PRELIMINARY SEWER REPORT

ARTISAN SCOTTSDALE

SWC Indian School Rd. & Marshall Way
Scottsdale, AZ 85251

Prepared For:

Prepared For:

Jackson Dearborn

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Chicago, IL 60607
Phone: 312-878-7362

Prepared by:

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

Project Number: 200708

Submittal Date: February 2, 2021

PRELIMINARY Basis of Design Report

☐ ACCEPTED
☑ ACCEPTED AS NOTED
☐ REVISE AND RESUBMIT

CITY OF SCOTTSDALE
SCOTTSDALE WATER
9379 E San Salvador Dr.
Scottsdale, AZ 85258

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 ldillon **DATE** 4/26/2021

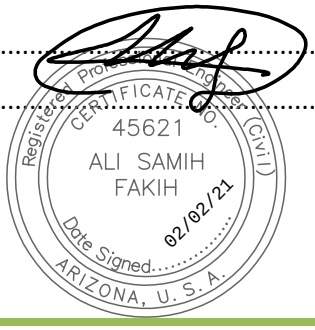
Address comments below and herein on final BOD in DR phase. Note required zoning stipulations.

1. Stipulation: Construct approximately 350ft of 8" SDR-35 sewer. Connect at Goldwater Blvd existing manhole.
2. Stipulation: Construct three(3) new 4-foot diameter manholes. Two (2) on new sewer line, One (1) on east side of proposed buildings.
3. Stipulation: Modify existing manhole and based on Goldwater Blvd to provide MAG detail 426 type B drop manhole connection. Reconstruct base channels to accept new sewer line.
4. Stipulation: Remove approximately 438ft of existing 8" sewer in alley. Line not to be abandoned in-place. Shown as to be removed on utility plan herein.
5. Confirm in final BOD submitted with DR case that south building flows will be routed to Marshall Rd. sewer. Show connection to new manhole.
6. In final BOD submitted with DR case on sewer profile show proposed alley grade and new proposed water line and necessary clearances.

Registered Professional Engineer (Civil)
CERTIFICATE NO.
45621
ALI SAMIH FAKIH
Date Signed 02/02/21
ARIZONA, U. S. A.

3-ZN-2021
3/30/2021

Table of Contents



LIST OF TABLES:

LIST OF FIGURES:

APPENDIX:

1. INTRODUCTION

1.1 SUMMARY OF PROPOSED DEVELOPMENT:

The proposed development consists of a multifamily residential use with commercial amenities located south of Indian School Road and west of Marshall Way Road in Scottsdale Arizona. The lot area is approximately 35,696 sf (0.82 acres) per the A.L.T.A. Survey performed by AW Land Surveying, LLC , 08/10/2020. The two proposed buildings will have a maximum of five floors and include approximately 83 residential units and 7,500 square feet of retail and amenities.

1.2 REPORT INTENT:

This report is being prepared to evaluate the existing and proposed wastewater demands compliant to the City's 2018 Design Standards and Policies Manual and the projects impact to the area's wastewater collection system along Marshall Way.

1.3 SITE and LEGAL DESCRIPTION:

The project property consists six land parcels north and south of the existing 14' alley located in the NE ¼ of Section 27, Township 2 North, Range 4 East of the Gila and Salt River Base and Meridian, Maricopa County.

- Assessor Parcel Numbers: 130-12-033B, 130-12-031B, 130-12-032B, 130-12-045,130-12-046B, 130-12-047A

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 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 evaluate the wastewater infrastructure consists of utilizing the DS+PM unit demands for onsite flows. Sewer pipe hydraulic capacities will be analyzing to assure conformance to the City's DS+PM 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 is zoned C-2. Land uses consist of existing parking area.

3.2 EXISTING TOPOGRAPHY, VEGETATION AND LANDFORM FEATURES:

The site has approximately four feet of fall from Indian School Road to 1st Avenue in a south east direction. The site is covered with paved parking, and decomposed granite 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. A small portion of the northwest corner is designated as Zone "X" shaded, it is defined as areas determined to be an area of 0.2% annual chance flooding with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance. Refer to **FIGURE 3** for an excerpt from the FIRM.

3.3 EXISTING SEWER MAINS:

City of Scottsdale Q-S 16-44 includes the proposed development. Existing sewer lines consist of:

- An 8" of unknown material type is running west to east along the Alley.
- An 8" of unknown material type under Marshall Way flowing south and connecting to a 12" DIP sewer trunk line near 2nd Street.
- An 18" vitreous clay pipe (VCP) running from north to south under Goldwater Boulevard.
- A 10" VCP pipe running from west to east in Indian School Road.

Refer to **FIGURE 4** for the referenced COS sewer Q-S Maps.

4. PROPOSED CONDITIONS

remove as called out on utility plan herein

4.1 SITE PLAN:

The property is proposed to be re-developed as residential apartment use with supporting commercial and underground parking structure. Development will include the reconstruction of existing driveway entrances from Marshall Way and 1st Street.

4.2 PROPOSED SEWER SYSTEM:

The City has the existing 8" sewer line running west to east along the alley can be abandoned. A new 8" PVC sewer line will be constructed along the alley conveying proposed and existing flow west to Goldwater Boulevard. Sanitary sewer service will be provided by connections to the proposed 8" line. Existing sewer service connections will be connected to the new 8" main line. **APPENDIX II** for the preliminary utility plan.

4.3 SEWER REQUIREMENTS:

The City's design standards govern pipe hydraulics. Sewer should be designed to provide 2.5 fps full flow velocity while not exceeding 15 fps. The design depth over diameter (d/D) ratio of the pipe shall not exceed 0.65 for pipes 12" or less. Service lines will be a minimum 6" diameter at 1% minimum slope.

4.4 MAINTENANCE RESPONSIBILITIES:

The on-site sewer service lines will be private and maintained by the property owner. The new 8" line will be public, maintained by the City.

Your are taking 20gpm of existing commerical flows off of Marshal Way/Osborn sewer and placing about the equivalent back...therefore no net change. If more than about 20gpm is routed south an in-lieu payment may be required.

5. SEWER SYSTEM COMPUTATIONS

5.1 ONSITE SEWER DEMANDS:

The proposed development at the site consists of residential apartment units including retail and amenity facilities. 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
Retail/Amenities	0.5	per sq. ft.	3
Commercial	0.5	per sq. ft.	3

TABLE 2: ARTISAN SCOTTSDALE ONSITE SEWER DEMAND CALCULATIONS PER DS+PM

Land Use	Count	Unit	ADD per Unit (gpd)	Avg. Day Demand (gpm)	Peak Demand (gpm)
High Density Residential (North Bldg)	53	Units	140	5.2	23.2
High Density Residential (South Bldg)	30	Units	140	2.9	13.1
Retail/Amenities	7,500	Sq. Ft.	0.5	2.6	8.0
			Totals	**10.7**	**44.3**

5.2 OFFSITE SEWER DEMANDS:

The peak flows for the existing developments discharging to the existing 8" sewer line along the Alley were assumed to be the following:

TABLE 3: OFFSITE CALCULATED WASTEWATER DEMANDS - EXISTING DEVELOPMENTS

Use	Sq. Ft.	Units	ADD per Unit (gpd)	Avg. Day Demand (gpm)	Peak Demand (gpm)
APN:130-12-975 (Commercial)	6,489	per sq. ft.	0.5	2.3	6.8
APN:130-12-041 (Commercial)	5,008	per sq. ft.	0.5	1.7	5.2
APN:130-12-042A (Commercial)	3,011	per sq. ft.	0.5	1.0	3.1

3-ZN-2021
3/30/2021

APN:130-12-043A (Commercial)	1,693	per sq. ft.	0.5	0.6	1.8
APN:130-12-044 (Commercial)	1,335	per sq. ft.	0.5	0.5	1.4
APN:130-12-035B (Commercial)	1,655	per sq. ft.	0.5	0.6	1.7
			Totals	**6.7**	**20.0**

Based on the DS&PM design criteria, an additional peak flow of approximately 20 gpm is conveyed through the existing 8" line along the Alley.

ok, but utility plan seems to indicate south building being routed to the manhole/sewer to the east that goes to Marshal Way

5.3 SEWER SYSTEM ANALYSIS:

The proposed development will discharge to the proposed 8" sewer line along the alley that ultimately discharges to the 18" VCP line along Goldwater Boulevard.

Per Tables 2 and 3 the peak flows conveyed through the proposed 8" will be as follows:

Table 4: TOTAL PEAK FLOWS TO THE PROPOSED 8" SEWER IN THE ALLEY

Project	Avg. Day Demand (gpm)	Peak Demand (gpm)
ARTISAN SCOTTSDALE	10.7	44.3
Existing Developments Peak Flow	6.7	20.0
	Total Peak Flow	**64.2**

Hydraulic calculations provided in **APPENDIX I** indicate 279 gpm is available for the 8-inch (S=0.52%) at a pipe d/D = 0.65.

TABLE 5 - CALCULATED PIPE HYDRAULICS SUMMARY

Scenario	Sewer Demand (gpm)	n-value	Slope (ft/ft)	Depth (in)	Velocity (fps)	Available Capacity (gpm)
Peak Offsite Flow	64.2	0.013	0.0052	2.1	1.84	-
d/D=0.65	-	0.013	0.0052	5.2	2.71	**279.41**

The proposed 8" sewer line is capable of conveying the proposed development's peak flow.

6. SUMMARY

6.1 SUMMARY OF PROPOSED SEWER IMPROVEMENTS:

- The proposed 8" sewer main was evaluated in accordance with City of Scottsdale's design standards and policies[2].
    - Minimum 2.5 fps full flow velocity is provided.

3-ZN-2021
3/30/2021

- Maximum d/D = 0.65 is not exceeded.
- 15 fps maximum velocity is not exceeded.

- 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:

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

7 SUPPORTING MAPS

7.1 SITE UTILITY PLAN

Refer to Preliminary Utility Plan in **APPENDIX II.**

8 REFERENCES

1. *COS QS Sewer Plan number 17-45*
2. *City of Scottsdale Design Standards & Policies Manual, 2018 (Chapter 7 – Sewer)*
3. *Final Basis of Design for Wastewater Canopy by Hilton prepared by Sustainability Engineering Group. Dated November 21, 2018.*

FIGURES –

1. Aerial Map
2. Vicinity Map
3. FEMA FIRM Map
4. Water Q-S 16-44

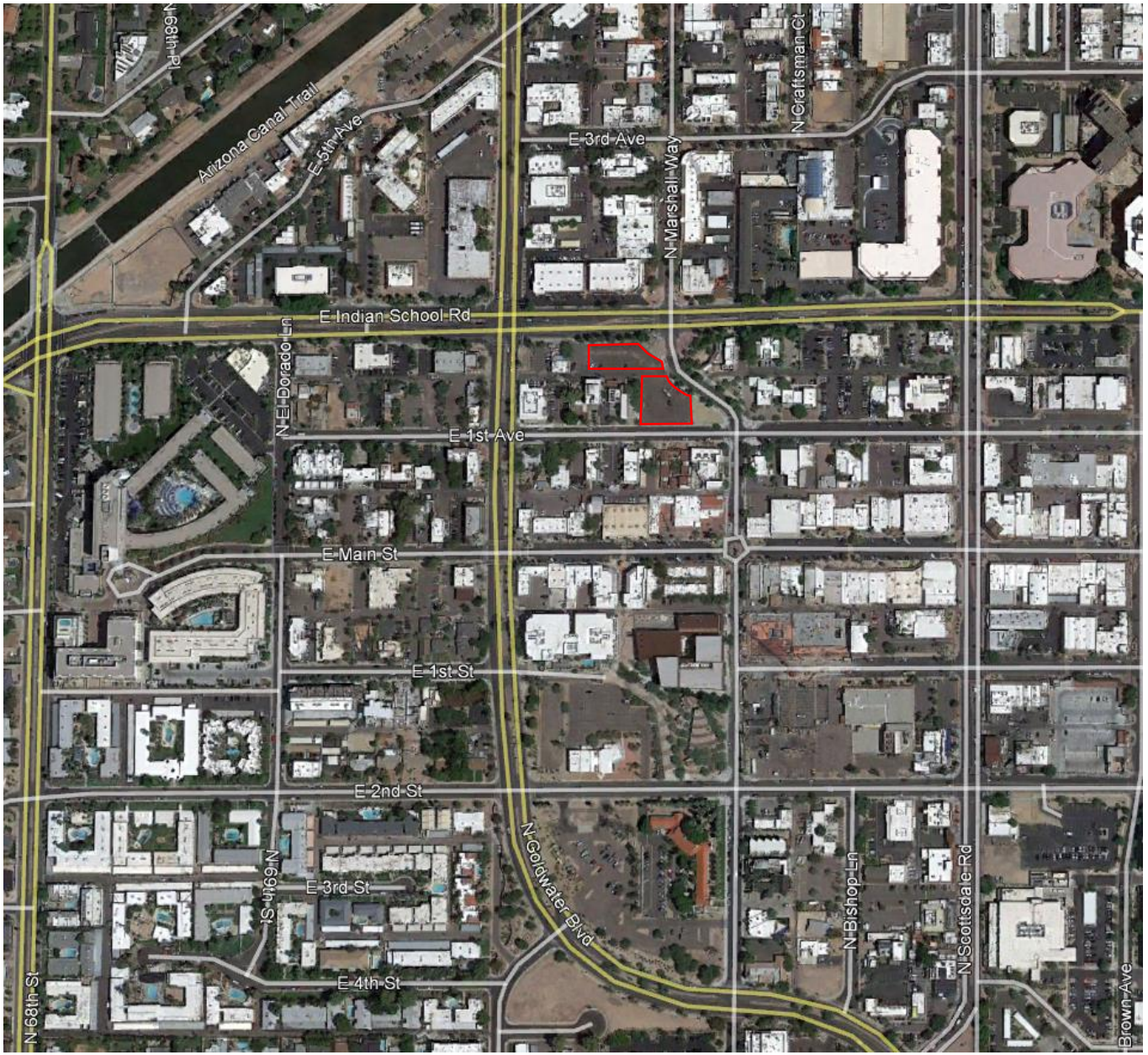


FIGURE 1
VICINITY MAP

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

FIGURE 2
AERIAL MAP

NOTES TO USERS

This map is for use in administering the Nation Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Arizona State Plane Central zone (FIPSZONE 0202). The **horizontal datum** was NAD 83 HARN, GRS1980 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988 (NAVD 88). These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. Map users wishing to obtain flood elevations referenced to the National Geodetic Vertical Datum of 1929 (NGVD 29) may use the following Maricopa County website application: http://www.fcd.maricopa.gov/Maps/gismaps/appa/gdacs/application/index.cfm

This web tool allows users to obtain point-specific datum conversion values by zooming in and hovering over a VERTCON checkbox on the layers menu on the left side of the screen. The VERTCON grid referenced in this web application was also used to convert existing flood elevations from NGVD 29 to NAVD 88.

To obtain current elevation, description, and/or location information for National Geodetic Survey bench marks shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at http://www.ngs.noaa.gov. To obtain information about Geodetic Densification and Cadastral Survey bench marks produced by the Maricopa County Department of Transportation, please visit the Flood Control District of Maricopa County website at: http://www.fcd.maricopa.gov/Maps/gismaps/apps/gdacs/application/index.cfm.

Base map information shown on this FIRM was derived from multiple sources. Aerial imagery was provided in digital format by the Maricopa County Department of Public Works, Flood Control District. The imagery is dated October 2009 to November 2009. Additional National Agricultural Imagery Program (NAIP) imagery was provided by the Arizona State Land Department (ALRIS) and is dated 2007. The coordinate system used for the production of the digital FIRM is State Plane Arizona Central NAD83 HARN, International Feet.

The **profile baseline** depicted on this map represents the hydraulic modeling baselines that match flood profiles in the FIS report. As a result of improved topographic data, the **profile baseline**, in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.

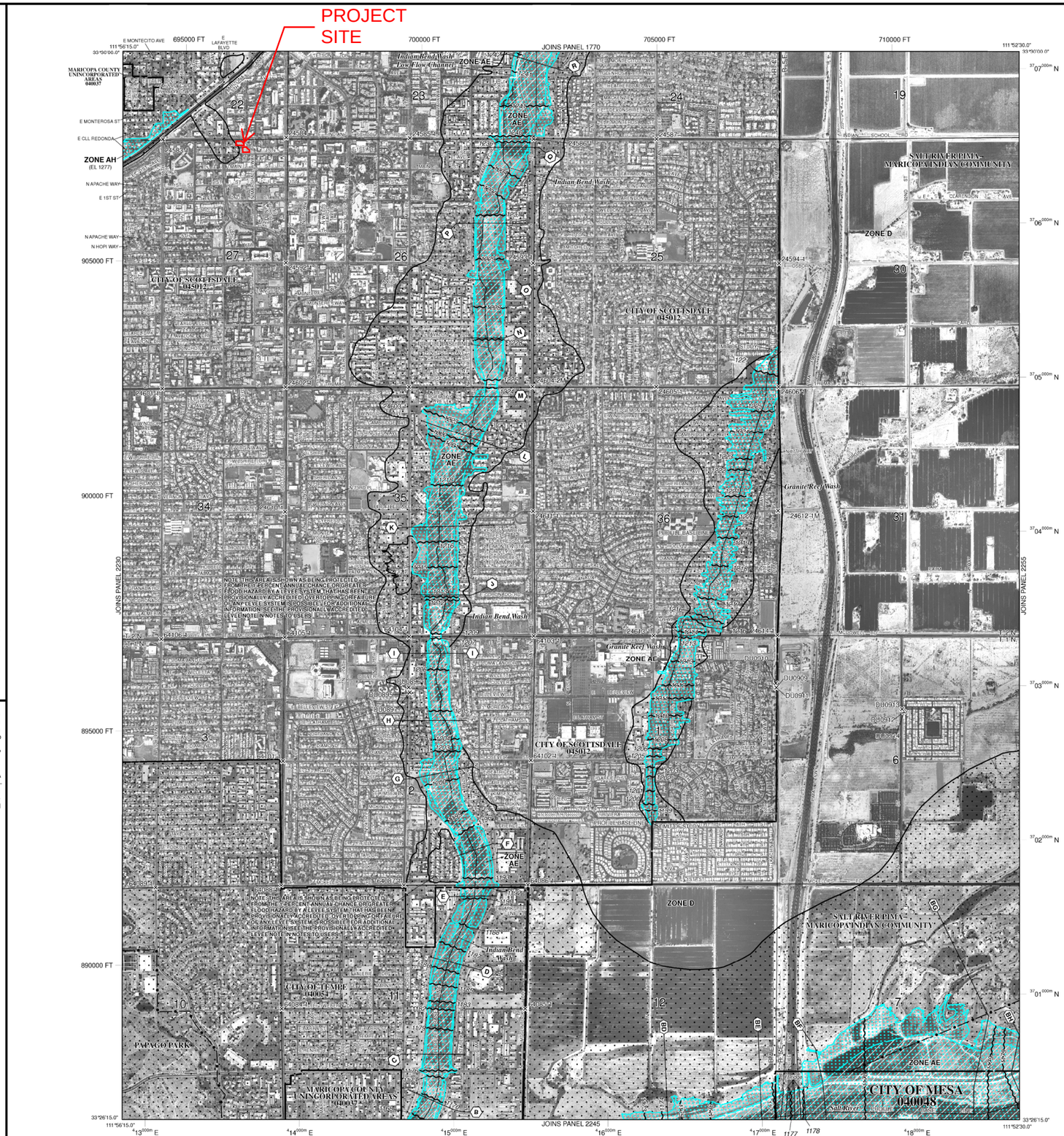
Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

For Information on available products associated with this FIRM, visit the **Map Service Center (MSC)** website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, or digital versions of this map. Many of these products can be ordered or obtained directly from the website.

If you have **questions about this map,** how to order products, or the National Flood Insurance Program in general, please call the **FEMA Map Information eXchange (FMIX)** at **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/.

Provisionally Accredited Levee Notes to Users: Check with your local community to obtain more information, such as the estimated level of protection provided (which may exceed the 1--percent--annual--chance level) and Emergency Action Plan, on the levee system(s) shown as providing protection for areas on this panel. Io maintain accreditation, the levee owner or community is required to submit the data and documentation necessary to comply with Section 65.10 of the NFIP regulations by June 25, 2011. If the community or owner does not provide the necessary data and documentation or if the data and documentation provided indicate the levee system does not comply with Section 65.10 requirements, FEMA will revise the flood hazard and risk information for this area to reflect de--accreditation of the levee system. To mitigate flood risk in residual risk areas, property owners and residents are encouraged to consider flood insurance and floodproofing or other protective measures. For more information on flood insurance, interested parties should visit the FEMA Website at http://www.fema.gov/business/nfip/index.shtm.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	1% annual chance floodplain boundary
	0.2% annual chance floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

A–A	Cross section line
23–23	Transect line
97°07'30", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4275000mN	1000-meter Universal Transverse Mercator grid ticks, zone 12
6000000 M	5000-foot grid ticks: Arizona State Plane coordinate system, central zone (FIPSZONE 0202), Transverse Mercator
DX5510	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
April 15, 1988

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
July 15, 2001 - September 30, 2005

October 16, 2013 –to advance suffix, to add floodway, to change base flood elevations, to change floodway, to update corporate limits, to add roads and road names, to incorporate previously issued letters of map revision, to add base flood elevation, and to add special flood hazard areas.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'
500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 2235L

FIRM
FLOOD INSURANCE RATE MAP
MARICOPA COUNTY, ARIZONA AND INCORPORATED AREAS

PANEL 2235 OF 4425
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
MARICOPA COUNTY	040037	2235	L
MESA, CITY OF	040046	2235	L
SCOTTSDALE, CITY OF	045012	2235	L
TEMPE, CITY OF	040054	2235	L

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
04013C2235L

MAP REVISED
OCTOBER 16, 2013

Federal Emergency Management Agenc

3-ZN-2021
3/30/2021

17-44

16-43

16-45

15-44

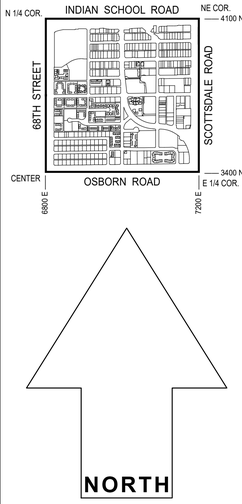
GENERAL NOTES:

- 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 (LS)
- Manhole (S)
- Non-GPS Point
- Plug
- Sewer Service Point
- Sewer Tap Point
- Sewer Valve
- Treatment Plant
- Sewer Main - Gravity
- Sewer Main - Force (Force)
- Sewer Main - Private

VICINITY MAP



SEWER

QUARTER SECTION MAP

16-44

NE 1/4 SEC. 27 T2N R4E

FIGURE 4

CITY OF SCOTTSDALE

SCOTTSDALE GEOGRAPHIC INFORMATION SYSTEMS

3629 North Drinkwater Boulevard
Scottsdale, Arizona 85251

07-JUN-20

3-ZN-2021
3/30/2021

APPENDIX I

SEWER PIPE HYDRAULICS

Proposed 8" at S=0.0052 ft/ft, d/D=0.65

Project Description	
Friction Method	Manning Formula
Solve For	Discharge

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.0052 ft/ft
Normal Depth	5.2 in
Diameter	8.0 in

Results	
Discharge	295.82 gal/min
Flow Area	0.2 ft²
Wetted Perimeter	1.3 ft
Hydraulic Radius	2.3 in
Top Width	0.64 ft
Critical Depth	4.6 in
Percent Full	65.0 %
Critical Slope	0.0076 ft/ft
Velocity	2.74 ft/s
Velocity Head	0.12 ft
Specific Energy	0.55 ft
Froude Number	0.787
Maximum Discharge	420.70 gal/min
Discharge Full	391.09 gal/min
Slope Full	0.0030 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	0.0 %
Downstream Velocity	0.00 ft/s
Upstream Velocity	0.00 ft/s
Normal Depth	5.2 in
Critical Depth	4.6 in
Channel Slope	0.0052 ft/ft
Critical Slope	0.0076 ft/ft

Proposed 8" at S=0.0052 ft/ft, Q=64.1gpm

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data		
Roughness Coefficient	0.013	
Channel Slope	0.0065	ft/ft
Diameter	8.0	in
Discharge	64.10	gal/min

Results		
Normal Depth	2.1	in
Flow Area	0.1	ft²
Wetted Perimeter	0.7	ft
Hydraulic Radius	1.2	in
Top Width	0.58	ft
Critical Depth	2.1	in
Percent Full	25.9	%
Critical Slope	0.0065	ft/ft
Velocity	1.99	ft/s
Velocity Head	0.06	ft
Specific Energy	0.23	ft
Froude Number	1.004	
Maximum Discharge	470.35	gal/min
Discharge Full	437.25	gal/min
Slope Full	0.0001	ft/ft
Flow Type	Critical	

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	25.9	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.1	in
Critical Depth	2.1	in
Channel Slope	0.0065	ft/ft
Critical Slope	0.0065	ft/ft

APPENDIX II

PRELIMINARY UTILITY EXHIBIT

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

DEVELOPER:
JACKSON DEARBORN
404 S. WELLS ST. SUITE 400
CHICAGO, IL 60607
312-878-7362
ATTN: RYAN TOBIAS

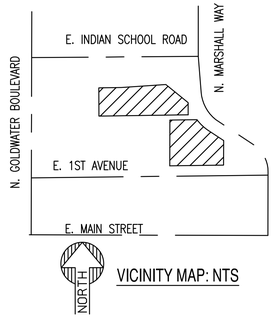
ARCHITECT:
SWABACK PLLC
7550 E. MCDONALD DR. SUITE A
SCOTTSDALE, AZ 85250
480-367-2100
ATTN: JEFFREY DENZAK

OWNER:
DENEFICIARY TRUST
810 W. HOWE ST.
TEMPE AZ 85281
480-367-2100
ATTN: BENJAMIN FUNKE

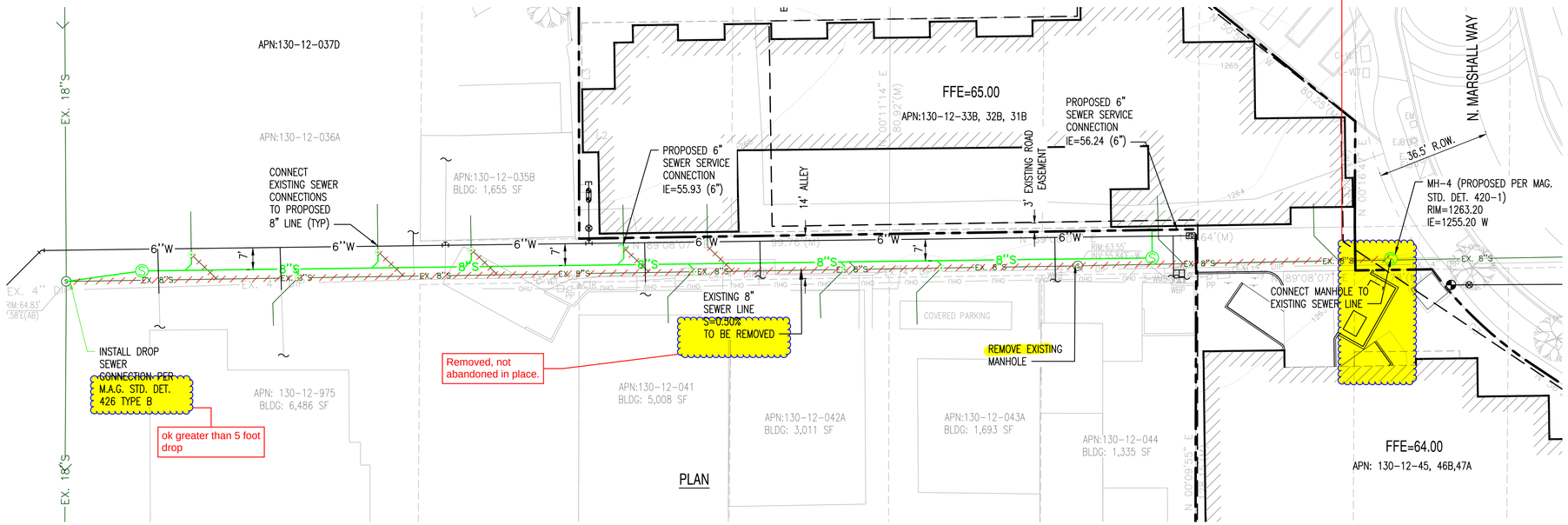
ARTISAN SCOTTSDALE

SWC INDIAN SCHOOL RD & MARSHALL WAY
SCOTTSDALE, AZ 85251
PRELIMINARY SEWER EXHIBIT

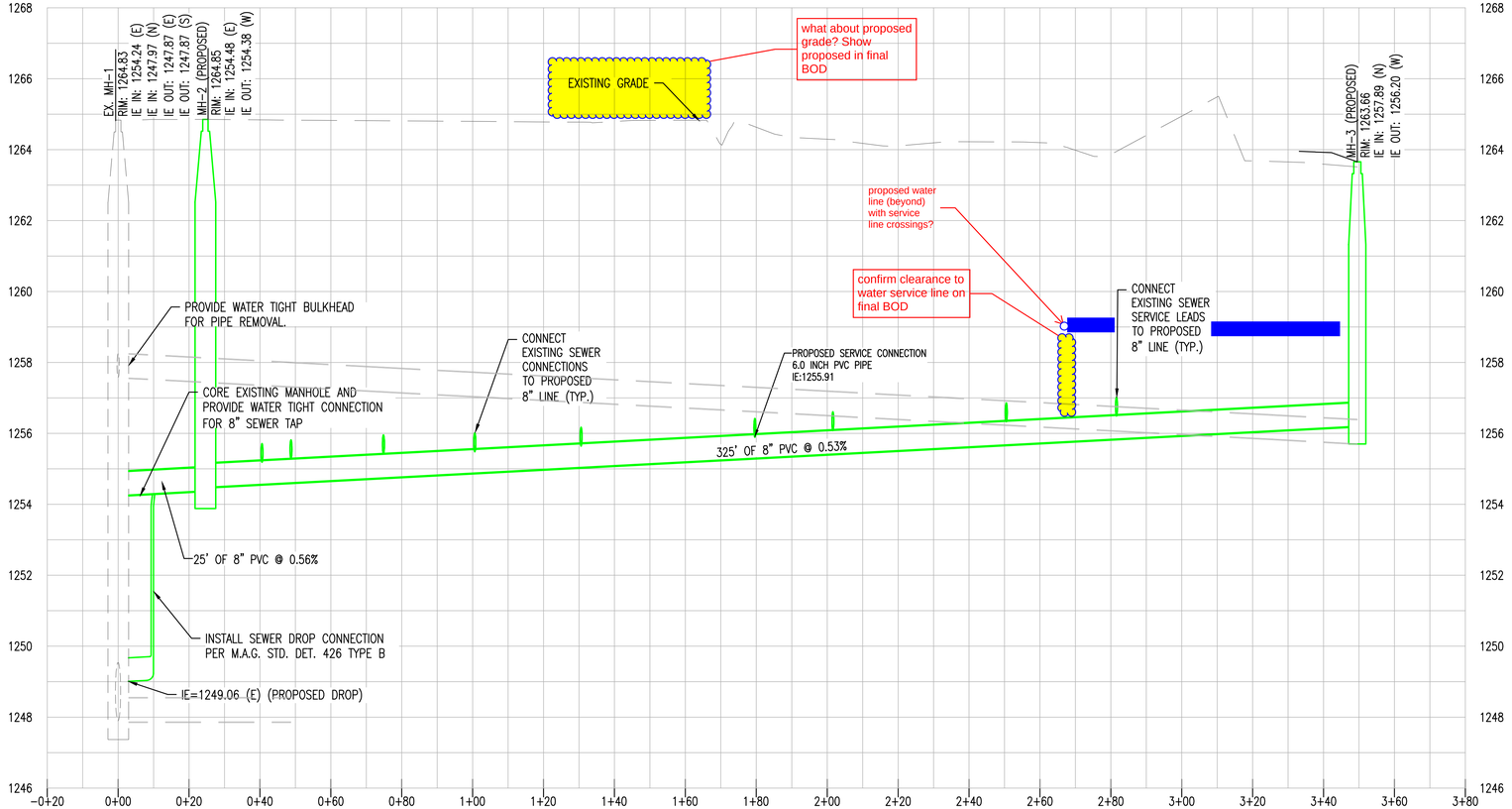
this indicates that the south building will connect to this manhole



VICINITY MAP: NTS



PLAN



PROFILE

EXISTING LEGEND

- EX. W — EXISTING WATER LINE
- EX. S — EXISTING SEWER LINE
- PROPERTY LINE
- EXISTING ROAD EASEMENT

PROPOSED LEGEND

- PROPOSED SEWER LINE
- SEWER MANHOLE
- UNDERGROUND STRUCTURE EASEMENT
- REMOVAL LIMITS

NORTH

SCALE: 1" = 20'

PRELIMINARY
NOT FOR
CONSTRUCTION

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

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

PROJECT: SUB4
LOCATION: SWC OF INDIAN SCHOOL ROAD AND MARSHALL WAY

DRAWN	LP	01/11/2021
DESIGNED	LP	01/11/2021
QC		
QA		
PROJ. MGR.	AF	

DATE: 01/11/2021
ISSUED FOR: REZONING

REVISION NO.:	DATE:
1	
2	
3	
4	

JOB NO.: 200708

SHEET TITLE: PRELIMINARY UTILITY EXHIBIT (SEWER PLAN AND PROFILE)

PAGE NO.: 2 OF 2
SHEET NO.: C4.11

LOCATION: Z:\SHARED\PROJECTS\JACKSON DEARBORN PARTNERS-SWAABACK\MARSHAL WAY-SCOTTSDALE-200708\11 CAD (SEG)\11.2 ENTITLEMENT-PLANNING\200708-PRELIMINARY UTILITY PLAN.DWG SAVED BY: LAPTOP02 DATE: 1/29/2021

3-ZN-2021
3/30/2021