



Water and Wastewater Study
Combined



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 12/23/2019

**WATER DISTRIBUTION SYSTEM
BASIS OF DESIGN REPORT
FOR
RAINTREE PHASE III RESIDENTIAL BUILDING**

December 4, 2019
WP# 195063



EXPIRES 03-31-22



December 4, 2019

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Re: **Raintree Phase III Residential Building**
Water Distribution System Basis of Design Report
WP# 195063

Mr. Dillion:

This Water Distribution System Basis of Design Report is prepared for Trammell Crow and submitted to the City of Scottsdale. The proposed Raintree Phase III Residential Building (Site) is a 3.12-acre site, located at the southeast corner of North Northsight Boulevard and East Raintree Drive. More specifically, the Site is located in the southwest quarter of Section 12, Township 3 North, Range 4 East of the Gila and Salt River Meridian. Refer to the *Vicinity Map* at the back of this report for project location. The Raintree Phase III Residential Building is a proposed 5-story, 190-room residential building with 5.5-story parking garage. The project is planned to be constructed with associated paving, utility, hardscape, and landscape improvements.

The Site is surrounded by public waterline infrastructure which forms a looped waterline system around the Site. There is one (1) 12-inch C900 water main in Northsight Boulevard. There is one (1) 20-inch SCP and one (1) 12-inch ACP water main in Raintree Drive. There is one (1) 10-inch C900 water main in 87th Street. There is one (1) 8-inch DIP public waterline in the existing Raintree Private Drive. The Raintree Phase III site proposes three (3) connections to the public 8-inch water main in the Raintree Private Drive to service domestic, irrigation and fire demands. Refer to the attached *Water Exhibit* for a depiction of the existing water infrastructure surrounding the Site.

The design criteria used to estimate potable water demands and evaluate system hydraulics are based on Wood, Patel & Associates, Inc.'s (WOODPATEL) understanding of the requirements listed in the *City of Scottsdale Design Standards and Policies Manual*, 2018. The following is a summary of the primary design criteria utilized:

- Average Day Water Demand, High Density Condominium :..... 0.27 gpm/unit*
- Fire Flow Requirements:..... min 1,500 gpm**
- Maximum Day Demand: 2.0 x ADD
- Peak Hour Demand: 3.5 x ADD
- Minimum Residual Pressure, Peak Hour:..... 50 psi
- Minimum Residual Pressure, Maximum Day + Fire Flow:..... 30 psi
- Maximum System Pressure:..... 120 psi

- Maximum Pipe Head Loss, Maximum Day Demand: 8 ft / 1000 ft
- Maximum Pipe Head Loss, Peak Hour Demand: 10 ft / 1000 ft
- Minimum Pipe Diameter, Public Water Line 8 inches

Abbreviations: gpd = gallons per day; sf = square feet; ADD = average day demand; psi = pounds per square inch

*Includes both inside and outside use per Figure 6-1.2, *COS Design Standards & Policies Manual*

**Fire flow is based on 10% reduction to account for flow measurement inaccuracy (Refer to attached *Calculations* in the appendices)

Potable water service for the proposed Site will be provided by one (1) 3-inch domestic turbo water service, equipped with a 3-inch backflow prevention device and meter, connecting to an existing 3-inch stub on the east side of the Site. In addition, a 1-inch irrigation service, equipped with a 1-inch backflow prevention device and meter, is to be reused in the northeast corner. Refer to the attached *Water Exhibit* for a depiction of the proposed water infrastructure.

Fire protection for the proposed Site will be provided through one (1) 8-inch fire sprinkler service, connecting to the 8-inch public waterline on the south side of the Site and a proposed remote fire department connection. In addition, there are several existing fire hydrants within the Site vicinity. One (1) fire hydrant will be relocated. Refer to the attached *Water Exhibit* for proposed fire hydrant and fire sprinkler service locations.

The design criteria used to estimate water demands and evaluate system hydraulics are based on Wood, Patel & Associates, Inc.'s (WOODPATEL) understanding of locally-accepted design criteria, and the requirements listed in the City of Scottsdale Standards.

The average-day water demand for the Site is projected to be approximately 73,872 gallons per day (gpd), or 51 gallons per minute (gpm). The projected max day demand is 103 gpm. The projected peak demand is 180 gpm (Refer to the attached *Calculation and Hydraulic Modeling Results*).

WaterCAD Version 8i, by Haestad Methods, was utilized to analyze the existing water distribution system and proposed improvements. The hydraulic model was calibrated using data provided from a fire hydrant flow test, performed by the Arizona Flow Testing, LLC., on November 8th, 2019 (Refer to attached *Fire Hydrant Flow Test*).

The hydraulic modeling results indicate the proposed system is capable of delivering peak demands of approximately 180 gpm to the Site, with pressures ranging from 72 -74 psi. Fire-flow results during Max Day demand indicate the required fire flows (1,500 gpm) are available within the proposed development at all existing and proposed fire hydrants, with system residual pressures at or above 30 psi, with the minimum fire flow at 2,704 gpm. It is important to add, a 75-percent reduction was applied to the fire flow requirements, due to proposed sprinkler system. Hydraulic-modeling results, calculations, and exhibits involved in the water system analysis are attached.

Thank you for your review of the Water Distribution System Basis of Design Report provided for the Raintree Phase III Residential Building. Feel free to contact me if you have any questions.

Wood, Patel & Associates, Inc.



Anthony J. Bueche, PE
Project Manager

EXPIRES 03-31-22

Attachments: Calculations and Hydraulic Modeling Results
 Vicinity Map
 Water System Exhibit
 Fire Flow Test Results

AJB/se

CALCULATIONS AND HYDRAULIC MODELING RESULTS



TABLE 1
WATER DEMAND DESIGN FLOWS

Project Raintree Phase III
Location Scottsdale AZ
Project Number 15063
Project Engineer Tony Beuche
References City of Scottsdale Design Standards and Policies Manual

LAND USE AND DWELLING UNIT BREAKDOWN BY JUNCTION														
HYDRAULIC MODEL NODE	ELEVATION (ft)	LAND USE	DWELLING UNITS	DEMAND VALUE	UNITS	AVERAGE DAILY DEMAND			MAX DAY FLOW			PEAK FLOW		
						(gpm)	(gpd)	Total (gpm)	(gpm)	(gpd)	Total (gpm)	(gpm)	(gpd)	Total (gpm)
J-DOM	1,462.00	High Density Condominium	190	0.27	gpm/Unit	51.30	73,872.00	51.30	102.60	147,744.00	102.60	179.55	258,552.00	179.55
Total			190			51	73,872	51	103	147,744	103	180	258,552	180



EXISTING WATER SYSTEM PRESSURES

Project Raintree Phase III
Location Scottsdale AZ
Project Number 15063
Project Engineer Tony Beuche

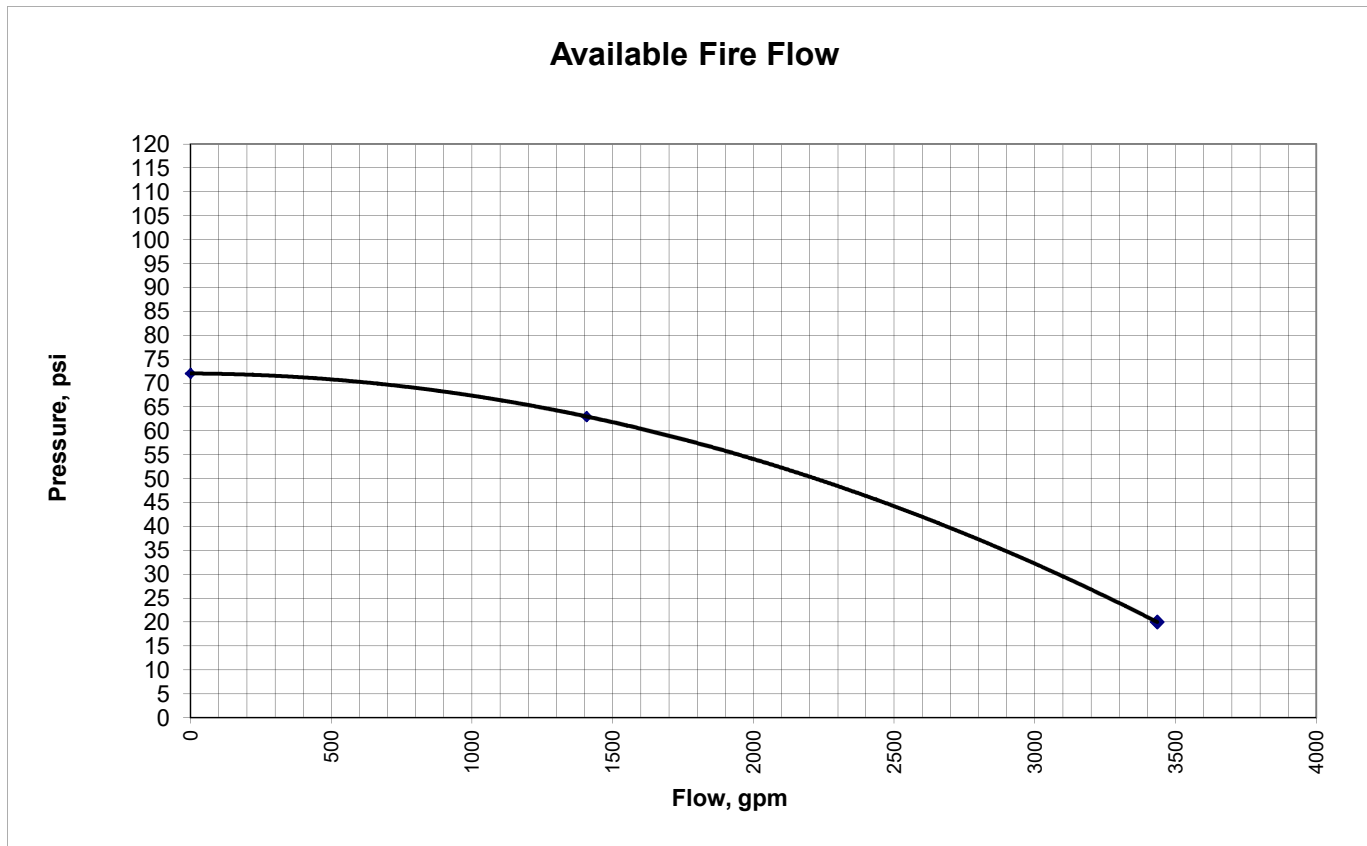
Flow Test Location
Date of Flow Test

Pressure Hydrant

Static Pressure (psi) 72.0
 Residual Pressure (psi) 63.0
 Calculated Flow at 20 psi 3435 gpm

Flow Hydrant

Flow (gpm) 1407
 Calculated Flow at 20 psi



Discharge (gpm)	Pressure (psi)	Head (ft)
0	72	166.2
1407	63	145.5
3435	20	46.2

Notes

1. Values provided from a flow test by Arizona Fire Flow Testing LLC.

FlexTable: Pipe Table

Active Scenario: Calibration - Static

Label	Diameter (in)	Material	Start Node	Stop Node	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)
P-1	8.0	Ductile Iron	FH-TEST	J-DOM	130.0	0	0.00
P-2	8.0	Ductile Iron	J-DOM	FH-FLOW	130.0	0	0.00
P-4	8.0	Ductile Iron	J-FIRE	J-1	130.0	0	0.00
P-5	12.0	PVC	J-1	J-2	150.0	0	0.00
P-6	12.0	Asbestos Cement	J-2	FH-TEST	140.0	0	0.00
P-PMP	48.0	Ductile Iron	PMP-1	FH-TEST	130.0	0	0.00
P-RES	48.0	Ductile Iron	RES-1	PMP-1	130.0	0	0.00

FlexTable: Junction Table

Active Scenario: Calibration - Static

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
FH-FLOW	1,458.50	0	1,629.20	74
FH-TEST	1,463.00	0	1,629.20	72
J-1	1,460.00	0	1,629.20	73
J-2	1,460.00	0	1,629.20	73
J-DOM	1,462.00	0	1,629.20	72
J-FIRE	1,459.00	0	1,629.20	74

FlexTable: Pipe Table

Active Scenario: Calibration - Flow

Label	Diameter (in)	Material	Start Node	Stop Node	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)
P-1	8.0	Ductile Iron	FH-TEST	J-DOM	130.0	1,407	8.98
P-2	8.0	Ductile Iron	J-DOM	FH-FLOW	130.0	1,407	8.98
P-4	8.0	Ductile Iron	J-FIRE	J-1	130.0	0	0.00
P-5	12.0	PVC	J-1	J-2	150.0	0	0.00
P-6	12.0	Asbestos Cement	J-2	FH-TEST	140.0	0	0.00
P-PMP	48.0	Ductile Iron	PMP-1	FH-TEST	130.0	1,407	0.25
P-RES	48.0	Ductile Iron	RES-1	PMP-1	130.0	1,407	0.25

FlexTable: Junction Table
Active Scenario: Calibration - Flow

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
FH-FLOW	1,458.50	1,407	1,595.03	59
FH-TEST	1,463.00	0	1,608.50	63
J-1	1,460.00	0	1,608.50	64
J-2	1,460.00	0	1,608.50	64
J-DOM	1,462.00	0	1,604.34	62
J-FIRE	1,459.00	0	1,608.50	65

FlexTable: Pipe Table

Active Scenario: Calibration - Max

Label	Diameter (in)	Material	Start Node	Stop Node	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)
P-1	8.0	Ductile Iron	FH-TEST	J-DOM	130.0	3,435	21.92
P-2	8.0	Ductile Iron	J-DOM	FH-FLOW	130.0	3,435	21.92
P-4	8.0	Ductile Iron	J-FIRE	J-1	130.0	0	0.00
P-5	12.0	PVC	J-1	J-2	150.0	0	0.00
P-6	12.0	Asbestos Cement	J-2	FH-TEST	140.0	0	0.00
P-PMP	48.0	Ductile Iron	PMP-1	FH-TEST	130.0	3,435	0.61
P-RES	48.0	Ductile Iron	RES-1	PMP-1	130.0	3,435	0.61

FlexTable: Junction Table
Active Scenario: Calibration - Max

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
FH-FLOW	1,458.50	3,435	1,438.84	-9
FH-TEST	1,463.00	0	1,509.20	20
J-1	1,460.00	0	1,509.20	21
J-2	1,460.00	0	1,509.20	21
J-DOM	1,462.00	0	1,487.47	11
J-FIRE	1,459.00	0	1,509.20	22

FlexTable: Pipe Table
Active Scenario: Average Day Demand

Label	Diameter (in)	Material	Start Node	Stop Node	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)
P-1	8.0	Ductile Iron	FH-TEST	J-DOM	130.0	40	0.26
P-2	8.0	Ductile Iron	J-DOM	FH-FLOW	130.0	-11	0.07
P-3	8.0	Ductile Iron	FH-FLOW	J-FIRE	130.0	-11	0.07
P-4	8.0	Ductile Iron	J-FIRE	J-1	130.0	-11	0.07
P-5	12.0	PVC	J-1	J-2	150.0	-11	0.03
P-6	12.0	Asbestos Cement	J-2	FH-TEST	140.0	-11	0.03
P-PMP	48.0	Ductile Iron	PMP-1	FH-TEST	130.0	51	0.01
P-RES	48.0	Ductile Iron	RES-1	PMP-1	130.0	51	0.01

FlexTable: Junction Table
Active Scenario: Average Day Demand

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
FH-FLOW	1,458.50	0	1,629.16	74
FH-TEST	1,463.00	0	1,629.17	72
J-1	1,460.00	0	1,629.17	73
J-2	1,460.00	0	1,629.17	73
J-DOM	1,462.00	51	1,629.16	72
J-FIRE	1,459.00	0	1,629.17	74

FlexTable: Pipe Table
Active Scenario: Peak Hour

Label	Diameter (in)	Material	Start Node	Stop Node	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)
P-1	8.0	Ductile Iron	FH-TEST	J-DOM	130.0	141	0.90
P-2	8.0	Ductile Iron	J-DOM	FH-FLOW	130.0	-39	0.25
P-3	8.0	Ductile Iron	FH-FLOW	J-FIRE	130.0	-39	0.25
P-4	8.0	Ductile Iron	J-FIRE	J-1	130.0	-39	0.25
P-5	12.0	PVC	J-1	J-2	150.0	-39	0.11
P-6	12.0	Asbestos Cement	J-2	FH-TEST	140.0	-39	0.11
P-PMP	48.0	Ductile Iron	PMP-1	FH-TEST	130.0	180	0.03
P-RES	48.0	Ductile Iron	RES-1	PMP-1	130.0	180	0.03

FlexTable: Junction Table
Active Scenario: Peak Hour

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
FH-FLOW	1,458.50	0	1,628.79	74
FH-TEST	1,463.00	0	1,628.84	72
J-1	1,460.00	0	1,628.83	73
J-2	1,460.00	0	1,628.84	73
J-DOM	1,462.00	180	1,628.78	72
J-FIRE	1,459.00	0	1,628.79	73

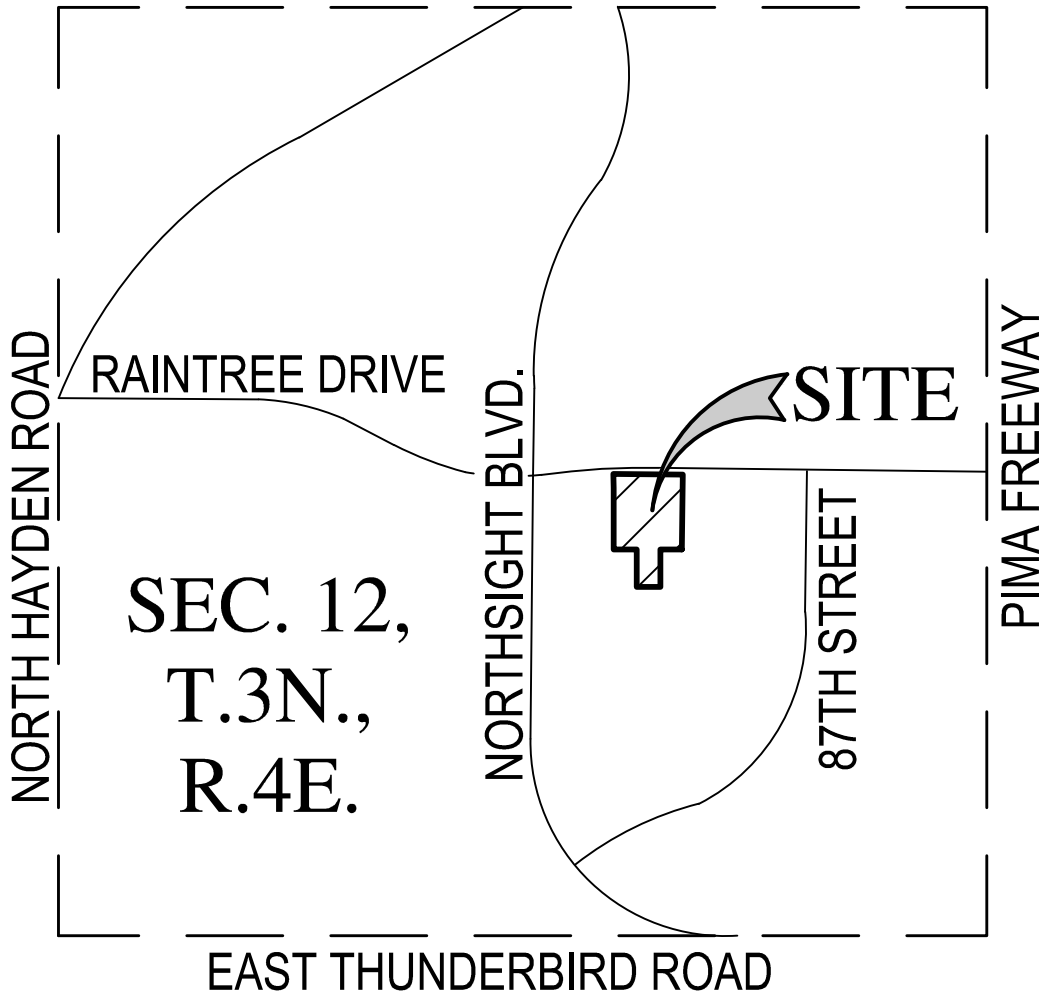
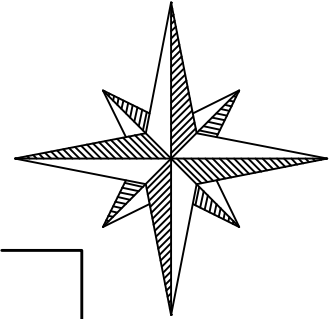
Fire Flow Node FlexTable: Fire Flow Report

Active Scenario: Fire Flow + Max Day

Label	Elevation (ft)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Pressure (Residual Lower Limit) (psi)	Pressure (Calculated Residual) (psi)	Hydraulic Grade (ft)
FH-FLOW	1,458.50	1,500	2,719	30	30	1,629.06
FH-TEST	1,463.00	1,500	2,978	30	30	1,629.08
J-1	1,460.00	1,500	2,828	30	30	1,629.08
J-2	1,460.00	1,500	2,895	30	30	1,629.08
J-DOM	1,462.00	1,603	2,927	30	30	1,629.06
J-FIRE	1,459.00	1,500	2,704	30	30	1,629.06

VICINITY MAP

N



**NOT
FOR
CONSTRUCTION
OR RECORDING**



RAINTREE PHASE III

VICINITY MAP

DATE	12-04-2019	SCALE	N/A	SHEET	01 OF 01
JOB NO.	195063	DESIGN	TB	CHECK	TB
		DRAWN	AF	RFI #	N/A

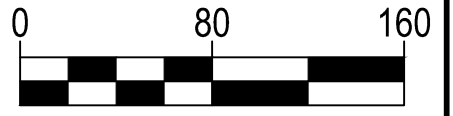
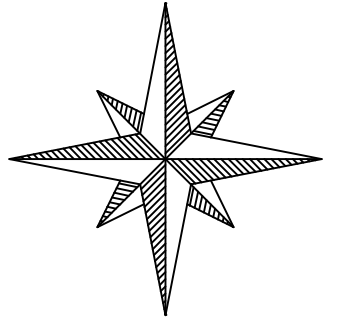
WATER SYSTEM EXHIBIT

PIPE DIAMETER EXISTING

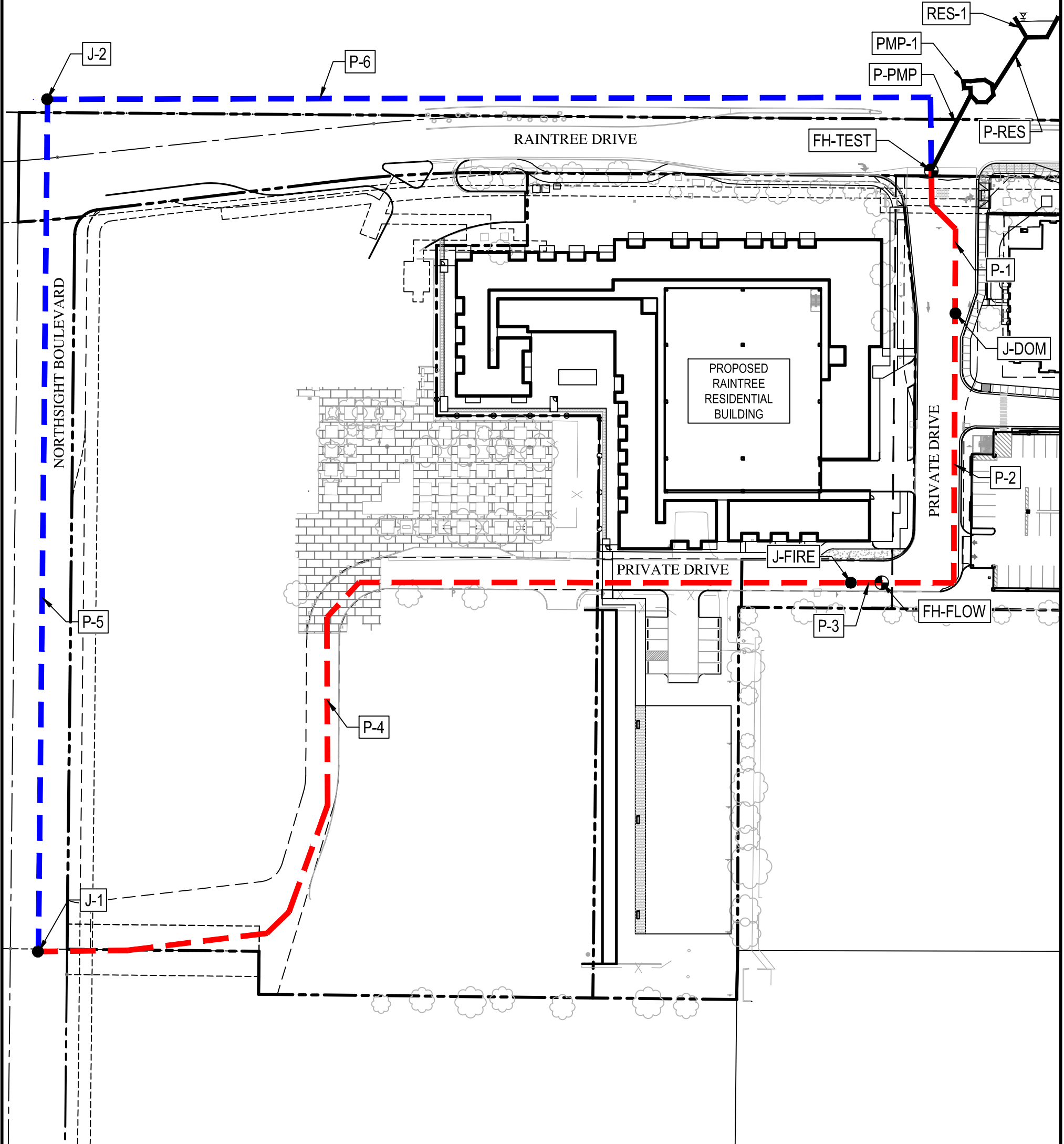
8-INCHES ----

12-INCHES ----

N



Horz. 1 in. = 80 ft.



**NOT
FOR
CONSTRUCTION
OR RECORDING**



RAINTREEE PHASE III

WATER EXHIBIT

DATE	12-04-19	SCALE	1" = 80'	SHEET	01 OF 01
JOB NO.	195063	DESIGN	TB	DRAWN	AF

FIRE FLOW TEST RESULTS

Arizona Flow Testing LLC

HYDRANT FLOW TEST REPORT

Project Name:	Raintree Phase 3 Residential Building
Project Address:	87 th Street and Raintree Drive, Scottsdale, Arizona 85260
Arizona Flow Testing Project No.:	19414
Client Project No.:	Not Provided
Flow Test Permit No.:	C60265
Date and time flow test conducted:	November 8, 2019 at 8:00 AM
Data is current and reliable until:	May 8, 2020
Conducted by:	Floyd Vaughan – Arizona Flow Testing, LLC (480-250-8154)
Witnessed by:	Jared Berry – City of Scottsdale-Inspector (602-541-4942)

Raw Test Data

Static Pressure: **82.0 PSI**
(Measured in pounds per square inch)

Residual Pressure: **73.0 PSI**
(Measured in pounds per square inch)

Pitot Pressure: **14.0 PSI**
(Measured in pounds per square inch)

Diffuser Orifice Diameter: 4- Inch Hose Monster
(Measured in inches)

Coefficient of Diffuser: .7875

Flowing GPM: **1,407 GPM**
(Measured in gallons per minute)

GPM @ 20 PSI: **3,989 GPM**

Data with 10 PSI Safety Factor

Static Pressure: **72.0 PSI**
(Measured in pounds per square inch)

Residual Pressure: **63.0 PSI**
(Measured in pounds per square inch)

Distance between hydrants: Approx. 330 Feet

Main size: Not Provided

Flowing GPM: **1,407 GPM**

GPM @ 20 PSI: **3,627 GPM**

Scottsdale requires a maximum Static Pressure of 72 PSI for AFES Design.

Flow Test Location

+





**WASTEWATER COLLECTION SYSTEM
BASIS OF DESIGN REPORT
FOR
RAINTREE PHASE III RESIDENTIAL BUILDING**

December 4, 2019
WP# 195063

**FINAL Basis of Design
Report**

- APPROVED**
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- 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

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Senior Water Resources Engineer
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Re: **Raintree Phase III Residential Building**
Wastewater Collection System Basis of Design Report
WP# 195063

Mr. Dillion:

This Wastewater Collection System Basis of Design Report is prepared for Trammell Crow Company and submitted to the City of Scottsdale in support of the application for a minor General Plan Amendment and rezoning of the property located in the southeast quadrant of Raintree Drive and north Northsight Boulevard.

Phase I consists of the existing office building and improvements on the west side of the property. Phase II consists of an approved office building, parking garage and related improvements to be constructed on the east side of the property.

The proposed Raintree Phase III Residential Building (Site) is a 3.12-acre site, located at the southeast corner of north Northsight Boulevard and east Raintree Drive. More specifically, the Site is located in the southwest quarter of Section 12, Township 3 North, Range 4 East of the Gila and Salt River Meridian. Refer to the *Vicinity Map* at the back of this report for project location. The Raintree Phase III Residential Building is a proposed 5-story, 190-room residential building with 5.5-story parking garage. The project is planned to be constructed with associated paving, utility, hardscape, and landscape improvements.

Wastewater flowing from the proposed Site will discharge to an existing 8-inch stub into the 8-inch public sewer line located in the Site's private drive. The 8-inch public sewer line then discharges into the existing public 8-inch VCP sewer line in Raintree Drive. Refer to the attached *Wastewater Exhibit* for a depiction of the existing sewer infrastructure surrounding the Site.

The design criteria used to estimate wastewater flows and evaluate system hydraulics are based on Wood, Patel & Associates, Inc.'s (WOODPATEL) understanding of the requirements listed in the *City of Scottsdale Design Standards and Policies Manual*, 2018. The following is a summary of the primary design criteria utilized:

- Average Day Wastewater flows, High Density Condominium: 140 gpd/unit
- Peaking Factor, High Density Condominium: 4.5
- Minimum Mean Full Flow Velocity:2.50 fps
- Minimum Peak Full Flow Velocity: 10.0 fps
- Minimum Peak Flow d/D Ratio (12-inch diameter or less sewers):d/D = 0.65
- Minimum Peak Full Flow Velocity:10.0 fps
- Minimum Peak Flow d/D Ratio (12-inch diameter or less sewers):d/D = 0.65

Abbreviations: gpd = gallons per day; fps = feet per second

Based on the above design criteria, the projected average day flow for the proposed project is approximately 26,600 gallons per day (gpd). The peak flow is projected to be 119,700 gpd. The proposed sewer slopes, projected flow velocities, and pipe flow capacities are summarized on the attached spreadsheets.

It is assumed the infiltration and inflow from wet weather has been accounted for in the published design flow rates for the development and the maximum d/D. Therefore, those flows have not been added into the calculations. The proposed sanitary sewer collection system is designed to have adequate capacity to serve the proposed development.

Thank you for your review of the Wastewater Collection System Basis of Design Report provided for the Raintree Phase III Residential Building. Feel free to contact me if you have any questions.

Sincerely,

Wood, Patel & Associates, Inc.



EXPIRES 03-31-22

Anthony J. Beuché, PE
Project Manager

Attachments: Wastewater Design Flows & Flowmaster Results
 Vicinity Map
 Wastewater Exhibit

AJB/se

Y:\WP\Reports\Commercial\195063 Raintree Phase III Residential Building Wastewater BOD.docx

WASTEWATER DESIGN FLOWS & FLOWMASTER RESULTS

TABLE 1
WASTEWATER MODEL, FULL BUILD-OUT CONDITION

Project Raintree Phase III
Location Scottsdale AZ
Project Number 15063
Project Engineer Tony Beuche
References City of Scottsdale Design Standards and Policies Manual
 Arizona Administrative Code, Title 18, Chapter 9

FROM NODE	TO NODE	Multi-Family Residential (DU)	DEMAND VALUE (gpd/DU)	SEWER NODE ADD (gpd)	TOTAL ADD (gpd)	POPULATION	PEAKING FACTOR	PEAK FLOW (gpd)	PEAK FLOW (gpm)
Outfall 1 Priavte Drive									
1	2	190	140	26,600	26,600	266.0	4.5	119,700	83
Total Outfall 1		190		26,600	26,600	266.0	4.5	119,700	83
Total Proposed Flow		190		26,600	26,600	266	4.5	119,700	83

8-Inch at Peak Flow

Project Description

Friction Method Manning Formula
Solve For Normal Depth

Input Data

Roughness Coefficient 0.013
Channel Slope 0.08000 ft/ft
Diameter 8.00 in
Discharge 119700.00 gal/day

Results

Normal Depth 1.27 in
Flow Area 0.04 ft²
Wetted Perimeter 0.55 ft
Hydraulic Radius 0.78 in
Top Width 0.49 ft
Critical Depth 0.20 ft
Percent Full 15.8 %
Critical Slope 0.00641 ft/ft
Velocity 5.23 ft/s
Velocity Head 0.42 ft
Specific Energy 0.53 ft
Froude Number 3.41
Maximum Discharge 3.68 ft³/s
Discharge Full 3.42 ft³/s
Slope Full 0.00023 ft/ft
Flow Type SuperCritical

GVF Input Data

Downstream Depth 0.00 in
Length 0.00 ft
Number Of Steps 0

GVF Output Data

Upstream Depth 0.00 in
Profile Description
Profile Headloss 0.00 ft
Average End Depth Over Rise 0.00 %
Normal Depth Over Rise 15.81 %
Downstream Velocity Infinity ft/s

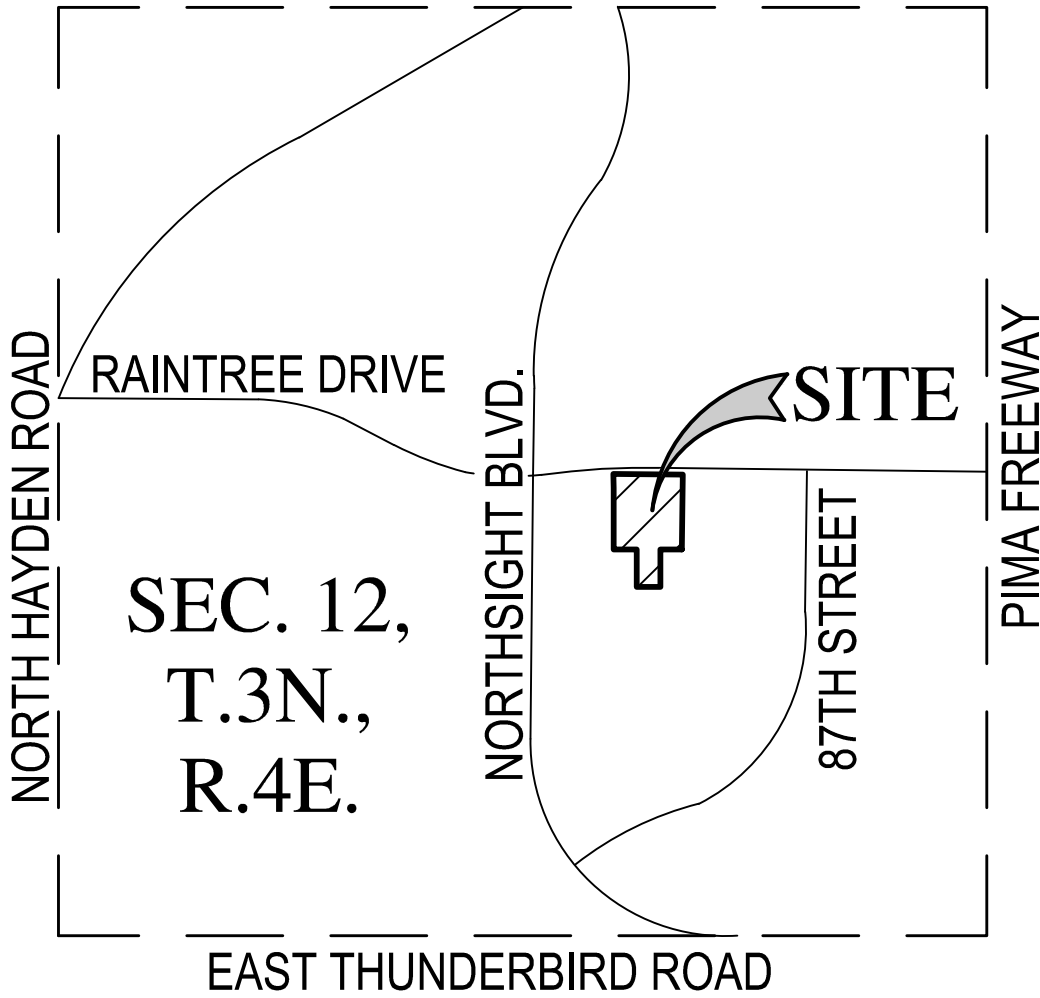
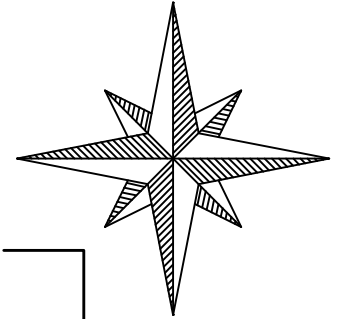
8-Inch at Peak Flow

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.27	in
Critical Depth	0.20	ft
Channel Slope	0.08000	ft/ft
Critical Slope	0.00641	ft/ft

VICINITY MAP

N



**NOT
FOR
CONSTRUCTION
OR RECORDING**

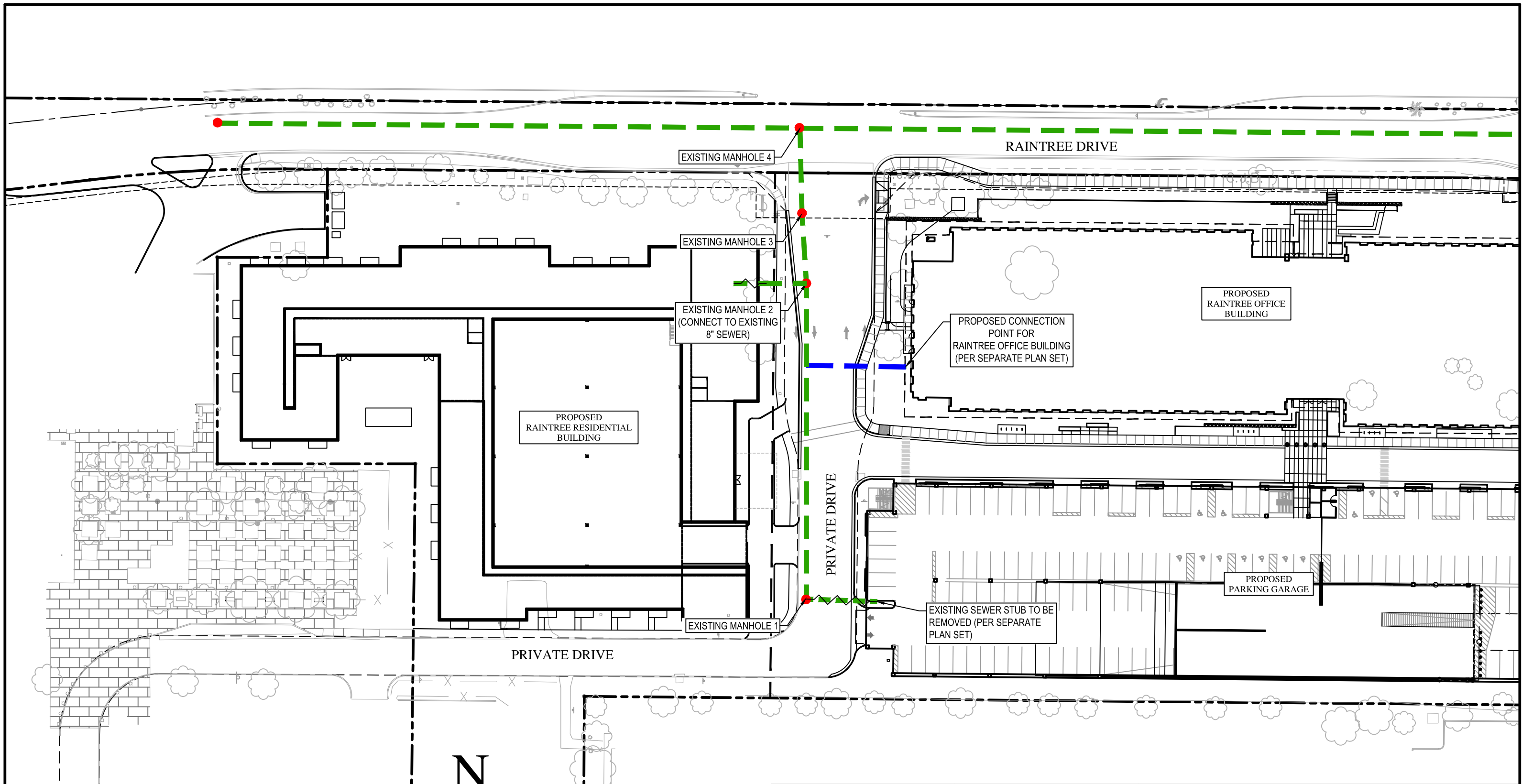


RAINTREE PHASE III

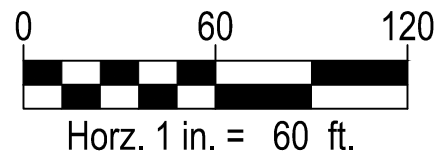
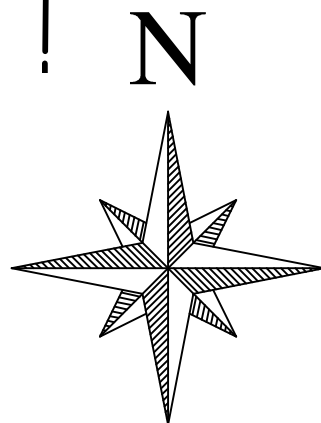
VICINITY MAP

DATE	12-04-2019	SCALE	N/A	SHEET	01 OF 01
JOB NO.	195063	DESIGN	TB	CHECK	TB
		DRAWN	AF	RFI #	N/A

WASTEWATER EXHIBIT



PIPE DIAMETER	EXISTING	PLANNED
6-INCHES		
8-INCHES		
12-INCHES		
MANHOLE		
CLEANOUT		



**NOT
FOR
CONSTRUCTION
OR RECORDING**



RAINTREE PHASE III

WASTEWATER EXHIBIT

DATE	12-04-2019	SCALE	1" = 60'	SHEET	01 OF 01
JOB NO.	195063	DESIGN	TB	CHECK	TB
		DRAWN	AF	RFI #	N/A