



WYATT

FIRE PROTECTION, INC.

9095 S.W. Burnham

Tigard, OR 97223

OLESON LOT 5

5916 SW 67TH PL

PORTLAND, OR 97223

**FIRE PROTECTION
HYDRAULIC CALCULATIONS**

HOME HYDRANT

NFPA-13D Packaged Residential Fire Pump & Tank

U.S. Patents #8,678,032 & 8,905,069

HH3-150SP

350 Gallon Water Tank

- ① Tank Drain $\frac{1}{2}$ "(GHT)
- ② Overflow Fitting 1"(FNPT)
- ③ Auto-Fill Valve $\frac{3}{4}$ "(FNPT)

1.5HP Electric Motor

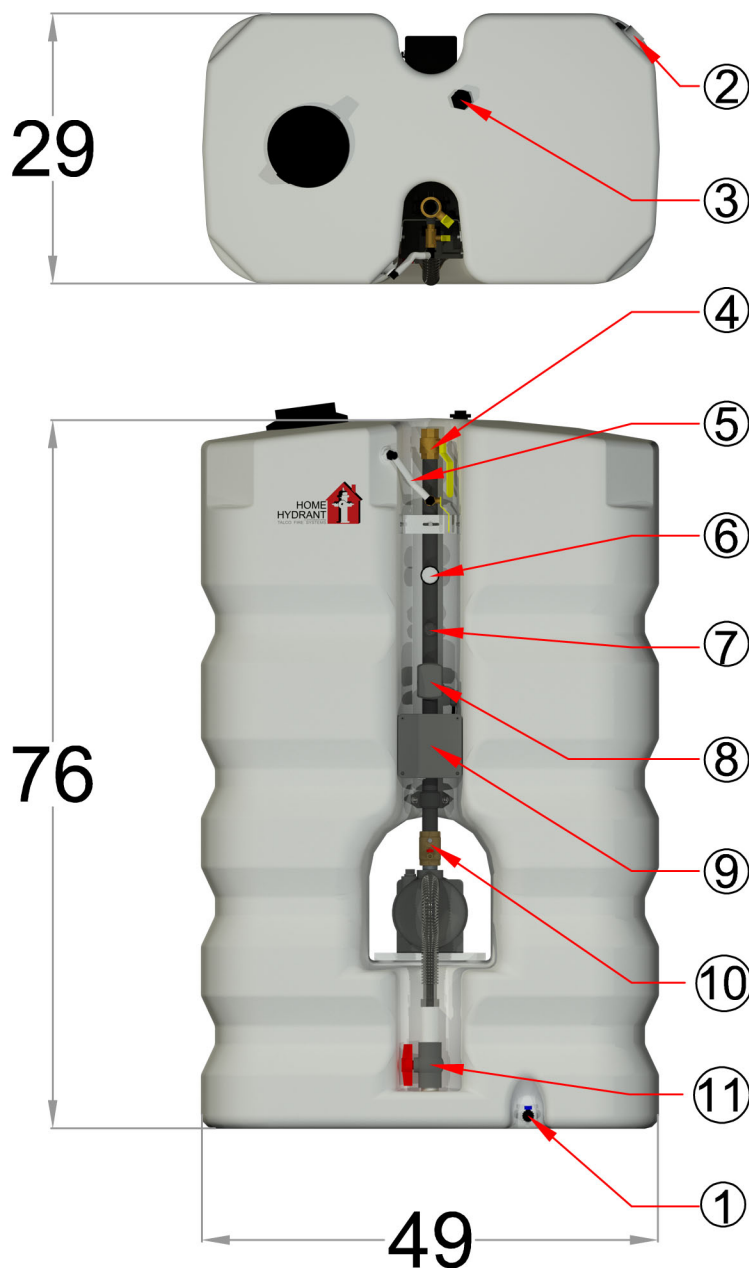
240 Volt Single-Phase

10.9 Amp (Full Load)

1 $\frac{1}{4}$ " 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

CALCULATION SUMMARY

Project Name : Oleson Park Lot 5

Project Location: 5916 SW 67th Pl

Contract No. : C23-171

City: Portland, OR 97223

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)
Bonus	Demand (HW)		512	26.2	Required 26.3	0.051	7	13	2	0	24.8

HYDRAULIC CALCULATIONS for

Job Information

Project Name : Oleson Park Lot 5

Contract No. : C23-171

City: Portland, OR 97223

Project Location: 5916 SW 67th Pl

Date: 3/29/2023

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: RC

Authority Having Jurisdiction:

Design

Remote Area Name	Bonus
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)	26.3
Type of System	Wet
Volume - Entire System (gal)	4.1 gal

Water Supply Information

Date

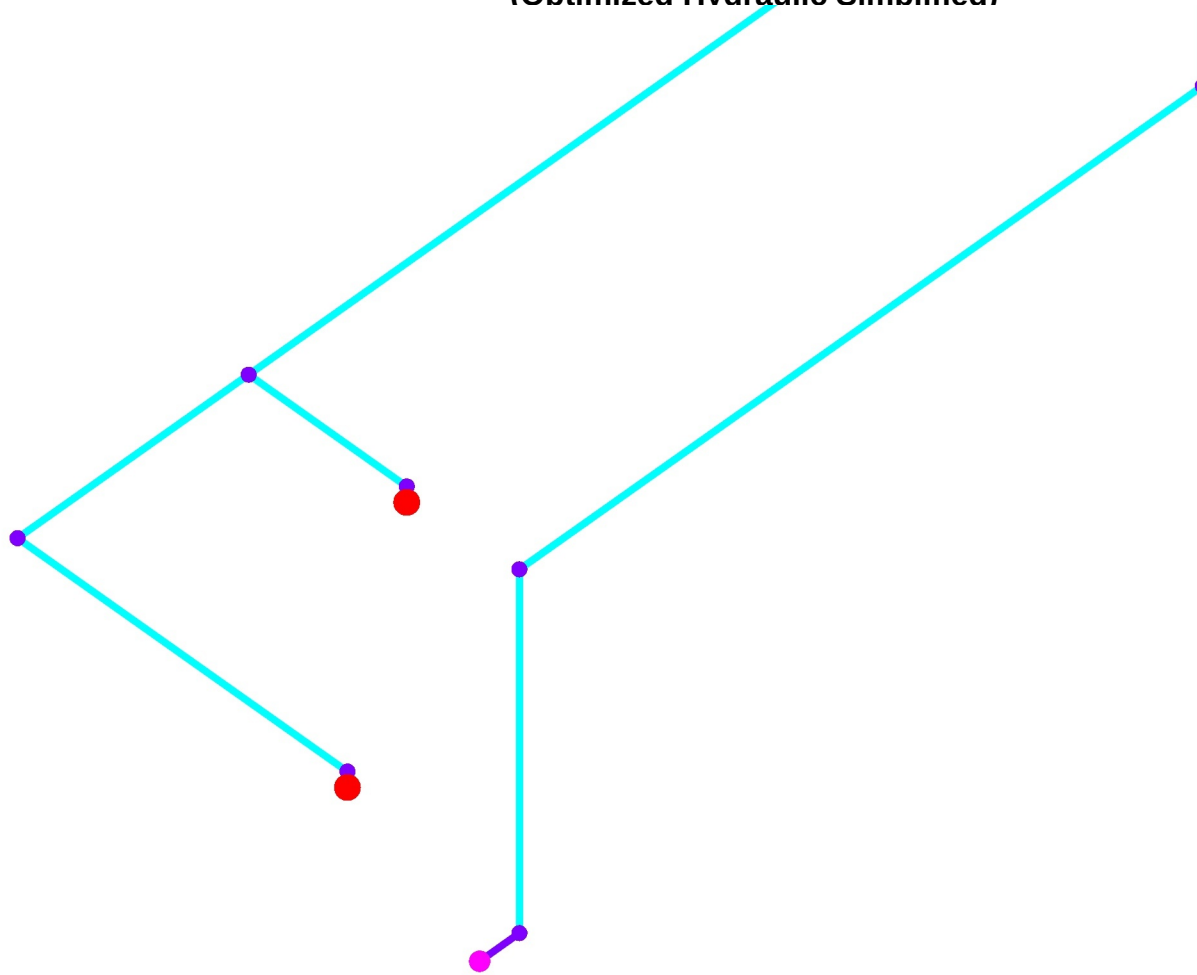
Location

Source

W1

Notes

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



Hydraulic Analysis for : Bonus

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	55
30	50

Supply Analysis

Node at Source	Static Pressure (psi)	Residual Pressure (psi)	Flow (gpm)	Available Pressure (psi)	Total Demand (gpm)	Required Pressure (psi)
W1	55	50	30	51.1	26.2	26.3

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)

26.3

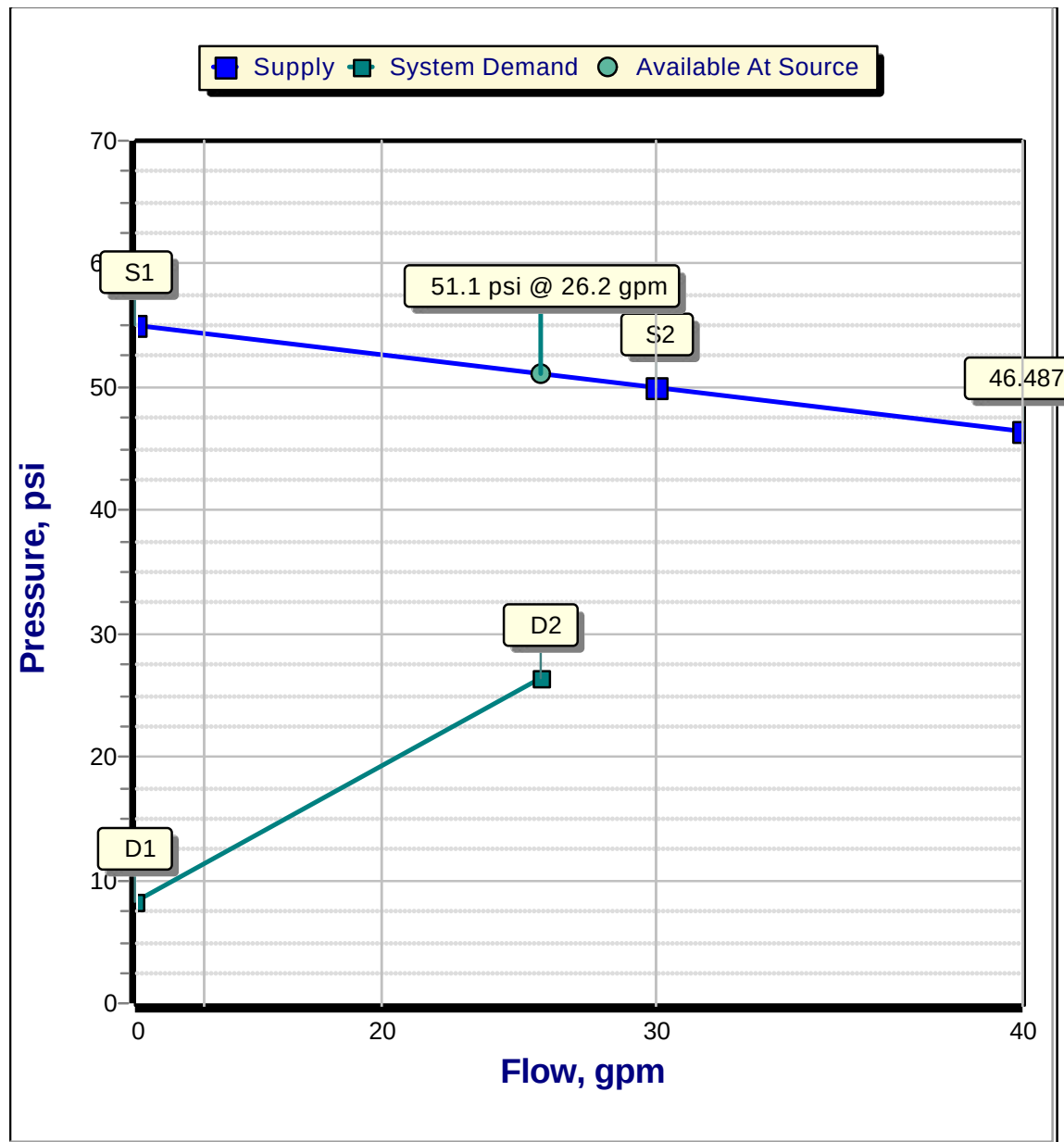
W1 - Flow (gpm)

26.2

Demand w/o System Pump(s)

N/A

Hydraulic Analysis for : Bonus



Hydraulic Analysis for : Bonus

Graph Labels

Label	Description	Values	
		Flow (gpm)	Pressure (psi)
S1	Supply point #1 - Static	0	55
S2	Supply point #2 - Residual	30	50
D1	Elevation Pressure	0	8.3
D2	System Demand	26.2	26.3

Curve Intersections & Safety Margins

Curve Name	Intersection		Safety Margin	
	Pressure (psi)	Flow (gpm)	Pressure (psi)	@ Flow (gpm)
Supply	46.7	39.5	24.8	26.2

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)
h1	Overhead Sprinkler	256	4.9	0.05	12.8	7	0.051	13	7
h2	Overhead Sprinkler	256	4.9	0.05	12.8	7	0.052	13.3	7.3

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
h1 19.17	Overhead Sprinkler HEAD	4.9 Open	13 0.2	256 0.051	7 -8.3	7 12.8
h2 19.17	Overhead Sprinkler HEAD	4.9 Open	13.3 0.5	256 0.052	7.3 -8.3	7 12.8
04 19.58	Node NODE				7.6 -8.5	
38 0	Node NODE				26.1 0	
W1 0	Supply SUPPLY		-26.2		26.3 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

h1 04	19.17 19.58	4.9	13 13	1 1.101	1x(BM.Tee-Run)=1 1x(BM.Tee-Br)=5 1x(BM.90)=5	15.07 11 26.07	150 0.0304	7 -0.2 0.8	
04 38	19.58 0		13.3 26.2	1 1.101	1x(us.90)=3.82 8x(BM.Tee-Run)=8 2x(BM.90)=10 1x(BM.Tee-Br)=5	62.35 26.82 89.18	150 0.112	7.6 8.5 10	
38 W1	0 0		0 26.2	1 1.049		1.04 0 1.04	120 0.2143	26.1 0 0.2	
W1								26.3	

Path No: 2

h2 04	19.17 19.58	4.9	13.3 13.3	1 1.101	1x(BM.Tee-Br)=5 1x(BM.90)=5	4.54 10 14.54	150 0.0317	7.3 -0.2 0.5	
04								7.6	

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

* Maximum Velocity of 9.74 ft/s occurs in the following pipe(s): (W1-38)

