

Ordinance Issues:

1. Note to the Submitter/Developer, as per section 7-1.400.A of the DSPM, Developers may be required to install, at their expense, all on-site and off-site improvements, if required.

Policy and Design Related Issues:

2. System capacity has not been analyzed per DSPM 7-1.000. However, from email with City on 8/8/2019, due to low flow and no proposed pool, the new flows will be less than 40 GPM and has been approved.

3. If separate buildings, or separate ownership of the commercial and multi-family residential buildings is being proposed, then separate service sewer service lines are recommended. DS&PM 7-1.409.C. Separate service lines are recommended for different uses. This was brought up in the previous submittal and has not been addressed or commented on in this submittal. If the sewer service line is to be shared by different buildings/owners then a private owners association may be required to designate shared infrastructure maintenance and repair responsibilities.

Technical Corrections to be Resolved:

4. Recommendation: Separate sewer service lines (sewer and/or water) are recommended for separate buildings or commercial/residential development with separate owners. Typically this is the easiest and most effective way to alleviate shared infrastructure and maintenance ownership issues. If the sewer service line is to be shared by different buildings/owners then a private owners association may be required to designate shared infrastructure maintenance and repair responsibilities.

5. As proposed a new 5ft diameter manhole will be added on the existing sewer to connect the new service line(s) using drop connections. Center new manhole in parking space outside of wheel track.

Table of Contents

1. INTRODUCTION.....	1
1.1 SUMMARY OF PROPOSED DEVELOPMENT:.....	1
1.2 SITE and LEGAL DESCRIPTION:.....	1
2. DESIGN DOCUMENTATION.....	1
2.1 DESIGN COMPLIANCE:.....	1
2.2 PROCEDURES, POLICIES AND METHODOLOGIES:.....	1
2.3 SOFTWARE ACKNOWLEDGEMENT:.....	1
3. EXISTING CONDITIONS.....	2
3.1 ZONING & LAND USE:.....	2
3.2 EXISTING TOPOGRAPHY, VEGETATION AND LANDFORM FEATURES:.....	2
3.3 EXISTING SEWER MAINS:.....	2
4. PROPOSED CONDITIONS.....	2
4.1 SITE PLAN:.....	2
4.2 PROPOSED SEWER SYSTEM:.....	2
4.3 SEWER REQUIREMENTS:.....	2
4.4 MAINTENANCE RESPONSIBILITIES:.....	2
5. SEWER SYSTEM COMPUTATIONS.....	3
5.1 SEWER DEMANDS:.....	3
5.2 SOFTWARE ANALYSIS:.....	3
5.3 SEWER SYSTEM ANALYSIS:.....	3
6. SUMMARY.....	4
6.1 SUMMARY OF PROPOSED SEWER IMPROVEMENTS:.....	4
6.2 PROJECT SCHEDULE:.....	4
7. SUPPORTING MAPS.....	4
7.1 SITE UTILITY PLAN.....	4
8. REFERENCES.....	4



LIST OF TABLES:

TABLE 1	-	COS Demand Criteria by Demand Type
TABLE 2	-	Sewer Demand Calculations
TABLE 3	-	Pipe Hydraulics Summary

LIST OF FIGURES:

FIGURE 1	-	Vicinity Map
FIGURE 2	-	Site Aerial
FIGURE 3	-	FIRM Excerpt
FIGURE 4	-	Sewer Quarter Section Map Excerpt

APPENDIX:

APPENDIX I	-	Sewer Hydraulic Analysis
APPENDIX II	-	Preliminary Utility Plan

1. INTRODUCTION

1.1 SUMMARY OF PROPOSED DEVELOPMENT:

The proposed development consists of a 54-unit four-story residential building 46.5 feet high with 900 square feet of commercial development located north and east north of the 68th Street and Indian School Road intersection in Scottsdale Arizona. The purpose of this report is to analyze service requirements of this development and its impact on the city's sewer system.

1.2 SITE and LEGAL DESCRIPTION:

The project property consists of two parcels of land totaling 41,866 square feet bounded by the Arizona Canal to the north, 5th Avenue/Valley Plaza to the east, Indian School Road to the south and an SRP well site/68th Street to the west. It is a portion 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:

- Parcel 173-48-048J; AZ Ocean View LLC, Zoning is D/DMU-2 PBD DO.
- Parcel 173-48-048G; AZ Ocean View LLC, Zoning is D/DMU-2 PBD DO.

DOES THIS MEAN
COMMON
OWNERSHIP
BETWEEN THE
TWO BUILDINGS?

Refer to **FIGURE 1 - Vicinity Map** for the project's location with respect to major cross streets.

2. DESIGN DOCUMENTATION

2.1 DESIGN COMPLIANCE:

The proposed sewer 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 the onsite private sewer infrastructure will be compliant with the City's DS+PM, Maricopa County Environmental Services and the applicable plumbing code criteria.

2.3 SOFTWARE ACKNOWLEDGEMENT:

Bentley FlowMaster® Version 8i is the computer software used for analyzing sewer hydraulics.

3. EXISTING CONDITIONS

3.1 ZONING & LAND USE:

The overall project parcel has been rezoned from C-2 DO (Downtown Overlay) to D/DMU-2 PBD (Planned Block Development). The site is presently cleared.

3.2 EXISTING TOPOGRAPHY, VEGETATION AND LANDFORM FEATURES:

The cleared site is essentially flat and void of vegetation. The Arizona Canal supports a recreational pathway. 5th Avenue and Indian School Road are fully paved with attached curb, gutter and sidewalk. Refer to FIGURE 2 for an aerial of the overall project existing conditions.

FIRM Map Number 04013C2235M dated September 18, 2020 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 SEWER MAINS:

Sewer: City of Scottsdale

- An existing 8" vit
- A 10" VCP sewer

Refer to FIGURE 4 for an

WHO WILL OWN THE COMMERCIAL DEVELOPMENT? IF SEPARATE BUILDINGS, OR OWNERSHIP, OF THE COMMERCIAL AND MULTI-FAMILY DEVELOPMENT IS BEING PROPOSED THEN SEPARATE SERVICE SEWER SERVICE LINES ARE REQUIRED. DS&PM 7-1.409.C.

4. PROPOSED CONDITIONS

4.1 SITE PLAN:

The property is proposed to be re-developed for multi-family residential use with some supporting commercial use. Development will include a new drive entrance off 5th Avenue and 24' wide paved access drives.

4.2 PROPOSED SEWER SYSTEM:

Per city stipulations, a private 6" PVC sewer service will connect to the existing 8" VCP sewer line in 5th Avenue via a proposed public manhole. The 6" private onsite collection system will provide service to the commercial and residential units. See APPENDIX II for a site utility plan.

4.3 SEWER REQUIREMENTS:

The International Plumbing Code will govern pipe hydraulics. The 6" sewer collection system will be designed to a minimum 0.012 ft/ft slope. The onsite manhole will be standard 4-foot diameter with 30" cast iron lids.

4.4 MAINTENANCE RESPONSIBILITIES:

The on-site sewer mains will be private and maintained by the property owner's association.

5. SEWER SYSTEM COMPUTATIONS

5.1 SEWER DEMANDS:

The proposed development at the site consists of multi-family residential and some commercial/retail uses. The associated DS+PM demands along with the peaking factors are shown in Table 1 below. A summary of the total sewer demands for the site are presented below in Table 2.

Table 1: COS Design Criteria by Demand Type

Land Use	Average Day Demand (gpd)	Unit	Design Peaking Factor
High Density Residential	140	per Unit	4.5
Commercial / Retail	0.5	per Sq. Ft.	3

Table 2: Sewer Demand Calculations

	Units or Area (sq. ft.)	ADD (gpm)	Avg. Day Demand (gpd)	Avg. Day Demand (gpm)	Peak Flow (gpm)
High Density Residential	54	140	7,560.0	5.3	23.6
Commercial/Retail	900	0.5	450.0	0.3	0.9
TOTAL DEMANDS:			8,010.0	5.6	24.6

5.2 SOFTWARE ANALYSIS:

Bentley FlowMaster® Version 8i is the computer software tool used in this study. Analysis input parameters included the following:

1. Pipe diameters (inches)
2. Pipes slopes
3. System demands (gpm)
4. Piping is PVC Manning's N-Values (n = 0.013)

Output parameters included but were not limited to:

1. Flow rate (gpm)
3. Velocities (fps)
4. Friction loss (feet)

5.3 SEWER SYSTEM ANALYSIS:

A summary of the hydraulic results is presented below in Table 3 below. Detailed FlowMaster® results are presented in APPENDIX I.

Table 3 - Pipe Hydraulics Summary

Demand Scenario	Pipe Flow (gpm)	n-value	Slope (ft/ft)	Depth (in)	Velocity (fps)
Peak Flow	24.6	0.013	0.012	1.2	1.9

6. SUMMARY

6.1 SUMMARY OF PROPOSED SEWER IMPROVEMENTS:

- The proposed sewer main is designed in accordance with the City of Scottsdale’s, Maricopa County’s and the International Plumbing Code’s design criteria.
- Backwater valves will be installed on any service line where the upstream manhole is higher than the finish floor of the building being served.

6.2 PROJECT SCHEDULE:

As a residential/commercial development the infrastructure and buildings are proposed to be constructed in a single phase.

7. SUPPORTING MAPS

7.1 SITE UTILITY PLAN

Refer to Preliminary On-site and Off-site Utility Plan in **APPENDIX II**.

8. REFERENCES

1. *COS QS Sewer Plan number 17-44*
2. *City of Scottsdale Design Standards & Policies Manual, 2018 (Chapter 7 – Sewer)*
3. *International Plumbing Code, 2015*

FIGURES

FIGURE 1 - Vicinity Map

FIGURE 2 - Site Aerial

FIGURE 3 - FIRM Excerpt

FIGURE 4 - Sewer Quarter Section Map

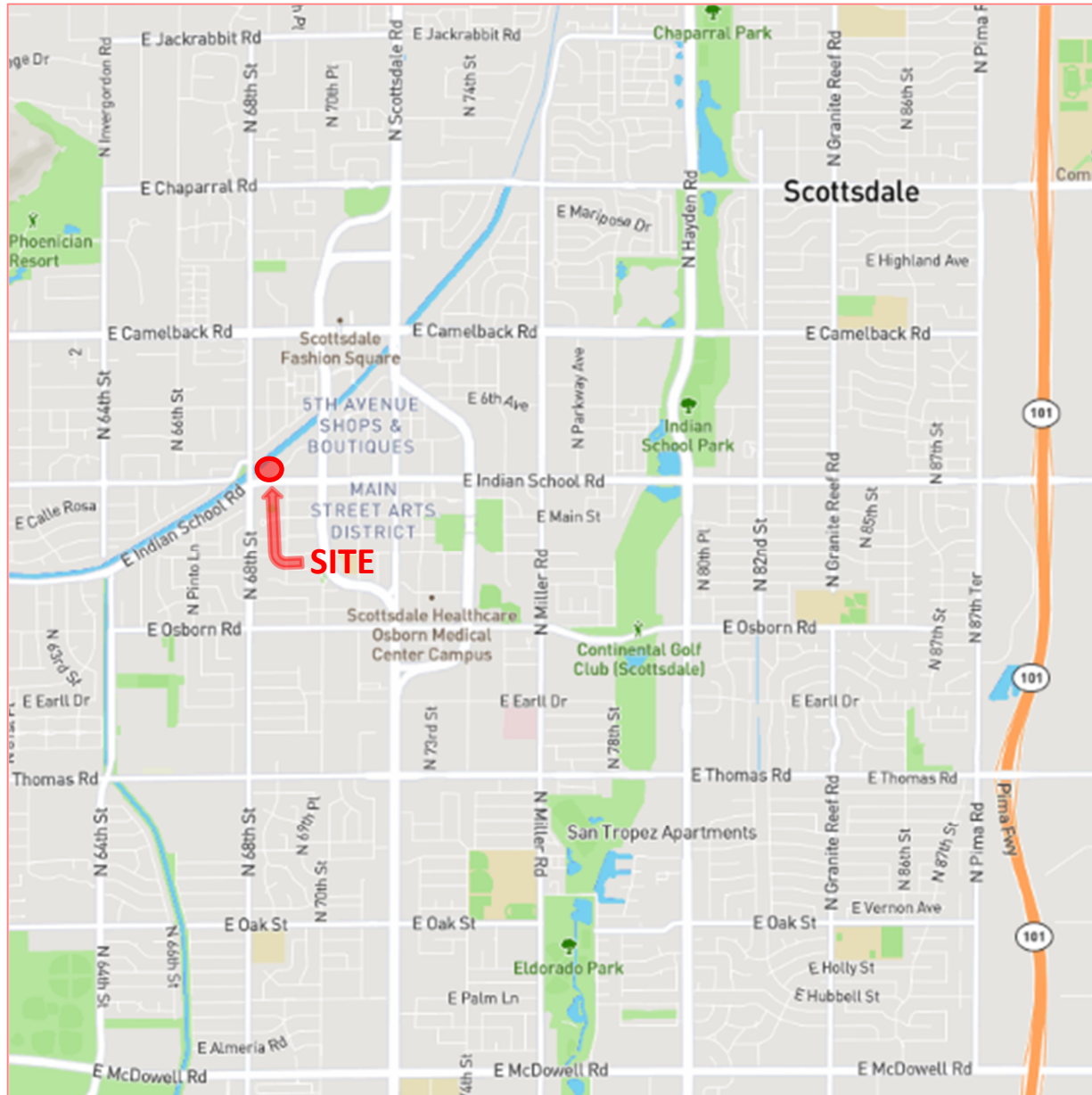


FIGURE 1 - Vicinity Map

8280 E. Gelding Dr., Suite 101
Scottsdale, AZ 85260



FIGURE 2 - Site Aerial

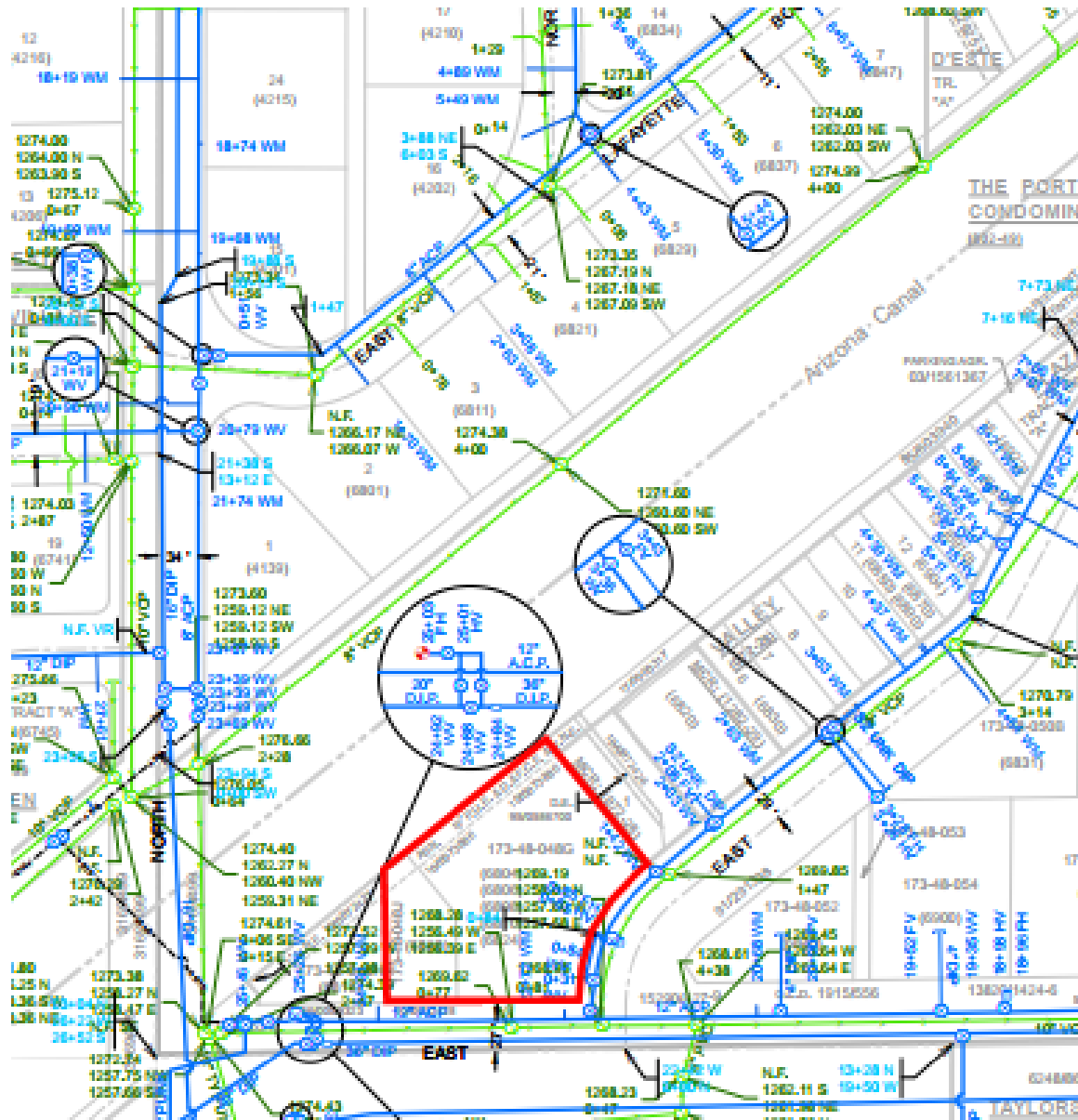


FIGURE 4 - COS QS 17-44
Excerpt

APPENDIX I

Sewer Hydraulic Analysis

6" Sewer, S=0.012 ft/ft at Peak Flow

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth
Input Data	
Roughness Coefficient	0.013
Channel Slope	0.012 ft/ft
Diameter	6.0 in
Discharge	24.60 gpm
Results	
Normal Depth	1.2 in
Flow Area	0.0 ft ²
Wetted Perimeter	0.5 ft
Hydraulic Radius	0.7 in
Top Width	0.40 ft
Critical Depth	1.4 in
Percent Full	20.2 %
Critical Slope	0.007 ft/ft
Velocity	1.94 ft/s
Velocity Head	0.06 ft
Specific Energy	0.16 ft
Froude Number	1.285
Maximum Discharge	296.75 gpm
Discharge Full	275.86 gpm
Slope Full	0.000 ft/ft
Flow Type	Supercritical

APPENDIX I – Sewer Hydraulic Analysis

APPENDIX II

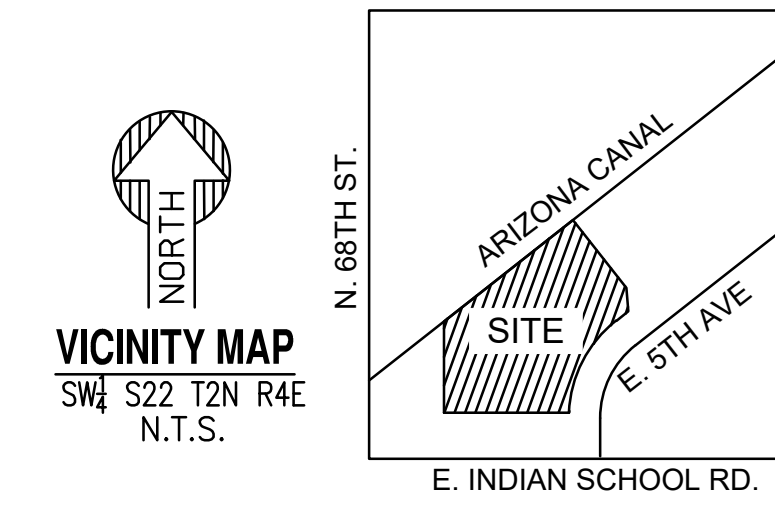
Preliminary Utility Plan

OWNER
 MAGNOLIA PROPERTY CO.
 2435 E. SOUTHLAKE BLVD. SUITE 150
 SOUTHLAKE, TEXAS. 76092
 PHONE: 817-769-2580

CIVIL ENGINEER
 SUSTAINABILITY ENGINEERING GROUP
 8280 E. GELDING DR. SUITE 101
 SCOTTSDALE, ARIZONA 85260
 PHONE: 480-237-2507
 ATTN: ALI FAKIH

ARCHITECT
 WILDER ARCHITECTS, LLC.
 16904 CLUB HILL DR.
 DALLAS, TEXAS. 75248
 PHONE: 214-616-5196

SURVEYOR
 MLC SERVICES, LLC.
 3231 S. COUNTRY CLUB WAY., SUITE 103
 TEMPE, ARIZONA. 85282
 PHONE: 602-393-2030
 ATTN: CHRISTOPHER J. WILSON



PRELIMINARY
 NOT FOR
 CONSTRUCTION

SUSTAINABILITY
 ENGINEERING
 GROUP
 SEG



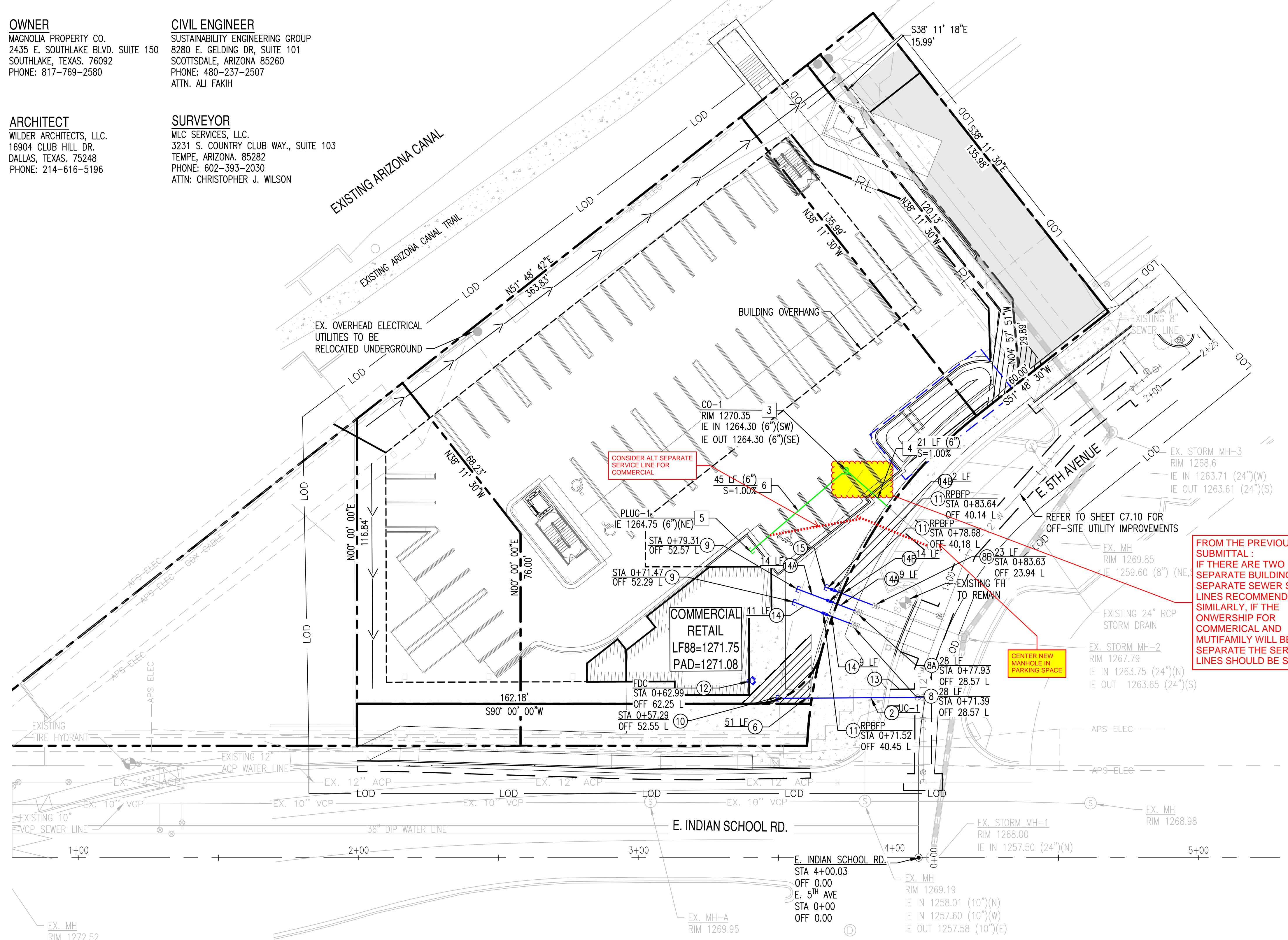
PROJECT: 68th AND ISR
 LOCATION: 6824 E. INDIAN SCHOOL ROAD, SCOTTSDALE, ARIZONA, 85251.

DATE: 07/01/2022
 ISSUED FOR: DRB

REVISION NO.	DATE

PRELIMINARY
 ON-SITE UTILITY PLAN

PAGE NO.: 5 OF 6
 SHEET NO.: C4.10



PRIVATE WATER KEY NOTES

- CONTRACTOR TO VERIFY SIZE AND LOCATION OF EXISTING WATER LINE PRIOR TO CONSTRUCTION.
- CONTRACTOR TO VERIFY ALL INVERTS AND CLEARANCE OF CROSSING UTILITIES PRIOR TO COMMENCING CONSTRUCTION.
- GATE VALVE WITH VALVE BOX, TYPE "C" WITH LOCKING LID. SIZE PER PLAN.
- DOMESTIC CONNECTION TO BUILDING, REFER TO MEP PLAN FOR CONTINUATION. BACKFLOW PREVENTION WILL BE IN THE FIRE RISER ROOM.
- FIRE CONNECTION TO BUILDING, REFER TO PLAN FOR CONTINUATION.
- REDUCED PRESSURE PRINCIPLE BACKFLOW ASSEMBLY (RPPBA). SIZE TO MATCH WATER METER SIZE.
- FIRE DEPARTMENT CONNECTION BY BUILDING CONTRACTOR. SHOWN FOR REFERENCE.
- SAWCUT, REMOVE AND REPLACE EXISTING ASPHALT FOR TRENCHING.
- 2" TYPE "K" COPPER DOMESTIC SERVICE LINE. LENGTH PER PLAN.
- 1" TYPE "K" COPPER DOMESTIC SERVICE LINE. LENGTH PER PLAN.
- 1" TYPE "K" COPPER IRRIGATION SERVICE LINE. LENGTH PER PLAN.
- CAP END AND PROVIDE FLUSHING. REFER TO IRRIGATION PLANS.

PRIVATE SEWER KEY NOTES

- SEWER CLEAN-OUT.
- 6" PVC-SDR 35 SEWER LINE CONNECTION PER MAG STD. DET. 440-1. S=1.00% MINIMUM. LENGTH AND SLOPE PER PLAN.
- SEWER CONNECTION TO BUILDING.
- 6" PVC SDR-35 SEWER LINE. LENGTH AND SLOPE PER PLAN. MAINTAIN 4' MINIMUM COVER.

UTILITY CROSSINGS			
UC-1	6" WATER BOT	1266.02	NO EXTRA PROTECTION REQUIRED
	8" SEWER TOP	1259.07	

NOTE:
 1. EXISTING MANHOLES RIMS AND INVERTS HAVE BEEN SET BASED ON AS-BUILT. P IP 27505, SHEET 3 OF 6. DATED 12/07/1995.

GENERAL UTILITY CONSTRUCTION NOTES

- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH MAG UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, LATEST EDITION, OR AS AMENDED BY LOCAL MUNICIPALITY SPECIFICATIONS, UNLESS OTHERWISE NOTED.
- BEDDING MATERIAL TO BE IN ACCORDANCE WITH MAG SECTION 702.2 AND TABLE 702-1.
- PROVIDE TRENCH EXCAVATION, BEDDING & BACKFILLING, AND COMPACTION PER MAG SPECIFICATION SECTION 601.
- FOR HDPE PIPE INSTALLATION PROVIDE TRENCH EXCAVATION, BEDDING & BACKFILLING, AND COMPACTION PER MAG SPECIFICATION SECTION 603.
- SEPARATION OF WATER LINE FROM ELECTRICAL OR GAS LINES WILL CONFORM TO C.O.S. STD. DET. 2372.
- WATER PIPING CONNECTING THE METER TO THE BFP SHALL BE INSPECTED BY A CITY BACKFLOW PREVENTION SPECIALIST PRIOR TO CLSM AND BACKFILL.
- ALL PRODUCTS USED ON THIS SITE SHALL CONFORM TO ANSI/NSF STANDARDS 60 AND 61 IN ACCORDANCE WITH REGULATORY CITATION R18-4-213.
- PROVIDE 3' MINIMUM COVER FOR WATER SERVICE LEADS AT LOT LINES.
- PROVIDE 5' MINIMUM COVER FOR SANITARY LEADS AT LOT LINES.
- MAINTAIN SANITARY SEPARATION / PROTECTION FROM WATER AND UTILITIES PER C.O.S. STD. DET. 2401.

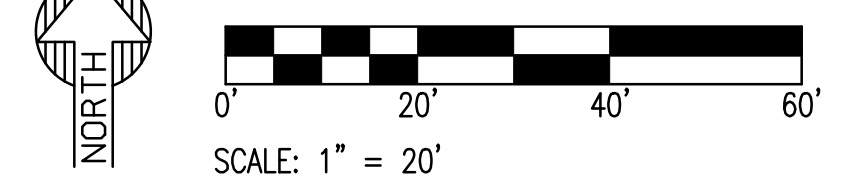
EXISTING LEGEND:

---XXXX---	EX. MAJOR CONTOURS	EX. S	SEWER LINE	---	STORM DRAIN LINE
---XXXX---	EX. MINOR CONTOURS	(S)	SEWER MANHOLE	(C)	STORM CATCH BASIN
P=XX.XX	EX. SPOT ELEVATION	EX. W	WATER LINE	(M)	STORM MANHOLE
---	EASEMENT LINE AS NOTED	(V)	WATER VALVE	(L)	STREET LIGHT
		(F)	FIRE HYDRANT	---	ROAD CENTERLINE

PROPOSED UTILITY LEGEND:

---	PROPERTY LINE	(FH)	FIRE HYDRANT	(BFP)	BACK FLOW PREVENTER	(S)	SEWER MANHOLE
---	EASEMENT LINE	(FDC)	FDC	(R)	REDUCER	(CO)	SEWER CLEAN OUT
8"W	WATER LINE	(M)	WATER METER	(CAP)	CAP		
8"S	SEWER LINE	(G)	GATE VALVE	(BC)	BUILDING CONNECTION		

PRELIMINARY ON-SITE UTILITY PLAN



THIS DRAWING IS AN INSTRUMENT OF SERVICE AND THE PROPERTY OF SUSTAINABILITY ENGINEERING GROUP, AND SHALL REMAIN THEIR PROPERTY. THE USE OF THIS DRAWING SHALL BE RESTRICTED TO THE ORIGINAL SITE FOR WHICH IT IS PREPARED AND PUBLICATION THEREOF IS EXPRESSLY LIMITED TO SUCH USE.

