 0.62 cfs.

Refer to **Appendix IV** for Inlet Capacity Chart.

4.7. PIPE CAPACITY CALCULATIONS:

The proposed drainage system consists of a dual 8" PVC pipe (n=0.013) conveying overflow run-off from proposed catch basins CB-1 and CB-2 to proposed catch basins CB-3 and CB-4 acting as bubble-up structure. Pipe capacity calculations will be included in the final drainage report.

4.8. ADEQ WATER QUALITY REQUIREMENTS:

The total disturbed area of this site is approximately 0.43 acres. The Arizona Department of Environmental Quality requires that any site disturbance over an acre is required to submit an NOI. A NOI is not required since the site is less than 1 acre in size.

5. FLOOD SAFETY FOR DWELLINGS

5.1. FINISHED FLOOR ELEVATIONS:

Per City of Scottsdale DSPM, when plans are signed by a civil engineer, the engineer sets the lowest floor elevation that they consider safe from flooding and adds a corresponding certification statement on the plans.

The proposed lowest building finished floor elevation (1244.90') will be set a minimum of 12" above the 100-year water surface elevation of Basins A1 and A2. The 100-year elevation is no more than 1243.85', so the lowest finish floor elevation is 12.6 inches above the 100-year water surface elevation for basins A1 and A2.

This project lies in an "X" Flood Zone. The proposed lowest building finished floor elevation (1244.90') 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 1243.03'. At this elevation, the site is considered safe from flooding for up to the 100-year storm.

6. CONCLUSIONS

6.1. OVERALL PROJECT:

1. The finish floor elevations will be designed as the higher elevation between a minimum of 14 inches above the low top of curb and a minimum of 12 inches above the 100-year water surface elevation of basins A1 and A2.
2. There is a difference between the outfall and the Finish Floor Elevation of 22.4 inches and a difference between the 100-year water surface elevation of 12.6 inches
3. Discharge to historical outfalls will be decreased under proposed conditions.
4. On-site storage facilities will be provided to account for the 100-year, 2-hour storm event in order to reduce discharge at each concentration point.

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

FIGURES

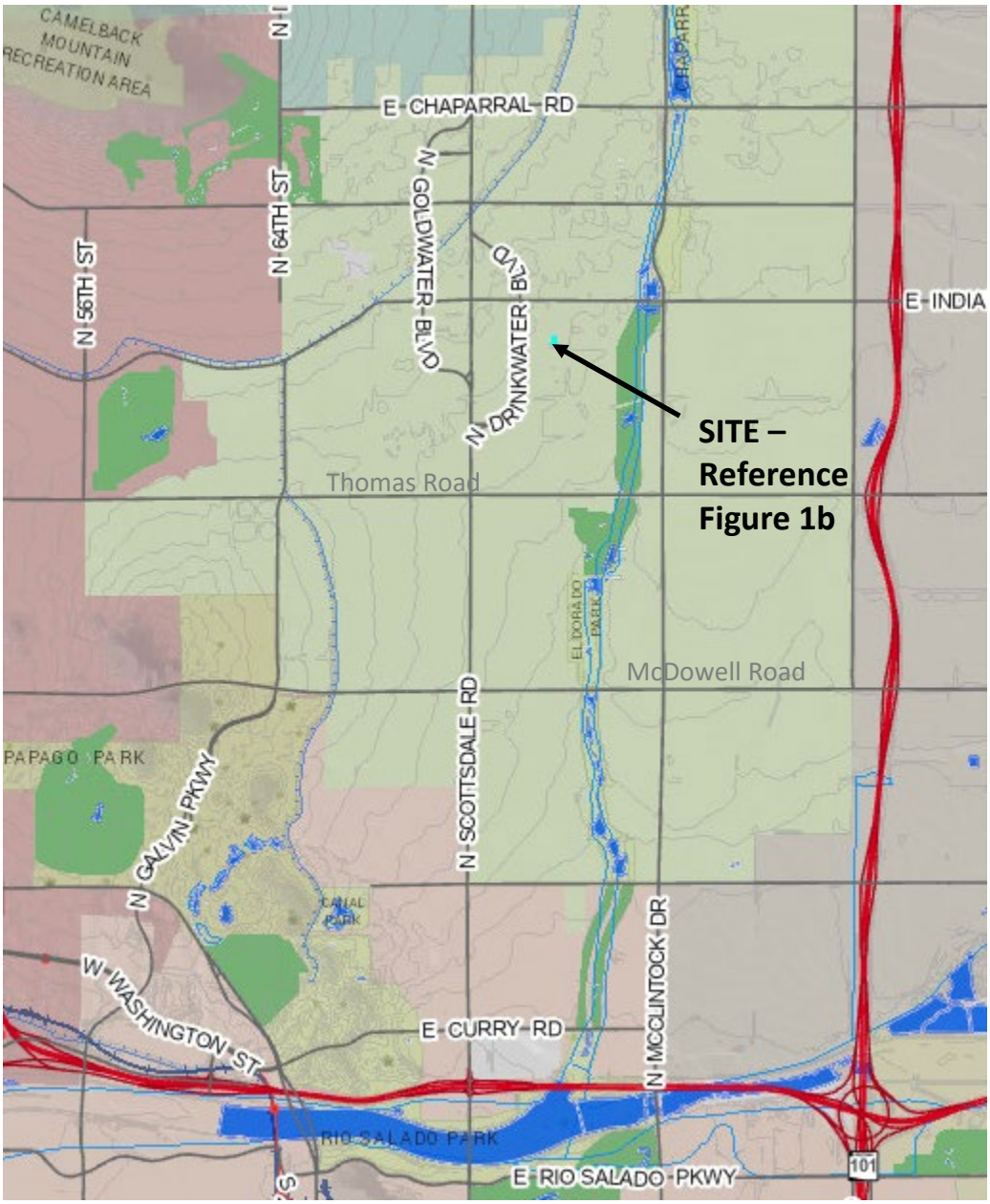

FIGURE 1a – Vicinity map

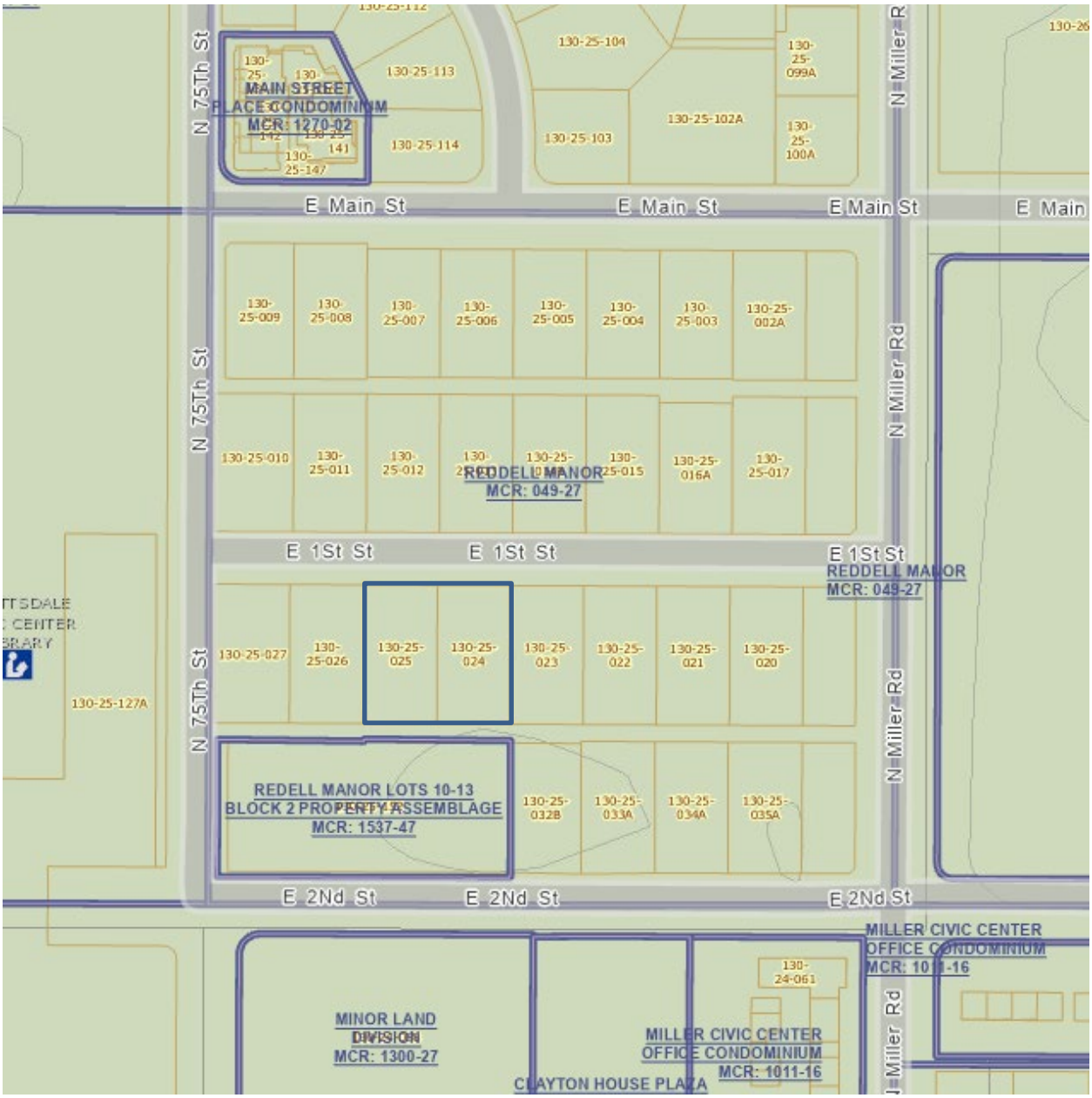

FIGURE 1b – Vicinity map

Figure 2 - Aerial

National Flood Hazard Layer FIRMette

FEMA

111°55'27"W 33°29'46"N

111°54'50"W 33°29'16"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 10/17/2022 at 8:14 PM 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 17, 2022

1:480

0 20 40 80 ft

0 5 10 20 m

APPENDIX I

RAINFALL DATA

NOAA Atlas 14, Volume 1, Version 5
Location name: Scottsdale, Arizona, USA*
Latitude: 33.492°, Longitude: -111.9191°
Elevation: 1241.91 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** (0.154-0.224)	**0.240** (0.202-0.292)	**0.326** (0.273-0.396)	**0.392** (0.326-0.474)	**0.482** (0.393-0.579)	**0.551** (0.444-0.659)	**0.621** (0.492-0.742)	**0.693** (0.539-0.826)	**0.790** (0.598-0.943)	**0.863** (0.641-1.03)
10-min	**0.279** (0.234-0.340)	**0.365** (0.307-0.445)	**0.496** (0.415-0.603)	**0.597** (0.496-0.721)	**0.733** (0.599-0.881)	**0.838** (0.676-1.00)	**0.945** (0.748-1.13)	**1.06** (0.821-1.26)	**1.20** (0.911-1.43)	**1.31** (0.976-1.57)
15-min	**0.346** (0.290-0.422)	**0.453** (0.381-0.552)	**0.615** (0.514-0.747)	**0.740** (0.614-0.894)	**0.909** (0.742-1.09)	**1.04** (0.838-1.24)	**1.17** (0.927-1.40)	**1.31** (1.02-1.56)	**1.49** (1.13-1.78)	**1.63** (1.21-1.95)
30-min	**0.466** (0.390-0.568)	**0.609** (0.513-0.742)	**0.828** (0.692-1.01)	**0.996** (0.827-1.20)	**1.22** (0.999-1.47)	**1.40** (1.13-1.68)	**1.58** (1.25-1.88)	**1.76** (1.37-2.10)	**2.01** (1.52-2.39)	**2.19** (1.63-2.62)
60-min	**0.576** (0.483-0.703)	**0.754** (0.635-0.919)	**1.02** (0.857-1.24)	**1.23** (1.02-1.49)	**1.52** (1.24-1.82)	**1.73** (1.40-2.07)	**1.95** (1.55-2.33)	**2.18** (1.70-2.60)	**2.48** (1.88-2.96)	**2.71** (2.02-3.25)
2-hr	**0.668** (0.569-0.797)	**0.865** (0.737-1.03)	**1.16** (0.983-1.38)	**1.38** (1.16-1.64)	**1.69** (1.40-1.99)	**1.92** (1.57-2.26)	**2.16** (1.74-2.55)	**2.41** (1.91-2.83)	**2.74** (2.12-3.22)	**3.00** (2.26-3.55)
3-hr	**0.727** (0.617-0.876)	**0.933** (0.794-1.13)	**1.23** (1.04-1.48)	**1.46** (1.22-1.75)	**1.78** (1.48-2.12)	**2.04** (1.67-2.42)	**2.31** (1.85-2.74)	**2.60** (2.04-3.07)	**2.99** (2.28-3.54)	**3.30** (2.46-3.92)
6-hr	**0.875** (0.758-1.03)	**1.11** (0.964-1.31)	**1.42** (1.23-1.67)	**1.67** (1.43-1.95)	**2.01** (1.70-2.34)	**2.28** (1.90-2.64)	**2.56** (2.10-2.96)	**2.84** (2.29-3.29)	**3.23** (2.53-3.75)	**3.54** (2.71-4.12)
12-hr	**0.977** (0.855-1.14)	**1.24** (1.08-1.44)	**1.57** (1.36-1.81)	**1.83** (1.58-2.11)	**2.18** (1.86-2.50)	**2.44** (2.07-2.81)	**2.72** (2.27-3.13)	**3.00** (2.47-3.45)	**3.38** (2.71-3.90)	**3.67** (2.89-4.27)
24-hr	**1.16** (1.04-1.31)	**1.48** (1.32-1.67)	**1.92** (1.71-2.16)	**2.26** (2.01-2.54)	**2.74** (2.42-3.08)	**3.12** (2.74-3.49)	**3.52** (3.06-3.94)	**3.93** (3.39-4.40)	**4.49** (3.84-5.03)	**4.93** (4.18-5.55)
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** (2.72-3.45)	**3.52** (3.09-3.95)	**3.99** (3.48-4.48)	**4.48** (3.88-5.04)	**5.17** (4.42-5.82)	**5.72** (4.85-6.46)
3-day	**1.33** (1.19-1.50)	**1.70** (1.52-1.92)	**2.24** (1.99-2.52)	**2.67** (2.37-3.00)	**3.28** (2.89-3.68)	**3.77** (3.30-4.22)	**4.29** (3.73-4.81)	**4.83** (4.17-5.42)	**5.60** (4.77-6.29)	**6.22** (5.25-7.01)
4-day	**1.40** (1.25-1.58)	**1.79** (1.60-2.02)	**2.37** (2.10-2.66)	**2.83** (2.51-3.17)	**3.48** (3.07-3.91)	**4.01** (3.51-4.50)	**4.58** (3.98-5.13)	**5.18** (4.46-5.81)	**6.02** (5.12-6.76)	**6.71** (5.65-7.55)
7-day	**1.56** (1.39-1.76)	**1.99** (1.77-2.24)	**2.62** (2.33-2.96)	**3.14** (2.78-3.53)	**3.87** (3.41-4.34)	**4.45** (3.90-4.99)	**5.08** (4.41-5.70)	**5.74** (4.95-6.45)	**6.67** (5.68-7.50)	**7.43** (6.25-8.37)
10-day	**1.69** (1.51-1.90)	**2.16** (1.93-2.43)	**2.85** (2.54-3.20)	**3.41** (3.02-3.82)	**4.19** (3.69-4.68)	**4.81** (4.22-5.38)	**5.48** (4.77-6.12)	**6.17** (5.33-6.91)	**7.15** (6.10-8.00)	**7.93** (6.70-8.90)
20-day	**2.08** (1.86-2.33)	**2.67** (2.39-2.99)	**3.53** (3.15-3.94)	**4.18** (3.72-4.66)	**5.05** (4.47-5.62)	**5.72** (5.05-6.37)	**6.40** (5.62-7.14)	**7.09** (6.20-7.92)	**8.02** (6.95-8.98)	**8.74** (7.51-9.79)
30-day	**2.42** (2.16-2.72)	**3.12** (2.79-3.49)	**4.11** (3.67-4.59)	**4.87** (4.33-5.42)	**5.88** (5.20-6.54)	**6.65** (5.87-7.40)	**7.45** (6.54-8.28)	**8.26** (7.21-9.18)	**9.35** (8.10-10.4)	**10.2** (8.76-11.4)
45-day	**2.81** (2.52-3.14)	**3.62** (3.25-4.04)	**4.77** (4.27-5.32)	**5.62** (5.02-6.26)	**6.74** (6.00-7.51)	**7.58** (6.72-8.45)	**8.43** (7.45-9.40)	**9.28** (8.16-10.4)	**10.4** (9.07-11.6)	**11.2** (9.75-12.6)
60-day	**3.11** (2.80-3.46)	**4.01** (3.61-4.47)	**5.28** (4.74-5.87)	**6.20** (5.55-6.89)	**7.39** (6.61-8.22)	**8.28** (7.37-9.20)	**9.17** (8.13-10.2)	**10.0** (8.86-11.2)	**11.2** (9.80-12.5)	**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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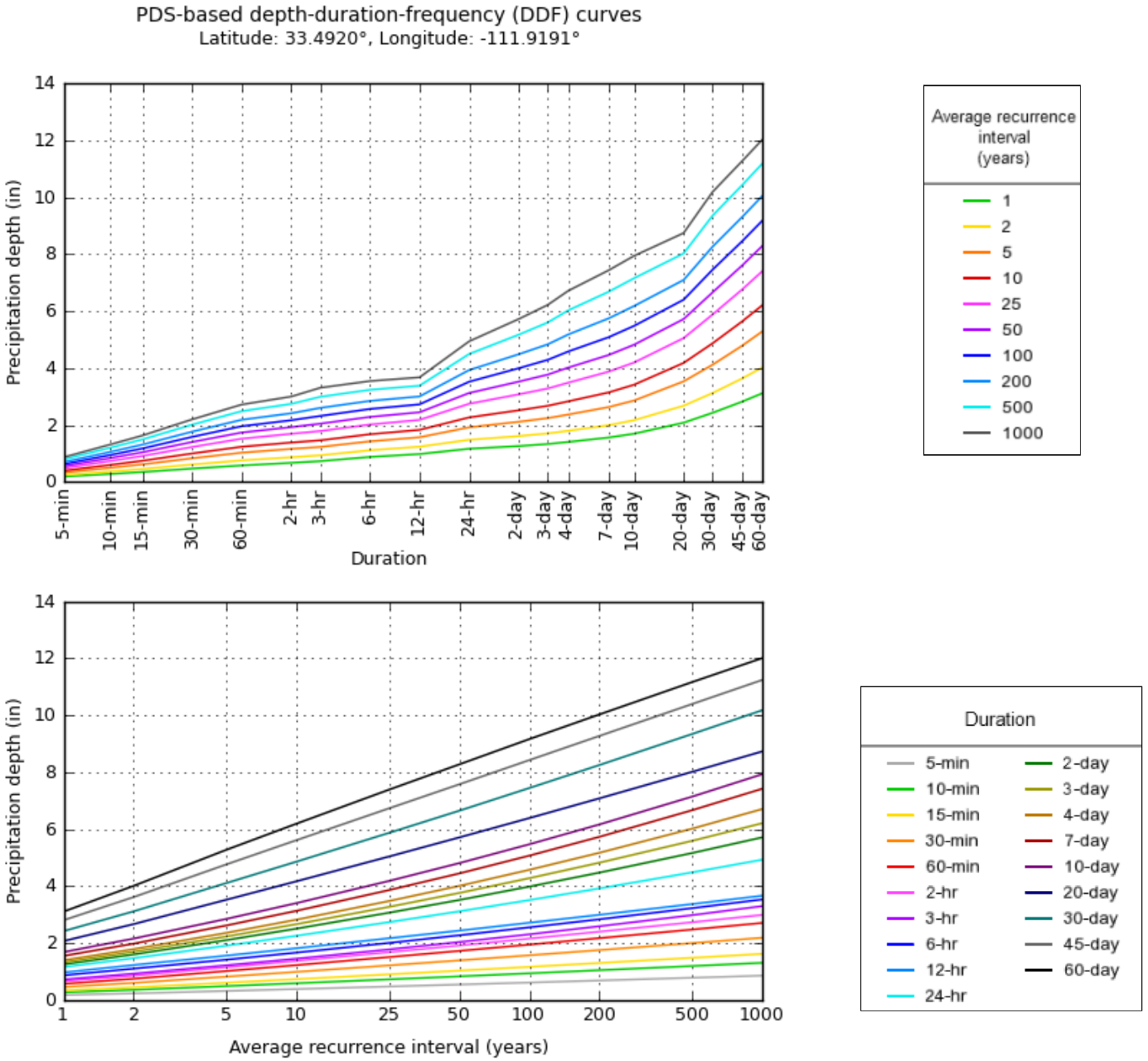
PF graphical



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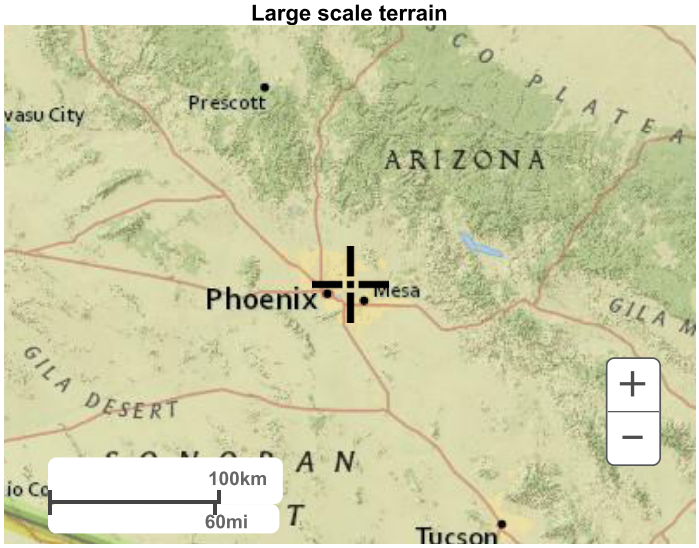
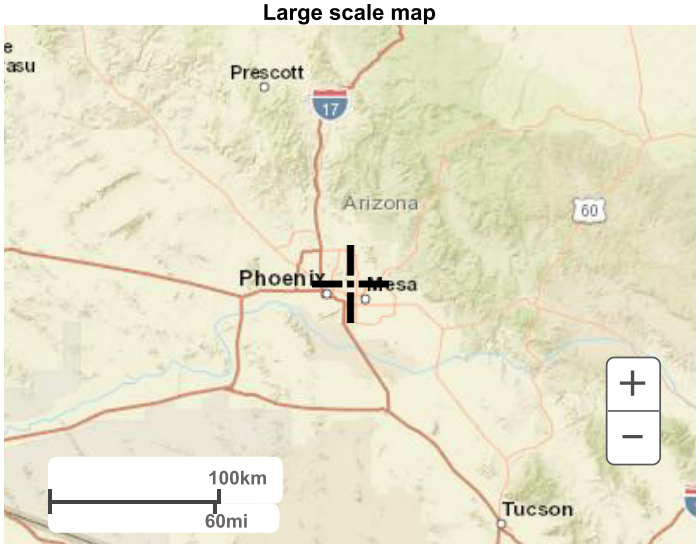
Maps & aerials

Small scale terrain

Large scale terrain



Large scale map



Large scale aerial

NOAA Atlas 14, Volume 1, Version 5
Location name: Scottsdale, Arizona, USA*
Latitude: 33.492°, Longitude: -111.9191°
Elevation: 1241.91 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** (1.85-2.69)	**2.88** (2.42-3.50)	**3.91** (3.28-4.75)	**4.70** (3.91-5.69)	**5.78** (4.72-6.95)	**6.61** (5.33-7.91)	**7.45** (5.90-8.90)	**8.32** (6.47-9.91)	**9.48** (7.18-11.3)	**10.4** (7.69-12.4)
10-min	**1.67** (1.40-2.04)	**2.19** (1.84-2.67)	**2.98** (2.49-3.62)	**3.58** (2.98-4.33)	**4.40** (3.59-5.29)	**5.03** (4.06-6.02)	**5.67** (4.49-6.77)	**6.33** (4.93-7.54)	**7.21** (5.47-8.60)	**7.88** (5.86-9.43)
15-min	**1.38** (1.16-1.69)	**1.81** (1.52-2.21)	**2.46** (2.06-2.99)	**2.96** (2.46-3.58)	**3.64** (2.97-4.37)	**4.16** (3.35-4.98)	**4.69** (3.71-5.60)	**5.23** (4.07-6.24)	**5.96** (4.52-7.11)	**6.51** (4.84-7.79)
30-min	**0.932** (0.780-1.14)	**1.22** (1.03-1.48)	**1.66** (1.38-2.01)	**1.99** (1.65-2.41)	**2.45** (2.00-2.94)	**2.80** (2.26-3.35)	**3.16** (2.50-3.77)	**3.52** (2.74-4.20)	**4.01** (3.04-4.79)	**4.39** (3.26-5.25)
60-min	**0.576** (0.483-0.703)	**0.754** (0.635-0.919)	**1.02** (0.857-1.24)	**1.23** (1.02-1.49)	**1.52** (1.24-1.82)	**1.73** (1.40-2.07)	**1.95** (1.55-2.33)	**2.18** (1.70-2.60)	**2.48** (1.88-2.96)	**2.71** (2.02-3.25)
2-hr	**0.334** (0.284-0.398)	**0.432** (0.368-0.518)	**0.579** (0.492-0.689)	**0.690** (0.580-0.820)	**0.844** (0.700-0.996)	**0.960** (0.786-1.13)	**1.08** (0.872-1.27)	**1.20** (0.953-1.42)	**1.37** (1.06-1.61)	**1.50** (1.13-1.77)
3-hr	**0.242** (0.205-0.292)	**0.311** (0.264-0.376)	**0.408** (0.346-0.492)	**0.486** (0.407-0.582)	**0.594** (0.491-0.707)	**0.680** (0.554-0.807)	**0.771** (0.617-0.913)	**0.865** (0.681-1.02)	**0.995** (0.759-1.18)	**1.10** (0.819-1.31)
6-hr	**0.146** (0.127-0.172)	**0.185** (0.161-0.218)	**0.238** (0.206-0.279)	**0.279** (0.239-0.326)	**0.336** (0.284-0.390)	**0.381** (0.317-0.440)	**0.427** (0.350-0.494)	**0.475** (0.382-0.550)	**0.540** (0.423-0.626)	**0.591** (0.452-0.688)
12-hr	**0.081** (0.071-0.094)	**0.103** (0.090-0.119)	**0.130** (0.113-0.150)	**0.151** (0.131-0.175)	**0.181** (0.154-0.208)	**0.203** (0.172-0.233)	**0.226** (0.188-0.259)	**0.249** (0.205-0.286)	**0.280** (0.225-0.324)	**0.305** (0.240-0.355)
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** (0.114-0.146)	**0.147** (0.128-0.164)	**0.164** (0.141-0.183)	**0.187** (0.160-0.210)	**0.206** (0.174-0.231)
2-day	**0.026** (0.023-0.030)	**0.033** (0.030-0.038)	**0.044** (0.039-0.049)	**0.052** (0.046-0.059)	**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** (0.101-0.135)
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** (0.046-0.061)	**0.063** (0.053-0.070)	**0.070** (0.059-0.079)
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** (0.015-0.020)	**0.020** (0.018-0.022)	**0.023** (0.020-0.026)	**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)	**0.011** (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** (0.006-0.008)	**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.

Please refer to NOAA Atlas 14 document for more information.

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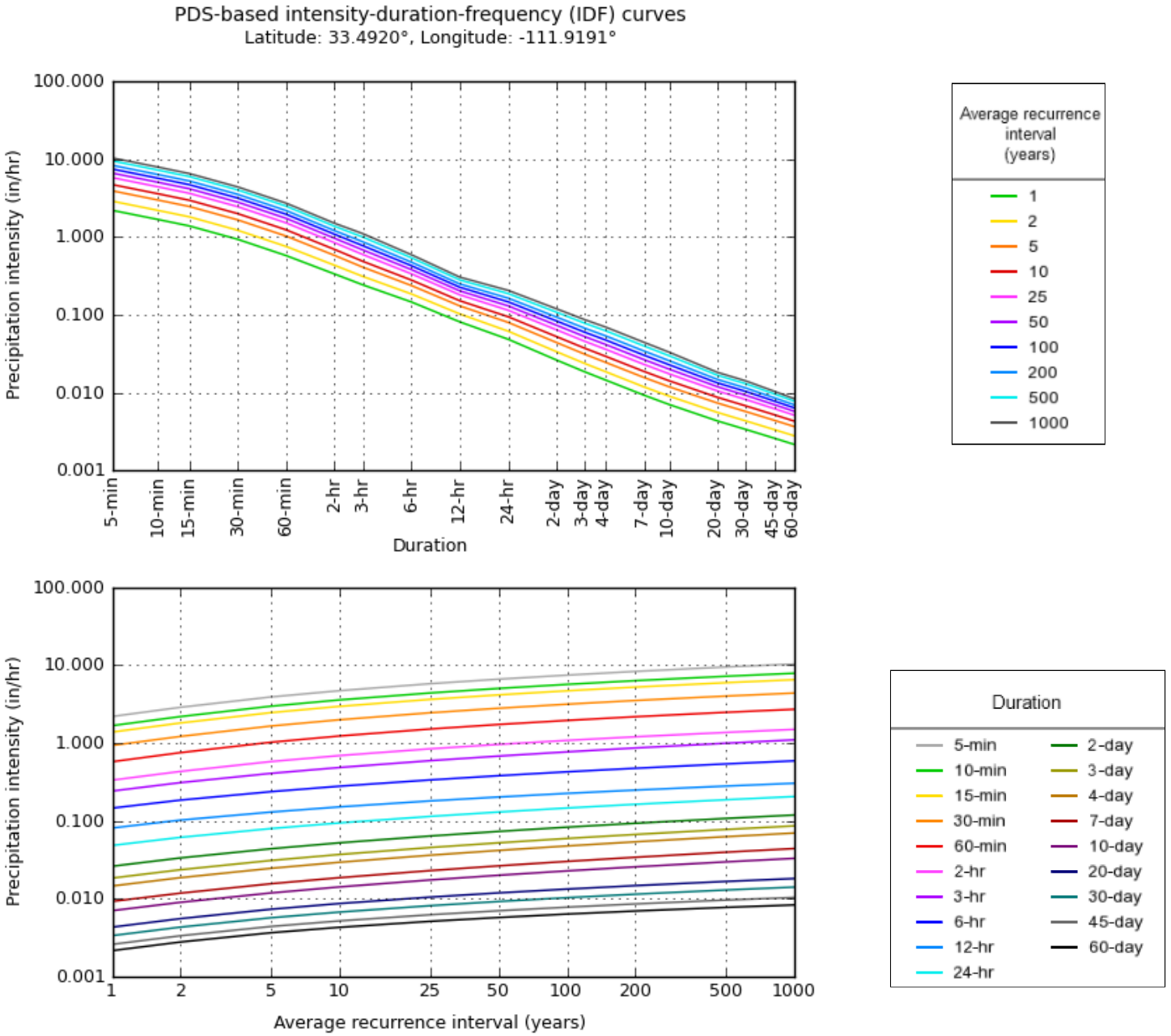
PF graphical



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Cwt CALCULATIONS

EXISTING OVERALL SITE C_w				
	PAVEMENT	DESERT LANDSCAPE	TOTAL AREA (ac)	Cwt
C-VALUE	0.95	0.45		
AREA (ac)	0.24	0.19	**0.42**	0.74
EX-A	0.13	0.08	0.20	0.76
EX-B	0.11	0.11	0.22	0.70

PROPOSED OVERALL SITE C_w				
	BUILDING/ PAVEMENT	DESERT LANDSCAPE	TOTAL AREA (ac)	Cwt
C-VALUE	0.95	0.45		
AREA (ac)	0.35	0.08	**0.42**	**0.87**
DA-A	0.15	0.01	0.16	0.92
DA-B	0.06	0.07	0.12	0.68
DA-C	0.14	0.00	0.14	0.95

1ST STREET TOWNHOMES

EXISTING CONDITIONS C_{WT} EXHIBIT

7515 AND 7521 E. 1ST STREET
SCOTTSDALE, AZ 85251

PROPERTY LINE

BUILDING/PAVED SURFACE =	10,280 SF (0.24 AC)	@ CWT=0.95
NATURAL DESERT/LANDSCAPE =	8,200 SF (0.19 AC)	@ CWT=0.45
TOTAL ON-SITE CWT =	18,480 SF (0.42 AC)	@ CWT=0.75

NORTH

0' 10' 20' 30'

SCALE: 1" = 10'

PRELIMINARY
NOT FOR
CONSTRUCTION

SEG SUSTAINABILITY ENGINEERING GROUP
5240 N. 16TH STREET, SUITE 105, PHOENIX, ARIZONA 85016
WWW.AZSEG.COM TEL. 480.588.7226 FAX. 480.259.3534

CLIENT LOGO

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

PROJECT
1ST STREET TOWNHOMES

LOCATION
7515 & 7521 E. 1ST STREET, SCOTTSDALE, AZ

DRAWN	JC	03/14/2023
DESIGNED	JC	03/14/2023
QC		
FINAL QC		
PROJ. MGR.	AF	03/14/2023

DATE: 03/14/2023
ISSUED FOR: REVIEW

REVISION NO.:	DATE:
1	
2	
3	
4	

JOB NO.: 220529

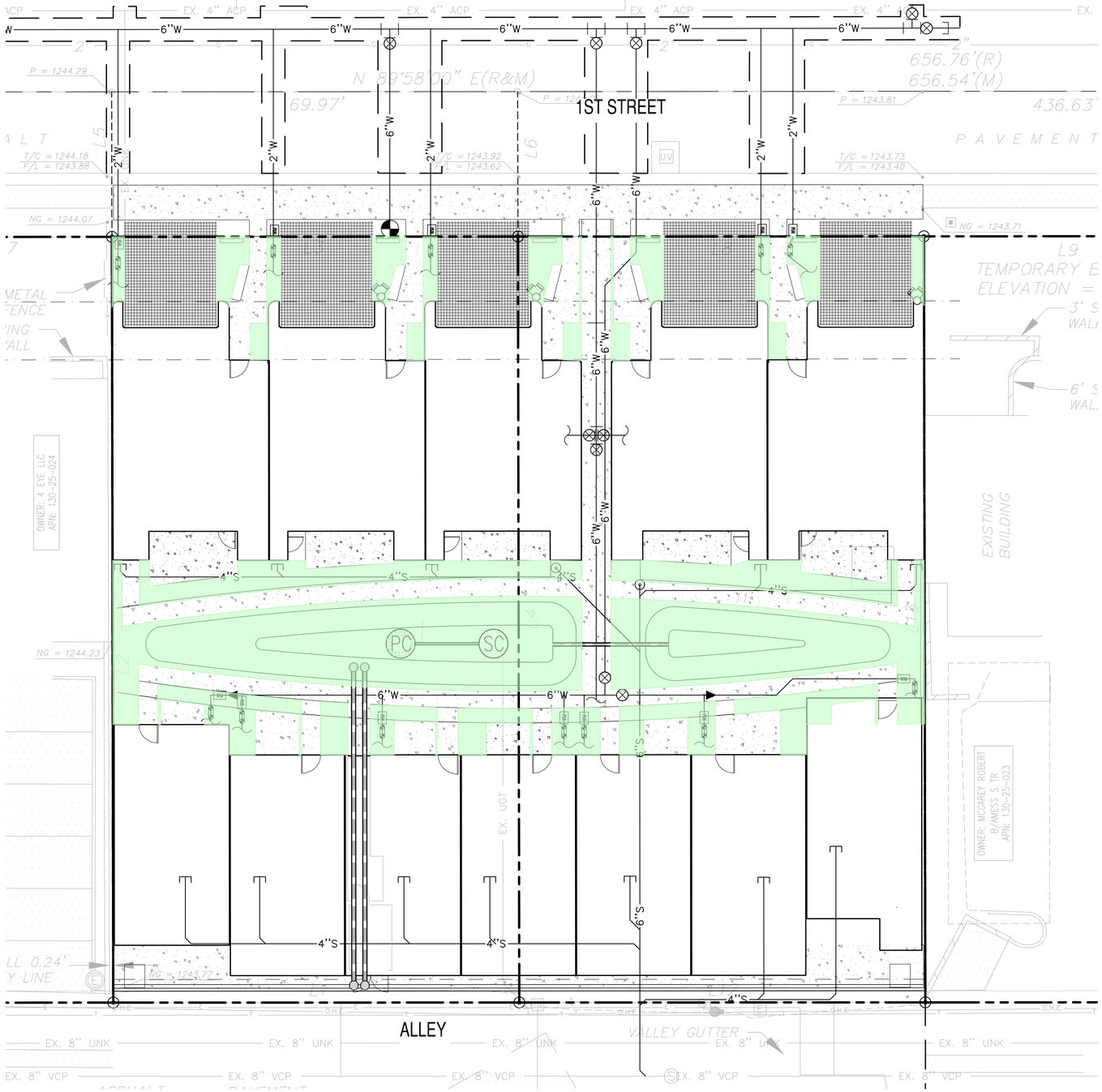
SHEET TITLE:
EXISTING CONDITIONS C_{WT} EXHIBIT

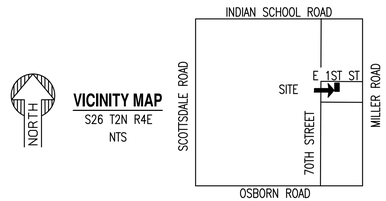
PAGE NO.: 1 OF 1
SHEET NO.: **EX-Cwt**

1ST STREET TOWNHOMES

PROPOSED CONDITIONS C_{WT} EXHIBIT

7515 AND 7521 E. 1ST STREET
SCOTTSDALE, AZ 85251





LEGEND

PROPERTY LINE

E 1ST STREET (CP-1)

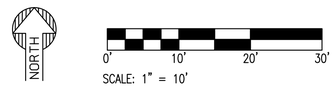
BUILDING/PAVED SURFACE =	6,577 SF (0.15 AC)	@ 100-YR CWT=0.95
NATURAL DESERT/LANDSCAPE =	489 SF (0.01 AC)	@ 100-YR CWT=0.45
TOTAL CP-1 CWT =	7,066 SF (0.16 AC)	@ 100-YR CWT=0.92

BASIN A

BUILDING/PAVED SURFACE =	2,461 SF (0.056 AC)	@ 100-YR CWT=0.95
NATURAL DESERT/LANDSCAPE =	2,877 SF (0.066 AC)	@ 100-YR CWT=0.45
TOTAL BASIN A CWT =	5,338 SF (0.12 AC)	@ 100-YR CWT=0.68

SOUTH ALLEY (CP-2)

BUILDING/PAVED SURFACE =	6,156 SF (0.14 AC)	@ 100-YR CWT=0.95
NATURAL DESERT/LANDSCAPE =	0 SF (0.00 AC)	@ 100-YR CWT=0.45
TOTAL CP-2 CWT =	6,156 SF (0.14 AC)	@ 100-YR CWT=0.95



NOT FOR CONSTRUCTION

SEG SUSTAINABILITY ENGINEERING GROUP
5240 N. 16TH STREET, SUITE 105, PHOENIX, ARIZONA 85016
WWW.AZSEG.COM TEL. 480.588.7226 FAX. 480.259.3534

SCOTTSDALE HOLDINGS, LLC

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

PROJECT: 1ST STREET TOWNHOMES
LOCATION: 7515 & 7521 E. 1ST STREET, SCOTTSDALE, AZ

DRAWN	JC/BC	09/03/2024
DESIGNED	JC/BC	09/03/2024
QC	SC	06/17/2024
FINAL QC	BC	06/27/2024
PROJ. MGR.	AF	09/03/2024

DATE: 09/03/2024
ISSUED FOR: DRB

REVISION NO.:	DATE:
1	
2	
3	
4	

JOB NO.: 220529

SHEET TITLE: **PROPOSED CONDITIONS C_{WT} EXHIBIT**

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

CASE NO.: 17-DR-2022; 33-DR-2023 PLAN CHECK #: TBD

1ST STREET TOWNHOMES

EXISTING CONDITIONS DRAINAGE AREA MAP

7515 AND 7521 E. 1ST STREET
SCOTTSDALE, AZ 85251

AREA IN ACRES — DRAINAGE AREA — RUNOFF COEFFICIENT

DRAINAGE AREA KEY

PROPOSED LEGEND

- DRAINAGE AREAS DISCHARGING TO 1ST STREET
- DRAINAGE AREA DISCHARGHING TO SOUTH ALLEY
- FLOW ARROW

SUMMARY OF 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)
	0.42	0.76	4.70	-	7.45	-	-	1.50	2.38
EX-A	0.20	0.78	4.7	0.74	7.45	1.17	E 1st Street	0.74	1.17
EX-B	0.22	0.73	4.7	0.76	7.45	1.21	South Alley	0.76	1.21

NORTH

0' 10' 20' 30'
SCALE: 1" = 10'

PRELIMINARY
NOT FOR
CONSTRUCTION

SEG SUSTAINABILITY ENGINEERING GROUP
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CLIENT LOGO

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PROJECT
1ST STREET TOWNHOMES

LOCATION
7515 & 7521 E. 1ST STREET, SCOTTSDALE, AZ

DRAWN	JC	03/14/2023
DESIGNED	JC	03/14/2023
QC		
FINAL QC		
PROJ. MGR.	AF	03/14/2023

DATE:
03/14/2023
ISSUED FOR:
REVIEW

REVISION NO.:	DATE:
1	
2	
3	
4	

JOB NO.:
220529

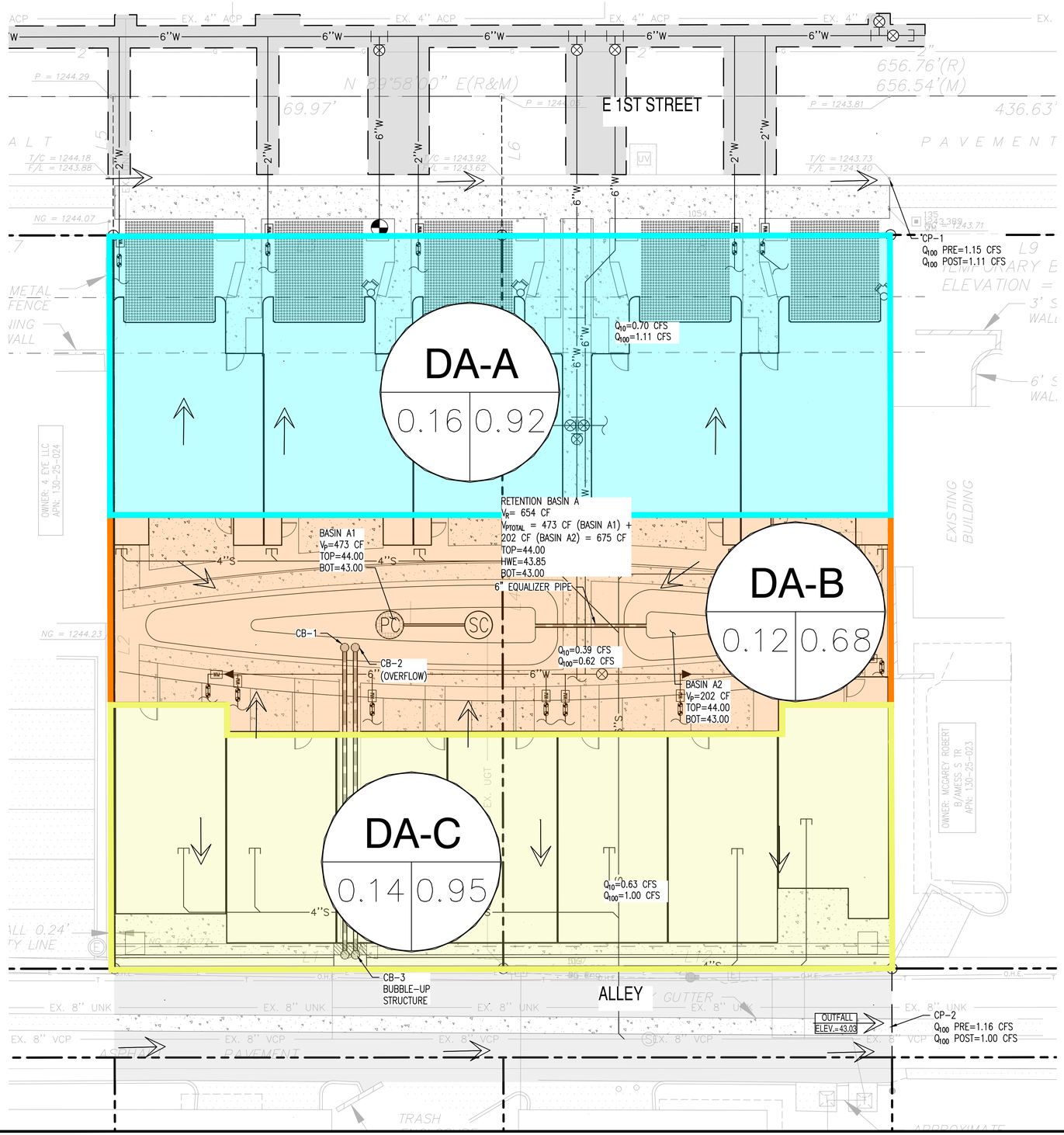
SHEET TITLE:
EXISTING CONDITIONS DRAINAGE AREA MAP

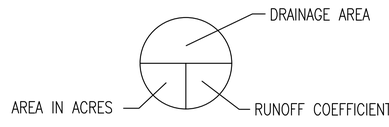
PAGE NO.: 1 OF 1
SHEET NO.: **EX-DAM**

1ST STREET TOWNHOMES

PROPOSED CONDITIONS DRAINAGE AREA MAP

7515 AND 7521 E. 1ST STREET
SCOTTSDALE, AZ 85251





DRAINAGE AREA KEY

PROPOSED LEGEND

- DRAINAGE AREA DISCHARGING TO BASIN B
- DRAINAGE AREA DISCHARGING TO 1ST STREET
- DRAINAGE AREA DISCHARGING TO SOUTH ALLEY
- FLOW ARROW

BASIN A1					
ELEV. (FT)	AREA (SF)	DEPTH (FT)	AVG VOLUME (CF)	SUM VOLUME (CF)	COMMENT
1243.00	257			0.00	Bottom
		0.85	473		
1243.85	767			**473**	**Volume Provided**
		0.15	58		
1244.00	857			531	Basin Top

BASIN A2					
ELEV. (FT)	AREA (SF)	DEPTH (FT)	AVG VOLUME (CF)	SUM VOLUME (CF)	COMMENT
1243.00	72			0.00	Bottom
		0.85	202		
1243.85	353			**202**	**Volume Provided**
		0.15	57		
1244.00	403			259	Basin Top

SUMMARY OF PROPOSED SITE DISCHARGES

	TOTAL AREA	100-YR Cwt	Intensity 10 yr 5-min	Q 10	Intensity 100 yr 5-min	Q 100	Concentration Point
	(ac)	(-)	(in/hr)	(cfs)	(in/hr)	(cfs)	CP#
	0.42	-	4.70	-	7.45	-	-
DA-A	0.16	0.92	4.70	0.70	7.45	1.11	E 1st Street (CP-1)
DA-B	0.12	0.68	4.70	0.39	7.45	0.62	BASIN A
DA-C	0.14	0.95	4.70	0.63	7.45	1.00	South Alley (CP-2)

NOTE: RUNOFF COEFFICIENTS FOR THE 10-YR EVENT ARE MAINTAINED THE SAME AS 100-YR EVENT TO BE CONSERVATIVE.

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PROJECT: 1ST STREET TOWNHOMES
LOCATION: 7515 & 7521 E. 1ST STREET, SCOTTSDALE, AZ

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JOB NO.: 220529

SHEET TITLE: **PROPOSED CONDITIONS DRAINAGE AREA MAP**

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

CASE NO.: 17-DR-2022; 33-DR-2023 PLAN CHECK#: TBD

APPENDIX III

GRADING & DRAINAGE PLAN

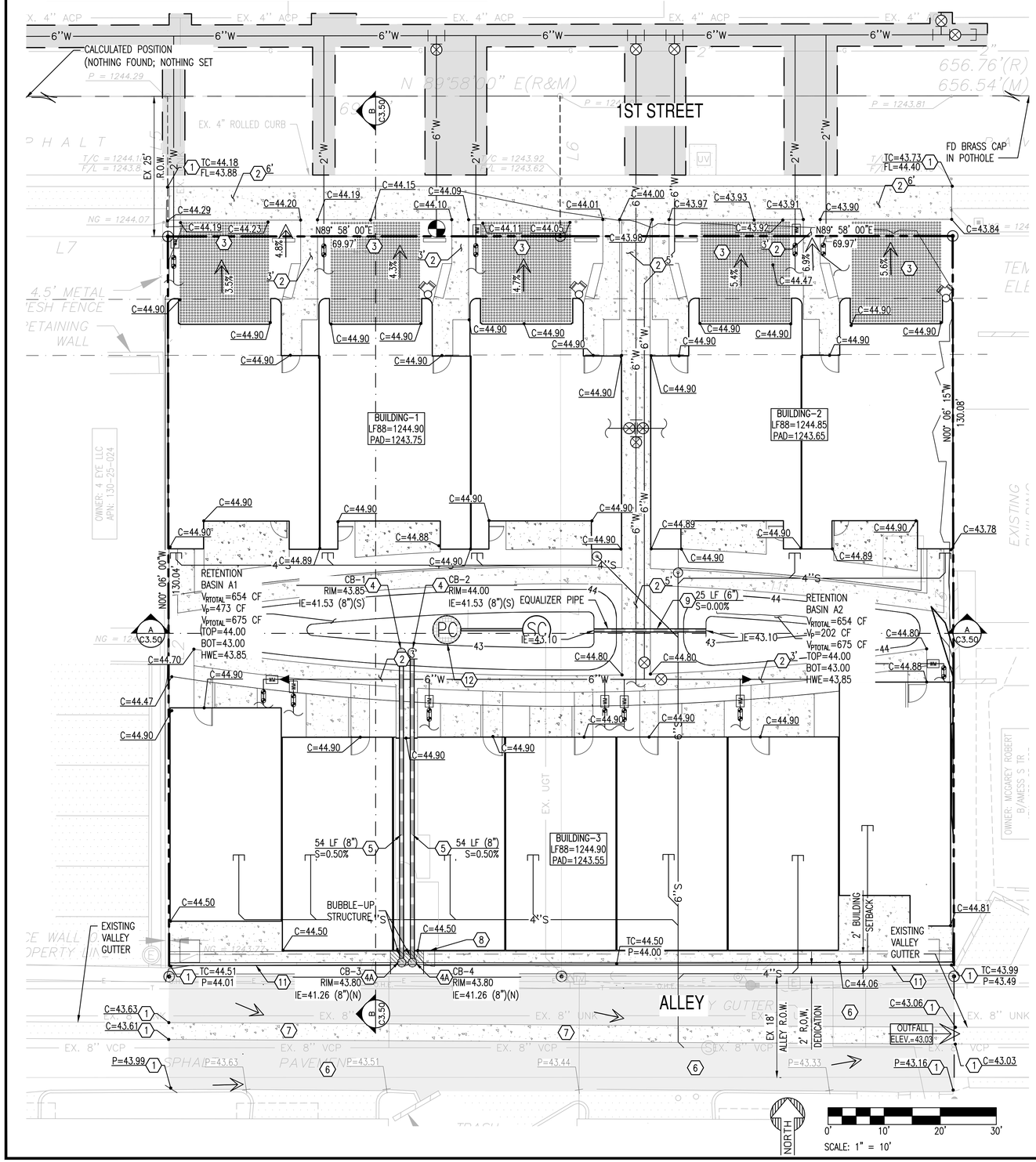
1ST STREET TOWNHOMES

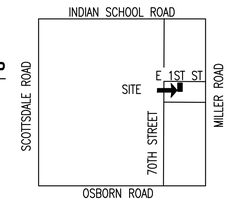
PRELIMINARY GRADING AND DRAINAGE PLAN

7515 & 7521 E. 1ST STREET, SCOTTSDALE AZ 85251

A PORTION OF THE EAST HALF OF THE SOUTHEAST QUARTER OF SECTION 26, TOWNSHIP 2 NORTH, RANGE 4 EAST OF THE GILA AND SALT RIVER MERIDIAN, MARICOPA COUNTY, ARIZONA.

SHEET INDEX					
		SHEET NO.:	DESCRIPTION:	LATEST DATE:	REVISION:
●	1	C3.10	PRELIMINARY GRADING AND DRAINAGE PLAN	9/5/2024	
●	2	C3.20	GRADING AND DRAINAGE DETAILS	9/5/2024	
●	3	C3.50	SITE CROSS SECTIONS	9/5/2024	
●	4	C4.00	PRELIMINARY UTILITY PLAN	9/5/2024	





VICINITY MAP
S26 T2N R4E
NTS

CIVIL ENGINEER
SUSTAINABILITY ENGINEERING GROUP
5240 N. 16TH STREET, SUITE 105
PHOENIX, ARIZONA 85016
PHONE: 480-588-7226
ATTN: ALI FAKIH, PE
EMAIL: ALI@AZSEG.COM

OWNER:
SCOTTSDALE HOLDINGS LLC
7515 E 1ST STREET
SCOTTSDALE, ARIZONA 85250
PHONE: 602-448-6345
ATTN: NEIL TANG
EMAIL: NEILTANG211@GMAIL.COM

SURVEYOR
ALLIANCE LAND SURVEYING, LLC
7900 N. 70TH AVENUE, SUITE 104
GLENDALE, ARIZONA 85303
PHONE: 623-972-2200
ATTN: G. BRYAN GOETZENBERGER, RLS
EMAIL: CONTACTUS@AZALS.COM

BASIS OF BEARING:
THE BASIS OF BEARING AND ALL MONUMENTATION SHOWN HEREON IS BASED ON THE MONUMENT LINE OF E 2ND STREET, USING A BEARING OF NORTH 89 DEGREES 52 MINUTES 00 SECONDS EAST, AS SHOWN ON FINAL PLAT OF REDDELL MANOR, RECORDED IN BOOK 49, PAGE 27, MARICOPA COUNTY RECORDS.

BENCHMARK:
THE NORTHWEST CORNER OF SECTION 26, MONUMENTED WITH A BRASS CAP IN HANDHOLE, HAVING AN ELEVATION OF 1260.366, NAVD88 DATUM PER THE MCDOT SURVEY DATASHEET.

PRELIMINARY GRADING 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. CONCRETE SIDEWALK PER MAG STD. DET. 230. WIDTH PER PLAN.
3. INSTALL TURFGRID PERMEABLE PAVERS PER ARCHITECTURAL SITE PLAN.
4. 18" NYLOPLAST DRAIN BASIN WITH STANDARD H-20 GRATE, INCLUDING CONCRETE COLLAR, PER DET. 3/C3.20.
4A. FURNISH AND INSTALL BUBBLER BOX PER DET. 5/C3.20. BUBBLER BOX RIM TO BE UNDERNEATH SIDEWALK SCUPPER.
5. DUAL PVC STORM PIPE WITH CONCRETE SLEEVE; LENGTH, SIZE AND SLOPE PER PLAN.
6. 2.5" AC ON 4" ABC ON COMPACTED SUBGRADE PER MAG SPECIFICATION 301, 310, AND 321, AND PER DET. 4/C3.20.
7. 3' VALLEY GUTTER PER MAG STD. DET. 202.
8. SIDEWALK SCUPPER PER MAG STD. DET. 203. SCUPPER TO BE PERPENDICULAR WITH CURB.
9. PVC STORM PIPE; LENGTH, SIZE AND SLOPE PER PLAN. CHAMFER PIPE AT ENDS TO MATCH GRADE.
10. FURNISH AND INSTALL NYLOPLAST DRAIN BASIN WITH 30" RISER AND 2'X2' STEEL GRATE. PER DET. 1/C3.20 AND 2/C3.20.
11. 6" MOUNTABLE CURB AND GUTTER PER MAG STD. DET. 220-2 TYPE "F".
12. MAXWELL PLUS DRYWELL NOTE: CONTRACTOR TO HAVE A PERCOLATION TEST DONE ON FIRST CONSTRUCTED DRYWELL AND PROVIDE RESULTS TO ENGINEER FOR DETERMINATION OF ULTIMATE NUMBER OF REQUIRED DRYWELLS.

FEMA

MAP NUMBER	COMMUNITY NUMBER	PANEL # PANEL DATE	SUFFIX	DATE OF FIRM (INDEX DATE)	FIRM ZONE	BASE FLOOD ELEVATION (IN AO ZONE USE DEPTH)
04013C2235M	045012	2235 09/18/2020	M	02/08/2024	X	N/A

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 MARICOPA ASSOCIATION OF GOVERNMENTS (MAG) UNIFORM STANDARD SPECIFICATIONS AND UNIFORM STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION AS AMENDED BY THE LATEST VERSION OF THE CITY OF SCOTTSDALE STANDARD SPECIFICATIONS AND SUPPLEMENTAL STANDARD DETAILS. IF THERE IS A CONFLICT, THE CITY'S SUPPLEMENT 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 THE PLANS IS VALID FOR SIX (6) MONTHS. IF ASSOCIATED PERMIT HAS NOT BEEN ISSUED WITHIN THIS TIME FRAME, THE PLANS MUST BE RESUBMITTED TO THE CITY FOR RE-APPROVAL.
4. A CITY INSPECTOR WILL INSPECT ALL WORKS WITHIN THE CITY OF SCOTTSDALE. NOTIFY INSPECTION SERVICES 72 HOURS BEFORE BEGINNING WORK.
5. WHENEVER EXCAVATION IS NECESSARY, CALL THE BLUE STAKE CENTER, 811, TWO WORKING DAYS BEFORE EXCAVATION BEGINS.
6. PERMISSION TO WORK IN THE RIGHT-OF-WAY (PWR) PERMITS ARE REQUIRED FOR ALL WORKS WITHIN THE RIGHTS-OF-WAY AND EASEMENTS GRANTED FOR PUBLIC PURPOSES. COPIES OF ALL PERMITS MUST BE RETAINED ON-SITE AN 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.

EXISTING LEGEND:

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

PROPOSED GRADING LEGEND:

PROPERTY LINE
C=XX.XX CONCRETE ELEVATION
XX MAJOR CONTOUR
XX MINOR CONTOUR
FLOW ARROW
NYLOPLAST BASIN
STORM PIPE
WM WATER METER
GATE VALVE
BACKFLOW PREVENTER
FDC
FIRE HYDRANT
SEWER CLEAN OUT
CONCRETE PAVEMENT
TURFGID PERMEABLE PAVER

ENGINEER'S STATEMENT:

I HEREBY CERTIFY THAT ALL ELEVATION PRESENTED ON THIS PLAN ARE BASED ON NAVD-1988 AND MEET THE FEMA BENCHMARK MAINTENANCE (BMM) CRITERIA.

ENGINEER'S CERTIFICATION:

THE LOWEST FLOOR ELEVATION(S) AND/OR FLOOD PROOFING ELEVATION(S) ON THIS PLAN ARE SUFFICIENTLY HIGH TO PROVIDE PROTECTION FROM FLOODING CAUSED BY A 100-YEAR STORM, AND ARE IN ACCORDANCE WITH SCOTTSDALE REVISED CODE, CHAPTER 37 - STORMWATER AND FLOODPLAIN MANAGEMENT.

NOT FOR CONSTRUCTION

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LOCATION: 7515 & 7521 E. 1ST STREET, SCOTTSDALE, AZ

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PROJ. MGR.	AF	09/05/2024

DATE: 09/05/2024
ISSUED FOR: DRB

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3	
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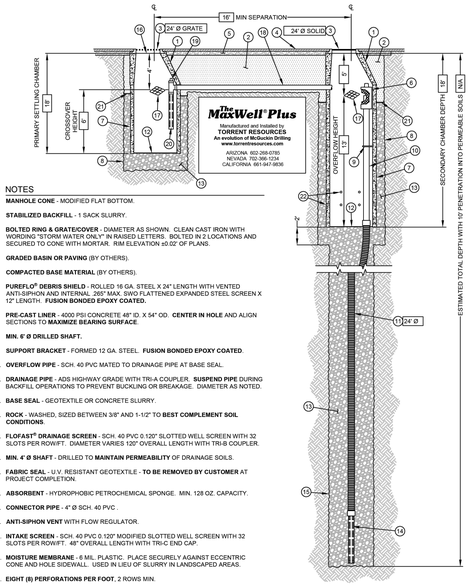
JOB NO.: 220529

SHEET TITLE: **PRELIMINARY GRADING AND DRAINAGE PLAN**

PAGE NO.: 1 OF 4
SHEET NO.: **C3.10**

CASE NO.: 17-DR-2022; 33-DR-2023 PLAN CHECK#: TBD

The MaxWell® Plus Drainage System Detail And Specifications



NOTES

1. **MANHOLE CONE** - MODIFIED FLAT BOTTOM.
2. **STABILIZED BACKFILL** - 1 SACK SLURRY.
3. **BOLTED RING & GRATE/COVER** - DIAMETER AS SHOWN. CLEAN CAST IRON WITH WORDING "STORM WATER ONLY" IN RAISED LETTERS. BOLTED IN 2 LOCATIONS AND SECURED TO CONE WITH MORTAR. RIM ELEVATION ±0.02' OF PLANS.
4. **GRADED BASIN OR PAVING** (BY OTHERS).
5. **COMPACTED BASE MATERIAL** (BY OTHERS).
6. **PUREFLO® DEBRIS SHIELD** - ROLLED 16 GA. STEEL X 24" LENGTH WITH VENTED ANTI-SIPHON AND INTERNAL, 265° MAX. SWD FLATTENED EXPANDED STEEL SCREEN X 12" LENGTH. **FUSION BONDED EPOXY COATED.**
7. **PRE-CAST LINER** - 4000 PSI CONCRETE 48" ID. X 54" OD. **CENTER IN HOLE** AND ALIGN SECTIONS TO **MAXIMIZE BEARING SURFACE**.
8. **MIN. 6' Ø DRILLED SHAFT.**
9. **SUPPORT BRACKET** - FORMED 12 GA. STEEL. **FUSION BONDED EPOXY COATED**.
10. **OVERFLOW PIPE** - SCH. 40 PVC MATED TO DRAINAGE PIPE AT BASE SEAL.
11. **DRAINAGE PIPE** - ADS HIGHWAY GRADE WITH TRI-A COUPLER. **SUSPEND PIPE** DURING BACKFILL OPERATIONS TO PREVENT BUCKLING OR BREAKAGE. DIAMETER AS NOTED.
12. **BASE SEAL** - GEOTEXTILE OR CONCRETE SLURRY.
13. **ROCK** - WASHED, SIZED BETWEEN 3/8" AND 1-1/2" TO **BEST COMPLEMENT SOIL CONDITIONS**.
14. **FLOFAST® DRAINAGE SCREEN** - SCH. 40 PVC 0.120" SLOTTED WELL SCREEN WITH 32 SLOTS PER ROW/FT. DIAMETER VARIES 120" OVERALL LENGTH WITH TRI-B COUPLER.
15. **MIN. 4' Ø SHAFT** - DRILLED TO **MAINTAIN PERMEABILITY** OF DRAINAGE SOILS.
16. **FABRIC SEAL** - U.V. RESISTANT GEOTEXTILE - **TO BE REMOVED BY CUSTOMER** AT PROJECT COMPLETION.
17. **ABSORBENT** - HYDROPHOBIC PETROCHEMICAL SPONGE. MIN. 128 OZ. CAPACITY.
18. **CONNECTOR PIPE** - 4" Ø SCH. 40 PVC .
19. **ANTI-SIPHON VENT** WITH FLOW REGULATOR.
20. **INTAKE SCREEN** - SCH. 40 PVC 0.120" MODIFIED SLOTTED WELL SCREEN WITH 32 SLOTS PER ROW/FT. 48" OVERALL LENGTH WITH TRI-C END CAP.
21. **MOISTURE MEMBRANE** - 6 MIL PLASTIC. PLACE SECURELY AGAINST ECCENTRIC CONE AND HOLE SIDEWALL. USED IN LIEU OF SLURRY IN LANDSCAPED AREAS.
22. **EIGHT (8) PERFORATIONS PER FOOT**, 2 ROWS MIN.

AZ Lic. ROC075469, A, ROC047087 B-61, ADWR 383
CA Lic. 529986, C-42, HAZ
NV Lic. 0065000 A + WM Lic. 80004 GP34

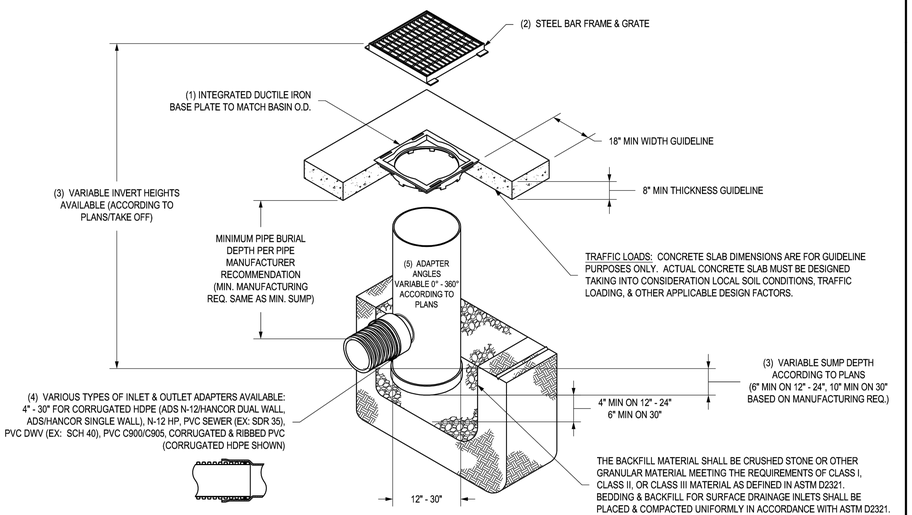
U.S. Patent No. 4,823,595 - ™ Trademark 1974, 1990, 2004

AZ MAXWELL PLUS

MAXWELL PLUS DETAIL

1

NYLOPLAST DRAIN BASIN WITH 2 FT X 2FT STEEL BAR GRATE



1 - 12" - 30" BASE PLATES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
2 - FRAME & GRATE SHALL BE STEEL PER ASTM A36.
3 - DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS.
4 - DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL), N-12 HP, & PVC SEWER (4" - 24").
5 - ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-012.
6 - STEEL BAR GRATE SHALL MEET H-20 LOAD RATING.

DRAWN BY	EBC	MATERIAL	
DATE	03-22-10		
REVISED BY	NMH	PROJECT NO./NAME	
DATE	03-16-16		
DWG SIZE	A	SCALE 1:40	SHEET 1 OF 1

ADS Nyloplast
3130 VERONA AVE
BUFORD, GA 30518
PHN (770) 932-2443
FAX (770) 932-2490
www.nyloplast-us.com

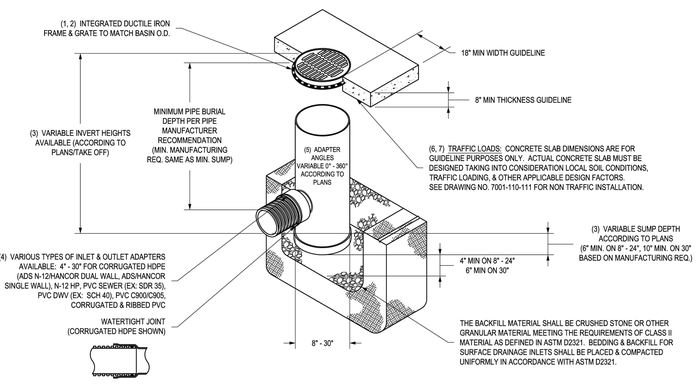
TITLE: DRAIN BASIN WITH 2 FT X 2 FT STEEL BAR GRATE QUICK SPEC INSTALLATION DETAIL

DWG NO. 7001-110-394 REV D

NYLOPLAST DRAIN BASIN WITH 2'X2' STEEL GRATE

2

NYLOPLAST DRAIN BASIN WITH STANDARD GRATE



1 - 8" - 30" STANDARD GRATES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
2 - 12" - 30" FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05. 8" & 10" STANDARD GRATES FIT DIRECTLY ONTO DRAIN BASINS WITH THE USE OF A PVC BODY TOP. SEE DRAWING NO. 7001-110-045.
3 - DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE NEEDED FOR BASINS OVER 84" DUE TO SHIPPING RESTRICTIONS. SEE DRAWING NO. 7001-110-065.
4 - DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL), N-12 HP, & PVC SEWER (4" - 24").
5 - ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-012.
6 - 12" - 30" STANDARD GRATES SHALL MEET H-20 LOAD RATING.
7 - 8" & 10" STANDARD GRATES ARE RATED FOR LIGHT DUTY APPLICATIONS ONLY; NO CONCRETE COLLAR NEEDED FOR LIGHT DUTY RATING.

DRAWN BY	EBC	MATERIAL	
DATE	1-23-06		
REVISED BY	EBC	PROJECT NO./NAME	
DATE	3-3-10		
DWG SIZE	A	SCALE 1:40	SHEET 1 OF 1

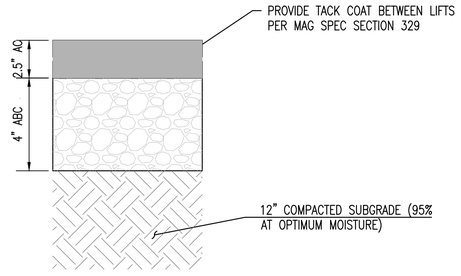
Nyloplast
3130 VERONA AVE
BUFORD, GA 30518
PHN (770) 932-2443
FAX (770) 932-2490
www.nyloplast-us.com

TITLE: DRAIN BASIN WITH STANDARD GRATE QUICK SPEC INSTALLATION DETAIL

DWG NO. 7001-110-144 REV F

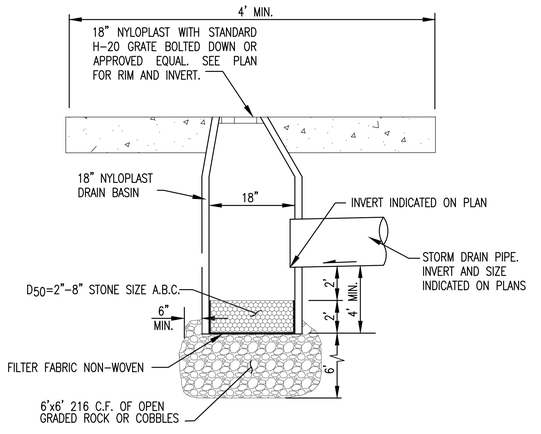
NYLOPLAST DRAIN BASIN WITH STANDARD GRATED LID DETAIL

3



ASPHALT PAVEMENT SECTION

4



BUBBLER BOX DETAIL

5

NOT FOR CONSTRUCTION

SEG SUSTAINABILITY ENGINEERING GROUP
5240 N. 16TH STREET, SUITE 105, PHOENIX, ARIZONA 85016
WWW.AZSEG.COM TEL. 480.588.7226 FAX 480.259.3534

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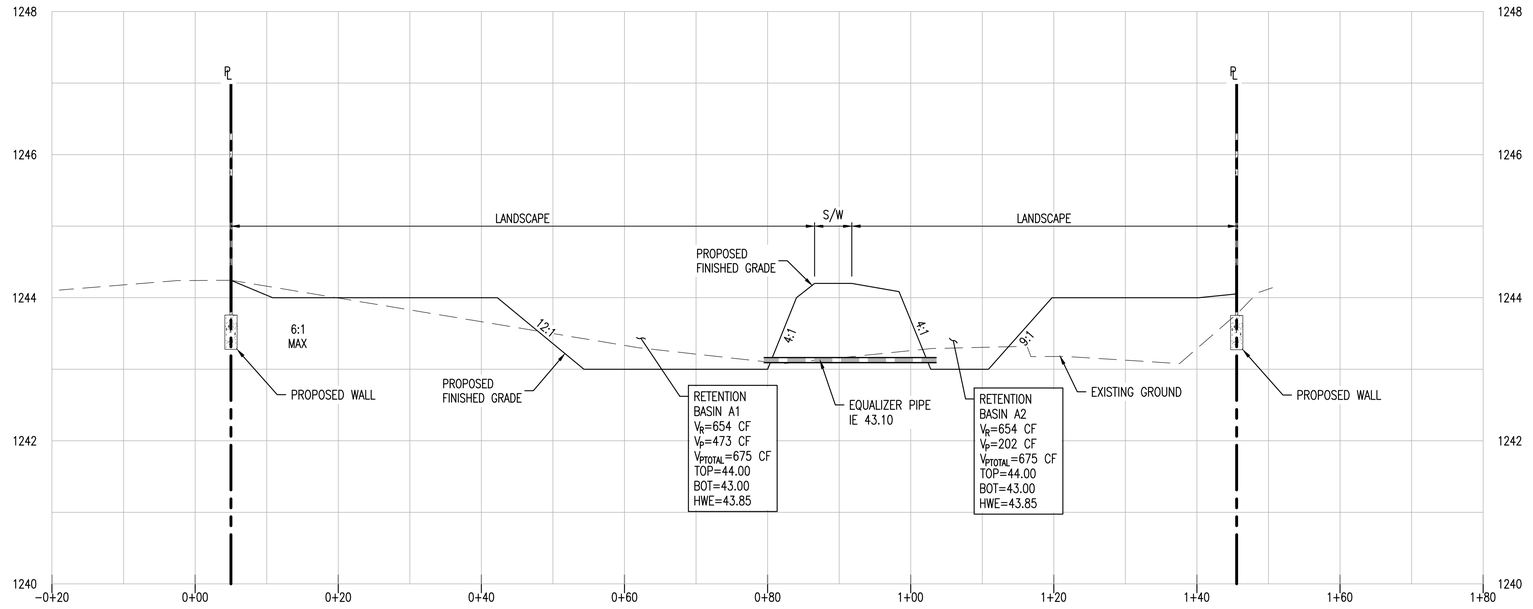
SHEET TITLE: **GRADING AND DRAINAGE DETAILS**

PAGE NO.: 2 OF 4

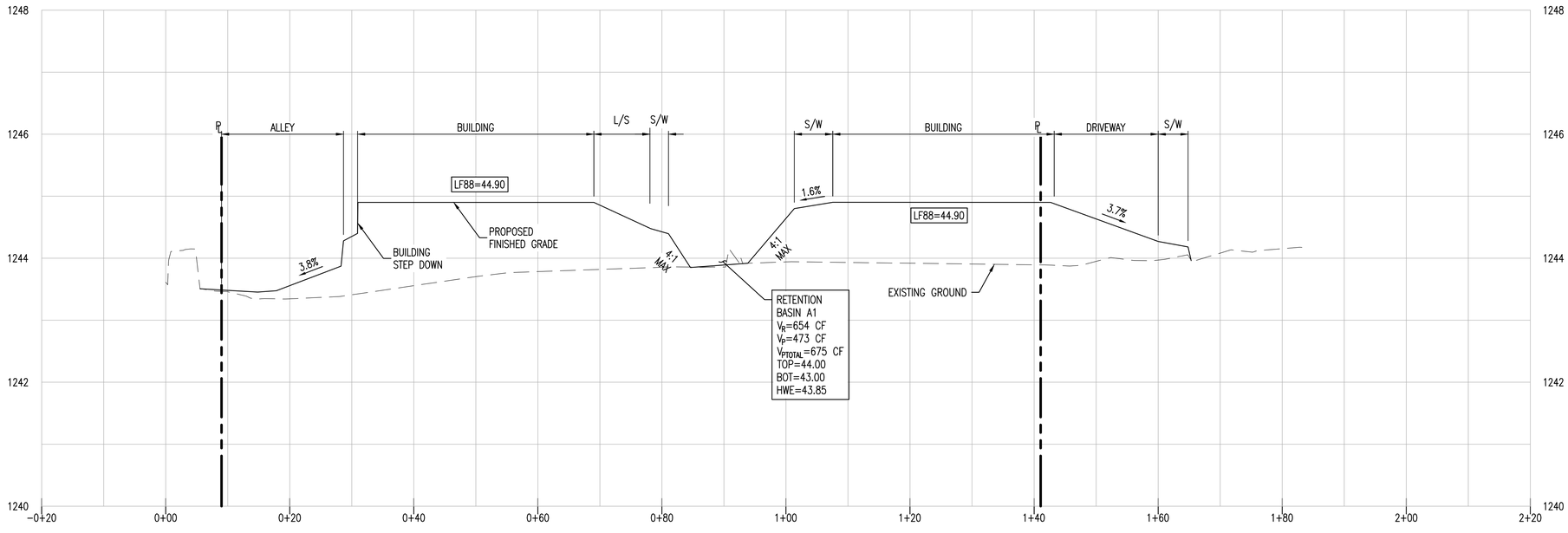
SHEET NO.: **C3.20**

CASE NO.: 17-DR-2022; 33-DR-2023 PLAN CHECK#: TBD



SECTION A-A (C3.10)

HORIZONTAL SCALE: 1" = 10'
VERTICAL SCALE: 1" = 1'



SECTION B-B (C3.10)

HORIZONTAL SCALE: 1" = 10'
VERTICAL SCALE: 1" = 1'

NOT FOR CONSTRUCTION

SEG SUSTAINABILITY ENGINEERING GROUP
5240 N. 16TH STREET, SUITE 105, PHOENIX, ARIZONA 85016
WWW.AZSEG.COM TEL. 480.588.7226 FAX. 480.259.3534

SCOTTSDALE HOLDINGS, LLC

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

PROJECT
1ST STREET TOWNHOMES

LOCATION
7515 & 7521 E. 1ST STREET, SCOTTSDALE, AZ

DRAWN	JC/BC	09/05/2024
DESIGNED	JC/BC	09/05/2024
QC	SC	09/17/2024
FINAL QC	BC	09/27/2024
PROJ. MGR.	AF	09/05/2024

DATE: 09/05/2024

ISSUED FOR: DRB

REVISION NO.:	DATE:
1	
2	
3	
4	

JOB NO.: 220529

SHEET TITLE:

SITE CROSS SECTIONS

PAGE NO.: 3 OF 4

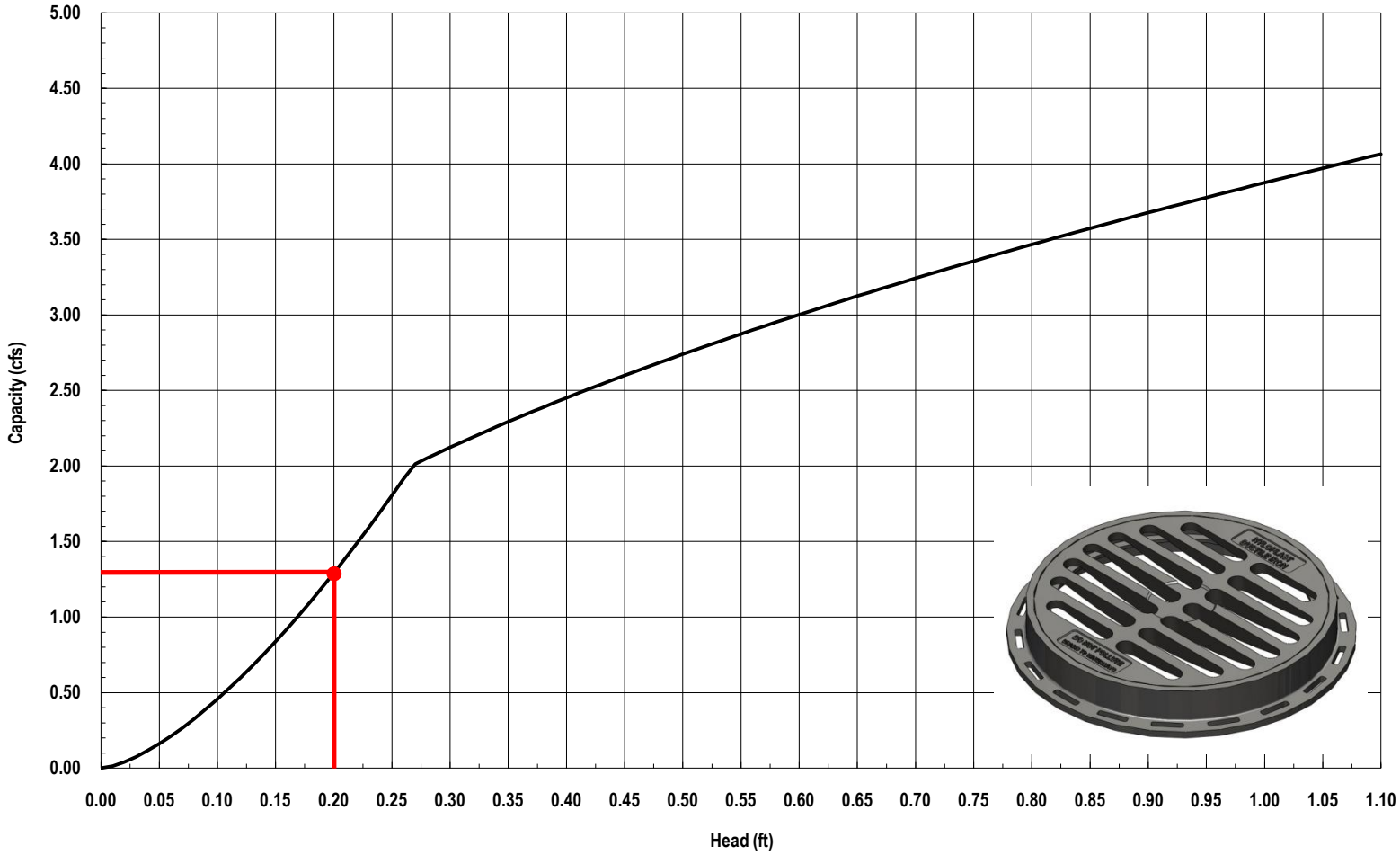
SHEET NO.: **C3.50**

CASE NO.: 17-DR-2022; 33-DR-2023 PLAN CHECK#: TBD

APPENDIX IV

INLET CAPACITY CHART

Nyloplast 18" Standard Grate Inlet Capacity Chart



Inlet Capacity @ 0.20' ponding depth = 1.30 cfs
Inlet Capacity @ 0.50% Clogging factor= 0.65 cfs

Nyloplast®
3130 Verona Avenue • Buford, GA 30518
(866) 888-8479 / (770) 932-2443 • Fax: (770) 932-2490