

Water 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

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



Engineer of Record:



Royce A. Eklund, RCE # 76742

Final Basis of Design Report
for
AutoNation Ford Expansion

**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 2/8/2023

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Today's Ideas. Tomorrow's Reality.

To: City of Scottsdale
From: Royce Eklund, P.E.
Date: Feb 2nd, 2023
RE: **Final Basis of Design**
AutoNation Ford Expansion
Project No.: 21139

1. Introduction

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.

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8555 E. Frank Lloyd Wright Boulevard
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Engineer: Commercial Development Resources
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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: 78,510 sf + 1,712 Car Wash
Construction Type: Auto Service Building/Carwash

1.3. Purpose of Report

The purpose of this basis of design report is to identify and describe the proposed water system infrastructure that will be needed to serve the proposed Project.

2. Water System Infrastructure

2.1. Existing Infrastructure

The existing water system infrastructure within the Project vicinity includes a 2-inch water service line on site that runs north to south adjacent to the existing buildings. This water line is used to serve the existing buildings to the east. The existing water line connects to the main water line within Northsight Boulevard. Two fire hydrants exist on site. A 2-inch water meter is located along Northsight Boulevard, to the west of the site.

2.2. Proposed Infrastructure

The proposed water infrastructure consists of a 2-inch water service line that will connect to the western side of the proposed building in three locations (See Utility Plan) and will tie into the existing 8-inch water line that runs north to south adjacent to the building.

3. Design Flows and Basis of Design

3.1. Water Demands

Anticipated water demands for the AutoNation Ford Expansion have been calculated in accordance with the City's design criteria as described in the City of Scottsdale *Design Standards & Policies* (2018).

A summary of the City of Scottsdale design criteria is shown in Table 1 below.

TABLE 1 - DESIGN CRITERIA			
Design Criteria		Criteria	Units
Average Day Unit Water Demands			
	Commercial/Retail	0.8	gpd/sq ft
Peaking Factors			
	Maximum Day Demand	2.0	times average day
	Peak Hour Demand	3.5	times average day
Static Conditions			
	Maximum Pressure	120	psi
Average Day, Maximum Day, & Peak Hour Conditions			
	Minimum Pressure	50	psi
	Maximum Head loss	10	ft/1,000 ft
Fire Flow Conditions			
	Minimum Pressure	20	psi
	Fire Flow (w/ 10% safety factor)	8000	gpm for 4 hours
	Reduce Fire Flow (assuming up to 75% reduction)	2000	gpm for 4 hours

As shown below in Table 2, domestic water demands were calculated as 59,570.4 gallons per day (gpd), 119,140.8 gpd, and 208,496.4 gpd for average day, maximum day, and peak hour demand, respectively.

TABLE 2 – TOTAL WATER DEMAND SUMMARY								
PARCEL	AREA (sq-ft)	LAND USE	AVERAGE DAY DEMAND		MAXIMUM DAY DEMAND		PEAK HOUR DEMAND	
			gpd	gpm	gpd	gpm	gpd	gpm
Scottsdale Ford Campus+ Car Wash	80,222	COMMERCIAL /RETAIL	64,177	44.6	130,410	90.5	224,622	156

3.2. Fire Flow Test Results

A fire hydrant flow test was conducted along the 8" water main in Northsight Blvd. The flow test was witnessed by City of Scottsdale staff. The flow test results at this location show a static pressure equal to 66 pounds per square inch (psi), residual pressure equals to 65 psi, total discharge flow of 1,187 gallons per minute (gpm), and a flow of 9,402 gpm at 20 psi. The Flow Test Summary can be found in Appendix B.

3.3. Required Fire Flow

The minimum fire flow illustrated in Table 1 has been determined based on the total area of the Scottsdale Ford Campus. The proposed AutoNation Ford expansion includes a total area of 78,463 square feet and requires a minimum of 8,000 gallons per minute (gpm) of fire flow for a duration of 4 hours per Table B105.1 of the 2018 IFC. As the buildings will be sprinklered, the required fire flow may be reduced by up to 75% per the 2018 IFC. For the purpose of this report, a reduction has been applied to the required fire flow resulting in a 2,000 gpm requirement.

4. Conclusions

- The proposed water infrastructure includes the construction of a 2-inch water service line that ties into the existing 8-inch water line adjacent to the site.
- The average day, maximum day, and peak hour water demands for the Project are 44.6 gpm (64,177 gpd), 90.5 gpm (130,409.6 gpd), and 156 gpm (224,621.6 gpd), respectively.
- The required fire flow for the Project is 2,000 gpm for 4 hours.

5. References

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

International Code Council. (2018). *International Fire Code*.

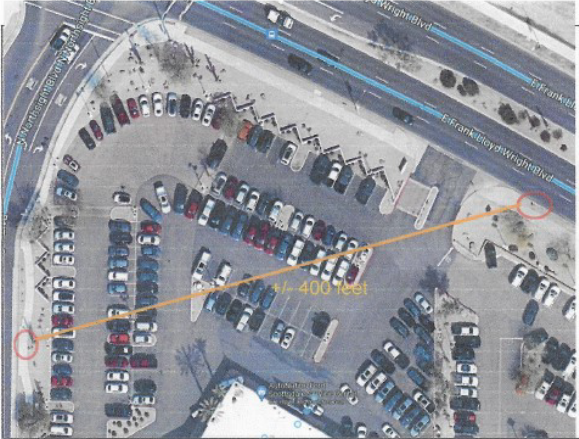


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ATTACHMENT A: FIGURES

CONCEPTUAL ONSITE UTILITY PLAN

ATTACHMENT B: FIRE FLOW TEST RESULTS

	Flow Test Summary	
Prior to conducting test you must contact Inspection Services at 480-312-5750 to activate permit and schedule test date and inspection.		
Project Address: <u>8555 E Frank Lloyd Wright Blvd</u> Encroachment Permit No. <u>C69099</u> Date of Test: <u>7/15/2022</u> Time of Test: <u>7am</u>		
Test requires using two (2) hydrants on the water system. 1. Attach water quarter section map identifying (#1) pressure and (#2) flow hydrant used to conduct the test OR 2. Show location of pressure hydrant and flow hydrant with cross streets and distance between hydrants and main size tested below.  Test Data Static pressure: <u>66</u> psi Residual pressure: <u>65</u> psi Pitot reading: <u>50</u> psi Flow GPM: <u>1187</u> gpm Hydrant orifice Diameter: <u>2.5</u> Coefficient of Discharge: <u>.9</u> Contractor: <u>Sunstate Fire Protection, Inc.</u> <u>PO Box 86324, Phoenix, AZ 85080</u>		
Signature(s) of contractor's employees conducting test: <u>Nolan Ramos</u> <u>B-R</u> Area Inspector present at test: <u>C. mender</u>		
Planning & Development Services Department 7447 E Indian School Road, Suite 105, Scottsdale, AZ 85251 • Phone: 480-312-7000 • Fax: 480-312-7088		

ATTACHMENT C: TABLE A – WATER DEMAND CALCULATIONS

Table A - Water Demand Calculation
Project: AutoNation Ford Expansion
Feb 2, 2022

TABLE 2 – TOTAL WATER DEMAND SUMMARY								
PARCEL	AREA (sq-ft)	LAND USE	AVERAGE DAY		MAXIMUM DAY		PEAK HOUR DEMAND	
			gpd	gpm	gpd	gpm	gpd	gpm
Scottsdale Ford Campus	78,510	COMMERCIAL/ RETAIL	62,808.0	43.6	125,616.0	87.2	219,828.0	152.7
Scottsdale Ford Campus	1,712	CAR WASH	1,369.6	1.0	4,793.6	3.3	4,793.6	3.3

Notes:

- Design criteria based on City of Scottsdale *Design Standards & Policies Manual* (2018)

Demand Factors

Commercial/Retail 0.8 gpd/sq-ft

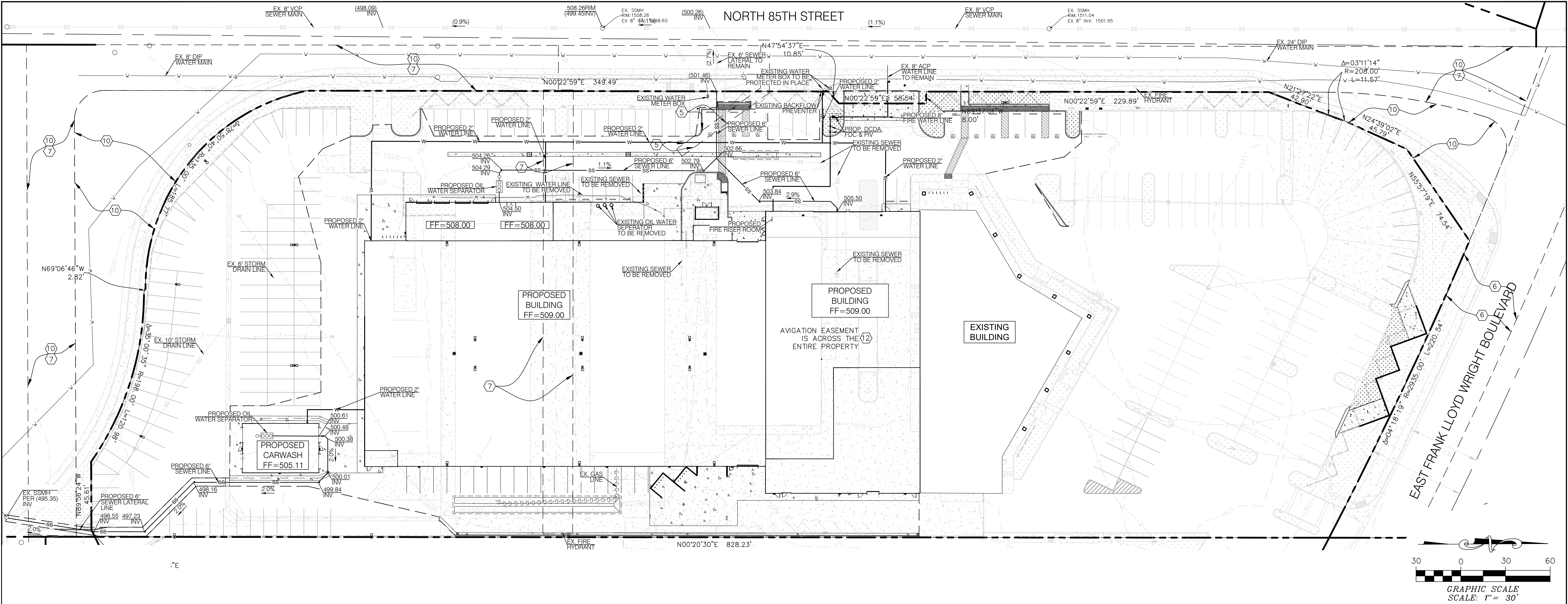
Peaking Factors

Maximum Day Demand 2 x Avg Day Demand

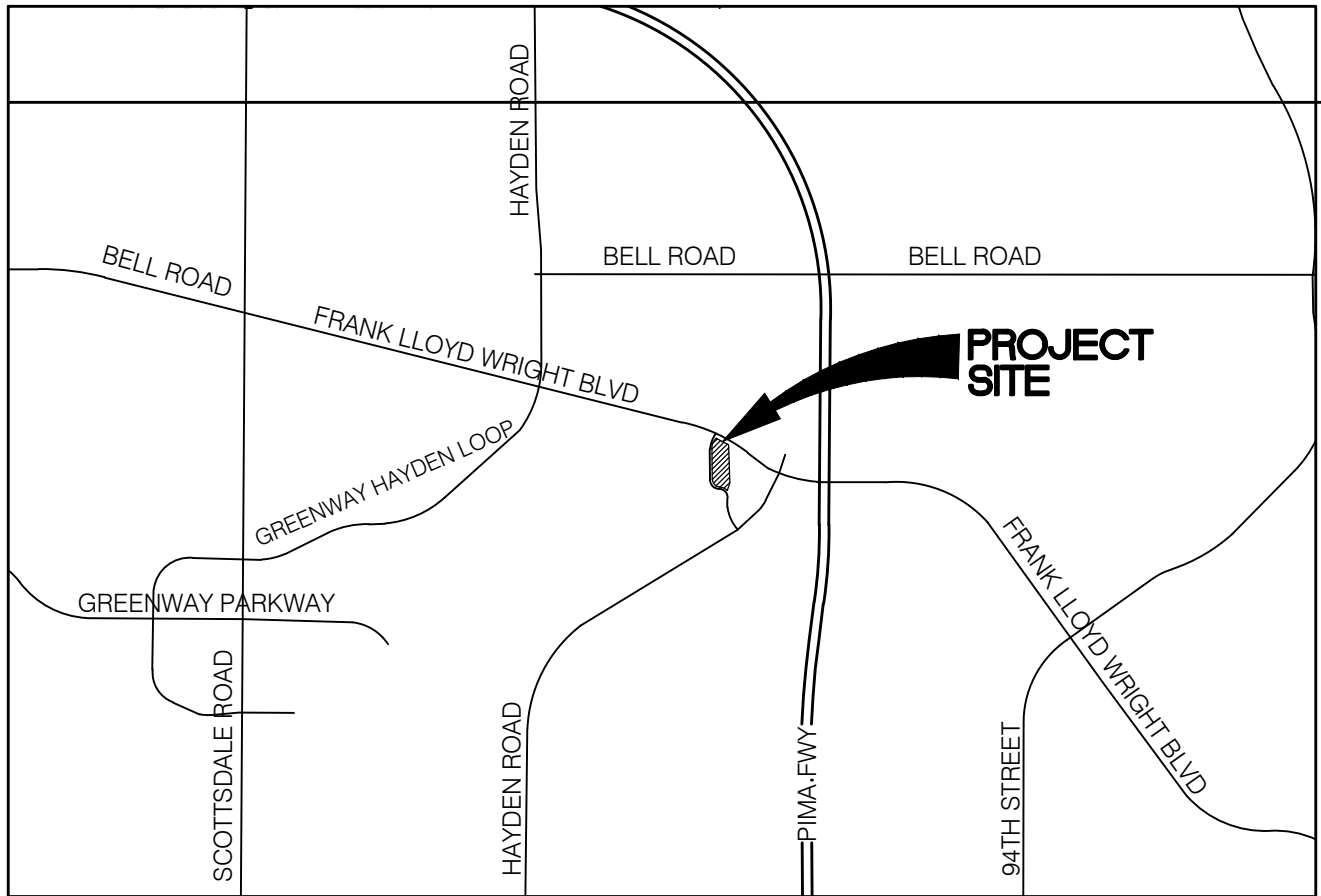
Peak Hour Demand 3.5 x Avg Day Demand

Fire Flow Demand

Campus	Commercial/ Retail	8000 gpm for 4 hours 2000 gpm for 3 hours	0.25 FACTOR
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- LEGEND:**
- EXISTING CONCRETE
 - PROPOSED CONCRETE
 - PROPOSED LANDSCAPE
 - PROPOSED ASPHALT
 - PROPOSED FIRE LANE
 - PROPERTY LINE
 - EASEMENT
 - PROPOSED SAWCUT LINE
 - EXISTING WALL
 - PROPOSED WALL

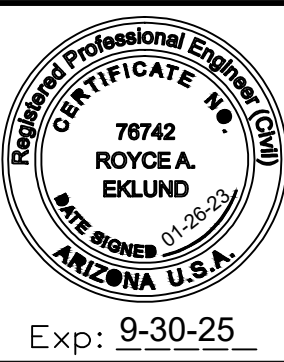


VICINITY MAP
N.T.S.

REVISIONS		
NUMBER	DATE	

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



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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