22-109145 DFS 01 RS

WYATT
FIRE PROTECTION, INC.
9095 S.W. Burnham
Tigard, OR 97223

OLESON PARK LOT 4
5906 SW 67TH PI
PORTLAND, OR 97225

FIRE PROTECTION
HYDRAULIC CALCULATIONS

CALCULATION SUMMARY

Project Name : Job Name

Project Location:

Contract No. :

City:

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)
Hall	Demand (HW)		512	26.4	Required 21.6	0.051	7	13	2	0	29.1
MBath	Demand (HW)		512	26.2	Required 20.9	0.051	7	13	2	0	29.9

HYDRAULIC CALCULATIONS
for

Job Information

Project Name : Job Name

Contract No. :

City:

Project Location:

Date: 8/5/2022

Contractor Information

Name of Contractor: Wyatt Fire Protection

Address: 9095 SW Burnham St

City: Tigard, OR 97223

Phone Number: 503-684-2928

E-mail:

Name of Designer:

Authority Having Jurisdiction:

Design

Remote Area Name	Hall
Remote Area Location	
Occupancy Classification	
Density (gpm/ft²)	0.051
Area of Application (ft²)	512
Coverage per Sprinkler (ft²)	256
Number of Calculated Sprinklers	2
In-Rack Demand (gpm)	0
Special Heads	
Hose Streams (gpm)	0
Total Water Required (incl. Hose Streams) (gpm)	26.4
Required Pressure at Source (psi)	21.6
Type of System	Wet
Volume - Entire System (gal)	3.1 gal

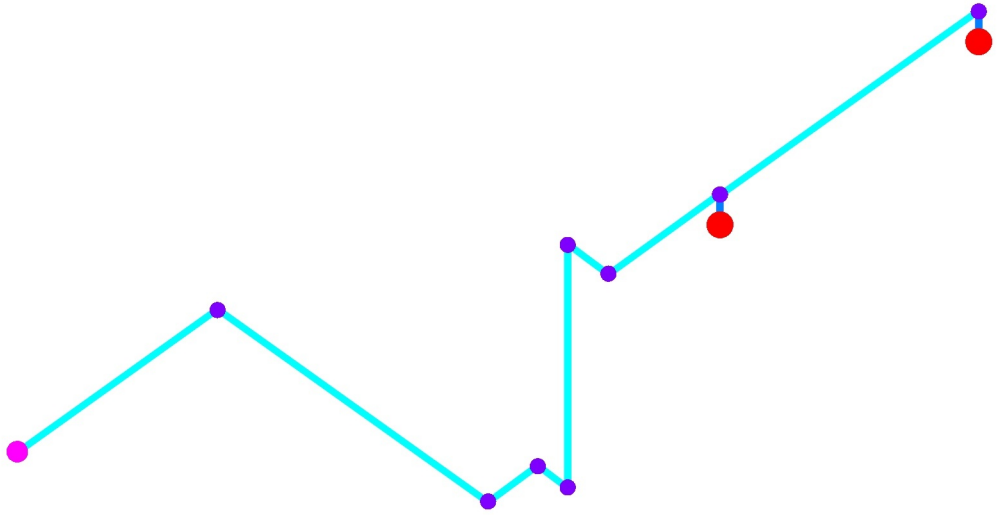
Water Supply Information

Date	MM/DD/YYYY
Location	
Source	W1

Notes

Node Labels: Off
Pipe Labels: Off

Diagram for Design Area : Hall
(Optimized Hydraulic Simplified)



File: W:\Levi\Oleson Park Lot 4\Oleson Park Lot 4.dwg

Hydraulic Analysis for : Hall

Calculation Info

Calculation Mode	Demand
Hydraulic Model	Hazen-Williams
Fluid Name	Water @ 60F (15.6C)
Fluid Weight, (lb/ft³)	N/A for Hazen-Williams calculation.
Fluid Dynamic Viscosity, (lb·s/ft²)	N/A for Hazen-Williams calculation.

Water Supply Parameters

Supply 1 : W1

Flow (gpm)	Pressure (psi)
0	55
20	52
25	51
30	50
35	48
40	46
45	43
50	40

Supply Analysis

Node at Source	Static Pressure (psi)	Residual Pressure (psi)	Flow (gpm)	Available Pressure (psi)	Total Demand (gpm)	Required Pressure (psi)
W1	55	52	20	50.7	26.4	21.6

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)	

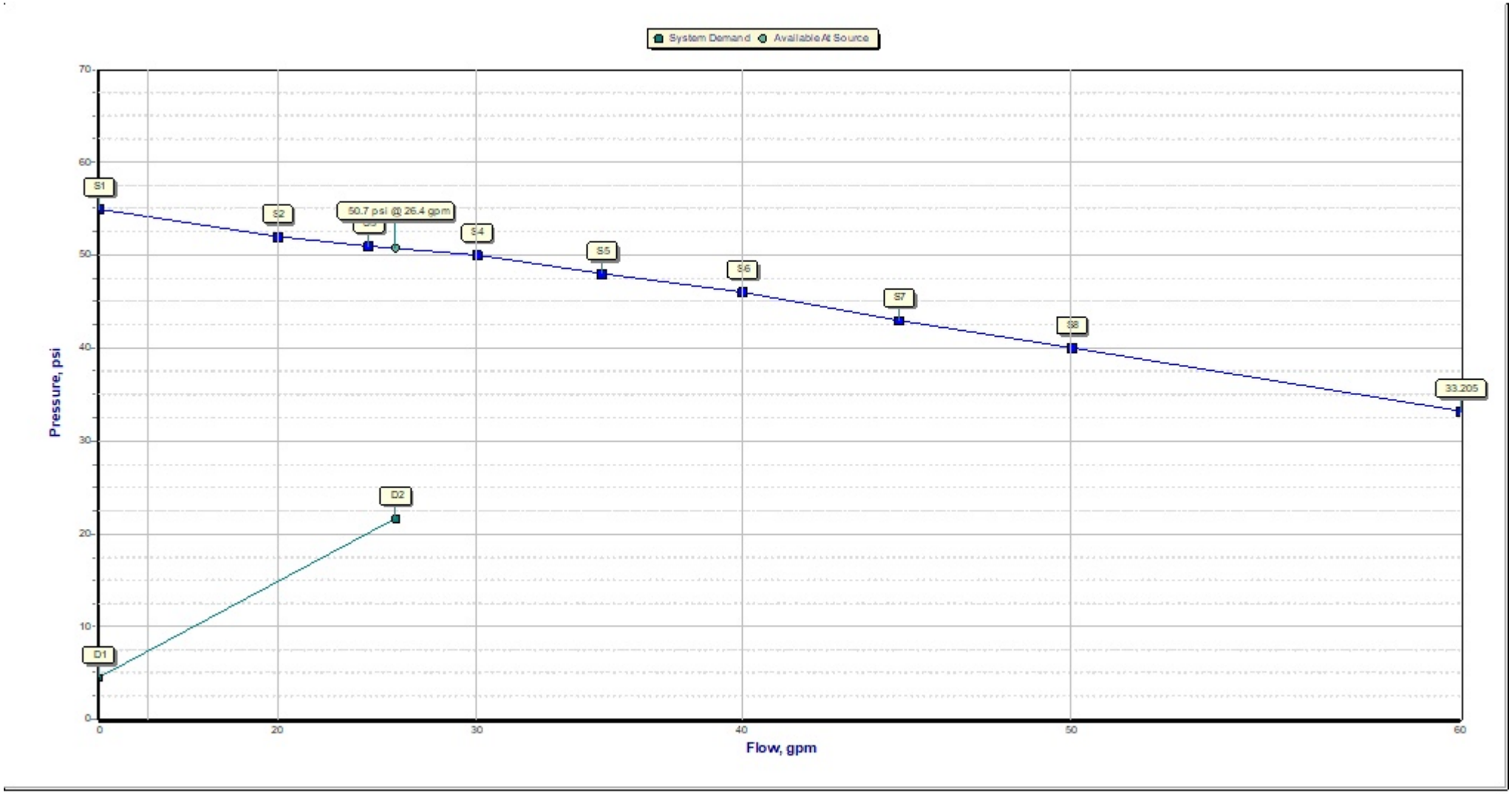
Sprinklers

Ovehead Sprinkler Flow (gpm)	26.4
InRack Sprinkler Flow (gpm)	0
Other (custom defined) Sprinkler Flow (gpm)	0
Total Sprinkler Flow (gpm)	26.4

Other

Required Margin of Safety (psi)	0
W1 - Pressure (psi)	21.6
W1 - Flow (gpm)	26.4
Demand w/o System Pump(s)	N/A

Hydraulic Analysis for : Hall



Hydraulic Analysis for : Hall

Graph Labels

Label	Description	Values	
		Flow (gpm)	Pressure (psi)
S1	Supply point #1 - Static	0	55
S2	Supply point #2	20	52
S3	Supply point #3	25	51
S4	Supply point #4	30	50
S5	Supply point #5	35	48
S6	Supply point #6	40	46
S7	Supply point #7	45	43
S8	Supply point #8	50	40
D1	Elevation Pressure	0	4.6
D2	System Demand	26.4	21.6

Curve Intersections & Safety Margins

Curve Name	Intersection		Safety Margin	
	Pressure (psi)	Flow (gpm)	Pressure (psi)	@ Flow (gpm)
Supply	44.9	41.9	29.1	26.4

Open Heads

Head Ref.	Head Type	Coverage	K-Factor	Required			Calculated		
				Density	Flow	Pressure	Density	Flow	Pressure
		(ft²)	(gpm/psi½)	(gpm/ft²)	(gpm)	(psi)	(gpm/ft²)	(gpm)	(psi)
h3	Overhead Sprinkler	256	4.9	0.05	12.8	7	0.052	13.4	7.5
h4	Overhead Sprinkler	256	4.9	0.05	12.8	7	0.051	13	7

Node Data

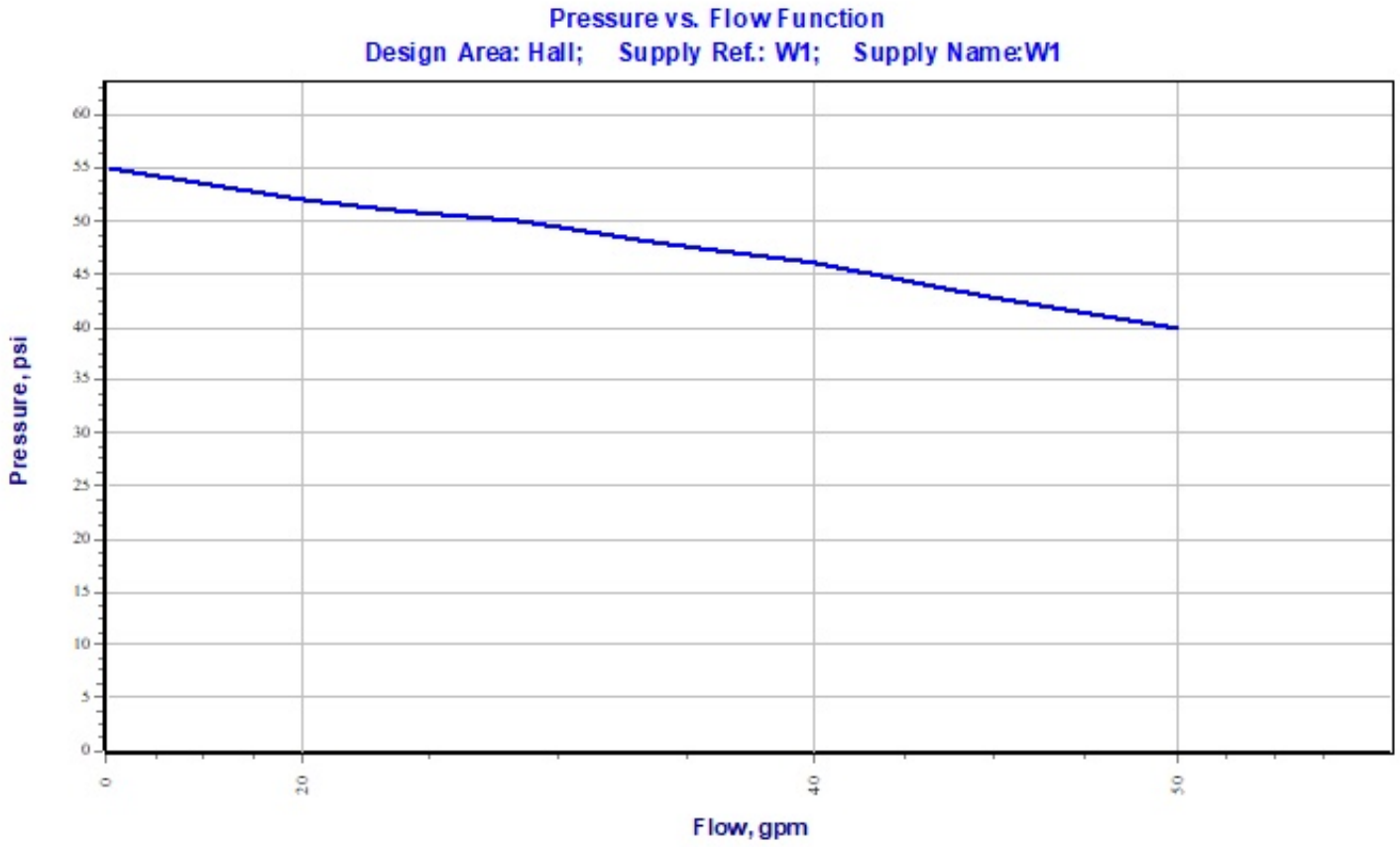
Node# Elev	Type Hgroup	K-Fact. Open/Closed	Discharge Overdischarge	Coverage Density	Tot. Pres. Elev. Pres.	Req. Pres. Req. Discharge
ft		gpm/psi½	gpm gpm	ft² gpm/ft²	psi psi	psi gpm
h4 20	Overhead Sprinkler HEAD	4.9 Open	13 0.2	256 0.051	7 -4.5	7 12.8
h3 20	Overhead Sprinkler HEAD	4.9 Open	13.4 0.6	256 0.052	7.5 -4.5	7 12.8
01 21.5	Node NODE				7 -5.2	
W1 9.5	Supply SUPPLY		-26.4		21.6 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/psi½)	(gpm)	(in)	(ft)	(ft)	(psi)	(psi)	
Path No: 1									
h4	20	4.9	13	1	3x(BM.Tee-Run)=3	14.31	150	7	
01	21.5		13	1.101	1x(BM.Tee-Br)=5	8	0.0304	-0.6	
						22.31		0.7	
01	21.5		13.4	1	3x(BM.Tee-Run)=3	46.78	150	7	
W1	9.5		26.4	1.101	3x(BM.90)=15	36.56	0.113	5.2	
					2x(BM.Tee-Br)=10	83.34		9.4	
					1x(us.Tee-Br)=9.56				
W1								**21.6**	
Path No: 2									
h3	20	4.9	13.4	1	1x(BM.Tee-Br)=5	1.5	150	7.5	
01	21.5		13.4	1.101		5	0.0322	-0.6	
						6.5		0.2	
01								**7**	

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

* Maximum Velocity of 8.88 ft/s occurs in the following pipe(s): (W1-01)



HYDRAULIC CALCULATIONS
for

Job Information

Project Name : Job Name

Contract No. :

City:

Project Location:

Date: 8/5/2022

Contractor Information

Name of Contractor: Wyatt Fire Protection

Address: 9095 SW Burnham St

City: Tigard, OR 97223

Phone Number: 503-684-2928

E-mail:

Name of Designer:

Authority Having Jurisdiction:

Design

Remote Area Name	MBath
Remote Area Location	
Occupancy Classification	
Density (gpm/ft²)	0.051
Area of Application (ft²)	512
Coverage per Sprinkler (ft²)	256
Number of Calculated Sprinklers	2
In-Rack Demand (gpm)	0
Special Heads	
Hose Streams (gpm)	0
Total Water Required (incl. Hose Streams) (gpm)	26.2
Required Pressure at Source (psi)	20.9
Type of System	Wet
Volume - Entire System (gal)	3.4 gal

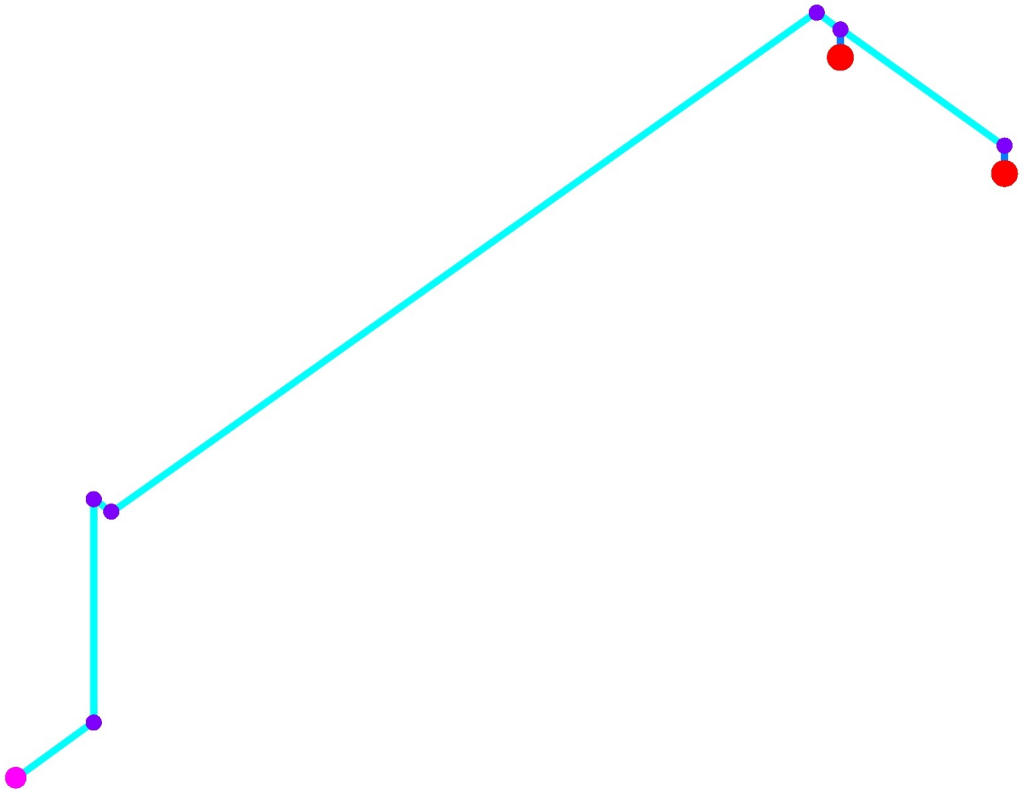
Water Supply Information

Date	MM/DD/YYYY
Location	
Source	W1

Notes

Node Labels: Off
Pipe Labels: Off

Diagram for Design Area : MBath
(Optimized Hydraulic Simplified)



File: W:\Levi\Oleson Park Lot 4\Oleson Park Lot 4.dwg

Hydraulic Analysis for : MBath

Calculation Info

Calculation Mode	Demand
Hydraulic Model	Hazen-Williams
Fluid Name	Water @ 60F (15.6C)
Fluid Weight, (lb/ft³)	N/A for Hazen-Williams calculation.
Fluid Dynamic Viscosity, (lb·s/ft²)	N/A for Hazen-Williams calculation.

Water Supply Parameters

Supply 1 : W1

Flow (gpm)	Pressure (psi)
0	55
20	52
25	51
30	50
35	48
40	46
45	43
50	40

Supply Analysis

Node at Source	Static Pressure (psi)	Residual Pressure (psi)	Flow (gpm)	Available Pressure (psi)	Total Demand (gpm)	Required Pressure (psi)
W1	55	52	20	50.8	26.2	20.9

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)	

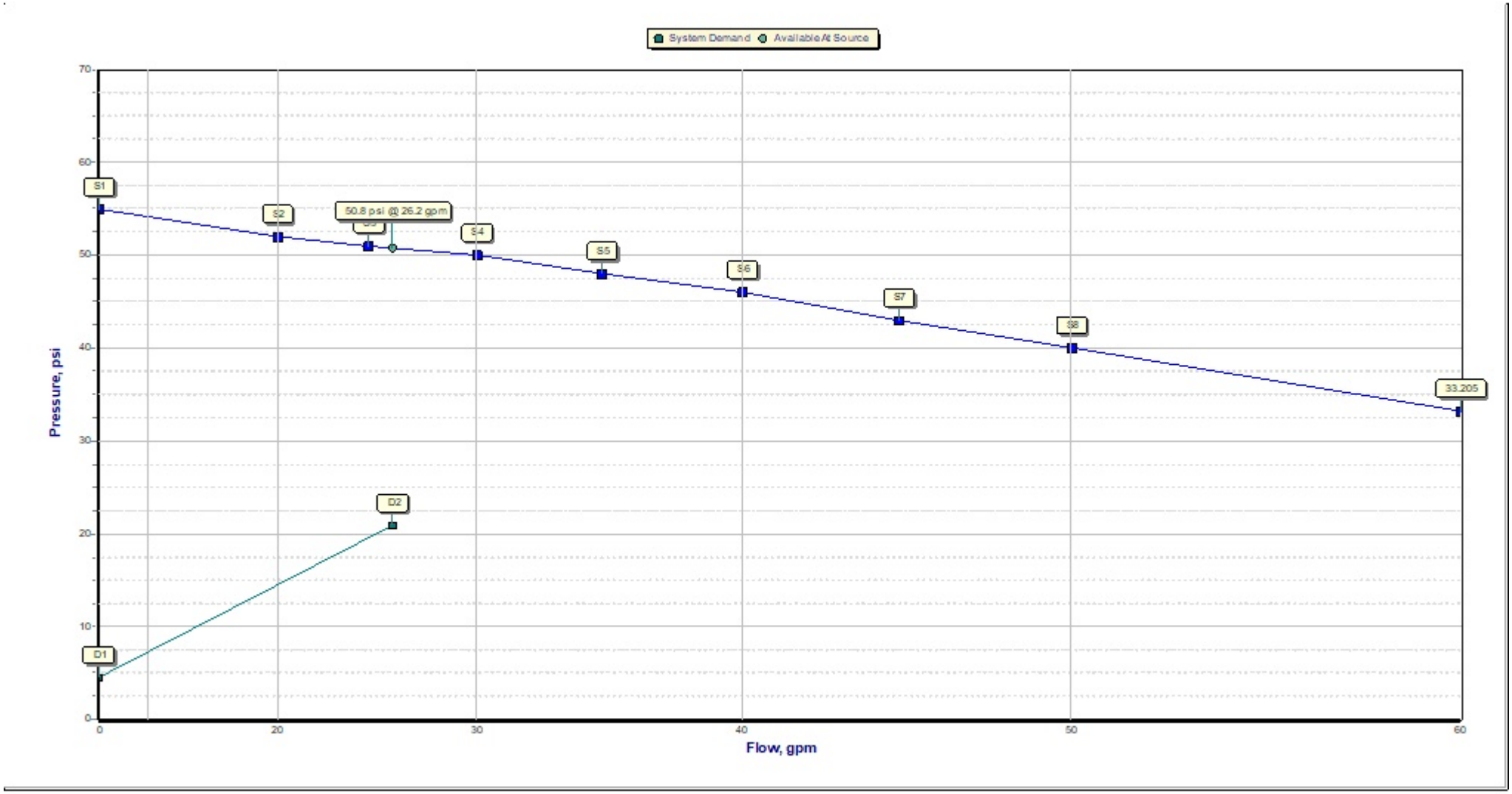
Sprinklers

Ovehead Sprinkler Flow (gpm)	26.2
InRack Sprinkler Flow (gpm)	0
Other (custom defined) Sprinkler Flow (gpm)	0
Total Sprinkler Flow (gpm)	26.2

Other

Required Margin of Safety (psi)	0
W1 - Pressure (psi)	20.9
W1 - Flow (gpm)	26.2
Demand w/o System Pump(s)	N/A

Hydraulic Analysis for : MBath



Hydraulic Analysis for : MBath

Graph Labels

Label	Description	Values	
		Flow (gpm)	Pressure (psi)
S1	Supply point #1 - Static	0	55
S2	Supply point #2	20	52
S3	Supply point #3	25	51
S4	Supply point #4	30	50
S5	Supply point #5	35	48
S6	Supply point #6	40	46
S7	Supply point #7	45	43
S8	Supply point #8	50	40
D1	Elevation Pressure	0	4.6
D2	System Demand	26.2	20.9

Curve Intersections & Safety Margins

Curve Name	Intersection		Safety Margin	
	Pressure (psi)	Flow (gpm)	Pressure (psi)	@ Flow (gpm)
Supply	44.5	42.5	29.9	26.2

Open Heads

Head Ref.	Head Type	Coverage	K-Factor	Required			Calculated		
				Density	Flow	Pressure	Density	Flow	Pressure
		(ft²)	(gpm/psi½)	(gpm/ft²)	(gpm)	(psi)	(gpm/ft²)	(gpm)	(psi)
h1	Overhead Sprinkler	256	4.9	0.05	12.8	7	0.052	13.2	7.3
h2	Overhead Sprinkler	256	4.9	0.05	12.8	7	0.051	13	7

Node Data

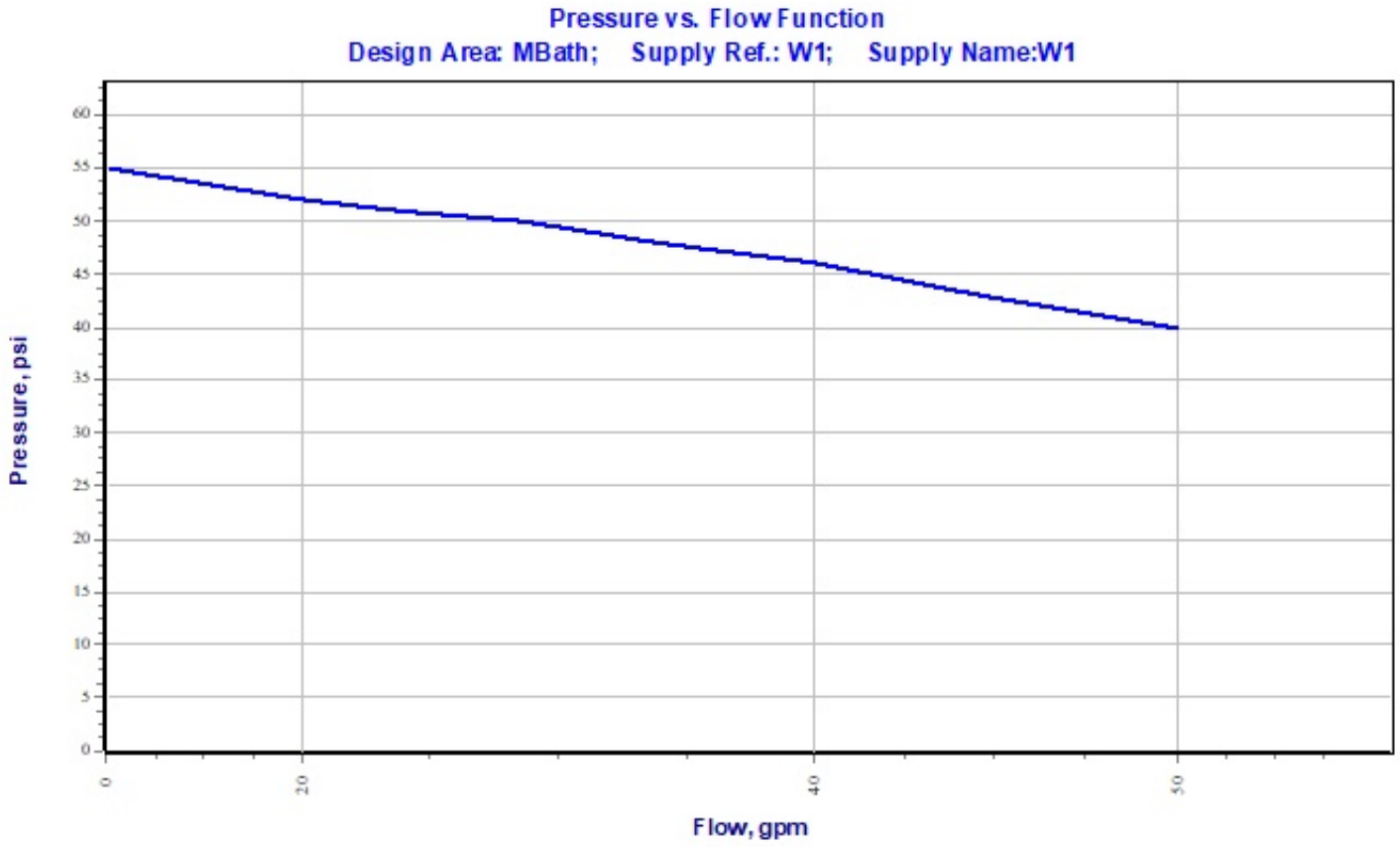
Node# Elev	Type Hgroup	K-Fact. Open/Closed	Discharge Overdischarge	Coverage Density	Tot. Pres. Elev. Pres.	Req. Pres. Req. Discharge
ft		gpm/psi½	gpm gpm	ft² gpm/ft²	psi psi	psi gpm
02 21.5	Node NODE				6.8 -5.2	
W1 9.5	Supply SUPPLY		-26.2		20.9 0	
h1 20	Overhead Sprinkler HEAD	4.9 Open	13.2 0.4	256 0.052	7.3 -4.5	7 12.8
h2 20	Overhead Sprinkler HEAD	4.9 Open	13 0.2	256 0.051	7 -4.5	7 12.8

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/psi½)	(gpm)	(in)	(ft)	(ft)	(psi)	(psi)	
Path No: 1									
h2	20	4.9	13	1	1x(BM.Tee-Run)=1	10.32	150	7	
02	21.5		13	1.101	1x(BM.90)=5	6	0.0304	-0.6	
						16.32		0.5	
02	21.5		13.2	1	2x(BM.Tee-Br)=10	56.31	150	6.8	
W1	9.5		26.2	1.101	2x(BM.90)=10	23	0.1117	5.2	
					3x(BM.Tee-Run)=3	79.31		8.9	
W1								**20.9**	
Path No: 2									
h1	20	4.9	13.2	1	1x(BM.Tee-Br)=5	1.5	150	7.3	
02	21.5		13.2	1.101		5	0.0315	-0.6	
						6.5		0.2	
02								**6.8**	

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

* Maximum Velocity of 8.83 ft/s occurs in the following pipe(s): (W1-02)



TALCO FIRE SYSTEMS
RESIDENTIAL & COMMERCIAL FIRE PUMP SPECIALISTS
6040 NE 112TH AVE. PORTLAND, OR 97220
800-878-8055 WWW.TALCOFIRE.COM

Home Hydrant

NFPA-13D Packaged Residential Fire Pump & Tank
U.S. Patents #8,678,032 & 8,905,069

HH3-150SP

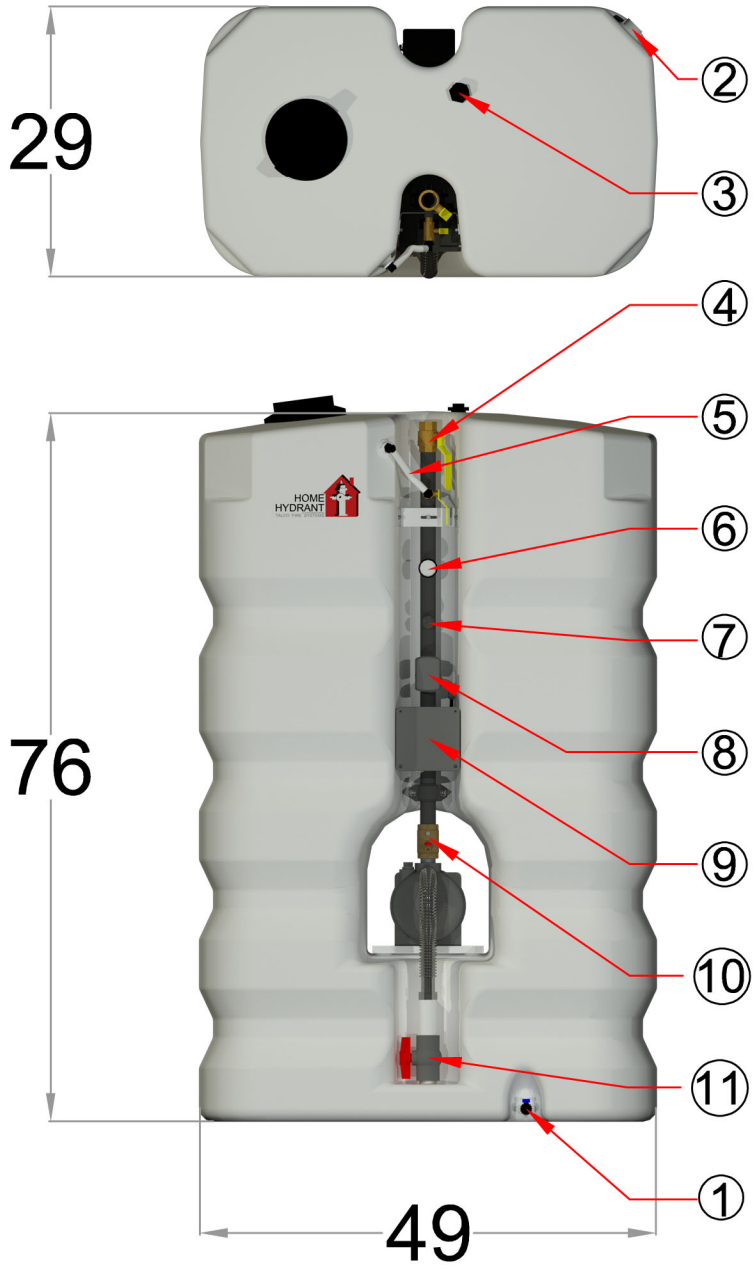
50GPM @ 40PSI

350 Gallon Water Tank

① Tank Drain ½"(GHT)
② Overflow Fitting 1"(FNPT)
③ Auto-Fill Valve ¾"(FNPT

1.5HP Electric Motor
240 Volt Single-Phase
10.9 Amp (Full Load)

1 ¼" Discharge (FNPT)
Smart Riser Control System
④ Isolation Ball Valve
⑤ Test Line/System Drain
⑥ Pressure Gauge
⑦ Flow Switch (Optional)
⑧ Pressure Switch
⑨ Run-Time Controller
⑩ Discharge Check Valve
⑪ Suction Shut-off Valve



Performance

Performance values based on multiple pump tests. Not for certification purposes.

GPM	0	20	25	30	35	40	45	50
PSI	55	52	51	50	48	46	43	40