FINAL Basis of Design Report

☐ APPROVED

☑ APPROVED AS NOTED

☐ REVISE AND RESUBMIT

CITY OF SCOTTSDALE

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

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.

06/01/2021

BY ldillon **DATE** 6/1/2021

Address the following comments below and herein for plan submittal:
1.) **Stipulation**: Pool Backwash flow equalization required. Refer to guidance in accepted sewer BOD under 5-ZN-2020. As proposed herein: *The pool backwash will be captured by an equalization tank that is to be sized for up to four consecutive backwashes. The tank will have a metered flow of 5 gpm that outlets to the proposed sewer system.*
2.) **Stipulation**: Offsite sewer system modifications required. Add one additional manhole and 8" pipeline section as shown on figure 1 utility plan. Reroute and plug sewer as shown in figure 1.
3.) **Stipulation**: No wastewater flows permitted to McDowell Rd sewer.
4.)All sewer shown within the development property shall be private sewer. Designate private on submitted plans.
5.) Connection service line to public sewer shall be 8" w/ no clean outs or 6" per MAG 440-3 (currently shown 8" service with one additional new on-site receiving manhole)
6.) Address comments on utility plan

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SOUTHDALE

Final Wastewater Basis of Design Report

3 engineering Job #: 1872
April 23, 2021

17-DR-2021
5/6/2021

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SOUTHDALE

FINAL WASTEWATER BASIS OF DESIGN REPORT

Prepared for:

Hawkins Companies LLC
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Scottsdale, Arizona 85257
Contact: Mark Mitchell
Phone: (480) 223-8239

Registered Professional Engineer (Civil)
CERTIFICATE NO.
46857
DANIEL G.
MANN
4/23/21
Date Signed
ARIZONA, U.S.A.

Daniel G. Mann, P.E.

April 23, 2021

Submittal to:

City of Scottsdale
7447 E. Indian School Road, Suite 105
Scottsdale, AZ 85251

Prepared by:

3 engineering, L.L.C.
6370 E. Thomas Road, Suite #200
Scottsdale, Arizona 85251
Contact: Dan G. Mann, P.E.

Job Number 1872

17-DR-2021
5/6/2021

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Table of Contents

Tables

Figures

Appendices

1. Introduction

The project site, Southdale, is located in the southeast quarter of Section 34, Township 2 North, Range 4 East of the Gila and Salt River Meridian, Maricopa County, Arizona within the City of Scottsdale. The project is located on the northeast corner of 70th Street and McDowell Road. The site is bounded on the north by an apartment complex, on the east by a commercial development, on the south by McDowell Road, and on the west by 70th Street. See Appendix A for a vicinity map.

The existing zoning is C-3. The land is currently used as a commercial development. The General Plan shows the site as a Mixed-Use Neighborhood. The proposed zoning is PUD. The site is a proposed 267-unit apartment complex with office and retail space.

2. Design Documentation

The purpose of this Wastewater Basis of Design Report is to verify that the existing City of Scottsdale sewer system is able to accommodate demands generated by the proposed project, Southdale. FlowMaster V8i by Bentley Systems was used to model and analyze the existing sewer system downstream of the site to verify it has capacity for the existing flow plus the flows generated from the proposed site, Southdale. Modeling was performed in compliance with the City of Scottsdale design requirements.

The existing flow in the system was tested at two manholes in Palm Lane, downstream of the site. The tests were performed by RDH Environmental Services on 1/25/2020 through 2/2/2020. See results in Appendix B.

Demands for the proposed site were calculated using Section 7-1.403A of the City of Scottsdale 2018 Design Standards and Policies Manual. It is our opinion that this report is in accordance with the 2018 City of Scottsdale Design Standards and Policies Manual.

3. Existing Conditions

The existing zoning is C-3. The existing land is a commercial development. See Appendix A for a vicinity map. The site is surrounded by existing multi-family residential development and commercial development. There is an existing 8" V.C.P. sewer line in the apartment complex north of the site that will be utilized by the proposed development. This sewer line flows north to an 8" V.C.P. sewer line in Palm Lane at City of Scottsdale Manhole #31. This manhole has an overflow pipe that is conveyed to Manhole #48, which outlets to a 10" sewer line in Palm Lane. The 8" sewer line in Palm Lane flows to an 8" V.C.P. sewer line in Scottsdale Road, that flows south. The 10" sewer line in Palm lane flows to an 18" V.C.P. sewer line in Scottsdale Road, that flows south. The 8" sewer line running through the apartment north of the site, the 8" and 10" sewer lines in Palm Lane and the 8" sewer line in Scottsdale Road will be analyzed to determine if they have capacity for the additional flow generated from the proposed project. See Figure 1 for existing sewer layout.

4. Proposed Conditions

The project consists of a 267-unit apartment complex with 3,300 s.f. of office space and 2,200 s.f. of retail space on 3.83 acres. It is proposed that this project will tie into the existing 8" V.C.P. sewer line in the apartment complex north of the site. See Preliminary Onsite Utility Plans in Appendix G.

17-DR-2021
5/6/2021

The proposed site includes one pool. The assumed instantaneous backwash rate of the pool is 100 gpm. The pool backwash will be captured by an equalization tank that is to be sized for up to four consecutive backwashes. The tank will have a metered flow of 5 gpm that outlets to the proposed sewer system.

5. Computations

5.1. Proposed Site Demand Calculations

The following demand criteria from the City of Scottsdale 2018 Design Standards and Policies Manual (DSPM) were used in determining the system demands for the proposed site.

1. 267 proposed units
2. 3.83 acre site (70 du/ac)
3. 1.7 persons per unit (Per DSPM, multifamily density exceeding 22 du/ac)
4. 100 gallons per person per day (Per DSPM, residential)
5. Peaking factor = 4 (Per DSPM, residential)
6. 3,300 s.f. proposed Office Space
7. 0.4 gpd/s.f. (Per DPSM, Office)
8. 2,200 s.f. proposed Retail Space
9. 0.5 gpd/s.f. (Per DSPM, Commercial/Retail)
10. Peaking factor = 3 (Per DSPM, Commercial/Retail, Office)
11. 5 gallons per minute per pool for backwash (assume 1 pool)

TABLE 1: ON-SITE SEWER DEMANDS	
Pool Backwash	5 gpm
Avg. daily demand w/ pool backwash	38.20 gpm
Design Flow Rate w/ pool backwash	136.12 gpm

Residentail
Average daily demand: 267 units x 1.7 persons per unit x 100 gpd per person = 45,390 gpd
= 45,390 gpd/1440 mpd = 31.52 gpm

Peak flow rate = 4.0 x 45,390 gpd = 181,560 gpd
= 181,560 gpd/1440 mpd = 126.08 gpm

Office
Average daily demand: 3,300 s.f. x 0.4 gpd per s.f. = 1,320 gpd
= 1,320 gpd/1440 mpd = 0.92 gpm

Peak flow rate = 3.0 x 1,320 gpd = 3,960 gpd
= 3,960 gpd/1440 mpd = 2.75 gpm

Retail
Average daily demand: 2,200 s.f. x 0.5 gpd per s.f. = 1,100 gpd
= 1,100 gpd/1440 mpd = 0.76 gpm

Peak flow rate = 3.0 x 1,100 gpd = 3,300 gpd
= 3,300 gpd/1440 mpd = 2.29 gpm

17-DR-2021
5/6/2021

Total
Average daily demand = 33.20 gpm
Peak flow rate = 131.12 gpm

5.2. Existing System Flows

The existing maximum flows for the sewer lines in Palm Lane were determined by the flow test performed 1/25/2020 through 2/2/2020. There is a maximum of 13.172 gpm exiting manhole #48 east to the 10" sewer line in Palm Lane and a maximum of 218.699 gpm exiting manhole #31 east to the 8" sewer line in Palm Lane. The data was logged in 5-minute intervals over 9 days, including two weekends. See Appendix B for flow test data.

Two legs contribute to manhole #31. The leg flowing from the south has 114 single family homes, 101 multi-family units, the Aire Townhome development and ultimately the proposed site. The leg flowing from the west has 349 single family homes, 114 multi-family units, and Tonalea elementary school with 500 students. The flows from the two legs are calculated below per the City of Scottsdale DSPM. See Appendix C for a map of the legs.

South Leg (Orange)
114 Single-family x 2.5 persons per unit x 100 gpd per person x 4.0 P.F. / 1440 = 79.16 gpm
Aire townhomes: 80 units x 2.5 persons per unit x 100 gpd per person x 4.0 P.F. / 1440 = 55 gpm
Aire townhomes pool backwash: 100 gpm
101 multi-family x 2.5 persons per unit x 100 gpd per person x 4.0 P.F. / 1440 = 70.12 gpm
Total Peak flow = 304.28 gpm

West Leg (Green)
349 Single-family x 2.5 persons per unit x 100 gpd per person x 4.0 P.F. / 1440 = 242.36 gpm
114 multi-family x 2.5 persons per unit x 100 gpd per person x 4.0 P.F. / 1440 = 79.16 gpm
Tonalea elementary: 50 gpd per student x 500 students x 6.0 P.F. / 1440 = 104.17 gpm
Total Peak flow = 425.69 gpm

The total calculated flow for this manhole is 729.97 gpm. The south leg accounts for 41.68% of the total flow and the west leg accounts for 58.32% of the total flow.

The proportion of the total flow for each leg is applied to the tested flow through manhole #31. From the observed test results, the south leg has a proportional flow of 91.15 gpm, and the west leg has a proportional flow of 127.54 gpm. The total flow is 218.69 gpm.

Analysis of the 8" V.C.P. sewer line in Scottsdale Road requires adding the peak flows from four downstream buildings that include: a chiropractor's office, Ace Hardware, Post Office, and Comerica Bank. The flows for the sites are calculated below per the City of Scottsdale DSPM.

Chiropractic: 2,135 sf x 0.4 gpd per sf x 3.0 P.F. / 1440 = 1.78 gpm
Ace Hardware: 20,175 sf x 0.5 gpd per sf x 3.0 P.F. / 1440 = 21.02 gpm
Post Office: 84,225 sf x 0.1 gpd per sf x 3.0 P.F. / 1440 = 17.55 gpm
Bank: 3,950 sf x 0.5 gpd per sf x 3.0 P.F. / 1440 = 4.11 gpm
Total Peak Flow = 44.46 gpm

5.3. Sewer System Analysis

FlowMaster V8i by Bentley Systems was used to model and analyze the existing sewer system for compliance with the C.O.S. design requirements. The sewer lines were modeled with a Manning's n coefficient of 0.013. The sewer rims and inverts were surveyed by 3 engineering on

17-DR-2021
5/6/2021

02/13/20 and 03/16/20. See Figure 1 for an overall system layout. In addition to analyzing the 8" sewer running through the apartment site, the system downstream will be analyzed to address the 8" sewer line in Scottsdale Road which does not have sufficient capacity for the additional flows from the proposed site in the existing configuration. The maximum allowable d/D for all pipes discussed is 0.75.

Existing Sewer Line in Apartment

The existing 8" sewer line running through the apartment complex north of the site was analyzed at the minimum surveyed slope of 0.27%. The existing flow in this segment is the 91.15 gpm from the south leg. The existing d/D is 0.39. See Appendix D for FlowMaster results of this pipe.

Existing Sewer Line in Apartment with Proposed Site

The existing 8" sewer line running through the apartment complex north of the site was analyzed at the minimum surveyed slope of 0.27%. The new flow includes the the 91.15 gpm from the south leg, plus the additional 136.12 gpm of flow from the proposed site for a total of 227.27 gpm. The proposed d/D is 0.68 in the existing line. See Appendix D for FlowMaster results of this pipe.

Existing Sewer System in Palm Lane and Scottsdale Road

In the existing condition, Manhole #31 in Palm lane, receives the 91.15 gpm from the south leg and the 127.54 gpm from the west leg. There is an existing overflow pipe elevated 3" above the downstream pipe in manhole #31 that flows into manhole #48. The overflow pipe was modeled as a weir using the resulting elevation when the total flow of 218.69 gpm enters the 8" pipe in Palm Lane. The overflow pipe conveys a flow of 48.74 gpm to the 10" line in Palm Lane. The results of the existing system analysis are discussed below and FlowMaster Data is included in Appendix E.

- The existing 10" sewer line in Palm Lane was analyzed at a minimum surveyed slope of 0.43%. The existing flow includes the 13.17 gpm from the flow test of manhole #48 plus the 48.74 gpm from the overflow pipe in manhole #31 for a total flow of 61.91 gpm. The existing d/D is 0.21.
- The existing 8" sewer line in Palm Lane was analyzed at a minimum surveyed slope of 0.27%. The existing flow includes the 169.95 gpm that bypasses the overflow pipe in manhole #31. The existing d/D is 0.56.
- The existing 8" sewer line in Scottsdale Road was analyzed at a minimum surveyed slope of 0.19%. The existing flow includes the 169.95 gpm from the 8" line in Palm Lane plus the 44.46 gpm from the buildings along Scottsdale Road for a total flow of 214.41 gpm. The existing d/D is 0.75.

Proposed Sewer System in Palm Lane and Scottsdale Road with Proposed Site

The proposed project, Southdale, generates 136.12 gpm of peak wastewater flow that is conveyed to manhole #31. In the existing configuration, the capacity of the 8" line in Scottsdale Road will be exceeded as the d/D is already 0.75 before the additional flows. The proposed plan is to divert more flow into the 10" line in Palm lane, which has excess capacity.

This will be achieved by adding a manhole in the west leg (green) and connecting the leg directly into manhole #48. The 10" line in Palm Lane will then receive the entire 127.54 gpm from the West leg. Manhole #31 in Palm lane will receive the existing 91.15 gpm from the South leg plus the additional 136.12 gpm from the proposed site for a total flow of 227.27 gpm. There is an existing overflow pipe elevated 3" above the downstream pipe in manhole #31 that flows into manhole #48. The overflow pipe will remain unchanged. With this flow, the overflow pipe conveys 54.90 gpm of the 227.27 gpm to manhole #48.

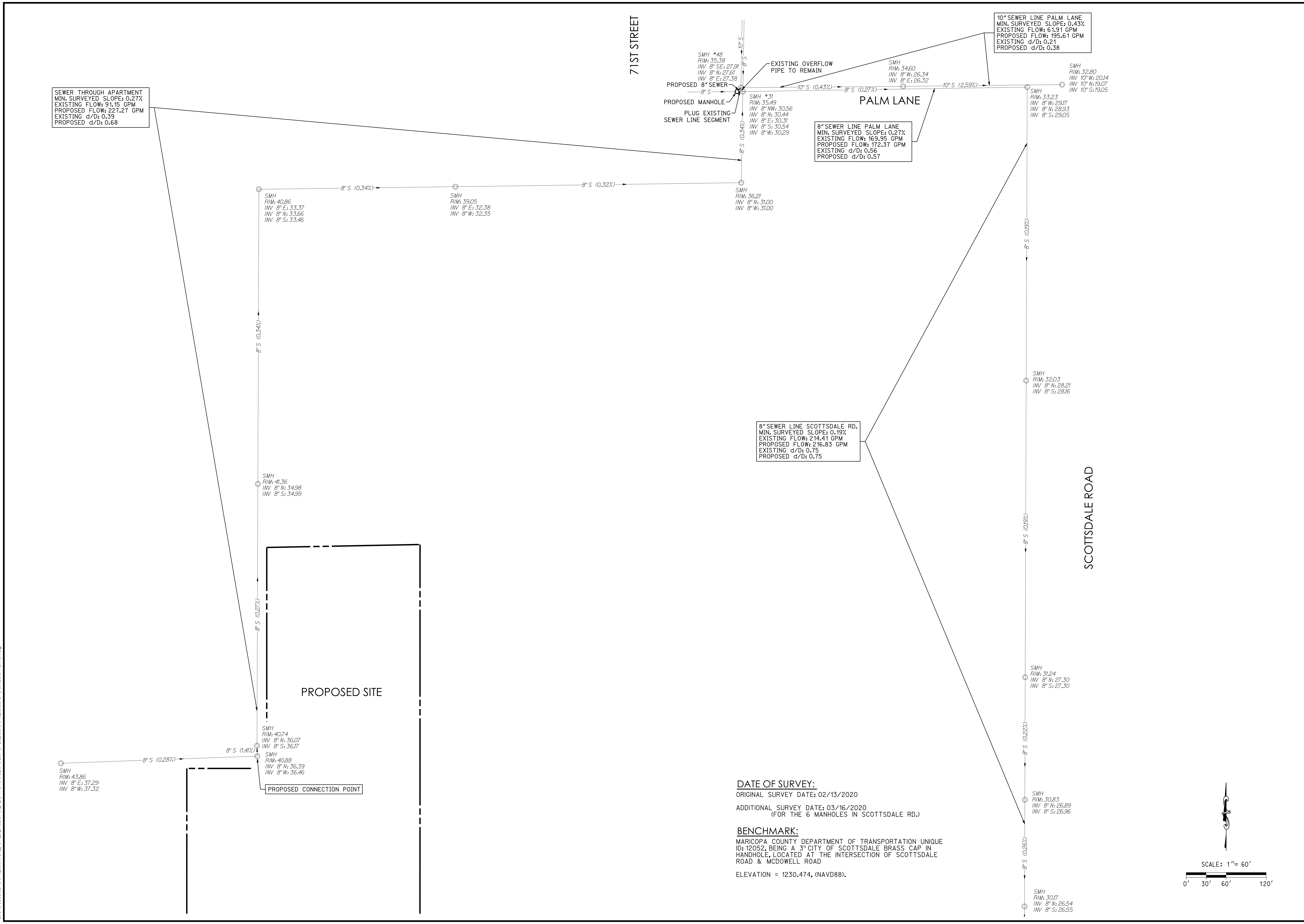
The results are discussed below. FlowMaster Data is included in Appendix F and shown in Figure 1 on the following page.

- The 10” sewer line in Palm Lane was analyzed at a minimum surveyed slope of 0.43%. The proposed flow includes the 127.54 gpm from the west leg plus the 13.17 gpm from the flow test of manhole #48 plus the 54.90 gpm from the overflow pipe in manhole #31 for a total flow of 195.61 gpm. The proposed d/D is 0.38.
- The 8” sewer line in Palm Lane was analyzed at a minimum surveyed slope of 0.27%. The proposed flow includes the 172.37 gpm from the south leg and proposed site that bypasses the overflow pipe. The proposed d/D is 0.57.
- The 8” sewer line in Scottsdale Road was analyzed at a minimum surveyed slope of 0.19%. The proposed flow includes the 172.37 gpm from the 8” line in Palm Lane plus 44.46 gpm from the buildings along Scottsdale Road for a total flow of 216.83 gpm. The proposed d/D is 0.75.

6. ***Summary***

The Peak Flow for the proposed site is 136.12 gpm. The site ties into an existing 8” sewer line, in the apartment complex north of the site, that has an existing flow of 91.15 gpm. The pipe has a proposed d/D of 0.68 with the additional flow from the proposed site. In the existing configuration, the 8” sewer line in Scottsdale Road is at capacity and cannot handle additional flow from the proposed site, Southdale. The proposed improvements address the capacity issue for the 8” sewer line in Scottsdale Road. It is proposed to re-route the west leg of the sewer to the 10” line in Palm Lane via a new manhole and leave the overflow pipe in place. The maximum d/D of 0.75 in the 8” line in Scottsdale Road will remain.

17-DR-2021
5/6/2021



DATE OF SURVEY:

ORIGINAL SURVEY DATE: 02/13/2020

ADDITIONAL SURVEY DATE: 03/16/2020
(FOR THE 6 MANHOLES IN SCOTTSDALE RD.)

BENCHMARK:

MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION UNIQUE ID: 12052, BEING A 3" CITY OF SCOTTSDALE BRASS CAP IN HANDHOLE, LOCATED AT THE INTERSECTION OF SCOTTSDALE ROAD & MCDOWELL ROAD

ELEVATION = 1230.474, (NAVD88).

SOUTHDALE

7000 E. MCDOWELL ROAD, SCOTTSDALE, AZ 85257

FIGURE 1 - PROPOSED OVERALL SYSTEM EXHIBIT

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ENGINEER: D. MANN
DESIGNER: D. MANN
CAD TECH: R. HANNEN

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6370 E. THOMAS ROAD
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DATE: 06/26/20

PROJECT NO.
1872

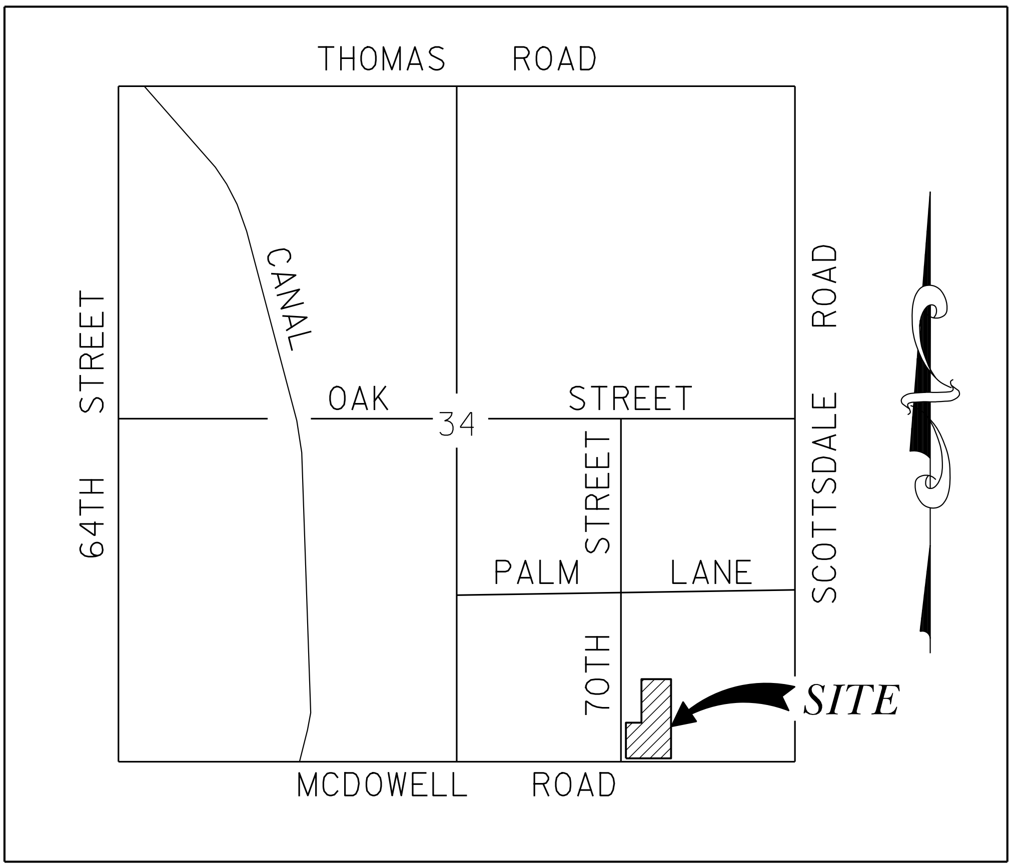
SHEET NO.
1 of 1

C:\My SecuriSync\Projects\1872_70th_St_McDowell_Apartments\Reports\Sewer Capacity\Proposed Overall System Exhibit.dgn

17-DR-2021
5/6/2021

APPENDIX A

Vicinity Map



VICINITY MAP

N.T.S.

17-DR-2021
5/6/2021

APPENDIX B

Flow Test Results

Flow Study for 3 Engineering Project: 726-PA-2019 (District at 7000 E. McDowell)

Dan Man
3 Engineering
9379 E. San Salvador Dr.   Scottsdale, Arizona • 85258

SL727 RDH Flow Study, 2 sites in Scottsdale, AZ   Friday, 1-25-20 to Sunday 2-2-20.

Equipment for Both Sites: Hach 901 Logger with Flo-Dar sensor**.**

The equipment was installed on 1-24-20 with confined space entry, pipe size confirmed, sensor calibrated and level depth confirmed to the flow level at that time.
Duration of monitoring: 9 days over 2 weekends.
Monitor: Flow (gpm), Level (in), and Velocity (fps)
Data logging: 5 minutes intervals (No averaged intervals)

Site 1: Manhole on Palm Lane just East of 71st Street and West of Scottsdale Rd.
Quarter section: 13-44
Manhole: #31
8" VCP
Flo-Dar sensor installed downstream on the 8" line (due to collecting data from 3 flows)
There was no buildup in the pipe.
All data is good with no sensor interference from debris.

Attached is the excel sheet showing all Level, Velocity and Flow using the Manning equation within the loggers. Below are the data summaries for Site 1:

3 Engineering MH31 Level (in.)			
Date	Maximum	Minimum	Average
1/25/2020	4.516	1.670	2.968
1/26/2020	4.467	1.670	3.077
1/27/2020	4.101	1.609	2.919
1/28/2020	4.346	1.664	2.973
1/29/2020	4.161	1.556	2.942
1/30/2020	4.448	1.822	3.107
1/31/2020	4.645	2.279	3.455
2/1/2020	4.650	2.459	3.585
2/2/2020	4.860	2.312	3.610

3 Engineering MH31 Velocity (fps)			
Date	Maximum	Minimum	Average
1/25/2020	2.048	1.024	1.623
1/26/2020	2.236	0.969	1.652
1/27/2020	2.242	0.968	1.663
1/28/2020	2.225	0.950	1.721
1/29/2020	2.206	0.991	1.663
1/30/2020	2.360	1.110	1.713
1/31/2020	2.466	1.344	1.920
2/1/2020	2.315	1.181	1.896
2/2/2020	2.340	1.194	1.869

Flow Study for 3 Engineering Project: 726-PA-2019 (District at 7000 E. McDowell)

3 Engineering MH31 Flow (gpm)			
Date	Maximum	Minimum	Average
1/25/2020	166.794	26.290	90.416
1/26/2020	185.594	23.660	97.869
1/27/2020	181.243	22.000	91.283
1/28/2020	177.327	22.400	96.150
1/29/2020	164.073	22.067	91.924
1/30/2020	186.510	30.502	101.115
1/31/2020	200.695	50.721	126.505
2/1/2020	218.699	52.181	130.384
2/2/2020	206.784	46.251	131.618

Period Summary		
Measures	Value	Unit
Max. Total Flow	314,900	gpd
Min. Total Flow	31,700	gpd
Avg. Total Flow	153,200	gpd
Total Flow	1,378,461.1	gal

RDH Environmental Services
Theresa Hayes
General Manager
gm@rdh-env.com

Flow Study for 3 Engineering Project: 726-PA-2019 (District at 7000 E. McDowell)

Dan Man
3 Engineering
9379 E. San Salvador Dr. Scottsdale, Arizona • 85258

SL727 RDH Flow Study, 2 sites in Scottsdale, AZ Friday, 1-25-20 to Sunday 2-2-20.

Equipment for Both Sites: Hach 901 Logger with Flo-Dar sensor**.**

The equipment was installed on 1-24-20 with confined space entry, pipe size confirmed, sensor calibrated and level depth confirmed to the flow level at that time.
Duration of monitoring: 9 days over 2 weekends.
Monitor: Flow (gpm), Level (in), and Velocity (fps)
Data logging: 5 minutes intervals (No averaged intervals)

Site 2: Manhole on Palm Lane between 71st Street and Scottsdale Rd.
Quarter section: 13-44
Manhole: #48
10" VCP
Flo-Dar sensor installed upstream on the 10" line
There was no buildup in the pipe.
All data is good with no sensor interference from debris.

Attached is the excel sheet showing all Level, Velocity and Flow using the Manning equation within the loggers. Below are the data summaries for Site 2:

3 Engineering MH48 Level (in.)			
Date	**Maximum**	**Minimum**	**Average**
1/25/2020	0.559	0.156	0.317
1/26/2020	0.583	0.134	0.322
1/27/2020	0.505	0.199	0.340
1/28/2020	0.541	0.157	0.330
1/29/2020	0.524	0.151	0.310
1/30/2020	0.639	0.178	0.385
1/31/2020	0.681	0.257	0.392
2/1/2020	0.759	0.156	0.392
2/2/2020	0.718	0.168	0.419

3 Engineering MH48 Velocity (fps)			
Date	**Maximum**	**Minimum**	**Average**
1/25/2020	1.420	0.765	1.063
1/26/2020	1.554	0.697	1.058
1/27/2020	1.521	0.730	1.063
1/28/2020	1.521	0.659	1.087
1/29/2020	1.390	0.795	1.070
1/30/2020	1.506	0.813	1.118
1/31/2020	1.497	0.835	1.138
2/1/2020	1.641	0.780	1.169
2/2/2020	1.556	0.826	1.183

Flow Study for 3 Engineering Project: 726-PA-2019 (District at 7000 E. McDowell)

3 Engineering MH48 Flow (gpm)			
Date	**Maximum**	**Minimum**	**Average**
1/25/2020	6.251	0.759	2.591
1/26/2020	7.116	0.522	2.718
1/27/2020	6.533	0.860	2.831
1/28/2020	6.934	0.706	2.814
1/29/2020	6.403	0.655	2.557
1/30/2020	9.435	0.800	3.708
1/31/2020	10.650	1.475	3.765
2/1/2020	13.172	0.819	4.152
2/2/2020	11.721	0.774	4.619

Period Summary		
Measures	**Value**	**Unit**
Max. Total Flow	19,000	gpd
Min. Total Flow	800	gpd
Avg. Total Flow	4,800	gpd
Total Flow	42,833.1	gal

RDH Environmental Services
Theresa Hayes,
General Manager
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APPENDIX C

System Leg Exhibit

17-DR-2021
5/6/2021

APPENDIX D

Apartment Segment FlowMaster Data

Cross Section for Existing Apartment Segment: 8" Sewer min slope

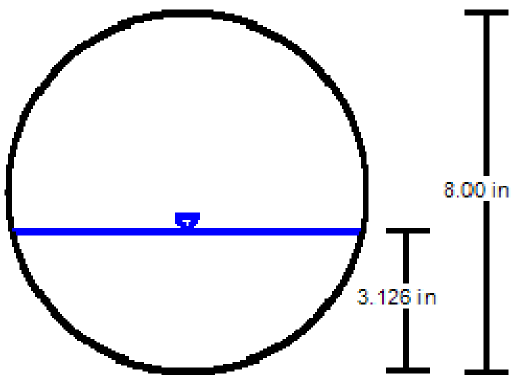
Project Description

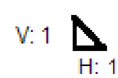
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.27000	%
Normal Depth	3.126	in
Diameter	8.00	in
Discharge	91.15	gpm

Cross Section Image





17-DR-2021
5/6/2021

Worksheet for Existing Apartment Segment: 8" Sewer min slope

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.27000	%
Diameter	8.00	in
Discharge	91.15	gpm

Results

Normal Depth	3.126	in
Flow Area	18.20	in²
Wetted Perimeter	0.90	ft
Hydraulic Radius	1.684	in
Top Width	0.65	ft
Critical Depth	0.21	ft
Percent Full	39.1	%
Critical Slope	0.00640	ft/ft
Velocity	1.61	ft/s
Velocity Head	0.04	ft
Specific Energy	0.30	ft
Froude Number	0.64	
Maximum Discharge	0.68	ft³/s
Discharge Full	0.63	ft³/s
Slope Full	0.00028	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.000	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.000	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	39.08	%
Downstream Velocity	Infinity	ft/s

17-DR-2021
5/6/2021

Worksheet for Existing Apartment Segment: 8" Sewer min slope

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.126	in
Critical Depth	0.21	ft
Channel Slope	0.27000	%
Critical Slope	0.00640	ft/ft

Cross Section for Apartment Segment: 8" Sewer min slope w/ Prop.

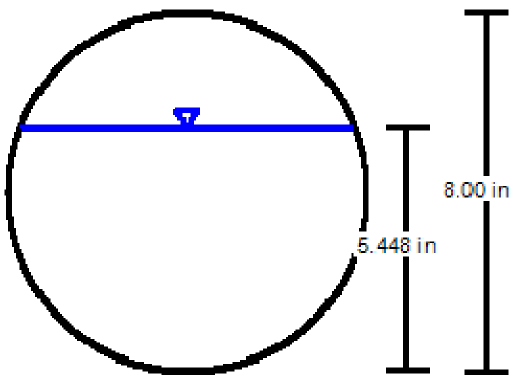
Project Description

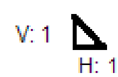
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.27000	%
Normal Depth	5.448	in
Diameter	8.00	in
Discharge	227.27	gpm

Cross Section Image





17-DR-2021
5/6/2021

Worksheet for Apartment Segment: 8" Sewer min slope w/ Prop. Flow

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.27000	%
Diameter	8.00	in
Discharge	227.27	gpm

Results

Normal Depth	5.448	in
Flow Area	36.46	in²
Wetted Perimeter	1.29	ft
Hydraulic Radius	2.348	in
Top Width	0.62	ft
Critical Depth	0.33	ft
Percent Full	68.1	%
Critical Slope	0.00702	ft/ft
Velocity	2.00	ft/s
Velocity Head	0.06	ft
Specific Energy	0.52	ft
Froude Number	0.55	
Maximum Discharge	0.68	ft³/s
Discharge Full	0.63	ft³/s
Slope Full	0.00176	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.000	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.000	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	68.10	%
Downstream Velocity	Infinity	ft/s

17-DR-2021
5/6/2021

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	5.448	in
Critical Depth	0.33	ft
Channel Slope	0.27000	%
Critical Slope	0.00702	ft/ft

APPENDIX E

Existing Sewer FlowMaster Data

Cross Section for Existing: 8" Sewer Palm Lane Overflow to Weir

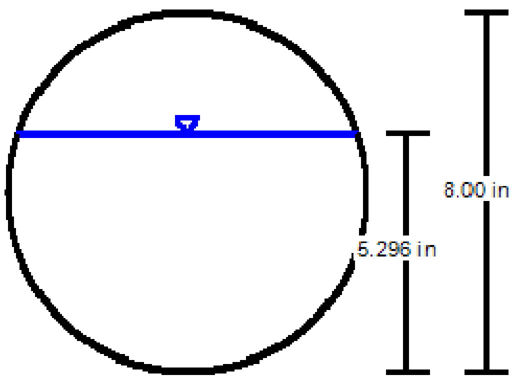
Project Description

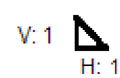
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.27000	%
Normal Depth	5.296	in
Diameter	8.00	in
Discharge	218.69	gpm

Cross Section Image





17-DR-2021
5/6/2021

Worksheet for Existing: 8" Sewer Palm Lane Overflow to Weir

Project Description

Friction Method	Manning Formula	
Solve For	Normal Depth	

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.27000	%
Diameter	8.00	in
Discharge	218.69	gpm

Results

Normal Depth	5.296	in
Flow Area	35.32	in²
Wetted Perimeter	1.27	ft
Hydraulic Radius	2.323	in
Top Width	0.63	ft
Critical Depth	0.33	ft
Percent Full	66.2	%
Critical Slope	0.00697	ft/ft
Velocity	1.99	ft/s
Velocity Head	0.06	ft
Specific Energy	0.50	ft
Froude Number	0.56	
Maximum Discharge	0.68	ft³/s
Discharge Full	0.63	ft³/s
Slope Full	0.00163	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.000	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.000	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	66.20	%
Downstream Velocity	Infinity	ft/s

17-DR-2021
5/6/2021

Worksheet for Existing: 8" Sewer Palm Lane Overflow to Weir

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	5.296	in
Critical Depth	0.33	ft
Channel Slope	0.27000	%
Critical Slope	0.00697	ft/ft

17-DR-2021
5/6/2021

Cross Section for Existing: Rectangular Weir Overflow NW

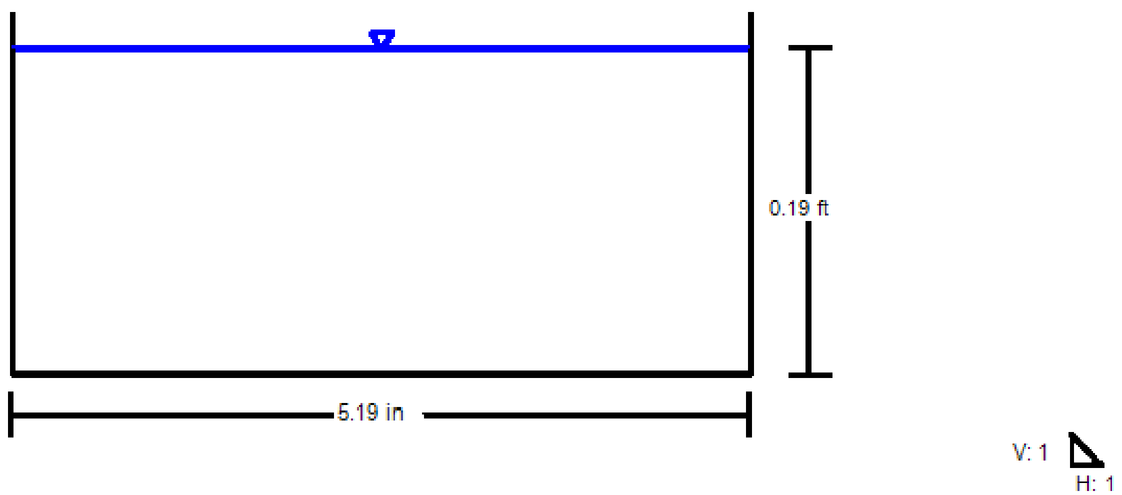
Project Description

Solve For	Discharge

Input Data

Discharge	48.74	gpm
Headwater Elevation	2.296	in
Crest Elevation	0.00	in
Tailwater Elevation	0.00	in
Weir Coefficient	3.00	US
Crest Length	5.19	in
Number Of Contractions	0	

Cross Section Image



17-DR-2021
5/6/2021

Worksheet for Existing: Rectangular Weir Overflow NW

Project Description

Solve For	Discharge

Input Data

Headwater Elevation	2.296	in
Crest Elevation	0.00	in
Tailwater Elevation	0.00	in
Weir Coefficient	3.00	US
Crest Length	5.19	in
Number Of Contractions	0	

Results

Discharge	48.74	gpm
Headwater Height Above Crest	0.19	ft
Tailwater Height Above Crest	0.00	ft
Flow Area	11.92	in²
Velocity	1.31	ft/s
Wetted Perimeter	0.82	ft
Top Width	0.43	ft

17-DR-2021
5/6/2021

Cross Section for Existing: 8" Sewer Palm Lane

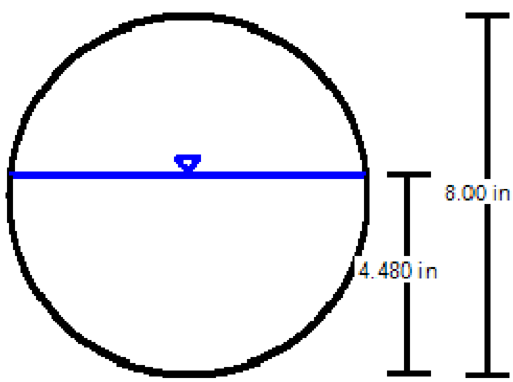
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.27000	%
Normal Depth	4.480	in
Diameter	8.00	in
Discharge	169.95	gpm

Cross Section Image



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17-DR-2021
5/6/2021

Worksheet for Existing: 8" Sewer Palm Lane

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.27000	%
Diameter	8.00	in
Discharge	169.95	gpm

Results

Normal Depth	4.480	in
Flow Area	28.97	in²
Wetted Perimeter	1.13	ft
Hydraulic Radius	2.141	in
Top Width	0.66	ft
Critical Depth	0.29	ft
Percent Full	56.0	%
Critical Slope	0.00669	ft/ft
Velocity	1.88	ft/s
Velocity Head	0.06	ft
Specific Energy	0.43	ft
Froude Number	0.60	
Maximum Discharge	0.68	ft³/s
Discharge Full	0.63	ft³/s
Slope Full	0.00098	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.000	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.000	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	56.01	%
Downstream Velocity	Infinity	ft/s

17-DR-2021
5/6/2021

Worksheet for Existing: 8" Sewer Palm Lane

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	4.480	in
Critical Depth	0.29	ft
Channel Slope	0.27000	%
Critical Slope	0.00669	ft/ft

17-DR-2021
5/6/2021

Cross Section for Existing: 10" Sewer Palm

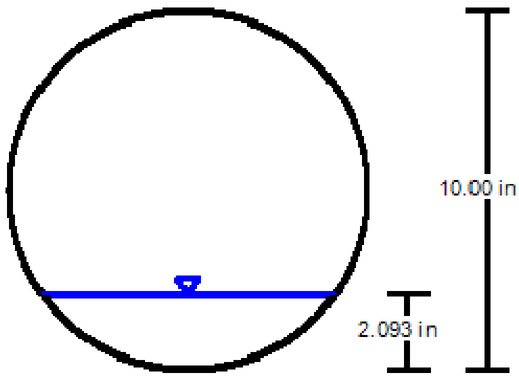
Project Description

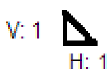
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.43000	%
Normal Depth	2.093	in
Diameter	10.00	in
Discharge	61.91	gpm

Cross Section Image





17-DR-2021
5/6/2021

Worksheet for Existing: 10" Sewer Palm

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.43000	%
Diameter	10.00	in
Discharge	61.91	gpm

Results

Normal Depth	2.093	in
Flow Area	11.93	in²
Wetted Perimeter	0.79	ft
Hydraulic Radius	1.256	in
Top Width	0.68	ft
Critical Depth	0.16	ft
Percent Full	20.9	%
Critical Slope	0.00621	ft/ft
Velocity	1.66	ft/s
Velocity Head	0.04	ft
Specific Energy	0.22	ft
Froude Number	0.84	
Maximum Discharge	1.55	ft³/s
Discharge Full	1.44	ft³/s
Slope Full	0.00004	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.000	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.000	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	20.93	%
Downstream Velocity	Infinity	ft/s

17-DR-2021
5/6/2021

Worksheet for Existing: 10" Sewer Palm

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.093	in
Critical Depth	0.16	ft
Channel Slope	0.43000	%
Critical Slope	0.00621	ft/ft

Cross Section for Existing: 8" Sewer Scottsdale Road

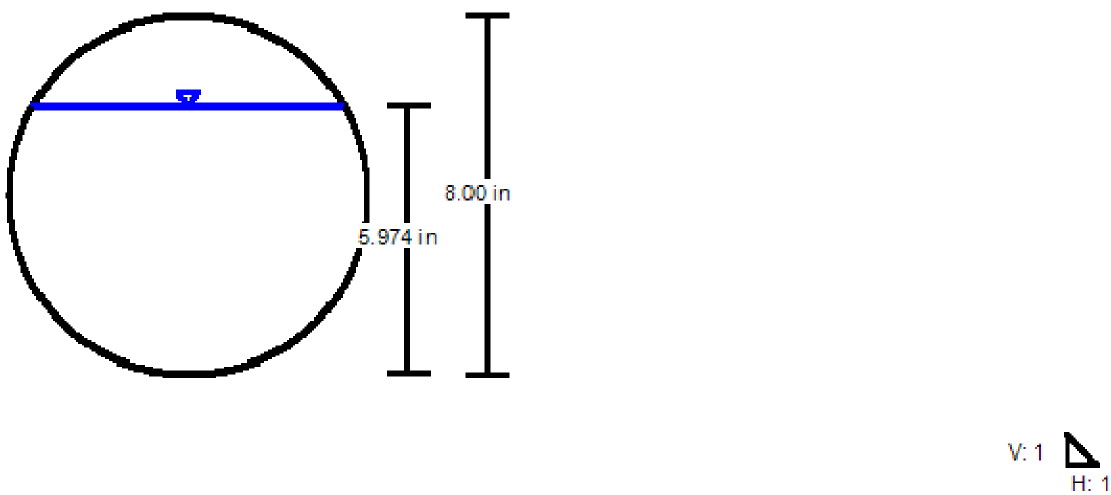
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.19000	%
Normal Depth	5.974	in
Diameter	8.00	in
Discharge	214.41	gpm

Cross Section Image



17-DR-2021
5/6/2021

Worksheet for Existing: 8" Sewer Scottsdale Road

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.19000	%
Diameter	8.00	in
Discharge	214.41	gpm

Results

Normal Depth	5.974	in
Flow Area	40.26	in²
Wetted Perimeter	1.39	ft
Hydraulic Radius	2.411	in
Top Width	0.58	ft
Critical Depth	0.32	ft
Percent Full	74.7	%
Critical Slope	0.00694	ft/ft
Velocity	1.71	ft/s
Velocity Head	0.05	ft
Specific Energy	0.54	ft
Froude Number	0.43	
Maximum Discharge	0.57	ft³/s
Discharge Full	0.53	ft³/s
Slope Full	0.00156	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.000	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.000	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	74.67	%
Downstream Velocity	Infinity	ft/s

17-DR-2021
5/6/2021

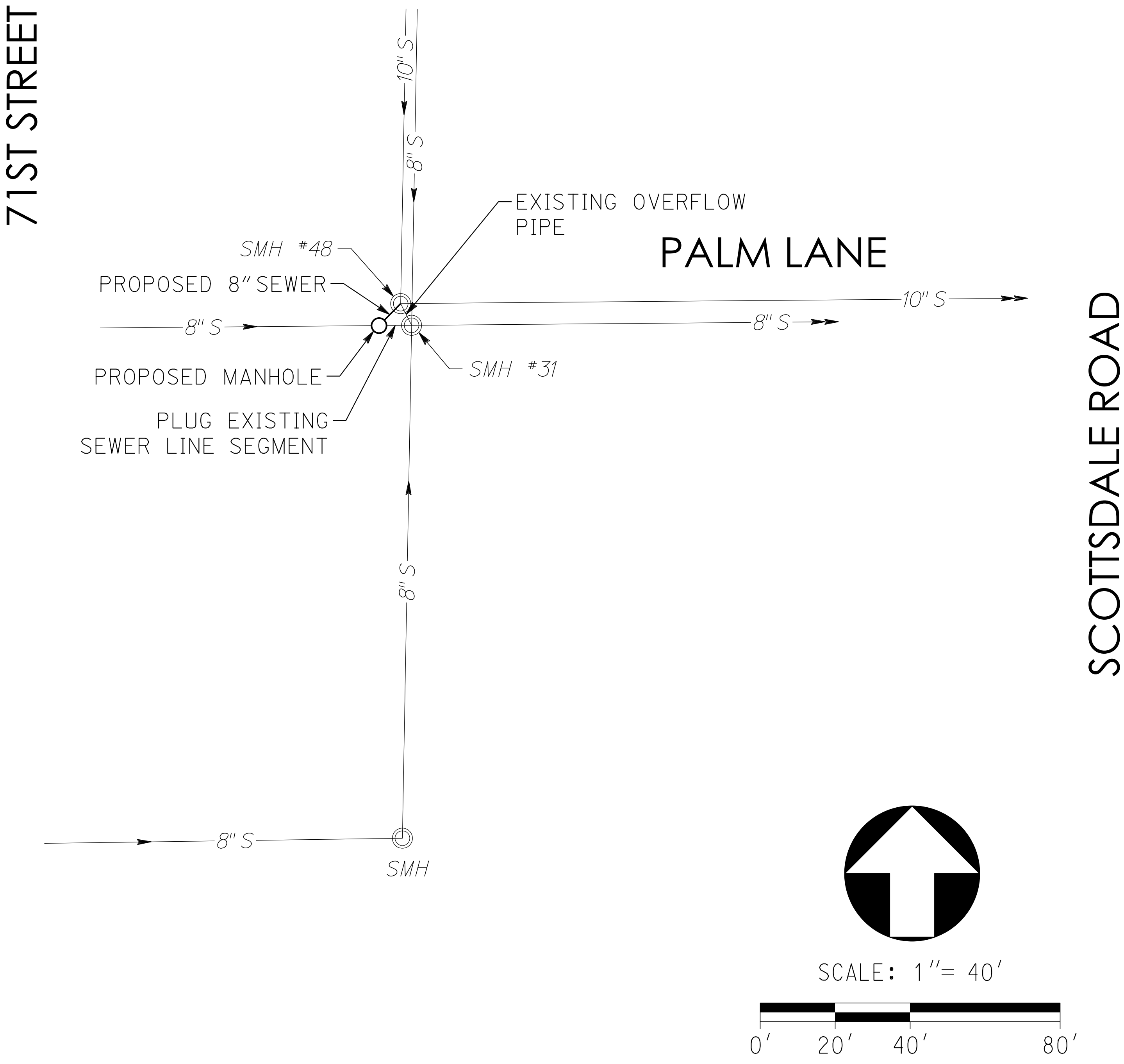
GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	5.974	in
Critical Depth	0.32	ft
Channel Slope	0.19000	%
Critical Slope	0.00694	ft/ft

17-DR-2021
5/6/2021

APPENDIX F

Proposed Sewer FlowMaster Data



PROPOSED MANHOLE EXHIBIT

3engineering
planning civil engineering surveying

SOUTHDALE

3 ENGINEERING, LLC
6370 E. THOMAS ROAD, SUITE # 200 - SCOTTSDALE, ARIZONA 85251
PHONE: (602) 334-4387 - FAX: (602) 490-3230
WWW.3ENGINEERING.COM

DATE:	PROJECT NO.
06/26/20	1872

17-DR-2021
5/6/2021

C:\My SecuritSync\Projects\1872_70th_St_McDowell_Apartments\Reports\Sewer Capacity\Proposed Manhole Exhibit.dgn

Cross Section for Proposed: 8" Sewer Palm Lane Overflow to Weir

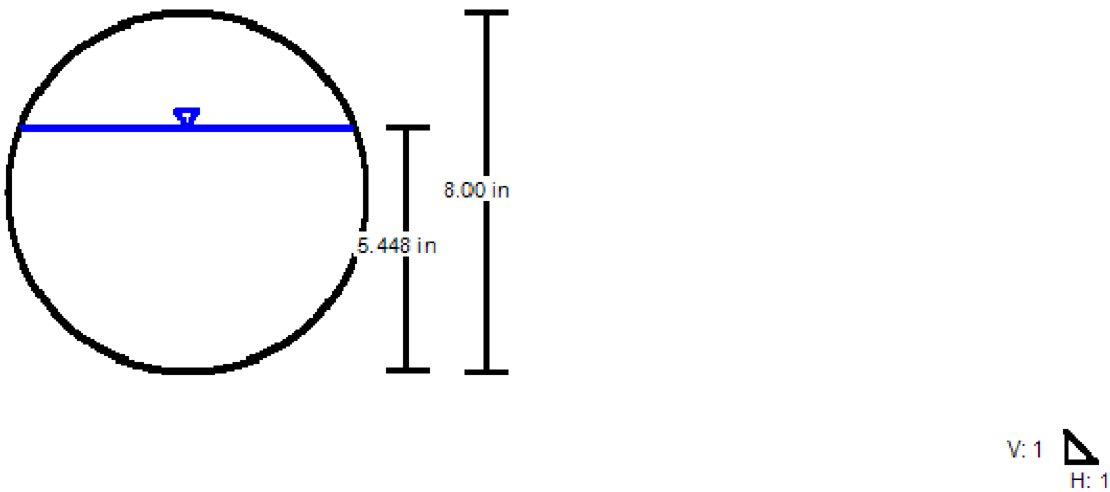
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.27000	%
Normal Depth	5.448	in
Diameter	8.00	in
Discharge	227.27	gpm

Cross Section Image



17-DR-2021
5/6/2021

Worksheet for Proposed: 8" Sewer Palm Lane Overflow to Weir

Project Description

Friction Method	Manning Formula		
Solve For	Normal Depth		

Input Data

Roughness Coefficient		0.013	
Channel Slope		0.27000	%
Diameter		8.00	in
Discharge		227.27	gpm

Results

Normal Depth		5.448	in
Flow Area		36.46	in²
Wetted Perimeter		1.29	ft
Hydraulic Radius		2.348	in
Top Width		0.62	ft
Critical Depth		0.33	ft
Percent Full		68.1	%
Critical Slope		0.00702	ft/ft
Velocity		2.00	ft/s
Velocity Head		0.06	ft
Specific Energy		0.52	ft
Froude Number		0.55	
Maximum Discharge		0.68	ft³/s
Discharge Full		0.63	ft³/s
Slope Full		0.00176	ft/ft
Flow Type	SubCritical		

GVF Input Data

Downstream Depth		0.000	in
Length		0.00	ft
Number Of Steps		0	

GVF Output Data

Upstream Depth		0.000	in
Profile Description			
Profile Headloss		0.00	ft
Average End Depth Over Rise		0.00	%
Normal Depth Over Rise		68.10	%
Downstream Velocity		Infinity	ft/s

17-DR-2021
5/6/2021

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	5.448	in
Critical Depth	0.33	ft
Channel Slope	0.27000	%
Critical Slope	0.00702	ft/ft

Cross Section for Proposed: Rectangular Weir Overflow NW

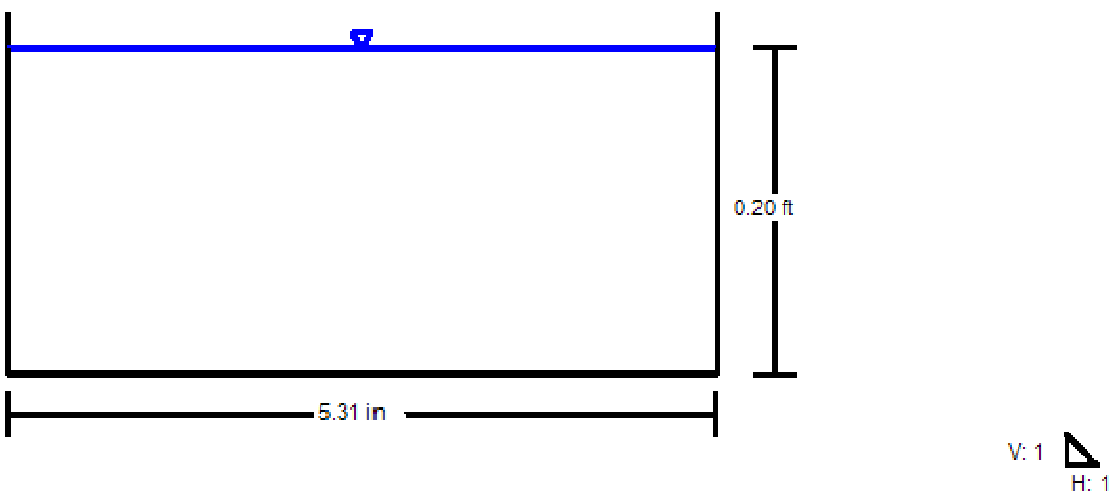
Project Description

Solve For	Discharge

Input Data

Discharge	54.90	gpm
Headwater Elevation	2.448	in
Crest Elevation	0.00	in
Tailwater Elevation	0.00	in
Weir Coefficient	3.00	US
Crest Length	5.31	in
Number Of Contractions	0	

Cross Section Image



17-DR-2021
5/6/2021

Worksheet for Proposed: Rectangular Weir Overflow NW

Project Description

Solve For	Discharge

Input Data

Headwater Elevation	2.448	in
Crest Elevation	0.00	in
Tailwater Elevation	0.00	in
Weir Coefficient	3.00	US
Crest Length	5.31	in
Number Of Contractions	0	

Results

Discharge	54.90	gpm
Headwater Height Above Crest	0.20	ft
Tailwater Height Above Crest	0.00	ft
Flow Area	13.00	in²
Velocity	1.35	ft/s
Wetted Perimeter	0.85	ft
Top Width	0.44	ft

Cross Section for Proposed: 8" Sewer Palm Lane

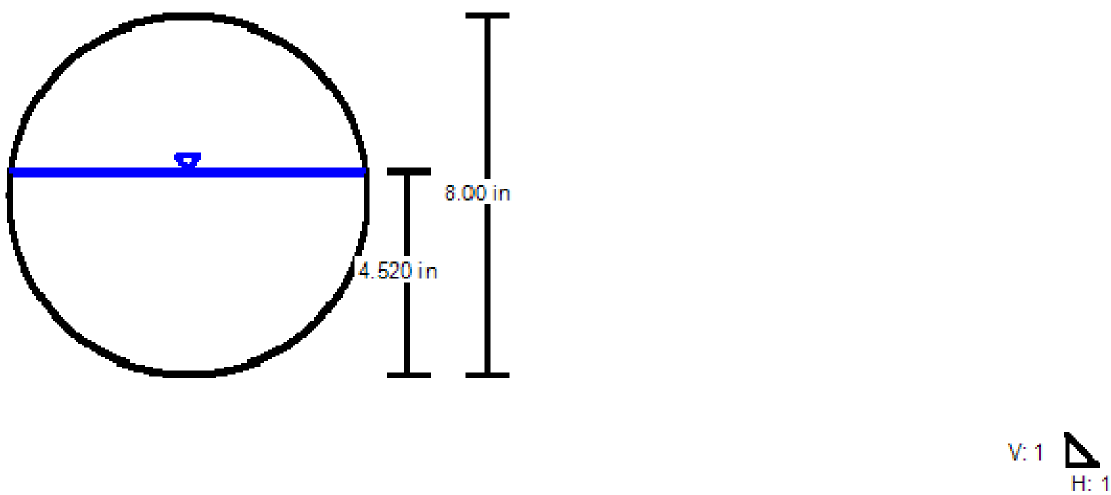
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.27000	%
Normal Depth	4.520	in
Diameter	8.00	in
Discharge	172.37	gpm

Cross Section Image



17-DR-2021
5/6/2021

Worksheet for Proposed: 8" Sewer Palm Lane

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.27000	%
Diameter	8.00	in
Discharge	172.37	gpm

Results

Normal Depth	4.520	in
Flow Area	29.28	in²
Wetted Perimeter	1.13	ft
Hydraulic Radius	2.152	in
Top Width	0.66	ft
Critical Depth	0.29	ft
Percent Full	56.5	%
Critical Slope	0.00670	ft/ft
Velocity	1.89	ft/s
Velocity Head	0.06	ft
Specific Energy	0.43	ft
Froude Number	0.60	
Maximum Discharge	0.68	ft³/s
Discharge Full	0.63	ft³/s
Slope Full	0.00101	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.000	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.000	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	56.50	%
Downstream Velocity	Infinity	ft/s

17-DR-2021
5/6/2021

Worksheet for Proposed: 8" Sewer Palm Lane

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	4.520	in
Critical Depth	0.29	ft
Channel Slope	0.27000	%
Critical Slope	0.00670	ft/ft

Cross Section for Proposed: 10" Sewer Palm

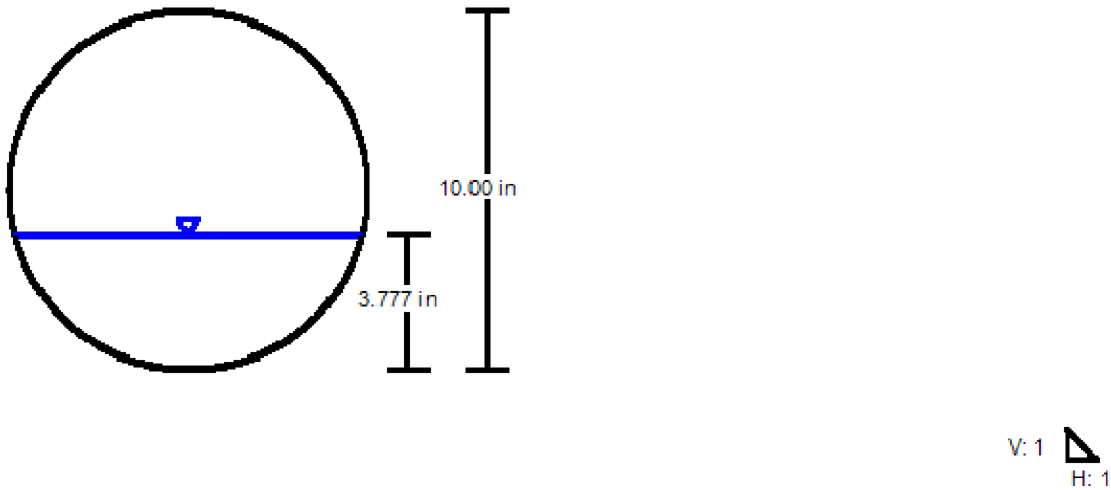
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.43000	%
Normal Depth	3.777	in
Diameter	10.00	in
Discharge	195.61	gpm

Cross Section Image



17-DR-2021
5/6/2021

Worksheet for Proposed: 10" Sewer Palm

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.43000	%
Diameter	10.00	in
Discharge	195.61	gpm

Results

Normal Depth	3.777	in
Flow Area	27.17	in²
Wetted Perimeter	1.10	ft
Hydraulic Radius	2.052	in
Top Width	0.81	ft
Critical Depth	0.29	ft
Percent Full	37.8	%
Critical Slope	0.00600	ft/ft
Velocity	2.31	ft/s
Velocity Head	0.08	ft
Specific Energy	0.40	ft
Froude Number	0.84	
Maximum Discharge	1.55	ft³/s
Discharge Full	1.44	ft³/s
Slope Full	0.00040	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.000	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.000	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	37.77	%
Downstream Velocity	Infinity	ft/s

17-DR-2021
5/6/2021

Worksheet for Proposed: 10" Sewer Palm

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.777	in
Critical Depth	0.29	ft
Channel Slope	0.43000	%
Critical Slope	0.00600	ft/ft

Cross Section for Prposed: 8" Sewer Scottsdale Road

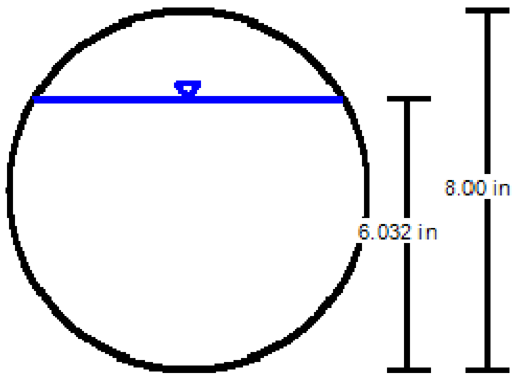
Project Description

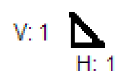
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.19000	%
Normal Depth	6.032	in
Diameter	8.00	in
Discharge	216.83	gpm

Cross Section Image





17-DR-2021
5/6/2021

Worksheet for Prposed: 8" Sewer Scottsdale Road

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.19000	%
Diameter	8.00	in
Discharge	216.83	gpm

Results

Normal Depth	6.032	in
Flow Area	40.66	in²
Wetted Perimeter	1.40	ft
Hydraulic Radius	2.416	in
Top Width	0.57	ft
Critical Depth	0.33	ft
Percent Full	75.4	%
Critical Slope	0.00696	ft/ft
Velocity	1.71	ft/s
Velocity Head	0.05	ft
Specific Energy	0.55	ft
Froude Number	0.43	
Maximum Discharge	0.57	ft³/s
Discharge Full	0.53	ft³/s
Slope Full	0.00160	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.000	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.000	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	75.40	%
Downstream Velocity	Infinity	ft/s

Worksheet for Prposed: 8" Sewer Scottsdale Road

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	6.032	in
Critical Depth	0.33	ft
Channel Slope	0.19000	%
Critical Slope	0.00696	ft/ft

17-DR-2021
5/6/2021

APPENDIX G

Preliminary Onsite Utility Plans

PRELIMINARY UTILITY PLAN FOR
SOUTHDALE
7000 E. MCDOWELL ROAD, SCOTTSDALE, ARIZONA 85257

LOCATED IN A PORTION OF THE SOUTHEAST QUARTER OF SECTION 34, TOWNSHIP 2 NORTH, RANGE 4 EAST OF THE GILA AND SALT RIVER MERIDIAN, MARICOPA COUNTY, ARIZONA

LEGAL DESCRIPTION:

THAT PORTION OF THE SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 34, TOWNSHIP 2 NORTH, RANGE 4 EAST OF THE GILA AND SALT RIVER BASE AND MERIDIAN, MARICOPA COUNTY, ARIZONA, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE NORTH LINE OF THE SOUTH HALF OF SAID SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER, A DISTANCE OF 380.00 FEET EAST OF THE WEST LINE OF SAID SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER;

THENCE WEST ALONG SAID NORTH LINE TO A POINT ON THE EAST LINE OF A NORTH-SOUTH ALLEY AS SHOWN ON THE PLAT OF WONDERLAND, ACCORDING TO BOOK 100 OF MAPS, PAGE 19, RECORDS OF MARICOPA COUNTY, ARIZONA;

THENCE SOUTH ALONG THE EAST LINE OF AFORESAID ALLEY TO AN ANGLE POINT THEREON;

THENCE WEST ALONG THE SOUTH LINE OF AN EAST-WEST ALLEY AS SHOWN ON AFORESAID PLAT OF WONDERLAND, TO A POINT ON THE EAST LINE OF 70TH STREET AS SHOWN ON AFORESAID PLAT;

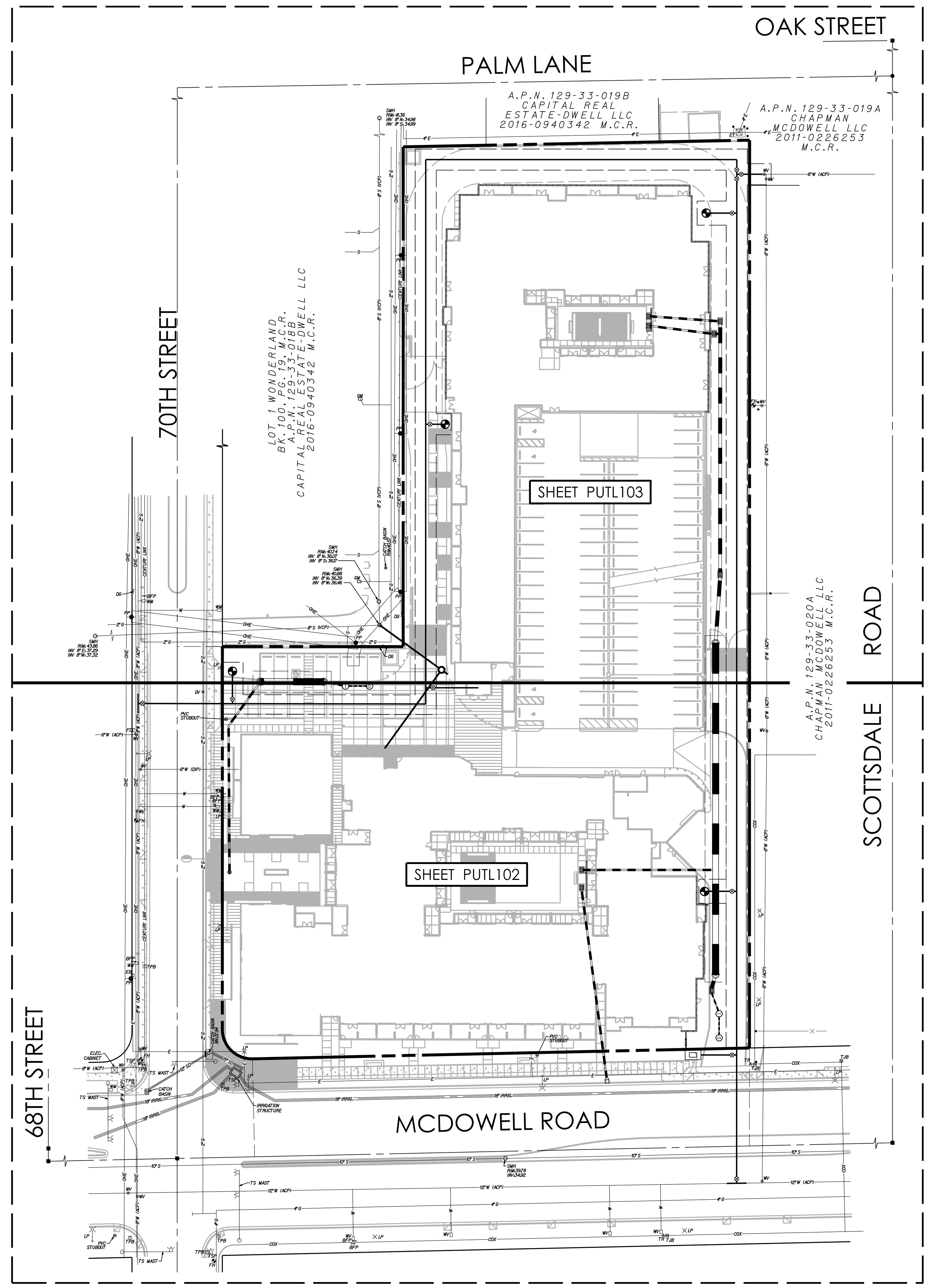
THENCE SOUTH ALONG SAID EAST LINE, A DISTANCE OF 253.88 FEET TO THE BEGINNING OF A CURVE TO THE LEFT HAVING A CENTRAL ANGLE OF 91 DEGREES 14 MINUTES 49 SECONDS AND A TANGENT OF 20.00 FEET;

THENCE SOUTHEASTERLY ALONG SAID CURVE TO THE LEFT, AN ARC DISTANCE OF 31.17 FEET;

THENCE SOUTH PARALLEL WITH THE WEST LINE OF THE SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION 34, A DISTANCE OF 65.00 FEET TO A POINT ON THE SOUTH LINE OF THE SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION 34, FROM WHICH THE SOUTHWEST CORNER THEREOF BEARS WEST, A DISTANCE OF 52.42 FEET;
THENCE EAST ALONG THE SOUTH LINE OF THE SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION 34, TO A POINT 380.00 FEET EAST OF THE SOUTHWEST CORNER OF SAID SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER;

THENCE NORTH ALONG A LINE PARALLEL TO AND 380.00 FEET EAST OF THE WEST LINE OF SAID SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER TO THE POINT OF BEGINNING;

EXCEPT THE SOUTH 65.00 FEET THEREOF.



SITE MAP
N.T.S.

GENERAL NOTES FOR PUBLIC WORKS CONSTRUCTION:

1. ALL CONSTRUCTION IN THE PUBLIC RIGHTS-OF-WAY OR IN EASEMENTS GRANTED FOR PUBLIC USE MUST CONFORM TO THE LATEST MARICOPA ASSOCIATION OF GOVERNMENTS (MAG) UNIFORM STANDARD SPECIFICATIONS AND UNIFORM STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION AS AMENDED BY THE LATEST VERSION OF THE CITY OF SCOTTSDALE STANDARD SPECIFICATIONS AND SUPPLEMENTAL STANDARD DETAILS. IF THERE IS A CONFLICT, THE CITY'S SUPPLEMENTAL STANDARD DETAILS WILL GOVERN.
2. THE CITY ONLY APPROVES THE SCOPE, NOT THE DETAIL OF ENGINEERING DESIGNS; THEREFORE IF CONSTRUCTION QUANTITIES ARE SHOWN ON THESE PLANS, THEY ARE NOT VERIFIED BY THE CITY.
3. THE APPROVAL OF PLANS IS VALID FOR SIX (6) MONTHS. IF ASSOCIATED PERMIT HAS NOT BEEN ISSUED WITHIN THIS TIME FRAME, THE PLANS MUST BE RESUBMITTED TO THE CITY FOR RE-APPROVAL.
4. A CITY INSPECTOR WILL INSPECT ALL WORKS WITHIN THE CITY OF SCOTTSDALE. NOTIFY INSPECTION SERVICES 72 HOURS BEFORE BEGINNING WORK.
5. WHENEVER EXCAVATION IS NECESSARY, CALL THE BLUE STAKE CENTER, 811, TWO WORKING DAYS BEFORE EXCAVATION BEGINS.
6. PERMISSION TO WORK IN THE RIGHT-OF-WAY (PWR) PERMITS ARE REQUIRED FOR ALL WORKS WITHIN THE RIGHTS-OF-WAY AND EASEMENTS GRANTED FOR PUBLIC PURPOSES. COPIES OF ALL PERMITS MUST BE RETAINED ON-SITE AND BE AVAILABLE FOR INSPECTION AT ALL TIMES. FAILURE TO PRODUCE THE REQUIRED PERMITS WILL RESULT IN IMMEDIATE SUSPENSION OF ALL WORK UNTIL THE PROPER PERMIT DOCUMENTATION IS OBTAINED.

UTILITY	UTILITY COMPANY	NAME OF COMPANY REPRESENTATIVE	TELEPHONE NUMBER	DATE SIGNED
ELECTRIC	APS			
TELEPHONE	CENTURY LINK			
NATURAL GAS	SOUTHWEST GAS			
CABLE TV	COX COMMUNICATIONS			
OTHER	A.T.&T.			
OTHER				

ENGINEER'S CERTIFICATION

I DANIEL G. MANN, AS THE ENGINEER OF RECORD FOR THIS DEVELOPMENT, HEREBY CERTIFY THAT ALL UTILITY COMPANIES LISTED ABOVE HAVE BEEN PROVIDED FINAL IMPROVEMENT PLANS FOR REVIEW, AND THAT ALL CONFLICTS IDENTIFIED BY THE UTILITIES HAVE BEEN RESOLVED. IN ADDITION "NO CONFLICT" FORMS HAVE BEEN OBTAINED FROM EACH UTILITY COMPANY AND ARE INCLUDED IN THIS SUBMITTAL.

SIGNATURE DATE

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
PUTL101	COVER SHEET - PRELIMINARY UTILITY PLAN
PUTL102	PRELIMINARY UTILITY PLAN
PUTL103	PRELIMINARY UTILITY PLAN

FLOOD INSURANCE RATE MAP (FIRM) INFORMATION:

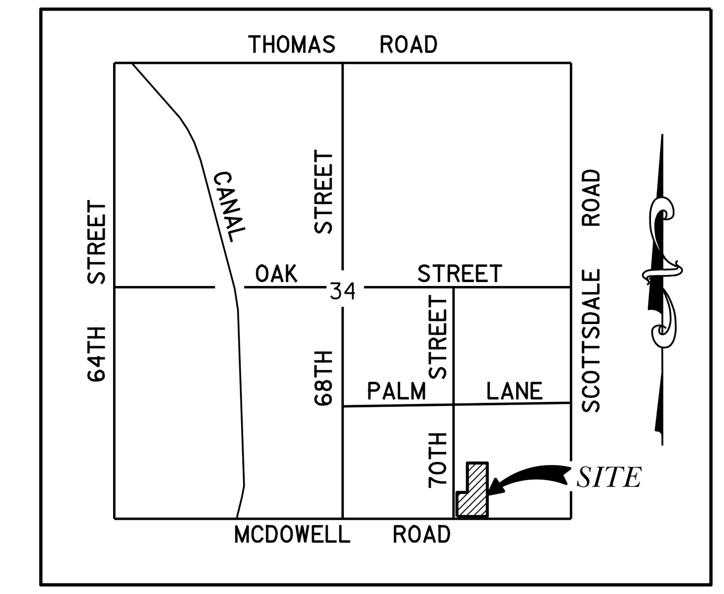
COMMUNITY NUMBER	PANEL NUMBER	PANEL DATE	SUFFIX	FIRM DATE	FIRM ZONE	BASE FLOOD ELEVATION
045012	2235	OCTOBER 16, 2013	L	OCTOBER 16, 2013	X	N/A

ENGINEER'S CERTIFICATION:

THE LOWEST FINISH FLOOR ELEVATION(S) AND/OR FLOOD PROOFING ELEVATION(S) ON THIS PLAN ARE SUFFICIENTLY HIGH TO PROVIDE PROTECTION FROM FLOODING CAUSED BY A 100-YEAR STORM, AND ARE IN ACCORDANCE WITH SCOTTSDALE REVISED CODE, CHAPTER 37 - FLOODPLAIN AND STORMWATER REGULATION.

LEGEND

	INDICATES PROPERTY / BOUNDARY LINE
1560	INDICATES EXISTING CONTOUR ELEVATION
58	INDICATES PROPOSED CONTOUR ELEVATION
TC: 59.13 G: 58.64	INDICATES EXISTING TOP OF CURB ELEVATION / INDICATES EXISTING GUTTER ELEVATION
+ 62.52	INDICATES EXISTING GROUND ELEVATION
+ P: 60.11	INDICATES EXISTING PAVEMENT ELEVATION
+ C: 56.69	INDICATES EXISTING CONCRETE ELEVATION
15.9	INDICATES PROPOSED GROUND ELEVATION
1%	INDICATES DIRECTION OF FLOW & SLOPE
GB	INDICATES GRADE BREAK
P=	INDICATES PROPOSED PAVEMENT ELEVATION
C=	INDICATES PROPOSED TOP OF CONC. ELEVATION
G=	INDICATES PROPOSED GUTTER ELEVATION
LF_{88}=	INDICATES LOWEST FINISH FLOOR ELEVATION
W	INDICATES PROPOSED WATERLINE
S	INDICATES PROPOSED SEWERLINE
	INDICATES PROPOSED METER
	INDICATES PROPOSED SEWER CLEANOUT
	INDICATES PROPOSED CATCH BASIN
	INDICATES PROPOSED STORM DRAIN PIPE
	INDICATES PROPOSED STORM DRAIN MANHOLE
	INDICATES PROPOSED FIRE HYDRANT
FH	INDICATES EXISTING FIRE HYDRANT
24" SD	INDICATES EXISTING STORM DRAIN PIPE
8" S	INDICATES EXISTING SEWER LINE & SIZE
12" W (ACP) WV	INDICATES EXISTING WATER LINE, VALVE & SIZE
E	INDICATES EXISTING BURIED ELECTRIC CONDUIT
G	INDICATES EXISTING GAS LINE
OHE	INDICATES EXISTING OVERHEAD ELECTRIC
PP	INDICATES EXISTING POWER POLE
LP	INDICATES EXISTING LIGHT POLE
ET	INDICATES EXISTING ELECTRIC TRANSFORMER
EB	INDICATES EXISTING ELECTRIC BOX
WM	INDICATES EXISTING WATER METER
BWV	INDICATES EXISTING BACKFLOW PREVENTER VALVE



VICINITY MAP
N.T.S.

PROJECT SCOPE:

THE SCOPE OF THIS PROJECT IS A NEW RESIDENTIAL APARTMENT COMPLEX WITH 267 UNITS ALSO WITH PARKING GARAGE, UTILITY IMPROVEMENTS AND LANDSCAPE.

CLIENT:

HAWKINS COMPANIES LLC
4700 S. MCCLINTOCK DR. #160
TEMPE, ARIZONA 85282

CONTACT: MARK MITCHELL
PHONE: (480) 223-8239
EMAIL: MMITCHELL@HCOLLC.COM

ENGINEER:

3 ENGINEERING
6370 E. THOMAS ROAD, SUITE #200
SCOTTSDALE, ARIZONA 85251

CONTACT: DANIEL G. MANN, P.E.
PHONE: (602) 334-4387
EMAIL: DAN@3ENGINEERING.COM

PARCEL ADDRESS:

7000 E. MCDOWELL ROAD,
SCOTTSDALE, ARIZONA 85257

ASSESSORS PARCEL NUMBER:

129-33-001S

LOT AREA:

GROSS AREA:	4.690 ACRES
NET AREA:	3.932 ACRES
DISTURBED AREA:	3.932 ACRES

BENCHMARK:

MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION UNIQUE ID: 12052, BEING A 3" CITY OF SCOTTSDALE BRASS CAP IN HANDHOLE, LOCATED AT THE INTERSECTION OF SCOTTSDALE ROAD & MCDOWELL ROAD

ELEVATION = 1230.474 (NAVD'88)
CITY OF SCOTTSDALE DATUM

I HEREBY CERTIFY THAT ALL ELEVATIONS REPRESENTED ON THIS PLAN ARE BASED ON THE ELEVATION DATUM FOR THE CITY OF SCOTTSDALE BENCHMARK PROVIDED ABOVE.

ENGINEER 4/26/2021 DATE

BASIS OF BEARING

THE BASIS OF BEARING IS THE MONUMENT LINE OF SCOTTSDALE ROAD, ALSO BEING THE WEST LINE OF THE SOUTHEAST CORNER, SECTION 34, USING A BEARING OF NORTH 00 DEGREES 00 MINUTES 00 SECONDS EAST, AS PER THE RECORD OF SURVEY IN BOOK 1250 OF MAPS, PAGE 15, RECORDS OF MARICOPA COUNTY, ARIZONA.

ENGINEER'S STATEMENT:

THE ENGINEER OF RECORD ON THESE PLANS HAS RECEIVED A COPY OF THE APPROVED STIPULATIONS FOR THIS PROJECT AND HAS DESIGNED THESE PLANS IN CONFORMANCE WITH THE APPROVED STIPULATIONS

AS-BUILT CERTIFICATION:

I HEREBY CERTIFY THAT THE RECORD DRAWING MEASUREMENTS AS SHOWN HEREON WERE MADE UNDER MY SUPERVISION OR AS NOTED AND ARE CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

REGISTERED ENGINEER/LAND SURVEYOR DATE

REGISTRATION NUMBER

CIVIL APPROVAL

REVIEW & RECOMMENDED APPROVAL BY:

PAVING		TRAFFIC	
G & D		PLANNING	
W & S		FIRE	
RET. WALLS			

ENGINEERING COORDINATION MGR. (OR DESIGNEE) DATE

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

SOUTHDALE
7000 E. MCDOWELL ROAD, SCOTTSDALE, AZ 85257
PRELIMINARY UTILITY PLAN

Registered Professional Engineer
CERTIFICATE NO. 46857
DANIEL G. MANN
4/26/21
ARIZONA, U.S.A.

3engineering
planning civil engineering surveying

DESIGNER: D. MANN
CAD TECH: PHILLIE V.

3 ENGINEERING, LLC
6370 E. THOMAS ROAD SUITE # 200
SCOTTSDALE, ARIZONA 85251
PHONE: (602) 334-4387
FAX: (602) 490-3230
WWW.3ENGINEERING.COM

DATE: 04/26/21

PROJECT NO. 1872

SHEET NO. PUTL201

Q.S. #13-44

17-DR-2021
5/6/2021

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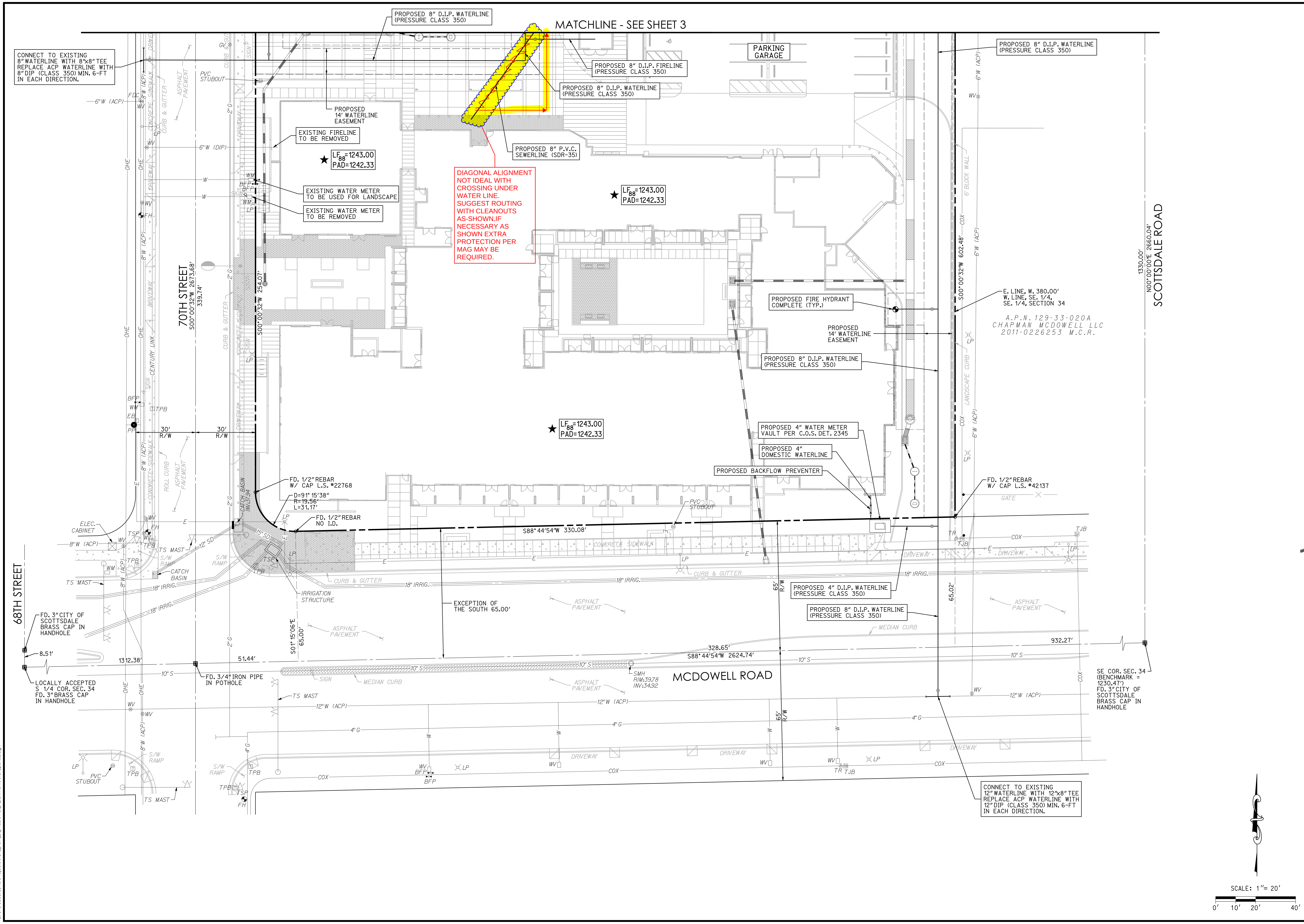

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Call 811 or click Arizona811.com

REVISIONS

SOUTHDALE
7000 E. MCDOWELL ROAD, SCOTTSDALE, AZ 85257
PRELIMINARY UTILITY PLAN

Registered Professional Engineer
CERTIFICATE NO. 46857
DANIEL G. MANN
4/26/21
ARIZONA, U.S.A.

3engineering
civil engineering
planning
surveying

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ENGINEER: D. MANN | DESIGNER: D. MANN | CAD TECH: PHILIP V.

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PHONE: (602) 334-4387
FAX: (602) 490-3230
WWW.3ENGINEERING.COM

DATE: 04/26/21

PROJECT NO. 1872

SHEET NO. PUTL202
2 of 3

Q.S.#13-44

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17-DR-2021
5/6/2021

17-DR-2021
5/6/2021