

Remote Area #1

SHOP DRAWING / SUBMITTAL REVIEW

REVIEWED REVIEWED AS NOTED

REVISE AND RESUBMIT REJECTED

Project No.: 2265 Submittal No.: 211300.001

Corrections or comments made on the shop drawings during this review do not relieve the contractor from compliance with requirements of the drawings and specifications. This check is only for review of the general conformance with the design concept of the project and general compliance with the information given in the contract documents. This contractor is responsible for: confirming and correlating all quantities and dimensions; selecting fabrication processes and techniques of construction; coordinating his or her work with that and other trades and performing all in a safe and satisfactory manner.

By: David Dammon Date: 11/9/2016

DAMMON ENGINEERING, INC.

Slidell, LA

HYDRAULIC CALCULATIONS for

Job Information

Project Name : MAINSTAY SUITES

Contract No. :

City: HACKBERRY, LA 70645

Project Location: 700 MAIN ST - LA HWY 27

Date: 11/3/2016

Contractor Information

Name of Contractor: LIFE SAFETY

Address: 11168 LUCUIS LANE

City: HAMMOND, LA 70404

Phone Number: 504-915-5514

E-mail:

Name of Designer: DRURY

Authority Having Jurisdiction: STATE FIRE MARSHAL

Design

Remote Area Name	1
Remote Area Location	3RD FLOOR CORRIDOR
Occupancy Classification	RESIDENTIAL
Density (gpm/ft ²)	0.05
Area of Application (ft ²)	389
Coverage per Sprinkler (ft ²)	340
Number of Calculated Sprinklers	4
In-Rack Demand (gpm)	0
Special Heads	
Hose Streams (gpm)	100
Total Water Required (incl. Hose Streams) (gpm)	167.9
Required Pressure at Source (psi)	52.3
Type of System	Wet
Volume - Entire System (gal)	632.2 gal

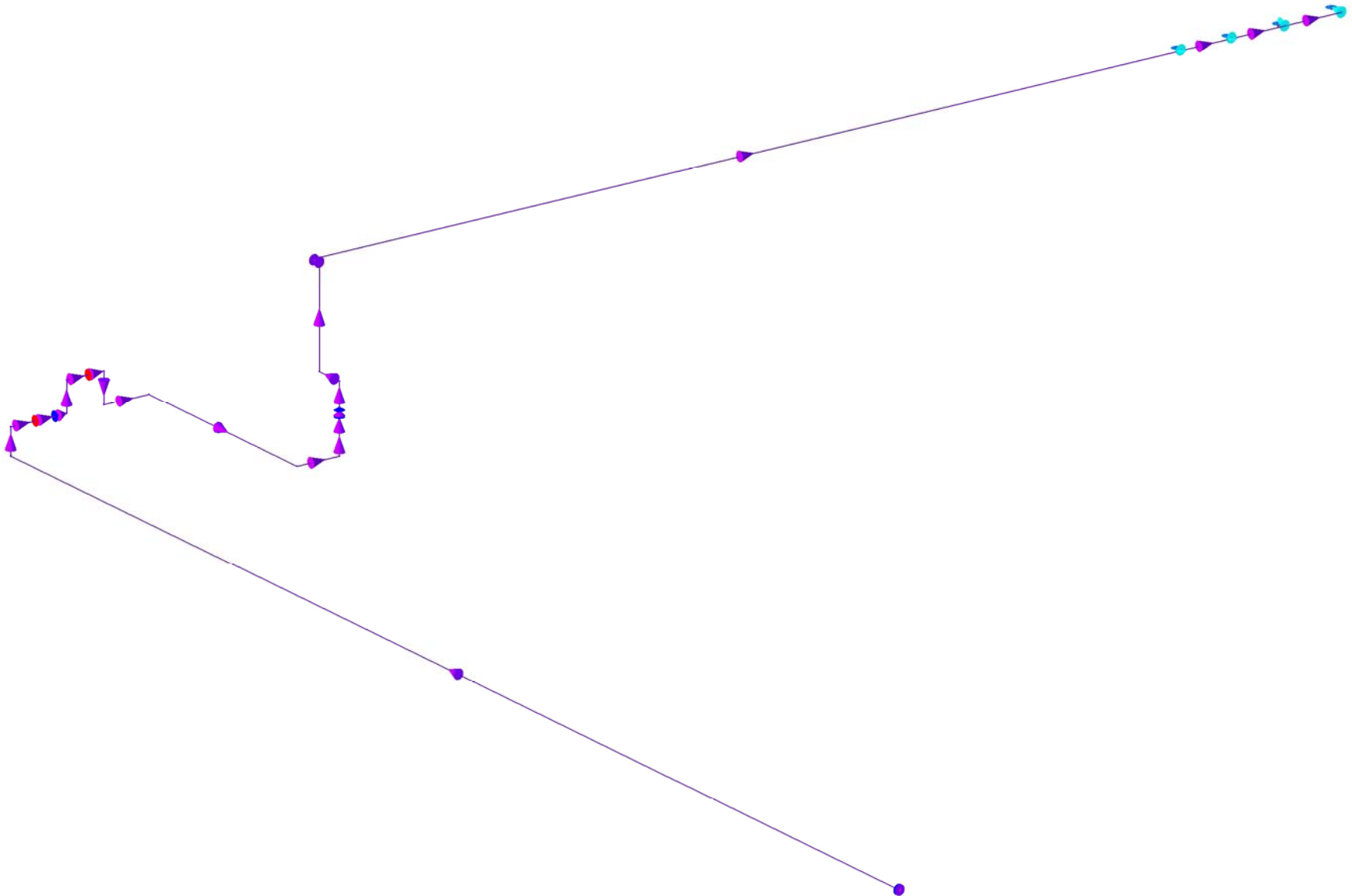
Water Supply Information

Date	11/02/16
Location	LA HWY 27 11:55am
Source	W1

Notes

UP TO 4 SPRINKLERS IN A

Diagram for Design Area : 1 (Optimized Hvdraulic Simplified)



Hydraulic Analysis for : 1

Calculation Info

Calculation Mode	Demand
Hydraulic Model	Hazen-Williams
Fluid Name	Water @ 60F (15.6C)
Fluid Weight, (lb/ft ³)	N/A for Hazen-Williams calculation.
Fluid Dynamic Viscosity, (lb·s/ft ²)	N/A for Hazen-Williams calculation.

Water Supply Parameters

Supply 1 : W1

Flow (gpm)	Pressure (psi)
0	58
1060	55

Supply Analysis

Node at Source	Static Pressure (psi)	Residual Pressure (psi)	Flow (gpm)	Available Pressure (psi)	Total Demand (gpm)	Required Pressure (psi)
W1	58	55	1060	58	167.9	52.3

Hoses

Inside Hose Flow / Standpipe Demand (gpm)

Outside Hose Flow (gpm)

Additional Outside Hose Flow (gpm) 100

Other (custom defined) Hose Flow (gpm)

 Total Hose Flow (gpm) 100

Sprinklers

Ovehead Sprinkler Flow (gpm) 67.9

InRack Sprinkler Flow (gpm) 0

Other (custom defined) Sprinkler Flow (gpm) 0

 Total Sprinkler Flow (gpm) 67.9

Other

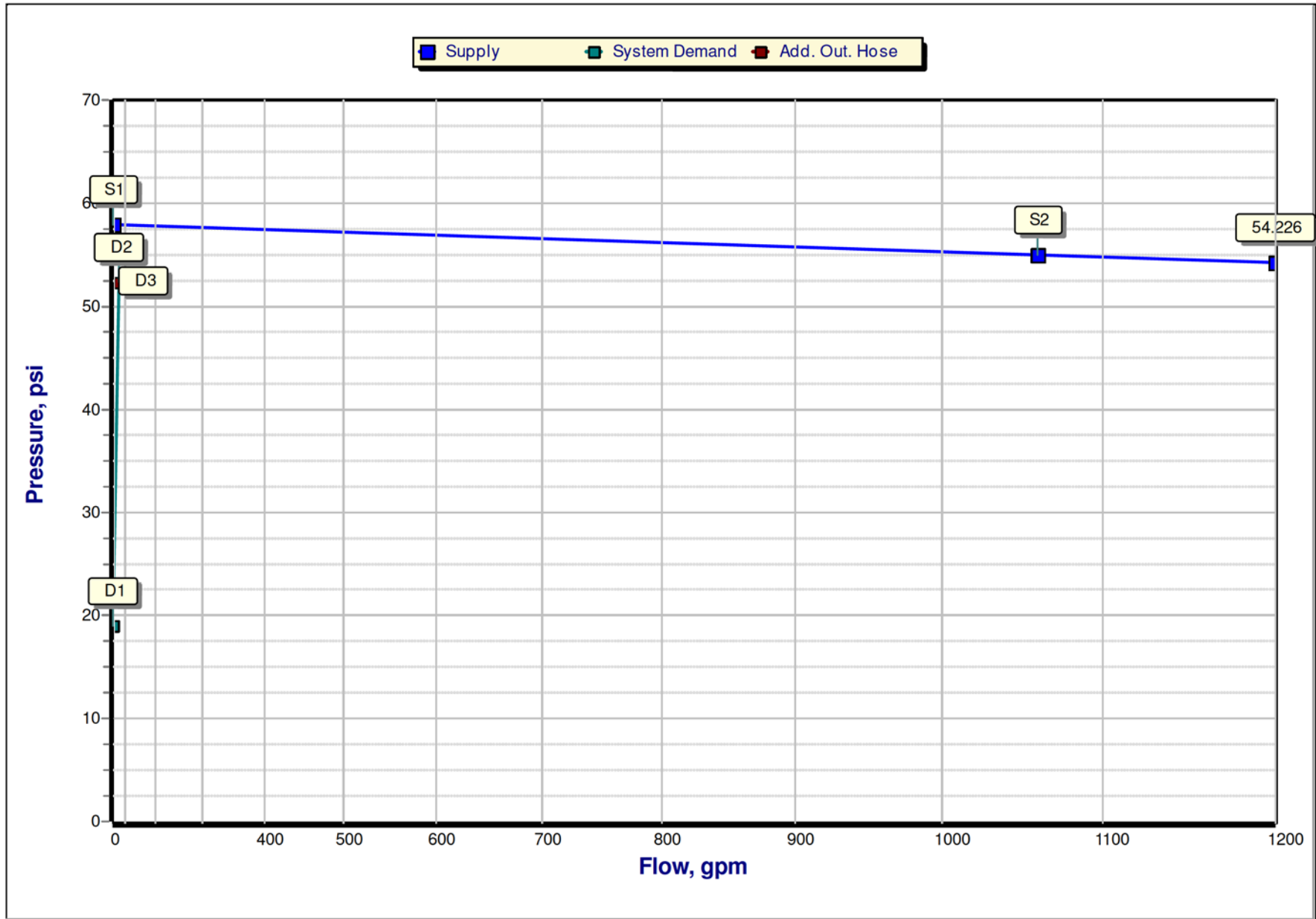
Required Margin of Safety (psi) 0

W1 - Pressure (psi) 52.3

W1 - Flow (gpm) 67.9

Demand w/o System Pump(s) N/A

Hydraulic Analysis for : 1



Hydraulic Analysis for : 1

Graph Labels

Label	Description	Values	
		Flow (gpm)	Pressure (psi)
S1	Supply point #1 - Static	0	58
S2	Supply point #2 - Residual	1060	55
D1	Elevation Pressure	0	19
D2	System Demand	67.9	52.3
D3	System Demand + Add.Out.Hose	167.9	52.3

Curve Intersections & Safety Margins

Curve Name	Intersection		Safety Margin	
	Pressure (psi)	Flow (gpm)	Pressure (psi)	@ Flow (gpm)
Supply	58	73.9	5.6	167.9

Open Heads

Head Ref.	Head Type	Coverage	K-Factor	Required			Calculated		
				Density	Flow	Pressure	Density	Flow	Pressure
		(ft ²)	(gpm/psi ^{1/2})	(gpm/ft ²)	(gpm)	(psi)	(gpm/ft ²)	(gpm)	(psi)
1	Overhead Sprinkler	340	4.9	0.05	17	12	0.05	17	12
2	Overhead Sprinkler	280	4.9	0.05	14	8.2	0.06	16.7	11.7
3	Overhead Sprinkler	340	4.9	0.05	17	12	0.05	17	12
4	Overhead Sprinkler	340	4.9	0.05	17	12	0.051	17.2	12.3

Node Data

Node# Elev	Type Hgroup	K-Fact. Open/Closed	Discharge Overdischarge	Coverage Density	Tot. Pres. Elev. Pres.	Req. Pres. Req. Discharge
ft		gpm/psi ^{1/2}	gpm gpm	ft ² gpm/ft ²	psi psi	psi gpm
1 33.75	Overhead Sprinkler HEAD	4.9 Open	17 0	340 0.05	12 -19	12 17
3 33.75	Overhead Sprinkler HEAD	4.9 Open	17 0	340 0.05	12 -19	12 17
4 33.75	Overhead Sprinkler HEAD	4.9 Open	17.2 0.2	340 0.051	12.3 -19	12 17
2 33.75	Overhead Sprinkler HEAD	4.9 Open	16.7 2.7	280 0.06	11.7 -19	8.2 14
414 34	Node NODE				12.6 -19.1	
401 34	Node NODE				12.7 -19.1	
400 34	Node NODE				12.8 -19.1	
003 34	Node NODE				13.1 -19.1	
031 34	Node NODE				21.7 -19.1	
033 11.5	Node NODE				33 -9.3	
035-O 6.08	Node NODE				35.7 -7	
035-I 5.42	Node NODE				36.5 -6.7	
036-O 4.32	Node NODE				37 -6.2	
036-I 4	Node NODE				37.2 -6.1	
043-I 3	Node NODE				37.7 -5.6	
037 1	Node NODE				38.5 -4.8	
043-O 3	Node NODE				43.6 -5.6	
046-I -4	Node NODE				46.7 -2.6	
046-O -4	Node NODE				46.7 -2.6	
047-I -4	Node NODE				46.7 -2.6	
047-O -4	Node NODE				49.7 -2.6	
050-I -10	Node NODE				52.3 0	
050-O -10	Node NODE				52.3 0	
W1 -10	Supply SUPPLY		-67.9		52.3 0	

PIPE INFORMATION

Node 1 Node 2	Elev 1 Elev 2	K-Factor 1 K-Factor 2	Flow added (q) Total flow (Q)	Nominal ID Actual ID	Fittings quantity x (name) = length	L F T	C Factor Pf per ft	total (Pt) elev (Pe) frict (Pf)	NOTES
	(ft)	(gpm/psi ^{1/2})	(gpm)	(in)	(ft)	(ft)	(psi)	(psi)	

Path No: 1

1 414	33.75 34	4.9	17 17	1 1.101	2x(BM.Tee-Br)=10	3.63 10 13.63	150 0.0502	12 -0.1 0.7	
414 401	34 34		0 17	2 2.003	2x(BM.Tee-Run)=2	13.39 2 15.39	150 0.0027	12.6 0 0.0	
401 400	34 34		16.7 33.7	2 2.003	1x(BM.Tee-Run)=1	12.61 1 13.61	150 0.0097	12.7 0 0.1	
400 003	34 34		17 50.7	2 2.003	3x(BM.Tee-Run)=3	12 3 15	150 0.0206	12.8 0 0.3	
003 031	34 34		17.2 67.9	2 2.003	1x(coupling)=1.3 26x(BM.Tee-Run)=26 1x(BM.90)=10	205.78 37.3 243.08	150 0.0354	13.1 0 8.6	
031 033	34 11.5		0 67.9	2 2.157	1x(us.Tee-Br)=12.31 1x(us.90)=6.15	24.33 18.46 42.79	120 0.0373	21.7 9.7 1.6	
033 035-O	11.5 6.08		0 67.9	2.5 2.635	1x(coupling)=1.37 1x(us.90)=8.24	12.16 9.61 21.77	120 0.0141	33 2.3 0.3	
035-O 035-I	6.08 5.42		0 67.9	2.5 0		0.67 0 0.67	0 0.7289	35.7 0.3 0.5	CV-1 FR Check ***
035-I 036-O	5.42 4.32		0 67.9	2.5 2.635	1x(coupling)=1.37	1.1 1.37 2.47	120 0.0141	36.5 0.5 0.0	
036-O 036-I	4.32 4		0 67.9	2.5 0		0.32 0 0.32	0 0.3679	37 0.1 0.1	BFV-N ***
036-I 037	4 1		0 67.9	4 4.26	1x(coupling)=1.32	3 1.32 4.32	120 0.0014	37.2 1.3 0	
037 043-I	1 3		0 67.9	6 5.86	1x(coupling)=1.28 5x(us.90)=89.4	85.83 90.68 176.51	150 0.0002	38.5 -0.9 0.0	
043-I 043-O	3 3		0 67.9	6 0		0.5 0 0.5	0 11.8142	37.7 0 5.9	WATTS 757 ***
043-O 046-I	3 -4		0 67.9	6 5.86	1x(coupling)=1.28 2x(us.90)=35.76	14.04 37.04 51.08	150 0.0002	43.6 3 0	
046-I 046-O	-4 -4		0 67.9	6 0		0.88 0 0.88	0 0.0008	46.7 0 0	Gate A2360 ***
046-O 047-I	-4 -4		0 67.9	6 5.86	1x(coupling)=1.28	4.11 1.28 5.39	150 0.0002	46.7 0 0	

PIPE INFORMATION

Node 1 Node 2	Elev 1 Elev 2	K-Factor 1 K-Factor 2	Flow added (q) Total flow (Q)	Nominal ID Actual ID	Fittings quantity x (name) = length	L F T	C Factor Pf per ft	total (Pt) elev (Pe) frict (Pf)	NOTES
	(ft)	(gpm/psi ^{1/2})	(gpm)	(in)	(ft)	(ft)	(psi)	(psi)	

Path No: 1

047-I	-4		0	6		0.5	0	46.7	WATTS SS07F
047-O	-4		67.9	0		0	6	0	***
						0.5		3	
047-O	-4		0	6	1x(coupling)=1.28	310.41	150	49.7	
050-I	-10		67.9	5.86	1x(us.Tee-Br)=38.32	57.47	0.0002	2.6	
					1x(us.90)=17.88	367.88		0.1	
050-I	-10		0	6		0.88	0	52.3	Gate A2360
050-O	-10		67.9	0		0	0.0008	0	***
						0.88		0	
050-O	-10		0	6		0.48	150	52.3	
W1	-10		67.9	5.86		0	0.0002	0	
						0.48		0	
W1								52.3	

Path No: 2

3	33.75	4.9	17	1	1x(BM.Tee-Br)=5	1.96	150	12	
400	34		17	1.101	2x(BM.90)=10	15	0.0502	-0.1	
						16.96		0.9	
400								12.8	

Path No: 3

4	33.75	4.9	17.2	1	1x(BM.Tee-Br)=5	1.96	150	12.3	
003	34		17.2	1.101	2x(BM.90)=10	15	0.0513	-0.1	
						16.96		0.9	
003								13.1	

Path No: 4

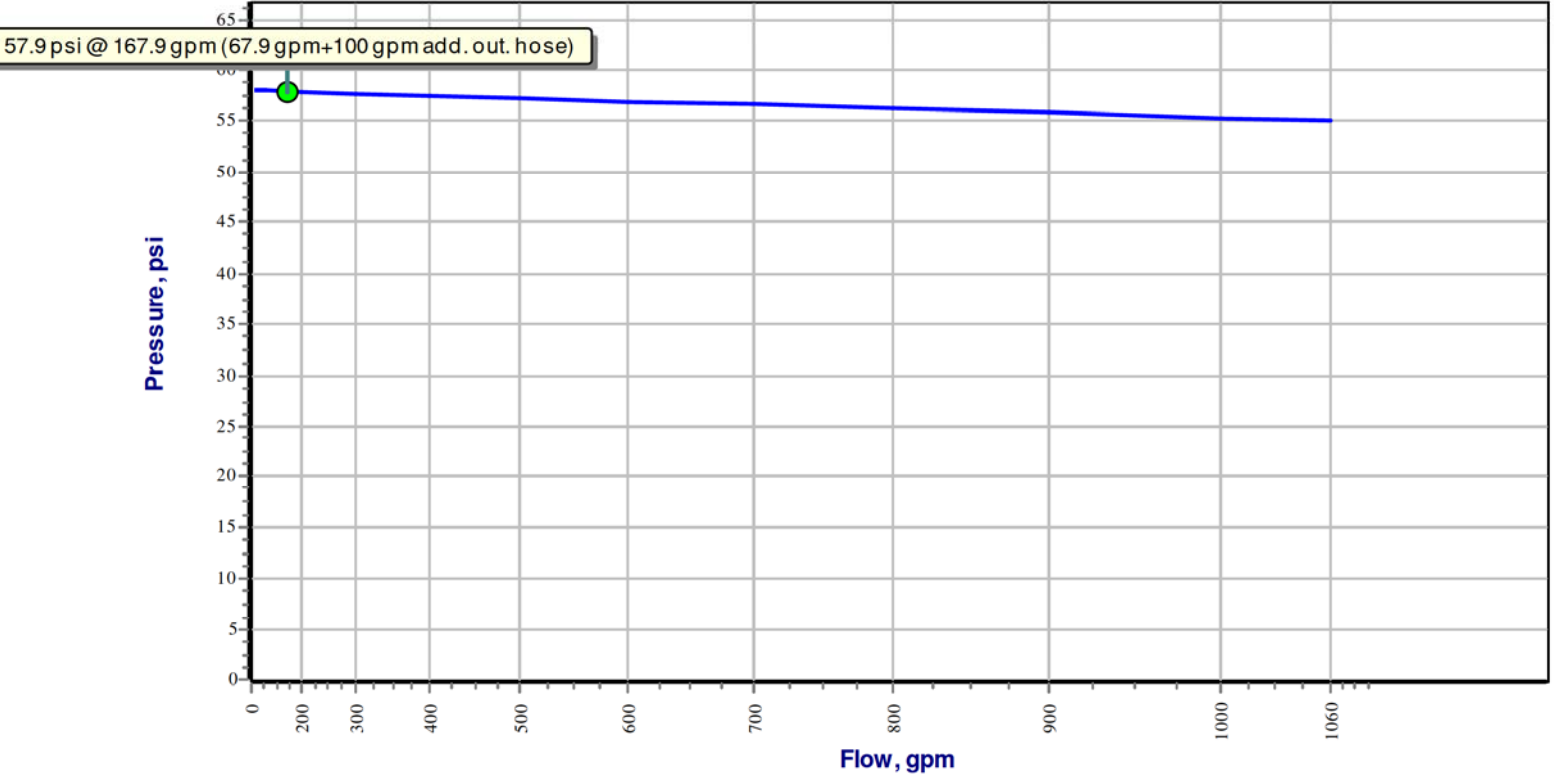
2	33.75	4.9	16.7	1	2x(BM.Tee-Br)=10	2.57	150	11.7	
401	34		16.7	1.101	2x(BM.90)=10	20	0.0487	-0.1	
						22.57		1.1	
401								12.7	

* Pressures are balanced to a high degree of accuracy. Values may vary by 0.1 psi due to display rounding.

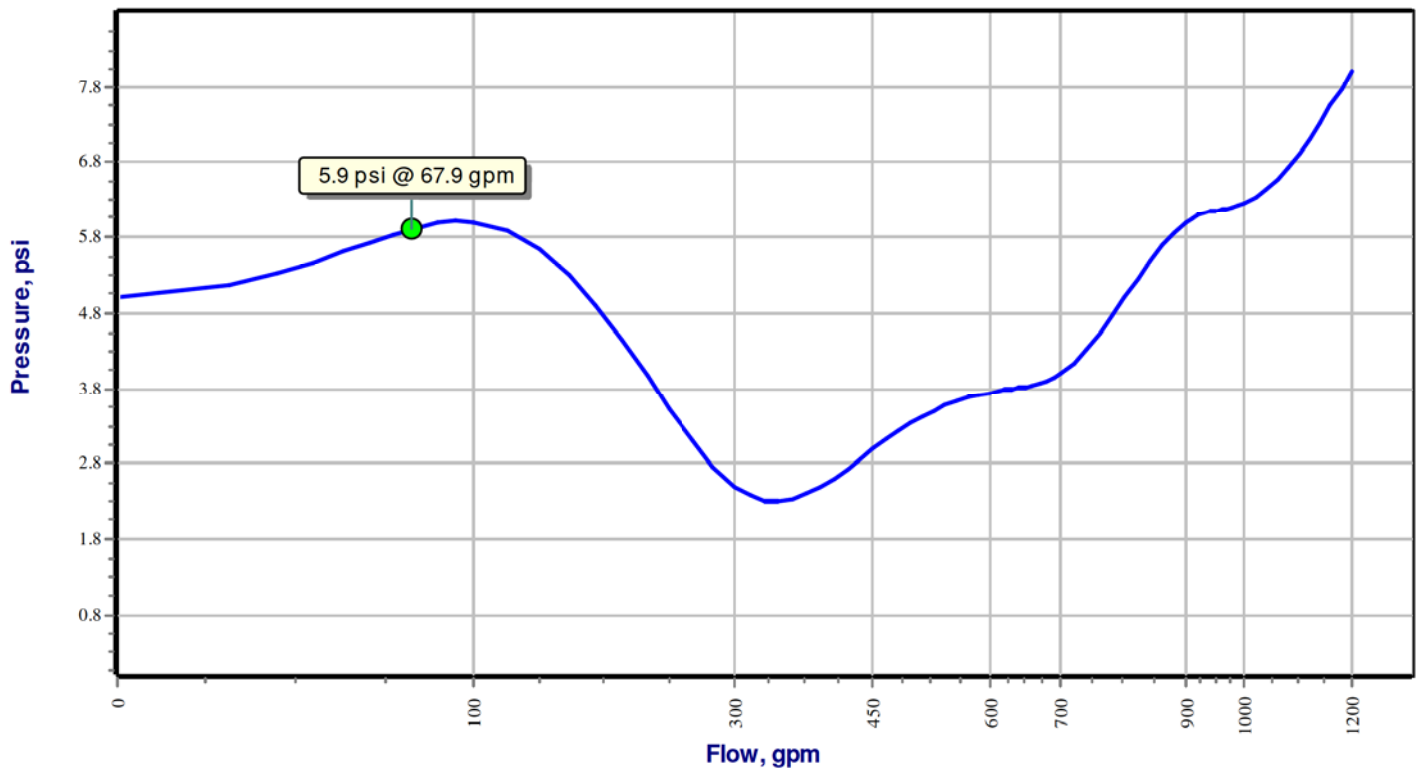
* Maximum Velocity of 6.92 ft/s occurs in the following pipe(s): (031-003)

*** Device pressure loss (gain in the case of pumps) is calculated from the device's curve. If the device curve is printed with this report, it will appear below. The length of the device as shown in the table above comes from the CAD drawing. The friction loss per unit of length is calculated based upon the length and the curve-based loss/gain value. Internal ID and C Factor values are irrelevant as the device is not represented as an addition to any pipe, but is an individual item whose loss/gain is based solely on the curve data.

Pressure vs. Flow Function Design Area: 1; Supply Ref.: W1; Supply Name:W1

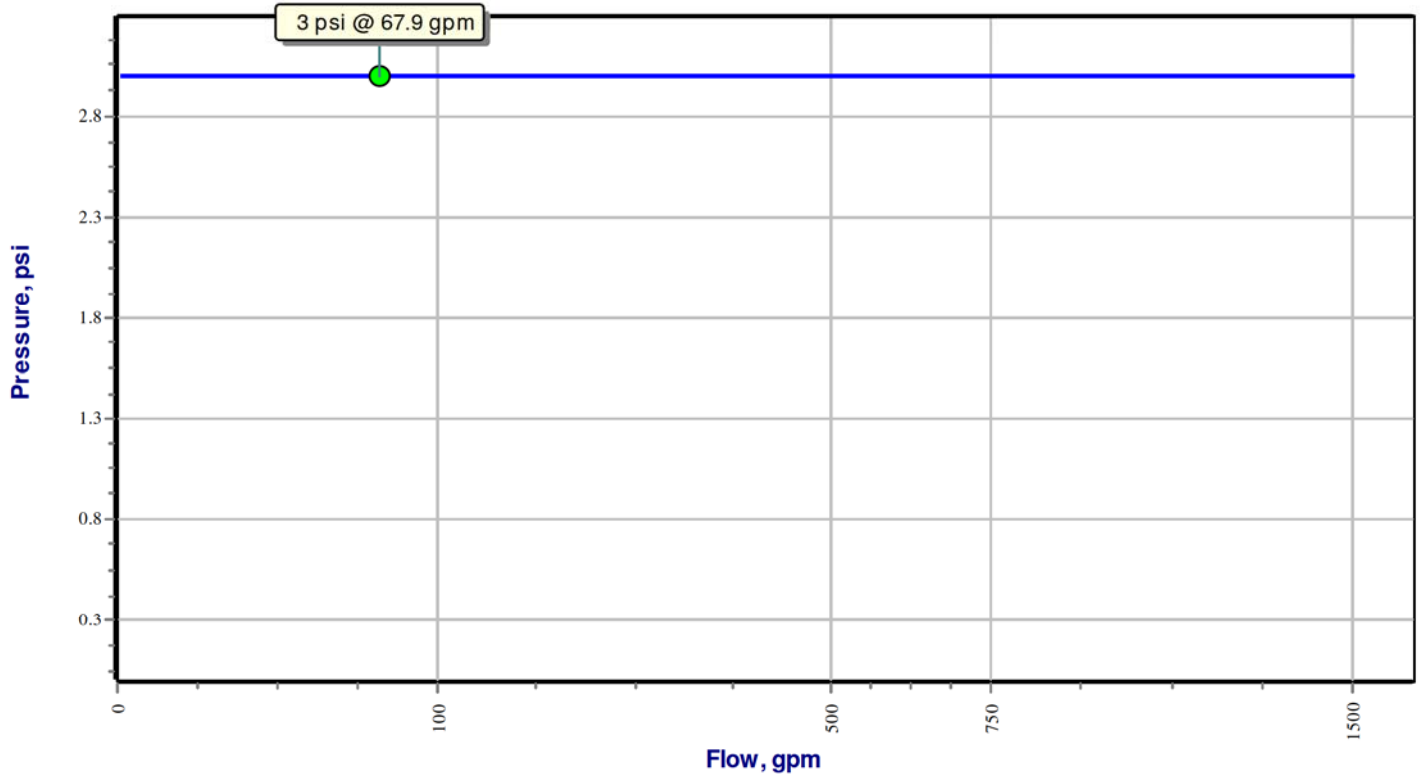


Pressure Loss Function Design Area: 1; BFP Ref.: 650 (WATTS 757, Size = 6); Inlet Node: 043-I; Outlet Node: 043-O



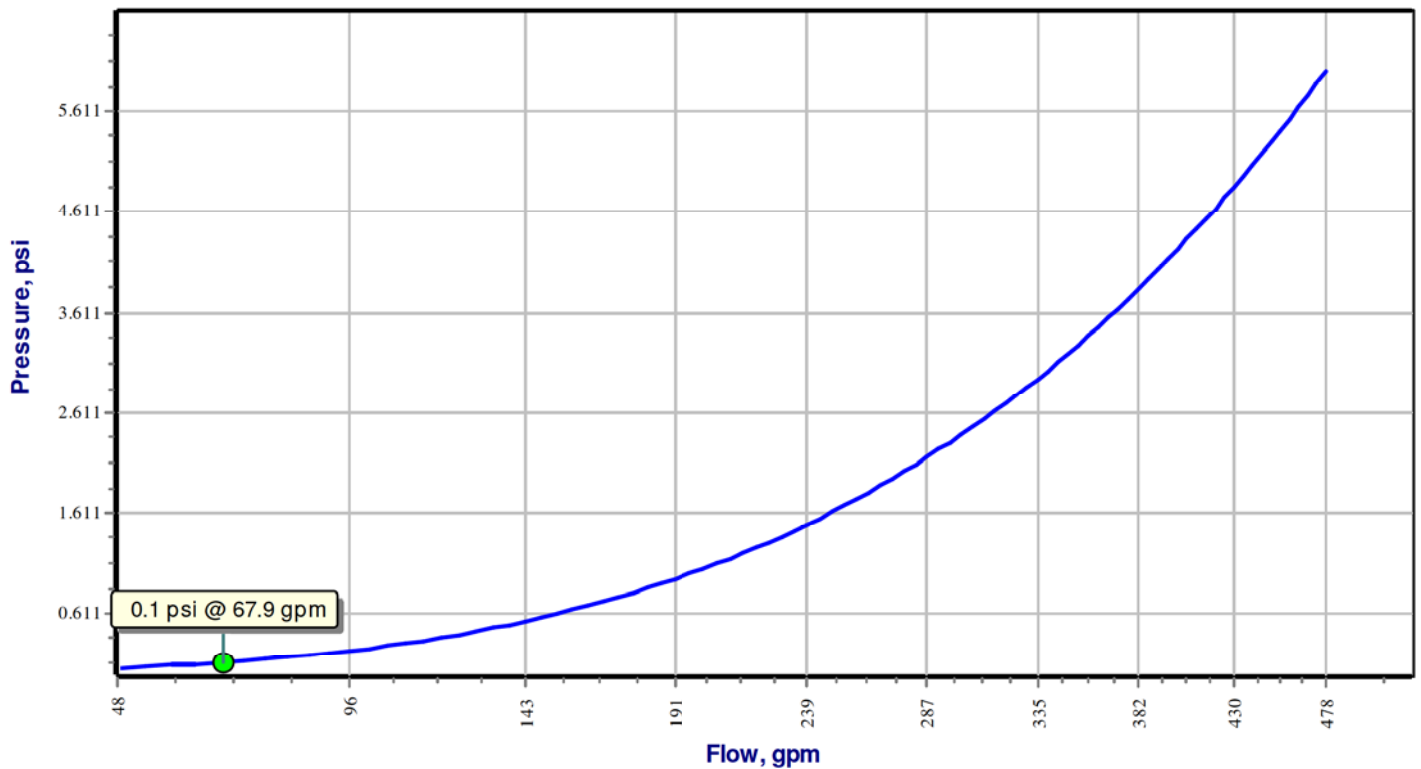
Pressure Loss Function

Design Area: 1; BFP Ref.: 652 (WATTS SS07F, Size = 6); Inlet Node: 047-I; Outlet Node: 047-O



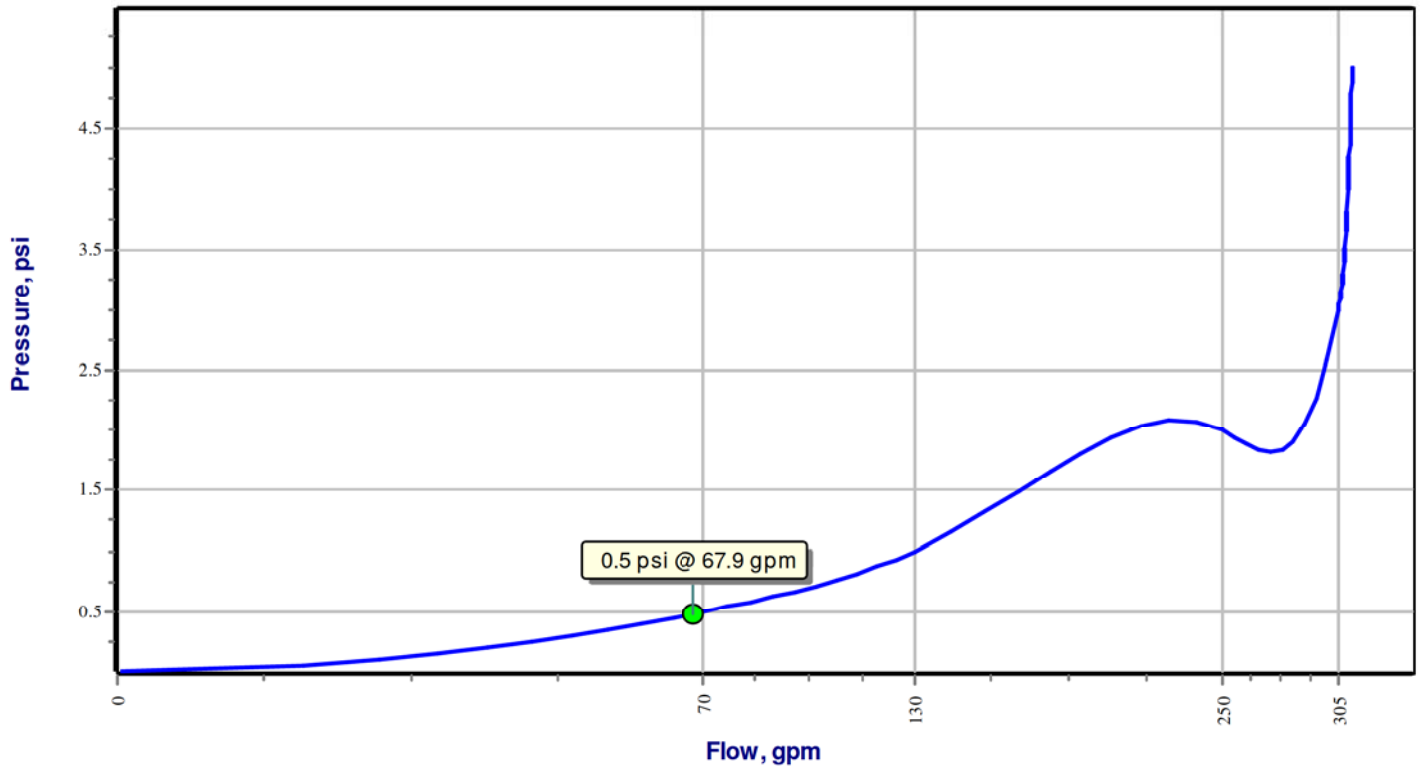
Pressure Loss Function

Design Area: 1; Valve Ref.: 648 (BFV-N, Size = 2.5); Inlet Node: 036-I; Outlet Node: 036-O



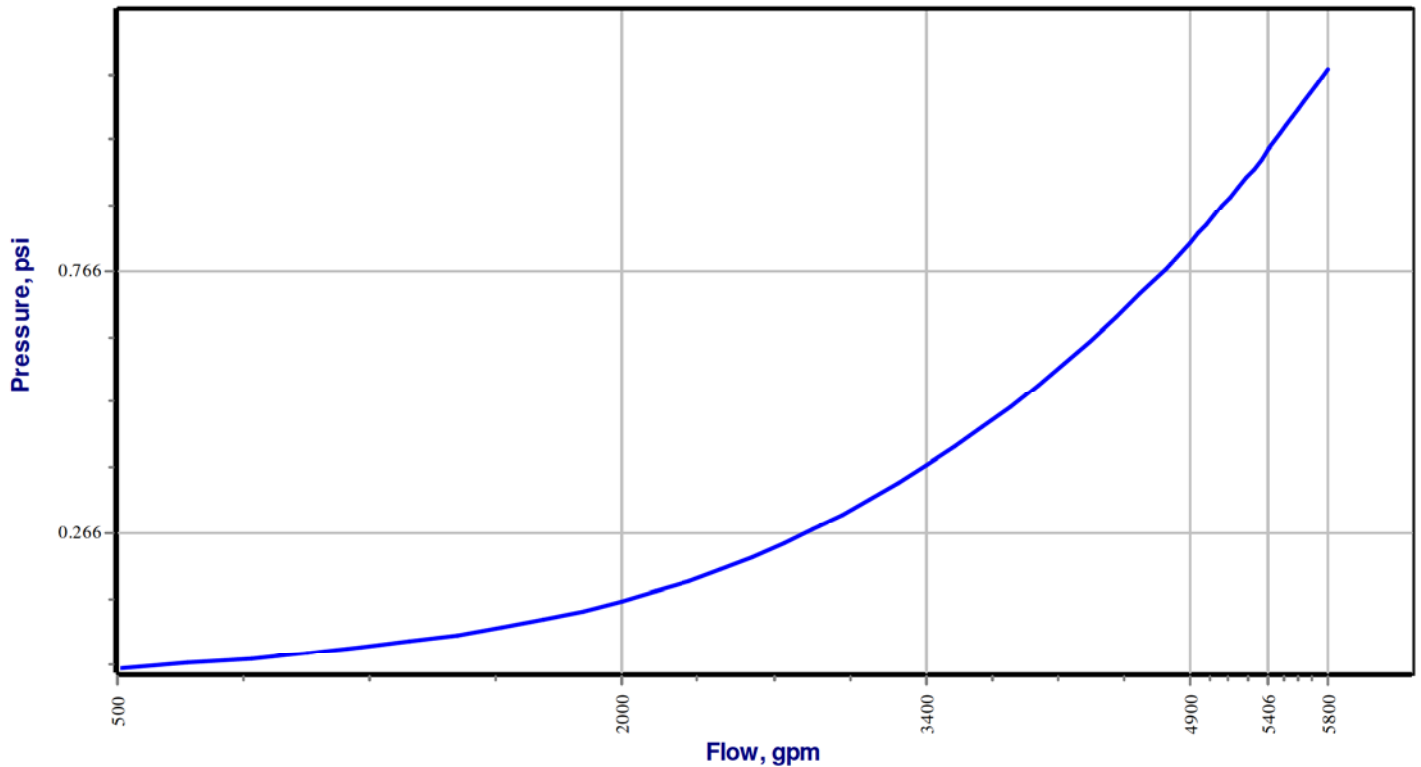
Pressure Loss Function

Design Area: 1; Valve Ref.: 649 (CV-1 FR Check, Size = 2.5); Inlet Node: 035-I; Outlet Node: 035-O



Pressure Loss Function

Design Area: 1; Valve Ref.: 651 (Gate A2360, Size = 6); Inlet Node: 046-I; Outlet Node: 046-O



Pressure Loss Function
Design Area: 1; Valve Ref.: 653 (Gate A2360, Size = 6); Inlet Node: 050-I; Outlet Node: 050-O

