

# PRELIMINARY WASTEWATER REPORT

for

## COSANTI COMMONS

7000 E. Shea Boulevard  
Scottsdale, Arizona

### PRELIMINARY Basis of Design Report

- ACCEPTED  
 ACCEPTED AS NOTED  
 REVISE AND RESUBMIT



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

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

BY JCampo

DATE 4/17/2024

Prepared For:

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-Revise size on existing sewer in Shea from 8" to 10".



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Project Number: 230113

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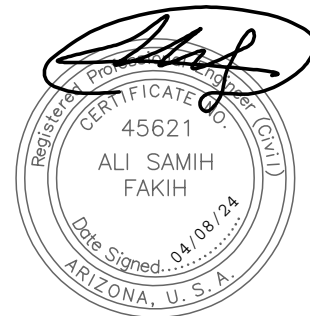
Resubmittal: April 8<sup>th</sup>, 2024

COS PA No.: 973-PA-2022

Plan Check No: TBD

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## 1. INTRODUCTION

### 1.1 SUMMARY OF PROPOSED DEVELOPEMENT

Cosanti Commons is a proposed 196-unit high-density multifamily project located north of Shea Boulevard between N. 70<sup>th</sup> Street and N. 71<sup>st</sup> Street in Scottsdale, Arizona. The project will raze an existing office complex on the eastern portion of the site and construct 1, 2 and 3 bedroom residential units. The existing commercial development on the western portion of the site will be maintained. Sewer service to the residential development will be provided off the existing public 8" sewer line extending into the site from Shea Boulevard. The purpose of this preliminary report is to provide a wastewater analysis for general plan and zoning review. Refer to **FIGURE 1** for a vicinity map.

### 1.2 LEGAL DESCRIPTION

The existing parcel located in Section 22, Township 3 North, Range 4 East will be subdivided maintaining the existing commercial site on the west side and the proposed residential development on the east side.

- Existing APN: 175-42-140, Lot 1, 7000 E Shea Boulevard, as recorded on Book 1701, Page 37 of Maricopa County Records. The total land area is 7.255 acres, more or less.

## 2. DESIGN DOCUMENTATION

### 2.1 DESIGN COMPLIANCE

The proposed sewer system is designed to meet design 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

This project proposes new service connections to the existing 8" onsite sewer system which connects to an 8" offsite system in Shea Boulevard flowing east to a 24" system in Scottsdale Road. Hydraulic analysis for the 8" systems will be provided complying with the City's design criteria. Adequate capacity in the 24" pipe needs to be confirmed by the City's Master Plan.

### 2.3 SOFTWARE ACKNOWLEDGEMENT:

Onsite sewer service lines will be hydraulically evaluated using Bentley FlowMaster® V8i (SELECTseries 1).

## 3. EXISTING CONDITIONS

### 3.1 EXISTING AND PROPOSED ZONING AND LAND USES

The parcel is presently zoned C-2, central business. The project is requesting rezoning to PUD-PSD, planned unit development with planned shared development overlay.

### 3.2 EXISTING TOPOGRAPHY, VEGETATION AND LANDFORM FEATURES:

The parcel is fully developed. The topography slopes to the south and west with approximately five feet of fall. Refer to **FIGURE 2** for an aerial of the overall project existing conditions.

### 3.3 EXISTING SEWER INFRASTRUCTURE:

See **FIGURE 3** - City of Scottsdale (QS 29-44)

- An 8" sewer line exists along the site's Shea Boulevard frontage approximately 15' north of the street centerline.
- An 8" VCP line exists along the site's 70<sup>th</sup> Street frontage approximately 10' east of the street centerline.
- A 6" unknown type sewer line exists along the west half of the site's Sahuaro Drive frontage along the south right-of-way.
- A public 8" sewer line extends into the site from the 8" line in Shea Boulevard and is located within a 25' water and sewer facilities easement. This public sewer tees east and west within the site and is located within the dedicated facilities easement.
- A 24" VCP sewer exists in Scottsdale Road and provides outfall from the Shea Boulevard sewer line.

### 3.4 SEWER FLOW MONITORING IN SHEA BOULEVARD WEST OF SCOTTSDALE ROAD:

Flow monitoring is not proposed. The City will need to verify adequate capacity through their wastewater model.

## 4. PROPOSED CONDITIONS

### 4.1 SITE PLAN

**FIGURE 4** depicts the proposed site plan. The onsite structure and service lines located on the eastern side of the site will be removed. The eastern portion of the property is being re-developed with a residential structure containing 196 units. The 8" sewer line running north-south will remain with a reach extending to the east removed. The west leg will remain in place.

### 4.2 PROPOSED SEWER SERVICE CONNECTIONS

Sewer service will consist of a 6" pipe connecting to the existing onsite 8" pipe at an existing manhole. The preliminary utility plan is shown in **APPENDIX I**.

### 4.3 MAINTENANCE RESPONSIBILITIES

The proposed 6" sewer service line will be owned and maintained by the property owner.

## 5. SEWER SYSTEM COMPUTATIONS

### 5.1 EXISTING & PROPOSED NEW SEWER DEMAND

**Table 1: EXISTING ONSITE SEWER DEMAND CALCULATIONS**

	Area (sq.ft.)	Dwelling Units	ADD (gpd/unit)	Peaking Factor	Avg. Day Demand (gpm)	Peak Flow (gpm)
West Side Commercial/Retail	203,659		0.5	3.0	70.7	212.1
East Side Commercial/Retail	38,596		0.5	3.0	13.4	40.2
Totals					84.1	252.3

**Table 2: PROPOSED RESIDENTIAL SEWER DEMAND CALCULATIONS (East Side)**

	Area (sq.ft.)	Dwelling Units	ADD (gpd/unit)	Peaking Factor	Avg. Day Demand (gpm)	Peak Flow (gpm)
Proposed East Side Residential	-	196	140	4.5	19.1	85.8
Proposed Pool Backwash				N/A	-	100.0
Total with Pool Backwash					19.1	185.8

**Table 3: RESULTING ONSITE SEWER DEMAND CALCULATIONS**

	Area (sq.ft.)	Dwelling Units	ADD (gpd/unit)	Peaking Factor	Avg. Day Demand (gpm)	Peak Flow (gpm)
New East Side Residential	-	196	140	4.5	19.1	85.8
Ex. West Side Commercial/Retail	203,659	-	0.5	3.0	70.7	212.1
Total without Pool backwash					89.8	297.9
Pool				N/A	-	100.0
Total with Pool Backwash					89.8	397.9

### 5.2 ONSITE SERVICE REQUIREMENTS

A proposed 6" service line at 1.00% slope to the existing onsite 8" pipe is sufficient to convey the peak 85.8 gpm domestic flow plus the 100.0 gpm pool backwash at a depth of 3.8" and velocity of 3.12 fps.

The existing 8" onsite public sewer will convey the 397.9 gpm onsite peak flow at a depth of 5.1" and velocity of 3.78 fps. This pipe connects to the existing 8" sewer in Shea Boulevard.

Refer to **APPENDIX II** for the onsite pipe hydraulic calculations.

### 5.3 EXISTING SHEA BOULEVARD SEWER CAPACITY

Capacity for the existing 8" sewer line along Shea Boulevard at a d/D = 0.80 and slope of 1.00% was calculated to be 530.12 gpm with a 3.95 fps velocity. Refer to **APPENDIX II** for the offsite pipe hydraulic calculations.

## 6. SUMMARY / CONCLUSIONS

### 6.1 Summary:

The proposed sewer flows, and service connections are designed to meet criteria of the City's Design Standards and Policies Manual, the Arizona Department of Environmental Quality ("ADEQ"), and Maricopa County Environmental Services Department ("MCESD").

The hydraulic output shown in **APPENDIX II** indicates that the 6" sewer connection is sufficient to provide domestic and pool backwash service to this project. The project's impact on the existing 8" sewer in Shea Boulevard will need to be evaluated by the City.

10"

### 6.2 PROJECT SCHEDULE:

As a residential apartment development, the service connections and buildings are proposed to be constructed in a single phase.

## 7. REFERENCES

1. COS Sewer Q-S MAP 29-44
2. City of Scottsdale Design Standards & Policies Manual, 2018 (Chapter 7 – Sewer)

## 8. FIGURES:

- FIGURE 1 - Vicinity Map- Local Aerial
- FIGURE 2 - Aerial
- FIGURE 3 - COS Sewer Q-S Map 29-44
- FIGURE 4 - Proposed Site Plan

## 9. APPENDICIES:

- APPENDIX I - Preliminary Utility Plan
- APPENDIX II - Sewer Hydraulics



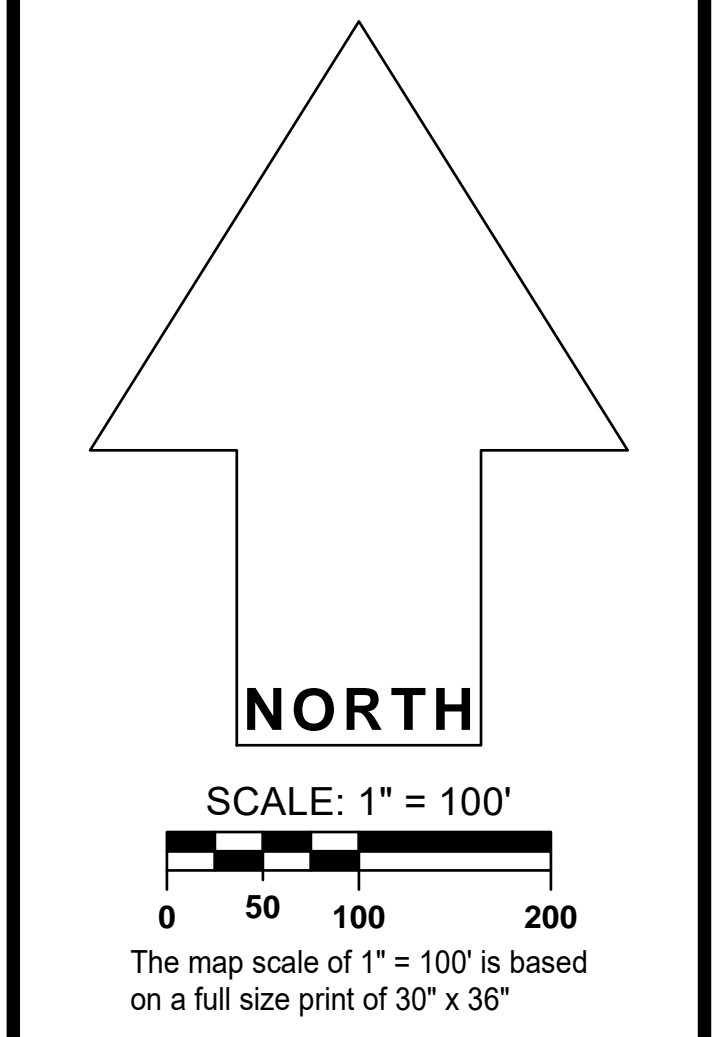
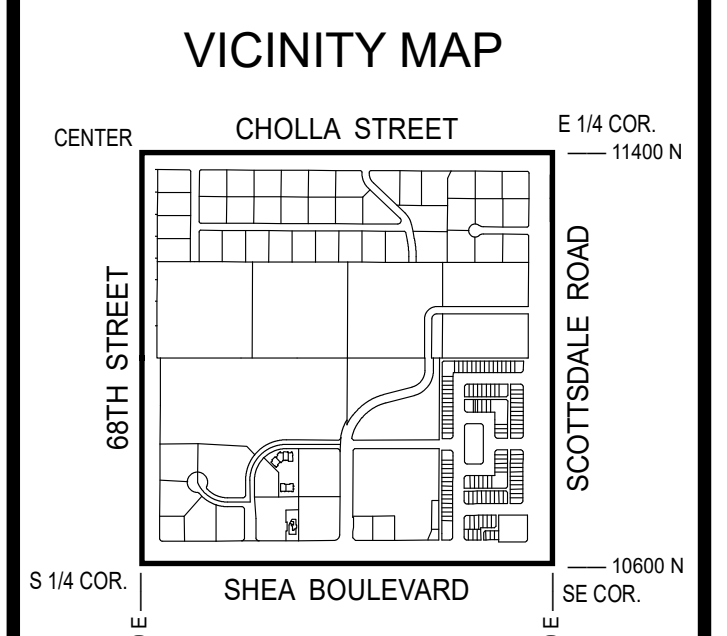


**FIGURE 2 –  
Aerial**



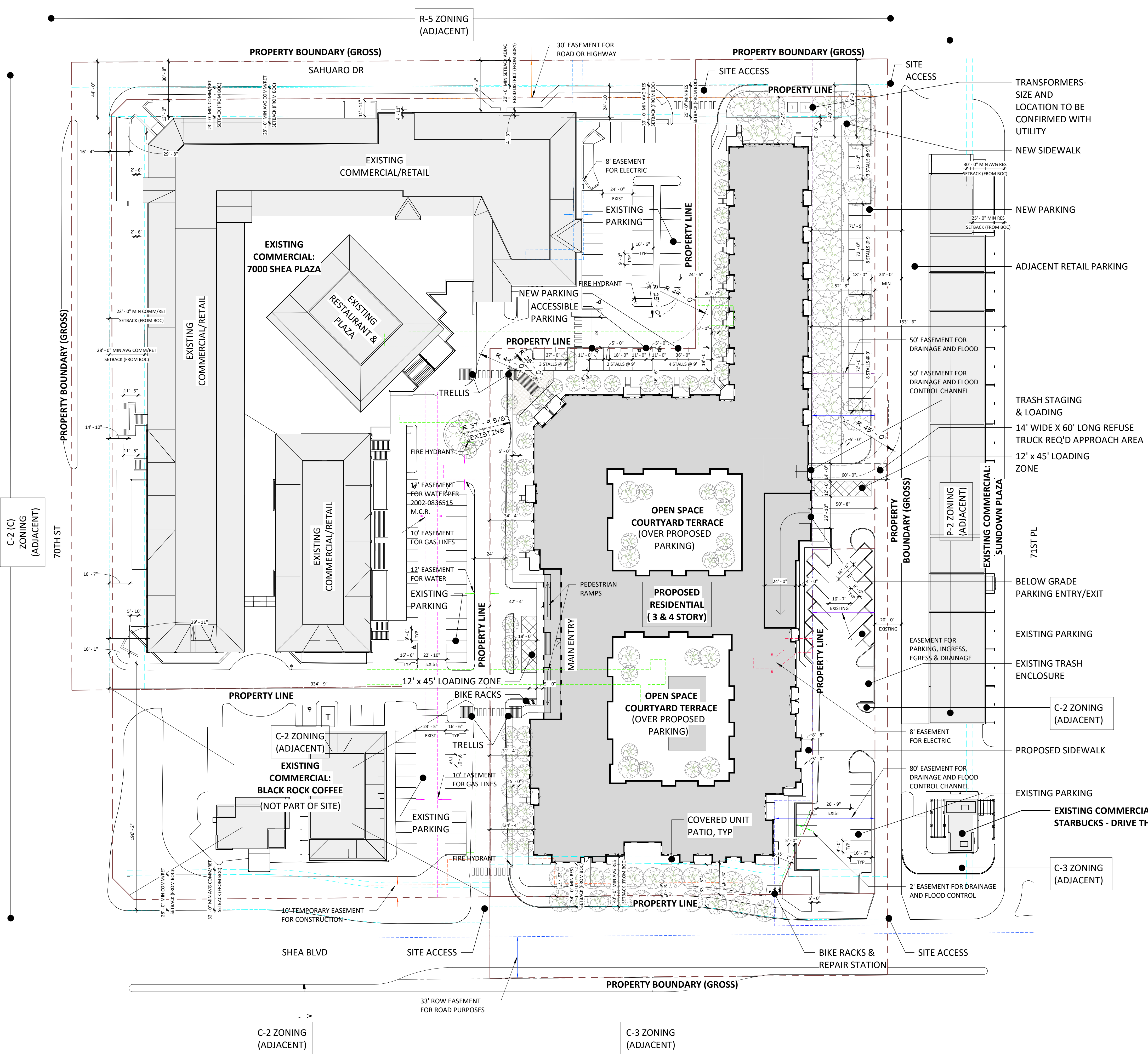
**GENERAL NOTES:**  
 THIS IS A COMPUTER GENERATED DRAWING. FOR ANY REVISIONS PLEASE CONTACT THE CITY OF SCOTTSDALE GIS DEPARTMENT AT (480) 312-7792.  
 THE SECTION LINE BEARING AND DISTANCES ARE BASED ON THE CITY OF SCOTTSDALE GPS SURVEY OF SEPTEMBER, 1991. BEARINGS ARE NAD 83 GRID AND DISTANCES ARE 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:**
- Cleanout
  - Lift Station
  - Manhole
  - Non-GPS Point
  - Plug
  - Sewer Service Point
  - Sewer Tap Point
  - Sewer Valve
  - Treatment Plant
  - Sewer Main - Gravity
  - Sewer Main - Force
  - Sewer Main - Private



**SEWER**  
 QUARTER SECTION MAP  
**29-44**  
 SE 1/4 SEC. 22 T3N R4E

THIS DOCUMENT IS PROVIDED FOR GENERAL INFORMATION PURPOSES ONLY. THE CITY OF SCOTTSDALE DOES NOT WARRANT ITS ACCURACY, COMPLETENESS OR SUITABILITY FOR ANY PARTICULAR PURPOSE. IT SHOULD NOT BE RELIED UPON WITHOUT FIELD VERIFICATION.  
 THE CITY OF SCOTTSDALE  
 15-JAN-23



PROJECT DATA SUMMARY	
Case No:	TBD
Project Address:	COMMERCIAL/RETAIL BUILDINGS: 7000 E Shea Blvd, Bldgs A, B, C, D, E, G, H and multiple suite numbers (existing per County) RESIDENTIAL BUILDING: TBD -- (7000 E Shea Blvd, Bldg J - existing per County) Scottsdale, AZ 85254
APN (EXISTING):	EXISTING COMMERCIAL/RETAIL SITE: 175-42-1365 (per County) EXISTING RESIDENTIAL SITE: 175-42-1365 (per County) OVERALL SITE: TBD -- (175-42-1365 -- existing per County)
APN (PROPOSED):	EXISTING COMMERCIAL/RETAIL SITE + RESIDENTIAL SITE: 29-44
QS:	EXISTING COMMERCIAL/RETAIL SITE: C-2 (Central Business) EXISTING RESIDENTIAL SITE: C-2 (Central Business)
Zoning Classification (EXISTING):	OVERALL SITE: PUD-PSD (Planned Unit Development with Planned Shared Development Overlay)
Zoning Classification (PROPOSED):	
Site Area Gross Overall (PROPOSED):	±383,577 S.F. (±8.806 A.C.)
Site Area Net Overall (PROPOSED):	±322,023 S.F. (±7.393 A.C.)
Common/Usable Open Space (REQUIRED):	±38,358 S.F. (10% of gross site area); 29,425 S.F. exists
Common Open/Usable Open/Unusable Open Space (PROPOSED):	±64,000 S.F. (16.7% of gross site area); ±34,575 new S.F. proposed
Total Building Area (PROPOSED):	EXISTING COMMERCIAL/RETAIL SITE: ±297,000 GSF (includes below-grade pkg) NEW RESIDENTIAL: ±377,000 GSF (includes below-grade pkg)
Commercial FAR ALLOWED (overall net site area):	Commercial uses: 0.8 FAR max. (0.8 x 322,023 S.F. (net) = 257,618 S.F.)
Commercial FAR PROPOSED (overall net site area):	0.64 FAR (±207,000 S.F./322,023 S.F. (net) = 0.643) -- overall site will not exceed 0.8 FAR for Commercial (non-residential) uses
Residential Density PROPOSED:	23.17 DU/acre (204 DU/±8.806 acres)
Total Units PROPOSED:	204 UNITS 1-BR: 129 UNITS 2-BR: 71 UNITS 3-BR: 4 UNITS 283 BEDROOMS
Workforce Housing PROPOSED:	20 UNITS
Building Height ALLOWED:	48'-0" maximum with 10'-0" overage allowed for certain roof elements covering no more than 30% of building area
Building Height PROPOSED:	55'-0" + mechanical per ordinance
Vehicle Parking REQUIRED:	±595 stalls
Vehicle Parking PROPOSED:	±729 stalls

**FIGURE 4 - Proposed Site Plan**

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# *APPENDICIES*

- I. Preliminary Utility Plan***
- II. Sewer Service Hydraulics***





## 6" Service @ 1.0% - East Side Residential

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth
Input Data	
Roughness Coefficient	0.013
Channel Slope	0.010 ft/ft
Diameter	6.0 in
Discharge	185.80 gpm
Results	
Normal Depth	3.8 in
Flow Area	0.1 ft <sup>2</sup>
Wetted Perimeter	0.9 ft
Hydraulic Radius	1.7 in
Top Width	0.48 ft
Critical Depth	3.9 in
Percent Full	63.9 %
Critical Slope	0.009 ft/ft
Velocity	3.12 ft/s
Velocity Head	0.15 ft
Specific Energy	0.47 ft
Froude Number	1.049
Maximum Discharge	270.89 gpm
Discharge Full	251.83 gpm
Slope Full	0.005 ft/ft
Flow Type	Supercritical
GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0
GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	63.9 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	3.8 in
Critical Depth	3.9 in
Channel Slope	0.010 ft/ft
Critical Slope	0.009 ft/ft

## 8" Onsite Sewer @ 1.0% - Peak Flow w/ Pool Backwash

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth
Input Data	
Roughness Coefficient	0.013
Channel Slope	0.010 ft/ft
Diameter	8.0 in
Discharge	397.90 gpm
Results	
Normal Depth	5.1 in
Flow Area	0.2 ft <sup>2</sup>
Wetted Perimeter	1.2 ft
Hydraulic Radius	2.3 in
Top Width	0.64 ft
Critical Depth	5.4 in
Percent Full	63.7 %
Critical Slope	0.009 ft/ft
Velocity	3.78 ft/s
Velocity Head	0.22 ft
Specific Energy	0.65 ft
Froude Number	1.102
Maximum Discharge	583.40 gpm
Discharge Full	542.34 gpm
Slope Full	0.005 ft/ft
Flow Type	Supercritical
GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0
GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	63.7 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	5.1 in
Critical Depth	5.4 in
Channel Slope	0.010 ft/ft
Critical Slope	0.009 ft/ft

## 8" Shea Sewer @ 1.0% - d/D=0.80

Project Description	
Friction Method	Manning Formula
Solve For	Discharge
Input Data	
Roughness Coefficient	0.013
Channel Slope	0.010 ft/ft
Normal Depth	6.4 in
Diameter	8.0 in
Results	
Discharge	530.12 gpm
Flow Area	0.3 ft <sup>2</sup>
Wetted Perimeter	1.5 ft
Hydraulic Radius	2.4 in
Top Width	0.53 ft
Critical Depth	6.2 in
Percent Full	80.0 %
Critical Slope	0.011 ft/ft
Velocity	3.95 ft/s
Velocity Head	0.24 ft
Specific Energy	0.78 ft
Froude Number	0.928
Maximum Discharge	583.40 gpm
Discharge Full	542.34 gpm
Slope Full	0.010 ft/ft
Flow Type	Subcritical
GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0
GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	65.0 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	6.4 in
Critical Depth	6.2 in
Channel Slope	0.010 ft/ft
Critical Slope	0.011 ft/ft