FINAL WATER REPORT

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 7/12/2021

Conform to following stipulations and address comments below and herein in the submitted improvement plans:

1) STIPULATION: Add new water mains as shown on utility plan to complete an 8-inch loop around the site.:
a.) Approx. 200 feet of 8-inch water main be placed along 3rd Ave
b.) Dead end main on east property line shall be extended connected to existing 3rd Ave 8" main.
c.) New 8" main along entire western frontage/alley shall be installed.

2) STIPULATION: Existing 6" main on 3rd Avenue to be removed as shown on utility plans to be replaced with new 8" main.

3) STIPULATION: Further detail shall be shown on submitted plans to clarify how the new 8" main will be coordinated with the existing 8" and 6" mains north of 3rd Avenue on Craftsman Ct. Refer to utility plan comments herein.

The Triangle

7120 E. Indian School Road
Scottsdale, AZ 85251

Registered Professional Engineer (Civil)
CERTIFICATE NO.
45621
ALI SAMIH
FAKIH
Date Signed 06/15/21
ARIZONA, U.S.A.

Prepared For:

Gensler

2575 E. Camelback Rd Suite 175
Phoenix, AZ 85016
Phone: 602-523-4900

Prepared by:

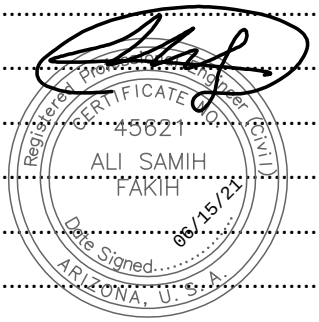
SEG

Sustainability Engineering Group
8280 E. Gelding Drive, Suite 101
Scottsdale, AZ 85260
480.588.7226 www.azSEG.com

Project Number: 200504
Revision Date: June 25, 2020 (Rezoning)
Revision Date: August 28, 2020 (Rezoning)
Revision Date: October 16, 2020 (Rezoning)
Revision Date: June 15, 2021 (DRB)

Case No.: 10-ZN-2020 **Plan Check No.: TBD**

Table of Contents



LIST OF TABLES:

LIST OF FIGURES:

APPENDIX:

1. INTRODUCTION

1.1 SUMMARY OF PROPOSED DEVELOPMENT:

The proposed development consists of a mixed residential use with commercial amenities located north of Indian School Road and south of 3rd Avenue between Marshall Way and Scottsdale Road in Scottsdale Arizona. An existing inn and several commercial buildings will be razed. The lot area is 144,173 square feet (3.31 acres) per the A.L.T.A. surveys. The proposed structures will have a maximum of seven floors and include a maximum of 190 residential units, 168 hotel rooms, a 4,000 square foot restaurant, 14,000 square feet of miscellaneous retail/fitness/clubhouse amenities and a pool.

1.2 REPORT INTENT:

This report is provided to support the proposed redevelopment and evaluate existing and proposed water demands compliant to the City's 2017 Design Standards and Policies Manual and the projects impact to the local area's water distribution system.

1.3 SITE AND LEGAL DESCRIPTION:

The project property consists three land parcels located in the SE ¼ of Section 22, Township 2 North, Range 4 East of the Gila and Salt River Base and Meridian, Maricopa County, with the following Assessor Parcel Numbers:

- 173-50-108A, 173-50-034 and 173-50-117B

Refer to **FIGURE 1** for a vicinity map of the project's location with respect to major cross streets.

2. DESIGN DOCUMENTATION

2.1 DESIGN COMPLIANCE:

The proposed water system is designed to meet the criteria of the City of Scottsdale ("the City") Water Resources Department, the Arizona Department of Environmental Quality ("ADEQ"), and Maricopa County Environmental Services Department ("MCESD").

2.2 PROCEDURES, POLICIES AND METHODOLOGIES:

The general methodology used to design this public water infrastructure consists of modeling a network of water distribution mains to meet the City's pressure, head loss, and water demand requirements during daily demands and fire events. The connection to the water system is modeled as a reservoir and pump. The pump will simulate the pressure drop and the available flow from the existing water system as depicted by the fire flow test.

2.3 SOFTWARE ACKNOWLEDGEMENT:

Bentley WaterCAD® Version 8i is the computer modeling tool used in this water study.

3. EXISTING CONDITIONS

3.1 ZONING & LAND USE:

The overall project parcel is zoned D/OC-2 PBD DO-Type 2. Land uses consist of a motel and commercial/retail/office activities.

3.2 EXISTING TOPOGRAPHY, VEGETATION AND LANDFORM FEATURES:

The site has approximately five feet of fall from 3rd Avenue to Indian School Road in a south east direction. The site is covered with building and paved parking with only minor landscaping. Refer to **FIGURE 2** for an aerial of the overall project existing conditions.

FIRM Map Number 04013C2235L dated October 16, 2013 indicates this site is designated as Zone "X". As such, it is defined as areas outside of the 0.2% annual chance of flooding. Refer to **FIGURE 3** for an excerpt from the FIRM.

3.3 EXISTING WATER MAIN:

Water: City of Scottsdale (QS 17-45)

- The site is located within COS Water Pressure Zone 1A.
- An existing 12" ductile iron (DIP) water distribution main serving Zone 1A fronts the site under Indian School Road.
- An existing 6" asbestos cement (ACP) and 8" DIP water distribution main serving Zone 1A fronts the site under 3rd Avenue.
- An existing 8" ACP water extends north along the site's east property line from Indian School Road and dead ends just south of 3rd Avenue.
- Fire hydrants exist to the east and west of the project along Indian School Road and fronting the site along 3rd Avenue.
- Four existing water meters to the parcels are indicated on the City's quarter-section maps to the site along Indian School Road and 3rd Avenue.
- An existing 36" DIP water transmission line fronts the site under Indian School Road and serves Pressure Zone 1 to the south of Indian School Road.

Refer to **FIGURE 4** for COS Water QS Map 17-45 showing water line locations.

3.4 CERTIFIED FLOW TEST RESULTS OF EXISTING WATER SYSTEM:

Certified fire hydrant flow testing was performed on the 3rd Avenue system on May 14, 2020 by Arizona Flow Testing LLC at 7:00 a.m. A second test was performed on the Indian School Road system on November 20, 2020 by Arizona Flow Testing LLC at 7:00 a.m. The test documentation is included in the **APPENDIX I** and summarized in the tables below.

3rd Avenue Test (May 14, 2020)					
	Static Pressure (psi)	**Residual Pressure (psi)**	**Pitot Pressure (psi)**	**Flowing GPM**	**GPM @ 20 psi**
Raw Test Data	106	76	30	2354	4156
Data w/ 34 psi Safety Factor	72	42	-	2354	3168
Indian School Road Test (Nov. 20, 2020)					
	Static Pressure (psi)	**Residual Pressure (psi)**	**Pitot Pressure (psi)**	**Flowing GPM**	**GPM @ 20 psi**
Raw Test Data	106	91	29	2025	5199
Data w/ 34 psi Safety Factor	72	57	-	2025	3962
Note: The WaterCad Model in **APPENDIX I** Utilizes the Indian School Road Test Data w/ 34 psi Safety Factor (AFES Design)					

Per requirements of the City's DS&PM (ref. 2), the modeled water system uses the "derated" pressure and flow data from the Indian School Road test as a basis for evaluating the City's water supply. The "derated" pressure is approximately 34 psi lower than the recorded pressure. "Derated" AFES (Automated Fire Extinguishing System) data is typically used by the building fire sprinkler engineer to design the automated fire sprinkler system.

stipulation in zoning case confirmed valid

4. PROPOSED CONDITIONS

4.1 SITE PLAN:

The property is proposed to be re-developed as residential apartment and hotel use with supporting commercial, office and retail facilities. Development will include new drive entrances from both Indian School Road and 3rd Avenue. A new pedestrian crossing is proposed at 3rd Avenue connecting the project to Craftsman Court. A new pedestrian crossing is also proposed across Indian School Road west of the western driveway with a pedestrian refuge area in the median.

completes 8" loop around site

4.2 PROPOSED WATER SYSTEM:

A reach of 6" AC pipe along the site's 3rd Street frontage will be removed and replaced with 8" DIP to minimize line losses during fire flow. A new reach of 8" DIP water main is proposed along the west property line connecting the 12" DIP in Indian School Road to the new 8" ACP replacement in 3rd Avenue. This line will support fire service to the hotel and apartment buildings. The existing dead-end water line along the northeast property line is proposed to be connected into the 3rd Avenue 8" DIP and will be used for fire and domestic service to the residential buildings.

Domestic, irrigation and fire line service connections for the existing commercial building are off the 12" DIP in Indian School Road. Meters not reused will be inventories for development fee credit and removed per City requirements.

The extensions and connections noted above will provide redundant sourcing to the site from Indian School Road and 3rd Avenue. New fire hydrants will be provided to meet City spacing requirements.

4.3 WATER REQUIREMENTS:

The City's design standards govern the domestic and fire flow demands per Chapter 6 of the City of Scottsdale's DS&PM, dated January 2017. The maximum fire flow demand used is 2,500 gpm based on the proposed high-rise building and 1,500 gpm for the low-rise residential buildings.

Building 1 Height = 76' Building 2 Height = 76'
Building 3 Height = 40' Building 4,5,6 Height = 32'

The required fire flow was determined to be 1,500 gpm for low-rise based on DS&PM.

4.4 MAINTENANCE RESPONSIBILITIES:

On-site water lines and meters for the proposed development will be public, located within easements dedicated to the City of Scottsdale. An additional easement will be proposed along the eastern boundary to provide a total width of 13'. An alleyway will be dedicated to the City along the western boundary. Refer to **FIGURE 5** – Proposed Easement Exhibit.

The existing offsite water lines are in public rights-of-ways and/or easements. All metered services will be installed with reduced pressure principle backflow preventers owned and maintained by the property owner.

5. WATER SYSTEM COMPUTATIONS

5.1 WATER DEMANDS:

The proposed development at the site consists of residential apartment units and a hotel including two swimming pools and commercial/office/retail facilities. The associated DS+PM demands along with the peaking factors are shown in Table 1 below. A summary of the total water demands for the site are presented below in Table 2.

Table 1: COS DESIGN CRITERIA BY DEMAND TYPE

Land Use	Average Day Demand (gpm)	Unit	*Peaking Factors*	
			Max Day	Peak Hour
High Density Residential	0.27	per unit	2	3.5
Hotel	0.63	per unit	2	3.5
Restaurant	1.81E-03	per sq. ft.	2	3.5
Retail amenities	1.11E-03	per sq. ft.	2	3.5

Table 2: ONSITE WATER DEMAND CALCULATIONS PER DS+PM

Land Use	Unit Count or Area (sq ft)	Unit	ADD per Unit (gpm)	Avg. Day Demand (gpm)	Max Day Demand (gpm)	Peak Hour Demand (gpm)
B-1 Hotel	168	Rooms	0.63	105.8	211.7	370.4
B-1 Restaurant	4,000	Sq. Ft.	1.81E-03	7.2	14.5	25.3
B-2/3 High Density Resider	180	Units	0.27	48.6	97.2	170.1
B-4 Townhomes	2	Units	0.27	0.5	1.1	1.9
B-5 Townhomes	2	Units	0.27	0.5	1.1	1.9
B-6 Townhomes	6	Units	0.27	1.6	3.2	5.7
Ex - Retail amenities	14,000	Sq. Ft.	1.11E-03	15.5	31.1	54.4
			Totals	179.9	359.8	629.7

5.2 SOFTWARE MODELING:

Bentley WaterCAD® Version 8i is the computer modeling tool used in this study.

Network analysis input parameters included the following:

1. Pipe diameters (inches)
2. Pipe lengths (feet)
3. Pipes invert elevations (feet – MSL)
4. A reservoir and a pump to model the fire flow test perfor
5. System demands (gpm)
6. Fire flows (gpm)
7. Model piping is ductile iron pipe using Hazen-Williams fri

values don't match table 3. Modeling herein appears to be using the higher values from zoning case. Conservative but ok. Not a big difference.

Output parameters included but were not limited to:

1. Pressure (psig)
2. Flow rates (gpm)
3. Velocities (fps)
4. Head loss (feet)

Modeling output will include junction, pipe, pump and reservoir reports for the average day, maximum day and peak hour domestic demands. Fire flow analysis includes the following two modeling scenarios compliant with NFPA 1 allowing the total available flow to be split among hydrants adjacent to the site:

- 2500 gpm split equally among two fire hydrants under the maximum day scenario, and
- 1250 gpm assigned to a hydrant adjacent to the west side of the hotel and with 1250 gpm assigned to the remaining nodes, including the maximum day domestic demands.

5.3 MINIMUM PRESSURE REQUIREMENTS:

The following system pressure requirements are in accordance with the City's design standards:

- Average day, maximum day and peak hour flow demands:
  - Minimum pressure = 50 psig
    - At the highest finished floor level to be served by the system pressure during normal daily operating conditions.

- Maximum pressure = 120 psig
- Maximum day plus coincident fire flow demand:
  - Minimum pressure = 30 psig
    - At the highest ceiling level to be served by the system pressure during normal daily operating conditions.
  - Maximum pressure = 120 psig
- Daily scenario head loss shall not exceed 10 feet per 1,000 feet length of pipe.

The minimum pressure locations noted above may require the project's mechanical engineer to consider domestic and/or fire pumps. Refer to **APPENDIX II** for computer modeling results.

5.4 WATER SYSTEM ANALYSIS:

A summary of the modeling results is presented below in Table 3. Detailed WaterCAD® results are presented in **APPENDIX II**. Water pressure for domestic and fire service to the upper floors of the structures may require internal pumps and will be designed by the Mechanical Engineer. The following table represents flow and pressure available at ground level.

good summary of model results, thank you!

Table 3 - WaterCAD® Analysis Results

Demand Scenario	Water Demand (GPM)	Pressure (PSIG)				Max Pipe Vel (ft/s)	Pipe ID
		Min.	Node	Max.	Node		
Average Day	191	69	J-7	74	J-13	0.6	P-21
Maximum Day	381	69	J-7	74	J-13	1.2	P-21
Peak Hour	667	67	J-7	72	J-13	2.1	P-21
Fire Flow (1)	2881	39	J-7	45	J-13	5.8	P-18
Fire Flow (2)	2881	27	J-6	45	J-13	9.9	P-26
Fire Flow (3)	3031	30	J-1	45	J-14	15	P-27

Notes (1) MD + 1250 gpm split between J-20 and J-15
(2) MD + 1250 gpm routed to all junctions with constant 1250 gpm at J-20
(3) MD + FF range of 2500 to 3000 gpm routed to the local junctions

These results indicate that the proposed water system meets the City's criteria for daily water usage and fire flow events. The flows and pressures shown in APPENDIX II support the domestic and fire flow demands for the high-rise apartment and hotel buildings.

values from zoning case BOD, not a big difference

meets criteria

not sure what criteria this is referencing

6. SUMMARY

6.1 SUMMARY OF PROPOSED WATER IMPROVEMENTS:

- The proposed water main is designed in accordance with City of Scottsdale's design standards and policies[2].
  - Minimum 50 psi @ peak hour required; 67 psi provided.
  - Minimum 30 psi @ max+ fire flow required; 30+ psi provided.
  - The system supports the total 1500 gpm for low-rise commercial buildings plus 381 gpm at maximum day.
- The results shown in the modeling summary (refer to Section 5.4) indicate that the proposed water system meets the City's criteria for Daily water usage and fire flow events as described in Section 5.3.
- Pressure regulating valves will be installed on all building services and backflow prevention devices on all metered services.

6.2 PROJECT SCHEDULE:

The infrastructure and buildings are proposed to be constructed in a single phase.

7 SUPPORTING MAPS

7.1 SITE UTILITY PLAN

Refer to the Site Plan / Utility Plan in **APPENDIX III.**

8 REFERENCES

1. *COS QS Water Plan number 17-44*
2. *City of Scottsdale Design Standards & Policies Manual, 2017 (Chapter 6 – Water)*

Table 1: COS DESIGN CRITERIA BY DEMAND TYPE

Land Use	Average Day Demand (gpm)	Unit	*Peaking Factors*	
			Max Day	Peak Hour
High Density Residential	0.27	per unit	2	3.5
Hotel	0.63	per unit	2	3.5
Restaurant	1.81E-03	per sq. ft.	2	3.5
Retail amenities	1.11E-03	per sq. ft.	2	3.5

Table 2: ONSITE WATER DEMAND CALCULATIONS PER DS+PM

Land Use	Unit Count or Area (sq ft)	Unit	ADD per Unit (gpm)	Avg. Day Demand (gpm)	Max Day Demand (gpm)	Peak Hour Demand (gpm)
B-1 Hotel	168	Rooms	0.63	105.8	211.7	370.4
B-1 Restaurant	4,000	Sq. Ft.	1.81E-03	7.2	14.5	25.3
B-2/3 High Density Residentia	180	Units	0.27	48.6	97.2	170.1
B-4 Townhomes	2	Units	0.27	0.5	1.1	1.9
B-5 Townhomes	2	Units	0.27	0.5	1.1	1.9
B-6 Townhomes	6	Units	0.27	1.6	3.2	5.7
Ex - Retail amenities	14,000	Sq. Ft.	1.11E-03	15.5	31.1	54.4
			Totals	179.9	359.8	629.7

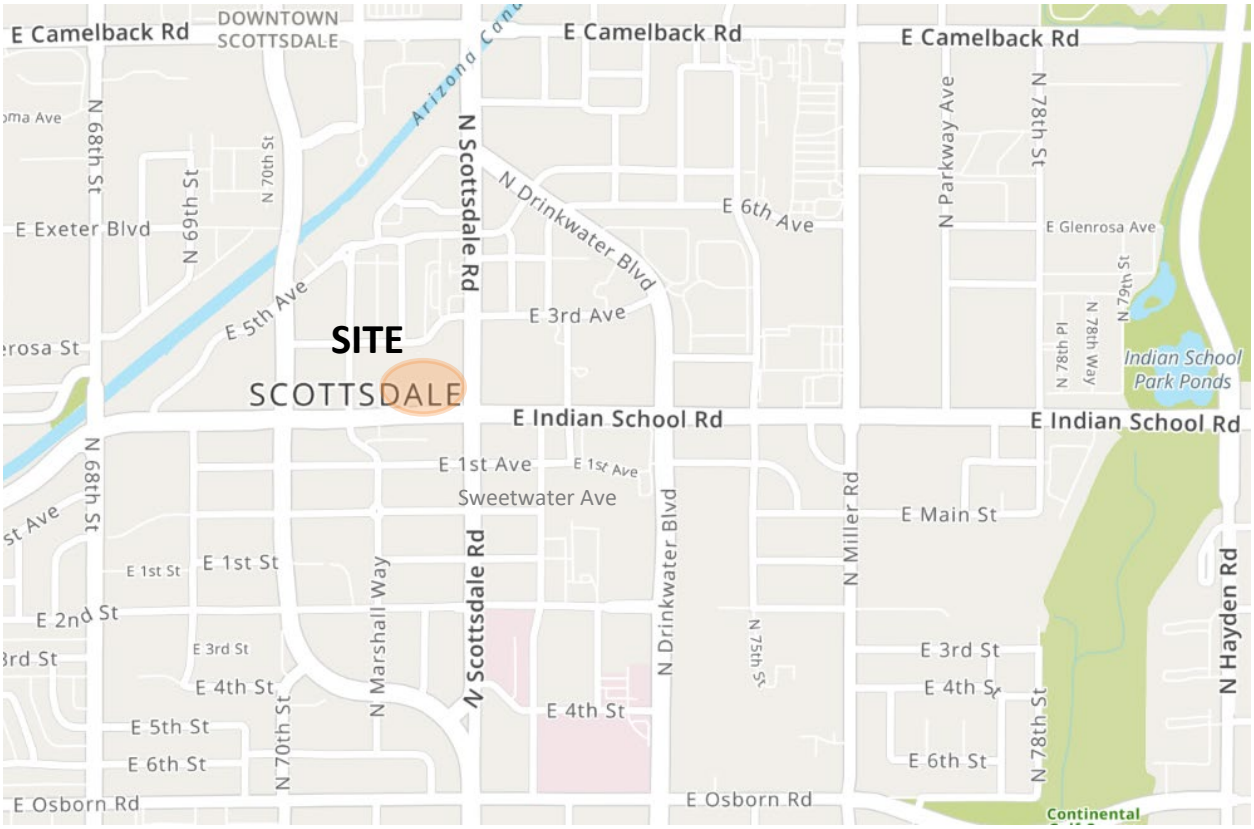


FIGURE 1 – Vicinity Map

FIGURE 2 - Aerial

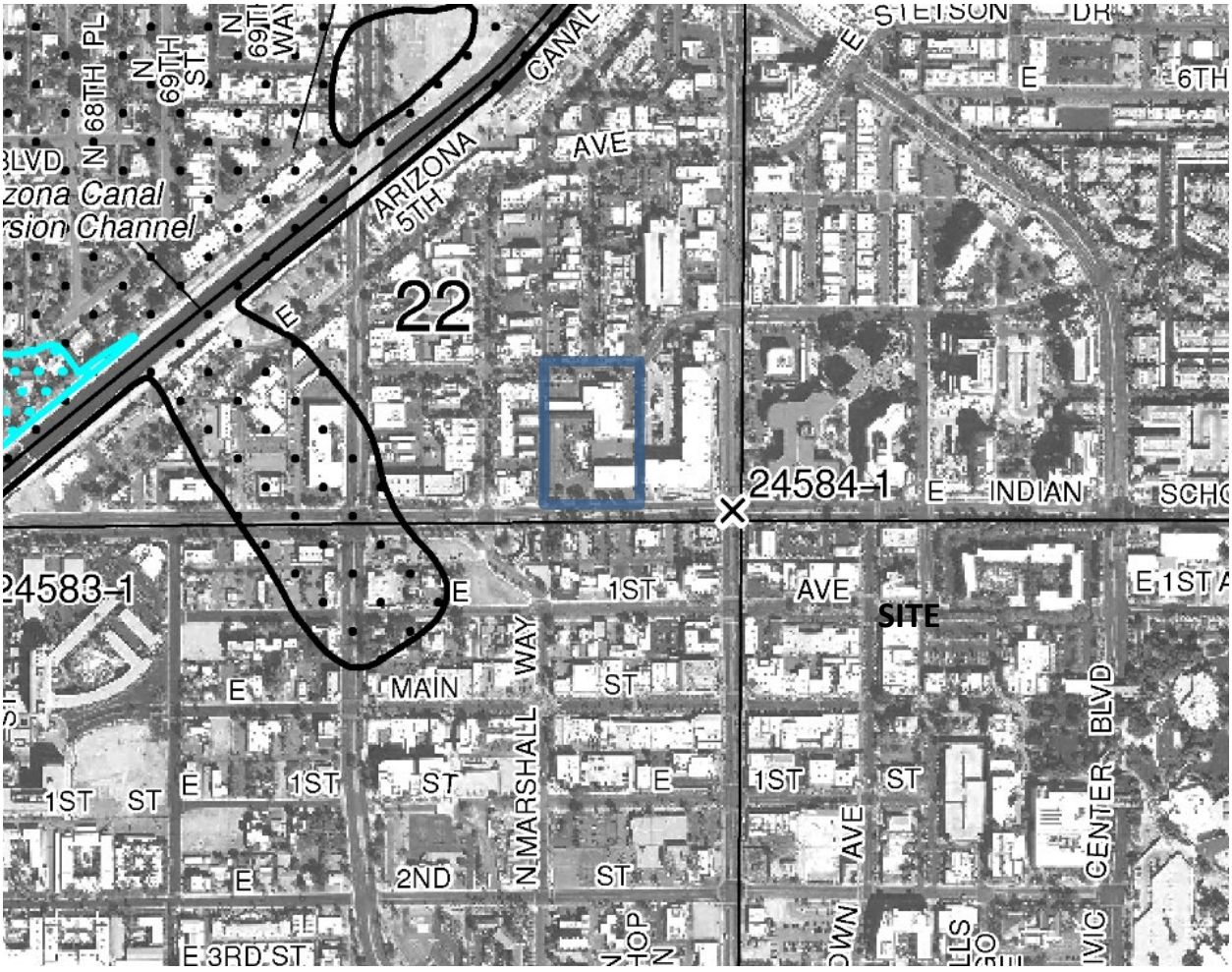


FIGURE 3 – FEMA FIRM

Excerpt from 04013C2235L

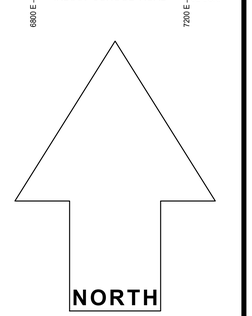
GENERAL NOTES:

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

LEGEND:

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

VICINITY MAP



The map scale of 1" = 100' is based on a full size print of 30" x 36"

WATER

QUARTER SECTION MAP

17-44

SE 1/4 SEC. 22 T2N R4E

FIGURE 4

CITY OF SCOTTSDALE

SCOTTSDALE GEOGRAPHIC INFORMATION SYSTEMS

3629 North Drinkwater Boulevard
Scottsdale, Arizona 85251

CIVIL ENGINEER:
SEG
8280 E. GELDING DR, SUITE #101
SCOTTSDALE, AZ 85260
480-588-7226
ATTN: ALI FAKIH
EMAIL: ALI@AZSEG.COM

CLIENT/OWNER:
PEG DEVELOPMENT
180 N. UNIVERSITY AVE
SUITE 200, PROVO UT 84601
801-655-1998
ATTN: MATT KRAMBULE
EMAIL: MKRAMBULE@PEGCOMPANIES.COM

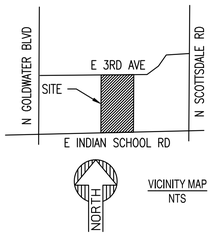
ARCHITECT:
GENSLER
2575 E. CAMELBACK RD
SUITE 175, PHOENIX AZ 85016
602-253-4900
ATTN: JOHANNA COLLINS
EMAIL: JOHANNA_COLLINS@GENSLER.COM

LANDSCAPE ARCHITECT:
COLWELL SHELOR
4450 N. 12TH STREET, SUITE 104
PHOENIX, AZ 85014
602-633-2195
EMAIL: ACOLWELL@COLWELLSHELOR.COM

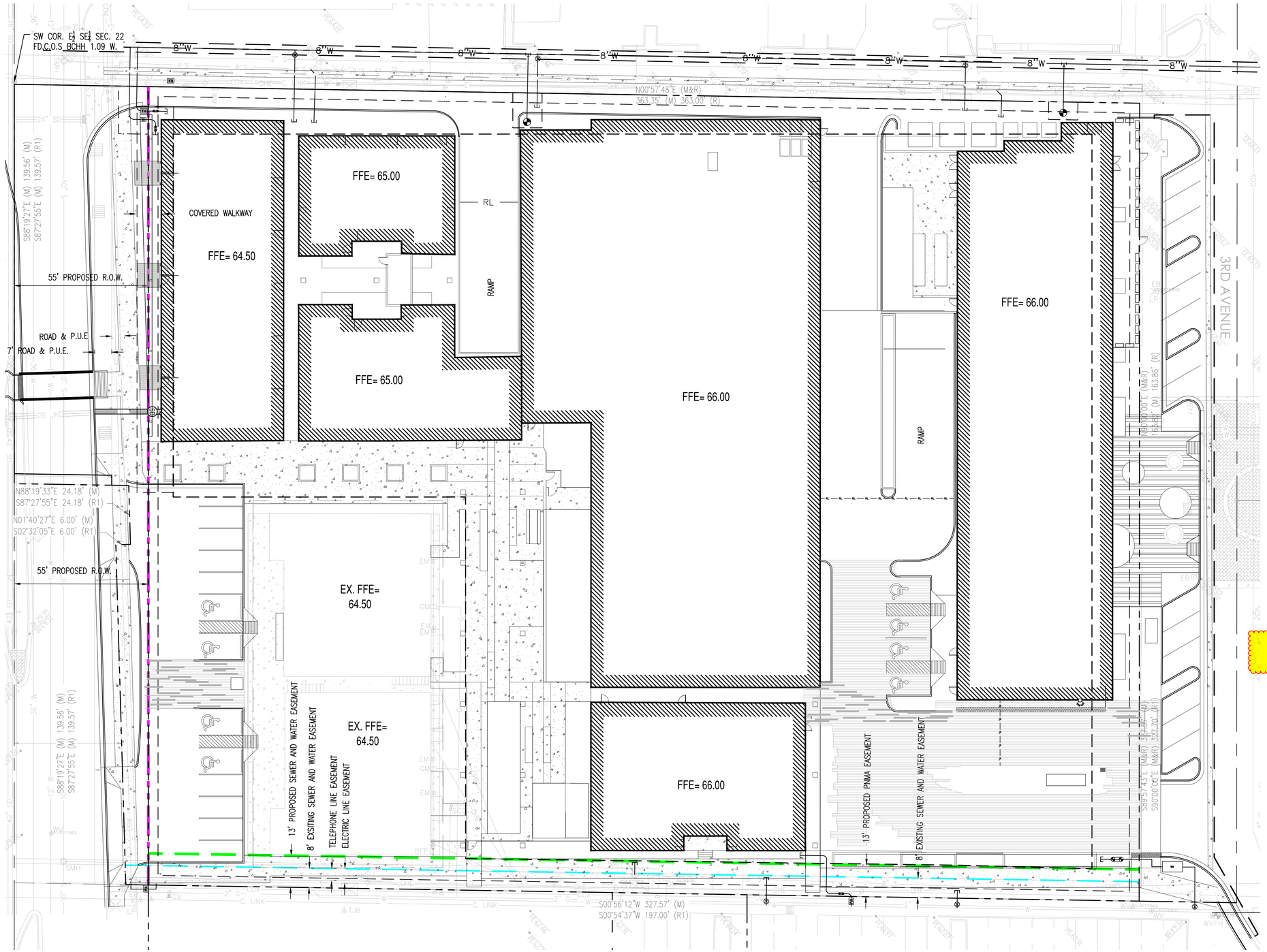
KIMSEY HOTEL & APARTMENT

PROPOSED EASEMENT EXHIBIT

7120 E. INDIAN SCHOOL ROAD. SCOTTSDALE, AZ. 85251



VICINITY MAP
NTS



PROPOSED LEGEND:

- PROPERTY LINE
- PROPOSED ACCESS EASEMENT
- PROPOSED WATER AND SEWER EASEMENT
- UNDERGROUND PARKING
- EXISTING WATER EASEMENT
- PROPOSED R.O.W.

NORTH

0' 20' 40' 60'

SCALE: 1" = 20'

NOT FOR CONSTRUCTION

SEG SUSTAINABILITY ENGINEERING GROUP
8280 E. GELDING DRIVE SUITE 101, SCOTTSDALE, ARIZONA 85260
WWW. AZSEG.COM TEL. 480.588.7226 FAX. 480.259.3534

Gensler

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

PROJECT: KIMSEY HOTEL & APARTMENT
LOCATION: 7120 E. INDIAN SCHOOL ROAD. SCOTTSDALE, AZ. 85251

DRAWN	LP	6/14/2021
DESIGNED	LP	6/14/2021
QC	SC	6/15/2021
FINAL QC		
PROJ. MGR.	AF	

DATE: 06/15/2021
ISSUED FOR: DRB

REVISION NO.:	DATE:
1	
2	

PROPOSED EASEMENT EXHIBIT

JOB NO.: 200504
SHEET TITLE: **PROPOSED EASEMENT EXHIBIT**
PAGE NO.: FIGURE 5
SHEET NO.:

CASE NO.: 10-ZN-2020

LOCATION: Z:\SHARED\PROJECTS\GENSLER\HOJO APARTMENTS SCOTTSDALE 200504\11 CAD (SEG)\11.3 CD'S\200504_PROPOSED EASEMENT EXHIBIT.DWG SAVED BY: LAPTOP02 DATE: 6/15/2021

Arizona Flow Testing LLC

HYDRANT FLOW TEST REPORT

Project Name:	The Triangle
Project Address:	7100 East Indian School Road, Scottsdale, Arizona, 85251
Client Project No.:	Not Provided
Arizona Flow Testing Project No.:	20456
Flow Test Permit No.:	C63790
Date and time flow test conducted:	November 20, 2020 at 7:00 AM
Data is current and reliable until:	May 20, 2021
Conducted by:	Floyd Vaughan– Arizona Flow Testing, LLC (480-250-8154)
Coordinated by:	Chris Mendez –City of Scottsdale-Inspector (602-9028-9046)

Raw Test Data

Static Pressure: **106.0 PSI**
(Measured in pounds per square inch)

Residual Pressure: **91.0 PSI**
(Measured in pounds per square inch)

Pitot Pressure: **29.0 PSI**
(Measured in pounds per square inch)

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

Coefficient of Diffuser 0.7875

Flowing GPM: **2,025 GPM**
(Measured in gallons per minute)

GPM @ 20 PSI: **5,199 GPM**

Data with 34 PSI Safety Factor

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

Residual Pressure: **57.0 PSI**
(Measured in pounds per square inch)

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

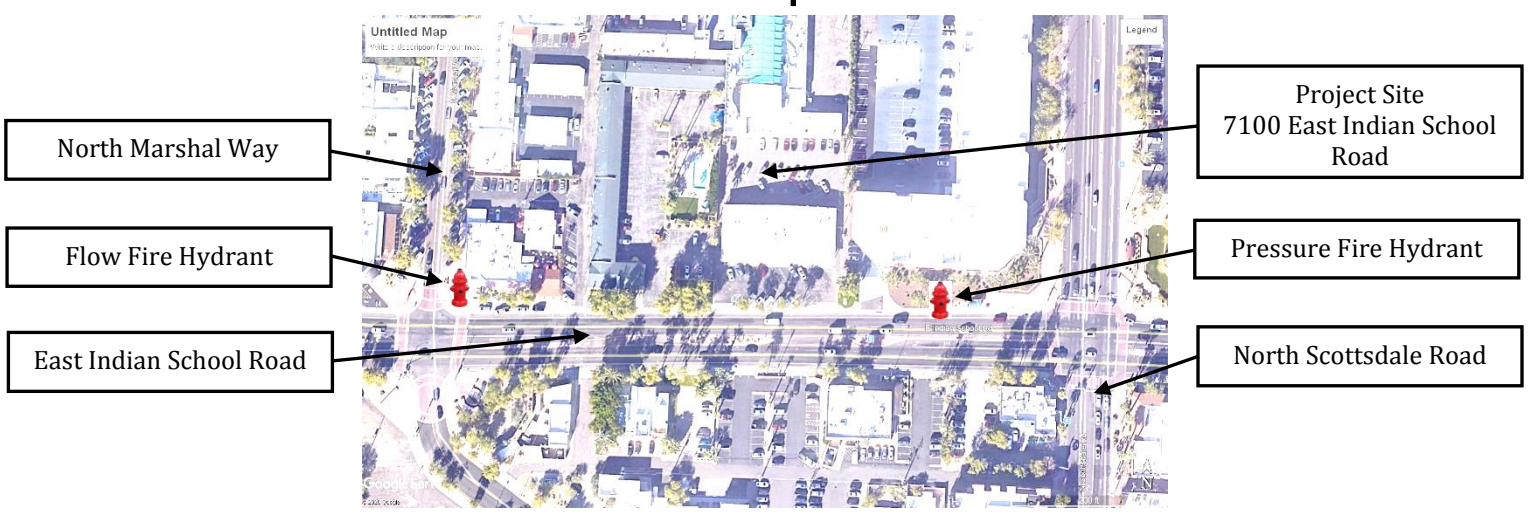
Distance between hydrants: Approx.: 630-Feet

Main size: Not Provided

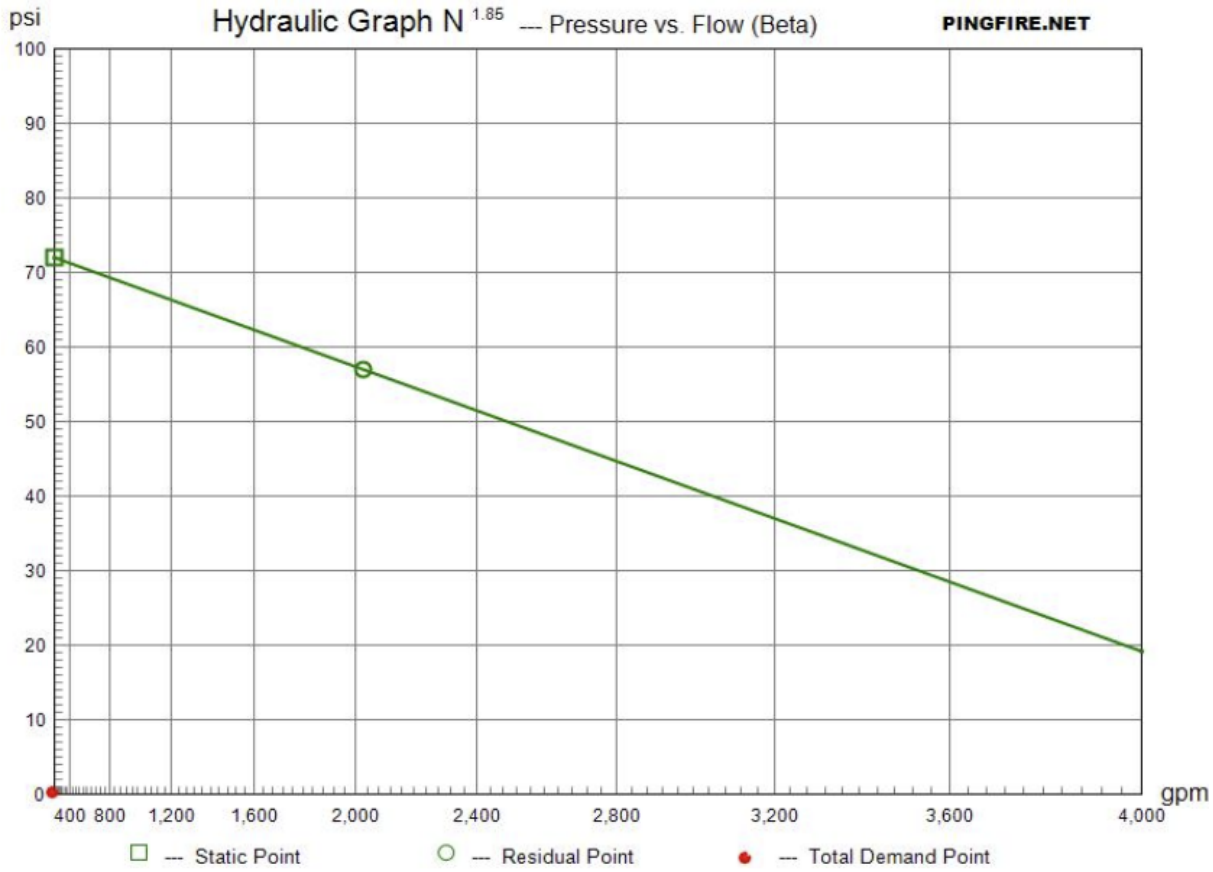
Flowing GPM: **2,025 GPM**

GPM @ 20 PSI**:** **3,962 GPM**

Flow Test Location **North**



Indian School Road Flow Test With 34 psi Safety Factor

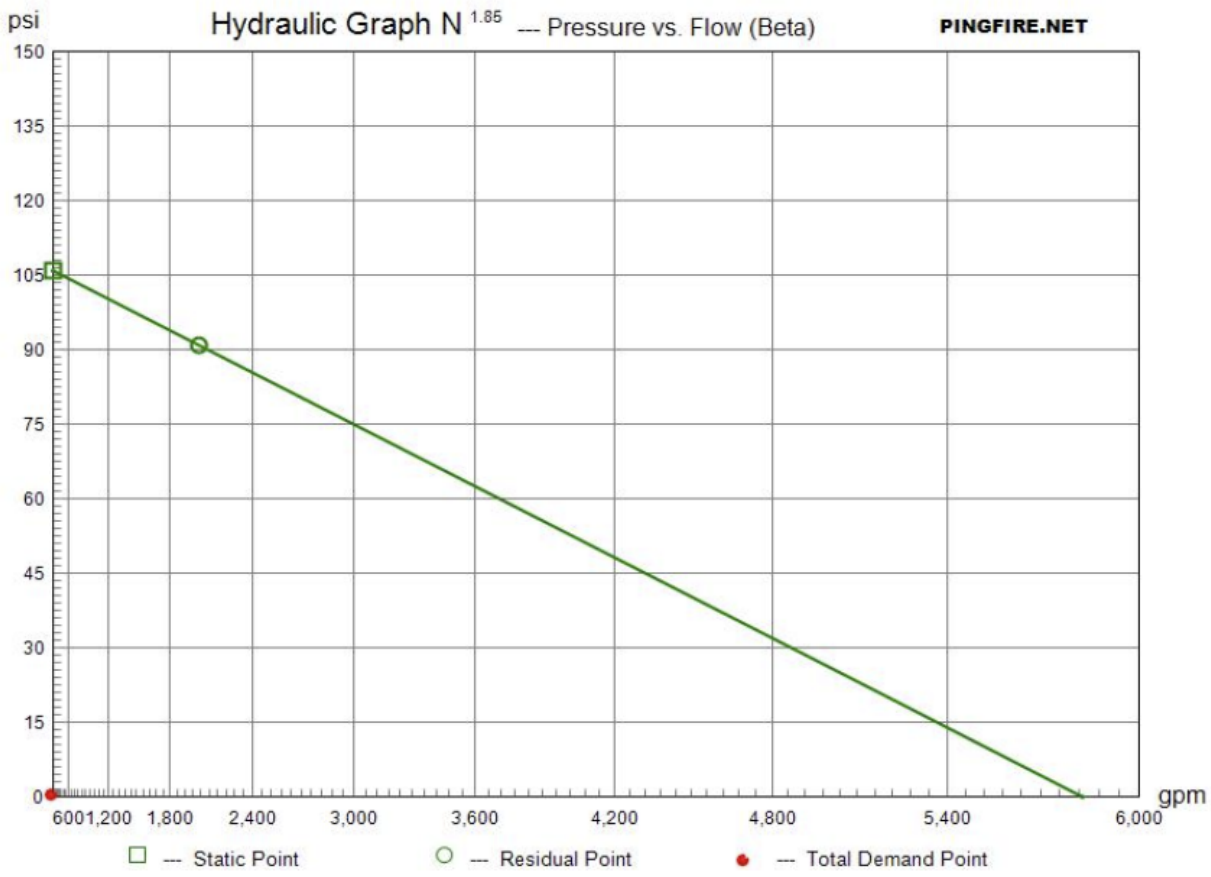


Project Location: Indian School Road 12" Water Line - West of Scottsdale Road

Flow Test: Hydrant Elev.= 1265 ft., Static Pressure= 72 psi, Residual Pressure= 57 psi, Flow= 2025 gpm

APPENDIX I
ISR FH Flow Test Plot

Indian School Road Flow Test - Raw Data



Project Location: Indian School Road 12" Water Line - West of Scottsdale Road

Flow Test: Hydrant Elev.= 1265 ft., Static Pressure= 106 psi, Residual Pressure= 91 psi, Flow= 2025 gpm

APPENDIX I
ISR FH Flow Test Plot

Arizona Flow Testing LLC

HYDRANT FLOW TEST REPORT

Project Name:	Arts District in Scottsdale
Project Address:	7100 East Indian School Road, Scottsdale, Arizona 85251
Client Project No.:	200504
Arizona Flow Testing Project No.:	20174
Flow Test Permit No.:	C62135
Date and time flow test conducted:	May 14, 2020 at 7:00 AM
Data is current and reliable until:	November 14, 2020
Conducted by:	Floyd Vaughan – Arizona Flow Testing, LLC (480-250-8154)
Witnessed by:	Ray Padilla – City of Scottsdale-Inspector (602-541-0586)

Raw Test Data

Static Pressure: **106.0 PSI**
(Measured in pounds per square inch)

Residual Pressure: **76.0 PSI**
(Measured in pounds per square inch)

Pitot Pressure: **30.0 PSI**
(Measured in pounds per square inch)

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

Coefficient of Diffuser: .7875

Flowing GPM: **2,354 GPM**
(Measured in gallons per minute)

GPM @ 20 PSI: **4,156 GPM**

Data with 34 PSI Safety Factor

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

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

Residual Pressure: **42.0 PSI**
(Measured in pounds per square inch)

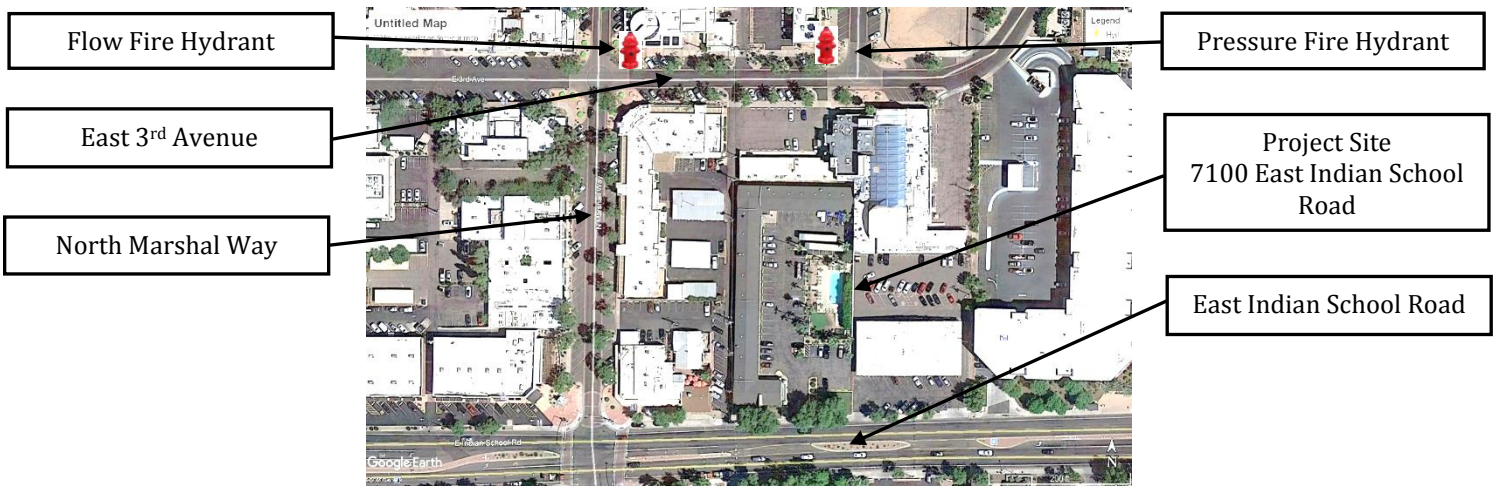
Distance between hydrants: Approx. 280 Feet

Main size: Not Provided

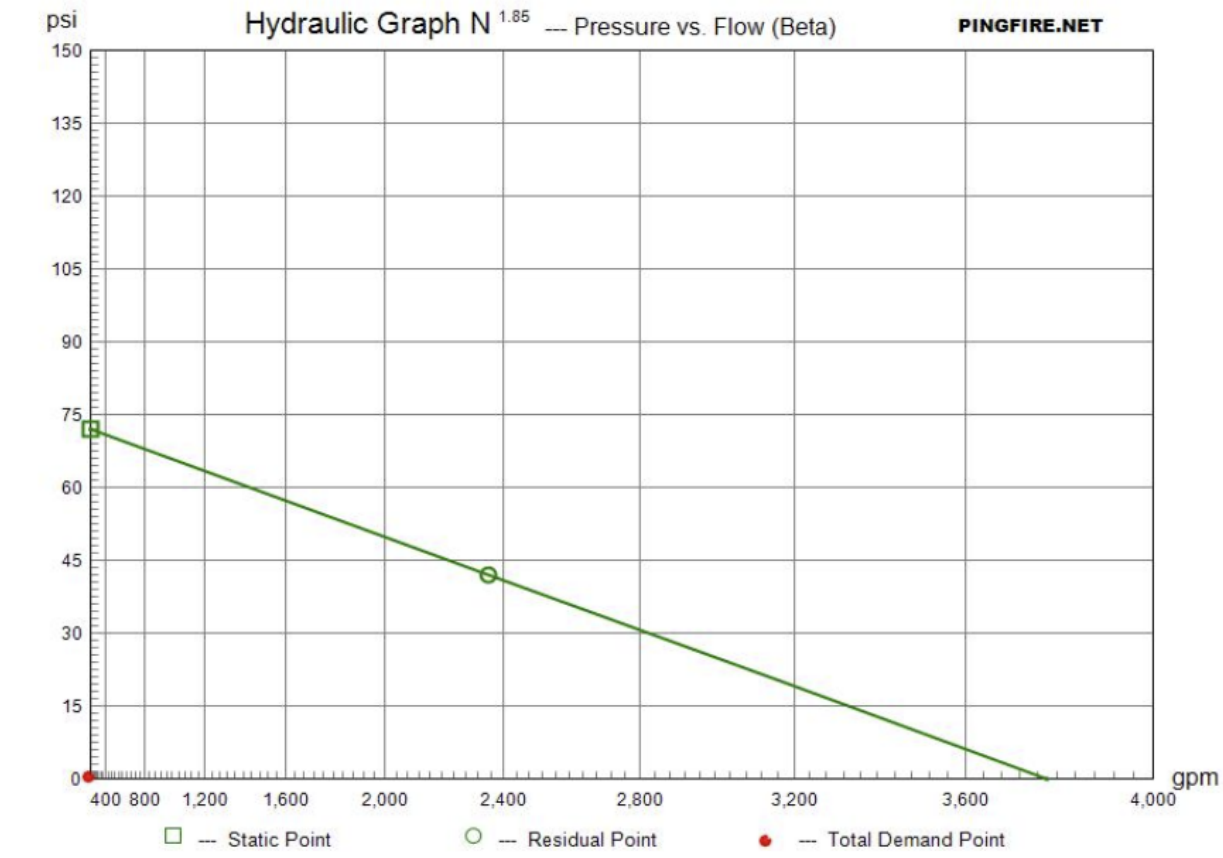
Flowing GPM: **2,354 GPM**

GPM @ 20 PSI**:** **3,168 GPM**

Flow Test Location **North**



3rd Avenue Flow Test With 34 psi Safety Factor



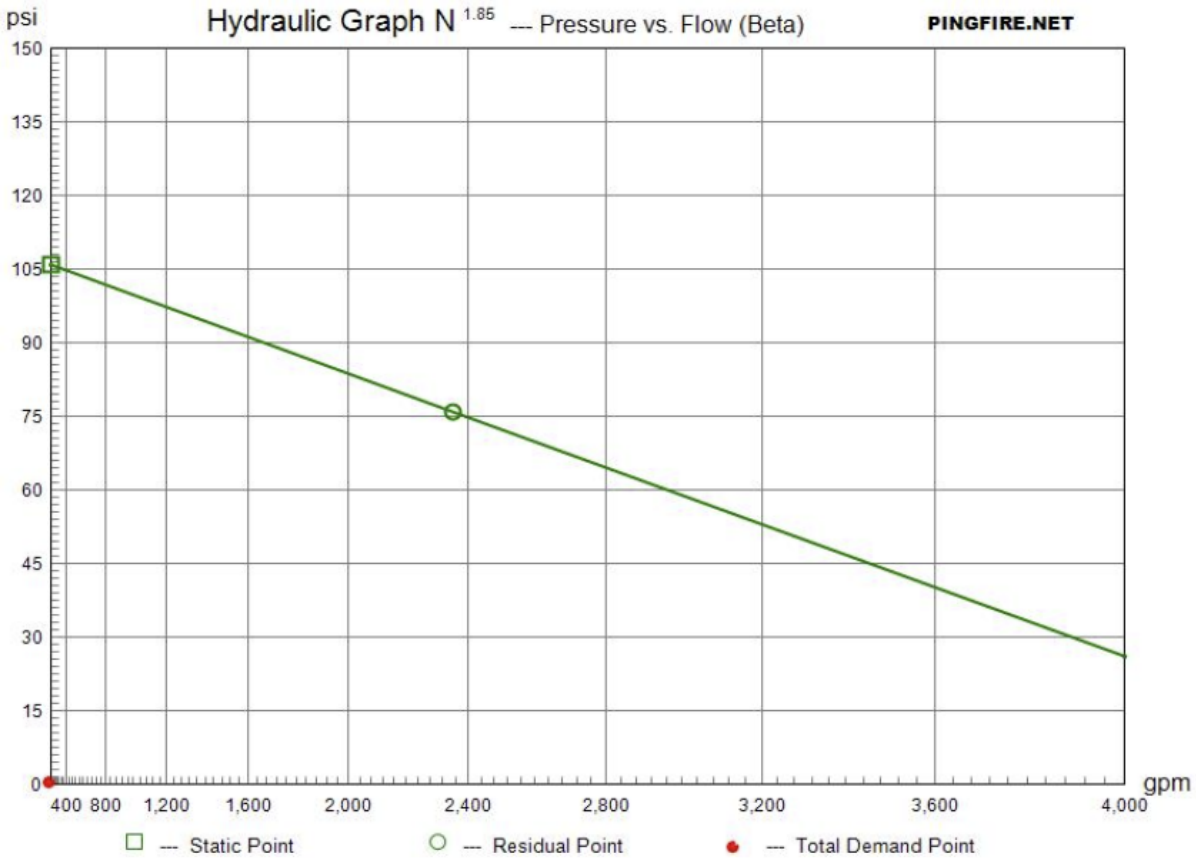
Project Location: Gensler - Triangle Building

Flow Test: Hydrant Elev.= 1265 ft., Static Pressure= 72 psi, Residual Pressure= 42 psi, Flow= 2354 gpm

APPENDIX I
3rd Ave FH Flow Test Plot

8280 E. Gelding Dr., Suite 101
Scottsdale, AZ 85260
info@azSEG.com 480.588.7226 www.azSEG.com

3rd Avenue Flow Test - Raw Data

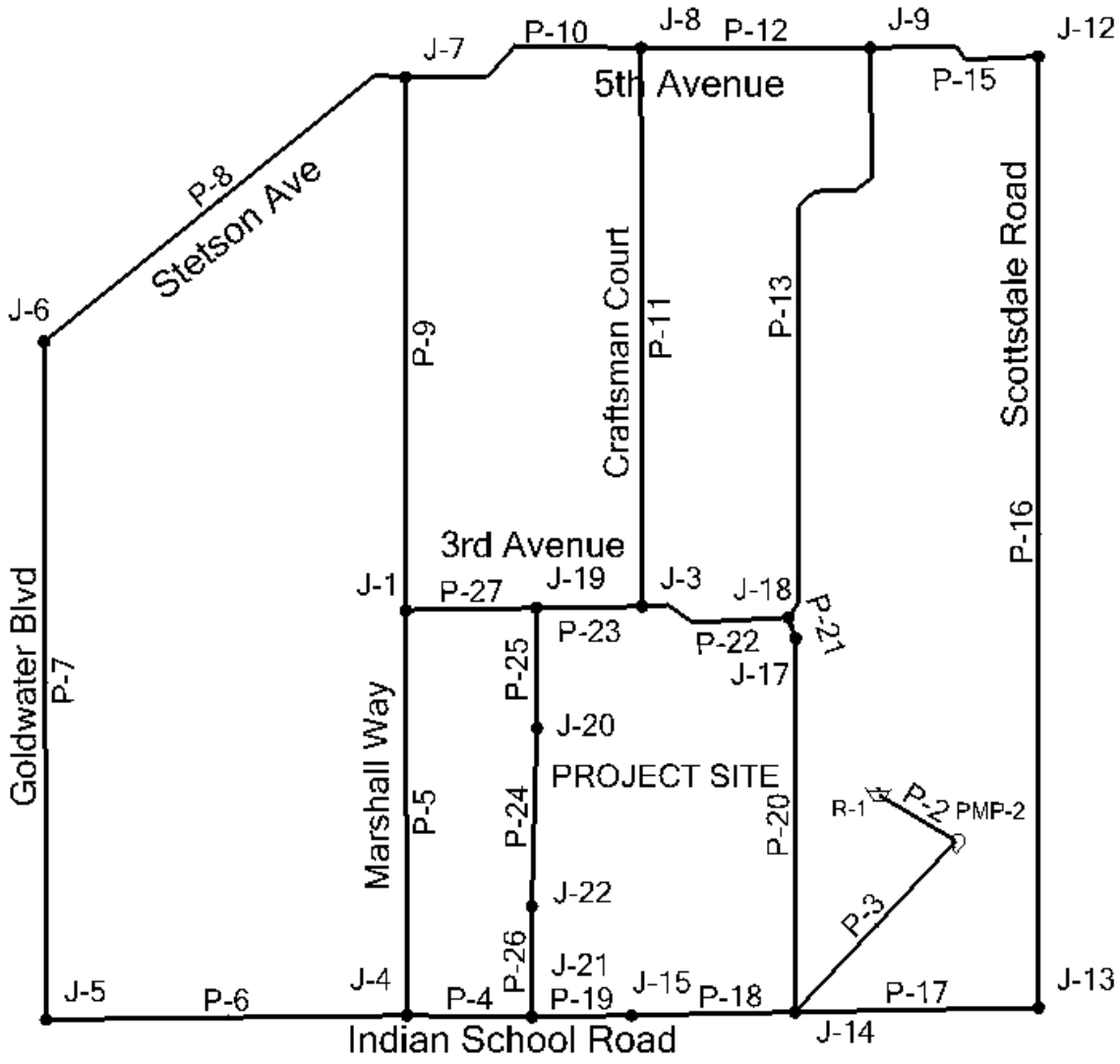


Project Location: Gensler - Triangle Building

Flow Test: Hydrant Elev.= 1265 ft., Static Pressure= 106 psi, Residual Pressure= 76 psi, Flow= 2354 gpm

APPENDIX I
3rd Ave FH Flow Test Plot

8280 E. Gelding Dr., Suite 101
Scottsdale, AZ 85260
info@azSEG.com 480.588.7226 www.azSEG.com



APPENDIX II - WaterCAD Modeling Analysis

2020-11-13 AD, MD & PH model.wtg

Active Scenario: AD

FlexTable: Junction Table

ID	Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
30	J-1	1,267.10	0	1,431.08	71
36	J-3	1,265.20	0	1,431.06	72
39	J-4	1,263.90	0	1,431.10	72
41	J-5	1,266.00	0	1,431.10	71
43	J-6	1,270.20	0	1,431.09	70
45	J-7	1,270.80	0	1,431.08	69
48	J-8	1,268.20	0	1,431.07	70
51	J-9	1,267.50	0	1,431.07	71
57	J-12	1,267.00	0	1,431.08	71
59	J-13	1,259.90	0	1,431.11	74
61	J-14	1,261.90	16	1,431.11	73
63	J-15	1,262.50	0	1,431.10	73
78	J-17	1,265.65	157	1,431.04	72
80	J-18	1,265.65	0	1,431.05	72
84	J-19	1,266.06	0	1,431.07	71
87	J-20	1,266.00	0	1,431.08	71
89	J-21	1,263.12	0	1,431.10	73
92	J-22	1,266.00	7	1,431.09	71

2020-11-13 AD, MD & PH model.wtg

Active Scenario: AD

FlexTable: Pipe Table

Label	Diameter (in)	Length (Scaled) (ft)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Status (Initial)
P-2	30.0	126	Ductile Iron	130.0	180	0.08	0.000	Open
P-3	30.0	328	Ductile Iron	130.0	180	0.08	0.000	Open
P-4	12.0	174	Ductile Iron	130.0	25	0.07	0.000	Open
P-5	6.0	566	Asbestos Cement	130.0	-16	0.18	0.000	Open
P-6	12.0	504	Ductile Iron	130.0	9	0.03	0.000	Open
P-7	6.0	947	Ductile Iron	130.0	9	0.11	0.000	Open
P-8	6.0	635	Ductile Iron	130.0	9	0.11	0.000	Open
P-9	6.0	744	Asbestos Cement	130.0	-3	0.03	0.000	Open
P-10	6.0	349	Ductile Iron	130.0	12	0.14	0.000	Open
P-11	6.0	780	Asbestos Cement	130.0	7	0.08	0.000	Open
P-12	8.0	320	Ductile Iron	130.0	5	0.03	0.000	Open
P-13	8.0	877	Ductile Iron	130.0	31	0.20	0.000	Open
P-15	8.0	246	Asbestos Cement	130.0	-26	0.17	0.000	Open
P-16	8.0	1,328	Asbestos Cement	130.0	-26	0.17	0.000	Open
P-17	12.0	340	Ductile Iron	130.0	-26	0.07	0.000	Open
P-18	12.0	228	Ductile Iron	130.0	69	0.20	0.000	Open
P-19	12.0	140	Ductile Iron	130.0	69	0.20	0.000	Open
P-20	8.0	522	Ductile Iron	130.0	69	0.44	0.000	Open
P-21	8.0	31	Ductile Iron	130.0	-88	0.56	0.000	Open
P-22	8.0	213	Ductile Iron	130.0	-57	0.36	0.000	Open
P-23	8.0	148	Asbestos Cement	130.0	-50	0.32	0.000	Open
P-24	8.0	249	Ductile Iron	130.0	-36	0.23	0.000	Open
P-25	8.0	168	Ductile Iron	130.0	-36	0.23	0.000	Open
P-26	8.0	154	Ductile Iron	130.0	43	0.28	0.000	Open
P-27	6.0	183	Ductile Iron	130.0	-13	0.15	0.000	Open

2020-11-13 AD, MD & PH model.wtg

Active Scenario: AD

FlexTable: Pump Table

Label	Elevation (ft)	Status (Initial)	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Flow (Total) (gpm)	Pump Head (ft)
PMP-2	1,265.00	On	1,265.20	1,431.11	180	165.91

2020-11-13 AD, MD & PH model.wtg

Active Scenario: AD

FlexTable: Reservoir Table

Label	Elevation (ft)	Flow (Out net) (gpm)	Hydraulic Grade (ft)
R-1	1,265.20	180	1,265.20

2020-11-13 AD, MD & PH model.wtg

Active Scenario: MD

FlexTable: Junction Table

ID	Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
30	J-1	1,267.10	0	1,429.98	70
36	J-3	1,265.20	0	1,429.93	71
39	J-4	1,263.90	0	1,430.06	72
41	J-5	1,266.00	0	1,430.05	71
43	J-6	1,270.20	0	1,430.01	69
45	J-7	1,270.80	0	1,429.98	69
48	J-8	1,268.20	0	1,429.95	70
51	J-9	1,267.50	0	1,429.95	70
57	J-12	1,267.00	0	1,429.97	71
59	J-13	1,259.90	0	1,430.08	74
61	J-14	1,261.90	31	1,430.08	73
63	J-15	1,262.50	0	1,430.07	72
78	J-17	1,265.65	314	1,429.84	71
80	J-18	1,265.65	0	1,429.86	71
84	J-19	1,266.06	0	1,429.97	71
87	J-20	1,266.00	0	1,429.99	71
89	J-21	1,263.12	0	1,430.06	72
92	J-22	1,266.00	14	1,430.03	71

2020-11-13 AD, MD & PH model.wtg

Active Scenario: MD

FlexTable: Pipe Table

Label	Diameter (in)	Length (Scaled) (ft)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Status (Initial)
P-2	30.0	126	Ductile Iron	130.0	359	0.16	0.000	Open
P-3	30.0	328	Ductile Iron	130.0	359	0.16	0.000	Open
P-4	12.0	174	Ductile Iron	130.0	51	0.14	0.000	Open
P-5	6.0	566	Asbestos Cement	130.0	-32	0.36	0.000	Open
P-6	12.0	504	Ductile Iron	130.0	19	0.05	0.000	Open
P-7	6.0	947	Ductile Iron	130.0	19	0.21	0.000	Open
P-8	6.0	635	Ductile Iron	130.0	19	0.21	0.000	Open
P-9	6.0	744	Asbestos Cement	130.0	-5	0.06	0.000	Open
P-10	6.0	349	Ductile Iron	130.0	24	0.27	0.000	Open
P-11	6.0	780	Asbestos Cement	130.0	15	0.17	0.000	Open
P-12	8.0	320	Ductile Iron	130.0	9	0.06	0.000	Open
P-13	8.0	877	Ductile Iron	130.0	62	0.40	0.000	Open
P-15	8.0	246	Asbestos Cement	130.0	-53	0.34	0.000	Open
P-16	8.0	1,328	Asbestos Cement	130.0	-53	0.34	0.000	Open
P-17	12.0	340	Ductile Iron	130.0	-53	0.15	0.000	Open
P-18	12.0	228	Ductile Iron	130.0	138	0.39	0.000	Open
P-19	12.0	140	Ductile Iron	130.0	138	0.39	0.000	Open
P-20	8.0	522	Ductile Iron	130.0	138	0.88	0.000	Open
P-21	8.0	31	Ductile Iron	130.0	-176	1.12	0.001	Open
P-22	8.0	213	Ductile Iron	130.0	-114	0.73	0.000	Open
P-23	8.0	148	Asbestos Cement	130.0	-99	0.63	0.000	Open
P-24	8.0	249	Ductile Iron	130.0	-73	0.46	0.000	Open
P-25	8.0	168	Ductile Iron	130.0	-73	0.46	0.000	Open
P-26	8.0	154	Ductile Iron	130.0	87	0.55	0.000	Open
P-27	6.0	183	Ductile Iron	130.0	-27	0.30	0.000	Open

2020-11-13 AD, MD & PH model.wtg

Active Scenario: MD

FlexTable: Pump Table

Label	Elevation (ft)	Status (Initial)	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Flow (Total) (gpm)	Pump Head (ft)
PMP-2	1,265.00	On	1,265.20	1,430.08	359	164.88

2020-11-13 AD, MD & PH model.wtg

Active Scenario: MD

FlexTable: Reservoir Table

Label	Elevation (ft)	Flow (Out net) (gpm)	Hydraulic Grade (ft)
R-1	1,265.20	359	1,265.20

2020-11-13 AD, MD & PH model.wtg

Active Scenario: PH

FlexTable: Junction Table

ID	Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
30	J-1	1,267.10	0	1,427.23	69
36	J-3	1,265.20	0	1,427.08	70
39	J-4	1,263.90	0	1,427.43	71
41	J-5	1,266.00	0	1,427.43	70
43	J-6	1,270.20	0	1,427.31	68
45	J-7	1,270.80	0	1,427.22	68
48	J-8	1,268.20	0	1,427.15	69
51	J-9	1,267.50	0	1,427.14	69
57	J-12	1,267.00	0	1,427.20	69
59	J-13	1,259.90	0	1,427.49	73
61	J-14	1,261.90	54	1,427.50	72
63	J-15	1,262.50	0	1,427.46	71
78	J-17	1,265.65	550	1,426.82	70
80	J-18	1,265.65	0	1,426.88	70
84	J-19	1,266.06	0	1,427.18	70
87	J-20	1,266.00	0	1,427.25	70
89	J-21	1,263.12	0	1,427.44	71
92	J-22	1,266.00	25	1,427.35	70

2020-11-13 AD, MD & PH model.wtg

Active Scenario: PH

FlexTable: Pipe Table

Label	Diameter (in)	Length (Scaled) (ft)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Status (Initial)
P-2	30.0	126	Ductile Iron	130.0	629	0.29	0.000	Open
P-3	30.0	328	Ductile Iron	130.0	629	0.29	0.000	Open
P-4	12.0	174	Ductile Iron	130.0	89	0.25	0.000	Open
P-5	6.0	566	Asbestos Cement	130.0	-56	0.64	0.000	Open
P-6	12.0	504	Ductile Iron	130.0	33	0.09	0.000	Open
P-7	6.0	947	Ductile Iron	130.0	33	0.37	0.000	Open
P-8	6.0	635	Ductile Iron	130.0	33	0.37	0.000	Open
P-9	6.0	744	Asbestos Cement	130.0	-9	0.11	0.000	Open
P-10	6.0	349	Ductile Iron	130.0	42	0.48	0.000	Open
P-11	6.0	780	Asbestos Cement	130.0	26	0.30	0.000	Open
P-12	8.0	320	Ductile Iron	130.0	16	0.10	0.000	Open
P-13	8.0	877	Ductile Iron	130.0	108	0.69	0.000	Open
P-15	8.0	246	Asbestos Cement	130.0	-92	0.59	0.000	Open
P-16	8.0	1,328	Asbestos Cement	130.0	-92	0.59	0.000	Open
P-17	12.0	340	Ductile Iron	130.0	-92	0.26	0.000	Open
P-18	12.0	228	Ductile Iron	130.0	241	0.68	0.000	Open
P-19	12.0	140	Ductile Iron	130.0	241	0.68	0.000	Open
P-20	8.0	522	Ductile Iron	130.0	241	1.54	0.001	Open
P-21	8.0	31	Ductile Iron	130.0	-308	1.97	0.002	Open
P-22	8.0	213	Ductile Iron	130.0	-200	1.27	0.001	Open
P-23	8.0	148	Asbestos Cement	130.0	-174	1.11	0.001	Open
P-24	8.0	249	Ductile Iron	130.0	-127	0.81	0.000	Open
P-25	8.0	168	Ductile Iron	130.0	-127	0.81	0.000	Open
P-26	8.0	154	Ductile Iron	130.0	152	0.97	0.001	Open
P-27	6.0	183	Ductile Iron	130.0	-47	0.53	0.000	Open

2020-11-13 AD, MD & PH model.wtg

Active Scenario: PH

FlexTable: Pump Table

Label	Elevation (ft)	Status (Initial)	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Flow (Total) (gpm)	Pump Head (ft)
PMP-2	1,265.00	On	1,265.20	1,427.51	629	162.31

2020-11-13 AD, MD & PH model.wtg

Active Scenario: PH

FlexTable: Reservoir Table

Label	Elevation (ft)	Flow (Out net) (gpm)	Hydraulic Grade (ft)
R-1	1,265.20	629	1,265.20

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

2020-11-13 MDD - FF split to J20 and J15.wtg

Active Scenario: MD

FlexTable: Pipe Table

ID	Label	Diameter (in)	Length (Scaled) (ft)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Status (Initial)
35	P-2	30.0	129	Ductile Iron	130.0	2,859	1.30	0.000	Open
37	P-3	30.0	272	Ductile Iron	130.0	2,859	1.30	0.000	Open
91	P-4	12.0	174	Ductile Iron	130.0	167	0.47	0.000	Open
40	P-5	6.0	566	Asbestos Cement	130.0	-124	1.41	0.002	Open
42	P-6	12.0	504	Ductile Iron	130.0	43	0.12	0.000	Open
44	P-7	6.0	947	Ductile Iron	130.0	43	0.48	0.000	Open
46	P-8	6.0	635	Ductile Iron	130.0	43	0.48	0.000	Open
47	P-9	6.0	744	Asbestos Cement	130.0	82	0.93	0.001	Open
49	P-10	6.0	349	Ductile Iron	130.0	-39	0.45	0.000	Open
50	P-11	6.0	780	Asbestos Cement	130.0	96	1.09	0.001	Open
52	P-12	8.0	320	Ductile Iron	130.0	-135	0.86	0.000	Open
81	P-13	8.0	877	Ductile Iron	130.0	130	0.83	0.000	Open
58	P-15	8.0	246	Asbestos Cement	130.0	-266	1.70	0.002	Open
60	P-16	8.0	1,328	Asbestos Cement	130.0	-266	1.70	0.002	Open
62	P-17	12.0	340	Ductile Iron	130.0	-266	0.75	0.000	Open
64	P-18	12.0	228	Ductile Iron	130.0	2,039	5.78	0.009	Open
90	P-19	12.0	140	Ductile Iron	130.0	789	2.24	0.002	Open
79	P-20	8.0	522	Ductile Iron	130.0	524	3.34	0.006	Open
83	P-21	8.0	31	Ductile Iron	130.0	210	1.34	0.001	Open
82	P-22	8.0	213	Ductile Iron	130.0	340	2.17	0.002	Open
85	P-23	8.0	148	Asbestos Cement	130.0	436	2.78	0.004	Open
95	P-24	8.0	249	Ductile Iron	130.0	-607	3.88	0.007	Open
88	P-25	8.0	168	Ductile Iron	130.0	643	4.10	0.008	Open
93	P-26	8.0	154	Ductile Iron	130.0	622	3.97	0.008	Open
86	P-27	6.0	183	Ductile Iron	130.0	-206	2.34	0.004	Open

2020-11-13 MDD - FF split to J20 and J15.wtg

Active Scenario: MD

FlexTable: Junction Table

ID	Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
30	J-1	1,267.10	0	1,362.43	41
36	J-3	1,265.20	0	1,362.28	42
39	J-4	1,263.90	0	1,363.32	43
41	J-5	1,266.00	0	1,363.31	42
43	J-6	1,270.20	0	1,363.11	40
45	J-7	1,270.80	0	1,362.97	40
48	J-8	1,268.20	0	1,363.04	41
51	J-9	1,267.50	0	1,363.18	41
57	J-12	1,267.00	0	1,363.57	42
59	J-13	1,259.90	0	1,365.65	46
61	J-14	1,261.90	31	1,365.72	45
63	J-15	1,262.50	1,250	1,363.56	44
78	J-17	1,265.65	314	1,362.84	42
80	J-18	1,265.65	0	1,362.81	42
84	J-19	1,266.06	0	1,361.70	41
87	J-20	1,266.00	1,250	1,360.35	41
89	J-21	1,263.12	0	1,363.33	43
92	J-22	1,266.00	14	1,362.16	42

2020-11-13 MD+FF - 1250 routed to all nodes with constant 1250 at J20.wtg

Active Scenario: MD+FF

Fire Flow Node FlexTable: Fire Flow Report

Label	Fire Flow (Needed) (gpm)	Calculated Pressure at Junction (psi)	Max Day + Fire Flow at Junction (gpm)	Junction w/ Minimum Pressure (System)	Junction Pressure (psi)	Pipe w/ Maximum Velocity	Velocity of Maximum Pipe (ft/s)
J-1	1,250	37	1,251	J-7	38	P-26	6.38
J-3	1,250	39	1,251	J-7	38	P-26	6.74
J-4	1,250	42	1,251	J-7	39	P-18	5.52
J-5	1,250	41	1,251	J-7	39	P-18	5.45
J-6	1,250	28	1,251	J-7	36	P-8	7.27
J-7	1,250	34	1,251	J-6	37	P-10	6.33
J-8	1,250	37	1,251	J-7	37	P-26	6.00
J-9	1,250	38	1,251	J-7	38	P-26	5.93
J-12	1,250	38	1,251	J-7	38	P-26	5.76
J-13	1,250	45	1,251	J-7	40	P-26	4.38
J-14	1,250	45	1,282	J-7	40	P-26	4.27
J-15	1,250	44	1,251	J-7	40	P-18	5.79
J-17	1,250	39	1,565	J-7	38	P-26	6.22
J-18	1,250	39	1,251	J-7	38	P-26	6.26
J-19	1,250	38	1,251	J-20	38	P-26	7.15
J-20	1,250	37	2,501	J-7	39	P-26	8.15
J-21	1,250	43	1,251	J-7	40	P-18	5.61
J-22	1,250	39	1,265	J-20	39	P-26	9.89

2020-11-13 AD, MD & PH model.wtg

Active Scenario: MD+FF

Fire Flow Node FlexTable: Fire Flow Report

Label	Fire Flow (Needed) (gpm)	Calculated Pressure at Junction (psi)	Max Day + Fire Flow at Junction (gpm)	Fire Flow (Available) (gpm)	Junction w/ Minimum Pressure (System)	Junction Pressure (psi)	Pipe w/ Maximum Velocity	Pipe Velocity (ft/s)
J-1	2,500	25	2,711	2,711	J-7	32	P-27	15.00
J-3	2,500	29	2,873	2,873	J-7	30	P-23	8.89
J-4	2,500	32	2,951	2,951	J-6	30	P-4	7.37
J-5	2,500	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
J-6	2,500	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
J-7	2,500	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
J-8	2,500	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
J-9	2,500	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
J-12	2,500	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
J-13	2,500	34	3,000	3,000	J-7	31	P-17	7.56
J-14	2,500	35	3,031	3,000	J-7	31	P-2	1.52
J-15	2,500	33	3,000	3,000	J-7	30	P-18	7.46
J-17	2,500	29	3,154	2,840	J-18	30	P-21	11.36
J-18	2,500	30	2,833	2,833	J-17	30	P-20	8.40
J-19	2,500	29	2,883	2,883	J-7	30	P-26	7.36
J-20	2,500	27	2,904	2,904	J-19	30	P-26	9.41
J-21	2,500	33	2,978	2,978	J-7	30	P-18	7.04
J-22	2,500	28	2,961	2,947	J-20	30	P-26	12.78

2020-11-13 AD, MD & PH model.wtg
Active Scenario: MD+FF
Pump Definition Detailed Report: PMP-2

Element Details			
ID	106	Notes	
Label	PMP-2		

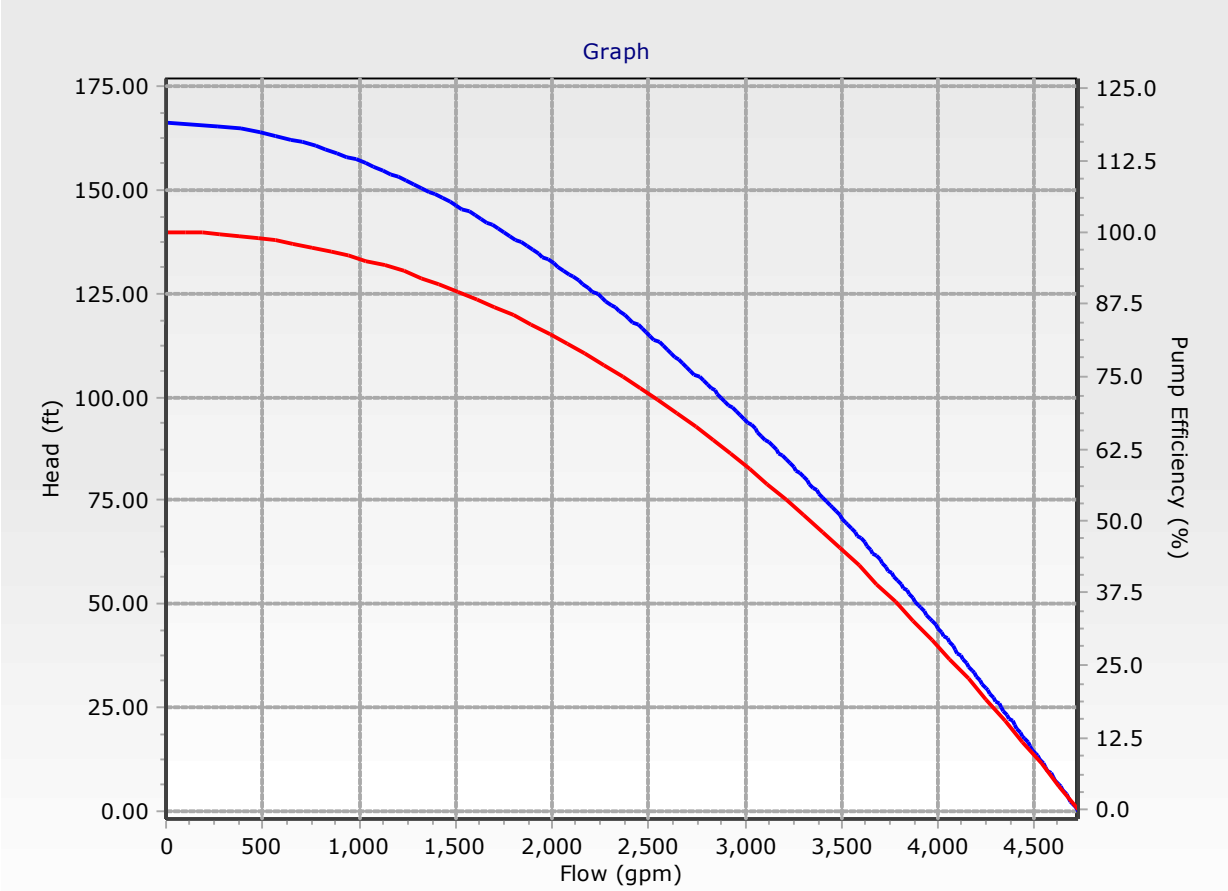
Pump Definition Type			
Pump Definition Type	Standard (3 Point)	Design Head	131.60 ft
Shutoff Flow	0 gpm	Maximum Operating Flow	3,962 gpm
Shutoff Head	166.30 ft	Maximum Operating Head	46.20 ft
Design Flow	2,025 gpm		

Pump Efficiency Type			
Pump Efficiency Type	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

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

2020-11-13 AD, MD & PH model.wtg
Active Scenario: MD+FF
Pump Definition Detailed Report: PMP-2



APPENDIX III

UTILITY PLAN

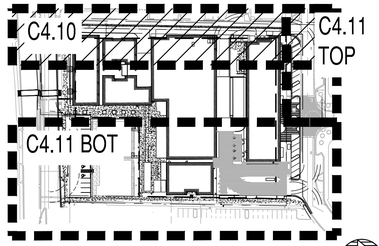
KIMSEY HOTEL & APARTMENT
UTILITY PLAN
7120 E. INDIAN SCHOOL ROAD. SCOTTSDALE, AZ. 85251

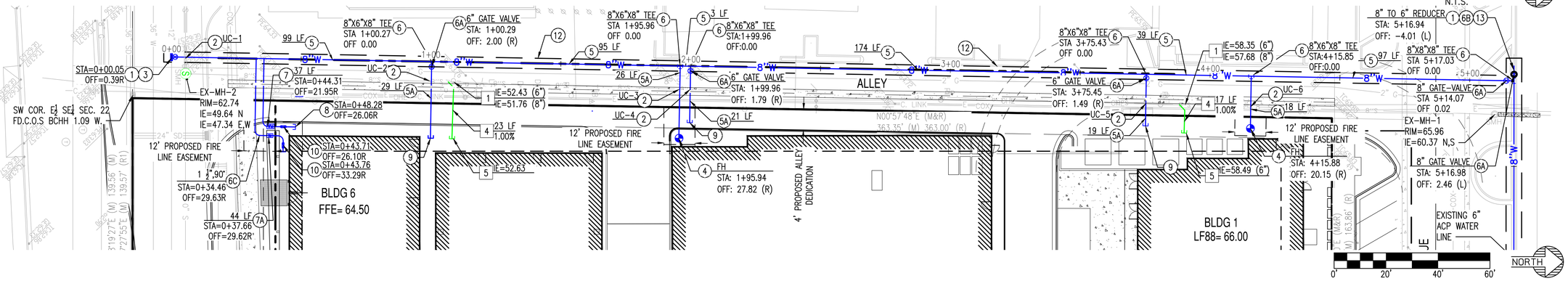
SEWER CONSTRUCTION KEY NOTES

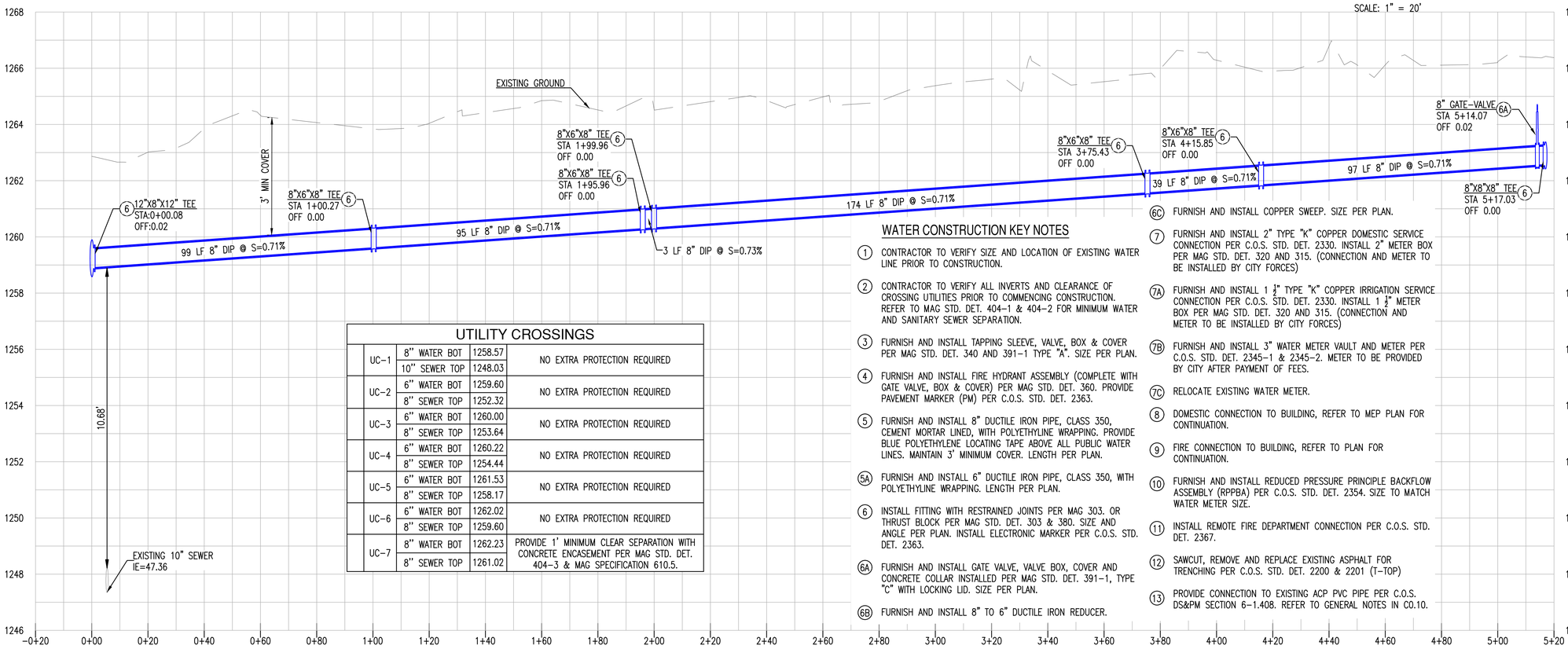
1. CONTRACTOR SHALL VERIFY THE LOCATION OF THE EXISTING SANITARY SEWER LINE BEFORE PROCEEDING WITH TRENCHING. CONTRACTOR SHALL CONTACT ENGINEER IF EXISTING SEWER ELEVATION IS HIGHER THAN PROPOSED TIE-IN INVERT PRIOR TO ANY CONSTRUCTION ACTIVITY.
2. CONTRACTOR SHALL VERIFY ALL INVERTS AND CLEARANCE OF CROSSING UTILITIES PRIOR TO COMMENCING CONSTRUCTION.
3. FURNISH AND INSTALL 6" PVC SDR-35 SEWER LINE. SIZE, LENGTH AND SLOPE PER PLAN. MAINTAIN 4' MINIMUM COVER.
4. FURNISH AND INSTALL 6" PVC-SDR 35 SEWER LINE CONNECTION PER MAG STD. DET. 440-1. LENGTH AND SLOPE PER PLAN.
5. REFER TO BUILDING PLUMBING PLANS FOR CONTINUATION.
6. CORE EXISTING MANHOLE AND PROVIDE WATERTIGHT CONNECTION FOR NEW SEWER. RECONSTRUCT PAVED INVERT AS REQUIRED.

CONSTRUCTION TYPE:
BUILDING 1: TYPE IIB
BUILDINGS 2-6: TYPE IIIA

NOTES:
1. EXISTING MANHOLES RIMS AND INVERTS HAS BEEN SET BASED ON THE SURVEY RECEIVED FROM 3 ENGINEERS, LLC. DATED 02/13/20.
2. EXISTING MANHOLES RIMS AND INVERTS HAS BEEN SET BASED ON QUARTER SECTION MAP QS# 17-44. DATED 06/11/20.
3. EXISTING WATER MAIN INVERT ELEVATIONS TO BE VERIFIED IN FIELD.
4. EXISTING OVERHEAD LINES EXTENDING ACROSS E.3RD AVENUE SHALL BE RELOCATED UNDER THE STREET AND UP TO THE NEXT EXISTING RISER ON THE NORTH SIDE OF E 3RD AVENUE.







UTILITY CROSSINGS

UC-1	8" WATER BOT	1258.57	NO EXTRA PROTECTION REQUIRED
	10" SEWER TOP	1248.03	
UC-2	6" WATER BOT	1259.60	NO EXTRA PROTECTION REQUIRED
	8" SEWER TOP	1252.32	
UC-3	6" WATER BOT	1260.00	NO EXTRA PROTECTION REQUIRED
	8" SEWER TOP	1253.64	
UC-4	6" WATER BOT	1260.22	NO EXTRA PROTECTION REQUIRED
	8" SEWER TOP	1254.44	
UC-5	6" WATER BOT	1261.53	NO EXTRA PROTECTION REQUIRED
	8" SEWER TOP	1258.17	
UC-6	6" WATER BOT	1262.02	NO EXTRA PROTECTION REQUIRED
	8" SEWER TOP	1259.60	
UC-7	8" WATER BOT	1262.23	PROVIDE 1' MINIMUM CLEAR SEPARATION WITH CONCRETE ENCASEMENT PER MAG STD. DET. 404-3 & MAG SPECIFICATION 610.5.
	8" SEWER TOP	1261.02	

WATER CONSTRUCTION KEY NOTES

1. CONTRACTOR TO VERIFY SIZE AND LOCATION OF EXISTING WATER LINE PRIOR TO CONSTRUCTION.
2. CONTRACTOR TO VERIFY ALL INVERTS AND CLEARANCE OF CROSSING UTILITIES PRIOR TO COMMENCING CONSTRUCTION. REFER TO MAG STD. DET. 404-1 & 404-2 FOR MINIMUM WATER AND SANITARY SEWER SEPARATION.
3. FURNISH AND INSTALL TAPPING SLEEVE, VALVE, BOX & COVER PER MAG STD. DET. 340 AND 391-1 TYPE "A". SIZE PER PLAN.
4. FURNISH AND INSTALL FIRE HYDRANT ASSEMBLY (COMPLETE WITH GATE VALVE, BOX & COVER) PER MAG STD. DET. 360. PROVIDE PAVEMENT MARKER (PM) PER C.O.S. STD. DET. 2363.
5. FURNISH AND INSTALL 8" DUCTILE IRON PIPE, CLASS 350, CEMENT MORTAR LINED, WITH POLYETHYLINE WRAPPING. PROVIDE BLUE POLYETHYLENE LOCATING TAPE ABOVE ALL PUBLIC WATER LINES. MAINTAIN 3' MINIMUM COVER. LENGTH PER PLAN.
5A. FURNISH AND INSTALL 6" DUCTILE IRON PIPE, CLASS 350, WITH POLYETHYLINE WRAPPING. LENGTH PER PLAN.
6. INSTALL FITTING WITH RESTRAINED JOINTS PER MAG 303. OR THRUST BLOCK PER MAG STD. DET. 303 & 380. SIZE AND ANGLE PER PLAN. INSTALL ELECTRONIC MARKER PER C.O.S. STD. DET. 2363.
6A. FURNISH AND INSTALL GATE VALVE, VALVE BOX, COVER AND CONCRETE COLLAR INSTALLED PER MAG STD. DET. 391-1, TYPE "C" WITH LOCKING LID. SIZE PER PLAN.
6B. FURNISH AND INSTALL 8" TO 6" DUCTILE IRON REDUCER.
6C. FURNISH AND INSTALL COPPER SWEEP. SIZE PER PLAN.
7. FURNISH AND INSTALL 2" TYPE "K" COPPER DOMESTIC SERVICE CONNECTION PER C.O.S. STD. DET. 2330. INSTALL 2" METER BOX PER MAG STD. DET. 320 AND 315. (CONNECTION AND METER TO BE INSTALLED BY CITY FORCES)
7A. FURNISH AND INSTALL 1 ½" TYPE "K" COPPER IRRIGATION SERVICE CONNECTION PER C.O.S. STD. DET. 2330. INSTALL 1 ½" METER BOX PER MAG STD. DET. 320 AND 315. (CONNECTION AND METER TO BE INSTALLED BY CITY FORCES)
7B. FURNISH AND INSTALL 3" WATER METER VAULT AND METER PER C.O.S. STD. DET. 2345-1 & 2345-2. METER TO BE PROVIDED BY CITY AFTER PAYMENT OF FEES.
7C. RELOCATE EXISTING WATER METER.
8. DOMESTIC CONNECTION TO BUILDING, REFER TO MEP PLAN FOR CONTINUATION.
9. FIRE CONNECTION TO BUILDING, REFER TO PLAN FOR CONTINUATION.
10. FURNISH AND INSTALL REDUCED PRESSURE PRINCIPLE BACKFLOW ASSEMBLY (RPPBA) PER C.O.S. STD. DET. 2354. SIZE TO MATCH WATER METER SIZE.
11. INSTALL REMOTE FIRE DEPARTMENT CONNECTION PER C.O.S. STD. DET. 2367.
12. SAWCUT, REMOVE AND REPLACE EXISTING ASPHALT FOR TRENCHING PER C.O.S. STD. DET. 2200 & 2201 (T-TOP)
13. PROVIDE CONNECTION TO EXISTING ACP PVC PIPE PER C.O.S. DS&PM SECTION 6-1.408. REFER TO GENERAL NOTES IN C0.10.

PROPOSED UTILITY LEGEND:
PROPERTY LINE · EASEMENT LINE · 8"W WATER LINE · 8"S SEWER LINE · FIRE HYDRANT · FDC · WATER METER · GATE VALVE · T.S.V.B.&C · BACK FLOW PREVENTER · REDUCER · CAP · BUILDING CONNECTION · SEWER MANHOLE · SEWER CLEAN OUT

8" ALLEY WATERLINE PROFILE VIEW
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 2'

EXISTING LEGEND:
CENTERLINE · EASEMENT LINE AS NOTED · CHAINLINKE FENCE · TREE · EX. S SEWER LINE · SEWER MANHOLE · EX. W WATER LINE · WV WATER VALVE · FIRE HYDRANT · STORM DRAIN LINE · CB STORM CATCH BASIN · STORM MANHOLE · GAS LINE · IRR IRRIGATION LINE · SIGN · STREET LIGHT · FO FIBER OPTIC LINE

NOT FOR CONSTRUCTION

SUSTAINABILITY ENGINEERING GROUP
8280 E. GELDING DRIVE SUITE 101, SCOTTSDALE, ARIZONA 85260
WWW.AZSEG.COM TEL. 480.588.7226 FAX. 480.259.3534

Gensler

Blue Stake, Inc. Arizona 811 at least two full working days before you begin excavation. ARIZONA811 Call 811 or visit Arizona811.com

PROJECT	KIMSEY HOTEL & APARTMENT
LOCATION	7120 E. INDIAN SCHOOL ROAD. SCOTTSDALE, AZ. 85251

DRAWN	LP	6/14/2021
DESIGNED	LP	6/14/2021
QC	SC	6/15/2021
FINAL QC		
PROJ. MGR.	AF	

DATE: 06/15/2021
ISSUED FOR: DRB

REVISION NO.:	DATE:
1	
2	
3	
4	

JOB NO.: 200504
SHEET TITLE: **UTILITY PLAN**

PAGE NO.: 8 OF 9
SHEET NO.: **C4.10**

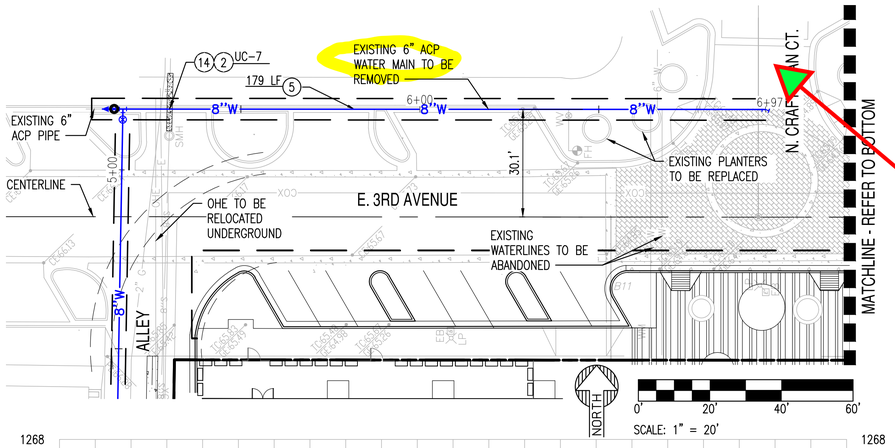
CASE NO.: 10-ZN-2020

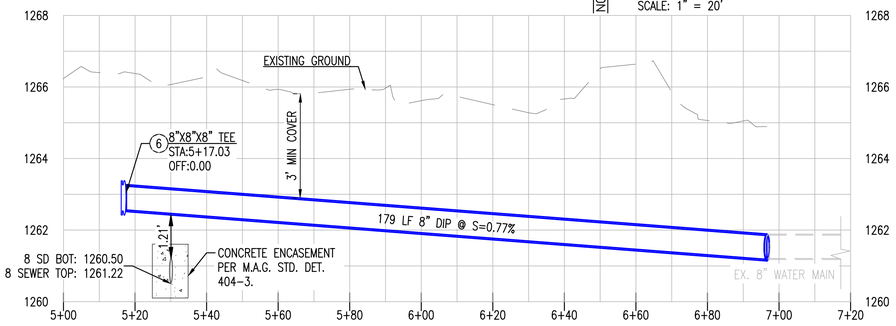
LOCATION: Z:\SHARED\PROJECTS\GENSLER\HOJO APARTMENTS SCOTTSDALE 200504\11 CAD (SEG)\11.3 CD'S\200504-CD-C4.00.DWG SAVED BY: LAPTOP02 DATE: 6/15/2021

KIMSEY HOTEL & APARTMENT

UTILITY PLAN

7120 E. INDIAN SCHOOL ROAD. SCOTTSDALE, AZ. 85251





8" E. 3RD AVENUE WATERLINE REPLACEMENT PROFILE VIEW

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 2'

Clarify what is being done with the existing 8-inch on Craftsman Ct. Not shown to right.

KEY MAP
N.T.S.

NORTH

WATER CONSTRUCTION KEY NOTES

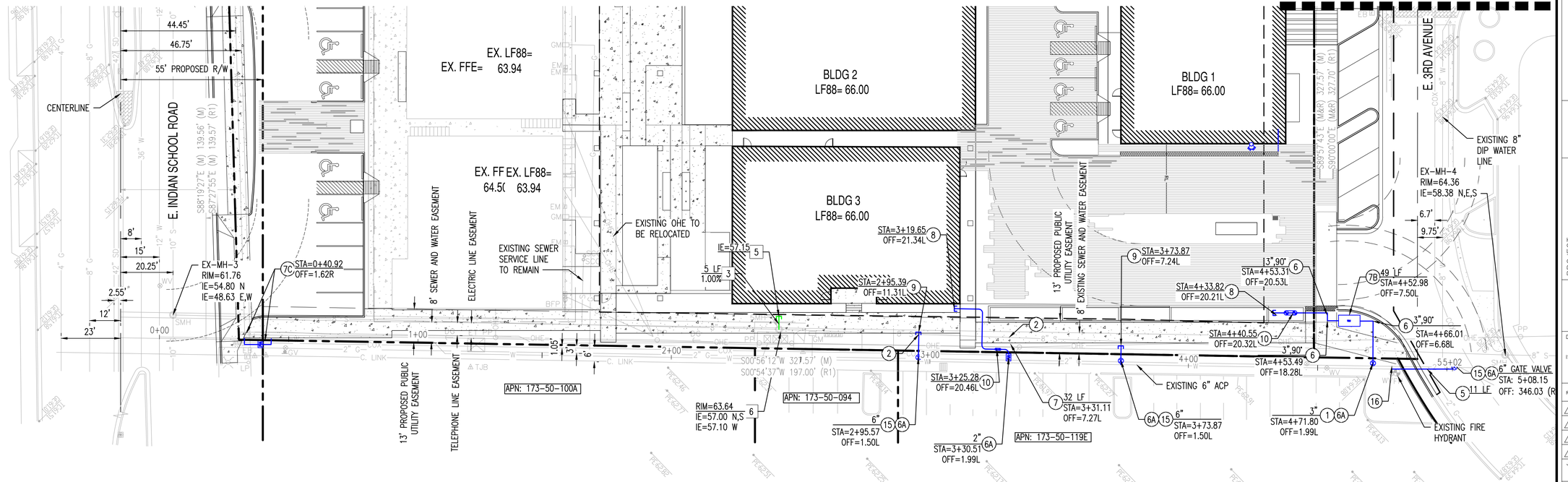
1. CONTRACTOR TO VERIFY SIZE AND LOCATION OF EXISTING WATER LINE PRIOR TO CONSTRUCTION.
2. CONTRACTOR TO VERIFY ALL INVERTS AND CLEARANCE OF CROSSING UTILITIES PRIOR TO COMMENCING CONSTRUCTION. REFER TO MAG STD. DET. 404-1 & 404-2 FOR MINIMUM WATER AND SANITARY SEWER SEPARATION.
4. FURNISH AND INSTALL FIRE HYDRANT ASSEMBLY (COMPLETE WITH GATE VALVE, BOX & COVER) PER MAG STD. DET. 360. PROVIDE PAVEMENT MARKER (PM) PER C.O.S. STD. DET. 2363.
5. FURNISH AND INSTALL 8" DUCTILE IRON PIPE, CLASS 350, CEMENT MORTAR LINED, WITH POLYETHYLINE WRAPPING. PROVIDE BLUE POLYETHYLENE LOCATING TAPE ABOVE ALL PUBLIC WATER LINES. MAINTAIN 3' MINIMUM COVER. LENGTH PER PLAN.
6. INSTALL FITTING WITH RESTRAINED JOINTS PER MAG 303. OR THRUST BLOCK PER MAG STD. DET. 303 & 380. SIZE AND ANGLE PER PLAN. INSTALL ELECTRONIC MARKER PER C.O.S. STD. DET. 2363.
6A. FURNISH AND INSTALL GATE VALVE, VALVE BOX, COVER AND CONCRETE COLLAR INSTALLED PER MAG STD. DET. 391-1, TYPE "C" WITH LOCKING LID. SIZE PER PLAN.
6C. FURNISH AND INSTALL COPPER SWEEP. SIZE PER PLAN.
7. FURNISH AND INSTALL 2" TYPE "K" COPPER DOMESTIC SERVICE CONNECTION PER C.O.S. STD. DET. 2330. INSTALL 2" METER BOX PER MAG STD. DET. 320 AND 315. (CONNECTION AND METER TO BE INSTALLED BY CITY FORCES)
7A. FURNISH AND INSTALL 1 ½" TYPE "K" COPPER IRRIGATION SERVICE CONNECTION PER C.O.S. STD. DET. 2330. INSTALL 1 ½" METER BOX PER MAG STD. DET. 320 AND 315. (CONNECTION AND METER TO BE INSTALLED BY CITY FORCES)
7B. FURNISH AND INSTALL 3" WATER METER VAULT AND METER PER C.O.S. STD. DET. 2345-1 & 2345-2. METER TO BE PROVIDED BY CITY AFTER PAYMENT OF FEES.
7C. RELOCATE EXISTING WATER METER.
8. DOMESTIC CONNECTION TO BUILDING, REFER TO MEP PLAN FOR CONTINUATION.
9. FIRE CONNECTION TO BUILDING, REFER TO PLAN FOR CONTINUATION.
10. FURNISH AND INSTALL REDUCED PRESSURE PRINCIPLE BACKFLOW ASSEMBLY (RPPBA) PER C.O.S. STD. DET. 2354. SIZE TO MATCH WATER METER SIZE.
11. INSTALL REMOTE FIRE DEPARTMENT CONNECTION PER C.O.S. STD. DET. 2367.
12. SAWCUT, REMOVE AND REPLACE EXISTING ASPHALT FOR TRENCHING PER C.O.S. STD. DET. 2200 & 2201 (T-TOP)
13. PROVIDE CONNECTION TO EXISTING ACP PVC PIPE PER C.O.S. DS&PM SECTION 6-1.408. REFER TO GENERAL NOTES IN C0.10.
14. PROTECT WATERMAIN USING REINFORCED CONCRETE ENCASEMENT ON SEWER PIPE AND WATERMAIN PER MAG STD. DET. 404-3.
15. FURNISH AND INSTALL 6" X 6" CUT-IN TEE.
16. FURNISH AND INSTALL 6" DIP COUPLER AND CONNECT TO EXISTING 6" ACP WATER MAIN.

SEWER CONSTRUCTION KEY NOTES

1. CONTRACTOR SHALL VERIFY THE LOCATION OF THE EXISTING SANITARY SEWER LINE BEFORE PROCEEDING WITH TRENCHING. CONTRACTOR SHALL CONTACT ENGINEER IF EXISTING SEWER ELEVATION IS HIGHER THAN PROPOSED TIE-IN INVERT PRIOR TO ANY CONSTRUCTION ACTIVITY.
2. CONTRACTOR SHALL VERIFY ALL INVERTS AND CLEARANCE OF CROSSING UTILITIES PRIOR TO COMMENCING CONSTRUCTION.
4. FURNISH AND INSTALL 6" PVC-SDR 35 SEWER LINE CONNECTION PER MAG STD. DET. 440-1. LENGTH AND SLOPE PER PLAN.
5. REFER TO BUILDING PLUMBING PLANS FOR CONTINUATION.

UTILITY CROSSINGS

UC-7	8" WATER BOT	1262.23	PROVIDE 1' MINIMUM CLEAR SEPARATION WITH CONCRETE ENCASEMENT PER MAG STD. DET. 404-3 & MAG SPECIFICATION 610.5.
	8" SEWER TOP	1261.22	



PROPOSED UTILITY LEGEND:

PROPERTY LINE · EASEMENT LINE · 8"W WATER LINE · 8"S SEWER LINE · FIRE HYDRANT · FDC · WATER METER · GATE VALVE · T.S.V.B.&C · BACK FLOW PREVENTER · REDUCER · CAP · BUILDING CONNECTION · SEWER MANHOLE · SEWER CLEAN OUT

EXISTING LEGEND:

CENTERLINE · EASEMENT LINE AS NOTED · CHAINLINKE FENCE · TREE · SEWER LINE · SEWER MANHOLE · WATER LINE · WATER VALVE · FIRE HYDRANT · STORM DRAIN LINE · STORM CATCH BASIN · STORM MANHOLE · GAS LINE · IRRIGATION LINE · SIGN · STREET LIGHT · FIBER OPTIC LINE

NOT FOR CONSTRUCTION

SEG SUSTAINABILITY ENGINEERING GROUP
8280 E. GELDING DRIVE SUITE 101, SCOTTSDALE, ARIZONA 85260
WWW. AZSEG.COM TEL. 480.588.7226 FAX. 480.259.3534

Gensler

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

PROJECT	KIMSEY HOTEL & APARTMENT
LOCATION	7120 E. INDIAN SCHOOL ROAD. SCOTTSDALE, AZ. 85251

DRAWN	LP	6/14/2021
DESIGNED	LP	6/14/2021
QC	SC	6/15/2021
FINAL QC		
PROJ. MGR.	AF	

DATE: 06/15/2021
ISSUED FOR: DRB

REVISION NO.:	DATE:
1	
2	
3	
4	

JOB NO.: 200504

SHEET TITLE: **UTILITY PLAN**

PAGE NO.: 8 OF 9
SHEET NO.: C4.10

CASE NO.: 10-ZN-2020

LOCATION: Z:\SHARED\PROJECTS\GENSLER\HOJO APARTMENTS SCOTTSDALE 200504\11 CAD (SEG)\11.3 CD'S\200504-CD-C4.00.DWG SAVED BY: LAPTOP02 DATE: 6/15/2021