WOOD PATEL

WASTEWATER DISTRIBUTION SYSTEM
PRELIMINARY BASIS OF DESIGN REPORT
FOR
FAIRMONT SCOTTSDALE PRINCESS
PRIVADO WELCOME BUILDING AND PARKING MODIFICATIONS

October 12, 2022
WP# 215319

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 apritchard **DATE** 10/28/2022

EXPIRES 06-30-25

TABLE OF CONTENTS

APPENDICES

EXHIBITS

EXPIRES 06-30-25

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1.0 EXECUTIVE SUMMARY

The Fairmont Scottsdale Princess Privado Welcome Building and Parking Modifications (Site) is a proposed hotel welcome building and parking lot development on an approximate 6-acre parcel at the Fairmont Scottsdale Princess, in the City of Scottsdale (APN#215-08-003C). The proposed development will consist of one (1) visitor welcome building and new parking lot expansion. The project will include parking, hardscape, landscape, and utility improvements to support the development. The Site is located approximately 1,300 feet to the east of Scottsdale Road and Princess Boulevard, on the south side of Princess Boulevard within Section 35, Township 4 North, Range 4 East of the Gila and Salt River Base and Meridian, Maricopa County, Arizona. Refer to Exhibit 1 – *Vicinity Map* for the project location. The existing property, currently zoned C-2, is primarily developed with buildings, parking lots, pools, sidewalks, and a variety of landscaping (desert and grass).

The design criteria used to estimate potable water demands and evaluate system hydraulics are based on Wood, Patel & Associates, Inc's (WOODPATEL's) understanding of the requirements listed in the *City of Scottsdale Design Standards and Policies Manual, 2018*.

The following is a summary of the design criteria utilized:

Average Day Wastewater Demand, Commercial/Retail: .....0.5 gpd / sf
Peak Factor, Commercial/Retail: 3.0
Minimum Mean Full Flow Velocity: .....2.50 fps
Minimum Peak Full Flow Velocity: .....10.0 fps
Minimum Peak Flow d/D Ratio (12-inch diameter or less sewers): .....d/D = 0.65
Abbreviations: gpd = gallons per day; fps = feet per second; P = population/1,000

2.0 INTRODUCTION

2.1 General Background

Privado Welcome Building and Parking Modifications (Site) is a proposed hotel visitor center and parking lot development on an approximate 6-acre parcel in the City of Scottsdale (APN#215-08-003C). The proposed development will consist of one (1) welcome building and new parking lot expansion. The project will include parking, hardscape, landscape, and utility improvements to support the development.

2.2 Project Location

The Site is located approximately 1,300 feet to the east of the Scottsdale Road and Princess Boulevard, on the south side of Princess Boulevard within Section 35, Township 4 North, Range 4 East of the Gila and Salt River Base and Meridian, Maricopa County, Arizona. Refer to Exhibit 1 – *Vicinity Map* for the project location.

2.3 Purpose of Report

This Wastewater Collection System Basis of Design Report has been prepared in WOODPATEL's understanding of the City of Scottsdale Wastewater Collection System Design requirements, as applicable for the Site. The purpose of this Report is to address the following wastewater design consideration for the Site:

- Average-day and Peak Wastewater flows determination
- Capacity analysis of the proposed wastewater collection system

3.0 EXISTING WASTEWATER INFRASTRUCTURE

3.1 Existing Utility System Conditions

The existing wastewater infrastructure adjacent to the Site, includes a public 18-inch sewer line on the west side of the Site that extends south from Princess Boulevard to the south end of the property. The public 18-inch sewer line then continues east along the south side of the adjacent property. Please refer to Exhibit 2 – *Wastewater Exhibit* for a depiction of the existing wastewater infrastructure surrounding the Site.

4.0 PROPOSED WASTEWATER INFRASTRUCTURE

4.1 Proposed Utility System Conditions

As a part of the project, one sewer service will be removed from an existing building and added for the proposed Welcome Building. The proposed sewer service will require a manhole on the existing 18-inch sewer line. According to our calculations, the existing wastewater infrastructure can handle the wastewater flows and demands for the proposed project since sewer flows into the existing 18-inch sewer line will not be increased.

4.2 Modeling and Results

Based on the current City of Scottsdale design criteria, the projected average-day flow for the proposed Site is calculated to be 1,374 gallons per day (gpd), or 1.0 gallon per minute (gpm). The peak flow is projected to be 4,121 gpd, or 2.9 gpm. Refer to Appendix A – *Hydraulic Modeling Results* for calculations. The proposed sewer slopes, projected flow velocities, and pipe flow capacities with the current flows are summarized on the attached spreadsheet and indicate that the wastewater system is adequate for the Site.

5.0 CONCLUSIONS

Based on our wastewater collection system analysis for the proposed Site, the following conclusions are made:

1. The design criteria used to estimate wastewater flows and evaluate system hydraulics are based on WOODPATEL's understanding of the published City of Scottsdale Design Standards and Policies Manual, 2018.

2. The projected average-day flow for the proposed Site is calculated to be 1,374 gallons per day (gpd), or 1.0 gallon per minute (gpm). The peak flow is projected to be 4,121 gpd, or 2.9 gpm.

6.0 REFERENCES

1. City of Scottsdale Design Standards and Policies Manual, 2018

APPENDIX A – HYDRAULIC MODELING RESULTS

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TABLE 1
WASTEWATER DESIGN CRITERIA

Project	Fairmont Scottsdale Princess Privado Welcome Center and Parking Expansion
Location	Scottsdale AZ
Project Number	215319
Project Engineer	Darin Moore, P.E.
References	City of Scottsdale Design Standards and Policies Manual (2018)

WASTEWATER DEMANDS

LAND USE	AVERAGE DAILY DEMAND (ADD)		POPULATION[1]
	VALUE	UNITS	
Commercial/Retail	0.50	gpd/sf	0.005 Persons per sf
Office	0.40	gpd/sf	0.004 Persons per sf
Restaurant	1.20	gpd/sf	0.012 Persons per sf
High Density Condominiums	140	gpd/DU	1.4 Persons per DU
School: without Cafeteria	30	gpd/Student	0.3 Persons per Student
School: with Cafeteria	50	gpd/Student	0.5 Persons per Student
Resort Hotel	380	gpd/Room	3.8 Persons per Room
Cultural	0.1	gpd/sf	0.001 Persons per sf
Fitness Center/Spa/ Health Club	0.8	gpd/sf	0.008 Persons per sf

HYDRAULIC MODELING CRITERIA

DESCRIPTION		VALUE[2]
PEAK FLOW		
	Peak Flow = Peaking Factor (PF) x ADD	
	Commercial/Retail	3.0
	Fitness Center/Spa/Health Club	3.5
	High Density Condominium	4.5
	Restaurant	6.0
HYDRAULICS		
	Minimum Pipe Diameter (in)	8
	Manning's "n" value	0.013
	Maximum d/D ratio at peak flow	0.65

PIPE SIZE	MEAN VELOCITY[2]		DESIGN SLOPE[2]	
(in)	Minimum (ft/sec)	Maximum (ft/sec)	Minimum (%)	Maximum (%)
8	2.5	10.0	0.380	6.980
10	2.5	10.0	0.306	5.121
12	2.5	10.0	0.256	3.919

Notes

1. Based on Arizona Administrative Code, Title 18, Chapter 9 value of 100 gallons per capita per day.
2. Per City of Scottsdale Design Standards and Policies Manual (2018)

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WASTEWATER MODEL, FULL BUILD-OUT CONDITION

Project	Fairmont Scottsdale Princess Privado Welcome Center and Parking Expansion
Location	Scottsdale AZ
Project Number	215319
Project Engineer	Darin Moore, P.E.
References	City of Scottsdale Design Standards and Policies Manual (2018)
	Arizona Administrative Code, Title 18, Chapter 9

FROM NODE	Commercial/ Retail (SF)	Commercial/ Retail (GPD/SF)	SEWER NODE ADD (GPD)	SEWER NODE ADD (GPM)	PEAK FLOW [1] (GPD)	PEAK FLOW [1] (GPM)
Outfall						
Welcome Center	2747	0.5	1,374	1.0	4,121	2.9
Total Outfall	**2,747**		**1,374**	**1.0**	**4,121**	**2.9**

1 Peaking Factor per the City of Scottsdale Design Standards & Policies Manual are as follows:

Commercial/Retail: 3

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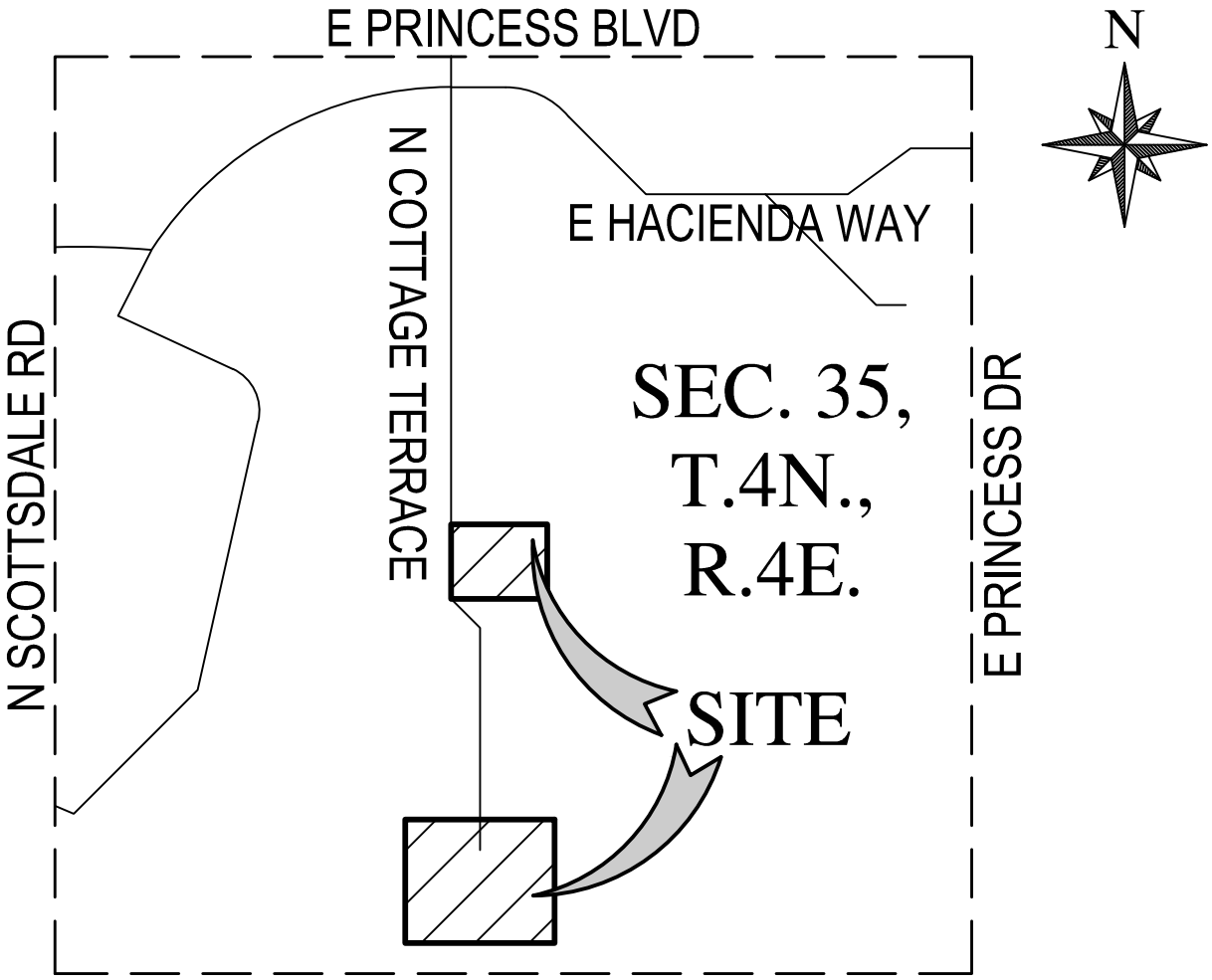
CALCULATED PIPE CAPACITIES, FULL BUILD-OUT CONDITION

Project Fairmont Scottsdale Princess Privado Welcome Center and Parking Expansion
Location Scottsdale AZ
Project Number 215319
Project Engineer Darin Moore, P.E.
References City of Scottsdale Design Standards and Policies Manual (2018)
ADEQ Bulletin No. 11

					PEAK FLOW RESULTS					
FROM NODE	**PIPE SIZE**	**MODELED PIPE SLOPE**	**PIPE CAPACITY (FULL)**		**PEAK FLOW**	**PEAK FLOW**	**d/D**	**MEAN VELOCITY (at d/D=0.75)**	**SURPLUS CAPACITY**	**PERCENT OF CAPACITY**
	(in)	**(ft/ft)**	**(gpd)**	**(gpm)**	**(gpd)**	**(gpm)**		**(ft/sec)**	**(gpd)**	**(%)**
Outfall										
Welcome Center	6	0.0226	546,689	380	4,121	2.9	0.07	4.7	542,569	0.8%

EXHIBIT 1 – VICINITY MAP



VICINITY MAP

N.T.S.

NOT
FOR
CONSTRUCTION
OR RECORDING

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FAIRMONT SCOTTSDALE PRINCESS PRIVADO WELCOME CENTER AND PARKING MODIFICATIONS

VICINITY MAP EXHIBIT

DATE	8-22-2022	SCALE	N.T.S	SHEET	1 OF 1
JOB NO.	215319	DESIGN	RS	CHECK	
		DRAWN	LBD	RFI #	

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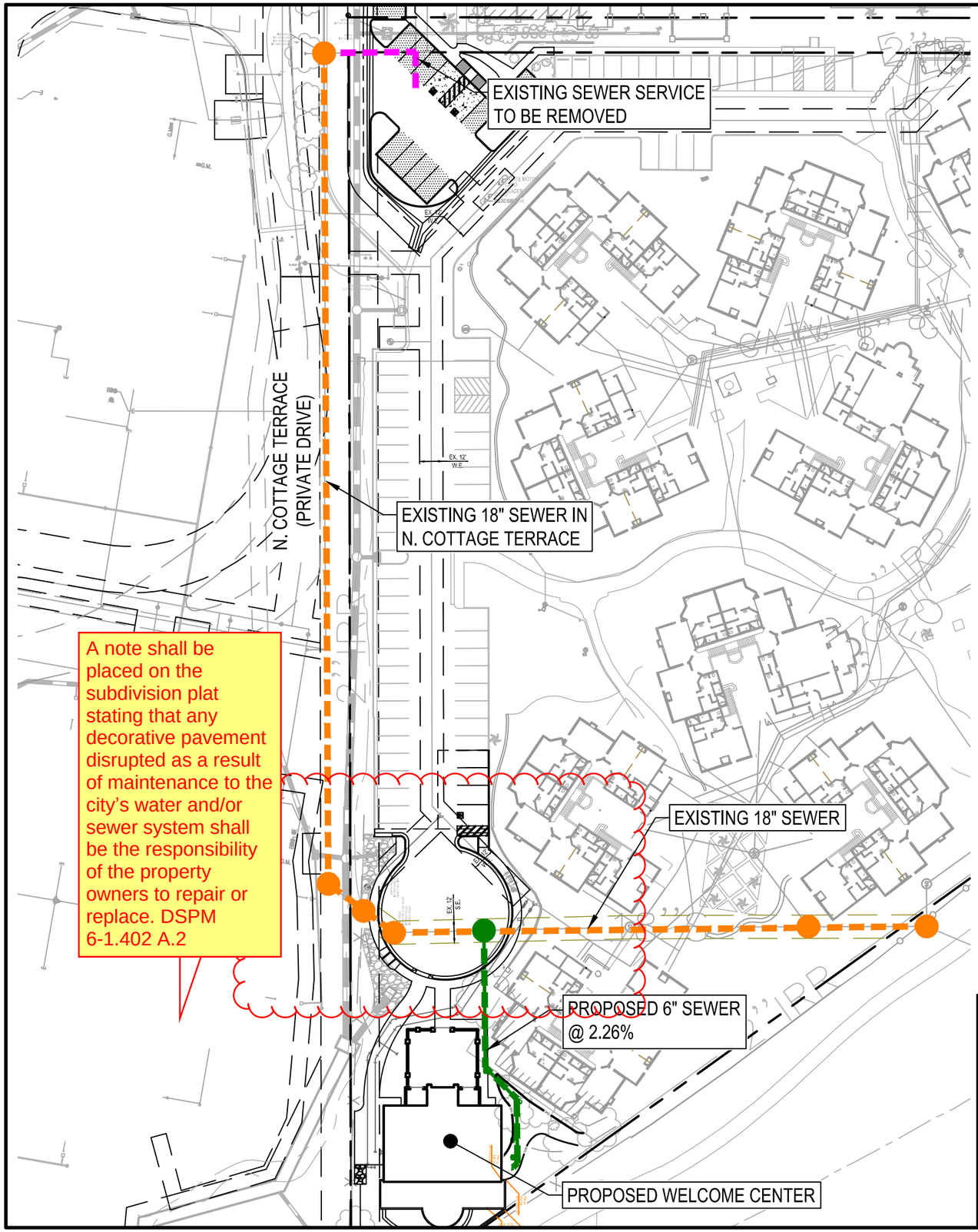
EXHIBIT 2 – WASTEWATER EXHIBIT



Note: As stated during 593-PA-2022, water and sewer master plans, including evaluation of impacts to offsite infrastructure will be required for additional improvements at the resort per DSPM 6-1.200 and 7-1.200.

N

0 30 60

Horz. 1 in. = 60 ft.

LEGEND

- EXISTING 18" SEWER PIPE
- EXISTING SEWER SERVICE
- PROPOSED 6" SEWER SERVICE
- PROPERTY BOUNDARY
- EXISTING SEWER MANHOLE
- PROPOSED SEWER MANHOLE

NOT FOR CONSTRUCTION OR RECORDING

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FAIRMONT SCOTTSDALE PRINCESS

PRIVADO WELCOME BUILDING AND PARKING MODIFICATION

DATE	10/12/2022	SCALE	1" = 60'	SHEET	1 OF 1
JOB NO.	215220	DESIGN	RS	DRAWN	AM

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