

CALCULATION SUMMARY

Project Name : 2363 Prospect Avenue

Project Location: 2363 Prospect Avenue

Drawing No. :

City: Bronx, NY 10458

DEPT BLDGS Job No. 220646629



Scan Code ESHS8077694



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Design Areas

Design Area Name	Calc. Mode (Model)	Occupancy	Area of Application	Total Water	Pressure @ Source	Min. Density	Min. Pressure	Min. Flow	Calculated Heads	Hose Streams	Margin To Source
			(ft ²)	(gpm)	(psi)	(gpm/ft ²)	(psi)	(gpm)	#	(gpm)	(psi)
1	Demand (HW)	Light	669.7	114.3	Required 44.1	0.124	7	15.3	7	0	6.9



HYDRAULIC CALCULATIONS for

Job Information

Project Name 2363 Prospect Avenue

Contract No. :

City Bronx, NY 10458

Project Location: 2363 Prospect Avenue

Date 6/3/2018

Contractor Information

Name of Contractor: Joselow Consulting

Address: 30 Glenn Street, Suite 203

City: White plains, NY 10603

Phone Number: 212.736.0241

E-mail:

Name of Designer: AJ

Authority Having Jurisdiction: NYDOB

Design

Remote Area Name	1
Remote Area Location	5th Floor Unit 1
Occupancy Classification	Light
Density (gpm/ft²)	0.124
Area of Application (ft²)	669.7
Coverage per Sprinkler (ft²)	123
Number of Calculated Sprinklers	7
In-Rack Demand (gpm)	0
Special Heads	
Hose Streams (gpm)	0
Total Water Required (incl. Hose Streams) (gpm)	114.3
Required Pressure at Source (psi)	44.1
Type of System	Wet
Volume - Entire System (gal)	615.3 gal

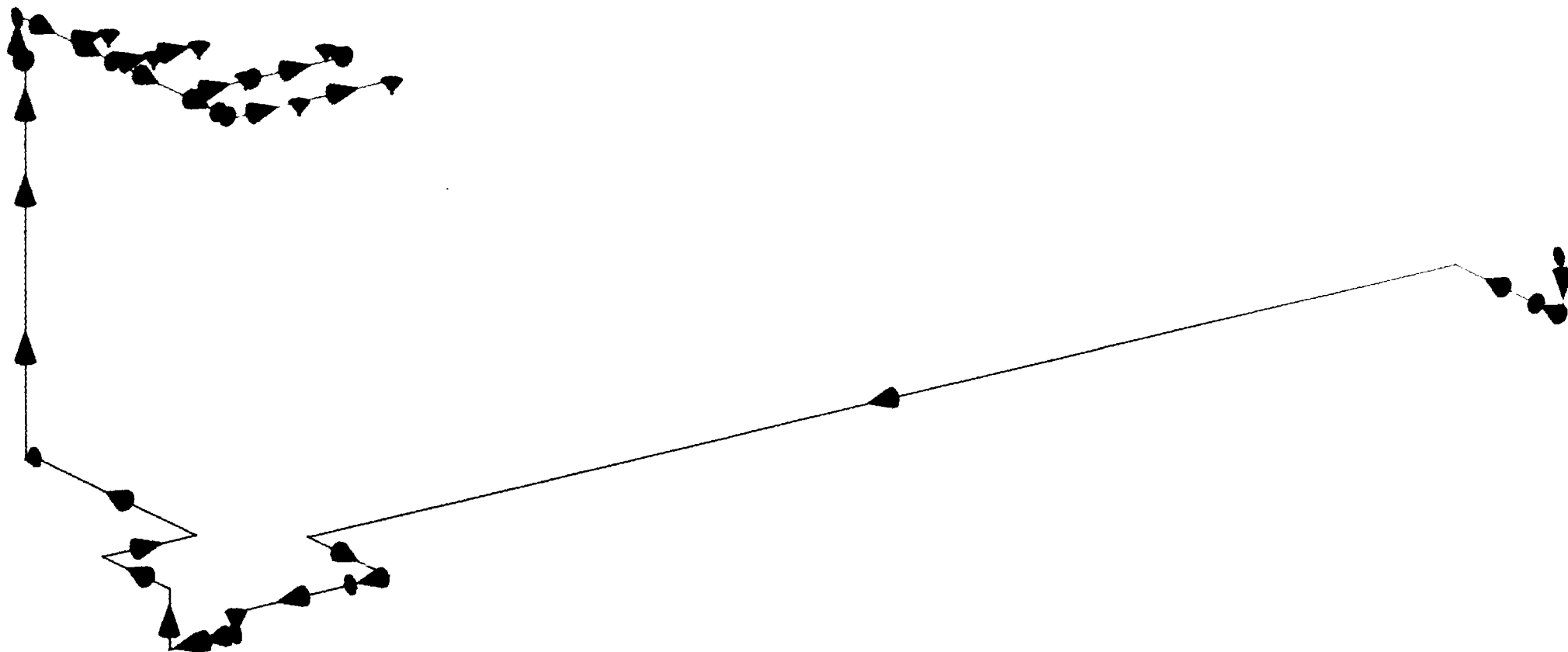
Water Supply Information

Date	05/18/18
Location	W Side of Prospect Ave 1st Hyd S of East 187th St
Source	W1

Notes

Room design method.

**Diagram for Design Area : 1
(Optimized Hvdraulic Simplified)**



Hydraulic Analysis for : 1**Calculation Info**

Calculation Mode
 Hydraulic Model
 Fluid Name
 Fluid Weight, (lb/ft³)
 Fluid Dynamic Viscosity, (lb-s/ft²)

Demand
 Hazen-Williams
 Water @ 60F (15.6C)
 N/A for Hazen-Williams calculation.
 N/A for Hazen-Williams calculation.

Water Supply Parameters

Supply 1 : W1

Flow (gpm)	Pressure (psi)
0	51
500	50

Supply Analysis

Node at Source	Static Pressure (psi)	Residual Pressure (psi)	Flow (gpm)	Available Pressure (psi)	Total Demand (gpm)	Required Pressure (psi)
W1	51	50	500	50.9	114.3	44.1

Hoses

Inside Hose Flow / Standpipe Demand (gpm)

Outside Hose Flow (gpm)

Additional Outside Hose Flow (gpm)

Other (custom defined) Hose Flow (gpm)

Total Hose Flow (gpm)**Sprinklers**

Overhead Sprinkler Flow (gpm) 114.3

InRack Sprinkler Flow (gpm) 0

Other (custom defined) Sprinkler Flow (gpm) 0

Total Sprinkler Flow (gpm) 114.3**Other**

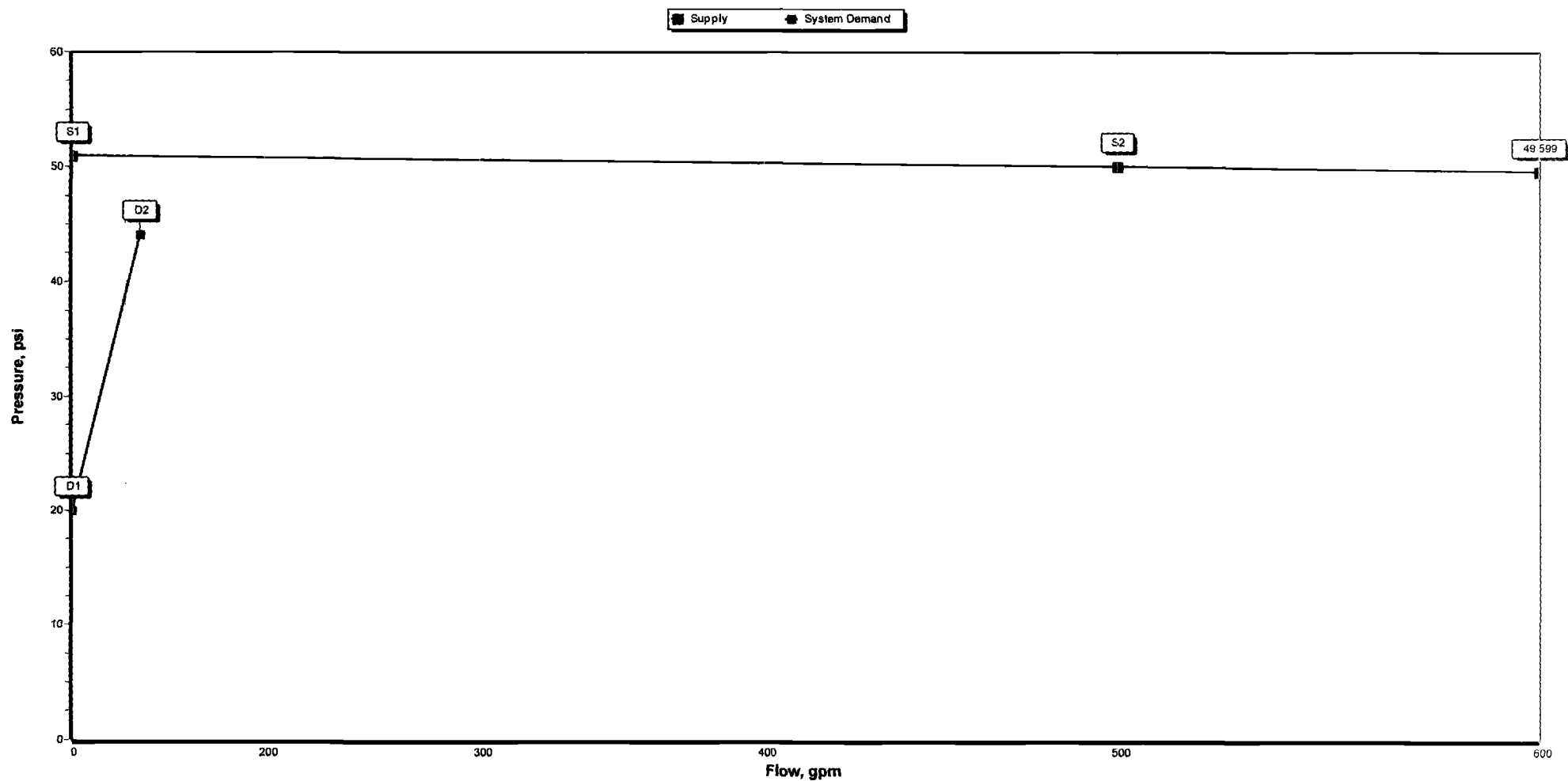
Required Margin of Safety (psi) 0

W1 - Pressure (psi) 44.1

W1 - Flow (gpm) 114.3

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	51
S2	Supply point #2 - Residual	500	50
D1	Elevation Pressure	0	20
D2	System Demand	114.3	44.1

Curve Intersections & Safety Margins

Curve Name	Intersection		Safety Margin	
	Pressure (psi)	Flow (gpm)	Pressure (psi)	@ Flow (gpm)
Supply	50.9	130.9	6.9	114.3

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)
A1	Overhead Sprinkler	123	5.6	0.1	12.3	7	0.124	15.3	7.5
A2	Overhead Sprinkler	87	5.6	0.1	8.7	7	0.183	16	8.1
A3	Overhead Sprinkler	87	5.6	0.1	8.7	7	0.179	15.6	7.8
A4	Overhead Sprinkler	113	5.6	0.1	11.3	7	0.131	14.8	7
A5	Overhead Sprinkler	87	5.6	0.1	8.7	7	0.191	16.6	8.8
A6	Overhead Sprinkler	87	5.6	0.1	8.7	7	0.194	16.9	9.1
A7	Overhead Sprinkler	87	5.6	0.1	8.7	7	0.22	19.2	11.7

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
A1 57.67	Overhead Sprinkler HEAD	5.6 Open	15.3 3	123 0.124	7.5 -20	7 12.3
A4 57.67	Overhead Sprinkler HEAD	5.6 Open	14.8 3.5	113 0.131	7 -20	7 11.3
A3 57.67	Overhead Sprinkler HEAD	5.6 Open	15.6 6.9	87 0.179	7.8 -20	7 8.7
A2 57.67	Overhead Sprinkler HEAD	5.6 Open	16 7.3	87 0.183	8.1 -20	7 8.7
A5 57.67	Overhead Sprinkler HEAD	5.6 Open	16.6 7.9	87 0.191	8.8 -20	7 8.7
A6 57.67	Overhead Sprinkler HEAD	5.6 Open	16.9 8.2	87 0.194	9.1 -20	7 8.7
A7 57.67	Overhead Sprinkler HEAD	5.6 Open	19.2 10.5	87 0.22	11.7 -20	7 8.7
48 59.17	Node NODE				7.9 -20.7	
01 59.17	Node NODE				8 -20.7	
46 59.17	Node NODE				9 -20.7	
03 59.17	Node NODE				11.5 -20.7	
05 59.17	Node NODE				11.6 -20.7	
07 59.17	Node NODE				11.8 -20.7	
12 59.17	Node NODE				12.3 -20.7	
13 59.17	Node NODE				12.4 -20.7	
14 59.17	Node NODE				12.7 -20.7	
22-O 54.67	Node NODE				16.4 -18.7	
22-I 54.67	Node NODE				16.7 -18.7	
24 45.13	Node NODE				21.7 -14.6	
25 35.08	Node NODE				26.2 -10.2	
32-O 2	Node NODE				41.3 4.1	
W1 11.46	Supply SUPPLY		-114.3		44.1 0	
35 4.46	Node NODE				47 3	
36-O 4.46	Node NODE				47 3	
36-I 4.46	Node NODE				47 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
37 4.46	Node NODE				47.1 3	
39 4.46	Node NODE				47.1 3	
40-O 4.46	Node NODE				47.1 3	
40-I 4.46	Node NODE				47.1 3	
32-I 2	Node NODE				47.9 4.1	
33-O 2	Node NODE				47.9 4.1	
33-I 2	Node NODE				47.9 4.1	

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

A4 48	57.67 59.17	5.6	14.8 14.8	1 1.049	2x(us.90)=4	16.9 4 20.9	120 0.0744	7 -0.6 1.6	
48 07	59.17 59.17		15.6 30.4	1 1.049	1x(us.Tee-Br)=5	8.97 5 13.97	120 0.282	7.9 0 3.9	
07 12	59.17 59.17		31.2 61.7	2 2.067		12 0 12	120 0.0384	11.8 0 0.5	
12 13	59.17 59.17		33.5 95.2	2 2.067		0.94 0 0.94	120 0.0857	12.3 0 0.1	
13 14	59.17 59.17		0 95.2	2.5 2.469		7.56 0 7.56	120 0.0361	12.4 0 0.3	
14 22-O	59.17 54.67		19.2 114.3	2.5 2.469	1x(coupling)=1 3x(us.90)=18	15.38 19 34.38	120 0.0507	12.7 1.9 1.7	
22-O 22-I	54.67 54.67		0 114.3	2.5 0		1 0 1	0 0.3009	16.4 0 0.3	VIC 705BFV ***
22-I 24	54.67 45.13		0 114.3	2.5 2.469	1x(coupling)=1 1x(us.90)=6	10.1 7 17.1	120 0.0507	16.7 4.1 0.9	
24 25	45.13 35.08		0 114.3	3 3.068	1x(coupling)=1	10.04 1 11.04	120 0.0176	21.7 4.4 0.2	
25 32-O	35.08 2		0 114.3	4 4.026	1x(coupling)=1 6x(us.90)=60	92.84 61 153.84	120 0.0047	26.2 14.3 0.7	
32-O 32-I	2 2		0 114.3	4 0		1 0 1	0 6.6233	41.3 0 6.6	WATTS 709DCDA ***
32-I 33-O	2 2		0 114.3	4 4.026	1x(coupling)=1	2.68 1 3.68	120 0.0047	47.9 0 0.0	
33-O 33-I	2 2		0 114.3	4 0		1 0 1	0 0.0107	47.9 0 0.0	Gate A2360 ***
33-I 35	2 4.46		0 114.3	4 4.026	2x(us.90)=20	3.74 20 23.74	120 0.0047	47.9 -1.1 0.1	
35 36-O	4.46 4.46		0 114.3	4 4.3	1x(coupling)=1.83	14.25 1.83 16.08	140 0.0026	47 0 0.0	
36-O 36-I	4.46 4.46		0 114.3	4 0		0.75 0 0.75	0 0.0051	47 0 0	NRS GATE ***

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

36-I 37	4.46 4.46		0 114.3	4 4.3	1x(us.90)=18.33	5 18.33 23.33	140 0.0026	47 0 0.1	
37 39	4.46 4.46		0 114.3	8 8.39	2x(us.90)=57.83	165 57.83 222.83	140 0.0001	47.1 0 0.0	
39 40-O	4.46 4.46		0 114.3	6 6.28	1x(coupling)=1.58	14.13 1.58 15.7	140 0.0004	47.1 0 0	
40-O 40-I	4.46 4.46		0 114.3	6 0		0.88 0 0.88	0 0.008	47.1 0 0	NRS GATE ***
40-I W1	4.46 11.46		0 114.3	6 6.28	2x(us.90)=44.13	12.5 44.13 56.63	140 0.0004	47.1 -3 0.0	
W1								44.1	

Path No: 2

A1 01	57.67 59.17	5.6	15.3 15.3	1 1.049	1x(us.90)=2	13.56 2 15.56	120 0.0788	7.5 -0.6 1.2	
01 03	59.17 59.17		16 31.2	1 1.049	1x(us.90)=2	9.61 2 11.61	120 0.2963	8 0 3.4	
03 05	59.17 59.17		0 31.2	1.25 1.38		1.78 0 1.78	120 0.0779	11.5 0 0.1	
05 07	59.17 59.17		0 31.2	1.5 1.61		6.46 0 6.46	120 0.0368	11.6 0 0.2	
07								11.8	

Path No: 3

A3 48	57.67 59.17	5.6	15.6 15.6	1 1.049	1x(us.Tee-Br)=5 1x(us.90)=2	2.62 7 9.62	120 0.0819	7.8 -0.6 0.8	
48								7.9	

Path No: 4

A2 01	57.67 59.17	5.6	16 16	1 1.049	1x(us.Tee-Br)=5	1.5 5 6.5	120 0.0854	8.1 -0.6 0.6	
01								8	

PIPE INFORMATION**Path No: 5**

A5	57.67	5.6	16.6	1	1x(us.90)=2	7.25	120	8.8	
46	59.17		16.6	1.049		2	0.0921	-0.6	
						9.25		0.9	
46	59.17		16.9	1	1x(us.Tee-Br)=5	4.75	120	9	
12	59.17		33.5	1.049		5	0.3368	0	
						9.75		3.3	
12								12.3	

Path No: 6

A6	57.67	5.6	16.9	1	1x(us.Tee-Br)=5	1.5	120	9.1	
46	59.17		16.9	1.049		5	0.0944	-0.6	
						6.5		0.6	
46								9	

Path No: 7

A7	57.67	5.6	19.2	1	1x(us.Tee-Br)=5	6.25	120	11.7	
14	59.17		19.2	1.049	1x(us.90)=2	7	0.1199	-0.6	
						13.25		1.6	
14								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 12.43 ft/s occurs in the following pipe(s): (12-46)

*** 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.