Commercial Development Resources

Today's Ideas. Tomorrow's Reality.

Sewer Final Basis of Design Report
for
AutoNation Ford Expansion
Scottsdale, Arizona

Prepared for:
AN Motors of Scottsdale, LLC
8555 E. Frank Lloyd Wright Blvd
Scottsdale, AZ 85260

FINAL Basis of Design Report

☑ **APPROVED**

☐ **APPROVED AS NOTED**

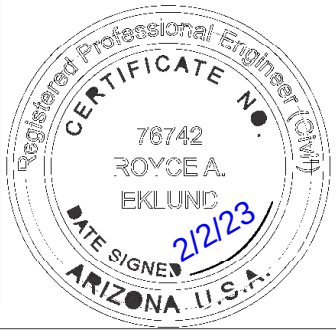
☐ **REVISE AND RESUBMIT**

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.

BY RSacks **DATE** 2/8/2023

Prepared By:



Engineer of Record:

Royce A. Eklund, RCE # 76742

Final Basis of Design Report
for
AutoNation Ford Expansion

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To: City of Scottsdale
From: Royce Eklund, PE
Date: Feb 2, 2023
RE: Wastewater Basis Design
AutoNation Ford Expansion
Project No.: 21139

1. Development Information

1.1. Description and Owner

AutoNation Ford Scottsdale (the Project) is an expansion of an existing Ford Dealership in Scottsdale, Arizona. Currently there is a showroom/sales building at the northern end of the parcel and three service buildings south of the showroom/sales building.

The proposed improvements for the project include protecting in place the northern sales building, replacing the three southern service buildings with one (59,253 sq-ft) service building, constructing a carwash onsite, incorporating an accessible path of travel to the Right-of-Way along Northsight Boulevard, and reconstruction and redesign of the parking lot and landscape.

Owner: AN Motors of Scottsdale, LLC
8555 E. Frank Lloyd Wright Boulevard
Scottsdale, Arizona 85260

Engineer: Commercial Development Resources
695 Town Center Drive #110
Costa Mesa, CA 92626
Contact: Aaron Albertson
Tel: 949-610-8997

1.2. Location and Land Use

The Project is located at the southeast corner of Northsight Boulevard and Frank Lloyd Wright Boulevard.

Address:	8555 E. Frank Lloyd Wright Boulevard, Scottsdale AZ
APN:	215-51-009V
Location:	S1-T3N-R4E
Parcel Size:	250,388 SF/ 5.75 AC
Building Footprint:	74,463 sf
Construction Type:	Auto Service Building/Carwash

2. Existing and Proposed Infrastructure

2.1. Existing Infrastructure

The existing wastewater infrastructure for the project includes an existing 6" lateral from the existing sales and service buildings with an oil and water separator. The 6" lateral ties into an existing 8" sewer main along Northsight Boulevard.

2.2. Proposed Infrastructure

The proposed infrastructure includes the construction of a 6" sewer line with sand/oil and water separator, and lateral to tie into the 8" sewer main along Northsight Boulevard. The line from the existing showroom will be protected in place with a new line and oil/water separator tying in from the proposed service building. The plan also includes a 6" Sewer

lateral that connects I the Northsight Blvd sewer to the south of the project site for a total of two site laterals This is due to the elevation difference between the car wash and the sewer lateral on the west side of the site.

3. Design Flows and Basis of Design

3.1. Wastewater Flows

The anticipated wastewater flows for AutoNation Ford Scottsdale have been calculated in accordance with the City of Scottsdale's Design criteria as identified in the City of Scottsdale 2018 Design Standards & Policies. A summary of the projected wastewater flows for the project is presented in Table 1 below. Detailed wastewater flow calculations are provided in Table 2 in Appendix A.

TABLE 1
TOTAL WATERWATER FLOW SUMMARY

PARCEL	AVERAGE DAILY FLOW		PEAKING FACTOR	MAXIMUM DAILY FLOW	
	gpm	gpd		gpm	gpd
Scottsdale Ford Campus	86.9	125194	3	260.8	375582

3.2. Existing Sewer Capacity Analysis

The pipe capacity for the proposed sewer line was calculated using a Manning's n-value of 0.013 and a slope of 0.025 ft/ft, representative of the proposed sewer slope onsite obtained from the utility plan. As shown in **Table 2** in **Appendix A**, the proposed 6-inch sewer line with a slope of 0.025 ft/ft will be able to convey the peak flow of 375,582 gpd with a Depth/Diameter (d/D) ratio of 16%. Because the d/D ratio meets City of Scottsdale requirements (<65%), the existing sewer onsite will adequately handle flows from the proposed showroom building and existing campus.

4. Conclusion

- The projected average daily flows and peak daily flows generated by the Project are **125,194 gpd (86.9 gpm)** and **375,582 gpd (260.8 gpm)**, respectively.
- As shown in **Table 2** in **Appendix A** and discussed in Section 3b above, the proposed 6-inch sewer will be able to convey all proposed peak flows with a Depth/Diameter ratio of 16%. Because the d/D ratio meets the City of Scottsdale requirements, the existing collection system will adequately handle the flows from the proposed showroom building and existing campus.

5. References

City of Scottsdale. (2018). Design Standards & Policies Manual

APPENDIX A: TABLE 2 – SEWER CAPACITY CALCULATIONS

Table 2 - Sewer Capacity Calculation
Project: AutoNation Ford Expansion
Feb 2 2022

Flow Summary								
Parcel	Area		Demand	Avg Daily Flow		Peaking Factor	Max Daily Flow	
	Sq Ft	Acre	GPD/sqft	GPM	GPD		GPM	GPD
Total Campus	250388	5.75	0.5	86.9	125194	3	260.8	375582

Pipe Parameters					
Sewer Diameter		Manning's	Slope	Hydraulic Radius (R)	
Inches	Feet	n	S	Partial Flow	Full Flow
6	0.5	0.013	0.025	0.050	0.125

Velocity = (1.486/n)*R^(2/3)*S^(1/2)	
V (Partial Flow)	2.45
V (Full Flow)	4.52

From Relative Flow in Circular Pipe Chart	
V/Vmax	d/D
0.54	0.16

Amax (sqft)	A/Amax	A (partial)
0.196	0.1	0.0196

Q = V x A	Qpartial	Qfull	Qpartial/ Qfull
cfs	0.0481	0.886	0.054
gpm	21.6	397.5	0.054
gpd	31073.7	572381.9	0.054

APPENDIX B: CONCEPTUAL UTILITY PLAN

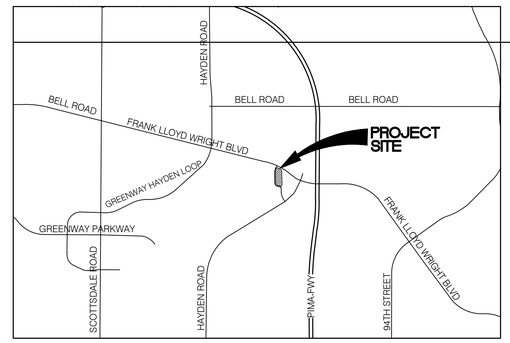
NORTH 85TH STREET

EX. 8" VCP SEWER MAIN
(498.09) INV
(0.9%)
508.26RIM (499.45INV)
EX. SSMH RIM: 1508.26
EX. 8" INV: 1498.60
(500.26) INV
(1.1%)
EX. 8" VCP SEWER MAIN
EX. SSMH RIM: 1511.04
EX. 8" INV: 1501.95
EX. 24" DIP WATER MAIN
EX. 8" DIP WATER MAIN
N47°54'37"E 10.85'
EX. 6" SEWER LATERAL TO REMAIN
EXISTING WATER METER BOX TO BE PROTECTED IN PLACE
EX. 8" ACP WATER LINE TO REMAIN
PROPOSED 2" WATER LINE
Δ=03°11'14" R=208.00' L=11.57'
N00°22'59"E 349.49'
(501.46) INV
EXISTING WATER METER BOX
N00°22'59"E 58.54'
EXISTING BACKFLOW PREVENTER
N00°22'59"E 229.89'
EX. FIRE HYDRANT
N21°27'22"E 42.90'
N24°39'02"E 45.79'
PROPOSED 2" WATER LINE
PROPOSED 2" WATER LINE
PROPOSED 2" WATER LINE
PROPOSED 6" SEWER LINE
PROP. DCDA, FDC & PIV
PROPOSED 8" FIRE WATER LINE
N89°53'47"W 8.00'
EXISTING SEWER TO BE REMOVED
PROPOSED 2" WATER LINE
504.26' INV
504.29 INV
PROPOSED 6" SEWER LINE
502.79 INV
502.66 INV
1.1%
EXISTING SEWER TO BE REMOVED
PROPOSED OIL WATER SEPARATOR
EXISTING WATER LINE TO BE REMOVED
PROPOSED 6" SEWER LINE
503.84 INV
2.9%
505.50 INV
504.50 INV
PROPOSED 2" WATER LINE
FF=508.00
FF=508.00
EXISTING OIL WATER SEPERATOR TO BE REMOVED
PROPOSED FIRE RISER ROOM
N55°57'19"E 74.54'
EX. 6" STORM DRAIN LINE
N69°06'46"W 2.82'
EXISTING SEWER TO BE REMOVED
EXISTING SEWER TO BE REMOVED
PROPOSED BUILDING FF=509.00
PROPOSED BUILDING FF=509.00
EXISTING BUILDING
AVIGATION EASEMENT IS ACROSS THE ENTIRE PROPERTY
EX. 10' STORM DRAIN LINE
Δ=35°00'35" R=98.00' L=120.98'
PROPOSED 2" WATER LINE
PROPOSED OIL WATER SEPARATOR
500.61 INV
500.48 INV
500.38 INV
PROPOSED CARWASH FF=505.11
PROPOSED 6" SEWER LINE
500.01 INV
498.16 INV
499.84 INV
EX. GAS LINE
EX. SSMH PER (495.35) INV
N89°56'24"W 45.61'
PROPOSED 6" SEWER LATERAL LINE
496.55 INV
497.23 INV
EX. FIRE HYDRANT
N00°20'30"E 828.23'
EAST FRANK LLOYD WRIGHT BOULEVARD
Δ=04°18'19" R=2935.00' L=220.54'

GRAPHIC SCALE
SCALE: 1" = 30'
30 0 30 60

LEGEND:

- EXISTING CONCRETE
- PROPOSED CONCRETE
- PROPOSED LANDSCAPE
- PROPOSED ASPHALT
- PROPOSED FIRE LANE
- PROPERTY LINE
- EASEMENT
- PROPOSED SAWCUT LINE
- EXISTING WALL
- PROPOSED WALL



VICINITY MAP
N.T.S.
N

REVISIONS

NUMBER	DATE		APPVD

DRAWN BY: AH
CHECKED BY: RE
DATE: 01/26/2023

BENCHMARK

THE BENCHMARK FOR THIS SURVEY IS POINT 26006-1, AN ARIZONA MONUMENT, BEING A 3" ADOT AL CAP STAMPED "VOID" ON CAP PER REQUEST BY JIM SPRINGS, MCR BOOK:763, MCR PAGE:38. N 957,779.321, E 707,863.709

ELEVATION : 1523.707' (NAVD 83')

PLANS PREPARED BY:

01/26/2023
ROYCE A. EKLUND DATE
R.C.E. 76742 EXP. 9/30/23

Registered Professional Engineer (Civil) CERTIFICATE No. 76742 ROYCE A. EKLUND 01-26-23 CIVIL ENGINEER ARIZONA U.S.A.

Exp: 9-30-25

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695 Town Center Drive #110 Costa Mesa CA 92626
T 949-910-5997 www.CDRwest.com

BASIS OF BEARINGS:
FOR THIS MAP IS THE WESTERLU LINE OF PARCEL MAP (MINOR LAND DIVISION PLAT) RECORDED IN BOOK 1202, PAGE 15. I.E. N 00°20'20"E.

LEGAL DESCRIPTION
A PORTION OF THE SOUTHWEST QUARTER OF SECTION 1, TOWNSHIP 3 NORTH, RANGE 4 EAST, OF THE GILA AND SALT RIVER BASE AND MERIDIAN, OF MARICOPA COUNTY, STATE OF ARIZONA.

WET UTILITY PLAN

AUTONATION FORD SCOTTSDALE
8555 E. FRANK LLOYD WRIGHT BLVD
SCOTTSDALE AZ 85260
APN: 215-51-009-V

SHEET
UT-01
1 OF 1

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