FINAL Basis of Design Report

- ☐ APPROVED
- ☑ APPROVED AS NOTED
- ☐ REVISE AND RESUBMIT

CITY OF SCOTTSDALE

SCOTTSDALE WATER
9379 E San Salvador Dr.
Scottsdale, AZ 85258

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 ldillon **DATE** 6/1/2021

Address the following comments below and herein for plan submittal:
1.) **Stipulation**: Connection tees to the existing water mains on McDowell Rd and 70th St will require two isolation valves each. Refer to utility plan markups herein.
2.) Call out proposed riser room for each building. Are any FDC lines to be installed? If so indicate locations.
3.) Provide fully restrained joint pipe where required per MAG and City standards e.g. 90 degree bends.
4.) **Stipulation**: Proposed meter to be within meter vault as currently sized. Note that meter credit for existing meters to be removed/abandoned should be pursued/applied.
5.) **Stipulation**: meter and service line removal shall be removed back to the main, i.e. do not leave water service line(s) "stubbed out" at the property line.
6.) Address comments on utility plan.

3 engineering
planning civil engineering surveying

SOUTHDALE
Final Water Basis of Design Report

3 engineering Job #: 1872
April 23, 2021

17-DR-2021
5/6/2021

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SOUTHDALE

FINAL WATER BASIS OF DESIGN REPORT

Prepared for:

Hawkins Companies LLC
4700 S. McClintock Drive #160
Scottsdale, Arizona 85257
Contact: Mark Mitchell
Phone: (480) 223-8239

Daniel G. Mann, P.E.

April 23, 2021

Submittal to:

City of Scottsdale
7447 E. Indian School Road, Suite 105
Scottsdale, AZ 85251

Prepared by:

3 engineering, LLC
6370 E. Thomas Road, Suite #200
Scottsdale, Arizona 85251
Contact: Dan G. Mann, P.E.

Job Number 1872

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1. Introduction

The project site, Southdale, is located in the southeast quarter of Section 34, Township 2 North, Range 4 East of the Gila and Salt River Meridian, Maricopa County, Arizona within the City of Scottsdale. The project is located at 7000 E. McDowell Road, Scottsdale, AZ 85257. The site is bounded on the north by an apartment complex, on the east by a commercial development, on the south by McDowell Road, and on the west by 70th Street. See Appendix A for a site map.

The existing zoning is C-3. The land is currently used as a commercial development. The General Plan shows the site as a Mixed-Use Neighborhood. The proposed zoning is PUD. The site is a proposed 267-unit apartment complex with office and retail space.

2. Existing Conditions

The existing zoning is C-3. The existing land is a commercial development. See Appendix A for a site map. The site is surrounded by existing multi-family residential development and commercial development.

The site currently has a 6" D.I.P. private fireline with fire hydrants. The fireline is tied into an existing 8" A.C.P. water main in 70th Street, west of the site. There is also an existing 12" A.C.P. waterline in McDowell Road, south of the site, and an existing 6" A.C.P. private waterline in APN 129-33-020A, east of the site. See Water Plans in Appendix D for existing waterline layout.

The certified flow test can be found in Appendix B. The static pressure of the existing system was 72.0 psi and the residual pressure was 54.0 psi at 2,392 gpm with a 16.0 psi factor of safety. The test was taken at two hydrants in 70th Street, west of the site.

3. Proposed Conditions

The project consists of a 267-unit apartment complex with 3,300 s.f. of office space and 2,200 s.f. of retail space on 3.83 acres. The proposed building has a fire flow demand of 2,000 gpm based on Table B105.1 of the International Fire Code. This is using the total square footage of the building which is 285,240 s.f. and a construction type of V-B and a 75% reduction for automatic fire sprinklers. However, the minimum fire flow for high rise structures per the City of Scottsdale DSPM is 2,500 gpm. The existing private fire line and hydrants within the site will be removed and the proposed water system is to be public and is to be maintained by the City of Scottsdale. The system will connect to the existing 8" A.C.P. waterline in 70th Street and the existing 12" A.C.P. waterline in McDowell Road. The proposed water system includes four (4) new fire hydrants, connected by 8" D.I.P. waterline. Additionally, the water system will connect to the existing 6" ACP waterline stub in APN 129-33-020A at the northeast corner of the site. See Water Plans in Appendix D for proposed waterline layout, pipe sizes and material.

4. Required Computations & Hydraulic Modeling

The purpose of this basis of design report is to verify that the existing City of Scottsdale water system is able to accommodate demands generated by the proposed project, Southdale. Demands were calculated using Figure 6.1-2 of the City of Scottsdale Design Standards and Policies Manual dated 2018. It is our opinion that this report is in accordance with the 2018 City of Scottsdale Design Standards and Policies Manual.

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Not a high-rise per IBC, but OK conservative assumption

The following demand criteria were used in determining the system demands for the proposed site.

gpm

1. 267 proposed units
2. 3.83 acre site (70 du/ac)
3. 0.27 gallons per minute per unit (per Figure 6.2 of D.S.&P.M. 2018 for Residential Demand, High density Condo)
4. 3,300 s.f. proposed Office Space
5. 0.000834 gallons per day per square foot (Per DSPM, Office)
6. 2,200 s.f. proposed Retail Space
7. 0.00111 gallons per day per square foot (Per DSPM, Commercial/Retail)
8. Proposed Building = 285,240 s.f., Building type V-B, per Table B105.1 of the 2015 International Fire Code the fire flow = 8,000 gpm. 75% reduction based on fully sprinklered buildings is 2,000 gpm. The minimum fire flow is 2,500 gpm for High Rise structures per City of Scottsdale DSPM section 6-1.501. Fire Flow = 2,500 gpm.
9. Max day flow = 2.0 x average day demand
10. Peak hour flow = 3.5 x average day demand

TABLE 1: ON-SITE WATER DEMANDS	
Avg. daily demand	77.28 gpm
Max day demand	154.56 gpm
Peak hour flow rate	270.48 gpm
Fire flow	2,500 gpm
Fire flow + Max Day	2,654.56 gpm

Average Daily Demand Residential: 267-units x 0.27 gpmpu = 72.09 gpm

Average Daily Demand Office: 3,300 s.f. x 0.000834 gpmpsf = 2.75 gpm

Average Daily Demand Retail: 2,200 s.f. x 0.00111 gpmpsf = 2.44 gpm

Total Average Daily Demand = 77.28 gpm

Max Day Demand = 2.0 x 77.28 gpm = 154.56 gpm

Peak Hour Flow rate = 3.5 x 77.28 gpm = 270.48 gpm

Bentley WaterCAD V8i was used to model the proposed water system. The WaterCAD system was modeled with a connection to the existing public water system in the 12" waterline in McDowell Road using a reservoir and a pump with a curve determined from the flow test results. The Fire Flow + Max Day demand for the site is 2,654.56 gpm. At this flow, the minimum pressure in the system exceeds the City of Scottsdale Requirement of 30 psi minimum under fire flow conditions. The proposed pipes have velocities less than 10 fps. Therefore, the proposed water system is adequate to support the proposed improvements for the site. See WaterCAD Results in Appendix C.

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5. ***Summary***

The Peak Hourly Flow for the proposed site is 270.48 gpm.
The fire flow for the Proposed building is 2,500 gpm based on the minimum fire flow for high rise structures per City of Scottsdale DSPM.
The system meets minimum pressure requirements at Fire Flow + Max Day demand.

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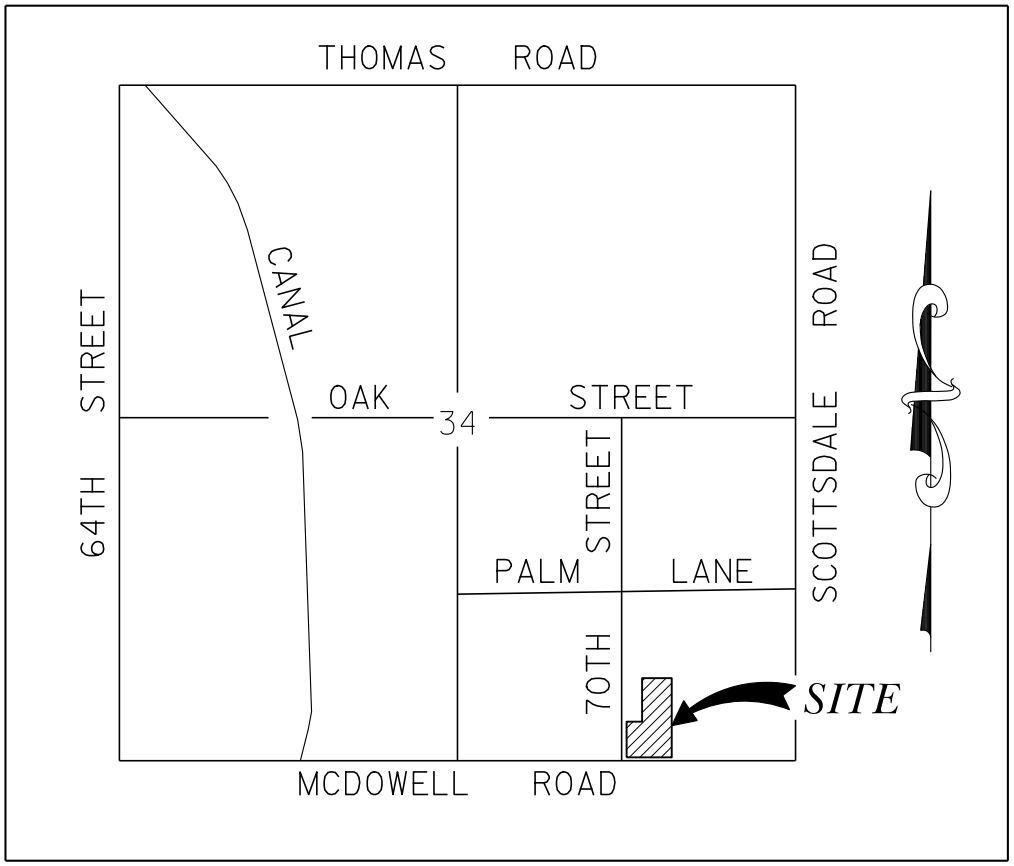
APPENDIX A

Vicinity Map



VICINITY MAP

N.T.S.

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APPENDIX B

Fire Flow Test Results

Arizona Flow Testing LLC

HYDRANT FLOW TEST REPORT

Project Name:	Not Provided
Project Address:	70th Street & McDowell (NEC), Scottsdale, Arizona, 85257
Client Project No.:	Not Provided
Arizona Flow Testing Project No.:	20109
Flow Test Permit No.:	C61639
Date and time flow test conducted:	March 20, 2020 at 7:20 AM
Data is current and reliable until:	September 20, 2020
Conducted by:	Floyd Vaughan – Arizona Flow Testing, LLC (480-250-8154)
Coordinated by:	Ray Padilla –City of Scottsdale-Inspector (602-541-0586)

Raw Test Data

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

Residual Pressure: **70.0 PSI**
(Measured in pounds per square inch)

Pitot Pressure: **31.0 PSI**

(Measured in pounds per square inch)

Diffuser Orifice Diameter: One 4-inch Pollard Diffuser
(Measured in inches)

Coefficient of Diffuser: 0.9

Flowing GPM: **2,392 GPM**
(Measured in gallons per minute)

GPM @ 20 PSI: **4,904 GPM**

Data with 16 PSI Safety Factor

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

Residual Pressure: **54.0 PSI**
(Measured in pounds per square inch)

Distance between hydrants: Approx.: 160 feet

Main size: Not Provided

Flowing GPM: **2,392 GPM**

GPM @ 20 PSI**:** **4,243 GPM**

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

Flow Test Location **North**

Flow Fire Hydrant

North 70th Street

Pressure Fire Hydrant

Project Site
70th Street & McDowell
(NEC)

East McDowell Road

APPENDIX C

WaterCAD Results

Pump Definition Detailed Report: 2020_05_20_Flow_Test

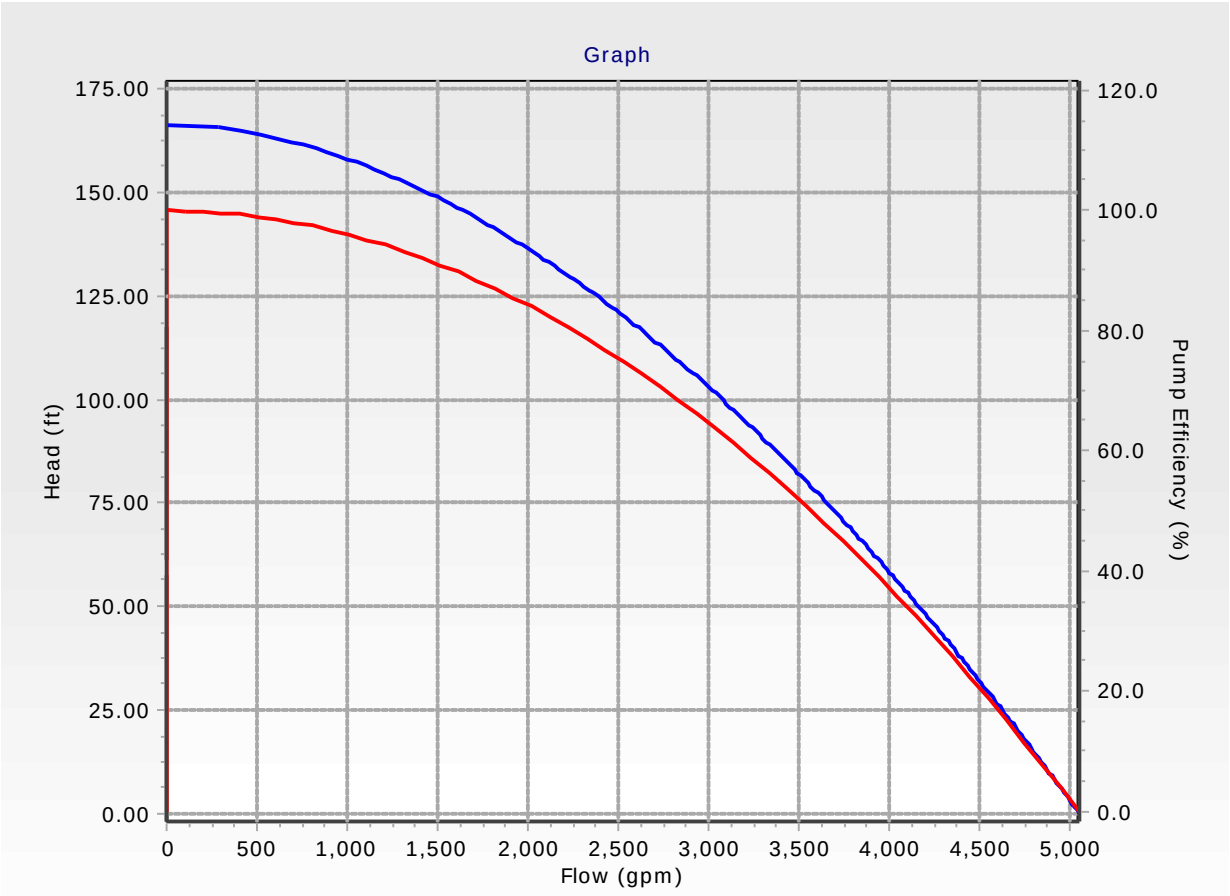
Element Details			
ID	67	Notes	
Label	2020_05_20_Flow_Test		

Pump Definition Type			
Pump Definition Type	Standard (3 Point)	Design Head	124.74 ft
Shutoff Flow	0 gpm	Maximum Operating Flow	4,243 gpm
Shutoff Head	166.32 ft	Maximum Operating Head	46.20 ft
Design Flow	2,392 gpm		

Pump Efficiency			
Pump Efficiency	Best Efficiency Point	Motor Efficiency	100.0 %
BEP Efficiency	100.0 %	Is Variable Speed Drive?	False
BEP Flow	0 gpm		

Transient (Physical)			
Inertia (Pump and Motor)	0.000 lb·ft²	Specific Speed	SI=25, US=1280
Speed (Full)	0 rpm	Reverse Spin Allowed?	True

Pump Definition Detailed Report: 2020_05_20_Flow_Test



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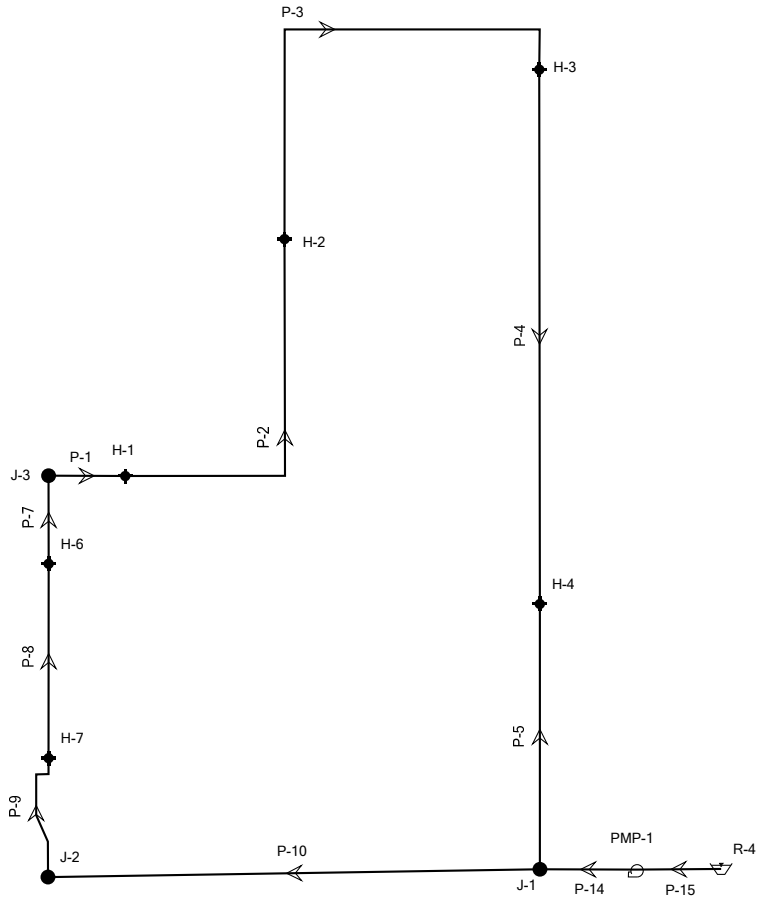
Scenario: Average Day



Bentley Systems, Inc. Haestad Methods Solution Center
27 Siemon Company Drive Suite 200 W Watertown, CT 06795 USA
+1-203-755-1666

FlexTable: Hydrant Table (1872_with_pump.wtg)

Current Time: 0.000 hours

ID	Label	Hydrant Status	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
28	H-1	Closed	45.27	0	200.82	67.3
53	H-6	Closed	44.85	0	200.82	67.5
54	H-7	Closed	44.48	0	200.83	67.6
29	H-2	Closed	44.30	0	200.82	67.7
31	H-4	Closed	42.50	77	200.81	68.5
30	H-3	Closed	42.50	0	200.81	68.5

FlexTable: Junction Table (1872_with_pump.wtg)

Current Time: 0.000 hours

ID	Label	Elevation (ft)	Zone	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
50	J-3	38.26	<None>	0	200.82	70.3
49	J-2	37.17	<None>	0	200.83	70.8
48	J-1	34.58	<None>	0	200.83	71.9

FlexTable: Pipe Table (1872_with_pump.wtg)

Current Time: 0.000 hours

ID	Label	Length (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
65	P-14	1	J-1	PMP-1	48.0	Ductile Iron	130.0	-77	0.01	0.000
66	P-15	1	PMP-1	R-4	48.0	Ductile Iron	130.0	-77	0.01	0.000
59	P-10	398	J-2	J-1	12.0	Asbestos Cement	140.0	-20	0.06	0.000
35	P-1	62	J-3	H-1	8.0	Ductile Iron	130.0	20	0.13	0.000
36	P-2	321	H-1	H-2	8.0	Ductile Iron	130.0	20	0.13	0.000
37	P-3	409	H-2	H-3	8.0	Ductile Iron	130.0	20	0.13	0.000
38	P-4	432	H-3	H-4	8.0	Ductile Iron	130.0	20	0.13	0.000
56	P-7	71	J-3	H-6	8.0	Asbestos Cement	140.0	-20	0.13	0.000
57	P-8	157	H-6	H-7	8.0	Asbestos Cement	140.0	-20	0.13	0.000
58	P-9	108	H-7	J-2	8.0	Asbestos Cement	140.0	-20	0.13	0.000
39	P-5	215	H-4	J-1	8.0	Ductile Iron	130.0	-58	0.37	0.000

FlexTable: Pump Table (1872_with_pump.wtg)

Current Time: 0.000 hours

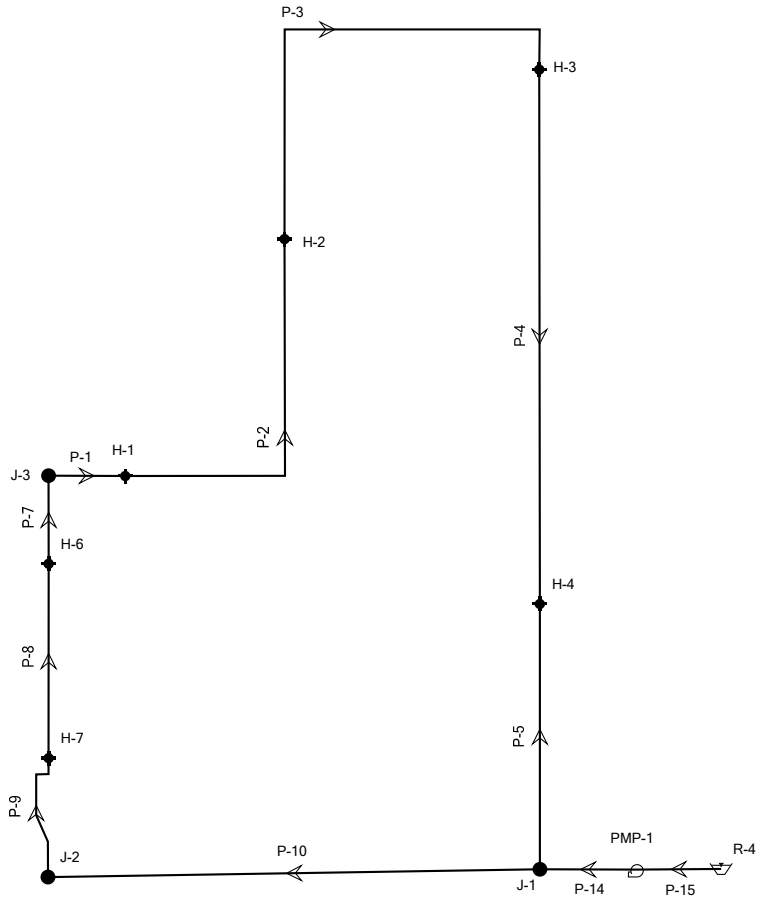
ID	Label	Elevation (ft)	Pump Definition	Status (Initial)	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Flow (Total) (gpm)	Pump Head (ft)
64	PMP-1	34.58	2020_05_20_Flow_Test	On	34.58	200.83	77	166.25

FlexTable: Reservoir Table (1872_with_pump.wtg)

Current Time: 0.000 hours

ID	Label	Elevation (ft)	Zone	Flow (Out net) (gpm)	Hydraulic Grade (ft)
52	R-4	34.58	<None>	77	34.58

Scenario: Max Day



FlexTable: Hydrant Table (1872_with_pump.wtg)

Current Time: 0.000 hours

ID	Label	Hydrant Status	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
28	H-1	Closed	45.27	0	200.62	67.2
53	H-6	Closed	44.85	0	200.63	67.4
54	H-7	Closed	44.48	0	200.63	67.6
29	H-2	Closed	44.30	0	200.61	67.6
31	H-4	Closed	42.50	155	200.57	68.4
30	H-3	Closed	42.50	0	200.59	68.4

FlexTable: Junction Table (1872_with_pump.wtg)

Current Time: 0.000 hours

ID	Label	Elevation (ft)	Zone	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
50	J-3	38.26	<None>	0	200.62	70.2
49	J-2	37.17	<None>	0	200.64	70.7
48	J-1	34.58	<None>	0	200.64	71.8

FlexTable: Pipe Table (1872_with_pump.wtg)

Current Time: 0.000 hours

ID	Label	Length (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
66	P-15	1	PMP-1	R-4	48.0	Ductile Iron	130.0	-155	0.03	0.000
65	P-14	1	J-1	PMP-1	48.0	Ductile Iron	130.0	-155	0.03	0.000
59	P-10	398	J-2	J-1	12.0	Asbestos Cement	140.0	-39	0.11	0.000
35	P-1	62	J-3	H-1	8.0	Ductile Iron	130.0	39	0.25	0.000
36	P-2	321	H-1	H-2	8.0	Ductile Iron	130.0	39	0.25	0.000
37	P-3	409	H-2	H-3	8.0	Ductile Iron	130.0	39	0.25	0.000
38	P-4	432	H-3	H-4	8.0	Ductile Iron	130.0	39	0.25	0.000
56	P-7	71	J-3	H-6	8.0	Asbestos Cement	140.0	-39	0.25	0.000
57	P-8	157	H-6	H-7	8.0	Asbestos Cement	140.0	-39	0.25	0.000
58	P-9	108	H-7	J-2	8.0	Asbestos Cement	140.0	-39	0.25	0.000
39	P-5	215	H-4	J-1	8.0	Ductile Iron	130.0	-115	0.74	0.000

FlexTable: Pump Table (1872_with_pump.wtg)

Current Time: 0.000 hours

ID	Label	Elevation (ft)	Pump Definition	Status (Initial)	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Flow (Total) (gpm)	Pump Head (ft)
64	PMP-1	34.58	2020_05_20_Flow_Test	On	34.58	200.64	155	166.06

FlexTable: Reservoir Table (1872_with_pump.wtg)

Current Time: 0.000 hours

ID	Label	Elevation (ft)	Zone	Flow (Out net) (gpm)	Hydraulic Grade (ft)
52	R-4	34.58	<None>	155	34.58

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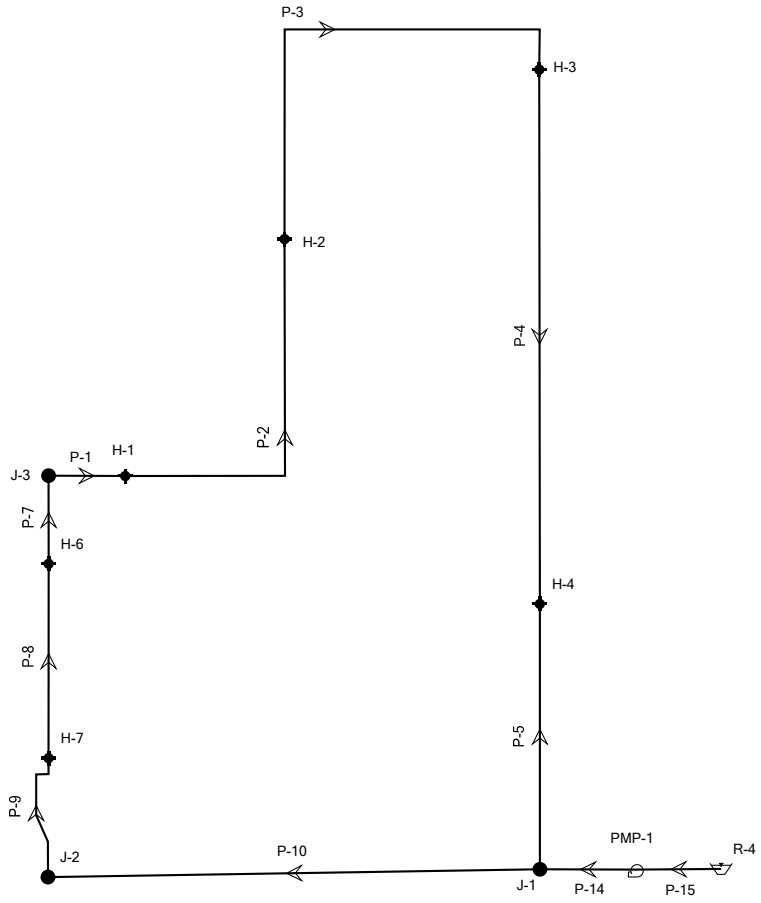
Scenario: Peak Hour



FlexTable: Hydrant Table (1872_with_pump.wtg)

Current Time: 0.000 hours

ID	Label	Hydrant Status	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
28	H-1	Closed	45.27	0	200.11	67.0
53	H-6	Closed	44.85	0	200.13	67.2
54	H-7	Closed	44.48	0	200.15	67.3
29	H-2	Closed	44.30	0	200.07	67.4
31	H-4	Closed	42.50	270	199.96	68.1
30	H-3	Closed	42.50	0	200.02	68.2

FlexTable: Junction Table (1872_with_pump.wtg)

Current Time: 0.000 hours

ID	Label	Elevation (ft)	Zone	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
50	J-3	38.26	<None>	0	200.12	70.0
49	J-2	37.17	<None>	0	200.16	70.5
48	J-1	34.58	<None>	0	200.16	71.6

FlexTable: Pipe Table (1872_with_pump.wtg)

Current Time: 0.000 hours

ID	Label	Length (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
65	P-14	1	J-1	PMP-1	48.0	Ductile Iron	130.0	-270	0.05	0.000
66	P-15	1	PMP-1	R-4	48.0	Ductile Iron	130.0	-270	0.05	0.000
59	P-10	398	J-2	J-1	12.0	Asbestos Cement	140.0	-69	0.20	0.000
35	P-1	62	J-3	H-1	8.0	Ductile Iron	130.0	69	0.44	0.000
36	P-2	321	H-1	H-2	8.0	Ductile Iron	130.0	69	0.44	0.000
37	P-3	409	H-2	H-3	8.0	Ductile Iron	130.0	69	0.44	0.000
38	P-4	432	H-3	H-4	8.0	Ductile Iron	130.0	69	0.44	0.000
56	P-7	71	J-3	H-6	8.0	Asbestos Cement	140.0	-69	0.44	0.000
57	P-8	157	H-6	H-7	8.0	Asbestos Cement	140.0	-69	0.44	0.000
58	P-9	108	H-7	J-2	8.0	Asbestos Cement	140.0	-69	0.44	0.000
39	P-5	215	H-4	J-1	8.0	Ductile Iron	130.0	-202	1.29	0.001

FlexTable: Pump Table (1872_with_pump.wtg)

Current Time: 0.000 hours

ID	Label	Elevation (ft)	Pump Definition	Status (Initial)	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Flow (Total) (gpm)	Pump Head (ft)
64	PMP-1	34.58	2020_05_20_Flow_Test	On	34.58	200.16	270	165.58

FlexTable: Reservoir Table (1872_with_pump.wtg)

Current Time: 0.000 hours

ID	Label	Elevation (ft)	Zone	Flow (Out net) (gpm)	Hydraulic Grade (ft)
52	R-4	34.58	<None>	270	34.58

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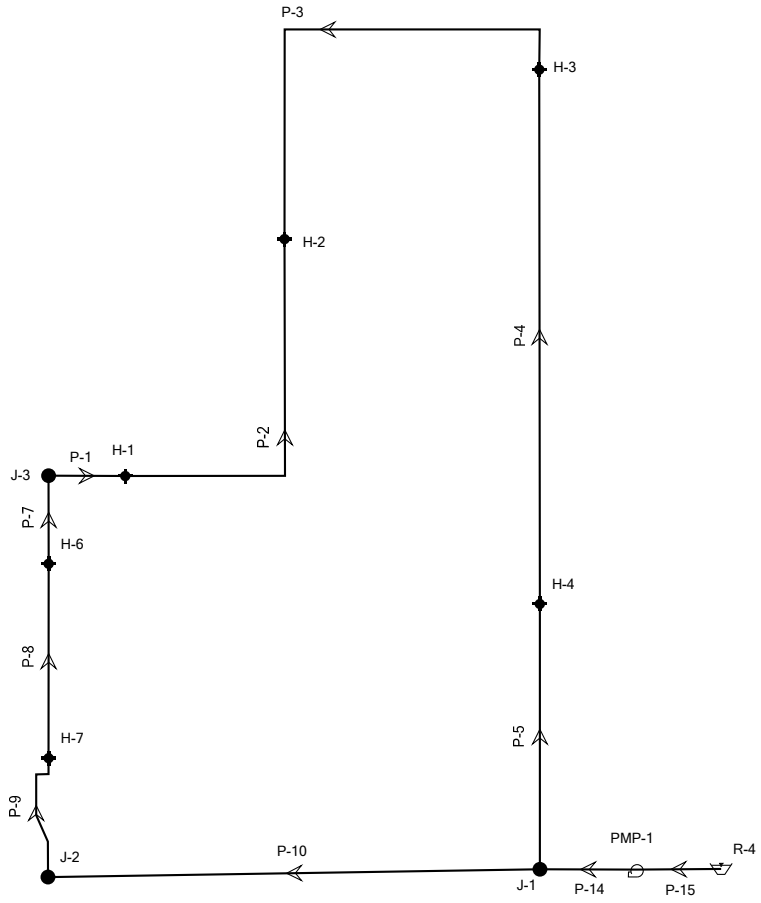
27 Siemon Company Drive Suite 200 W Watertown, CT 06795 USA +1-203-755-1666

Scenario: Max Day + Fire Flow



FlexTable: Hydrant Table (1872_with_pump.wtg)

Current Time: 0.000 hours

ID	Label	Hydrant Status	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
29	H-2	Closed	44.30	1,327	129.36	36.8
30	H-3	Closed	42.50	1,327	129.38	37.6
28	H-1	Closed	45.27	0	138.71	40.4
53	H-6	Closed	44.85	0	142.34	42.2
31	H-4	Closed	42.50	0	143.48	43.7
54	H-7	Closed	44.48	0	146.33	44.1

split to 2 worse-case hydrants, good

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FlexTable: Junction Table (1872_with_pump.wtg)

Current Time: 0.000 hours

ID	Label	Elevation (ft)	Zone	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
50	J-3	38.26	<None>	0	140.52	44.2
49	J-2	37.17	<None>	0	149.08	48.4
48	J-1	34.58	<None>	0	150.48	50.1

FlexTable: Pipe Table (1872_with_pump.wtg)

Current Time: 0.000 hours

ID	Label	Length (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
37	P-3	409	H-2	H-3	8.0	Ductile Iron	130.0	-40	0.26	0.000
65	P-14	1	J-1	PMP-1	48.0	Ductile Iron	130.0	-2,655	0.47	0.000
66	P-15	1	PMP-1	R-4	48.0	Ductile Iron	130.0	-2,655	0.47	0.000
59	P-10	398	J-2	J-1	12.0	Asbestos Cement	140.0	-1,287	3.65	0.004
35	P-1	62	J-3	H-1	8.0	Ductile Iron	130.0	1,287	8.22	0.029
36	P-2	321	H-1	H-2	8.0	Ductile Iron	130.0	1,287	8.22	0.029
56	P-7	71	J-3	H-6	8.0	Asbestos Cement	140.0	-1,287	8.22	0.025
57	P-8	157	H-6	H-7	8.0	Asbestos Cement	140.0	-1,287	8.22	0.025
58	P-9	108	H-7	J-2	8.0	Asbestos Cement	140.0	-1,287	8.22	0.025
38	P-4	432	H-3	H-4	8.0	Ductile Iron	130.0	-1,367	8.73	0.033
39	P-5	215	H-4	J-1	8.0	Ductile Iron	130.0	-1,367	8.73	0.033

FlexTable: Pump Table (1872_with_pump.wtg)

Current Time: 0.000 hours

ID	Label	Elevation (ft)	Pump Definition	Status (Initial)	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Flow (Total) (gpm)	Pump Head (ft)
64	PMP-1	34.58	2020_05_20_Flow_Test	On	34.58	150.48	2,655	115.90

FlexTable: Reservoir Table (1872_with_pump.wtg)

Current Time: 0.000 hours

ID	Label	Elevation (ft)	Zone	Flow (Out net) (gpm)	Hydraulic Grade (ft)
52	R-4	34.58	<None>	2,655	34.58

APPENDIX D

Preliminary Water Plans

PRELIMINARY UTILITY PLAN FOR
SOUTHDALE
7000 E. MCDOWELL ROAD, SCOTTSDALE, ARIZONA 85257

LOCATED IN A PORTION OF THE SOUTHEAST QUARTER OF SECTION 34, TOWNSHIP 2 NORTH, RANGE 4 EAST OF THE GILA AND SALT RIVER MERIDIAN, MARICOPA COUNTY, ARIZONA

LEGAL DESCRIPTION:

THAT PORTION OF THE SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 34, TOWNSHIP 2 NORTH, RANGE 4 EAST OF THE GILA AND SALT RIVER BASE AND MERIDIAN, MARICOPA COUNTY, ARIZONA, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE NORTH LINE OF THE SOUTH HALF OF SAID SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER, A DISTANCE OF 380.00 FEET EAST OF THE WEST LINE OF SAID SOUTHEAST QUARTER OF THE
SOUTHEAST QUARTER;

THENCE WEST ALONG SAID NORTH LINE TO A POINT ON THE EAST LINE OF A NORTH-SOUTH ALLEY AS SHOWN ON THE PLAT OF WONDERLAND, ACCORDING TO BOOK 100 OF MAPS, PAGE 19, RECORDS OF MARICOPA COUNTY, ARIZONA;

THENCE SOUTH ALONG THE EAST LINE OF AFORESAID ALLEY TO AN ANGLE POINT THEREON;

THENCE WEST ALONG THE SOUTH LINE OF AN EAST-WEST ALLEY AS SHOWN ON AFORESAID PLAT OF WONDERLAND, TO A POINT ON THE EAST LINE OF 70TH STREET AS SHOWN ON AFORESAID PLAT;

THENCE SOUTH ALONG SAID EAST LINE, A DISTANCE OF 253.88 FEET TO THE BEGINNING OF A CURVE TO THE LEFT HAVING A CENTRAL ANGLE OF 91 DEGREES 14 MINUTES 49 SECONDS AND A TANGENT OF 20.00 FEET;

THENCE SOUTHEASTERLY ALONG SAID CURVE TO THE LEFT, AN ARC DISTANCE OF 31.17 FEET;

THENCE SOUTH PARALLEL WITH THE WEST LINE OF THE SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION 34, A DISTANCE OF 65.00 FEET TO A POINT ON THE SOUTH LINE OF THE SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION 34, FROM WHICH THE SOUTHWEST CORNER THEREOF BEARS WEST, A DISTANCE OF 52.42 FEET;
THENCE EAST ALONG THE SOUTH LINE OF THE SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION 34, TO A POINT 380.00 FEET EAST OF THE SOUTHWEST CORNER OF SAID SOUTHEAST QUARTER OF THE
SOUTHEAST QUARTER;

THENCE NORTH ALONG A LINE PARALLEL TO AND 380.00 FEET EAST OF THE WEST LINE OF SAID SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER TO THE POINT OF BEGINNING;

EXCEPT THE SOUTH 65.00 FEET THEREOF.

GENERAL NOTES FOR PUBLIC WORKS CONSTRUCTION:

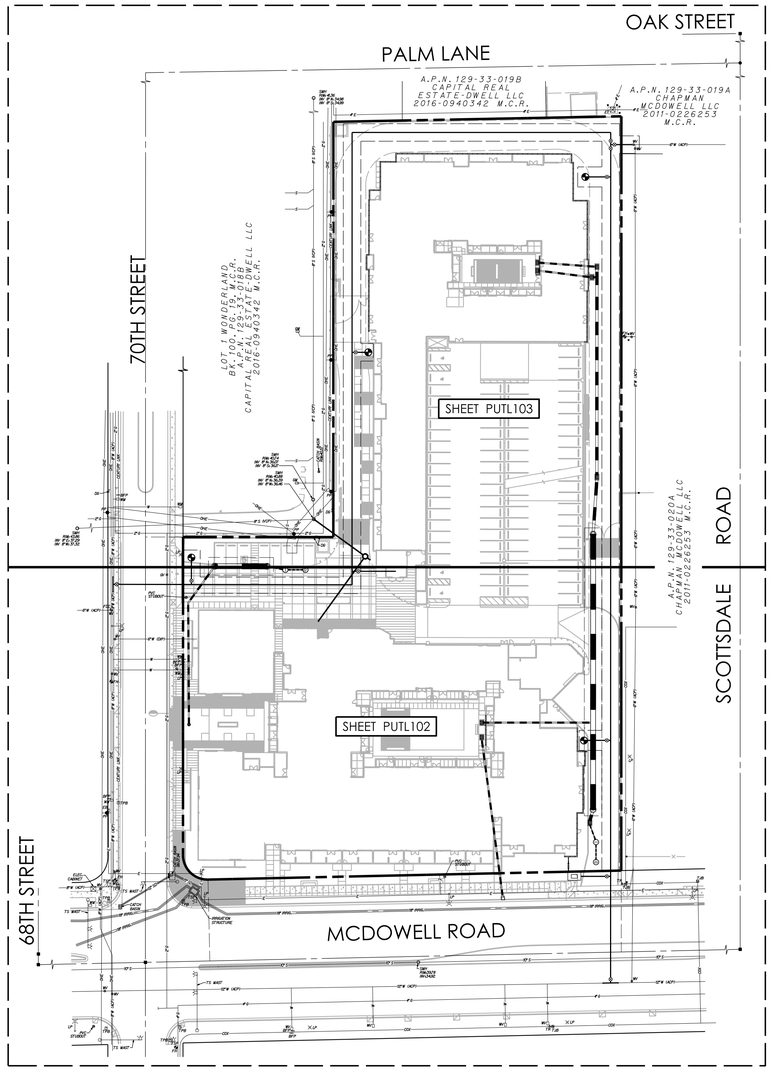
1. ALL CONSTRUCTION IN THE PUBLIC RIGHTS-OF-WAY OR IN EASEMENTS GRANTED FOR PUBLIC USE MUST CONFORM TO THE LATEST MARICOPA ASSOCIATION OF GOVERNMENTS (MAG) UNIFORM STANDARD SPECIFICATIONS AND UNIFORM STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION AS AMENDED BY THE LATEST VERSION OF THE CITY OF SCOTTSDALE STANDARD SPECIFICATIONS AND SUPPLEMENTAL STANDARD DETAILS. IF THERE IS A CONFLICT, THE CITY'S SUPPLEMENTAL STANDARD DETAILS WILL GOVERN.
2. THE CITY ONLY APPROVES THE SCOPE, NOT THE DETAIL OF ENGINEERING DESIGNS; THEREFORE IF CONSTRUCTION QUANTITIES ARE SHOWN ON THESE PLANS, THEY ARE NOT VERIFIED BY THE CITY.
3. THE APPROVAL OF PLANS IS VALID FOR SIX (6) MONTHS. IF ASSOCIATED PERMIT HAS NOT BEEN ISSUED WITHIN THIS TIME FRAME, THE PLANS MUST BE RESUBMITTED TO THE CITY FOR RE-APPROVAL.
4. A CITY INSPECTOR WILL INSPECT ALL WORKS WITHIN THE CITY OF SCOTTSDALE. NOTIFY INSPECTION SERVICES 72 HOURS BEFORE BEGINNING WORK.
5. WHENEVER EXCAVATION IS NECESSARY, CALL THE BLUE STAKE CENTER, 811, TWO WORKING DAYS BEFORE EXCAVATION BEGINS.
6. PERMISSION TO WORK IN THE RIGHT-OF-WAY (PWR) PERMITS ARE REQUIRED FOR ALL WORKS WITHIN THE RIGHTS-OF-WAY AND EASEMENTS GRANTED FOR PUBLIC PURPOSES. COPIES OF ALL PERMITS MUST BE RETAINED ON-SITE AND BE AVAILABLE FOR INSPECTION AT ALL TIMES. FAILURE TO PRODUCE THE REQUIRED PERMITS WILL RESULT IN IMMEDIATE SUSPENSION OF ALL WORK UNTIL THE PROPER PERMIT DOCUMENTATION IS OBTAINED.

UTILITY	UTILITY COMPANY	NAME OF COMPANY REPRESENTATIVE	TELEPHONE NUMBER	DATE SIGNED
ELECTRIC	APS			
TELEPHONE	CENTURY LINK			
NATURAL GAS	SOUTHWEST GAS			
CABLE TV	COX COMMUNICATIONS			
OTHER	A.T.&T.			
OTHER				

ENGINEER'S CERTIFICATION

I DANIEL G. MANN, AS THE ENGINEER OF RECORD FOR THIS DEVELOPMENT, HEREBY CERTIFY THAT ALL UTILITY COMPANIES LISTED ABOVE HAVE BEEN PROVIDED FINAL IMPROVEMENT PLANS FOR REVIEW, AND THAT ALL CONFLICTS IDENTIFIED BY THE UTILITIES HAVE BEEN RESOLVED. IN ADDITION 'NO CONFLICT' FORMS HAVE BEEN OBTAINED FROM EACH UTILITY COMPANY AND ARE INCLUDED IN THIS SUBMITTAL.

SIGNATURE _____ DATE _____



SITE MAP
N.T.S.

INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
PUTL101	COVER SHEET - PRELIMINARY UTILITY PLAN
PUTL102	PRELIMINARY UTILITY PLAN
PUTL103	PRELIMINARY UTILITY PLAN

FLOOD INSURANCE RATE MAP (FIRM) INFORMATION:

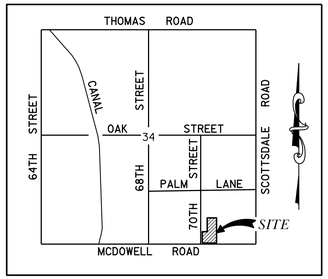
COMMUNITY NUMBER	PANEL NUMBER	PANEL DATE	SUFFIX	FIRM DATE	FIRM ZONE	BASE FLOOD ELEVATION
045012	2235	OCTOBER 16, 2013	L	OCTOBER 16, 2013	X	N/A

ENGINEER'S CERTIFICATION:

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

LEGEND

	INDICATES PROPERTY / BOUNDARY LINE
1560	INDICATES EXISTING CONTOUR ELEVATION
58	INDICATES PROPOSED CONTOUR ELEVATION
TC: 59.13 G: 58.64	INDICATES EXISTING TOP OF CURB ELEVATION / INDICATES EXISTING GUTTER ELEVATION
+ 62.52	INDICATES EXISTING GROUND ELEVATION
+ P: 60.11	INDICATES EXISTING PAVEMENT ELEVATION
+ C: 56.69	INDICATES EXISTING CONCRETE ELEVATION
15.9	INDICATES PROPOSED GROUND ELEVATION
1%	INDICATES DIRECTION OF FLOW & SLOPE
GB	INDICATES GRADE BREAK
P=	INDICATES PROPOSED PAVEMENT ELEVATION
C=	INDICATES PROPOSED TOP OF CONC. ELEVATION
G=	INDICATES PROPOSED GUTTER ELEVATION
LF_{88}=	INDICATES LOWEST FINISH FLOOR ELEVATION
W	INDICATES PROPOSED WATERLINE
S	INDICATES PROPOSED SEWERLINE
	INDICATES PROPOSED METER
	INDICATES PROPOSED SEWER CLEANOUT
	INDICATES PROPOSED CATCH BASIN
	INDICATES PROPOSED STORM DRAIN PIPE
	INDICATES PROPOSED STORM DRAIN MANHOLE
	INDICATES PROPOSED FIRE HYDRANT
FH	INDICATES EXISTING FIRE HYDRANT
24" SD	INDICATES EXISTING STORM DRAIN PIPE
8" S	INDICATES EXISTING SEWER LINE & SIZE
12"W (ACP) WV	INDICATES EXISTING WATER LINE,VALVE & SIZE
E	INDICATES EXISTING BURIED ELECTRIC CONDUIT
G	INDICATES EXISTING GAS LINE
OHE	INDICATES EXISTING OVERHEAD ELECTRIC
PP	INDICATES EXISTING POWER POLE
LP	INDICATES EXISTING LIGHT POLE
ET	INDICATES EXISTING ELECTRIC TRANSFORMER
EB	INDICATES EXISTING ELECTRIC BOX
WM	INDICATES EXISTING WATER METER
BWV	INDICATES EXISTING BACKFLOW PREVENTER VALVE



VICINITY MAP
N.T.S.

PROJECT SCOPE:

THE SCOPE OF THIS PROJECT IS A NEW RESIDENTIAL APARTMENT COMPLEX WITH 267 UNITS ALSO WITH PARKING GARAGE, UTILITY IMPROVEMENTS AND LANDSCAPE.

CLIENT:

HAWKINS COMPANIES LLC
4700 S. MCCLINTOCK DR. #160
TEMPE, ARIZONA 85282

CONTACT: MARK MITCHELL
PHONE: (480) 223-8239
EMAIL: MMITCHELL@HCOLLC.COM

ENGINEER:

3 ENGINEERING
6370 E. THOMAS ROAD, SUITE #200
SCOTTSDALE, ARIZONA 85251

CONTACT: DANIEL G. MANN, P.E.
PHONE: (602) 334-4387
EMAIL: DAN@3ENGINEERING.COM

PARCEL ADDRESS:

7000 E. MCDOWELL ROAD,
SCOTTSDALE, ARIZONA 85257

ASSESSORS PARCEL NUMBER:

129-33-001S

LOT AREA:

GROSS AREA:	4.690 ACRES
NET AREA:	3.932 ACRES
DISTURBED AREA:	3.932 ACRES

BENCHMARK:

MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION UNIQUE ID: 12052, BEING A 3" CITY OF SCOTTSDALE BRASS CAP IN HANDHOLE, LOCATED AT THE INTERSECTION OF SCOTTSDALE ROAD & MCDOWELL ROAD

ELEVATION = 1230.474 (NAVD'88)
CITY OF SCOTTSDALE DATUM

I HEREBY CERTIFY THAT ALL ELEVATIONS REPRESENTED ON THIS PLAN ARE BASED ON THE ELEVATION DATUM FOR THE CITY OF SCOTTSDALE BENCHMARK PROVIDED ABOVE.

ENGINEER _____ 4/26/2021 DATE

BASIS OF BEARING

THE BASIS OF BEARING IS THE MONUMENT LINE OF SCOTTSDALE ROAD, ALSO BEING THE WEST LINE OF THE SOUTHEAST CORNER, SECTION 34, USING A BEARING OF NORTH 00 DEGREES 00 MINUTES 00 SECONDS EAST, AS PER THE RECORD OF SURVEY IN BOOK 1250 OF MAPS, PAGE 15, RECORDS OF MARICOPA COUNTY, ARIZONA.

ENGINEER'S STATEMENT:

THE ENGINEER OF RECORD ON THESE PLANS HAS RECEIVED A COPY OF THE APPROVED STIPULATIONS FOR THIS PROJECT AND HAS DESIGNED THESE PLANS IN CONFORMANCE WITH THE APPROVED STIPULATIONS

AS-BUILT CERTIFICATION:

I HEREBY CERTIFY THAT THE RECORD DRAWING MEASUREMENTS AS SHOWN HEREON WERE MADE UNDER MY SUPERVISION OR AS NOTED AND ARE CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

REGISTERED ENGINEER/LAND SURVEYOR _____ DATE _____

REGISTRATION NUMBER _____

CIVIL APPROVAL			
REVIEW & RECOMMENDED APPROVAL BY:			
PAVING		TRAFFIC	
G & D		PLANNING	
W & S		FIRE	
RET. WALLS			

ENGINEERING COORDINATION MGR. (OR DESIGNEE) _____ DATE _____

Contact Arizona 811 at least two full working days before you begin excavation
Call 811 or click Arizona811.com
SNOW3A38

SOUTHDALE
7000 E. MCDOWELL ROAD, SCOTTSDALE, AZ 85257
PRELIMINARY UTILITY PLAN

Registered Professional Engineer (Civil) CERTIFICATE NO. 46857 DANIEL G. MANN 4/26/21 Date Signed ARIZONA, U.S.A.

3engineering surveying civil engineering planning

ACI TECH: PTRUE
DESIGNER: D. MANN
ENGINEER: D. MANN

3 ENGINEERING, LLC
6370 E. THOMAS ROAD SUITE # 200
SCOTTSDALE, ARIZONA 85251
PHONE: (602) 334-4387
FAX: (602) 490-3230
WWW.3ENGINEERING.COM

DATE: 04/26/21
PROJECT NO. 1872
SHEET NO. PUTL201 1 of 3
Q.S. #13-44

C:\My Security\Projects\1872_70th_St_McDowell_Apartments\1872pu101.dgn

17-DR-2021
5/6/2021

MATCHLINE - SEE SHEET 3
No FDC or riser room called out. Coordinate requirements with fire plan review
w/ 8" isolation valve on east leg
CONNECT TO EXISTING 8"WATERLINE WITH 8"x8" TEE REPLACE ACP WATERLINE WITH 8"DIP (CLASS 350) MIN. 6-FT IN EACH DIRECTION.
PROPOSED 8" D.I.P. WATERLINE (PRESSURE CLASS 350)
PROPOSED 8" D.I.P. FIRELINE (PRESSURE CLASS 350)
PARKING GARAGE
PROPOSED 14' WATERLINE EASEMENT
EXISTING FIRELINE TO BE REMOVED
PROPOSED 8" P.V.C. SEWERLINE (SDR-35)
fully restrain pipe as required
EXISTING WATER METER TO BE USED FOR LANDSCAPE
EXISTING WATER METER TO BE REMOVED
LF88=1243.00 PAD=1242.33
70TH STREET
S00°00'32"W 2673.68'
339.74'
S00°00'32"W 254.07'
PROPOSED FIRE HYDRANT COMPLETE (TYP.)
E. LINE, W. 380.00' W. LINE, SE. 1/4, SE. 1/4, SECTION 34
A.P.N. 129-33-020A CHAPMAN MCDOWELL LLC 2011-0226253 M.C.R.
S00°00'32"W 602.48'
N00°00'00"E 2660.04'
1330.00'
SCOTTSDALE ROAD
PROPOSED 4" WATER METER VAULT PER C.O.S. DET. 2345
PROPOSED 4" DOMESTIC WATERLINE
PROPOSED BACKFLOW PREVENTER
FD. 1/2" REBAR W/ CAP L.S. #22768
D=91°15'38" R=19.56' L=31.17'
FD. 1/2" REBAR NO I.D.
FD. 1/2" REBAR W/ CAP L.S. #42137
S88°44'54"W 330.08'
30' R/W
PROPOSED 4" D.I.P. WATERLINE (PRESSURE CLASS 350)
PROPOSED 8" D.I.P. WATERLINE (PRESSURE CLASS 350)
EXCEPTION OF THE SOUTH 65.00'
S01°15'06"E 65.00'
65' R/W
65.02'
68TH STREET
FD. 3" CITY OF SCOTTSDALE BRASS CAP IN HANDHOLE
8.51'
1312.38'
51.44'
328.65'
S88°44'54"W 2624.74'
932.27'
MCDOWELL ROAD
LOCALLY ACCEPTED S 1/4 COR. SEC. 34 FD. 3" BRASS CAP IN HANDHOLE
FD. 3/4" IRON PIPE IN POTHOLE
SMH RIM:39.78 INV:34.92
SE COR. SEC. 34 (BENCHMARK = 1230.47') FD. 3" CITY OF SCOTTSDALE BRASS CAP IN HANDHOLE
CONNECT TO EXISTING 12"WATERLINE WITH 12"x8" TEE REPLACE ACP WATERLINE WITH 12"DIP (CLASS 350) MIN. 6-FT IN EACH DIRECTION.
w/ 8" isolation valve on north leg and 12" isolation valve on west leg of tee
SCALE: 1"= 20'
0' 10' 20' 40'
Contact Arizona 811 at least two full working days before you begin excavation
Call 811 or click Arizona811.com
REVISIONS
SOUTHDALE
7000 E. MCDOWELL ROAD, SCOTTSDALE, AZ 85257
PRELIMINARY UTILITY PLAN
Registered Professional Engineer CERTIFICATE NO. 46857 DANIEL G. MANN 4/26/21 ARIZONA, U.S.A.
3engineering civil engineering surveying planning
COPYRIGHT 2021 3 ENGINEERING, LLC
3 ENGINEERING, LLC 6370 E. THOMAS ROAD SUITE # 200 SCOTTSDALE, ARIZONA 85251 PHONE: (602) 334-4387 FAX: (602) 490-3230 WWW.3ENGINEERING.COM
DATE: 04/26/21
PROJECT NO. 1872
SHEET NO. PUTL202 2 of 3
Q.S. #13-44
17-DR-2021 5/6/2021

fully restrain pipe as required

OAK STREET

E 1/4 COR. SEC. 34
FD. 3" CITY OF SCOTTSDALE
BRASS CAP IN HANDHOLE

1330.03'

FD. 3" CITY OF SCOTTSDALE
BRASS CAP IN FLUSH

PALM LANE
S 89°03'15" W 2624.03'
1312.02'

A.P.N. 129-33-019A
CHAPMAN MCDOWELL LLC
2011-0226253 M.C.R.

LOT 1 WONDERLAND
BK. 100, PG. 19, M.C.R.
A.P.N. 129-33-018B
CAPITAL REAL ESTATE-DWELL LLC
2016-0940342 M.C.R.

SMH
RIM: 41.36
INV 8" N: 34.98
INV 8" S: 34.99

N. LINE, S. 1/2,
SE. 1/4, SEC. 34
SECTION 34

A.P.N. 129-33-019B
CAPITAL REAL ESTATE-DWELL LLC
2016-0940342 M.C.R.

EXISTING BUILDING

4" E

6' BLOCK WALL

N88°54'05"E 230.06'

FD. NAIL IN
WASHER L.S. #42137

coordinate with adjacent property owner as-required

6"W (ACP)

CONNECT TO EXISTING
6" WATERLINE

PROPOSED 6" D.I.P. WATERLINE
(PRESSURE CLASS 350)

PROPOSED
14' WATERLINE
EASEMENT

PROPOSED 8" D.I.P. WATERLINE
(PRESSURE CLASS 350)

PROPOSED FIRE HYDRANT
COMPLETE (TYP.)

★ LF$_{88}$=1243.00
PAD=1242.33

PROPOSED 8" D.I.P. WATERLINE
(PRESSURE CLASS 350)

PROPOSED
14' WATERLINE
EASEMENT

E. LINE, W. 380.00'
W. LINE, SE. 1/4,
SE. 1/4, SECTION 34

PROPOSED 8" D.I.P. WATERLINE
(PRESSURE CLASS 350)

★ LF$_{88}$=1243.00
PAD=1242.33

PROPOSED
14' WATERLINE
EASEMENT

PROPOSED FIRE HYDRANT
COMPLETE (TYP.)

PARKING GARAGE

PROPOSED 8" D.I.P. WATERLINE
(PRESSURE CLASS 350)

★ LF$_{88}$=1243.00
PAD=1242.33

PARKING GARAGE

PROPOSED
14' WATERLINE
EASEMENT

GATE

PROPOSED 8" D.I.P. WATERLINE
(PRESSURE CLASS 350)

CONNECT TO EXISTING
SEWER MANHOLE

PROPOSED 8" P.V.C.
SEWERLINE (SDR-35)

PROPOSED SEWER MANHOLE

MATCHLINE - SEE SHEET 2

PROPOSED 8" P.V.C.
SEWERLINE (SDR-35)

PROPOSED FIRE HYDRANT
COMPLETE (TYP.)

70TH STREET
S00°00'32"W 2673.68'
997.27'

FD. 1/2" REBAR
NO I.D.

S00°00'32"W 955.77'

LOT 1 WONDERLAND
BK. 100, PG. 19, M.C.R.
A.P.N. 129-33-018B
CAPITAL REAL ESTATE-DWELL LLC
2016-0940342 M.C.R.

30' R/W

30' R/W

SMH
RIM: 43.86
8" E: 37.29
8" W: 37.32

SMH
RIM: 40.74
INV 8" N: 36.07
INV 8" S: 36.17

SMH
RIM: 40.88
INV 8" N: 36.39
INV 8" W: 36.46

CATCH BASIN
RIM=40.57

5' ELECTRIC
EASEMENT
PER REC. NO.
2000-0291367

FD. 1/2" REBAR
W/ CAP
L.S. #42137

FD. 1/2" REBAR
W/ CAP
L.S. #21081

30.00'

N89°59'28"W 119.98'

S00°00'32"W 331.66'

S00°00'32"W 602.48'

A.P.N. 129-33-020A
CHAPMAN MCDOWELL LLC
2011-0226253 M.C.R.

1330.00'
N00°00'00"E 2660.04'
SCOTTSDALE ROAD

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

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

SNOISIA3d

SOUTHDALE
7000 E. MCDOWELL ROAD, SCOTTSDALE, AZ 85257

PRELIMINARY UTILITY PLAN

Registered Professional Engineer
CERTIFICATE NO.
46857
DANIEL G. MANN
4/26/21
Date Signed
ARIZONA, U.S.A.

3 engineering
civil engineering
planning
surveying

CAD TECH: PABLE V.
DESIGNER: D. MANN
DRAWN: D. MANN
ENGINEER: D. MANN

3 ENGINEERING, LLC
6370 E. THOMAS ROAD
SUITE # 200
SCOTTSDALE, ARIZONA 85251
PHONE: (602) 334-4387
FAX: (602) 490-3230
WWW.3ENGINEERING.COM

DATE: 04/26/21

PROJECT NO.
1872

SHEET NO.
PUTL203
3 of 3

Q.S.#13-44

17-DR-2021
5/6/2021

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