



Water and Wastewater Study
Combined

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1.0 Introduction

Silver King is a proposed 0.804-acre commercial development. The project is located in a commercial development near the Scottsdale Airpark in Maricopa County, and is bounded by Greenway Road to the north, 73rd Street to the west, Butherus Drive to the south and Scottsdale Airport to the east. The project lies within a portion of the northwest corner of Section 11, Township 3 North, Range 4 East of the Gila and Salt River Meridian in Maricopa County, Arizona.

This report will review the Silver King sewer system. The proposed system will connect to the existing 15-inch sewer main located in Greenway Road.

The calculations of sewer flow and pipe sizing in this report are based on system design criteria in the City of Scottsdale Design Standards and Policies Manual.

2.0 Sewer Design

2.1 Sewer System

The proposed sewer system from the development flows to an existing 15-inch sewer line in Greenway Road. The main connect from the development will be 6-inch line that flows from the center of the property to the north into the Greenway Road connection.

2.2 Design Requirements

All wastewater facilities for this project will be designed in accordance with the City of Scottsdale Creek Design Standards and Policies Manual, as well as ADEQ Bulletin 11 Chapter IV Section D and MAG standards and specifications.

The buildings on the site will be serviced as described above. The average sewer flow was calculated based on a demand of 0.4 gpd per square foot with the building at 12,086 sf. The following criteria area utilized in the analysis of the system demands:

- Average Sewer Flow 0.4 gpd/sf
- Peaking Factor 3.0

2.3 Sewer Demand Calculations

Daily Sewer Demand for the Project is based on the following criteria:

Average Sewer Flow –

$$0.4 \text{ gpd/sf} \times 12,086 \text{ sf} = 4,834 \text{ gpd} = 3.36 \text{ gpm}$$

Peak Sewer Flow –

$$3.0 \times 4,834 \text{ gpd} = 14,502 \text{ gpd} = 10.07 \text{ gpm}$$

$$\text{Capacity of 4" Sewer at 1.04\% slope} = 125,767 \text{ GPD} = 87.34 \text{ GPM}$$

3.0 Conclusions

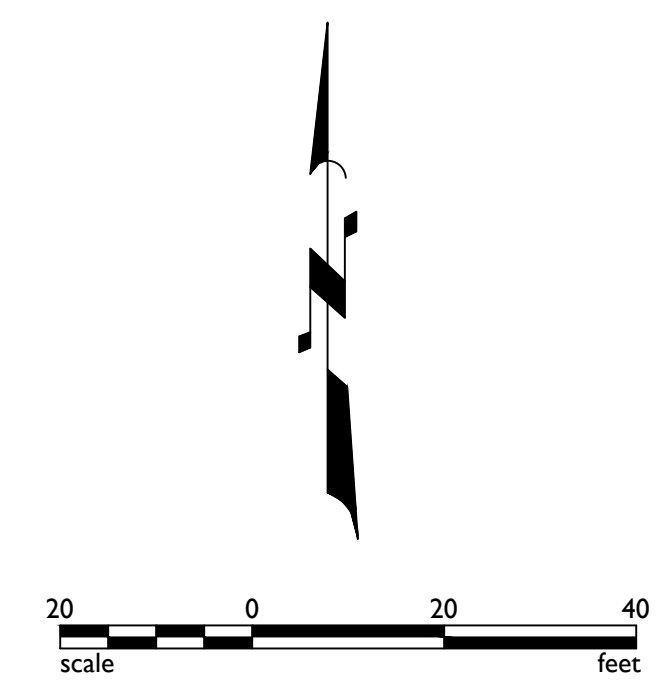
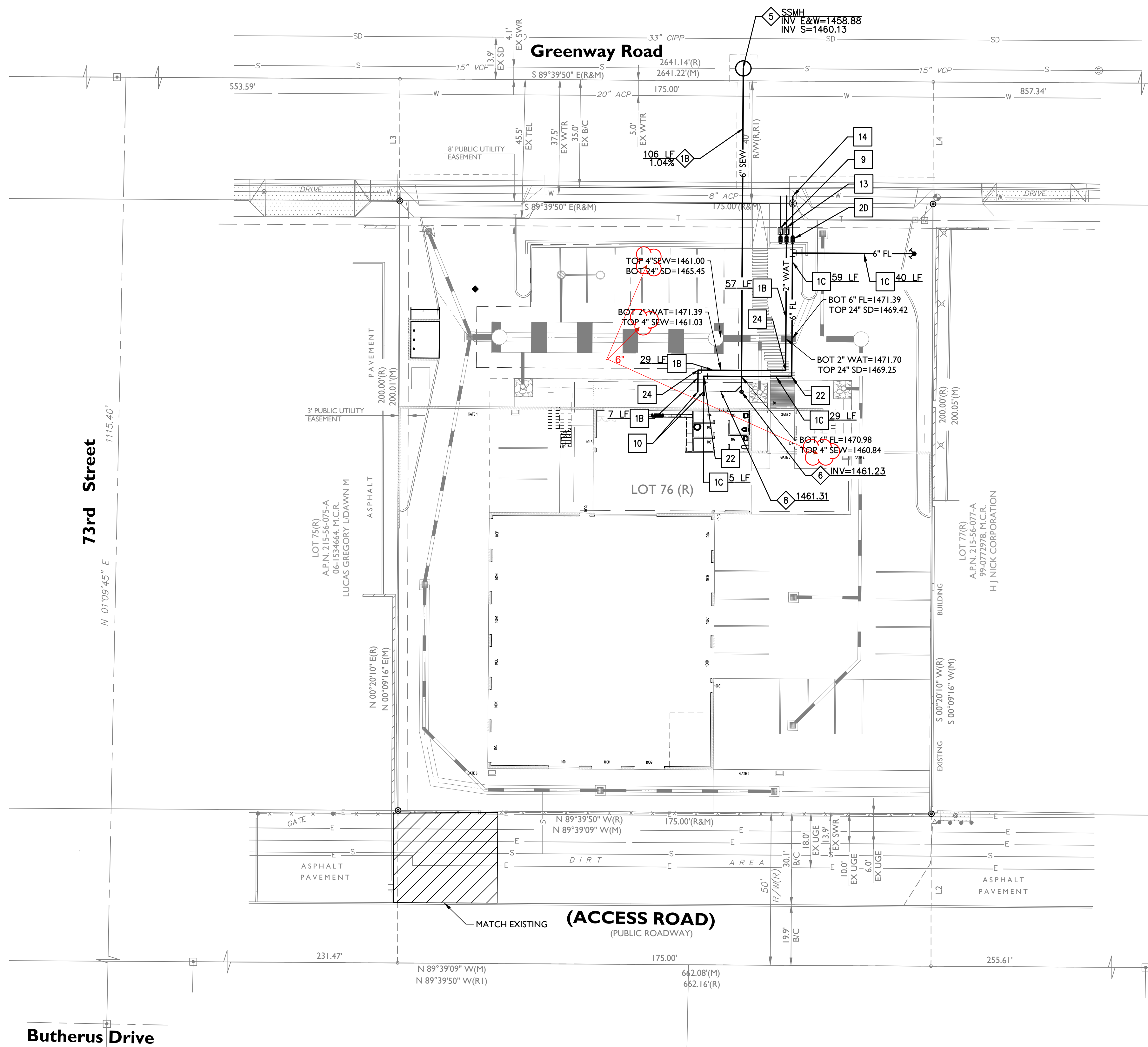
- City of Scottsdale Design Standards have been met.
- The sewer service is a 6" gravity-fed.
- Minimum slopes for the 6" pipe is 1.04%
- System will connect into an existing 15" sewer main within Greeway Road.
- Peak wastewater production for Silver King will be 125,767 GPD.

Appendix A:

Figures

Construction Notes

- ON-SITE WATER NOTES**
- 1B 2" SCHEDULE 80 PVC WATER LINE PER MAG SPEC 610 93 LF
 - 1C 6" D.I.P. FIRE SPRINKLER LINE 133 LF
 - 2D INSTALL DOUBLE CHECK VALVE BACKFLOW PREVENTION ASSEMBLY PER COS DTL 2359; SIZE = 6". 1 EA
 - 9 1-1/2" LANDSCAPE WATER METER SERVICE INSTALLATION WITH REDUCED PRESSURE BACKFLOW ASSEMBLY PER COS DTL 2330 & 2353. CONTINUATION PER LANDSCAPE PLANS. 1 EA
 - 10 WATER LINE CONTINUATION PER BUILDING PLUMBING PLANS. 2 EA
 - 13 2" DOMESTIC WATER METER SERVICE INSTALLATION WITH REDUCED PRESSURE BACKFLOW ASSEMBLY PER COS DTL 2330 & 2353. 1 EA
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- SEWER NOTES**
- 1B 6" SDR-35 PVC SEWERLINE 106 LF
 - 5 CONSTRUCT 5' DIA. MANHOLE PER MAG 420-1, MANHOLE LID PER MAG STD DTL 425. CONTRACTOR SHALL VERIFY THE LOCATION AND ELEVATION OF THE EXISTING SS LINE BEFORE PROCEEDING WITH TRENCHING. 1 EA
 - 6 CLEANOUT PER MAG STD DTL 441 1 EA
 - 8 SEE PLUMBING PLANS FOR CONTINUATION.



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Suite 120
Mesa, AZ 85201
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EPS GROUP

Silver King
735 East Greenway Road
Scottsdale, Arizona 85260

Utility Plan

Project:

Revisions:

Call at least one full working day before you begin excavation.

ARIZONA

DESIGNED BY: EPS
DRAWN BY: EPS

REGISTERED PROFESSIONAL ENGINEER (PE)
CERTIFICATE NO. 50291
DANIEL B. AUXIER
Exp. 02-28-24

Job No. 19-0122
C400

Sheet No. 8 of 8

55-DR-2019
2/20/2020



Water Demand Report

For

Silver King

City of Scottsdale, Arizona

Owner/Developer
Silver King Companies, Inc.
10679 N. Frank Lloyd Wright Blvd.
Suite 103
Scottsdale, Arizona 85259
Tel: 480-201-5769

FINAL Basis of Design Report

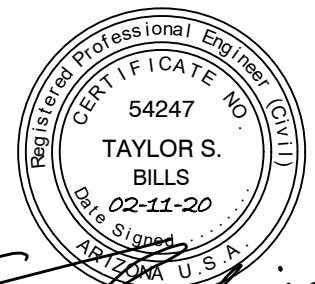
- APPROVED
- APPROVED AS NOTED
- REVISE AND RESUBMIT



Disclaimer: If approved; the approval is granted under the condition that the final construction documents submitted for city review will match the information herein. Any subsequent changes in the water or sewer design that materially impact design criteria or standards will require re-analysis, re-submittal, and approval of a revised basis of design report prior to the plan review submission.; this approval is not a guarantee of construction document acceptance. For questions or clarifications contact the Water Resources Planning and Engineering Department at 480-312-5685.

BY rsacks

DATE 2/24/2020



Project No. 19-0122

Date: February 2020

1130 N. Alma School Road, Suite 120
Mesa, AZ 85201
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Appendix B: Fire Flow Test Summary

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Figure 1: Water Exhibit Appendix A

1.0 Introduction

Silver King is a proposed 0.804-acre commercial development. The project is located in a commercial development near the Scottsdale Airpark in Maricopa County, and is bounded by Greenway Road to the north, 73rd Street to the west, Butherus Drive to the south and Scottsdale Airport to the east. The project lies within a portion of the northwest corner of Section 11, Township 3 North, Range 4 East of the Gila and Salt River Meridian in Maricopa County, Arizona.

1.1 Project Description

The Project consists of a single two story building with attached garage of 12,086 square feet, with future plans to develop a hanger next to the garage. Surface parking is proposed as well as the traditional supporting improvements.

2.0 Water Design

2.1 Water System

The site lies within the City of Scottsdale water service area. Commercial demands and fire flow will be provided from the City of Scottsdale water system.

The proposed domestic water system will tie into the existing 8-inch diameter water line in Greenway Road adjacent to the Project. The fire sprinkler line will also connect to the same existing 8-inch line. The domestic water system will be serviced through one 2-inch meter with backflow prevention provided by a reduced principle assembly and a 2-inch service line. The fire sprinkler line will be serviced through a single 6-inch backflow preventor.

A Typical single 2-inch meter has a continuous operating range up to approximately 160 GPM. One 2-inch water meter will provide adequate domestic water demand based on the calculations provided below.

2.2 Design Requirements

The buildings on the site will be serviced as described above. Final sizing will be completed during the final water & fire system design. The City of Scottsdale design criteria will be used for the sizing of the commercial on-site system and the City of Scottsdale Fire Department criteria will be used to design and layout the fire water system on the site. The following criteria are utilized in analyzing the system demands:

- Average daily demand 0.6 gpd/sf
- Minimum Fire Flow 1,500 gpm
- Maximum Static Pressure 120 psi
- Minimum Peak Hour Pressure 50 psi
- Minimum Max Day + Fire Flow Pressure 30 psi
- Max Day Demand Factor 2
- Peak Hour Demand Factor 3.5

2.3 Commercial Water Demand Calculations

Daily Water Demand for the Project is based on the following City of Scottsdale criteria:

Commercial Average Daily Demand –
 $0.6 \text{ gpd/sf} \times 12,086 \text{ sf} = 7,252 \text{ gpd} = 5.04 \text{ gpm}$
Max Day Demand – $2 \times \text{Average Day} = 10.07 \text{ gpm}$
Peak Hour Demand – $3.5 \times \text{Average Day} = 17.64 \text{ gpm}$

2.4 Fire Flow Demand Calculations

Fire Flow demand for the Project is based on the following criteria laid out in the 2012 International Fire Code:

*Largest Planned Building within Project	12,086 sf
Construction Type	IIIB w/ NFPA 13 Sprinkler System
Required Fire Flow IFC Table B105.1	2,250 gpm
Fire Demand w/ 75% Reduction for Sprinkler System	1,500 gpm

3.0 Conclusions

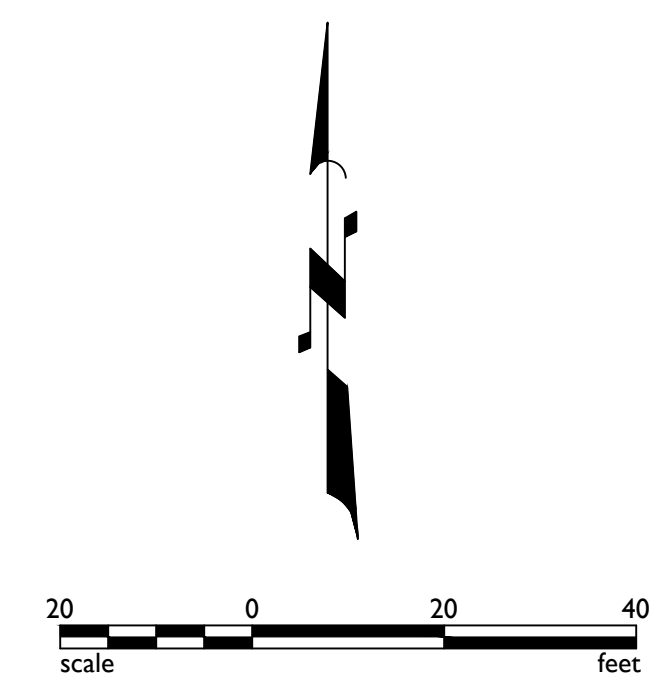
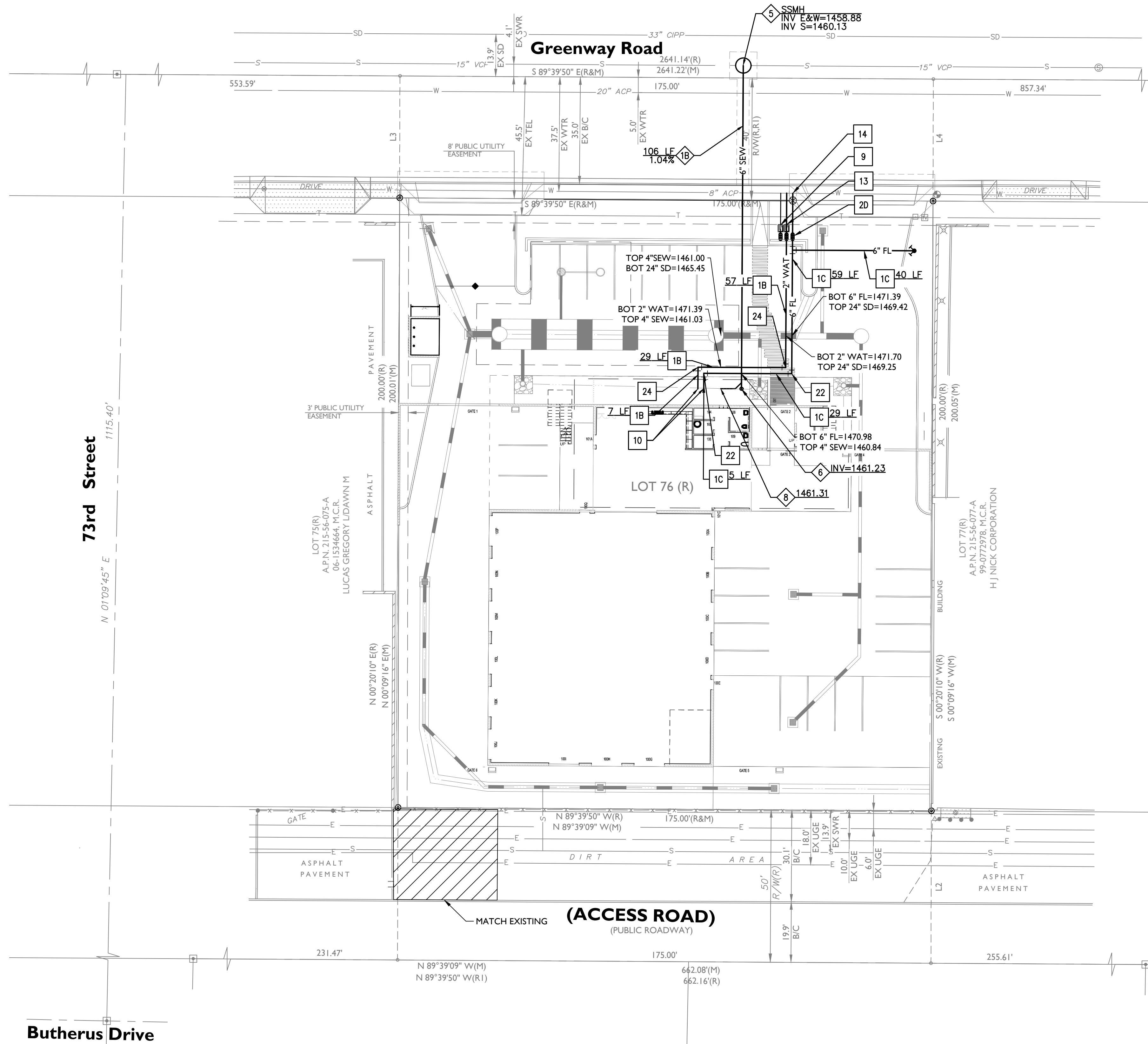
- City of Scottsdale Design Standards have been met.
- The fire sprinkler line is planned to be 6-inches in diameter while and provide water for fire sprinklers for the building.
- The system will connect to the existing 8” water main in Greenway Road.
- The domestic water system for the site will be serviced by a single 2-inch water meter.

Appendix A

Water Exhibit

Construction Notes

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DANIEL B. AUXIER
Exp. 02-28-24

Job No. 19-0122
C400
Sheet No. 8 of 8

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2/20/2020

Appendix B

Fire Flow Test Summary



Flow Test Summary

Project Name: EJFT 20043
Project Address: 7335 E Greenway Rd, Scottsdale, AZ 85260
Date of Flow Test: 2020-02-03
Time of Flow Test: 8:00 AM
Data Reliable Until: 2020-08-03
Conducted By: Cesar Reyna & John Echeverri (EJ Flow Tests) 602.999.7637
Witnessed By: Jared Berry (City of Scottsdale) 602.541.4942
City Forces Contacted: City of Scottsdale (602.541.4942)
Permit Number: C61166

Note Scottsdale requires a max static pressure of 72 psi for safety factor.

Raw Flow Test Data

Static Pressure: 84.0 PSI
Residual Pressure: 70.0 PSI
Flowing GPM: 2,147
GPM @ 20 PSI: 4,878


Data with a 12 PSI Safety Factor

Static Pressure: 72.0 PSI
Residual Pressure: 58.0 PSI
Flowing GPM: 2,147
GPM @ 20 PSI: 4,361

Hydrant F₁

Pitot Pressure (1): 37 PSI
Coefficient of Discharge (1): 0.9
Hydrant Orifice Diameter (1): 2.5 inches
Pitot Pressure (2): 45 PSI
Coefficient of Discharge (2): 0.9
Hydrant Orifice Diameter (2): 2.5 inches



 Static-Residual Hydrant

 Flow Hydrant

Main Size
8 inches

Distance Between F₁ and R
669 ft (measured linearly)

Static-Residual Elevation
1473 ft (above sea level)

Flow Hydrant (F₁) Elevation
1476 ft (above sea level)

Elevation & distance values are approximate

EJ Flow Tests, LLC

21505 North 78th Ave. | Suite 130 | Peoria, Arizona 85382 | (602) 999-7637 | www.ejengineering.com
John L. Echeverri | NICET Level IV 078493 SME | C-16 FP Contractor ROC 271705 AZ | NFPA CFPS 1915

www.flowtestsummary.com

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Static-Residual Hydrant



Flow Hydrant (only hydrant F1 shown for clarity)



Approximate Project Site



Water Supply Curve N^{1.85} Graph

