FINAL (AS NOTED)

PRELIMINARY WATER BASIS OF DESIGN REPORT

Hyatt Pima Renovation

7330 North Pima Road
Scottsdale, Arizona

APPROVED AS FINAL
Accepted For: AS NOTED
City of Scottsdale
Water Resources Department
9379 E. San Salvador
Scottsdale, Arizona
By: L DILLON
Date: 8-8-17

Prepared for:

Zenith Asset Company, LLC
1855 Olympic Boulevard, Suite 300
Walnut Creek, CA 94596

Prepared by:

Kimley-Horn and Associates
291010001
June 2017

Kimley»Horn

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HYATT PIMA RENOVATION

7330 N. PIMA ROAD

SCOTTSDALE, ARIZONA

JUNE 2017

Prepared By:

Kimley»Horn

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INTRODUCTION

SITE LOCATION

This Preliminary Water Basis of Design Report (WaterBOD) has been prepared for the proposed Hyatt Pima Renovation located at 7330 N. Pima Road in Scottsdale, Arizona (development). The development is bound to the west and south by private townhomes and private drive known as Inner Circle Drive, an existing private condominium complex to the north, and Pima Road to the east. The development is located within Section 1 of Township 2 North, Range 4 East of the Gila and Salt River Base and Meridian, Maricopa County, Arizona. Refer to **Figure 1** for the Vicinity Map.

PROJECT SIZE AND TYPE

The development is a proposed three-story, 100 room hotel renovation project, including parking lot and open space improvements. The development is approximately 7.93 gross acres with a net proposed disturbance of 3.56 acres.

PURPOSE AND OBJECTIVES

This report presents the basis of design criteria that will be used for engineering design of the proposed development. This report establishes a preliminary water service plan for the development of the site.

- Demonstrate compliance with the City's Design Standards & Polices Manual (DSPM).
- Identify a preliminary water system layout for the proposed development.
- Determination of the water demand generated by the development.
- Modeling and Analysis of the existing and proposed water system, including Fire service.

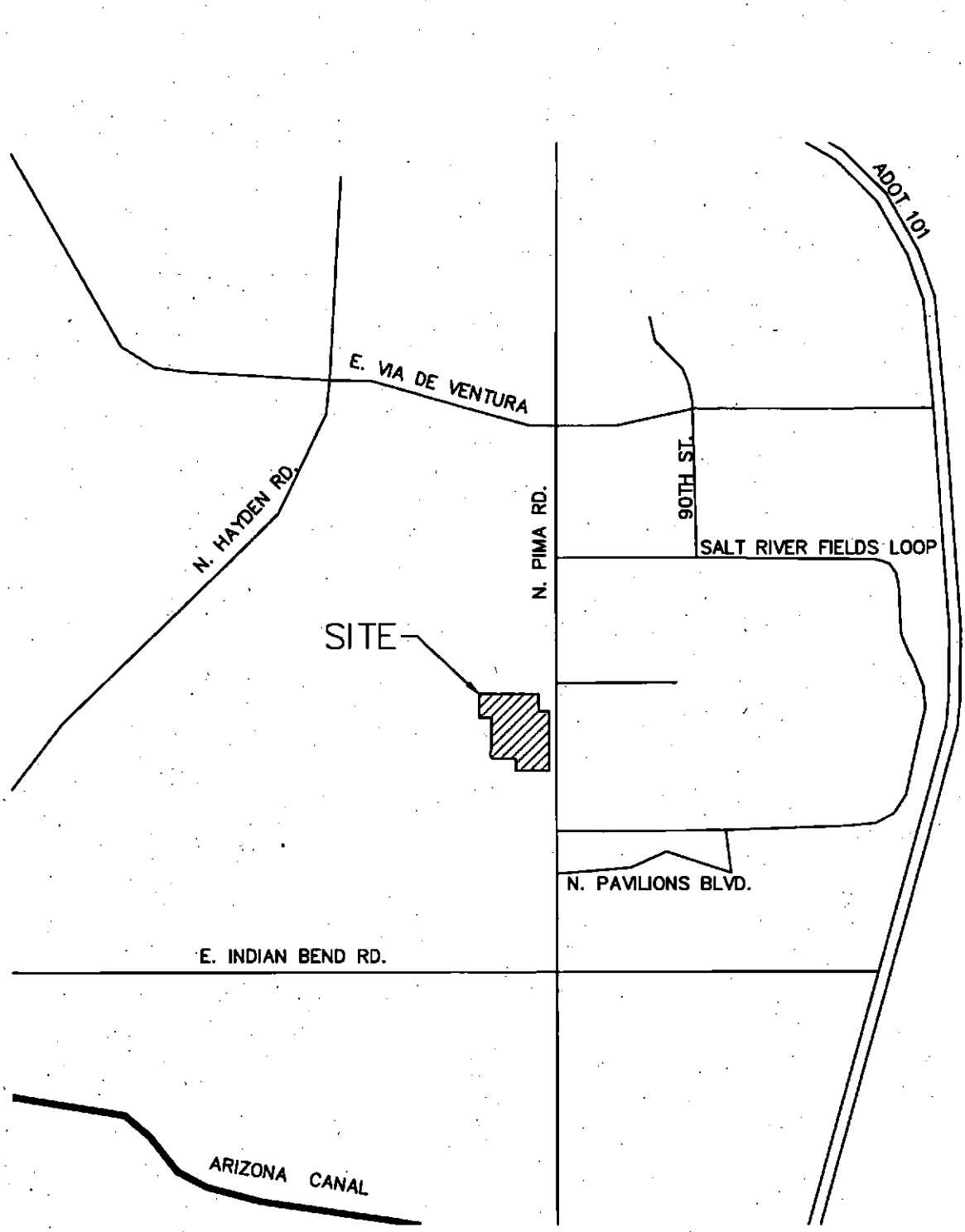


FIGURE 1
VICINITY MAP

Kimley»Horn

K:\EAV_Civil\291010001 - Days Inn Scottsdale\Drainage\Figures\Figure 1 Vicinity Map.dwg Apr 27, 2017 Trey.Farrell

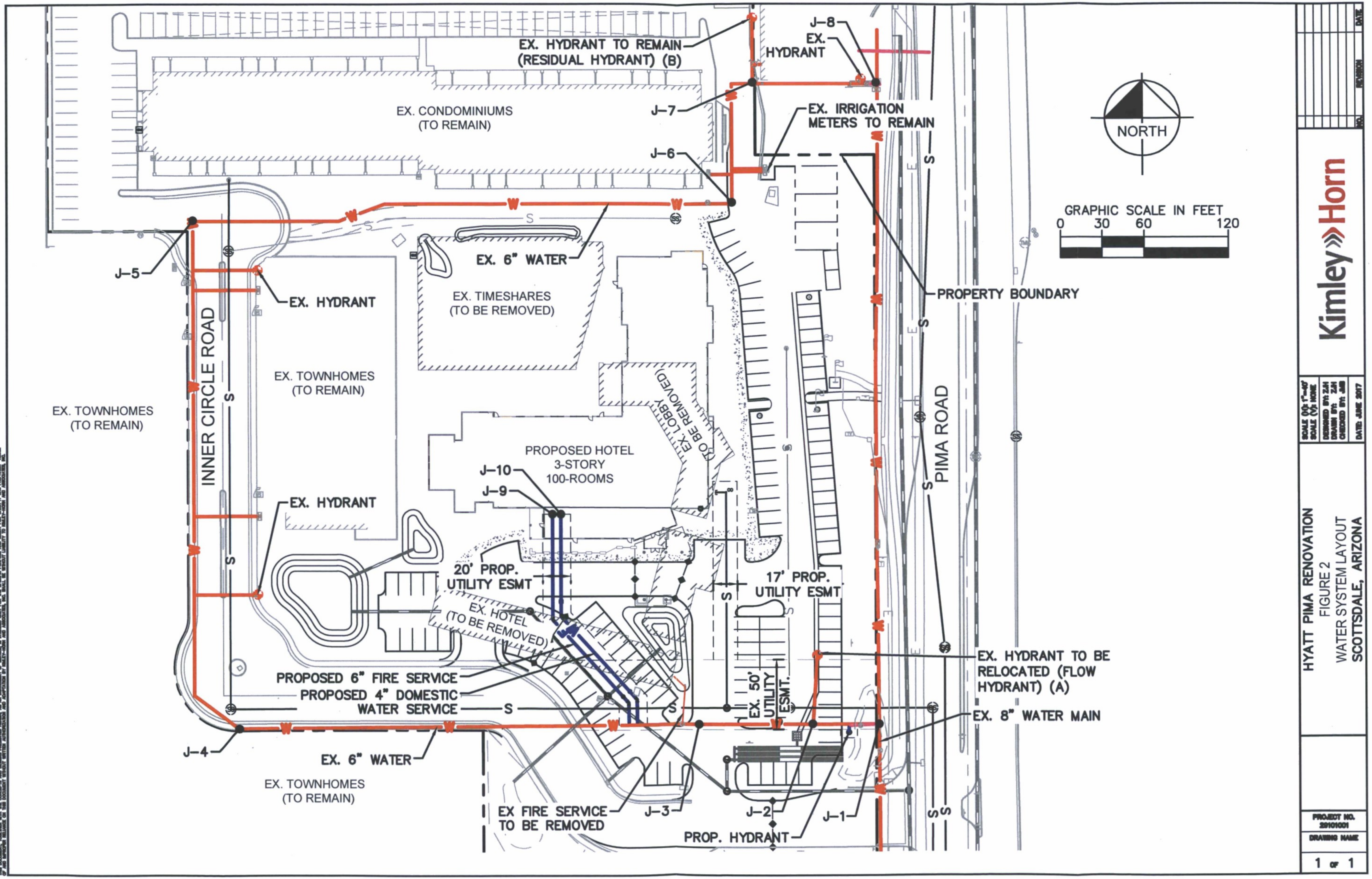
COLLECTION SYSTEM DESCRIPTION

EXISTING COLLECTION SYSTEM

The development consists of existing condominiums, a Days Inn Hotel & Timeshare, private townhomes, a private access drive known as Inner Circle Drive, and a parking lot along the north and east end of the development. Per the City of Scottsdale Quarter Section map 23-48 there is a 6-inch ACP waterline that loops through Inner Circle Road and easement south of the existing condominiums. The 6-inch waterline connects at two locations to an existing 8-inch ACP waterline in Pima Road. There are 4 existing fire hydrants located on site. The existing hotel and timeshare buildings are served from a 2-inch water meter.

PROPOSED COLLECTION SYSTEM

The proposed development will include demolition of the existing Days Inn Hotel, Lobby, and Timeshare buildings. A new 3-story 100-room hotel is proposed on the site. The new hotel will be served by a separate domestic and fire service, which will connect to the 6-inch waterline to the south of the building. The existing 2-inch meter will be replaced with a new 3-inch meter on a 4-inch service line. The domestic service line and meter are sized from a fixture analysis flow rate per IPC2015, based on a proposed water fixture count of 873. This fixture count include ancillary uses for the pool and additional hose bibs anticipated on the property. Refer to **Appendix C** for the building fixture count sheet. The fire service line will be a 6-inch line. The existing irrigation meters near the north end of the parking lot will remain to serve the site. Three of the existing hydrants will remain in place, to serve the site. The fourth hydrant, located at the southeast corner of the site will be relocated with the proposed parking lot reconfiguration. Refer to **Figure 2** for the proposed water layout.


EX. HYDRANT TO REMAIN (RESIDUAL HYDRANT) (B)
J-8
EX. HYDRANT
J-7
EX. IRRIGATION METERS TO REMAIN
J-6
EX. CONDOMINIUMS (TO REMAIN)
NORTH
GRAPHIC SCALE IN FEET
0 30 60 120
J-5
EX. HYDRANT
EX. 6" WATER
EX. TIMESHARES (TO BE REMOVED)
PROPERTY BOUNDARY
INNER CIRCLE ROAD
EX. TOWNHOMES (TO REMAIN)
EX. TOWNHOMES (TO REMAIN)
EX. LOBBY (TO BE REMOVED)
PIMA ROAD
PROPOSED HOTEL 3-STORY 100-ROOMS
J-10
J-9
EX. HYDRANT
20' PROP. UTILITY ESMT
17' PROP. UTILITY ESMT
EX. HOTEL (TO BE REMOVED)
EX. HYDRANT TO BE RELOCATED (FLOW HYDRANT) (A)
PROPOSED 6" FIRE SERVICE
PROPOSED 4" DOMESTIC WATER SERVICE
EX. 50' UTILITY ESMT.
EX. 8" WATER MAIN
J-4
EX. 6" WATER
EX. TOWNHOMES (TO REMAIN)
EX FIRE SERVICE TO BE REMOVED
J-3
J-2
J-1
PROP. HYDRANT
Kimley»Horn
HYATT PIMA RENOVATION
FIGURE 2
WATER SYSTEM LAYOUT
SCOTTSDALE, ARIZONA
DATE: JUNE 2017
PROJECT NO. 29101001
1 OF 1

DESIGN CRITERIA

The design criteria for the development is based on the City of Scottsdale Design Standards and Policies Manual (DS&PM) and IPC2015. Average daily demands for the various building uses and peaking factors were used to determine the existing and proposed peak flows generated on site. See **Table 1** below for a summary of the design criteria used.

Table 1. Water Design Criteria

TABLE 1 WATER DESIGN CRITERIA		
Water Demands		
Land Use	**Average Daily Flow (gpd)**	
Townhome (3-7.9 DU/ac)	248.2	per unit
Condominium	185.3	per unit
Resort Hotel & Timeshare	446.3	per room
Water Design Criteria		
Peaking Factors		
Maximum Day		2.0
Peak Hour		3.5
Fire Flow		
New Hotel	1688	GPM
Pressure Requirements		
Residual @ Highest Finished Floor Elevation	50	Min PSI
System Static Pressure	120	Max PSI
Fire Flow @ Hydrant Tee or Riser	30	Min PSI

Per IFC Table B105.1, the proposed 60,000 Sq. Ft. Type V-B building requires a fire flow 6,750. A 75% reduction is applied for automatic sprinkler system, for a final requirement of 1688 GPM.

No change from previous assume verified w/ COS fire

A fixture count analysis per IPC2015 was performed to determine the peak demand of the proposed hotel. This peak demand of 190 GPM is used as the peak hour demand in the water analysis. Refer to **Appendix C** for the fixture count sheet.

The existing site, consisting of the condos, townhomes, and the hotel & timeshares generate a peak water demand of approximately 117,000 gpd or 81 gpm. The proposed site, which consists of the existing condos and townhomes, as well as the proposed hotel, generate a peak demand of approximately 314,500 gpd or 218 gpm. See **Table 2** below for a summary of the existing and proposed flows generated on site.

Table 2. Water Demand Calculations

Use	Units/ Rooms (#)	Demand (gpd)	Average Daily Demand (gpd)	Max Day Demand (gpd)	Peak Hour Demand (gpd)	Peak Hour Demand (gpm)
Ex. Townhomes	17	248.2	4,219	8,439	14,768	10
Ex. Condo [1]	40	185.3	7,412	14,824	25,942	18
Ex. Hotel & Timeshare	49	446.3	21,869	43,737	76,540	53
Proposed Hotel	100	446.3	44,630	273,600 [3]	273,600	190 [3]
Existing Total			**33,500**		**117,250**	**81**
Proposed Total [2]			**56,261**		**314,310**	**218**

Notes:

(1): Existing Condominium Consists of 40 - 1,365 Sq. Ft Units, assumed 2 rooms each.

(2): Proposed Total includes Ex. Townhomes, Ex. Condo, and Proposed Hotel

(3): Proposed Max Day/Peak Hour Demand Per IPC2015, refer to Fixture Count Sheet in Appendix C.

WATER SYSTEM ANALYSIS

The WaterCAD v8i water system modeling software distributed by Haestad Methods, Inc. was used to model the proposed water network. A fire hydrant flow test was performed to determine the residual and static pressures of the existing network. The hydrant located in the northern end of the parking lot was the measured hydrant, while the hydrant at the southeast corner of the site was flowed. Refer to **Appendix A – Fire Hydrant Flow Test** Results.

The proposed water distribution system is modeled under four design scenarios. Average Day, Max Day, Peak Hour, and Max Day plus Fire Flow. Domestic demands based on the calculated demands from **Table 2** were placed on the corresponding WaterCAD design Nodes. See **Table 3** below for WaterCAD Junction Demands.

Table 3. WaterCAD Node Summary

WaterCAD Node	Use	Existing/Proposed Ground Elevation	WaterCAD Elevation	Average Day Demand (gpm)	Max Day Demand (gpm)	Peak Hour Demand (gpm)	Fire Flow Demand (gpm) [1]
J-1	-	1300.00	1300.00	0	0	0	1688
J-2	-	1299.60	1299.60	0	0	0	1688
J-3	-	1299.00	1299.00	0	0	0	1688
J-4	Ex. Townhomes	1299.00	1299.00	3	6	10	1688
J-5	-	1299.50	1299.50	0	0	0	1688
J-6	Ex. Condo	1301.20	1301.20	5	10	18	1688
J-7	-	1301.50	1301.50	0	0	0	1688

J-8		1301.80	1301.80	0	0	0	1688
J-9	Proposed Fire Service	1302.00	1302.00	0	0	0	1688
J-10	Proposed Domestic Service	1302.00	1349.00	31	190	190	N/A
			Total	**39**	**206**	**218**	

Notes:
(1): Fire Flow Demand per IFC Table B105.1, 75% reduction for fully sprinklered building.

Demands are placed at the highest finished floor of the proposed building. For the Average Day, Max Day and Peak hour, the minimum residual pressure is the system should be maintained between above 50 PSI at the highest finished floor and below 120 PSI in the system. For the Fire Flow scenario, the required fire flow is applied to all nodes independently, with the exception of the proposed domestic connection (J-10). In the Fire Flow scenario, the minimum residual pressure in the network should be maintained above 30 PSI at the hydrant or building riser elevation.

ANALYSIS RESULTS

Results from the water model indicated the proposed system is able to provide the required domestic and fire flows at or above the minimum required pressures. On-site water pressure in the three modeled scenarios is approximately 80 PSI at ground level. The resulting pressure at the highest finished flow of the proposed hotel is 67 PSI in the Peak Hour Scenario. The available Fire Flow in the Max Day is above 2,000 GPM at a residual pressure of 30 PSI at the fire hydrant or building rise elevation. **See Appendix B – WaterCAD Output** complete analysis results.

RESULT SHOULD BE 57 psi, you did not update J-10 ELEVATION FOR MODELING to ELEVATION 1349.00

Appendix A – Fire Hydrant Flow Test Results

ALLIANCE FIRE PROTECTION CO.

Phone: (480) 966-9178 Fax: (480) 967-9191
2114 East Cedar Street • Tempe, Arizona 85281
E-mail Address: afpc@afpc.com

AZ Lic. C-16 58130
AZ Lic. L-16 74007
NV Lic. C-41a 30135

FIRE HYDRANT FLOW TEST

Name: Kimley-Horn
Days Inn
Scottsdale Arizona

Date: 03/09/17
Time: 7:30 AM
Report #
Tech: R.Pfeiff

Static Hydrant: NEC of parking lot near Pima Road (A) Flowing Hydrant: South end of parking lot in island (B)

Elevation: 1302 Elevation: 1299
Dist. Between Hydrants: 125 Yards Type of Supply: CITY MAIN
Diameter of Main:

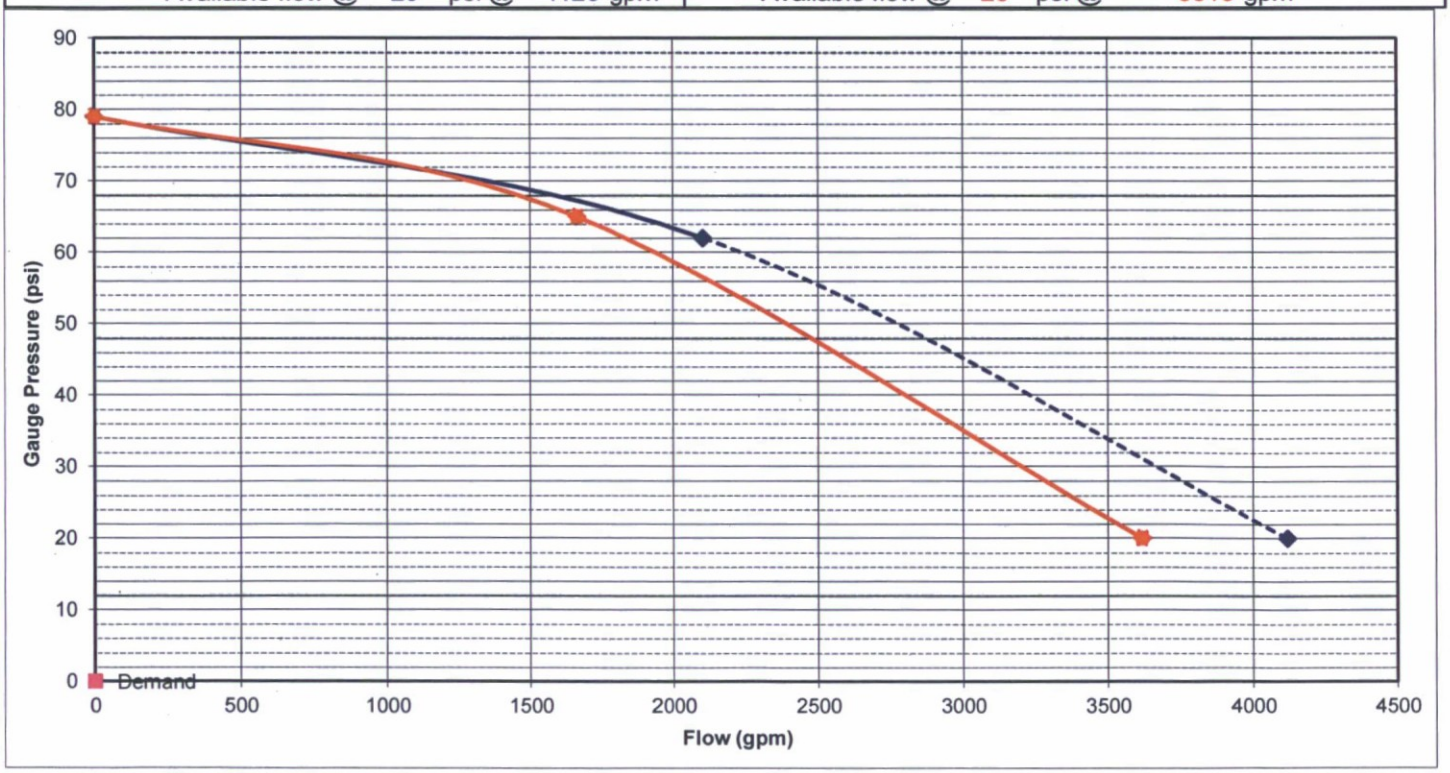
Static Pressure:	A	79.0	B	79.0
Residual Pressure:	A	62.0	B	65.0

No A, ok

Pump Present: NO
Tank Present: NO
Req. GPM: Req. PSI:

Hydrant:	A	A	B	B
Outlet Diameter:	4.0		4.0	
Pitot Reading:	24.0		15.0	
Coeff:	0.90		0.90	
Discharge GPM:	2104	0	1664	0

Flow A				Flow B			
Static pressure of	79	psi @	0 gpm	Static pressure of	79	psi @	0 gpm
Residual pressure of	62	psi @	2104 gpm	Residual pressure of	65	psi @	1664 gpm
Available flow @	20	psi @	4120 gpm	Available flow @	20	psi @	3618 gpm



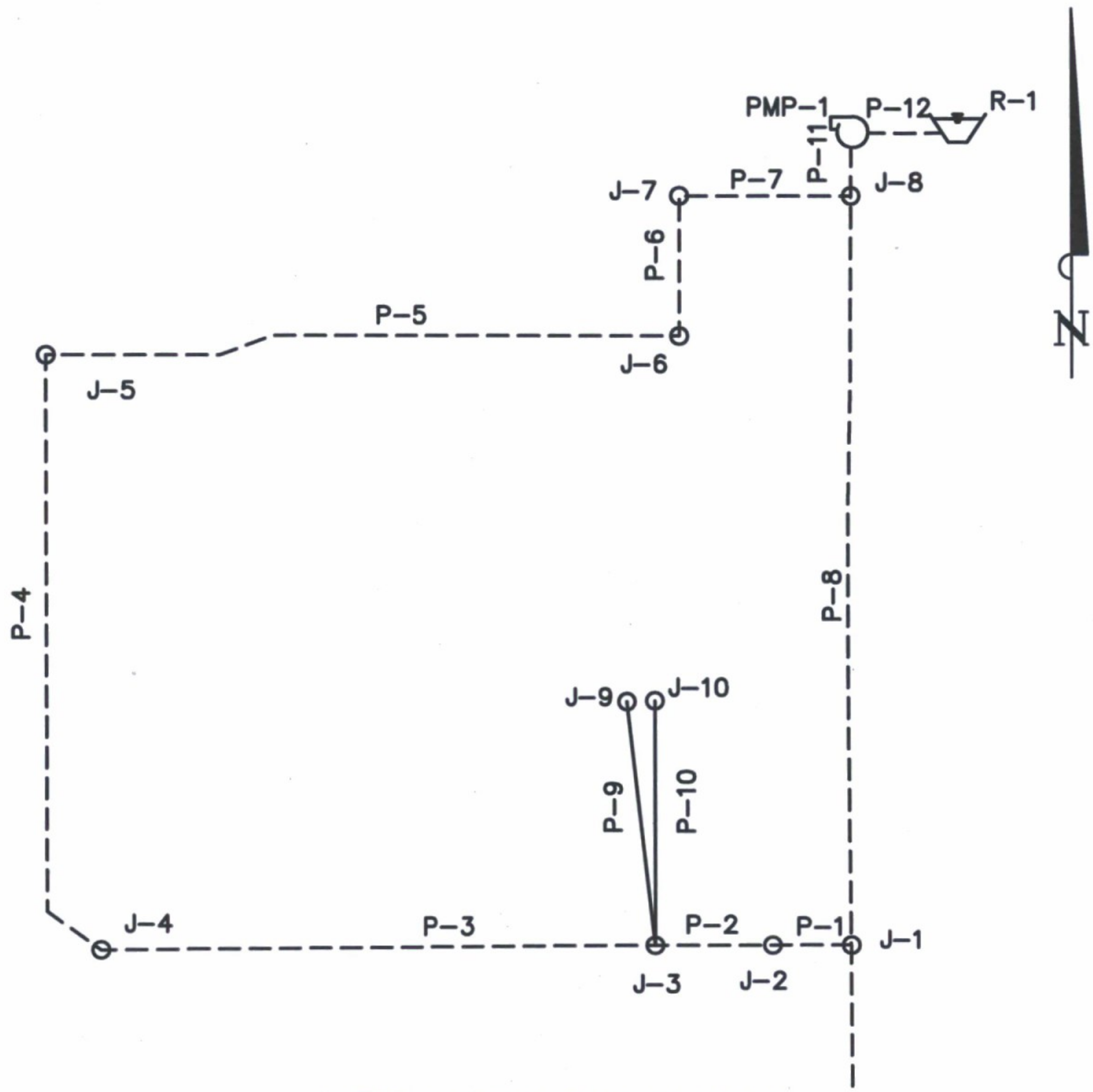
Comments:

NOTES:

1. Flowing hydrant is assumed to be on a circulating main or downstream of the pressure test hydrant on a dead-end system.
2. Flow analysis assumes a gravity flow system with no distribution pumps and having no demand, other than the test
3. The distance between hydrants, elevations & main diameters are for information only

Appendix B – WaterCAD Output

- *Network Diagram*
- *Pump Supply Rating Curve*
- *Average Day*
- *Max Day*
- *Peak Hour*
- *Max Day + Fire Flow*



NETWORK DIAGRAM

NTS

Kimley»Horn

Pump Definition Detailed Report: Pump Definition - 1

Active Scenario: Max Day Plus Fire Flow

Element Details			
ID	64	Notes	
Label	Pump Definition - 1		

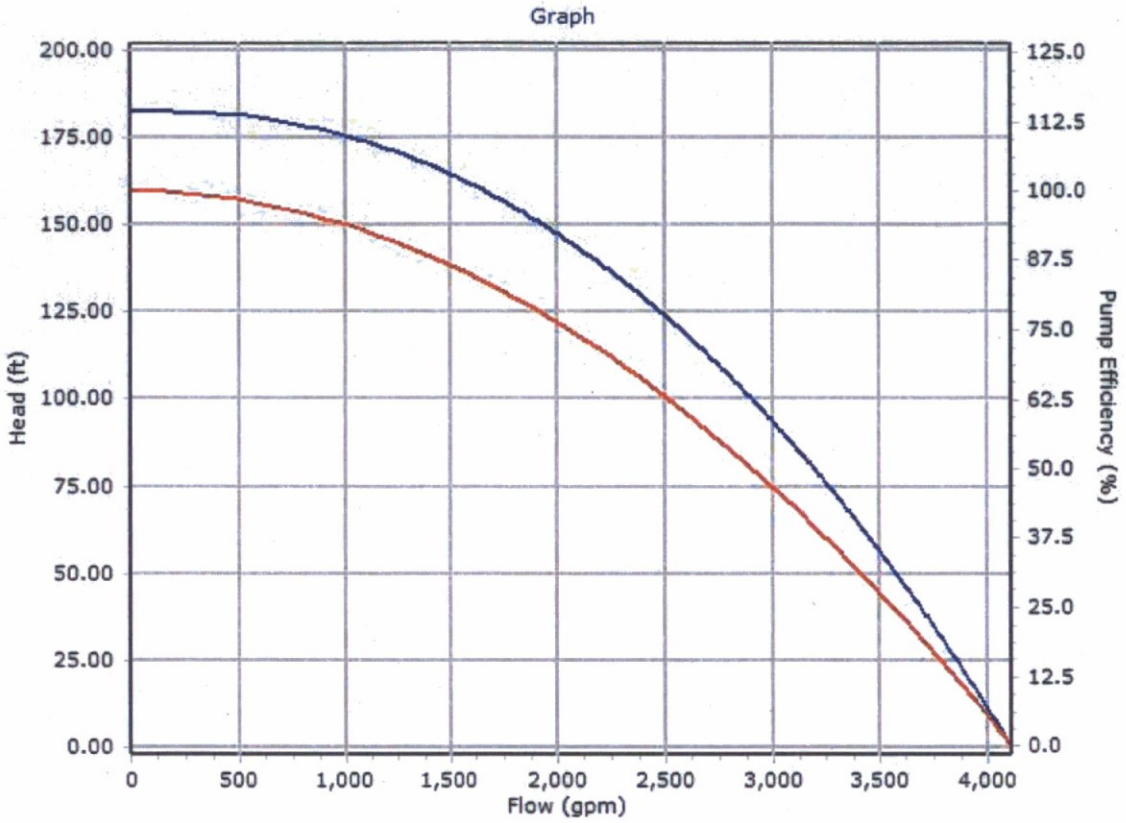
Pump Definition Type			
Pump Definition Type	Standard (3 Point)	Design Head	143.22 ft
Shutoff Flow	0 gpm	Maximum Operating Flow	3,618 gpm
Shutoff Head	183.00 ft	Maximum Operating Head	46.20 ft
Design Flow	2,104 gpm		

Pump Efficiency Type			
Pump Efficiency Type	Best Efficiency Point	Motor Efficiency	100.0 %
BEP Efficiency	100.0 %	Is Variable Speed Drive?	False
BEP Flow	0 gpm		

Transient (Physical)			
Inertia (Pump and Motor)	0.000 lb·ft²	Specific Speed	SI=25, US=1280
Speed (Full)	0 rpm	Reverse Spin Allowed?	True

Pump Definition Detailed Report: Pump Definition - 1

Active Scenario: Max Day Plus Fire Flow



FlexTable: Junction Table

Active Scenario: Average Day

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-1	1,300.00	0	1,484.99	80
J-2	1,299.60	0	1,484.98	80
J-3	1,299.00	0	1,484.98	80
J-4	1,299.00	3	1,484.98	80
J-5	1,299.50	0	1,484.98	80
J-6	1,301.20	5	1,484.99	80
J-7	1,301.50	0	1,484.99	79
J-8	1,301.80	0	1,485.00	79
J-9	1,302.00	0	1,484.98	79
J-10	1,326.00	31	1,484.86	69

1349

SEE pg 8

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FlexTable: Pipe Table

Active Scenario: Average Day

Label	Start Node	Stop Node	Length (ft)	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
P-1	J-1	J-2	47	6.0	130.0	24	0.27	0.000
P-2	J-2	J-3	93	6.0	130.0	24	0.27	0.000
P-3	J-3	J-4	349	6.0	130.0	-7	0.08	0.000
P-4	J-4	J-5	364	6.0	130.0	-10	0.11	0.000
P-5	J-5	J-6	412	6.0	130.0	-10	0.11	0.000
P-6	J-6	J-7	77	6.0	130.0	-15	0.17	0.000
P-7	J-7	J-8	87	6.0	130.0	-15	0.17	0.000
P-8	J-8	J-1	458	8.0	130.0	24	0.15	0.000
P-9	J-3	J-9	147	6.0	130.0	0	0.00	0.000
P-10	J-3	J-10	141	4.0	130.0	31	0.79	0.001
P-11	J-8	PMP-1	1	36.0	130.0	-39	0.01	0.000
P-12	PMP-1	R-1	1	36.0	130.0	-39	0.01	0.000

FlexTable: Pump Table

Active Scenario: Average Day

Label	Elevation (ft)	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Flow (Total) (gpm)	Flow (Design) (gpm)	Pump Head (ft)	Head (Design) (ft)
PMP-1	1,302.00	1,302.00	1,485.00	39	2,104	183.00	143.22

FlexTable: Junction Table

Active Scenario: Max Day

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-1	1,300.00	0	1,484.59	80
J-2	1,299.60	0	1,484.50	80
J-3	1,299.00	0	1,484.32	80
J-4	1,299.00	6	1,484.43	80
J-5	1,299.50	0	1,484.56	80
J-6	1,301.20	10	1,484.72	79
J-7	1,301.50	0	1,484.76	79
J-8	1,301.80	0	1,484.80	79
J-9	1,302.00	0	1,484.32	79
J-10	1,326.00	190	1,480.84	67

1349.00
SEE pg. 8

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FlexTable: Pipe Table

Active Scenario: Max Day

Label	Start Node	Stop Node	Length (ft)	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
P-1	J-1	J-2	47	6.0	130.0	138	1.57	0.002
P-2	J-2	J-3	93	6.0	130.0	138	1.57	0.002
P-3	J-3	J-4	349	6.0	130.0	-52	0.59	0.000
P-4	J-4	J-5	364	6.0	130.0	-58	0.65	0.000
P-5	J-5	J-6	412	6.0	130.0	-58	0.65	0.000
P-6	J-6	J-7	77	6.0	130.0	-68	0.77	0.001
P-7	J-7	J-8	87	6.0	130.0	-68	0.77	0.001
P-8	J-8	J-1	458	8.0	130.0	138	0.88	0.000
P-9	J-3	J-9	147	6.0	130.0	0	0.00	0.000
P-10	J-3	J-10	141	4.0	130.0	190	4.85	0.025
P-11	J-8	PMP-1	1	36.0	130.0	-206	0.06	0.000
P-12	PMP-1	R-1	1	36.0	130.0	-206	0.06	0.000

FlexTable: Pump Table

Active Scenario: Max Day

Label	Elevation (ft)	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Flow (Total) (gpm)	Flow (Design) (gpm)	Pump Head (ft)	Head (Design) (ft)
PMP-1	1,302.00	1,302.00	1,484.80	206	2,104	182.80	143.22

FlexTable: Junction Table

Active Scenario: Peak Hour

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-1	1,300.00	0	1,484.55	80
J-2	1,299.60	0	1,484.46	80
J-3	1,299.00	0	1,484.27	80
J-4	1,299.00	10	1,484.37	80
J-5	1,299.50	0	1,484.51	80
J-6	1,301.20	18	1,484.67	79
J-7	1,301.50	0	1,484.72	79
J-8	1,301.80	0	1,484.77	79
J-9	1,302.00	0	1,484.27	79
J-10	1,326.00	190	1,480.79	67

Ok ✓

57 psi

Should be 1349.00

see pg. 8

FlexTable: Pipe Table

Active Scenario: Peak Hour

Label	Start Node	Stop Node	Length (ft)	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
P-1	J-1	J-2	47	6.0	130.0	141	1.60	0.002
P-2	J-2	J-3	93	6.0	130.0	141	1.60	0.002
P-3	J-3	J-4	349	6.0	130.0	-49	0.55	0.000
P-4	J-4	J-5	364	6.0	130.0	-59	0.67	0.000
P-5	J-5	J-6	412	6.0	130.0	-59	0.67	0.000
P-6	J-6	J-7	77	6.0	130.0	-77	0.87	0.001
P-7	J-7	J-8	87	6.0	130.0	-77	0.87	0.001
P-8	J-8	J-1	458	8.0	130.0	141	0.90	0.000
P-9	J-3	J-9	147	6.0	130.0	0	0.00	0.000
P-10	J-3	J-10	141	4.0	130.0	190	4.85	0.025
P-11	J-8	PMP-1	1	36.0	130.0	-218	0.07	0.000
P-12	PMP-1	R-1	1	36.0	130.0	-218	0.07	0.000

FlexTable: Pump Table

Active Scenario: Peak Hour

Label	Elevation (ft)	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Flow (Total) (gpm)	Flow (Design) (gpm)	Pump Head (ft)	Head (Design) (ft)
PMP-1	1,302.00	1,302.00	1,484.77	218	2,104	182.77	143.22

Fire Flow Node FlexTable: Fire Flow Report

Active Scenario: Max Day Plus Fire Flow

Label	Elevation (ft)	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Pressure (Calculated Residual) (psi)	Pressure (System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)
J-1	1,300.00	1,688	2,814	30	30	J-2
J-2	1,299.60	1,688	2,696	30	30	J-9
J-3	1,299.00	1,688	2,498	31	30	J-9
J-4	1,299.00	1,688	2,256	30	30	J-5
J-5	1,299.50	1,688	2,261	30	30	J-4
J-6	1,301.20	1,688	2,666	30	30	J-5
J-7	1,301.50	1,688	2,876	30	30	J-6
J-8	1,301.80	1,688	3,319	30	30	J-9
J-9	1,302.00	1,688	2,022	30	30	J-3

ALL PRESSURES/FLOWS @ GRADE

APPLICANT VERIFY W/ COS FIRE ON PRESSURE/FLOW VERSUS ELEVATION REQUIREMENT

Appendix C – Fixture Count Sheet

Project Name: Hyatt Place

Location: Scottsdale, AZ

Job #: THA201702

Plumbing Code: IPC

By: Scott A. Davis

Date: May 11, 2017

Fixture Type	Description	Qty	WFU Each	WFU Total	WSFU Each	WSFU Total	CW FU Each	CW FU Total	HW FU Each	HW FU Total
Units (PRIVATE)										
Water_Closet	Water Closet, Gravity Tank (1.6 gpf)	100.0	3.0	300.0	3.0	300.0	3.0	300.0	0.0	0.0
Lavatory	Lavatory	102.0	1.0	102.0	2.0	204.0	1.0	102.0	1.0	102.0
Bathing	Tub/Shower (1/2")	50.0	2.0	100.0	2.0	100.0	1.0	50.0	1.0	50.0
Bathing	Shower (1/2)	50.0	2.0	100.0	3.0	150.0	2.0	100.0	2.0	100.0
Counter_Sink	Counter Sink	3.0	2.0	6.0	2.0	6.0	1.0	3.0	1.0	3.0
Select_Types	Select Fixture	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Public										
Pool Area										
Water_Closet	Water Closet, Gravity Tank (1.6 gpf)(Pub)	1.0	4.0	4.0	3.0	3.0	3.0	3.0	0.0	0.0
Lavatory	Lavatory (Pub)	1.0	1.0	1.0	2.0	2.0	1.5	1.5	1.5	1.5
Bathing	Shower (1/2")(Pub)	1.0	2.0	2.0	4.0	4.0	3.0	3.0	3.0	3.0
Drains	2" Floor Drain	1.0	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0
Drains	3" Floor Drain	1.0	5.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0
Drains	4" Standpipe	1.0	6.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0
Select_Types	Select Fixture	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Public RR										
Water_Closet	Water Closet, Gravity Tank (1.6 gpf)(Pub)	4.0	4.0	16.0	3.0	12.0	3.0	12.0	0.0	0.0
Urinal	Urinal (1.0 gpf)	2.0	2.0	4.0	5.0	10.0	5.0	10.0	0.0	0.0
Lavatory	Lavatory (Pub)	4.0	1.0	4.0	2.0	8.0	1.5	6.0	1.5	6.0
Drains	2" Floor Drain	2.0	3.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0
Select_Types	Select Fixture	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Break Room										
Water_Closet	Water Closet, Gravity Tank (1.6 gpf)(Pub)	1.0	4.0	4.0	3.0	3.0	3.0	3.0	0.0	0.0
Lavatory	Lavatory (Pub)	1.0	1.0	1.0	2.0	2.0	1.5	1.5	1.5	1.5
Drains	2" Floor Drain	1.0	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0
Counter_Sink	Counter Sink(Pub)	1.0	2.0	2.0	2.0	2.0	1.0	1.0	1.0	1.0
Select_Types	Select Fixture	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bar/Café										
Counter_Sink	Counter Sink(Pub)	1.0	2.0	2.0	2.0	2.0	1.0	1.0	1.0	1.0
Counter_Sink	Bar Sink(Pub)	1.0	2.0	2.0	2.0	2.0	1.0	1.0	1.0	1.0
Drains	2" Floor Drain	2.0	3.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0
Drains	3" Floor Sink	1.0	5.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0
Select_Types	Select Fixture	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kitchen										
Commercial_Kitchen	Handsink	2.0	1.0	2.0	2.0	4.0	1.0	2.0	1.0	2.0
Counter_Sink	Counter Sink(Pub)	2.0	2.0	4.0	2.0	4.0	1.0	2.0	1.0	2.0
Commercial_Kitchen	3-Comp Sink	1.0	3.0	3.0	4.0	4.0	3.0	3.0	3.0	3.0
Commercial_Kitchen	Pot Sink	1.0	3.0	3.0	3.0	3.0	2.0	2.0	2.0	2.0
Commercial_Kitchen	Dishwasher	1.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0
Drains	3" Floor Sink	1.0	5.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0
Drains	2" Floor Drain	4.0	3.0	12.0	0.0	0.0	0.0	0.0	0.0	0.0
Select_Types	Select Fixture	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Laundry										
Laundry_Box	Clothes Washer, Commercial (Gravity)	2.0	2.0	4.0	3.0	6.0	2.0	4.0	2.0	4.0
Service_Sink	Laundry Sink(Pub)	2.0	2.0	4.0	2.0	4.0	1.0	2.0	1.0	2.0

5 (public) 5 AVG. 5.8 PER bath group OK

5 20

5 3

		2.0	2.0	4.0	3.0	6.0	2.0	4.0	2.0	4.0
Drains	2" Floor Drain	**2.0**	**3.0**	**6.0**	0.0	0.0	0.0	0.0	0.0	0.0
Select_Types	Select Fixture	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

BOH

Service_Sink	Mop Sink(Pub) 3"	**3.0**	**3.0**	**9.0**	**3.0**	**9.0**	**2.0**	**6.0**	**2.0**	**6.0**
Drains	3" Floor Drain	**4.0**	**5.0**	**20.0**	0.0	0.0	0.0	0.0	0.0	0.0
Hose_Bibbs	Hose Bibb	**7.0**	0.0	0.0	**3.0**	**21.0**	**3.0**	**21.0**	0.0	0.0
Select_Types	Select Fixture	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Select_Types	Select Fixture	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Select_Types	Select Fixture	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Select_Types	Select Fixture	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Select_Types	Select Fixture	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Building Sub Total		**766.0**		~~**873.0**~~ 885		**644.0**		**297.0**
Pipe Size		8"		4"		3"		2 1/2"
GPM Flow		383.0		190.4		150.9		84.4

used in model ✓