FINAL WASTEWATER REPORT

for

COSANTI COMMONS

7000 E. Shea Boulevard
Scottsdale, Arizona 85254

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Resubmittal: December 18th, 2023
Resubmittal: April 8th, 2024
Resubmittal: April 30th, 2025 (DRB)

COS CASE No.: 973-PA-2022; 6-ZN-2023; 2-GP-2023 Plan Check No.: TBD

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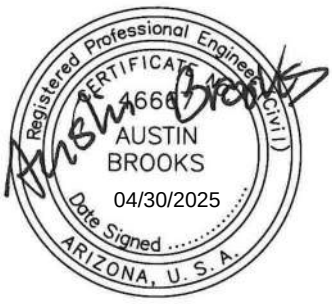

EXPIRATION DATE: 09–30–2025

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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. 70th Street and N. 71st 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 final report is to provide wastewater analysis, sewer service requirements, and proposed connections to the City's public lines.

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 of 7000 E. Shea Boulevard, according to the plat of record in the office of the County Recorder of Maricopa County, Arizona, in Book 1701 of Maps, Page 37. The total disturbed land area is 4.36 net acres (189,956.46 sq. ft.).

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 10" onsite sewer system which connects to an 10" offsite system in Shea Boulevard flowing east to a 24" system in Scottsdale Road. Hydraulic analysis for the 10" 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 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)

- A 10" 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 70th 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 10" line in Shea Boulevard. 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 was performed by RDH Environmental over a nine-day period, including 2 weekends, between November 17th 2023, and November 27th, 2023, generally located at the downstream reaches of a pipe prior to changing diameter or at locations where significant flow was added. The following sewer systems were monitored:

- Shea Blvd West of Scottsdale Rd (10'' VCP)

COS MH1 Period Summary: Flow				
Measures	**Value**	**Unit**	**Date**	**Time**
Max.	136.56	gpm	Saturday, November 18, 2023	1:50 PM
Min.	10.33	gpm	Friday, November 24, 2023	4:55 AM
Avg.	70.30	gpm		
Total	1,113,219.75	gal		

The Sewer Monitoring Summaries are included in **APPENDIX II**.

4. 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 189 units. The 10" 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'' PVC sewer line connecting to the existing onsite 8" pipe at an existing manhole, located on the northwestern corner of the main building. A second line will consist of an 8'' PVC sewer line connected to the existing onsite 8'' pipe at an existing manhole, located on the southwestern corner of the building.

The preliminary utility plan is shown in **APPENDIX I.**

4.3. MAINTENANCE RESPONSIBILITIES

The proposed 6" and 8" sewer service lines 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	79,200		0.5	3.0	27.5	82.5
East Side Commercial/Retail	24,629		0.5	3.0	8.6	25.7
Totals					36.1	108.2

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	-	189	140	4.5	18.4	82.7
Proposed Pool Backwash				N/A	-	100.0
Total with Pool Backwash					18.4	182.7

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	-	189	140	4.5	18.4	82.7
Ex. West Side Commercial/Retail	79,200	-	0.5	3.0	27.5	82.5
Total without Pool backwash					45.9	165.2
Pool				N/A	-	100.0
Total with Pool Backwash					45.9	265.2

Table 4: PEAK FLOW W/ CITY CONDUCTED RESULTS						
	Area (sq.ft.)	Dwelling Units	ADD (gpd/unit)	Peaking Factor	Avg. Day Demand (gpm)	Peak Flow (gpm)
New East Side Residential	-	189	140	4.5	18.4	82.7
Ex. West Side Commercial/Retail	79,200	-	0.5	3.0	27.5	82.5
Pool				N/A	-	100.0
Total without City Conducted Results					45.9	265.2
RDH Flow at Shea Blvd West of Scottsdale Rd. 10" VCP pipe.				N/A	-	136.6
Total with City Conducted Results					45.9	401.7

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 182.7 gpm domestic flow plus the 100.0 gpm pool backwash at a depth of 3.8" and velocity of 3.11 fps.

A proposed 8" service line at 1.00% slope to the existing onsite 8" pipe is sufficient to convey the peak 182.7 gpm domestic flow plus the 100.0 gpm pool backwash at a depth of 3.2" and velocity of 3.12 fps.

The existing 8" onsite public sewer will convey the 265.2 gpm onsite peak flow at a depth of 3.9" and velocity of 3.44 fps. This pipe connects to the existing 10" 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 10" sewer line along Shea Boulevard at a d/D = 0.65 and slope of 1.00% was calculated to be 743.80 gpm with a 4.42 fps velocity.

To conduct a proper analysis, the City Conducted Flow Results were taken into account for the calculation of Shea Blvd 10" sewer line. The same line was analyzed adding the Onsite Sewer Demand Calculations (265.2 gpm), plus, RDH Flow Study's maximum registered flow at existing MH1 (136.56 gpm). Totaling a demand of **401.76 gpm**, with a Velocity of 3.82 fps at a Normal Depth of 4.4 in. Meaning the proposed lines can withstand the required 743.80 gpm capacity.

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.

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)*

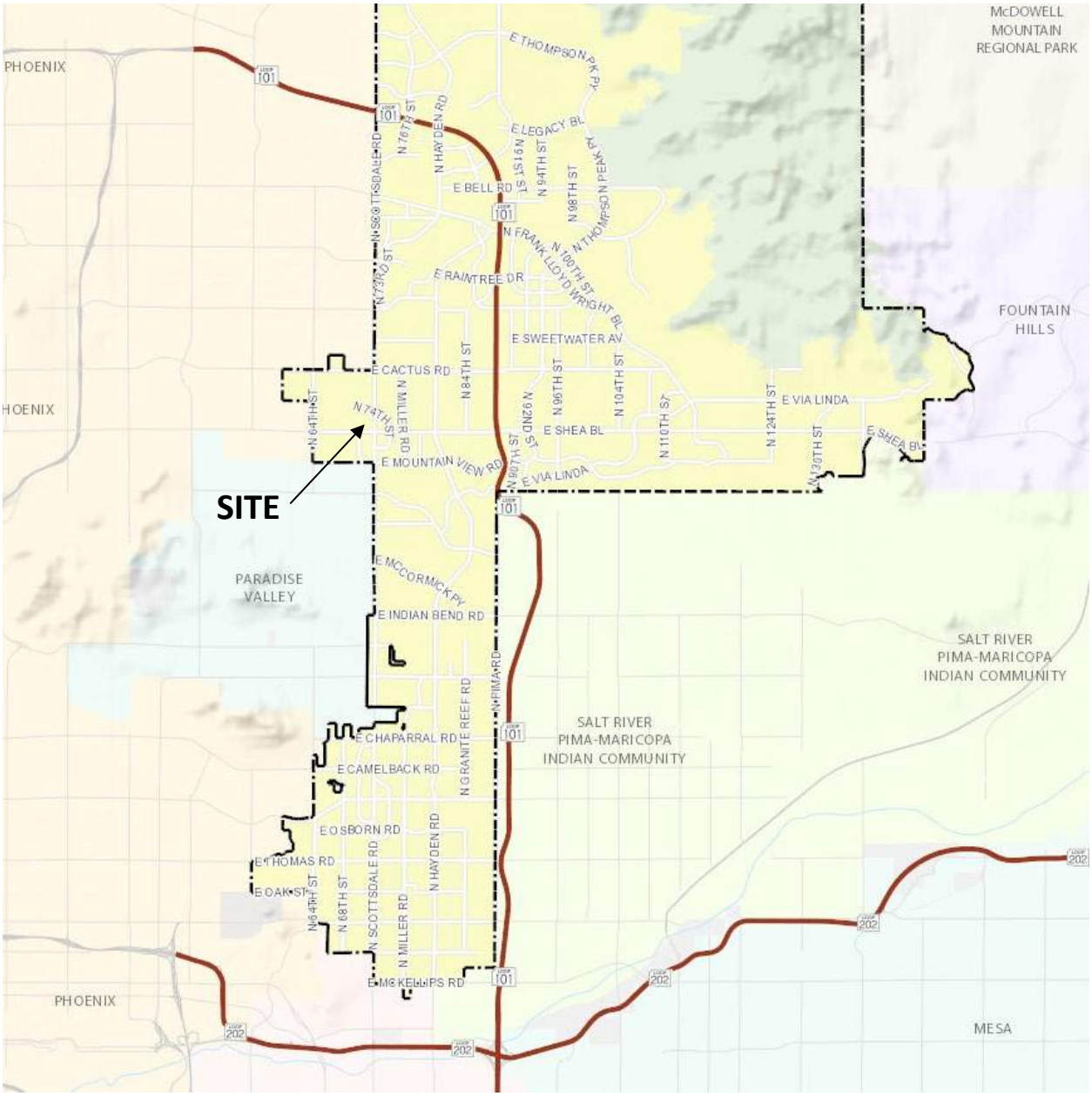


FIGURE 1 – Vicinity Map

FIGURE 2 – Aerial

30-44

29-43

29-45

28-44

15-JAN-23

GENERAL NOTES:

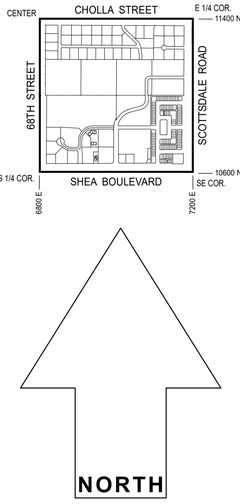
- THIS IS A COMPUTER GENERATED DRAWING. FOR ANY REVISIONS PLEASE CONTACT THE CITY OF SCOTTSDALE GIS DEPARTMENT AT (480) 312-7792.
- THE SECTION LINE BEARING AND DISTANCES ARE BASED ON THE CITY OF SCOTTSDALE GPS SURVEY OF SEPTEMBER, 1991. BEARINGS ARE NAD 83 GRID AND DISTANCES ARE FLATTENED TO GROUND.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

FIGURE 3 - COS Sewer Q-S Map 29-44

VICINITY MAP



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

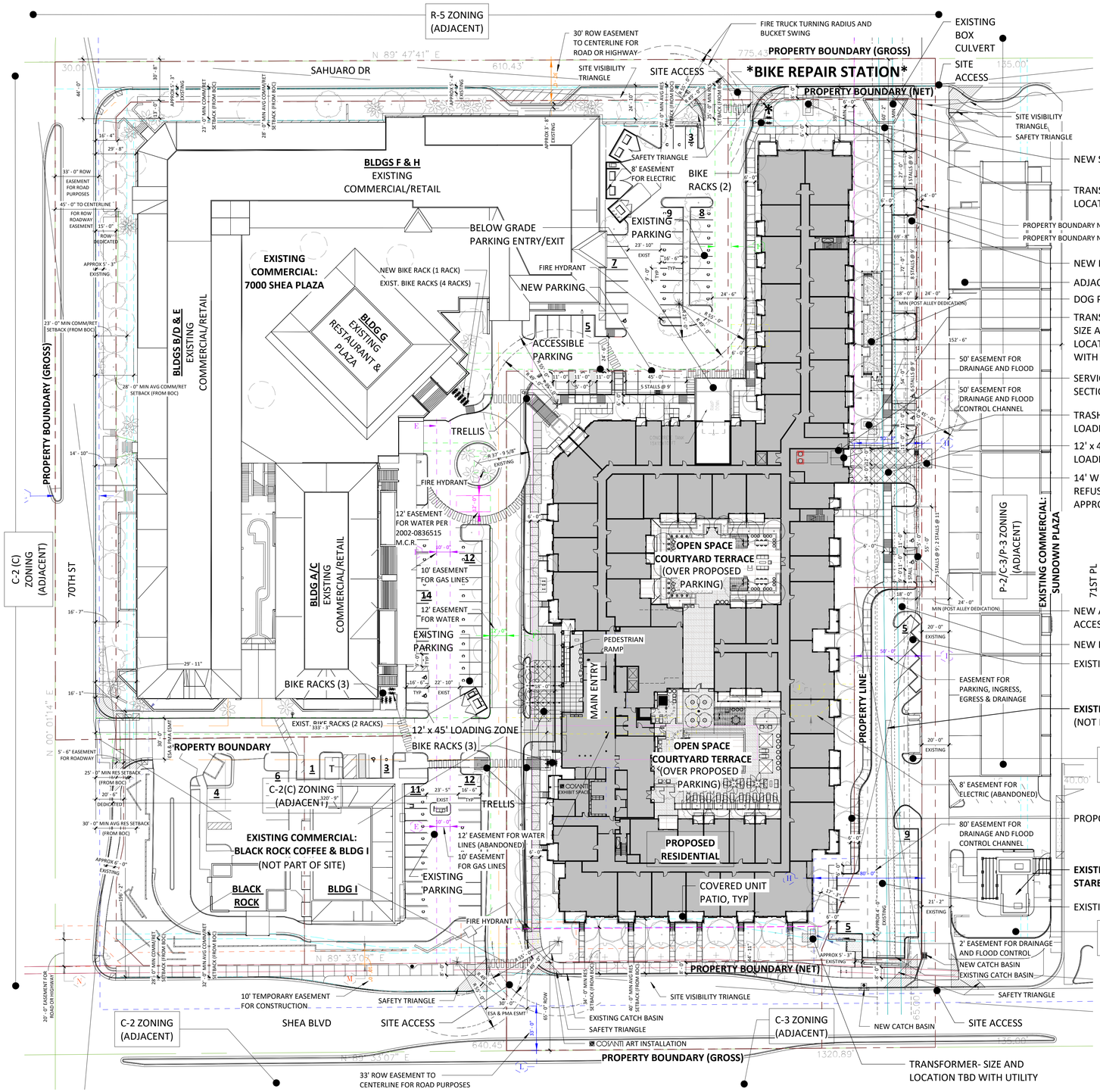
SEWER

QUARTER SECTION MAP

29-44

SE 1/4 SEC. 22 T3N R4E

SCOTTSDALE GEOGRAPHIC INFORMATION SYSTEMS
3629 North Drinkwater Boulevard
Scottsdale, Arizona 85251



1 A.21.fb **TECHNICAL REQUIREMENTS**
1" = 40'-0"

FIGURE 4 - Proposed Site Plan

1/27/2025 5:07:36 PM

EXISTING BUILDINGS SF:

(PER CASE 30-DR-2020)

BUILDING A/C:	**+/-18,500 SF**
BUILDING B/D:	**+/-18,500 SF**
BUILDING E:	**+/-12,200 SF**
BUILDING F:	**+/- 7,200 SF**
BUILDING G:	**+/- 7,200 SF**
BUILDING H:	**+/-15,600 SF**
TOTAL:	**+/-79,200 SF**
LOT 2 BLACK ROCK:	**+/- 1,977 SF**
LOT 3 BUILDING I:	**+/- 5,600 SF (AZ BREAD +/-2,800 SF)**

PARKING METRICS - EXISTING LOT 3:

COSANTI COMMONS
EXISTING LOT 3 PARKING *(NOT PART OF REZONE REQUEST)*

esg

STANDARD	APPROVED SITE PLAN FOR EXISTING COMMERCIAL Case #: 30-DR-2020	GENERAL ZONING PARKING REQUIREMENT	EXISTING COMMERCIAL LOT 2 - *NOT PART OF REZONE REQUEST* (C-2 (C) ZONING)	EXISTING COMMERCIAL LOT 3 - *NOT PART OF REZONE REQUEST* (C-2 (C) ZONING)
VEHICLE PARKING PER USE [Table 9.103.A]	1:300 SF			
MIXED USE COMMERCIAL CENTER USE (TOTAL REQUIRED)	-	1:300 SF	1,977 SF**** / 300 = **7**	5,600 SF**** / 300 = **19**
TOTAL VEHICLE PARKING **PROVIDED**	-	-	**10** (SURFACE TO REMAIN)	**27** (SURFACE TO REMAIN)

**** Per Site Plan data, Black Rock Coffee Bar, Case# 30-DR-2020; Lot 3 = Building I (Arizona Bread Company and Fitness 4 Home)

PROJECT DATA SUMMARY:

Case No:	973-PA-2022, 2-GP-2023, 6-ZN-2023, 3-DA-2023
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:** 175-42-138S (per County) **EXISTING RESIDENTIAL SITE:** 175-42-136S (per County)
APN (PROPOSED):	**OVERALL SITE:** 175-42-140 (per Plat)
QS:	**EXISTING COMMERCIAL/RETAIL SITE + RESIDENTIAL SITE:** 29-44
Zoning Classification (EXISTING):	**EXISTING COMMERCIAL/RETAIL SITE:** C-2 (Central Business) **EXISTING RESIDENTIAL SITE:** C-2 (Central Business)
Zoning Classification (PROPOSED):	**OVERALL SITE:** PUD-PSD (Planned Unit Development with Planned Shared Development Overlay) -- APPROVED WITH CASES: 2-GP-2023, 6-ZN-2023, 3-DA-2023

ZONING SUMMARY:

COSANTI COMMONS
PLANNED UNIT DEVELOPMENT WITH PLANNED SHARED DEVELOPMENT OVERLAY — APPROVED WITH CASES: 2-GP-2023, 6-ZN-2023, 3-DA-2023

esg

STANDARD	APPROVED SITE PLAN FOR EXISTING COMMERCIAL Case #: 97-ZN-1986 (C-2 (C) ZONING)	PUD-PSD ZONING	PROPOSED OVERALL LOT (PUD-PSD ZONING)	EXISTING COMMERCIAL (PUD-PSD ZONING)	PROPOSED RESIDENTIAL (PUD-PSD ZONING)
USE	RETAIL, OFFICE, RESTAURANT	-	MIXED USE CENTER (RETAIL, OFFICE, DENTAL OFFICE, HAIR SALONS, HEALTH FOOD STORE, SPORTS TRAINING, CHESS INSTRUCTION, RESTAURANT, PARKING) & MULTI-FAMILY	MIXED USE CENTER (RETAIL, OFFICE, DENTAL OFFICE, HAIR SALONS, HEALTH FOOD STORE, SPORTS TRAINING, CHESS INSTRUCTION, RESTAURANT, PARKING)	MULTI-FAMILY
TOTAL LOT AREA (GROSS, WITH CITY-OWNED PARCELS)	N/A	0.5 min. to 15 ACRES max.	398,264 S.F. (9.143 AC)	204,162 S.F. (4.687 AC)	194,102 S.F. (4.456 AC)
TOTAL LOT AREA (GROSS, WITHOUT CITY-OWNED PARCELS)	N/A	0.5 min. to 15 ACRES max.	**375,447 S.F. (8.619 AC)**	**204,162 S.F. (4.687 AC)**	**171,285 S.F. (3.932 AC)**
TOTAL LOT AREA (NET, WITHOUT CITY-OWNED PARCELS, BEFORE 4' ALLEY DEDICATION)	N/A	-	**316,041 S.F. (7.255 AC)**	**168,073 S.F. (3.858 AC)**	**147,968 S.F. (3.397 AC)**
TOTAL FUTURE LOT AREA (NET, WITHOUT CITY-OWNED PARCELS, AFTER 4' ALLEY DEDICATION)	N/A	-	**314,532 S.F.(a) (7.221 AC)**	**168,046 S.F.(a) (3.858 AC)**	**146,486 S.F.(a) (3.363 AC)**
RESIDENTIAL GSF	N/A	-	±295,000 G.S.F.	-	±295,000 G.S.F.
DWELLING QUANTITY	N/A	-	189 UNITS	0 UNITS	189 UNITS
	-	-	EFFICIENCY: 30 UNITS 1-BR: 114 UNITS 2-BR: 45 UNITS 3-BR: 0 UNITS	EFFICIENCY: 0 UNITS 1-BR: 0 UNITS 2-BR: 0 UNITS 3-BR: 0 UNITS	EFFICIENCY: 30 UNITS 1-BR: 114 UNITS 2-BR: 45 UNITS 3-BR: 0 UNITS
TOTAL # BEDROOMS	N/A	-	234 BEDROOMS	0 BEDROOMS	234 BEDROOMS
DENSITY/INTENSITY (FAR**)	-	Residential Uses: per Development Plan	±22 DU/AC GROSS 189 / ±8.619 = ±21.93	0 DU/AC GROSS 0 / ±4.687 = 0	±68 DU/AC GROSS 189 / ±3.932 = ±48.07
[COMMERCIAL USE EXCEPTIONS SEC. 5.5005.B.3]	0.33 proposed FAR stated in case (0.5 max. FAR now)	Commercial Uses: 0.8 max. (net site area)	Commercial Uses: ≤80,200 SF***/314,532(a) = 0.25 FAR	Commercial Uses: ≤79,200 SF***/314,532(a) = 0.25 FAR	Commercial Uses: 1,000 SF/314,532(a) = 0.0 FAR
BUILDING HEIGHT [EXCEPTIONS SEC. 5.5005.D, 5.5005.E]	8 x 314,532(a) = 251,626 SF 14 FT 48 FT max. 10 FT average allowed for certain elements covering no more than 30% of bldg roof area	38 FT COMM/RETAIL 49 FT MAX MULTI-FAMILY	38 FT COMM/RETAIL 49 FT MAX MULTI-FAMILY	38 FT COMM/RETAIL	49 FT MAX MULTI-FAMILY includes 10 FT average allowed for certain elements covering no more than 30% of bldg roof area
SETBACKS	-	-	-	-	-
MINIMUM AVERAGE SETBACK	-	-	APPROVED AMENDED STANDARD FOR 'MINIMUM' AVERAGE SETBACK (PUD LANGUAGE)	APPROVED AMENDED STANDARD FOR 'MINIMUM' AVERAGE SETBACK (PUD LANGUAGE)	APPROVED AMENDED STANDARD FOR 'MINIMUM' AVERAGE SETBACK (PUD LANGUAGE)
SAHUARO (NORTH) - GROUND FLR RESIDENTIAL MIN./MIN. AVG.	20 FT stated in case	25 FT / 30 FT - FR. BACK OF PLANNED CURB	≥39'-7"/47'-1" PROPOSED	N/A	≥39'-7"/47'-1" PROPOSED
SAHUARO (NORTH) - GROUND FLR COMM/RETAIL MIN./MIN. AVG.	25 FT required now from MF district)	23 FT / 28 FT - FR. BACK OF PLANNED CURB	24' EXISTS (ROOF OVERHANG, RAMPED WALKWAY, LOW UTILITY SCREEN WALL ENCROACH MIN SETBACK UNDER 15 FT ENCROACHMENT) / 28'-2" EXISTS	24' EXISTS (ROOF OVERHANG, RAMPED WALKWAY, LOW UTILITY SCREEN WALL ENCROACH MIN SETBACK UNDER 15 FT ENCROACHMENT) / 28'-2" EXISTS	N/A
SHEA (SOUTH) - GROUND FLR RESIDENTIAL MIN./MIN. AVG.	20 FT stated in case (front - 0 FT req'd now)	34 FT / 40 FT - FR. BACK OF PLANNED CURB	≥44-11'/51'-4" PROPOSED	N/A	≥44-11'/51'-4" PROPOSED
SHEA (SOUTH) - GROUND FLR COMM/RETAIL MIN./MIN. AVG.		28 FT / 32 FT - FR. BACK OF PLANNED CURB	193'/205'-4" EXISTS	193'/205'-4" EXISTS	N/A
70TH ST (WEST) - GROUND FLR RESIDENTIAL MIN./MIN. AVG.	20 FT stated in case (front - 0 FT req'd now)	25 FT / 30 FT - FR. BACK OF PLANNED CURB	≥320'-9"/321'-10" PROPOSED	N/A	≥320'-9"/321'-10" PROPOSED
70TH ST (WEST) - GROUND FLR COMM/RETAIL MIN./MIN. AVG.		23 FT / 28 FT - FR. BACK OF PLANNED CURB	29' EXISTS (ROOF OVERHANG, ENCLOSED STAIRS, EXTERIOR STEPS ENCROACH MIN SETBACK BUT UNDER 15 FT ENCROACHMENT) / 30'-1" EXISTS	29' EXISTS (ROOF OVERHANG, ENCLOSED STAIRS, EXTERIOR STEPS ENCROACH MIN SETBACK BUT UNDER 15 FT ENCROACHMENT) / 30'-1" EXISTS	N/A
BUILDING ENVELOPE [ENCROACHMENTS - SEC. 5.5005.G]	-	-	-	-	-
SAHUARO (NORTH) - ADJ. TO RESID. DISTRICT ENVELOPE	N/A	1-2 - STARTING ON RESID. DISTRICT BOUNDARY	REQUESTING ENCROACHMENT FOR EXISTING COMMERCIAL BUILDING	REQUESTING ENCROACHMENT FOR EXISTING COMMERCIAL BUILDING	COMPLIES
71ST PL (EAST) - STANDARD ENVELOPE	N/A	1:1 - STARTING UP 36 FT FR. MIN. SETBACK TO 48 FT; THEN 2:1	N/A	N/A	N/A
SHEA (SOUTH) - STANDARD ENVELOPE	N/A	1:1 - STARTING UP 36 FT FR. MIN. SETBACK TO 48 FT; THEN 2:1	COMPLIES	COMPLIES	COMPLIES
70TH ST (WEST) - STANDARD ENVELOPE	N/A	1:1 - STARTING UP 36 FT FR. MIN. SETBACK TO 48 FT; THEN 2:1	COMPLIES	COMPLIES	N/A
PRIVATE OUTDOOR LIVING SPACE	N/A	0.05 x gross floor area of the dwelling unit	COMPLIES	N/A	COMPLIES
COMMON OPEN SPACE	amount stated in case illegible (0.10 x 314,532(a) (net lot area) now = 31,453 SF plus .004 x net lot area for ea. FT of bldg height over 12 FT (.004 x 314,532(a) x 26 FT****) = ±32,711 + 31,453 = ±64,164 SF req'd now overall site)	0.10 x 375,447 (gross site area) = 37,545 SF	±94,080 SF OVERALL PROPOSED (±59,996 SF EXISTS OVERALL)	-	-

(a) the net area after the 4' alley dedication
** FAR calculated over the NET site area; floor area can exclude: parking areas, uncovered steps, exterior balcony space, exterior ground floor patio space, basement space used for unoccupied storage, elevator shafts & space occupied by electrical & mechanical rooms.
***Existing commercial SF of +/-79,200 SF per Site Plan data, Black Rock Coffee Bar, Case# 30-DR-2020
****Per 159-DR-86 'Elevations,' Design Review Submittal, City approved stamp dated 11/6/86

PARKING METRICS:

STANDARD	APPROVED SITE PLAN FOR EXISTING COMMERCIAL Case #: 97-ZN-1986 (C-2 (C) ZONING)	PUD-PSD ZONING	PROPOSED OVERALL LOT (PUD-PSD ZONING)	EXISTING COMMERCIAL (PUD-PSD ZONING)	PROPOSED RESIDENTIAL (PUD-PSD ZONING) — incl. 1,000 SF commercial Cosanti Flex Space
PARKING LOCATED BETWEEN BUILDING AND STREET [Sec. 5.5006.A.]	-	-	COMPLIES	COMPLIES	COMPLIES
DRIVE AISLE SIZE [Table 9.106.A]	-	-	EXISTING	EXISTING	COMPLIES
PARKING STALL SIZE [Table 9.106.A]	-	-	COMPLIES	EXISTING	COMPLIES
VEHICLE PARKING PER USE [Table 9.103.A]	-	-	-	-	-
MIXED USE COMMERCIAL CENTER USE TOTAL REQUIRED	-	1:300 SF	≥80,200 SF **268**	≥79,200 SF*** / 300 = **264**	1,000 SF max. / 300 = **4**
MULTIFAMILY GUEST (189 TOTAL UNITS)	-	1 PER 6 UNITS	-	-	32
MULTIFAMILY EFFICIENCY 30 UNITS	-	1.25 PER DU	-	-	38
MULTIFAMILY 1BR 114 UNITS	-	1.3 PER DU	-	-	149
MULTIFAMILY 2BR 45 UNITS	-	1.7 PER DU	-	-	77
MULTIFAMILY 3BR+ 0 UNITS	-	1.9 PER DU	-	-	0
MULTIFAMILY TOTAL REQUIRED			-	-	**296**
TOTAL VEHICLE PARKING **REQUIRED**	663 stated in case for larger overall site		**564**	**264**	**300**
TOTAL VEHICLE PARKING **PROVIDED**, INCLUDES ACCESSIBLE	561 (15% reduct.) stated in case for larger overall site	-	-	58 (SURFACE TO REMAIN) 313 (STRUCTURED) (this site (garage) includes required parking for 65 (32 guests + 4 Cosanti Exhibit/Flex Space + 29 add'l residential per Agreement))	41 SURFACE (30 + 11 of the 19 SURFACE ON CITY PARCELS) 200 (STRUCTURED) (not including compacts/tandems)
			612	**TOTAL: 371**	**TOTAL: 241**
ACCESSIBLE PARKING, STRUCTURED REQUIRED (4% MIN OF THE PROVIDED)	-	-	**22**	13	9
ACCESSIBLE PARKING, SURFACE REQUIRED (4% MIN OF THE PROVIDED)	-	-	**5**	3	2
ACCESSIBLE PARKING, STRUCT. PROV. (INCLUDED IN THE PROVIDED PKG TOTALS)	-	-	**29**	20	9
ACCESSIBLE PARKING, SURFACE PROV. (INCLUDED IN THE PROVIDED PKG TOTALS)	-	-	**11**	4	7
COVERED PARKING [Sec. 9.105.I.5a)]	-	-	-	-	-
ACCESSIBLE TENANT COVERED PARKING PROVIDED (FOR MF DEVTS)	-	-	11	2	9
	-	**4% MIN RATIOS PROVIDED**	11 / 229 = .048 = 4.8%	2 / 29 = .069 = 6.9%	9 / 200 = .045 = 4.5%
NONACCESSIBLE TENANT COVERED PARKING PROVIDED (FOR MF DEVTS)	-	-	218	27	191
	-	**RATIOS PROVIDED**	218 / 229 = .952 = 95.2%	27 / 29 = .931 = 93.1%	191 / 200 = .955 = 95.5%
ACCESSIBLE VISITOR COVERED PARKING PROVIDED (FOR MF DEVTS)	-	-	2	2	0
(MF DWELLING VISITOR PKG SPACES TO BE PROVIDED IN COVERED)	-	**4% MIN RATIOS PROVIDED**	2 / 32 = .063 = 6.3%	2 / 32 = .063 = 6.3%	0 / 200 = .000 = 0%
NONACCESSIBLE VISITOR COVERED PARKING PROVIDED (FOR MF DEVTS)	-	-	30	30	0
(MF DWELLING VISITOR PKG SPACES TO BE PROVIDED IN COVERED)	-	**RATIOS PROVIDED**	30 / 32 = .938 = 94%	30 / 32 = .938 = 94%	0 / 200 = .000 = 0%
ACCESSIBLE NONRESIDENTIAL COVERED PARKING PROVIDED	-	-	18	18	0
(THESE ARE EXISTING + NEW COSANTI SPACES)	-	**4% MIN RATIOS PROVIDED**	18 / 252 = .071 = 7.1%	18 / 252 = .071 = 7.1%	0 / 200 = .000 = 0%
NONACCESSIBLE NONRESIDENTIAL COVERED PARKING PROVIDED	-	-	234	234	0
(THESE ARE EXISTING + NEW COSANTI SPACES)	-	**EXISTING RATIOS PROVIDED**	234 / 252 = .929 = 92.9%	234 / 252 = .929 = 92.9%	0 / 200 = .000 = 0%
TOTAL VEHICLE PARKING REQUIRED & PROVIDED			**TOTAL VEHICLE PARKING REQUIRED (OVERALL SITE) = 564;** **TOTAL PARKING PROVIDED (OVERALL SITE) = 612**		
			TOTAL VEHICLE PARKING SURPLUS (OVERALL SITE) = 48		
BICYCLE PARKING PER USE [Sec. 9.103.C]	0 stated in case				
MIXED USE COMMERCIAL CENTER USE REQUIREMENT		1:10 REQ. VEH., 2 MIN., 100 MAX.	-	264 / 10 = 27	4 / 10 = 3
MULTIFAMILY USE REQUIREMENT		1:10 REQ. VEH., 2 MIN., 100 MAX.	-	32 / 10 = 4	264 / 10 = 27
BICYCLE PARKING REQUIRED (TOTALS)	0 stated in case	-	**60**	**31**	**29**
BICYCLE PARKING PROVIDED	0 provided in case				
BICYCLE PARKING SPACES, STRUCTURED	0 provided in case	-	-	0	28
BICYCLE PARKING SPACES, SURFACE	0 provided in case	-	-	20 (10 racks – 6 existing + 4 new racks)	16 (8 racks)
BICYCLE PARKING PROVIDED (TOTALS)	0 provided in case	-	**64**	**20**	**44**
TOTAL BICYCLE PARKING REQUIRED & PROVIDED			**TOTAL BICYCLE PARKING REQUIRED (OVERALL SITE) = 60;** **TOTAL BICYCLE PARKING PROVIDED (OVERALL SITE) = 64**		

***Existing commercial SF of +/-79,200 SF per Site Plan data, Black Rock Coffee Bar, Case# 30-DR-2020

COSANTI COMMONS
7000 E Shea Blvd / Scottsdale AZ

esg
ARCHITECTURE & DESIGN
350 North 5th Street, Suite 400
Minneapolis, MN 55401
p 612.339.5508 | esgarch.com

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed architect under the laws of the State of Arizona

Signature

Typed or Printed Name

License # Date

NOT FOR CONSTRUCTION

01/24/2025
DRB SUBMITTAL

ORIGINAL ISSUE:

REVISIONS

No.	Description	Date

222517
PROJECT NUMBER

KEY PLAN

COSANTI COMMONS

TECHNICAL REQUIREMENTS

A.21.fb

APPENDICES

I. Utility Plan

II. Sewer Service Hydraulics

INDEX OF DRAWINGS

SHEET INDEX					
		SHEET NO.:	DESCRIPTION:	LATEST DATE:	REVISION:
●	1	C4.00	PRELIMINARY COVER SHEET & KEYMAP	04/30/2025	
●	2	C4.10	PRELIMINARY UTILITY PLAN	04/30/2025	
●	3	C4.11	PRELIMINARY UTILITY PLAN	04/30/2025	

● FILLED CIRCLE INDICATES PLAN IS INCLUDED WITH THIS SUBMITTAL

QUANTITIES

WATER QUANTITIES		
DESC.	QTY.	UNIT
6" DIP	86	LF
2" TYPE "K" COPPER LINE	74	LF
1" TYPE "K" COPPER LINE	39	LF
8"X6" TEE	2	EA
8"X6" BEND	1	EA
FIRE HYDRANT ASSEMBLY (INLCUDES GV)	2	EA
2" WATER METER	2	EA
1" WATER METER	1	EA
2" BACKFLOW PREVENTER	2	EA
1" BACKFLOW PREVENTER	1	EA

SEWER QUANTITIES		
DESC.	QTY.	UNIT
6" PVC	177	LF
8" PVC	16	LF

(QUANTITIES SHOWN ARE FOR PERMITTING PURPOSES ONLY. CONTRACTOR IS RESPONSIBLE FOR DETERMINING QUANTITIES FOR BIDDING PURPOSES.)

LEGEND

PROPOSED UTILITY LEGEND:

- PROPERTY LINE
- EASEMENT LINE
- X"W — WATER LINE
- X"S — SEWER LINE
- FIRE HYDRANT
- FDC
- WM — WATER METER
- GATE VALVE
- T.S.V.B.&C.
- BACK FLOW PREVENTER
- CAP
- BUILDING CONNECTION
- SEWER CLEAN OUT

EXISTING LEGEND

- S — SEWER LINE
- (S) — SEWER MANHOLE
- W — WATER LINE
- WV — WATER VALVE
- FIRE HYDRANT
- G — GAS LINE
- TV — UNDERGROUND TELEVISION LINE
- E — UNDERGROUND ELECTRIC LINE
- OHE — OVERHEAD ELECTRIC LINE
- T — ELECTRIC TRANSFORMER
- E — ELECTRIC JUNCTION BOX
- (E) — ELECTRIC METER
- SD — STORM DRAIN LINE
- CB — STORM CATCH BASIN
- (D) — STORM MANHOLE

REMOVAL LEGEND:

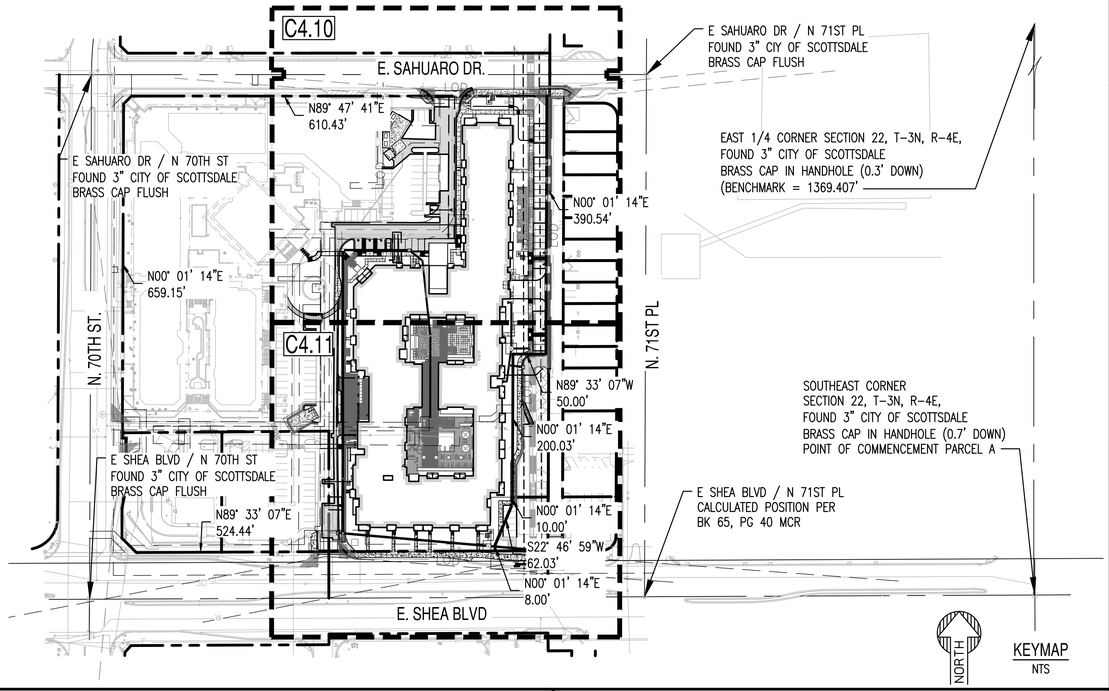
////////////////// PIPE REMOVAL

COSANTI COMMONS

PRELIMINARY COVER SHEET & KEYMAP

7000 E. SHEA BLVD SCOTTSDALE, AZ 85254

A PORTION OF THE SOUTHEAST QUARTER OF SECTION 22, TOWNSHIP 3 NORTH, RANGE 4 EAST OF THE GILA AND SALT RIVER MERIDIAN, MARICOPA COUNTY, ARIZONA.



NO-CONFLICT BLOCK

NO CONFLICT SIGNATURE BLOCK				
UTILITY	UTILITY COMPANY	NAME OF COMPANY REPRESENTATIVE	TELEPHONE NUMBER	DATE SUBMITED
ELECTRIC	APS	ADRIANNE BRENNAN	(602) 493-4401	01/24/2023
TELEPHONE	CENTURYLINK	KATHY HADRICH	(602) 630-5480	01/24/2023
NATURAL GAS	SW GAS	X	(XXX) XXX-XXXX	01/24/2023
CABLE/TV	COX	GLENN STEPHENS	(XXX) XXX-XXXX	01/24/2023
OTHER	X	X	(XXX) XXX-XXXX	XX/XX/XXXX

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

SIGNATURE _____ DATE _____

NOTES FOR IMPROVEMENTS PLANS WHERE THERE IS AN EXISTING ACP OR PVC PIPE:

ANY WATER LINE PROJECT THAT INVOLVES CONNECTING TO AN EXISTING ACP OR PVC PIPE REQUIRES SPECIAL ATTENTION. PER DSPM SECTION 6-1.408:

FITTINGS INSTALLED INTO ASBESTOS CEMENT PIPE (ACP) OR PVC PIPE WITHIN 6-FEET OF ANOTHER FITTING OR JOINT WILL REQUIRE THAT SECTION OF PIPE TO BE REMOVED AND REPLACED WITH DUCTILE IRON PIPE (DIP).

EXISTING TEES, TAPPING SLEEVES AND RELATED APPURTENANCES THAT ARE NOT UTILIZED BY THE DEVELOPMENT SHALL BE REMOVED BY THE CONTRACTOR.

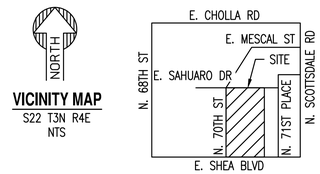
A MINIMUM 3-FOOT SECTION OF PIPE SHALL BE REMOVED, WITH NO LESS THAN 6 FEET REMAINING TO THE NEAREST JOINT. THE REMOVED PIPE SHALL BE REPLACED WITH DIP.

WHEN MORE THAN 3-FEET OF EXISTING ACP OR PVC WATER LINES ARE EXPOSED DURING CONSTRUCTION AND THE BEDDING IS DISTURBED, THE WATER LINE MUST BE REPLACED WITH DIP (MINIMUM CLASS 350) WITH MECHANICAL JOINTS OR FLANGED JOINTS TO 3-FEET PAST THE SIDES OF THE EXPOSED CROSSING TRENCH. REFER TO MAG STANDARD DETAIL NO. 403-3.

NO TAPPING SLEEVE AND VALVE SHALL BE USED ON ACP PIPE. VALVES WILL NEED TO BE CUT INTO ACP PIPE.

DISPOSAL OF MATERIALS CONTAINING ASBESTOS AND/OR LEAD SHALL BE IN CONFORMANCE WITH ALL REGULATIONS, LAWS AND ORDINANCES.

VICINITY MAP



PROJECT TEAM

OWNER
TRAMMELL CROW COMPANY
2575 E. CAMELBACK RD, SUITE 400
PHOENIX, ARIZONA 85016
PHONE: 602-809-0211
ATTN.: PAUL TUCHIN
EMAIL: PTUCHIN@TRAMMELLCROW.COM

CIVIL ENGINEER
SUSTAINABILITY ENGINEERING GROUP
5240 N. 16TH STREET, SUITE 105
PHOENIX, ARIZONA 85016
PHONE: 480-588-7226
ATTN.: ALI FAKIH
EMAIL: ALI@AZSEG.COM

SURVEY
SUPERIOR SURVEYING SERVICES, INC.
2122 W. LONE CACTUS DRIVE, SUITE 11
PHOENIX, ARIZONA 85027
PHONE: 623-869-0223 (EXT. 103)
ATTN.: JAMES WILLIAMSON
EMAIL: JAMES@SUPERIORSURVEYING.COM

ARCHITECT
ESG ARCHITECTURE & DESIGN
350 N. 5TH STREET, SUITE 400
MINNEAPOLIS, MINNESOTA 55401
PHONE: 612-339-5508
ATTN.: LAURA EDER
EMAIL: LAURA.EDER@ESGARCH.COM

LANDSCAPE
COLLECTIV LANDSCAPE ARCHITECTS
1426 N. 2ND STREET, SUITE 200
PHOENIX, ARIZONA 85004
PHONE: 602.358.7711 EXT. 106
ATTN: MICHAEL CHAPMAN
EMAIL: MIKEC@COLLECTIVLA.COM

PROJECT INFO

PROJECT LOCATION:
SITE ADDRESS: 7000 E. SHEA BLVD SCOTTSDALE, AZ 85254

PROJECT DESCRIPTION:
THIS PROJECT IS FOR A MIXED USE NEIGHBORHOOD BUILDING, WITH TWO COURTYARD TERRACES.

SITE DATA:

ASSESSOR PARCEL NUMBER:	175-42-140
ZONING:	PUD-PSD
GROSS AREA:	375,468.94 SF (8.62 AC)
NET AREA:	315,981.40 SF (7.25 AC)
DISTURBED AREA:	189,956.46 SF (4.36 AC)

BASIS OF BEARING:
MONUMENT LINE OF SCOTTSDALE ROAD, ALSO BEING THE EAST LINE OF THE SOUTHEAST QUARTER OF SECTION 22, USING A BEARING OF NORTH 00 DEGREES 13 MINUTES 09 SECONDS EAST PER THE RECORD OF SURVEY "GEODETIC DENSIFICATION AND CADASTRAL SURVEY", IN BOOK 763 OF MAPS, PAGE 38, RECORDS OF MARICOPA COUNTY, ARIZONA.

BENCHMARK:
THE BENCHMARK USED FOR THIS SURVEY IS THE MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION UNIQUE POINT ID 5842, BEING A 3" CITY OF SCOTTSDALE BRASS CAP IN HANDHOLE, LOCATED AT THE INTERSECTION OF SCOTTSDALE ROAD & CHOLLA STREET, HAVING AN ELEVATION OF 1369.407 FEET, NAVD88.

LEGAL PARCEL DESCRIPTION:
LOT 1 OF 7000 EAST SHEA BOULEVARD, ACCORDING TO THE PLAT OF RECORD IN THE OFFICE OF THE COUNTY RECORDER OF MARICOPA COUNTY, ARIZONA, IN BOOK 1701 OF MAPS, PAGE 37.

APPENDIX I

NOT FOR CONSTRUCTION

SUSTAINABILITY ENGINEERING GROUP
SEG
5240 N. 16TH STREET SUITE 105, PHOENIX, ARIZONA 85016
WWW.AZSEG.COM TEL. 480.588.7226 FAX. 480.259.3534

CASE FILE NO's: 973-PA-2022, 6-ZN-2023, 2-GP-2023

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

PROJECT: COSANTI COMMONS
LOCATION: 7000 E. SHEA BLVD. SCOTTSDALE, AZ 85254

DRAWN	LR	12/27/2024
DESIGNED	DJ	12/27/2024
CHECKED	SC	01/15/2025
FINAL QC	AB	04/30/2025
PROJ. MGR.	AB	04/30/2025

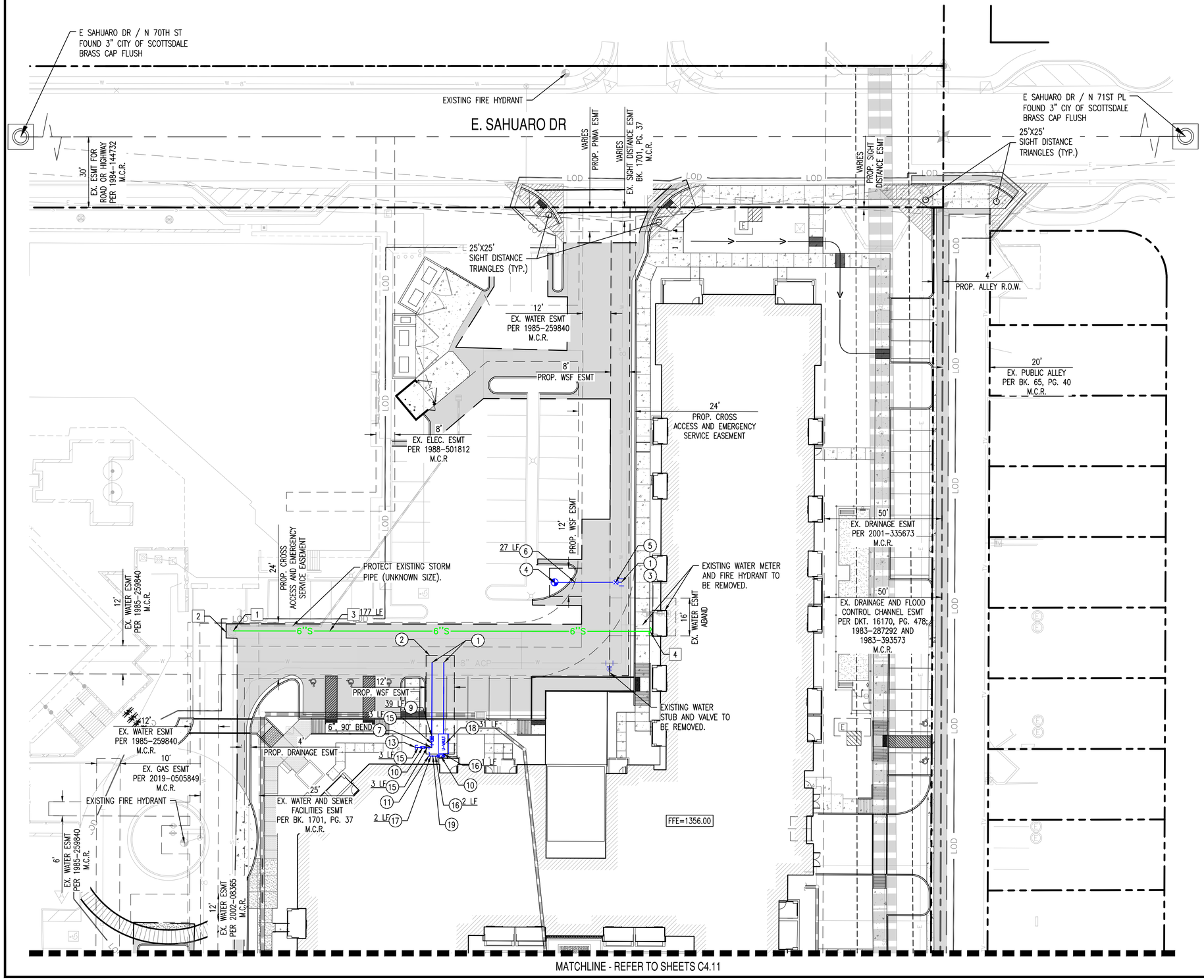
DATE: 04/30/2025
ISSUED FOR: DRB

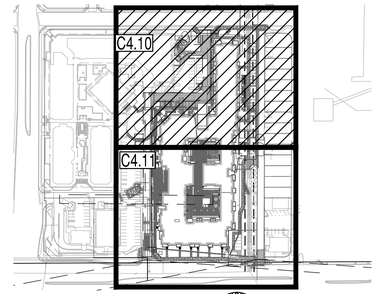
REVISION NO.:	DATE:
1	
2	
3	
4	

JOB NO.: 230113

SHEET TITLE: PRELIMINARY COVER SHEET & KEYMAP

PAGE NO.: 1 OF 3
SHEET NO.: C4.00





KEY MAP
NTS

PRELIMINARY WATER NOTES

1. CONNECTION TO EXISTING WATER LINE.
2. SAWCUT, REMOVE AND REPLACE EXISTING PAVEMENT.
3. PROPOSED TEE, SIZE PER PLAN.
4. PROPOSED FIRE HYDRANT ASSEMBLY.
5. PROPOSED GATE VALVE WITH VALVE BOX AND COVER.
6. 6" DUCTILE IRON PIPE. LENGTH PER PLAN.
7. PROPOSED FITTING, SIZE & ANGLE PER PLAN.
9. 1" IRRIGATION SERVICE CONNECTION. LENGTH PER PLAN.
10. BACKFLOW PREVENTION, SIZE TO MATCH WATER METER SIZE.
11. DOMESTIC CONNECTION TO BUILDING.
13. CAP WATER LINE END AND PROVIDE MARKER.
14. 2" COPPER PIPE. LENGTH PER PLAN.
15. 1" COPPER PIPE. LENGTH PER PLAN.
16. 3" COPPER PIPE. LENGTH PER PLAN.
17. 4" DIP. LENGTH PER PLAN.
18. 3" COPPER DOMESTIC SERVICE CONNECTION. LENGTH PER PLAN.
19. 4" TO 3" REDUCER.

PRELIMINARY SEWER NOTES

1. CONNECTION TO EXISTING SEWER MANHOLE.
2. SAWCUT, REMOVE AND REPLACE EXISTING PAVEMENT.
3. 6" PVC SEWER LINE CONNECTION. LENGTH PER PLAN.
4. SEWER CONNECTION TO BUILDING.

LEGEND

REFER TO SHEET C4.00

NOTE

EASEMENTS LABELED TO BE ABANDONED WILL BE ABANDONED UPON COMPLETION OF DEMOLITION.

NORTH

APPENDIX I

0' 20' 40' 60'
SCALE: 1" = 20'

NOT FOR CONSTRUCTION

SEG
SUSTAINABILITY ENGINEERING GROUP
5240 N. 16TH STREET SUITE 105, PHOENIX, ARIZONA 85016
WWW.AZSEG.COM TEL. 480.568.7226 FAX. 480.259.3534

Contact Arizona 811 at least two full working days before you begin excavation
ARIZONA811
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PROJECT: COSANTI COMMONS
LOCATION: 7000 E. SHEA BLVD. SCOTTSDALE, AZ 85254

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DATE: 04/30/2025
ISSUED FOR: DRB

REVISION NO.:	DATE:
1	
2	
3	
4	

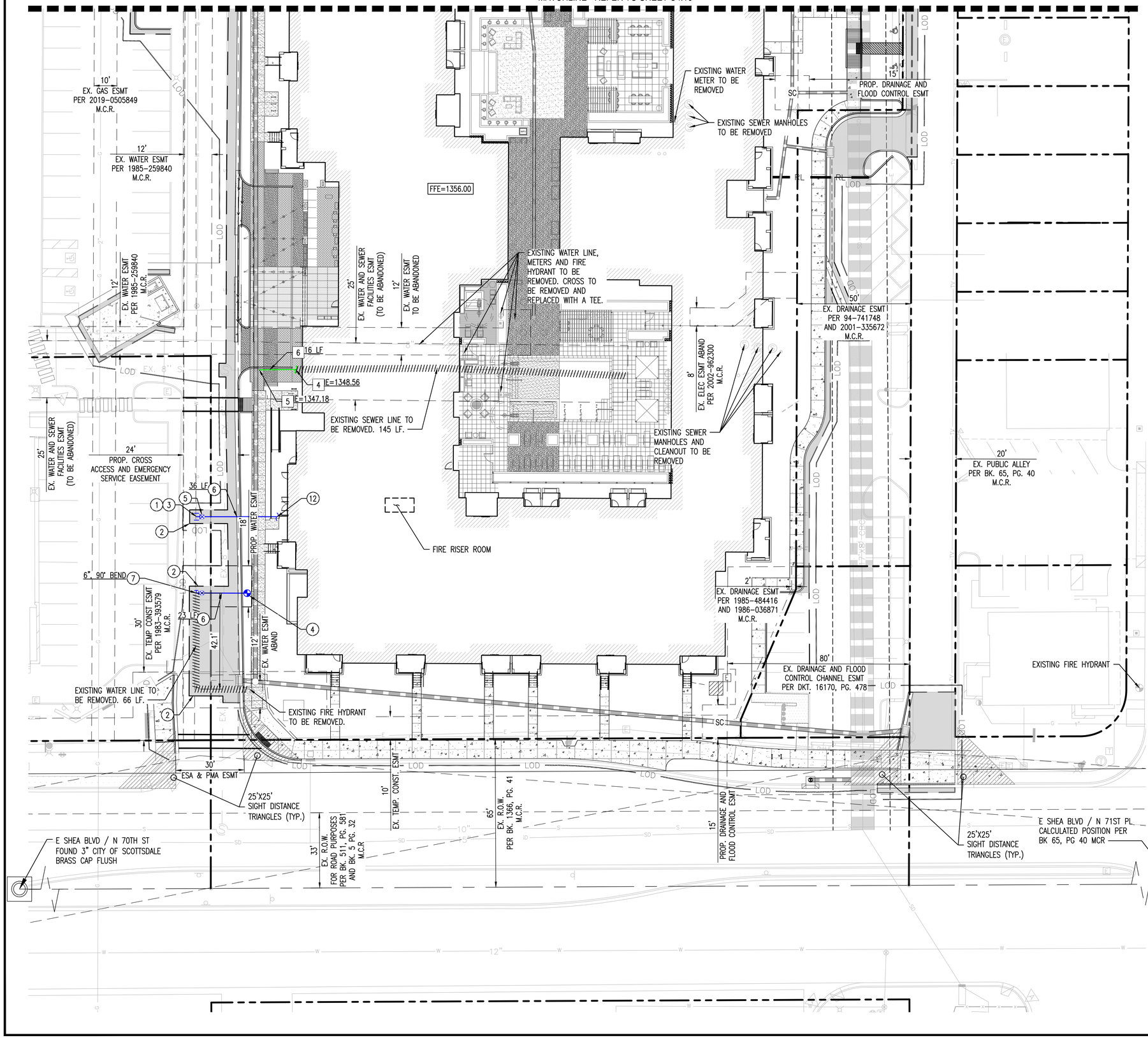
JOB NO.: 230113

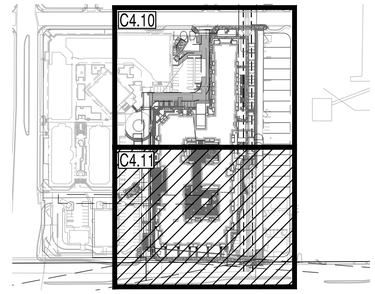
SHEET TITLE: **PRELIMINARY UTILITY PLAN**

PAGE NO.: 2 OF 3
SHEET NO.: **C4.10**

CASE FILE NO's: 973-PA-2022, 6-ZN-2023, 2-GP-2023

MATCHLINE - REFER TO SHEET C4.10





KEY MAP
NTS

NORTH

PRELIMINARY WATER NOTES

1. CONNECTION TO EXISTING WATER LINE.
2. SAWCUT, REMOVE AND REPLACE EXISTING PAVEMENT.
3. PROPOSED TEE, SIZE PER PLAN.
4. PROPOSED FIRE HYDRANT ASSEMBLY.
5. PROPOSED GATE VALVE WITH VALVE BOX AND COVER.
6. 6" DUCTILE IRON PIPE. LENGTH PER PLAN.
7. PROPOSED FITTING, SIZE & ANGLE PER PLAN.
12. FIRE CONNECTION TO BUILDING.

PRELIMINARY SEWER NOTES

4. SEWER CONNECTION TO BUILDING.
5. CONNECTION TO EXISTING STUB.
6. REMOVE & REPLACE 8" PVC SEWER LINE. LENGTH PER PLAN.

LEGEND

REFER TO SHEET C4.00

NOTE

EASEMENTS LABELED TO BE ABANDONED WILL BE ABANDONED UPON COMPLETION OF DEMOLITION.

APPENDIX I

NORTH

0' 20' 40' 60'

SCALE: 1" = 20'

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PROJECT: COSANTI COMMONS
LOCATION: 7000 E. SHEA BLVD. SCOTTSDALE, AZ 85254

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JOB NO.: 230113

SHEET TITLE: **PRELIMINARY UTILITY PLAN**

PAGE NO.: 3 OF 3
SHEET NO.: **C4.11**

CASE FILE NO's: 973-PA-2022, 6-ZN-2023, 2-GP-2023

APPENDIX II

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	182.70 gpm

Results	
Normal Depth	3.8 in
Flow Area	0.1 ft²
Wetted Perimeter	0.9 ft
Hydraulic Radius	1.7 in
Top Width	0.48 ft
Critical Depth	3.9 in
Percent Full	63.2 %
Critical Slope	0.009 ft/ft
Velocity	3.11 ft/s
Velocity Head	0.15 ft
Specific Energy	0.47 ft
Froude Number	1.055
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	63.2 %
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

APPENDIX II

8" 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	8.0 in
Discharge	182.70 gpm

Results	
Normal Depth	3.2 in
Flow Area	0.1 ft²
Wetted Perimeter	0.9 ft
Hydraulic Radius	1.7 in
Top Width	0.65 ft
Critical Depth	3.6 in
Percent Full	40.0 %
Critical Slope	0.007 ft/ft
Velocity	3.12 ft/s
Velocity Head	0.15 ft
Specific Energy	0.42 ft
Froude Number	1.230
Maximum Discharge	583.40 gpm
Discharge Full	542.34 gpm
Slope Full	0.001 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	40.0 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	3.2 in
Critical Depth	3.6 in
Channel Slope	0.010 ft/ft
Critical Slope	0.007 ft/ft

APPENDIX II

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	265.20 gpm

Results	
Normal Depth	3.9 in
Flow Area	0.2 ft²
Wetted Perimeter	1.0 ft
Hydraulic Radius	2.0 in
Top Width	0.67 ft
Critical Depth	4.3 in
Percent Full	49.3 %
Critical Slope	0.007 ft/ft
Velocity	3.44 ft/s
Velocity Head	0.18 ft
Specific Energy	0.51 ft
Froude Number	1.197
Maximum Discharge	583.40 gpm
Discharge Full	542.34 gpm
Slope Full	0.002 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	49.3 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	3.9 in
Critical Depth	4.3 in
Channel Slope	0.010 ft/ft
Critical Slope	0.007 ft/ft

APPENDIX II

10" Shea Offsite Sewer @ 1.0% - d/D=0.65

Project Description	
Friction Method	Manning Formula
Solve For	Discharge

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.010 ft/ft
Normal Depth	6.5 in
Diameter	10.0 in

Results	
Discharge	743.80 gpm
Flow Area	0.4 ft²
Wetted Perimeter	1.6 ft
Hydraulic Radius	2.9 in
Top Width	0.79 ft
Critical Depth	6.9 in
Percent Full	65.0 %
Critical Slope	0.008 ft/ft
Velocity	4.42 ft/s
Velocity Head	0.30 ft
Specific Energy	0.84 ft
Froude Number	1.133
Maximum Discharge	1,057.78 gpm
Discharge Full	983.33 gpm
Slope Full	0.006 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	65.0 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	6.5 in
Critical Depth	6.9 in
Channel Slope	0.010 ft/ft
Critical Slope	0.008 ft/ft

APPENDIX II

10" Shea Offsite Sewer @ 1.0% - Peak Flow w/ City Flow Monitoring

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.010 ft/ft
Diameter	10.0 in
Discharge	401.76 gpm

Results	
Normal Depth	4.4 in
Flow Area	0.2 ft²
Wetted Perimeter	1.2 ft
Hydraulic Radius	2.3 in
Top Width	0.83 ft
Critical Depth	5.0 in
Percent Full	44.5 %
Critical Slope	0.007 ft/ft
Velocity	3.82 ft/s
Velocity Head	0.23 ft
Specific Energy	0.60 ft
Froude Number	1.265
Maximum Discharge	1,057.78 gpm
Discharge Full	983.33 gpm
Slope Full	0.002 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	44.5 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	4.4 in
Critical Depth	5.0 in
Channel Slope	0.010 ft/ft
Critical Slope	0.007 ft/ft

APPENDIX II

SL1596 RDH Flow Study for City of Scottsdale

Richard Sacks, P.E.
City of Scottsdale Water Resources
9379 E. San Salvador Dr, Scottsdale, AZ 85258

SL1596 RDH Flow Study, 1 site total in Scottsdale, AZ from Friday 11-17-23 to Monday 11-27-23.

Equipment for Site: Hach 901 Logger with Flo-Dar Sensor (Area Velocity)**.**
The equipment was installed on Thursday, 11/16/23 with confined space entry, pipe size confirmed, sensor calibrated, and level depth confirmed to the flow level.

Duration of monitoring: 9-days including 2 weekends
Monitor: Flow (gpm), Level (in), and Velocity (fps)
Data logging: 5-minute intervals (No averaged intervals)

Calibration Performed: Calibration method using 8.00-inch target.
Target Measure: 8.00 in Meter Read: 8.00 in 11/16/2023 9:03 am

Meter Validation: PASSED

Location #1 located on Shea Blvd West of Scottsdale Rd
72” Diameter, Rim to Invert: 200.00 inches
10” VCP pipe, flowing East
No Lateral(s)
The pipe condition is intact and reasonably clean.
Scum line of 3.00 inches
Flo-Dar installed pointing upstream in the 10” pipe channel.

Flow Data is valid having no missing, erroneous, or anomalies with data.

Attached is a MS Excel summary showing level, velocity, and flow logged at 5-minute intervals during the monitoring period.

RDH Environmental Services
Jeff Schulte
Operations Manager
servicemanager@rdh-env.com

APPENDIX II

SL1596 RDH Flow Study for City of Scottsdale

Pictures:

APPENDIX II

SL1596 RDH Flow Study for City of Scottsdale

Period Summaries:

COS MH1 Period Summary: Flow				
Measures	**Value**	**Unit**	**Date**	**Time**
Max.	136.56	gpm	Saturday, November 18, 2023	1:50 PM
Min.	10.33	gpm	Friday, November 24, 2023	4:55 AM
Avg.	70.30	gpm		
Total	1,113,219.75	gal		

COS MH1 Period Summary: Level				
Measures	**Value**	**Unit**	**Date**	**Time**
Max.	3.00	in	Sunday, November 19, 2023	11:15 AM
Min.	1.32	in	Friday, November 24, 2023	5:05 AM
Avg.	2.31	in		

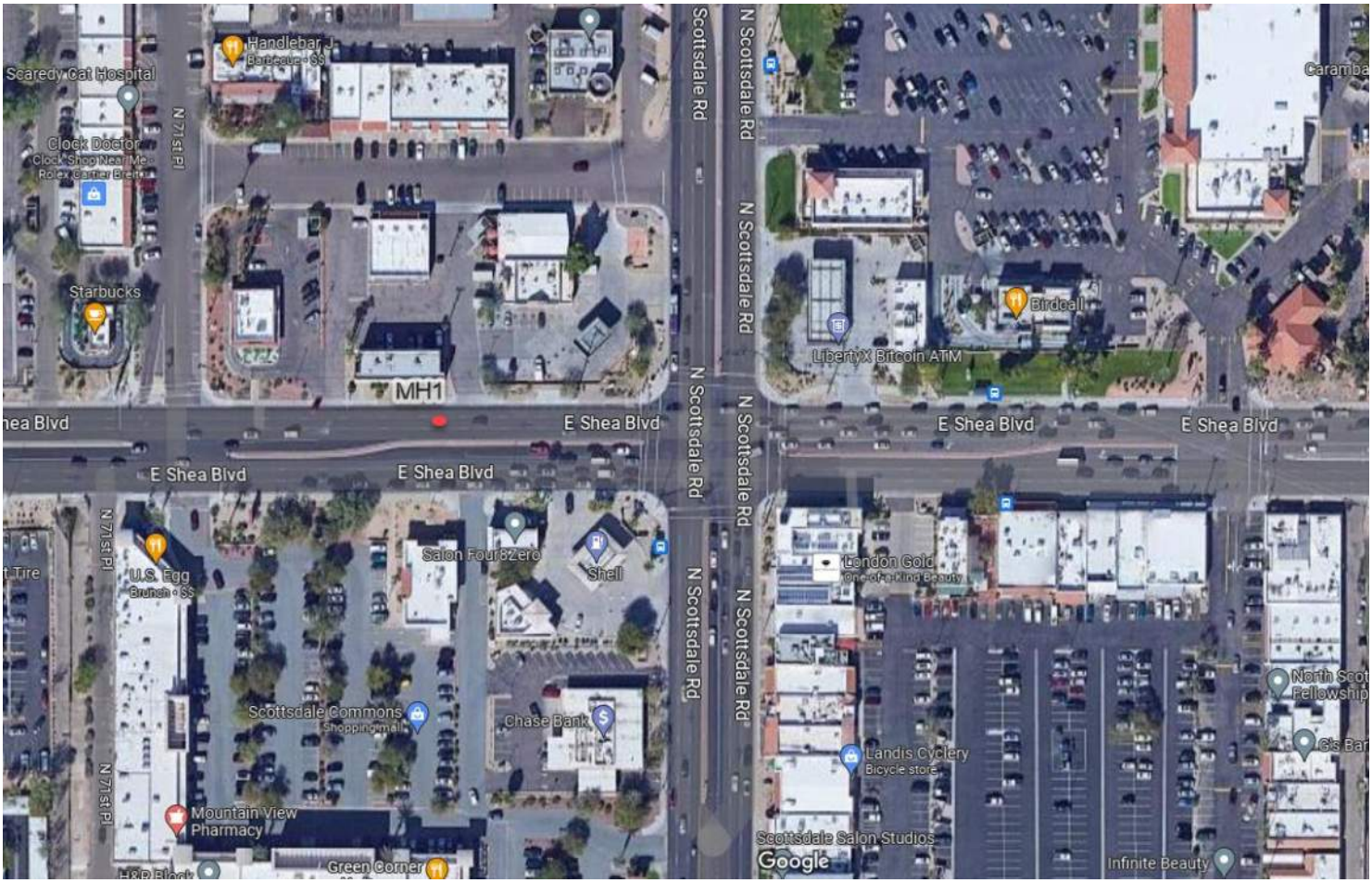
COS MH1 Period Summary: Velocity				
Measures	**Value**	**Unit**	**Date**	**Time**
Max.	2.29	fps	Saturday, November 18, 2023	1:45 PM
Min.	0.53	fps	Friday, November 24, 2023	4:55 AM
Avg.	1.51	fps		

*Data begins at 12:00 am on November 17th and ends at 11:55 pm on November 27th.

APPENDIX II

SL1596 RDH Flow Study for City of Scottsdale

Site Map:



APPENDIX II

CONFINED SPACE ENTRY PERMIT

ALL COPIES OF PERMIT WILL REMAIN AT JOB SITE UNTIL JOB IS COMPLETED

LOCATION/DESCRIPTION OF CONFINED SPACE: COS SL1596
DATE: 11-16-23
PURPOSE OF ENTRY: Flow Study
TIME: 8:30
EXPECTED HAZARDOUS: Gases
EXPIRATION: 11-16-23
COMMUNICATIONS: Hand & Verbal
ENTRY SUPERVISOR: Nick Albertson

SPECIAL REQUIREMENTS BEFORE ENTRY:	YES	NO		YES	NO
Lockout De-energize - Test and Verify		✓	Escape Harness Required	✓	
Lines Broken - Capped or Blanked		✓	Tripod Emergency Escape Unit	✓	
Purge - Flush and Vent		✓	Lifelines		✓
Ventilation		✓	Fire Extinguishers		✓
Secure Area (Post and Flag)	✓		Lighting (Explosion proof)	✓	
Breathing Apparatus		✓	Protective Clothing	✓	
Resucitator - Inhalator		✓	Respirator		✓

TEST INTERVAL: 15 Min

TEST(S) TO BE TAKEN / ACCEPTABLE ENTRY CONDITIONS
DO NOT ENTER IF PERMISSIBLE ENTRY LEVELS ARE EXCEEDED

	Permissible Entry Level			DATE	11-16	11-16								
				TESTER	NB	NA								
				TIME	8:25	9:00	9:05							
				AM/PM	M	M	M	M	M	M	M	M	M	M
% of Oxygen	19.5% to 23.5%				20.9	20.9	20.6							
^ of L.F.L.* (Gas/Vapor/Mist)	Less than 10%				0	0	0							
Carbon Monoxide	35 ppm (8 hr.)				0	0	0							
Aromatic Hydrocarbon	1 ppm (8 hr.)				0	0	0							
Hydrogen Sulfide	10 ppm (8 hr.)				0	0	0							
Sulfur Dioxide	2 ppm (8 hr.)				0	0	0							
Ammonia	25 ppm (8 hr.)				0	0	0							
					IN	OUT								

NAME OF GAS TERSTER(S)

NOTE: Continuous/periodic tests shall be established before beginning the job.
Any questions pertaining to test requirements should be directed to

TESTING INSTRUMENTS USED	NAME	TYPE	IDENTIFICATION NUMBER
Honeywell	BW Tech	GasAlertMax XT II	XT-XWHM-Y-NA MA215-026608

AUTHORIZED ENTRANTS
Zac Schultz

AUTHORIZED ATTENDANTS
Nick Albertson
Eric Gentile
Jordan Ashamboptci

PERMIT AUTHORIZATION

I certify that all actions and conditions necessary for safe entry have been performed

Nick Albertson	Nick Albertson
NAME (Print)	Signature
11-16-23	9:10
DATE	TIME

IN CASE OF AN EMERGENCY CALL 911

APPENDIX II

CONFINED SPACE ENTRY PERMIT

ALL COPIES OF PERMIT WILL REMAIN AT JOB SITE UNTIL JOB IS COMPLETED

LOCATION/DESCRIPTION OF CONFINED SPACE: COS SL1596
DATE: 11-28-23
PURPOSE OF ENTRY: Flow Study/Removal
TIME: 7:50
EXPECTED HAZARDOUS: Gases
EXPIRATION: 11-28-23
COMMUNICATIONS: Hand & Verbal
ENTRY SUPERVISOR: Nick Albertson

SPECIAL REQUIREMENTS BEFORE ENTRY:	YES	NO		YES	NO
Lockout De-energize - Test and Verify		N	Escape Harness Required	Y	
Lines Broken - Capped or Blanked		N	Tripod Emergency Escape Unit	Y	
Purge - Flush and Vent		N	Lifelines		N
Ventilation	Y		Fire Extinguishers		N
Secure Area (Post and Flag)	Y		Lighting (Explosion proof)	Y	
Breathing Apparatus		N	Protective Clothing	Y	
Resucitator - Inhalator		N	Respirator		N

TEST INTERVAL: 15 Min

TEST(S) TO BE TAKEN / ACCEPTABLE ENTRY CONDITIONS
DO NOT ENTER IF PERMISSIBLE ENTRY LEVELS ARE EXCEEDED

	Permissible Entry Level			DATE	11-28	11-28								
				TESTER	NA	NA								
				TIME	7:53	7:57								
				AM/PM	M	M	M	M	M	M	M	M	M	M
% of Oxygen	19.5% to 23.5%				20.9	20.9								
^ of L.F.L.* (Gas/Vapor/Mist)	Less than 10%				0	0								
Carbon Monoxide	35 ppm (8 hr.)				0	0								
Aromatic Hydrocarbon	1 ppm (8 hr.)				0	0								
Hydrogen Sulfide	10 ppm (8 hr.)				2	0								
Sulfur Dioxide	2 ppm (8 hr.)				0	0								
Ammonia	25 ppm (8 hr.)				0	0								

NAME OF GAS TERSTER(S)

NOTE: Continuous/periodic tests shall be established before beginning the job.
Any questions pertaining to test requirements should be directed to

TESTING INSTRUMENTS USED	NAME	TYPE	IDENTIFICATION NUMBER
Honeywell	BW Tech	GasAlertMax XT II	XT-XWHM-Y-NA MA215-026608

AUTHORIZED ENTRANTS
Zac Schultz

AUTHORIZED ATTENDANTS
Nick Albertson
Scott Azzarborski
Eric Gendile

PERMIT AUTHORIZATION

I certify that all actions and conditions necessary for safe entry have been performed

Nick Albertson — Signature
NAME (Print)

11-28-23 — DATE
8:00 — TIME

IN CASE OF AN EMERGENCY CALL 911