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 apritchard DATE 12/8/2023

12/8/2023

Master and Final

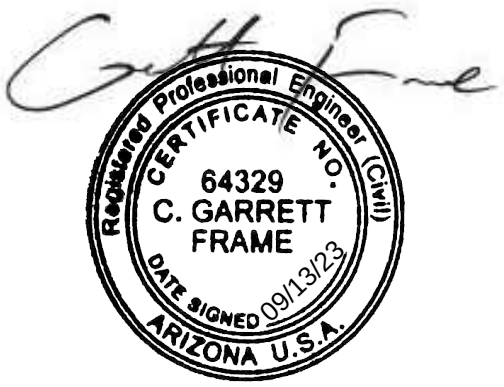
Water Basis of Design Report

Legacy North

NWC of Legacy Boulevard and N. Miller Road

Prepared for:

The Dinerstein Companies
1010 S. Coast Highway 101, Ste 106
Encinitas, CA 92024



Prepared by:

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291878000
September 2023

Legacy North

MASTER AND FINAL WATER BASIS OF DESIGN REPORT

SEPTEMBER 2023

Prepared By:

Kimley»Horn

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Contents

Appendices

1.0 INTRODUCTION

Kimley-Horn and Associates, Inc. has prepared this Master and Final water basis of design report for the proposed Legacy and Miller development at the northwest corner of Legacy Boulevard and Miller Road in Scottsdale, Arizona. This report intends to demonstrate that the proposed project conforms to the City of Scottsdale design requirements.

The Legacy North Development encompasses approximately 18.52 net acres and contains various multi-family residential buildings totaling 443 dwelling units as well as 11,200 square feet of nonresidential space. The project lies within a portion of the Northwest Quarter of Section 26, Township 4 North, Range 4 East of the Gila and Salt River Base and Meridian in Maricopa County, Arizona. More specifically, the site is bounded on the west by an APS substation, on the south by Legacy Boulevard, on the north by a multi-family complex, and east by undeveloped commercial land. See **Appendix A** for the Vicinity Map.

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2.0 DOMESTIC WATER ANALYSIS

2.1 INTENT AND SCOPE

The intent of this section is to evaluate the potable water infrastructure for the proposed development. As a result of this analysis, it will be determined if the potable water infrastructure is capable of satisfying the projected water demands for the proposed development in accordance with the City of Scottsdale Design Standards & Policies Manual (**Reference 1**) and the 2018 International Fire Code (**Reference 2**) for fire prevention.

2.2 DOMESTIC WATER SUPPLY

There is an existing 16-inch DIP water main located in Legacy Boulevard along the south side of the project. There is also an existing 16-inch DIP water main stub located in Miller Road at the southeast corner of the project. Additionally, there is an existing 20" DIP non-potable water main located in Legacy Road along the south of the project. There is also and existing 12" PVC water main in Miller Road north of project with a stub at the northeast corner of the project.

The project will extend the public water main within Miller Road along the site frontage and connect the aforementioned water main stubs. The water main in Miller Road to the north and south of the project are in separate pressure zones therefore a pressure reducing valve will be installed along the proposed water main. In order to serve the domestic and fire flow demand for the project, a proposed 8-inch DIP public water main will connect to the proposed 12-inch DIP public water main in Miller Road. This will create a looped water system around the buildings with fire hydrants spaced at a maximum interval of 400-feet.

For domestic water service, each of the buildings will have a water service that connects to the proposed 8-inch DIP water main with a water meter and backflow preventer. Refer to **Exhibit 2** for a utility layout.

2.3 INTERNATIONAL FIRE CODE

According to the City of Scottsdale Fire Department, the 2018 International Fire Code (IFC) with City of Scottsdale Amendments is currently the governing code with respect to fire protection requirements. The IFC evaluates the building construction type, occupancy descriptions, and square footage to set minimum fire flow requirements with regards to a particular development.

The largest proposed building is approximately 52,415 square feet with a V-B construction type. Per Table B105.1(2) of **Reference 2**, the required fire flow is 6,250 gallons per minute. As a fire sprinkler system will be installed in the building, the actual required fire flow is 25% of the fire flow from table B105.1(2) or 1,500 gallons per minute, whichever is greater. Therefore, the minimum required fire flow is 1,562.5 gallons per minute. Fire Flow requirements are provided in **Appendix B** for reference.

A fire flow test was performed by EJ Flow Testing on an existing fire hydrant northeast of the project, along 76th Street. The existing hydrant has an available flow of 5,372 gpm at 20 psi. See **Appendix C** for the fire flow test.

2.4 WATER DEMANDS

According to the guidelines provided in Figure 6-1.2 of **Reference 1**, the proposed development will add the following demands to the existing water system for Average Day Demand (ADD), Maximum Day Demand (MDD), and Peak Hour Demand (PHD):

Average Day Demand:

Residential: 185.3 GPD/unit = 0.27 GPM/unit * (High Density Condominium)

**Per Figure 6-1.2 Average Day Water Demands from the City of Scottsdale Design Standards & Policies Manual the above flow in GPM assumes a 12-hour active water use period per 24-hour day.*

Legacy & Miller (443 units proposed): (0.27 GPM/unit) x (443 units) = 119.61 GPM

Commercial: 0.8 GPD/sq. ft. = 0.00111 GPM/sq. ft. (Leasing and Clubhouse buildings)

**Per Figure 6-1.2 Average Day Water Demands from the City of Scottsdale Design Standards & Policies Manual the above flow in GPM assumes a 12-hour active water use period per 24-hour day.*

Legacy & Miller: (0.00111 GPM/sq. ft.) x (11,200 sq. ft.) = 12.43 GPM

Legacy & Miller Demands:

Average Day Demand = 119.61 GPM + 12.43 GPM = 132.04 GPM

Maximum Day Demand = (2) x (ADD) = 264.08 GPM

Peak Hour Demand = (3.5) x (ADD) = 462.14 GPM

2.5 HYDRAULIC CALCULATIONS

A water model, using Bentley's WaterCAD V8i program, was used to analyze the proposed demands on the water system. Refer to **Exhibit 3** in **Appendix A** for the WaterCAD network used in the model. To determine the existing static and residual water pressure in the area, a fire hydrant flow test was completed using the adjacent fire hydrants near the project. The results from this test produced three different data points for static and residual pressures with associated flow rates. This data was input into the water model and simulated as a reservoir and pump. Refer to **Table 3** below and **Appendix E** for flow test results.

Table 3: Fire Hydrant Flow Test Results

Pressure (PSI)	Flow Rate (GPM)
72	0
58	2,645
20	5,372

The following scenarios were modeled to evaluate the existing and proposed water facilities to demonstrate compliance with the design criteria identified in this report:

- Average Day Demand
- Maximum Day Demand
- Peak Hour Demand
- Maximum Day Demand + Fire Flow

Results from these scenarios can be seen in **Appendices B through E**. For Average Day and the Peak Hour Demand scenarios, all nodes analyzed maintained a minimum pressure of 40 PSI. For the Maximum Day + Fire Flow scenario, all nodes maintained a minimum pressure of 20 PSI while meeting fire flow requirements.

The following **Table 4** describes the minimum design criteria applied during this water analysis.

Table 4: Design Criteria

Design Criteria	Requirement
Minimum Pressure – Maximum Day + Fire Flow	20 psi
Minimum Pressure – Peak Hour, Average Day	40 psi

3.0 CONCLUSION

This development proposes to extend the public water system in Miller Road and connect to the proposed public water system at two points and construct an 8-inch DIP public water main loop to provide sufficient water to the development. The existing and proposed water infrastructure were found to be adequate to support the development.

4.0 REFERENCES

1. City of Scottsdale, *Design Standards and Policies Manual.* 2018.

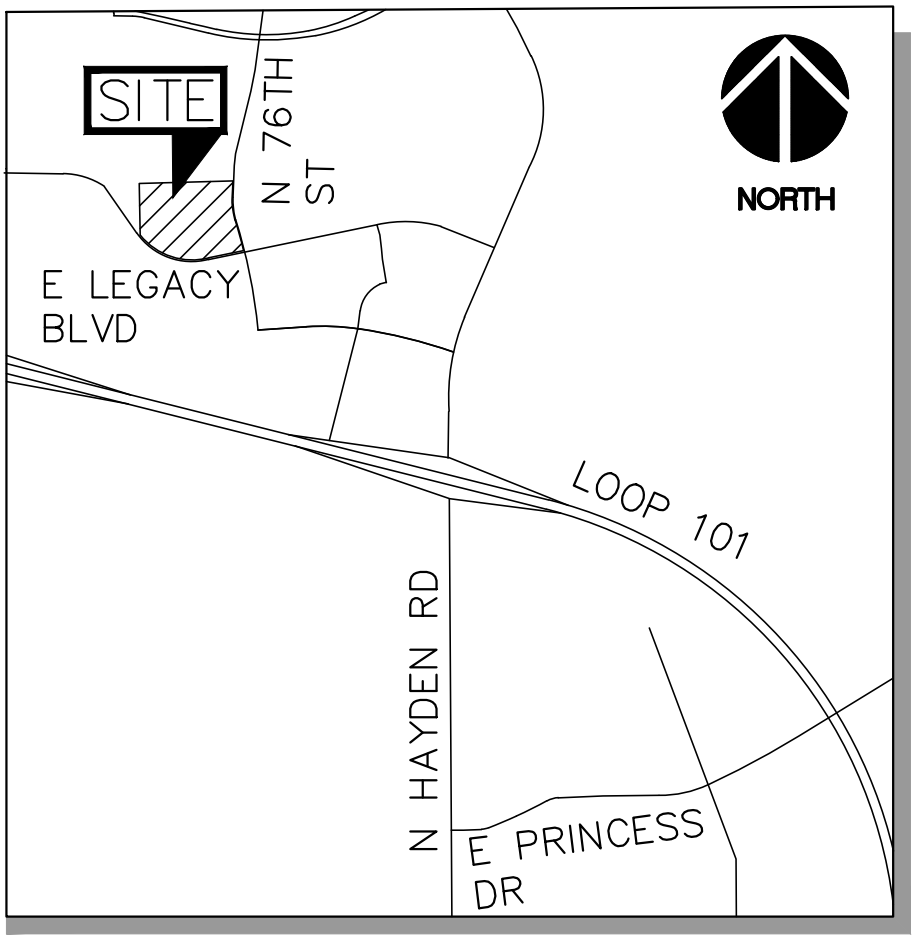
2. International Code Council, *2018 International Fire* Code. May 2018

APPENDIX A: Exhibits

Exhibit 1 – Vicinity Map

Exhibit 2 – Utility Layout

Exhibit 3 – WaterCAD Network



VICINITY MAP

SCOTTSDALE, AZ

N.T.S.

VICINITY MAP

N.T.S.

NORTH

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NORTH

GRAPHIC SCALE IN FEET
0 25 50 100

LEGEND

- PROPERTY LINE
- RIGHT OF WAY LINE
- STREET CENTERLINE
- W — EXISTING PUBLIC WATER MAIN
- S — EXISTING PUBLIC SEWER MAIN
- W — PROPOSED PUBLIC WATER MAIN
- F — PROPOSED PRIVATE FIRELINE
- S — PROPOSED SEWER MAIN/SERVICE
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- CO — PROPOSED SANITARY SEWER CLEANOUT
- EXISTING FIRE HYDRANT
- PROPOSED FIRE DEPARTMENT CONNECTION
- PROPOSED FIRE HYDRANT

BUILDING A
BUILDING B
BUILDING C
BUILDING D
BUILDING E
BUILDING F
BUILDING G
BUILDING H
BUILDING I
BUILDING J
BUILDING K
BUILDING L
BUILDING M
BUILDING N
BUILDING O
BUILDING P
BUILDING Q
BUILDING R
BUILDING S
BUILDING T
BUILDING U
BUILDING V
BUILDING W
BUILDING X
BUILDING Y
BUILDING Z
BUILDING N1
BUILDING A1
BUILDING B1
BUILDING J1
BUILDING K1
BUILDING L1
BUILDING I1
BUILDING M1
BUILDING O1
BUILDING C1
BUILDING D1
BUILDING E1
BUILDING F1
BUILDING G1
BUILDING H1

EXISTING 12" PVC WATER MAIN
PROPOSED LANDSCAPE METER
PROPOSED 6" SDR-35 PVC SEWER SERVICE, TYP.
PROP. 8" SDR-35 PVC SEWER MAIN
PROP. 6" CLASS 350 DIP PRIVATE FIRELINE, TYP.
PROPOSED 12" CLASS 350 DIP WATER MAIN
PROPOSED 8" CLASS 350 DIP WATER MAIN
PROPOSED FIRE HYDRANT, TYP.
20' WATER EASEMENT
DW
EXISTING 8" PVC SEWER MAIN
EXISTING FIRE HYDRANT
EXISTING 20" DIP NON-POTABLE WATER MAIN
EXISTING 16" DIP WATER MAIN
EXISTING 12" PVC SEWER MAIN
E LEGACY BLVD
N MILLER RD
EXISTING 16" DIP WATER MAIN

Provide 20' easements for water lines. DSPM 7-1.412

If this is a PRV, refer to COS standard detail for valve and vault. Specify upstream and downstream pressures on design drawings. Also include main and bypass PRV sizes.DSPM 6-1.407

ARV on water main on both sides of storm drain if there is a vertical realignment. DSPM 6-1.410.

What is the diameter of this segment of main, 16"?

Pressure Zone 5

Pressure Zone 4

Provide second source connection per DSPM 6-1.402. Include check valve (Bermad Check valve 760 -03 Series with DI Body, Epoxy Coated, SST trims and tubing) in vault to prevent Zone 5 from traveling to Zone 4.

EXHIBIT 2: UTILITY LAYOUT

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WaterCAD Layout

APPENDIX B: Average Day Demand Results

Pipe Table

Junction Table

Hydrant Table

Reservoir Table

Pump Table

Average Day Demand

Pipe Table - Time: 0.00 hours

Label	Start Node	Stop Node	Length (Scaled) (ft)	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss (ft)
P-1	J-1	J-2	157	12.0	Ductile Iron	130.0	144.26	0.41	0.01
P-2	J-1	J-4	199	12.0	Ductile Iron	130.0	-145.76	0.41	0.01
P-3	J-4	H-2	37	6.0	Ductile Iron	130.0	0.00	0.00	0.00
P-4	J-2	J-5	136	8.0	Ductile Iron	130.0	58.80	0.38	0.01
P-5	J-5	J-6	86	8.0	Ductile Iron	130.0	56.10	0.36	0.01
P-6	J-6	J-7	45	8.0	Ductile Iron	130.0	53.40	0.34	0.00
P-7	J-7	J-8	86	8.0	Ductile Iron	130.0	50.70	0.32	0.01
P-8	J-8	J-9	17	8.0	Ductile Iron	130.0	48.00	0.31	0.00
P-9	J-9	J-10	29	8.0	Ductile Iron	130.0	48.00	0.31	0.00
P-10	J-10	J-11	86	8.0	Ductile Iron	130.0	45.30	0.29	0.01
P-11	J-11	J-12	97	8.0	Ductile Iron	130.0	42.60	0.27	0.01
P-12	J-12	J-13	17	8.0	Ductile Iron	130.0	41.10	0.26	0.00
P-13	J-13	J-14	69	8.0	Ductile Iron	130.0	39.90	0.25	0.00
P-14	J-14	J-15	17	8.0	Ductile Iron	130.0	38.40	0.25	0.00
P-15	J-15	J-16	21	8.0	Ductile Iron	130.0	37.20	0.24	0.00
P-16	J-16	J-17	10	8.0	Ductile Iron	130.0	37.20	0.24	0.00
P-17	J-17	J-18	14	8.0	Ductile Iron	130.0	35.70	0.23	0.00
P-18	J-18	J-19	72	8.0	Ductile Iron	130.0	34.50	0.22	0.00
P-19	J-19	J-20	14	8.0	Ductile Iron	130.0	33.30	0.21	0.00
P-20	J-20	J-21	34	8.0	Ductile Iron	130.0	31.80	0.20	0.00
P-21	J-21	J-22	10	8.0	Ductile Iron	130.0	30.30	0.19	0.00
P-22	J-22	J-23	39	8.0	Ductile Iron	130.0	29.10	0.19	0.00
P-23	J-5	BLDG X	25	6.0	Ductile Iron	130.0	1.20	0.01	0.00
P-24	J-5	BLDG L	26	6.0	Ductile Iron	130.0	1.50	0.02	0.00
P-25	J-23	J-24	9	8.0	Ductile Iron	130.0	27.60	0.18	0.00
P-26	J-24	J-25	206	8.0	Ductile Iron	130.0	26.40	0.17	0.00
P-27	J-25	J-26	83	8.0	Ductile Iron	130.0	8.27	0.05	0.00
P-28	J-26	J-27	25	8.0	Ductile Iron	130.0	-3.63	0.02	0.00
P-30	J-28	J-29	153	8.0	Ductile Iron	130.0	-9.63	0.06	0.00
P-31	J-29	J-30	39	8.0	Ductile Iron	130.0	-9.63	0.06	0.00
P-32	J-30	J-31	26	8.0	Ductile Iron	130.0	-33.06	0.21	0.00
P-33	J-31	J-32	178	8.0	Ductile Iron	130.0	-39.06	0.25	0.01
P-34	J-32	BLDG F1	45	6.0	Ductile Iron	130.0	4.50	0.05	0.00
P-35	J-32	J-33	29	8.0	Ductile Iron	130.0	-43.56	0.28	0.00
P-36	J-33	J-34	150	8.0	Ductile Iron	130.0	-22.49	0.14	0.00
P-37	J-35	J-36	141	8.0	Ductile Iron	130.0	-28.49	0.18	0.00
P-38	J-36	J-37	192	8.0	Ductile Iron	130.0	-34.49	0.22	0.01
P-39	J-37	J-38	40	8.0	Ductile Iron	130.0	-40.49	0.26	0.00
P-41	PMP-3	J-4	28	100.0	Ductile Iron	130.0	145.76	0.01	0.00
P-42	R-1	PMP-3	24	100.0	Ductile Iron	130.0	145.76	0.01	0.00
P-43	J-47	BLDG A1	6	6.0	Ductile Iron	130.0	6.00	0.07	0.00
P-44	J-47	BLDG B1	9	6.0	Ductile Iron	130.0	6.00	0.07	0.00

Average Day Demand

Pipe Table - Time: 0.00 hours

Label	Start Node	Stop Node	Length (Scaled) (ft)	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss (ft)
P-45	J-44	J-47	24	6.0	Ductile Iron	130.0	12.00	0.14	0.00
P-46	J-34	J-35	117	8.0	Ductile Iron	130.0	-22.49	0.14	0.00
P-47	J-40	BLDG K1	85	6.0	Ductile Iron	130.0	11.90	0.14	0.00
P-48	J-40	BLDG Z	24	6.0	Ductile Iron	130.0	6.00	0.07	0.00
P-49	J-24	BLDG M	44	6.0	Ductile Iron	130.0	1.20	0.01	0.00
P-50	J-36	BLDG H1	22	6.0	Ductile Iron	130.0	6.00	0.07	0.00
P-51	J-35	BLDG G1	31	6.0	Ductile Iron	130.0	6.00	0.07	0.00
P-52	J-37	BLDG I1	28	6.0	Ductile Iron	130.0	6.00	0.07	0.00
P-53	J-43	BLDG M1	51	6.0	Ductile Iron	130.0	7.22	0.08	0.00
P-54	J-27	H-6	18	6.0	Ductile Iron	130.0	0.00	0.00	0.00
P-55	J-26	BLDG J1	23	6.0	Ductile Iron	130.0	11.90	0.14	0.00
P-56	J-39	BLDG Y	23	6.0	Ductile Iron	130.0	6.00	0.07	0.00
P-57	J-23	BLDG A	64	6.0	Ductile Iron	130.0	1.50	0.02	0.00
P-58	J-21	BLDG B	28	6.0	Ductile Iron	130.0	1.50	0.02	0.00
P-59	J-25	J-39	21	8.0	Ductile Iron	130.0	18.13	0.12	0.00
P-60	J-39	J-40	185	8.0	Ductile Iron	130.0	12.13	0.08	0.00
P-61	J-40	J-41	160	8.0	Ductile Iron	130.0	-5.77	0.04	0.00
P-62	J-41	J-42	35	8.0	Ductile Iron	130.0	-10.21	0.07	0.00
P-63	J-42	J-43	144	8.0	Ductile Iron	130.0	-10.21	0.07	0.00
P-64	J-43	J-30	92	8.0	Ductile Iron	130.0	-17.43	0.11	0.00
P-65	J-31	BLDG E1	24	6.0	Ductile Iron	130.0	6.00	0.07	0.00
P-66	J-30	BLDG D1	125	6.0	Ductile Iron	130.0	6.00	0.07	0.00
P-68	J-6	BLDG K	29	6.0	Ductile Iron	130.0	1.50	0.02	0.00
P-69	J-6	BLDG W	21	6.0	Ductile Iron	130.0	1.20	0.01	0.00
P-70	J-7	BLDG V	22	6.0	Ductile Iron	130.0	1.20	0.01	0.00
P-71	J-7	BLDG J	28	6.0	Ductile Iron	130.0	1.50	0.02	0.00
P-72	J-8	BLDG U	22	6.0	Ductile Iron	130.0	1.20	0.01	0.00
P-73	J-8	BLDG I	29	6.0	Ductile Iron	130.0	1.50	0.02	0.00
P-74	J-38	J-44	114	8.0	Ductile Iron	130.0	44.96	0.29	0.01
P-75	J-44	J-45	101	8.0	Ductile Iron	130.0	32.96	0.21	0.00

Average Day Demand

Pipe Table - Time: 0.00 hours

Label	Start Node	Stop Node	Length (Scaled) (ft)	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss (ft)
P-76	J-45	J-46	119	8.0	Ductile Iron	130.0	32.96	0.21	0.00
P-77	J-46	J-33	193	8.0	Ductile Iron	130.0	21.06	0.13	0.00
P-78	J-9	H-3	17	6.0	Ductile Iron	130.0	0.00	0.00	0.00
P-79	J-11	BLDG S	21	6.0	Ductile Iron	130.0	1.20	0.01	0.00
P-80	J-11	BLDG G	30	6.0	Ductile Iron	130.0	1.50	0.02	0.00
P-81	J-12	BLDG F	28	6.0	Ductile Iron	130.0	1.50	0.02	0.00
P-82	J-14	BLDG E	28	6.0	Ductile Iron	130.0	1.50	0.02	0.00
P-83	J-2	J-3	213	12.0	Ductile Iron	130.0	85.46	0.24	0.01
P-85	J-16	H-4	17	6.0	Ductile Iron	130.0	0.00	0.00	0.00
P-86	J-42	H-5	18	6.0	Ductile Iron	130.0	0.00	0.00	0.00
P-87	J-29	H-7	18	6.0	Ductile Iron	130.0	0.00	0.00	0.00
P-88	J-34	H-8	18	6.0	Ductile Iron	130.0	0.00	0.00	0.00
P-89	J-45	H-9	19	6.0	Ductile Iron	130.0	0.00	0.00	0.00
P-90	J-41	BLDG N1	113	6.0	Ductile Iron	130.0	4.44	0.05	0.00
P-91	J-46	BLDG L1	31	6.0	Ductile Iron	130.0	11.90	0.14	0.00
P-92	J-28	BLDG C1	23	6.0	Ductile Iron	130.0	6.00	0.07	0.00
P-95	J-10	BLDG T	21	6.0	Ductile Iron	130.0	1.20	0.01	0.00
P-96	J-10	BLDG H	29	6.0	Ductile Iron	130.0	1.50	0.02	0.00
P-97	J-13	BLDG R	21	6.0	Ductile Iron	130.0	1.20	0.01	0.00
P-98	J-15	BLDG Q	21	6.0	Ductile Iron	130.0	1.20	0.01	0.00
P-99	J-17	BLDG D	28	6.0	Ductile Iron	130.0	1.50	0.02	0.00
P-100	J-18	BLDG P	21	6.0	Ductile Iron	130.0	1.20	0.01	0.00
P-101	J-19	BLDG C	31	6.0	Ductile Iron	130.0	1.20	0.01	0.00
P-102	J-20	BLDG O	21	6.0	Ductile Iron	130.0	1.50	0.02	0.00
P-103	J-22	BLDG N	24	6.0	Ductile Iron	130.0	1.20	0.01	0.00

Average Day Demand

Junction Table - Time: 0.00 hours

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-1	47.47	1.50	213.43	72
J-2	45.87	0.00	213.41	72
J-3	42.72	0.00	213.41	74
J-4	47.47	0.00	213.44	72
J-5	44.42	0.00	213.40	73
J-6	44.56	0.00	213.39	73
J-7	44.57	0.00	213.39	73
J-8	44.41	0.00	213.38	73
J-9	44.00	0.00	213.38	73
J-10	44.29	0.00	213.38	73
J-11	43.89	0.00	213.38	73
J-12	43.26	0.00	213.37	74
J-13	43.02	0.00	213.37	74
J-14	42.31	0.00	213.37	74
J-15	42.22	0.00	213.37	74
J-16	42.09	0.00	213.36	74
J-17	42.18	0.00	213.36	74
J-18	42.11	0.00	213.36	74
J-19	41.76	0.00	213.36	74
J-20	41.65	0.00	213.36	74
J-21	41.39	0.00	213.36	74
J-22	41.32	0.00	213.36	74
J-23	41.41	0.00	213.36	74
BLDG X	44.50	1.20	213.40	73
BLDG L	46.20	1.50	213.40	72
J-24	40.98	0.00	213.36	75
J-25	37.88	0.00	213.35	76
J-26	36.56	0.00	213.35	76
J-27	36.73	0.00	213.35	76
J-28	34.65	0.00	213.35	77
J-29	35.34	0.00	213.35	77
J-30	34.70	0.00	213.35	77
J-31	34.95	0.00	213.36	77
J-32	37.19	0.00	213.36	76
BLDG F1	35.50	4.50	213.36	77
J-33	37.41	0.00	213.36	76
J-34	37.94	0.00	213.37	76
J-35	36.94	0.00	213.37	76
J-36	38.73	0.00	213.37	76
J-37	40.25	0.00	213.38	75
J-38	41.72	0.00	213.38	74
J-39	38.40	0.00	213.35	76
J-40	38.81	0.00	213.35	76
J-41	38.98	0.00	213.35	75
J-42	37.36	0.00	213.35	76
J-43	36.47	0.00	213.35	77

Average Day Demand

Junction Table - Time: 0.00 hours

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
BLDG E1	33.50	6.00	213.36	78
BLDG D1	33.50	6.00	213.35	78
BLDG K	46.20	1.50	213.39	72
BLDG W	44.50	1.20	213.39	73
BLDG V	44.00	1.20	213.39	73
BLDG J	46.60	1.50	213.39	72
BLDG U	44.00	1.20	213.38	73
BLDG I	46.60	1.50	213.38	72
J-44	41.46	0.00	213.37	74
J-45	41.25	0.00	213.37	74
J-46	39.49	0.00	213.37	75
BLDG S	43.50	1.20	213.38	73
BLDG G	46.50	1.50	213.38	72
BLDG F	46.50	1.50	213.37	72
BLDG E	44.70	1.50	213.37	73
BLDG N1	41.50	4.44	213.35	74
BLDG L1	40.00	11.90	213.37	75
BLDG C1	35.00	6.00	213.35	77
BLDG T	43.50	1.20	213.38	73
BLDG H	46.50	1.50	213.38	72
BLDG R	42.00	1.20	213.37	74
BLDG Q	42.00	1.20	213.37	74
BLDG D	44.00	1.50	213.36	73
BLDG P	41.50	1.20	213.36	74
BLDG C	44.00	1.20	213.36	73
BLDG O	41.50	1.50	213.36	74
BLDG N	40.50	1.20	213.36	75
BLDG B	43.30	1.50	213.36	74
BLDG A	43.30	1.50	213.36	74
BLDG Y	39.00	6.00	213.35	75
BLDG J1	37.00	11.90	213.35	76
BLDG M1	38.00	7.22	213.35	76
BLDG I1	40.00	6.00	213.38	75
BLDG G1	37.00	6.00	213.37	76
BLDG H1	38.50	6.00	213.37	76
BLDG M	40.50	1.20	213.36	75
BLDG Z	39.50	6.00	213.35	75
BLDG K1	37.00	11.90	213.35	76
J-47	41.68	0.00	213.37	74
BLDG B1	42.00	6.00	213.37	74
BLDG A1	41.50	6.00	213.37	74

Average Day Demand

Hydrant Table - Time: 0.00 hours

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
H-2	47.47	0.00	213.44	72
H-3	45.59	0.00	213.38	73
H-4	43.58	0.00	213.36	73
H-5	38.95	0.00	213.35	75
H-6	38.32	0.00	213.35	76
H-7	37.84	0.00	213.35	76
H-8	39.51	0.00	213.37	75
H-9	42.89	0.00	213.37	74

Reservoir Table - Time: 0.00 hours

Label	Elevation (ft)	Flow (Out net) (gpm)	Hydraulic Grade (ft)
R-1	47.47	145.76	47.47

Pump Table - Time: 0.00 hours

Label	Elevation (ft)	Pump Definition	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Flow (Total) (gpm)	Pump Head (ft)
PMP-3	47.47	Flow Test	47.47	213.44	145.76	165.97

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APPENDIX C: Maximum Day Demand Results

Pipe Table

Junction Table

Hydrant Table

Reservoir Table

Pump Table

Maximum Day Demand

Pipe Table - Time: 0.00 hours

Label	Start Node	Stop Node	Length (Scaled) (ft)	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss (ft)
P-1	J-1	J-2	157	12.0	Ductile Iron	130.0	278.53	0.79	0.04
P-2	J-1	J-4	199	12.0	Ductile Iron	130.0	-278.53	0.79	0.05
P-3	J-4	H-2	37	6.0	Ductile Iron	130.0	0.00	0.00	0.00
P-4	J-2	J-5	136	8.0	Ductile Iron	130.0	113.68	0.73	0.04
P-5	J-5	J-6	86	8.0	Ductile Iron	130.0	108.28	0.69	0.03
P-6	J-6	J-7	45	8.0	Ductile Iron	130.0	102.88	0.66	0.01
P-7	J-7	J-8	86	8.0	Ductile Iron	130.0	97.48	0.62	0.02
P-8	J-8	J-9	17	8.0	Ductile Iron	130.0	92.08	0.59	0.00
P-9	J-9	J-10	29	8.0	Ductile Iron	130.0	92.08	0.59	0.01
P-10	J-10	J-11	86	8.0	Ductile Iron	130.0	86.68	0.55	0.02
P-11	J-11	J-12	97	8.0	Ductile Iron	130.0	81.28	0.52	0.02
P-12	J-12	J-13	17	8.0	Ductile Iron	130.0	78.28	0.50	0.00
P-13	J-13	J-14	69	8.0	Ductile Iron	130.0	75.88	0.48	0.01
P-14	J-14	J-15	17	8.0	Ductile Iron	130.0	72.88	0.47	0.00
P-15	J-15	J-16	21	8.0	Ductile Iron	130.0	70.48	0.45	0.00
P-16	J-16	J-17	10	8.0	Ductile Iron	130.0	70.48	0.45	0.00
P-17	J-17	J-18	14	8.0	Ductile Iron	130.0	67.48	0.43	0.00
P-18	J-18	J-19	72	8.0	Ductile Iron	130.0	65.08	0.42	0.01
P-19	J-19	J-20	14	8.0	Ductile Iron	130.0	62.68	0.40	0.00
P-20	J-20	J-21	34	8.0	Ductile Iron	130.0	59.68	0.38	0.00
P-21	J-21	J-22	10	8.0	Ductile Iron	130.0	56.68	0.36	0.00
P-22	J-22	J-23	39	8.0	Ductile Iron	130.0	54.28	0.35	0.00
P-23	J-5	BLDG X	25	6.0	Ductile Iron	130.0	2.40	0.03	0.00
P-24	J-5	BLDG L	26	6.0	Ductile Iron	130.0	3.00	0.03	0.00
P-25	J-23	J-24	9	8.0	Ductile Iron	130.0	51.28	0.33	0.00
P-26	J-24	J-25	206	8.0	Ductile Iron	130.0	48.88	0.31	0.01
P-27	J-25	J-26	83	8.0	Ductile Iron	130.0	16.74	0.11	0.00
P-28	J-26	J-27	25	8.0	Ductile Iron	130.0	-7.06	0.05	0.00
P-30	J-28	J-29	153	8.0	Ductile Iron	130.0	-18.96	0.12	0.00
P-31	J-29	J-30	39	8.0	Ductile Iron	130.0	-18.96	0.12	0.00
P-32	J-30	J-31	26	8.0	Ductile Iron	130.0	-60.75	0.39	0.00
P-33	J-31	J-32	178	8.0	Ductile Iron	130.0	-72.65	0.46	0.03
P-34	J-32	BLDG F1	45	6.0	Ductile Iron	130.0	8.90	0.10	0.00
P-35	J-32	J-33	29	8.0	Ductile Iron	130.0	-81.55	0.52	0.01
P-36	J-33	J-34	150	8.0	Ductile Iron	130.0	-42.41	0.27	0.01
P-37	J-35	J-36	141	8.0	Ductile Iron	130.0	-54.31	0.35	0.01
P-38	J-36	J-37	192	8.0	Ductile Iron	130.0	-66.21	0.42	0.02
P-39	J-37	J-38	40	8.0	Ductile Iron	130.0	-78.11	0.50	0.01
P-41	PMP-3	J-4	28	100.0	Ductile Iron	130.0	278.53	0.01	0.00
P-42	R-1	PMP-3	24	100.0	Ductile Iron	130.0	278.53	0.01	0.00
P-43	J-47	BLDG A1	6	6.0	Ductile Iron	130.0	11.90	0.14	0.00
P-44	J-47	BLDG B1	9	6.0	Ductile Iron	130.0	11.90	0.14	0.00

Maximum Day Demand

Pipe Table - Time: 0.00 hours

Label	Start Node	Stop Node	Length (Scaled) (ft)	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss (ft)
P-45	J-44	J-47	24	6.0	Ductile Iron	130.0	23.80	0.27	0.00
P-46	J-34	J-35	117	8.0	Ductile Iron	130.0	-42.41	0.27	0.01
P-47	J-40	BLDG K1	85	6.0	Ductile Iron	130.0	23.80	0.27	0.01
P-48	J-40	BLDG Z	24	6.0	Ductile Iron	130.0	11.90	0.14	0.00
P-49	J-24	BLDG M	44	6.0	Ductile Iron	130.0	2.40	0.03	0.00
P-50	J-36	BLDG H1	22	6.0	Ductile Iron	130.0	11.90	0.14	0.00
P-51	J-35	BLDG G1	31	6.0	Ductile Iron	130.0	11.90	0.14	0.00
P-52	J-37	BLDG I1	28	6.0	Ductile Iron	130.0	11.90	0.14	0.00
P-53	J-43	BLDG M1	51	6.0	Ductile Iron	130.0	14.43	0.16	0.00
P-54	J-27	H-6	18	6.0	Ductile Iron	130.0	0.00	0.00	0.00
P-55	J-26	BLDG J1	23	6.0	Ductile Iron	130.0	23.80	0.27	0.00
P-56	J-39	BLDG Y	23	6.0	Ductile Iron	130.0	11.90	0.14	0.00
P-57	J-23	BLDG A	64	6.0	Ductile Iron	130.0	3.00	0.03	0.00
P-58	J-21	BLDG B	28	6.0	Ductile Iron	130.0	3.00	0.03	0.00
P-59	J-25	J-39	21	8.0	Ductile Iron	130.0	32.14	0.21	0.00
P-60	J-39	J-40	185	8.0	Ductile Iron	130.0	20.24	0.13	0.00
P-61	J-40	J-41	160	8.0	Ductile Iron	130.0	-15.46	0.10	0.00
P-62	J-41	J-42	35	8.0	Ductile Iron	130.0	-15.46	0.10	0.00
P-63	J-42	J-43	144	8.0	Ductile Iron	130.0	-15.46	0.10	0.00
P-64	J-43	J-30	92	8.0	Ductile Iron	130.0	-29.89	0.19	0.00
P-65	J-31	BLDG E1	24	6.0	Ductile Iron	130.0	11.90	0.14	0.00
P-66	J-30	BLDG D1	125	6.0	Ductile Iron	130.0	11.90	0.14	0.00
P-68	J-6	BLDG K	29	6.0	Ductile Iron	130.0	3.00	0.03	0.00
P-69	J-6	BLDG W	21	6.0	Ductile Iron	130.0	2.40	0.03	0.00
P-70	J-7	BLDG V	22	6.0	Ductile Iron	130.0	2.40	0.03	0.00
P-71	J-7	BLDG J	28	6.0	Ductile Iron	130.0	3.00	0.03	0.00
P-72	J-8	BLDG U	22	6.0	Ductile Iron	130.0	2.40	0.03	0.00
P-73	J-8	BLDG I	29	6.0	Ductile Iron	130.0	3.00	0.03	0.00
P-74	J-38	J-44	114	8.0	Ductile Iron	130.0	86.74	0.55	0.02
P-75	J-44	J-45	101	8.0	Ductile Iron	130.0	62.94	0.40	0.01

Maximum Day Demand

Pipe Table - Time: 0.00 hours

Label	Start Node	Stop Node	Length (Scaled) (ft)	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss (ft)
P-76	J-45	J-46	119	8.0	Ductile Iron	130.0	62.94	0.40	0.01
P-77	J-46	J-33	193	8.0	Ductile Iron	130.0	39.14	0.25	0.01
P-78	J-9	H-3	17	6.0	Ductile Iron	130.0	0.00	0.00	0.00
P-79	J-11	BLDG S	21	6.0	Ductile Iron	130.0	2.40	0.03	0.00
P-80	J-11	BLDG G	30	6.0	Ductile Iron	130.0	3.00	0.03	0.00
P-81	J-12	BLDG F	28	6.0	Ductile Iron	130.0	3.00	0.03	0.00
P-82	J-14	BLDG E	28	6.0	Ductile Iron	130.0	3.00	0.03	0.00
P-83	J-2	J-3	213	12.0	Ductile Iron	130.0	164.85	0.47	0.02
P-85	J-16	H-4	17	6.0	Ductile Iron	130.0	0.00	0.00	0.00
P-86	J-42	H-5	18	6.0	Ductile Iron	130.0	0.00	0.00	0.00
P-87	J-29	H-7	18	6.0	Ductile Iron	130.0	0.00	0.00	0.00
P-88	J-34	H-8	18	6.0	Ductile Iron	130.0	0.00	0.00	0.00
P-89	J-45	H-9	19	6.0	Ductile Iron	130.0	0.00	0.00	0.00
P-90	J-41	BLDG N1	113	6.0	Ductile Iron	130.0	0.00	0.00	0.00
P-91	J-46	BLDG L1	31	6.0	Ductile Iron	130.0	23.80	0.27	0.00
P-92	J-28	BLDG C1	23	6.0	Ductile Iron	130.0	11.90	0.14	0.00
P-95	J-10	BLDG T	21	6.0	Ductile Iron	130.0	2.40	0.03	0.00
P-96	J-10	BLDG H	29	6.0	Ductile Iron	130.0	3.00	0.03	0.00
P-97	J-13	BLDG R	21	6.0	Ductile Iron	130.0	2.40	0.03	0.00
P-98	J-15	BLDG Q	21	6.0	Ductile Iron	130.0	2.40	0.03	0.00
P-99	J-17	BLDG D	28	6.0	Ductile Iron	130.0	3.00	0.03	0.00
P-100	J-18	BLDG P	21	6.0	Ductile Iron	130.0	2.40	0.03	0.00
P-101	J-19	BLDG C	31	6.0	Ductile Iron	130.0	2.40	0.03	0.00
P-102	J-20	BLDG O	21	6.0	Ductile Iron	130.0	3.00	0.03	0.00
P-103	J-22	BLDG N	24	6.0	Ductile Iron	130.0	2.40	0.03	0.00

Maximum Day Demand

Junction Table - Time: 0.00 hours

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-1	47.47	0.00	213.04	72
J-2	45.87	0.00	213.01	72
J-3	42.72	0.00	212.99	74
J-4	47.47	0.00	213.09	72
J-5	44.42	0.00	212.96	73
J-6	44.56	0.00	212.94	73
J-7	44.57	0.00	212.92	73
J-8	44.41	0.00	212.90	73
J-9	44.00	0.00	212.90	73
J-10	44.29	0.00	212.89	73
J-11	43.89	0.00	212.88	73
J-12	43.26	0.00	212.86	73
J-13	43.02	0.00	212.86	73
J-14	42.31	0.00	212.85	74
J-15	42.22	0.00	212.84	74
J-16	42.09	0.00	212.84	74
J-17	42.18	0.00	212.84	74
J-18	42.11	0.00	212.84	74
J-19	41.76	0.00	212.83	74
J-20	41.65	0.00	212.83	74
J-21	41.39	0.00	212.82	74
J-22	41.32	0.00	212.82	74
J-23	41.41	0.00	212.82	74
BLDG X	44.50	2.40	212.96	73
BLDG L	46.20	3.00	212.96	72
J-24	40.98	0.00	212.82	74
J-25	37.88	0.00	212.81	76
J-26	36.56	0.00	212.80	76
J-27	36.73	0.00	212.80	76
J-28	34.65	0.00	212.80	77
J-29	35.34	0.00	212.81	77
J-30	34.70	0.00	212.81	77
J-31	34.95	0.00	212.81	77
J-32	37.19	0.00	212.84	76
BLDG F1	35.50	8.90	212.83	77
J-33	37.41	0.00	212.84	76
J-34	37.94	0.00	212.85	76
J-35	36.94	0.00	212.85	76
J-36	38.73	0.00	212.87	75
J-37	40.25	0.00	212.89	75
J-38	41.72	0.00	212.90	74
J-39	38.40	0.00	212.80	75
J-40	38.81	0.00	212.80	75
J-41	38.98	0.00	212.80	75
J-42	37.36	0.00	212.80	76
J-43	36.47	0.00	212.80	76

Maximum Day Demand

Junction Table - Time: 0.00 hours

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
BLDG E1	33.50	11.90	212.81	78
BLDG D1	33.50	11.90	212.80	78
BLDG K	46.20	3.00	212.94	72
BLDG W	44.50	2.40	212.94	73
BLDG V	44.00	2.40	212.92	73
BLDG J	46.60	3.00	212.92	72
BLDG U	44.00	2.40	212.90	73
BLDG I	46.60	3.00	212.90	72
J-44	41.46	0.00	212.87	74
J-45	41.25	0.00	212.86	74
J-46	39.49	0.00	212.85	75
BLDG S	43.50	2.40	212.88	73
BLDG G	46.50	3.00	212.88	72
BLDG F	46.50	3.00	212.86	72
BLDG E	44.70	3.00	212.85	73
BLDG N1	41.50	0.00	212.80	74
BLDG L1	40.00	23.80	212.85	75
BLDG C1	35.00	11.90	212.80	77
BLDG T	43.50	2.40	212.89	73
BLDG H	46.50	3.00	212.89	72
BLDG R	42.00	2.40	212.86	74
BLDG Q	42.00	2.40	212.84	74
BLDG D	44.00	3.00	212.84	73
BLDG P	41.50	2.40	212.84	74
BLDG C	44.00	2.40	212.83	73
BLDG O	41.50	3.00	212.83	74
BLDG N	40.50	2.40	212.82	75
BLDG B	43.30	3.00	212.82	73
BLDG A	43.30	3.00	212.82	73
BLDG Y	39.00	11.90	212.80	75
BLDG J1	37.00	23.80	212.80	76
BLDG M1	38.00	14.43	212.80	76
BLDG I1	40.00	11.90	212.89	75
BLDG G1	37.00	11.90	212.85	76
BLDG H1	38.50	11.90	212.87	75
BLDG M	40.50	2.40	212.82	75
BLDG Z	39.50	11.90	212.80	75
BLDG K1	37.00	23.80	212.80	76
J-47	41.68	0.00	212.87	74
BLDG B1	42.00	11.90	212.87	74
BLDG A1	41.50	11.90	212.87	74

Maximum Day Demand

Hydrant Table - Time: 0.00 hours

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
H-2	47.47	0.00	213.09	72
H-3	45.59	0.00	212.90	72
H-4	43.58	0.00	212.84	73
H-5	38.95	0.00	212.80	75
H-6	38.32	0.00	212.80	75
H-7	37.84	0.00	212.81	76
H-8	39.51	0.00	212.85	75
H-9	42.89	0.00	212.86	74

Reservoir Table - Time: 0.00 hours

Label	Elevation (ft)	Flow (Out net) (gpm)	Hydraulic Grade (ft)
R-1	47.47	278.53	47.47

Pump Table - Time: 0.00 hours

Label	Elevation (ft)	Pump Definition	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Flow (Total) (gpm)	Pump Head (ft)
PMP-3	47.47	Flow Test	47.47	213.09	278.53	165.62

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APPENDIX D: Peak Hour Demand Results

Pipe Table

Junction Table

Hydrant Table

Reservoir Table

Pump Table

Peak Hour Demand

Pipe Table - Time: 0.00 hours

Label	Start Node	Stop Node	Length (Scaled) (ft)	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss (ft)
P-1	J-1	J-2	157	12.0	Ductile Iron	130.0	500.79	1.42	0.11
P-2	J-1	J-4	199	12.0	Ductile Iron	130.0	-500.79	1.42	0.14
P-3	J-4	H-2	37	6.0	Ductile Iron	130.0	0.00	0.00	0.00
P-4	J-2	J-5	136	8.0	Ductile Iron	130.0	202.59	1.29	0.13
P-5	J-5	J-6	86	8.0	Ductile Iron	130.0	193.59	1.24	0.07
P-6	J-6	J-7	45	8.0	Ductile Iron	130.0	184.59	1.18	0.04
P-7	J-7	J-8	86	8.0	Ductile Iron	130.0	175.59	1.12	0.06
P-8	J-8	J-9	17	8.0	Ductile Iron	130.0	166.59	1.06	0.01
P-9	J-9	J-10	29	8.0	Ductile Iron	130.0	166.59	1.06	0.02
P-10	J-10	J-11	86	8.0	Ductile Iron	130.0	157.59	1.01	0.05
P-11	J-11	J-12	97	8.0	Ductile Iron	130.0	148.59	0.95	0.05
P-12	J-12	J-13	17	8.0	Ductile Iron	130.0	143.59	0.92	0.01
P-13	J-13	J-14	69	8.0	Ductile Iron	130.0	139.59	0.89	0.03
P-14	J-14	J-15	17	8.0	Ductile Iron	130.0	134.59	0.86	0.01
P-15	J-15	J-16	21	8.0	Ductile Iron	130.0	130.59	0.83	0.01
P-16	J-16	J-17	10	8.0	Ductile Iron	130.0	130.59	0.83	0.00
P-17	J-17	J-18	14	8.0	Ductile Iron	130.0	125.59	0.80	0.01
P-18	J-18	J-19	72	8.0	Ductile Iron	130.0	121.59	0.78	0.03
P-19	J-19	J-20	14	8.0	Ductile Iron	130.0	117.59	0.75	0.00
P-20	J-20	J-21	34	8.0	Ductile Iron	130.0	112.59	0.72	0.01
P-21	J-21	J-22	10	8.0	Ductile Iron	130.0	107.59	0.69	0.00
P-22	J-22	J-23	39	8.0	Ductile Iron	130.0	103.59	0.66	0.01
P-23	J-5	BLDG X	25	6.0	Ductile Iron	130.0	4.00	0.05	0.00
P-24	J-5	BLDG L	26	6.0	Ductile Iron	130.0	5.00	0.06	0.00
P-25	J-23	J-24	9	8.0	Ductile Iron	130.0	98.59	0.63	0.00
P-26	J-24	J-25	206	8.0	Ductile Iron	130.0	94.59	0.60	0.05
P-27	J-25	J-26	83	8.0	Ductile Iron	130.0	30.30	0.19	0.00
P-28	J-26	J-27	25	8.0	Ductile Iron	130.0	-11.70	0.07	0.00
P-30	J-28	J-29	153	8.0	Ductile Iron	130.0	-32.70	0.21	0.00
P-31	J-29	J-30	39	8.0	Ductile Iron	130.0	-32.70	0.21	0.00
P-32	J-30	J-31	26	8.0	Ductile Iron	130.0	-114.20	0.73	0.01
P-33	J-31	J-32	178	8.0	Ductile Iron	130.0	-135.20	0.86	0.08
P-34	J-32	BLDG F1	45	6.0	Ductile Iron	130.0	16.00	0.18	0.00
P-35	J-32	J-33	29	8.0	Ductile Iron	130.0	-151.20	0.97	0.02
P-36	J-33	J-34	150	8.0	Ductile Iron	130.0	-78.27	0.50	0.02
P-37	J-35	J-36	141	8.0	Ductile Iron	130.0	-99.27	0.63	0.04
P-38	J-36	J-37	192	8.0	Ductile Iron	130.0	-120.27	0.77	0.07
P-39	J-37	J-38	40	8.0	Ductile Iron	130.0	-141.27	0.90	0.02
P-41	PMP-3	J-4	28	100.0	Ductile Iron	130.0	500.79	0.02	0.00
P-42	R-1	PMP-3	24	100.0	Ductile Iron	130.0	500.79	0.02	0.00
P-43	J-47	BLDG A1	6	6.0	Ductile Iron	130.0	21.00	0.24	0.00
P-44	J-47	BLDG B1	9	6.0	Ductile Iron	130.0	21.00	0.24	0.00

Peak Hour Demand

Pipe Table - Time: 0.00 hours

Label	Start Node	Stop Node	Length (Scaled) (ft)	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss (ft)
P-45	J-44	J-47	24	6.0	Ductile Iron	130.0	42.00	0.48	0.00
P-46	J-34	J-35	117	8.0	Ductile Iron	130.0	-78.27	0.50	0.02
P-47	J-40	BLDG K1	85	6.0	Ductile Iron	130.0	42.00	0.48	0.02
P-48	J-40	BLDG Z	24	6.0	Ductile Iron	130.0	21.00	0.24	0.00
P-49	J-24	BLDG M	44	6.0	Ductile Iron	130.0	4.00	0.05	0.00
P-50	J-36	BLDG H1	22	6.0	Ductile Iron	130.0	21.00	0.24	0.00
P-51	J-35	BLDG G1	31	6.0	Ductile Iron	130.0	21.00	0.24	0.00
P-52	J-37	BLDG I1	28	6.0	Ductile Iron	130.0	21.00	0.24	0.00
P-53	J-43	BLDG M1	51	6.0	Ductile Iron	130.0	25.25	0.29	0.00
P-54	J-27	H-6	18	6.0	Ductile Iron	130.0	0.00	0.00	0.00
P-55	J-26	BLDG J1	23	6.0	Ductile Iron	130.0	42.00	0.48	0.00
P-56	J-39	BLDG Y	23	6.0	Ductile Iron	130.0	21.00	0.24	0.00
P-57	J-23	BLDG A	64	6.0	Ductile Iron	130.0	5.00	0.06	0.00
P-58	J-21	BLDG B	28	6.0	Ductile Iron	130.0	5.00	0.06	0.00
P-59	J-25	J-39	21	8.0	Ductile Iron	130.0	64.29	0.41	0.00
P-60	J-39	J-40	185	8.0	Ductile Iron	130.0	43.29	0.28	0.01
P-61	J-40	J-41	160	8.0	Ductile Iron	130.0	-19.71	0.13	0.00
P-62	J-41	J-42	35	8.0	Ductile Iron	130.0	-35.25	0.22	0.00
P-63	J-42	J-43	144	8.0	Ductile Iron	130.0	-35.25	0.22	0.01
P-64	J-43	J-30	92	8.0	Ductile Iron	130.0	-60.50	0.39	0.01
P-65	J-31	BLDG E1	24	6.0	Ductile Iron	130.0	21.00	0.24	0.00
P-66	J-30	BLDG D1	125	6.0	Ductile Iron	130.0	21.00	0.24	0.01
P-68	J-6	BLDG K	29	6.0	Ductile Iron	130.0	5.00	0.06	0.00
P-69	J-6	BLDG W	21	6.0	Ductile Iron	130.0	4.00	0.05	0.00
P-70	J-7	BLDG V	22	6.0	Ductile Iron	130.0	4.00	0.05	0.00
P-71	J-7	BLDG J	28	6.0	Ductile Iron	130.0	5.00	0.06	0.00
P-72	J-8	BLDG U	22	6.0	Ductile Iron	130.0	4.00	0.05	0.00
P-73	J-8	BLDG I	29	6.0	Ductile Iron	130.0	5.00	0.06	0.00
P-74	J-38	J-44	114	8.0	Ductile Iron	130.0	156.94	1.00	0.07
P-75	J-44	J-45	101	8.0	Ductile Iron	130.0	114.94	0.73	0.03

Peak Hour Demand

Pipe Table - Time: 0.00 hours

Label	Start Node	Stop Node	Length (Scaled) (ft)	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss (ft)
P-76	J-45	J-46	119	8.0	Ductile Iron	130.0	114.94	0.73	0.04
P-77	J-46	J-33	193	8.0	Ductile Iron	130.0	72.94	0.47	0.03
P-78	J-9	H-3	17	6.0	Ductile Iron	130.0	0.00	0.00	0.00
P-79	J-11	BLDG S	21	6.0	Ductile Iron	130.0	4.00	0.05	0.00
P-80	J-11	BLDG G	30	6.0	Ductile Iron	130.0	5.00	0.06	0.00
P-81	J-12	BLDG F	28	6.0	Ductile Iron	130.0	5.00	0.06	0.00
P-82	J-14	BLDG E	28	6.0	Ductile Iron	130.0	5.00	0.06	0.00
P-83	J-2	J-3	213	12.0	Ductile Iron	130.0	298.20	0.85	0.06
P-85	J-16	H-4	17	6.0	Ductile Iron	130.0	0.00	0.00	0.00
P-86	J-42	H-5	18	6.0	Ductile Iron	130.0	0.00	0.00	0.00
P-87	J-29	H-7	18	6.0	Ductile Iron	130.0	0.00	0.00	0.00
P-88	J-34	H-8	18	6.0	Ductile Iron	130.0	0.00	0.00	0.00
P-89	J-45	H-9	19	6.0	Ductile Iron	130.0	0.00	0.00	0.00
P-90	J-41	BLDG N1	113	6.0	Ductile Iron	130.0	15.54	0.18	0.00
P-91	J-46	BLDG L1	31	6.0	Ductile Iron	130.0	42.00	0.48	0.01
P-92	J-28	BLDG C1	23	6.0	Ductile Iron	130.0	21.00	0.24	0.00
P-95	J-10	BLDG T	21	6.0	Ductile Iron	130.0	4.00	0.05	0.00
P-96	J-10	BLDG H	29	6.0	Ductile Iron	130.0	5.00	0.06	0.00
P-97	J-13	BLDG R	21	6.0	Ductile Iron	130.0	4.00	0.05	0.00
P-98	J-15	BLDG Q	21	6.0	Ductile Iron	130.0	4.00	0.05	0.00
P-99	J-17	BLDG D	28	6.0	Ductile Iron	130.0	5.00	0.06	0.00
P-100	J-18	BLDG P	21	6.0	Ductile Iron	130.0	4.00	0.05	0.00
P-101	J-19	BLDG C	31	6.0	Ductile Iron	130.0	4.00	0.05	0.00
P-102	J-20	BLDG O	21	6.0	Ductile Iron	130.0	5.00	0.06	0.00
P-103	J-22	BLDG N	24	6.0	Ductile Iron	130.0	4.00	0.05	0.00

Peak Hour Demand

Junction Table - Time: 0.00 hours

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-1	47.47	0.00	211.97	71
J-2	45.87	0.00	211.86	72
J-3	42.72	0.00	211.80	73
J-4	47.47	0.00	212.11	71
J-5	44.42	0.00	211.73	72
J-6	44.56	0.00	211.65	72
J-7	44.57	0.00	211.62	72
J-8	44.41	0.00	211.56	72
J-9	44.00	0.00	211.54	72
J-10	44.29	0.00	211.53	72
J-11	43.89	0.00	211.47	73
J-12	43.26	0.00	211.42	73
J-13	43.02	0.00	211.41	73
J-14	42.31	0.00	211.38	73
J-15	42.22	0.00	211.37	73
J-16	42.09	0.00	211.36	73
J-17	42.18	0.00	211.36	73
J-18	42.11	0.00	211.35	73
J-19	41.76	0.00	211.33	73
J-20	41.65	0.00	211.32	73
J-21	41.39	0.00	211.31	74
J-22	41.32	0.00	211.31	74
J-23	41.41	0.00	211.30	74
BLDG X	44.50	4.00	211.73	72
BLDG L	46.20	5.00	211.73	72
J-24	40.98	0.00	211.30	74
J-25	37.88	0.00	211.25	75
J-26	36.56	0.00	211.25	76
J-27	36.73	0.00	211.25	76
J-28	34.65	0.00	211.25	76
J-29	35.34	0.00	211.25	76
J-30	34.70	0.00	211.26	76
J-31	34.95	0.00	211.26	76
J-32	37.19	0.00	211.34	75
BLDG F1	35.50	16.00	211.34	76
J-33	37.41	0.00	211.36	75
J-34	37.94	0.00	211.38	75
J-35	36.94	0.00	211.40	75
J-36	38.73	0.00	211.44	75
J-37	40.25	0.00	211.51	74
J-38	41.72	0.00	211.53	73
J-39	38.40	0.00	211.25	75
J-40	38.81	0.00	211.24	75
J-41	38.98	0.00	211.24	75
J-42	37.36	0.00	211.24	75
J-43	36.47	0.00	211.25	76

Peak Hour Demand

Junction Table - Time: 0.00 hours

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
BLDG E1	33.50	21.00	211.26	77
BLDG D1	33.50	21.00	211.25	77
BLDG K	46.20	5.00	211.65	72
BLDG W	44.50	4.00	211.65	72
BLDG V	44.00	4.00	211.62	73
BLDG J	46.60	5.00	211.62	71
BLDG U	44.00	4.00	211.56	72
BLDG I	46.60	5.00	211.56	71
J-44	41.46	0.00	211.46	74
J-45	41.25	0.00	211.43	74
J-46	39.49	0.00	211.39	74
BLDG S	43.50	4.00	211.47	73
BLDG G	46.50	5.00	211.47	71
BLDG F	46.50	5.00	211.42	71
BLDG E	44.70	5.00	211.38	72
BLDG N1	41.50	15.54	211.24	73
BLDG L1	40.00	42.00	211.38	74
BLDG C1	35.00	21.00	211.25	76
BLDG T	43.50	4.00	211.53	73
BLDG H	46.50	5.00	211.52	71
BLDG R	42.00	4.00	211.41	73
BLDG Q	42.00	4.00	211.37	73
BLDG D	44.00	5.00	211.36	72
BLDG P	41.50	4.00	211.35	73
BLDG C	44.00	4.00	211.33	72
BLDG O	41.50	5.00	211.32	73
BLDG N	40.50	4.00	211.31	74
BLDG B	43.30	5.00	211.31	73
BLDG A	43.30	5.00	211.30	73
BLDG Y	39.00	21.00	211.25	75
BLDG J1	37.00	42.00	211.24	75
BLDG M1	38.00	25.25	211.24	75
BLDG I1	40.00	21.00	211.51	74
BLDG G1	37.00	21.00	211.40	75
BLDG H1	38.50	21.00	211.44	75
BLDG M	40.50	4.00	211.30	74
BLDG Z	39.50	21.00	211.24	74
BLDG K1	37.00	42.00	211.22	75
J-47	41.68	0.00	211.46	73
BLDG B1	42.00	21.00	211.45	73
BLDG A1	41.50	21.00	211.45	74

Peak Hour Demand

Hydrant Table - Time: 0.00 hours

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
H-2	47.47	0.00	212.11	71
H-3	45.59	0.00	211.54	72
H-4	43.58	0.00	211.36	73
H-5	38.95	0.00	211.24	75
H-6	38.32	0.00	211.25	75
H-7	37.84	0.00	211.25	75
H-8	39.51	0.00	211.38	74
H-9	42.89	0.00	211.43	73

Reservoir Table - Time: 0.00 hours

Label	Elevation (ft)	Flow (Out net) (gpm)	Hydraulic Grade (ft)
R-1	47.47	500.79	47.47

Pump Table - Time: 0.00 hours

Label	Elevation (ft)	Pump Definition	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Flow (Total) (gpm)	Pump Head (ft)
PMP-3	47.47	Flow Test	47.47	212.11	500.79	164.64

APPENDIX E: Maximum Day Demand + Fire Flow Results

Pipe Table

Junction Table

Hydrant Table

Reservoir Table

Pump Table

Maximum Day + Fire Flow Demand

Pipe Table - Time: 0.00 hours

Label	Start Node	Stop Node	Length (Scaled) (ft)	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss (ft)
P-1	J-1	J-2	157	12.0	Ductile Iron	130.0	1,841.03	5.22	1.23
P-2	J-1	J-4	199	12.0	Ductile Iron	130.0	-1,841.03	5.22	1.56
P-3	J-4	H-2	37	6.0	Ductile Iron	130.0	0.00	0.00	0.00
P-4	J-2	J-5	136	8.0	Ductile Iron	130.0	865.67	5.53	1.90
P-5	J-5	J-6	86	8.0	Ductile Iron	130.0	860.27	5.49	1.18
P-6	J-6	J-7	45	8.0	Ductile Iron	130.0	854.87	5.46	0.62
P-7	J-7	J-8	86	8.0	Ductile Iron	130.0	849.47	5.42	1.16
P-8	J-8	J-9	17	8.0	Ductile Iron	130.0	844.07	5.39	0.23
P-9	J-9	J-10	29	8.0	Ductile Iron	130.0	62.82	0.40	0.00
P-10	J-10	J-11	86	8.0	Ductile Iron	130.0	57.42	0.37	0.01
P-11	J-11	J-12	97	8.0	Ductile Iron	130.0	52.02	0.33	0.01
P-12	J-12	J-13	17	8.0	Ductile Iron	130.0	49.02	0.31	0.00
P-13	J-13	J-14	69	8.0	Ductile Iron	130.0	46.62	0.30	0.00
P-14	J-14	J-15	17	8.0	Ductile Iron	130.0	43.62	0.28	0.00
P-15	J-15	J-16	21	8.0	Ductile Iron	130.0	41.22	0.26	0.00
P-16	J-16	J-17	10	8.0	Ductile Iron	130.0	41.22	0.26	0.00
P-17	J-17	J-18	14	8.0	Ductile Iron	130.0	38.22	0.24	0.00
P-18	J-18	J-19	72	8.0	Ductile Iron	130.0	35.82	0.23	0.00
P-19	J-19	J-20	14	8.0	Ductile Iron	130.0	33.42	0.21	0.00
P-20	J-20	J-21	34	8.0	Ductile Iron	130.0	30.42	0.19	0.00
P-21	J-21	J-22	10	8.0	Ductile Iron	130.0	27.42	0.18	0.00
P-22	J-22	J-23	39	8.0	Ductile Iron	130.0	25.02	0.16	0.00
P-23	J-5	BLDG X	25	6.0	Ductile Iron	130.0	2.40	0.03	0.00
P-24	J-5	BLDG L	26	6.0	Ductile Iron	130.0	3.00	0.03	0.00
P-25	J-23	J-24	9	8.0	Ductile Iron	130.0	22.02	0.14	0.00
P-26	J-24	J-25	206	8.0	Ductile Iron	130.0	19.62	0.13	0.00
P-27	J-25	J-26	83	8.0	Ductile Iron	130.0	0.67	0.00	0.00
P-28	J-26	J-27	25	8.0	Ductile Iron	130.0	-23.13	0.15	0.00
P-30	J-28	J-29	153	8.0	Ductile Iron	130.0	-35.03	0.22	0.01
P-31	J-29	J-30	39	8.0	Ductile Iron	130.0	-35.03	0.22	0.00
P-32	J-30	J-31	26	8.0	Ductile Iron	130.0	-90.01	0.57	0.01
P-33	J-31	J-32	178	8.0	Ductile Iron	130.0	-101.91	0.65	0.05
P-34	J-32	BLDG F1	45	6.0	Ductile Iron	130.0	8.90	0.10	0.00
P-35	J-32	J-33	29	8.0	Ductile Iron	130.0	-110.81	0.71	0.01
P-36	J-33	J-34	150	8.0	Ductile Iron	130.0	306.59	1.96	0.31
P-37	J-35	J-36	141	8.0	Ductile Iron	130.0	-486.56	3.11	0.68
P-38	J-36	J-37	192	8.0	Ductile Iron	130.0	-498.46	3.18	0.96
P-39	J-37	J-38	40	8.0	Ductile Iron	130.0	-510.36	3.26	0.21
P-41	PMP-3	J-4	28	100.0	Ductile Iron	130.0	1,841.03	0.08	0.00

Maximum Day + Fire Flow Demand

Pipe Table - Time: 0.00 hours

Label	Start Node	Stop Node	Length (Scaled) (ft)	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss (ft)
P-42	R-1	PMP-3	24	100.0	Ductile Iron	130.0	1,841.03	0.08	0.00
P-43	J-47	BLDG A1	6	6.0	Ductile Iron	130.0	11.90	0.14	0.00
P-44	J-47	BLDG B1	9	6.0	Ductile Iron	130.0	11.90	0.14	0.00
P-45	J-44	J-47	24	6.0	Ductile Iron	130.0	23.80	0.27	0.00
P-46	J-34	J-35	117	8.0	Ductile Iron	130.0	-474.66	3.03	0.54
P-47	J-40	BLDG K1	85	6.0	Ductile Iron	130.0	23.80	0.27	0.01
P-48	J-40	BLDG Z	24	6.0	Ductile Iron	130.0	11.90	0.14	0.00
P-49	J-24	BLDG M	44	6.0	Ductile Iron	130.0	2.40	0.03	0.00
P-50	J-36	BLDG H1	22	6.0	Ductile Iron	130.0	11.90	0.14	0.00
P-51	J-35	BLDG G1	31	6.0	Ductile Iron	130.0	11.90	0.14	0.00
P-52	J-37	BLDG I1	28	6.0	Ductile Iron	130.0	11.90	0.14	0.00
P-53	J-43	BLDG M1	51	6.0	Ductile Iron	130.0	14.43	0.16	0.00
P-54	J-27	H-6	18	6.0	Ductile Iron	130.0	0.00	0.00	0.00
P-55	J-26	BLDG J1	23	6.0	Ductile Iron	130.0	23.80	0.27	0.00
P-56	J-39	BLDG Y	23	6.0	Ductile Iron	130.0	11.90	0.14	0.00
P-57	J-23	BLDG A	64	6.0	Ductile Iron	130.0	3.00	0.03	0.00
P-58	J-21	BLDG B	28	6.0	Ductile Iron	130.0	3.00	0.03	0.00
P-59	J-25	J-39	21	8.0	Ductile Iron	130.0	18.96	0.12	0.00
P-60	J-39	J-40	185	8.0	Ductile Iron	130.0	7.06	0.05	0.00
P-61	J-40	J-41	160	8.0	Ductile Iron	130.0	-28.64	0.18	0.00
P-62	J-41	J-42	35	8.0	Ductile Iron	130.0	-28.64	0.18	0.00
P-63	J-42	J-43	144	8.0	Ductile Iron	130.0	-28.64	0.18	0.00
P-64	J-43	J-30	92	8.0	Ductile Iron	130.0	-43.07	0.27	0.00
P-65	J-31	BLDG E1	24	6.0	Ductile Iron	130.0	11.90	0.14	0.00
P-66	J-30	BLDG D1	125	6.0	Ductile Iron	130.0	11.90	0.14	0.00
P-68	J-6	BLDG K	29	6.0	Ductile Iron	130.0	3.00	0.03	0.00
P-69	J-6	BLDG W	21	6.0	Ductile Iron	130.0	2.40	0.03	0.00
P-70	J-7	BLDG V	22	6.0	Ductile Iron	130.0	2.40	0.03	0.00
P-71	J-7	BLDG J	28	6.0	Ductile Iron	130.0	3.00	0.03	0.00

Maximum Day + Fire Flow Demand

Pipe Table - Time: 0.00 hours

Label	Start Node	Stop Node	Length (Scaled) (ft)	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss (ft)
P-72	J-8	BLDG U	22	6.0	Ductile Iron	130.0	2.40	0.03	0.00
P-73	J-8	BLDG I	29	6.0	Ductile Iron	130.0	3.00	0.03	0.00
P-74	J-38	J-44	114	8.0	Ductile Iron	130.0	465.00	2.97	0.50
P-75	J-44	J-45	101	8.0	Ductile Iron	130.0	441.20	2.82	0.40
P-76	J-45	J-46	119	8.0	Ductile Iron	130.0	441.20	2.82	0.48
P-77	J-46	J-33	193	8.0	Ductile Iron	130.0	417.40	2.66	0.70
P-78	J-9	H-3	17	6.0	Ductile Iron	130.0	781.25	8.86	0.78
P-79	J-11	BLDG S	21	6.0	Ductile Iron	130.0	2.40	0.03	0.00
P-80	J-11	BLDG G	30	6.0	Ductile Iron	130.0	3.00	0.03	0.00
P-81	J-12	BLDG F	28	6.0	Ductile Iron	130.0	3.00	0.03	0.00
P-82	J-14	BLDG E	28	6.0	Ductile Iron	130.0	3.00	0.03	0.00
P-83	J-2	J-3	213	12.0	Ductile Iron	130.0	975.36	2.77	0.52
P-85	J-16	H-4	17	6.0	Ductile Iron	130.0	0.00	0.00	0.00
P-86	J-42	H-5	18	6.0	Ductile Iron	130.0	0.00	0.00	0.00
P-87	J-29	H-7	18	6.0	Ductile Iron	130.0	0.00	0.00	0.00
P-88	J-34	H-8	18	6.0	Ductile Iron	130.0	781.25	8.86	0.83
P-89	J-45	H-9	19	6.0	Ductile Iron	130.0	0.00	0.00	0.00
P-90	J-41	BLDG N1	113	6.0	Ductile Iron	130.0	0.00	0.00	0.00
P-91	J-46	BLDG L1	31	6.0	Ductile Iron	130.0	23.80	0.27	0.00
P-92	J-28	BLDG C1	23	6.0	Ductile Iron	130.0	11.90	0.14	0.00
P-95	J-10	BLDG T	21	6.0	Ductile Iron	130.0	2.40	0.03	0.00
P-96	J-10	BLDG H	29	6.0	Ductile Iron	130.0	3.00	0.03	0.00
P-97	J-13	BLDG R	21	6.0	Ductile Iron	130.0	2.40	0.03	0.00
P-98	J-15	BLDG Q	21	6.0	Ductile Iron	130.0	2.40	0.03	0.00
P-99	J-17	BLDG D	28	6.0	Ductile Iron	130.0	3.00	0.03	0.00
P-100	J-18	BLDG P	21	6.0	Ductile Iron	130.0	2.40	0.03	0.00
P-101	J-19	BLDG C	31	6.0	Ductile Iron	130.0	2.40	0.03	0.00
P-102	J-20	BLDG O	21	6.0	Ductile Iron	130.0	3.00	0.03	0.00
P-103	J-22	BLDG N	24	6.0	Ductile Iron	130.0	2.40	0.03	0.00

Maximum Day + Fire Flow Demand

Junction Table - Time: 0.00 hours

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-1	47.47	0.00	195.52	64
J-2	45.87	0.00	194.28	64
J-3	42.72	0.00	193.77	65
J-4	47.47	0.00	197.08	65
J-5	44.42	0.00	192.38	64
J-6	44.56	0.00	191.20	63
J-7	44.57	0.00	190.58	63
J-8	44.41	0.00	189.42	63
J-9	44.00	0.00	189.19	63
J-10	44.29	0.00	189.19	63
J-11	43.89	0.00	189.18	63
J-12	43.26	0.00	189.17	63
J-13	43.02	0.00	189.17	63
J-14	42.31	0.00	189.17	64
J-15	42.22	0.00	189.17	64
J-16	42.09	0.00	189.17	64
J-17	42.18	0.00	189.17	64
J-18	42.11	0.00	189.17	64
J-19	41.76	0.00	189.16	64
J-20	41.65	0.00	189.16	64
J-21	41.39	0.00	189.16	64
J-22	41.32	0.00	189.16	64
J-23	41.41	0.00	189.16	64
BLDG X	44.50	2.40	192.38	64
BLDG L	46.20	3.00	192.38	63
J-24	40.98	0.00	189.16	64
J-25	37.88	0.00	189.16	65
J-26	36.56	0.00	189.16	66
J-27	36.73	0.00	189.16	66
J-28	34.65	0.00	189.16	67
J-29	35.34	0.00	189.17	67
J-30	34.70	0.00	189.17	67
J-31	34.95	0.00	189.18	67
J-32	37.19	0.00	189.22	66
BLDG F1	35.50	8.90	189.22	67
J-33	37.41	0.00	189.23	66
J-34	37.94	0.00	188.93	65
J-35	36.94	0.00	189.46	66
J-36	38.73	0.00	190.14	66
J-37	40.25	0.00	191.11	65
J-38	41.72	0.00	191.32	65
J-39	38.40	0.00	189.16	65
J-40	38.81	0.00	189.16	65
J-41	38.98	0.00	189.16	65
J-42	37.36	0.00	189.16	66
J-43	36.47	0.00	189.17	66

Maximum Day + Fire Flow Demand

Junction Table - Time: 0.00 hours

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
BLDG E1	33.50	11.90	189.18	67
BLDG D1	33.50	11.90	189.17	67
BLDG K	46.20	3.00	191.20	63
BLDG W	44.50	2.40	191.20	63
BLDG V	44.00	2.40	190.58	63
BLDG J	46.60	3.00	190.58	62
BLDG U	44.00	2.40	189.42	63
BLDG I	46.60	3.00	189.42	62
J-44	41.46	0.00	190.81	65
J-45	41.25	0.00	190.41	65
J-46	39.49	0.00	189.93	65
BLDG S	43.50	2.40	189.18	63
BLDG G	46.50	3.00	189.18	62
BLDG F	46.50	3.00	189.17	62
BLDG E	44.70	3.00	189.17	63
BLDG N1	41.50	0.00	189.16	64
BLDG L1	40.00	23.80	189.93	65
BLDG C1	35.00	11.90	189.16	67
BLDG T	43.50	2.40	189.19	63
BLDG H	46.50	3.00	189.19	62
BLDG R	42.00	2.40	189.17	64
BLDG Q	42.00	2.40	189.17	64
BLDG D	44.00	3.00	189.17	63
BLDG P	41.50	2.40	189.17	64
BLDG C	44.00	2.40	189.16	63
BLDG O	41.50	3.00	189.16	64
BLDG N	40.50	2.40	189.16	64
BLDG B	43.30	3.00	189.16	63
BLDG A	43.30	3.00	189.16	63
BLDG Y	39.00	11.90	189.16	65
BLDG J1	37.00	23.80	189.16	66
BLDG M1	38.00	14.43	189.16	65
BLDG I1	40.00	11.90	191.11	65
BLDG G1	37.00	11.90	189.46	66
BLDG H1	38.50	11.90	190.14	66
BLDG M	40.50	2.40	189.16	64
BLDG Z	39.50	11.90	189.16	65
BLDG K1	37.00	23.80	189.15	66
J-47	41.68	0.00	190.81	65
BLDG B1	42.00	11.90	190.81	64
BLDG A1	41.50	11.90	190.81	65

Maximum Day + Fire Flow Demand

Hydrant Table - Time: 0.00 hours

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
H-2	47.47	0.00	197.08	65
H-3	45.59	781.25	188.42	62
H-4	43.58	0.00	189.17	63
H-5	38.95	0.00	189.16	65
H-6	38.32	0.00	189.16	65
H-7	37.84	0.00	189.17	65
H-8	39.51	781.25	188.09	64
H-9	42.89	0.00	190.41	64

Reservoir Table - Time: 0.00 hours

Label	Elevation (ft)	Flow (Out net) (gpm)	Hydraulic Grade (ft)
R-1	47.47	1,841.03	47.47

Pump Table - Time: 0.00 hours

Label	Elevation (ft)	Pump Definition	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Flow (Total) (gpm)	Pump Head (ft)
PMP-3	47.47	Flow Test	47.47	197.08	1,841.03	149.61

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APPENDIX F: Fire Hydrant Flow Test Results

Flow Test Summary

Project Name:	EJFT 23255-1 - Legacy & Miller
Project Address:	E Thompson Peak Pkwy & 76th St, Scottsdale, az 85255
Date of Flow Test:	2023-06-16
Time of Flow Test:	7:15 AM
Data Reliable Until:	2023-12-16
Conducted By:	Steven Saethre & Sheila Schauble (EJ Flow Test) 602.999.7637
Witnessed By:	Vince Cusumano (City of Scottsdale) 480.312.5761
City Forces Contacted:	City of Scottsdale (480.312.5761)
Permit Number:	C72617

Note Scottsdale Requires a Maximum Static Pressure of 72 psi for Safety

Raw Flow Test Data

Static Pressure:	104.0 PSI
Residual Pressure:	90.0 PSI
Flowing GPM:	2,645
GPM @ 20 PSI:	6,960

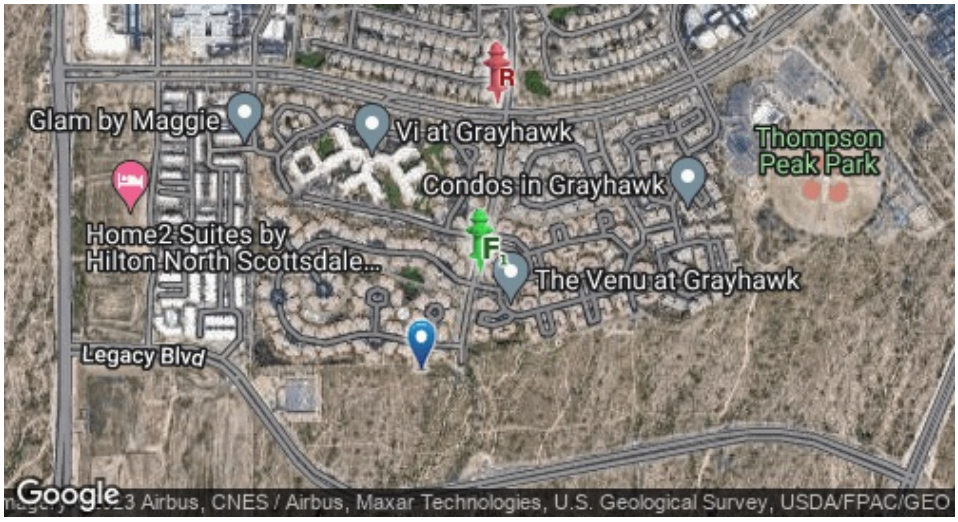
Data with a 32 PSI Safety Factor

Static Pressure:	72.0 PSI
Residual Pressure:	58.0 PSI
Flowing GPM:	2,645
GPM @ 20 PSI:	5,372

Hydrant F_1

Pitot Pressure (1):	55	PSI
Coefficient of Discharge (1):	0.9	
Hydrant Orifice Diameter (1):	4	inches

Additional Coefficient 0.83 on orifice #1



Project Site

Static-Residual Hydrant

Flow Hydrant

Distance Between F_1 and R
1149 ft (measured linearly)

Static-Residual Elevation
1681 ft (above sea level)

Flow Hydrant (F_1) Elevation
1659 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 |
John L. Echeverri | NICET Level IV 78493 SME | C-16 FP Contractor ROC 271705 AZ | NFPA CFPS 1915
www.flowtestsummary.com

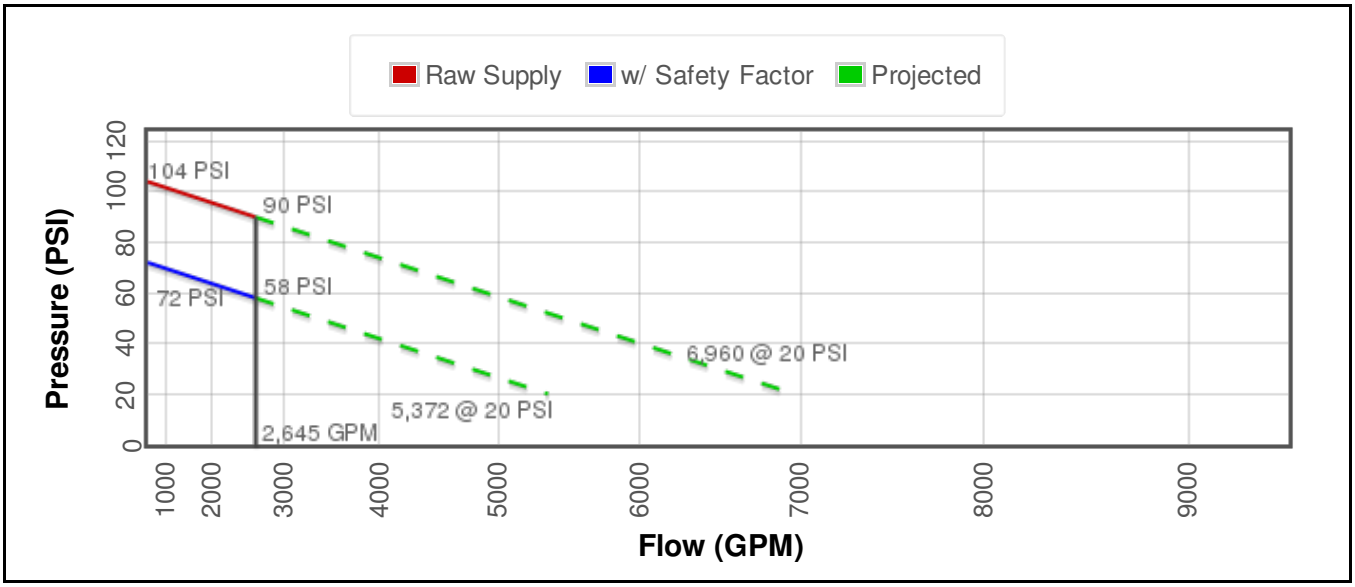
Flow Test Summary

Static-Residual Hydrant

Flow Hydrant (only hydrant F1 shown for clarity)

Approximate Project Site

Water Supply Curve $N^{1.85}$ Graph



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APPENDIX G: Fire Flow Requirements from 2018 IF

APPENDIX B

FIRE-FLOW REQUIREMENTS FOR BUILDINGS

User note:

About this appendix: *Appendix B provides a tool for the use of jurisdictions in establishing a policy for determining fire-flow requirements in accordance with Section 507.3. The determination of required fire flow is not an exact science, but having some level of information provides a consistent way of choosing the appropriate fire flow for buildings throughout a jurisdiction. The primary tool used in this appendix is a table that presents fire flow based on construction type and building area based on the correlation of the Insurance Services Office (ISO) method and the construction types used in the* International Building Code

SECTION B101
GENERAL

B101.1 Scope. The procedure for determining fire-flow requirements for buildings or portions of buildings hereafter constructed shall be in accordance with this appendix. This appendix does not apply to structures other than buildings.

SECTION B102
DEFINITIONS

B102.1 Definitions. For the purpose of this appendix, certain terms are defined as follows:

FIRE-FLOW. The flow rate of a water supply, measured at 20 pounds per square inch (psi) (138 kPa) residual pressure, that is available for firefighting.

FIRE-FLOW CALCULATION AREA. The floor area, in square feet (m^2), used to determine the required fire flow.

SECTION B103
MODIFICATIONS

B103.1 Decreases. The *fire code official* is authorized to reduce the fire-flow requirements for isolated buildings or a group of buildings in rural areas or small communities where the development of full fire-flow requirements is impractical.

B103.2 Increases. The *fire code official* is authorized to increase the fire-flow requirements where conditions indicate an unusual susceptibility to group fires or conflagrations. An increase shall be not more than twice that required for the building under consideration.

B103.3 Areas without water supply systems. For information regarding water supplies for fire-fighting purposes in rural and suburban areas in which adequate and reliable water supply systems do not exist, the *fire code official* is authorized to utilize NFPA 1142 or the *International Wildland-Urban Interface Code.*

B103.4 Outside storage use. The fire code is authorized to require a fire-flow of no less than 2,000 gpm (7571 L/min) where combustible materials, *hazardous materials* and other items are stored or used outside.

SECTION B104
FIRE-FLOW CALCULATION AREA

B104.1 General. The fire-flow calculation area shall be the total floor area of all floor levels within the *exterior walls*, and under the horizontal projections of the roof of a building,

B104.2 Area separation. Portions of buildings that are separated by *fire walls* without openings, constructed in accordance with the *International Building Code*, are allowed to be considered as separate fire-flow calculation areas.

B104.3 Type IA and Type IB construction. The fire-flow calculation area of buildings constructed of Type IA and Type IB construction shall be the area of the three largest successive floors.

Exception: Fire-flow calculation area for open parking garages shall be determined by the area of the largest floor.

SECTION B105
FIRE-FLOW REQUIREMENTS FOR BUILDINGS

B105.1 One- and two-family dwellings, Group R-3 and R-4 buildings and townhouses. The minimum *fire-flow* and flow duration requirements for one- and two-family *dwellings*, Group R-3 and R-4 buildings and *townhouses* shall be as specified in Tables B105.1(1) and B105.1(2).

B105.2 Buildings other than one- and two-family dwellings, Group R-3 and R-4 buildings and townhouses. The minimum *fire-flow* and flow duration for buildings other than one- and two-family *dwellings*, Group R-3 and R-4 buildings and *townhouses* shall be as specified in Tables B105.2 and B105.1(2).

Exception: A reduction in required fire-flow of up to 50 percent, as *approved*, is allowed when the building is provided with an *approved* NFPA 13 *automatic sprinkler system* installed in accordance with Section 903.3.1.1. The resulting fire-flow shall not be less than 1,500 gallons per minute (5678 L/min) for the prescribed duration as specified in Table B105.1. No reductions are allowed for NFPA 13D or 13R systems other than Group R-3 single-family homes.

B105.3 Water supply for buildings equipped with an automatic sprinkler system. For buildings equipped with an *approved automatic sprinkler system*, the water supply shall be capable of providing the greater of:

1. The *automatic sprinkler system* demand, including hose stream allowance.
2. The required *fire flow*.

TABLE B105.1(1)
REQUIRED FIRE FLOW FOR ONE- AND TWO-FAMILY DWELLINGS, GROUP R-3 AND R-4 BUILDINGS AND TOWNHOUSES

FIRE-FLOW CALCULATION AREA	AUTOMATIC SPRINKLER SYSTEM (Design Standard)	MINIMUM FIRE FLOW (gallons per minute)	FLOW DURATION (hours)
0–3,600	No automatic sprinkler system	1,000	1
3,601 and greater	No automatic sprinkler system	Value in Table B105.1(2)	Duration in Table B105.1(2) at the required fire-flow rate
0 - 3,600	Section 903.3.1.3 of the *International Fire Code* or Section P2904 of the *International Residential Code*	500	B105.1(2)
3,601 and greater	Section 903.3.1.3 of the *International Fire Code* or Section P2904 of the *International Residential Code*	½ value in Table B105.1(2)	Duration in Table B105.1(2)

TABLE B105.1(2)
MINIMUM REQUIRED FIRE-FLOW AND FLOW DURATION FOR BUILDINGS

FIRE-FLOW CALCULATION AREA (square feet)					FIRE-FLOW (gallons per minute)[b]	FLOW DURATION (hours)
Type IA and IB[a]	Type IIA and IIIA[a]	Type IV and V-A[a]	Type IIB and IIIB[a]	Type V-B[a]		
0-22,700	0-12,700	0-8,200	0-5,900	0-3,600	1,500	2
22,701-30,200	12,701-17,000	8,201-10,900	5,901-7,900	3,601-4,800	1,750	
30,201-38,700	17,001-21,800	10,901-12,900	7,901-9,800	4,801-6,200	2,000	
38,701-48,300	21,801-24,200	12,901-17,400	9,801-12,600	6,201-7,700	2,250	
48,301-59,000	24,201-33,200	17,401-21,300	12,601-15,400	7,701-9,400	2,500	
59,001-70,900	33,201-39,700	21,301-25,500	15,401-18,400	9,401-11,300	2,750	
70,901-83,700	39,701-47,100	25,501-30,100	18,401-21,800	11,301-13,400	3,000	3
83,701-97,700	47,101-54,900	30,101-35,200	21,801-25,900	13,401-15,600	3,250	
97,701-112,700	54,901-63,400	35,201-40,600	25,901-29,300	15,601-18,000	3,500	
112,701-128,700	63,401-72,400	40,601-46,400	29,301-33,500	18,001-20,600	3,750	
128,701-145,900	72,401-82,100	46,401-52,500	33,501-37,900	20,601-23,300	4,000	4
145,901-164,200	82,101-92,400	52,501-59,100	37,901-42,700	23,301-26,300	4,250	
164,201-183,400	92,401-103,100	59,101-66,000	42,701-47,700	26,301-29,300	4,500	
183,401-203,700	103,101-114,600	66,001-73,300	47,701-53,000	29,301-32,600	4,750	
203,701-225,200	114,601-126,700	73,301-81,100	53,001-58,600	32,601-36,000	5,000	
225,201-247,700	126,701-139,400	81,101-89,200	58,601-65,400	36,001-39,600	5,250	
247,701-271,200	139,401-152,600	89,201-97,700	65,401-70,600	39,601-43,400	5,500	
271,201-295,900	152,601-166,500	97,701-106,500	70,601-77,000	43,401-47,400	5,750	
295,901-Greater	166,501-Greater	106,501-115,800	77,001-83,700	47,401-51,500	6,000	
—	—	115,801-125,500	83,701-90,600	51,501-55,700	6,250	
—	—	125,501-135,500	90,601-97,900	55,701-60,200	6,500	
—	—	135,501-145,800	97,901-106,800	60,201-64,800	6,750	
—	—	145,801-156,700	106,801-113,200	64,801-69,600	7,000	
—	—	156,701-167,900	113,201-121,300	69,601-74,600	7,250	
—	—	167,901-179,400	121,301-129,600	74,601-79,800	7,500	
—	—	179,401-191,400	129,601-138,300	79,801-85,100	7,750	
—	—	191,401-Greater	138,301-Greater	85,101-Greater	8,000	

For SI: 1 square foot = 0.0929 m^2, 1 gallon per minute = 3.785 L/m, 1 pound per square inch = 6.895 kPa.

a. Types of construction are based on the *International Building Code*.

b. Measured at 20 psi residual pressure.

TABLE B105.2
REQUIRED FIRE FLOW FOR BUILDINGS OTHER THAN ONE- AND TWO-FAMILY DWELLINGS, GROUP R-3 AND R-4 BUILDINGS AND TOWNHOUSES

AUTOMATIC SPRINKLER SYSTEM (Design Standard)	MINIMUM FIRE FLOW (gallons per minute)	FLOW DURATION (hours)
No automatic sprinkler system	Value in Table B105.1(2)	Duration in Table B105.1(2)
Section 903.3.1.1 of the *International Fire Code*	25% of the value in Table B105.1(2)[a]	Duration in Table B105.1(2) at the reduced flow rate
Section 903.3.1.2 of the *International Fire Code*	25% of the value in Table B105.1(2)[b]	Duration in Table B105.1(2) at the reduced flow rate

For SI: 1 gallon per minute = 3.785 L/m.
a. The reduced fire flow shall be not less than 1,000 gallons per minute.
b. The reduced fire flow shall be not less than 1,500 gallons per minute.

SECTION B106
REFERENCED STANDARDS

ICC	IBC—18	International Building Code	B104.2
ICC	IWUIC—18	International Wildland-Urban Interface Code	B103.3
ICC	IRC—18	International Residential Code	Table 105.1(1)
NFPA	1142—17	Standard on Water Supplies for Suburban and Rural Fire Fighting	

B106.1 Additional requirements. See Chapter 5 of this code for additional requirements.

Kimley»Horn

APPENDIX H: Preliminary Utility Plan

APPR.	DATE	BY	DESCRIPTION	REV

PUBLIC WATER MAIN NOTES

1. INSTALL 8" CLASS 350 DIP WATER MAIN POLYWRAPPED, LENGTH PER PLAN, MINIMUM 3' COVER. BEDDING AND BACKFILL PER COS STD DET 2201.
2. INSTALL 8"X6" TEE WITH RESTRAINED JOINTS PER MAG STD DET 303.
3. INSTALL 8" BEND WITH RESTRAINED JOINTS PER MAG STD DET 303.
4. INSTALL FIRE HYDRANT ASSEMBLY WITH VALVE PER MAG STD DET 360.
14. INSTALL 6" CLASS 350 DIP WATER MAIN POLYWRAPPED WITH TRACER WIRE, LENGTH PER PLAN, MINIMUM 3' COVER. BEDDING AND BACKFILL PER COS STD DET 2201.
15. INSTALL 2" TYPE K SOFT COPPER WATER SERVICE LINE CONNECTION WITH 2" METER PER COS STD DET 2330.

PRIVATE SEWER NOTES

1. INSTALL 8" SDR-35 PVC PRIVATE SEWER MAIN.
2. INSTALL 6" SDR-35 PVC PRIVATE SEWER SERVICE.
3. INSTALL 48" SEWER MANHOLE PER MAG STD DET 420-2, INVERTS PER PLAN.
4. CONNECT TO BUILDING SEWER AT TWO WAY CLEANOUT. REF MEP PLANS FOR CONTINUATION.
5. SEWER CLEANOUT PER MAG STD DET 441.
6. INSTALL WYE CONNECTION, INVERT PER PLAN.

PRIVATE FIRELINE NOTES

1. INSTALL 6" CLASS 350 DIP FIRELINE POLYWRAPPED WITH TRACER WIRE, LENGTH PER PLAN, MINIMUM 3' COVER. BEDDING AND BACKFULL PER COS STD DET 2201.
3. BUILDING FIRELINE CONNECTION. INSTALL RISER AND BACKFLOW PREVENTOR PER COS STD DET 2369 IN FIRE RISER ROOM. REF FIRE SPRINKLER PLANS FOR CONTINUATION.
4. INSTALL 6" BEND WITH RESTRAINED JOINTS PER MAG STD DET 303.

PRIVATE WATER NOTES

1. BUILDING DOMESTIC WATER CONNECTION, REF MEP PLANS FOR CONTINUATION.
2. INSTALL 3" SCH 40 PVC DOMESTIC WATER SERVICE.
3. INSTALL 2" REDUCED PRESSURE BACKFLOW PREVENTION ASSEMBLY PER COS STD DET 2354.

No PVC from tap to meter. Service line from tap to meter shall be per DSPM 6-1.416.

CIVIL ENGINEER

KIMLEY-HORN AND ASSOCIATES, INC.
7740 N. 16TH STREET
SUITE 300
PHOENIX, AZ 85020
PH: (602) 944-5500
CONTACT: GARRETT FRAME, PE

DEVELOPER/OWNER

THE DINERSTEIN COMPANY
1010 S. COAST HIGHWAY 101, STE 106
ENCINITAS, CA 92024

LAND SURVEYOR

SURVEY INNOVATION GROUP, INC
22425 N. 16TH STREET, SUITE 1
PHOENIX, ARIZONA 85024
PH: (480) 922-0780
CONTACT: MICHAEL A. BANTA, RLS

ARCHITECT

KTGY ARCHITECTURE + PLANNING
17911 VON KARMAN AVE, STE 200
IRVINE, CA 92614
PH: (949) 851-2133

NOTES

1. ADD 1500' TO ALL ELEVATIONS.
2. ALL ELEVATIONS ARE INVERT ELEVATIONS, UNLESS OTHERWISE NOTED.
3. SEE HEREON FOR LEGEND.
4. ALL PIPE CROSSING INFORMATION IS PRELIMINARY AND SUBJECT TO CHANGE DURING FINAL DESIGN.
5. STATIONS AND OFFSETS ARE BASED ON MILLER ROAD CENTERLINE.

BENCHMARK

PER SURVEY INNOVATION GROUP, THE BENCHMARK IS:
FOUND 2 1/2" STEEL PIPE 0.15' UP WITH 3 1/4" BLM BRASS CAP STAMPED "T4N R4E 1/4 S26 S35 1995"

ELEVATION = 1598.718 (NAVD88)

LEGEND

- PROPERTY LINE
- RIGHT OF WAY LINE
- STREET CENTERLINE
- EASEMENT LINE
- S — EXISTING SANITARY SEWER MAIN
- W — EXISTING PUBLIC WATER MAIN
- CCTV — EXISTING CABLE TV LINE
- E — EXISTING ELECTRIC LINE
- EXISTING STORM DRAIN
- PROPOSED STORM DRAIN
- W — PROPOSED WATER MAIN
- S — PROPOSED SEWER MAIN
- F — PROPOSED FIRE LINE
- DW — PROPOSED DOMESTIC WATER LINE
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- PROPOSED FIRE DEPARTMENT CONNECTION
- PROPOSED CATCH BASIN
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE

APN 212-43-601
VILLAGE AT GREYHAWK OWNERS ASSOCIATION
DOCUMENT NO. 2011-0525654 M.C.R.
ZONING: R-5

FLOOD INFORMATION

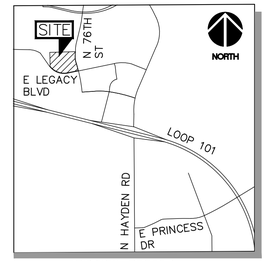
ACCORDING TO THE FLOOD INSURANCE RATE MAP #04013C1320 L, DATED 10/16/2013, THIS PROPERTY IS LOCATED IN FLOOD ZONE "AO" IS DEFINED AS AREAS WITH BASE FLOOD ELEVATION OR DEPTH. (DEPTH1 FEET)(VEL 3 FEET/SECOND)

PENDING LOMR APPROVAL THIS PROPERTY WILL BE LOCATED IN FLOOD ZONE "X" IS DEFINED AS AREAS OF 0.2% ANNUAL CHANCE FLOOD HAZARD, AREAS OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTH LESS THAN ONE FOOT OR WITH DRAINAGE AREAS OF LESS THAN ONE SQUARE MILE.

BASIS OF BEARING

PER SURVEY INNOVATION GROUP, THE BASIS OF BEARING IS THE SOUTH LINE OF THE SOUTHEAST QUARTER OF SECTION 26, TOWNSHIP 4 NORTH, RANGE 4 EAST OF THE GILA AND SALT RIVER BASE AND MERIDIAN, MARICOPA COUNTY, ARIZONA, AS SHOWN IN BOOK 693, PAGE 3 MARICOPA COUNTY RECORDS.

SAID LINE BEARS SOUTH 89 DEGREES 58 MINUTES 20 SECONDS EAST.

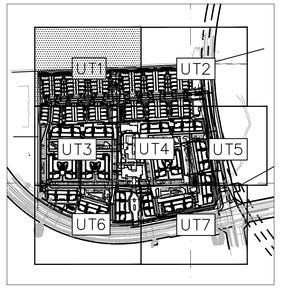


VICINITY MAP
SCOTTSDALE, AZ
N.T.S.

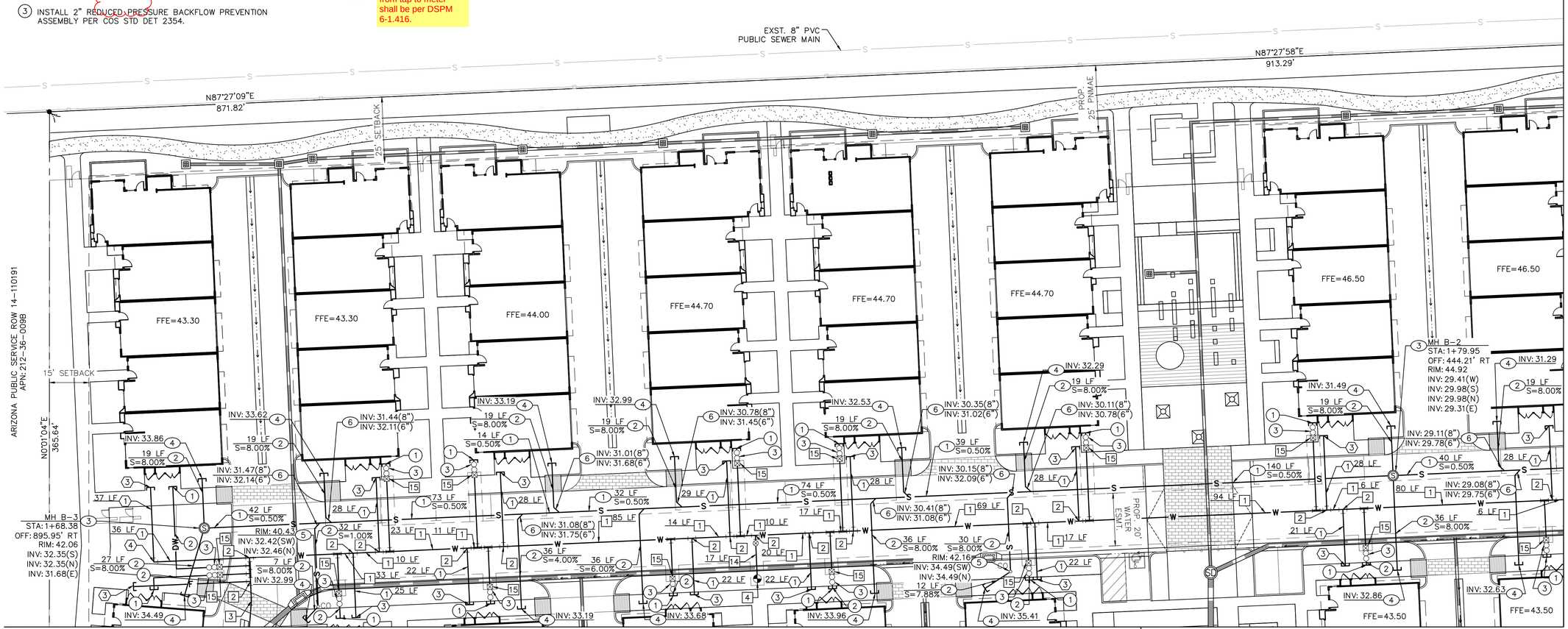
NORTH

GRAPHIC SCALE IN FEET
0 10 20 40

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



KEY MAP
N.T.S.



Kimley»Horn

7740 North 16th Street, Suite 300
Phoenix, Arizona 85020 (602) 944-5500

NWC LEGACY BLVD AND MILLER ROAD

PRELIMINARY UTILITY PLAN

SCOTTSDALE, ARIZONA

PROJECT No.	291878000
SCALE (H):	1"=20'
SCALE (V):	NONE
DRAWN BY:	HDO
DESIGN BY:	RMH
CHECK BY:	CGF
DATE:	09/13/23

Registered Professional Engineer (Civil)
CERTIFICATE NO.
64329
C. GARRETT FRAME
Date Signed 09/13/23
ARIZONA, USA
Expires 06/30/25

878000Pre-UT.dwg

UT1

1 OF 7 SHEETS

PUBLIC WATER MAIN NOTES

1. INSTALL 8" CLASS 350 DIP WATER MAIN POLYWRAPPED, LENGTH PER PLAN, MINIMUM 3' COVER. BEDDING AND BACKFILL PER COS STD DET 2201.
2. INSTALL 8"X6" TEE WITH RESTRAINED JOINTS PER MAG STD DET 303.
3. INSTALL 8" BEND WITH RESTRAINED JOINTS PER MAG STD DET 303.
4. INSTALL FIRE HYDRANT ASSEMBLY WITH VALVE PER MAG STD DET 360.
9. CONNECT TO EXISTING 12" WATER MAIN WITH 12" BEND.
13. INSTALL 12"X8" TEE WITH RESTRAINED JOINTS PER MAG STD DET 303.
14. INSTALL 6" CLASS 350 DIP WATER MAIN POLYWRAPPED WITH TRACER WIRE, LENGTH PER PLAN, MINIMUM 3' COVER. BEDDING AND BACKFILL PER COS STD DET 2201.
15. INSTALL 2" TYPE K SOFT COPPER WATER SERVICE LINE CONNECTION WITH 2" METER PER COS STD DET 2330.
18. INSTALL 12" CLASS 350 DIP WATER MAIN POLYWRAPPED WITH TRACER WIRE, LENGTH PER PLAN. 3' MINIMUM COVER.
20. INSTALL 1" TYPE K SOFT COPPER LANDSCAPE SERVICE LINE CONNECTION WITH 1" METER PER COS STD DET 2330.

PRIVATE SEWER NOTES

1. INSTALL 8" SDR-35 PVC PRIVATE SEWER MAIN.
2. INSTALL 6" SDR-35 PVC PRIVATE SEWER SERVICE.
3. INSTALL 48" SEWER MANHOLE PER MAG STD DET 420-2, INVERTS PER PLAN.
4. CONNECT TO BUILDING SEWER AT TWO WAY CLEANOUT. REF MEP PLANS FOR CONTINUATION.
6. INSTALL WYE CONNECTION, INVERT PER PLAN.

PUBLIC SEWER NOTES

1. INSTALL 8" SDR-35 PVC PUBLIC SEWER MAIN.
3. INSTALL 48" SEWER MANHOLE PER MAG STD DET 420-2, INVERTS PER PLAN.

PRIVATE WATER NOTES

1. BUILDING DOMESTIC WATER CONNECTION, REF MEP PLANS FOR CONTINUATION.
2. INSTALL 3" SCH 40 PVC DOMESTIC WATER SERVICE.
3. INSTALL 2" REDUCED PRESSURE BACKFLOW PREVENTION ASSEMBLY PER COS STD DET 2354.
4. INSTALL 1" REDUCED PRESSURE BACKFLOW PREVENTION ASSEMBLY PER COS STD DET 2354.

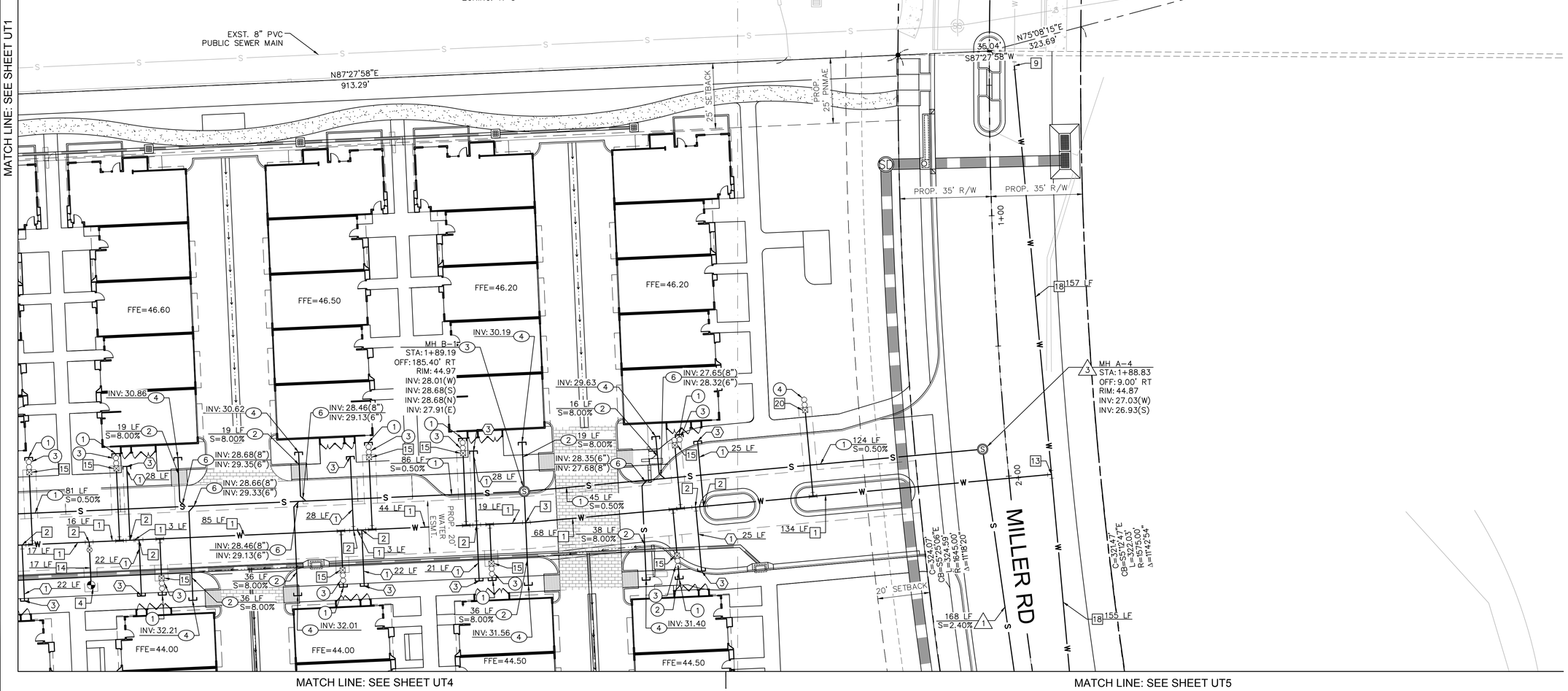
PRIVATE FIRELINE NOTES

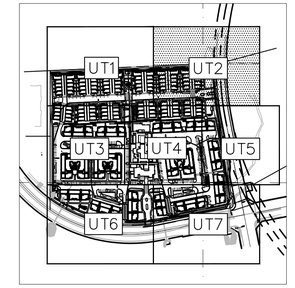
1. INSTALL 6" CLASS 350 DIP FIRELINE POLYWRAPPED WITH TRACER WIRE, LENGTH PER PLAN, MINIMUM 3' COVER. BEDDING AND BACKFULL PER COS STD DET 2201.
3. BUILDING FIRELINE CONNECTION. INSTALL RISER AND BACKFLOW PREVENTOR PER COS STD DET 2369 IN FIRE RISER ROOM. REF FIRE SPRINKLER PLANS FOR CONTINUATION.

NOTES

1. ADD 1500' TO ALL ELEVATIONS.
2. ALL ELEVATIONS ARE INVERT ELEVATIONS, UNLESS OTHERWISE NOTED.
3. SEE SHEET UT1 FOR LEGEND.
4. ALL PIPE CROSSING INFORMATION IS PRELIMINARY AND SUBJECT TO CHANGE DURING FINAL DESIGN.
5. STATIONS AND OFFSETS ARE BASED ON MILLER ROAD CENTERLINE.

APN 212-43-601
VILLAGE AT GREYHAWK OWNERS ASSOCIATION
DOCUMENT NO. 2011-0525654 M.C.R.
ZONING: R-5





KEY MAP
N.T.S.

NORTH

GRAPHIC SCALE IN FEET
0 10 20 40

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

REV	DESCRIPTION	BY	DATE	APPR.

Kimley»Horn

7740 North 16th Street, Suite 300
Phoenix, Arizona 85020 (602) 944-5500

NWC LEGACY BLVD AND MILLER ROAD
SCOTTSDALE, ARIZONA

PRELIMINARY UTILITY PLAN

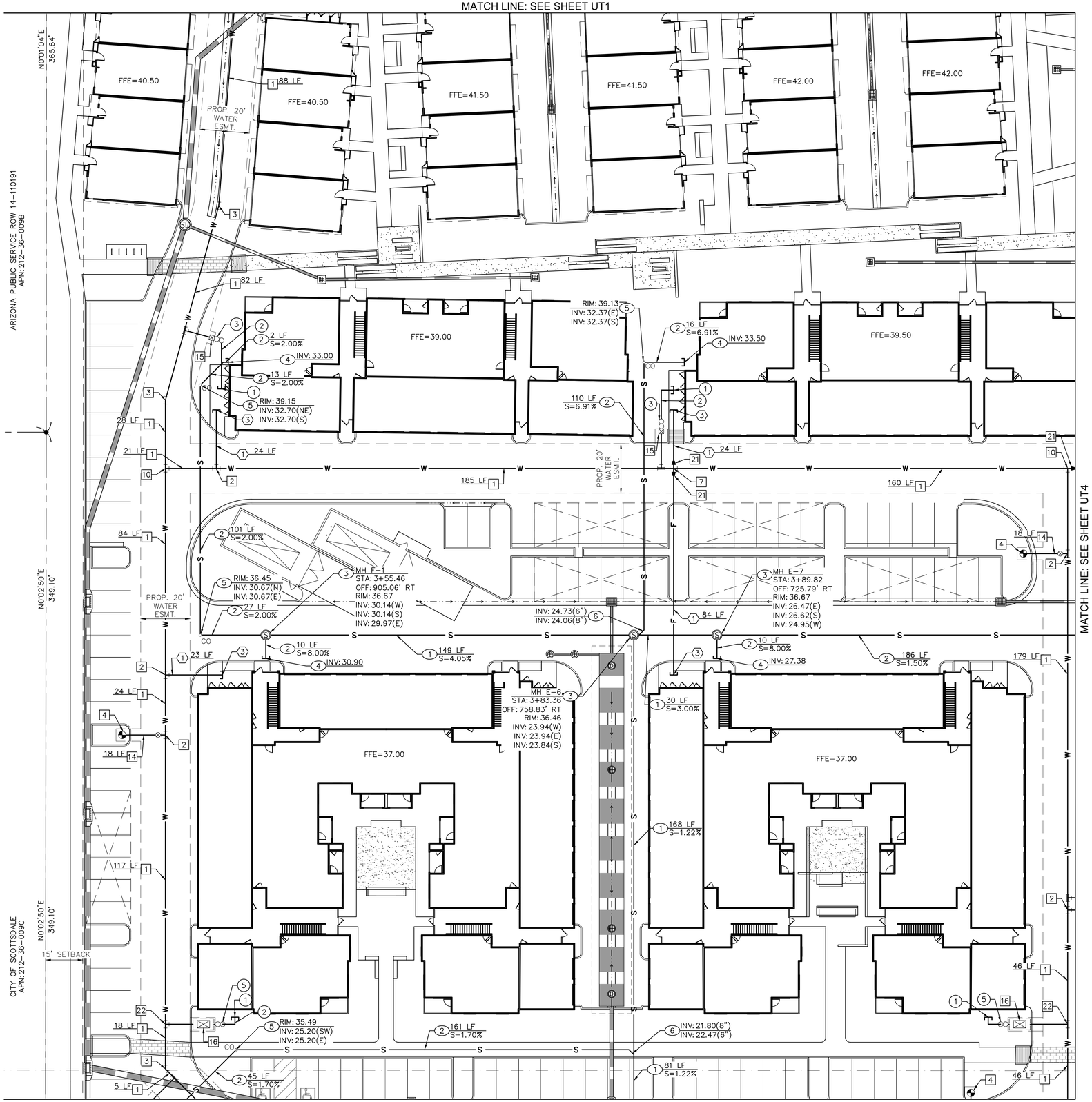
PROJECT No.	291878000
SCALE (H):	1"=20'
SCALE (V):	NONE
DRAWN BY:	HDO
DESIGN BY:	RMH
CHECK BY:	CGF
DATE:	09/13/23

Registered Professional Engineer (Civil)
CERTIFICATE NO
64329
C. GARRETT
FRAME
Date Signed 09/13/23
ARIZONA, U.S.A.
Expires 06/30/25

291878000Pre-UT.dwg

UT2
2 OF 7 SHEETS

MATCH LINE: SEE SHEET UT1



MATCH LINE: SEE SHEET UT6

MATCH LINE: SEE SHEET UT4

PUBLIC WATER MAIN NOTES

1. INSTALL 8" CLASS 350 DIP WATER MAIN POLYWRAPPED, LENGTH PER PLAN, MINIMUM 3' COVER. BEDDING AND BACKFILL PER COS STD DET 2201.
2. INSTALL 8"X6" TEE WITH RESTRAINED JOINTS PER MAG STD DET 303.
3. INSTALL 8" BEND WITH RESTRAINED JOINTS PER MAG STD DET 303.
4. INSTALL FIRE HYDRANT ASSEMBLY WITH VALVE PER MAG STD DET 360.
7. INSTALL 8"X8" CROSS CONNECTION WITH THRUST BLOCKS PER MAG STD DET 380.
10. INSTALL 8"X8" TEE WITH THRUST BLOCKS PER MAG STD DET 380.
14. INSTALL 6" CLASS 350 DIP WATER MAIN POLYWRAPPED WITH TRACER WIRE, LENGTH PER PLAN, MINIMUM 3' COVER. BEDDING AND BACKFILL PER COS STD DET 2201.
15. INSTALL 2" TYPE K SOFT COPPER WATER SERVICE LINE CONNECTION WITH 2" METER PER COS STD DET 2330.
16. INSTALL 3" DIP WATER SERVICE LINE CONNECTION WITH 3" METER PER COS STD DET 2345-1.
21. INSTALL 8"X6" REDUCER.
22. INSTALL 8"X3" TEE WITH RESTRAINED JOINTS PER MAG STD DET 303.

PRIVATE SEWER NOTES

1. INSTALL 8" SDR-35 PVC PRIVATE SEWER MAIN.
2. INSTALL 6" SDR-35 PVC PRIVATE SEWER SERVICE.
3. INSTALL 48" SEWER MANHOLE PER MAG STD DET 420-2, INVERTS PER PLAN.
4. CONNECT TO BUILDING SEWER AT TWO WAY CLEANOUT. REF MEP PLANS FOR CONTINUATION.
5. SEWER CLEANOUT PER MAG STD DET 441.
6. INSTALL WYE CONNECTION, INVERT PER PLAN.

PRIVATE FIRELINE NOTES

1. INSTALL 6" CLASS 350 DIP FIRELINE POLYWRAPPED WITH TRACER WIRE, LENGTH PER PLAN, MINIMUM 3' COVER. BEDDING AND BACKFULL PER COS STD DET 2201.
3. BUILDING FIRELINE CONNECTION. INSTALL RISER AND BACKFLOW PREVENTOR PER COS STD DET 2369 IN FIRE RISER ROOM. REF FIRE SPRINKLER PLANS FOR CONTINUATION.

PRIVATE WATER NOTES

1. BUILDING DOMESTIC WATER CONNECTION, REF MEP PLANS FOR CONTINUATION.
2. INSTALL 3" SCH 40 PVC DOMESTIC WATER SERVICE.
3. INSTALL 2" REDUCED PRESSURE BACKFLOW PREVENTION ASSEMBLY PER COS STD DET 2354.
5. INSTALL 3" REDUCED PRESSURE BACKFLOW PREVENTION ASSEMBLY PER COS STD DET 2353.

NOTES

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3. SEE SHEET UT1 FOR LEGEND.
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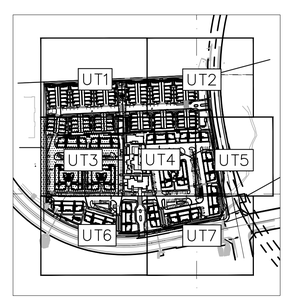


KEY MAP
N.T.S.

NORTH

GRAPHIC SCALE IN FEET
0 10 20 40

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

REV	DESCRIPTION	BY	DATE	APPR.

Kimley»Horn

7740 North 16th Street, Suite 300
Phoenix, Arizona 85020 (602) 944-5500

NWC LEGACY BLVD AND MILLER ROAD

PRELIMINARY UTILITY PLAN

SCOTTSDALE, ARIZONA

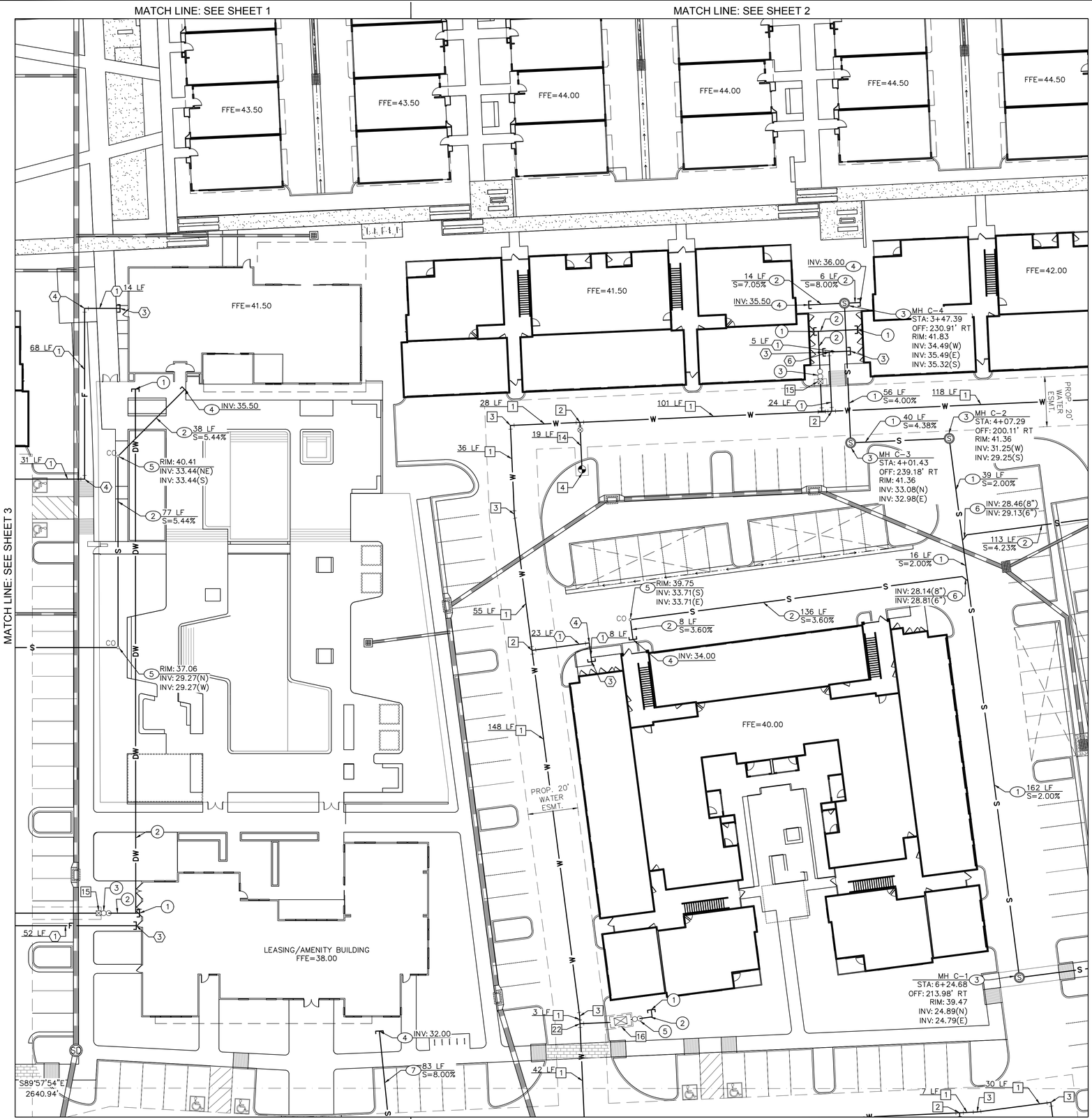
Registered Professional Engineer (Civil)
CERTIFICATE NO.
64329
C. GARRETT FRAME
Date Signed 09/13/23
ARIZONA, USA
Expires 06/30/25

PROJECT No.	291878000
SCALE (H):	1"=20'
SCALE (V):	NONE
DRAWN BY:	HDO
DESIGN BY:	RMH
CHECK BY:	CGF
DATE:	09/13/23

291878000Pre-UT.dwg

UT3

3 OF 7 SHEETS



PUBLIC WATER MAIN NOTES

1. INSTALL 8" CLASS 350 DIP WATER MAIN POLYWRAPPED, LENGTH PER PLAN, MINIMUM 3' COVER. BEDDING AND BACKFILL PER COS STD DET 2201.
2. INSTALL 8"X6" TEE WITH RESTRAINED JOINTS PER MAG STD DET 303.
3. INSTALL 8" BEND WITH RESTRAINED JOINTS PER MAG STD DET 303.
4. INSTALL FIRE HYDRANT ASSEMBLY WITH VALVE PER MAG STD DET 360.
14. INSTALL 6" CLASS 350 DIP WATER MAIN POLYWRAPPED WITH TRACER WIRE, LENGTH PER PLAN, MINIMUM 3' COVER. BEDDING AND BACKFILL PER COS STD DET 2201.
15. INSTALL 2" TYPE K SOFT COPPER WATER SERVICE LINE CONNECTION WITH 2" METER PER COS STD DET 2330.
16. INSTALL 3" DIP WATER SERVICE LINE CONNECTION WITH 3" METER PER COS STD DET 2345-1.
22. INSTALL 8"X3" TEE WITH RESTRAINED JOINTS PER MAG STD DET 303.

PRIVATE SEWER NOTES

1. INSTALL 8" SDR-35 PVC PRIVATE SEWER MAIN.
2. INSTALL 6" SDR-35 PVC PRIVATE SEWER SERVICE.
3. INSTALL 48" SEWER MANHOLE PER MAG STD DET 420-2, INVERTS PER PLAN.
4. CONNECT TO BUILDING SEWER AT TWO WAY CLEANOUT. REF MEP PLANS FOR CONTINUATION.
5. SEWER CLEANOUT PER MAG STD DET 441.
6. INSTALL WYE CONNECTION, INVERT PER PLAN.
7. PROPOSED 4" SDR 35 PVC PRIVATE SEWER SERVICE.

PRIVATE FIRELINE NOTES

1. INSTALL 6" CLASS 350 DIP FIRELINE POLYWRAPPED WITH TRACER WIRE, LENGTH PER PLAN, MINIMUM 3' COVER. BEDDING AND BACKFULL PER COS STD DET 2201.
3. BUILDING FIRELINE CONNECTION. INSTALL RISER AND BACKFLOW PREVENTOR PER COS STD DET 2369 IN FIRE RISER ROOM. REF FIRE SPRINKLER PLANS FOR CONTINUATION.
4. INSTALL 6" BEND WITH RESTRAINED JOINTS PER MAG STD DET 303.
6. INSTALL 6"X6" TEE WITH THRUST BLOCKS PER MAG STD DET 303.

PRIVATE WATER NOTES

1. BUILDING DOMESTIC WATER CONNECTION, REF MEP PLANS FOR CONTINUATION.
2. INSTALL 3" SCH 40 PVC DOMESTIC WATER SERVICE.
3. INSTALL 2" REDUCED PRESSURE BACKFLOW PREVENTION ASSEMBLY PER COS STD DET 2354.
5. INSTALL 3" REDUCED PRESSURE BACKFLOW PREVENTION ASSEMBLY PER COS STD DET 2353.

NOTES

1. ADD 1500' TO ALL ELEVATIONS.
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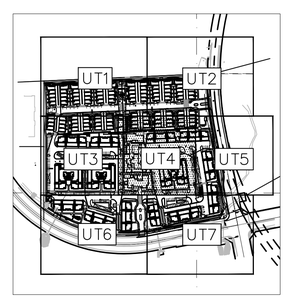

KEY MAP
N.T.S.

NORTH

GRAPHIC SCALE IN FEET
0 10 20 40

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

APPR. | DATE | BY | DESCRIPTION | REV

Kimley»Horn

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Phoenix, Arizona 85020 (602) 944-5500

NWC LEGACY BLVD AND MILLER ROAD

PRELIMINARY UTILITY PLAN

SCOTTSDALE, ARIZONA

PROJECT No.
291878000

SCALE (H):	1"=20'
SCALE (V):	NONE
DRAWN BY:	HDO
DESIGN BY:	RMH
CHECK BY:	CGF
DATE:	09/13/23

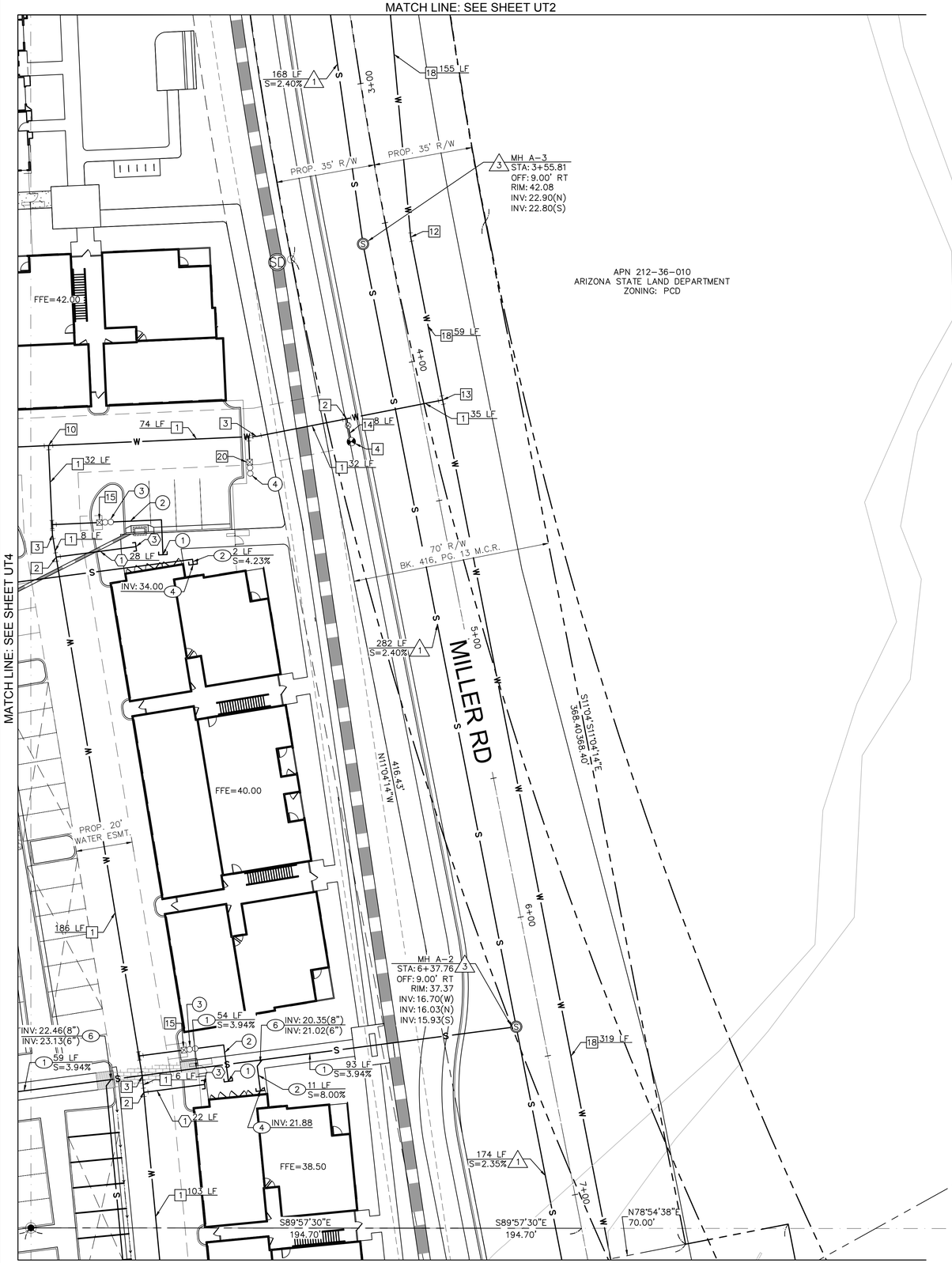
Registered Professional Engineer (Civil)
CERTIFICATE NO.
64329
C. GARRETT FRAME
Date Signed 09/13/23
ARIZONA, U.S.A.
Expires 06/30/25

878000Pre-UT.dwg

UT4

4 OF 7 SHEETS

MATCH LINE: SEE SHEET UT2



APN 212-36-010
ARIZONA STATE LAND DEPARTMENT
ZONING: PCD

MATCH LINE: SEE SHEET UT4

MATCH LINE: SEE SHEET UT7

PUBLIC WATER MAIN NOTES

1. INSTALL 8" CLASS 350 DIP WATER MAIN POLYWRAPPED, LENGTH PER PLAN, MINIMUM 3' COVER. BEDDING AND BACKFILL PER COS STD DET 2201.
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4. INSTALL FIRE HYDRANT ASSEMBLY WITH VALVE PER MAG STD DET 360.
10. INSTALL 8"X8" TEE WITH THRUST BLOCKS PER MAG STD DET 380.
12. INSTAL 12" BEND WITH THRUST BLOCKS PER MAG STD DET 380.
13. INSTALL 12"X8" TEE WITH RESTRAINED JOINTS PER MAG STD DET 303.
14. INSTALL 6" CLASS 350 DIP WATER MAIN POLYWRAPPED WITH TRACER WIRE, LENGTH PER PLAN, MINIMUM 3' COVER. BEDDING AND BACKFILL PER COS STD DET 2201.
15. INSTALL 2" TYPE K SOFT COPPER WATER SERVICE LINE CONNECTION WITH 2" METER PER COS STD DET 2330.
18. INSTALL 12" CLASS 350 DIP WATER MAIN POLYWRAPPED WITH TRACER WIRE, LENGTH PER PLAN. 3' MINIMUM COVER.
20. INSTALL 1" TYPE K SOFT COPPER LANDSCAPE SERVICE LINE CONNECTION WITH 1" METER PER COS STD DET 2330.

PRIVATE SEWER NOTES

1. INSTALL 8" SDR-35 PVC PRIVATE SEWER MAIN.
2. INSTALL 6" SDR-35 PVC PRIVATE SEWER SERVICE.
4. CONNECT TO BUILDING SEWER AT TWO WAY CLEANOUT. REF MEP PLANS FOR CONTINUATION.
6. INSTALL WYE CONNECTION, INVERT PER PLAN.

PRIVATE FIRELINE NOTES

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PRIVATE WATER NOTES

1. BUILDING DOMESTIC WATER CONNECTION, REF MEP PLANS FOR CONTINUATION.
2. INSTALL 3" SCH 40 PVC DOMESTIC WATER SERVICE.
3. INSTALL 2" REDUCED PRESSURE BACKFLOW PREVENTION ASSEMBLY PER COS STD DET 2354.
4. INSTALL 1" REDUCED PRESSURE BACKFLOW PREVENTION ASSEMBLY PER COS STD DET 2354.

PUBLIC SEWER NOTES

1. INSTALL 8" SDR-35 PVC PUBLIC SEWER MAIN.
3. INSTALL 48" SEWER MANHOLE PER MAG STD DET 420-2, INVERTS PER PLAN.

NOTES

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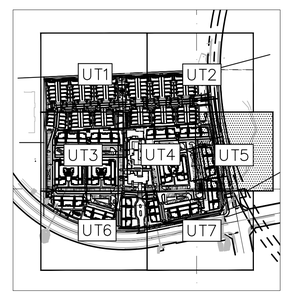

KEY MAP
N.T.S.

NORTH

GRAPHIC SCALE IN FEET
0 10 20 40

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ARIZONA811
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APPR.	DATE	BY	DESCRIPTION	REV

Kimley»Horn

7740 North 16th Street, Suite 300
Phoenix, Arizona 85020 (602) 944-5500

NWC LEGACY BLVD AND MILLER ROAD

PRELIMINARY UTILITY PLAN

SCOTTSDALE, ARIZONA

PROJECT No.	291878000
SCALE (H):	1"=20'
SCALE (V):	NONE
DRAWN BY:	HDO
DESIGN BY:	RMH
CHECK BY:	CGF
DATE:	09/13/23

Registered Professional Engineer (Civil)
CERTIFICATE NO.
64329
C. GARRETT FRAME
Date Signed 09/13/23
ARIZONA, U.S.A.
Expires 06/30/25

878000Pre-UT.dwg

UT5
5 OF 7 SHEETS

MATCH LINE: SEE SHEET UT3

MATCH LINE: SEE SHEET UT4

MATCH LINE: SEE SHEET UT7

CITY OF SCOTTSDALE
APN: 212-36-009C

INV: 25.97
MAINT. BUILDING FFE=34.50

PROP. 20' WATER ESMT.

FFE=33.50

INV: 23.05

20 LF S=8.00%

MH E-3
STA: 6+58.35
OFF: 900.96' RT
RIM: 34.32
INV: 18.24(E)
INV: 18.14(SW)

MH E-5
STA: 6+43.17
OFF: 809.66' RT
RIM: 33.35
INV: 20.62(N)
INV: 20.52(SW)

MH E-4
STA: 6+71.05
OFF: 841.54' RT
RIM: 34.03
INV: 19.68(NE)
INV: 20.35(E)
INV: 19.58(W)

FFE=33.00

51 LF S=1.00%

61 LF S=2.21%

42 LF S=2.00%

12 LF S=8.00%

INV: 21.31

INV: 17.63

Δ=4°44'57"
R=750.00'
L=62.17'
CB=S59°44'29"E
C=62.15'

N47°15'02"E
6.01'

S59°41'09"E
40.02'

N6°01'
S28°45'36"E

N0°02'50"E
61.22'

26.8'

EXST. 50' R/W

EXST. 8" PVC SEWER SERVICE

EXST. 20" DIP NON-POTABLE WATER MAIN

EXST. SMH
RIM=30.09
IE=16.94

E LEGACY BLVD

Δ=39°50'58"
R=750.00'
L=521.63'
CB=S81°09'53"E
C=511.18'

EXST. 16" DIP PUBLIC WATER MAIN

EXST. 8" PVC PUBLIC SEWER MAIN

EXST. SMH
RIM=30.69
IE=15.89

EXST. GAS LINE

EXST. SMH
RIM=31.27
IE=14.90

EXST. 12" PVC PUBLIC SEWER MAIN

EXST. FIRE HYDRANT

FFE=33.50

RIM: 33.96
INV: 27.36(S)
INV: 27.36(E)

INV: 27.50

RIM: 35.78
INV: 26.38(W)
INV: 26.38(E)

MH D-2
STA: 6+79.20
OFF: 477.29' RT
RIM: 36.42
INV: 25.36(N)
INV: 26.22(E)
INV: 25.20(W)
INV: 25.03(S)

PUBLIC WATER MAIN NOTES

1. INSTALL 8" CLASS 350 DIP WATER MAIN POLYWRAPPED, LENGTH PER PLAN, MINIMUM 3' COVER. BEDDING AND BACKFILL PER COS STD DET 2201.
2. INSTALL 8"X6" TEE WITH RESTRAINED JOINTS PER MAG STD DET 303.
3. INSTALL 8" BEND WITH RESTRAINED JOINTS PER MAG STD DET 303.
7. INSTALL 8"X8" CROSS CONNECTION WITH THRUST BLOCKS PER MAG STD DET 380.
14. INSTALL 6" CLASS 350 DIP WATER MAIN POLYWRAPPED WITH TRACER WIRE, LENGTH PER PLAN, MINIMUM 3' COVER. BEDDING AND BACKFILL PER COS STD DET 2201.
15. INSTALL 2" TYPE K SOFT COPPER WATER SERVICE LINE CONNECTION WITH 2" METER PER COS STD DET 2330.
21. INSTALL 8"X6" REDUCER.

PRIVATE SEWER NOTES

1. INSTALL 8" SDR-35 PVC PRIVATE SEWER MAIN.
2. INSTALL 6" SDR-35 PVC PRIVATE SEWER SERVICE.
3. INSTALL 48" SEWER MANHOLE PER MAG STD DET 420-2, INVERTS PER PLAN.
4. CONNECT TO BUILDING SEWER AT TWO WAY CLEANOUT. REF MEP PLANS FOR CONTINUATION.
5. SEWER CLEANOUT PER MAG STD DET 441.
7. PROPOSED 4" SDR 35 PVC PRIVATE SEWER SERVICE.
8. REMOVE PLUG AND CONNECT TO EXISTING SEWER STUB.

PRIVATE FIRELINE NOTES

1. INSTALL 6" CLASS 350 DIP FIRELINE POLYWRAPPED WITH TRACER WIRE, LENGTH PER PLAN, MINIMUM 3' COVER. BEDDING AND BACKFULL PER COS STD DET 2201.
3. BUILDING FIRELINE CONNECTION. INSTALL RISER AND BACKFLOW PREVENTOR PER COS STD DET 2369 IN FIRE RISER ROOM. REF FIRE SPRINKLER PLANS FOR CONTINUATION.
4. INSTALL 6" BEND WITH RESTRAINED JOINTS PER MAG STD DET 303.

PRIVATE WATER NOTES

1. BUILDING DOMESTIC WATER CONNECTION, REF MEP PLANS FOR CONTINUATION.
2. INSTALL 3" SCH 40 PVC DOMESTIC WATER SERVICE.
3. INSTALL 2" REDUCED PRESSURE BACKFLOW PREVENTION ASSEMBLY PER COS STD DET 2354.

NOTES

1. ADD 1500' TO ALL ELEVATIONS.
2. ALL ELEVATIONS ARE INVERT ELEVATIONS, UNLESS OTHERWISE NOTED.
3. SEE SHEET UT1 FOR LEGEND.
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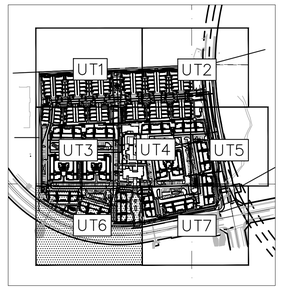

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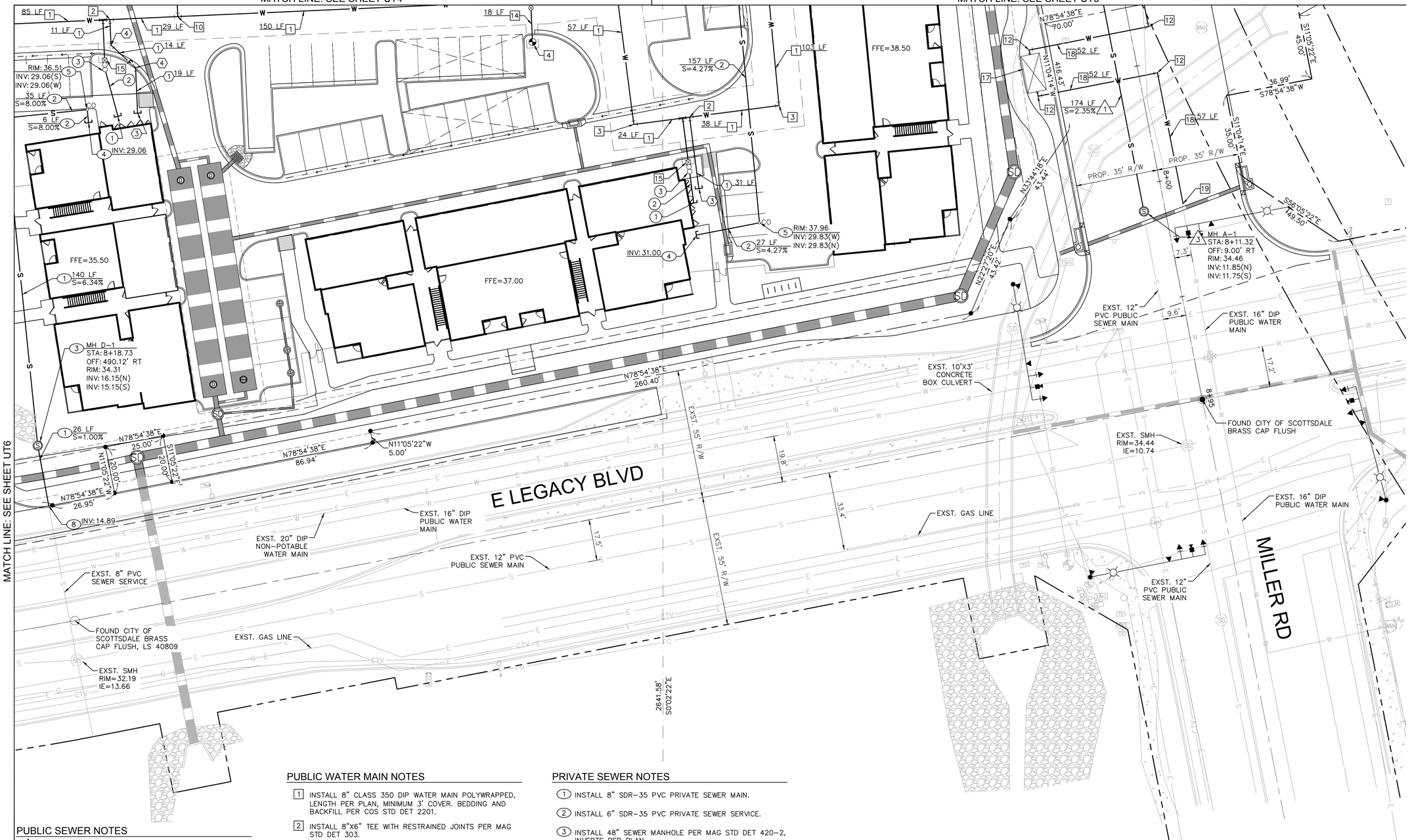
UT6

6 OF 7 SHEETS

MATCH LINE: SEE SHEET UT4

MATCH LINE: SEE SHEET UT5

MATCH LINE: SEE SHEET UT6



PUBLIC SEWER NOTES

1. INSTALL 8" SDR-35 PVC PUBLIC SEWER MAIN.
3. INSTALL 48" SEWER MANHOLE PER MAG STD DET 420-2, INVERTS PER PLAN.

PRIVATE WATER NOTES

1. BUILDING DOMESTIC WATER CONNECTION, REF MEP PLANS FOR CONTINUATION.
2. INSTALL 3" SCH 40 PVC DOMESTIC WATER SERVICE.
3. INSTALL 2" REDUCED PRESSURE BACKFLOW PREVENTION ASSEMBLY PER COS STD DET 2354.

PUBLIC WATER MAIN NOTES

1. INSTALL 8" CLASS 350 DIP WATER MAIN POLYWRAPPED, LENGTH PER PLAN, MINIMUM 3' COVER. BEDDING AND BACKFILL PER COS STD DET 2201.
2. INSTALL 8"X6" TEE WITH RESTRAINED JOINTS PER MAG STD DET 303.
3. INSTALL 8" BEND WITH RESTRAINED JOINTS PER MAG STD DET 303.
4. INSTALL FIRE HYDRANT ASSEMBLY WITH VALVE PER MAG STD DET 360.
10. INSTALL 8"X8" TEE WITH THRUST BLOCKS PER MAG STD DET 380.
12. INSTAL 12" BEND WITH THRUST BLOCKS PER MAG STD DET 380.
14. INSTALL 6" CLASS 350 DIP WATER MAIN POLYWRAPPED WITH TRACER WIRE, LENGTH PER PLAN, MINIMUM 3' COVER. BEDDING AND BACKFILL PER COS STD DET 2201.
15. INSTALL 2" TYPE K SOFT COPPER WATER SERVICE LINE CONNECTION WITH 2" METER PER COS STD DET 2330.
17. PROPOSED PRESSURE REDUCING VALVE PER COS STD DETAIL 2342-1.
18. INSTALL 12" CLASS 350 DIP WATER MAIN POLYWRAPPED WITH TRACER WIRE, LENGTH PER PLAN. 3' MINIMUM COVER.
19. CONNECT TO EXISTING WATER MAIN WITH 16"X12" REDUCER WITH THRUST BLOCKS PER MAG STD DET 380.

PRIVATE SEWER NOTES

1. INSTALL 8" SDR-35 PVC PRIVATE SEWER MAIN.
2. INSTALL 6" SDR-35 PVC PRIVATE SEWER SERVICE.
3. INSTALL 48" SEWER MANHOLE PER MAG STD DET 420-2, INVERTS PER PLAN.
4. CONNECT TO BUILDING SEWER AT TWO WAY CLEANOUT. REF MEP PLANS FOR CONTINUATION.
5. SEWER CLEANOUT PER MAG STD DET 441.
8. REMOVE PLUG AND CONNECT TO EXISTING SEWER STUB.

PRIVATE FIRELINE NOTES

1. INSTALL 6" CLASS 350 DIP FIRELINE POLYWRAPPED WITH TRACER WIRE, LENGTH PER PLAN, MINIMUM 3' COVER. BEDDING AND BACKFULL PER COS STD DET 2201.
3. BUILDING FIRELINE CONNECTION. INSTALL RISER AND BACKFLOW PREVENTOR PER COS STD DET 2369 IN FIRE RISER ROOM. REF FIRE SPRINKLER PLANS FOR CONTINUATION.
4. INSTALL 6" BEND WITH RESTRAINED JOINTS PER MAG STD DET 303.

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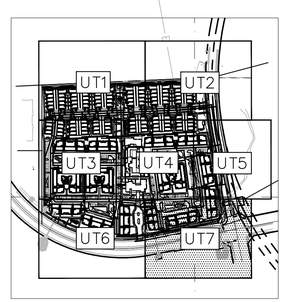

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UT7
7 OF 7 SHEETS