



KLAND CIVIL ENGINEERS

Preliminary Water Basis of Design Report Scottsdale and McDowell

7047 E. McDowell Road, Scottsdale, AZ 85257

#K17127

CASE No. 6-2N-2018

Prepared by:

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Prepared for:

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PRELIMINARY Basis of Design Report

- ACCEPTED
- ACCEPTED AS NOTED
- REVISE AND RESUBMIT



Disclaimer: If accepted; the preliminary approval is granted under the condition that a final basis of design report will also be submitted for city review and approval (typically during the DR or PP case). The final report shall incorporate further water or sewer design and analysis requirements as defined in the city design standards and policy manual and address those items noted in the preliminary review comments (both separate and included herein). The final report shall be submitted and approved prior to the plan review submission.

For questions or clarifications contact the Water Resources Planning and Engineering Department at 480-312-5685.

BY Idillon DATE 11/8/2018

Address comments throughout for DR case submittal(s).

Comment highlights:

- 1) update water demand calculations per Chapter 6 2018 DS&PM gpm values and restaurant peaking factor
- 2) Modeling scenarios shall be completed and results presented per 2018 DS&PM
- 3) Pavers in public water line easement will require an indemnity agreement with the City/Water Resources.
- 4) water meter sizing shall be determined per method in 2018 DS&PM.

Submitted to:

City of Scottsdale
7447 E. Indian School Road
Scottsdale, Arizona 85251



Revised on September 28, 2018
Revised on August 21, 2018
April 3, 2018

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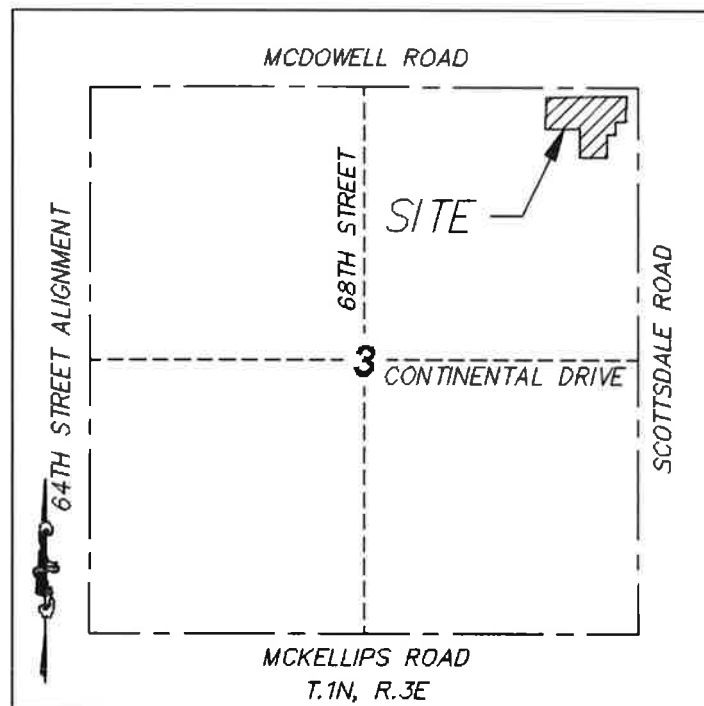
Appendix A-1 Water Calculations
Appendix A-2 Water and Sewer Plans



Revised on September 28, 2018
Revised on August 21, 2018
April 3, 2018

1. Introduction

This site is located at the southwest corner of Scottsdale Road and McDowell Road in Scottsdale, Arizona. The project is within a portion of the northeast $\frac{1}{4}$ of Section 3, Township 1 North, Range 3 East of the Gila and Salt River Base and Meridian in Maricopa County, Arizona which is currently fully developed retail with surface parking, landscape and hardscape. The site is bounded on the south and west by existing commercial and residential developments, on the north, by McDowell Road, and on the east, by Scottsdale Road. The proposed site will consist of a multi-family and commercial development on approximately 5.55 net acres. The multi-family development is 274 units in 3 carriage buildings (single apartment above garage) and single podium style apartment building over ground level parking. A podium style apartment building consist of multiple levels of apartments over a parking garage and an amenity exists in the center. The commercial development is comprised of five retail/restaurant buildings, a grocery store and a 116-room hotel.



VICINITY MAP

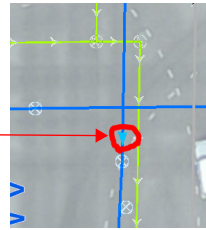
N.T.S.

With respect to the finish floor elevations (FFE), the highest FFE for the apartments is 42'-2" at the 4th floor and for the hotel is currently at 47'-0" at the 5th floor of the hotel above the ground floor.

The site is located within COS Q.S. 12-44 which is the City of Scottsdale water and sewer service area. There is an existing 8-inch water line on the west side of Scottsdale Road and an existing 12-inch water line on the south side of McDowell Road. The site currently has three water services on McDowell Road and three water services on Scottsdale Road (Please see Appendix C for meter sizes). Some of these existing services will likely be used for landscape and the unused ones will need to be removed. There is also an existing 6-inch fire line service on McDowell Road that will be removed with this development.

2. Water System

Remove reducer and connect to 12"



A new 12-inch water main will be installed in Scottsdale Road from the intersection of McDowell Road, south to the south property line of this development. The new 12-inch water main will connect

to the existing 8-inch water main in Scottsdale Road at the intersection of McDowell Road and at the southern property limits. The final location of the new 12-inch water main will be determine during the Design Review submittal.

Full 12" connection at SkySong Blvd to be reinstated also (currently reduces to 8" to connect to Scottsdale Rd line). Other hydrant and meter connection along Scottsdale Rd will also need reinstatement. New 12" should connect to 12" that goes east on Enterprise Dr.

The retail and multi-family sites will be serviced with a new 8-inch public water main looping through the site in the access drive. The new 8-inch public water will be contained in a 20-foot public water easement. The 8-inch public water main will connect to the new 12-inch water main in Scottsdale Road and twice to the 12-inch public water main in McDowell Road. Domestic water services, landscape water services, fire sprinkler services and fire hydrants will be provided from the proposed 8-inch public water main. The existing water meter sizes have been shown on the attached Preliminary Water and Sewer Plan. The existing water services will be removed if they are not utilized for landscape purposes. Any existing water service on Scottsdale Road that will be utilized will be reconnected to the proposed 12-inch water main. The existing 6-inch fire line on McDowell Road will also be removed. Fire hydrant coverage is provided by proposed onsite fire hydrants connected to the proposed 8-inch public water main.

Determine per DS&PM 2018 criteria using updated demand values and peaking factors and include in revised DR case BOD. Refer to additional comments in Appendix A-1 calc table.

We anticipate that the multi-family development will be service by two 3-inch domestic water meters. For the commercial development we anticipate that the Hotel will be service by a 3-inch domestic water meter and the retail/restaurants will each have a 2-inch domestic water meter. Water meter and service sizing will be done by the Plumbing Engineer at the time of final design.

We have also estimated the water demand for the site using The City of Scottsdale Design Standards & Policies Manual. The average daily demand was estimated at 112 gpm. The peak daily demand was calculated by increasing the average daily demand by a factor of 2.0, which is a total of 224 gpm. The peak hour demand was calculated by increasing the average daily demand by a factor of 3.5, which is a total of 392 gpm. The hydraulic capacity analyses based on the demand flow is submitted along with final design package.

With respect to fire flow demand, the most demanding water is the hotel with 71,265 sf and construction type III-B (please see Appendix A-1 for the detailed calculations). Per the 2012 International Fire Code, Appendix B, Section B105.2, the minimum fire flow is 1,500 gpm with the allowable 75% reduction. Water Demand Calculations are provided in Appendix A-1 and Appendix A-3 for the Water and Sewer Plans.

3. References

1. City of Scottsdale Design Standards & Policies Manual, 2018.
2. 2012 International Fire Code, Appendix B, Fire-Flow Requirements for Buildings

Verify with fire department, update hydraulic model as applicable

Update demands per 2018 DS&PM Ch6 figure 6-1.2 "gpm values" found in section 6-1.202, refer to additional comments in Appendix A-1 calc table

APPENDIX A-1

Water Calculations

Water Demand by Type

Number of Apartment Units:	274 at 227.6 gpd/unit
Number of Hotel Rooms:	116 at 446.3 gpd/room
Area of Restaurant:	17,880 sf at 1.3 gpd/sf
Area of Retail:	29,760 sf at 0.8 gpd/sf

Average Day Demand

Apartments:	$274 \times 227.6 = 62,362.4$ gpd
Hotel:	$116 \times 446.3 = 51,770.8$ gpd
Restaurant:	$17,880 \times 1.3 = 23,244$ gpd
Retail:	$29,760 \times 0.8 = 23,808$ gpd
Total:	161,185 gpd (111.94 gpm)

Maximum Day Demand

Maximum daily peaking factor:	2.0
Total:	$2.0 \times 161,185$ gpd = 322,370 gpd (223.90 gpm)

Peak Hour Demand

Peak hour demand factor:	3.5
Total:	$3.5 \times 161,185$ gpd = 564,148 gpd (391.77 gpm)

The plumbing engineer will size the water meters to meet IPC fixture unit demands at the time of construction document preparation. In addition, a separate landscape meter will be installed for landscape needs.

Not calculated correctly, correct for DR case per 2018 DS&PM gpm values, refer to following page

2018 DS&PM 6-1.202

AVERAGE DAY WATER DEMANDS ⁽¹⁾							
IN GALLONS PER DAY (GPD) ⁽²⁾				IN GALLONS PER MINUTE (GPM) ⁽²⁾⁽³⁾			
Land Use	Inside Use	Outside Use	Total Use	Inside Use	Outside Use	Total Use	Units
Residential Demand per Dwelling Unit							
< 2 dwelling unit per acre (DU/ac)	208.9	276.7	485.6	0.30	0.39	0.69	per unit
2 – 2.9 DU/ac	193.7	276.7	470.4	0.27	0.39	0.66	per unit
3 – 7.9 DU/ac	175.9	72.3	248.2	0.25	0.11	0.36	per unit
8 – 11.9 DU/ac	155.3	72.3	227.6	0.22	0.11	0.33	per unit
12 – 22 DU/ac	155.3	72.3	227.6	0.22	0.11	0.33	per unit
High Density Condominium (condo)	155.3	30	185.3	0.22	0.05	0.27	per unit
Resort Hotel (includes site amenities)	401.7	44.6	446.3	0.56	0.07	0.63	per room
Service and Employment							
Restaurant	1.2	0.1	1.3	1.67E-03	1.39E-04	1.81E-03	per square foot (sq.ft.)
Commercial/Retail	0.7	0.1	0.8	9.73E-04	1.39E-04	1.11E-03	per sq.ft.
Commercial High Rise	0.5	0.1	0.6	6.95E-04	1.39E-04	8.34E-04	per sq.ft.

AVERAGE DAY WATER DEMANDS ⁽¹⁾							
IN GALLONS PER DAY (GPD) ⁽²⁾				IN GALLONS PER MINUTE (GPM) ⁽²⁾⁽³⁾			
Office	0.5	0.1	0.6	6.95E-04	1.39E-04	8.34E-04	per sq.ft.
Institutional	670	670	1340	0.94	0.94	1.88	per acre
Industrial	873	154	1027	1.22	0.22	1.44	per acre
Research and Development	1092	192	1284	1.52	0.27	1.79	per acre
Special Use Areas							
Natural Area Open Space	0	0	0	0.0	0.0	0.0	per acre
Developed Open Space – Parks	0	1786	1786	0.0	2.49	2.49	per acre
Developed Open Space – Golf Course	0	4285	4285	0.0	5.96	5.96	per acre
Notes: (1) These values shall not be used directly for service line or water meter sizing. (2) Gallon per day values are provided for reference only. The instantaneous gallon per minute flow rates presented are intended for use in the required hydraulic modeling scenarios. The gpm values assume a 12-hour active water use period per 24-hour day. In large or specialty developments or master plans the hydraulic analysis criteria and parameters should be discussed with the Water Resources Department. Seasonal peaking should also be considered. Upon review, the Water Resources Department reserves the right to designate flows to be used in hydraulic modeling scenarios that may be different from those presented here. (3) The hydraulic modeling peaking factors used in select modeling scenarios are to be applied to the gpm values shown here. Max day and peak hour peaking factors can be found in Section 6-1.404.							

FIGURE 6-1.2 AVERAGE DAY WATER DEMANDS

2018 DS&PM 6-1.404

use peaking factor of 6 for restaurants

- B. Select model scenario flows and their respective peaking factors are as follows:
1. Maximum day: Defined as 2 times the average day total use flow as determined per Figure 6-1.2 (use gpm value).
 2. Peak hour: Defined as 3.5 times the average day total use as determined per Figure 6-1.2 (use gpm value).
 3. **Note:** These peaking factors shall be appropriately increased for restaurants and high-demand water users, or as designated by the Water Resources Department after review.

FIRE FLOW DEMAND - For Retail

Hotel Building – 5 Story

Area = 71,265 sf, Construction Type = III-B, Required Fire Flow = 5,750 gpm

Grocery Building – 1 Story

Area = 21,840 sf, Construction Type = V-B, Required Fire Flow = 4,000 gpm

Restaurant Building – 1 Story

Area = 4,000 sf, Construction Type = V-B, Required Fire Flow = 1,750 gpm

Retail/Restaurant Building – 1 Story

Area = 5,880 sf, Construction Type = V-B, Required Fire Flow = 2,000 gpm

FIRE FLOW DEMAND - For Multi-Family

Building 1 (Carriage Units) – 2 Story

Area = 4,060 sf, Construction Type = V-B, Required Fire Flow = 1,750 gpm

Building 2 (Carriage Units) – 2 Story

Area = 4,144 sf, Construction Type = V-B, Required Fire Flow = 1,750 gpm

Building 4 (Garage for Apartments) – 1 Story

Area = 112,887 sf, Construction Type = I-A, Required Fire Flow = 3,750 gpm

Building 5 – 4 Story

Area = 57,955 sf, Construction Type = V-A, Required Fire Flow = 4,250 gpm

Building 6 – 4 Story

Area = 91,833 sf, Construction Type = V-A, Required Fire Flow = 5,500 gpm

Building 7 – 4 Story

Area = 93,799 sf, Construction Type = V-A, Required Fire Flow = 5,500 gpm

Building 8 – 4 Story

Area = 54,688 sf, Construction Type = V-A, Required Fire Flow = 4,250 gpm

Per 2012 International Fire Code, Appendix B, Section B105.2 a 75% reduction in the fire flow can be approved if an approved automatic sprinkler system is installed. The resulting fire flow shall not be less than the required minimum of 1,500 gpm. All buildings in this development will be provided with an automatic fire sprinkler system. The largest fire flow required is 5,750 gpm for

the Hotel. Based on the 75% fire flow reduction the fire flow would be 1437.5 gpm. Therefore, the minimum 1,500 gpm fire flow is required.

Confirm with fire department

To examine the existing fire system, a flow-pressure fire hydrant test was conducted by EJ Flow Tests LCC on the existing fire hydrant in E McDowell Road. According to the raw flow test results, the static pressures was 86.0 with a residual pressure of 78.0 PSI flowing 2,252 GPM. The results from the fire flow test were put into the Anvil Fire – Flow Test Graph to determine the residual pressure at the fire flow demand. The Anvil Fire - Flow Test Graph provides a $N^{1.85}$ Logarithmic Graph based on NFPA 291 recommendations. Based on the Anvil Fire - Flow Test Graph a fire flow

demand of 1500 gpm results in a residual pressure of 82 psi. See attached fire flow test result and Anvil Fire – Flow Test Graph included in this report. The resulting 82 psi was then converted to head (ft), see attached for conversion. This equates to a pressure head of 189 ft. To model the system Bentley WaterCAD V8 XM Edition was used. The proposed system was modeled using a reservoir with the head elevation applied at the connections to the existing public water main. All minor friction losses due to fittings were included in the analysis. Per modelling results, the proposed system has the required capacity to service the site with a demand fire flow of 1500 gpm. Please see the following documents for the detailed test results and model.

A static fixed level should not be used for every modeling scenario. This HGL is unique to 1,500 gpm demand. Unless you want the most conservative HGL possible for all scenarios?? Refer to DS&PM 2018 6-1.202 section G. Revise in DR case BOD submittal.

No results presented. What is pressure at highest finished floor level during peak hour flow???

For DR case, present results for each modeling scenario described in DS&PM 2018 Chapter 6 section 6-1.202.

This pressure cannot be used directly for modeling, Adjustments must be made. Refer to 2018 DS&PM 6-1.405, Section B. Revise in DR case BOD submittal.



Flow Test Summary

Project Name: EJFT 18172
Project Address: 7115 E McDowell Rd, Scottsdale, AZ 85257
Date of Flow Test: 2018-07-18
Time of Flow Test: 7:58 AM
Data Reliable Until: 2019-01-18
Conducted By: Austin Gourley & Cesar Reyna (EJ Flow Tests) 602.999.7637
Witnessed By: Brian Dick (City of Scottsdale) 602.228.2187
City Forces Contacted: City of Scottsdale (602.228.2187)
Permit Number: C55856

Note Scottsdale requires a max static pressure of 72 psi for safety factor

Raw Flow Test Data

Static Pressure: 86.0 PSI
Residual Pressure: 78.0 PSI
Flowing GPM: 2,252
GPM @ 20 PSI: 7,038

Data with a 14 PSI Safety Factor

Static Pressure: 72.0 PSI
Residual Pressure: 64.0 PSI
Flowing GPM: 2,252
GPM @ 20 PSI: 6,188

Hydrant F₁

Pitot Pressure (1): 45 PSI
Coefficient of Discharge (1): 0.9
Hydrant Orifice Diameter (1): 2.5 inches
Pitot Pressure (2): 45 PSI
Coefficient of Discharge (2): 0.9
Hydrant Orifice Diameter (2): 2.5 inches



 Static-Residual Hydrant

 Flow Hydrant

Distance Between F₁ and R
170 ft (measured linearly)

Static-Residual Elevation
1237 ft (above sea level)

Flow Hydrant (F₁) Elevation
1238 ft (above sea level)

Elevation & distance values are approximate

EJ Flow Tests, LLC

21505 North 78th Ave. | Suite 130 | Peoria, Arizona 85382 | (602) 999-7637 | www.ejengineering.com
John L. Echeverri | NICET Level IV 078493 SME | C-16 FP Contractor ROC 271705 AZ | NFPA CFPS 1915
www.flowtestsummary.com

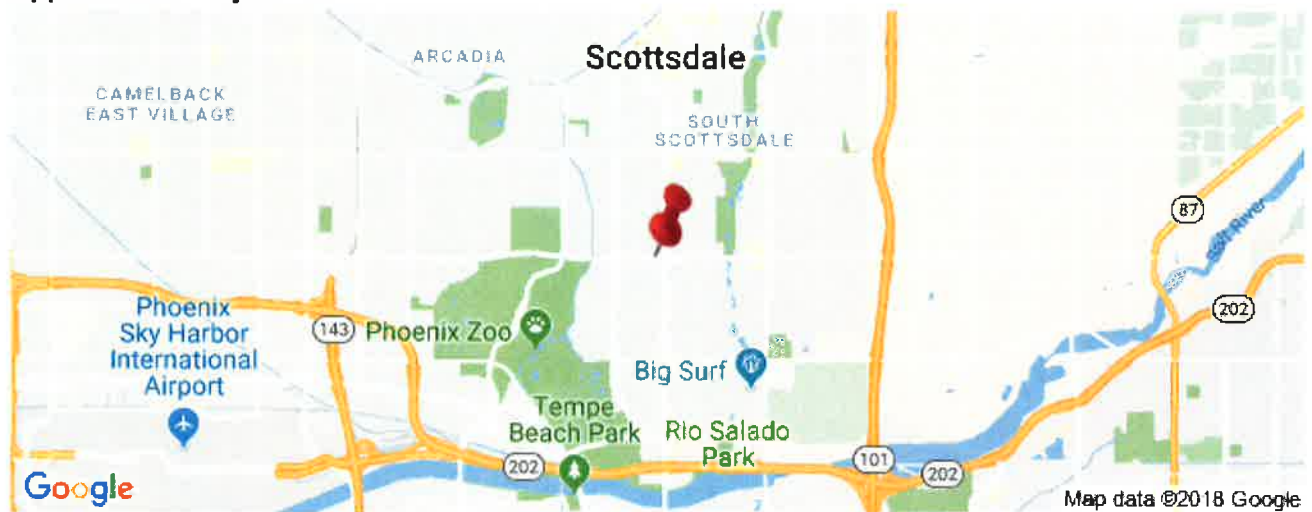
Static-Residual Hydrant



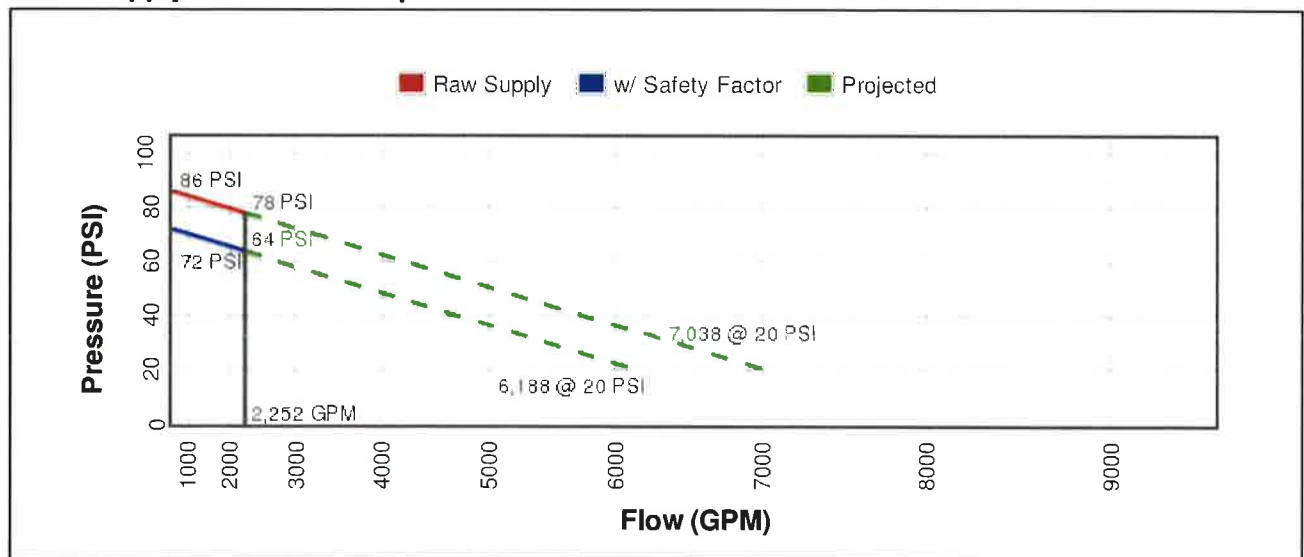
Flow Hydrant (only hydrant F1 shown for clarity)



Approximate Project Site



Water Supply Curve $N^{1.85}$ Graph



- [PACKAGED ENCLOSURES](#)
- [PUMPS](#)
- [APPS](#)
- [BLOG](#)
- [CONTACT](#)



Logarithmic Graph of Water Supply

Summary: This app provides a $N^{1.85}$ logarithmic graph based on NFPA 291 recommendations. We also offer a blank PDF logarithmic flow test sheet.

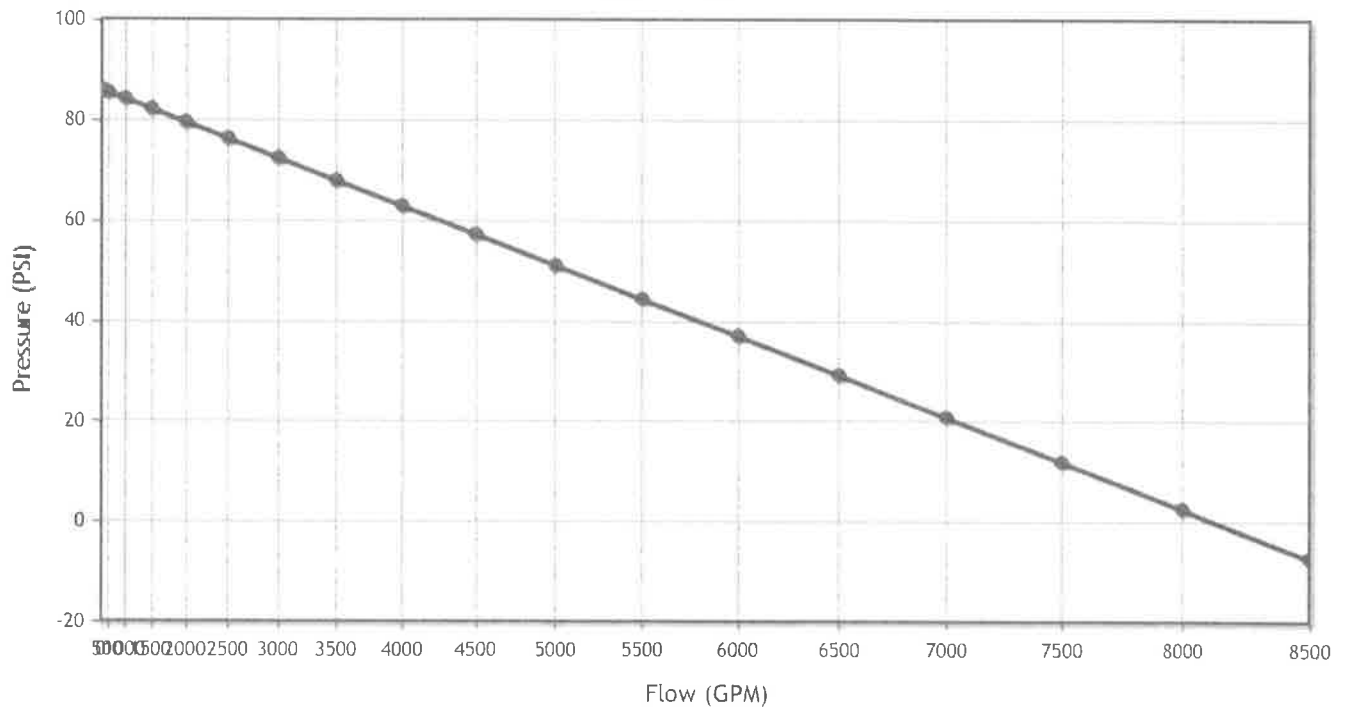
Graph Points

86	Static Pressure
78	Residual Pressure
2252	Residual Flow

Data Points

Flow	Pressure
<input type="text" value="1500"/>	<input type="text" value="82.228"/>

Flow Test



Reservoir - Pressure Conversion

12" Water in McDowell Road

Residual Pressure = * 82 psi

$$H = \frac{P_d}{\gamma}$$

P_d = Static Pressure (psi)

γ = Specific Weight lb/ft³

$$H = \frac{(82)(144 \text{ in}^2/\text{ft}^2)}{62.4 \text{ lb/ft}^3}$$

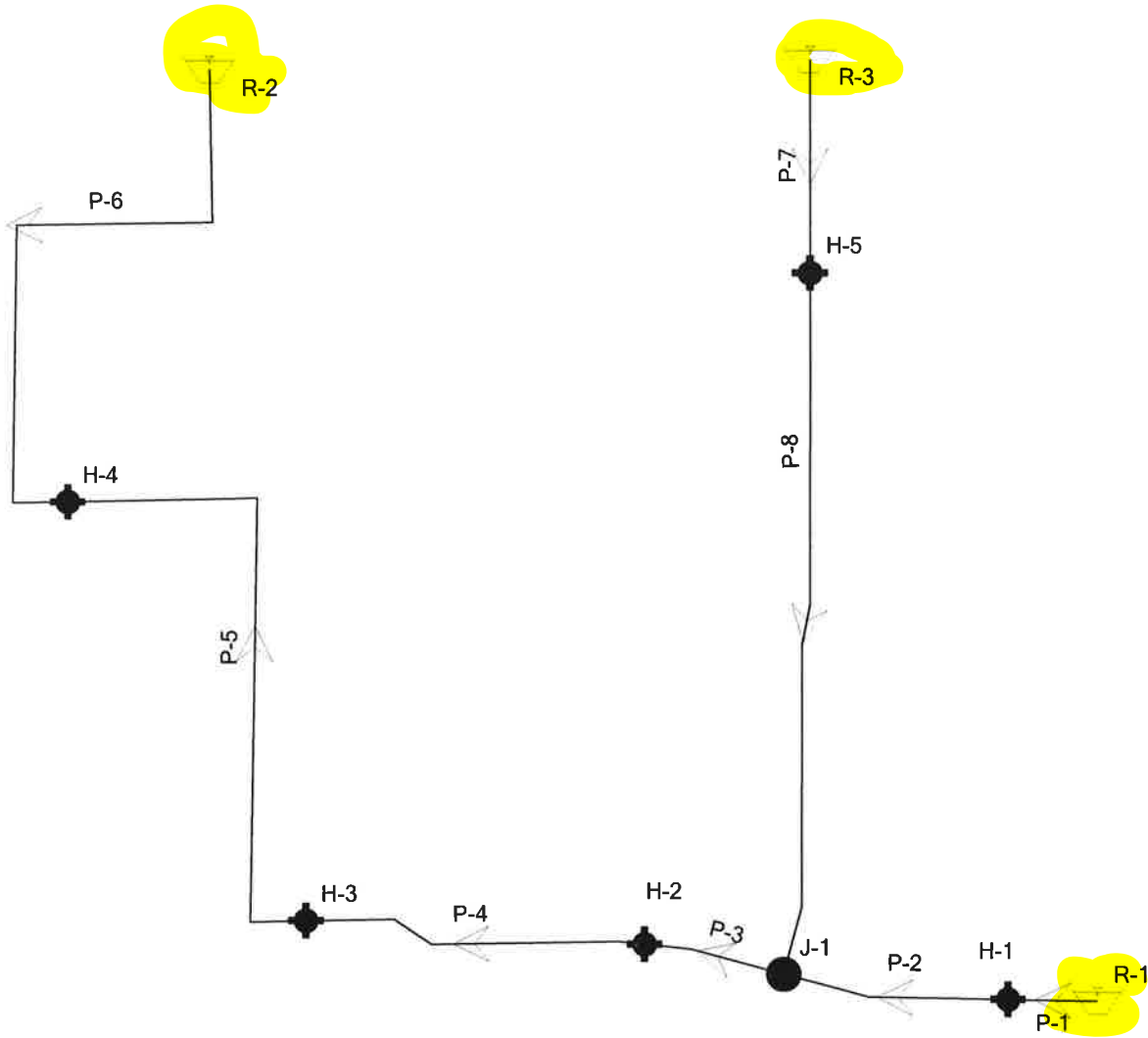
$$H = 189 \text{ ft}$$

* Residual pressure is based on flow test in Appendix A for a demand of 1500 gpm.

For DR case, present results for each modeling scenario described in DS&PM 2018 Chapter 6 section 6-1.202.

Scenario: Base

Provide reference points in this network map. Where is Scottsdale Road, Development, new lines, existing lines, etc??



FlexTable: Reservoir Table (broadstone fire flow model.wtg)

Current Time: 0.000 hours

Label	Elevation (ft)	Flow (Out net) (gpm)	Hydraulic Grade (ft)
R-1	223.00	474	223.00
R-2	223.00	758	223.00
R-3	223.00	267	223.00

FlexTable: Pipe Table (broadstone fire flow model.wtg)

Current Time: 0.000 hours

Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen- Williams C	Flow (gpm)	Velocity (ft/s)
P-1	61	R-1	H-1	8.0	DIP	130.0	474	3.03
P-2	155	H-1	J-1	8.0	DIP	130.0	474	3.03
P-3	97	J-1	H-2	8.0	DIP	130.0	742	4.73
P-4	234	H-2	H-3	8.0	DIP	130.0	742	4.73
P-5	454	H-3	H-4	8.0	DIP	130.0	242	1.54
P-6	463	H-4	R-2	8.0	DIP	130.0	-758	4.84
P-7	145	R-3	H-5	8.0	DIP	130.0	267	1.71
P-8	478	H-5	J-1	8.0	DIP	130.0	267	1.71

FlexTable: Junction Table (broadstone fire flow model.wtg)

Current Time: 0.000 hours

Label	Elevation (ft)	Hydraulic Grade (ft)	Pressure (psi)
J-1	30.20	222.01	83.0

FlexTable: Hydrant Table (broadstone fire flow model.wtg)

Current Time: 0.000 hours

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
H-4	34.30	1,000	217.94	79.5
H-3	33.00	500	218.53	80.3
H-2	31.00	0	220.99	82.2
H-5	32.00	0	222.77	82.5
H-1	30.00	0	222.72	83.4

Fire flow must be applied to a max of two hydrant nodes. These must be the worst-case hydraulic nodes to confirm minimum pressure requirement. Concurrent pressure at highest finished floor must be checked/satisfied.

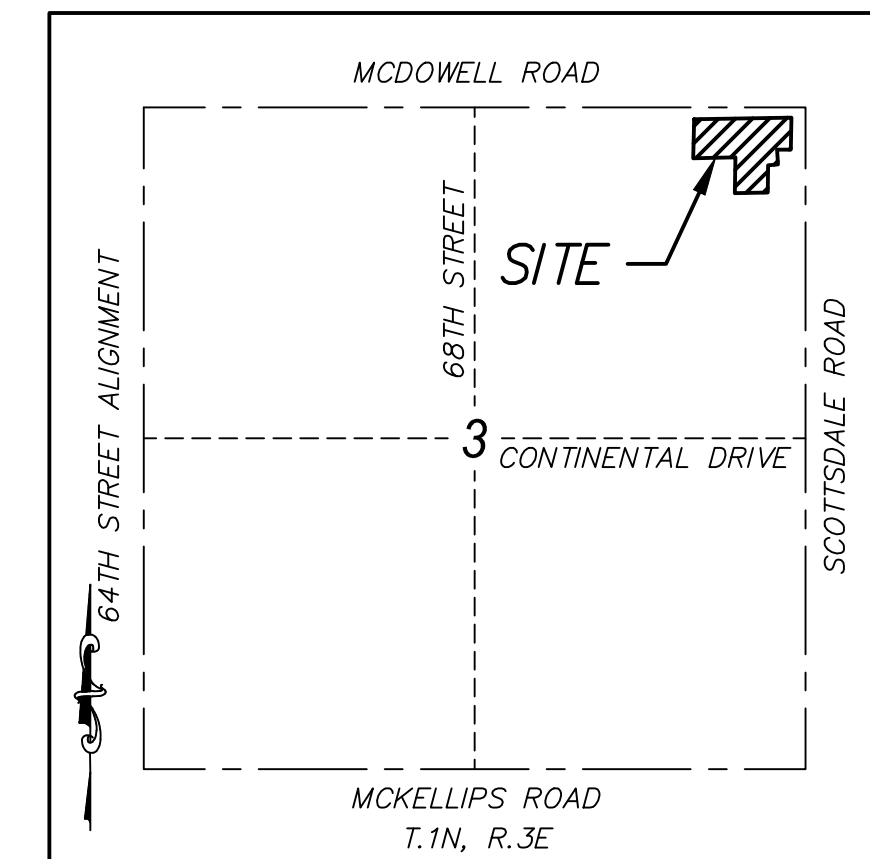
APPENDIX A-2
Water and Sewer Plans

PRELIMINARY WATER AND SEWER PLAN

FOR

SCOTTSDALE RD AND MCDOWELL

A PORTION OF THE NORTHEAST QUARTER OF SECTION 3, TOWNSHIP 1 NORTH, RANGE 3 EAST OF THE GILA AND SALT RIVER BASE AND MERIDIAN, MARICOPA COUNTY, ARIZONA.



VICINITY MAP
N.T.S.

ENGINEER

KLAND CIVIL ENGINEERS
7227 N. 16TH ST., STE 217
PHOENIX, AZ 85020
PH: (480) 344-0480
CONTACT: LESLIE KLAND, PE

DEVELOPER

PAPAGO MARKETPLACE, LLC
AN ARIZONA LIMITED LIABILITY COMPANY
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SCOTTSDALE, AZ 85257
PH: (602) 821-4552
CONTACT: LEE MASHBURN

ARCHITECT

NELSEN PARTNERS ARCHITECTS & PLANNERS
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SCOTTSDALE, AZ 85254
PH: (480) 949-6800
CONTACT: MICHAEL SAADY

ORB
2944 N. 44TH ST., STE 101
PHOENIX, AZ 85018
PH: (602) 957-4530
CONTACT: JUAN ASTIAZARAN

FLOOD ZONE

ACCORDING TO THE FLOOD INSURANCE RATE MAP #04013C2235L, DATED OCTOBER 16, 2013, THIS PROPERTY IS LOCATED IN FLOOD ZONE "X" (SHADED).

BASIS OF BEARING

THE EAST LINE OF THE NORTHEAST QUARTER OF SECTION 3, TOWNSHIP 1 NORTH, RANGE 4 EAST, USING A BEARING OF SOUTH 00 DEGREES 48 MINUTES 46 SECONDS WEST.

BENCHMARK

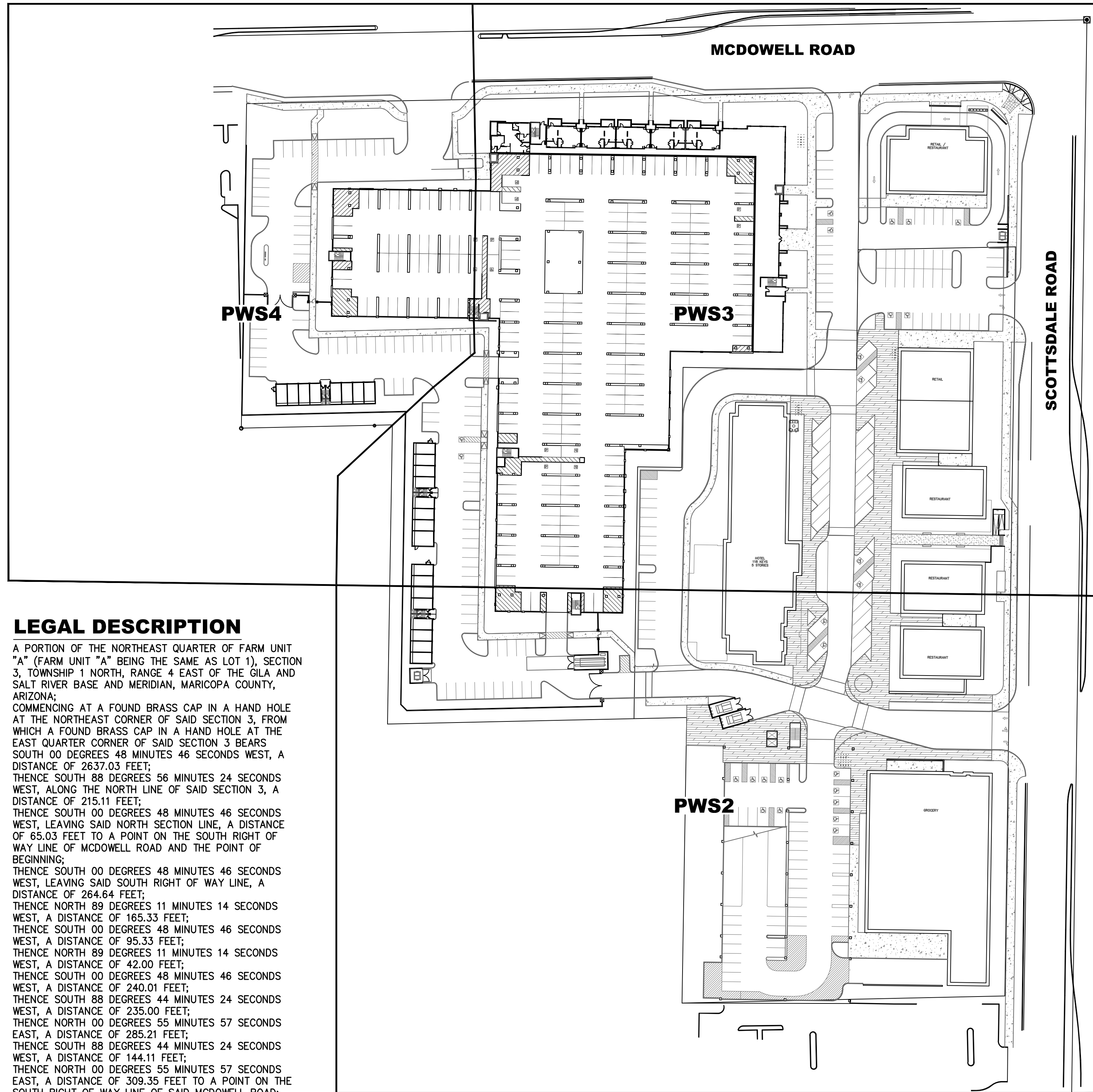
CITY OF SCOTTSDALE BRASS CAP IN HANDHOLE LOCATED AT THE INTERSECTION OF 68TH STREET AND MCDOWELL ROAD (NORTHERLY OF TWO MONUMENTS).
ELEVATION=1254.158' (NAVD 88, CITY OF SCOTTSDALE DATUM)

AREA

479,296 SQ.FT. OR 11.003 ACRES, MORE OR LESS.

ADDRESS

7047 E. MCDOWELL RD.
SCOTTSDALE, AZ 85257



KEYMAP

N.T.S.

LEGAL DESCRIPTION

A PORTION OF THE NORTHEAST QUARTER OF FARM UNIT "A" (FARM UNIT "A" BEING THE SAME AS LOT 1), SECTION 3, TOWNSHIP 1 NORTH, RANGE 4 EAST OF THE GILA AND SALT RIVER BASE AND MERIDIAN, MARICOPA COUNTY, ARIZONA;
COMMENCING AT A FOUND BRASS CAP IN A HAND HOLE AT THE NORTHEAST CORNER OF SAID SECTION 3, FROM WHICH A FOUND BRASS CAP IN A HAND HOLE AT THE EAST QUARTER CORNER OF SAID SECTION 3 BEARS SOUTH 00 DEGREES 48 MINUTES 46 SECONDS WEST, A DISTANCE OF 2637.03 FEET;
THENCE SOUTH 88 DEGREES 56 MINUTES 24 SECONDS WEST, ALONG THE NORTH LINE OF SAID SECTION 3, A DISTANCE OF 215.11 FEET;
THENCE SOUTH 00 DEGREES 48 MINUTES 46 SECONDS WEST, LEAVING SAID NORTH SECTION LINE, A DISTANCE OF 65.03 FEET TO A POINT ON THE SOUTH RIGHT OF WAY LINE OF MCDOWELL ROAD AND THE POINT OF BEGINNING;
THENCE SOUTH 00 DEGREES 48 MINUTES 46 SECONDS WEST, LEAVING SAID SOUTH RIGHT OF WAY LINE, A DISTANCE OF 264.64 FEET;
THENCE NORTH 89 DEGREES 11 MINUTES 14 SECONDS WEST, A DISTANCE OF 165.33 FEET;
THENCE SOUTH 00 DEGREES 48 MINUTES 46 SECONDS WEST, A DISTANCE OF 95.33 FEET;
THENCE NORTH 89 DEGREES 11 MINUTES 14 SECONDS WEST, A DISTANCE OF 42.00 FEET;
THENCE SOUTH 00 DEGREES 48 MINUTES 46 SECONDS WEST, A DISTANCE OF 240.01 FEET;
THENCE SOUTH 88 DEGREES 44 MINUTES 24 SECONDS WEST, A DISTANCE OF 235.00 FEET;
THENCE NORTH 00 DEGREES 55 MINUTES 57 SECONDS EAST, A DISTANCE OF 285.21 FEET;
THENCE SOUTH 88 DEGREES 44 MINUTES 24 SECONDS WEST, A DISTANCE OF 144.11 FEET;
THENCE NORTH 00 DEGREES 55 MINUTES 57 SECONDS EAST, A DISTANCE OF 309.35 FEET TO A POINT ON THE SOUTH RIGHT OF WAY LINE OF SAID MCDOWELL ROAD;
THENCE NORTH 88 DEGREES 56 MINUTES 24 SECONDS EAST, ALONG SAID SOUTH RIGHT OF WAY LINE, A DISTANCE OF 585.26 FEET TO THE POINT OF BEGINNING.

EXISTING	DESCRIPTION	PROPOSED
=====	CURB AND GUTTER	=====
-----	SIDEWALK	-----
-----	SINGLE CURB	-----
-----	RIM AND INVERT ELEVATION	-----
-----	CONTOUR	-----
⊗	WATER FITTINGS	⊗
⊙	WATER METER	⊙
---	WATER LINE	---
⊕	FIRE HYDRANT	⊕
---	SEWER LINE	---
⊙	SEWER MANHOLE/CLEANOUT	⊙
---	STORM DRAIN	---
⊙	CATCH BASIN	⊙
⊙	DRYWELL	⊙
⊙	UNDERGROUND STORAGE TANK	⊙
⊙	SCUPPER	⊙
---	FINISHED FLOOR	FF=43.81
---	GAS LINE/METER/VALVE	---
---	ELECTRIC LINE/METER	---
---	CABLE/JUNCTION BOX	---
---	OVERHEAD ELECTRIC/POLE	---
---	BOUNDARY LINE	---
---	CENTER LINE	---
---	EASEMENT	---
---	IRRIGATION	---
---	FIBER OPTIC	---

REVISIONS

SCOTTSDALE RD AND MCDOWELL

PRELIMINARY WATER AND SEWER PLAN

KLAND CIVIL ENGINEERS

CIVIL ENGINEERING
LAND DEVELOPMENT SERVICES
LAND SURVEYING

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ENGINEER: L. KLAND
DESIGNER: T. HODJATI
CAD TECH: FITZGERALD



Project No.
K17127

09-27-18

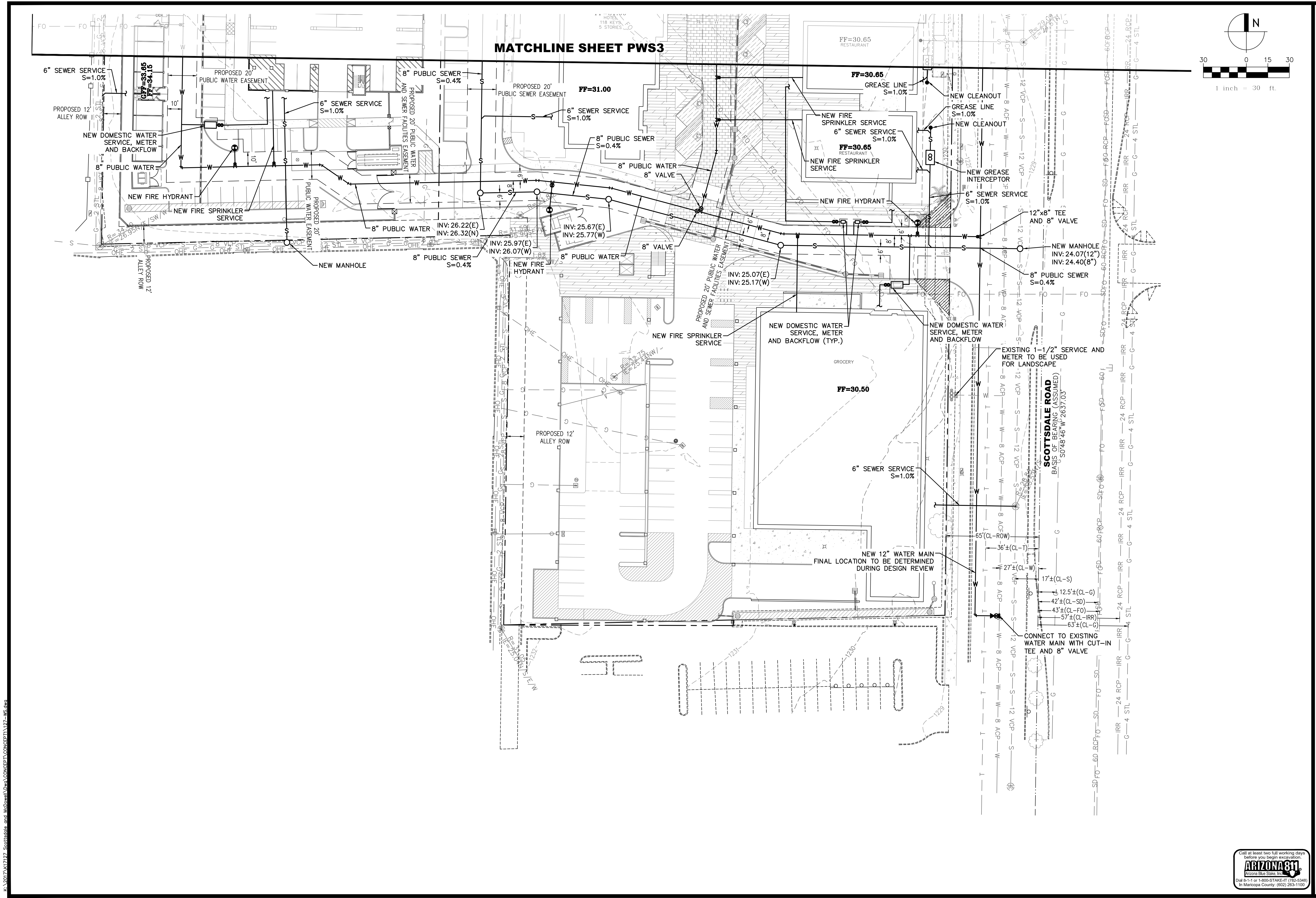
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PWS1

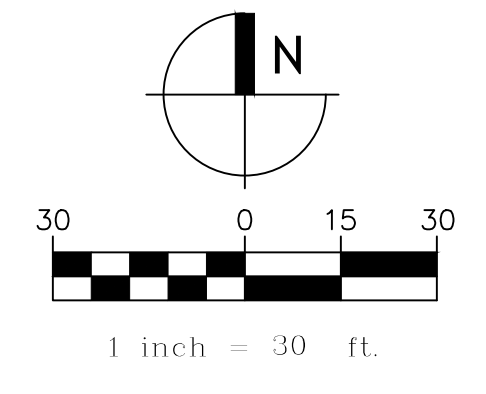
OF 4



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MATCHLINE SHEET PWS3



REVISIONS

SCOTTSDALE RD AND MCDOWELL
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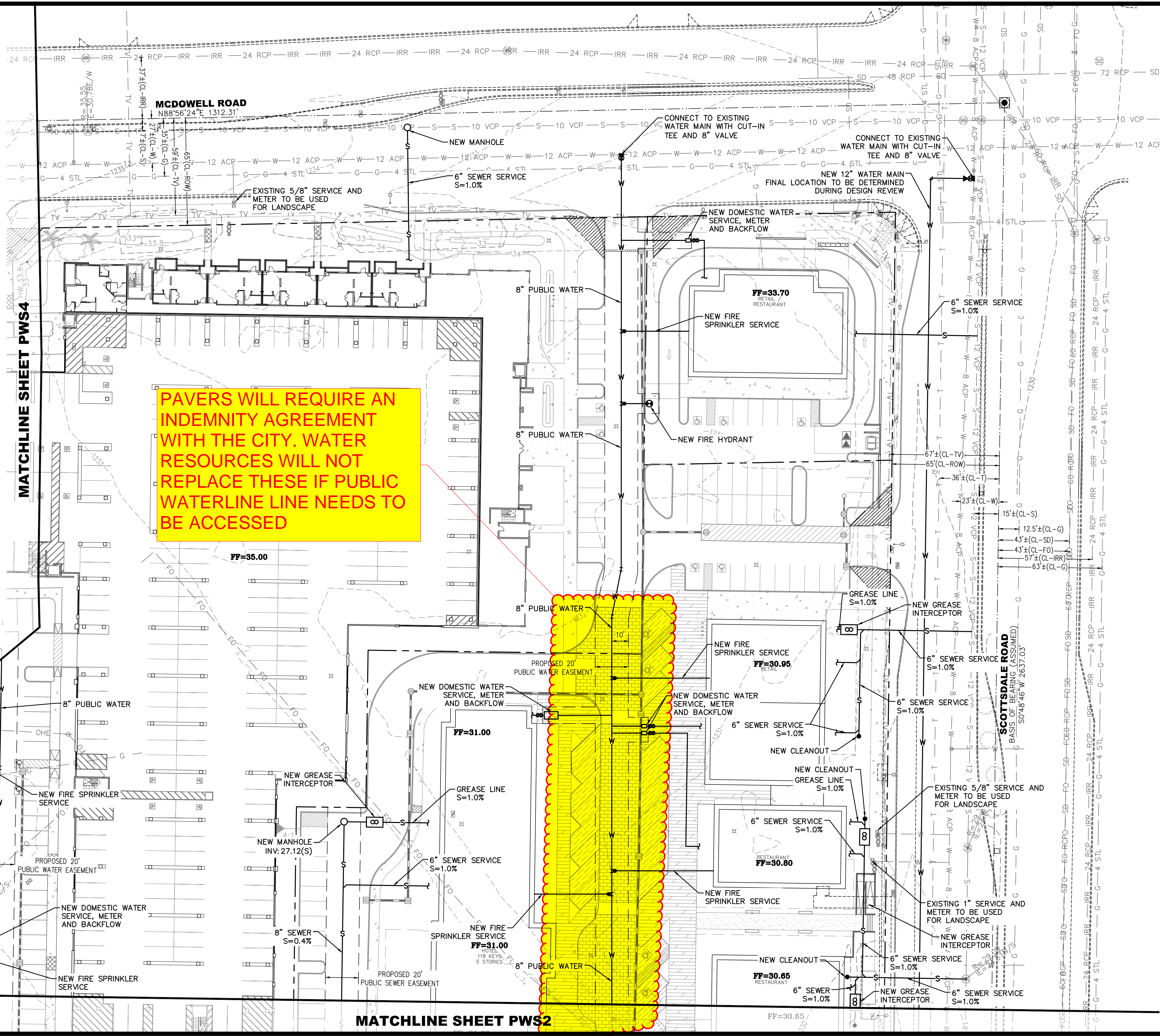
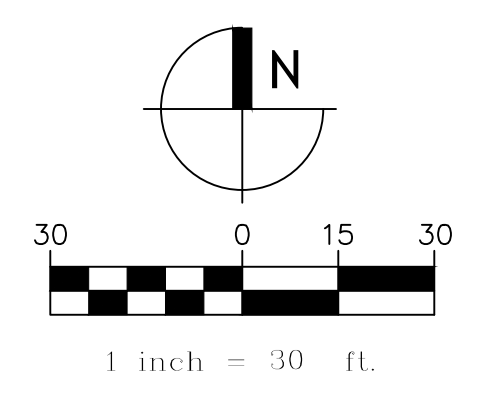
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PWS2
 OF 4



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PAVERS WILL REQUIRE AN INDEMNITY AGREEMENT WITH THE CITY. WATER RESOURCES WILL NOT REPLACE THESE IF PUBLIC WATERLINE LINE NEEDS TO BE ACCESSED

REVISIONS

SCOTTSDALE RD AND MCDOWELL
PRELIMINARY WATER AND SEWER PLAN

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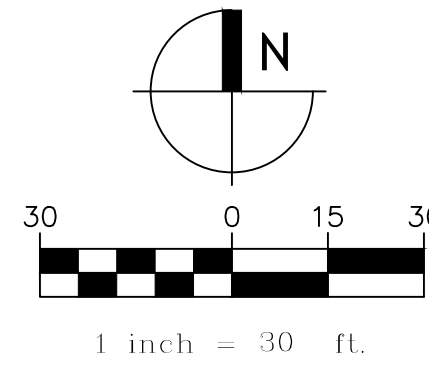
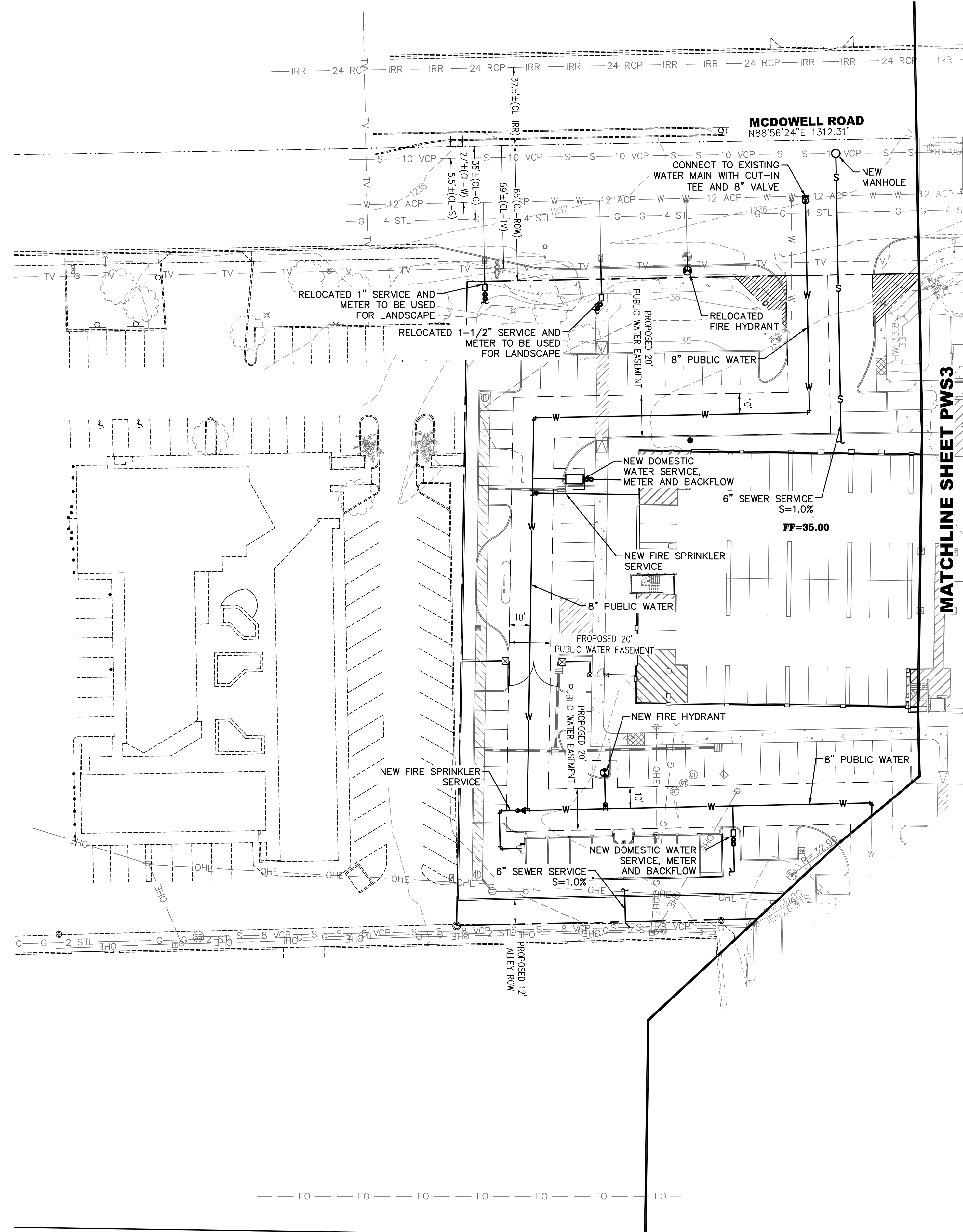
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PWS3
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REVISIONS

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 OF 4

