

WATER BASIS OF DESIGN REPORT
FOR THE
NEW RECTORY BUILDING
SCOTTSDALE, AZ

At
St. Bernard of Clairvaux Catholic Church
10755 North 124th Street
Scottsdale, Arizona 85259

Case No. 866-PA-2020

For
The Roman Catholic Diocese of Phoenix
400 East Monroe Street
Phoenix, AZ 85004

**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

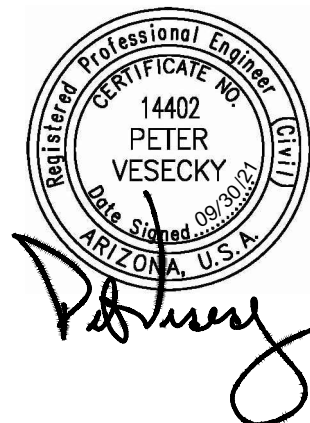
DATE 10/6/2021

For Submittal to:
City of Scottsdale
7447 E. Indian School Rd.
Scottsdale, AZ 85251

Prepared by:



8502 E. Via de Ventura, Suite 101
Scottsdale, AZ 85258



September 30, 2021

Job No. 20004

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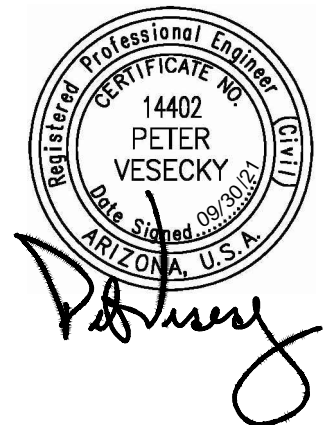
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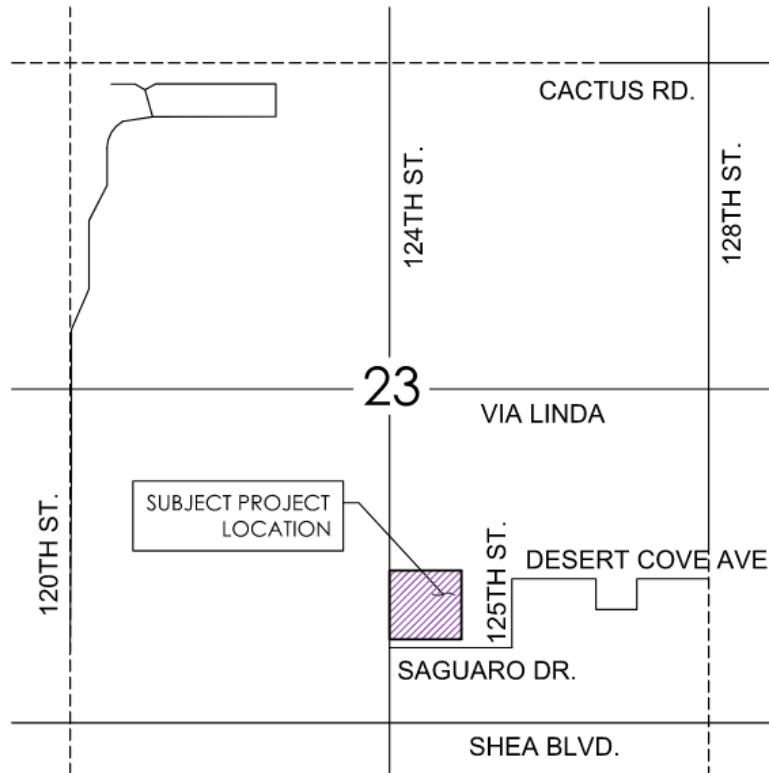
1 Introduction

This Basis of Design Report for new construction of a Rectory Building, as an addition at the St. Bernard of Clairvaux Catholic Church (herein after referred to as the Project). This report was prepared by VESPRO, per the direction of Brent Maupin Engineering & Design, as part of the submittal process to the City of Scottsdale (COS). It is the intent of this report to estimate domestic water usage and fire flow demands for a single building addition to this site that will serve as the living quarters for the priests and visitors to the church site. The existing system capacity to provide for the additional site demands will be presented to show no significant changes in the existing water infrastructure that serves the subject property with water services.

The Church property consists of approximately 8.94 acres (excluding right-of-way). The Project Site consists of approximately 0.45 acres (18,300 square feet) net, excluding the adjacent street right-of-way, and is currently undeveloped open space.

2 Site Location

The Project site is located at 10755 North 124th Street, Scottsdale, AZ 85259, adjacent the northeast corner of the intersection of North 124th Street and East Sahuaro Drive in the City of Scottsdale (See **Figure 1** below). The Project site is further described as being bound by existing Church buildings to the south and west, Dessert Mountain High School athletic fields to the north, and residential homes to the east (See Figure 2 – Aerial Photo Map).



**T-3-N, R-5-E
VICINITY MAP**
N.T.S.

Figure 1. Vicinity Map

The project is located within a portion of the southeast quarter of Section 23, Township 3 North, Range 5 East of the Gila and Salt River Baseline and Meridian, Maricopa County, Arizona.

3 Site Description

The exiting Church Property and Project Site is zoned as R1-43 ELS.

The Church Property consists of approximately 8.94 acres (excluding right-of-way). The Project Site consists of approximately 0.45 acres (18,300 square feet). The new Rectory Building will be constructed on an area of the property that was left undeveloped. The overall Church Site

topography is graded to drain to catch basin inlets located on the north and south sides of church site. Cross slopes vary throughout the property.

4 Water System

4.1 Existing Water System Conditions

The existing Church property is mostly developed, except for the Project Site location. Domestic and fire flow water servicing the Church property is provided by an existing private 8-inch PVC looped waterline system, which is tied into the 12-inch ACP main waterline within 124th Street at the south driveway entrance and near the north driveway entrance. Additionally, there are 3 fire hydrants that are directly tied to the looped water line system and a fourth fire hydrant tied into the 12-inch ACP water line near the southwest corner of the property. Refer to the Water Quarter Section Map 29-58 obtained from the COS (**See Appendix A**).

A fire hydrant flow test was performed by EJ Engineering, on December 11, 2020 to verify current pressured in the existing 12-inch mainline. The Flow Test Summary and corresponding information are provided in **Appendix B**.

The COS has established a max static pressure of 72 psi for fire flow test results. The actual resulting static pressure from the Fire Flow Test was 122 psi as shown in **Appendix B**. The reduction in static pressure includes a factor of safety greater than the suggested value of 10%, in accordance with values established in the COS 2018 Design Standards and Policy Manual (DSPM), Section 6-1.404.

In summary, the Fire Flow Test provided the following:

Static Pressure =	122.0 psi
Residual Pressure =	112.0 psi with 3,047 gpm
Minimum Residual Pressure =	20.0 psi with 10,679 gpm

Note: The system capacity with the applied reduction per the COS DSPM:

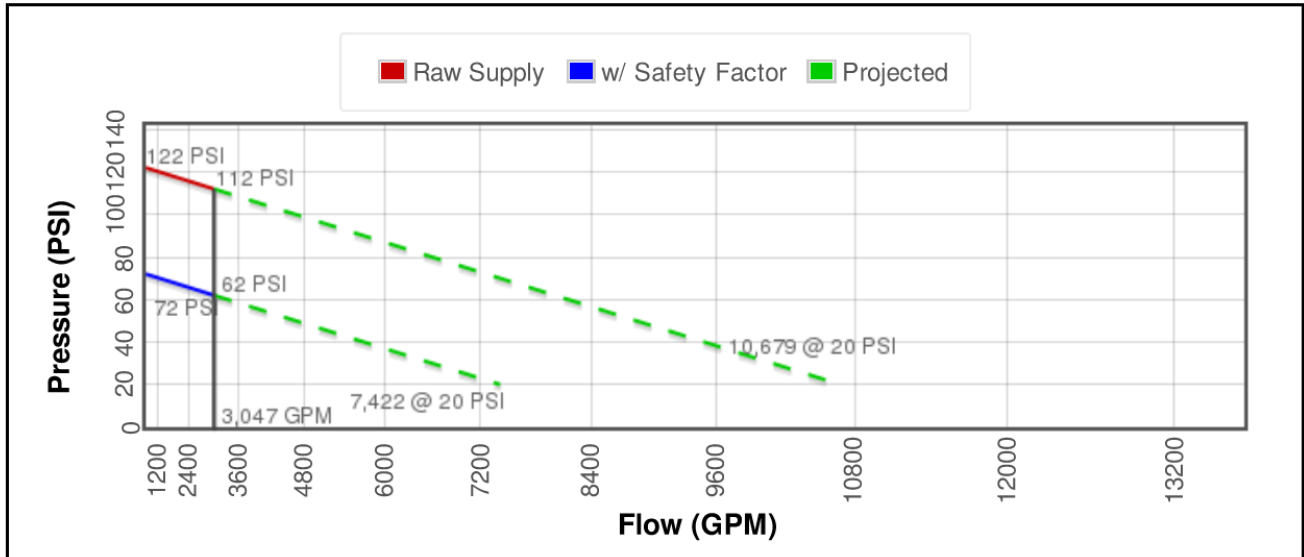
Static Pressure w/ safety factor =	72.0 psi
------------------------------------	----------

Residual Pressure = 62.0 psi with 3,047 gpm

Minimum Residual Pressure = 20.0 psi with 7,422 gpm

The projected flow test results are shown in the graph below.

Water Supply Curve N^{1.85} Graph



4.2 Water System Design Criteria

The anticipated domestic and fire flow demand criteria were analyzed to determine adequate water system infrastructure service capacity to the project site. The evaluation criteria included guidelines set forth within the COS DSPM and International Fire Code (IFC 2018).

Average Day Demand (ADD) is based on 208.9 gpd for inside use and 276.7 gpd for outside use per dwelling unit. The total Average Day Demand is 485.6 gpd per dwelling unit. Please refer to Appendix C for a copy of the water system evaluation criteria utilized in this analysis.

4.3 Proposed Water System Demands

4.3.1 Domestic Demand Requirements

The Rectory provides for living quarters for two priests and occasional guests in the other three bedrooms. It is assumed that there will be approximately four times the demand per conservative high-density residential demand, which for this particular case, that is not shown in the standard estimates to choose from, we assumed about 728 GPD for the ADD. This is 1.5 times greater than the total consumptive use estimated by the City for a typical dwelling unit, as shown in Table 1 below.

Domestic demand requirements are determined in accordance with the COS Design Standards & Policies Manual, Table 6.1-2 'Average Water Demands'. Refer to Table 1 below for a summary of site domestic water demands:

**Table 1 Domestic Water Demands, Rectory Building Addition
(City of Scottsdale Design Standards Manual, dated 2018)**

Building	Area	Building Use	No. of Bedrooms	Domestic Water Demands [†]				
				Average ^{††}	Average Day (ADD)	Average Day*	Max Day	Peak Hour
<i>(ID)</i>	<i>(sf)</i>			<i>(gpd/unit)</i>	<i>(gpd)</i>	<i>(gpm)</i>	<i>(gpm)</i>	<i>(gpm)</i>
Residential: < 2 dwelling unit per acre (DU/ac)	3,540	Residential	4	728 gpd/ 1.5 x BR	728	0.5	1.0	1.8

[†] The peaking factors are 2 times the average day for maximum day, and 3.5 times the average day for peak hour

^{††} Applied an addition factor of 1.5 to account for an additional bedroom beyond a typical dwelling unit for the Rectory bldg..

4.3.2 Fire Flow Requirements

Fire flow requirements are determined in accordance with the IFC 2018, Table B105.1(2) "Minimum Required Fire Flow and Flow Duration for Buildings". This is included in Appendix C for reference. The existing system for fire flow is based on the largest building on the Church property. The Church at 23,922 sf is the largest building and is construction type 1B per the 2010 Site Plan. The corresponding fire flow for the rectory building is based on the total square footage, 3,540 sf, the Minimum Required Fire-Flow and Flow Duration for Buildings

utilizing a type II-B construction, is 3,000 gpm for a duration of three hours. However, Section B105.2 of the 2018 IFC allows for a reduction of the required fire flow by 75%, but not less than 1,500 gpm when buildings are equipped with an automatic sprinkler system. This is also consistent with Section 6-1.501 of the COS DSPM. Contingent upon the approval of this report and the construction plans by the COS Fire Marshall, the fire flow demand will be reduced to 1,500 gpm with the building fully equipped with a fire system that meets the standards for sprinkler system design using sprinkler heads that meet current NFPA 13 requirements.

4.3.3 Fire Sprinkler System

This development has an existing 4" fire line stubbed out to the building area for the fire sprinkler system. This design will be completed by the sprinkler system contractor. The sprinkler flow and system pressure requirements are currently undetermined. Sprinkler calculations will be submitted as part of the architectural building plan submittal to the City of Scottsdale.

4.4 Proposed Condition Water System (Refer to Exhibit CGD)

Per Figure 6-1.3 City Pressure Zone Map the Project site is located within Zone 5.

Services for the Project site will be provided via tapping into the existing 8-inch public water main line in 124th St. and extending a 6-inch public water line west into the site.

The domestic water distribution system for the rectory building addition consists of a 1-1/2-inch service line that connects to a service line already installed with a 2" meter on a 2-1/2 backflow preventor that will extend south of the connection to the City 12" ACP main line. The existing domestic water meter is located near the middle of the lot on the west side of the site along the frontage at 124th St.

Service water for fire flow is provided by an existing 4-inch private onsite looped 8" fireline. The water line dedicated for fire flow extends into the site from the main line in 124th Street. See Utility Plan shown as Exhibit 1.

Hydraulic models were created for three system demand conditions of Average Day Demand, Peak Hour Demand, and Max Day + Fire Flow using the EPANET 2.0 software program. The results of the computer model analyses, ran for each demand scenario, are provided in the junction and pipe reports located in Appendix D. Each scenario is titled per the scenario ran. Figures for each scenario are also included that shows the system pressure at each node and flow values associated with each element are provided.

The 'Peak Hour' scenario represents the respective domestic demands on the proposed system. Demand is placed at the building which models the proposed domestic service to the building through a 1.5-inch service. Results are provided in Table 2 below.

Table.2
Peak Hour Domestic Water Demand Analysis Results,
Rectory building addition, City of Scottsdale

Scenario	Total Domestic Demand	Min Residual Pressure	Maximum System Pipe	
			Velocity	Head Loss
<i>(No.)</i>	<i>(gpm)</i>	<i>(psi)</i>	<i>(ft/s)</i>	<i>(ft/1000 ft)</i>
Peak Hour	145	62.3	7.67	78

Anticipated available domestic water service pressure is approximately 62 psi. This exceeds the minimum pressure of 50 psi set by the COS.

Also shown are the results of the 'Max Day plus Fire Flow Demand' scenario for the Rectory building addition development, utilizing the established minimum allowable fire flow of 1,500 gpm. This is consistent with both the 2018 IFC and the COS 2018 DSPM. The fire flow demand was applied to the proposed fire hydrant located near the northwest corner of the building. Results are provided in Table 3.

Table.3
Max Day + Fire Flow Water Demand Analysis Results,
Addition of Rectory building at St Benard Church, City of Scottsdale

Scenario	Total Required Demand	Min Residual Pressure	Maximum System Pipe	
			Velocity	Head Loss
<i>(ID)</i>	<i>(gpm)</i>	<i>(psi)</i>	<i>(ft/s)</i>	<i>(ft/1000 ft)</i>
Max Day + Fire Flow	1,560	52.3	9.96	115

Note: Results above are from junction J-22 (pressure) and pipe P-1 (velocity and head loss).

Therefore, the proposed water system, based upon the fire flow test is adequate to provide the estimated maximum daily domestic and a fire flow demand for the additional Rectory building development.

Additionally, the available combined flow at the existing fire hydrant north of the new building and south of the corner building is approximately 1500 gpm while maintaining a minimum of 30 psi.

5 Conclusion

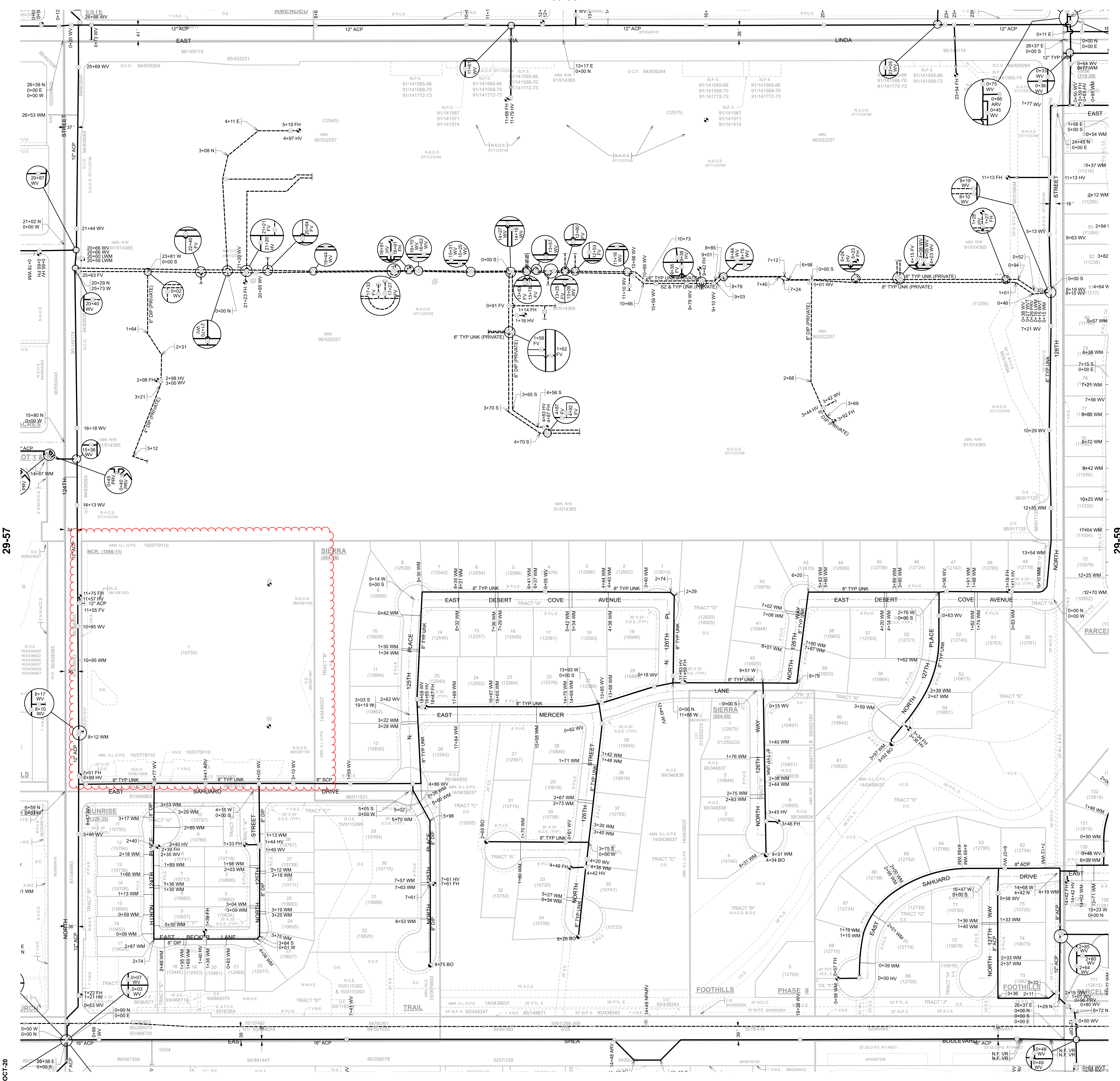
The proposed Rectory addition to the St. Bernard Church Campus meets the requirements of the City of Scottsdale 2018 Design Standards and Policy Manual, 2018 International Fire Code, and ADEQ Title 18 of the Arizona Administrative Code.

Based upon the recent fire flow test the proposed water system is adequate to provide the estimated maximum daily domestic and a fire flow demand of 1,500 gpm, at a minimum residual pressure of 52 psi.

6 References

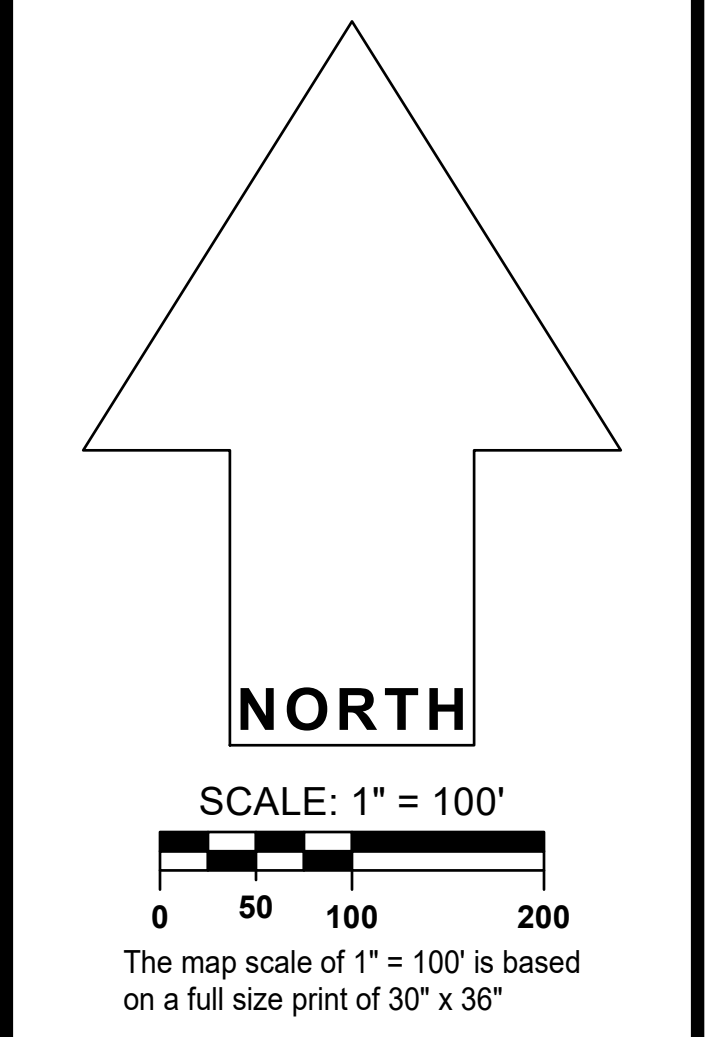
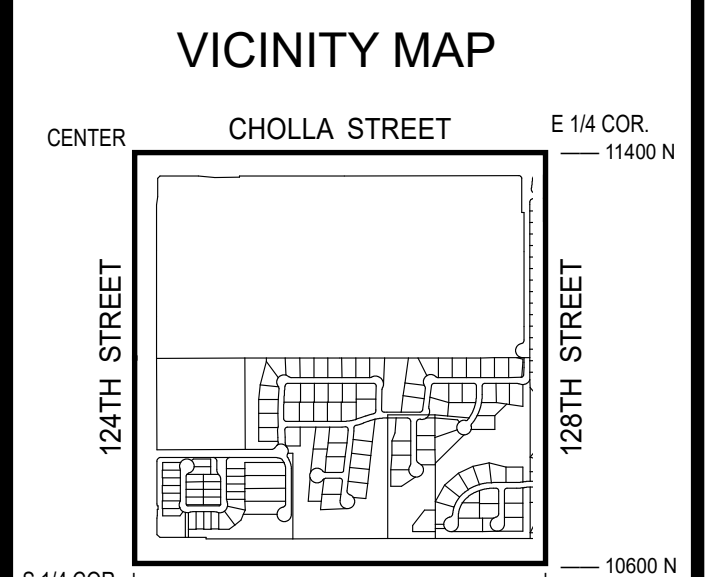
- i. Arizona Administrative Code, Title 18, Environmental Quality, Chapter 9, Dept. of Environmental Quality Water Pollution Control, December 31, 2005.
- ii. 2018 International Fire Code, International Fire Code Institute, 2019
- iii. City of Scottsdale Design Standards and Policy Manual, dated 2018

Appendix A
Water Quarter Section Map



GENERAL NOTES:
 * THIS IS A COMPUTER GENERATED DRAWING. FOR ANY REVISIONS PLEASE CONTACT THE CITY OF SCOTTSDALE GIS DEPARTMENT AT (480) 312-7792.
 * THE SECTION LINE BEARING AND DISTANCES ARE BASED ON THE CITY OF SCOTTSDALE GPS SURVEY OF SEPTEMBER, 1991. BEARINGS ARE NAD 83 GRID AND DISTANCES ARE FLATTENED TO GROUND. WHERE NO CORNER WAS FOUND THE DIMENSIONS ARE GIVEN TO CALCULATED SECTION CORNERS AND ARE NOTED AS 'CALCULATED' ON THE MAP.

- LEGEND:**
- Air Release Valve
 - Non-potable Air Release Valve
 - Blowoff
 - Cap
 - Cathodic Protection
 - Fill Drain
 - Fire Hydrant
 - Non-GPS Point
 - Pressure Reducing Valve
 - Pump
 - Reducer
 - Sample Station
 - Water Manhole
 - Non-Potable Manhole
 - Well
 - Valve
 - Non-potable Valve
 - Vault
 - Water Main
 - Non-Potable Main
 - Fire / Private Main
 - Non-Scottsdale Main



WATER
 QUARTER SECTION MAP
29-58
 SE 1/4 SEC. 23 T3N R5E

NOTICE
 THIS DOCUMENT IS PROVIDED FOR GENERAL INFORMATION PURPOSES ONLY. THE CITY OF SCOTTSDALE DOES NOT WARRANT ITS ACCURACY, COMPLETENESS OR SUITABILITY FOR ANY PARTICULAR PURPOSE. IT SHOULD NOT BE RELIED UPON WITHOUT FIELD VERIFICATION.
 THE CITY OF SCOTTSDALE

29-57

29-59

11-OCT-20

Appendix B
Fire Flow Test



Flow Test Summary

Project Name: EJFT 20277.1
Project Address: 10755 N 124th St, Scottsdale, AZ 85259
Date of Flow Test: 2020-12-11
Time of Flow Test: 6:50 AM
Data Reliable Until: 2021-06-11
Conducted By: Eder Cueva & Steven Saethre (EJ Flow Tests) 602.999.7637
Witnessed By: Jared Berry (City of Scottsdale) 602.541.4942
City Forces Contacted: City of Scottsdale (602.541.4942)
Permit Number: C63893

Note Scottsdale requires a max static pressure of 72 psi for safety factor.

Raw Flow Test Data

Static Pressure: 122.0 PSI
Residual Pressure: 112.0 PSI
Flowing GPM: 3,047
GPM @ 20 PSI: 10,679

Data with a 50 PSI Safety Factor

Static Pressure: 72.0 PSI
Residual Pressure: 62.0 PSI
Flowing GPM: 3,047
GPM @ 20 PSI: 7,422

Hydrant F₁

Pitot Pressure (1): 73 PSI
Coefficient of Discharge (1): 0.9
Hydrant Orifice Diameter (1): 4 inches
Additional Coefficient 0.83 on orifice #1



- Project Site
 - Static-Residual Hydrant
 - Flow Hydrant
- Distance Between F₁ and R
473 ft (measured linearly)
- Static-Residual Elevation
1580 ft (above sea level)
- Flow Hydrant (F₁) Elevation
1568 ft (above sea level)
- Elevation & distance values are approximate

Appendix C
Water System Evaluation Criteria

page that indicates the units used

AVERAGE DAY WATER DEMANDS ⁽¹⁾							
IN GALLONS PER DAY (GPD) ⁽²⁾				IN GALLONS PER MINUTE (GPM) ⁽²⁾⁽³⁾			
Land Use	Inside Use	Outside Use	Total Use	Inside Use	Outside Use	Total Use	Units
Residential Demand per Dwelling Unit							
< 2 dwelling unit per acre (DU/ac)	208.9	276.7	485.6	0.30	0.39	0.69	per unit
2 – 2.9 DU/ac	193.7	276.7	470.4	0.27	0.39	0.66	per unit
3 – 7.9 DU/ac	175.9	72.3	248.2	0.25	0.11	0.36	per unit
8 – 11.9 DU/ac	155.3	72.3	227.6	0.22	0.11	0.33	per unit
12 – 22 DU/ac	155.3	72.3	227.6	0.22	0.11	0.33	per unit
High Density Condominium (condo)	155.3	30	185.3	0.22	0.05	0.27	per unit
Resort Hotel (includes site amenities)	401.7	44.6	446.3	0.56	0.07	0.63	per room
Service and Employment							
Restaurant	1.2	0.1	1.3	1.67E-03	1.39E-04	1.81E-03	per square foot (sq.ft.)
Commercial/Retail	0.7	0.1	0.8	9.73E-04	1.39E-04	1.11E-03	per sq.ft.
Commercial High Rise	0.5	0.1	0.6	6.95E-04	1.39E-04	8.34E-04	per sq.ft.

Table 1: Domestic Water Demands

2018 COS Engineering & Design Standards

Building (ID)	Building		Domestic Water Demands						
	# Units -	 (units)	Use Category -	Average -		Average (gpd)	Average (gpm)	Max Day* (gpm)	Peak Hour (gpm)
Main Church A	23,922	sf	office	0.60	gpd/sf	14,353	10.0	19.9	34.9
Existing Office B	6,774	sf	Commercial / Office	0.60	gpd/sf	4,064	2.8	5.6	9.9
New Rectory Building C	3,540	sf	Res. Dwelling <2U/ac	485.60	gpd/unit †	728	0.5	1.0	1.8
2 - Story Office Building D	39,400	sf	Commercial / Office	0.60	gpd/sf	23,640	16.4	32.8	98.5
							29.7	59.4	145.0

* The max day flow is 2.0 x average day flow, and peak hour is 3.5 times average day

† Rectory building is 1.5 times the typical number of bedrooms for a dwelling unit and was applied to the COS estimated value.

Appendix D
Computer Model Analysis Results

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*****
*                               E P A N E T                               *
*                               Hydraulic and Water Quality                 *
*                               Analysis for Pipe Networks                   *
*                               Version 2.0                                 *
*****
    
```

Input File: 19034_ADD_REV.net

Link - Node Table:

Link ID	Start Node	End Node	Length ft	Diameter in	
P-1	J-1	J-2	131	12	
P-2	J-2	J-3	103	12	
P-3	J-3	J-4	86	12	
P-4	J-3	J-5	100	6	
P-9	J-5	J-10	19	2	
P-6	J-6	J-7	23	6	
P-7	J-6	J-8	129	6	
P-8	J-8	J-9	19	6	
P-10	J-1	J-13	75	6	
P-11	J-2	J-14	43	6	
CKV-1	J-11	J-12	.5	2	
P-5	J-5	J-6	12	6	
PMP	RSVR	J-2	#N/A	#N/A	Pump
BPV-1	J-10	J-11	#N/A		2 Valve

Energy Usage:

Pump	Usage Factor	Avg. Effic.	Kw-hr /Mgal	Avg. Kw	Peak Kw	Cost /day
PMP	100.00	75.00	696.61	0.23	0.23	0.00
Demand Charge:						0.00
Total Cost:						0.00

Node Results:

Node ID	Demand GPM	Head ft	Pressure psi	Quality
J-1	0.00	1395.30	72.06	0.00
J-2	0.00	1395.30	72.06	0.00
J-3	0.00	1395.30	71.97	0.00
J-4	0.00	1395.30	71.93	0.00
J-5	0.00	1395.30	72.06	0.00
J-10	0.00	1395.28	72.05	0.00
J-6	0.00	1395.30	72.32	0.00

Node Results: (continued)

Node ID	Demand GPM	Head ft	Pressure psi	Quality
J-7	0.00	1395.30	72.01	0.00
J-8	0.00	1395.30	72.60	0.00
J-9	0.00	1395.30	72.10	0.00
J-13	0.00	1395.30	115.82	0.00
J-14	0.00	1395.30	72.06	0.00
J-11	0.00	1390.62	70.03	0.00
J-12	5.40	1390.62	70.03	0.00
RSVR	-5.41	1229.00	0.00	0.00 Reservoir

Link Results:

Link ID	Flow GPM	Velocity fps	Unit Headloss ft/Kft	Status
P-1	0.00	0.00	0.00	Open
P-2	5.40	0.02	0.00	Open
P-3	0.00	0.00	0.00	Open
P-4	5.40	0.06	0.00	Open
P-9	5.40	0.55	0.87	Open
P-6	0.00	0.00	0.00	Open
P-7	0.00	0.00	0.00	Open
P-8	0.00	0.00	0.00	Open
P-10	0.00	0.00	0.00	Open
P-11	0.00	0.00	0.00	Open
CKV-1	5.40	0.55	0.98	Open
P-5	0.00	0.00	0.00	Open
PMP	5.41	0.00	-166.30	Open Pump
BPV-1	5.40	0.55	4.66	Open Valve

Appendix D-1
Computer Model Analysis Results. Average Day Demand

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*****
*                               E P A N E T                               *
*                               Hydraulic and Water Quality                 *
*                               Analysis for Pipe Networks                   *
*                               Version 2.0                                *
*****
    
```

Input File: 19034_PHD_REV2.net

Link - Node Table:

Link ID	Start Node	End Node	Length ft	Diameter in	
P-1	J-1	J-2	131	12	
P-2	J-2	J-3	103	12	
P-3	J-3	J-4	86	12	
P-4	J-3	J-5	100	6	
P-9	J-5	J-10	19	2	
P-6	J-6	J-7	23	6	
P-7	J-6	J-8	129	6	
P-8	J-8	J-9	19	6	
P-10	J-1	J-13	75	6	
P-11	J-2	J-14	43	6	
CKV-1	J-11	J-12	.5	2	
P-5	J-5	J-6	12	6	
PMP	RSVR	J-2	#N/A	#N/A	Pump
BPV-1	J-10	J-11	#N/A		2 Valve

Energy Usage:

Pump	Usage Factor	Avg. Effic.	Kw-hr /Mgal	Avg. Kw	Peak Kw	Cost /day
PMP	100.00	75.00	696.59	0.79	0.79	0.00
Demand Charge:						0.00
Total Cost:						0.00

Node Results:

Node ID	Demand GPM	Head ft	Pressure psi	Quality
J-1	0.00	1395.30	72.06	0.00
J-2	0.00	1395.30	72.06	0.00
J-3	0.00	1395.30	71.97	0.00
J-4	0.00	1395.30	71.93	0.00
J-5	0.00	1395.29	72.05	0.00
J-10	0.00	1395.13	71.98	0.00
J-6	0.00	1395.29	72.31	0.00

Node Results: (continued)

Node ID	Demand GPM	Head ft	Pressure psi	Quality
J-7	0.00	1395.29	72.01	0.00
J-8	0.00	1395.29	72.60	0.00
J-9	0.00	1395.29	72.10	0.00
J-13	0.00	1395.30	115.82	0.00
J-14	0.00	1395.30	72.06	0.00
J-11	0.00	1388.12	68.95	0.00
J-12	18.90	1388.11	68.94	0.00
RSVR	-18.91	1229.00	0.00	0.00 Reservoir

Link Results:

Link ID	Flow GPM	Velocity fps	Unit Headloss ft/Kft	Status
P-1	0.00	0.00	0.00	Open
P-2	18.90	0.05	0.00	Open
P-3	0.00	0.00	0.00	Open
P-4	18.90	0.21	0.04	Open
P-9	18.90	1.93	8.76	Open
P-6	0.00	0.00	0.00	Open
P-7	0.00	0.00	0.00	Open
P-8	0.00	0.00	0.00	Open
P-10	0.00	0.00	0.00	Open
P-11	0.00	0.00	0.00	Open
CKV-1	18.90	1.93	8.79	Open
P-5	0.00	0.00	0.00	Open
PMP	18.91	0.00	-166.30	Open Pump
BPV-1	18.90	1.93	7.01	Open Valve

Appendix D-2
Computer Model Analysis Results. Peak Hour Demand

 * E P A N E T *
 * Hydraulic and Water Quality *
 * Analysis for Pipe Networks *
 * Version 2.2 *

Input File: Water Model-AD.net

ST BENARD CHURCH WATER ANALYSIS

Link - Node Table:

Link ID	Start Node	End Node	Length ft	Diameter in
P1	J1	J12	60	8
P2	J12	J11	189	12
P3	J2	J3	40	8
P4	J28	J5	250	8
P5	J5	J6	260	8
P6	J6	J7	106	8
P7	J8	J7	153	8
P8	J9	J8	156	8
P9	J10	J9	226	8
P10	J27	J10	295	8
P11	J12	J13	35	8
P14	J21	J25	290	2.5
P15	J7	J18	37	8
P16	J5	J17	37	4
P17	J8	J19	37	4
P18	J10	J20	30	4
P19	J9	J23	24	6
P20	J16	J22	170	1.5
P21	J2	J11	147	12
P13	J25	J24	40	1.5
P22	J16	J26	45	1.5
P23	J25	J16	69	2
P24	J15	J21	1	2.5
P12	J14	J27	1	8
P25	J4	J28	1	8
2	R1	J1	#N/A	#N/A Pump
BFP1	J3	J4	#N/A	8 Valve
BFP8	J14	J13	#N/A	8 Valve
1	J11	J15	#N/A	2.5 Valve



Energy Usage:

Pump	Usage Factor	Avg. Effic.	Kw-hr /Mgal	Avg. Kw	Peak Kw	Cost /day
2	100.00	75.00	668.64	62.58	62.58	0.00
					Demand Charge:	0.00
					Total Cost:	0.00

Node Results:

Node ID	Demand GPM	Head ft	Pressure psi	Quality
J1	0.00	1728.62	69.60	0.00

67	J2	0.00	1725.69	63.13	0.00
68	J3	0.00	1725.36	62.98	0.00
69	J4	0.00	1713.56	57.87	0.00
70	J5	0.00	1711.44	56.52	0.00
71	J6	750.00	1709.25	55.14	0.00
72	J7	0.00	1709.27	56.01	0.00
73	J8	0.00	1709.30	58.19	0.00
74	J9	750.00	1709.34	58.21	0.00
75	J10	0.00	1712.34	59.51	0.00
76	J11	0.00	1725.87	67.10	0.00
77	J12	0.00	1726.13	68.08	0.00
78	J13	0.00	1725.66	67.01	0.00
79	J14	0.00	1716.26	62.51	0.00
80	J15	0.00	1707.87	58.44	0.00
81	J16	0.00	1703.79	54.07	0.00
82	J17	0.00	1711.44	56.52	0.00
83	J18	0.00	1709.27	55.58	0.00
84	J19	0.00	1709.30	57.76	0.00
85	J20	0.00	1712.34	59.07	0.00
86	J21	20.00	1707.84	55.83	0.00
87	J22	1.00	1703.76	52.32	0.00
88	J23	0.00	1709.34	58.64	0.00
89	J24	33.00	1699.31	53.13	0.00
90	J25	0.00	1703.90	54.12	0.00
91	J26	6.00	1703.57	53.11	0.00
92	J27	0.00	1716.25	62.50	0.00
93	J28	0.00	1713.55	57.87	0.00
94	R1	-1560.00	1569.00	0.00	0.00 Reservoir



Link Results:

Link ID	Flow GPM	Velocity fps	Unit	Headloss ft/Kft	Status
P1	1560.00	9.96		41.62	Open
P2	718.72	2.04		1.37	Open
P3	658.72	4.20		8.43	Open
P4	658.72	4.20		8.43	Open
P5	658.72	4.20		8.43	Open
P6	-91.28	0.58		0.22	Open
P7	91.28	0.58		0.22	Open
P8	91.28	0.58		0.22	Open
P9	841.28	5.37		13.26	Open
P10	841.28	5.37		13.26	Open
P11	841.28	5.37		13.26	Open
P14	40.00	2.61		13.59	Open
P15	0.00	0.00		0.00	Open
P16	0.00	0.00		0.00	Open
P17	0.00	0.00		0.00	Open
P18	0.00	0.00		0.00	Open
P19	0.00	0.00		0.00	Open
P20	1.00	0.18		0.18	Open
P21	-658.72	1.87		1.17	Open
P13	33.00	5.99		114.59	Open
P22	6.00	1.09		4.87	Open
P23	7.00	0.71		1.60	Open
P24	60.00	3.92		28.81	Open
P12	841.28	5.37		13.31	Open
P25	658.72	4.20		8.54	Open
2	1560.00	0.00		-159.62	Open Pump
BFP1	658.72	4.20		11.80	Open Valve
BFP8	-841.28	5.37		9.40	Open Valve
1	60.00	3.92		18.00	Open Valve

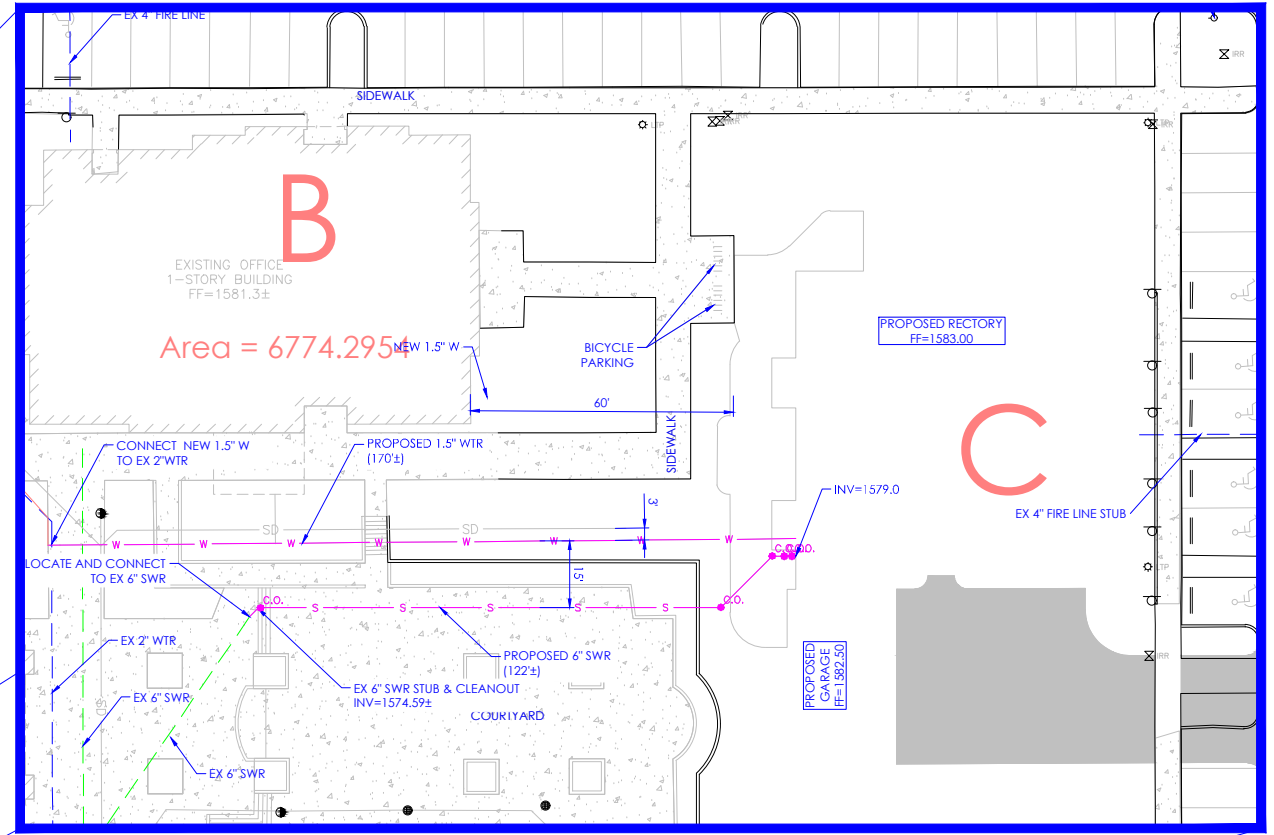
NO.	DATE	DESCRIPTION

RECTORY ADDITION TO ST. BERNARD OF CLAIRVAUX CATHOLIC CHURCH
 10755 N. 124TH ST. - SCOTTSDALE, ARIZONA 85259
PROPOSED PRIVATE WATER AND SEWER MAP

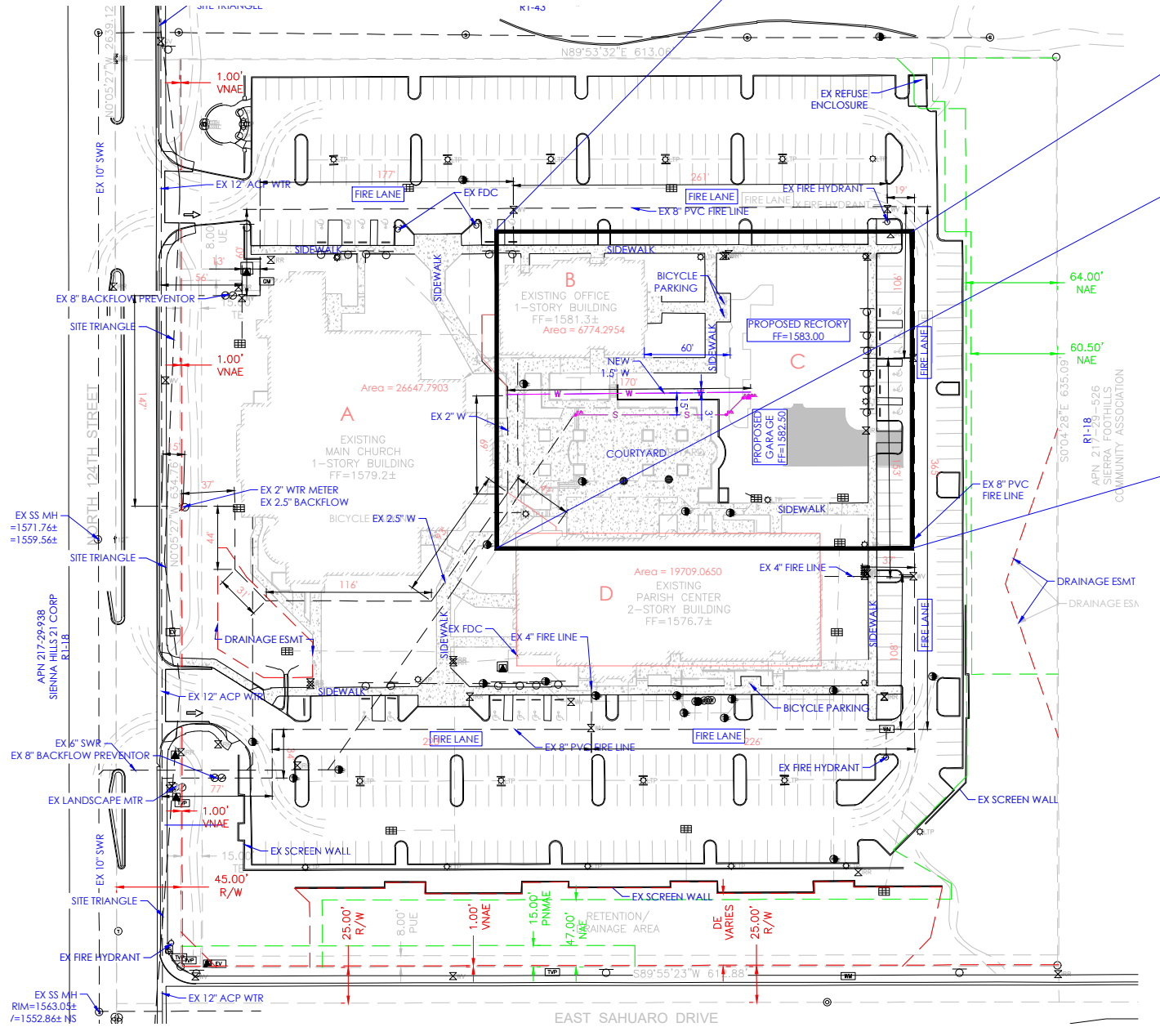
PROJECT NO.:	20204
DRAWING DATE:	7/2021
DRAWN BY:	MFC
CHECKED BY:	PV
DRAWING SCALE:	AS SHOWN
DRAWING FILE:	EX 1 VSD.DWG

PRELIMINARY WATER & SEWER
EX-1
1 of 1
PLAN

14-DR-2021_V2
 10/4/2021



WATER & SEWER CONNECTION DETAIL
 SCALE: 1"=20'

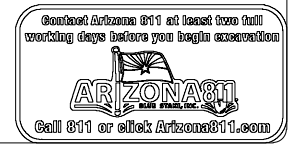
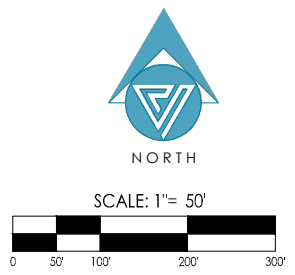


EXISTING SITE UTILITY MAP
 SCALE: 1"=50'

- LEGEND**
- - - EXISTING BOUNDARY LINE
 - - - EXISTING EASEMENT LINE
 - [FIRE LANE] DESIGNATED FIRE LANE
 - C.O. - SANITARY SEWER CLEANOUT
 - S - SEWER
 - W - WATER

GENERAL NOTES

1. EXISTING UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY AND WERE NOT SURVEYED OR FIELD VERIFIED BY THE ENGINEER.



O.S. PROJECT NO. 866-PA-2020 - KEY CODE 91728 - NEW PHASE TO 38-DR-2010