

JACOBS WALLACE, LLC
ENGINEERING PLANNING MANAGEMENT

FINAL

~~PRELIMINARY~~ WASTEWATER DISTRIBUTION SYSTEM

BASIS OF DESIGN REPORT

FINAL Basis of Design Report <input type="checkbox"/> APPROVED <input checked="" type="checkbox"/> APPROVED AS NOTED <input type="checkbox"/> REVISE AND RESUBMIT	 CITY OF SCOTTSDALE SCOTTSDALE WATER 9379 E San Salvador Dr. Scottsdale, AZ 85258
<small>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.</small>	
BY Idillon	DATE 1/6/2023

FOR

Marshall Four

4251 N Marshall Way

Scottsdale, Arizona

Address comments below and herein on the submitted improvement plans:

11/8/2022

1) connection to sewer needs to made perpendicular to the eastern alley sewer, 6" min diameter service line and per MAG 440-3

Prepared for

Tomecack Design
Mark Tomecack

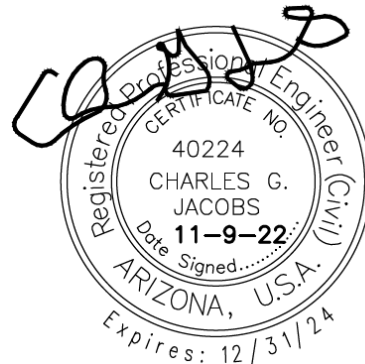


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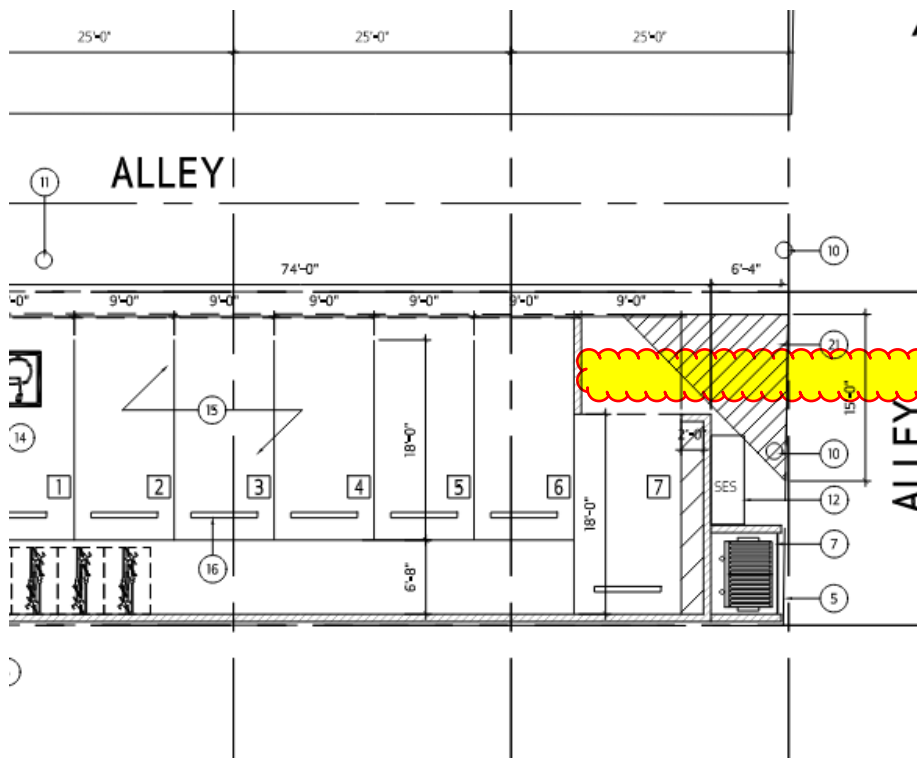
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Appendix:

Vicinity Map

Calculations

City of Scottsdale Quarter Section Map



connection to sewer
needs to be made
perpendicular to the
eastern alley sewer,
6" min diameter
and per MAG 440-3

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INTRODUCTION

The proposed project consists of a multi-story mixed use project podium style building. The existing building and parking will be demolished. The new building will be retail and multi-family residential.

The 0.10-acre site is located near the intersection of 5th Ave and Marshall Way on the east side of Marshall Way at 4251 N. Marshall Way. The site is bordered on all sides by existing commercial/multifamily developments.

The site lies within the Southeast Quarter of Section 22, Township 2 North, Range 4 East of Gila and Salt River Base and Meridian. See the Appendix for a vicinity map.

EXISTING CONDITIONS

There is an existing 8" VCP sewer main within the alley located on the east side of this property that will be utilized for this project.

PROPOSED CONDITIONS

The proposed project will install a new 6" private sewer to service the project. There will be a new 6" sewer connection made to the existing 8" VCP sewer near the center of the alley on the east side of the project. The new private 6" line serving the project will be installed at 1% minimum slope. Any existing services to the property will be abandoned.

The private sewer line construction and design will conform to Uniform Plumbing Code.

WASTEWATER ANALYSIS

Residential: 4 units

Retail: 1616 sf

Unit Daily Flows:

Residential: 140 gpd/unit

Retail: 0.5gpd/sf

Average Daily Flow:

Residential: 4 units * 140 gpd/unit=560 gpd

Retail: 1616 sf * 0.5gpd/sf = 808 gpd

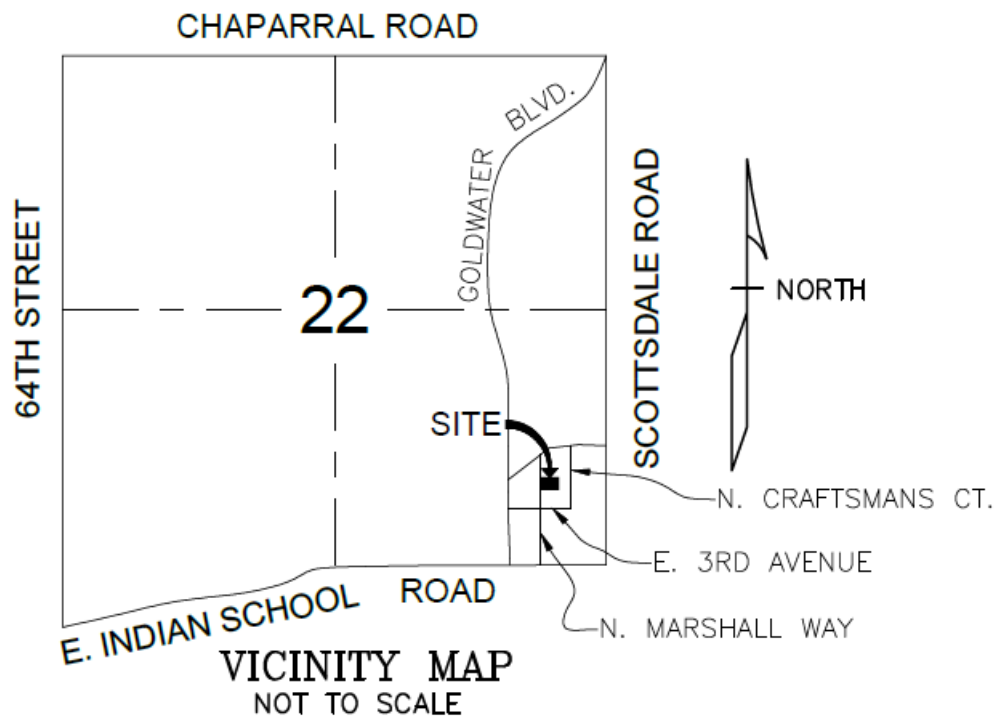
Peak Daily Flow:

$560 \text{ gpd} * 4.5 + 808 \text{ gpd} * 3 = 4944 \text{ gpd} = 3.43 \text{ gpm}$

SUMMARY

A 6" line with a slope of 1.0% flowing at 75% full carries 229 gpm with a velocity of 4.79 fps. A 6" line carrying 3.43 gpm flows with a velocity of 1.0 fps. See attached calculations in the Appendix. These parameters fall within acceptable ranges as set forth in the City of Scottsdale guidelines.

Vicinity Map



Calculations

Marshall Four

Design Flow

Set units: m mm ft in [\[Hide this line\]](#)

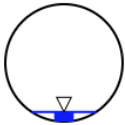
Inputs

Pipe diameter, d_0	6	in	X
Manning roughness, n	0.013		X
Pressure slope (possibly ? equal to pipe slope), S_0	1	% rise/run	X
Percent of (or ratio to) full depth (100% or 1 if flowing full)	8.2	%	X

Results

Flow, Q (See notes)	3.4603	gpm	X
Velocity, v	1.0103	ft/sec	X
Velocity head, h_v	0.1904	in H ₂ O	X
Flow area	1.0990	sq. in.	X
Wetted perimeter	3.4851	in	X
Hydraulic radius	0.3153	in	X
Top width, T	3.2924	in	X
Froude number, F	1.07		X
Average shear stress (tractive force), τ	0.7854	N/m ²	X

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Marshall Four

Full Flow

Set units: m mm ft in [\[Hide this line\]](#)

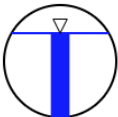
Inputs

Pipe diameter, d_0	6	in	X
Manning roughness, n	0.013		X
Pressure slope (possibly ? equal to pipe slope), S_0	1	% rise/run	X
Percent of (or ratio to) full depth (100% or 1 if flowing full)	75	%	X

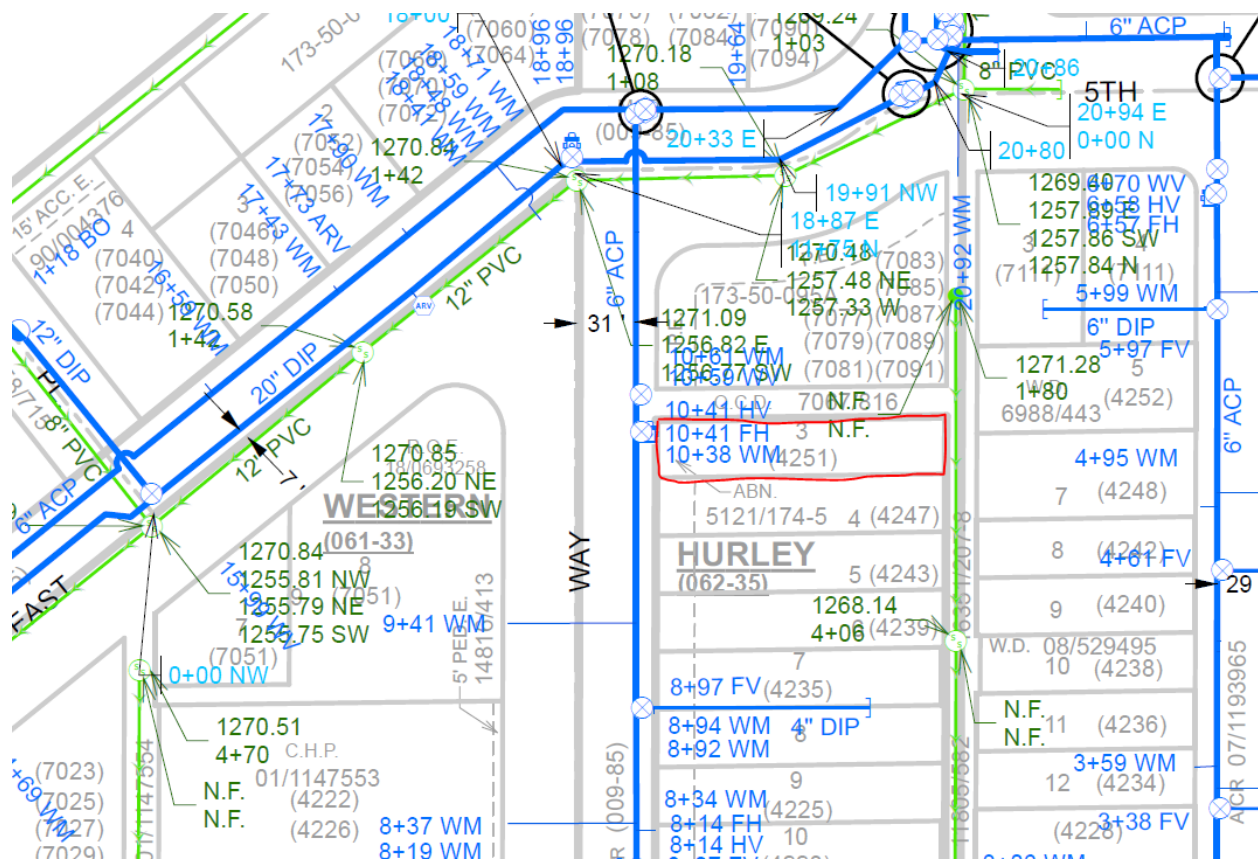
Results

Flow, Q (See notes)	229.6187	gpm	X
Velocity, v	3.2389	ft/sec	X
Velocity head, h_v	1.9565	in H ₂ O	X
Flow area	22.7467	sq. in.	X
Wetted perimeter	12.5664	in	X
Hydraulic radius	1.8101	in	X
Top width, T	5.1962	in	X
Froude number, F	0.95		X
Average shear stress (tractive force), τ	4.5085	N/m ²	X

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City Map



Aerial Map

