

CAMELBACK RESIDENTIAL

WATER BASIS OF DESIGN REPORT

FINAL Basis of Design Report

- APPROVED
- APPROVED AS NOTED
- REVISE AND RESUBMIT



Disclaimer: If approved; the approval is granted under the condition that the final construction documents submitted for city review will match the information herein. Any subsequent changes in the water or sewer design that materially impact design criteria or standards will require re-analysis, re-submittal, and approval of a revised basis of design report prior to the plan review submission.; this approval is not a guarantee of construction document acceptance. For questions or clarifications contact the Water Resources Planning and Engineering Department at 480-312-5685.

BY Idillon

DATE 4/25/2022

PREPARED FOR

ZT Scottsdale Owner, LLC

2001 Summit Park Drive, Suite 300
Orlando, Florida 32810

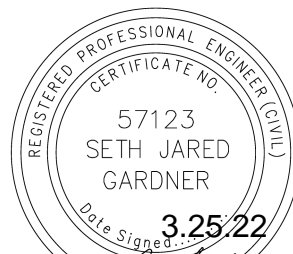
PREPARED BY

Atwell, LLC

4700 E. Southern Avenue
Mesa, AZ 85206

Address comments below and herein on the subsequent submitted improvement plans:

- 1) provide air/vac valves per City standard detail 2348 on both sides of vert. realignments. Air/vac canister to be located off of street in protected/accessible area. DS&PM 6-1.410, 6.
- 2) Address any additional comments shown on utility plan.



Seth Jared Gardner

March 2022

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1.0 INTRODUCTION

This preliminary basis of design report was completed under contract with ZT Scottsdale Owner, LLC, owner and developer of Camelback Residential. The proposed Camelback Residential project includes two mixed-use buildings, “Building A” and “Building B”. Building A consists of 362 residential dwelling units (Townhomes), a rooftop pool, 2,109 square feet of office space and 13,685 square feet of retail/restaurant space. It is unknown at this time what the ratio of retail-to-restaurant will be utilized; hence this is analyzed all as restaurant due to the higher demand and peaking factors required for this land use type. Building B consists of 170 residential dwelling units, a pool, and approximately 6,879 square feet of amenity area. Building B also contains an underground parking garage. The analysis presented in this Report encompasses both developments “Building A” and “Building B,” though they are being submitted under separate permits. The two buildings will be constructed simultaneously, and no interim conditions are anticipated or evaluated.

1.1 PROJECT LOCATION

The proposed Camelback Residential project is located approximately 600 feet to the northeast of the intersection of Scottsdale Road and Camelback Road, west of the Arizona Canal within the City of Scottsdale, Arizona. The location of the site is illustrated in project’s vicinity map Exhibit 1.

1.2 SITE ZONING

The current zoning for the site is D/RCO-2.

1.3 GENERAL PLAN

The Camelback Residential project is located within what is considered the Downtown Core Area of the City of Scottsdale General Plan and it will reflect the plan’s vision, goals, and policies.

2.0 DESIGN DOCUMENTATION

2.1 DESIGN PROCEDURES

The analysis of the proposed water system will be done in compliance with the 2018 City of Scottsdale Design Standards and Policies Manual.

The proposed water distribution system will serve the project in accordance with City of Scottsdale design standards and the ADEQ Engineering Bulletin 10.

The estimated Average Day Demand of the Camelback Residential project was determined based on the following Average Day Demand values. All of the values below include both inside use and outside use demands.

- High Density Residential = 0.27 gallons per minute per unit
- Commercial/Retail/Amenity = .00111 gallons per minute per square foot.
- Restaurant = 0.00181 gallons per square foot

The Maximum Day Demand was calculated using a factor of 2.0 times the Average Day Demand. The Peak Hour Demand was determined by multiplying the Average Day Demand by a factor of 3.5, and the restaurant Peak Factor is 6.0 times the Average Day.

2.2 SOFTWARE

Water demands were determined using a Microsoft Excel spreadsheet. Atwell created a WaterCAD™ model of the proposed water system. WaterCAD is a water distribution system modeling software created by Haestad Methods. To run WaterCAD, a user inputs the water system map, waterline sizes, and demand locations. WaterCAD connects these elements as a system and uses mathematical equations to determine flow directions, flow magnitudes and pressures for the water system modeled.

3.0 EXISTING CONDITIONS

3.1 ZONING AND LAND USE

The site is currently zoned D/RCO-2. This district is intended to provide for use of residential/commercial/office spacing within the Downtown overlay.

3.2 EXISTING TOPOGRAPHY, VEGETATION, AND LANDFORM FEATURES

Generally, the existing topography slopes in a southeasterly direction. The site in its existing condition is a cleared dirt lot that was historically occupied by the Safari Hotel and Resort. Currently, the north portion of the site is being used as an excavated borrow pit for surrounding developments.

3.3 EXISTING UTILITIES

There are two existing waterlines within Scottsdale Road adjacent to the site. There is a 16" water line (unknown material type), as well as a 6" ACP waterline as illustrated on the City of Scottsdale Quarter Section map 18-45 provided in Appendix A. There are no known existing stubs provided for the Camelback Residential site. There is an 8" water line within Coolidge Street that branches off of the 16" main in Scottsdale. This 8" water line also branches into a fire hydrant dead-end line within the private street east of the Camelback Residential site.

3.4 CERTIFIED FLOW TESTING

A fire flow tests was done for this project on two fire hydrants adjacent to the project site. The test was performed off of a 16" waterline in Scottsdale Road. The results and location of the tests are provided in this Report. The results indicate pressures greater than 72psi. As prescribed by the City of Scottsdale design manuals, the tested pressures were adjusted such that the pressures do not exceed 72psi. These reduced flows were used to set up a reservoir and pump scenario within the WaterCAD program.

4.0 PROPOSED CONDITIONS

4.1 SITE PLAN

The proposed site improvements are illustrated on Exhibit 2.

4.2 PROPOSED CONNECTIONS

New domestic water service connections are proposed for this project. Building A's connection will be located along the existing 8" DIP main within Coolidge Street. Building B's connection will tie into the proposed 8" main within the private street between Building A and B. The proposed preliminary connections to the existing system are illustrated on Exhibit 2. The service sizes will be based on the requirements provided by the project's Mechanical Engineer. Building A requires a 4" water service and meter and backflow preventer and will transition to a 6" line for the building connection. Building B will have a 3" water service, meter and backflow preventer, and will use a 4" water line to connect to the building plumbing.

Additionally, an 8" ductile iron pipe class 350 water main will need to be installed within the private street adjacent to the site to serve the needs of the project as a complete looped system. Refer to Exhibit 2 to see how the proposed water main and the existing water main connect.

4.3 WATER ZONE, FIRE FLOW, AND SYSTEM PRESSURES

The Camelback Residential development lies within the City of Scottsdale Water Zone 1A per the *2015 Water Master Plan Update* prepared by CH2M Hill. This zone serves areas with ground elevations from 1250 feet to 1330 feet. The finished floor (FF) elevations of Building A vary between 1279.00' and 1281.00', whereas Building B's FF is at 1279.90'. Building A's highest story will be 93'-2" from the Finished Floor and Building B's highest story will be 133'-2" from Finished Floor.

The static pressure modeled was based on the flow test performed. The results of the flow tests are included in the Appendix. Building B is considered a high-rise, whereas Building A is not. The building system will maintain a minimum pressure of 30 psi under fire flow conditions.

Buildings on site will be utilize fire sprinklers and will be of construction type based on the information provided by the project's architect. The *Design Standards and Policies*

Manual dictates that the minimum fire flow for multi-family residential projects is 2,000gpm for non-high rise, and 2,500gpm minimum for high-rise buildings. Based on the 2015 IFC requirements for fire flow, Table B105.1(2), each building requires 8,000 gpm at a duration of 4 hours. Accounting for the automatic sprinkler systems, a 75% reduction to this fire flow can be applied, resulting in a minimum 2,500 gpm for each building.

5.0 COMPUTATIONS

5.1 CALCULATIONS

A copy of the demand calculations spreadsheet for this report has been provided in Appendix C. The system was modeled with ductile iron pipe (DIP) with a Hazen-Williams coefficient of 130. Junctions were elevated to the existing or proposed finished ground elevation. As the proposed structures are tall, only pressures at ground level were analyzed. It is anticipated that at some level within the building booster pumps will be needed, as determined by the mechanical engineer, to maintain adequate pressures throughout.

5.2 DEMAND SUMMARY

Table E.2.1 and E2.2 summarize the water demands for Buildings A and B of the Camelback Residential project. A detailed demand table is provided in Appendix C.

TABLE E.2.1 – BUILDING A WATER DEMAND SUMMARY

Land Use	Average Day (gpm)	Max Day (gpm)	Peak Hour (gpm)
Townhomes / HD Residential	97.7	195.5	342.1
Office	2.3	4.7	8.2
Restaurant / Retail	24.8	49.5	148.6
Total	124.9	249.7	498.9

TABLE E.2.1 – BUILDING B WATER DEMAND SUMMARY

Land Use	Average Day (gpm)	Max Day (gpm)	Peak Hour (gpm)
Townhomes / HD Residential	45.9	91.8	160.7
Lobby/Spa/Amenities	7.6	15.3	26.7
Total	53.5	107.1	187.4

5.3 WATER MODELING RESULTS

Average Day, Peak Hour demand and Max Day plus Fire Flow scenarios were analyzed for the project based on current architectural and building plumbing designs. Demands above were allocated to junctions/nodes at the proposed service lines within the model. Fire flows were assigned at the junction at junction J-7, representing the existing fire hydrant to the east of Building A. It was found that this fire hydrant produced the worst-case scenario for the fire flow. Full results of the analysis are included in the Appendix.

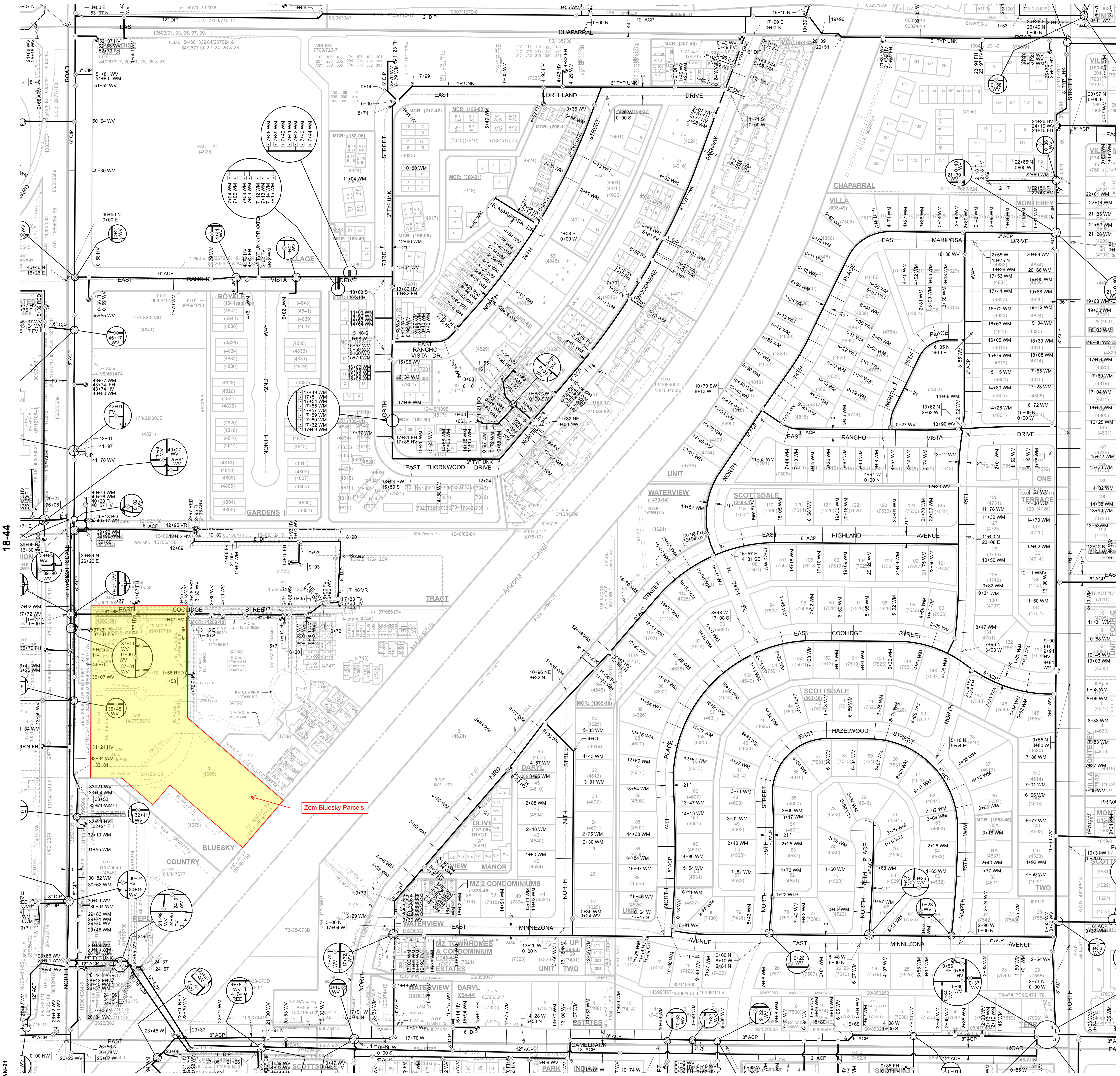
After review of these results it is concluded that the proposed 8-inch main extension will adequately supply the demand requirements of the project.

6.0 SUMMARY

The proposed Camelback Residential water system connections are illustrated on Exhibit 2, Appendix A. A new 8-inch water distribution main and two new domestic services will be installed as part of this project. Modeled pressures were derived based on a fire hydrant flow and residual test using hydrants adjacent to the site, as provided in Appendix E. The proposed water improvements will meet all pressure, velocity, and headloss requirements per the City of Scottsdale Design Standards & Policies Manual, 2018.

APPENDIX A

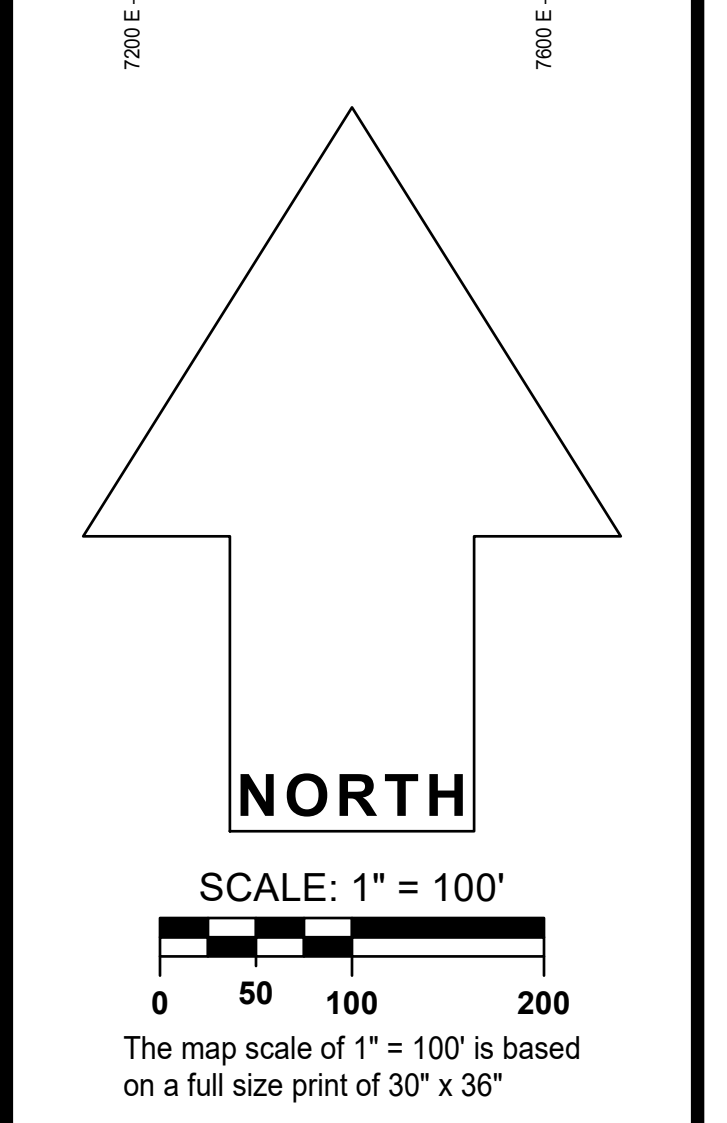
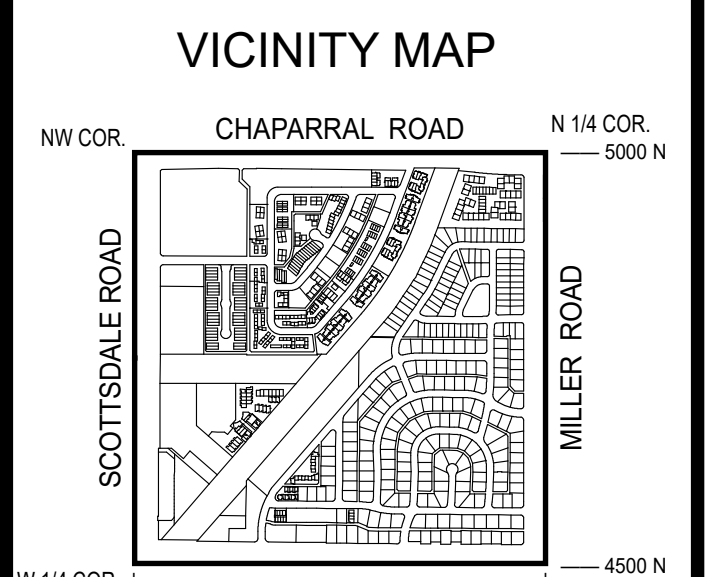
CITY OF SCOTTSDALE WATER QUARTER SECTION MAP



GENERAL NOTES:
 THIS IS A COMPUTER GENERATED DRAWING. FOR ANY REVISIONS PLEASE CONTACT THE CITY OF SCOTTSDALE GIS DEPARTMENT AT (480) 312-7792.
 THE SECTION LINE BEARING AND DISTANCES ARE BASED ON THE CITY OF SCOTTSDALE GPS SURVEY OF SEPTEMBER, 1991. BEARINGS ARE NAD 83 GRID AND DISTANCES ARE FLATTENED TO GROUND. WHERE NO CORNER WAS FOUND THE DIMENSIONS ARE GIVEN TO CALCULATED SECTION CORNERS AND ARE NOTED AS 'CALCULATED' ON THE MAP.

LEGEND:

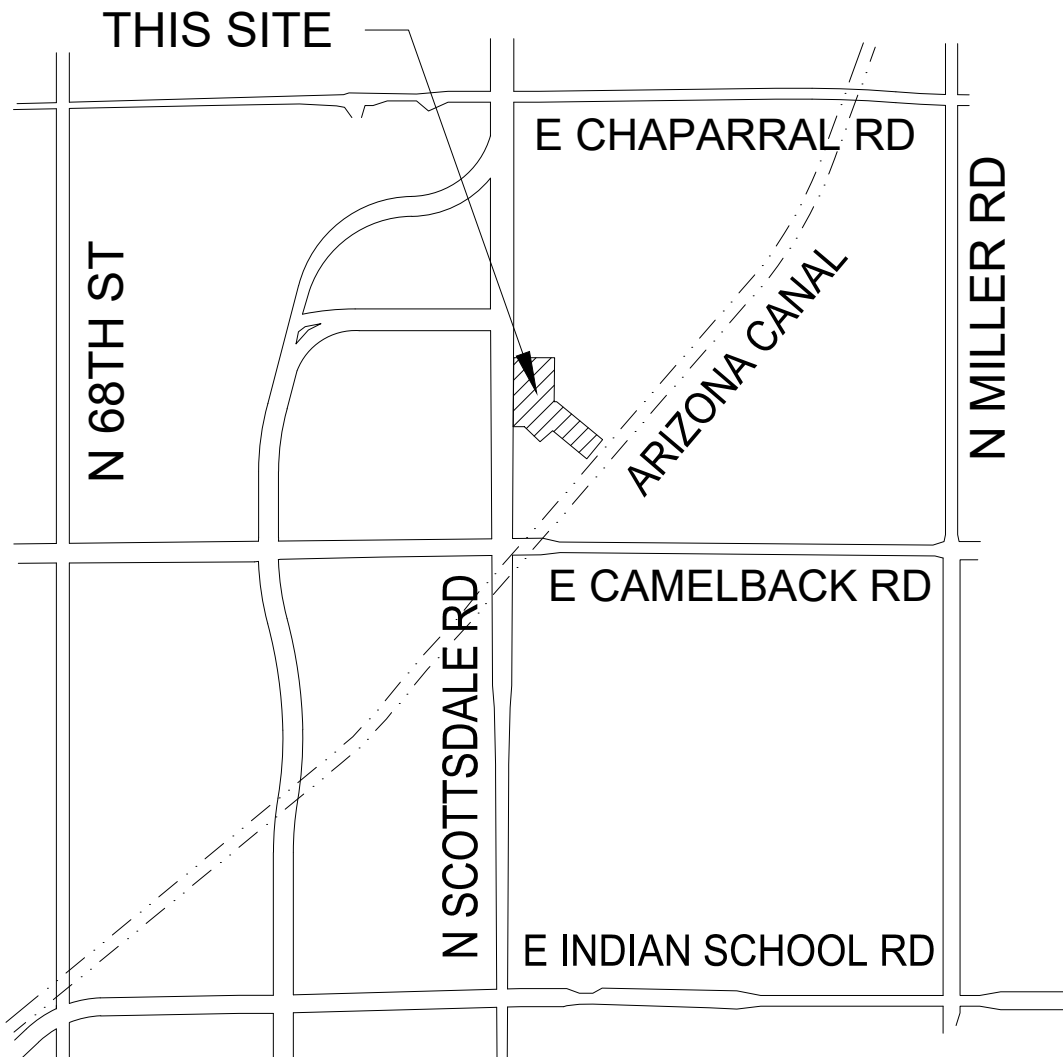
- Air Release Valve (Symbol)
- Non-potable Air Release Valve (Symbol)
- Blowoff (Symbol)
- Cap (Symbol)
- Cathodic Protection (Symbol)
- Fill Drain (Symbol)
- Fire Hydrant (Symbol)
- Non-GPS Point (Symbol)
- Pressure Reducing Valve (Symbol)
- Pump (Symbol)
- Reducer (Symbol)
- Sample Station (Symbol)
- Water Manhole (Symbol)
- Non-Potable Manhole (Symbol)
- Well (Symbol)
- Valve (Symbol)
- Non-potable Valve (Symbol)
- Vault (Symbol)
- Water Main (Symbol)
- Non-Potable Main (Symbol)
- Fire / Private Main (Symbol)
- Non-Scottsdale Main (Symbol)



WATER
 QUARTER SECTION MAP
18-45
 NW 1/4 SEC. 23 T2N R4E

NOTICE
 THIS DOCUMENT IS PROVIDED FOR GENERAL INFORMATION PURPOSES ONLY. THE CITY OF SCOTTSDALE DOES NOT WARRANT ITS ACCURACY, COMPLETENESS OR SUITABILITY FOR ANY PARTICULAR PURPOSE. IT SHOULD NOT BE RELIED UPON WITHOUT FIELD VERIFICATION.
 THE CITY OF SCOTTSDALE
 10-JAN-21

APPENDIX B
EXHIBITS



NOT FOR CONSTRUCTION
NOT TO SCALE

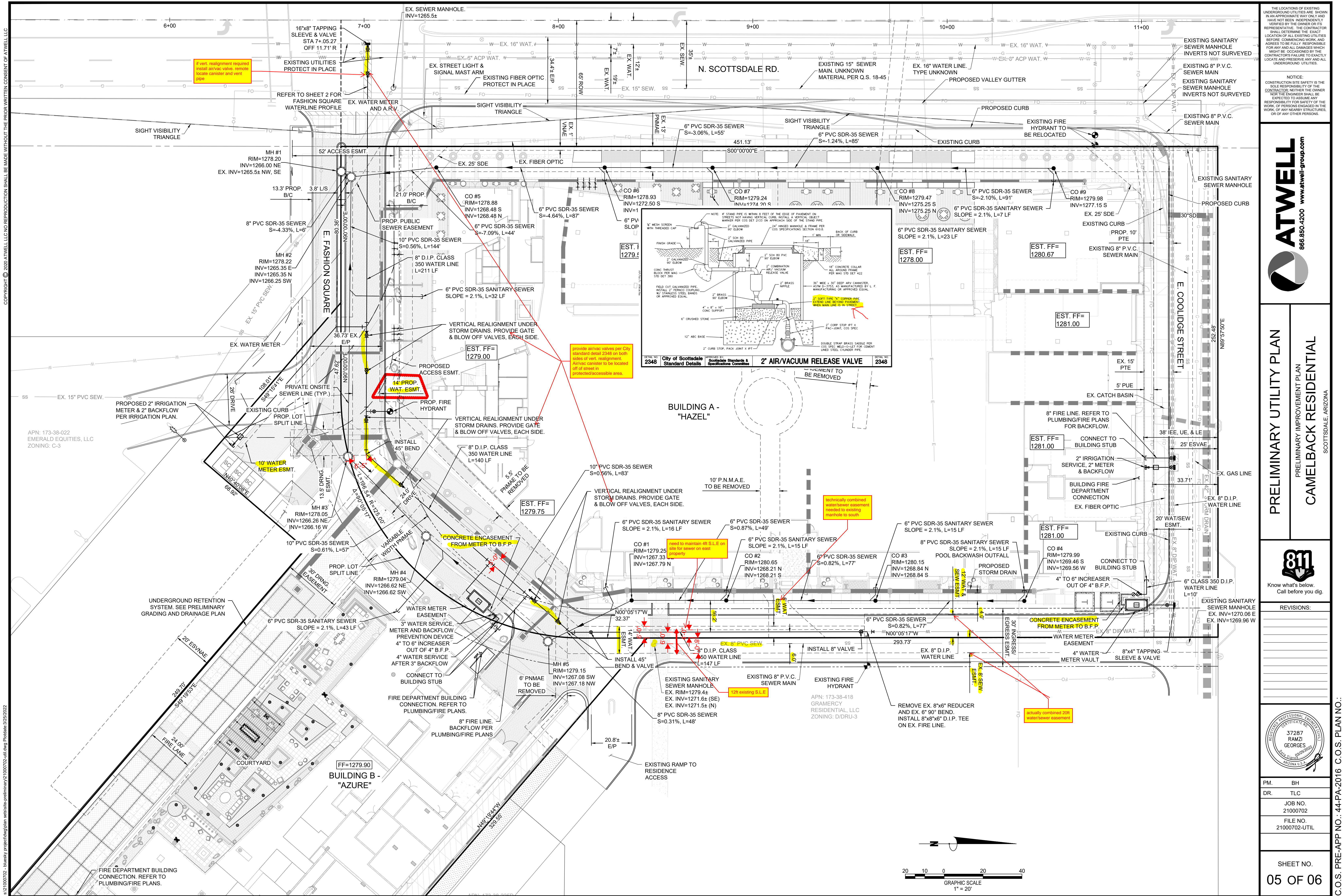


ATWELL
866.860.4200 www.atwell-group.com

4700 E. SOUTHERN AVENUE
MESA, AZ 85206
480.218.8831

EXHIBIT 1
VICINITY MAP
ZOM BLUESKY

SCOTTSDALE, AZ



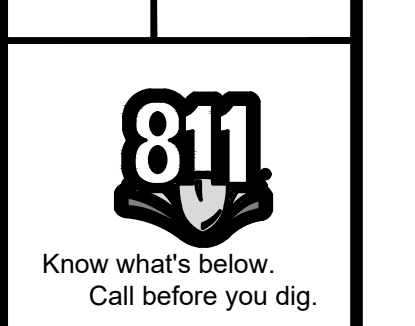
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 APN: 173-38-022 EMERALD EQUITIES, LLC ZONING: C-3
 8/12/2020 10:07:02 - business project\dwg\plan\utility-preliminary\21000702-01.dwg PlotDate: 3/25/2022

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE: CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK OF PERSONS ENGAGED IN THE WORK OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

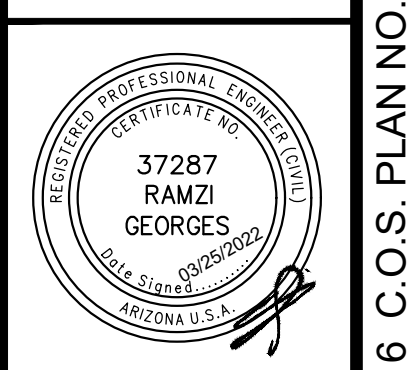


PRELIMINARY UTILITY PLAN
 PRELIMINARY IMPROVEMENT PLAN
CAMELBACK RESIDENTIAL
 SCOTTSDALE, ARIZONA



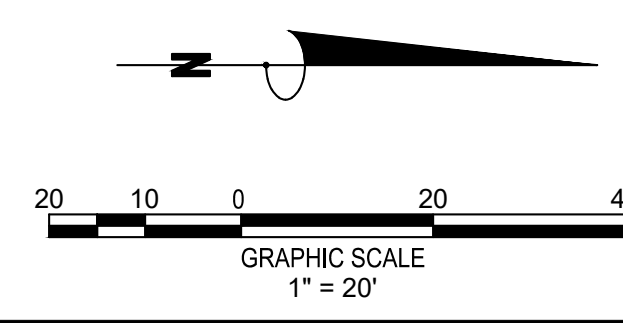
REVISIONS:

NO.	DATE	DESCRIPTION



PM.	BH
DR.	TLC
JOB NO.	21000702
FILE NO.	21000702-UTIL

SHEET NO.
05 OF 06
 C.O.S. PRE-APP NO.: 44-PA-2016 C.O.S. PLAN NO.:



APPENDIX C
WATER DEMAND TABLE

**SCOTTSDALE WATERVIEW
PROPOSED WATER DEMANDS**

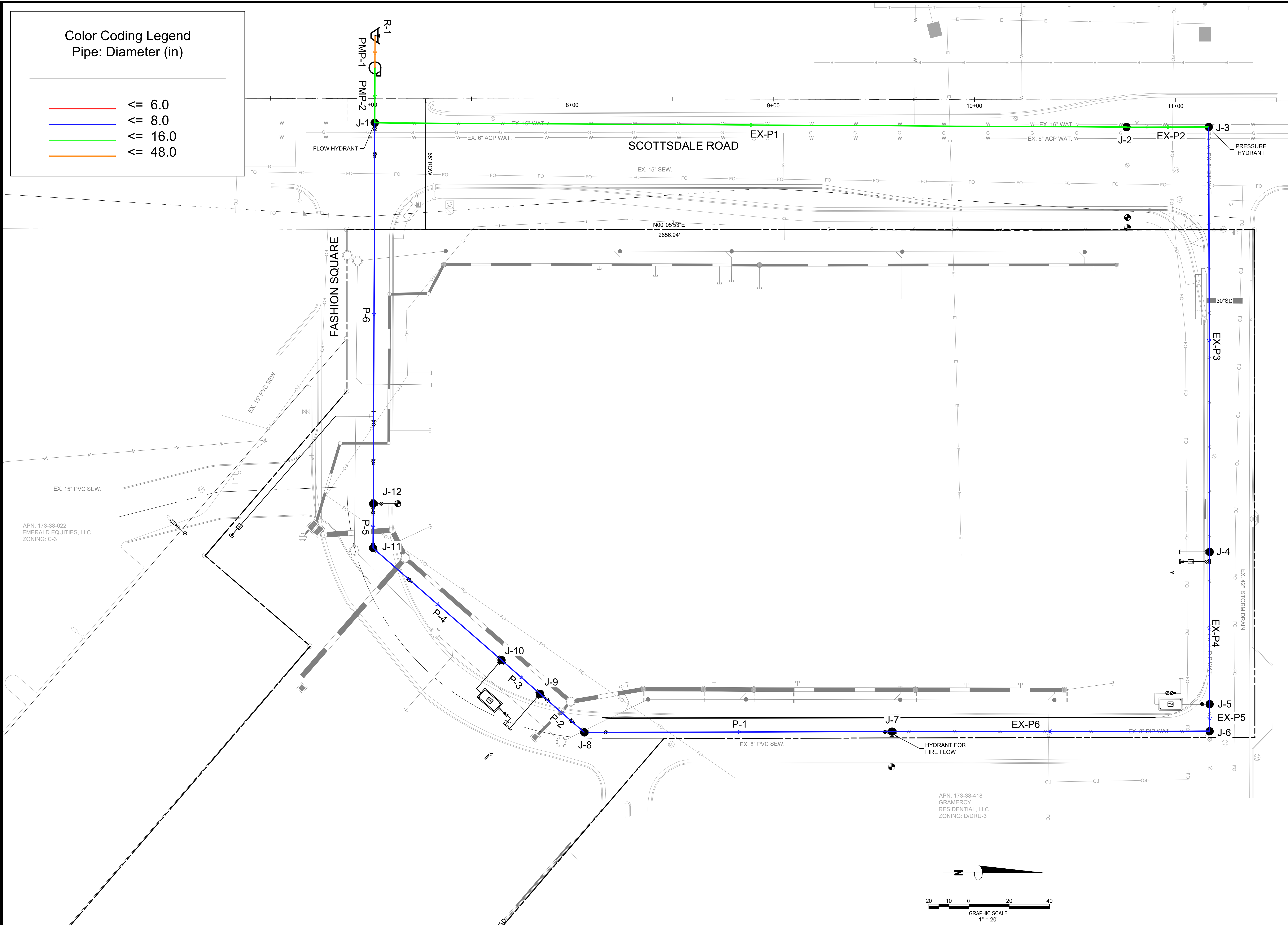
Zom Bluesky											
Proposed Water Demand Calculations											
BUILDING A											
Land Use	WaterCAD Junction	Area Sq. Ft.	Units	Average Daily Demand Per Unit (gpm)	Average Daily Demand (gpm)	Max. Day Factor	Maximum Daily Demand (gpm)	Peak Hour Factor	Peak Hour Demand (gpm)	Fire Flow (gpm)	Fire Flow Reduction (75%) (gpm)
Townhomes & HD Residential	J-22	-	362	0.27	97.7	2.0	195.5	3.5	342.1	8,000	2,500
Office	J-22	2,109		0.00111	2.3	2.0	4.7	3.5	8.2		
Retail/Restaurant	J-22	13,685		0.00181	24.8	2.0	49.5	6.0	148.6		
Total				124.9		249.7		498.9		2,500	
BUILDING B											
Land Use	WaterCAD Junction	Area Sq. Ft.	Units	Average Daily Demand Per Unit (gpm)	Average Daily Demand (gpm)	Max. Day Factor	Maximum Daily Demand (gpm)	Peak Hour Factor	Peak Hour Demand (gpm)	Fire Flow (gpm)	Fire Flow Reduction (75%) (gpm)
HD Residential	J-11		170	0.27	45.9	2.0	91.8	3.5	160.7	8,000	2,500
Lobby/Spa/Amenity Spaces	J-11	6,879		0.00111	7.6	2.0	15.3	3.5	26.7		
Total				53.5		107.1		187.4		2,500	

APPENDIX D
WATERCAD MODELING RESULTS

s:\21000702 - bluesky project\project documents\engineering-planning-power and energy\reports\water model\21000702-water model.dwg Plotdate: 3/20/2022
 COPYRIGHT © 2020 ATWELL LLC. NO REPRODUCTION SHALL BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF ATWELL LLC.

Color Coding Legend
Pipe: Diameter (in)

- ≤ 6.0
- ≤ 8.0
- ≤ 16.0
- ≤ 48.0



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WATER MODEL EXHIBIT
 CAMELBACK RESIDENTIAL
 SCOTTSDALE, ARIZONA



Know what's below.
Call before you dig.

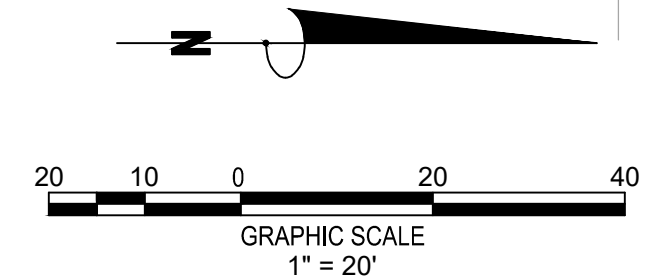
REVISIONS:

NO.	DATE	DESCRIPTION

PM.	BH
DR.	TLC
JOB NO. 21000702	
FILE NO. 21000702-Water Model	

SHEET NO.
01 OF 01

APN: 173-38-418
 GRAMERCY
 RESIDENTIAL LLC
 ZONING: D/DRU-3



C.O.S. PRE-APP NO.: 44-PA-2016 C.O.S. PLAN NO.:

Active Scenario: Average Day

FlexTable: Junction Table

ID	Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)	Notes	Unit Demand Collection <Count>	Unit Demand Collection
32	J-1	1,279.70	0.0	1,446.28	72.07	Flow Hydrant	0	<Collection: 0 items>
33	J-2	1,279.90	0.0	1,446.28	71.98		0	<Collection: 0 items>
45	J-3	1,280.20	0.0	1,446.28	71.85	Pressure Hydrant	0	<Collection: 0 items>
72	J-4	1,279.80	0.0	1,446.23	72.01		0	<Collection: 0 items>
74	J-5	1,280.00	124.9	1,446.21	71.91		3	<Collection: 3 items>
92	J-6	1,280.10	0.0	1,446.21	71.87		0	<Collection: 0 items>
35	J-7	1,280.30	0.0	1,446.22	71.78	Hydrant	0	<Collection: 0 items>
57	J-8	1,279.26	0.0	1,446.22	72.24		0	<Collection: 0 items>
114	J-9	1,279.53	0.0	1,446.22	72.12		0	<Collection: 0 items>
112	J-10	1,279.59	53.5	1,446.22	72.09		2	<Collection: 2 items>
110	J-11	1,278.67	0.0	1,446.24	72.50		0	<Collection: 0 items>
108	J-12	1,278.13	0.0	1,446.24	72.73	Hydrant	0	<Collection: 0 items>

Active Scenario: Average Day

FlexTable: Pipe Table

Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Headloss (ft)
EX-P1	374	J-1	J-2	16.0	Ductile Iron	130.0	93.3	0.15	0.000	0.00
EX-P2	41	J-2	J-3	16.0	Ductile Iron	130.0	93.3	0.15	0.000	0.00
EX-P3	211	J-3	J-4	8.0	Ductile Iron	130.0	93.3	0.60	0.000	0.05
EX-P4	76	J-5	J-4	8.0	Ductile Iron	130.0	-93.3	0.60	0.000	0.02
EX-P5	13	J-5	J-6	8.0	Ductile Iron	130.0	-31.6	0.20	0.000	0.00
EX-P6	158	J-6	J-7	8.0	Ductile Iron	130.0	-31.6	0.20	0.000	0.00
P-1	153	J-7	J-8	8.0	Ductile Iron	130.0	-31.6	0.20	0.000	0.00
P-2	29	J-9	J-8	8.0	Ductile Iron	130.0	31.6	0.20	0.000	0.00
P-3	25	J-10	J-9	8.0	Ductile Iron	130.0	31.6	0.20	0.000	0.00
P-4	85	J-11	J-10	8.0	Ductile Iron	130.0	85.1	0.54	0.000	0.02
P-5	22	J-12	J-11	8.0	Ductile Iron	130.0	85.1	0.54	0.000	0.00
P-6	189	J-1	J-12	8.0	Ductile Iron	130.0	85.1	0.54	0.000	0.04
PMP-1	16	R-1	PMP-1	48.0	Ductile Iron	130.0	178.4	0.03	0.000	0.00
PMP-2	27	PMP-1	J-1	16.0	Ductile Iron	130.0	178.4	0.28	0.000	0.00

Active Scenario: Average Day

FlexTable: Pump Table

ID	Label	Elevation (ft)	Pump Definition	Pump Status	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Flow (Total) (gpm)	Pump Head (ft)
31	PMP-1	1,279.70	2021-4-29 AZ Flow Test Calibrated	On	1,279.70	1,446.28	178.4	166.58

Active Scenario: Peak Hour

FlexTable: Junction Table

ID	Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)	Notes	Unit Demand Collection <Count>	Unit Demand Collection
32	J-1	1,279.70	0.0	1,442.48	70.43	Flow Hydrant	0	<Collection: 0 items>
33	J-2	1,279.90	0.0	1,442.44	70.33		0	<Collection: 0 items>
45	J-3	1,280.20	0.0	1,442.44	70.19	Pressure Hydrant	0	<Collection: 0 items>
72	J-4	1,279.80	0.0	1,441.85	70.11		0	<Collection: 0 items>
74	J-5	1,280.00	498.9	1,441.64	69.93		3	<Collection: 3 items>
92	J-6	1,280.10	0.0	1,441.65	69.89		0	<Collection: 0 items>
35	J-7	1,280.30	0.0	1,441.72	69.84	Hydrant	0	<Collection: 0 items>
57	J-8	1,279.26	0.0	1,441.79	70.32		0	<Collection: 0 items>
114	J-9	1,279.53	0.0	1,441.80	70.21		0	<Collection: 0 items>
112	J-10	1,279.59	187.4	1,441.81	70.18		2	<Collection: 2 items>
110	J-11	1,278.67	0.0	1,442.00	70.66		0	<Collection: 0 items>
108	J-12	1,278.13	0.0	1,442.05	70.92	Hydrant	0	<Collection: 0 items>

Active Scenario: Peak Hour

FlexTable: Pipe Table

Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Headloss (ft)
EX-P1	374	J-1	J-2	16.0	Ductile Iron	130.0	362.8	0.58	0.000	0.04
EX-P2	41	J-2	J-3	16.0	Ductile Iron	130.0	362.8	0.58	0.000	0.00
EX-P3	211	J-3	J-4	8.0	Ductile Iron	130.0	362.8	2.32	0.003	0.59
EX-P4	76	J-5	J-4	8.0	Ductile Iron	130.0	-362.8	2.32	0.003	0.21
EX-P5	13	J-5	J-6	8.0	Ductile Iron	130.0	-136.1	0.87	0.000	0.01
EX-P6	158	J-6	J-7	8.0	Ductile Iron	130.0	-136.1	0.87	0.000	0.07
P-1	153	J-7	J-8	8.0	Ductile Iron	130.0	-136.1	0.87	0.000	0.07
P-2	29	J-9	J-8	8.0	Ductile Iron	130.0	136.1	0.87	0.000	0.01
P-3	25	J-10	J-9	8.0	Ductile Iron	130.0	136.1	0.87	0.000	0.01
P-4	85	J-11	J-10	8.0	Ductile Iron	130.0	323.5	2.06	0.002	0.19
P-5	22	J-12	J-11	8.0	Ductile Iron	130.0	323.5	2.06	0.002	0.05
P-6	189	J-1	J-12	8.0	Ductile Iron	130.0	323.5	2.06	0.002	0.43
PMP-1	16	R-1	PMP-1	48.0	Ductile Iron	130.0	686.3	0.12	0.000	0.00
PMP-2	27	PMP-1	J-1	16.0	Ductile Iron	130.0	686.3	1.10	0.000	0.01

Active Scenario: Peak Hour

FlexTable: Pump Table

ID	Label	Elevation (ft)	Pump Definition	Pump Status	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Flow (Total) (gpm)	Pump Head (ft)
31	PMP-1	1,279.70	2021-4-29 AZ Flow Test Calibrated	On	1,279.70	1,442.49	686.3	162.79

Active Scenario: Max Day + FF (single node)

FlexTable: Junction Table

ID	Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)	Notes	Unit Demand Collection <Count>	Unit Demand Collection
32	J-1	1,279.70	0.0	1,384.47	45.33	Flow Hydrant	0	<Collection: 0 items>
33	J-2	1,279.90	0.0	1,383.97	45.03		0	<Collection: 0 items>
45	J-3	1,280.20	0.0	1,383.91	44.87	Pressure Hydrant	0	<Collection: 0 items>
72	J-4	1,279.80	0.0	1,375.64	41.47		0	<Collection: 0 items>
74	J-5	1,280.00	249.7	1,372.68	40.10		3	<Collection: 3 items>
92	J-6	1,280.10	0.0	1,372.31	39.89		0	<Collection: 0 items>
35	J-7	1,280.30	2,500.0	1,367.88	37.89	Hydrant	1	<Collection: 1 items>
57	J-8	1,279.26	0.0	1,372.05	40.14		0	<Collection: 0 items>
114	J-9	1,279.53	107.1	1,372.84	40.37		2	<Collection: 2 items>
112	J-10	1,279.59	107.1	1,373.65	40.69		2	<Collection: 2 items>
110	J-11	1,278.67	0.0	1,376.74	42.43		0	<Collection: 0 items>
108	J-12	1,278.13	0.0	1,377.55	43.01	Hydrant	0	<Collection: 0 items>

Active Scenario: Max Day + FF (single node)

FlexTable: Pipe Table

Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Headloss (ft)
EX-P1	374	J-1	J-2	16.0	Ductile Iron	130.0	1,509.5	2.41	0.001	0.50
EX-P2	41	J-2	J-3	16.0	Ductile Iron	130.0	1,509.5	2.41	0.001	0.05
EX-P3	211	J-3	J-4	8.0	Ductile Iron	130.0	1,509.5	9.63	0.039	8.27
EX-P4	76	J-5	J-4	8.0	Ductile Iron	130.0	-1,509.5	9.63	0.039	2.96
EX-P5	13	J-5	J-6	8.0	Ductile Iron	130.0	1,259.8	8.04	0.028	0.38
EX-P6	158	J-6	J-7	8.0	Ductile Iron	130.0	1,259.8	8.04	0.028	4.42
P-1	153	J-7	J-8	8.0	Ductile Iron	130.0	-1,240.2	7.92	0.027	4.16
P-2	29	J-9	J-8	8.0	Ductile Iron	130.0	1,240.2	7.92	0.027	0.79
P-3	25	J-10	J-9	8.0	Ductile Iron	130.0	1,347.3	8.60	0.032	0.81
P-4	85	J-11	J-10	8.0	Ductile Iron	130.0	1,454.4	9.28	0.037	3.10
P-5	22	J-12	J-11	8.0	Ductile Iron	130.0	1,454.4	9.28	0.037	0.80
P-6	189	J-1	J-12	8.0	Ductile Iron	130.0	1,454.4	9.28	0.037	6.92
PMP-1	16	R-1	PMP-1	48.0	Ductile Iron	130.0	2,963.8	0.53	0.000	0.00
PMP-2	27	PMP-1	J-1	16.0	Ductile Iron	130.0	2,963.8	4.73	0.005	0.13

Active Scenario: Max Day + FF (single node)

FlexTable: Pump Table

ID	Label	Elevation (ft)	Pump Definition	Pump Status	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Flow (Total) (gpm)	Pump Head (ft)
31	PMP-1	1,279.70	2021-4-29 AZ Flow Test Calibrated	On	1,279.70	1,384.60	2,963.8	104.90

APPENDIX E
FIRE FLOW TEST RESULTS

Arizona Flow Testing LLC

HYDRANT FLOW TEST REPORT

Project Name: Zom Azure and Hazel
Project Address: 4605 North Scottsdale Road, Scottsdale, Arizona 85251
Arizona Flow Testing Project No.: 21219
Client Project No.: Not Provided
Flow Test Permit No.: C65119
Date and time flow test conducted: April 29, 2021 at 8:15 AM
Data is current and reliable until: October 29, 2021
Conducted by: Floyd Vaughan – Arizona Flow Testing, LLC (480-250-8154)
Witnessed by: Chris Mendez –City of Scottsdale-Inspector (602-9028-9046)

Raw Test Data

Static Pressure: **100.0 PSI**
(Measured in pounds per square inch)

Residual Pressure: **88.0 PSI**
(Measured in pounds per square inch)

Pitot Pressure: **26.0 PSI**
(Measured in pounds per square inch)

Diffuser Orifice Diameter: 4 Inch Hose Monster
(Measured in inches)

Coefficient of Diffuser: 0.7875

Flowing GPM: **1,917 GPM**
(Measured in gallons per minute)

GPM @ 20 PSI: **5,340 GPM**

Data with 28 PSI Safety Factor

Static Pressure: **72.0 PSI**
(Measured in pounds per square inch)

Residual Pressure: **60.0 PSI**
(Measured in pounds per square inch)

Distance between hydrants: Approx. 260 Feet

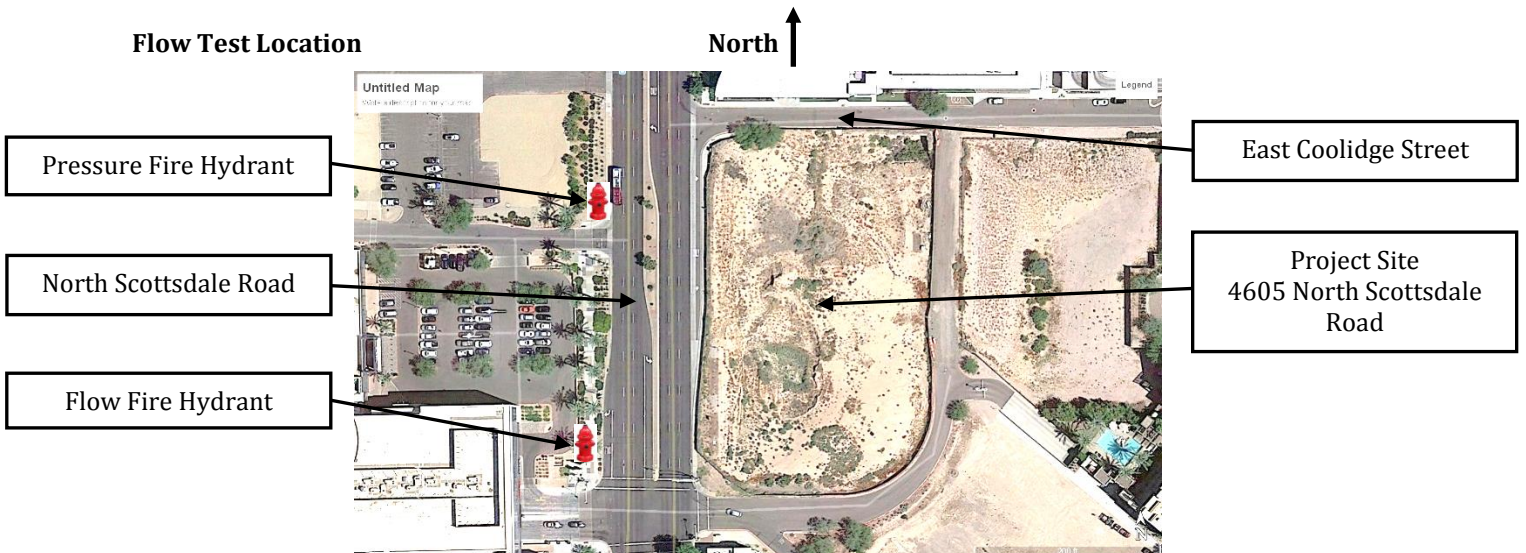
Main size: Not Provided

Flowing GPM: **1,917 GPM**

GPM @ 20 PSI: **4,232 GPM**

Scottsdale requires a maximum Static Pressure of 72 PSI for AFES Design.

Flow Test Location



Active Scenario: Max Day + FF (single node)
Pump Definition Detailed Report: 2021-4-29 AZ Flow Test Calibrated

