73RD & HELM AIRPARK GARAGE CONDOS

14805 N. 73rd Street, Scottsdale, AZ 85260

PRELIMINARY DRAINAGE REPORT

Plan # _____
Case # 25-DR-2025
Q-S # _____
[X] Accepted
[ ] Corrections
N.Baronas 3/23/2026
Reviewed By Date

JMC JOB NO. 0222
OCTOBER 2025
REVISED: JANUARY 2026

CASE #: 25-DR-2025

JMC Engineering
7315 North 16th Street, Suite 101, Phoenix, AZ 85020
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73RD & HELM AIRPARK GARAGE CONDOS

14805 N. 73rd Street,
Scottsdale, AZ 85260

PRELIMINARY DRAINAGE REPORT

Prepared For:

Robert Brown Architects
88 South San Marcos Place
Chandler, AZ 85225
Phone: (480) 377-2222

Helene Florento, P.E., C.F.M.

January 2026

Prepared By:

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JMC JOB NUMBER 0222

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1.0 INTRODUCTION

This report is prepared at the direction of Robert Brown Architects ("client") as part of the Design Review (DR) submittal process to the City of Scottsdale (COS) for the project, 73rd & Helm Airpark Garage Condos.

Robert Brown Architects
88 South San Marcos Place
Chandler, AZ 85225
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Phone: (480) 377-2222

1.1. SITE LOCATION

The project address is 14805 N. 73rd Street within the City of Scottsdale, Arizona and is further described as being located within a portion of Section 11, Township 3 North (T3N), Range 4 East (R4E) of the Gila and Salt River Baseline and Meridian, Maricopa County, Arizona. The project is bounded to the north and east by existing business condominiums, to the west by 73rd Street, and to the south by Helm Drive (**Fig. 1**).

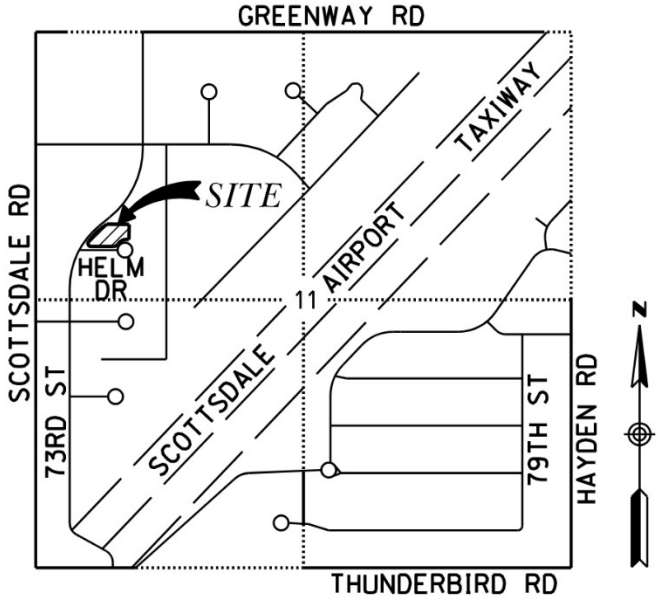

Figure 1: Vicinity Map

1.2. SITE DESCRIPTION

Project improvements shall include demolition of the existing onsite facilities to accommodate two (2) new garage condominium buildings (15 total units) with an attached one (1)-story office/clubhouse, asphalt parking areas, associated landscape areas, and appurtenant facilities. Off-site improvements may include but are not limited to the removal of one (1) driveway on 73rd Street, the removal and addition of one (1) driveway on Helm Drive, and ADA compliant pedestrian walkways. The site is currently zoned (I-1) Industrial Park. Rezoning is not anticipated in support of the project. The land use designation for the project site is "Commercial/Office Building" per the Maricopa County Assessor's Parcel Viewer Website.

1.3. PURPOSE AND OBJECTIVES

The purpose and objectives of this Preliminary Drainage Report are to:

1. Present the existing drainage conditions for the project site and proposed drainage plan for the project site.
2. Provide supporting information required for the proposed grading and drainage concept, in accordance with the City of Scottsdale (COS) and Flood Control District of Maricopa County (FCDMC) drainage requirements.
3. Determine the offsite and onsite peak discharges.
4. Determine the required onsite drainage improvements to convey runoff through the project site.

1.4. RELEVANT DRAINAGE STUDIES

The project is located within the East Shea Area Drainage Master Study (ADMS) within Corridor SD01, completed for the Flood Control District of Maricopa County (FCDMC) to identify potential flooding hazards in the study area due to the changes in the watershed since 1978. FCDMC has used updated mapping technology and a more technically sound approach to identification of these hazards. FLO-2D model results are included within **Appendix E.**

2.0 DESCRIPTION OF EXISTING DRAINAGE CONDITIONS

2.1. EXISTING ONSITE CONDITIONS

The project site is currently developed with an existing office building, asphalt parking areas, covered parking canopies, and associated desert landscape areas (**Fig. 2**). The site consists of approximately 58% impervious surfaces and is graded to drain to one (1) above-ground retention basin located at the southwest corner of the site.

Table 1 provides a summary of pre-development retention. Refer to Figure 4 in **Appendix A** for the drainage area locations and **Appendix D** for a more detailed retenton analysis.

Table 1: Existing Condition Retention Summary

Major Basin	Volume Required	Volume Provided	Volume Excess	Notes*
(ID)	(V_r)	(V_p)	(V_e)	
	(ft^3)	(ft^3)	(ft^3)	
1E	9,555	9,985	430	Conveyed to Retention Basin (RB-01E)

Volume Provided exceeds Volume Required for the Pre-Project Condition.

2.2. OFFSITE CONDITIONS

Pursuant to the topographic survey prepared for the site, stormwater generated on 73rd Street to the west of the site discharges south and away from the site via existing roadway curb and gutter.

Stormwater generated on Helm Drive to the south of the site discharges west and away from the site via existing roadway curb and gutter.

The properties to the north and east are fully-developed and primarily self-retained. A portion of the driveway northerly adjacent to the site drains west to 73rd Street.

All off-site flows shall continue to drain to historical locations in the same path, direction, and magnitude.

2.3. FEMA FLOOD HAZARD ZONE

Table 2: Flood Insurance Rate Map Information

COMMUNITY NUMBER	PANEL #	PANEL DATE	SUFFIX	DATE OF FIRM (INDEX DATE)	FIRM ZONE	BASE FLOOD ELEVATION (FT) (BASE FLOOD DEPTH IN ZONE AO)
045012	1760	10/16/13	L	07/20/21	ZONE X (SHADED)	N/A

The proposed site lies within Flood Hazard Zone "X" shaded as indicated on map number 04013C2215L, dated October 16, 2013, of the FEMA Flood Insurance Rate Map (Fig. 3).

Zone "X" (shaded) areas are defined by Federal Emergency Management Agency (FEMA) as areas of 0.2% annual chance of flood; areas of 1% annual chance of flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

3.0 PROPOSED DRAINAGE PLAN

3.1. GENERAL DESCRIPTION

As discussed in Section 1.2, the proposed project includes construction of (2) new garage condominium buildings (15 total units) with an attached one (1)-story office/clubhouse, asphalt parking areas, associated landscape areas, and appurtenant facilities. Overall, the area of imperviousness will increase due to project improvements. The proposed drainage design includes grated inlets, roof drains, and storm drain to capture storm water from pavement areas and convey said runoff to one (1) 10-ft diameter C.M.P. underground storage tank. Refer to **Appendix F** for the Preliminary Grading & Drainage Plan.

Table 3 provides a summary of post-development on-site flows. Refer to Figure 5 in **Appendix A** for the drainage area locations and **Appendix B** for more detailed hydrologic analyses.

Table 3: Proposed Condition Peak Flow Summary

Concentration Point	Drainage Area	Area	Runoff Coefficient	100-Yr Peak Discharge*	Notes
CP	**DA**	**A**	**C**	**Q_{100}**	
		(ac)		**(cfs)**	
1P	1P	0.29	0.45	1.0	To Retention Basin (RB-01P)
2P.1	2P.1	0.58	0.88	3.9	To Underground Tank (UST-02)
2P.2	2P.2	0.72	0.89	4.9	To Underground Tank (UST-02)

*Design storm is the 100-year event, with a time of concentration of 5-minutes.

3.2. STORMWATER STORAGE REQUIREMENTS

Pursuant to the City of Scottsdale (COS) *Design Standards & Policies Manual* (DS&PM) 2018, Section 4-1.201.C.1.b, Page 185, "For sites that have been previously developed, or portions of a site thereof, the 100-year, 2-hour storm event shall be retained on-site."

Pursuant to the COS DS&PM 2018, Section 4-1.201.C.2.b, "Retention of the first flush volume is encouraged, if the stormwater storage facility will be fully evacuated within 36 hours based on the requirements contained within Section 4.1-201(B)(2)."

The development does not include street improvements at the perimeter of the property, thus retention of the 73rd Street half-street nor the Helm Drive half-street is required. Table 4, below, provides the proposed retention summary for the project. Refer to **Appendix D** for a more detailed retention analysis.

Table 4: Retention Summary

Major Basin	Volume Required	Volume Provided	Volume Excess	Notes*
(ID)	(V_r)	(V_p)	(V_e)	
	(ft^3)	(ft^3)	(ft^3)	
1P	1,063	1,103	40	To Retention Basin (RB-01P)
2P	9,318	9,425	107	To Underground Tank (UST-02)

Volume Provided exceeds Volume Required for the Pre-Project Condition.

The calculated First Flush Volume for Drainage Area 1P is 239-cf.
The calculated First Flush Volume for Drainage Area 2P is 2,090-cf.

The calculated First Flush Volumes for both drainage areas are less than the 100-year, 2-hour volumes thus the underground tank systems, sized for the 100-year, 2-hour storm, accommodate the First Flush Volumes.

3.2.1. STORMWATER DISPOSAL

The use of drywells is required such that storm water dissipates within 36 hours at a minimum disposal rate of 0.1-cfs per second. The number of drywells required for the project is summarized in Table 5. Refer to **Appendix D** for these calculations and **Appendix F** for the Preliminary Grading & Drainage Plan prepared JMC Engineering for the project.

Table 5: Disposal summary

Retention Basin	Volume Retained	Design Disposal rate		Number of Drywells
(ID)	(V_R)	(R_I)		(N)
	(ft^3)	(ft^3/s)	(ft^3/hr)	
UST-02	9,425	0.10	360.00	1

The above-ground Retention Basin (RB-01P) does not exceed one (1)-ft in depth and shall dissipate via surface percolation. Pursuant to Section 3.2 of this report, the calculated First Flush Volumes for both drainage areas are less than the 100-year, 2-hour volumes thus the drywells, quantified for the 100-year, 2-hour storm, are adequate to treat the First Flush Volumes as they are percolated. The project meets City of Scottsdale and FCDMC retention and disposal standards.

3.2.2. EMERGENCY OUTFALL

Per Section 2.1 of this report, the pre-project site drains to an existing retention basin located at the southwest corner of the property. This existing basin emergency overflows to Helm Drive during storm events which exceed the 100-year, 2-hour storm.

This project proposes to retain the entire 100-year, 2-hour storm event on-site. For storm events exceeding the 100-year, 2-hour, the emergency outfall locations are as follows:

- Drainage Area 1P emergency outfalls over the sidewalk at an elevation of 56.02-ft southerly to Helm Drive, as it does in the pre-development condition.
- Drainage Area 2P emergency outfalls over the southern driveway at an elevation of 57.44-ft southerly to Helm Drive, as it does in the pre-development condition.

All emergency outfalls are consistent with pre-development flow patterns.

3.2.3. UNDERGROUND STORAGE TANK REQUIREMENTS

All proposed underground storage tanks shall meet the City's USST policy in Section 4-1.202 of the City's Design Standards & Policies Manual (DSPM), which includes but is not limited to the following:

a. The owner must dedicate a public drainage easement over the USST, with no major vegetation such as trees within the easement. At a minimum, the easement should extend at a projected slope of 1:1 from the bottom of the pipe.
b. The USST must have at least a 75-year life, including the lining and coating.
c. The USST must drain by gravity.
d. Specify MAG supplemental standard detail 2554 for corrugated metal pipes.
e. A minimum of two access points must be provided for each USST.
f. An Operations and Maintenance (O&M) Manual must be prepared for the system prior to approval of final plans.
g. Final plans must include signs at each end of the USST.
h. A signed and notarized Ownership and Responsibility Statement must be provided prior to approval of final plans.
i. Add the required warning signs

3.3. PROPOSED DRAINAGE STRUCTURES

Several drainage structures will be required in order to convey the onsite flows through the project site to proposed retention basins. These structures consist of grated inlets, roof drains, and storm drains. **Figure 5** depicts the local drainage structures together with the associated local contributing watersheds.

Hydraulic calculations and sizing of all drainage infrastructure for the 100-year event shall be provided as part of the final engineering phase and Final Drainage Report.

3.3.1. LOWEST FLOOR ELEVATION

In order to ensure that the lowest finish floor elevation(s) are free from inundation during the 100-year storm frequency event, the finished floor elevations for each on-site building were

selected such that they are 14-inches above low curb (or the site outfall, whichever is greater) and, at minimum, one (1)-ft above the high water elevation of any above-ground retention basins.

- The lowest floor elevation for Building B is set at 1,457.52-ft which is 1.50-ft or 18.00-inches above the site outfall (1,456.02-ft) and 1.52-ft or 18.24-inches above the high water elevation of Retention Basin RB-01P (1,456.00-ft)
- The lowest floor elevation for the Clubhouse is set at 1,457.86-ft which is 1.84-ft or 22.08-inches above the site outfall (1,456.02-ft) and 1.86-ft or 22.32-inches above the high water elevation of Retention Basin RB-01P (1,456.00-ft)
- The lowest floor elevation for Building A is set at 1,458.20-ft which is 2.18-ft or 26.16-inches above the site outfall (1,456.02-ft) and 2.20-ft or 26.40-inches above the high water elevation of Retention Basin RB-01P (1,456.00-ft)

3.4. PROJECT PHASING

The project is proposed to be constructed as one phase. All proposed drainage infrastructure will be constructed as one phase.

4.0 SPECIAL CONDITIONS

There are no special conditions anticipated for this project.

5.0 DATA ANALYSIS METHODS

5.1. HYDROLOGIC PROCEDURES

The drainage scheme for this project was determined in accordance with the existing topographic and drainage features. The hydrologic analyses were done using the following methodologies and procedures:

1. Proposed drainage improvements were designed consistent with *The City of Scottsdale Design Standards and Policies Manual* (2018) and the *Drainage Design Manual for Maricopa County*, Volumes I and II (DDM Vol. I and Vol. II).
2. Pre-development and post-development flows for the 100-year event were determined using the Rational Method through the Drainage Design Management System (DDMSW) software, version 5.3.0, available from the Flood Control District of Maricopa County. In accordance with *The City of Scottsdale Design Standards and Policies Manual* (COS DSPM, 2018) the Rational Method was utilized because all watersheds are less than 160 acres. Default runoff coefficients from the COS DSPM were utilized based on land use and cover type.
3. Rainfall intensity for Rational Method calculations was determined from NOAA Atlas 14 for the site location by the DDMSW software.
4. Precipitation values for retention calculations were determined from NOAA Atlas 14 for the site location. Refer to **Appendix D** for an excerpt of the NOAA Atlas 14.

5. Figure 4.1-5 of the *City of Scottsdale Design Standards and Policies Manual* was utilized to determine runoff coefficients for the Rational Method. Per the referenced figure, desert landscaped areas and pavement/rooftop areas corresponded to a runoff coefficient of 0.45 and 0.95 for the 100-year storm event, respectively.

5.2. HYDRAULIC PROCEDURES

Hydraulic calculations and sizing of all drainage infrastructure for the 100-year event shall be provided as part of the final engineering phase and Final Drainage Report.

1. Inlets are sized using the weir equation (weir coefficient (C) = 3.0), assuming a clogging factor of 0.5 for grated inlets and trench drains, 0.25 for curb opening inlets, and with the constraint that the maximum allowable depth of ponded water within a parking lot is 0.5-ft.

2. Storm drain analysis is performed using the Bentley's StormCAD Connect Edition 10.03. Tailwater elevations are set at the top elevation of proposed underground tanks.

5.3. STORMWATER STORAGE CALCULATIONS

1. Required stormwater storage volumes (retention) are calculated in accordance with Section 4-1.807 of *The City of Scottsdale Design Standards and Policies Manual* (2018).

2. The retention required for the site is the 100-year, 2-hour storm volume and the First Flush Volume, whichever is greater. The calculated First Flush Volumes are less than the calculated 100-year, 2-hour volumes thus retention provided as sized for the 100-year, 2-hour storm also accommodates the First Flush Volume.

3. Disposal of the 100-year, 2-hour storm volume (and the first flush volume) shall occur within 36-hours with a design disposal rate of 0.1-cfs via a dual chamber drywell system.

6.0 STORMWATER QUALITY

Pursuant to the COS DP&SM 2018, Section 4-1.401.B, "Stormwater runoff from construction sites can include pollutants such as phosphorous, nitrogen, pesticides, petroleum derivatives, construction chemicals, solid wastes and sediment that adversely affect water quality. Compliance with the Construction General Permit will help prevent these pollutants from entering washes, lakes, other surface waters and the city's SD system." As such, project sites with disturbance areas that exceed 1-acre are required to submit a Notice of Intent (NOI) application and a Storm Water Pollution Prevention Plan (SWPPP) to the Arizona Department of Environmental Quality (ADEQ).

The operators must keep a copy of the SWPPP on site. In addition to ADEQ enforcement, the City may enforce stormwater management requirements, through inspections, responding to complaints and other means.

After ADEQ approval, the operator must include 2 copies of the approved NOI and SWPPP with improvement plan submittal to the City.

Once construction is completed, as defined in the Construction General Permit, the operators must send a Notice of Termination (NOT) to ADEQ and the City.

Project disturbance area exceeds one (1)-acre which warrants the SWPPP and NOI application to ADEQ. This is a

Preliminary Drainage Report. The required NOI application, certification, and SWPPP shall be provided as part of the Final Engineering phase and within the Final Drainage Report (COS DP&SM 2018, Appendix 4-1A.E.2, Page 213).

7.0 CONCLUSIONS

- This is a *Preliminary* Drainage Report.
- The proposed project is designed in conformance with FCDMC Hydrology and Hydraulics *Drainage Design Manuals* 2018.
- One (1) above-ground retention basin and one (1) underground storage tank is proposed to retain the 100-year, 2-hour onsite runoff for the site.
- The First Flush Volume required for all drainage areas are less than the calculated 100-year, 2-hour volumes for the site, thus the two (2) proposed storage facilities are sufficiently sized to accommodate the First Flush Volume in addition to the 100-year, 2-hour onsite runoff for the site.
- Proposed conveyance infrastructure shall be designed to convey the onsite 100-year storm event.
- Peak Discharges have been calculated using the Rational Method.
- At a minimum, finished floors will be designed to be 14-inches above the lowest adjacent top of curb elevation or the lowest drainage outfall and designed to be, at minimum, one (1)-ft above the high water elevation of any adjacent retention basin(s).
- The project disturbance area exceeds 1 -acre and is subject to a NOI application and SWPPP review through ADEQ and the City of Scottsdale. A SWPPP and NOI certificate shall be provided as part of Final Engineering within the Final Drainage Report.
- On-going maintenance is required to ensure the proposed drainage system performs as designed. Maintenance of private storm drain systems is the responsibility of private parties.

8.0 ENGINEER'S STATEMENT

The drainage design concept presented in this Preliminary Drainage Report assures that drainage affecting the project will be handled in a manner that does not conflict with any federal, state, and/or county regulations intended to protect adjacent properties and/or the project itself from adverse impacts during design storm events specified in the current regulations.

Disclaimer – ***Any deviations from the drainage scheme and hydraulic design presented herein, or any variations in climatic or watershed conditions may affect the functionality and other hydrologic or hydraulic characteristics of this project and nullify the results presented herein.***

9.0 REFERENCES

- Flood Control District of Maricopa County, Drainage Design Manual for Maricopa County, Arizona, Volume I – Hydrology. December 14, 2018.
- Flood Control District of Maricopa County, Drainage Design Manual for Maricopa County, Arizona, Volume II – Hydraulics. December 14, 2018.
- City of Scottsdale, Design Standards and Policies Manual. 2018.
- City of Scottsdale, Stormwater & Floodplain Management Ordinance, 2016 Update.

APPENDIX A: Figures & Exhibits

1. *Figure 2 – Aerial Exhibit*
2. *Figure 3 – FEMA Firmette*
3. *Figure 4 – Existing Conditions Drainage Exhibit*
4. *Figure 5 – Post-Development Drainage Exhibit*

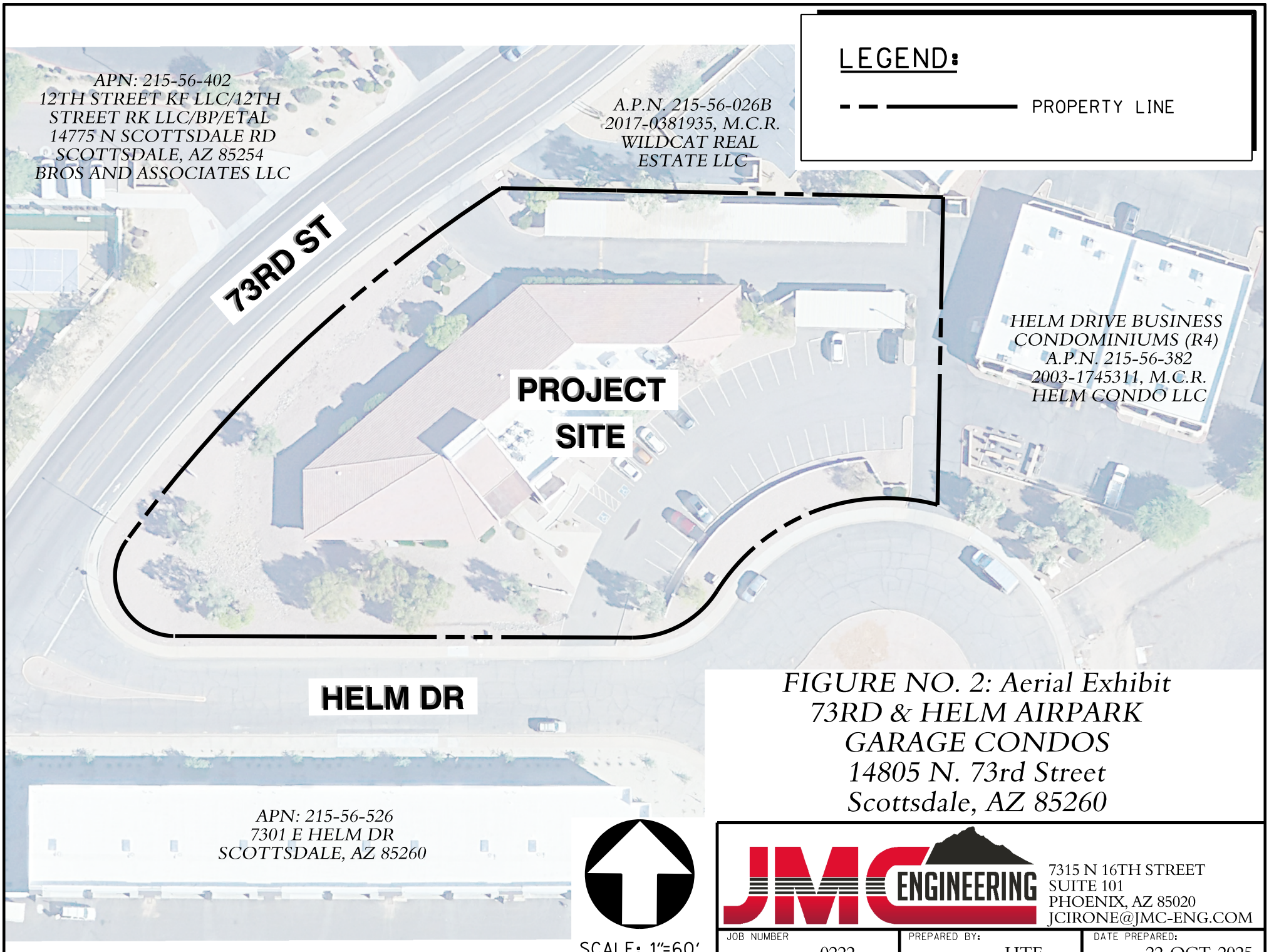

FIGURE NO. 2: Aerial Exhibit
73RD & HELM AIRPARK GARAGE CONDOS
14805 N. 73rd Street
Scottsdale, AZ 85260

JMC ENGINEERING
7315 N 16TH STREET
SUITE 101
PHOENIX, AZ 85020
JCIRONE@JMC-ENG.COM

JOB NUMBER	PREPARED BY:	DATE PREPARED:
0222	HTF	22-OCT-2025

C:\Users\HeleneTorento\jmc-eng.com\Projects - General\0222-73rd & Helm Airpark Garage Condos\Drainage\0222exb_FIGURE 02_Aerial.dgn (Model: Default)
22-OCT-2025

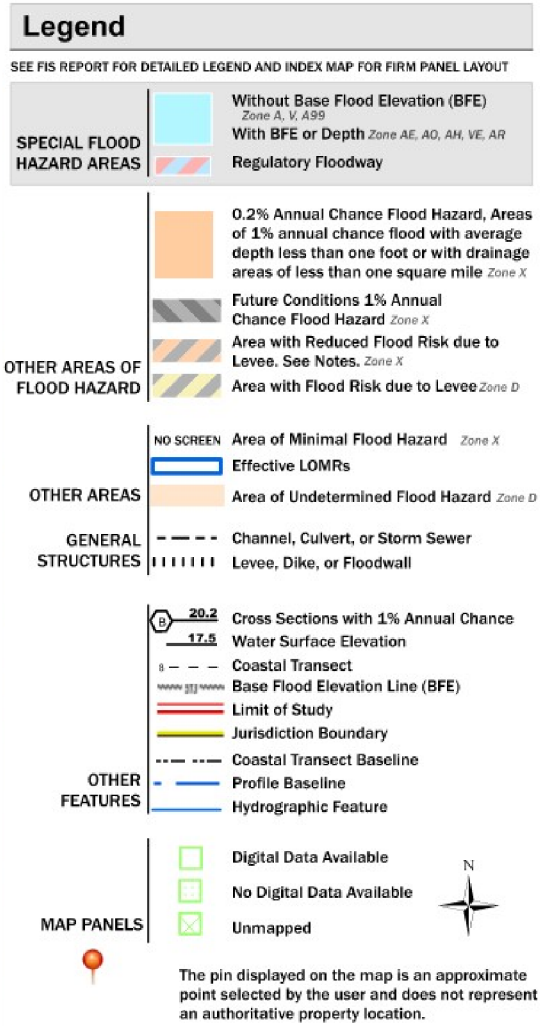

FIG. 3: FEMA FIRMETTE
73RD & HELM AIRPARK GARAGE CONDOS
14805 N. 73rd Street
Scottsdale, AZ 85260

SCALE: 1"=500'

JMC ENGINEERING
7315 N 16TH STREET
SUITE 101
PHOENIX, AZ 85020
JCIRONE@JMC-ENG.COM

JOB NUMBER	PREPARED BY:	DATE PREPARED:
0222	HTF	22-OCT-2025

LEGEND

- SITE OUTFALL LOCATION (11)
- INDICATES EXISTING DRAINAGE AREA DELINEATION
- INDICATES EXISTING DRAINAGE AREA (1E)
- PROJECT BOUNDARY
- FLOW LINE
- EXISTING CONTOURS (4592)
- FLOW DIRECTION

EXISTING CONDITION RETENTION SUMMARY

MAJOR BASIN (ID)	VOLUME REQUIRED (VR) (cf)	VOLUME PROVIDED (VP) (cf)	VOLUME EXCESS (VE) (cf)	NOTES
1E	9,555	9,985	430	Conveyed to Retention Basin (RB-01E)

VOLUME PROVIDED>VOLUME REQUIRED. SEE APPENDIX D.

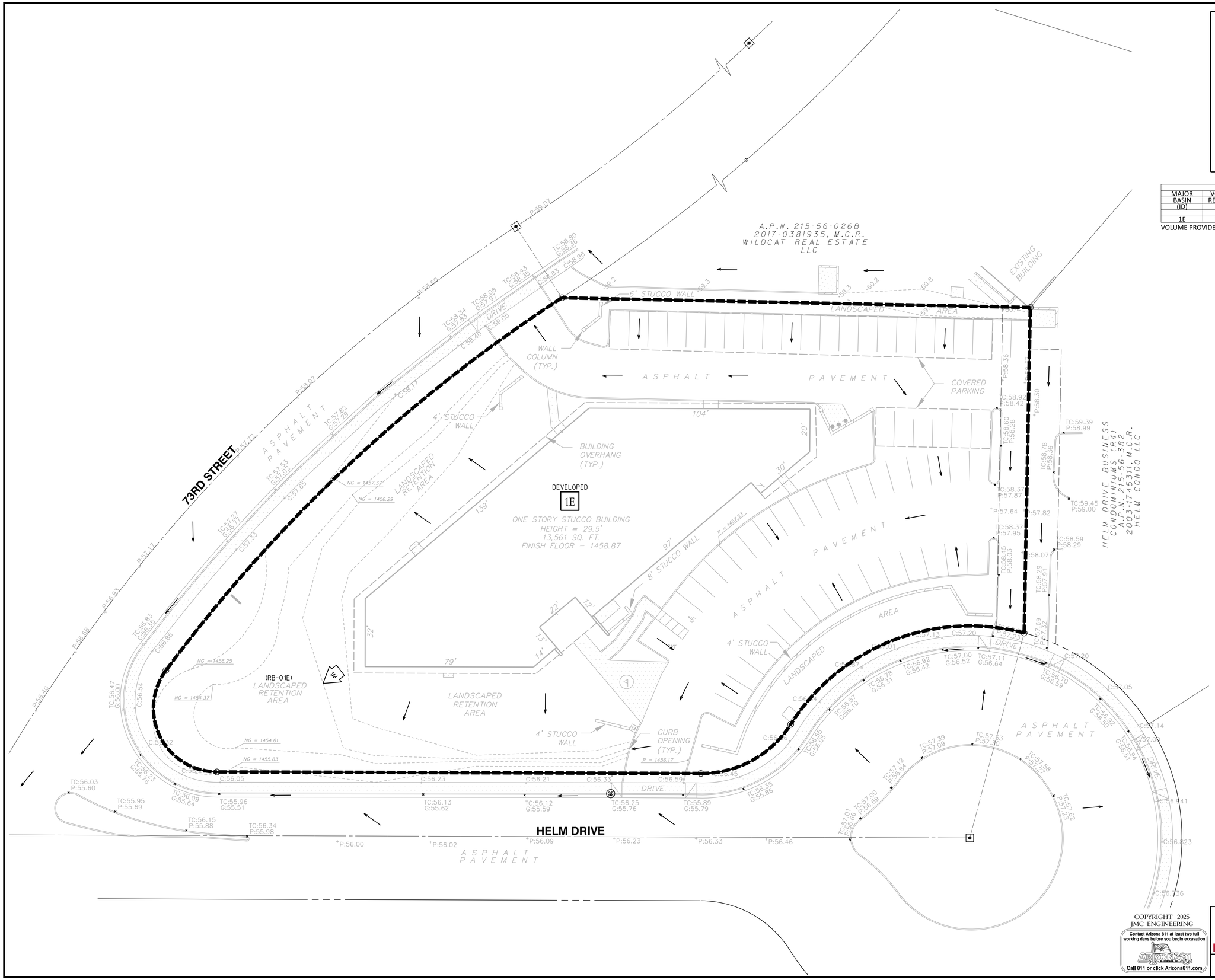

FIGURE NO. 4:
Existing Drainage Exhibit
73RD & HELM AIRPARK GARAGE CONDOS
14805 N. 73rd Street
Scottsdale, AZ 85260

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

JMC ENGINEERING
7315 N 16TH STREET
SUITE 101
PHOENIX, AZ 85020
JCIRONE@JMC-ENG.COM

DATE: 22-OCT-2025 | PROJECT NO. 0222 | PM: HTF

LEGEND

- INDICATES DRAINAGE AREA DELINEATION
- PROPERTY BOUNDARY
- INDICATES FLOWLINE
- 1P — INDICATES DRAINAGE AREA
- FLOW DIRECTION
- INDICATES PROPOSED DRYWELL
- PROPOSED STORM DRAIN/ROOF DRAIN
- PROPOSED GRATED INLET
- PROPOSED UNDERGROUND TANK
- XX.X — CONCENTRATION POINT

PROPOSED CONDITION RETENTION SUMMARY

MAJOR BASIN (ID)	VOLUME REQUIRED (VR) (cf)	VOLUME PROVIDED (VP) (cf)	VOLUME EXCESS (VE) (cf)	NOTES
1P	1,063	1,103	40	Conveyed to Retention Basin (RB-01P)
2P	9,318	9,425	107	Conveyed to Underground Tank (UST-02)

VOLUME PROVIDED>VOLUME REQUIRED. FIRST FLUSH VOLUME ALSO PROVIDED. SEE APPENDIX D.

PROPOSED 100-YEAR PEAK DISCHARGES

CP (ID)	DRAINAGE AREA (DA)	AREA (A) (AC)	C COEFFICIENT (C)	PEAK DISCHARGE Q_{100}* (CFS)
1P	1P	0.29	0.45	1.0
2P.1	2P.1	0.58	0.88	3.9
2P.2	2P.2	0.72	0.89	4.9

*Time of Concentration is 5 minutes.

73RD STREET

HELM DRIVE

A.P.N. 215-56-026B
2017-0381935, M.C.R.
WILDCAT REAL ESTATE LLC

EXISTING BUILDING

HELM DRIVE BUSINESS CONDOMINIUMS (#4)
A.P.N. 215-56-382
2003-1745311, M.C.R.
HELM CONDO LLC

ASPHALT PAVEMENT

2P.2

BUILDING B
LF 88=1,458.20 FT
PAD=1,457.53★

TANK (UST-02)
10' DIA. CMP
120 L.F.
VR=9,318 CF
VP=9,425 CF

PROPOSED 40' x 150' DRAINAGE EASEMENT

BUILDING B
LF 88=1,457.86 FT
PAD=1,457.19★

BUILDING A
LF 88=1,458.20 FT
PAD=1,457.53★

2P.1

BUILDING B
LF 88=1,457.52 FT
PAD=1,456.85★

CLUBHOUSE
LF 88=1,457.86 FT
PAD=1,457.19★

RETENTION BASIN (RB-01P)
HWE=56.00 FT
BTM=55.00 FT
DEPTH=1 FT
VR=1,063 CF
VP=1,103 CF

PROPOSED DRAINAGE EASEMENT

1P

EMERGENCY OVERFLOW FOR UST, ELEV.=57.44

EMERGENCY OVERFLOW SURFACE ELEV.=56.02

N

SCALE 1" =20'

0 20 40 60

FIGURE NO. 5:
Proposed Drainage Exhibit
73RD & HELM AIRPARK GARAGE CONDOS
14805 N. 73rd Street
Scottsdale, AZ 85260

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

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SUITE 101
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HFLORENTO@JMC-ENG.COM

DATE: 5-FEB-2026 | PROJECT NO. 0222 | PM: HTF

C:\Users\HeleneFlorento\jmc-eng.com\Projects - General\0222-73rd & Helm Airpark Garage Condos\Drainage\0222exb_FIGURE 05_PrDrn.dgn (Model: Default)
5-FEB-2026

APPENDIX B: Hydrologic Analysis

1. *Weighted Runoff Coefficient*
2. *DDMSW Software (FCDMC) Output Results*

RUNOFF COEFFICIENT

Drainage Design Manual for Maricopa County, Volume II - Hydraulics . August 15, 2013.
Section 4.6, "Design Example," Equation 2.3.2.

$$C_W = \frac{A_1C_1 + A_2C_2 + \cdots + A_{n+1}C_{n+1}}{A_1 + A_2 + \cdots + A_{n+1}}$$

C_w Weighted Runoff Coefficient
A_i Area of Subbasin, square feet
C_i Runoff Coefficient for Subbasin, (as determined by:
City of Scottsdale *Design Standards & Policies Manual 2018,* Figure 4-1.5*)*

DRAINAGE AREA (ID)	***LAND USE***	***RUNOFF COEFFICIENT*** (C) (100-YR)	***SUBBASIN AREA*** (A) (ft^2)	(CA) (ft^2)	***WEIGHTED RUNOFF COEFFICIENT*** (C_w)
1P	Desert Landscaping	0.45	12,707	5,718	0.45
	Paved streets, Rooftops	0.95	0	0	#DIV/0!
1P			12,707	5,718	**0.45**
2P.1	Desert Landscaping	0.45	3,678	1,655	0.45
	Paved streets, Rooftops	0.95	21,630	20,549	0.95
2P.1			25,308	22,204	**0.88**

Project

Reference	0222
Title	73rd & Helm Airpark Garage Condos
Location	City of Scottsdale, AZ
Agency	Flood Control District of Maricopa County

Project Defaults

Model	Rational
Land Use Agency	FCDMC
Rainfall	NOAA14
Roads Agency	MCDOT
Inlets Agency	MAG

Comments

Duration	2 Yr	5 Yr	10 Yr	25 Yr	50 Yr	100 Yr	200 Yr	500 Yr	1000 Yr
DEFAULT									
5 Min	0.249	0.335	0.402	0.492	0.560	0.632	0.702	0.798	0.871
10 Min	0.379	0.510	0.612	0.749	0.853	0.962	1.068	1.215	1.325
15 Min	0.470	0.632	0.758	0.928	1.057	1.192	1.324	1.507	1.643
30 Min	0.633	0.851	1.021	1.250	1.424	1.605	1.783	2.029	2.212
1 Hour	0.783	1.053	1.264	1.547	1.762	1.987	2.207	2.511	2.738
2 Hour	0.909	1.208	1.436	1.753	1.986	2.233	2.479	2.812	3.070
3 Hour	1.002	1.306	1.547	1.888	2.161	2.440	2.737	3.140	3.462
6 Hour	1.189	1.518	1.782	2.139	2.414	2.703	3.000	3.401	3.717
12 Hour	1.324	1.672	1.941	2.307	2.587	2.878	3.172	3.562	3.866
24 Hour	1.564	2.009	2.364	2.861	3.251	3.660	4.082	4.668	5.133

Flood Control District of Maricopa County
Drainage Design Management System
LAND USE
Project Reference: 0222

Sub Basin	Land Use Code	Area (acres)	Area (%)	Kb	Runoff Coefficient C						Description
					2 Year	5 Year	10 Year	25 Year	50 Year	100 Year	
Major Basin ID: 01											
1P	320	0.29	100.0	0.043	0.36*	0.36*	0.36*	0.40*	0.43*	0.45*	Industrial
		0.290	**100.0**								
2P.1	320	0.58	100.0	0.041	0.70*	0.70*	0.70*	0.77*	0.84*	0.88*	Industrial
		0.580	**100.0**								
2P.2	320	0.72	100.0	0.041	0.72*	0.72*	0.72*	0.79*	0.86*	0.89*	Industrial
		0.720	**100.0**								

* Non default value

Flood Control District of Maricopa County
Drainage Design Management System
SUB BASINS
Project Reference: 0222

ID	Sub Basin Data							Sub Basin Hydrology Summary					
	Area (acres)	Length (ft)	USGE	DSGE	Slope (ft/mi)	Kb		2 Year	5 Year	10 Year	25 Year	50 Year	100 Year
Major Basin ID: 01													
1P	0.3	237	58.90	56.00	64.6	0.043	Q (cfs)	0.3	0.4	0.5	0.7	0.8	1.0
							C	0.36	0.36	0.36	0.40	0.43	0.45
							CA (ac)	0.10	0.10	0.10	0.12	0.12	0.13
							Volume (ac-ft)	0.0076	0.0101	0.0120	0.0175	0.0199	0.0242
							Tc (min)	5	5	5	5	5	5
							i (in/hr)	2.99	4.02	4.82	5.90	6.72	7.58
2P.1	0.6	103	57.90	57.00	46.1	0.041	Q (cfs)	1.2	1.6	2.0	2.7	3.3	3.9
							C	0.70	0.70	0.70	0.77	0.84	0.88
							CA (ac)	0.41	0.41	0.41	0.45	0.49	0.51
							Volume (ac-ft)	0.0311	0.0413	0.0491	0.0657	0.0811	0.0949
							Tc (min)	5	5	5	5	5	5
							i (in/hr)	2.99	4.02	4.82	5.90	6.72	7.58
2P.2	0.7	137	58.20	57.20	38.5	0.041	Q (cfs)	1.6	2.1	2.5	3.4	4.2	4.9
							C	0.72	0.72	0.72	0.79	0.86	0.89
							CA (ac)	0.52	0.52	0.52	0.57	0.62	0.64
							Volume (ac-ft)	0.0394	0.0523	0.0622	0.0833	0.1026	0.1191
							Tc (min)	5	5	5	5	5	5
							i (in/hr)	2.99	4.02	4.82	5.90	6.72	7.58

* Non default value

APPENDIX C: Hydraulic Calculations

1. *Inlet Sizing Calculations*
2. *StormCAD Software Output Results*

Hydraulic calculations and sizing of all drainage infrastructure for the 100-year event shall be provided as part of the final engineering phase and Final Drainage Report.

APPENDIX D: Retention Analysis

NOAA Atlas 14, Volume 1, Version 5
Location name: Scottsdale, Arizona, USA*
Latitude: 33.6204°, Longitude: -111.9232°
Elevation: 1458 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	**0.190** (0.158-0.232)	**0.249** (0.208-0.303)	**0.335** (0.278-0.406)	**0.401** (0.332-0.486)	**0.491** (0.399-0.592)	**0.559** (0.450-0.669)	**0.631** (0.498-0.754)	**0.701** (0.544-0.835)	**0.797** (0.603-0.952)	**0.869** (0.645-1.04)
10-min	**0.290** (0.240-0.353)	**0.378** (0.317-0.461)	**0.509** (0.423-0.618)	**0.611** (0.505-0.739)	**0.748** (0.607-0.902)	**0.851** (0.685-1.02)	**0.960** (0.758-1.15)	**1.07** (0.829-1.27)	**1.21** (0.918-1.45)	**1.32** (0.982-1.58)
15-min	**0.359** (0.298-0.437)	**0.469** (0.393-0.571)	**0.631** (0.524-0.766)	**0.757** (0.626-0.916)	**0.927** (0.753-1.12)	**1.06** (0.849-1.26)	**1.19** (0.940-1.42)	**1.32** (1.03-1.58)	**1.50** (1.14-1.80)	**1.64** (1.22-1.96)
30-min	**0.484** (0.401-0.589)	**0.632** (0.529-0.769)	**0.850** (0.705-1.03)	**1.02** (0.843-1.23)	**1.25** (1.01-1.50)	**1.42** (1.14-1.70)	**1.60** (1.27-1.92)	**1.78** (1.38-2.12)	**2.02** (1.53-2.42)	**2.21** (1.64-2.64)
60-min	**0.599** (0.496-0.729)	**0.782** (0.655-0.952)	**1.05** (0.873-1.28)	**1.26** (1.04-1.53)	**1.54** (1.26-1.86)	**1.76** (1.42-2.10)	**1.98** (1.57-2.37)	**2.20** (1.71-2.63)	**2.51** (1.90-2.99)	**2.73** (2.03-3.27)
2-hr	**0.700** (0.589-0.832)	**0.906** (0.767-1.08)	**1.20** (1.01-1.42)	**1.43** (1.19-1.69)	**1.75** (1.44-2.05)	**1.98** (1.62-2.32)	**2.23** (1.78-2.60)	**2.47** (1.95-2.89)	**2.80** (2.16-3.28)	**3.06** (2.30-3.59)
3-hr	**0.781** (0.659-0.957)	**1.00** (0.846-1.23)	**1.30** (1.10-1.60)	**1.54** (1.29-1.88)	**1.88** (1.55-2.27)	**2.16** (1.75-2.58)	**2.44** (1.94-2.92)	**2.73** (2.13-3.26)	**3.14** (2.38-3.74)	**3.46** (2.56-4.13)
6-hr	**0.943** (0.809-1.12)	**1.19** (1.02-1.42)	**1.52** (1.29-1.79)	**1.78** (1.50-2.09)	**2.14** (1.78-2.50)	**2.41** (1.97-2.82)	**2.70** (2.18-3.14)	**2.99** (2.38-3.50)	**3.39** (2.62-3.95)	**3.71** (2.80-4.33)
12-hr	**1.05** (0.899-1.24)	**1.32** (1.13-1.57)	**1.67** (1.42-1.96)	**1.94** (1.64-2.28)	**2.30** (1.93-2.70)	**2.58** (2.14-3.02)	**2.87** (2.34-3.35)	**3.16** (2.55-3.68)	**3.55** (2.79-4.16)	**3.85** (2.97-4.54)
24-hr	**1.23** (1.07-1.44)	**1.56** (1.36-1.83)	**2.00** (1.74-2.35)	**2.36** (2.04-2.75)	**2.85** (2.44-3.32)	**3.24** (2.75-3.76)	**3.65** (3.06-4.24)	**4.07** (3.36-4.71)	**4.65** (3.77-5.40)	**5.11** (4.08-5.96)
2-day	**1.30** (1.12-1.52)	**1.66** (1.43-1.94)	**2.16** (1.85-2.52)	**2.56** (2.18-2.98)	**3.11** (2.63-3.61)	**3.54** (2.96-4.11)	**4.00** (3.32-4.65)	**4.46** (3.67-5.21)	**5.11** (4.12-5.98)	**5.63** (4.47-6.61)
3-day	**1.40** (1.22-1.62)	**1.78** (1.55-2.07)	**2.34** (2.03-2.71)	**2.79** (2.41-3.22)	**3.42** (2.93-3.94)	**3.92** (3.34-4.52)	**4.46** (3.76-5.14)	**5.02** (4.19-5.81)	**5.81** (4.78-6.73)	**6.44** (5.23-7.50)
4-day	**1.49** (1.31-1.71)	**1.91** (1.68-2.19)	**2.52** (2.21-2.89)	**3.02** (2.64-3.46)	**3.73** (3.24-4.27)	**4.31** (3.71-4.92)	**4.92** (4.21-5.63)	**5.57** (4.72-6.40)	**6.50** (5.43-7.48)	**7.26** (5.99-8.39)
7-day	**1.69** (1.47-1.94)	**2.15** (1.88-2.48)	**2.85** (2.49-3.28)	**3.42** (2.97-3.93)	**4.23** (3.65-4.85)	**4.88** (4.18-5.60)	**5.57** (4.74-6.40)	**6.32** (5.32-7.29)	**7.37** (6.12-8.52)	**8.23** (6.76-9.55)
10-day	**1.82** (1.60-2.09)	**2.33** (2.04-2.68)	**3.08** (2.69-3.53)	**3.69** (3.21-4.22)	**4.54** (3.93-5.19)	**5.23** (4.50-5.97)	**5.97** (5.09-6.82)	**6.74** (5.70-7.73)	**7.83** (6.53-9.01)	**8.72** (7.18-10.1)
20-day	**2.25** (1.98-2.58)	**2.90** (2.55-3.31)	**3.83** (3.36-4.37)	**4.54** (3.97-5.17)	**5.50** (4.79-6.26)	**6.24** (5.41-7.11)	**7.00** (6.04-7.99)	**7.78** (6.66-8.90)	**8.83** (7.49-10.1)	**9.64** (8.11-11.1)
30-day	**2.64** (2.32-3.02)	**3.40** (2.99-3.88)	**4.49** (3.93-5.11)	**5.31** (4.64-6.04)	**6.43** (5.59-7.31)	**7.29** (6.31-8.28)	**8.18** (7.04-9.29)	**9.08** (7.76-10.3)	**10.3** (8.73-11.7)	**11.2** (9.44-12.9)
45-day	**3.05** (2.70-3.47)	**3.94** (3.47-4.47)	**5.19** (4.58-5.88)	**6.12** (5.38-6.94)	**7.36** (6.44-8.34)	**8.30** (7.23-9.40)	**9.25** (8.01-10.5)	**10.2** (8.79-11.6)	**11.5** (9.79-13.1)	**12.4** (10.5-14.3)
60-day	**3.38** (2.99-3.82)	**4.36** (3.86-4.93)	**5.74** (5.07-6.47)	**6.74** (5.94-7.61)	**8.05** (7.08-9.09)	**9.03** (7.90-10.2)	**10.0** (8.72-11.3)	**11.0** (9.52-12.5)	**12.3** (10.5-14.0)	**13.2** (11.3-15.1)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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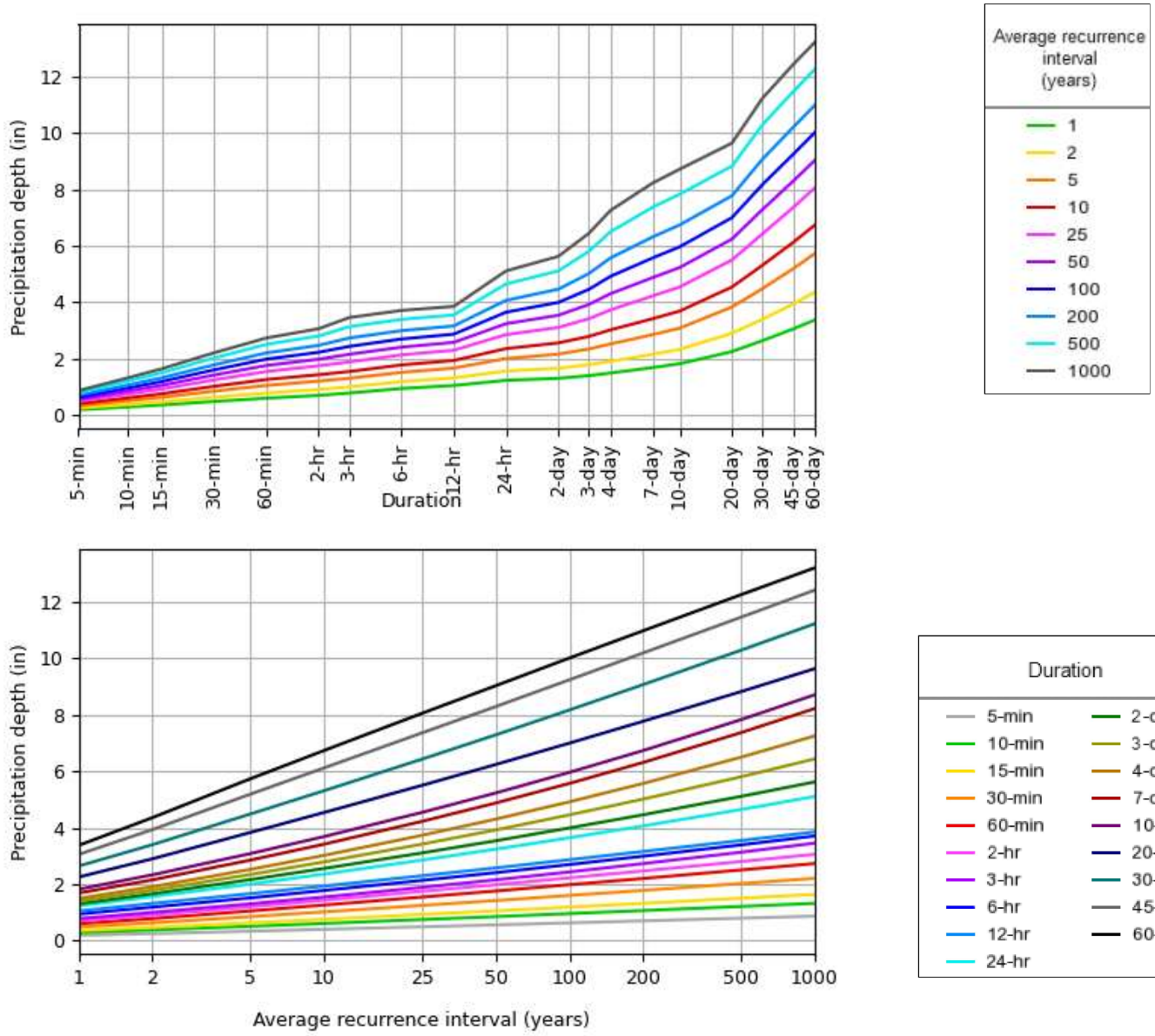
PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 33.6204°, Longitude: -111.9232°



NOAA Atlas 14, Volume 1, Version 5

Created (GMT): Mon Oct 20 20:59:27 2025

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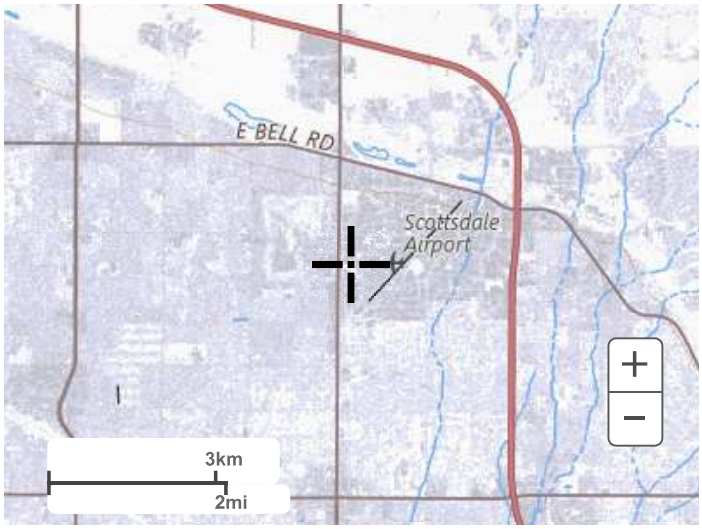
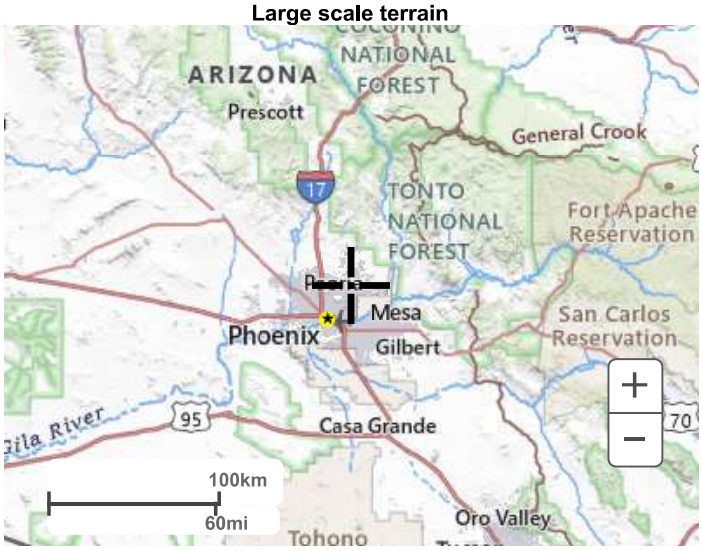
Maps & aerials

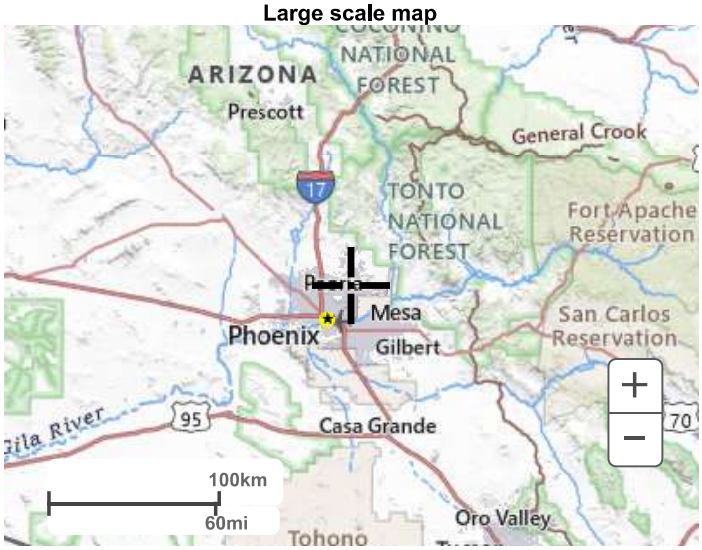
Small scale terrain



Large scale terrain



Large scale map



Large scale aerial

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

Disclaimer

RETENTION SUMMARY

DRAINAGE AREA (ID)	*VOLUME REQUIRED* (V_r) (ft^3)	*VOLUME PROVIDED* (V_p) (ft^3)	*VOLUME EXCESS* (ft^3)	*NOTES* (ID)
1E	9,555	9,985	430	To Retention Basin (RB-01E)
1P	1,063	1,103	40	To Retention Basin (RB-01P)
2P	9,318	9,425	107	To Underground Tank (UST-02)

All volume provided exceeds volume required.

Retention is for the 100-year, 2-hour storm event.

First Flush Volume for Drainage Area 1P is:	239	ft^3	< 100-yr, 2-hr volume
First Flush Volume for Drainage Area 2P is:	2,090	ft^3	< 100-yr, 2-hr volume

VOLUME REQUIRED (100-YR, 2-HR)

Pursuant to the City of Scottsdale *Design Standards & Policies Manual 2018* , Section 4-1.201.C.1.a, Page 185
"For sites that have not been previously developed, or portions of a site thereof, the standard formula for determining the required stormwater storage runoff volume is shown below:"

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

Vr Required storage volume, cubic feet
C Runoff Coefficient, (per Figure 4-1.5 of the DPSM 2018, page 203)
R Precipitation amount = the depth of the 100-year, 2-hour rainfall from NOAA website, inches
A Area, acres

DRAINAGE AREA	*RUNOFF COEFFICIENT*	*RAINFALL DEPTH*	*SUBBASIN AREA*		*VOLUME REQUIRED*		*NOTES:*
(ID)	(C)	(P)	(A)		(V)		
		(in)	(ft^2)	(acres)	(ft^3)	(acre-ft)	
1E	0.74	2.23	69,255	1.59	9,555	0.2193	To Retention Basin (RB-01E)
1P	0.45	2.23	12,707	0.29	1,063	0.0244	To Retention Basin (RB-01P)
2P	0.89	2.23	56,549	1.30	9,318	0.2139	To Underground Tank (UST-02)

VOLUME REQUIRED (FIRST FLUSH)

City of Scottsdale *Design Standards & Policies Manual 2018,* Section 4-1.201.C.2.a, Page 186:

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

V_{FF} Minimum First Flush volume in ac-ft
C Weighted average runoff coefficient for the disturbed area of the proposed development
P Precipitation depth of 0.5 inches
A Area of project site in acres

MAJOR BASIN	*RUNOFF COEFFICIENT*	*RAINFALL DEPTH*	*MAJOR BASIN AREA*		*VOLUME REQUIRED*	
(ID)	(C)	(P)	(A)		(V)	
		(in)	(ft^2)	(acres)	(ft^3)	(acre-ft)
1P	0.45	0.50	12,707	0.2917	239	0.0055
2P	0.89	0.50	56,549	1.2982	2,090	0.0480

RUNOFF COEFFICIENT

Drainage Design Manual for Maricopa County, Volume II - Hydraulics . August 15, 2013.
Section 4.6, "Design Example," Equation 2.3.2.

$$C_W = \frac{A_1C_1 + A_2C_2 + \cdots + A_{n+1}C_{n+1}}{A_1 + A_2 + \cdots + A_{n+1}}$$

C_w Weighted Runoff Coefficient
A_i Area of Subbasin, square feet
C_i Runoff Coefficient for Subbasin, (as determined by:
City of Scottsdale *Design Standards & Policies Manual 2018,* Figure 4-1.5*)*

DRAINAGE AREA (ID)	***LAND USE***	***RUNOFF COEFFICIENT*** (C) (100-YR)	***SUBBASIN AREA*** (A) (ft^2)	(CA) (ft^2)	***WEIGHTED RUNOFF COEFFICIENT*** (C_W)
1E	Desert Landscaping	0.45	28,755	12,940	0.00
	Paved streets, Rooftops	0.95	40,500	38,475	0.95
1E			69,255	51,415	**0.74**
1P	Desert Landscaping	0.45	12,707	5,718	0.45
	Paved streets, Rooftops	0.95	0	0	#DIV/0!
1P			12,707	5,718	**0.45**
2P	Desert Landscaping	0.45	7,164	3,224	0.45
	Paved streets, Rooftops	0.95	49,384	46,915	0.95
2P			56,549	50,139	**0.89**

VOLUME PROVIDED

$$V_P = \frac{(A_1 + A_2)(E_1 - E_2)}{2}$$

V_p	Storage Volume in cubic feet
A_1	Top Surface Area in square feet
A_2	Bottom Surface Area in square feet
E_1	Top Elevation in feet
E_2	Bottom Elevation in feet

RETENTION BASIN	*ELEVATION*	*SURFACE AREA***	*VOLUME PROVIDED*	
(ID)	(E)	(A)	(V_p)	
		(ft^2)	(ft^3)	(ac-ft)
RB-01E	56.00	16,085.42	9,985	0.2292
	55.00	3,884.78		
		Subtotal:	9,985	0.2292
RB-01P	56.00	2,417.52	1,103	0.0253
	55.50	1,993.22		
		Subtotal:	1,103	0.0253

UNDERGROUND STORAGE VOLUME

$$V = \pi\left(\frac{D}{2}\right)^2 L$$

V Underground Storage Tank Volume
D Diameter of Storage Tank
L Length of Tank

RETENTION BASIN	*DIAMETER*	*LENGTH OF TANK*	*UNDERGROUND STORAGE VOLUME*	
(ID)	(D)	(L)	(V)	
	(ft)	(ft)	(ft^3)	(ac-ft)
UST-02	10	120	9,425	0.2164

NUMBER OF DRYWELLS REQUIRED

Pursuant to the City of Scottsdale Design Standards & Policies Manual 2018, Section 4-1.201.B.3,
"A retention basin utilizing dry wells for the dissipation of stormwater may be permitted, subject to stormwater staff approval if: A dual-chamber system is designed to minimize sedimentation."

Drainage Design Manual for Maricopa County, Volume II - Hydraulics . August 15, 2013.
" Retention basins shall be drained within 36 hours following the storm" (Page 10-2)
"The accepted design disposal rate for a dry well should not be less than 0.1 cfs per well" (Page 9-18)

$$N = \frac{V_R}{36R_I}$$

N	Minimum Number of Injection Wells Required
V_R	Volume Retained in the Retention/Detention Basin in cubic feet
R_I	Approved Discharge Rate per Well in cubic feet per second
Drain Time	36 hours

RETENTION BASIN	*VOLUME RETAINED*	*DESIGN DISPOSAL RATE*		*NUMBER OF DRYWELLS*
(ID)	(V_R)	(R_I)		(N)
	(ft^3)	(ft^3/s)	(ft^3/hr)	
UST-02	9,425	0.10	360.00	1

NOTE: Retention Basin (RB-01P) does not exceed one (1)-ft in depth and shall dissipate via surface percolation.

APPENDIX E: Warning & Disclaimer of Liability

Warning and Disclaimer of Liability

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

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

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

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

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

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

684-PA-2025		10/22/2025
Plan Check No.	Owner or Agent	Date

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.

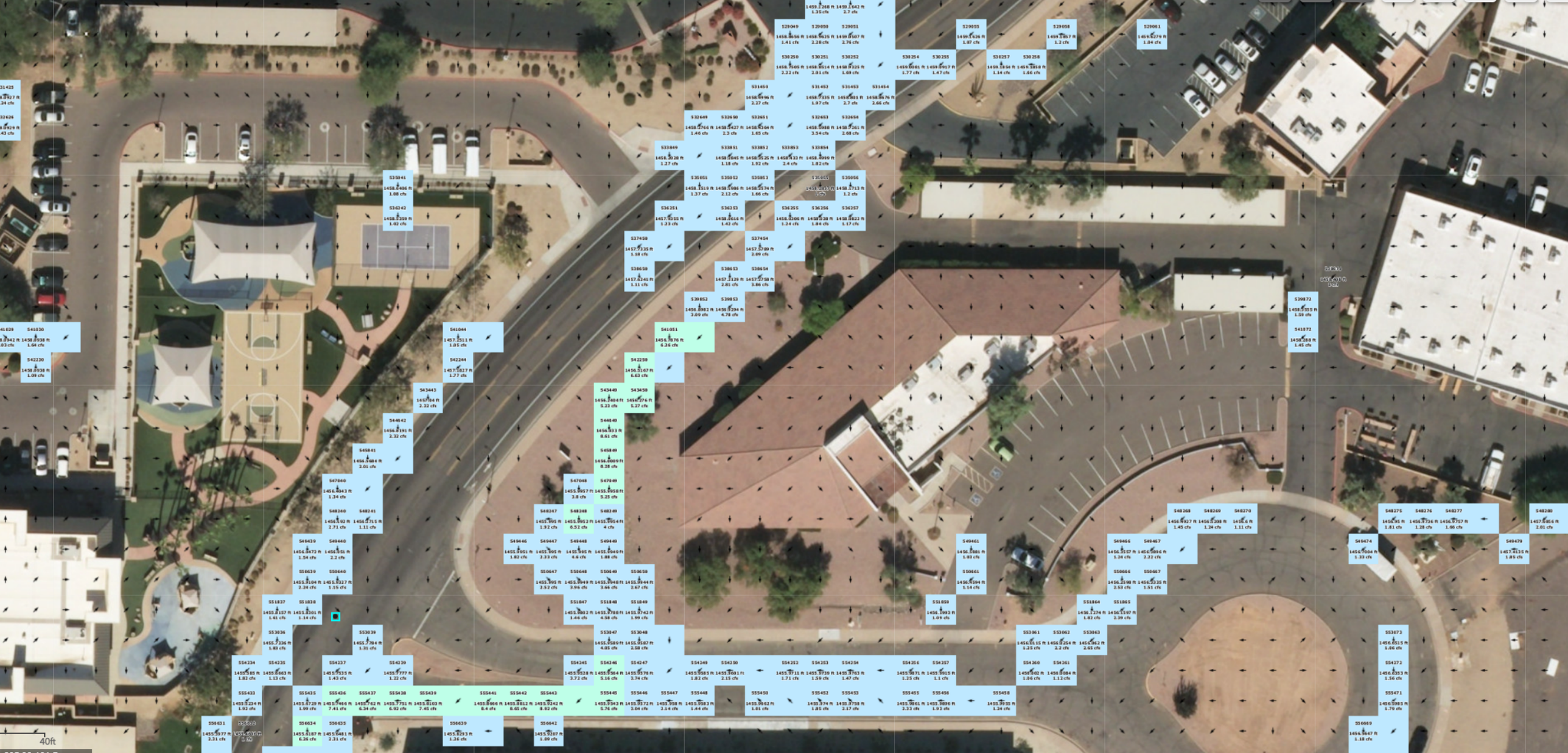
Compliance with the Stormwater and Floodplain Management Ordinance does not ensure complete protection from flooding. Flood-related problems such as natural erosion, streambed meander, or constructed obstructions and diversions may occur and have an adverse effect in the event of a flood. You are advised to consult your own engineer or other expert regarding these considerations.

I have read and understand the above.

684-PA-2025		10/22/2025
Plan Check #	Owner	Date

APPENDIX F: Reference Documentation

1. *FLO-2D Model (East Shea ADMS, Corridor SD01)*
2. *Preliminary Grading & Drainage Plans, prepared by JMC dated January 2026*

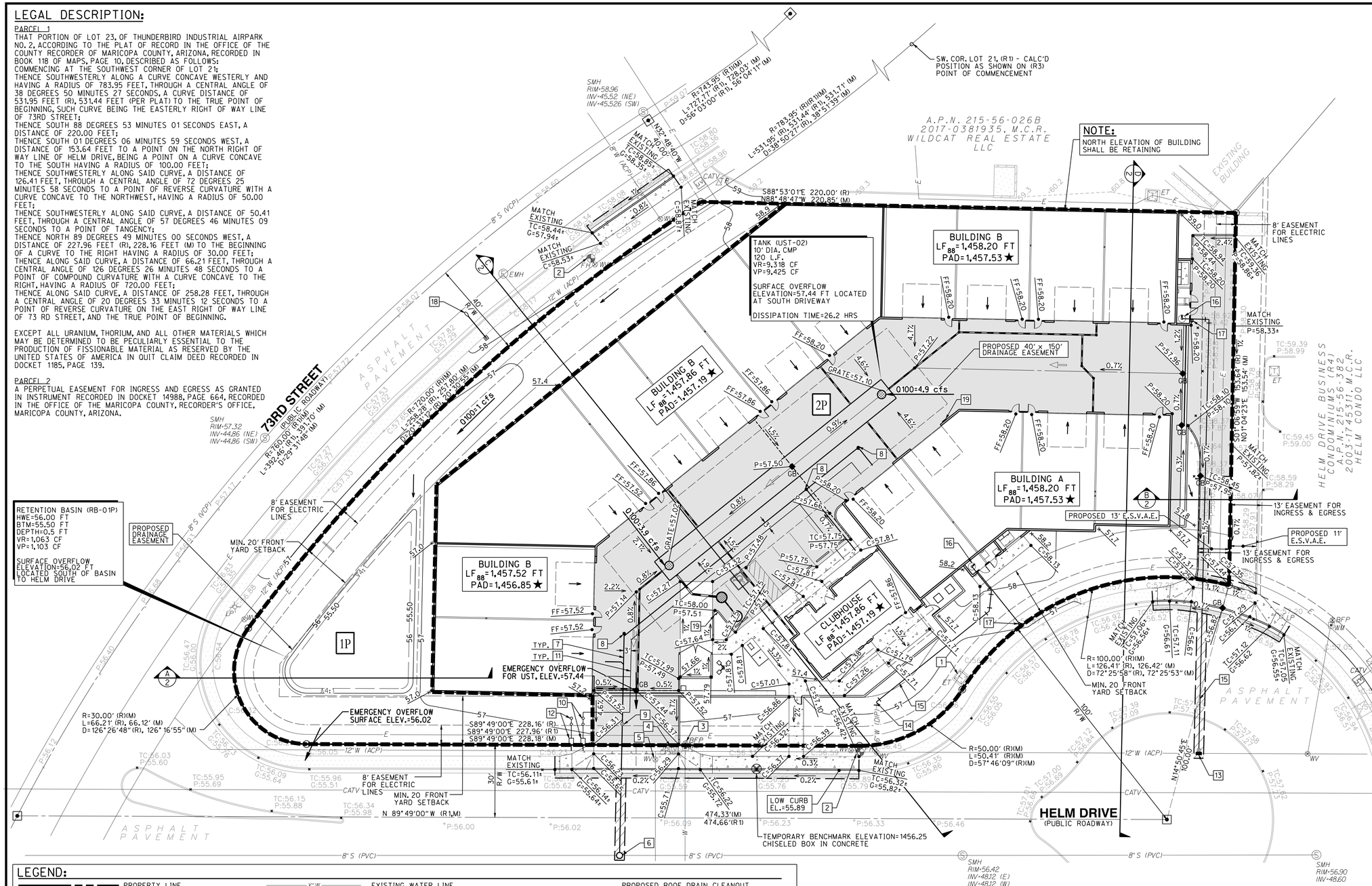

40ft

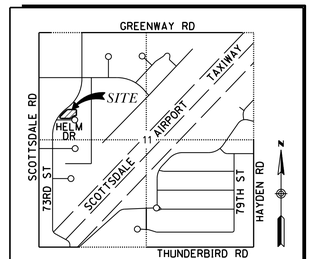
LEGAL DESCRIPTION:

PARCEL 1
THAT PORTION OF LOT 23, OF THUNDERBIRD INDUSTRIAL AIRPARK NO. 2, ACCORDING TO THE PLAT OF RECORD IN THE OFFICE OF THE COUNTY RECORDER OF MARICOPA COUNTY, ARIZONA, RECORDED IN BOOK 118 OF MAPS, PAGE 10, DESCRIBED AS FOLLOWS:
COMMENCING AT THE SOUTHWEST CORNER OF LOT 21;
THENCE SOUTHWESTERLY ALONG A CURVE CONCAVE WESTERLY AND HAVING A RADIUS OF 783.95 FEET, THROUGH A CENTRAL ANGLE OF 38 DEGREES 50 MINUTES 27 SECONDS, A CURVE DISTANCE OF 531.95 FEET (R), 531.44 FEET (PER PLAT) TO THE TRUE POINT OF BEGINNING, SUCH CURVE BEING THE EASTERLY RIGHT OF WAY LINE OF 73RD STREET;
THENCE SOUTH 88 DEGREES 53 MINUTES 01 SECONDS EAST, A DISTANCE OF 220.00 FEET;
THENCE SOUTH 01 DEGREES 06 MINUTES 59 SECONDS WEST, A DISTANCE OF 153.64 FEET TO A POINT ON THE NORTH RIGHT OF WAY LINE OF HELM DRIVE, BEING A POINT ON A CURVE CONCAVE TO THE SOUTH HAVING A RADIUS OF 100.00 FEET;
THENCE SOUTHWESTERLY ALONG SAID CURVE, A DISTANCE OF 126.41 FEET, THROUGH A CENTRAL ANGLE OF 72 DEGREES 25 MINUTES 58 SECONDS TO A POINT OF REVERSE CURVATURE WITH A CURVE CONCAVE TO THE NORTHWEST, HAVING A RADIUS OF 50.00 FEET;
THENCE SOUTHWESTERLY ALONG SAID CURVE, A DISTANCE OF 50.41 FEET, THROUGH A CENTRAL ANGLE OF 57 DEGREES 46 MINUTES 09 SECONDS TO A POINT OF TANGENCY;
THENCE NORTH 89 DEGREES 49 MINUTES 00 SECONDS WEST, A DISTANCE OF 227.96 FEET (R), 228.16 FEET (M) TO THE BEGINNING OF A CURVE TO THE RIGHT HAVING A RADIUS OF 30.00 FEET;
THENCE ALONG SAID CURVE, A DISTANCE OF 66.21 FEET, THROUGH A CENTRAL ANGLE OF 126 DEGREES 26 MINUTES 48 SECONDS TO A POINT OF COMPOUND CURVATURE WITH A CURVE CONCAVE TO THE RIGHT, HAVING A RADIUS OF 720.00 FEET;
THENCE ALONG SAID CURVE, A DISTANCE OF 258.28 FEET, THROUGH A CENTRAL ANGLE OF 20 DEGREES 33 MINUTES 12 SECONDS TO A POINT OF REVERSE CURVATURE ON THE EAST RIGHT OF WAY LINE OF 73 RD STREET, AND THE TRUE POINT OF BEGINNING.

EXCEPT ALL URANIUM, THORIUM, AND ALL OTHER MATERIALS WHICH MAY BE DETERMINED TO BE PECULIARLY ESSENTIAL TO THE PRODUCTION OF FISSIONABLE MATERIAL AS RESERVED BY THE UNITED STATES OF AMERICA IN QUIT CLAIM DEED RECORDED IN DOCKET 1185, PAGE 139.

PARCEL 2
A PERPETUAL EASEMENT FOR INGRESS AND EGRESS AS GRANTED IN INSTRUMENT RECORDED IN DOCKET 14988, PAGE 664, RECORDED IN THE OFFICE OF THE MARICOPA COUNTY, RECORDER'S OFFICE, MARICOPA COUNTY, ARIZONA.





VICINITY MAP
N.T.S.

OWNER:
AB II SDL, LLC
15029 N. THOMPSON PEAK PARKWAY
SCOTTSDALE, AZ 85260

CONTACT: DAVID PETERSON
PHONE: (602) 418-3967
EMAIL: DAVID@BRICKSTREETCOMPANIES.COM

ENGINEER:
JMC ENGINEERING, PLLC
7315 N 16TH STREET, SUITE 101
PHOENIX, AZ 85020

CONTACT: HELENE FLORENTO, P.E., C.F.M.
PHONE: (602) 374-4148
EMAIL: HFLORENTO@JMC-ENG.COM

ARCHITECT:
ROBERT BROWN ARCHITECTS
88 SOUTH SAN MARCOS PLACE
CHANDLER, AZ 85225

CONTACT: KELLY FERGUSON
EMAIL: KELLY@RBROWNARCH.COM

ADDRESS:
14805 N. 73RD STREET
SCOTTSDALE, AZ 85260

APN NUMBERS:
215-56-026C

BASIS OF BEARING:
THE MONUMENT LINE OF HELM DRIVE, USING A BEARING OF NORTH 89 DEGREES 49 MINUTES 00 SECONDS WEST, PER THE PLAT OF THUNDERBIRD INDUSTRIAL AIRPARK NO: 2, RECORDED IN BOOK 118, PAGE 10, M.C.R.

BENCHMARK:
THE BENCHMARK USED FOR THIS SURVEY IS THE SOUTH QUARTER CORNER OF SECTION 11, MONUMENTED WITH A MARICOPA COUNTY ALUMINUM CAP, HAVING AN ELEVATION OF 1428.335, NAVD88 DATUM PER THE MCDOT SURVEY DATASHEET.

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

HELENE FLORENTO, P.E., C.F.M. — 02/05/2026 DATE

KEY NOTES:
1. EXISTING TRANSFORMER TO REMAIN
2. EXISTING FIRE HYDRANT(S) TO REMAIN
3. REMOVE EXISTING WATER METER & BACKFLOW
4. RELOCATE EXISTING JUNCTION BOX OR ADJUST TO GRADE PER UTILITY PROVIDER'S DISCRETION
5. ADJUST EXISTING WATER VALVE TO GRADE
6. NEW SEWER MANHOLE
7. NEW SEWER SERVICE
8. NEW SEWER CLEANOUT
9. NEW BACKWATER VALVE
10. NEW DOMESTIC WATER METER & BACKFLOW
11. NEW DOMESTIC WATER SERVICE
12. NEW IRRIGATION METER, SERVICE & BACKFLOW
13. NEW TAPPING SLEEVE
14. CONNECT TO EXISTING FIRE SERVICE STUB
15. NEW FIRE SERVICE
16. NEW FIRE RISER WITH ATTACHED BACKFLOW
17. NEW FIRE DEPARTMENT CONNECTION (FDC)
18. NEW STREETLIGHT
19. INSTALL SIGNS AT EACH END OF THE UNDERGROUND STORAGE TANK THAT READ "NOTICE-UNDERGROUND STORMWATER STORAGE TANK." THE SIZE, COLOR, AND LOCATIONS OF SIGNS ARE SUBJECT TO CITY STAFF APPROVAL. OWNER/CONTRACTOR TO PROVIDE SIGN PACKAGE FOR CITY REVIEW.

★NOTE:
VERIFY PAD GRADE WITH FINAL BUILDING PLANS

LEGEND:

PROPERTY LINE	EXISTING WATER LINE
ROADWAY CENTERLINE	EXISTING SEWER LINE
RIGHT-OF-WAY LINE	EXISTING ELECTRIC LINE
SETBACK LINE	EXISTING CATV LINE
EASEMENT	DIRECTION OF FLOW & SLOPE
ADJACENT LOT LINE	PROPOSED PAVEMENT ELEVATION
HANDICAP PARKING	PROPOSED TOP OF CURB ELEVATION
CONCRETE	PROPOSED GUTTER ELEVATION
FH EXISTING FIRE HYDRANT	PROPOSED CONCRETE ELEVATION
WM EXISTING WATER METER	PROPOSED FLOWLINE ELEVATION
BFP EXISTING BACKFLOW ASSEMBLY	FINISH FLOOR ELEVATION
WV EXISTING WATER VALVE	GRADE BREAK
SMH EXISTING SEWER MANHOLE	PROPOSED UNDERGROUND RETENTION STORAGE TANK
LP EXISTING LIGHT POLE	PROPOSED STORM DRAIN
ET EXISTING ELECTRIC TRANSFORMER	SAWCUT LINE
EMH EXISTING ELECTRIC MANHOLE	PROPOSED ROOF DRAIN CLEANOUT
JB EXISTING JUNCTION BOX	PROPOSED DRYWELL
CATV EXISTING CATV BOX	PROPOSED CMP RISER WITH GRATE (INLET)
TR EXISTING TELEPHONE RISER	DRAINAGE AREA DELINEATION
	DRAINAGE AREA ID
	NEW ASPHALT PAVEMENT
	CROSS SECTION ID / SHEET NUMBER
	GARAGE SLOPE DIRECTION ARROW

FLOOD INSURANCE RATE MAP (FIRM) INFORMATION:

COMMUNITY NUMBER	PANEL #	PANEL DATE	SUFFIX	DATE OF FIRM (INDEX DATE)	FIRM ZONE	BASE FLOOD ELEVATION (FT) (BASE FLOOD DEPTH IN ZONE AO)
045012	1760	10/16/13	L	07/20/21	ZONE X (SHADED)	N/A

RETENTION SUMMARY TABLE (SEE COMPANION DRAINAGE REPORT)

DESCRIPTION	EVENT	Vr	Vp	EXCESS	NOTE
DRAINAGE AREA 1P	100YR-2HR	1,063 CF	1,103 CF	40 CF	TO RETENTION BASIN (RB-01P)
DRAINAGE AREA 2P	100YR-2HR	9,318 CF	9,425 CF	107 CF	TO UNDERGROUND TANK (UST-02)

SCALE: 1"= 20'
0' 10' 20' 40'

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

REVISIONS		
NO.	DESCRIPTION	DATE

73RD & HELM AIRPARK GARAGE CONDOS
14805 N. 73RD STREET, SCOTTSDALE, ARIZONA 85260
PRELIMINARY GRADING & DRAINAGE PLAN W/ UTILITIES

Registered Professional Engineer (Civil) — 68219 — HELENE T. FLORENTO — 02-05-26 — Date Signed — ARIZONA, U.S.A. — Expires: 3-31-2028

7315 N 16TH STREET
SUITE 101
PHOENIX, AZ 85020
HFLORENTO@JMC-ENG.COM

JMC ENGINEERING

DESIGNED: JMC/HTF
DRAWN: HTF

PROJECT NO. 0222
DATE: 5-FEB-2026

SHEET 1 OF 3

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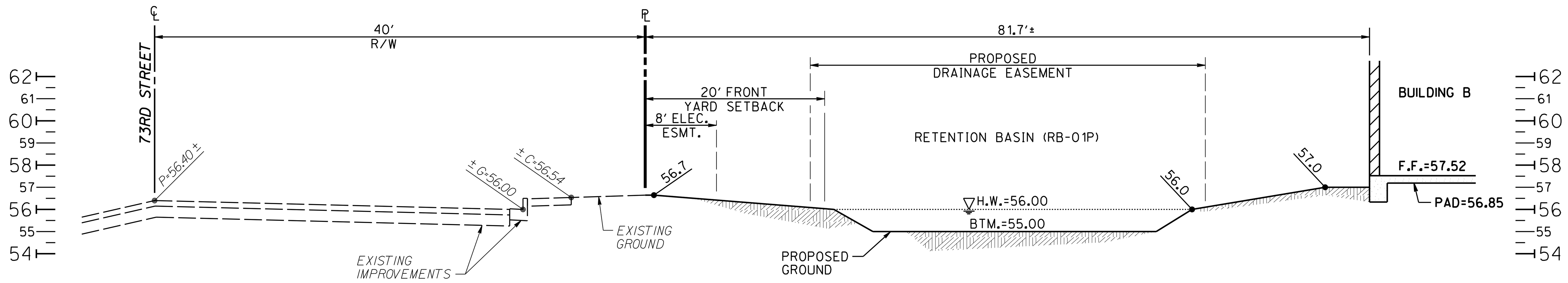
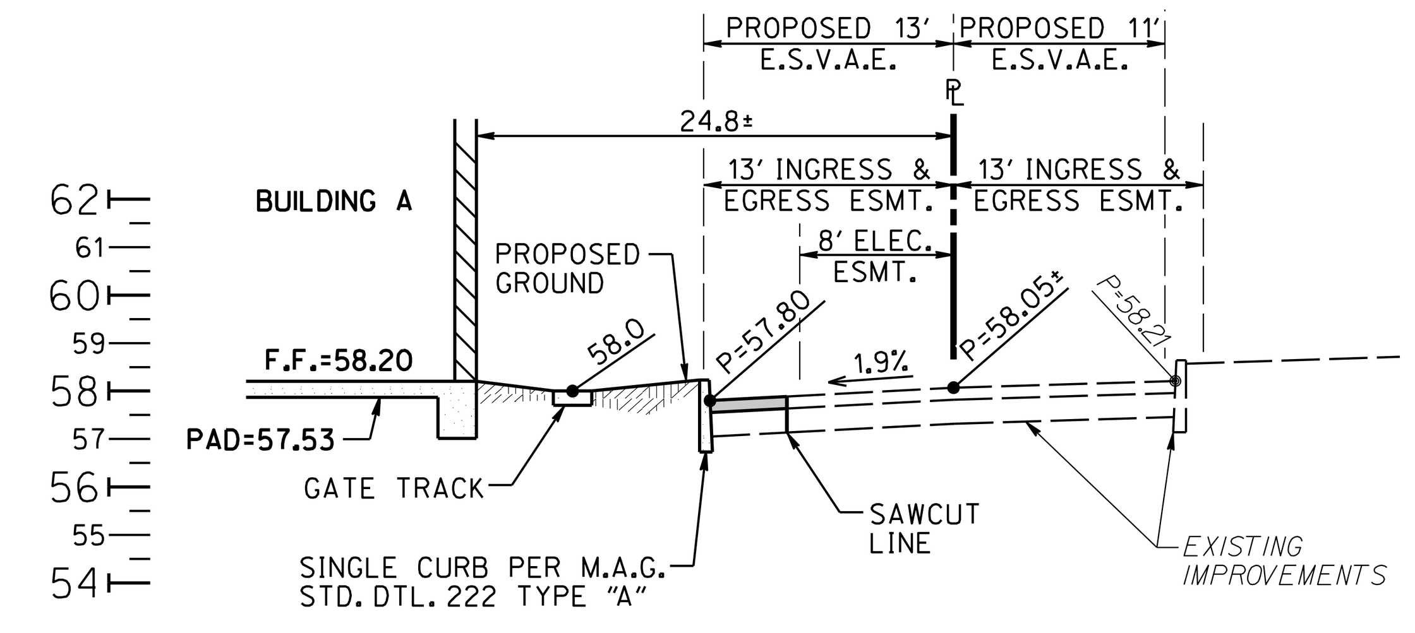
5-FEB-2026

73RD & HELM AIRPARK GARAGE CONDOS
14805 N. 73RD STREET, SCOTTSDALE, ARIZONA 85260
TYPICAL SECTIONS



A TYPICAL SECTION
N.T.S.



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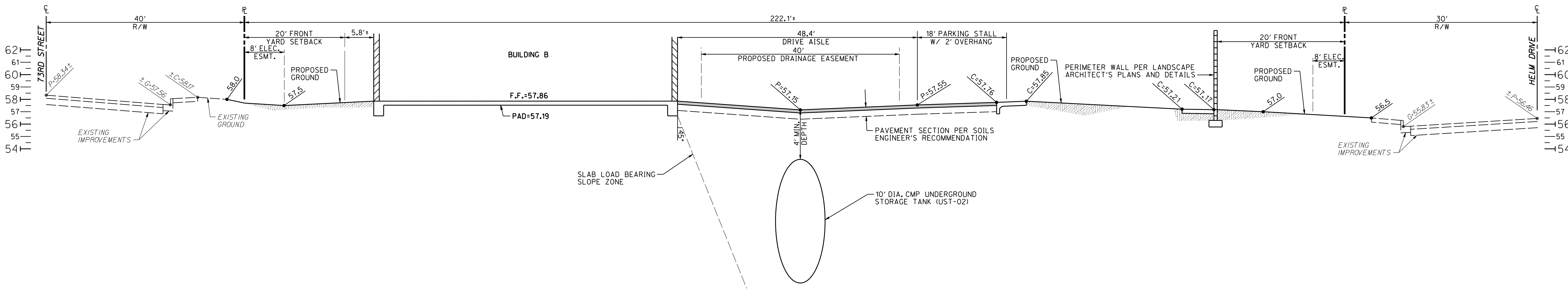
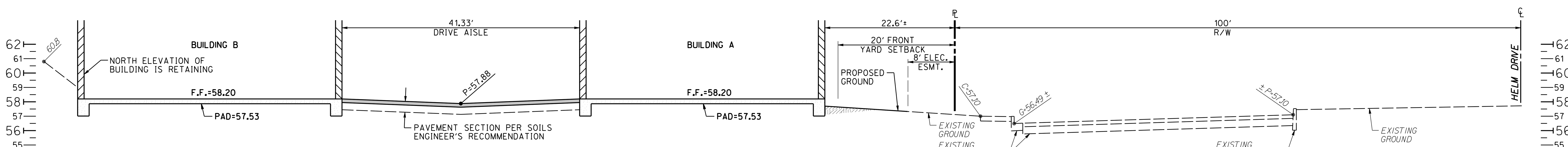
N.T.S.



C TYPICAL SECTION
N.T.S.



D TYPICAL SECTION
N.T.S.

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

REVISIONS		
NO.	DESCRIPTION	DATE

HELENE T. FLORENTO 68219 02-05-26 ARIZONA, U.S.A.
Expires: 3-31-2028

JMC ENGINEERING
7315 N 16TH STREET
SUITE 101
PHOENIX, AZ 85020
HFLORENTO@JMC-ENG.COM

DESIGNED: JMC/HTF
DRAWN: HTF
PROJECT NO: 0222
DATE: 5-FEB-2026

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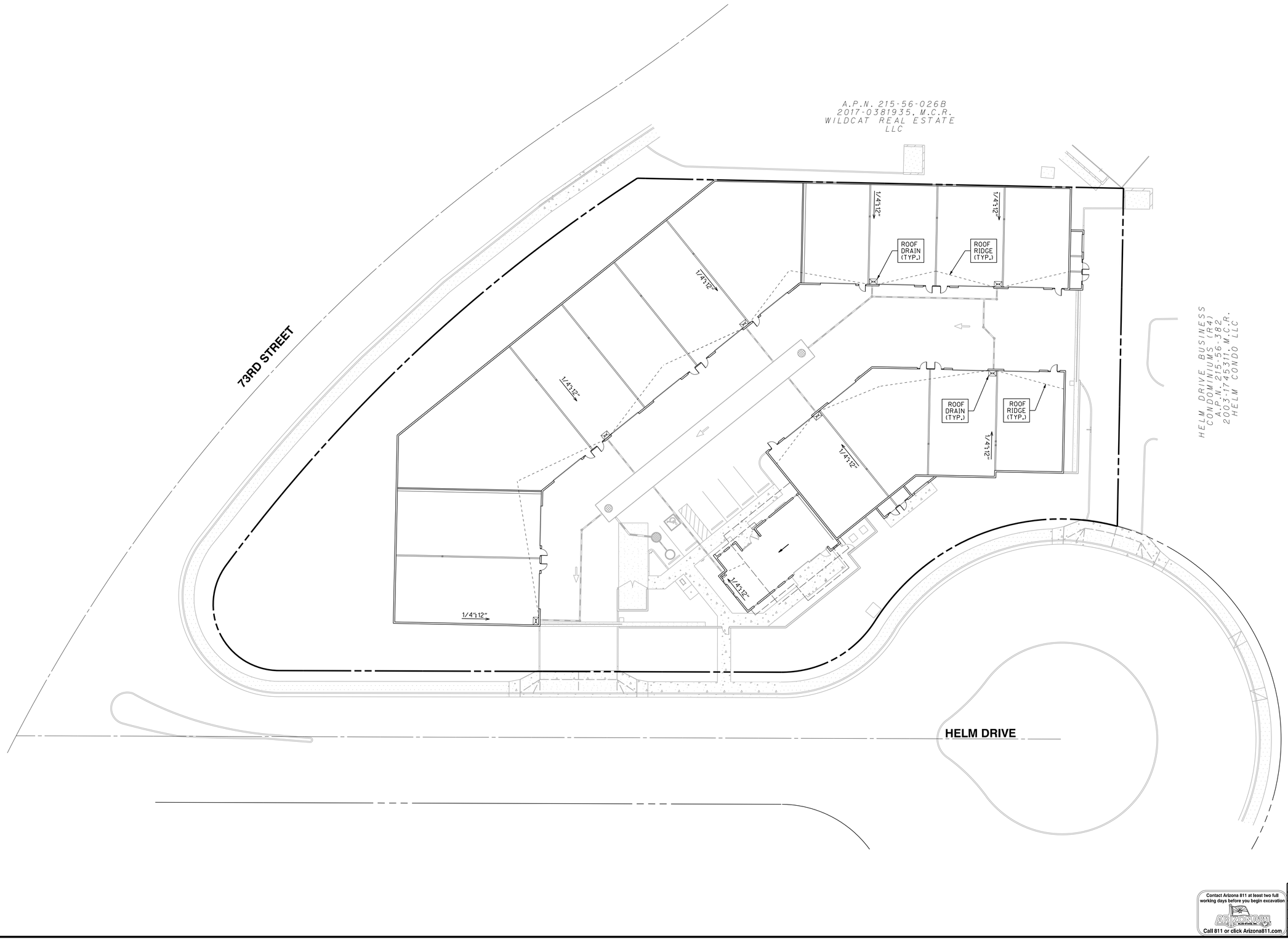
5-FEB-2026

NOTE:
THIS PLAN IS PRELIMINARY. ROOF DESIGN & SLOPES SUBJECT TO CHANGE DURING FINAL ENGINEERING/CONSTRUCTION DOCUMENT PHASE.



SCALE: 1"=20'

73RD & HELM AIRPARK GARAGE CONDOS
14805 N. 73RD STREET, SCOTTSDALE, ARIZONA 85260
ROOF SLOPE DIAGRAM

Registered Professional Engineer
6821
HELENE T. FLORENTO
02-05-26
Date Signed
ARIZONA, U.S.A.
Expires: 3-31-2028

JMC ENGINEERING
7315 N 16TH STREET
SUITE 100
PHOENIX, AZ 85020
HFLORENTO@JMC-ENG.COM

DESIGNED: JMC/HTF
DRAWN: HTF

PROJECT NO: 0222
DATE: 5-FEB-2026

SHEET 3 OF 3

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

REVISIONS		
NO.	DESCRIPTION	DATE

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