CITY OF SCOTTSDALE

Abbreviated Water and Sewer Needs

CAVASSON

LOCATED NEAR THE NORTHWEST CORNER OF THE HAYDEN ROAD AND LOOP 101
FRONTAGE ROAD INTERSECTION

FINAL SEWER REPORT-CAVASSON PHASE 1 HOTEL
BASIS OF DESIGN

August 12, 2019
Revised February 26, 2020

Project No.: 18114-301

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 scan DATE 5/22/2020

PREPARED FOR:

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Expires 03-31-2021

HUBBARD ENGINEERING

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1. INTRODUCTION

1.1 Project Scope

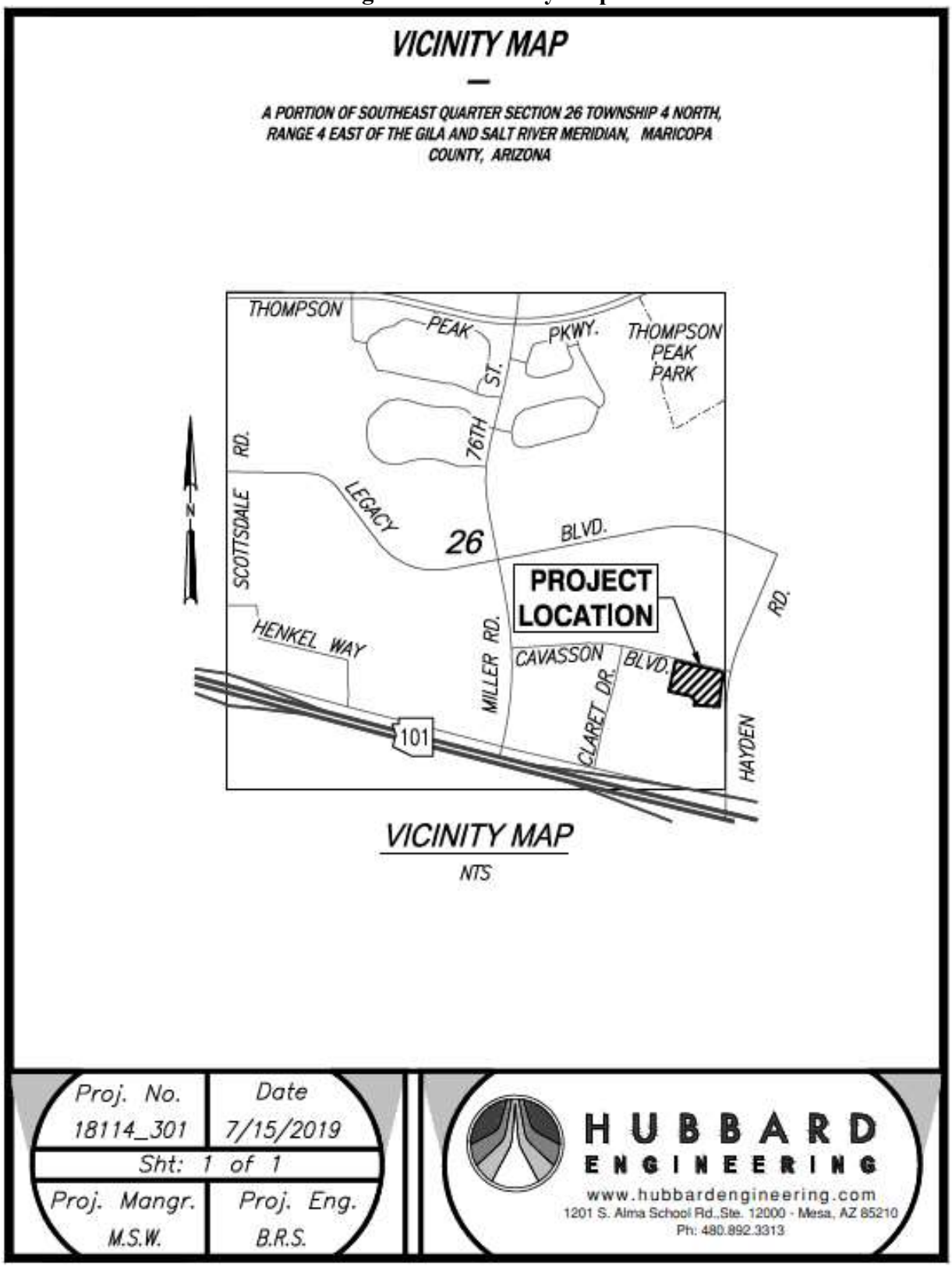
This report presents the results of a *Final Sewer Study* conducted by Hubbard Engineering at the request of Nationwide Realty Investors ("Client"), for the Phase I Hotel of the Cavasson Master Development ("Site"). The purpose of this report is to provide a detailed analysis for the proposed sanitary sewer system for the development. The sewer analysis in this report adheres to the City of Scottsdale's *2012 Water Reuse Master Plan Update* and the approved *Cavasson Master Wastewater Report* dated March 26, 2019.

1.2 Site Description

The project site is located in the southeast quarter of Section 26, Township 4N, Range 4E of the Gila and Salt River Base and Meridian, Maricopa County, Arizona. The site is currently undeveloped, and prior to Nationwide Realty Investor's acquisition, was held in trust by the Arizona State Land Department (ASLD) as a portion of the overall Crossroads East development, which encompasses approximately 883 gross acres. Phase I of the Cavasson site development is located in the southwest corner of the overall Crossroads East development, near the Hayden Road and Loop 101 Frontage Road intersection. The land naturally falls from northeast to southwest.

The project site is bounded by the Loop 101 Freeway to the south, North Hayden Road to the east, and undeveloped land to the west and north. The site location is shown in **Figure 1.1 – Vicinity Map**. The Hotel is specifically located in the northeast corner of the site.

Figure 1.1 – Vicinity Map



1.3 Project Type

The overall Cavasson project is being developed by Nationwide Reality Investors as a master planned, mixed use development with office, retail, hotels, and multifamily residential parcels with public and private roadways that run adjacent and through the development. The Phase 1 Hotel for Cavasson will include construction of a new six story, 237 room hotel building. Improvements will also include surrounding access drives, parking, and extending existing private utility stubs to service the building.

1.4 Regulatory Requirements

The following documents were utilized in the preparation of this report:

- City of Scottsdale, *Design Standards & Policies Manual*.
- City of Scottsdale, *Water Reuse Master Plan Update 2012.*
- Arizona Department of Environmental Quality (ADEQ), *Engineering Bulletin 11: Minimum Requirements for Design, Submission of Plans and Specifications of Sewage Works.*
- Arizona Department of Environmental Quality (ADEQ), *Aquifer Protection Permit (APP) Program.*
- Maricopa Association of Governments (MAG), *Uniform Standard Specifications and Details for Public Works Construction, 2018 Edition.*
- *2015 Edition of the International Plumbing Code.*
- City of Scottsdale, *Ordinance No. 4346.*

2. PROJECT DESCRIPTION

2.1 Tie in to Existing System

As part of the Phase 1 development, a 12-inch diameter public sewer main was installed (by others) within the proposed Cavasson Boulevard right-of-way located along the north side of the Phase I site. A 12-inch diameter sewer stub has been provided off of this main to service portions of the Phase I development. The Phase 1 Hotel development will connect to this sewer main line through the provided 6-inch stub to the property. See **Exhibit 1** for tie in locations.

2.2 Service Area

The proposed Cavasson development is located within the City of Scottsdale's Service Area, specifically within the Sub-basin 4 collection area, per Figure 1-3 in the City of Scottsdale's *2012 Water Reuse Master Plan Update.* Details regarding the capacity and infrastructure within this service area are further discussed in the approved *Cavasson Master Wastewater Report*.

The proposed sewer for the Phase I Hotel will service the new 237 room hotel building. See **Exhibit 1** for the proposed sewer layout.

2.3 Right of Way and Easements

All proposed sewer lines installed with the Phase I development will be private. These private mains will connect to the public sewer at existing stubs described in Section 2.1 of this report.

3. DESIGN FLOWS AND BASIS OF DESIGN

3.1 Average Daily Flow

In accordance with Table 2-4 of the City of Scottsdale's *2012 Water Reuse Master Plan Update*, the design unit loads for each land use type associated with the Phase I Hotel development are as follows:

Land Use Type	Zoning Category	Unit Load (gpad)
Resorts/Tourism	R-4R	3,985

In coordination with the City of Scottsdale staff, a multiplying factor of 1.06 is applied to the Average Daily Flow to account for the development's increased allowable Floor Area Ratio (FAR) of 0.85 from the City's Zoning Ordinance standard of 0.80. Determination of this multiplying factor is discussed in further detail in the approved *Cavasson Master Wastewater Report.*

In addition to the unit demands, the Phase 1 Hotel will include a pool which will result in an additional 100 gpm of flow to the sewer system. Therefore, the total average daily flow for the Phase 1 Hotel development is:

Total Average Daily Flow = (3,985 gpad) x (2.93 acres) x (1.06) + 100 gpm = 156,418 gpd = 108.6 gpm

3.2 Peak Daily Flow

In accordance with the approved *Cavasson Master Wastewater Report*, a peaking factor of 2.6 is applied to the Average Daily Flow (ADF) to determine the Peak Daily Flow (PDF). Therefore, the total peak flow is:

Total Peak Flow = (2.6) x (12,418 gpd) + 100 gpm = 176,287 gpd =122.4 gpm = 0.27 cfs

3.3 Pipe Capacity and Velocity Calculations

The pipe capacity of the proposed system was calculated using the Manning's Equation:

$$Q = (k/n) \times (R_h^{2/3}) \times (S^{1/2}) \times A$$

where:

Q = flow rate, ft^3/s;
k = conversion factor = 1.4859 $ft^{1/3}/s$;
n = headloss coefficient;
R_h = hydraulic radius, ft;
S = slope, ft/ft;
A = pipe cross sectional area, ft.

A summary of the calculated full flow pipe capacities and velocities can be found in **Appendix A**.

4. DESIGN CRITERIA

4.1 Flow Velocities

In accordance with the City of Scottsdale's *Design Standards and Policies Manual,* all sanitary sewers within the city shall be designed and constructed such that the mean velocity in the pipe, when flowing full, shall not be less than two and a half (2.5) feet per second (fps). At this velocity, the sewer flow will typically allow the pipe to be "self-cleaning" and minimizes the settlement of solids within the pipe.

Additionally, to prevent abrasion and erosion of the pipe material, the velocity of the peak flow shall not exceed 10 fps.

4.2 Manholes

In accordance with the City of Scottsdale's *Design Standards and Policies Manual,* manholes are required at all changes of grade, pipe size, pipe material or alignment and at distances not to exceed 500 feet for 8-15 inch diameter lines. Additional sewer manhole requirements include:

- The horizontal angle between two lines cannot be less than 90 degrees.
- Manholes shall have a minimum 0.10-foot drop across the trough.
- The difference in invert elevations between inflow and outflow lines shall not exceed one pipe diameter unless a drop connection is installed.

4.3 Minimum Pipe Sizing

The proposed sewer service lines will be 6-inch in diameter.

4.4 Pipe Material

All new sewer lines are proposed be PVC SDR-35, in accordance with the City of Scottsdale's *Design Standards and Policies Manual.*

4.5 Sewer Cover and Separation

In accordance with the City of Scottsdale's *Design Standards and Policies Manual:*

- The sewer collection system shall have a minimum cover of four feet from the crown of a sewer pipe to finish grade.
- The sewer collection system shall have a minimum horizontal distance of six feet from a water line.
- The minimum vertical clearance of a water line crossing under or over a sanitary sewer line must be two feet.

5. CONCLUSIONS AND RECOMMENDATIONS

1. The project site is located within the City of Scottsdale Sub-basin 4 collection area.
2. Design unit flows for each land use type were determined from the City of Scottsdale's *2012 Water Reuse Master Plan Update.*
3. The Average Daily Flow is 156,418 gallons per day = 108.6 gpm
4. The Total Peak Flow is 176,287 gallons per day = 122.4 gpm = 0.27 cfs
5. Proposed sewer service lines will be 6-inch diameter.

6. REFERENCES

1. City of Scottsdale, *Design Standards & Policies Manual*, January 18, 2018.
2. Carollo Engineers, *City of Scottsdale Water Reuse Master Plan Update 2012,* 2012.
3. Coe & Van Loo Consultants, Inc. (CVL) *Arizona State Land Department- Crossroads East Wastewater Master Plan Update,* April 13, 2008.
4. Arizona Department of Environmental Quality (ADEQ). *Engineering Bulletin 11: Minimum Requirements for Design, Submission of Plans and Specifications of Sewage Works.* May 1978.
5. Arizona Department of Environmental Quality (ADEQ). *Aquifer Protection Permit (APP) Program*.
6. Maricopa Association of Governments (MAG). *Uniform Standard Specifications and Details for Public Works Construction.* January 2018.
7. International Code Council. *2015 Edition of the International Plumbing Code*. January 1, 2015.
8. City of Scottsdale, *Ordinance No. 4346,* June 17, 2018.
9. City of Scottsdale, Ordinance No. 1147, June 17, 2018.

Appendix A
Sewer Capacity and Velocity Calculations
Cavasson - Phase I Hotel

Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Friday, Oct 25 2019

Sewer Capacity

Circular

Diameter (ft)	= 0.50
Invert Elev (ft)	= 50.00
Slope (%)	= 2.00
N-Value	= 0.013

Calculations

Compute by:	Known Q
Known Q (cfs)	= 0.27

Highlighted

Depth (ft)	= 0.21
Q (cfs)	= 0.270
Area (sqft)	= 0.08
Velocity (ft/s)	= 3.42
Wetted Perim (ft)	= 0.71
Crit Depth, Yc (ft)	= 0.27
Top Width (ft)	= 0.49
EGL (ft)	= 0.39

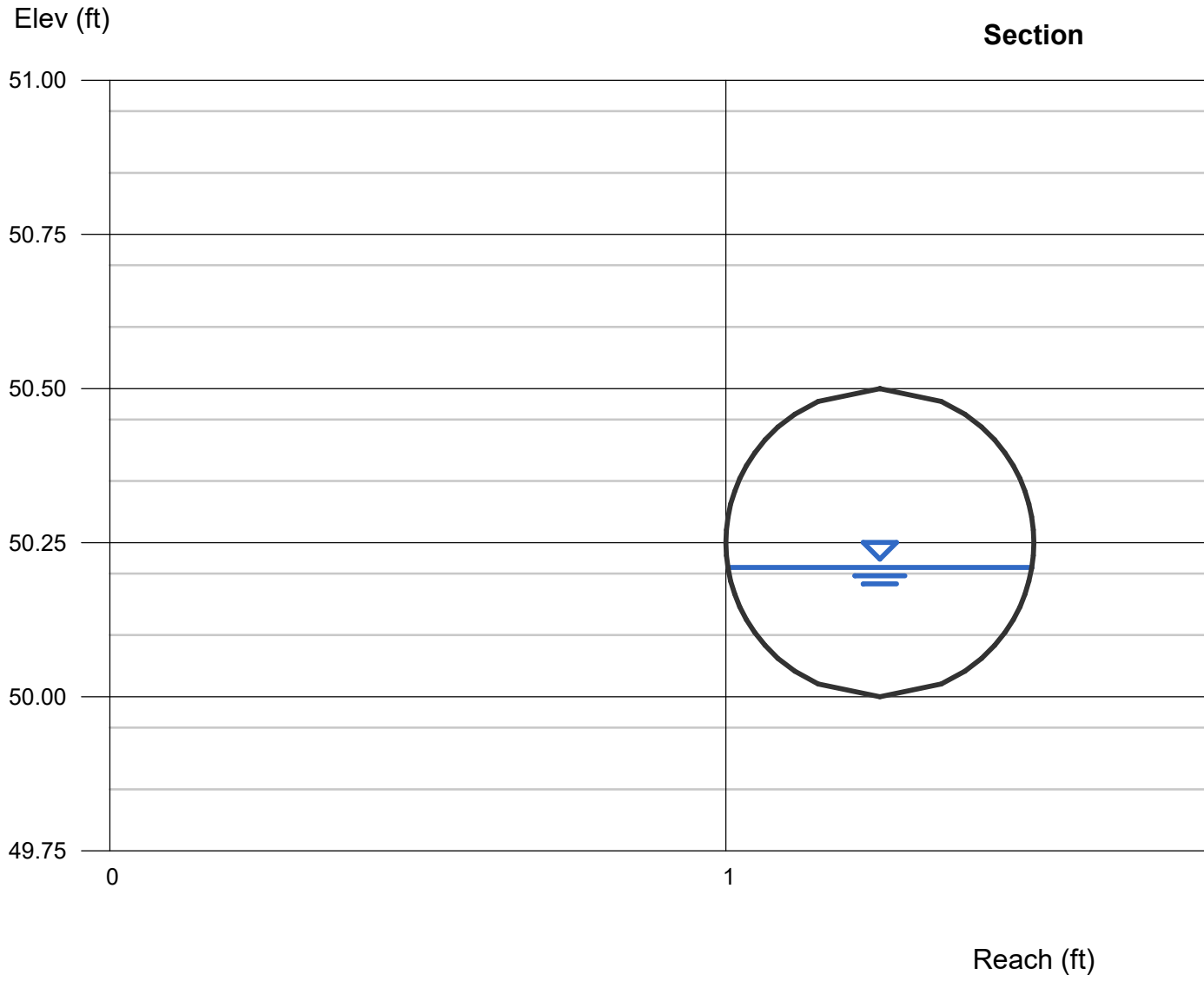
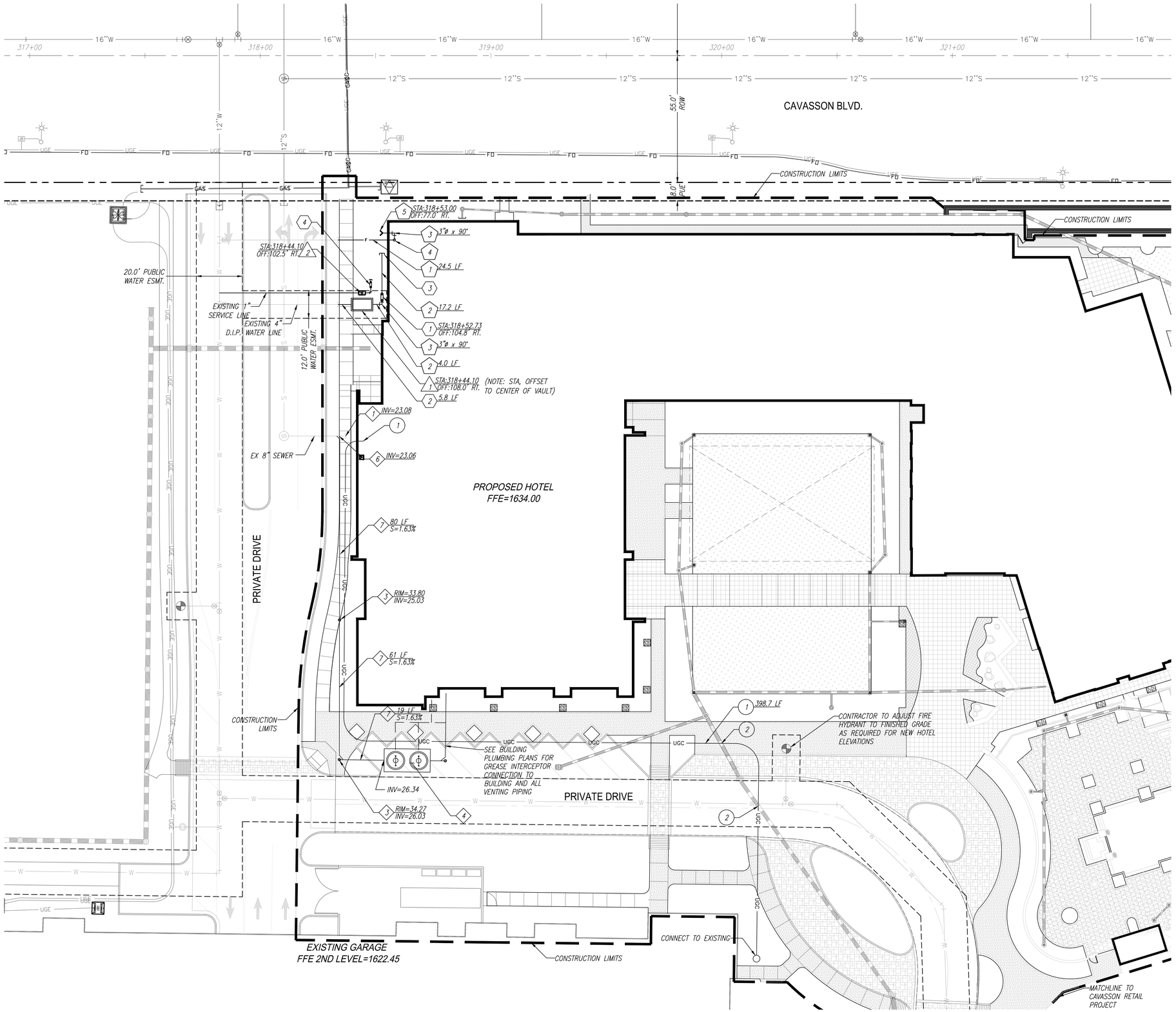


Exhibit 1
Sewer System Layout
Cavasson - Phase I Hotel



CONSTRUCTION NOTES

PRIVATE SANITARY SEWER NOTES:

1. REMOVE PLUG AND CONNECT TO EXISTING 8" SEWER LINE STUB. CONTRACTOR TO VERIFY DEPTH AND LOCATION OF CONNECTION AND NOTIFY ENGINEER OF ANY DISCREPANCIES. INVERT AS NOTED
2. CONNECT TO BUILDING GREASE INTERCEPTOR LINE. INVERT AS SHOWN ON PLAN.
3. NOT USED.
4. INSTALL ZURN PROCEPTOR GREASE INTERCEPTOR. ALL SIZING AND DETAILS PER BUILDING PLUMBING PLANS. INTECEPTOR HAS 2" DROP FROM INLET TO OUTLET PIPE. RIM AND INVERTS AS NOTED.
5. INSTALL 6" SEWER CLEAN OUT PER M.A.G. STD. DET. 441, TYPE B. RIM AND INVERT AS SHOWN ON PLAN.
6. INSTALL 6" SEWER CONNECTION PER M.A.G. STD. DET. 440-1. INVERT AS SHOWN ON PLAN.
7. INSTALL 6" PVC SDR-35 SEWER PIPE PER M.A.G. SPEC. 615 AND 743. LENGTH AND SLOPE AS NOTED.

FIRELINE NOTES:

1. INSTALL 8"ø D.I.P. CLASS 350 POLY-WRAPPED PER M.A.G. STD. SPEC. 610. MECHANICAL RESTRAINT JOINTS PER M.A.G. STD. DTL. 303-1, 303-2 WITH MIN. 3' COVER. LENGTH AS NOTED.
2. INSTALL 3"ø D.I.P. CLASS 350 POLY-WRAPPED PER M.A.G. STD. SPEC. 610. MECHANICAL RESTRAINT JOINTS PER M.A.G. STD. DTL. 303-1, 303-2 WITH MIN. 3' COVER. LENGTH AS NOTED.
3. INSTALL WATERLINE BEND, D.I.P. CLASS 350 POLY-WRAPPED WITH MEGALUG SERIES 1100 MECHANICAL RESTRAINT JOINT OR APPROVED EQUAL. SIZE AND ANGLE AS NOTED.
4. BRING 8" FIRELINE TO FIRE RISER ROOM FOR CONNECTION TO FIRE SPRINKLER RISER PER C.O.S. STD. DTL. 2368. REFER TO PLUMBING PLANS FOR CONTINUATION.
5. INSTALL FIRE DEPARTMENT REMOTE SIAMESE CONNECTION PER C.O.S. STD. DTL. 2367.

PRIVATE WATER NOTES:

1. INSTALL 3"ø BACKFLOW PREVENTION ASSEMBLY PER C.O.S. STD. DTL. 2351.
2. INSTALL 4"ø SCHEDULE 40 PVC PIPE. LENGTH AS NOTED.
3. STUB AND PLUG 3" WATER SERVICE LINE 5' FROM BUILDING FOR CONNECTION BY OTHERS. REFER TO PLUMBING PLANS FOR CONTINUATION.
4. INSTALL 1"ø BACKFLOW PREVENTION ASSEMBLY PER C.O.S. STD. DTL. 2532. SEE LANDSCAPE PLANS FOR CONTINUATION.

PUBLIC WATER NOTES:

1. INSTALL 3" WATER METER PER C.O.S. STD. DTL. 2345-1 IN CONCRETE VAULT. INSTALLATION OF 3" TURBO WATER METER AFTER PAYMENT OF ALL FEES BY THE CITY OF SCOTTSDALE.
2. INSTALL 1" WATER METER PER C.O.S. STD. DTL. 2345-2. INSTALLATION OF 1" LANDSCAPE WATER METER AFTER PAYMENT OF ALL FEES BY THE CITY OF SCOTTSDALE.

COMMUNICATIONS NOTES:

1. INSTALL 4" COMMUNICATION LINE CONDUIT. REFER TO HOTEL PLANS FOR CONTINUATION.
2. CONTRACTOR TO MAINTAIN 1' OF CLEARANCE BETWEEN EX. UTILITY AND NEW 4" CONDUIT.

NOTE:

ALL DRY UTILITIES UNDER SEPARATE PERMIT, SHOWN FOR REFERENCE ONLY.

STATIONS BASED ON THE CENTERLINE OF CAVASSON BLVD. (C.O.S. #6630-18-6)

Call before you dig. 1.800.STAKE.IT 602.263.1100

20 0 20 40 scale feet

NOT FOR CONSTRUCTION PRELIMINARY FOR RECORDING BID AT RISK

PUBLIC AND PRIVATE UTILITY PLAN
HILTON SCOTTSDALE NORTH AT CAVASSON

A PORTION OF THE SOUTHEAST QUARTER OF SECTION 26 TOWNSHIP 4 NORTH, RANGE 4 EAST OF THE GILA AND SALT RIVER MERIDIAN, MARICOPA COUNTY, ARIZONA

Project No.	Date	Sheet No.
18114-301	3/30/2020	SHT: 09 OF 11
Project Manager: G. BROWN	Project Engineer: M. WOLF	C501

HUBBARD ENGINEERING
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1201 S. Alma School Rd.,Ste. 12000 - Mesa, AZ 85210
Ph: 480.892.3313

100% PRICING SET

CAVASSON

LOCATED NEAR THE NORTHWEST CORNER OF THE HAYDEN ROAD AND THE LOOP 101 FRONTAGE ROAD INTERSECTION

FINAL WATER REPORT – PHASE I HOTEL
BASIS OF DESIGN

October 31, 2019

Project No.: 18114-301

FINAL Basis of Design Report
☐ APPROVED
☑ APPROVED AS NOTED
☐ REVISE AND RESUBMIT

CITY OF SCOTTSDALE
SCOTTSDALE WATER
9379 E San Salvador Dr.
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BY scan DATE 5/22/2020

PREPARED FOR:
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375 N. FRONT STREET
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(480) 892-3313
MICHAEL S. WOLF, PE

HUBBARD ENGINEERING

1. Minimum fire flow pressure is 30 psi per DSPM 6-1.202
2, Modeling shows small diameter service lines with excessive velocities. Service lines will be sized by Building Plan review when meters are sized.

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EXHIBITS

1. INTRODUCTION

1.1 Project Scope

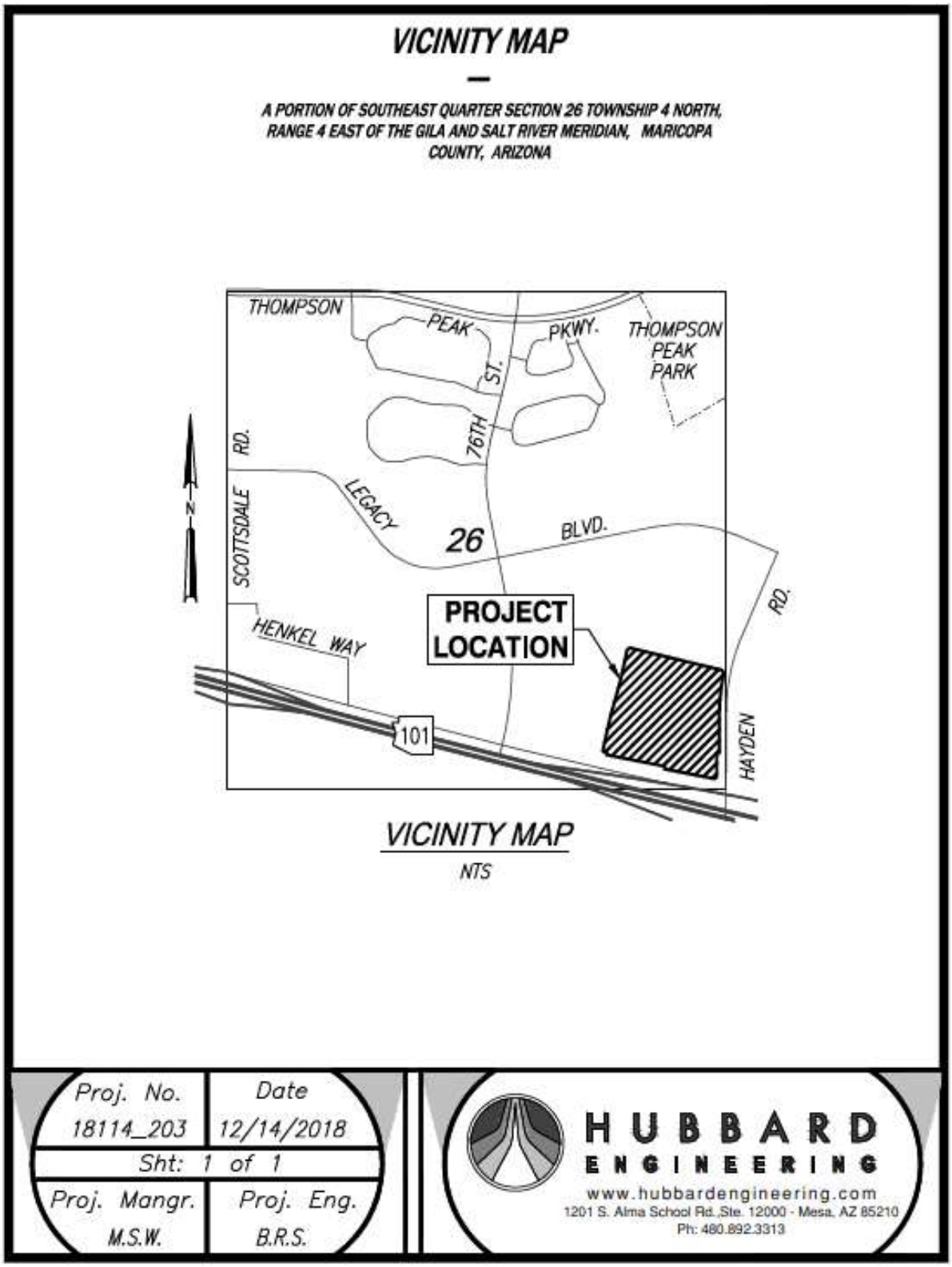
This report presents the results of a *Final Water Study* conducted by Hubbard Engineering at the request of Nationwide Realty Investors ("client"), for the Phase I Hotel of the Cavasson master development ("site"). The purpose of this report is to provide an evaluation of the proposed distribution system for the site. This report addresses design flows and basis of design as well as design criteria. The water analysis of this report will adhere to Hubbard Engineering's submitted and approved *Master Water Report*.

1.2 Site Description

The project site is located in the southeast quarter of Section 26, Township 4N, Range 4E of the Gila and Salt River Base and Meridian, Maricopa County, Arizona. The site is currently undeveloped, and prior to Nationwide Realty Investor's acquisition, was held in trust by the Arizona State Land Department (ASLD) as a portion of the overall Crossroads East development, which encompasses approximately 883 gross acres. Phase I of the Cavasson site development is located in the southwest corner of the overall Crossroads East development, near the Hayden Road and Loop 101 Frontage Road intersection. The land naturally falls from northeast to southwest.

The project site is bounded by the Loop 101 Freeway to the south, North Hayden Road to the east, and undeveloped land to the west and north. The site location is shown in **Figure 1.1 – Vicinity Map**. The Hotel is specifically located in the northeast corner of the site.

Figure 1.1 – Vicinity Map



1.3 Project Type

The overall Cavasson project is being developed by Nationwide Reality Investors as a master planned, mixed use development with office, retail, hotels, and multifamily residential parcels with public and private roadways that run adjacent and through the development. The Phase 1 Hotel for Cavasson will include construction of a new six story, 237 room hotel building. Improvements will also include surrounding access drives, parking, and extending existing private utility stubs to service the building.

The analysis for the overall development was conducted in Hubbard's *Master Water Report* and will be referenced as it applies to Phase I.

1.4 Regulatory Requirements

The following documents were utilized in the preparation of this report:

- City of Scottsdale, *Design Standards & Policies Manual*.
- Arizona Department of Environmental Quality (ADEQ), *Aquifer Protection Permit (APP) Program.*
- Maricopa Association of Governments (MAG), *Uniform Standard Specifications and Details for Public Works Construction, 2016 Edition.*
- *2015 Edition of the International Fire Code.*
- *2015 Edition of the International Plumbing Code.*
- Hubbard Engineering*, Master Water Report for Cavasson, February 14, 2019.*

2. PROJECT DESCRIPTION

2.1 Tie-In to Existing System

The proposed water system for Phase 1 of the Cavasson Development will include connections to an existing 12" water line stub off of Hayden Road, 12" water line stub off of Claret Drive, 12" water line stub off of Cavasson Boulevard and a 12" water line stub off of the 12" public water line located within the private access drive at the south side of the Phase I site.

The proposed on-site system will tap into the existing 12" public water main that was constructed with Phase 1.

See **Exhibit 1** for proposed tie-in locations.

2.2 Service Area

The water service provider for the existing site is the City of Scottsdale. The Cavasson development is being developed by Nationwide Realty Investors as a master planned mixed use development with office, retail, hotels, and multifamily residential parcels with public

and private roadways that run adjacent and through the development. The Cavasson development is located within Zone 4 and is discussed in more detail in the previously submitted *Cavasson Master Water Plan*.

The Phase I Hotel will include construction of a new hotel building with a square footage of approximately 186,000± square feet and 237 rooms. Improvements will include surrounding access drives and utilities through the property to provide domestic water, fire, and sewer services to the proposed building. The building construction type for the hotel building will be Type IB and it will be equipped with an automatic sprinkler system (NFPA13) per the 2015 International Fire Code.

2.3 Right of Way and Easements

The proposed water lines will be private and therefore will not be within an easement.

3. DESIGN FLOWS AND BASIS OF DESIGN

3.1 Average Daily Demands

In accordance with the *City of Scottsdale Design Standards & Policies Manual Chapter 6* Section 6-1.205 (Reference 1), the design unit water demand for a hotel is 0.63 gallons per minute per room.

The total service area tributary to the proposed water main consists of 237 rooms.

Thus, the total Average Daily Demand is:

(0.63 gpm/room) x (237 rooms) **= 149.31 gpm**

3.2 Maximum Daily Demand and Peak Hour Flow

In accordance with the *City of Scottsdale Design Standards & Policies Manual Chapter 6* Section 6-1.404 (Reference 1), the maximum day peaking factor and peak hour peaking factor are as follows:

3.2.1 Maximum Day Demand

Max Day Demand = ADD * 2

3.2.2 Peak Hour Demand

Peak Hour Demand = ADD * 3.5

3.3 Water and Fire Demand Calculations

A summary of the water and fire demand calculations can be found in **Table 1** below.

Table 1: Water and Fire Demand Calculation Summary

Land Use	Square Footage	ADD (gpm/room)	ADD (gpm)	Max Day Demand (ADD x 2) (gpm)	Peak Hour Demand (ADD x 3.5) (gpm)	Fire Flow Required (gpm)	Max Day Plus Fire Flow (gpm)
Hotel	186,000	0.63	149.31	298.62	522.59	2,375	2,673.62

4. DESIGN CRITERIA

4.1 Minimum Pressure

The water distribution system shall be designed and constructed to maintain the following minimum pressures:

1. Max Day Demand plus Fire Flow – minimum of 20 psi
2. Peak Hour Demand – $\geq$ 50 psi and $\leq$ 80 psi, to achieve minimum service pressure of 40 psi.

A water model was run for the proposed system using WaterCAD. The basis of this model was developed using information from a fire hydrant flow test conducted on October 16, 2018. The results of this fire flow test are included in **Appendix A – Fire Flow Test Results**. Information regarding the definition of the pump used in the WaterCAD analysis can be found in **Appendix B – Pump Definition Report for Fire Flow Model**.

4.2 Fire Flows

Fire flow requirements are typically determined by the local fire department. The latest version of the International Fire Code (IFC), adopted by the City of Scottsdale, will serve as guidelines. A minimum Fire Flow of 4,750 gpm for 4 hours is based on a 186,000 sq. ft. building, per City of Scottsdale Fire Code, with 50% reduction Minimum Fire Flow of 2,375 gpm will be used due to NFPA 13 sprinkler system.

4.3 Minimum Pipe Sizing

The proposed fire line to the building will be 8-inch diameter. The proposed domestic line will be 3-inch diameter.

4.4 Pipe Material

All new fire lines will be Ductile Iron Pipe.

5. SUMMARY

- Per the City of Scottsdale Water System Pressure Zone Map, the Cavasson Development is located within Pressure Zone 4.
- The planned future Average Daily Demand for development is 149.31 gpm. This conforms to the Master Study.
- The planned future Maximum Daily Demand for the development is 298.62 gpm. This conforms to the Master Study.
- The planned future Peak Hour Demand for the development is 522.59 gpm. This conforms to the Master Study.
- The required fire flow is 2,375 gpm.
- Based on the results of the water model, the Cavasson development system can maintain a flow of 4,020 gallons per minute at a pressure of 20 psi.
- The results from the proposed water model show there are adequate flows and pressures being provided by the existing and proposed planned infrastructure for the Cavasson development.

6. REFERENCES

1. City of Scottsdale. *Design Standards & Policies Manual.* January 18, 2018.
2. Carollo Engineers. *2008 Scottsdale Integrated Water Resources Master Plan.* March 2008.
3. Coe & Van Loo Consultants, Inc. (CVL) *Arizona State Land Department- Crossroads East Water Master Plan Update,* April 13, 2008.
4. Arizona Department of Environmental Quality (ADEQ). *Engineering Bulletin 11: Minimum Requirements for Design, Submission of Plans and Specifications of Sewage Works.* May 1978.
5. Arizona Department of Environmental Quality (ADEQ). *Aquifer Protection Permit (APP) Program*.
6. Maricopa Association of Governments (MAG). *Uniform Standard Specifications and Details for Public Works Construction.* January 2016.
7. International Code Council. *2015 International Fire Code.*
8. International Code Council. *2015 Edition of the International Plumbing Code*.
9. City of Scottsdale, *Ordinance No. 4346,* June 17, 2018.
10. City of Scottsdale, *Resolution No. 1147,* June 17, 2018.

Appendix A
Average Day Demand
Cavasson – Phase I

Scenario: Avg Day
Current Time Step: 0.000 h
FlexTable: Junction Table

ID	Label	Elevation (ft)	Zone	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
686	J-1	1,609.00	Zone - 4	<Collection: 0 items>	0	1,783.00	75
687	J-2	1,612.00	Zone - 4	<Collection: 0 items>	0	1,783.00	74
689	J-3	1,623.00	Zone - 4	<Collection: 0 items>	0	1,782.96	69
691	J-4	1,629.00	Zone - 4	<Collection: 0 items>	0	1,782.94	67
693	J-5	1,629.90	Zone - 4	<Collection: 0 items>	0	1,782.94	66
695	J-6	1,631.92	Zone - 4	<Collection: 0 items>	0	1,782.93	65
697	J-7	1,649.25	Zone - 4	<Collection: 0 items>	0	1,782.93	58
701	J-8	1,649.00	Zone - 4	<Collection: 0 items>	0	1,782.93	58
703	J-9	1,649.00	Zone - 4	<Collection: 0 items>	0	1,782.93	58
705	J-10	1,649.00	Zone - 4	<Collection: 0 items>	0	1,782.93	58
707	J-11	1,646.00	Zone - 4	<Collection: 0 items>	0	1,782.93	59
709	J-12	1,643.00	Zone - 4	<Collection: 0 items>	0	1,782.93	61
711	J-13	1,637.84	Zone - 4	<Collection: 0 items>	0	1,782.93	63
713	J-14	1,633.68	Zone - 4	<Collection: 0 items>	0	1,782.93	65
717	J-16	1,630.55	Zone - 4	<Collection: 0 items>	0	1,782.92	66
719	J-17	1,617.54	Zone - 4	<Collection: 0 items>	0	1,782.92	72
721	J-18	1,625.17	Zone - 4	<Collection: 0 items>	0	1,782.92	68
724	J-19	1,612.00	Zone - 4	<Collection: 0 items>	0	1,783.00	74
735	J-38	1,616.47	Zone - 4	<Collection: 0 items>	0	1,782.95	72
737	J-20	1,625.50	Zone - 4	<Collection: 0 items>	0	1,782.92	68
741	J-43	1,606.70	Zone - 4	<Collection: 0 items>	0	1,782.90	76
745	J-40	1,619.49	Zone - 4	<Collection: 0 items>	0	1,782.93	71
750	J-34	1,607.21	Zone - 4	<Collection: 0 items>	0	1,782.91	76
754	J-39	1,612.00	Zone - 4	<Collection: 0 items>	0	1,782.64	74
757	J-41	1,612.00	Zone - 4	<Collection: 0 items>	0	1,782.84	74
761	J-33	1,613.33	Zone - 4	<Collection: 0 items>	0	1,782.90	73
764	J-21	1,612.50	Zone - 4	<Collection: 0 items>	0	1,782.91	74
768	J-35	1,618.40	Zone - 4	<Collection: 0 items>	0	1,782.92	71
771	J-22	1,618.54	Zone - 4	<Collection: 0 items>	0	1,782.91	71
775	J-15	1,619.21	Zone - 4	<Collection: 0 items>	0	1,782.93	71
778	J-23	1,625.00	Zone - 4	<Collection: 0 items>	0	1,782.92	68
783	J-24	1,623.83	Zone - 4	<Collection: 0 items>	0	1,782.92	69
799	J-27	1,619.36	Zone - 4	<Collection: 0 items>	0	1,782.92	71
807	J-28	1,626.64	Zone - 4	<Collection: 0 items>	0	1,782.93	68
818	J-29	1,636.73	Zone - 4	<Collection: 0 items>	0	1,782.93	63
825	J-30	1,649.00	Zone - 4	<Collection: 0 items>	0	1,782.93	58
828	J-31	1,645.84	Zone - 4	<Collection: 0 items>	0	1,782.93	59
848	J-32	1,648.15	Zone - 4	<Collection: 0 items>	0	1,782.93	58
877	J-37	1,640.12	Zone - 4	<Collection: 0 items>	0	1,782.93	62

933	J-44	1,624.90	Zone - 4	<Collection: 0 items>	0	1,782.92	68
937	J-45	1,606.60	Zone - 4	<Collection: 0 items>	0	1,782.91	76
960	J-25	1,612.51	Zone - 4	<Collection: 1 item>	0	1,782.83	74
963	J-26	1,607.18	Zone - 4	<Collection: 0 items>	0	1,782.90	76
967	J-47	1,628.00	Zone - 4	<Collection: 0 items>	0	1,782.94	67
972	J-36	1,628.59	Zone - 4	<Collection: 0 items>	0	1,782.93	67
982	J-42	1,618.72	Zone - 4	<Collection: 0 items>	0	1,782.92	71
1017	J-46	1,614.06	Zone - 4	<Collection: 0 items>	0	1,782.91	73
1022	J-48	1,612.14	Zone - 4	<Collection: 0 items>	0	1,782.69	74
1031	J-49	1,608.94	Zone - 4	<Collection: 0 items>	0	1,782.72	75
1034	J-50	1,609.90	Zone - 4	<Collection: 0 items>	0	1,782.95	75
1057	J-51	1,610.21	Zone - 4	<Collection: 0 items>	0	1,782.60	75
1058	J-52	1,617.00	Zone - 4	<Collection: 0 items>	0	1,782.60	72
1063	J-53	1,610.06	Zone - 4	<Collection: 0 items>	0	1,782.59	75
1067	J-334	1,613.08	Zone - 4	<Collection: 0 items>	0	1,782.91	73
1073	J-336	1,626.00	Zone - 4	<Collection: 0 items>	0	1,782.91	68
1077	J-337	1,621.01	Zone - 4	<Collection: 0 items>	0	1,782.93	70
1082	J-338	1,617.47	Zone - 4	<Collection: 0 items>	0	1,782.95	72
1087	J-339	1,624.64	Zone - 4	<Collection: 0 items>	0	1,782.94	68
1092	J-340	1,625.85	Zone - 4	<Collection: 0 items>	0	1,782.92	68
1095	D-1A-7	1,629.00	Zone - 4	<Collection: 1 item>	149	1,777.84	64
1064	D-1A-1	1,617.00	Zone - 4	<Collection: 1 item>	388	1,782.04	71

P:\2018\18114\Design-Reports\18114-301\Water\Model\18114-WaterModel Phase 1.wtg

Scenario: Avg Day
Current Time Step: 0.000 h
FlexTable: Pipe Table

ID	Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Has Check Valve?	Minor Loss Coefficient (Local)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)	Has User Defined Length?	Length (User Defined) (ft)
690	P-1	522	J-2	J-3	16.0	Ductile Iron	130.0	False	0.000	330	0.53	0.080	False	0
694	P-2	135	J-4	J-5	16.0	Ductile Iron	130.0	False	0.000	51	0.08	0.003	False	0
696	P-3	134	J-5	J-6	16.0	Ductile Iron	130.0	False	0.000	51	0.08	0.003	False	0
702	P-4	65	J-7	J-8	16.0	Ductile Iron	130.0	False	0.000	51	0.08	0.002	False	0
704	P-5	155	J-8	J-9	16.0	Ductile Iron	130.0	False	0.000	51	0.08	0.002	False	0
710	P-6	488	J-11	J-12	16.0	Ductile Iron	130.0	False	0.000	51	0.08	0.003	False	0
714	P-7	487	J-13	J-14	16.0	Ductile Iron	130.0	False	0.000	51	0.08	0.003	False	0
725	P-10	181	J-1	J-19	16.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
726	P-11	20	J-19	J-2	16.0	Ductile Iron	130.0	False	0.000	-207	0.33	0.031	False	0
1008	P-13	319	R-11	J-2	48.0	Ductile Iron	130.0	False	0.000	537	0.10	0.000	True	1
736	P-14	234	J-3	J-38	12.0	Ductile Iron	130.0	False	0.000	97	0.28	0.034	False	0
1035	P-15	380	J-43	J-50	12.0	Ductile Iron	130.0	False	0.000	-207	0.59	0.137	False	0
1036	P-16	350	J-50	J-19	12.0	Ductile Iron	130.0	False	0.000	-207	0.59	0.137	False	0
977	P-17	61	J-38	H-8	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
1055	P-18	94	J-39	J-51	8.0	Ductile Iron	130.0	False	0.000	128	0.82	0.404	False	0
1061	P-19	37	J-51	J-53	8.0	Ductile Iron	130.0	False	0.000	128	0.82	0.402	False	0
763	P-20	169	J-33	J-41	8.0	Ductile Iron	130.0	False	0.000	128	0.82	0.404	False	0
1068	P-21	45	J-33	J-334	12.0	Ductile Iron	130.0	False	0.000	-83	0.24	0.025	False	0
1069	P-8	105	J-334	J-21	12.0	Ductile Iron	130.0	False	0.000	-83	0.24	0.026	False	0
1018	P-22	261	J-35	J-46	8.0	Ductile Iron	130.0	False	0.000	45	0.29	0.057	False	0
772	P-23	402	J-18	J-22	16.0	Ductile Iron	130.0	False	0.000	136	0.22	0.016	False	0
773	P-24	293	J-22	J-21	16.0	Ductile Iron	130.0	False	0.000	136	0.22	0.015	False	0
1062	P-25	89	J-53	J-49	8.0	Ductile Iron	130.0	False	0.000	-260	1.66	1.507	False	0
776	P-26	51	J-40	J-15	12.0	Ductile Iron	130.0	False	0.000	45	0.13	0.007	False	0
779	P-27	324	J-18	J-23	16.0	Ductile Iron	130.0	False	0.000	-85	0.14	0.006	False	0
780	P-28	248	J-23	J-20	16.0	Ductile Iron	130.0	False	0.000	-85	0.14	0.006	False	0
1029	P-29	117	J-49	J-43	8.0	Ductile Iron	130.0	False	0.000	-260	1.66	1.508	False	0
983	P-30	37	J-35	J-42	12.0	Ductile Iron	130.0	False	0.000	-45	0.13	0.010	False	0
785	P-31	316	J-24	J-18	16.0	Ductile Iron	130.0	False	0.000	51	0.08	0.002	False	0
1019	P-32	61	J-46	J-33	8.0	Ductile Iron	130.0	False	0.000	45	0.29	0.058	False	0
1023	P-33	114	J-39	J-48	8.0	Ductile Iron	130.0	False	0.000	-128	0.82	0.404	False	0
1001	P-34	416	J-16	J-14	16.0	Ductile Iron	130.0	False	0.000	-51	0.08	0.002	False	0
800	P-35	532	J-17	J-27	16.0	Ductile Iron	130.0	False	0.000	51	0.08	0.003	False	0
801	P-36	358	J-27	J-24	16.0	Ductile Iron	130.0	False	0.000	51	0.08	0.002	False	0
1093	P-41	137	J-20	J-340	16.0	Ductile Iron	130.0	False	0.000	-33	0.05	0.001	False	0
1094	P-9	306	J-340	J-28	16.0	Ductile Iron	130.0	False	0.000	-182	0.29	0.027	False	0
809	P-42	163	J-28	J-4	16.0	Ductile Iron	130.0	False	0.000	-182	0.29	0.027	False	0
1033	P-43	25	J-49	H-2	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
1038	P-44	16	J-50	H-1	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
1049	P-45	21	J-34	H-10	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
819	P-46	371	J-6	J-29	16.0	Ductile Iron	130.0	False	0.000	51	0.08	0.003	False	0
1052	P-47	16	J-26	H-11	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
826	P-48	331	J-9	J-30	16.0	Ductile Iron	130.0	False	0.000	51	0.08	0.003	False	0
827	P-49	198	J-30	J-10	16.0	Ductile Iron	130.0	False	0.000	51	0.08	0.002	False	0
829	P-50	316	J-29	J-31	16.0	Ductile Iron	130.0	False	0.000	51	0.08	0.002	False	0
830	P-51	268	J-31	J-7	16.0	Ductile Iron	130.0	False	0.000	51	0.08	0.003	False	0
1059	P-52	19	J-51	J-52	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
1065	P-53	42	J-53	D-1A-1	6.0	Ductile Iron	130.0	False	0.000	388	4.40	12.834	False	0
849	P-60	315	J-10	J-32	16.0	Ductile Iron	130.0	False	0.000	51	0.08	0.002	False	0
850	P-61	197	J-32	J-11	16.0	Ductile Iron	130.0	False	0.000	51	0.08	0.003	False	0
878	P-75	227	J-12	J-37	16.0	Ductile Iron	130.0	False	0.000	51	0.08	0.002	False	0
879	P-76	264	J-37	J-13	16.0	Ductile Iron	130.0	False	0.000	51	0.08	0.003	False	0
1083	P-107	111	J-38	J-338	12.0	Ductile Iron	130.0	False	0.000	97	0.28	0.033	False	0
1088	P-37	130	J-338	J-339	12.0	Ductile Iron	130.0	False	0.000	97	0.28	0.034	False	0
1089	P-38	217	J-339	J-36	12.0	Ductile Iron	130.0	False	0.000	97	0.28	0.034	False	0
934	P-111	439	J-16	J-44	16.0	Ductile Iron	130.0	False	0.000	51	0.08	0.003	False	0
935	P-112	498	J-44	J-17	16.0	Ductile Iron	130.0	False	0.000	51	0.08	0.003	False	0
938	P-114	397	J-21	J-45	16.0	Ductile Iron	130.0	False	0.000	53	0.08	0.003	False	0

939	P-115	37	J-45	J-34	12.0	Ductile Iron	130.0	False	0.000	53	0.15	0.010	False	0
1024	P-127	354	J-48	J-25	8.0	Ductile Iron	130.0	False	0.000	-128	0.82	0.404	False	0
962	P-128	15	J-25	J-41	8.0	Ductile Iron	130.0	False	0.000	-128	0.82	0.400	False	0
964	P-129	294	J-34	J-26	12.0	Ductile Iron	130.0	False	0.000	53	0.15	0.011	False	0
965	P-130	397	J-26	J-43	12.0	Ductile Iron	130.0	False	0.000	53	0.15	0.011	False	0
968	P-132	378	J-3	J-47	16.0	Ductile Iron	130.0	False	0.000	233	0.37	0.042	False	0
969	P-133	161	J-47	J-4	16.0	Ductile Iron	130.0	False	0.000	233	0.37	0.042	False	0
974	P-136	246	J-36	J-40	12.0	Ductile Iron	130.0	False	0.000	97	0.28	0.034	False	0
975	P-137	24	H-7	J-36	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
980	P-139	17	J-25	H-3	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
984	P-140	322	J-42	J-15	12.0	Ductile Iron	130.0	False	0.000	-45	0.13	0.008	False	0
1078	P-453	246	J-20	J-337	12.0	Ductile Iron	130.0	False	0.000	-53	0.15	0.011	False	0
1079	P-39	83	J-337	J-40	12.0	Ductile Iron	130.0	False	0.000	-53	0.15	0.010	False	0
1071	P-454	36	J-334	H-74	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
1074	P-455	121	J-22	J-336	12.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
1076	P-456	15	J-336	H-75	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
1081	P-457	17	J-337	H-76	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
1086	P-458	114	J-338	H-77	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
1091	P-459	16	J-339	H-78	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
1096	P-460	79	J-340	D-1A-7	3.0	Ductile Iron	130.0	False	0.000	149	6.78	64.113	False	0

Appendix B
Max Day Demand
Cavasson – Phase I

Scenario: Max Day
Current Time Step: 0.000 h
FlexTable: Junction Table

ID	Label	Elevation (ft)	Zone	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
686	J-1	1,609.00	Zone - 4	<Collection: 0 items>	0	1,783.00	75
687	J-2	1,612.00	Zone - 4	<Collection: 0 items>	0	1,783.00	74
689	J-3	1,623.00	Zone - 4	<Collection: 0 items>	0	1,782.86	69
691	J-4	1,629.00	Zone - 4	<Collection: 0 items>	0	1,782.78	67
693	J-5	1,629.90	Zone - 4	<Collection: 0 items>	0	1,782.78	66
695	J-6	1,631.92	Zone - 4	<Collection: 0 items>	0	1,782.78	65
697	J-7	1,649.25	Zone - 4	<Collection: 0 items>	0	1,782.77	58
701	J-8	1,649.00	Zone - 4	<Collection: 0 items>	0	1,782.77	58
703	J-9	1,649.00	Zone - 4	<Collection: 0 items>	0	1,782.77	58
705	J-10	1,649.00	Zone - 4	<Collection: 0 items>	0	1,782.76	58
707	J-11	1,646.00	Zone - 4	<Collection: 0 items>	0	1,782.76	59
709	J-12	1,643.00	Zone - 4	<Collection: 0 items>	0	1,782.75	60
711	J-13	1,637.84	Zone - 4	<Collection: 0 items>	0	1,782.75	63
713	J-14	1,633.68	Zone - 4	<Collection: 0 items>	0	1,782.75	64
717	J-16	1,630.55	Zone - 4	<Collection: 0 items>	0	1,782.74	66
719	J-17	1,617.54	Zone - 4	<Collection: 0 items>	0	1,782.73	71
721	J-18	1,625.17	Zone - 4	<Collection: 0 items>	0	1,782.72	68
724	J-19	1,612.00	Zone - 4	<Collection: 0 items>	0	1,783.00	74
735	J-38	1,616.47	Zone - 4	<Collection: 0 items>	0	1,782.83	72
737	J-20	1,625.50	Zone - 4	<Collection: 0 items>	0	1,782.74	68
741	J-43	1,606.70	Zone - 4	<Collection: 0 items>	0	1,782.66	76
745	J-40	1,619.49	Zone - 4	<Collection: 0 items>	0	1,782.75	71
750	J-34	1,607.21	Zone - 4	<Collection: 0 items>	0	1,782.68	76
754	J-39	1,612.00	Zone - 4	<Collection: 0 items>	0	1,781.80	73
757	J-41	1,612.00	Zone - 4	<Collection: 0 items>	0	1,782.45	74
761	J-33	1,613.33	Zone - 4	<Collection: 0 items>	0	1,782.68	73
764	J-21	1,612.50	Zone - 4	<Collection: 0 items>	0	1,782.69	74
768	J-35	1,618.40	Zone - 4	<Collection: 0 items>	0	1,782.74	71
771	J-22	1,618.54	Zone - 4	<Collection: 0 items>	0	1,782.70	71
775	J-15	1,619.21	Zone - 4	<Collection: 0 items>	0	1,782.75	71
778	J-23	1,625.00	Zone - 4	<Collection: 0 items>	0	1,782.73	68
783	J-24	1,623.83	Zone - 4	<Collection: 0 items>	0	1,782.73	69
799	J-27	1,619.36	Zone - 4	<Collection: 0 items>	0	1,782.73	71
807	J-28	1,626.64	Zone - 4	<Collection: 0 items>	0	1,782.76	68
818	J-29	1,636.73	Zone - 4	<Collection: 0 items>	0	1,782.77	63
825	J-30	1,649.00	Zone - 4	<Collection: 0 items>	0	1,782.76	58
828	J-31	1,645.84	Zone - 4	<Collection: 0 items>	0	1,782.77	59
848	J-32	1,648.15	Zone - 4	<Collection: 0 items>	0	1,782.76	58
877	J-37	1,640.12	Zone - 4	<Collection: 0 items>	0	1,782.75	62

933	J-44	1,624.90	Zone - 4	<Collection: 0 items>	0	1,782.74	68
937	J-45	1,606.60	Zone - 4	<Collection: 0 items>	0	1,782.69	76
960	J-25	1,612.51	Zone - 4	<Collection: 0 items>	0	1,782.43	74
963	J-26	1,607.18	Zone - 4	<Collection: 0 items>	0	1,782.67	76
967	J-47	1,628.00	Zone - 4	<Collection: 0 items>	0	1,782.80	67
972	J-36	1,628.59	Zone - 4	<Collection: 0 items>	0	1,782.78	67
982	J-42	1,618.72	Zone - 4	<Collection: 0 items>	0	1,782.74	71
1017	J-46	1,614.06	Zone - 4	<Collection: 0 items>	0	1,782.69	73
1022	J-48	1,612.14	Zone - 4	<Collection: 0 items>	0	1,781.95	73
1031	J-49	1,608.94	Zone - 4	<Collection: 0 items>	0	1,782.07	75
1034	J-50	1,609.90	Zone - 4	<Collection: 0 items>	0	1,782.84	75
1057	J-51	1,610.21	Zone - 4	<Collection: 0 items>	0	1,781.67	74
1058	J-52	1,617.00	Zone - 4	<Collection: 0 items>	0	1,781.67	71
1063	J-53	1,610.06	Zone - 4	<Collection: 0 items>	0	1,781.62	74
1067	J-334	1,613.08	Zone - 4	<Collection: 0 items>	0	1,782.68	73
1073	J-336	1,626.00	Zone - 4	<Collection: 0 items>	0	1,782.70	68
1077	J-337	1,621.01	Zone - 4	<Collection: 0 items>	0	1,782.75	70
1082	J-338	1,617.47	Zone - 4	<Collection: 0 items>	0	1,782.82	72
1087	J-339	1,624.64	Zone - 4	<Collection: 0 items>	0	1,782.80	68
1092	J-340	1,625.85	Zone - 4	<Collection: 0 items>	0	1,782.74	68
1095	D-1A-7	1,629.00	Zone - 4	<Collection: 1 item>	299	1,764.40	59
1064	D-1A-1	1,617.00	Zone - 4	<Collection: 1 item>	742	1,779.81	70

Scenario: Max Day
Current Time Step: 0.000 h
FlexTable: Pipe Table

ID	Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Has Check Valve?	Minor Loss Coefficient (Local)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)	Has User Defined Length?	Length (User Defined) (ft)
690	P-1	522	J-2	J-3	16.0	Ductile Iron	130.0	False	0.000	642	1.02	0.274	False	0
694	P-2	135	J-4	J-5	16.0	Ductile Iron	130.0	False	0.000	98	0.16	0.009	False	0
696	P-3	134	J-5	J-6	16.0	Ductile Iron	130.0	False	0.000	98	0.16	0.008	False	0
702	P-4	65	J-7	J-8	16.0	Ductile Iron	130.0	False	0.000	98	0.16	0.009	False	0
704	P-5	155	J-8	J-9	16.0	Ductile Iron	130.0	False	0.000	98	0.16	0.009	False	0
710	P-6	488	J-11	J-12	16.0	Ductile Iron	130.0	False	0.000	98	0.16	0.009	False	0
714	P-7	487	J-13	J-14	16.0	Ductile Iron	130.0	False	0.000	98	0.16	0.009	False	0
1069	P-8	105	J-334	J-21	12.0	Ductile Iron	130.0	False	0.000	-159	0.45	0.084	False	0
1094	P-9	306	J-340	J-28	16.0	Ductile Iron	130.0	False	0.000	-355	0.57	0.092	False	0
725	P-10	181	J-1	J-19	16.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
726	P-11	20	J-19	J-2	16.0	Ductile Iron	130.0	False	0.000	-399	0.64	0.111	False	0
1008	P-13	319	R-11	J-2	48.0	Ductile Iron	130.0	False	0.000	1,041	0.18	0.000	True	1
736	P-14	234	J-3	J-38	12.0	Ductile Iron	130.0	False	0.000	189	0.54	0.116	False	0
1035	P-15	380	J-43	J-50	12.0	Ductile Iron	130.0	False	0.000	-399	1.13	0.463	False	0
1036	P-16	350	J-50	J-19	12.0	Ductile Iron	130.0	False	0.000	-399	1.13	0.463	False	0
977	P-17	61	J-38	H-8	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
1055	P-18	94	J-39	J-51	8.0	Ductile Iron	130.0	False	0.000	244	1.56	1.344	False	0
1061	P-19	37	J-51	J-53	8.0	Ductile Iron	130.0	False	0.000	244	1.56	1.344	False	0
763	P-20	169	J-33	J-41	8.0	Ductile Iron	130.0	False	0.000	244	1.56	1.344	False	0
1068	P-21	45	J-33	J-334	12.0	Ductile Iron	130.0	False	0.000	-159	0.45	0.085	False	0
1018	P-22	261	J-35	J-46	8.0	Ductile Iron	130.0	False	0.000	85	0.54	0.191	False	0
772	P-23	402	J-18	J-22	16.0	Ductile Iron	130.0	False	0.000	258	0.41	0.051	False	0
773	P-24	293	J-22	J-21	16.0	Ductile Iron	130.0	False	0.000	258	0.41	0.051	False	0
1062	P-25	89	J-53	J-49	8.0	Ductile Iron	130.0	False	0.000	-498	3.18	5.021	False	0
776	P-26	51	J-40	J-15	12.0	Ductile Iron	130.0	False	0.000	85	0.24	0.027	False	0
779	P-27	324	J-18	J-23	16.0	Ductile Iron	130.0	False	0.000	-160	0.25	0.021	False	0
780	P-28	248	J-23	J-20	16.0	Ductile Iron	130.0	False	0.000	-160	0.25	0.021	False	0
1029	P-29	117	J-49	J-43	8.0	Ductile Iron	130.0	False	0.000	-498	3.18	5.021	False	0
983	P-30	37	J-35	J-42	12.0	Ductile Iron	130.0	False	0.000	-85	0.24	0.027	False	0
785	P-31	316	J-24	J-18	16.0	Ductile Iron	130.0	False	0.000	98	0.16	0.009	False	0
1019	P-32	61	J-46	J-33	8.0	Ductile Iron	130.0	False	0.000	85	0.54	0.191	False	0
1023	P-33	114	J-39	J-48	8.0	Ductile Iron	130.0	False	0.000	-244	1.56	1.343	False	0
1001	P-34	416	J-16	J-14	16.0	Ductile Iron	130.0	False	0.000	-98	0.16	0.009	False	0
800	P-35	532	J-17	J-27	16.0	Ductile Iron	130.0	False	0.000	98	0.16	0.008	False	0
801	P-36	358	J-27	J-24	16.0	Ductile Iron	130.0	False	0.000	98	0.16	0.009	False	0
1088	P-37	130	J-338	J-339	12.0	Ductile Iron	130.0	False	0.000	189	0.54	0.116	False	0
1089	P-38	217	J-339	J-36	12.0	Ductile Iron	130.0	False	0.000	189	0.54	0.115	False	0
1079	P-39	83	J-337	J-40	12.0	Ductile Iron	130.0	False	0.000	-104	0.29	0.038	False	0
1093	P-41	137	J-20	J-340	16.0	Ductile Iron	130.0	False	0.000	-56	0.09	0.003	False	0
809	P-42	163	J-28	J-4	16.0	Ductile Iron	130.0	False	0.000	-355	0.57	0.092	False	0
1033	P-43	25	J-49	H-2	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
1038	P-44	16	J-50	H-1	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
1049	P-45	21	J-34	H-10	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
819	P-46	371	J-6	J-29	16.0	Ductile Iron	130.0	False	0.000	98	0.16	0.009	False	0
1052	P-47	16	J-26	H-11	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
826	P-48	331	J-9	J-30	16.0	Ductile Iron	130.0	False	0.000	98	0.16	0.008	False	0
827	P-49	198	J-30	J-10	16.0	Ductile Iron	130.0	False	0.000	98	0.16	0.009	False	0
829	P-50	316	J-29	J-31	16.0	Ductile Iron	130.0	False	0.000	98	0.16	0.008	False	0
830	P-51	268	J-31	J-7	16.0	Ductile Iron	130.0	False	0.000	98	0.16	0.008	False	0
1059	P-52	19	J-51	J-52	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
1065	P-53	42	J-53	D-1A-1	6.0	Ductile Iron	130.0	False	0.000	742	8.42	42.705	False	0
849	P-60	315	J-10	J-32	16.0	Ductile Iron	130.0	False	0.000	98	0.16	0.009	False	0
850	P-61	197	J-32	J-11	16.0	Ductile Iron	130.0	False	0.000	98	0.16	0.008	False	0
878	P-75	227	J-12	J-37	16.0	Ductile Iron	130.0	False	0.000	98	0.16	0.009	False	0
879	P-76	264	J-37	J-13	16.0	Ductile Iron	130.0	False	0.000	98	0.16	0.008	False	0
1083	P-107	111	J-38	J-338	12.0	Ductile Iron	130.0	False	0.000	189	0.54	0.116	False	0
934	P-111	439	J-16	J-44	16.0	Ductile Iron	130.0	False	0.000	98	0.16	0.009	False	0
935	P-112	498	J-44	J-17	16.0	Ductile Iron	130.0	False	0.000	98	0.16	0.008	False	0

938	P-114	397	J-21	J-45	16.0	Ductile Iron	130.0	False	0.000	99	0.16	0.009	False	0
939	P-115	37	J-45	J-34	12.0	Ductile Iron	130.0	False	0.000	99	0.28	0.036	False	0
1024	P-127	354	J-48	J-25	8.0	Ductile Iron	130.0	False	0.000	-244	1.56	1.343	False	0
962	P-128	15	J-25	J-41	8.0	Ductile Iron	130.0	False	0.000	-244	1.56	1.346	False	0
964	P-129	294	J-34	J-26	12.0	Ductile Iron	130.0	False	0.000	99	0.28	0.034	False	0
965	P-130	397	J-26	J-43	12.0	Ductile Iron	130.0	False	0.000	99	0.28	0.035	False	0
968	P-132	378	J-3	J-47	16.0	Ductile Iron	130.0	False	0.000	453	0.72	0.144	False	0
969	P-133	161	J-47	J-4	16.0	Ductile Iron	130.0	False	0.000	453	0.72	0.144	False	0
974	P-136	246	J-36	J-40	12.0	Ductile Iron	130.0	False	0.000	189	0.54	0.116	False	0
975	P-137	24	H-7	J-36	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
980	P-139	17	J-25	H-3	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
984	P-140	322	J-42	J-15	12.0	Ductile Iron	130.0	False	0.000	-85	0.24	0.026	False	0
1078	P-453	246	J-20	J-337	12.0	Ductile Iron	130.0	False	0.000	-104	0.29	0.038	False	0
1071	P-454	36	J-334	H-74	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
1074	P-455	121	J-22	J-336	12.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
1076	P-456	15	J-336	H-75	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
1081	P-457	17	J-337	H-76	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
1086	P-458	114	J-338	H-77	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
1091	P-459	16	J-339	H-78	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
1096	P-460	79	J-340	D-1A-7	3.0	Ductile Iron	130.0	False	0.000	299	13.55	231.452	False	0

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Appendix C
Peak Hour Demand
Cavasson – Phase I

Scenario: Peak Hour
Current Time Step: 0.000 h
FlexTable: Junction Table

ID	Label	Elevation (ft)	Zone	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
686	J-1	1,609.00	Zone - 4	<Collection: 0 items>	0	1,782.99	75
687	J-2	1,612.00	Zone - 4	<Collection: 0 items>	0	1,783.00	74
689	J-3	1,623.00	Zone - 4	<Collection: 0 items>	0	1,782.57	69
691	J-4	1,629.00	Zone - 4	<Collection: 0 items>	0	1,782.34	66
693	J-5	1,629.90	Zone - 4	<Collection: 0 items>	0	1,782.34	66
695	J-6	1,631.92	Zone - 4	<Collection: 0 items>	0	1,782.34	65
697	J-7	1,649.25	Zone - 4	<Collection: 0 items>	0	1,782.31	58
701	J-8	1,649.00	Zone - 4	<Collection: 0 items>	0	1,782.31	58
703	J-9	1,649.00	Zone - 4	<Collection: 0 items>	0	1,782.31	58
705	J-10	1,649.00	Zone - 4	<Collection: 0 items>	0	1,782.29	58
707	J-11	1,646.00	Zone - 4	<Collection: 0 items>	0	1,782.28	59
709	J-12	1,643.00	Zone - 4	<Collection: 0 items>	0	1,782.27	60
711	J-13	1,637.84	Zone - 4	<Collection: 0 items>	0	1,782.26	62
713	J-14	1,633.68	Zone - 4	<Collection: 0 items>	0	1,782.24	64
717	J-16	1,630.55	Zone - 4	<Collection: 0 items>	0	1,782.23	66
719	J-17	1,617.54	Zone - 4	<Collection: 0 items>	0	1,782.21	71
721	J-18	1,625.17	Zone - 4	<Collection: 0 items>	0	1,782.18	68
724	J-19	1,612.00	Zone - 4	<Collection: 0 items>	0	1,782.99	74
735	J-38	1,616.47	Zone - 4	<Collection: 0 items>	0	1,782.49	72
737	J-20	1,625.50	Zone - 4	<Collection: 0 items>	0	1,782.22	68
741	J-43	1,606.70	Zone - 4	<Collection: 0 items>	0	1,781.97	76
745	J-40	1,619.49	Zone - 4	<Collection: 0 items>	0	1,782.25	70
750	J-34	1,607.21	Zone - 4	<Collection: 0 items>	0	1,782.05	76
754	J-39	1,612.00	Zone - 4	<Collection: 0 items>	0	1,779.34	72
757	J-41	1,612.00	Zone - 4	<Collection: 0 items>	0	1,781.33	73
761	J-33	1,613.33	Zone - 4	<Collection: 0 items>	0	1,782.03	73
764	J-21	1,612.50	Zone - 4	<Collection: 0 items>	0	1,782.07	73
768	J-35	1,618.40	Zone - 4	<Collection: 0 items>	0	1,782.22	71
771	J-22	1,618.54	Zone - 4	<Collection: 0 items>	0	1,782.11	71
775	J-15	1,619.21	Zone - 4	<Collection: 0 items>	0	1,782.25	71
778	J-23	1,625.00	Zone - 4	<Collection: 0 items>	0	1,782.20	68
783	J-24	1,623.83	Zone - 4	<Collection: 0 items>	0	1,782.19	69
799	J-27	1,619.36	Zone - 4	<Collection: 0 items>	0	1,782.19	70
807	J-28	1,626.64	Zone - 4	<Collection: 0 items>	0	1,782.30	67
818	J-29	1,636.73	Zone - 4	<Collection: 0 items>	0	1,782.33	63
825	J-30	1,649.00	Zone - 4	<Collection: 0 items>	0	1,782.30	58
828	J-31	1,645.84	Zone - 4	<Collection: 0 items>	0	1,782.32	59
848	J-32	1,648.15	Zone - 4	<Collection: 0 items>	0	1,782.29	58
877	J-37	1,640.12	Zone - 4	<Collection: 0 items>	0	1,782.26	61

933	J-44	1,624.90	Zone - 4	<Collection: 0 items>	0	1,782.22	68
937	J-45	1,606.60	Zone - 4	<Collection: 0 items>	0	1,782.06	76
960	J-25	1,612.51	Zone - 4	<Collection: 0 items>	0	1,781.27	73
963	J-26	1,607.18	Zone - 4	<Collection: 0 items>	0	1,782.02	76
967	J-47	1,628.00	Zone - 4	<Collection: 0 items>	0	1,782.41	67
972	J-36	1,628.59	Zone - 4	<Collection: 0 items>	0	1,782.34	67
982	J-42	1,618.72	Zone - 4	<Collection: 0 items>	0	1,782.22	71
1017	J-46	1,614.06	Zone - 4	<Collection: 0 items>	0	1,782.06	73
1022	J-48	1,612.14	Zone - 4	<Collection: 0 items>	0	1,779.81	73
1031	J-49	1,608.94	Zone - 4	<Collection: 0 items>	0	1,780.18	74
1034	J-50	1,609.90	Zone - 4	<Collection: 0 items>	0	1,782.50	75
1057	J-51	1,610.21	Zone - 4	<Collection: 0 items>	0	1,778.96	73
1058	J-52	1,617.00	Zone - 4	<Collection: 0 items>	0	1,778.96	70
1063	J-53	1,610.06	Zone - 4	<Collection: 0 items>	0	1,778.81	73
1067	J-334	1,613.08	Zone - 4	<Collection: 0 items>	0	1,782.04	73
1073	J-336	1,626.00	Zone - 4	<Collection: 0 items>	0	1,782.11	68
1077	J-337	1,621.01	Zone - 4	<Collection: 0 items>	0	1,782.24	70
1082	J-338	1,617.47	Zone - 4	<Collection: 0 items>	0	1,782.46	71
1087	J-339	1,624.64	Zone - 4	<Collection: 0 items>	0	1,782.41	68
1092	J-340	1,625.85	Zone - 4	<Collection: 0 items>	0	1,782.22	68
1095	D-1A-7	1,629.00	Zone - 4	<Collection: 1 item>	523	1,730.52	44
1064	D-1A-1	1,617.00	Zone - 4	<Collection: 1 item>	1,357	1,773.26	68

Scenario: Peak Hour
Current Time Step: 0.000 h
FlexTable: Pipe Table

ID	Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Has Check Valve?	Minor Loss Coefficient (Local)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)	Has User Defined Length?	Length (User Defined) (ft)
690	P-1	522	J-2	J-3	16.0	Ductile Iron	130.0	False	0.000	1,156	1.84	0.816	False	0
694	P-2	135	J-4	J-5	16.0	Ductile Iron	130.0	False	0.000	178	0.28	0.026	False	0
696	P-3	134	J-5	J-6	16.0	Ductile Iron	130.0	False	0.000	178	0.28	0.025	False	0
702	P-4	65	J-7	J-8	16.0	Ductile Iron	130.0	False	0.000	178	0.28	0.026	False	0
704	P-5	155	J-8	J-9	16.0	Ductile Iron	130.0	False	0.000	178	0.28	0.025	False	0
710	P-6	488	J-11	J-12	16.0	Ductile Iron	130.0	False	0.000	178	0.28	0.026	False	0
714	P-7	487	J-13	J-14	16.0	Ductile Iron	130.0	False	0.000	178	0.28	0.026	False	0
1069	P-8	105	J-334	J-21	12.0	Ductile Iron	130.0	False	0.000	-291	0.82	0.258	False	0
1094	P-9	306	J-340	J-28	16.0	Ductile Iron	130.0	False	0.000	-637	1.02	0.271	False	0
725	P-10	181	J-1	J-19	16.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
726	P-11	20	J-19	J-2	16.0	Ductile Iron	130.0	False	0.000	-724	1.16	0.346	False	0
1008	P-13	319	R-11	J-2	48.0	Ductile Iron	130.0	False	0.000	1,880	0.33	0.000	True	1
736	P-14	234	J-3	J-38	12.0	Ductile Iron	130.0	False	0.000	340	0.97	0.344	False	0
1035	P-15	380	J-43	J-50	12.0	Ductile Iron	130.0	False	0.000	-724	2.05	1.395	False	0
1036	P-16	350	J-50	J-19	12.0	Ductile Iron	130.0	False	0.000	-724	2.05	1.395	False	0
977	P-17	61	J-38	H-8	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
1055	P-18	94	J-39	J-51	8.0	Ductile Iron	130.0	False	0.000	447	2.85	4.113	False	0
1061	P-19	37	J-51	J-53	8.0	Ductile Iron	130.0	False	0.000	447	2.85	4.113	False	0
763	P-20	169	J-33	J-41	8.0	Ductile Iron	130.0	False	0.000	447	2.85	4.113	False	0
1068	P-21	45	J-33	J-334	12.0	Ductile Iron	130.0	False	0.000	-291	0.82	0.255	False	0
1018	P-22	261	J-35	J-46	8.0	Ductile Iron	130.0	False	0.000	156	1.00	0.588	False	0
772	P-23	402	J-18	J-22	16.0	Ductile Iron	130.0	False	0.000	477	0.76	0.158	False	0
773	P-24	293	J-22	J-21	16.0	Ductile Iron	130.0	False	0.000	477	0.76	0.158	False	0
1062	P-25	89	J-53	J-49	8.0	Ductile Iron	130.0	False	0.000	-910	5.81	15.346	False	0
776	P-26	51	J-40	J-15	12.0	Ductile Iron	130.0	False	0.000	156	0.44	0.080	False	0
779	P-27	324	J-18	J-23	16.0	Ductile Iron	130.0	False	0.000	-298	0.48	0.066	False	0
780	P-28	248	J-23	J-20	16.0	Ductile Iron	130.0	False	0.000	-298	0.48	0.067	False	0
1029	P-29	117	J-49	J-43	8.0	Ductile Iron	130.0	False	0.000	-910	5.81	15.346	False	0
983	P-30	37	J-35	J-42	12.0	Ductile Iron	130.0	False	0.000	-156	0.44	0.080	False	0
785	P-31	316	J-24	J-18	16.0	Ductile Iron	130.0	False	0.000	178	0.28	0.026	False	0
1019	P-32	61	J-46	J-33	8.0	Ductile Iron	130.0	False	0.000	156	1.00	0.586	False	0
1023	P-33	114	J-39	J-48	8.0	Ductile Iron	130.0	False	0.000	-447	2.85	4.113	False	0
1001	P-34	416	J-16	J-14	16.0	Ductile Iron	130.0	False	0.000	-178	0.28	0.026	False	0
800	P-35	532	J-17	J-27	16.0	Ductile Iron	130.0	False	0.000	178	0.28	0.026	False	0
801	P-36	358	J-27	J-24	16.0	Ductile Iron	130.0	False	0.000	178	0.28	0.026	False	0
1088	P-37	130	J-338	J-339	12.0	Ductile Iron	130.0	False	0.000	340	0.97	0.344	False	0
1089	P-38	217	J-339	J-36	12.0	Ductile Iron	130.0	False	0.000	340	0.97	0.345	False	0
1079	P-39	83	J-337	J-40	12.0	Ductile Iron	130.0	False	0.000	-184	0.52	0.110	False	0
1093	P-41	137	J-20	J-340	16.0	Ductile Iron	130.0	False	0.000	-114	0.18	0.012	False	0
809	P-42	163	J-28	J-4	16.0	Ductile Iron	130.0	False	0.000	-637	1.02	0.271	False	0
1033	P-43	25	J-49	H-2	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
1038	P-44	16	J-50	H-1	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
1049	P-45	21	J-34	H-10	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
819	P-46	371	J-6	J-29	16.0	Ductile Iron	130.0	False	0.000	178	0.28	0.026	False	0
1052	P-47	16	J-26	H-11	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
826	P-48	331	J-9	J-30	16.0	Ductile Iron	130.0	False	0.000	178	0.28	0.025	False	0
827	P-49	198	J-30	J-10	16.0	Ductile Iron	130.0	False	0.000	178	0.28	0.026	False	0
829	P-50	316	J-29	J-31	16.0	Ductile Iron	130.0	False	0.000	178	0.28	0.025	False	0
830	P-51	268	J-31	J-7	16.0	Ductile Iron	130.0	False	0.000	178	0.28	0.026	False	0
1059	P-52	19	J-51	J-52	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
1065	P-53	42	J-53	D-1A-1	6.0	Ductile Iron	130.0	False	0.000	1,357	15.40	130.604	False	0
849	P-60	315	J-10	J-32	16.0	Ductile Iron	130.0	False	0.000	178	0.28	0.026	False	0
850	P-61	197	J-32	J-11	16.0	Ductile Iron	130.0	False	0.000	178	0.28	0.025	False	0
878	P-75	227	J-12	J-37	16.0	Ductile Iron	130.0	False	0.000	178	0.28	0.025	False	0
879	P-76	264	J-37	J-13	16.0	Ductile Iron	130.0	False	0.000	178	0.28	0.026	False	0
1083	P-107	111	J-38	J-338	12.0	Ductile Iron	130.0	False	0.000	340	0.97	0.345	False	0
934	P-111	439	J-16	J-44	16.0	Ductile Iron	130.0	False	0.000	178	0.28	0.026	False	0
935	P-112	498	J-44	J-17	16.0	Ductile Iron	130.0	False	0.000	178	0.28	0.026	False	0

938	P-114	397	J-21	J-45	16.0	Ductile Iron	130.0	False	0.000	186	0.30	0.028	False	0
939	P-115	37	J-45	J-34	12.0	Ductile Iron	130.0	False	0.000	186	0.53	0.111	False	0
1024	P-127	354	J-48	J-25	8.0	Ductile Iron	130.0	False	0.000	-447	2.85	4.113	False	0
962	P-128	15	J-25	J-41	8.0	Ductile Iron	130.0	False	0.000	-447	2.85	4.111	False	0
964	P-129	294	J-34	J-26	12.0	Ductile Iron	130.0	False	0.000	186	0.53	0.113	False	0
965	P-130	397	J-26	J-43	12.0	Ductile Iron	130.0	False	0.000	186	0.53	0.112	False	0
968	P-132	378	J-3	J-47	16.0	Ductile Iron	130.0	False	0.000	815	1.30	0.427	False	0
969	P-133	161	J-47	J-4	16.0	Ductile Iron	130.0	False	0.000	815	1.30	0.427	False	0
974	P-136	246	J-36	J-40	12.0	Ductile Iron	130.0	False	0.000	340	0.97	0.345	False	0
975	P-137	24	H-7	J-36	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
980	P-139	17	J-25	H-3	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
984	P-140	322	J-42	J-15	12.0	Ductile Iron	130.0	False	0.000	-156	0.44	0.082	False	0
1078	P-453	246	J-20	J-337	12.0	Ductile Iron	130.0	False	0.000	-184	0.52	0.110	False	0
1071	P-454	36	J-334	H-74	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
1074	P-455	121	J-22	J-336	12.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
1076	P-456	15	J-336	H-75	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
1081	P-457	17	J-337	H-76	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
1086	P-458	114	J-338	H-77	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
1091	P-459	16	J-339	H-78	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
1096	P-460	79	J-340	D-1A-7	3.0	Ductile Iron	130.0	False	0.000	523	23.72	652.490	False	0

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Appendix D
Max Day + Fire Flow
Cavasson – Phase I

Scenario: Fire Flow
Current Time Step: 0.000 h
Fire Flow Node FlexTable: Fire Flow Report

Label	Zone	Fire Flow Iterations	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Pressure (Residual Lower Limit) (psi)	Pressure (Calculated Residual) (psi)	Pressure (Zone Lower Limit) (psi)	Pressure (Calculated Zone Lower Limit) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (System Lower Limit) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Is Fire Flow Run Balanced?
H-1	Zone - 4	2	True	4,000	4,020	4,000	4,020	20	66	20	57	J-7	20	57	J-7	True
H-2	Zone - 4	2	True	4,000	4,020	4,000	4,020	20	52	20	56	J-7	20	56	J-7	True
H-3	Zone - 4	2	True	4,000	4,020	4,000	4,020	20	50	20	56	J-7	20	56	J-7	True
H-7	Zone - 4	2	True	4,000	4,020	4,000	4,020	20	52	20	56	J-7	20	56	J-7	True
H-8	Zone - 4	2	True	4,000	4,020	4,000	4,020	20	41	20	56	J-7	20	56	J-7	True
H-10	Zone - 4	2	True	4,000	4,020	4,000	4,020	20	63	20	56	J-7	20	56	J-7	True
H-11	Zone - 4	2	True	4,000	4,020	4,000	4,020	20	65	20	56	J-7	20	56	J-7	True
H-74	Zone - 4	2	True	4,000	4,020	4,000	4,020	20	53	20	56	J-7	20	56	J-7	True
H-75	Zone - 4	2	True	4,000	4,020	4,000	4,020	20	56	20	56	J-7	20	56	J-7	True
H-76	Zone - 4	2	True	4,000	4,020	4,000	4,020	20	55	20	56	J-7	20	56	J-7	True
H-77	Zone - 4	2	True	4,000	4,020	4,000	4,020	20	20	20	56	J-7	20	56	J-7	True
H-78	Zone - 4	2	True	4,000	4,020	4,000	4,020	20	57	20	56	J-7	20	56	J-7	True

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Scenario: Fire Flow
Current Time Step: 0.000 h
FlexTable: Hydrant Table

ID	Label	Hydrant Status	Include Hydrant Lateral Loss?	Emitter Coefficient (gpm/psi^n)	Length (Hydrant Lateral) (ft)	Elevation (ft)	Zone	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
1039	H-1	Open	False	0.000	0	1,609.00	Zone - 4	<Collection: 0 items>	0	1,782.84	75
1040	H-2	Open	False	0.000	0	1,608.00	Zone - 4	<Collection: 0 items>	0	1,782.07	75
1041	H-3	Open	False	0.000	0	1,618.85	Zone - 4	<Collection: 0 items>	0	1,782.43	71
1045	H-7	Open	False	0.000	0	1,630.00	Zone - 4	<Collection: 0 items>	0	1,782.78	66
1046	H-8	Open	False	0.000	0	1,622.00	Zone - 4	<Collection: 0 items>	0	1,782.83	70
1050	H-10	Open	False	0.000	0	1,607.00	Zone - 4	<Collection: 0 items>	0	1,782.68	76
1053	H-11	Open	False	0.000	0	1,607.00	Zone - 4	<Collection: 0 items>	0	1,782.67	76
1072	H-74	Open	False	0.000	0	1,616.00	Zone - 4	<Collection: 0 items>	0	1,782.68	72
1075	H-75	Open	False	0.000	0	1,626.00	Zone - 4	<Collection: 0 items>	0	1,782.70	68
1080	H-76	Open	False	0.000	0	1,631.00	Zone - 4	<Collection: 0 items>	0	1,782.75	66
1085	H-77	Open	False	0.000	0	1,617.00	Zone - 4	<Collection: 0 items>	0	1,782.82	72
1090	H-78	Open	False	0.000	0	1,626.50	Zone - 4	<Collection: 0 items>	0	1,782.80	68

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Scenario: Fire Flow
Current Time Step: 0.000 h
FlexTable: Junction Table

ID	Label	Elevation (ft)	Zone	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
686	J-1	1,609.00	Zone - 4	<Collection: 0 items>	0	1,783.00	75
687	J-2	1,612.00	Zone - 4	<Collection: 0 items>	0	1,783.00	74
689	J-3	1,623.00	Zone - 4	<Collection: 0 items>	0	1,782.86	69
691	J-4	1,629.00	Zone - 4	<Collection: 0 items>	0	1,782.78	67
693	J-5	1,629.90	Zone - 4	<Collection: 0 items>	0	1,782.78	66
695	J-6	1,631.92	Zone - 4	<Collection: 0 items>	0	1,782.78	65
697	J-7	1,649.25	Zone - 4	<Collection: 0 items>	0	1,782.77	58
701	J-8	1,649.00	Zone - 4	<Collection: 0 items>	0	1,782.77	58
703	J-9	1,649.00	Zone - 4	<Collection: 0 items>	0	1,782.77	58
705	J-10	1,649.00	Zone - 4	<Collection: 0 items>	0	1,782.76	58
707	J-11	1,646.00	Zone - 4	<Collection: 0 items>	0	1,782.76	59
709	J-12	1,643.00	Zone - 4	<Collection: 0 items>	0	1,782.75	60
711	J-13	1,637.84	Zone - 4	<Collection: 0 items>	0	1,782.75	63
713	J-14	1,633.68	Zone - 4	<Collection: 0 items>	0	1,782.75	64
717	J-16	1,630.55	Zone - 4	<Collection: 0 items>	0	1,782.74	66
719	J-17	1,617.54	Zone - 4	<Collection: 0 items>	0	1,782.73	71
721	J-18	1,625.17	Zone - 4	<Collection: 0 items>	0	1,782.72	68
724	J-19	1,612.00	Zone - 4	<Collection: 0 items>	0	1,783.00	74
735	J-38	1,616.47	Zone - 4	<Collection: 0 items>	0	1,782.83	72
737	J-20	1,625.50	Zone - 4	<Collection: 0 items>	0	1,782.74	68
741	J-43	1,606.70	Zone - 4	<Collection: 0 items>	0	1,782.66	76
745	J-40	1,619.49	Zone - 4	<Collection: 0 items>	0	1,782.75	71
750	J-34	1,607.21	Zone - 4	<Collection: 0 items>	0	1,782.68	76
754	J-39	1,612.00	Zone - 4	<Collection: 0 items>	0	1,781.80	73
757	J-41	1,612.00	Zone - 4	<Collection: 0 items>	0	1,782.45	74
761	J-33	1,613.33	Zone - 4	<Collection: 0 items>	0	1,782.68	73
764	J-21	1,612.50	Zone - 4	<Collection: 0 items>	0	1,782.69	74
768	J-35	1,618.40	Zone - 4	<Collection: 0 items>	0	1,782.74	71
771	J-22	1,618.54	Zone - 4	<Collection: 0 items>	0	1,782.70	71
775	J-15	1,619.21	Zone - 4	<Collection: 0 items>	0	1,782.75	71
778	J-23	1,625.00	Zone - 4	<Collection: 0 items>	0	1,782.73	68
783	J-24	1,623.83	Zone - 4	<Collection: 0 items>	0	1,782.73	69
799	J-27	1,619.36	Zone - 4	<Collection: 0 items>	0	1,782.73	71
807	J-28	1,626.64	Zone - 4	<Collection: 0 items>	0	1,782.76	68
818	J-29	1,636.73	Zone - 4	<Collection: 0 items>	0	1,782.77	63
825	J-30	1,649.00	Zone - 4	<Collection: 0 items>	0	1,782.76	58
828	J-31	1,645.84	Zone - 4	<Collection: 0 items>	0	1,782.77	59
848	J-32	1,648.15	Zone - 4	<Collection: 0 items>	0	1,782.76	58
877	J-37	1,640.12	Zone - 4	<Collection: 0 items>	0	1,782.75	62

933	J-44	1,624.90	Zone - 4	<Collection: 0 items>	0	1,782.74	68
937	J-45	1,606.60	Zone - 4	<Collection: 0 items>	0	1,782.69	76
960	J-25	1,612.51	Zone - 4	<Collection: 0 items>	0	1,782.43	74
963	J-26	1,607.18	Zone - 4	<Collection: 0 items>	0	1,782.67	76
967	J-47	1,628.00	Zone - 4	<Collection: 0 items>	0	1,782.80	67
972	J-36	1,628.59	Zone - 4	<Collection: 0 items>	0	1,782.78	67
982	J-42	1,618.72	Zone - 4	<Collection: 0 items>	0	1,782.74	71
1017	J-46	1,614.06	Zone - 4	<Collection: 0 items>	0	1,782.69	73
1022	J-48	1,612.14	Zone - 4	<Collection: 0 items>	0	1,781.95	73
1031	J-49	1,608.94	Zone - 4	<Collection: 0 items>	0	1,782.07	75
1034	J-50	1,609.90	Zone - 4	<Collection: 0 items>	0	1,782.84	75
1057	J-51	1,610.21	Zone - 4	<Collection: 0 items>	0	1,781.67	74
1058	J-52	1,617.00	Zone - 4	<Collection: 0 items>	0	1,781.67	71
1063	J-53	1,610.06	Zone - 4	<Collection: 0 items>	0	1,781.62	74
1067	J-334	1,613.08	Zone - 4	<Collection: 0 items>	0	1,782.68	73
1073	J-336	1,626.00	Zone - 4	<Collection: 0 items>	0	1,782.70	68
1077	J-337	1,621.01	Zone - 4	<Collection: 0 items>	0	1,782.75	70
1082	J-338	1,617.47	Zone - 4	<Collection: 0 items>	0	1,782.82	72
1087	J-339	1,624.64	Zone - 4	<Collection: 0 items>	0	1,782.80	68
1092	J-340	1,625.85	Zone - 4	<Collection: 0 items>	0	1,782.74	68
1095	D-1A-7	1,629.00	Zone - 4	<Collection: 1 item>	299	1,764.40	59
1064	D-1A-1	1,617.00	Zone - 4	<Collection: 1 item>	742	1,779.81	70

Scenario: Fire Flow
Current Time Step: 0.000 h
FlexTable: Pipe Table

ID	Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Has Check Valve?	Minor Loss Coefficient (Local)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)	Has User Defined Length?	Length (User Defined) (ft)
690	P-1	522	J-2	J-3	16.0	Ductile Iron	130.0	False	0.000	642	1.02	0.274	False	0
694	P-2	135	J-4	J-5	16.0	Ductile Iron	130.0	False	0.000	98	0.16	0.009	False	0
696	P-3	134	J-5	J-6	16.0	Ductile Iron	130.0	False	0.000	98	0.16	0.008	False	0
702	P-4	65	J-7	J-8	16.0	Ductile Iron	130.0	False	0.000	98	0.16	0.009	False	0
704	P-5	155	J-8	J-9	16.0	Ductile Iron	130.0	False	0.000	98	0.16	0.009	False	0
710	P-6	488	J-11	J-12	16.0	Ductile Iron	130.0	False	0.000	98	0.16	0.009	False	0
714	P-7	487	J-13	J-14	16.0	Ductile Iron	130.0	False	0.000	98	0.16	0.009	False	0
1069	P-8	105	J-334	J-21	12.0	Ductile Iron	130.0	False	0.000	-159	0.45	0.084	False	0
1094	P-9	306	J-340	J-28	16.0	Ductile Iron	130.0	False	0.000	-355	0.57	0.092	False	0
725	P-10	181	J-1	J-19	16.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
726	P-11	20	J-19	J-2	16.0	Ductile Iron	130.0	False	0.000	-399	0.64	0.111	False	0
1008	P-13	319	R-11	J-2	48.0	Ductile Iron	130.0	False	0.000	1,041	0.18	0.000	True	1
736	P-14	234	J-3	J-38	12.0	Ductile Iron	130.0	False	0.000	189	0.54	0.116	False	0
1035	P-15	380	J-43	J-50	12.0	Ductile Iron	130.0	False	0.000	-399	1.13	0.463	False	0
1036	P-16	350	J-50	J-19	12.0	Ductile Iron	130.0	False	0.000	-399	1.13	0.463	False	0
977	P-17	61	J-38	H-8	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
1055	P-18	94	J-39	J-51	8.0	Ductile Iron	130.0	False	0.000	244	1.56	1.344	False	0
1061	P-19	37	J-51	J-53	8.0	Ductile Iron	130.0	False	0.000	244	1.56	1.344	False	0
763	P-20	169	J-33	J-41	8.0	Ductile Iron	130.0	False	0.000	244	1.56	1.344	False	0
1068	P-21	45	J-33	J-334	12.0	Ductile Iron	130.0	False	0.000	-159	0.45	0.085	False	0
1018	P-22	261	J-35	J-46	8.0	Ductile Iron	130.0	False	0.000	85	0.54	0.191	False	0
772	P-23	402	J-18	J-22	16.0	Ductile Iron	130.0	False	0.000	258	0.41	0.051	False	0
773	P-24	293	J-22	J-21	16.0	Ductile Iron	130.0	False	0.000	258	0.41	0.051	False	0
1062	P-25	89	J-53	J-49	8.0	Ductile Iron	130.0	False	0.000	-498	3.18	5.021	False	0
776	P-26	51	J-40	J-15	12.0	Ductile Iron	130.0	False	0.000	85	0.24	0.027	False	0
779	P-27	324	J-18	J-23	16.0	Ductile Iron	130.0	False	0.000	-160	0.25	0.021	False	0
780	P-28	248	J-23	J-20	16.0	Ductile Iron	130.0	False	0.000	-160	0.25	0.021	False	0
1029	P-29	117	J-49	J-43	8.0	Ductile Iron	130.0	False	0.000	-498	3.18	5.021	False	0
983	P-30	37	J-35	J-42	12.0	Ductile Iron	130.0	False	0.000	-85	0.24	0.027	False	0
785	P-31	316	J-24	J-18	16.0	Ductile Iron	130.0	False	0.000	98	0.16	0.009	False	0
1019	P-32	61	J-46	J-33	8.0	Ductile Iron	130.0	False	0.000	85	0.54	0.191	False	0
1023	P-33	114	J-39	J-48	8.0	Ductile Iron	130.0	False	0.000	-244	1.56	1.343	False	0
1001	P-34	416	J-16	J-14	16.0	Ductile Iron	130.0	False	0.000	-98	0.16	0.009	False	0
800	P-35	532	J-17	J-27	16.0	Ductile Iron	130.0	False	0.000	98	0.16	0.008	False	0
801	P-36	358	J-27	J-24	16.0	Ductile Iron	130.0	False	0.000	98	0.16	0.009	False	0
1088	P-37	130	J-338	J-339	12.0	Ductile Iron	130.0	False	0.000	189	0.54	0.116	False	0
1089	P-38	217	J-339	J-36	12.0	Ductile Iron	130.0	False	0.000	189	0.54	0.115	False	0
1079	P-39	83	J-337	J-40	12.0	Ductile Iron	130.0	False	0.000	-104	0.29	0.038	False	0
1093	P-41	137	J-20	J-340	16.0	Ductile Iron	130.0	False	0.000	-56	0.09	0.003	False	0
809	P-42	163	J-28	J-4	16.0	Ductile Iron	130.0	False	0.000	-355	0.57	0.092	False	0
1033	P-43	25	J-49	H-2	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
1038	P-44	16	J-50	H-1	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
1049	P-45	21	J-34	H-10	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
819	P-46	371	J-6	J-29	16.0	Ductile Iron	130.0	False	0.000	98	0.16	0.009	False	0
1052	P-47	16	J-26	H-11	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
826	P-48	331	J-9	J-30	16.0	Ductile Iron	130.0	False	0.000	98	0.16	0.008	False	0
827	P-49	198	J-30	J-10	16.0	Ductile Iron	130.0	False	0.000	98	0.16	0.009	False	0
829	P-50	316	J-29	J-31	16.0	Ductile Iron	130.0	False	0.000	98	0.16	0.008	False	0
830	P-51	268	J-31	J-7	16.0	Ductile Iron	130.0	False	0.000	98	0.16	0.008	False	0
1059	P-52	19	J-51	J-52	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
1065	P-53	42	J-53	D-1A-1	6.0	Ductile Iron	130.0	False	0.000	742	8.42	42.705	False	0
849	P-60	315	J-10	J-32	16.0	Ductile Iron	130.0	False	0.000	98	0.16	0.009	False	0
850	P-61	197	J-32	J-11	16.0	Ductile Iron	130.0	False	0.000	98	0.16	0.008	False	0
878	P-75	227	J-12	J-37	16.0	Ductile Iron	130.0	False	0.000	98	0.16	0.009	False	0
879	P-76	264	J-37	J-13	16.0	Ductile Iron	130.0	False	0.000	98	0.16	0.008	False	0
1083	P-107	111	J-38	J-338	12.0	Ductile Iron	130.0	False	0.000	189	0.54	0.116	False	0
934	P-111	439	J-16	J-44	16.0	Ductile Iron	130.0	False	0.000	98	0.16	0.009	False	0
935	P-112	498	J-44	J-17	16.0	Ductile Iron	130.0	False	0.000	98	0.16	0.008	False	0

938	P-114	397	J-21	J-45	16.0	Ductile Iron	130.0	False	0.000	99	0.16	0.009	False	0
939	P-115	37	J-45	J-34	12.0	Ductile Iron	130.0	False	0.000	99	0.28	0.036	False	0
1024	P-127	354	J-48	J-25	8.0	Ductile Iron	130.0	False	0.000	-244	1.56	1.343	False	0
962	P-128	15	J-25	J-41	8.0	Ductile Iron	130.0	False	0.000	-244	1.56	1.346	False	0
964	P-129	294	J-34	J-26	12.0	Ductile Iron	130.0	False	0.000	99	0.28	0.034	False	0
965	P-130	397	J-26	J-43	12.0	Ductile Iron	130.0	False	0.000	99	0.28	0.035	False	0
968	P-132	378	J-3	J-47	16.0	Ductile Iron	130.0	False	0.000	453	0.72	0.144	False	0
969	P-133	161	J-47	J-4	16.0	Ductile Iron	130.0	False	0.000	453	0.72	0.144	False	0
974	P-136	246	J-36	J-40	12.0	Ductile Iron	130.0	False	0.000	189	0.54	0.116	False	0
975	P-137	24	H-7	J-36	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
980	P-139	17	J-25	H-3	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
984	P-140	322	J-42	J-15	12.0	Ductile Iron	130.0	False	0.000	-85	0.24	0.026	False	0
1078	P-453	246	J-20	J-337	12.0	Ductile Iron	130.0	False	0.000	-104	0.29	0.038	False	0
1071	P-454	36	J-334	H-74	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
1074	P-455	121	J-22	J-336	12.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
1076	P-456	15	J-336	H-75	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
1081	P-457	17	J-337	H-76	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
1086	P-458	114	J-338	H-77	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
1091	P-459	16	J-339	H-78	6.0	Ductile Iron	130.0	False	0.000	0	0.00	0.000	False	0
1096	P-460	79	J-340	D-1A-7	3.0	Ductile Iron	130.0	False	0.000	299	13.55	231.452	False	0

P:\2018\18114\Design-Reports\18114-301\Water\Model\18114-WaterModel Phase 1.wtg

Scenario: Fire Flow
Current Time Step: 0.000 h
FlexTable: Reservoir Table

ID	Label	Elevation (ft)	Zone	Flow (Out net) (gpm)	Hydraulic Grade (ft)
731	R-11	1,783.00	Zone - 4	1,041	1,783.00

P:\2018\18114\Design-Reports\18114-301\Water\Model\18114-WaterModel Phase 1.wtg

Appendix E
Fire Flow
Cavasson – Phase I

Flow Test Summary

Project Name:	EJFT 18250-1
Project Address:	N Hayden Rd & Legacy Blvd, Scottsdale, AZ 85255
Date of Flow Test:	2018-10-16
Time of Flow Test:	7:30 AM
Data Reliable Until:	2019-04-16
Conducted By:	Cesar Reyna & Austin Gourley (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:	C56459

Raw Flow Test Data

Static Pressure:	66.0 PSI
Residual Pressure:	59.0 PSI
Flowing GPM:	1,839
GPM @ 20 PSI:	5,082

Data with a 10 % Safety Factor

Static Pressure:	59.4 PSI
Residual Pressure:	52.4 PSI
Flowing GPM:	1,839
GPM @ 20 PSI:	4,674

Hydrant F_1

Pitot Pressure (1):	30	PSI
Coefficient of Discharge (1):	0.9	
Hydrant Orifice Diameter (1):	2.5	inches
Pitot Pressure (2):	30	PSI
Coefficient of Discharge (2):	0.9	
Hydrant Orifice Diameter (2):	2.5	inches

Static-Residual Hydrant

Flow Hydrant

Distance Between F_1 and R
1190 ft (measured linearly)

Static-Residual Elevation
1614 ft (above sea level)

Flow Hydrant (F_1) Elevation
1633 ft (above sea level)

Elevation & distance values are approximate

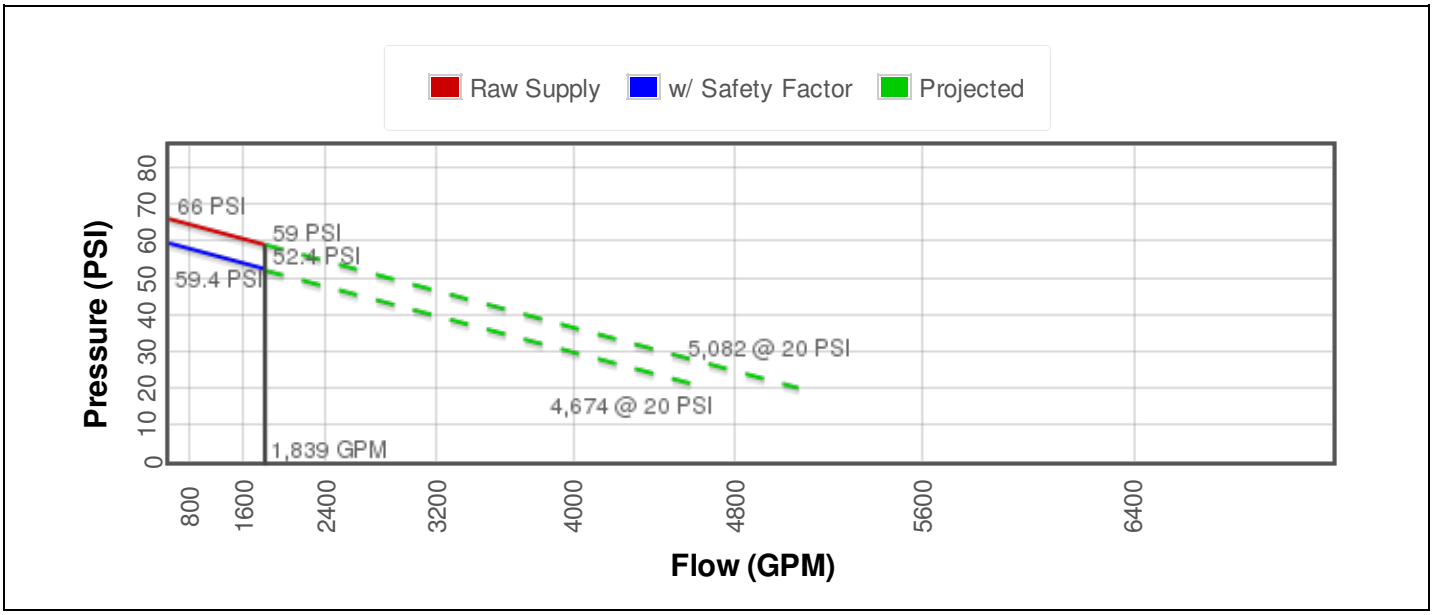
Flow Test Summary

Static-Residual Hydrant

Flow Hydrant (only hydrant F1 shown for clarity)

Approximate Project Site

Water Supply Curve $N^{1.85}$ Graph



Flow Test Summary

Project Name:	EJFT 18250-2
Project Address:	N Hayden Rd & Legacy Blvd, Scottsdale, AZ 85255
Date of Flow Test:	2018-10-16
Time of Flow Test:	7:50 AM
Data Reliable Until:	2019-04-16
Conducted By:	Cesar Reyna & Austin Gourley (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:	C56459

Raw Flow Test Data

Static Pressure:	51.0 PSI
Residual Pressure:	44.0 PSI
Flowing GPM:	1,645
GPM @ 20 PSI:	3,673

Data with a 10 % Safety Factor

Static Pressure:	45.9 PSI
Residual Pressure:	38.9 PSI
Flowing GPM:	1,645
GPM @ 20 PSI:	3,333

Hydrant F_1

Pitot Pressure (1):	24	PSI
Coefficient of Discharge (1):	0.9	
Hydrant Orifice Diameter (1):	2.5	inches
Pitot Pressure (2):	24	PSI
Coefficient of Discharge (2):	0.9	
Hydrant Orifice Diameter (2):	2.5	inches

Static-Residual Hydrant

Flow Hydrant

Distance Between F_1 and R
489 ft (measured linearly)

Static-Residual Elevation
1650 ft (above sea level)

Flow Hydrant (F_1) Elevation
1647 ft (above sea level)

Elevation & distance values are approximate

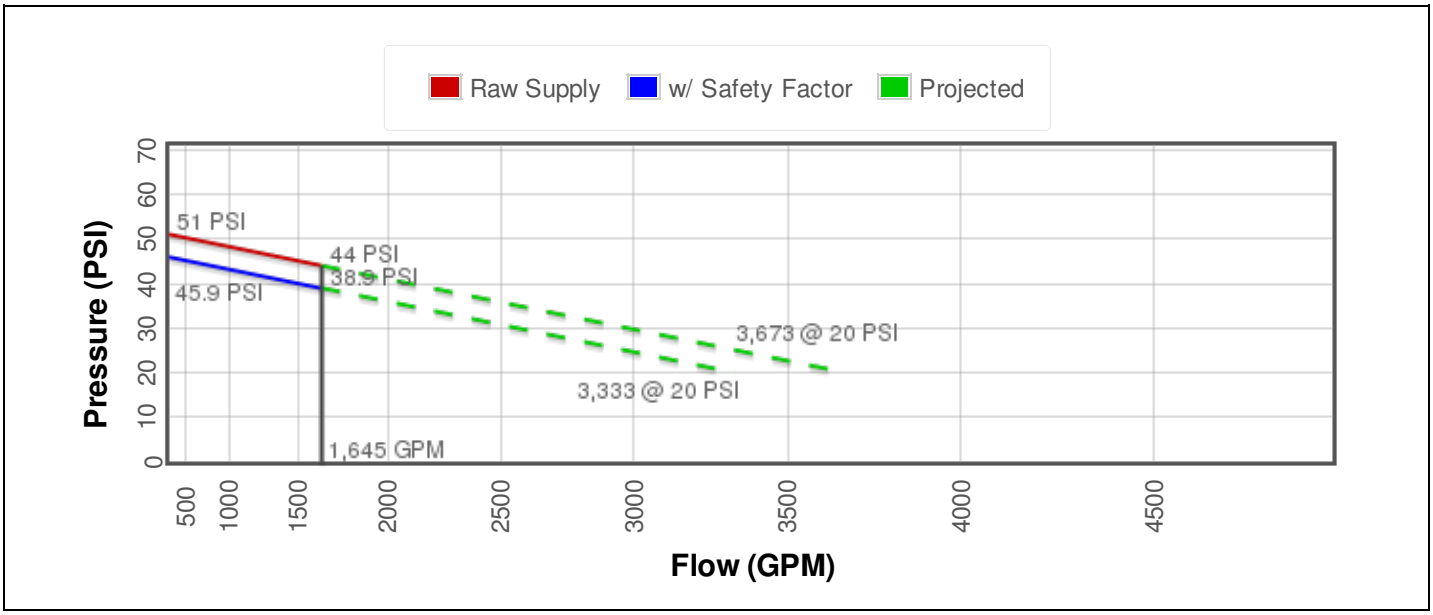
Flow Test Summary

Static-Residual Hydrant

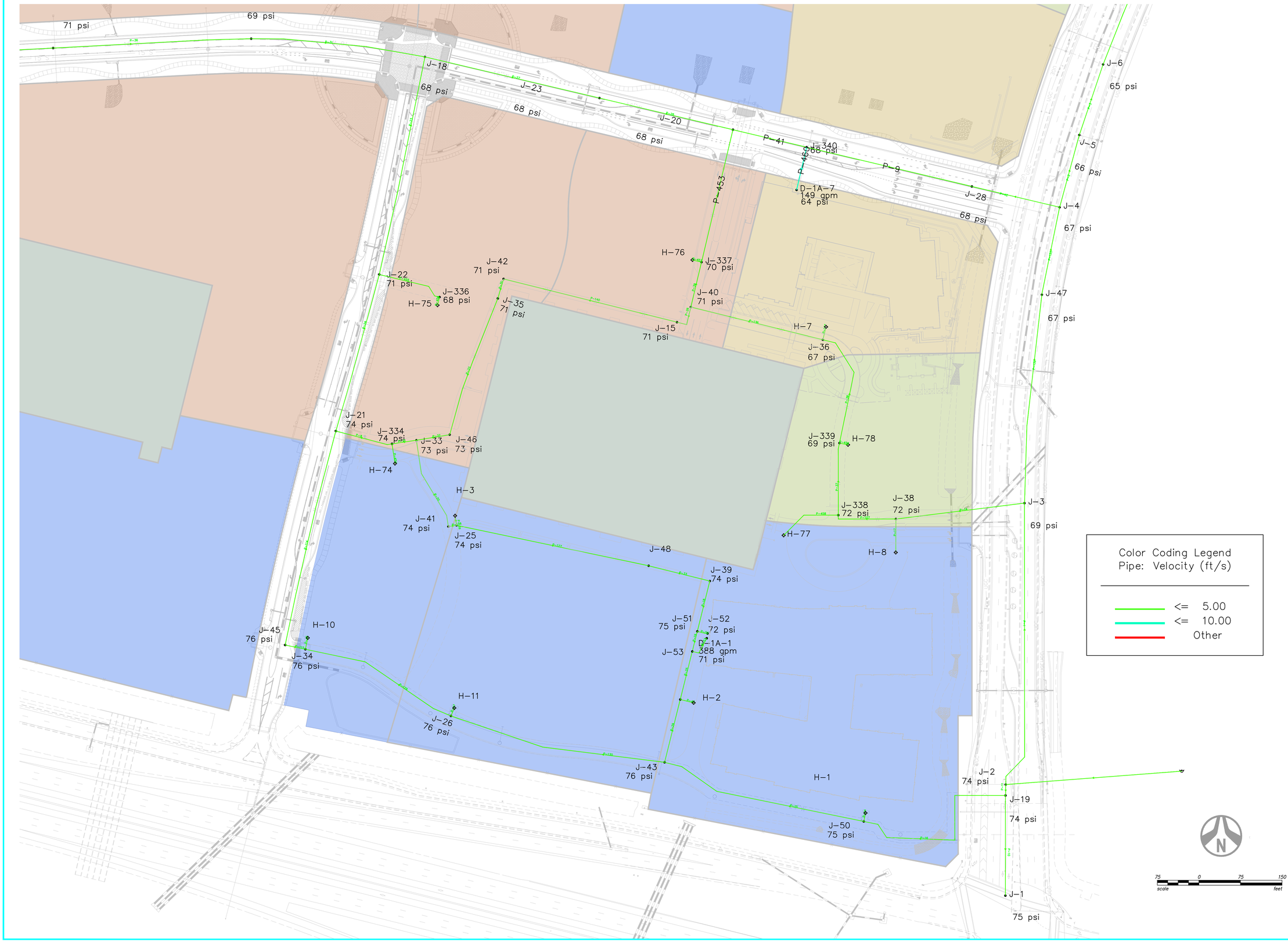
Flow Hydrant (only hydrant F1 shown for clarity)

Approximate Project Site

Water Supply Curve $N^{1.85}$ Graph



Exhibits
Cavasson – Phase I



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Mesa, AZ 85210
PH: 480.892.3313
www.hubbardengineering.com

AVERAGE DAY DEMAND WATER SYSTEM MAP

Date: 10/30/2019	Project Eng.: M. WOLF
Project No.: 18114-301	Project Mgr.: M. WOLF

SHT: 01 OF 01

EXHIBIT 1

J-18
68 psi
J-23
68 psi
J-20
68 psi
D-1A-7
299 gpm
59 psi
J-28
68 psi
J-6
65 psi
J-5
66 psi
J-4
67 psi
J-47
67 psi
H-76
70 psi
J-42
71 psi
J-22
71 psi
J-336
68 psi
H-75
J-35
71 psi
J-40
71 psi
J-15
71 psi
H-7
J-36
67 psi
J-21
74 psi
J-33
73 psi
J-46
73 psi
H-74
H-3
J-339
68 psi
H-78
J-38
72 psi
J-3
69 psi
J-41
74 psi
J-25
74 psi
H-77
H-8
J-48
J-39
74 psi
J-45
76 psi
H-10
J-51
74 psi
J-52
71 psi
D-1A-1
742 gpm
71 psi
J-53
J-34
76 psi
H-11
H-2
J-26
76 psi
J-43
76 psi
H-1
J-2
74 psi
J-19
74 psi
J-50
75 psi
J-1
75 psi

Color Coding Legend
Pipe: Velocity (ft/s)

<= 5.00
<= 10.00
Other

N

75 0 75 150
scale feet

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MAX DAY DEMAND WATER SYSTEM MAP

Date 10/30/2019
Project Eng. M. WOLF
Project No. 18114-301
Project Mgr. M. WOLF

SHT: 01 OF 01
EXHIBIT 2

J-18
68 psi
J-23
68 psi
J-20
68 psi
D-1A-7
523 gpm
44 psi
J-28
68 psi
J-6
65 psi
J-5
66 psi
J-4
67 psi
J-47
67 psi
H-76
70 psi
J-42
71 psi
J-22
71 psi
J-336
68 psi
H-75
J-35
71 psi
J-40
71 psi
J-15
71 psi
H-7
J-36
67 psi
J-21
74 psi
J-33
73 psi
J-46
73 psi
H-74
H-3
J-41
74 psi
J-25
73 psi
J-48
J-339
68 psi
H-78
J-38
72 psi
J-3
69 psi
H-77
H-8
J-39
73 psi
J-51
73 psi
J-52
70 psi
D-1A-1
1,357 gpm
68 psi
J-53
J-45
76 psi
H-10
J-34
76 psi
H-11
J-26
76 psi
H-2
J-43
76 psi
H-1
J-50
75 psi
J-2
74 psi
J-19
74 psi
J-1
75 psi

Color Coding Legend
Pipe: Velocity (ft/s)

<= 5.00
<= 10.00
Other

N

150 0 150 300
scale feet

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Mesa, AZ 85210
PH: 480.892.3313
www.hubbardengineering.com

PEAK HOUR DEMAND
WATER SYSTEM MAP

Date 10/30/2019
Project Eng. M. WOLF
Project No. 18114-301
Project Mgr. M. WOLF

SHT: 01 OF 01
EXHIBIT 3

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Suite 12000
Mesa, AZ 85210
PH: 480.892.3313
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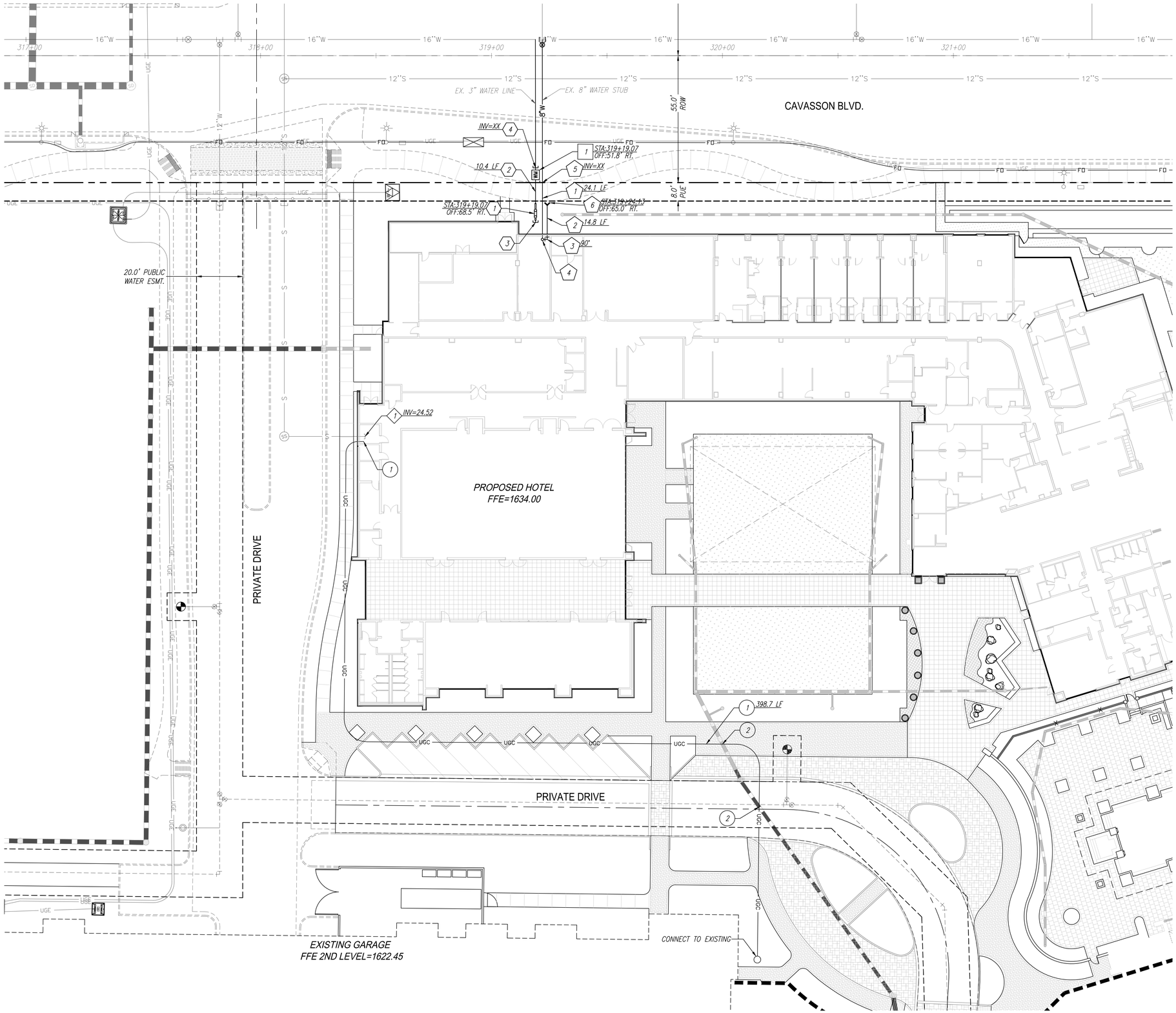
MAX DAY PLUS FIRE FLOW
WATER SYSTEM MAP

Date: 10/30/2019	Project Eng: M. WOLF
Project No.: 18114-301	Project Mgr: M. WOLF

SHT: 01 OF 01

EXHIBIT 4



CONSTRUCTION NOTES

PRIVATE SANITARY SEWER NOTES:

1. REMOVE PLUG AND CONNECT TO EXISTING 8" SEWER LINE STUB. CONTRACTOR TO VERIFY DEPTH AND LOCATION OF CONNECTION AND NOTIFY ENGINEER OF ANY DISCREPANCIES. INVERT AS NOTED

FIRELINE NOTES:

1. INSTALL 8"ø D.I.P. CLASS 350 POLY-WRAPPED PER M.A.G. STD. SPEC. 610. MECHANICAL RESTRAINT JOINTS PER M.A.G. STD. DTL. 303-1, 303-2 WITH MIN. 3' COVER. LENGTH AS NOTED.
2. INSTALL 4"ø D.I.P. CLASS 350 POLY-WRAPPED PER M.A.G. STD. SPEC. 610. MECHANICAL RESTRAINT JOINTS PER M.A.G. STD. DTL. 303-1, 303-2 WITH MIN. 3' COVER. LENGTH AS NOTED.
3. INSTALL WATERLINE BEND, D.I.P. CLASS 350 POLY-WRAPPED WITH MEGALUG SERIES 1100 MECHANICAL RESTRAINT JOINT OR APPROVED EQUAL. SIZE AND ANGLE AS NOTED.
4. BRING 8" FIRELINE TO FIRE RISER ROOM FOR CONNECTION TO FIRE SPRINKLER RISER PER C.O.S. STD. DTL. 2368. REFER TO PLUMBING PLANS FOR CONTINUATION.
5. REMOVE PLUG AND CONNECT TO EXISTING 8" WATER LINE STUB. CONTRACTOR TO VERIFY DEPTH AND LOCATION OF CONNECTION AND NOTIFY ENGINEER OF ANY DISCREPANCIES. INVERT AS NOTED.
6. INSTALL FIRE DEPARTMENT REMOTE SIAMESE CONNECTION PER C.O.S. STD. DTL. 2367.

PRIVATE WATER NOTES:

1. INSTALL 3" BACKFLOW PREVENTION ASSEMBLY PER C.O.S. STD. DTL. 2352.
2. INSTALL 3"ø SCHEDULE 40 PVC PIPE. LENGTH AS NOTED.
3. STUB AND PLUG 3" WATER SERVICE LINE 5' FROM BUILDING FOR CONNECTION BY OTHERS. REFER TO PLUMBING PLANS FOR CONTINUATION.
4. REMOVE PLUG AND CONNECT TO EXISTING 3" WATER LINE STUB. CONTRACTOR TO VERIFY DEPTH AND LOCATION OF CONNECTION AND NOTIFY ENGINEER OF ANY DISCREPANCIES. INVERT AS NOTED.

PUBLIC WATER NOTES:

1. INSTALL 3" WATER METER PER C.O.S. STD. DTL. 2345-1

COMMUNICATIONS NOTES:

1. INSTALL 4" COMMUNICATION LINE CONDUIT. REFER TO HOTEL PLANS FOR CONTINUATION.
2. CONTRACTOR TO MAINTAIN 1' OF CLEARANCE BETWEEN EX. UTILITY AND NEW 4" CONDUIT.

NOTE:

ALL DRY UTILITIES UNDER SEPARATE PERMIT, SHOWN FOR REFERENCE ONLY.

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602.263.1100

20 0 20 40
scale feet

NOT FOR CONSTRUCTION
PRELIMINARY
OR RECORDING
BID AT RISK

PUBLIC AND PRIVATE UTILITY PLAN
HILTON SCOTTSDALE NORTH AT CAVASSON

A PORTION OF THE SOUTHEAST QUARTER OF SECTION 26
TOWNSHIP 4 NORTH, RANGE 4 EAST OF THE GILA AND SALT RIVER
MERIDIAN, MARICOPA COUNTY, ARIZONA

Project No.	Date	Sheet No.
18114-301	09/20/2019	SHT: 02 OF 02
Project Manager: M.S.W.	Project Engineer: G. BROWN	C602

HUBBARD ENGINEERING
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