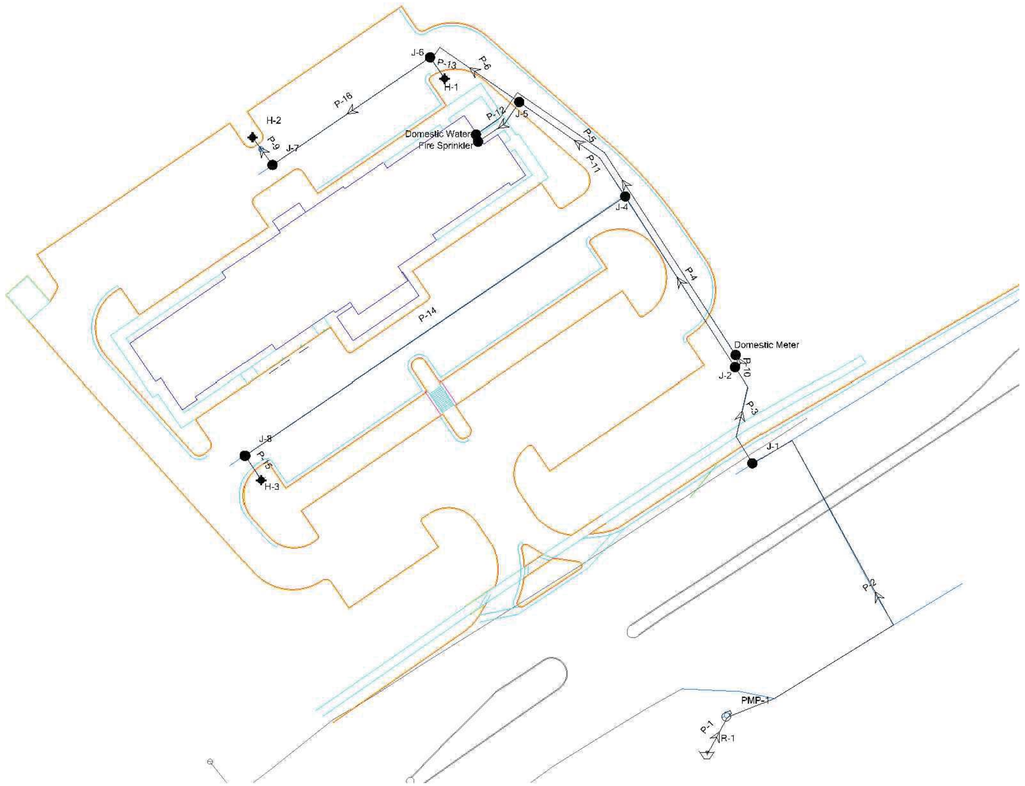


WVWA DOMESTIC METER SIZING WORKSHEET

Project & Designer Information	
Project Name:	Woodspring Suites
Project Address:	3812 Peters Creek Road, Roanoke, VA
Project Tax #:	037.10-01-12.00-0000
Designer/Engineer:	Draper Aden Associates

Type of Occupancy

☐ Single Family Home ☐ Apartments ☐ Condominiums ☒ Hotel ☐ Motel ☐ Restaurant ☐ Shopping Center

☐ Office ☐ Car Wash ☐ Public Building/School ☐ Hospital ☐ Industrial ☐ Mixed Use ☑ Other Commercial

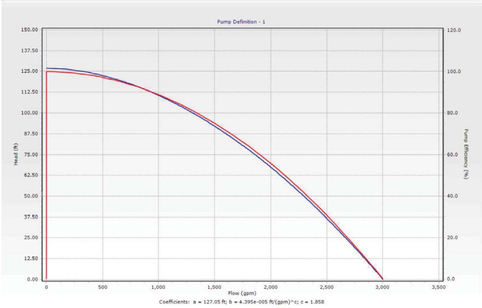
Domestic Demand (Continuous)

Fixture Type (standardized at 60 psi)	Fixture Value		Number of Fixtures		Total Fixture Value
Bathtub	8	x	122	=	976
Shower Only	2.5	x		=	0
Toilet (Flush Valve)	35	x		=	0
Toilet (Tank)	4	x	123	=	492
Urinal (Flush Valve)	35	x		=	0
Urinal (Wall or Stall)	16	x		=	0
Urinal Trough (2 foot unit)	2	x		=	0
Bidet	2	x		=	0
Faucet (Lavatory)	1.5	x	123	=	184.5
Faucet (Kitchen)	2.2	x	122	=	268.4
Faucet (Utility Sink)	4	x	2	=	8
Dishwasher (Residential)	2	x		=	0
DIshwasher (Commercial)	8	x		=	0
Clothes Washer (Residential)	6	x	6	=	36
Clothes Washer (Commercial)	10	x	2	=	20
Bedpan Washer	8	x		=	0
Dental Unit	2	x		=	0
1/2" Hose connection (w50 foot of hose)	5	x	2	=	10
5/8" Hose connection (w50 foot of hose)	9	x		=	0
3/4" Hose connection (w50 foot of hose)	12	x		=	0
Other:		x		=	0
COMBINED FIXTURE VALUE				=	1986.9
Water Flow Demand (gpm) using Figure 4-2 or 4-3 (SEE BELOW)				=	148 gpm
Static or Calculated Pressure (PSI) from GIS				=	60 psi
Pressure Adjustment Factor				=	1.0
TOTAL DOMESTIC DEMAND (gpm)				=	0
RECOMMENDED METER SIZE				=	3-inch Compound Meter

Page1 12/4/2017

Pump Definition Type: Standard (3 Point)

	Flow (gpm)	Head (ft)
Shutoff:	0	127.05
Design:	1,061	108.67
Max. Operating:	2,355	46.20



FlexTable: Reservoir Table

ID	Label	Elevation (ft)	Zone	Flow (Out net) (gpm)	Hydraulic Grade (ft)
30	R-1	1,152.00	<None>	1,905	1,152.00

FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-1	1,143.00	0	1,223.65	35
J-2	1,153.60	0	1,222.70	30
Domestic Meter	1,160.54	0	1,222.01	27
J-4	1,162.70	0	1,221.60	25
J-5	1,163.30	0	1,220.77	25
J-6	1,164.26	0	1,220.54	24
J-7	1,165.14	0	1,220.02	24
J-8	1,162.66	0	1,221.60	25
Fire Sprinkler	1,165.30	750	1,217.63	23
Domestic Water	1,165.30	155	1,217.19	22

RESIDUAL PRESSURE

FlexTable: Hydrant Table

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
H-1	1,164.86	0	1,220.54	24
H-2	1,166.26	1,000	1,214.99	21
H-3	1,162.62	0	1,221.60	26

STATIC PRESSURE

FlexTable: Hydrant Table

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
H-1	1,164.86	0	1,264.64	43
H-2	1,166.26	0	1,264.64	43
H-3	1,162.62	0	1,264.81	44

FlexTable: Pipe Table

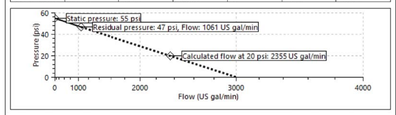
ID	Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Minor Loss Coefficient (Local)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
44	P-1	25	R-1	PMP-1	48.0	Ductile Iron	140.0	0.000	1,905	0.34	0.000
45	P-2	258	PMP-1	J-1	16.0	Ductile Iron	130.0	2.380	1,905	3.04	0.003
46	P-3	61	J-1	J-2	12.0	Ductile Iron	120.0	0.790	1,905	5.40	0.016
47	P-4	118	J-2	J-4	12.0	Ductile Iron	120.0	0.350	1,750	4.96	0.009
48	P-5	83	J-4	J-5	12.0	Ductile Iron	120.0	0.350	1,750	4.96	0.010
49	P-6	64	J-5	J-6	12.0	Ductile Iron	120.0	0.350	1,000	2.84	0.004
53	P-9	20	J-7	H-2	6.0	Ductile Iron	120.0	1.670	1,000	11.35	0.255
54	P-10	10	J-2	Domestic Meter	4.0	Ductile Iron	120.0	2.080	155	3.96	0.072
57	P-11	236	Domestic Meter	Domestic Water	4.0	Ductile Iron	120.0	0.800	155	3.96	0.020
59	P-12	34	J-5	Fire Sprinkler	6.0	Ductile Iron	120.0	1.280	750	8.51	0.093
60	P-13	15	J-6	H-1	6.0	Ductile Iron	120.0	2.470	0	0.00	0.000
61	P-14	266	J-4	J-8	12.0	Ductile Iron	120.0	1.670	0	0.00	0.000
62	P-15	17	J-8	H-3	6.0	Ductile Iron	120.0	1.670	0	0.00	0.000
64	P-16	111	J-6	J-7	12.0	Ductile Iron	120.0	1.540	1,000	2.84	0.005

Hydrant Test Record

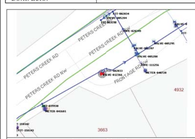
ID	HYD-13138_104497		
Inspection Type	TESTING		
Hydrant ID	HYD-13138		
Location	3563 PETERS CREEK RD NW		
Diameter (in)	2.500	*Flow (US gal/min)*	1061
Flush Time	5	*Water Used (US Mgal)*	0.005
X Coordinate (US Survey ft)	11048849.50	*Y Coordinate (US Survey ft)*	3645233.72
Time to Clear	5	*Initial Color*	CLEAR
Initial Turbidity	NOSUSSOL (No Suspended Solids (Clear))	*Final Turbidity*	NOSUSSOL (No Suspended Solids (Clear))
Initial Chlorine (mg/l)	-	*Final Chlorine (mg/l)*	-
Temperature	-	*pH Level*	-
Static Pressure	55.00	*Residual Pressure*	47.00

Flow Hydrant(s)

Hydrant ID	*Diameter (in)*	*Coefficient*	*Pitot Pressure (psi)*	*Flush Time (min)*	*Flow (US gal/min)*	*Water Used (US Mgal)*
HYD-13138	2.500	0.90	40.00	5	061	0.005



Actual Duration	-	*Actual Cost ($)*	-
Estimated Duration	-	*Estimated Cost ($)*	-
Schedule Number	134497	*Completed*	Y
Date/Time Planned	17 Mar 2021	*Task Status*	COMP (Completed)
Estimated Completion Date	17 Mar 2021	*Date/Time Started*	-
Repeat Period	-	*Date Completed*	13:42 17 Mar 2021
Team Leader	SFOX (ENG-Sonya Fox)	*Repeat Schedule Number*	-
Contractor	-		



Location Sketch - *Location Photo -*

Hydrant 2 Id	HYD-13012	*Static Pressure Hyd 2*	55.000
Hydrant 3 Id	-	*Residual Pressure Hyd 2*	47.000
Caps Status	ALLCAPS (All caps	*Static Pressure Hyd 3*	-

InfoAsset Manager

InfoAsset Hydrant Test Report
Created: 24/03/2021 11:13

Engineer: Draper Aden Associates — Date: 1/21/2021
Project Name: Woodspring Suites — Calculations By: KMJ

Type of Construction: Noncombustible — Class = 3
Class of Construction Coefficient — F = 0.8

Ground Floor Area = 12384 sf
2nd Floor Area = 12092 sf
3rd Floor Area = 12092 sf
4th Floor Area = 12092 sf

Total Floor Area A_t = 30522 sf

Fire Area Considered
$C_i = 18 \times F \times (A_t)^{0.5}$ — C_i = 2500

Type of Occupancy: Limited Combustible — Class = 2
Occupancy Factor (worst case) — O_i = 0.85

Exposure (X) and Communication (P)
$X_1 + P_1$ = 0
$X_2 + P_2$ =
$X_3 + P_3$ =
$X_4 + P_4$ =
$X_5 + P_5$ =
$X_6 + P_6$ =

$(X + P)_i$ = Total of $(X_i + P_i) + 1$ = 1
(max $(X + P)_i$ = 1.75)

Needed Fire Flow (NFF) — NFF = 2125
$NFF = C_i \times O_i \times (X + P)_i$

Automatic Sprinklers (Y/N): Y — Reduction Factor = 50% x NFF = 1063
Total = 1063

Required Fire Flow - Rounded = **1000**
(if <2500 nearest 250)(if >2500 nearest 500)

* Number of Hydrants Required = **1**

NOTE:
PER FIRE MARSHALL'S REVIEW COMMENTS DATED MARCH 10, 2021, THE REQUIRED FIRE FLOW FOR A BUILDING 3 STORIES OR LARGER, WITH SPRINKLERS, IS 1,000GPM.

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COMMONWEALTH OF VIRGINIA
KELLEN MARIE JOHNSON
Lic. No. 053607
05/24/2021
PROFESSIONAL ENGINEER

3rd Review

WATER CALCULATIONS

REVISIONS

New Facility for
WOODSPRING SUITES
3812 Peters Creek Road
Roanoke County, Virginia

DESIGNED BY: KMJ
DRAWN BY: DEP
CHECKED BY: CAH
SCALE: 1"=30'
DATE: MAY 24, 2021
PROJECT NUMBER: 20010271-010301

C702

SHEET 19 OF 35

APPROVED, 8/4/2021

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