Preliminary Sewer Basis of Design Report for Zoning Case at The Collector's Garages at Westworld 9909 E. McDowell Mountain Ranch Road Scottsdale, Arizona 85260

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 MRahman and RRahman **DATE** 6/17/2025

In the Final BOD, show the profiles for all the sewer lines and show and label storm drain and waterline crossings on these profiles in the Utility Plan. Show and label the horizontal and vertical clearances between the sewer lines and the storm drain and waterlines. Also, show vertical cover over the sewer lines and waterline.

Prepared by:
Hunter Engineering, Inc.
10446 North 74th Street, #140
Scottsdale, AZ 85258

Preliminary Sewer Basis of Design Report for Zoning Case at The Collector's Garages at Westworld 9909 E. McDowell Mountain Ranch Road Scottsdale, Arizona 85260

PREPARED FOR:

LGE DESIGN BUILD
1200 NORTH 52ND STREET
PHOENIX, AZ 85008

PREPARED BY:

GRANT HIRNEISE
HUNTER ENGINEERING, INC.
10446 NORTH 74TH STREET, #140
SCOTTSDALE, AZ 85258
(480) 991-3985

H.E. PROJECT NO. LGEC324

Table of Contents

1.0 INTRODUCTION

This preliminary sewer basis of design report has been prepared under a contract from LGE Design Build, developer of The Collector's Garages at Westworld project. The purpose of this report is to provide a preliminary sewer analysis, required by the City of Scottsdale, to support this development. Preparation of this report has been done according to the procedures detailed in Chapter 4 of the *City of Scottsdale Design Standards & Policies Manual dated January, 2018 (CSDSPM) (Reference 1)*.

This development project is located along the south side of McDowell Mountain Ranch Road just northwest of Thompson Peak Pkwy within the City of Scottsdale, Maricopa County, Arizona. The proposed project is currently two undeveloped parcels within the Westworld master development.

The existing parcel is bound by McDowell Mountain Ranch Road to the north, existing development to the west, and a City of Scottsdale park to the south and west. The site is specifically located within a portion of Section 5, Township 3 North, Range 5 East, of the Gila and Salt River Base and Meridian. Figure 1, in Appendix A, illustrates the location of the project site in relation to the City of Scottsdale street system. Access to the site is provided off of McDowell Mountain Ranch Road.

The development proposes the construction of five new auto garage buildings along with a clubhouse. Site improvements will include construction of a driveway entrance, parking lot, sidewalk, landscaping, and supporting infrastructure including storm drain, water, sewer and fire lines. The overall project site is approximately 5 acres.

2.0 EXISTING CONDITIONS

There is an existing 8” ductile iron sewer within McDowell Mountain Ranch Road adjacent to the site that the project will tie in to. This existing line runs west in McDowel Mountain Ranch Road, ultimately increasing in size to 24” at the Westworld Complex west of the project site. A Flow Monitoring Report was conducted on this 24” main near the Westworld Complex. The max level at any one interval was 10” or a d/D of 0.42. The max flow at any one interval was 979 gpm with an average flow of 598 gpm. The results are included in Appendix D of this report.

3.0 PROPOSED SEWER COLLECTION SYSTEM

This project proposes to connect to the existing sewer line with a proposed manhole on the above-mentioned sewer line. From this point into the site, the sewer will be private. See the Concept Utility Plans in Appendix A for the proposed service stub location and size.

It is anticipated the proposed buildings will be auto garages in addition to a local clubhouse building. Per Figure 7-1.2 Average Day Sewer Demand in the City of Scottsdale *Design Standards & Policies Manual,* a demand of 0.5 gallons per day per square foot (commercial) was

used for the proposed project. The design peaking factor is 3.0. See Appendix B for a summary of these calculations.

According to the calculations provided in Appendix B, the proposed site will have an estimated Average Daily Flow total of 25.9 gpm and a Peak Hour Flow of 77.6 gpm. Each building will have its own service with the highest building sewer demand of 21.7 gpm. The final plumbing design for the buildings is not complete at this time. Therefore, the proposed sewer service is calculated based on the minimum 1.2% for a 8" sewer service for each building.

The capacity of the proposed private 8" sewer service line at the minimum slope is 284 gpm on a max d/D ratio of 0.49, which is greater than the Peak Hour Flow of 21.7 gpm for the largest building. Therefore, the max individual building flow will be less than the service capacity flows.

The sanitary sewer pipe and fitting material for this project has been designated as PVC SDR-35. Trenching and bedding details for this project are to be per MAG Standard Specifications Section 601. Trench width above the installed pipe may be as wide as necessary to properly brace/install the work. Bedding backfill and compaction shall be installed per MAG Standard Specification 601.4. Service lines should connect to sewer according to MAG Standard Detail No. 440-3.

4.0 CONCLUSIONS

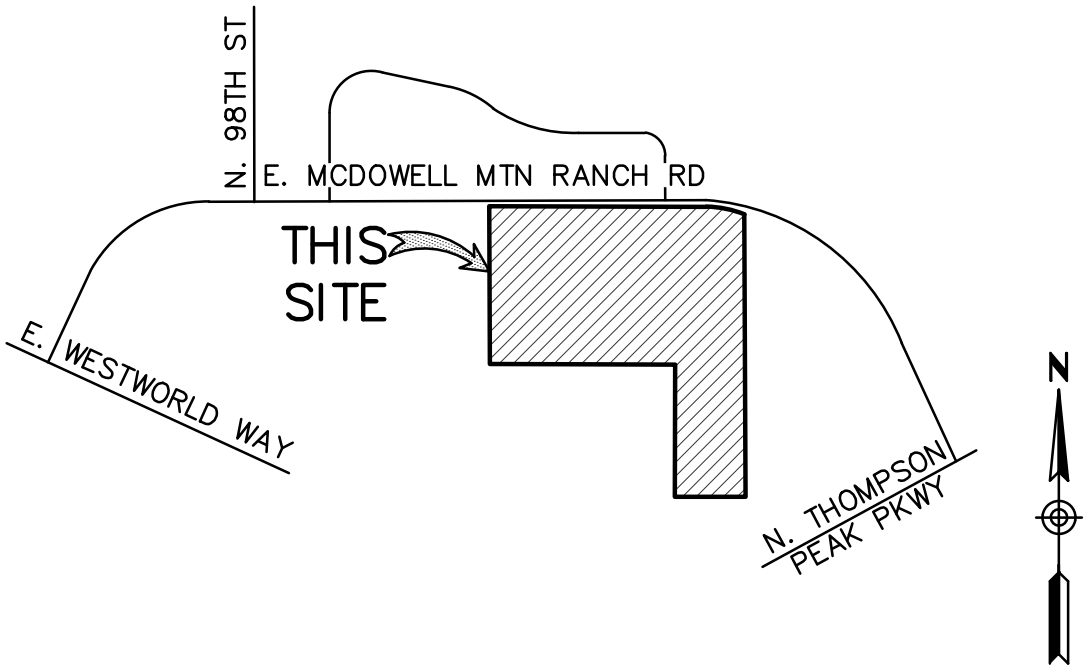
Based on the results of this study, it can be concluded that:

- The proposed sewer services are adequate to support this development.

5.0 REFERENCES

1) City of Scottsdale Design Standard & Policies Manual, January 2018 (Ref 1).

APPENDIX A
FIGURES

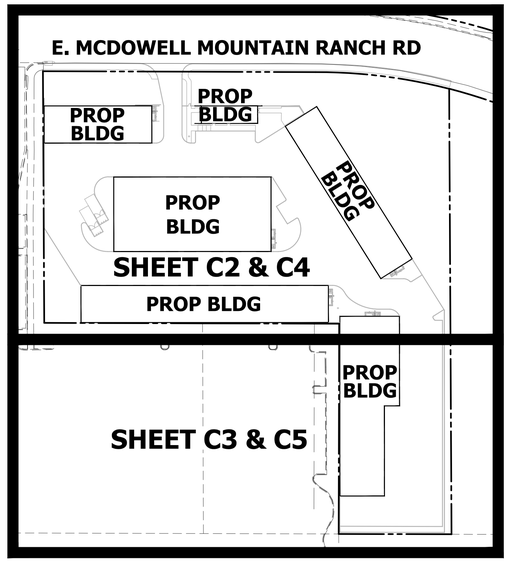


VICINITY MAP

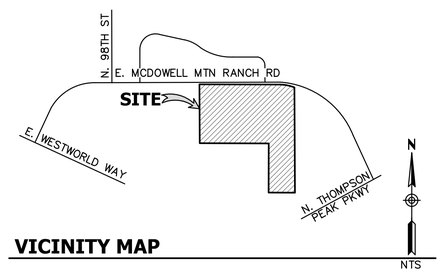
CONCEPTUAL GRADING, DRAINAGE & UTILITY
FOR
THE COLLECTOR'S GARAGES AT WESTWORLD

9909 E. MCDOWELL MOUNTAIN RANCH ROAD
SCOTTSDALE, ARIZONA

A PORTION OF SOUTHWEST QUARTER OF SECTION 5, TOWNSHIP 3 NORTH, RANGE 5 EAST, OF THE GILA AND SALT RIVER MERIDIAN, MARICOPA COUNTY, ARIZONA.



KEY MAP — NTS



VICINITY MAP

LEGAL DESCRIPTION

PARCEL 1 LOT 38, SECTION 5, TOWNSHIP 3 NORTH, RANGE 5 EAST OF THE GILA AND SALT RIVER MERIDIAN, MARICOPA COUNTY, ARIZONA; EXCEPT THE SOUTH 280.00 FEET; AND ALSO EXCEPT THE WEST 120.00 FEET OF SAID LOT 38, LYING NORTH OF SAID SOUTH 280.00 FEET OF LOT 38; ALSO EXCEPT THAT PORTION DEEDED TO THE CITY OF SCOTTSDALE BY INSTRUMENT RECORDED NOVEMBER 24, 1999 AT RECORDERS NO. 99–1069622, DESCRIBED AS FOLLOWS: THAT PART OF THE SOUTHWEST QUARTER OF SECTION 5, TOWNSHIP 3 NORTH, RANGE 5 EAST OF THE GILA AND SALT RIVER MERIDIAN COMMENCING AT THE CENTER OF SAID SOUTHWEST QUARTER, SAID POINT ALSO BEING THE NORTHEAST CORNER OF LOT 33 OF SAID SECTION 5; THENCE NORTH 89 DEGREES 50 MINUTES 16 SECONDS WEST ALONG THE NORTH LINE OF SAID LOT 33, A DISTANCE OF 329.93 FEET TO THE NORTHWEST CORNER OF SAID LOT 33, SAID POINT ALSO BEING THE NORTHEAST CORNER OF LOT 34; THENCE CONTINUING NORTH 89 DEGREES 50 MINUTES 16 SECONDS WEST ALONG THE NORTH LINE OF SAID LOT 34, A DISTANCE OF 329.93 FEET TO THE NORTHWEST CORNER OF SAID LOT 34, SAID POINT ALSO BEING THE NORTHEAST CORNER OF LOT 35; THENCE SOUTH 00 DEGREES 15 MINUTES 00 SECONDS EAST ALONG THE EAST LINE OF SAID LOT 35, A DISTANCE OF 660.26 FEET TO THE SOUTHEAST CORNER OF SAID LOT 35, SAID POINT ALSO BEING THE NORTHEAST CORNER OF LOT 38 AND THE TRUE POINT OF BEGINNING; THENCE SOUTH 00 DEGREES 12 MINUTES 30 SECONDS EAST ALONG THE EAST LINE OF SAID LOT 38, A DISTANCE OF 45.00 FEET TO A POINT; THENCE NORTH 89 DEGREES 44 MINUTES 14 SECONDS WEST PARALLEL TO THE NORTH LINE OF SAID LOT 38, A DISTANCE OF 210.50 FEET TO A POINT; THENCE NORTH 00 DEGREES 12 MINUTES 30 SECONDS WEST, A DISTANCE OF 45.00 FEET TO A POINT ON THE NORTH LINE OF SAID LOT 38; THENCE SOUTH 89 DEGREES 44 MINUTES 14 SECONDS EAST ALONG THE NORTH LINE OF SAID LOT 38, A DISTANCE OF 210.50 FEET TO THE TRUE POINT OF BEGINNING; AND ALSO EXCEPT ALL COAL, OIL, GAS AND OTHER MINERAL DEPOSITS AND EXCEPT ALL URANIUM, THORIUM OR ANY OTHER MATERIAL WHICH IS OR MAY BE DETERMINED TO BE PECULIARLY ESSENTIAL TO THE PRODUCTION OF FISSIONABLE MATERIALS WHETHER OF NOT OF COMMERCIAL VALUE, AS RESERVED IN PATENT FROM THE UNITED STATES OF AMERICA.
PARCEL 2 LOT 39, ACCORDING TO THE PLAT OF RECORD IN THE OFF OF THE COUNTY RECORDER OF MARICOPA COUNTY, ARIZONA RECORDED IN INSTRUMENT 99–0821451 LOT 39, SECTION 5, TOWNSHIP 3 NORTH, RANGE 5 EAST OF THE GILA AND SALT RIVER MERIDIAN, MARICOPA COUNTY, ARIZONA; EXCEPT THE WEST 180 FEET OF THE SOUTH 280 FEET THEREOF; AND ALSO EXCEPT THAT PORTION OF SAID LAND CONVEYED TO THE CITY OF SCOTTSDALE, A MUNICIPAL CORPORATION IN GENERAL WARRANTY DEED RECORDED AUGUST 31, 1999 AT RECORDERS NO. 99–0821451; AND ALSO EXCEPT ALL COAL, OIL, GAS AND OTHER MINERALS AND EXCEPT ALL URANIUM, THORIUM OR ANY OTHER MATERIAL WHICH IS OR MAY BE DETERMINED TO BE PECULIARLY ESSENTIAL TO THE PRODUCTION OF FISSIONABLE MATERIALS, WHETHER OR NOT OF COMMERCIAL VALUE AS RESERVED IN PATENT FROM THE UNITED STATES OF AMERICA.

UNDERGROUND STORMWATER STORAGE REQRUIEMENTS

UNDERGROUND STORMWATER STORAGE TANKS (USST) MUST MEET ALL CITY USST REQUIREMENTS IN SECTION 4–1.202 OF THE CITY DESIGN STANDARDS & POLICIES MANUAL (DSPM), WHICH INCLUDES BUT NOT LIMITED TO THE FOLLOWING: (THE DERIVED ITEMS BELOW ARE IDENTIFIED BY THE CORRESPONDING SECTION REFERENCE NUMBER)

C–3. THE OWNER MUST DEDICATE A PUBLIC DRAINAGE EASEMENT TO THE CITY WHICH MEETS THE STANDARDS FOR ALL DRAINAGE EASEMENTS. NO MAJOR VEGETATION SUCH AS TREES SHALL EXIST WITHIN THE EASEMENT. AT A MINIMUM, THE EASEMENT SHOULD EXTEND AT A 1:1 SLOPE STARTING AT THE BOTTOM OF THE SYSTEM, FROM THE OUTER SYSTEM'S WIDTH PROJECTED POINTS.

NOTE: THE DRAINAGE EASEMENT SHALL BE SHOWN ON THE PROJECT GRADING AND DRAINAGE PLAN AND OTHER APPLICABLE SHEETS. AT TIME OF SUBMITTAL OF FINAL PLANS, THE DRAINAGE EASEMENT SHALL BE DEDICATED THROUGH A SEPARATE SUBMITTAL TO THE CITY OF SCOTTSDALE.

C–4–E. THE USST MUST HAVE AT LEAST A 75–YEAR LIFE, INCLUDING THE LINING AND COATING.

C–4–F. THE USST SHALL DRAIN BY GRAVITY (SURFACE DRAINAGE). DRYWELLS ARE ACCEPTABLE WHEN DRAINAGE BY GRAVITY IS NOT FEASIBLE. PUMPS ARE ONLY ALLOWED WHEN NO OTHER FEASIBLE ALTERNATIVES EXIST.

D–2. WHEN PIPES ARE USED, THE USST MUST HAVE A SMOOTH INTERIOR FLOOR. SPECIFY MAG SUPPLEMENTAL STANDARD DETAIL 2554 FOR CORRUGATED METAL PIPES.

D–4. A MINIMUM OF TWO ACCESS POINTS, PER MAG STANDARDS, MUST BE PROVIDED FOR EACH USST.

E–1–B. AN OPERATIONS AND MAINTENANCE (O&M) MANUAL MUST BE PREPARED AND SUBMITTED ALONG WITH FINAL PLANS.

E–3. FINAL PLANS MUST INCLUDE SIGNS AT EACH END OF THE USST. THE SIGN SHOULD READ "NOTICE–UNDERGROUND STORMWATER STORAGE TANK".

E–4. A SIGNED AND NOTARIZED OWNERSHIP AND RESPONSIBILITY STATEMENT, IN A FORM SATISFACTORY TO THE CITY ATTORNEY, MUST BE PROVIDED PRIOR TO APPROVAL OF FINAL PLANS.

COMMUNITY NUMBER	PANEL # PANEL DATE	SUFFIX	DATE OF FIRM (INDEX DATE)	FIRM ZONE	BASE FLOOD ELEVATION (IN AO ZONE USE DEPTH)
04013C	1340 10–16–13	L	10/26/2013	ZONE A	NO BASE FLOOD ELEVATIONS DETERMINED
				ZONE X	

ENGINEER'S CERTIFICATION: THE LOWEST FLOOR ELEVATION(S) AND/OR FLOOD PROOFING ELEVATION(S) ON THIS PLAN ARE SUFFICIENTLY HIGH TO PROVIDE PROTECTION FROM FLOODING CAUSED BY A ONE–HUNDRED YEAR STORM, AND ARE IN ACCORDANCE WITH CITY OF SCOTTSDALE REVISED CODE, CHAPTER 37 – STORMWATER AND FLOODPLAIN MANAGEMENT.

SHEET INDEX

EXISTING LEGEND

CENTERLINE
RIGHT OF WAY
PROPERTY LINE
EASEMENT
MAJOR CONTOUR —1285—
MINOR CONTOUR —1283—
SANITARY SEWERLINE —SS—
WATERLINE —W—
CHAIN LINK FENCE
STREET LIGHT
SANITARY SEWER MANHOLE
WATER VALVE
FIRE HYDRANT
ELECTRICAL RISER
WATER METER
EX FLOW ARROW

PROPOSED LEGEND

CONTOUR 82
SEWERLINE SS
WATERLINE W
FIRELINE F
GRADE BREAK
STORM PIPE
FLOW ARROW
FIRE HYDRANT
TAPPING SLEEVE
DRYWELL
SPOT ELEVATION 00.00
CATCH BASIN
WATER METER
BACKFLOW PREVENTER
SIDEWALK
NAOS BOUNDARY
FEMA FLOOD BOUNDARY
SITE VISIBILITY

ABBREVIATIONS

APN	ASSESSOR PARCEL NUMBER	GR	GRATE	R/W	RIGHT OF WAY
BC	BACK OF CURB	HP	HIGH POINT	SD	STORM DRAIN
BOT	BOTTOM	HW	HIGH WATER	SF	SQUARE FEET
C	CONCRETE	IE	INVERT ELEVATION	SS	SANITARY SEWER
℄	CENTERLINE	IRR	IRRIGATION	SW	SIDEWALK
CF	CUBIC FEET	LF	LINEAR FEET	STA	STATION
CFS	CUBIC FEET PER SECOND	LP	LOW POINT	SY	SQUARE YARDS
CY	CUBIC YARD	MCR	MARICOPA COUNTY RECORDER	TC	TOP OF CURB
DE	DRAINAGE EASEMENT	ML	MATCH LINE	TEL	TELEPHONE
DW	DRYWELL	M	MONUMENT LINE	TF	TOP OF FOOTING
EA	EACH	MUTE	MULTI USE TRAIL EASEMENT	THR	TOP OF HANDRAIL
EL	ELEVATION	NAOS	NATURAL AREA OPEN SPACE	TRW	TOP OF RETAINING WALL
EP	EDGE OF PAVEMENT	NTS	NOT TO SCALE	TS	TRAFFIC SIGNAL
ESMT	EASEMENT	OHE	OVERHEAD ELECTRIC	TW	TOP OF WALL
ESO	EXTREME STORM OUTFALL	P	PAVEMENT	UGFO	UNDERGROUND FIBER OPTIC
EG	EXISTING GRADE	PAE	PUBLIC ACCESS EASEMENT	UGE	UNDERGROUND ELECTRIC
EX	EXISTING	PDE	PUBLIC DRAINAGE EASEMENT	UGT	UNDERGROUND TELEPHONE
FC	FACE OF CURB	℄	PROPERTY LINE	UTS	UNDERGROUND TRAFFIC SIGNAL
FF	FINISH FLOOR	POB	POINT OF BEGINNING	VG	VALLEY GUTTER
FG	FINISH GRADE	POC	POINT OF COMMENCEMENT	VNAE	VEHICULAR NON–ACCESS EASEMENT
FL	FLOWLINE	PUE	PUBLIC UTILITY EASEMENT	VOL	VOLUME
FT/FT	FOOT PER FOOT	PUFE	PUBLIC UTILITY FACILITIES EASEMENT	VP	VOLUME PROVIDED
FM	FORCE MAIN	PVI	POINT OF VERTICAL INTERSECTION	VR	VOLUME REQUIRED
G	GUTTER	PVMT	PAVEMENT	W	WATER
GB	GRADE BREAK	PC	PAVEMENT/CONCRETE	WLE	WATER LINE EASEMENT

DEVELOPER

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PHONE: (480) 966–4001
EMAIL: ANTHONYM@LGEDESIGNBUILD.COM

CIVIL ENGINEER

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ARCHITECT

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CONTACT: ANTHONY MARTINEZ
PHONE: (480) 966–4001
EMAIL: ANTHONYM@LGEDESIGNBUILD.COM

BENCHMARK

INFORMATION – MCDOT POINT ID321
BRASS CAP FLUSH
FND. 1/4 COR., SEC. 36, T.4N., R.4E.
ELEV.=1541.743' NAVD88

I HEREBY CERTIFY THAT ALL ELEVATIONS PRESENTED ON THIS PLAN ARE BASED ON NAVD–1988 AND MEET THE FEMA BENCHMARK MAINTENANCE (BMM) CRITERIA.

BASIS OF BEARING

BASIS OF BEARING FOR THIS SURVEY IS A BEARING OF SOUTH 89°52'19" EAST, ALONG THE SOUTH LINE OF SECTION 5, TOWNSHIP 3 NORTH, RANGE 5 EAST OF THE GILA AND SALT RIVER MERIDIAN, MARICOPA COUNTY, ARIZONA, ACCORDING TO THE PLSS SUBDIVISION RECORD OF SURVEY "MARICOPA COUNTY GEODETIC DENSIFICATION AND CADASTRAL SURVEY" AS RECORDED IN BK. 752, PG. 339, MARICOPA COUNTY RECORDS, ARIZONA.

APN:

217–14–037A, 217–14–038A

SITE AREA:

221,566± SF (5.087 AC)

PROJECT DESCRIPTION

PROPOSED AUTO LOFTS AND ASSOCIATED PARKING, DRIVES, LANDSCAPING, UTILITIES AND RETENTION FACILITIES.

RETENTION BASINS SUMMARY

DRAINAGE AREA LOCATION	VOLUME REQ'D (CF)	VOLUME PROV'D (CF)	EXCESS (CF)	DRYWELL
UGRT 1*	23,053	23,093	40	2
UGRT 2	8,558	8,588	30	1
UGRT 3	5,778	5,789	11	1

*UGRT 1 IS A SERIES OF TANKS HYDRAULICALLY CONNECTED WITH A 12-INCH PIPE
UGRT - UNDERGROUND RETENTION

NO.	DATE	REVISION	BY

PURPOSE: 6th ZONING SUBMITTAL

DESIGN BY: GH
DRAWN BY: DS
CHECKED BY: BL

HUNTER ENGINEERING
CIVIL AND SURVEY
10446 NORTH 74TH STREET SUITE 140
SCOTTSDALE, AZ 85258
P 480 951 3985

Professional Engineer CERTIFICATE NO. 63946 GRANT D. HIRNEISE Signed 6/17/25 ARIZONA, U.S.A.

COVER SHEET FOR COLLECTOR'S GARAGES AT WESTWORLD 9909 E. MCDOWELL MOUNTAIN RANCH ROAD SCOTTSDALE, ARIZONA

CONTACT ARIZONA 811 AT LEAST 2 FULL WORKING DAYS BEFORE YOU BEGIN EXCAVATION
AR ZONA811 CALL 811 OR CLICK AZ811.COM

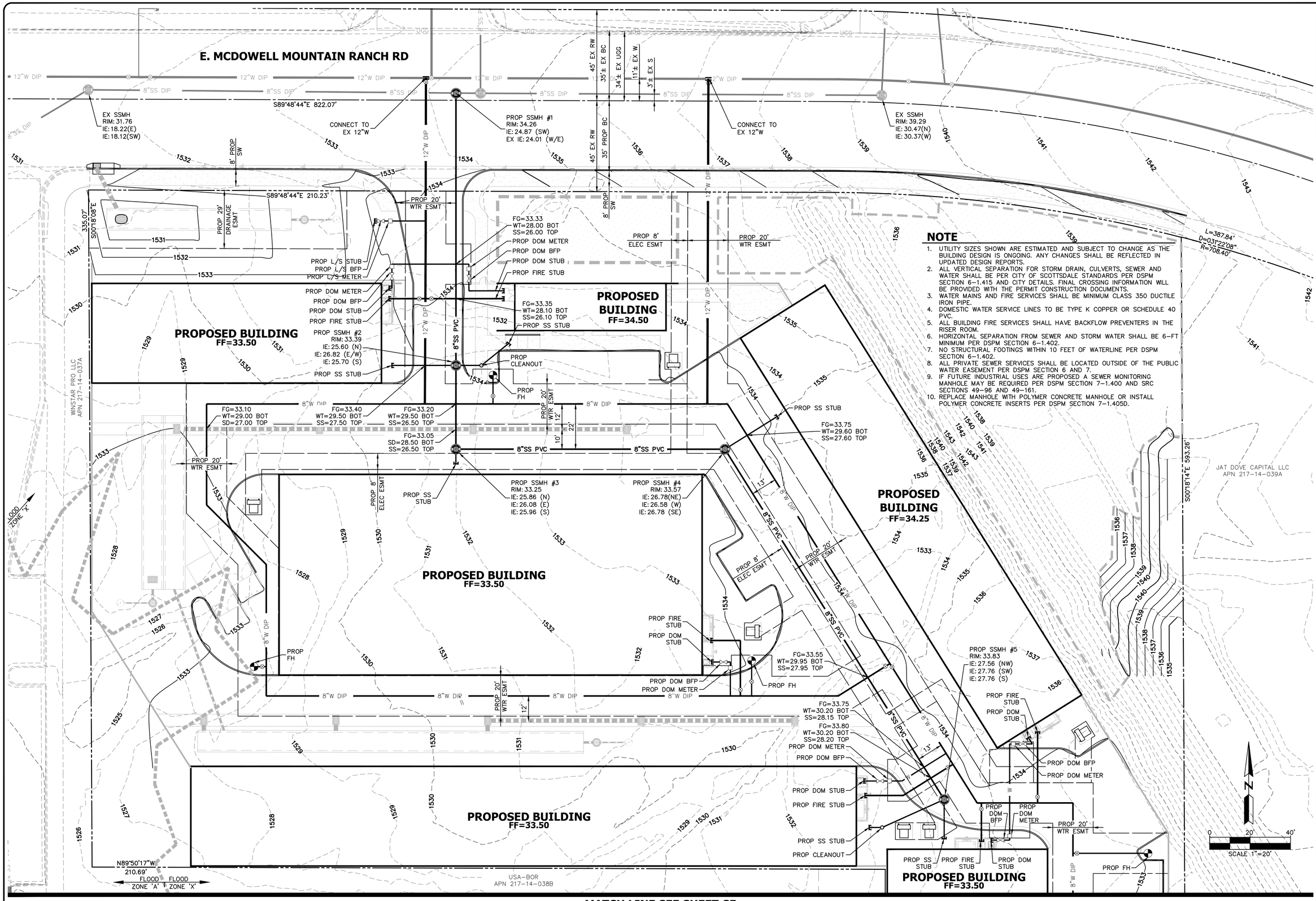
THESE PLANS ARE NOT APPROVED FOR CONSTRUCTION WITHOUT AN APPROVED SIGNATURE FROM THE GOVERNING MUNICIPALITY.

PROJECT NAME: COLLECTOR'S GARAGES WESTWORLD

HE NO.: LGEC324
SCALE: NTS

SHEET: C1

G:\LGEC324\Concept\GDRCOVER.dwg, 6/17/2025 1:18:35 PM, ghirneise1



MATCH LINE SEE SHEET C5

NO.	DATE	REVISION	BY

PURPOSE: 6th ZONING SUBMITTAL

DESIGN BY: GH
DRAWN BY: DS
CHECKED BY: BL

HUNTER ENGINEERING
CIVIL AND SURVEY
10446 NORTH 74TH STREET
SUITE 140
SCOTTSDALE, AZ 85258
P 480 991 3985

Registered Professional Engineer
CERTIFICATE NO.
63946
GRANT D.
HIRNEISE
Date Signed 6/17/25
ARIZONA, U.S.A.

CONCEPTUAL UTILITY PLAN FOR COLLECTOR'S GARAGES AT WESTWORLD
9909 E. MCDOWELL MOUNTAIN RANCH ROAD SCOTTSDALE, ARIZONA

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ARIZONA BLUE STAKE, INC.
CALL 811 OR CLICK ARIZONA811.COM

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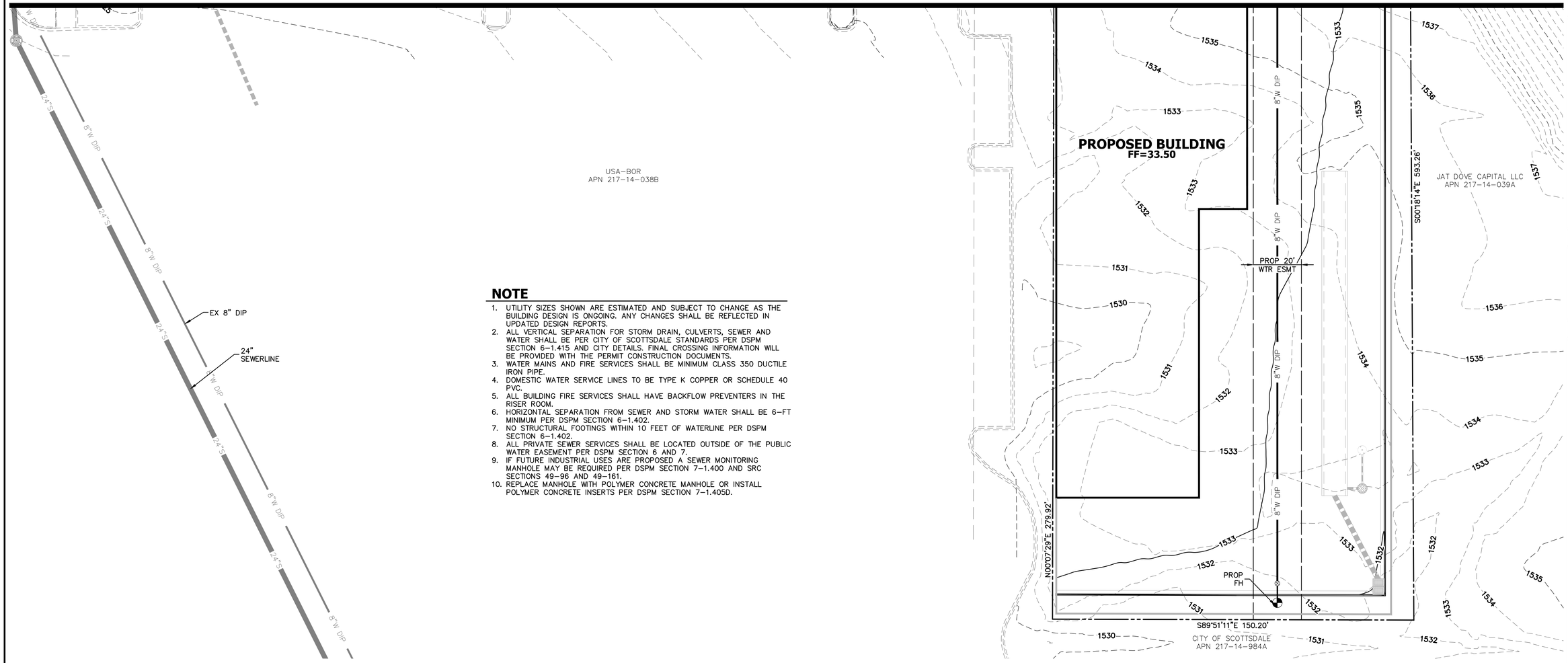
PROJECT NAME: COLLECTOR'S GARAGES WESTWORLD

HE NO.: LGEC324
SCALE: 1"=20'

SHEET: C4

MATCH LINE SEE SHEET C4



NOTE

1. UTILITY SIZES SHOWN ARE ESTIMATED AND SUBJECT TO CHANGE AS THE BUILDING DESIGN IS ONGOING. ANY CHANGES SHALL BE REFLECTED IN UPDATED DESIGN REPORTS.
2. ALL VERTICAL SEPARATION FOR STORM DRAIN, CULVERTS, SEWER AND WATER SHALL BE PER CITY OF SCOTTSDALE STANDARDS PER DSPM SECTION 6-1.415 AND CITY DETAILS. FINAL CROSSING INFORMATION WILL BE PROVIDED WITH THE PERMIT CONSTRUCTION DOCUMENTS.
3. WATER MAINS AND FIRE SERVICES SHALL BE MINIMUM CLASS 350 DUCTILE IRON PIPE.
4. DOMESTIC WATER SERVICE LINES TO BE TYPE K COPPER OR SCHEDULE 40 PVC.
5. ALL BUILDING FIRE SERVICES SHALL HAVE BACKFLOW PREVENTERS IN THE RISER ROOM.
6. HORIZONTAL SEPARATION FROM SEWER AND STORM WATER SHALL BE 6-FT MINIMUM PER DSPM SECTION 6-1.402.
7. NO STRUCTURAL FOOTINGS WITHIN 10 FEET OF WATERLINE PER DSPM SECTION 6-1.402.
8. ALL PRIVATE SEWER SERVICES SHALL BE LOCATED OUTSIDE OF THE PUBLIC WATER EASEMENT PER DSPM SECTION 6 AND 7.
9. IF FUTURE INDUSTRIAL USES ARE PROPOSED A SEWER MONITORING MANHOLE MAY BE REQUIRED PER DSPM SECTION 7-1.400 AND SRC SECTIONS 49-96 AND 49-161.
10. REPLACE MANHOLE WITH POLYMER CONCRETE MANHOLE OR INSTALL POLYMER CONCRETE INSERTS PER DSPM SECTION 7-1.405D.

NO.	DATE	REVISION	BY

PURPOSE: 6th ZONING SUBMITTAL

DESIGN BY: GH
DRAWN BY: DS
CHECKED BY: BL

HUNTER ENGINEERING
CIVIL AND SURVEY
10446 NORTH 74TH STREET
SUITE 140
SCOTTSDALE, AZ 85258
P 480 991 3985

Registered Professional Engineer
CERTIFICATE NO.
63946
GRANT D.
HIRNEISE
Signed 6/11/25
ARIZONA, U.S.A.

CONCEPTUAL UTILITY PLAN FOR COLLECTOR'S GARAGES AT WESTWORLD
9909 E. MCDOWELL MOUNTAIN RANCH ROAD SCOTTSDALE, ARIZONA

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PROJECT NAME: COLLECTOR'S GARAGES WESTWORLD

HE NO.: LGEC324
SCALE: 1"=20'

SHEET: C5

0 20' 40'
SCALE 1"=20'

APPENDIX B
SEWER CALCULATIONS

Project: The Collector's Garages at Westworld
Project No.: LGEC324
City: Scottsdale
Date: 11/25/2024

PROJECTED SANITARY SEWER LOADS

Building	Area (sf)	Average Day Sewer Demand (gpd) Per Table 7-1.2 Average Day Sewer Demand		Peaking Factor	Average Daily Flow (gpd)	Average Daily Flow (gpm)	Peak Flow (gpm)
Building A	7,072	0.5	gpd/sf	3.0	3,536	2.5	7.4
Building B	20,794	0.5	gpd/sf	3.0	10,397	7.2	21.7
Building C	16,248	0.5	gpd/sf	3.0	8,124	5.6	16.9
Building D	16,588	0.5	gpd/sf	3.0	8,294	5.8	17.3
Building E	11,808	0.5	gpd/sf	3.0	5,904	4.1	12.3
Clubhouse	1,945	0.5	gpd/sf	3.0	973	0.7	2.0
Total Buiding	74,455				**37,228**	**25.9**	**77.6**

Worksheet for Circular Channel

Solve for: Discharge — Manning's Formula

Mannings Coefficient:	0.013	
Channel Slope:	0.012000	ft/ft
Depth:	0.32	ft
Diameter:	8.0	in
Discharge:	284	gal/min

Flow Area:	0.2	ft²
Wetted Perimeter:	1.03	ft
Top Width:	0.00	ft
Critical Depth:	0.37	ft
Percent Full:	48.7	%
Critical Slope:	0.007473	ft/ft
Velocity:	3.75	ft/s
Velocity Head:	0.22	ft
Specific Energy:	0.54	ft
Froude Number:	1.31	
Maximum Discharge:	639	gal/min
Discharge Full:	594	gal/min
Slope Full:	0.002752	ft/ft
Flow Type:	Supercritical	

APPENDIX C
REFERENCES

CITY OF SCOTTSDALE

DESIGN STANDARDS & POLICIES MANUAL

LAND USE	DEMAND (gpd)	DESIGN PEAKING FACTOR
Commercial/Retail	0.5 per sq. ft.	3
Office	0.4 per sq. ft.	3
Restaurant	1.2 per sq. ft.	6
High Density Condominium (Condo)	140 per unit	4.5
Resort Hotel (includes site amenities)	380 per room.	4.5
School: without cafeteria	30 per student	6
School: with cafeteria	50 per student	6
Cultural	0.1 per sq. ft.	3
Clubhouse for Subdivision Golf Course	100 per patron x 2 patrons per du per day	4.5
Fitness Center/ Spa/ Health club	0.8 per sq. ft.	3.5

FIGURE 7-1.2 AVERAGE DAY SEWER DEMAND IN GALLONS PER DAY & PEAKING FACTORS BY LAND USE

HYDRAULIC DESIGN 7-1.404

No public SS lines will be less than 8 inches in diameter unless permission is received in writing from the Water Resources Department.

SS lines shall be designed and constructed to give mean full flow velocities equal to or greater than 2.5 fps, based upon Manning's Formula, using an "n" value of 0.013.

To prevent abrasion and erosion of the pipe material, the maximum velocity will be limited to 10 fps at estimated peak flow. Where velocities exceed this maximum figure, submit a hydraulic analysis along with construction recommendations to the Water Resources Department for consideration. In no case will velocities greater than 15 fps be allowed.

Actual velocities shall be analyzed for minimum, average day and peak day design flow conditions for each reach of pipe.

The SS system shall be designed to achieve uniform flow velocities through consistent slopes. Abrupt changes in slope shall be evaluated for hydraulic jump.

The depth to diameter ratio (d/D) for gravity SS pipes 12 inches in diameter and less shall not exceed 0.65 in the ultimate peak flow condition. This d/D ratio includes an allowance for system infiltration and inflow.

The d/D for gravity drains greater than 12 inches diameter shall not exceed 0.70 for the ultimate peak flow condition. This d/D includes an allowance for system infiltration and inflow.

Measures to mitigate hydrogen sulfide shall be analyzed at manhole drops, abrupt changes in pipe slope or direction and at changes in pipe diameter.

MANHOLES AND CLEAN OUTS 7-1.405

Manholes in city streets shall be located near the center of the inside traffic lane, rather than on or near the line separating traffic lanes. Manholes shall not be in bike trails, equestrian trails, sidewalks, crosswalks or wash crossings. Manholes are required at all

APPENDIX D
FLOW MONITORING REPORT

SL1801 RDH Flow Study for LGE

Blake Wells
LGE Design Build
1200 N. 52nd St, Phoenix, AZ 85008

SL1801 RDH Flow Study, 1 site total in Scottsdale, AZ from Friday 12-13-24 to Monday 12-23-24.

Equipment for Site: Hach 901 Logger with Flo-Dar Sensor (Area Velocity)**.**
The equipment was installed on Friday, 12/13/24 with confined space entry, pipe size confirmed, sensor calibrated, and level depth confirmed to the flow level.

Duration of monitoring: 10 days
Monitor: Flow (gpm), Level (in), and Velocity (fps)
Data logging: 5-minute intervals (No averaged intervals)

Calibration Performed: Calibration method using 12.00-inch target.

Target Measure: 12.00 in Meter Read: 12.02 in 12/13/2024 7:15 am

Based on the City of Scottsdale internal GIS Map for Water and Sewer, this is a 24" PVC sewer pipe which flows to the West. Therefore, the pipe identification, flow direction and relevant calculations should be further verified in Final BOD.

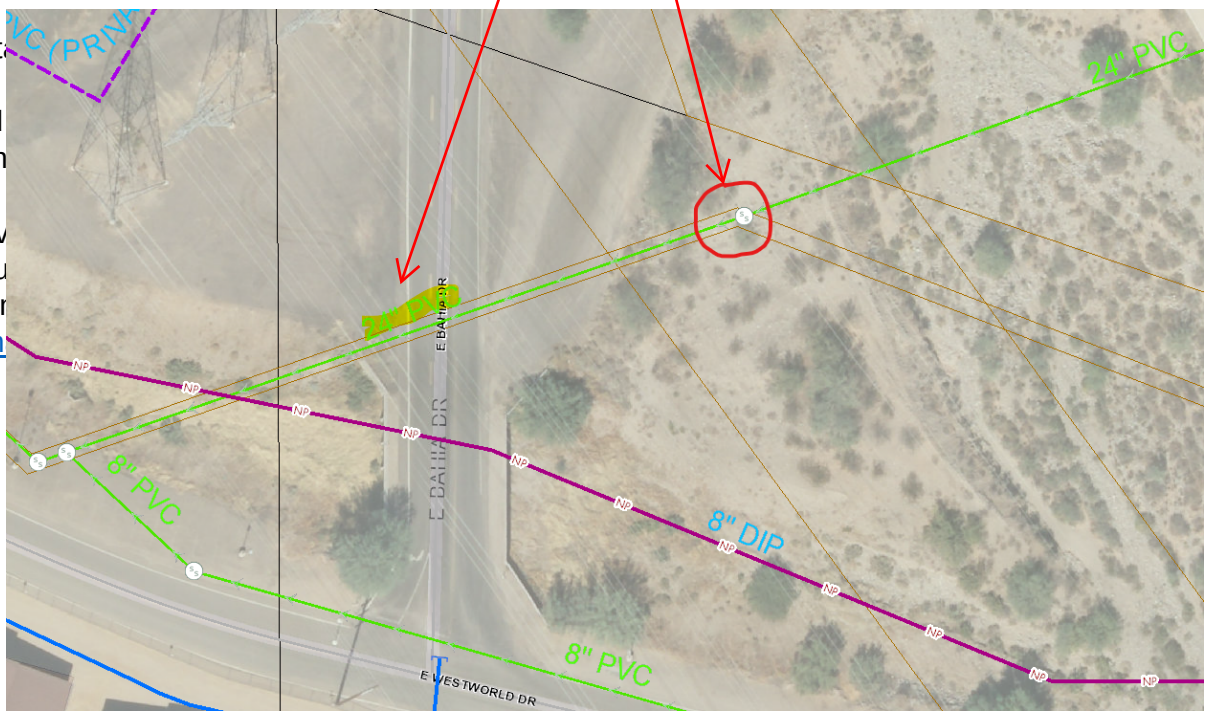
Meter Validation: PASSED

MH1 located at E. Bahia Dr. North of E. Westworld Dr.
72” Diameter, Rim to Invert: 206.00 inches
25” PVC pipe, flowing East.
No Lateral(s).
The pipe condition is intact with a thin layer of scum on the walls.
Scum line of 9.00 inches
Flo-Dar installed pointing upstream in the 25” pipe channel.

Flow Dat

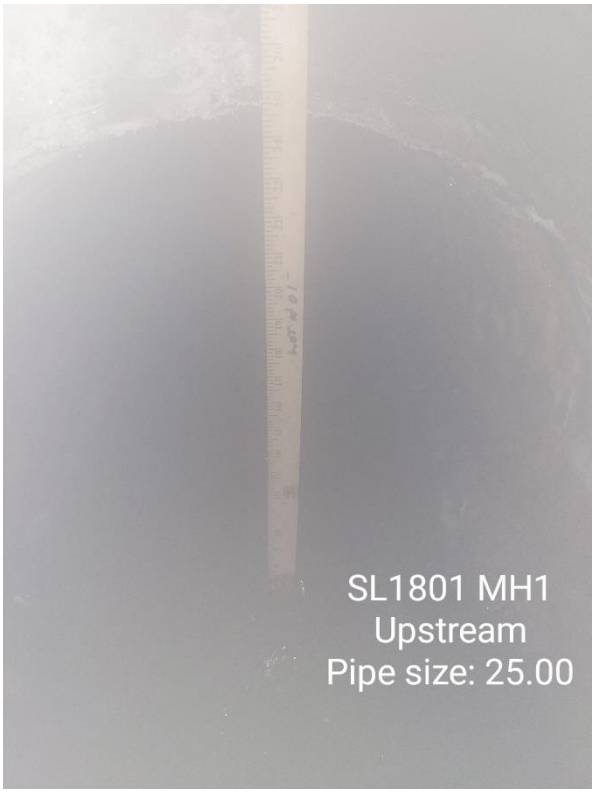
Attached the
monitorin

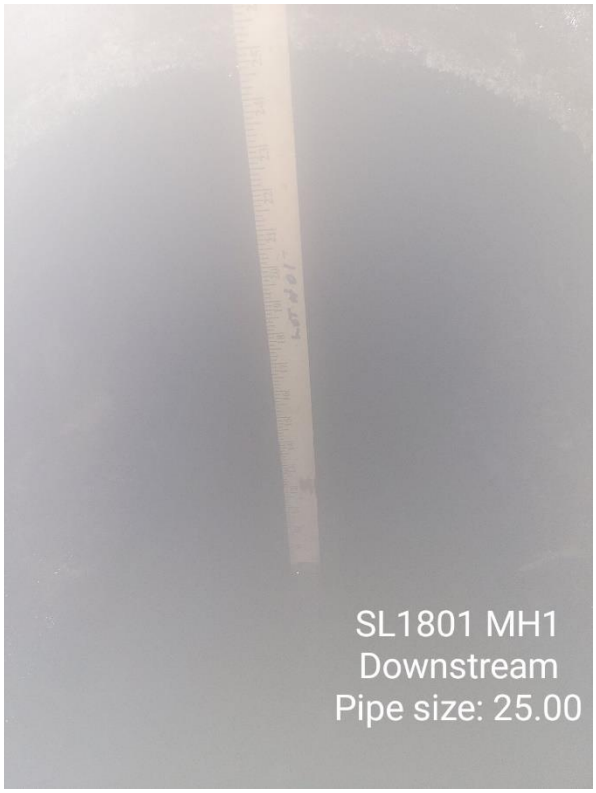
RDH Env
Jeff Schu
Operatior
servicem

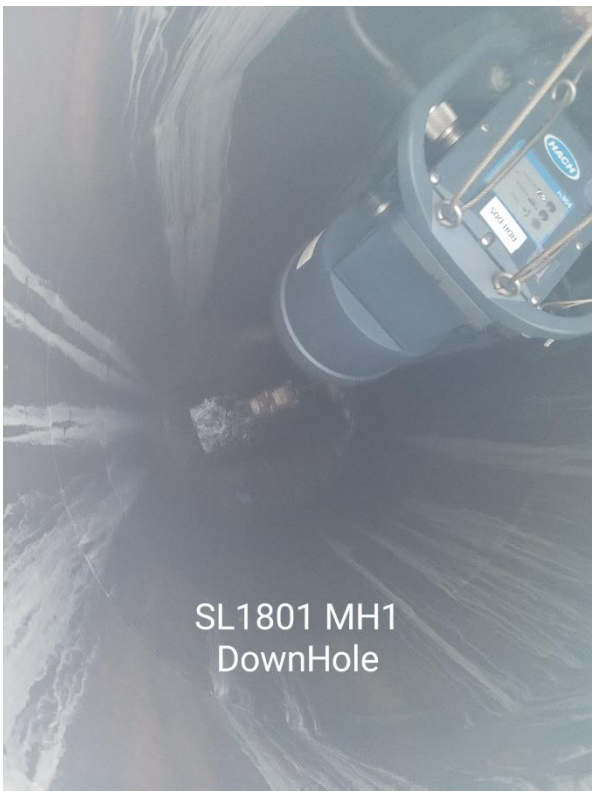


SL1801 RDH Flow Study for LGE

Pictures:







RDH ENVIRONMENTAL SERVICES, L.L.C.
3802 E. University Dr., Suite #4 ● Phoenix, AZ 85034 ● (602) 381-1960
Licenses: 122278 A

SL1801 RDH Flow Study for LGE

Period Summaries:

LGE COS MH1 Period Summary: Flow				
Measures	**Value**	**Unit**	**Date**	**Time**
Max.	978.72	gpm	Saturday, December 21, 2024	11:15 AM
Min.	248.31	gpm	Saturday, December 14, 2024	6:15 AM
Avg.	597.64	gpm		
Total	8,620,956.71	gal		

LGE COS MH1 Period Summary: Level				
Measures	**Value**	**Unit**	**Date**	**Time**
Max.	10.05	in	Sunday, December 22, 2024	11:20 AM
Min.	5.08	in	Sunday, December 15, 2024	6:40 AM
Avg.	7.85	in		

LGE COS MH1 Period Summary: Velocity				
Measures	**Value**	**Unit**	**Date**	**Time**
Max.	1.76	fps	Thursday, December 19, 2024	7:50 AM
Min.	0.97	fps	Friday, December 13, 2024	7:30 AM
Avg.	1.42	fps		

*Data begins at 7:25 am on December 13th and ends at 7:50 am on December 23rd.

SL1801 RDH Flow Study for LGE

Site Map:

RDH ENVIRONMENTAL SERVICES, L.L.C.
3802 E. University Dr., Suite #4 ● Phoenix, AZ 85034 ● (602) 381-1960
Licenses: 122278 A

CONFINED SPACE ENTRY PERMIT

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

LOCATION/DESCRIPTION OF CONFINED SPACE: SL 1201 MH1

PURPOSE OF ENTRY: Flow Study Install

EXPECTED HAZARDOUS: Gases

COMMUNICATIONS: Hand & Verbal

ENTRY SUPERVISOR: Jordan Astemborski

DATE: 12/13/24

TIME: 6:45am

EXPIRATION: 12:00pm 12/13/24

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	12/13	12/13	12/13							
				TESTER	JA	JA	JA							
				TIME AM/PM	6:50 AM	7:05 AM	7:20 AM	M	M	M	M	M	M	M
% of Oxygen	19.5% to 23.5%				20.9	20.9	20.9							
^ 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							

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 Schulte

AUTHORIZED ATTENDANTS: Jordan Astemborski

PERMIT AUTHORIZATION

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

Jordan Astemborski — NAME (Print)

Signature

12/13/24 — DATE

7:30am — TIME

IN CASE OF AN EMERGENCY CALL 911

RDH Environmental Services (602) 381-1960

CONFINED SPACE ENTRY PERMIT

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

LOCATION/DESCRIPTION OF CONFINED SPACE: LGE Design

DATE: 12/23/24

PURPOSE OF ENTRY: Removal of Flow Study

TIME: 7:30am

EXPECTED HAZARDOUS: Gases

EXPIRATION: 12:00pm 12/23/24

COMMUNICATIONS: Hand & Verbal

ENTRY SUPERVISOR: Jordan Astemborski

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	12/23	12/23									
				TESTER	SA	SA									
				TIME AM/PM	7:40 AM	7:55 AM	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.)				0	0									
Sulfur Dioxide	2 ppm (8 hr.)				0	0									
Ammonia	25 ppm (8 hr.)				0	0									

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Honeywell	BW Tech	GasAlertMax XT II	XT-XWHM-Y-NA MA215-026608

AUTHORIZED ENTRANTS: Zac Schulte

AUTHORIZED ATTENDANTS: Jordan Astemborski

PERMIT AUTHORIZATION

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

Jordan Astemborski — NAME (Print)

Signature

12/23/24 — DATE

8:00am — TIME

IN CASE OF AN EMERGENCY CALL 911

RDH Environmental Services (602) 381-1960