RED HAWK FIRE PROTECTION, LLC

801 Valley Ave NW, Suite D
Puyallup, WA 98371
(253) 840-9900
REDHAHF901QP

Ever Vigilant®

HYDRAULIC CALCULATIONS

FOR

Wesley Bradley Park – Care Center
Puyallup, WA

RHFP JOB NO. 70120

Expires DEC 31, 26

WASHINGTON STATE CERTIFICATE OF COMPETENCY FIRE SPRINKLER SYSTEMS

Travis Clifton Kinne
0835-1021-C Level 3
Red Hawk Fire Protection, LLC
REDHAHF901QP

Signature | Date: 04/10/2026

Gray & Osborne, Inc.
CONSULTING ENGINEERS

MEMORANDUM

TO: BRIAN JOHNSON, WATER SYSTEM SPECIALIST
FROM: MAYA VITA, E.I.T.
KERRI SIDEBOTTOM, P.E.
DATE: MARCH 6, 2025
SUBJECT: WESLEY HOMES FIRE FLOW AVAILABILITY – 707 39TH AVENUE SE CITY OF PUYALLUP, PIERCE COUNTY, WASHINGTON
G&O #21415.23

Per your request, we have analyzed the available fire flow at the Wesley Homes site located at 707 39th Avenue SE. The following assumptions used to determine the static pressure and available fire flow are noted as follows.

- The available fire flows and pressures are measured at six nodes, corresponding to five existing hydrants within the Wesley Homes site, as shown in the attached figure.
- Water system demands are based on projected 2038 demands and reservoirs are depleted of fire suppression and equalizing storage, as established in the *2019 Water System Plan* (WSP), approved by the Washington State Department of Health (DOH). The City's water model was updated in 2021 to reflect additional system improvements since the WSP was developed.
- All pump stations are idle, and the Salmon Springs source is operating at 1,100 gallons per minute (gpm).

The site is located in Zone 4, which is supplied by the 39th Avenue SE Reservoir 1. The system was modeled with the piping indicated on the attached figure.

The available pressure under 2038 peak hour demands at the hydrants is included in Table 1.

TABLE 1

Modeled Fire Flow Availability

Node	Hydrant	Elevation, feet	Peak Hour Pressure, psi
J1832	SE 903	462	82
J1834	SE 905	473	77
J2434	SE 902	474	77
J2436	SE 901	472	78
J2438	SE 900	465	81
J2440	SE 904	470	78

Available fire flow was modeled at six existing hydrants around the Wesley Homes site. All site piping is 12-inch ductile iron. The results of this modeling are included in Table 2. The modeled fire flow is available at either hydrant individually, but not simultaneously.

TABLE 2

Modeled Fire Flow Availability

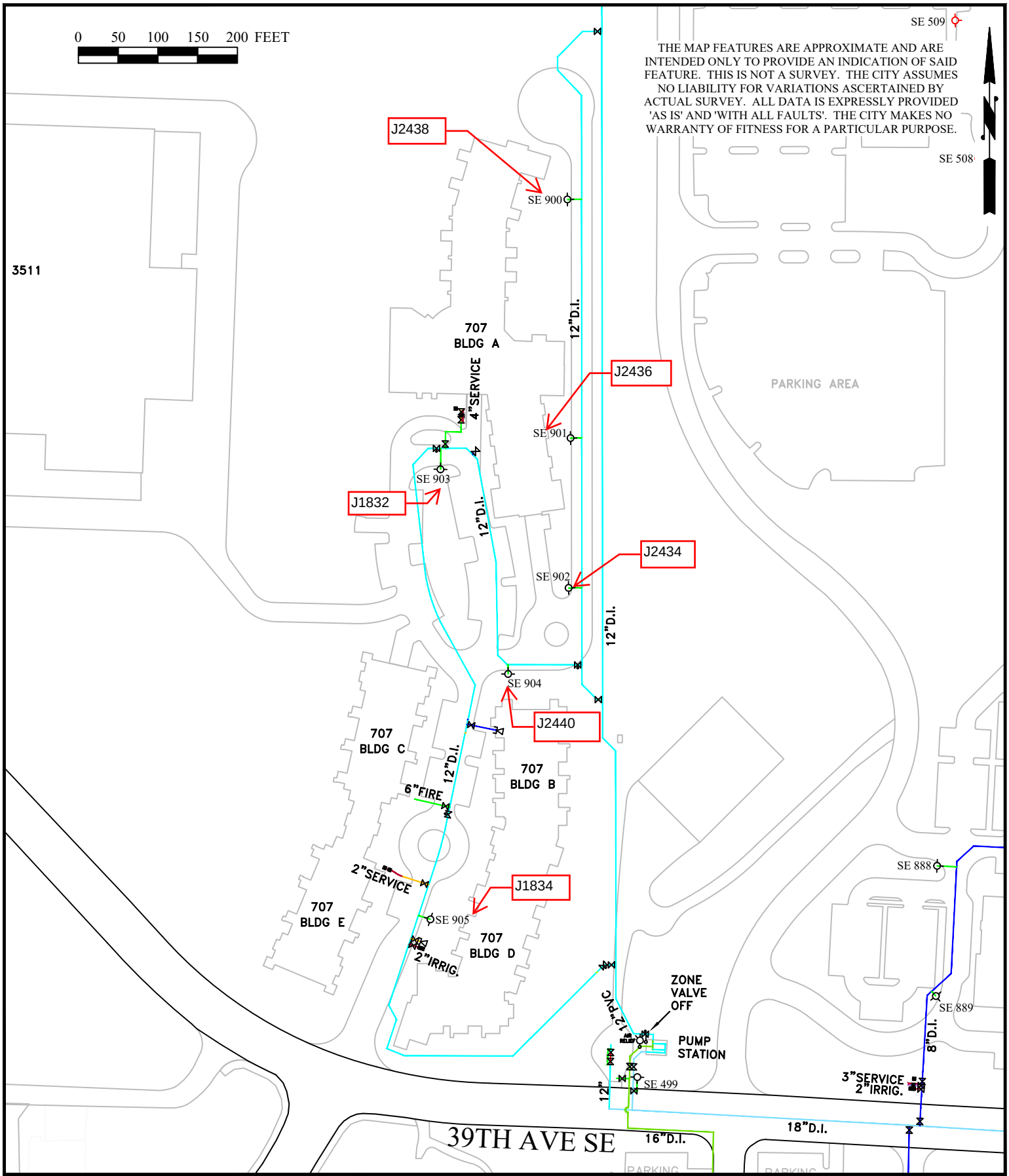
Node	Hydrant	Modeled Fire Flow, gpm	Residual Pressure at Modeled Fire Flow, psi	Minimum System Pressure at Modeled Fire Flow, psi
J1832	SE 903	3,320(1)	24	20
J1834	SE 905	3,250(1)	20	20
J2434	SE 902	3,330(1)	20	20
J2436	SE 901	3,350(1)	21	20
J2438	SE 900	3,390(1)	24	20
J2440	SE 904	3,340(1)	21	20

(1) Limited by the minimum system-wise pressure requirement of 20 psi at all service locations.

Fire flow to the hydrants is limited by the 20-psi minimum system pressure.

The Department of Health and City Standards for water distribution systems are to meet the peak hourly demand of the system while providing a minimum pressure of 30 psi, system-wide. Under peak daily demand with a fire flow, the system is designed to maintain a minimum pressure of 20 psi, system-wide. Although the peak hourly demand pressure may currently be higher than these standards, the Developer must recognize that the City may not provide pressure higher than 30 psi in the future. The flows and pressures determined in this memo are based on the approximate hydrant elevation at ground level. The Developer may design their sprinkler system for whatever pressure they wish; however, they must recognize and be responsible for conditions when the pressure may be less than currently exists.

MV/sr



CITY OF PUYALLUP
PUBLIC WORKS
WATER DIVISION

HYDRAULIC MODEL FOR WESLEY HOMES AT 707 39TH AVE SE

SCALE AS SHOWN

02/19/2025

COP\PW\WATER\S_MAINT\PDF\QSEC\PG011\MODEL FOR 707 39TH AVE SE

Hydraulic Calculations

for

Project Name: BRADLEY PARK CARE CENTER: (70120)
Location: 707 39TH AVE SE, BLDG B, , PUYALLUP, WA 98374
Drawing Name: 70120 WBP Care Center R01 Level 0 Basement Calculation Date: 4/10/2026

Design

Remote Area Number:	L0A1
Remote Area Location:	SPA 0108B
Occupancy Classification:	Light Hazard
Density	0.100gpm/ft²
Area of Application:	1950.00ft² (Actual 911.35ft²)
Coverage per Sprinkler:	100.00ft²
Type of sprinklers calculated:	Upright, Pendent
No. of sprinklers calculated:	12
No. of nozzles calculated:	0

In-rack Demand: N/A gpm at Node: N/A
Hose Streams: 100.00 at Node: 1 Type: Allowance at Source

Total Water Required (including Hose Streams where applicable):
From Water Supply at Node 1: 300.67 @ 77.731 (Safety Margin = 3.587)

Type of System: DRY
Volume of Dry/PreAction/Antifreeze/OtherAgent System: 411.42gal

Name of Contractor: RED HAWK FIRE PROTECTION, LLC
Address: 801 VALLEY AVE NW, SUITE D, PUYALLUP, WA 98371
Phone Number: 253-604-7311
Name of designer: BROOKE MCDANIELS
Authority Having Jurisdiction: : CITY OF PUYALLUP

Notes:

Summary Notes:

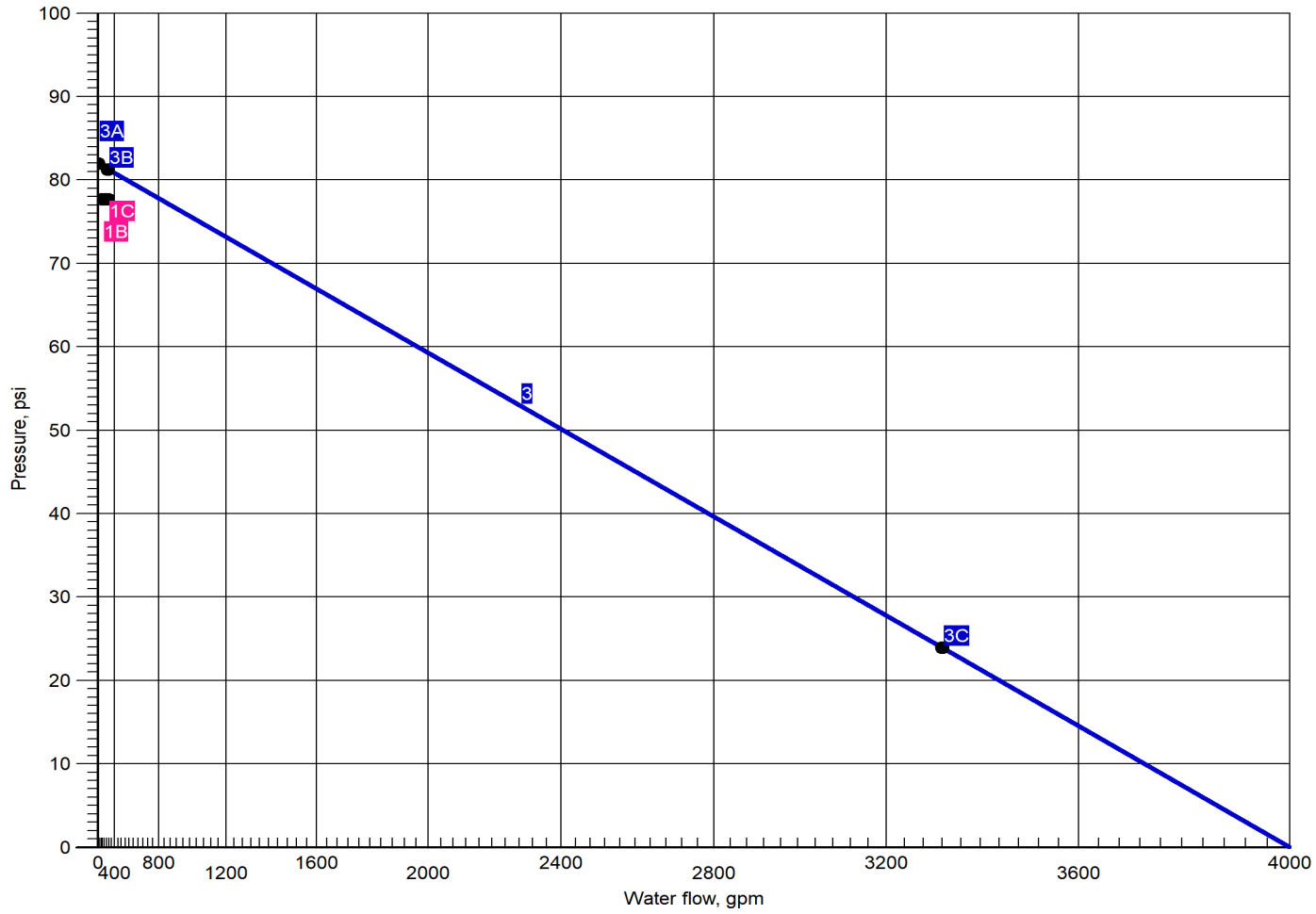
Water Supply at Node 1

Job Name: BRADLEY PARK CARE CENTER

Job Number: 70120 - REMOTE AREA L0A1

Report Description: Light Hazard (L0A1)

Remote Area Number: L0A1



Curve	Data Point	Hydraulic Calculation Results	Additional Data
1	1B	Required Pressure at System Demand: 77.731 @ 200.67	Available Flow @ 20 PSI: 3441.74
	1C	Required Pressure at System Demand (Including Hose Allowance at Source): 77.731 @ 300.67	
3	3A	Available Static Pressure at Water Supply at Node 1: 82.000	
	3B	Available Residual Pressure at System Demand: 81.318 @ 300.67	
	3C	Available Residual Pressure & Flow at Water Supply at Node 1: 24.000 @ 3320.00	

Summary Of Outflowing Devices

Device		Actual Flow (gpm)	Minimum Flow (gpm)	K-Factor (K)	Pressure (psi)			
Sprinkler	1000	15.29	10.00	5.6	7.455			
Sprinkler	1001	15.87	10.00	5.6	8.029			
Sprinkler	1003	16.34	10.00	5.6	8.510			
Sprinkler	1004	16.81	10.00	5.6	9.010			
Sprinkler	**1005**	**14.82**	**10.00**	**5.6**	**7.000**			
Sprinkler	1006	14.83	10.00	5.6	7.010			
Sprinkler	1008	15.77	10.00	5.6	7.929			
Sprinkler	1009	16.35	10.00	5.6	8.529			
Sprinkler	1010	16.46	10.00	5.6	8.635			
Sprinkler	1011	17.01	10.00	5.6	9.230			
Sprinkler	1103	26.00	10.00	5.6	21.560			
Sprinkler	1107	15.13	10.00	5.6	7.303			

Most Demanding Sprinkler Data

Supply Analysis

Node	Name	Static (psi)	Residual (psi) @ Flow (gpm)		Available (psi) @ Total Demand (gpm)		Required Pressure (psi)
1	Water Supply	82.000	24.000	3320.00	81.318	300.67	77.731

Node Analysis

Node Number	Elevation (Foot)	Node Type	Pressure at Node (psi)	Discharge at Node (gpm)	Notes
1	7-0	Supply	77.731	200.67	
1000	10-0½	Sprinkler	7.455	15.29	
1001	10-1	Sprinkler	8.029	15.87	
1003	10-1½	Sprinkler	8.510	16.34	
1004	10-2	Sprinkler	9.010	16.81	
1005	17-6	Sprinkler	7.000	14.82	
1006	17-6	Sprinkler	7.010	14.83	
1008	10-0½	Sprinkler	7.929	15.77	
1009	10-1	Sprinkler	8.529	16.35	
1010	6-6½	Sprinkler	8.635	16.46	
1011	6-7½	Sprinkler	9.230	17.01	
1103	10-6	Sprinkler	21.560	26.00	
1107	17-5	Sprinkler	7.303	15.13	
2	7-0		77.261	0.00	
3	3-0½	Gauge	78.920	0.00	BOR, BFP(-1.999)
4	3-0½		76.919	0.00	
109	10-2		9.616	0.00	
121	7-9½		62.310	0.00	

Node Number	Elevation (Foot)	Node Type	Pressure at Node (psi)	Discharge at Node (gpm)	Notes
1050	10-0½		7.963	0.00	
1051	10-2		9.745	0.00	
1052	17-6		8.963	0.00	
1053	18-0½		7.908	0.00	
1054	18-0		8.010	0.00	
1055	17-11½		8.326	0.00	
1056	17-8½		8.907	0.00	
1057	17-6		9.218	0.00	
1058	10-0½		8.466	0.00	
1059	10-1½		8.928	0.00	
1060	10-2		9.657	0.00	
1061	17-6		9.971	0.00	
1062	17-6		10.397	0.00	

Pipe Information

Node 1 / Node 2	Elev 1 / Elev 2 (Foot)	K-Factor	Flow added this step (q) / Total Flow (Q)	Nominal ID / Actual ID	Fittings & Devices / Equiv. Length (Foot)	Length (Foot) / Fitting (Foot) / Total (Foot)	C Factor / Pf Friction Loss Per Unit (psi)	Total(Pt) / Elev(Pe) / Friction(Pf)	Notes Fitting/Device (Equivalent Length) Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.
1005	17-6	5.6	14.82	1	(See Notes)	2-4½	100	7.000	• • • • • **Route 1** • • • • •
1053	18-0½		14.82	1.0490		8-6½ 10-11	0.104671	-0.235 1.144	Sprinkler, T(3-7), E(1-5), PO(3-7)
1053	18-0½			1½		9-3	100	7.908	
1054	18-0		14.82	1.7280		9-3	0.009208	0.017 0.085	
1054	18-0		14.83	1½		9-0	100	8.010	Flow (q) from Route 2
1055	17-11½		29.64	1.7280		9-0	0.033216	0.017 0.299	
1055	17-11½		15.13	1½	(See Notes)	2-8	100	8.326	Flow (q) from Route 3
1056	17-8½		44.78	1.7280		4-0½ 6-8½	0.071242	0.104 0.477	E(4-0½)
1056	17-8½			2	(See Notes)	0-0	100	8.907	
1057	17-6		44.78	2.1570		8-9½ 8-9½	0.024195	0.099 0.212	T(8-9½)
1057	17-6		64.30	2	(See Notes)	1-11	100	9.218	Flow (q) from Route 4
1062	17-6		109.08	2.1570		7-5½ 9-4½	0.125635	1.179	T(7-5½)
1062	17-6		65.59	2	(See Notes)	14-9½	100	10.397	Flow (q) from Route 5
1103	10-6		174.67	2.1570		12-3½ 27-1	0.300194	3.037 8.126	4fE(3-1)
1103	10-6	5.6	26.00	2	(See Notes)	86-7½	100	21.560	Sprinkler,
121	7-9½		200.67	2.1570		15-4½ 101-11½	0.388059	1.179 39.571	5fE(3-1)
121	7-9½			3	(See Notes)	174-10	100	62.310	PO(14-4½)
4	3-0½		200.67	3.2600		67-0 241-10	0.051925	2.053 12.556	fE(4-9½), T(12-5½), E(6-8½), DPV(4-8½), BV(9-7), PO(14-4½)
4	3-0½			6	(See Notes)	2-5½	150	76.919	
3	3-0½		200.67	6.3570		2-5½	0.000949	2.001	BOR, BFP(-1.999)
3	3-0½			6	(See Notes)	7-0	150	78.920	
2	7-0		200.67	6.3570		53-2 60-2	0.000949	-1.716 0.057	2E(26-7)

Pipe Information

Node 1 / Node 2	Elev 1 / Elev 2 (Foot)	K-Factor	Flow added this step (q) / Total Flow (Q)	Nominal ID / Actual ID	Fittings & Devices / Equiv. Length (Foot)	Length (Foot) / Fitting (Foot) / Total (Foot)	C Factor / Pf Friction Loss Per Unit (psi)	Total(Pt) / Elev(Pe) / Friction(Pf)	Notes (Fitting/Device (Equivalent Length); Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.)
2	7-0			6	Supply (See Notes)	263-10	140	77.261	Avl.Pressure @ Supply: 81.318
1	7-0		200.67	6.1600		110-5½	0.001256		4E(20-1), EE(10-0½), S
						374-3½		0.470	
			100.00					77.731	Hose Allowance At Source
1			300.67						Total(Pt) Route 1
1006	17-6	5.6	14.83	1	(See Notes)	3-1	100	7.010	• • • • • **Route 2** • • • • • Sprinkler,
1054	18-0		14.83	1.0490		8-6½	0.104805	-0.220	T(3-7), E(1-5), PO(3-7)
						11-8		1.221	
								8.010	Total(Pt) Route 2
1107	17-5	5.6	15.13	1	(See Notes)	3-0½	100	7.303	• • • • • **Route 3** • • • • • Sprinkler,
1055	17-11½		15.13	1.0490		8-6½	0.108855	-0.240	T(3-7), E(1-5), PO(3-7)
						11-7		1.262	
								8.326	Total(Pt) Route 3
1000	10-0½	5.6	15.29	1	(See Notes)	1-0	100	7.455	• • • • • **Route 4** • • • • • Sprinkler,
1050	10-0½		15.29	1.0490		3-7	0.110943		PO(3-7)
						4-7		0.508	
1050	10-0½			1½		8-3½	100	7.963	
1001	10-1		15.29	1.7280			0.009760	-0.015	
						8-3½		0.081	
1001	10-1	5.6	15.87	1½	(See Notes)	13-11	100	8.029	Sprinkler
1003	10-1½		31.16	1.7280			0.036424	-0.025	
						13-11		0.507	
1003	10-1½	5.6	16.34	1½	(See Notes)	7-8	100	8.510	Sprinkler,
1051	10-2		47.49	1.7280		8-0½	0.079448	-0.014	T(8-0½)
						15-8½		1.248	
1051	10-2		16.81	1½	(See Notes)	9-2	100	9.745	Flow (q) from Route 7
1052	17-6		64.30	1.7280		8-0½	0.139165	-3.179	2E(4-0½)
						17-2½		2.397	
1052	17-6			2		5-5	100	8.963	
1057	17-6		64.30	2.1570			0.047263		
						5-5		0.255	
								9.218	Total(Pt) Route 4

Pipe Information

Node 1 / Node 2	Elev 1 / Elev 2 (Foot)	K-Factor	Flow added this step (q) / Total Flow (Q)	Nominal ID / Actual ID	Fittings & Devices / Equiv. Length (Foot)	Length (Foot) / Fitting (Foot) / Total (Foot)	C Factor / Pf Friction Loss Per Unit (psi)	Total(Pt) / Elev(Pe) / Friction(Pf)	Notes Fitting/Device (Equivalent Length) Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.
1008	10-0½	5.6	15.77	1	(See Notes)	1-0	100	7.929	• • • • • **Route 5** • • • • •
						3-7			Sprinkler,
1058	10-0½		15.77	1.0490		4-7	0.117463	0.537	PO(3-7)
1058	10-0½			1½		7-3½	100	8.466	
								-0.013	
1009	10-1		15.77	1.7280		7-3½	0.010333	0.075	
1009	10-1	5.6	16.35	1½	(See Notes)	10-10½	100	8.529	Sprinkler
								-0.020	
1059	10-1½		32.12	1.7280		10-10½	0.038540	0.419	
1059	10-1½		16.46	1½		9-0	100	8.928	Flow (q) from Route 6
								-0.016	
1060	10-2		48.58	1.7280		9-0	0.082839	0.746	
1060	10-2		17.01	1½	(See Notes)	12-2	100	9.657	Flow (q) from Route 8
						12-1		-3.184	
1061	17-6		65.59	1.7280		24-2½	0.144373	3.497	3E(4-0½)
1061	17-6			2	(See Notes)	1-3	100	9.971	
						7-5½			
1062	17-6		65.59	2.1570		8-8½	0.049031	0.426	T(7-5½)
								10.397	Total(Pt) Route 5
1010	6-6½	5.6	16.46	1	(See Notes)	5-11½	100	8.635	• • • • • **Route 6** • • • • •
						8-6½		-1.550	Sprinkler,
1059	10-1½		16.46	1.0490		14-6	0.127106	1.843	T(3-7), E(1-5), PO(3-7)
								8.928	Total(Pt) Route 6
1004	10-2	5.6	16.81	1	(See Notes)	1-0	100	9.010	• • • • • **Route 7** • • • • •
						3-7			Sprinkler,
109	10-2		16.81	1.0490		4-7	0.132199	0.606	PO(3-7)
109	10-2			1½	(See Notes)	2-8	100	9.616	
						8-0½		0.005	
1051	10-2		16.81	1.7280		10-8½	0.011630	0.125	T(8-0½)
								9.745	Total(Pt) Route 7
1011	6-7½	5.6	17.01	1	(See Notes)	5-11½	100	9.230	• • • • • **Route 8** • • • • •
						8-6½		-1.535	Sprinkler,
1060	10-2		17.01	1.0490		14-6	0.135187	1.962	T(3-7), E(1-5), PO(3-7)

Pipe Information

Node 1	Elev 1 (Foot)	K-Factor	Flow added this step (q)	Nominal ID	Fittings & Devices	Length (Foot)	C Factor	Total(Pt)	Notes
						Fitting (Foot)	Pf Friction Loss Per Unit (psi)	Elev(Pe)	Fitting/Device (Equivalent Length) Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.
Node 2	Elev 2 (Foot)		Total Flow (Q)	Actual ID	Equiv. Length (Foot)	Total (Foot)		Friction(Pf)	
								9.657	Total(Pt) Route 8

Equivalent Pipe Lengths of Valves and Fittings (C=120 only)

(Actual Inside Diameter / Schedule 40 Steel Pipe Inside Diameter) 4.87 = Factor

C Value Multiplier

Value Of C	100	130	140	150
Multiplying Factor	0.713	1.16	1.33	1.51

Fittings Legend

ALV	Alarm Valve	AngV	Angle Valve	b	Bushing
BalV	Ball Valve	BFP	Backflow Preventer	BV	Butterfly Valve
C	Cross Flow Turn 90°	cplg	Coupling	Cr	Cross Run
CV	Check Valve	DelV	Deluge Valve	DPV	Dry Pipe Valve
E	90° Elbow	EE	45° Elbow	Ee1	11¼° Elbow
Ee2	22½° Elbow	f	Flow Device	fd	Flex Drop
FDC	Fire Department Connection	fE	90° FireLock(TM) Elbow	fEE	45° FireLock(TM) Elbow
flg	Flange	FN	Floating Node	fT	FireLock(TM) Tee
g	Gauge	GloV	Globe Valve	GV	Gate Valve
Ho	Hose	Hose	Hose	HV	Hose Valve
Hyd	Hydrant	LtE	Long Turn Elbow	mecT	Mechanical Tee
Noz	Nozzle	P1	Pump In	P2	Pump Out
PIV	Post Indicating Valve	PO	Pipe Outlet	PrV	Pressure Relief Valve
PRV I	Pressure Reducing Valve In	PRV C	Pressure Reducing Valve Out	red	Reducer/Adapter
S	Supply	sCV	Swing Check Valve	SFx	Seismic Flex
Spr	Sprinkler	St	Strainer	T	Tee Flow Turn 90°
Tr	Tee Run	U	Union	WirF	Wirsbo
WMV	Water Meter Valve	Z	Cap		

Check Point Gauge Data

Gauge	Available Static Pressure (psi)	Available Residual Pressure (psi)	Required Residual Pressure (psi)	K-Factor(K)	Flow(gpm)	Elevation(Foot)
BOR (3)	83.716	82.507	78.920	22.59	200.67	3-0½

Hydraulic Calculations

for

Project Name: BRADLEY PARK CARE CENTER: (70120)
Location: 707 39TH AVE SE, BLDG B, , PUYALLUP, WA 98374
Drawing Name: 70120 WBP Care Center R01 Level 0 Basement Calculation Date: 4/10/2026

Design

Remote Area Number:	LOA2
Remote Area Location:	POOL MECH. 0116
Occupancy Classification:	Light Hazard
Commodity Classification:	N/A
Density	0.100gpm/ft²
Area of Application:	1500.00ft² (Actual 193.60ft²)
Coverage per Sprinkler:	130.00ft²
Type of sprinklers calculated:	Upright
No. of sprinklers calculated:	5
No. of nozzles calculated:	0

In-rack Demand: N/A gpm at Node: N/A
Hose Streams: 100.00 at Node: 1 Type: Allowance at Source

Total Water Required (including Hose Streams where applicable):
From Water Supply at Node 1: 177.34 @ 20.271 (Safety Margin = 61.472)

Type of System: WET
Volume of Dry/PreAction/Antifreeze/OtherAgent System: N/A

Name of Contractor: RED HAWK FIRE PROTECTION, LLC
Address: 801 VALLEY AVE NW, SUITE D, PUYALLUP, WA 98371
Phone Number: 253-604-7311
Name of designer: BROOKE MCDANIELS
Authority Having Jurisdiction: : CITY OF PUYALLUP

Notes:

Summary Notes:

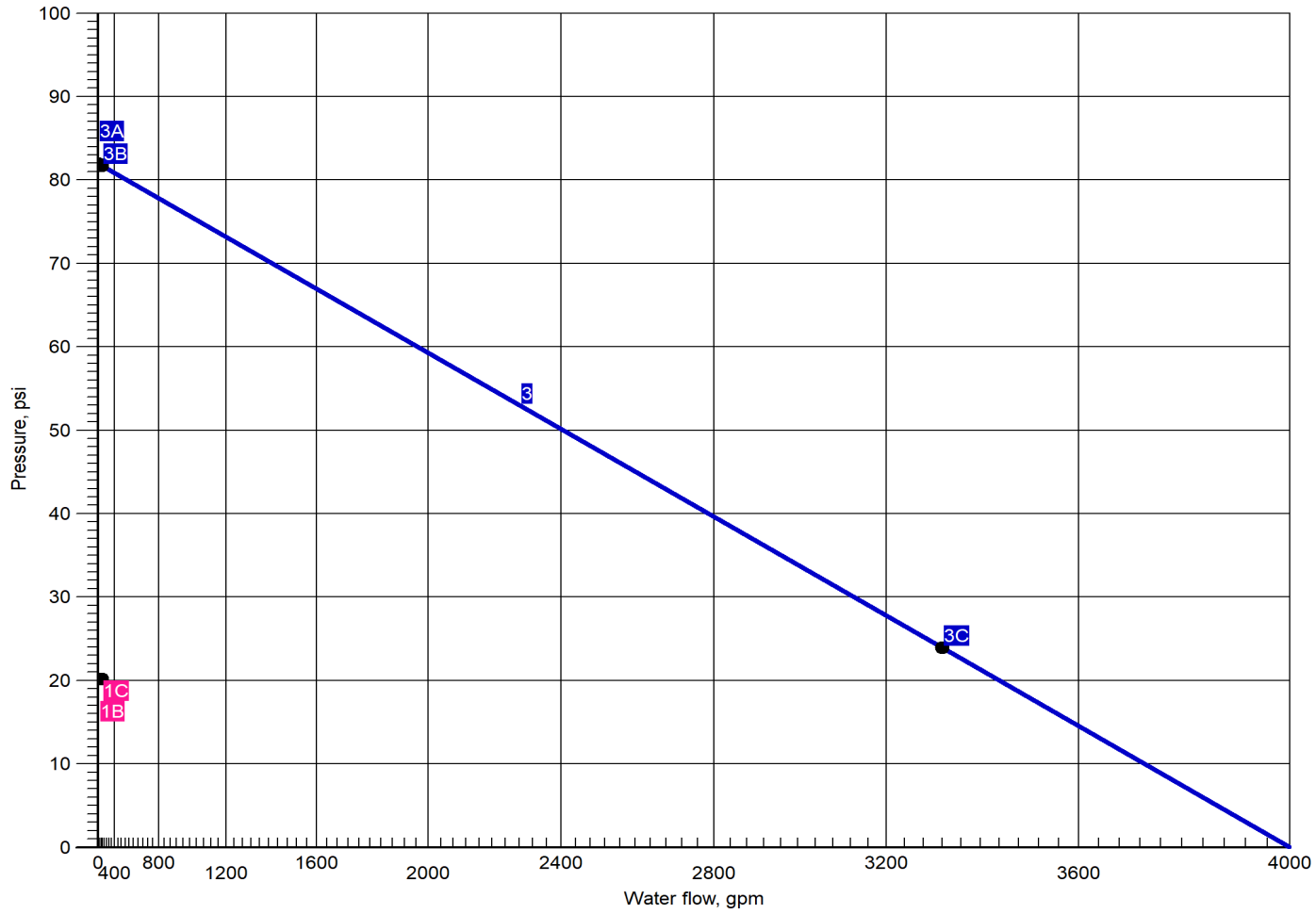
Water Supply at Node 1

Job Name: BRADLEY PARK CARE CENTER

Job Number: 70120 - REMOTE AREA L0A2

Report Description: Light Hazard (LOA2)

Remote Area Number: LOA2



Curve	Data Point	Hydraulic Calculation Results	Additional Data
1	1B	Required Pressure at System Demand: 20.271 @ 77.34	Available Flow @ 20 PSI: 3441.74
	1C	Required Pressure at System Demand (Including Hose Allowance at Source): 20.271 @ 177.34	
3	3A	Available Static Pressure at Water Supply at Node 1: 82.000	
	3B	Available Residual Pressure at System Demand: 81.743 @ 177.34	
	3C	Available Residual Pressure & Flow at Water Supply at Node 1: 24.000 @ 3320.00	

Summary Of Outflowing Devices

Device		Actual Flow (gpm)	Minimum Flow (gpm)	K-Factor (K)	Pressure (psi)			
Sprinkler	1100	16.17	13.00	5.6	8.336			
Sprinkler	**1101**	**14.82**	**13.00**	**5.6**	**7.000**			
Sprinkler	1102	15.74	13.00	5.6	7.896			
Sprinkler	1104	14.85	13.00	5.6	7.029			
Sprinkler	1105	15.77	13.00	5.6	7.929			

Most Demanding Sprinkler Data

Supply Analysis

Node	Name	Static (psi)	Residual (psi) @	Flow (gpm)	Available (psi) @	Total Demand (gpm)	Required Pressure (psi)
1	Water Supply	82.000	24.000	3320.00	81.743	177.34	20.271

Node Analysis

Node Number	Elevation (Foot)	Node Type	Pressure at Node (psi)	Discharge at Node (gpm)	Notes
1	7-0	Supply	20.271	77.34	
1100	10-0	Sprinkler	8.336	16.17	
1101	10-0	Sprinkler	7.000	14.82	
1102	10-0	Sprinkler	7.896	15.74	
1104	10-0	Sprinkler	7.029	14.85	
1105	10-0	Sprinkler	7.929	15.77	
2	7-0		20.191	0.00	
3	3-0½	Gauge	21.897	0.00	BOR, BFP(-4.114)
5	3-0½		17.782	0.00	
1150	10-0		8.534	0.00	
1151	10-0		8.540	0.00	
1152	10-0		8.575	0.00	
1153	8-6		9.833	0.00	
1260	8-6		15.258	0.00	

Pipe Information

Node 1 / Node 2	Elev 1 / Elev 2 (Foot)	K-Factor	Flow added this step (q) / Total Flow (Q)	Nominal ID / Actual ID	Fittings & Devices / Equiv. Length (Foot)	Length (Foot) / Fitting (Foot) / Total (Foot)	C Factor / Pf Friction Loss Per Unit (psi)	Total(Pt) / Elev(Pe) / Friction(Pf)	Notes Fitting/Device (Equivalent Length) Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.
1101	10-0	5.6	14.82	1	(See Notes)	12-0	120	7.000	• • • • • **Route 1** • • • • •
1102	10-0		14.82	1.0490		12-0	0.074703	0.896	Sprinkler
1102	10-0	5.6	15.74	1¼	(See Notes)	2-7	120	7.896	Sprinkler,
1151	10-0		30.55	1.3800		6-0 8-7	0.074951	0.644	PO(6-0)
1151	10-0		16.17	2½		4-11	120	8.540	Flow (q) from Route 3
1152	10-0		46.72	2.6350		4-11	0.007048	0.035	
1152	10-0		30.62	2½	(See Notes)	5-8	120	8.575	Flow (q) from Route 2
1153	8-6		77.34	2.6350		28-3½ 33-11½	0.017904	0.650 0.608	T(16-5½), 2fE(5-11)
1153	8-6			2½	(See Notes)	194-4	150	9.833	
1260	8-6		77.34	2.4230		110-0 304-4	0.017827	5.425	2cplg(2-0), 3E(12-0), T(12-0), 29Tr(2-0)
1260	8-6			4	(See Notes)	10-1	120	15.258	
5	3-0½		77.34	4.3100		86-6½ 96-7½	0.001630	2.366 0.158	2fE(9-5½), sCV(4-2), BV(7-8), PO(27-10½), C(27-10½)
5	3-0½			6	(See Notes)	4-6½	150	17.782	
3	3-0½		77.34	6.3570		4-6½	0.000163	4.115	BOR, BFP(-4.114)
3	3-0½			6	(See Notes)	7-0	150	21.897	
2	7-0		77.34	6.3570		53-2 60-2	0.000163	-1.716 0.010	2E(26-7)
2	7-0			6	Supply (See Notes)	263-10	140	20.191	
1	7-0		77.34	6.1600		110-5½ 374-3½	0.000215	0.081	Avl.Pressure @ Supply: 81.743 4E(20-1), EE(10-0½), S
			100.00					20.271	Hose Allowance At Source
1			177.34						Total(Pt) Route 1
1104	10-0	5.6	14.85	1	(See Notes)	12-0	120	7.029	• • • • • **Route 2** • • • • •
1105	10-0		14.85	1.0490		12-0	0.074988	0.900	Sprinkler

Pipe Information

Node 1 / Node 2	Elev 1 / Elev 2 (Foot)	K-Factor	Flow added this step (q) / Total Flow (Q)	Nominal ID / Actual ID	Fittings & Devices / Equiv. Length (Foot)	Length (Foot) / Fitting (Foot) / Total (Foot)	C Factor / Pf Friction Loss Per Unit (psi)	Total(Pt) / Elev(Pe) / Friction(Pf)	Notes Fitting/Device (Equivalent Length) Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.
1105	10-0	5.6	15.77	1¼	(See Notes)	2-7	120	7.929	Sprinkler,
1152	10-0		30.62	1.3800		6-0 8-7	0.075236	0.646	PO(6-0)
								8.575	Total(Pt) Route 2
1100	10-0	5.6	16.17	1¼	(See Notes)	2-7	120	8.336	• • • • • **Route 3** • • • • •
1150	10-0		16.17	1.3800		6-0 8-7	0.023093	0.198	Sprinkler, PO(6-0)
1150	10-0			2½		5-9	120	8.534	
1151	10-0		16.17	2.6350		5-9	0.000990	0.006	
								8.540	Total(Pt) Route 3

Equivalent Pipe Lengths of Valves and Fittings (C=120 only)

(Actual Inside Diameter / Schedule 40 Steel Pipe Inside Diameter) 4.87 = Factor

C Value Multiplier

Value Of C	100	130	140	150
Multiplying Factor	0.713	1.16	1.33	1.51

Fittings Legend

ALV	Alarm Valve	AngV	Angle Valve	b	Bushing
BalV	Ball Valve	BFP	Backflow Preventer	BV	Butterfly Valve
C	Cross Flow Turn 90°	cplg	Coupling	Cr	Cross Run
CV	Check Valve	DelV	Deluge Valve	DPV	Dry Pipe Valve
E	90° Elbow	EE	45° Elbow	Ee1	11¼° Elbow
Ee2	22½° Elbow	f	Flow Device	fd	Flex Drop
FDC	Fire Department Connection	fE	90° FireLock(TM) Elbow	fEE	45° FireLock(TM) Elbow
flg	Flange	FN	Floating Node	fT	FireLock(TM) Tee
g	Gauge	GloV	Globe Valve	GV	Gate Valve
Ho	Hose	Hose	Hose	HV	Hose Valve
Hyd	Hydrant	LtE	Long Turn Elbow	mecT	Mechanical Tee
Noz	Nozzle	P1	Pump In	P2	Pump Out
PIV	Post Indicating Valve	PO	Pipe Outlet	PrV	Pressure Relief Valve
PRV I	Pressure Reducing Valve In	PRV C	Pressure Reducing Valve Out	red	Reducer/Adapter
S	Supply	sCV	Swing Check Valve	SFx	Seismic Flex
Spr	Sprinkler	St	Strainer	T	Tee Flow Turn 90°
Tr	Tee Run	U	Union	WirF	Wirsbo
WMV	Water Meter Valve	Z	Cap		

Check Point Gauge Data

Gauge	Available Static Pressure (psi)	Available Residual Pressure (psi)	Required Residual Pressure (psi)	K-Factor(K)	Flow(gpm)	Elevation(Foot)
BOR (3)	83.716	83.369	21.897	16.53	77.34	3-0½

Hydraulic Calculations

for

Project Name: BRADLEY PARK CARE CENTER: (70120)
Location: 707 39TH AVE SE, BLDG B, , PUYALLUP, WA 98374
Drawing Name: 70120 WBP Care Center R01 Level 0 Basement Calculation Date: 4/10/2026

Design

Remote Area Number:	L0A3
Remote Area Location:	POOL MECH 0116
Occupancy Classification:	Light Hazard
Density	0.100gpm/ft²
Area of Application:	1500.00ft² (Actual 985.82ft²)
Coverage per Sprinkler:	196.00ft²
Type of sprinklers calculated:	Upright, Pendent
No. of sprinklers calculated:	12
No. of nozzles calculated:	0

In-rack Demand: N/A gpm at Node: N/A
Hose Streams: 100.00 at Node: 1 Type: Allowance at Source

Total Water Required (including Hose Streams where applicable):
From Water Supply at Node 1: 374.98 @ 70.452 (Safety Margin = 10.522)

Type of System: WET
Volume of Dry/PreAction/Antifreeze/OtherAgent System: N/A

Name of Contractor: RED HAWK FIRE PROTECTION, LLC
Address: 801 VALLEY AVE NW, SUITE D, PUYALLUP, WA 98371
Phone Number: 253-604-7311
Name of designer: BROOKE MCDANIELS
Authority Having Jurisdiction: : CITY OF PUYALLUP

Notes:

Summary Notes:

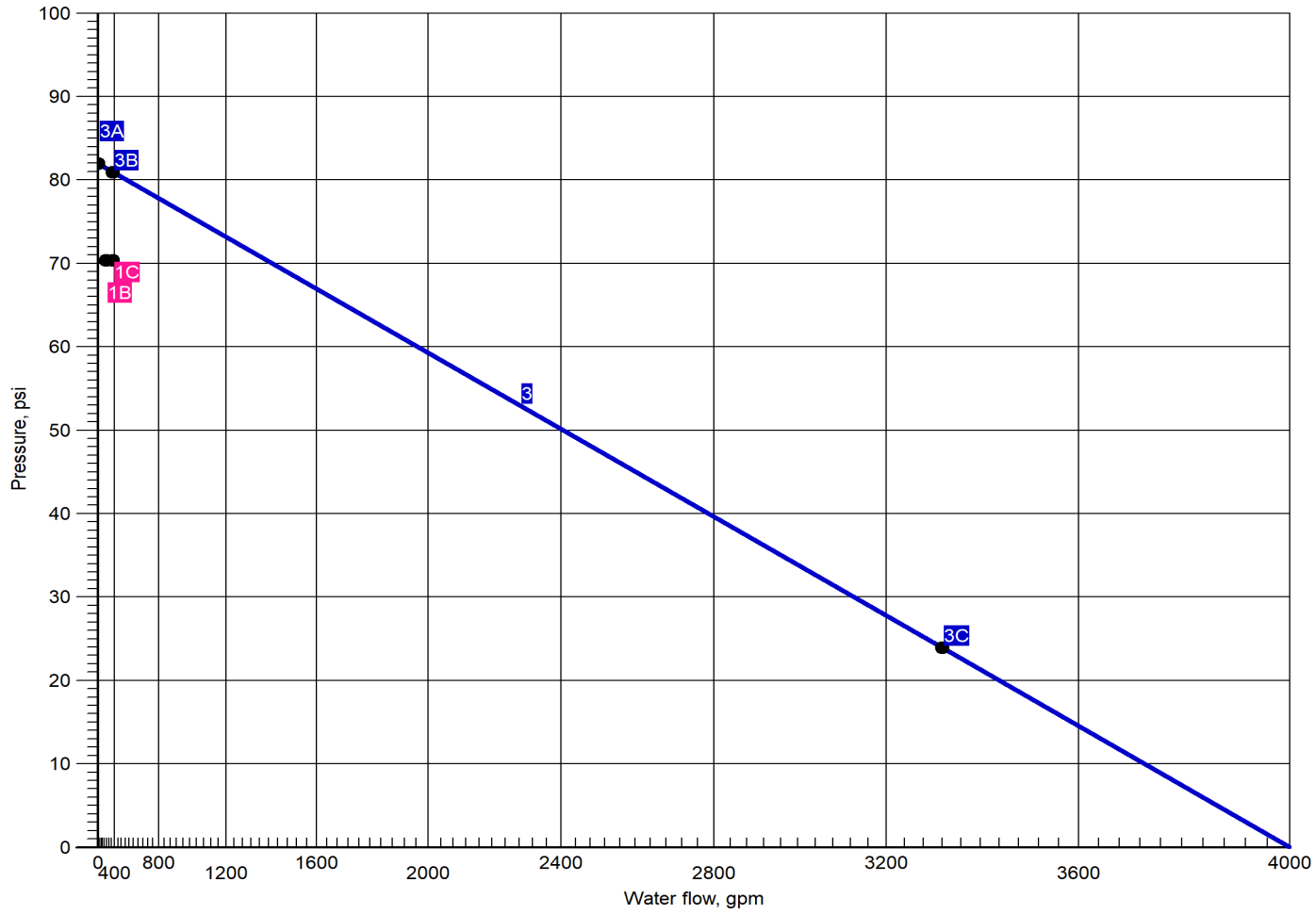
Water Supply at Node 1

Job Name: BRADLEY PARK CARE CENTER

Job Number: 70120 - REMOTE AREA L0A3

Report Description: Light Hazard (L0A3)

Remote Area Number: L0A3



Curve	Data Point	Hydraulic Calculation Results	Additional Data
1	1B	Required Pressure at System Demand: 70.452 @ 274.98	Available Flow @ 20 PSI: 3441.74
	1C	Required Pressure at System Demand (Including Hose Allowance at Source): 70.452 @ 374.98	
3	3A	Available Static Pressure at Water Supply at Node 1: 82.000	
	3B	Available Residual Pressure at System Demand: 80.974 @ 374.98	
	3C	Available Residual Pressure & Flow at Water Supply at Node 1: 24.000 @ 3320.00	

Summary Of Outflowing Devices

Device		Actual Flow (gpm)	Minimum Flow (gpm)	K-Factor (K)	Pressure (psi)			
Sprinkler	862	27.82	19.60	5.6	24.680			
Sprinkler	1200	20.60	19.60	5.6	13.537			
Sprinkler	1201	22.38	19.60	5.6	15.971			
Sprinkler	1202	22.31	19.60	5.6	15.879			
Sprinkler	1203	24.50	19.60	5.6	19.137			
Sprinkler	**1204**	**19.60**	**19.60**	**5.6**	**12.250**			
Sprinkler	1205	20.77	19.60	5.6	13.754			
Sprinkler	1206	24.72	19.60	5.6	19.480			
Sprinkler	1207	19.87	19.60	5.6	12.587			
Sprinkler	1208	21.05	19.60	5.6	14.130			
Sprinkler	1209	25.04	19.60	5.6	20.001			
Sprinkler	1210	26.32	19.60	5.6	22.085			

Most Demanding Sprinkler Data

Supply Analysis

Node	Name	Static (psi)	Residual (psi) @ Flow (gpm)		Available (psi) @ Total Demand (gpm)		Required Pressure (psi)
1	Water Supply	82.000	24.000	3320.00	80.974	374.98	70.452

Node Analysis

Node Number	Elevation (Foot)	Node Type	Pressure at Node (psi)	Discharge at Node (gpm)	Notes
1	7-0	Supply	70.452	274.98	
862	10-0	Sprinkler	24.680	27.82	
1200	10-0	Sprinkler	13.537	20.60	
1201	10-0	Sprinkler	15.971	22.38	
1202	6-6½	Sprinkler	15.879	22.31	
1203	6-7	Sprinkler	19.137	24.50	
1204	10-0	Sprinkler	12.250	19.60	
1205	10-0	Sprinkler	13.754	20.77	
1206	10-0	Sprinkler	19.480	24.72	
1207	10-0	Sprinkler	12.587	19.87	
1208	10-0	Sprinkler	14.130	21.05	
1209	10-0	Sprinkler	20.001	25.04	
1210	10-0	Sprinkler	22.085	26.32	
2	7-0		69.609	0.00	
3	3-0½	Gauge	71.223	0.00	BOR, BFP(-1.846)
5	3-0½		69.369	0.00	
1250	10-0		17.022	0.00	
1251	10-0		17.525	0.00	

Node Number	Elevation (Foot)	Node Type	Pressure at Node (psi)	Discharge at Node (gpm)	Notes
1252	10-0		19.234	0.00	
1253	8-8½		29.573	0.00	
1254	10-0		26.581	0.00	
1255	8-6		30.289	0.00	
1256	10-0		27.280	0.00	
1257	8-6		31.064	0.00	
1258	10-0		29.731	0.00	
1259	8-6		32.556	0.00	
1260	8-6		65.356	0.00	

Pipe Information

Node 1 / Node 2	Elev 1 / Elev 2 (Foot)	K-Factor	Flow added this step (q) / Total Flow (Q)	Nominal ID / Actual ID	Fittings & Devices / Equiv. Length (Foot)	Length (Foot) / Fitting (Foot) / Total (Foot)	C Factor / Pf Friction Loss Per Unit (psi)	Total(Pt) / Elev(Pe) / Friction(Pf)	Notes Fitting/Device (Equivalent Length) Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.
1204	10-0	5.6	19.60	1	(See Notes)	12-0	120	12.250	• • • • • **Route 1** • • • • • Sprinkler
1205	10-0		19.60	1.0490		12-0	0.125357	1.504	
1205	10-0	5.6	20.77	1	(See Notes)	12-0	120	13.754	Sprinkler
1206	10-0		40.37	1.0490		12-0	0.477153	5.726	
1206	10-0	5.6	24.72	1¼	(See Notes)	23-4½	120	19.480	Sprinkler
1254	10-0		65.08	1.3800		23-4½	0.303655	7.101	
1254	10-0			1¼	(See Notes)	2-0	150	26.581	
1255	8-6		65.08	1.3940		14-0 16-0	0.191315	0.650 3.057	E(8-0), T(6-0)
1255	8-6		89.80	2½	(See Notes)	8-0½	150	30.289	Flow (q) from Route 3
1257	8-6		154.88	2.4230		4-0 12-0½	0.064426	0.776	2Tr(2-0)
1257	8-6		65.96	2½	(See Notes)	8-0	150	31.064	Flow (q) from Route 2
1259	8-6		220.84	2.4230		4-0 12-0	0.124201	1.491	2Tr(2-0)
1259	8-6		54.14	2½	(See Notes)	114-0½	150	32.556	Flow (q) from Route 6
1260	8-6		274.98	2.4230		62-0 176-0½	0.186329	32.800	18Tr(2-0), 2E(12-0), cplg(2-0)
1260	8-6			4	(See Notes)	10-1	120	65.356	
5	3-0½		274.98	4.3100		86-6½ 96-7½	0.017040	2.366 1.647	2fE(9-5½), sCV(4-2), BV(7-8), PO(27-10½), C(27-10½)
5	3-0½			6	(See Notes)	4-6½	150	69.369	
3	3-0½		274.98	6.3570		4-6½	0.001699	1.854	BOR, BFP(-1.846)
3	3-0½			6	(See Notes)	7-0	150	71.223	
2	7-0		274.98	6.3570		53-2 60-2	0.001699	-1.716 0.102	2E(26-7)
2	7-0			6	Supply (See Notes)	263-10	140	69.609	Avl.Pressure @ Supply: 80.974
1	7-0		274.98	6.1600		110-5½ 374-3½	0.002250	0.842	4E(20-1), EE(10-0½), S

Pipe Information

Node 1 / Node 2	Elev 1 (Foot) / Elev 2 (Foot)	K-Factor	Flow added this step (q) / Total Flow (Q)	Nominal ID / Actual ID	Fittings & Devices / Equiv. Length (Foot)	Length (Foot) / Fitting (Foot) / Total (Foot)	C Factor / Pf Friction Loss Per Unit (psi)	Total(Pt) / Elev(Pe) / Friction(Pf)	Notes Fitting/Device (Equivalent Length) Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.
			100.00					70.452	Hose Allowance At Source
1			374.98						Total(Pt) Route 1
1207	10-0	5.6	19.87	1	(See Notes)	12-0	120	12.587	• • • • • **Route 2** • • • • • Sprinkler
1208	10-0		19.87	1.0490		12-0	0.128548	1.543	
1208	10-0	5.6	21.05	1	(See Notes)	12-0	120	14.130	Sprinkler
1209	10-0		40.92	1.0490		12-0	0.489245	5.871	
1209	10-0	5.6	25.04	1¼	(See Notes)	23-4½	120	20.001	Sprinkler
1256	10-0		65.96	1.3800		23-4½	0.311277	7.279	
1256	10-0			1¼	(See Notes)	2-0	150	27.280	
1257	8-6		65.96	1.3940		14-0 16-0	0.196117	0.650 3.134	E(8-0), T(6-0)
								31.064	Total(Pt) Route 2
1200	10-0	5.6	20.60	1	(See Notes)	13-8½	120	13.537	• • • • • **Route 3** • • • • • Sprinkler,
1201	10-0		20.60	1.0490		4-0 17-8½	0.137491	2.434	2E(2-0)
1201	10-0	5.6	22.38	1¼	(See Notes)	7-5½	120	15.971	Sprinkler
1250	10-0		42.98	1.3800		7-5½	0.140943	1.052	
1250	10-0			1¼	(See Notes)	4-8	150	17.022	
1251	10-0		42.98	1.3940		1-0 5-8	0.088800	0.503	Tr(1-0)
1251	10-0		22.31	1¼	(See Notes)	7-10½	150	17.525	Flow (q) from Route 4
1252	10-0		65.30	1.3940		1-0 8-10½	0.192476	1.709	Tr(1-0)
1252	10-0		24.50	1¼	(See Notes)	18-2	150	19.234	Flow (q) from Route 5
1253	8-8½		89.80	1.3940		10-0 28-2	0.347004	0.562 9.777	Tr(1-0), E(8-0), b(1-0)
1253	8-8½			2½	(See Notes)	10-8½	150	29.573	
1255	8-6		89.80	2.4230		16-0 26-8½	0.023501	0.088 0.627	T(12-0), 2Tr(2-0)

Pipe Information

Node 1 / Node 2	Elev 1 / Elev 2 (Foot)	K-Factor	Flow added this step (q) / Total Flow (Q)	Nominal ID / Actual ID	Fittings & Devices / Equiv. Length (Foot)	Length (Foot) Fitting / Total	C Factor / Pf Friction Loss Per Unit (psi)	Total(Pt) / Elev(Pe) / Friction(Pf)	Notes (Fitting/Device (Equivalent Length); Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.)
								30.289	Total(Pt) Route 3
1202	6-6½	5.6	22.31	1	(See Notes)	1-9	150	15.879	• • • • • **Route 4** • • • • • Sprinkler,
1251	10-0		22.31	1.1010		36-0 / 37-9	0.083324	-1.499 / 3.146	T(5-0), fd(31-0)
								17.525	Total(Pt) Route 4
1203	6-7	5.6	24.50	1	(See Notes)	3-11	150	19.137	• • • • • **Route 5** • • • • • Sprinkler,
1252	10-0		24.50	1.1010		12-0 / 15-11	0.099026	-1.480 / 1.577	E(7-0), T(5-0)
								19.234	Total(Pt) Route 5
1210	10-0	5.6	26.32	1	(See Notes)	12-0	120	22.085	• • • • • **Route 6** • • • • • Sprinkler
862	10-0		26.32	1.0490		12-0	0.216233	2.595	
862	10-0	5.6	27.82	1¼	(See Notes)	23-4½	120	24.680	Sprinkler
1258	10-0		54.14	1.3800		23-4½	0.215981	5.051	
1258	10-0			1¼	(See Notes)	2-0	150	29.731	
1259	8-6		54.14	1.3940		14-0 / 16-0	0.136077	0.650 / 2.175	E(8-0), T(6-0)
								32.556	Total(Pt) Route 6

Equivalent Pipe Lengths of Valves and Fittings (C=120 only)

(Actual Inside Diameter / Schedule 40 Steel Pipe Inside Diameter) 4.87 = Factor

C Value Multiplier

Value Of C	100	130	140	150
Multiplying Factor	0.713	1.16	1.33	1.51

Fittings Legend

ALV	Alarm Valve	AngV	Angle Valve	b	Bushing
BalV	Ball Valve	BFP	Backflow Preventer	BV	Butterfly Valve
C	Cross Flow Turn 90°	cplg	Coupling	Cr	Cross Run
CV	Check Valve	DelV	Deluge Valve	DPV	Dry Pipe Valve
E	90° Elbow	EE	45° Elbow	Ee1	11¼° Elbow
Ee2	22½° Elbow	f	Flow Device	fd	Flex Drop
FDC	Fire Department Connection	fE	90° FireLock(TM) Elbow	fEE	45° FireLock(TM) Elbow
flg	Flange	FN	Floating Node	fT	FireLock(TM) Tee
g	Gauge	GloV	Globe Valve	GV	Gate Valve
Ho	Hose	Hose	Hose	HV	Hose Valve
Hyd	Hydrant	LtE	Long Turn Elbow	mecT	Mechanical Tee
Noz	Nozzle	P1	Pump In	P2	Pump Out
PIV	Post Indicating Valve	PO	Pipe Outlet	PrV	Pressure Relief Valve
PRV I	Pressure Reducing Valve In	PRV C	Pressure Reducing Valve Out	red	Reducer/Adapter
S	Supply	sCV	Swing Check Valve	SFx	Seismic Flex
Spr	Sprinkler	St	Strainer	T	Tee Flow Turn 90°
Tr	Tee Run	U	Union	WirF	Wirsbo
WMV	Water Meter Valve	Z	Cap		

Check Point Gauge Data

Gauge	Available Static Pressure (psi)	Available Residual Pressure (psi)	Required Residual Pressure (psi)	K-Factor(K)	Flow(gpm)	Elevation(Foot)
BOR (3)	83.716	81.745	71.223	32.58	274.98	3-0½

Hydraulic Calculations

for

Project Name: BRADLEY PARK CARE CENTER: (70120)
Location: 707 39TH AVE SE, BLDG B, , PUYALLUP, WA 98374
Drawing Name: 70120 WBP Care Center R01 Level 0 Basement Calculation Date: 4/10/2026

Design

Remote Area Number:	L0A4
Remote Area Location:	CRAWL SPACE CS01
Occupancy Classification:	Light Hazard
Commodity Classification:	N/A
Density	0.100gpm/ft²
Area of Application:	1950.00ft² (Actual 1956.21ft²)
Coverage per Sprinkler:	130.00ft²
Type of sprinklers calculated:	Upright
No. of sprinklers calculated:	21
No. of nozzles calculated:	0

In-rack Demand: N/A gpm at Node: N/A
Hose Streams: 100.00 at Node: 1 Type: Allowance at Source

Total Water Required (including Hose Streams where applicable):
From Water Supply at Node 1: 452.96 @ 62.265 (Safety Margin = 18.279)

Type of System: DRY
Volume of Dry/PreAction/Antifreeze/OtherAgent System: 411.42gal

Name of Contractor: RED HAWK FIRE PROTECTION, LLC
Address: 801 VALLEY AVE NW, SUITE D, PUYALLUP, WA 98371
Phone Number: 253-604-7311
Name of designer: BROOKE MCDANIELS
Authority Having Jurisdiction: : CITY OF PUYALLUP

Notes:

Summary Notes:

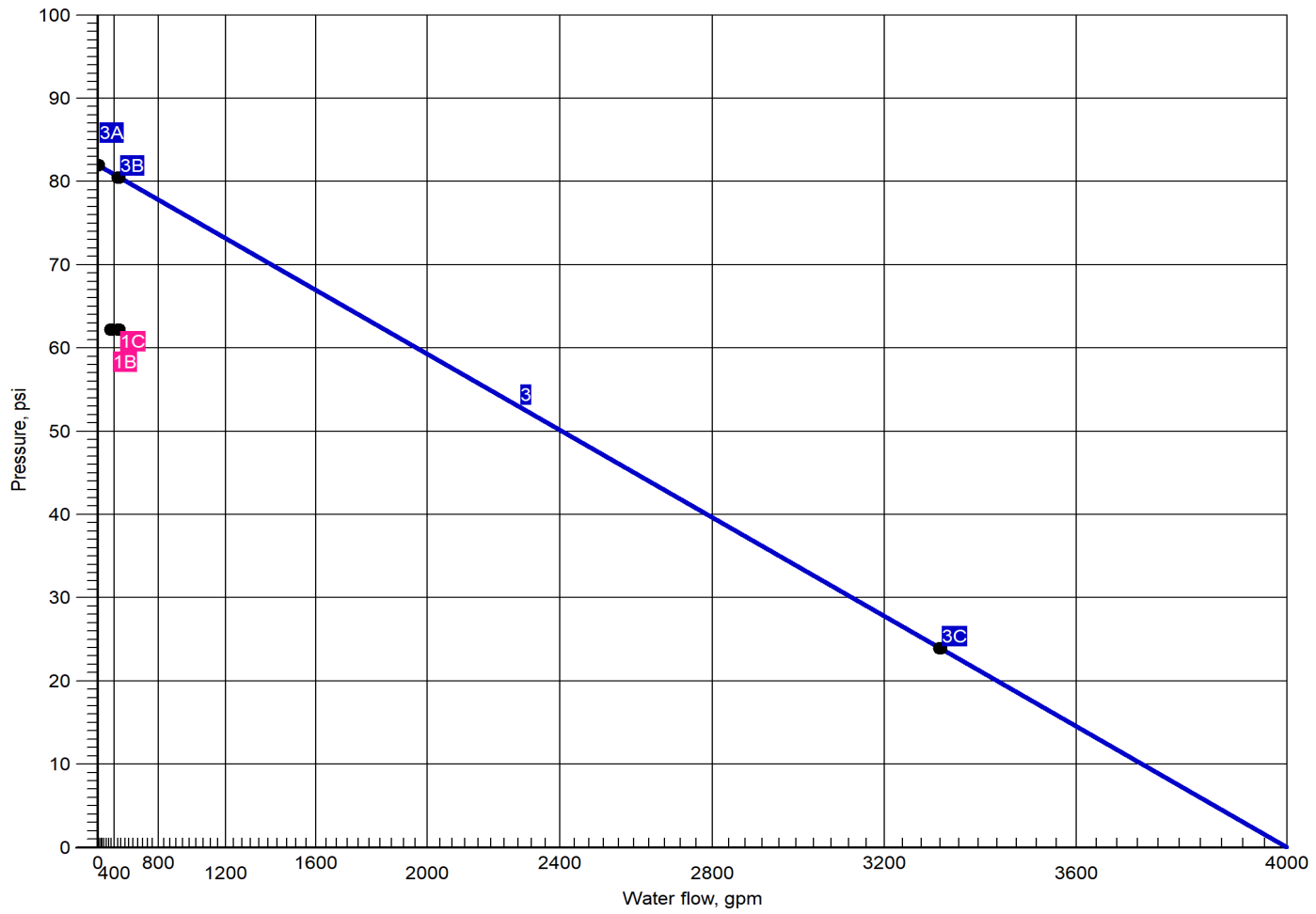
Water Supply at Node 1

Job Name: BRADLEY PARK CARE CENTER

Job Number: 70120 - REMOTE AREA L0A4

Report Description: Light Hazard (L0A4)

Remote Area Number: L0A4



Curve	Data Point	Hydraulic Calculation Results	Additional Data
1	1B	Required Pressure at System Demand: 62.265 @ 352.96	Available Flow @ 20 PSI: 3441.74
	1C	Required Pressure at System Demand (Including Hose Allowance at Source): 62.265 @ 452.96	
3	3A	Available Static Pressure at Water Supply at Node 1: 82.000	
	3B	Available Residual Pressure at System Demand: 80.544 @ 452.96	
	3C	Available Residual Pressure & Flow at Water Supply at Node 1: 24.000 @ 3320.00	

Summary Of Outflowing Devices

Device		Actual Flow (gpm)	Minimum Flow (gpm)	K-Factor (K)	Pressure (psi)			
Sprinkler	**1300**	**14.82**	**13.00**	**5.6**	**7.000**			
Sprinkler	1301	15.09	13.00	5.6	7.264			
Sprinkler	1302	16.03	13.00	5.6	8.191			
Sprinkler	1303	17.99	13.00	5.6	10.325			
Sprinkler	1304	15.04	13.00	5.6	7.210			
Sprinkler	1305	15.10	13.00	5.6	7.273			
Sprinkler	1306	16.05	13.00	5.6	8.213			
Sprinkler	1307	18.03	13.00	5.6	10.369			
Sprinkler	1308	15.19	13.00	5.6	7.358			
Sprinkler	1309	15.26	13.00	5.6	7.423			
Sprinkler	1310	16.21	13.00	5.6	8.380			
Sprinkler	1311	18.21	13.00	5.6	10.576			
Sprinkler	1312	16.13	13.00	5.6	8.298			
Sprinkler	1313	16.27	13.00	5.6	8.446			
Sprinkler	1314	17.09	13.00	5.6	9.318			
Sprinkler	1315	18.73	13.00	5.6	11.185			
Sprinkler	1316	16.51	13.00	5.6	8.692			
Sprinkler	1317	16.65	13.00	5.6	8.845			
Sprinkler	1318	17.49	13.00	5.6	9.755			
Sprinkler	1319	19.16	13.00	5.6	11.703			
Sprinkler	1320	21.90	13.00	5.6	15.290			

Most Demanding Sprinkler Data

Supply Analysis

Node	Name	Static (psi)	Residual (psi) @	Flow (gpm)	Available (psi) @	Total Demand (gpm)	Required Pressure (psi)
1	Water Supply	82.000	24.000	3320.00	80.544	452.96	62.265

Node Analysis

Node Number	Elevation (Foot)	Node Type	Pressure at Node (psi)	Discharge at Node (gpm)	Notes
1	7-0	Supply	62.265	352.96	
1300	10-1	Sprinkler	7.000	14.82	
1301	10-0½	Sprinkler	7.264	15.09	
1302	10-0	Sprinkler	8.191	16.03	
1303	9-11½	Sprinkler	10.325	17.99	
1304	10-0½	Sprinkler	7.210	15.04	
1305	10-0	Sprinkler	7.273	15.10	
1306	9-11½	Sprinkler	8.213	16.05	
1307	9-11	Sprinkler	10.369	18.03	
1308	10-0	Sprinkler	7.358	15.19	
1309	9-11½	Sprinkler	7.423	15.26	
1310	9-11	Sprinkler	8.380	16.21	
1311	9-10½	Sprinkler	10.576	18.21	
1312	10-0	Sprinkler	8.298	16.13	
1313	9-11½	Sprinkler	8.446	16.27	
1314	9-11	Sprinkler	9.318	17.09	
1315	9-10½	Sprinkler	11.185	18.73	
1316	9-11½	Sprinkler	8.692	16.51	

Node Number	Elevation (Foot)	Node Type	Pressure at Node (psi)	Discharge at Node (gpm)	Notes
1317	9-11	Sprinkler	8.845	16.65	
1318	9-10½	Sprinkler	9.755	17.49	
1319	9-10	Sprinkler	11.703	19.16	
1320	9-10	Sprinkler	15.290	21.90	
2	7-0		60.929	0.00	
3	3-0½	Gauge	62.483	0.00	BOR, BFP(-1.643)
4	3-0½		60.833	0.00	
1350	8-1½		8.671	0.00	
1351	8-1		8.965	0.00	
1352	8-0½		9.993	0.00	
1354	8-0		12.356	0.00	
1355	8-0		15.144	0.00	
1356	8-1½		8.674	0.00	
1357	8-1		8.975	0.00	
1358	8-0½		10.017	0.00	
1359	8-0		12.405	0.00	
1360	7-11½		15.215	0.00	
1361	8-1		8.834	0.00	
1362	8-0½		9.140	0.00	
1363	8-0		10.202	0.00	
1364	7-11½		12.634	0.00	
1365	7-11½		15.498	0.00	

Node Number	Elevation (Foot)	Node Type	Pressure at Node (psi)	Discharge at Node (gpm)	Notes
1366	8-0½		9.849	0.00	
1367	8-0		10.275	0.00	
1368	7-11½		11.241	0.00	
1369	7-11		13.307	0.00	
1370	7-11		15.892	0.00	
1371	8-0½		10.274	0.00	
1372	8-0		10.717	0.00	
1373	7-11½		11.725	0.00	
1374	7-11		13.880	0.00	
1375	7-11		16.577	0.00	
1376	7-10½		17.843	0.00	
1377	7-10½		18.160	0.00	

Pipe Information

Node 1 / Node 2	Elev 1 / Elev 2 (Foot)	K-Factor	Flow added this step (q) / Total Flow (Q)	Nominal ID / Actual ID	Fittings & Devices / Equiv. Length (Foot)	Length (Foot) / Fitting (Foot) / Total (Foot)	C Factor / Pf Friction Loss Per Unit (psi)	Total(Pt) / Elev(Pe) / Friction(Pf)	Notes Fitting/Device (Equivalent Length) Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.
1300	10-1	5.6	14.82	1	(See Notes)	2-11½	100	7.000	• • • • • **Route 1** • • • • •
1350	8-1½		14.82	1.0490		5-0	0.104671	0.840	Sprinkler,
						7-11½		0.831	E(1-5), T(3-7)
1350	8-1½			1¼		10-0	100	8.671	
1351	8-1		14.82	1.3800			0.027529	0.018	
						10-0		0.275	
1351	8-1		15.09	1¼		10-0	100	8.965	Flow (q) from Route 3
1352	8-0½		29.91	1.3800			0.100966	0.018	
						10-0		1.010	
1352	8-0½		16.03	1¼		10-6	100	9.993	Flow (q) from Route 7
1354	8-0		45.94	1.3800			0.223318	0.019	
						10-6		2.345	
1354	8-0		17.99	1¼	(See Notes)	2-6	100	12.356	Flow (q) from Route 16
1355	8-0		63.93	1.3800		4-3½	0.411619	0.004	PO(4-3½)
						6-9		2.783	
1355	8-0			3		10-0	100	15.144	
1360	7-11½		63.93	3.2600			0.006257	0.009	
						10-0		0.063	
1360	7-11½		64.22	3		12-0	100	15.215	Flow (q) from Route 2
1365	7-11½		128.15	3.2600			0.022649	0.011	
						12-0		0.272	
1365	7-11½		64.87	3		8-0	100	15.498	Flow (q) from Route 5
1370	7-11		193.02	3.2600			0.048321	0.007	
						8-0		0.387	
1370	7-11		68.23	3		8-0	100	15.892	Flow (q) from Route 9
1375	7-11		261.25	3.2600			0.084591	0.007	
						8-0		0.678	
1375	7-11		69.81	3		12-0	100	16.577	Flow (q) from Route 12
1377	7-10½		331.06	3.2600			0.131099	0.011	
						12-0		1.573	
1377	7-10½		21.90	3	(See Notes)	227-1	100	18.160	Flow (q) from Route 21
4	3-0½		352.96	3.2600		47-10	0.147590	2.100	
						274-11		40.572	T(12-5½), E(6-8½), DPV(4-8½), BV(9-7), PO(14-4½)

Pipe Information

Node 1 / Node 2	Elev 1 / Elev 2 (Foot)	K-Factor	Flow added this step (q) / Total Flow (Q)	Nominal ID / Actual ID	Fittings & Devices / Equiv. Length (Foot)	Length (Foot) / Fitting (Foot) / Total (Foot)	C Factor / Pf Friction Loss Per Unit (psi)	Total(Pt) / Elev(Pe) / Friction(Pf)	Notes (Fitting/Device (Equivalent Length); Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.)
4	3-0½			6	(See Notes)	2-5½	150	60.833	
3	3-0½		352.96	6.3570		2-5½	0.002697	1.650	BOR, BFP(-1.643)
3	3-0½			6	(See Notes)	7-0	150	62.483	
2	7-0		352.96	6.3570		53-2 60-2	0.002697	-1.716 0.162	2E(26-7)
2	7-0			6	Supply (See Notes)	263-10	140	60.929	Avl.Pressure @ Supply: 80.544
1	7-0		352.96	6.1600		110-5½ 374-3½	0.003571	1.337	4E(20-1), EE(10-0½), S
			100.00					62.265	Hose Allowance At Source
1			452.96						Total(Pt) Route 1
1304	10-0½	5.6	15.04	1	(See Notes)	2-11½	100	7.210	• • • • • **Route 2** • • • • • Sprinkler,
1356	8-1½		15.04	1.0490		2-10 5-9½	0.107566	0.840 0.624	2E(1-5)
1356	8-1½			1¼		10-0	100	8.674	
1357	8-1		15.04	1.3800		10-0	0.028290	0.018 0.283	
1357	8-1		15.10	1¼		10-0	100	8.975	Flow (q) from Route 4
1358	8-0½		30.14	1.3800		10-0	0.102404	0.018 1.024	
1358	8-0½		16.05	1¼		10-6	100	10.017	Flow (q) from Route 8
1359	8-0		46.19	1.3800		10-6	0.225582	0.019 2.369	
1359	8-0		18.03	1¼	(See Notes)	2-6	100	12.405	Flow (q) from Route 17
1360	7-11½		64.22	1.3800		4-3½ 6-9	0.415068	0.004 2.806	PO(4-3½)
								15.215	Total(Pt) Route 2
1301	10-0½	5.6	15.09	1	(See Notes)	2-11½	100	7.264	• • • • • **Route 3** • • • • • Sprinkler,
1351	8-1		15.09	1.0490		5-0 7-11½	0.108322	0.840 0.860	E(1-5), T(3-7)
								8.965	Total(Pt) Route 3

Pipe Information

Node 1 / Node 2	Elev 1 / Elev 2 (Foot)	K-Factor	Flow added this step (q) / Total Flow (Q)	Nominal ID / Actual ID	Fittings & Devices / Equiv. Length (Foot)	Length (Foot) / Fitting (Foot) / Total (Foot)	C Factor / Pf Friction Loss Per Unit (psi)	Total(Pt) / Elev(Pe) / Friction(Pf)	Notes Fitting/Device (Equivalent Length) Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.
1305	10-0	5.6	15.10	1	(See Notes)	2-11½	100	7.273	• • • • • **Route 4** • • • • •
1357	8-1		15.10	1.0490		5-0 7-11½	0.108447	0.840 0.861	Sprinkler, E(1-5), T(3-7)
								8.975	Total(Pt) Route 4
1308	10-0	5.6	15.19	1	(See Notes)	2-11½	100	7.358	• • • • • **Route 5** • • • • •
1361	8-1		15.19	1.0490		2-10 5-9½	0.109610	0.840 0.636	Sprinkler, 2E(1-5)
1361	8-1			1¼		10-0	100	8.834	
1362	8-0½		15.19	1.3800		10-0	0.028828	0.018 0.288	
1362	8-0½		15.26	1¼		10-0	100	9.140	Flow (q) from Route 6
1363	8-0		30.45	1.3800		10-0	0.104348	0.018 1.043	
1363	8-0		16.21	1¼		10-6	100	10.202	Flow (q) from Route 10
1364	7-11½		46.66	1.3800		10-6	0.229847	0.019 2.413	
1364	7-11½		18.21	1¼	(See Notes)	2-6	100	12.634	Flow (q) from Route 18
1365	7-11½		64.87	1.3800		4-3½ 6-9	0.422869	0.004 2.859	PO(4-3½)
								15.498	Total(Pt) Route 5
1309	9-11½	5.6	15.26	1	(See Notes)	2-11½	100	7.423	• • • • • **Route 6** • • • • •
1362	8-0½		15.26	1.0490		5-0 7-11½	0.110503	0.840 0.878	Sprinkler, E(1-5), T(3-7)
								9.140	Total(Pt) Route 6
1302	10-0	5.6	16.03	1	(See Notes)	2-11½	100	8.191	• • • • • **Route 7** • • • • •
1352	8-0½		16.03	1.0490		5-0 7-11½	0.121045	0.840 0.961	Sprinkler, E(1-5), T(3-7)
								9.993	Total(Pt) Route 7
1306	9-11½	5.6	16.05	1	(See Notes)	2-11½	100	8.213	• • • • • **Route 8** • • • • •
1358	8-0½		16.05	1.0490		5-0 7-11½	0.121347	0.840 0.964	Sprinkler, E(1-5), T(3-7)
								10.017	Total(Pt) Route 8

Pipe Information

Node 1 / Node 2	Elev 1 / Elev 2 (Foot)	K-Factor	Flow added this step (q) / Total Flow (Q)	Nominal ID / Actual ID	Fittings & Devices / Equiv. Length (Foot)	Length (Foot) / Fitting (Foot) / Total (Foot)	C Factor / Pf Friction Loss Per Unit (psi)	Total(Pt) / Elev(Pe) / Friction(Pf)	Notes Fitting/Device (Equivalent Length) Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.
1312	10-0	5.6	16.13	1	(See Notes)	2-11½	100	8.298	• • • • • **Route 9** • • • • •
1366	8-0½		16.13	1.0490		2-10	0.122512	0.840	Sprinkler,
						5-9½		0.711	2E(1-5)
1366	8-0½			1¼		12-6	100	9.849	
1367	8-0		16.13	1.3800			0.032221	0.023	
						12-6		0.403	
1367	8-0		16.27	1¼		8-1½	100	10.275	Flow (q) from Route 11
1368	7-11½		32.41	1.3800			0.117109	0.015	
						8-1½		0.952	
1368	7-11½		17.09	1¼		8-0	100	11.241	Flow (q) from Route 14
1369	7-11		49.50	1.3800			0.256422	0.014	
						8-0		2.051	
1369	7-11		18.73	1¼	(See Notes)	1-3½	100	13.307	Flow (q) from Route 19
1370	7-11		68.23	1.3800		4-3½	0.464266	0.002	
						5-7		2.583	PO(4-3½)
								15.892	Total(Pt) Route 9
1310	9-11	5.6	16.21	1	(See Notes)	2-11½	100	8.380	• • • • • **Route 10** • • • • •
1363	8-0		16.21	1.0490		5-0	0.123625	0.840	Sprinkler,
						7-11½		0.982	E(1-5), T(3-7)
								10.202	Total(Pt) Route 10
1313	9-11½	5.6	16.27	1	(See Notes)	2-11½	100	8.446	• • • • • **Route 11** • • • • •
1367	8-0		16.27	1.0490		5-0	0.124522	0.840	Sprinkler,
						7-11½		0.989	E(1-5), T(3-7)
								10.275	Total(Pt) Route 11
1316	9-11½	5.6	16.51	1	(See Notes)	2-11½	100	8.692	• • • • • **Route 12** • • • • •
1371	8-0½		16.51	1.0490		2-10	0.127873	0.840	Sprinkler,
						5-9½		0.742	2E(1-5)
1371	8-0½			1¼		12-6	100	10.274	
1372	8-0		16.51	1.3800			0.033631	0.023	
						12-6		0.420	
1372	8-0		16.65	1¼		8-1½	100	10.717	Flow (q) from Route 13
1373	7-11½		33.16	1.3800			0.122225	0.015	
						8-1½		0.993	

Pipe Information

Node 1 / Node 2	Elev 1 / Elev 2 (Foot)	K-Factor	Flow added this step (q) / Total Flow (Q)	Nominal ID / Actual ID	Fittings & Devices / Equiv. Length (Foot)	Length (Foot) / Fitting (Foot) / Total (Foot)	C Factor / Pf Friction Loss Per Unit (psi)	Total(Pt) / Elev(Pe) / Friction(Pf)	Notes Fitting/Device (Equivalent Length) Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.
1373	7-11½		17.49	1¼		8-0	100	11.725	Flow (q) from Route 15
1374	7-11		50.65	1.3800		8-0	0.267588	0.014 2.141	
1374	7-11		19.16	1¼	(See Notes)	1-3½	100	13.880	Flow (q) from Route 20
1375	7-11		69.81	1.3800		4-3½ 5-7	0.484385	0.002 2.695	PO(4-3½)
								16.577	Total(Pt) Route 12
1317	9-11	5.6	16.65	1	(See Notes)	2-11½	100	8.845	• • • • • **Route 13** • • • • •
1372	8-0		16.65	1.0490		5-0 7-11½	0.129953	0.840 1.032	Sprinkler, E(1-5), T(3-7)
								10.717	Total(Pt) Route 13
1314	9-11	5.6	17.09	1	(See Notes)	2-11½	100	9.318	• • • • • **Route 14** • • • • •
1368	7-11½		17.09	1.0490		5-0 7-11½	0.136375	0.840 1.083	Sprinkler, E(1-5), T(3-7)
								11.241	Total(Pt) Route 14
1318	9-10½	5.6	17.49	1	(See Notes)	2-11½	100	9.755	• • • • • **Route 15** • • • • •
1373	7-11½		17.49	1.0490		5-0 7-11½	0.142277	0.840 1.130	Sprinkler, E(1-5), T(3-7)
								11.725	Total(Pt) Route 15
1303	9-11½	5.6	17.99	1	(See Notes)	2-11½	100	10.325	• • • • • **Route 16** • • • • •
1354	8-0		17.99	1.0490		5-0 7-11½	0.149957	0.840 1.191	Sprinkler, E(1-5), T(3-7)
								12.356	Total(Pt) Route 16
1307	9-11	5.6	18.03	1	(See Notes)	2-11½	100	10.369	• • • • • **Route 17** • • • • •
1359	8-0		18.03	1.0490		5-0 7-11½	0.150542	0.840 1.196	Sprinkler, E(1-5), T(3-7)
								12.405	Total(Pt) Route 17
1311	9-10½	5.6	18.21	1	(See Notes)	2-11½	100	10.576	• • • • • **Route 18** • • • • •
1364	7-11½		18.21	1.0490		5-0 7-11½	0.153327	0.840 1.218	Sprinkler, E(1-5), T(3-7)
								12.634	Total(Pt) Route 18

Pipe Information

Node 1 / Node 2	Elev 1 / Elev 2 (Foot)	K-Factor	Flow added this step (q) / Total Flow (Q)	Nominal ID / Actual ID	Fittings & Devices / Equiv. Length (Foot)	Length (Foot) / Fitting (Foot) / Total (Foot)	C Factor / Pf Friction Loss Per Unit (psi)	Total(Pt) / Elev(Pe) / Friction(Pf)	Notes Fitting/Device (Equivalent Length) Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.
1315	9-10½	5.6	18.73	1	(See Notes)	2-11½	100	11.185	• • • • • **Route 19** • • • • •
						5-0	0.161466	0.840	Sprinkler,
1369	7-11		18.73	1.0490		7-11½		1.282	E(1-5), T(3-7)
								13.307	Total(Pt) Route 19
1319	9-10	5.6	19.16	1	(See Notes)	2-11½	100	11.703	• • • • • **Route 20** • • • • •
						5-0	0.168373	0.840	Sprinkler,
1374	7-11		19.16	1.0490		7-11½		1.337	E(1-5), T(3-7)
								13.880	Total(Pt) Route 20
1320	9-10	5.6	21.90	1	(See Notes)	2-11½	100	15.290	• • • • • **Route 21** • • • • •
						5-0	0.215619	0.840	Sprinkler,
1376	7-10½		21.90	1.0490		7-11½		1.712	E(1-5), T(3-7)
1376	7-10½			1¼	(See Notes)	1-3½	100	17.843	
						4-3½	0.056709	0.002	
1377	7-10½		21.90	1.3800		5-7		0.315	PO(4-3½)
								18.160	Total(Pt) Route 21

Equivalent Pipe Lengths of Valves and Fittings (C=120 only)

(Actual Inside Diameter / Schedule 40 Steel Pipe Inside Diameter) 4.87 = Factor

C Value Multiplier

Value Of C	100	130	140	150
Multiplying Factor	0.713	1.16	1.33	1.51

Fittings Legend

ALV	Alarm Valve	AngV	Angle Valve	b	Bushing
BalV	Ball Valve	BFP	Backflow Preventer	BV	Butterfly Valve
C	Cross Flow Turn 90°	cplg	Coupling	Cr	Cross Run
CV	Check Valve	DelV	Deluge Valve	DPV	Dry Pipe Valve
E	90° Elbow	EE	45° Elbow	Ee1	11¼° Elbow
Ee2	22½° Elbow	f	Flow Device	fd	Flex Drop
FDC	Fire Department Connection	fE	90° FireLock(TM) Elbow	fEE	45° FireLock(TM) Elbow
flg	Flange	FN	Floating Node	fT	FireLock(TM) Tee
g	Gauge	GloV	Globe Valve	GV	Gate Valve
Ho	Hose	Hose	Hose	HV	Hose Valve
Hyd	Hydrant	LtE	Long Turn Elbow	mecT	Mechanical Tee
Noz	Nozzle	P1	Pump In	P2	Pump Out
PIV	Post Indicating Valve	PO	Pipe Outlet	PrV	Pressure Relief Valve
PRV I	Pressure Reducing Valve In	PRV C	Pressure Reducing Valve Out	red	Reducer/Adapter
S	Supply	sCV	Swing Check Valve	SFx	Seismic Flex
Spr	Sprinkler	St	Strainer	T	Tee Flow Turn 90°
Tr	Tee Run	U	Union	WirF	Wirsbo
WMV	Water Meter Valve	Z	Cap		

Check Point Gauge Data

Gauge	Available Static Pressure (psi)	Available Residual Pressure (psi)	Required Residual Pressure (psi)	K-Factor(K)	Flow(gpm)	Elevation(Foot)
BOR (3)	83.716	80.762	62.483	44.65	352.96	3-0½

Hydraulic Calculations

for

Project Name: BRADLEY PARK CARE CENTER: (70120)
Location: 707 39TH AVE SE, BLDG B, , PUYALLUP, WA 98374
Drawing Name: 70120 WBP Care Center R01 Level 1 & Attic.cad Calculation Date: 4/10/2026

Design

Remote Area Number:	L1A1
Remote Area Location:	CC UNIT 1 1036
Occupancy Classification:	Residential
Density	0.100gpm/ft²
Area of Application:	900.00ft² (Actual 597.89ft²)
Coverage per Sprinkler:	400.00ft²
Type of sprinklers calculated:	Pendent
No. of sprinklers calculated:	8
No. of nozzles calculated:	0

In-rack Demand:	N/A gpm	at Node:	N/A		
Hose Streams:	100.00	at Node:	1	Type:	Allowance at Source

Total Water Required (including Hose Streams where applicable):
From Water Supply at Node 1: 266.61 @ 60.880 (Safety Margin = 20.574)

Type of System: WET
Volume of Dry/PreAction/Antifreeze/OtherAgent System: N/A

Name of Contractor: RED HAWK FIRE PROTECTION, LLC
Address: 801 VALLEY AVE NW, SUITE D, PUYALLUP, WA 98371
Phone Number: 253-604-7311
Name of designer: BROOKE MCDANIELS
Authority Having Jurisdiction: : CITY OF PUYALLUP

Notes:

Summary Notes:

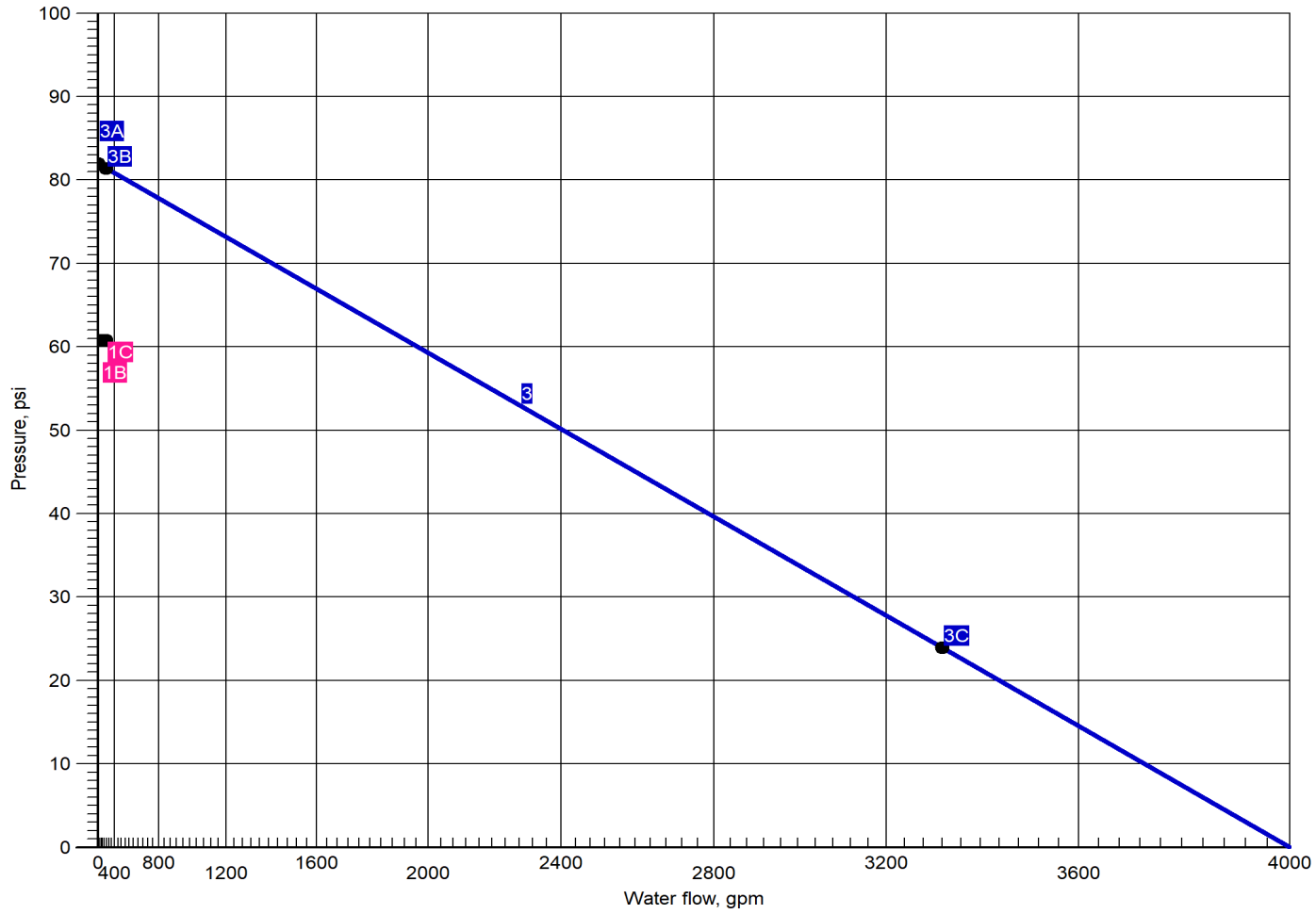
Water Supply at Node 1

Job Name: BRADLEY PARK CARE CENTER

Job Number: 70120

Report Description: Residential (L1A1)

Remote Area Number: L1A1



Curve	Data Point	Hydraulic Calculation Results	Additional Data
1	1B	Required Pressure at System Demand: 60.880 @ 166.61	Available Flow @ 20 PSI: 3441.74
	1C	Required Pressure at System Demand (Including Hose Allowance at Source): 60.880 @ 266.61	
3	3A	Available Static Pressure at Water Supply at Node 1: 82.000	
	3B	Available Residual Pressure at System Demand: 81.454 @ 266.61	
	3C	Available Residual Pressure & Flow at Water Supply at Node 1: 24.000 @ 3320.00	

Summary Of Outflowing Devices

Job Number: 70120
Report Description: Residential (L1A1)

Device		Actual Flow (gpm)	Minimum Flow (gpm)	K-Factor (K)	Pressure (psi)			
Sprinkler	**2000**	**20.01**	**20.01**	**5.8**	**11.900**			
Sprinkler	2001	20.39	20.01	5.8	12.354			
Sprinkler	2002	20.52	20.01	5.8	12.522			
Sprinkler	2003	20.62	20.01	5.8	12.637			
Sprinkler	2004	20.93	20.01	5.8	13.018			
Sprinkler	2005	21.37	20.01	5.8	13.577			
Sprinkler	2006	21.38	20.01	5.8	13.583			
Sprinkler	2007	21.40	20.01	5.8	13.614			

Most Demanding Sprinkler Data

Supply Analysis

Node	Name	Static (psi)	Residual (psi) @ Flow (gpm)		Available (psi) @ Total Demand (gpm)		Required Pressure (psi)
1	Water Supply	82.000	24.000	3320.00	81.454	266.61	60.880

Node Analysis

Node Number	Elevation (Foot)	Node Type	Pressure at Node (psi)	Discharge at Node (gpm)	Notes
1	-4-0	Supply	60.880	166.61	
2000	10-0½	Sprinkler	11.900	20.01	
2001	10-0½	Sprinkler	12.354	20.39	
2002	10-0½	Sprinkler	12.522	20.52	
2003	8-10½	Sprinkler	12.637	20.62	
2004	8-2	Sprinkler	13.018	20.93	
2005	8-10½	Sprinkler	13.577	21.37	
2006	8-10½	Sprinkler	13.583	21.38	
2007	8-10½	Sprinkler	13.614	21.40	
2	-4-0		60.532	0.00	
3	-7-11½	Gauge	62.187	0.00	BOR, BFP(-2.733)
4	-7-11½		59.452	0.00	
5	-7-11½		59.450	0.00	
8	-3-7		59.452	0.00	
200	10-5		13.159	0.00	
201	10-5		13.294	0.00	
202	10-5		14.069	0.00	
203	10-5		17.272	0.00	

Node Number	Elevation (Foot)	Node Type	Pressure at Node (psi)	Discharge at Node (gpm)	Notes
204	9-9½		38.298	0.00	
205	9-1		45.705	0.00	
206	9-1		50.956	0.00	
208	10-5		14.088	0.00	
209	10-5		14.100	0.00	
210	10-5		14.165	0.00	
211	10-5		14.794	0.00	

Pipe Information

Node 1 / Node 2	Elev 1 / Elev 2 (Foot)	K-Factor	Flow added this step (q) / Total Flow (Q)	Nominal ID / Actual ID	Fittings & Devices / Equiv. Length (Foot)	Length (Foot) / Fitting (Foot) / Total (Foot)	C Factor / Pf Friction Loss Per Unit (psi)	Total(Pt) / Elev(Pe) / Friction(Pf)	Notes Fitting/Device (Equivalent Length) Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.
2000	10-0½	5.8	20.01	1	(See Notes)	7-10½	150	11.900	• • • • • **Route 1** • • • • •
200	10-5		20.01	1.1010		13-0 20-10½	0.068091	-0.161 1.421	Sprinkler, E(7-0), T(5-0), Tr(1-0)
200	10-5		20.62	1½	(See Notes)	2-3½	150	13.159	Flow (q) from Route 4
201	10-5		40.63	1.5980		1-0 3-3½	0.041137	0.000 0.135	Tr(1-0)
201	10-5		20.39	1½	(See Notes)	6-10½	150	13.294	Flow (q) from Route 2
202	10-5		61.01	1.5980		2-0 8-10½	0.087290	 0.774	2Tr(1-0)
202	10-5		21.38	1½	(See Notes)	11-0½	150	14.069	Flow (q) from Route 7
203	10-5		82.39	1.5980		10-0 21-0½	0.152159	0.000 3.203	E(9-0), Tr(1-0)
203	10-5		84.22	1½	(See Notes)	24-1	150	17.272	Flow (q) from Route 3
204	9-9½		166.61	1.5980		13-0 37-1	0.559883	0.272 20.754	5Tr(1-0), T(8-0)
204	9-9½			1½	(See Notes)	0-8½	120	38.298	
205	9-1		166.61	1.6100		8-0 8-8½	0.815750	0.306 7.101	PO(8-0)
205	9-1			3	(See Notes)	167-10	120	45.705	
206	9-1		166.61	3.3340		55-2 223-0	0.023548	0.000 5.251	3fE(7-6), T(22-6), fE(10-2½)
206	9-1			4	(See Notes)	21-8	120	50.956	
5	-7-11½		166.61	4.3100		142-3½ 163-11½	0.006744	7.388 1.106	T(27-10½), 2C(27-10½), 2fE(9-5½), sCV(4-2), BV(7-8), PO(27-10½)
5	-7-11½			6		2-1	120	59.450	
4	-7-11½		166.61	6.3570		 2-1	0.001016	 0.002	
4	-7-11½			6	(See Notes)	2-5½	120	59.452	
3	-7-11½		166.61	6.3570		 2-5½	0.001016	 2.735	BOR, BFP(-2.733)
3	-7-11½			6	(See Notes)	7-0	120	62.187	
2	-4-0		166.61	6.3570		52-9½ 59-9½	0.001016	-1.716 0.061	3E(17-7)

Pipe Information

Node 1 / Node 2	Elev 1 / Elev 2 (Foot)	K-Factor	Flow added this step (q) / Total Flow (Q)	Nominal ID / Actual ID	Fittings & Devices / Equiv. Length (Foot)	Length (Foot) / Fitting (Foot) / Total (Foot)	C Factor / Pf Friction Loss Per Unit (psi)	Total(Pt) / Elev(Pe) / Friction(Pf)	Notes (Fitting/Device (Equivalent Length) Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.)
2	-4-0			6	Supply (See Notes)	263-10	120	60.532	Avl.Pressure @ Supply: 81.454
1	-4-0		166.61	6.3570		79-2½ 343-0½	0.001016	 0.349	4E(17-7), EE(8-9½), S
			100.00					60.880	Hose Allowance At Source
1			266.61						Total(Pt) Route 1
2001	10-0½	5.8	20.39	1	(See Notes)	3-7½	150	12.354	• • • • • **Route 2** • • • • •
201	10-5		20.39	1.1010		12-0 15-7½	0.070490	-0.161 1.102	Sprinkler, E(7-0), T(5-0)
								13.294	Total(Pt) Route 2
2002	10-0½	5.8	20.52	1	(See Notes)	8-2½	150	12.522	• • • • • **Route 3** • • • • •
208	10-5		20.52	1.1010		16-0 24-2½	0.071376	-0.161 1.728	Sprinkler, 2E(7-0), Tr(1-0), b(1-0)
208	10-5			1½	(See Notes)	0-0	150	14.088	
209	10-5		20.52	1.5980		1-0 1-0	0.011631	0.000 0.012	Tr(1-0)
209	10-5		21.40	1½	(See Notes)	0-6	150	14.100	Flow (q) from Route 8
210	10-5		41.92	1.5980		1-0 1-6	0.043603	-0.000 0.065	Tr(1-0)
210	10-5		21.37	1½	(See Notes)	5-9	150	14.165	Flow (q) from Route 6
211	10-5		63.30	1.5980		1-0 6-9	0.093430	 0.629	Tr(1-0)
211	10-5		20.93	1½	(See Notes)	6-7½	150	14.794	Flow (q) from Route 5
203	10-5		84.22	1.5980		9-0 15-7½	0.158485	 2.477	Tr(1-0), T(8-0)
								17.272	Total(Pt) Route 3
2003	8-10½	5.8	20.62	1	(See Notes)	4-6½	150	12.637	• • • • • **Route 4** • • • • •
200	10-5		20.62	1.1010		12-0 16-6½	0.071981	-0.667 1.190	Sprinkler, E(7-0), T(5-0)
								13.159	Total(Pt) Route 4
2004	8-2	5.8	20.93	1	(See Notes)	1-2	150	13.018	• • • • • **Route 5** • • • • •
211	10-5		20.93	1.1010		36-0 37-2	0.073989	-0.975 2.751	Sprinkler, T(5-0), fd(31-0)

Pipe Information

Node 1 / Node 2	Elev 1 / Elev 2 (Foot)	K-Factor	Flow added this step (q) / Total Flow (Q)	Nominal ID / Actual ID	Fittings & Devices / Equiv. Length (Foot)	Length (Foot) Fitting / Total	C Factor / Pf Friction Loss Per Unit (psi)	Total(Pt) / Elev(Pe) / Friction(Pf)	Notes (Fitting/Device (Equivalent Length); Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.)
								14.794	Total(Pt) Route 5
2005	8-10½	5.8	21.37	1	(See Notes)	4-4	150	13.577	• • • • • **Route 6** • • • • • Sprinkler,
210	10-5		21.37	1.1010		12-0	0.076920	-0.667	E(7-0), T(5-0)
						16-4		1.256	
								14.165	Total(Pt) Route 6
2006	8-10½	5.8	21.38	1	(See Notes)	3-0	150	13.583	• • • • • **Route 7** • • • • • Sprinkler,
202	10-5		21.38	1.1010		12-0	0.076953	-0.667	E(7-0), T(5-0)
						15-0		1.153	
								14.069	Total(Pt) Route 7
2007	8-10½	5.8	21.40	1	(See Notes)	2-11½	150	13.614	• • • • • **Route 8** • • • • • Sprinkler,
209	10-5		21.40	1.1010		12-0	0.077116	-0.667	E(7-0), T(5-0)
						14-11½		1.153	
								14.100	Total(Pt) Route 8

Equivalent Pipe Lengths of Valves and Fittings (C=120 only)

(Actual Inside Diameter / Schedule 40 Steel Pipe Inside Diameter) 4.87 = Factor

C Value Multiplier

Value Of C	100	130	140	150
Multiplying Factor	0.713	1.16	1.33	1.51

Fittings Legend

ALV	Alarm Valve	AngV	Angle Valve	b	Bushing
BalV	Ball Valve	BFP	Backflow Preventer	BV	Butterfly Valve
C	Cross Flow Turn 90°	cplg	Coupling	Cr	Cross Run
CV	Check Valve	DelV	Deluge Valve	DPV	Dry Pipe Valve
E	90° Elbow	EE	45° Elbow	Ee1	11¼° Elbow
Ee2	22½° Elbow	f	Flow Device	fd	Flex Drop
FDC	Fire Department Connection	fE	90° FireLock(TM) Elbow	fEE	45° FireLock(TM) Elbow
flg	Flange	FN	Floating Node	fT	FireLock(TM) Tee
g	Gauge	GloV	Globe Valve	GV	Gate Valve
Ho	Hose	Hose	Hose	HV	Hose Valve
Hyd	Hydrant	LtE	Long Turn Elbow	mecT	Mechanical Tee
Noz	Nozzle	P1	Pump In	P2	Pump Out
PIV	Post Indicating Valve	PO	Pipe Outlet	PrV	Pressure Relief Valve
PRV I	Pressure Reducing Valve In	PRV C	Pressure Reducing Valve Out	red	Reducer/Adapter
S	Supply	sCV	Swing Check Valve	SFx	Seismic Flex
Spr	Sprinkler	St	Strainer	T	Tee Flow Turn 90°
Tr	Tee Run	U	Union	WirF	Wirsbo
WMV	Water Meter Valve	Z	Cap		

Hydraulic Calculations

for

Project Name: BRADLEY PARK CARE CENTER: (70120)
Location: 707 39TH AVE SE, BLDG B, , PUYALLUP, WA 98374
Drawing Name: 70120 WBP Care Center R01 Level 1 & Attic.cad Calculation Date: 4/10/2026

Design

Remote Area Number:	L1A2
Remote Area Location:	NORTH CORRIDOR 1171
Occupancy Classification:	CORRIDOR
Density	0.100gpm/ft²
Area of Application:	674.57ft² (Actual 918.51ft²)
Coverage per Sprinkler:	280.00ft²
Type of sprinklers calculated:	Pendent
No. of sprinklers calculated:	8
No. of nozzles calculated:	0

In-rack Demand: N/A gpm at Node: N/A
Hose Streams: 100.00 at Node: 1 Type: Allowance at Source

Total Water Required (including Hose Streams where applicable):
From Water Supply at Node 1: 342.41 @ 55.485 (Safety Margin = 25.647)

Type of System:
Volume of Dry/PreAction/Antifreeze/OtherAgent System: N/A

Name of Contractor: RED HAWK FIRE PROTECTION, LLC
Address: 801 VALLEY AVE NW, SUITE D, PUYALLUP, WA 98371
Phone Number: 253-604-7311
Name of designer: BROOKE MCDANIELS
Authority Having Jurisdiction: : CITY OF PUYALLUP

Notes:

Summary Notes:

Water Supply at Node 1

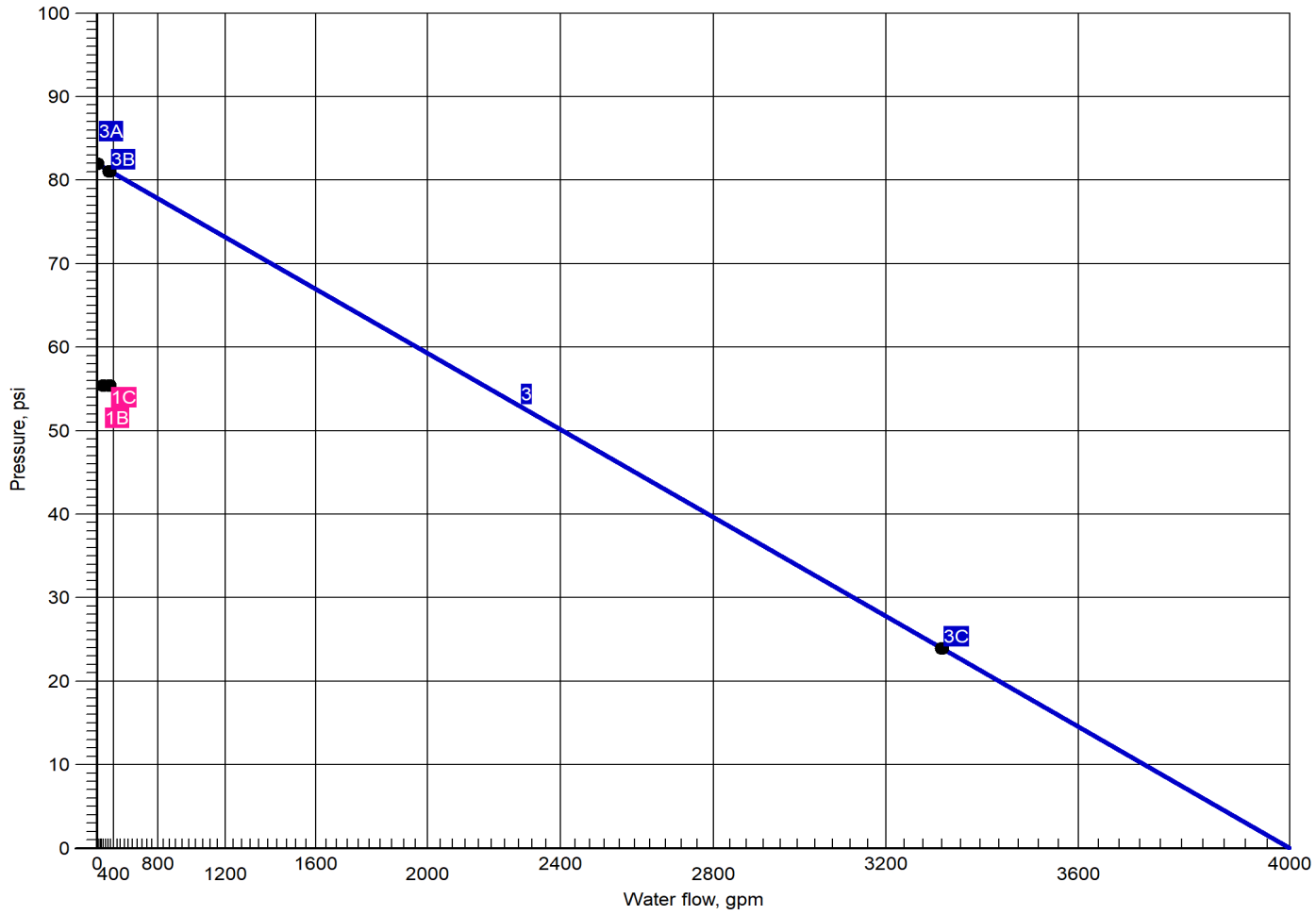
1 System Demand
3 Available Water Supply

Job Name: BRADLEY PARK CARE CENTER

Job Number: 70120

Report Description: CORRIDOR (L1A2)

Remote Area Number: L1A2



Curve	Data Point	Hydraulic Calculation Results	Additional Data
1	1B	Required Pressure at System Demand: 55.485 @ 242.41	Available Flow @ 20 PSI: 3441.74
	1C	Required Pressure at System Demand (Including Hose Allowance at Source): 55.485 @ 342.41	
3	3A	Available Static Pressure at Water Supply at Node 1: 82.000	
	3B	Available Residual Pressure at System Demand: 81.133 @ 342.41	
	3C	Available Residual Pressure & Flow at Water Supply at Node 1: 24.000 @ 3320.00	

Summary Of Outflowing Devices

Job Number: 70120
Report Description: CORRIDOR (L1A2)

Device		Actual Flow (gpm)	Minimum Flow (gpm)	K-Factor (K)	Pressure (psi)			
Sprinkler	**2100**	**28.00**	**28.00**	**5.6**	**25.000**			
Sprinkler	2101	28.95	28.00	5.6	26.731			
Sprinkler	2102	29.15	28.00	5.6	27.105			
Sprinkler	2103	29.39	28.00	5.6	27.546			
Sprinkler	2104	30.14	28.00	5.6	28.963			
Sprinkler	2105	30.44	28.00	5.6	29.556			
Sprinkler	2106	33.14	28.00	5.6	35.031			
Sprinkler	2107	33.19	28.00	5.6	35.124			

Most Demanding Sprinkler Data

Supply Analysis

Node	Name	Static (psi)	Residual (psi) @	Flow (gpm)	Available (psi) @	Total Demand (gpm)	Required Pressure (psi)
1	Water Supply	82.000	24.000	3320.00	81.133	342.41	55.485

Node Analysis

Node Number	Elevation (Foot)	Node Type	Pressure at Node (psi)	Discharge at Node (gpm)	Notes
1	-4-0	Supply	55.485	242.41	
2100	6-6	Sprinkler	25.000	28.00	
2101	6-6	Sprinkler	26.731	28.95	
2102	6-6	Sprinkler	27.105	29.15	
2103	6-6	Sprinkler	27.546	29.39	
2104	7-10½	Sprinkler	28.963	30.14	
2105	7-10	Sprinkler	29.556	30.44	
2106	5-10½	Sprinkler	35.031	33.14	
2107	5-10½	Sprinkler	35.124	33.19	
2	-4-0		54.788	0.00	
3	-7-11½	Gauge	56.382	0.00	BOR, BFP(-1.918)
4	-7-11½		54.459	0.00	
5	-7-11½		54.455	0.00	
8	-3-7		54.459	0.00	
204	9-9½		31.388	0.00	
205	9-1		35.418	0.00	
206	9-1		44.854	0.00	
212	10-5		29.028	0.00	

Node Number	Elevation (Foot)	Node Type	Pressure at Node (psi)	Discharge at Node (gpm)	Notes
213	10-5		30.931	0.00	
214	9-1		35.545	0.00	
215	9-1		35.946	0.00	
216	9-1		36.049	0.00	
217	9-1		36.130	0.00	
218	10-3½		29.648	0.00	
220	10-5		29.763	0.00	
221	10-3½		28.417	0.00	
222	10-3½		29.007	0.00	
223	10-3½		34.060	0.00	
224	9-9½		35.282	0.00	
225	10-3½		34.155	0.00	
226	9-9½		35.385	0.00	

Pipe Information

Node 1 / Node 2	Elev 1 / Elev 2 (Foot)	K-Factor	Flow added this step (q) / Total Flow (Q)	Nominal ID / Actual ID	Fittings & Devices / Equiv. Length (Foot)	Length (Foot) / Fitting (Foot) / Total (Foot)	C Factor / Pf Friction Loss Per Unit (psi)	Total(Pt) / Elev(Pe) / Friction(Pf)	Notes Fitting/Device (Equivalent Length) Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.
2100	6-6	5.6	28.00	1	(See Notes)	4-2	150	25.000	• • • • • **Route 1** • • • • •
212	10-5		28.00	1.1010		41-0 45-2	0.126797	-1.698 5.726	Sprinkler, 2T(5-0), fd(31-0)
212	10-5		30.14	1½	(See Notes)	12-10	150	29.028	Flow (q) from Route 5
213	10-5		58.14	1.5980		11-0 23-10	0.079836	-0.000 1.903	3Tr(1-0), T(8-0)
213	10-5		59.40	1½		0-7½	150	30.931	Flow (q) from Route 2
204	9-9½		117.54	1.5980		0-7½	0.293604	0.272 0.184	
204	9-9½			1½	(See Notes)	0-8½	120	31.388	
205	9-1		117.54	1.6100		8-0 8-8½	0.427783	0.306 3.724	PO(8-0)
205	9-1			3		10-4½	120	35.418	
214	9-1		117.54	3.3340		10-4½	0.012349	0.128	
214	9-1		29.15	3		21-6½	120	35.545	Flow (q) from Route 3
215	9-1		146.69	3.3340		21-6½	0.018606	0.400	
215	9-1		33.14	3		3-9½	120	35.946	Flow (q) from Route 7
216	9-1		179.84	3.3340		3-9½	0.027122	0.103	
216	9-1		33.19	3		2-2	120	36.049	Flow (q) from Route 8
217	9-1		213.02	3.3340		2-2	0.037102	0.081	
217	9-1		29.39	3	(See Notes)	129-11½	120	36.130	Flow (q) from Route 4
206	9-1		242.41	3.3340		55-2 185-1½	0.047124	0.000 8.724	3fE(7-6), T(22-6), fE(10-2½)
206	9-1			4	(See Notes)	21-8	120	44.854	
5	-7-11½		242.41	4.3100		142-3½ 163-11½	0.013495	7.388 2.213	T(27-10½), 2C(27-10½), 2fE(9-5½), sCV(4-2), BV(7-8), PO(27-10½)
5	-7-11½			6		2-1	120	54.455	
4	-7-11½		242.41	6.3570		2-1	0.002034	0.004	

Pipe Information

Node 1 / Node 2	Elev 1 / Elev 2 (Foot)	K-Factor	Flow added this step (q) / Total Flow (Q)	Nominal ID / Actual ID	Fittings & Devices / Equiv. Length (Foot)	Length (Foot) / Fitting (Foot) / Total (Foot)	C Factor / Pf Friction Loss Per Unit (psi)	Total(Pt) / Elev(Pe) / Friction(Pf)	Notes (Fitting/Device (Equivalent Length); Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.)
4	-7-11½			6	(See Notes)	2-5½	120	54.459	
3	-7-11½		242.41	6.3570		2-5½	0.002034	1.923	BOR, BFP(-1.918)
3	-7-11½			6	(See Notes)	7-0	120	56.382	
2	-4-0		242.41	6.3570		52-9½ 59-9½	0.002034	-1.716 0.122	3E(17-7)
2	-4-0			6	Supply (See Notes)	263-10	120	54.788	
1	-4-0		242.41	6.3570		79-2½ 343-0½	0.002034	0.698	Avl.Pressure @ Supply: 81.133 4E(17-7), EE(8-9½), S
			100.00					55.485	Hose Allowance At Source
1			342.41						Total(Pt) Route 1
2101	6-6	5.6	28.95	1	(See Notes)	1-9	150	26.731	• • • • • **Route 2** • • • • •
218	10-3½		28.95	1.1010		32-0 33-9	0.134897	-1.636 4.554	Sprinkler, b(1-0), fd(31-0)
218	10-3½			1½	(See Notes)	0-0	150	29.648	
220	10-5		28.95	1.5980		8-0 8-0	0.021983	-0.062 0.176	T(8-0)
220	10-5		30.44	1½	(See Notes)	6-1	150	29.763	Flow (q) from Route 6
213	10-5		59.40	1.5980		8-0 14-1	0.083066	-0.000 1.168	T(8-0)
								30.931	Total(Pt) Route 2
2102	6-6	5.6	29.15	1	(See Notes)	0-7	120	27.105	• • • • • **Route 3** • • • • •
214	9-1		29.15	1.0490		36-0 36-7	0.261333	-1.120 9.560	Sprinkler, PO(5-0), fd(31-0)
								35.545	Total(Pt) Route 3
2103	6-6	5.6	29.39	1	(See Notes)	0-7	120	27.546	• • • • • **Route 4** • • • • •
217	9-1		29.39	1.0490		36-0 36-7	0.265260	-1.120 9.704	Sprinkler, PO(5-0), fd(31-0)
								36.130	Total(Pt) Route 4
2104	7-10½	5.6	30.14	1	(See Notes)	2-5	150	28.963	• • • • • **Route 5** • • • • •
221	10-3½		30.14	1.1010		1-0 3-5	0.145285	-1.039 0.494	Sprinkler, b(1-0)

Pipe Information

Node 1 / Node 2	Elev 1 (Foot) / Elev 2 (Foot)	K-Factor	Flow added this step (q) / Total Flow (Q)	Nominal ID / Actual ID	Fittings & Devices / Equiv. Length (Foot)	Length (Foot) / Fitting (Foot) / Total (Foot)	C Factor / Pf Friction Loss Per Unit (psi)	Total(Pt) / Elev(Pe) / Friction(Pf)	Notes: Fitting/Device (Equivalent Length) Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.
221	10-3½			1½	(See Notes)	9-5	150	28.417	
212	10-5		30.14	1.5980		19-0 / 28-5	0.023676	-0.062 / 0.672	T(8-0), 2Tr(1-0), E(9-0)
								29.028	Total(Pt) Route 5
2105	7-10	5.6	30.44	1	(See Notes)	2-5½	150	29.556	• • • • • **Route 6** • • • • •
222	10-3½		30.44	1.1010		1-0 / 3-5½	0.148032	-1.058 / 0.509	Sprinkler, b(1-0)
222	10-3½			1½	(See Notes)	13-10½	150	29.007	
220	10-5		30.44	1.5980		20-0 / 33-10½	0.024124	-0.062 / 0.818	2T(8-0), 4Tr(1-0)
								29.763	Total(Pt) Route 6
2106	5-10½	5.6	33.14	1	(See Notes)	4-5	150	35.031	• • • • • **Route 7** • • • • •
223	10-3½		33.14	1.1010		1-0 / 5-5	0.173235	-1.906 / 0.935	Sprinkler, b(1-0)
223	10-3½			1½	(See Notes)	9-10	150	34.060	
224	9-9½		33.14	1.5980		26-0 / 35-10	0.028231	0.211 / 1.011	2T(8-0), Tr(1-0), E(9-0)
224	9-9½			1½	(See Notes)	0-8½	120	35.282	
215	9-1		33.14	1.6100		8-0 / 8-8½	0.041132	0.306 / 0.358	PO(8-0)
								35.946	Total(Pt) Route 7
2107	5-10½	5.6	33.19	1	(See Notes)	4-5	150	35.124	• • • • • **Route 8** • • • • •
225	10-3½		33.19	1.1010		1-0 / 5-5	0.173658	-1.906 / 0.937	Sprinkler, b(1-0)
225	10-3½			1½	(See Notes)	11-0	150	34.155	
226	9-9½		33.19	1.5980		25-0 / 36-0	0.028300	0.211 / 1.019	2T(8-0), E(9-0)
226	9-9½			1½	(See Notes)	0-8½	120	35.385	
216	9-1		33.19	1.6100		8-0 / 8-8½	0.041233	0.306 / 0.359	PO(8-0)
								36.049	Total(Pt) Route 8

Equivalent Pipe Lengths of Valves and Fittings (C=120 only)

(Actual Inside Diameter / Schedule 40 Steel Pipe Inside Diameter) 4.87 = Factor

C Value Multiplier

Value Of C	100	130	140	150
Multiplying Factor	0.713	1.16	1.33	1.51

Fittings Legend

ALV	Alarm Valve	AngV	Angle Valve	b	Bushing
BalV	Ball Valve	BFP	Backflow Preventer	BV	Butterfly Valve
C	Cross Flow Turn 90°	cplg	Coupling	Cr	Cross Run
CV	Check Valve	DelV	Deluge Valve	DPV	Dry Pipe Valve
E	90° Elbow	EE	45° Elbow	Ee1	11¼° Elbow
Ee2	22½° Elbow	f	Flow Device	fd	Flex Drop
FDC	Fire Department Connection	fE	90° FireLock(TM) Elbow	fEE	45° FireLock(TM) Elbow
flg	Flange	FN	Floating Node	fT	FireLock(TM) Tee
g	Gauge	GloV	Globe Valve	GV	Gate Valve
Ho	Hose	Hose	Hose	HV	Hose Valve
Hyd	Hydrant	LtE	Long Turn Elbow	mecT	Mechanical Tee
Noz	Nozzle	P1	Pump In	P2	Pump Out
PIV	Post Indicating Valve	PO	Pipe Outlet	PrV	Pressure Relief Valve
PRV I	Pressure Reducing Valve In	PRV C	Pressure Reducing Valve Out	red	Reducer/Adapter
S	Supply	sCV	Swing Check Valve	SFx	Seismic Flex
Spr	Sprinkler	St	Strainer	T	Tee Flow Turn 90°
Tr	Tee Run	U	Union	WirF	Wirsbo
WMV	Water Meter Valve	Z	Cap		

Hydraulic Calculations

for

Project Name: BRADLEY PARK CARE CENTER: (70120)
Location: 707 39TH AVE SE, BLDG B, , PUYALLUP, WA 98374
Drawing Name: 70120 WBP Care Center R01 Level 1 & Attic.cad Calculation Date: 4/10/2026

Design

Remote Area Number:	L1A3
Remote Area Location:	CC UNIT 1039
Occupancy Classification:	Concealed Combustible Space
Density	0.100gpm/ft²
Area of Application:	1000.00ft² (Actual 1057.80ft²)
Coverage per Sprinkler:	225.00ft²
Type of sprinklers calculated:	Upright
No. of sprinklers calculated:	7
No. of nozzles calculated:	0

In-rack Demand: N/A gpm at Node: N/A
Hose Streams: 100.00 at Node: 1 Type: Allowance at Source

Total Water Required (including Hose Streams where applicable):
From Water Supply at Node 1: 268.00 @ 66.794 (Safety Margin = 14.654)

Type of System: WET
Volume of Dry/PreAction/Antifreeze/OtherAgent System: N/A

Name of Contractor: RED HAWK FIRE PROTECTION, LLC
Address: 801 VALLEY AVE NW, SUITE D, PUYALLUP, WA 98371
Phone Number: 253-604-7311
Name of designer: BROOKE MCDANIELS
Authority Having Jurisdiction: : CITY OF PUYALLUP

Notes:

Summary Notes:

Water Supply at Node 1

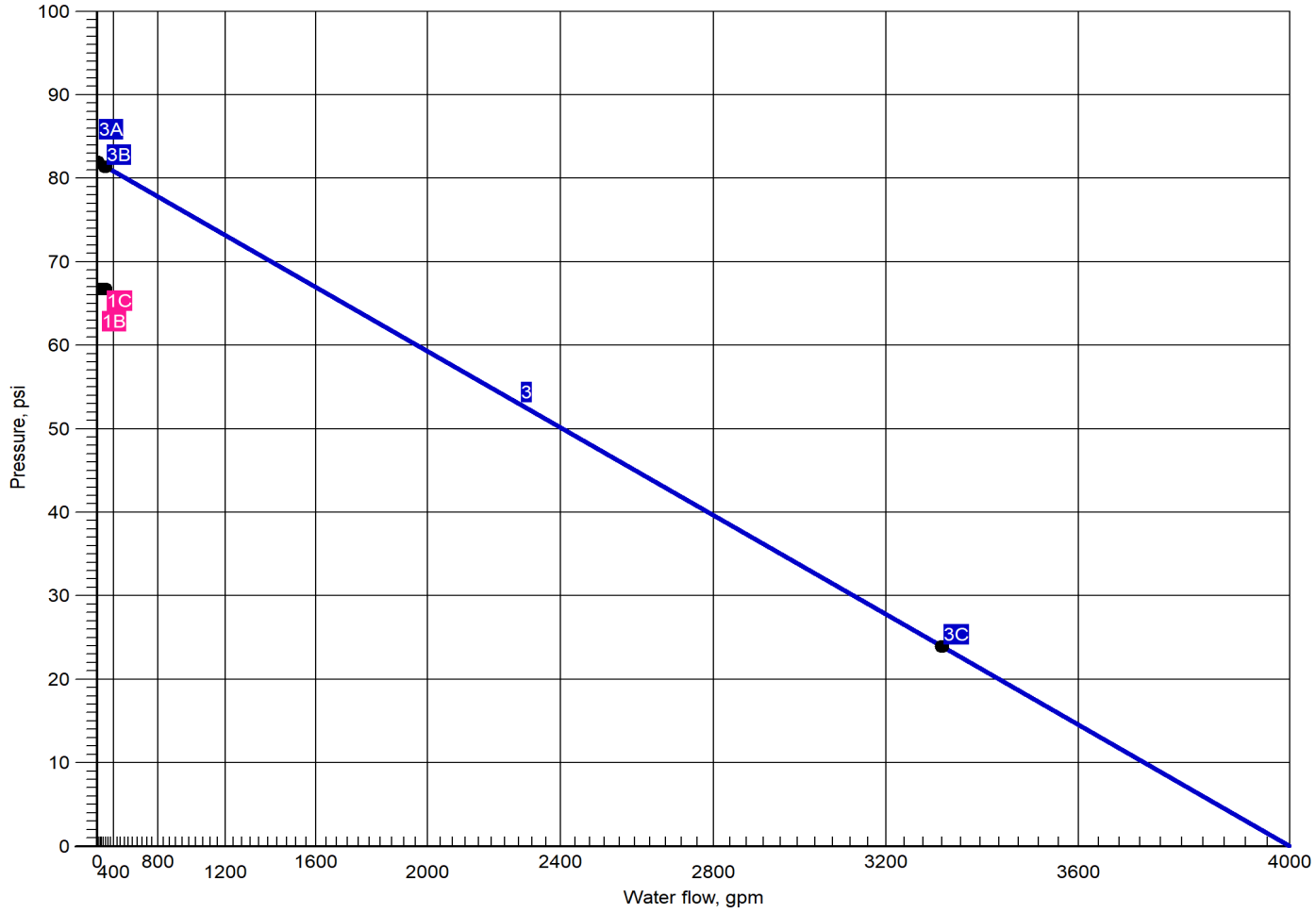
1 System Demand
3 Available Water Supply

Job Name: BRADLEY PARK CARE CENTER

Job Number: 70120

Report Description: Concealed Combustible Space (L1A3)

Remote Area Number: L1A3



Curve	Data Point	Hydraulic Calculation Results	Additional Data
1	1B	Required Pressure at System Demand: 66.794 @ 168.00	Available Flow @ 20 PSI: 3441.74
	1C	Required Pressure at System Demand (Including Hose Allowance at Source): 66.794 @ 268.00	
3	3A	Available Static Pressure at Water Supply at Node 1: 82.000	
	3B	Available Residual Pressure at System Demand: 81.449 @ 268.00	
	3C	Available Residual Pressure & Flow at Water Supply at Node 1: 24.000 @ 3320.00	

Summary Of Outflowing Devices

Job Number: 70120
Report Description: Concealed Combustible Space (L1A3)

Device		Actual Flow (gpm)	Minimum Flow (gpm)	K-Factor (K)	Pressure (psi)			
Sprinkler	**2200**	**22.50**	**22.50**	**5.6**	**16.143**			
Sprinkler	2201	22.51	22.50	5.6	16.158			
Sprinkler	2202	22.90	22.50	5.6	16.716			
Sprinkler	2203	23.31	22.50	5.6	17.319			
Sprinkler	2204	23.55	22.50	5.6	17.691			
Sprinkler	2205	23.99	22.50	5.6	18.348			
Sprinkler	2206	29.24	22.50	5.6	27.272			

Most Demanding Sprinkler Data

Supply Analysis

Node	Name	Static (psi)	Residual (psi) @ Flow (gpm)		Available (psi) @ Total Demand (gpm)		Required Pressure (psi)
1	Water Supply	82.000	24.000	3320.00	81.449	268.00	66.794

Node Analysis

Node Number	Elevation (Foot)	Node Type	Pressure at Node (psi)	Discharge at Node (gpm)	Notes
1	-4-0	Supply	66.794	168.00	
2200	10-10½	Sprinkler	16.143	22.50	
2201	10-10½	Sprinkler	16.158	22.51	
2202	10-10½	Sprinkler	16.716	22.90	
2203	10-10½	Sprinkler	17.319	23.31	
2204	10-10½	Sprinkler	17.691	23.55	
2205	10-10½	Sprinkler	18.348	23.99	
2206	10-10½	Sprinkler	27.272	29.24	
2	-4-0		66.440	0.00	
3	-7-11½	Gauge	68.095	0.00	BOR, BFP(-2.704)
4	-7-11½		65.388	0.00	
5	-7-11½		65.386	0.00	
8	-3-7		65.388	0.00	
204	9-9½		44.026	0.00	
205	9-1		51.543	0.00	
206	9-1		56.875	0.00	
212	10-5		29.846	0.00	
227	10-5		19.339	0.00	

Node Number	Elevation (Foot)	Node Type	Pressure at Node (psi)	Discharge at Node (gpm)	Notes
228	10-5		21.296	0.00	
229	10-5		22.713	0.00	
230	10-5		18.691	0.00	
231	10-5		18.793	0.00	
232	10-5		20.178	0.00	
233	10-5		19.272	0.00	
234	10-5		19.406	0.00	

Pipe Information

Node 1 / Node 2	Elev 1 / Elev 2 (Foot)	K-Factor	Flow added this step (q) / Total Flow (Q)	Nominal ID / Actual ID	Fittings & Devices / Equiv. Length (Foot)	Length (Foot) / Fitting (Foot) / Total (Foot)	C Factor / Pf Friction Loss Per Unit (psi)	Total(Pt) / Elev(Pe) / Friction(Pf)	Notes Fitting/Device (Equivalent Length) Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.
2200	10-10½	5.6	22.50	1	(See Notes)	15-5	150	16.143	• • • • • **Route 1** • • • • •
						20-0	0.084606	0.198	Sprinkler,
227	10-5		22.50	1.1010		35-5		2.998	2E(7-0), Tr(1-0), T(5-0)
227	10-5		23.99	1	(See Notes)	4-0½	150	19.339	Flow (q) from Route 6
						2-0	0.323918		
228	10-5		46.49	1.1010		6-0½		1.957	Tr(1-0), b(1-0)
228	10-5			1½	(See Notes)	6-10½	150	21.296	
						20-0	0.052786		
229	10-5		46.49	1.5980		26-10½		1.418	2E(9-0), 2Tr(1-0)
229	10-5		92.27	1½	(See Notes)	7-10½	150	22.713	Flow (q) from Route 2
						10-0	0.399114		
212	10-5		138.75	1.5980		17-10½		7.133	E(9-0), Tr(1-0)
212	10-5		29.24	1½	(See Notes)	13-5½	150	29.846	Flow (q) from Route 7
						11-0	0.568537	0.272	
204	9-9½		168.00	1.5980		24-5½		13.908	3Tr(1-0), T(8-0)
204	9-9½			1½	(See Notes)	0-8½	120	44.026	
						8-0	0.828360	0.306	
205	9-1		168.00	1.6100		8-8½		7.211	PO(8-0)
205	9-1			3	(See Notes)	167-10	120	51.543	
						55-2	0.023912	0.000	
206	9-1		168.00	3.3340		223-0		5.332	3fE(7-6), T(22-6), fE(10-2½)
206	9-1			4	(See Notes)	21-8	120	56.875	
						142-3½	0.006848	7.388	
5	-7-11½		168.00	4.3100		163-11½		1.123	T(27-10½), 2C(27-10½), 2fE(9-5½), sCV(4-2), BV(7-8), PO(27-10½)
5	-7-11½			6		2-1	120	65.386	
							0.001032		
4	-7-11½		168.00	6.3570		2-1		0.002	
4	-7-11½			6	(See Notes)	2-5½	120	65.388	
							0.001032		
3	-7-11½		168.00	6.3570		2-5½		2.707	BOR, BFP(-2.704)
3	-7-11½			6	(See Notes)	7-0	120	68.095	
						52-9½	0.001032	-1.716	
2	-4-0		168.00	6.3570		59-9½		0.062	3E(17-7)

Pipe Information

Node 1 / Node 2	Elev 1 / Elev 2 (Foot)	K-Factor	Flow added this step (q) / Total Flow (Q)	Nominal ID / Actual ID	Fittings & Devices / Equiv. Length (Foot)	Length (Foot) / Fitting (Foot) / Total (Foot)	C Factor / Pf Friction Loss Per Unit (psi)	Total(Pt) / Elev(Pe) / Friction(Pf)	Notes Fitting/Device (Equivalent Length) Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.
2	-4-0			6	Supply (See Notes)	263-10	120	66.440	Avl.Pressure @ Supply: 81.449
						79-2½	0.001032		
1	-4-0		168.00	6.3570		343-0½		0.354	4E(17-7), EE(8-9½), S
			100.00					66.794	Hose Allowance At Source
1			268.00						Total(Pt) Route 1
2201	10-10½	5.6	22.51	1	(See Notes)	11-7	150	16.158	• • • • • **Route 2** • • • • • Sprinkler,
						16-0	0.084676	0.198	
230	10-5		22.51	1.1010		27-7		2.336	2E(7-0), Tr(1-0), b(1-0)
230	10-5			1½	(See Notes)	4-5	150	18.691	
						3-0	0.013799	0.000	
231	10-5		22.51	1.5980		7-5		0.102	3Tr(1-0)
231	10-5		23.31	1½	(See Notes)	15-11½	150	18.793	Flow (q) from Route 4
						11-0	0.051383	0.000	
232	10-5		45.82	1.5980		26-11½		1.385	2Tr(1-0), E(9-0)
232	10-5		46.45	1½	(See Notes)	5-6	150	20.178	Flow (q) from Route 3
						8-0	0.187616		
229	10-5		92.27	1.5980		13-6		2.535	T(8-0)
								22.713	Total(Pt) Route 2
2202	10-10½	5.6	22.90	1	(See Notes)	11-0	150	16.716	• • • • • **Route 3** • • • • • Sprinkler,
						16-0	0.087382	0.198	
233	10-5		22.90	1.1010		27-0		2.358	2E(7-0), Tr(1-0), b(1-0)
233	10-5			1½	(See Notes)	6-4½	150	19.272	
						3-0	0.014240		
234	10-5		22.90	1.5980		9-4½		0.133	3Tr(1-0)
234	10-5		23.55	1½	(See Notes)	6-8	150	19.406	Flow (q) from Route 5
						8-0	0.052708		
232	10-5		46.45	1.5980		14-8		0.773	T(8-0)
								20.178	Total(Pt) Route 3
2203	10-10½	5.6	23.31	1	(See Notes)	2-1½	150	17.319	• • • • • **Route 4** • • • • • Sprinkler,
						12-0	0.090293	0.198	
231	10-5		23.31	1.1010		14-1½		1.276	E(7-0), T(5-0)
								18.793	Total(Pt) Route 4

Pipe Information

Node 1 / Node 2	Elev 1 / Elev 2 (Foot)	K-Factor	Flow added this step (q) / Total Flow (Q)	Nominal ID / Actual ID	Fittings & Devices / Equiv. Length (Foot)	Length (Foot) / Fitting (Foot) / Total (Foot)	C Factor / Pf Friction Loss Per Unit (psi)	Total(Pt) / Elev(Pe) / Friction(Pf)	Notes Fitting/Device (Equivalent Length) Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.
2204	10-10½	5.6	23.55	1	(See Notes)	3-5½	150	17.691	• • • • • **Route 5** • • • • •
234	10-5		23.55	1.1010		13-0	0.092083	0.198	Sprinkler,
						16-5½		1.517	E(7-0), Tr(1-0), T(5-0)
								19.406	Total(Pt) Route 5
2205	10-10½	5.6	23.99	1	(See Notes)	2-4	150	18.348	• • • • • **Route 6** • • • • •
227	10-5		23.99	1.1010		6-0	0.095243	0.198	Sprinkler,
						8-4		0.793	T(5-0), Tr(1-0)
								19.339	Total(Pt) Route 6
2206	10-10½	5.6	29.24	1	(See Notes)	4-3½	150	27.272	• • • • • **Route 7** • • • • •
212	10-5		29.24	1.1010		13-0	0.137419	0.198	Sprinkler,
						17-3½		2.377	E(7-0), Tr(1-0), T(5-0)
								29.846	Total(Pt) Route 7

Equivalent Pipe Lengths of Valves and Fittings (C=120 only)

(Actual Inside Diameter / Schedule 40 Steel Pipe Inside Diameter) 4.87 = Factor

C Value Multiplier

Value Of C	100	130	140	150
Multiplying Factor	0.713	1.16	1.33	1.51

Fittings Legend

ALV	Alarm Valve	AngV	Angle Valve	b	Bushing
BalV	Ball Valve	BFP	Backflow Preventer	BV	Butterfly Valve
C	Cross Flow Turn 90°	cplg	Coupling	Cr	Cross Run
CV	Check Valve	DelV	Deluge Valve	DPV	Dry Pipe Valve
E	90° Elbow	EE	45° Elbow	Ee1	11¼° Elbow
Ee2	22½° Elbow	f	Flow Device	fd	Flex Drop
FDC	Fire Department Connection	fE	90° FireLock(TM) Elbow	fEE	45° FireLock(TM) Elbow
flg	Flange	FN	Floating Node	fT	FireLock(TM) Tee
g	Gauge	GloV	Globe Valve	GV	Gate Valve
Ho	Hose	Hose	Hose	HV	Hose Valve
Hyd	Hydrant	LtE	Long Turn Elbow	mecT	Mechanical Tee
Noz	Nozzle	P1	Pump In	P2	Pump Out
PIV	Post Indicating Valve	PO	Pipe Outlet	PrV	Pressure Relief Valve
PRV I	Pressure Reducing Valve In	PRV C	Pressure Reducing Valve Out	red	Reducer/Adapter
S	Supply	sCV	Swing Check Valve	SFx	Seismic Flex
Spr	Sprinkler	St	Strainer	T	Tee Flow Turn 90°
Tr	Tee Run	U	Union	WirF	Wirsbo
WMV	Water Meter Valve	Z	Cap		

Hydraulic Calculations

for

Project Name: BRADLEY PARK CARE CENTER: (70120)
Location: 707 39TH AVE SE, BLDG B, , PUYALLUP, WA 98374
Drawing Name: 70120 WBP Care Center R01 Level 1 & Attic.cad Calculation Date: 4/10/2026

Design

Remote Area Number:	L1A4
Remote Area Location:	DAYROOM 1129
Occupancy Classification:	Light Hazard
Density	0.100gpm/ft²
Area of Application:	1500.00ft² (Actual 1057.84ft²)
Coverage per Sprinkler:	120.00ft²
Type of sprinklers calculated:	Pendent
No. of sprinklers calculated:	12
No. of nozzles calculated:	0

In-rack Demand:	N/A gpm	at Node:	N/A		
Hose Streams:	100.00	at Node:	1	Type:	Allowance at Source

Total Water Required (including Hose Streams where applicable):
From Water Supply at Node 1: 366.00 @ 67.153 (Safety Margin = 13.866)

Type of System: WET
Volume of Dry/PreAction/Antifreeze/OtherAgent System: N/A

Name of Contractor: RED HAWK FIRE PROTECTION, LLC
Address: 801 VALLEY AVE NW, SUITE D, PUYALLUP, WA 98371
Phone Number: 253-604-7311
Name of designer: BROOKE MCDANIELS
Authority Having Jurisdiction: : CITY OF PUYALLUP

Notes:

Summary Notes:

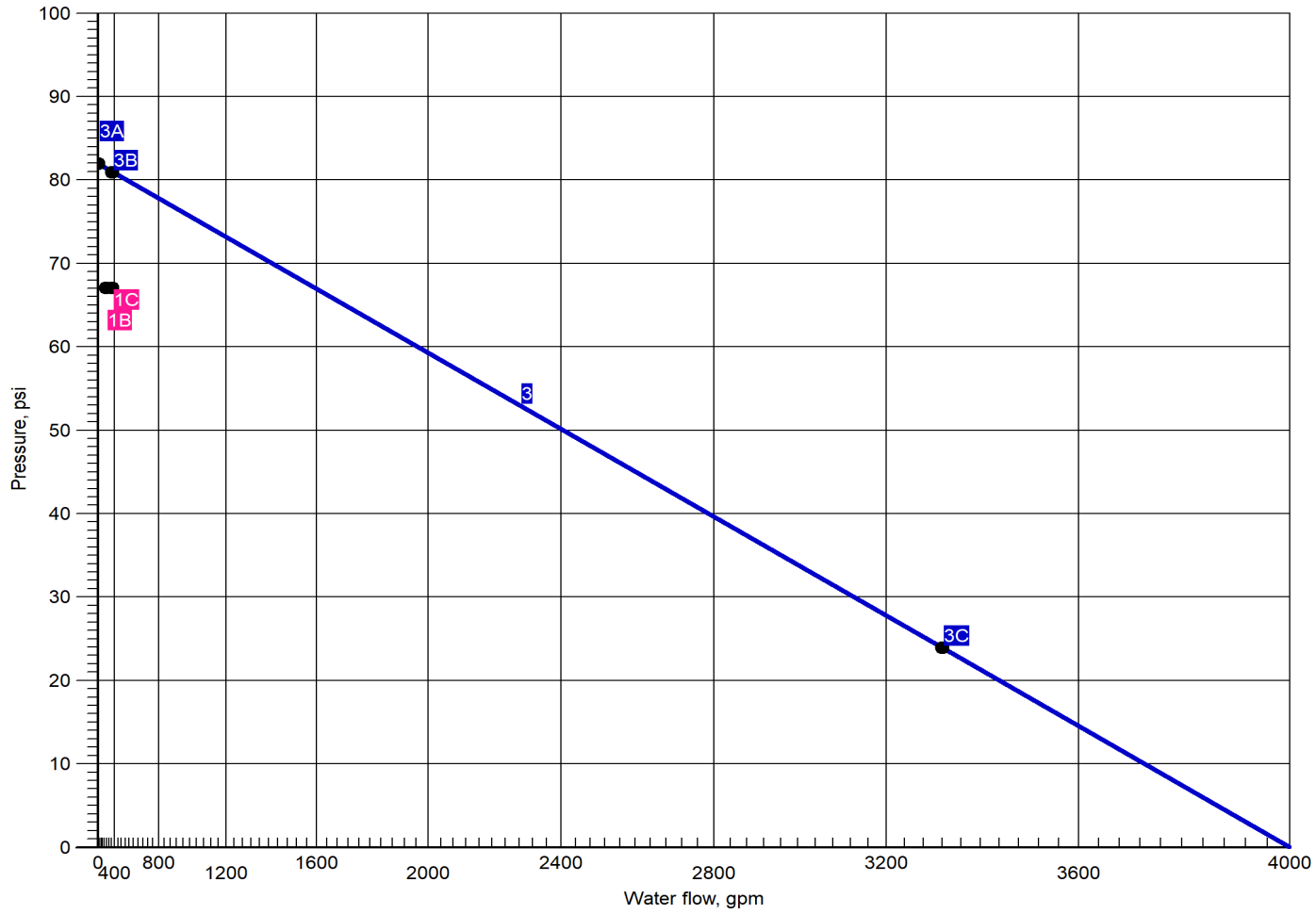
Water Supply at Node 1

Job Name: BRADLEY PARK CARE CENTER

Job Number: 70120

Report Description: Light Hazard (L1A4)

Remote Area Number: L1A4



Curve	Data Point	Hydraulic Calculation Results	Additional Data
1	1B	Required Pressure at System Demand: 67.153 @ 266.00	Available Flow @ 20 PSI: 3441.74
	1C	Required Pressure at System Demand (Including Hose Allowance at Source): 67.153 @ 366.00	
3	3A	Available Static Pressure at Water Supply at Node 1: 82.000	
	3B	Available Residual Pressure at System Demand: 81.019 @ 366.00	
	3C	Available Residual Pressure & Flow at Water Supply at Node 1: 24.000 @ 3320.00	

Summary Of Outflowing Devices

Job Number: 70120
Report Description: Light Hazard (L1A4)

Device		Actual Flow (gpm)	Minimum Flow (gpm)	K-Factor (K)	Pressure (psi)			
Sprinkler	**2300**	**28.00**	**28.00**	**5.6**	**25.000**			
Sprinkler	2301	17.70	12.00	5.6	9.993			
Sprinkler	2302	18.05	12.00	5.6	10.394			
Sprinkler	2303	19.86	12.00	5.6	12.582			
Sprinkler	2304	20.51	12.00	5.6	13.410			
Sprinkler	2305	20.60	12.00	5.6	13.535			
Sprinkler	2306	20.77	12.00	5.6	13.751			
Sprinkler	2307	21.29	12.00	5.6	14.454			
Sprinkler	2308	21.56	12.00	5.6	14.817			
Sprinkler	2309	24.49	12.00	5.6	19.124			
Sprinkler	2310	26.57	12.00	5.6	22.515			
Sprinkler	2311	26.60	12.00	5.6	22.562			

Most Demanding Sprinkler Data

Supply Analysis

Node	Name	Static (psi)	Residual (psi) @	Flow (gpm)	Available (psi) @	Total Demand (gpm)	Required Pressure (psi)
1	Water Supply	82.000	24.000	3320.00	81.019	366.00	67.153

Node Analysis

Node Number	Elevation (Foot)	Node Type	Pressure at Node (psi)	Discharge at Node (gpm)	Notes
1	-4-0	Supply	67.153	266.00	
2300	6-6	Sprinkler	25.000	28.00	
2301	11-9	Sprinkler	9.993	17.70	
2302	11-9	Sprinkler	10.394	18.05	
2303	14-0	Sprinkler	12.582	19.86	
2304	14-0	Sprinkler	13.410	20.51	
2305	14-0	Sprinkler	13.535	20.60	
2306	14-0	Sprinkler	13.751	20.77	
2307	14-0	Sprinkler	14.454	21.29	
2308	14-0	Sprinkler	14.817	21.56	
2309	7-0	Sprinkler	19.124	24.49	
2310	8-0½	Sprinkler	22.515	26.57	
2311	7-0½	Sprinkler	22.562	26.60	
2	-4-0		66.324	0.00	
3	-7-11½	Gauge	67.896	0.00	BOR, BFP(-1.867)
4	-7-11½		66.023	0.00	
5	-7-11½		66.018	0.00	
8	-3-7		66.023	0.00	

Node Number	Elevation (Foot)	Node Type	Pressure at Node (psi)	Discharge at Node (gpm)	Notes
206	9-1		56.003	0.00	
235	9-1		32.752	0.00	
236	16-3		8.904	0.00	
237	16-3		8.956	0.00	
238	15-9		10.449	0.00	
239	10-5		21.344	0.00	
240	9-9½		25.860	0.00	
241	9-1		31.875	0.00	
242	9-1		31.894	0.00	
243	9-1		31.921	0.00	
244	9-1		32.070	0.00	
245	9-1		32.617	0.00	
246	16-3		9.338	0.00	
247	16-3		9.923	0.00	
248	15-9		15.417	0.00	
249	9-9½		29.577	0.00	
250	15-9		16.501	0.00	
251	9-9½		28.686	0.00	
252	15-9		16.930	0.00	
253	9-9½		28.794	0.00	
254	10-5		23.161	0.00	
257	9-9½		27.083	0.00	

Pipe Information

Node 1 / Node 2	Elev 1 / Elev 2 (Foot)	K-Factor	Flow added this step (q) / Total Flow (Q)	Nominal ID / Actual ID	Fittings & Devices / Equiv. Length (Foot)	Length (Foot) / Fitting (Foot) / Total (Foot)	C Factor / Pf Friction Loss Per Unit (psi)	Total(Pt) / Elev(Pe) / Friction(Pf)	Notes Fitting/Device (Equivalent Length) Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.
2300	6-6	5.6	28.00	1	(See Notes)	0-7	120	25.000	• • • • • **Route 1** • • • • •
						36-0	0.242504	-1.120	Sprinkler,
235	9-1		28.00	1.0490		36-7		8.872	PO(5-0), fd(31-0)
235	9-1		238.00	3	(See Notes)	307-10½	120	32.752	Flow (q) from Route 2
						107-7½	0.055957	0.000	
206	9-1		266.00	3.3340		415-6		23.251	T(22-6), 10fE(7-6), fE(10-2½)
206	9-1			4	(See Notes)	21-8	120	56.003	
						142-3½	0.016025	7.388	
5	-7-11½		266.00	4.3100		163-11½		2.628	T(27-10½), 2C(27-10½), 2fE(9-5½), sCV(4-2), BV(7-8), PO(27-10½)
5	-7-11½			6		2-1	120	66.018	
							0.002415		
4	-7-11½		266.00	6.3570		2-1		0.005	
4	-7-11½			6	(See Notes)	2-5½	120	66.023	
							0.002415		
3	-7-11½		266.00	6.3570		2-5½		1.873	BOR, BFP(-1.867)
3	-7-11½			6	(See Notes)	7-0	120	67.896	
						52-9½	0.002415	-1.716	
2	-4-0		266.00	6.3570		59-9½		0.144	3E(17-7)
2	-4-0			6	Supply (See Notes)	263-10	120	66.324	
						79-2½	0.002415		Avl.Pressure @ Supply: 81.019
1	-4-0		266.00	6.3570		343-0½		0.828	4E(17-7), EE(8-9½), S
			100.00					67.153	Hose Allowance At Source
1			366.00						Total(Pt) Route 1
2301	11-9	5.6	17.70	1	(See Notes)	4-6	100	9.993	• • • • • **Route 2** • • • • •
						1-5	0.145490	-1.951	Sprinkler,
236	16-3		17.70	1.0490		5-11		0.862	E(1-5)
236	16-3			1		0-6	120	8.904	
							0.103836	-0.000	
237	16-3		17.70	1.0490		0-6		0.052	
237	16-3			1	(See Notes)	10-6	150	8.956	T(5-0)
						13-0	0.054292	0.217	
238	15-9		17.70	1.1010		23-6		1.276	E(7-0), Tr(1-0)

Pipe Information

Node 1 / Node 2	Elev 1 / Elev 2 (Foot)	K-Factor	Flow added this step (q) / Total Flow (Q)	Nominal ID / Actual ID	Fittings & Devices / Equiv. Length (Foot)	Length (Foot) / Fitting (Foot) / Total (Foot)	C Factor / Pf Friction Loss Per Unit (psi)	Total(Pt) / Elev(Pe) / Friction(Pf)	Notes Fitting/Device (Equivalent Length) Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.
238	15-9		18.05	1	(See Notes)	14-0½	150	10.449	Flow (q) from Route 3
239	10-5		35.76	1.1010		29-0 43-0½	0.199336	2.312 8.583	4E(7-0), Tr(1-0)
239	10-5		24.49	1	(See Notes)	3-1½	150	21.344	Flow (q) from Route 10
240	9-9½		60.25	1.1010		5-0 8-1½	0.523283	0.272 4.244	T(5-0)
240	9-9½			1	(See Notes)	0-8½	120	25.860	
241	9-1		60.25	1.0490		5-0 5-8½	1.000802	0.306 5.710	PO(5-0)
241	9-1			3		5-5	120	31.875	
242	9-1		60.25	3.3340		 5-5	0.003587	-0.000 0.019	
242	9-1		41.80	3		2-9	120	31.894	Flow (q) from Route 5
243	9-1		102.04	3.3340		 2-9	0.009507	 0.026	
243	9-1		53.17	3		7-3	120	31.921	Flow (q) from Route 11
244	9-1		155.22	3.3340		 7-3	0.020656	 0.150	
244	9-1		42.32	3	(See Notes)	9-5	120	32.070	Flow (q) from Route 7
245	9-1		197.54	3.3340		7-6 16-11	0.032267	0.000 0.546	fE(7-6)
245	9-1		40.47	3		2-11½	120	32.617	Flow (q) from Route 4
235	9-1		238.00	3.3340		 2-11½	0.045551	-0.000 0.135	
								32.752	Total(Pt) Route 2
2302	11-9	5.6	18.05	1	(See Notes)	4-6	100	10.394	• • • • • **Route 3** • • • • •
246	16-3		18.05	1.0490		1-5 5-11	0.150884	-1.951 0.894	Sprinkler, E(1-5)
246	16-3			1	(See Notes)	0-5	120	9.338	
247	16-3		18.05	1.0490		5-0 5-5	0.107686	-0.000 0.585	T(5-0)
247	16-3			1	(See Notes)	0-6	150	9.923	
238	15-9		18.05	1.1010		5-0 5-6	0.056305	0.217 0.310	T(5-0)

Pipe Information

Node 1 / Node 2	Elev 1 (Foot) / Elev 2 (Foot)	K-Factor	Flow added this step (q) / Total Flow (Q)	Nominal ID / Actual ID	Fittings & Devices / Equiv. Length (Foot)	Length (Foot) / Fitting (Foot) / Total (Foot)	C Factor / Pf Friction Loss Per Unit (psi)	Total(Pt) / Elev(Pe) / Friction(Pf)	Notes: Fitting/Device (Equivalent Length) Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.
								10.449	Total(Pt) Route 3
2303	14-0	5.6	19.86	1	(See Notes)	12-5½	150	12.582	• • • • • **Route 4** • • • • • Sprinkler,
248	15-9		19.86	1.1010		41-0 / 53-5½	0.067188	-0.759 / 3.593	E(7-0), 3Tr(1-0), fd(31-0)
248	15-9		20.60	1	(See Notes)	18-2½	150	15.417	Flow (q) from Route 6
249	9-9½		40.47	1.1010		28-0 / 46-2½	0.250606	2.585 / 11.575	4E(7-0)
249	9-9½			1	(See Notes)	0-8½	120	29.577	
245	9-1		40.47	1.0490		5-0 / 5-8½	0.479295	0.306 / 2.734	PO(5-0)
								32.617	Total(Pt) Route 4
2304	14-0	5.6	20.51	1	(See Notes)	13-0	150	13.410	• • • • • **Route 5** • • • • • Sprinkler,
250	15-9		20.51	1.1010		41-0 / 54-0	0.071267	-0.759 / 3.850	E(7-0), 3Tr(1-0), fd(31-0)
250	15-9		21.29	1	(See Notes)	15-1	150	16.501	Flow (q) from Route 8
251	9-9½		41.80	1.1010		21-0 / 36-1	0.266068	2.585 / 9.600	3E(7-0)
251	9-9½			1	(See Notes)	0-8½	120	28.686	
242	9-1		41.80	1.0490		5-0 / 5-8½	0.508867	0.306 / 2.903	PO(5-0)
								31.894	Total(Pt) Route 5
2305	14-0	5.6	20.60	1	(See Notes)	0-9	150	13.535	• • • • • **Route 6** • • • • • Sprinkler,
248	15-9		20.60	1.1010		36-0 / 36-9	0.071881	-0.759 / 2.640	T(5-0), fd(31-0)
								15.417	Total(Pt) Route 6
2306	14-0	5.6	20.77	1	(See Notes)	12-11½	150	13.751	• • • • • **Route 7** • • • • • Sprinkler,
252	15-9		20.77	1.1010		41-0 / 53-11½	0.072941	-0.759 / 3.937	E(7-0), 3Tr(1-0), fd(31-0)
252	15-9		21.56	1	(See Notes)	15-1	150	16.930	Flow (q) from Route 9
253	9-9½		42.32	1.1010		19-0 / 34-1	0.272282	2.585 / 9.280	2E(7-0), T(5-0)

Pipe Information

Node 1 / Node 2	Elev 1 / Elev 2 (Foot)	K-Factor	Flow added this step (q) / Total Flow (Q)	Nominal ID / Actual ID	Fittings & Devices / Equiv. Length (Foot)	Length (Foot) / Fitting (Foot) / Total (Foot)	C Factor / Pf Friction Loss Per Unit (psi)	Total(Pt) / Elev(Pe) / Friction(Pf)	Notes: Fitting/Device (Equivalent Length) Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.
253	9-9½			1	(See Notes)	0-8½	120	28.794	
244	9-1		42.32	1.0490		5-0	0.520752	0.306	PO(5-0)
						5-8½		2.971	
								32.070	Total(Pt) Route 7
2307	14-0	5.6	21.29	1	(See Notes)	0-9	150	14.454	• • • • • **Route 8** • • • • •
250	15-9		21.29	1.1010		36-0	0.076384	-0.759	Sprinkler, T(5-0), fd(31-0)
						36-9		2.806	
								16.501	Total(Pt) Route 8
2308	14-0	5.6	21.56	1	(See Notes)	0-9	150	14.817	• • • • • **Route 9** • • • • •
252	15-9		21.56	1.1010		36-0	0.078158	-0.759	Sprinkler, T(5-0), fd(31-0)
						36-9		2.871	
								16.930	Total(Pt) Route 9
2309	7-0	5.6	24.49	1	(See Notes)	1-5	150	19.124	• • • • • **Route 10** • • • • •
239	10-5		24.49	1.1010		36-0	0.098962	-1.481	Sprinkler, T(5-0), fd(31-0)
						37-5		3.701	
								21.344	Total(Pt) Route 10
2310	8-0½	5.6	26.57	1	(See Notes)	6-6½	150	22.515	• • • • • **Route 11** • • • • •
254	10-5		26.57	1.1010		8-0	0.115093	-1.028	Sprinkler, E(7-0), Tr(1-0)
						14-6½		1.674	
254	10-5		26.60	1	(See Notes)	1-9½	150	23.161	Flow (q) from Route 12
257	9-9½		53.17	1.1010		7-0	0.415315	0.272	E(7-0)
						8-9½		3.650	
257	9-9½			1	(See Notes)	0-8½	120	27.083	
243	9-1		53.17	1.0490		5-0	0.794307	0.306	PO(5-0)
						5-8½		4.531	
								31.921	Total(Pt) Route 11
2311	7-0½	5.6	26.60	1	(See Notes)	5-10½	150	22.562	• • • • • **Route 12** • • • • •
254	10-5		26.60	1.1010		12-0	0.115317	-1.462	Sprinkler, E(7-0), T(5-0)
						17-10½		2.060	
								23.161	Total(Pt) Route 12

Equivalent Pipe Lengths of Valves and Fittings (C=120 only)

(Actual Inside Diameter / Schedule 40 Steel Pipe Inside Diameter) 4.87 = Factor

C Value Multiplier

Value Of C	100	130	140	150
Multiplying Factor	0.713	1.16	1.33	1.51

Fittings Legend

ALV	Alarm Valve	AngV	Angle Valve	b	Bushing
BalV	Ball Valve	BFP	Backflow Preventer	BV	Butterfly Valve
C	Cross Flow Turn 90°	cplg	Coupling	Cr	Cross Run
CV	Check Valve	DelV	Deluge Valve	DPV	Dry Pipe Valve
E	90° Elbow	EE	45° Elbow	Ee1	11¼° Elbow
Ee2	22½° Elbow	f	Flow Device	fd	Flex Drop
FDC	Fire Department Connection	fE	90° FireLock(TM) Elbow	fEE	45° FireLock(TM) Elbow
flg	Flange	FN	Floating Node	fT	FireLock(TM) Tee
g	Gauge	GloV	Globe Valve	GV	Gate Valve
Ho	Hose	Hose	Hose	HV	Hose Valve
Hyd	Hydrant	LtE	Long Turn Elbow	mecT	Mechanical Tee
Noz	Nozzle	P1	Pump In	P2	Pump Out
PIV	Post Indicating Valve	PO	Pipe Outlet	PrV	Pressure Relief Valve
PRV I	Pressure Reducing Valve In	PRV C	Pressure Reducing Valve Out	red	Reducer/Adapter
S	Supply	sCV	Swing Check Valve	SFx	Seismic Flex
Spr	Sprinkler	St	Strainer	T	Tee Flow Turn 90°
Tr	Tee Run	U	Union	WirF	Wirsbo
WMV	Water Meter Valve	Z	Cap		

Hydraulic Calculations

for

Project Name: BRADLEY PARK CARE CENTER: (70120)
Location: 707 39TH AVE SE, BLDG B, , PUYALLUP, WA 98374
Drawing Name: 70120 WBP Care Center R01 Level 1 & Attic.cad Calculation Date: 4/10/2026

Design

Remote Area Number:	L1A5
Remote Area Location:	ATTIC
Occupancy Classification:	Light Hazard
Density	0.100gpm/ft²
Area of Application:	1950.00ft² (Actual 225.00ft²)
Coverage per Sprinkler:	100.00ft²
Type of sprinklers calculated:	Upright
No. of sprinklers calculated:	7
No. of nozzles calculated:	0

In-rack Demand:	N/A gpm	at Node:	N/A		
Hose Streams:	100.00	at Node:	1	Type:	Allowance at Source

Total Water Required (including Hose Streams where applicable):
From Water Supply at Node 1: 217.53 @ 66.013 (Safety Margin = 15.613)

Type of System: DRY
Volume of Dry/PreAction/Antifreeze/OtherAgent System: 411.13gal

Name of Contractor: RED HAWK FIRE PROTECTION, LLC
Address: 801 VALLEY AVE NW, SUITE D, PUYALLUP, WA 98371
Phone Number: 253-604-7311
Name of designer: BROOKE MCDANIELS
Authority Having Jurisdiction: : CITY OF PUYALLUP

Notes:

Summary Notes:

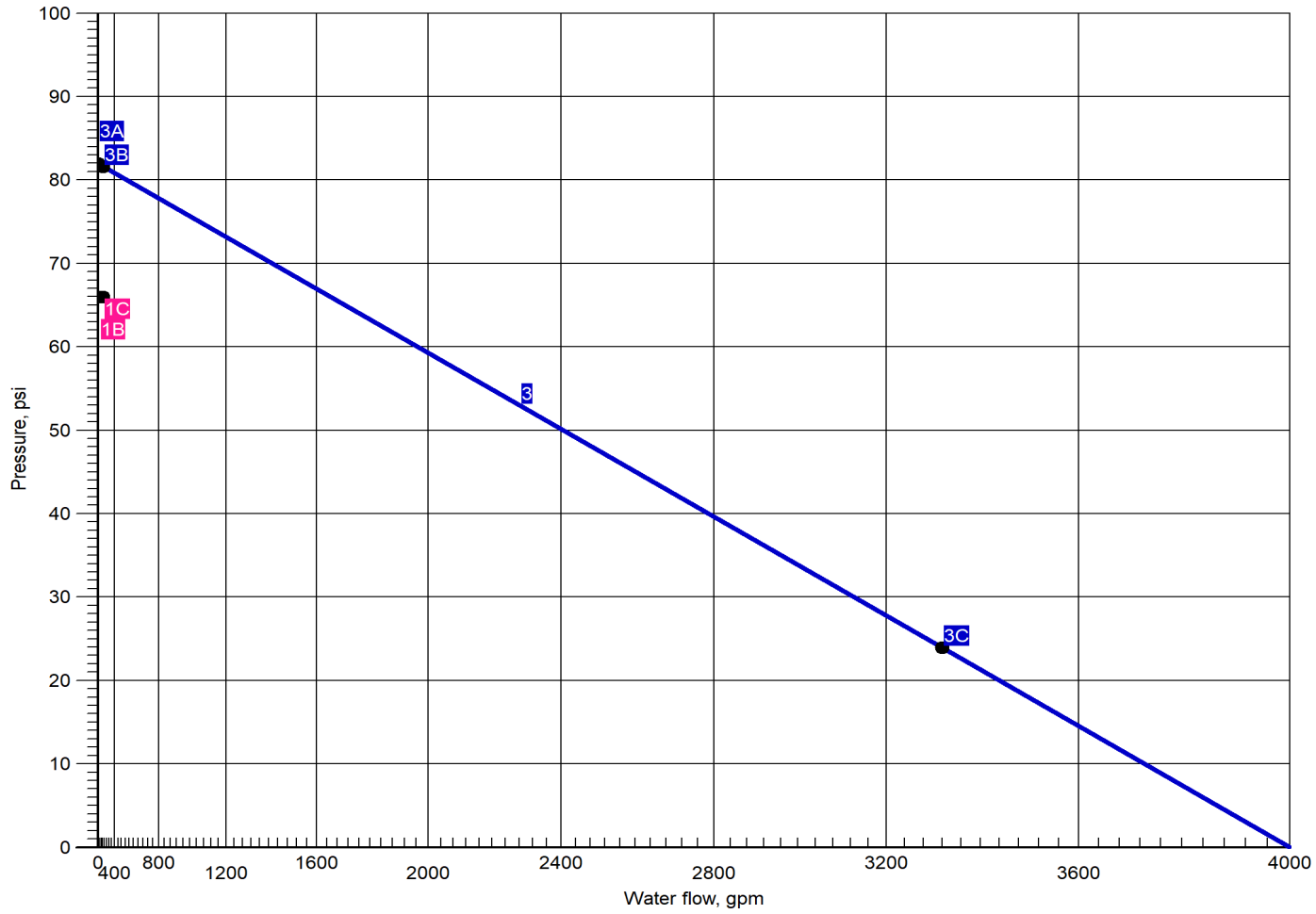
Water Supply at Node 1

Job Name: BRADLEY PARK CARE CENTER

Job Number: 70120

Report Description: Light Hazard (L1A5)

Remote Area Number: L1A5



Curve	Data Point	Hydraulic Calculation Results	Additional Data
1	1B	Required Pressure at System Demand: 66.013 @ 117.53	Available Flow @ 20 PSI: 3441.74
	1C	Required Pressure at System Demand (Including Hose Allowance at Source): 66.013 @ 217.53	
3	3A	Available Static Pressure at Water Supply at Node 1: 82.000	
	3B	Available Residual Pressure at System Demand: 81.625 @ 217.53	
	3C	Available Residual Pressure & Flow at Water Supply at Node 1: 24.000 @ 3320.00	

Summary Of Outflowing Devices

Job Number: 70120
Report Description: Light Hazard (L1A5)

Device		Actual Flow (gpm)	Minimum Flow (gpm)	K-Factor (K)	Pressure (psi)			
Sprinkler	**2400**	**14.82**	**10.00**	**5.6**	**7.000**			
Sprinkler	2401	14.89	10.00	5.6	7.074			
Sprinkler	2402	15.22	10.00	5.6	7.390			
Sprinkler	2403	15.93	10.00	5.6	8.089			
Sprinkler	2404	17.10	10.00	5.6	9.327			
Sprinkler	2405	19.10	10.00	5.6	11.634			
Sprinkler	2406	20.47	10.00	5.6	13.360			

Most Demanding Sprinkler Data

Supply Analysis

Node	Name	Static (psi)	Residual (psi) @ Flow (gpm)		Available (psi) @ Total Demand (gpm)		Required Pressure (psi)
1	Water Supply	82.000	24.000	3320.00	81.625	217.53	66.013

Node Analysis

Node Number	Elevation (Foot)	Node Type	Pressure at Node (psi)	Discharge at Node (gpm)	Notes
1	-4-0	Supply	66.013	117.53	
2400	18-5½	Sprinkler	7.000	14.82	
2401	18-6	Sprinkler	7.074	14.89	
2402	18-6½	Sprinkler	7.390	15.22	
2403	18-7	Sprinkler	8.089	15.93	
2404	18-7½	Sprinkler	9.327	17.10	
2405	19-7½	Sprinkler	11.634	19.10	
2406	22-6	Sprinkler	13.360	20.47	
2	-4-0		65.830	0.00	
3	-7-11½	Gauge	67.514	0.00	BOR, BFP(-3.599)
4	-7-11½		63.914	0.00	
5	-7-11½		63.908	0.00	
8	-3-7		61.197	0.00	
207	25-1		17.153	0.00	

Pipe Information

Node 1 / Node 2	Elev 1 / Elev 2 (Foot)	K-Factor	Flow added this step (q) / Total Flow (Q)	Nominal ID / Actual ID	Fittings & Devices / Equiv. Length (Foot)	Length (Foot) / Fitting (Foot) / Total (Foot)	C Factor / Pf Friction Loss Per Unit (psi)	Total(Pt) / Elev(Pe) / Friction(Pf)	Notes: Fitting/Device (Equivalent Length) Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.
2400	18-5½	5.6	14.82	1½	(See Notes)	10-0	100	7.000	• • • • • Route 1 • • • • • Sprinkler
							0.009208	-0.018	
2401	18-6		14.82	1.7280		10-0		0.092	
2401	18-6	5.6	14.89	1½	(See Notes)	10-0	100	7.074	Sprinkler
							0.033357	-0.018	
2402	18-6½		29.71	1.7280		10-0		0.334	
2402	18-6½	5.6	15.22	1½	(See Notes)	10-0	100	7.390	Sprinkler
							0.071706	-0.018	
2403	18-7		44.93	1.7280		10-0		0.717	
2403	18-7	5.6	15.93	1½	(See Notes)	10-0	100	8.089	Sprinkler
							0.125694	-0.018	
2404	18-7½		60.86	1.7280		10-0		1.257	
2404	18-7½	5.6	17.10	1½	(See Notes)	11-1	100	9.327	Sprinkler,
						2-8	0.198743	-0.424	fE(2-8)
2405	19-7½		77.96	1.7280		13-9		2.730	
2405	19-7½	5.6	19.10	1½	(See Notes)	10-0	100	11.634	Sprinkler
							0.298095	-1.255	
2406	22-6		97.06	1.7280		10-0		2.981	
2406	22-6	5.6	20.47	1½	(See Notes)	8-11	100	13.360	Sprinkler,
						2-8	0.424707	-1.120	fE(2-8)
207	25-1		117.53	1.7280		11-7		4.913	
207	25-1			2	(See Notes)	156-0½	100	17.153	
						63-2	0.144237	12.426	
8	-3-7		117.53	2.1570		219-2½		31.618	2fE(3-1), 5E(4-4½), T(8-9½), 2 C(8-9½), PO(8-9½)
8	-3-7			3	(See Notes)	6-11	100	61.197	
						35-4½	0.019300	1.901	
4	-7-11½		117.53	3.2600		42-3		0.816	E(6-8½), DPV(4-8½), BV(9-7), PO(14-4½)
4	-7-11½			6	(See Notes)	2-5½	120	63.914	
							0.000533		
3	-7-11½		117.53	6.3570		2-5½		3.600	BOR, BFP(-3.599)
3	-7-11½			6	(See Notes)	7-0	120	67.514	
						52-9½	0.000533	-1.716	
2	-4-0		117.53	6.3570		59-9½		0.032	3E(17-7)

Pipe Information

Node 1 / Node 2	Elev 1 / Elev 2 (Foot)	K-Factor	Flow added this step (q) / Total Flow (Q)	Nominal ID / Actual ID	Fittings & Devices / Equiv. Length (Foot)	Length (Foot) / Fitting (Foot) / Total (Foot)	C Factor / Pf Friction Loss Per Unit (psi)	Total(Pt) / Elev(Pe) / Friction(Pf)	Notes Fitting/Device (Equivalent Length) Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.
2	-4-0			6	Supply (See Notes)	263-10	120	65.830	Avl.Pressure @ Supply: 81.625 4E(17-7), EE(8-9½), S
						79-2½	0.000533		
1	-4-0		117.53	6.3570		343-0½		0.183	
								66.013	Total(Pt) Route 1

Equivalent Pipe Lengths of Valves and Fittings (C=120 only)

(Actual Inside Diameter / Schedule 40 Steel Pipe Inside Diameter) 4.87 = Factor

C Value Multiplier

Value Of C	100	130	140	150
Multiplying Factor	0.713	1.16	1.33	1.51

Fittings Legend

ALV	Alarm Valve	AngV	Angle Valve	b	Bushing
BalV	Ball Valve	BFP	Backflow Preventer	BV	Butterfly Valve
C	Cross Flow Turn 90°	cplg	Coupling	Cr	Cross Run
CV	Check Valve	DelV	Deluge Valve	DPV	Dry Pipe Valve
E	90° Elbow	EE	45° Elbow	Ee1	11¼° Elbow
Ee2	22½° Elbow	f	Flow Device	fd	Flex Drop
FDC	Fire Department Connection	fE	90° FireLock(TM) Elbow	fEE	45° FireLock(TM) Elbow
flg	Flange	FN	Floating Node	fT	FireLock(TM) Tee
g	Gauge	GloV	Globe Valve	GV	Gate Valve
Ho	Hose	Hose	Hose	HV	Hose Valve
Hyd	Hydrant	LtE	Long Turn Elbow	mecT	Mechanical Tee
Noz	Nozzle	P1	Pump In	P2	Pump Out
PIV	Post Indicating Valve	PO	Pipe Outlet	PrV	Pressure Relief Valve
PRV I	Pressure Reducing Valve In	PRV C	Pressure Reducing Valve Out	red	Reducer/Adapter
S	Supply	sCV	Swing Check Valve	SFx	Seismic Flex
Spr	Sprinkler	St	Strainer	T	Tee Flow Turn 90°
Tr	Tee Run	U	Union	WirF	Wirsbo
WMV	Water Meter Valve	Z	Cap		

Hydraulic Calculations

for

Project Name: BRADLEY PARK CARE CENTER: (70120)
Location: 707 39TH AVE SE, BLDG B, , PUYALLUP, WA 98374
Drawing Name: 70120 WBP Care Center R01 Level 1 & Attic.cad Calculation Date: 4/10/2026

Design

Remote Area Number:	L1A6
Remote Area Location:	ENTRY CANOPY
Occupancy Classification:	Light Hazard
Density	0.100gpm/ft²
Area of Application:	1950.00ft² (Actual 928.73ft²)
Coverage per Sprinkler:	130.00ft²
Type of sprinklers calculated:	Upright
No. of sprinklers calculated:	7
No. of nozzles calculated:	0

In-rack Demand:	N/A gpm	at Node:	N/A		
Hose Streams:	100.00	at Node:	1	Type:	Allowance at Source

Total Water Required (including Hose Streams where applicable):
From Water Supply at Node 1: 242.62 @ 62.825 (Safety Margin = 18.716)

Type of System: DRY
Volume of Dry/PreAction/Antifreeze/OtherAgent System: 411.13gal

Name of Contractor: RED HAWK FIRE PROTECTION, LLC
Address: 801 VALLEY AVE NW, SUITE D, PUYALLUP, WA 98371
Phone Number: 253-604-7311
Name of designer: BROOKE MCDANIELS
Authority Having Jurisdiction: : CITY OF PUYALLUP

Notes:

Summary Notes:

Water Supply at Node 1

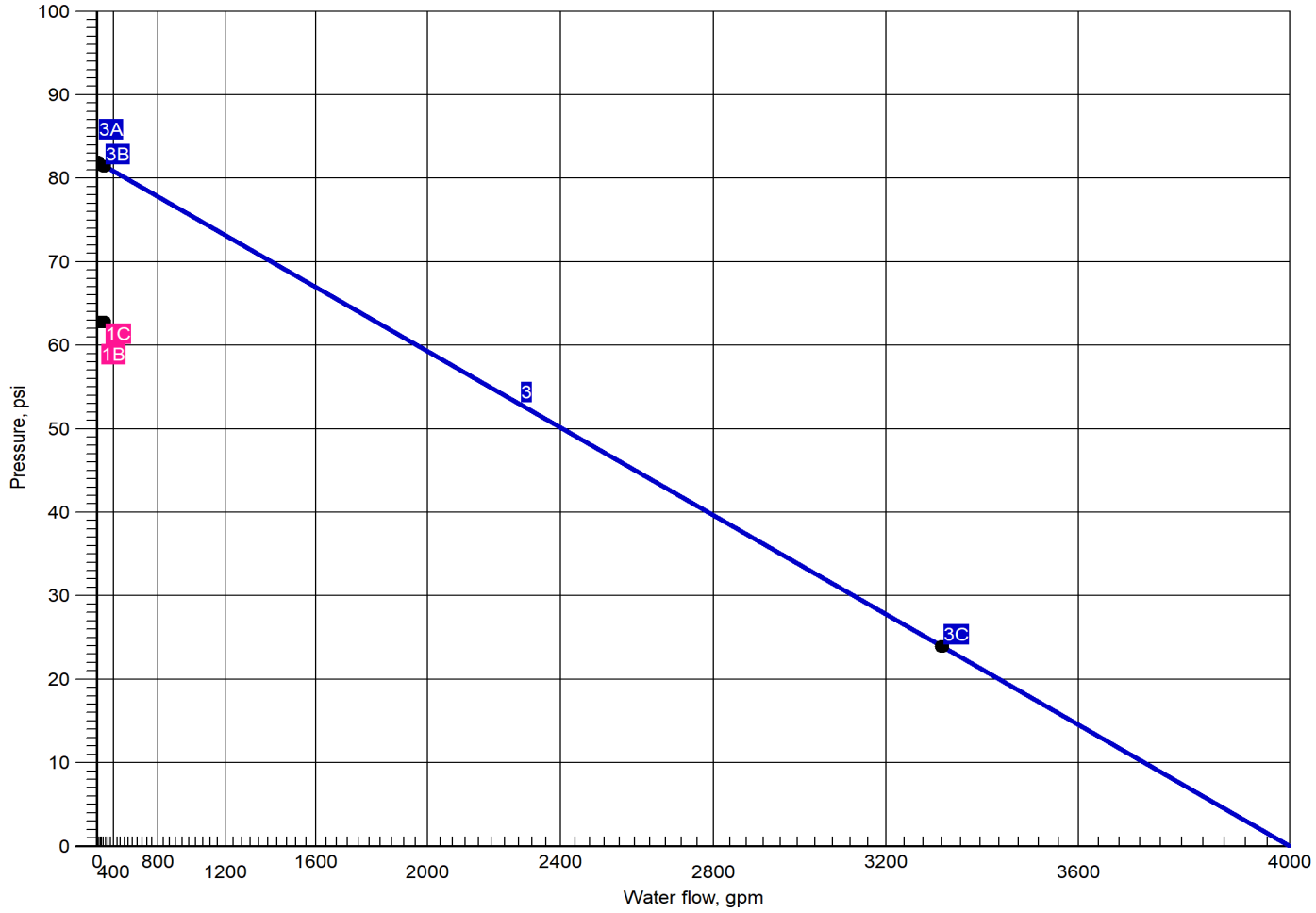
1 System Demand
3 Available Water Supply

Job Name: BRADLEY PARK CARE CENTER

Job Number: 70120

Report Description: Light Hazard (L1A6)

Remote Area Number: L1A6



Curve	Data Point	Hydraulic Calculation Results	Additional Data
1	1B	Required Pressure at System Demand: 62.825 @ 142.62	Available Flow @ 20 PSI: 3441.74
	1C	Required Pressure at System Demand (Including Hose Allowance at Source): 62.825 @ 242.62	
3	3A	Available Static Pressure at Water Supply at Node 1: 82.000	
	3B	Available Residual Pressure at System Demand: 81.541 @ 242.62	
	3C	Available Residual Pressure & Flow at Water Supply at Node 1: 24.000 @ 3320.00	

Summary Of Outflowing Devices

Job Number: 70120
Report Description: Light Hazard (L1A6)

Device		Actual Flow (gpm)	Minimum Flow (gpm)	K-Factor (K)	Pressure (psi)			
Sprinkler	**2500**	**14.82**	**13.00**	**5.6**	**7.000**			
Sprinkler	2501	15.10	13.00	5.6	7.275			
Sprinkler	2502	19.98	13.00	5.6	12.725			
Sprinkler	2503	20.66	13.00	5.6	13.613			
Sprinkler	2504	21.89	13.00	5.6	15.284			
Sprinkler	2505	23.78	13.00	5.6	18.026			
Sprinkler	2506	26.39	13.00	5.6	22.204			

Most Demanding Sprinkler Data

Supply Analysis

Node	Name	Static (psi)	Residual (psi) @ Flow (gpm)		Available (psi) @ Total Demand (gpm)		Required Pressure (psi)
1	Water Supply	82.000	24.000	3320.00	81.541	242.62	62.825

Node Analysis

Node Number	Elevation (Foot)	Node Type	Pressure at Node (psi)	Discharge at Node (gpm)	Notes
1	-4-0	Supply	62.825	142.62	
2500	16-2	Sprinkler	7.000	14.82	
2501	16-2	Sprinkler	7.275	15.10	
2502	10-3½	Sprinkler	12.725	19.98	
2503	10-3	Sprinkler	13.613	20.66	
2504	10-2½	Sprinkler	15.284	21.89	
2505	10-2	Sprinkler	18.026	23.78	
2506	10-1½	Sprinkler	22.204	26.39	
2	-4-0		62.564	0.00	
3	-7-11½	Gauge	64.234	0.00	BOR, BFP(-3.188)
4	-7-11½		61.044	0.00	
5	-7-11½		61.039	0.00	
8	-3-7		57.977	0.00	
219	10-9		12.086	0.00	
255	10-4		12.478	0.00	
256	10-1		32.748	0.00	

Pipe Information

Node 1 / Node 2	Elev 1 / Elev 2 (Foot)	K-Factor	Flow added this step (q) / Total Flow (Q)	Nominal ID / Actual ID	Fittings & Devices / Equiv. Length (Foot)	Length (Foot) / Fitting (Foot) / Total (Foot)	C Factor / Pf Friction Loss Per Unit (psi)	Total(Pt) / Elev(Pe) / Friction(Pf)	Notes Fitting/Device (Equivalent Length) Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.
2500	16-2	5.6	14.82	1¼	(See Notes)	10-0	100	7.000	• • • • • **Route 1** • • • • •
									Sprinkler
2501	16-2		14.82	1.3800		10-0	0.027529	0.275	
2501	16-2	5.6	15.10	1¼	(See Notes)	13-8	100	7.275	Sprinkler,
						10-8½		2.348	
219	10-9		29.92	1.3800		24-4½	0.101037	2.463	5E(2-1½)
219	10-9			1½	(See Notes)	1-7	100	12.086	
						2-10		0.181	
255	10-4		29.92	1.6100		4-5	0.047693	0.211	E(2-10)
255	10-4			1½		6-11½	100	12.478	
								0.013	
2502	10-3½		29.92	1.7280		6-11½	0.033795	0.235	
2502	10-3½	5.6	19.98	1½	(See Notes)	10-0	100	12.725	Sprinkler
								0.018	
2503	10-3		49.90	1.7280		10-0	0.087044	0.870	
2503	10-3	5.6	20.66	1½	(See Notes)	10-0	100	13.613	Sprinkler
								0.018	
2504	10-2½		70.56	1.7280		10-0	0.165242	1.652	
2504	10-2½	5.6	21.89	1½	(See Notes)	10-0	100	15.284	Sprinkler
								0.018	
2505	10-2		92.45	1.7280		10-0	0.272423	2.724	
2505	10-2	5.6	23.78	1½	(See Notes)	10-0	100	18.026	Sprinkler
								0.018	
2506	10-1½		116.23	1.7280		10-0	0.416029	4.160	
2506	10-1½	5.6	26.39	1½	(See Notes)	9-3½	100	22.204	Sprinkler,
						8-0½		0.017	
256	10-1		142.62	1.7280		17-4	0.607451	10.527	T(8-0½)
256	10-1			2	(See Notes)	55-4½	100	32.748	
						38-2		5.927	
8	-3-7		142.62	2.1570		93-6½	0.206300	19.301	2E(4-4½), fE(3-1), 2C(8-9½), PO(8-9½)
8	-3-7			3	(See Notes)	6-11	100	57.977	
						35-4½		1.901	
4	-7-11½		142.62	3.2600		42-3	0.027604	1.167	E(6-8½), DPV(4-8½), BV(9-7), PO(14-4½)

Pipe Information

Node 1 / Node 2	Elev 1 / Elev 2 (Foot)	K-Factor	Flow added this step (q) / Total Flow (Q)	Nominal ID / Actual ID	Fittings & Devices / Equiv. Length (Foot)	Length (Foot) / Fitting (Foot) / Total (Foot)	C Factor / Pf Friction Loss Per Unit (psi)	Total(Pt) / Elev(Pe) / Friction(Pf)	Notes (Fitting/Device (Equivalent Length); Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.)
4	-7-11½			6	(See Notes)	2-5½	120	61.044	
3	-7-11½		142.62	6.3570		2-5½	0.000762	3.190	BOR, BFP(-3.188)
3	-7-11½			6	(See Notes)	7-0	120	64.234	
2	-4-0		142.62	6.3570		52-9½ 59-9½	0.000762	-1.716 0.046	3E(17-7)
2	-4-0			6	Supply (See Notes)	263-10	120	62.564	
1	-4-0		142.62	6.3570		79-2½ 343-0½	0.000762	0.261	Avl.Pressure @ Supply: 81.541 4E(17-7), EE(8-9½), S
								62.825	Total(Pt) Route 1

Equivalent Pipe Lengths of Valves and Fittings (C=120 only)

(Actual Inside Diameter / Schedule 40 Steel Pipe Inside Diameter) 4.87 = Factor

C Value Multiplier

Value Of C	100	130	140	150
Multiplying Factor	0.713	1.16	1.33	1.51

Fittings Legend

ALV	Alarm Valve	AngV	Angle Valve	b	Bushing
BalV	Ball Valve	BFP	Backflow Preventer	BV	Butterfly Valve
C	Cross Flow Turn 90°	cplg	Coupling	Cr	Cross Run
CV	Check Valve	DelV	Deluge Valve	DPV	Dry Pipe Valve
E	90° Elbow	EE	45° Elbow	Ee1	11¼° Elbow
Ee2	22½° Elbow	f	Flow Device	fd	Flex Drop
FDC	Fire Department Connection	fE	90° FireLock(TM) Elbow	fEE	45° FireLock(TM) Elbow
flg	Flange	FN	Floating Node	fT	FireLock(TM) Tee
g	Gauge	GloV	Globe Valve	GV	Gate Valve
Ho	Hose	Hose	Hose	HV	Hose Valve
Hyd	Hydrant	LtE	Long Turn Elbow	mecT	Mechanical Tee
Noz	Nozzle	P1	Pump In	P2	Pump Out
PIV	Post Indicating Valve	PO	Pipe Outlet	PrV	Pressure Relief Valve
PRV I	Pressure Reducing Valve In	PRV C	Pressure Reducing Valve Out	red	Reducer/Adapter
S	Supply	sCV	Swing Check Valve	SFx	Seismic Flex
Spr	Sprinkler	St	Strainer	T	Tee Flow Turn 90°
Tr	Tee Run	U	Union	WirF	Wirsbo
WMV	Water Meter Valve	Z	Cap		

RED HAWK FIRE PROTECTION, LLC

801 Valley Ave NW, Suite D
Puyallup, WA 98371
(253) 840-9900
REDHAHF901QP

Ever Vigilant®

SEISMIC CALCULATIONS

FOR

Wesley Bradley Park – Care Center
Puyallup, WA

RHFP JOB NO. 70120

Expires DEC 31, 26

WASHINGTON STATE CERTIFICATE OF COMPETENCY FIRE SPRINKLER SYSTEMS

Travis Clifton Kinne
0835-1021-C Level 3
Red Hawk Fire Protection, LLC
REDHAHF901QP

Signature | Date: 04/10/2026

SITE SPECIFIC INFORMATION

APPLIED BUILDING CODE (IBC): 2018
APPLIED EDITION OF NFPA 13: 2019
SEISMIC DESIGN CATEGORY: D
SITE CLASS: C
OCCUPANCY CATEGORY: II
S_S: 1.257
S_1: 0.434
S_{DS}: 1.000
S_{D1}: 0.434
C_P: 0.61

(C_P FACTOR DETERMINED BY NFPA 13 (2016) TABLE 9.3.5.9.3 OR NFPA 13 (2019) TABLE 18.5.9.3)

SITE & BUILDING STRUCTURAL ANALYSIS BY: AHBL

NFPA 13 2019 Seismic Bracing Calculations

Project Name:	WBP - Care Center	Brace Design:	B1
Address:	707 39th Ave SE	Contractor Name:	Red Hawk Fire Protection
City, State, Zip:	Puyallup, WA 98374	Address:	801 Valley Ave NW
Prepared By:	McDaniels, Brooke	City, State, Zip:	Puyallup, Washington 98371
Date: 09-Apr-2026	Fax:		Phone: 2538409900

Brace Information

Maximum Length of Brace: 7'-0"
Size of Brace (in): 1" - Sch40
Type of Brace: Sch 40 Pipe
Brace Angle Range: 45-59 Degrees
Maximum Brace Spacing (ft): 25.00
Least Radius of Gyration* (in): 0.421
*kl/r Value:** 200
Maximum Horizontal Load (lbs): 1310

Seismic Brace Attachments

Structure Attachment Fitting: Universal Structural Bracket, EG, 9/16" Hole
Make: CADDY Model: CSBU1
UL Load Rating (lbs): 2000 Adjusted Per 18.5.2.3 (lbs): 1414

Structure Attachment Adapter: Multi Attachment, 9/16" Hole 1, 9/16" Hole 2
Make: CADDY Model: CSBMA050050EG
UL Load Rating (lbs): 680 Adjusted Per 18.5.2.3 (lbs): 480

Sway Brace Fitting: Quick Grip Lateral Sway Brace, 3" Pipe
Make: CADDY Model: CSBQG0300EG
UL Load Rating (lbs): 1300 Adjusted Per 18.5.2.3 (lbs): 919

Fastener Information

Fastener Orientation: H
Structure: Wood - Lag Screw

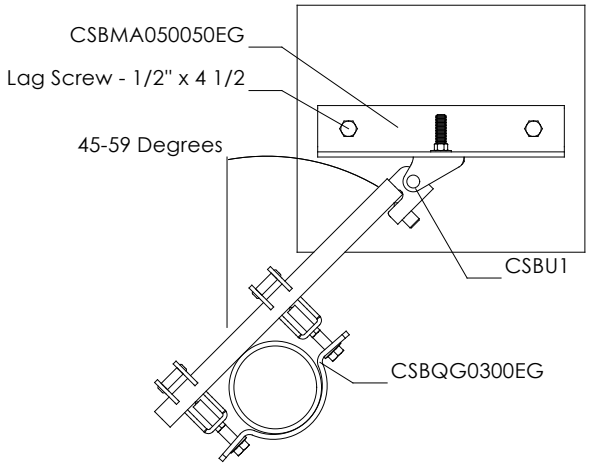
Fastener Qty: 2

Fastener Type: Lag Screw

Fastener Size: 1/2" x 4 1/2
Fastener Embedment: 4 1/2"
Fastener Max. Load (lbs): 460

Brace Orientation: Lateral

Brace I.D. (on plan): B1



Sprinkler System Zone of Influence (ZOI) Load Calculation (*Fpw = Cp x Wp*)

Pipe Size	Pipe Description	Wt/ft (lbs)	15% for Fittings	Total Wt/ft	Length (ft)	Total Wt
3"	Sch 10	7.90	1.19	9.09	25.00	227.10
1 1/4"	Sch 40	2.90	0.44	3.34	86.00	286.81
1"	Sch 40	2.10	0.32	2.42	27.00	65.21
	Weight of Misc. ZOI Valves and Fittings					0.00
	Total Zone of Influence (ZOI) Weight (Wp)					579.12
	Max Fpw per NFPA 13 2019, Section 18.5.5.2 including Section 18.5.5.2.4					773 lbs

Cp = 0.61 per
NFPA 13 2019
2018 IBC

Sway Brace Attached to
3" Sch10 Pipe

Max Fpw Based on
3" Sch10 Pipe

Horizontal Earthquake Load

Fpw = Cp x Wp
Fpw = 0.61 x 579.12
***Fpw* = 353.00 lbs**

*Excludes tension-only bracing systems

NFPA 13 2019 Seismic Bracing Calculations

Project Name:	WBP - Care Center	Brace Design:	B2
Address:	707 39th Ave SE	Contractor Name:	Red Hawk Fire Protection
City, State, Zip:	Puyallup, WA 98374	Address:	801 Valley Ave NW
Prepared By:	McDaniels, Brooke	City, State, Zip:	Puyallup, Washington 98371
Date: 09-Apr-2026		Fax:	Phone: 2538409900

Brace Information

Maximum Length of Brace: 7'-0"
Size of Brace (in): 1" - Sch40
Type of Brace: Sch 40 Pipe
Brace Angle Range: 45-59 Degrees
Maximum Brace Spacing (ft): 80.00
Least Radius of Gyration* (in): 0.421
*kl/r Value:** 200
Maximum Horizontal Load (lbs): 1310

Seismic Brace Attachments

Structure Attachment Fitting: Universal Structural Bracket, EG, 9/16" Hole
Make: CADDY Model: CSBU1
UL Load Rating (lbs): 2000 Adjusted Per 18.5.2.3 (lbs): 1414

Structure Attachment Adapter: Multi Attachment, 9/16" Hole 1, 9/16" Hole 2
Make: CADDY Model: CSBMA050050EG
UL Load Rating (lbs): 680 Adjusted Per 18.5.2.3 (lbs): 480

Sway Brace Fitting: 3" Single Pipe/Conduit Rigid Universal Sway Brace, electrogalvanized
Make: CADDY Model: CSB0300
UL Load Rating (lbs): 1400 Adjusted Per 18.5.2.3 (lbs): 989

Fastener Information

Fastener Orientation: E
Structure: Wood - Lag Screw

Fastener Qty: 2

Fastener Type: Lag Screw

Fastener Size: 1/2" x 4 1/2
Fastener Embedment: 4 1/2"
Fastener Max. Load (lbs): 800

Brace Orientation: Longitudinal

Brace I.D. (on plan): B2

Sprinkler System Zone of Influence (ZOI) Load Calculation (*Fpw = Cp x Wp*)

Pipe Size	Pipe Description	Wt/ft (lbs)	15% for Fittings	Total Wt/ft	Length (ft)	Total Wt
3"	Sch 10	7.90	1.19	9.09	80.00	726.80
	Weight of Misc. ZOI Valves and Fittings					0.00
	Total Zone of Influence (ZOI) Weight (Wp)					726.80

Cp = 0.61 per
NFPA 13 2019
2018 IBC

Sway Brace Attached to
3" Sch10 Pipe

Horizontal Earthquake Load

Fpw = Cp x Wp
Fpw = 0.61 x 726.80
***Fpw* = 443.00 lbs**

*Excludes tension-only bracing systems

NFPA 13 2019 Seismic Bracing Calculations

Project Name:	WBP - Care Center	Brace Design:	B3
Address:	707 39th Ave SE	Contractor Name:	Red Hawk Fire Protection
City, State, Zip:	Puyallup, WA 98374	Address:	801 Valley Ave NW
Prepared By:	McDaniels, Brooke	City, State, Zip:	Puyallup, Washington 98371
Date: 09-Apr-2026		Fax:	Phone: 2538409900

Brace Information	Seismic Brace Attachments
Maximum Length of Brace: 7'-0" Size of Brace (in): 1" - Sch40 Type of Brace: Sch 40 Pipe Brace Angle Range: 45-59 Degrees Maximum Brace Spacing (ft): 30.00 Least Radius of Gyration* (in): 0.421 *kl/r Value:** 200 Maximum Horizontal Load (lbs): 1310	Structure Attachment Fitting: Universal Structural Bracket, EG, 9/16" Hole Make: CADDY Model: CSBU1 UL Load Rating (lbs): 2000 Adjusted Per 18.5.2.3 (lbs): 1414 Structure Attachment Adapter: Multi Attachment, 9/16" Hole 1, 9/16" Hole 2 Make: CADDY Model: CSBMA050050EG UL Load Rating (lbs): 680 Adjusted Per 18.5.2.3 (lbs): 480 Sway Brace Fitting: Quick Grip Lateral Sway Brace, 3" Pipe Make: CADDY Model: CSBQG0300EG UL Load Rating (lbs): 1300 Adjusted Per 18.5.2.3 (lbs): 919

Fastener Information
Fastener Orientation: H Structure: Wood - Lag Screw Fastener Qty: 2 Fastener Type: Lag Screw Fastener Size: 1/2" x 4 1/2 Fastener Embedment: 4 1/2" Fastener Max. Load (lbs): 460
Brace Orientation: Lateral
Brace I.D. (on plan): B3

Sprinkler System Zone of Influence (ZOI) Load Calculation (*Fpw = Cp x Wp*)

Pipe Size	Pipe Description	Wt/ft (lbs)	15% for Fittings	Total Wt/ft	Length (ft)	Total Wt	
3"	EDDY Flow	7.14	1.07	8.21	30.00	246.30	**Cp = 0.61 per** NFPA 13 2019 2018 IBC
1 1/2"	CPVC	1.42	0.21	1.63	102.00	166.57	
1"	CPVC	0.68	0.10	0.78	147.00	114.95	Sway Brace Attached to 3" Eddy_Flow Pipe Max Fpw Based on *3"* Eddy_Flow Pipe
							Horizontal Earthquake Load *Fpw = Cp x Wp* *Fpw* = 0.61 x 527.82 ***Fpw* = 322.00 lbs**
Weight of Misc. ZOI Valves and Fittings						0.00	
Total Zone of Influence (ZOI) Weight (Wp)						527.82	
Max Fpw per NFPA 13 2019, Section 18.5.5.2 including Section 18.5.5.2.4						531 lbs	

*Excludes tension-only bracing systems

NFPA 13 2019 Seismic Bracing Calculations

Project Name:	WBP - Care Center	Brace Design:	B4
Address:	707 39th Ave SE	Contractor Name:	Red Hawk Fire Protection
City, State, Zip:	Puyallup, WA 98374	Address:	801 Valley Ave NW
Prepared By:	McDaniels, Brooke	City, State, Zip:	Puyallup, Washington 98371
Date: 09-Apr-2026		Fax:	Phone: 2538409900

Brace Information	Seismic Brace Attachments
Maximum Length of Brace: 7'-0" Size of Brace (in): 1" - Sch40 Type of Brace: Sch 40 Pipe Brace Angle Range: 45-59 Degrees Maximum Brace Spacing (ft): 30.00 Least Radius of Gyration* (in): 0.421 *kl/r Value:** 200 Maximum Horizontal Load (lbs): 1310	Structure Attachment Fitting: Universal Structural Bracket, EG, 9/16" Hole Make: CADDY Model: CSBU1 UL Load Rating (lbs): 2000 Adjusted Per 18.5.2.3 (lbs): 1414 Structure Attachment Adapter: Multi Attachment, 9/16" Hole 1, 9/16" Hole 2 Make: CADDY Model: CSBMA050050EG UL Load Rating (lbs): 680 Adjusted Per 18.5.2.3 (lbs): 480 Sway Brace Fitting: Quick Grip Lateral Sway Brace, 2 1/2" Pipe Make: CADDY Model: CSBQG0250EG UL Load Rating (lbs): 1500 Adjusted Per 18.5.2.3 (lbs): 1060

Fastener Information
Fastener Orientation: H Structure: Wood - Lag Screw Fastener Qty: 2 Fastener Type: Lag Screw Fastener Size: 1/2" x 4 1/2 Fastener Embedment: 4 1/2" Fastener Max. Load (lbs): 460
Brace Orientation: Lateral
Brace I.D. (on plan): B4

Sprinkler System Zone of Influence (ZOI) Load Calculation (*Fpw = Cp x Wp*)

Pipe Size	Pipe Description	Wt/ft (lbs)	15% for Fittings	Total Wt/ft	Length (ft)	Total Wt
2 1/2"	EDDY Flow	5.30	0.80	6.10	30.00	182.90
1 1/4"	Sch 40	2.90	0.44	3.34	85.00	283.48
		Weight of Misc. ZOI Valves and Fittings				0.00
		Total Zone of Influence (ZOI) Weight (Wp)				466.38
		Max Fpw per NFPA 13 2019, Section 18.5.5.2 including Section 18.5.5.2.4				360 lbs

Cp = 0.61 per
NFPA 13 2019
2018 IBC

Sway Brace Attached to
2 1/2" Eddy_Flow Pipe

Max Fpw Based on
2 1/2" Eddy_Flow Pipe

Horizontal Earthquake Load

Fpw = Cp x Wp
Fpw = 0.61 x 466.38
***Fpw* = 284.00 lbs**

*Excludes tension-only bracing systems

NFPA 13 2019 Seismic Bracing Calculations

Project Name:	WBP - Care Center	Brace Design:	B5
Address:	707 39th Ave SE	Contractor Name:	Red Hawk Fire Protection
City, State, Zip:	Puyallup, WA 98374	Address:	801 Valley Ave NW
Prepared By:	McDaniels, Brooke	City, State, Zip:	Puyallup, Washington 98371
Date: 09-Apr-2026		Fax:	Phone: 2538409900

Brace Information

Maximum Length of Brace: 7'-0"
Size of Brace (in): 1" - Sch40
Type of Brace: Sch 40 Pipe
Brace Angle Range: 45-59 Degrees
Maximum Brace Spacing (ft): 80.00
Least Radius of Gyration* (in): 0.421
*kl/r Value:** 200
Maximum Horizontal Load (lbs): 1310

Seismic Brace Attachments

Structure Attachment Fitting: Universal Structural Bracket, EG, 9/16" Hole
Make: CADDY Model: CSBU1
UL Load Rating (lbs): 2000 Adjusted Per 18.5.2.3 (lbs): 1414

Structure Attachment Adapter: n/a
Make: CADDY Model: n/a
UL Load Rating (lbs): n/a Adjusted Per 18.5.2.3 (lbs): n/a

Sway Brace Fitting: Universal Sway Brace, EG, 2 1/2" Pipe
Make: CADDY Model: CSB0250
UL Load Rating (lbs): 1300 Adjusted Per 18.5.2.3 (lbs): 919

Fastener Information

Fastener Orientation: E
Structure: Wood - Lag Screw

Fastener Qty: 1

Fastener Type: Lag Screw

Fastener Size: 1/2" x 4 1/2
Fastener Embedment: 4 1/2"
Fastener Max. Load (lbs): 400

Brace Orientation: Longitudinal

Brace I.D. (on plan): B5

Sprinkler System Zone of Influence (ZOI) Load Calculation (*Fpw = Cp x Wp*)

Pipe Size	Pipe Description	Wt/ft (lbs)	15% for Fittings	Total Wt/ft	Length (ft)	Total Wt
2 1/2"	EDDY Flow	5.30	0.80	6.10	80.00	487.60
					Weight of Misc. ZOI Valves and Fittings	0.00
					Total Zone of Influence (ZOI) Weight (Wp)	487.60

Cp = 0.61 per
NFPA 13 2019
2018 IBC

Sway Brace Attached to
2 1/2" Eddy_Flow Pipe

Horizontal Earthquake Load

Fpw = Cp x Wp
Fpw = 0.61 x 487.60
***Fpw* = 297.00 lbs**

*Excludes tension-only bracing systems

NFPA 13 2019 Seismic Bracing Calculations

Project Name:	WBP - Care Center	Brace Design:	B6
Address:	707 39th Ave SE	Contractor Name:	Red Hawk Fire Protection
City, State, Zip:	Puyallup, WA 98374	Address:	801 Valley Ave NW
Prepared By:	McDaniels, Brooke	City, State, Zip:	Puyallup, Washington 98371
Date: 09-Apr-2026		Fax:	Phone: 2538409900

Brace Information	Seismic Brace Attachments
Maximum Length of Brace: 7'-0" Size of Brace (in): 1" - Sch40 Type of Brace: Sch 40 Pipe Brace Angle Range: 45-59 Degrees Maximum Brace Spacing (ft): 25.00 Least Radius of Gyration* (in): 0.421 *kl/r Value:** 200 Maximum Horizontal Load (lbs): 1310	Structure Attachment Fitting: Universal Structural Bracket, EG, 9/16" Hole Make: CADDY Model: CSBU1 UL Load Rating (lbs): 2000 Adjusted Per 18.5.2.3 (lbs): 1414 Structure Attachment Adapter: n/a Make: CADDY Model: n/a UL Load Rating (lbs): n/a Adjusted Per 18.5.2.3 (lbs): n/a Sway Brace Fitting: Universal Sway Brace, EG, 2" Pipe Make: CADDY Model: CSB0200 UL Load Rating (lbs): 1800 Adjusted Per 18.5.2.3 (lbs): 1272

Fastener Information
Fastener Orientation: H Structure: Wood - Lag Screw Fastener Qty: 1 Fastener Type: Lag Screw Fastener Size: 1/2" x 4 1/2 Fastener Embedment: 4 1/2" Fastener Max. Load (lbs): 230
Brace Orientation: Lateral
Brace I.D. (on plan): B6

Sprinkler System Zone of Influence (ZOI) Load Calculation (*Fpw = Cp x Wp*)

Pipe Size	Pipe Description	Wt/ft (lbs)	15% for Fittings	Total Wt/ft	Length (ft)	Total Wt	
2"	Sch 10	4.20	0.63	4.83	25.00	120.80	**Cp = 0.61 per** NFPA 13 2019 2018 IBC
1 1/2"	Sch 10	3.00	0.45	3.45	66.00	227.70	
1"	Sch 40	2.10	0.32	2.42	2.00	4.83	Sway Brace Attached to 2" Sch10 Pipe
							Max Fpw Based on *2"* Sch10 Pipe
							Horizontal Earthquake Load
							Fpw = Cp x Wp *Fpw* = 0.61 x 353.33 ***Fpw* = 216.00 lbs**
Weight of Misc. ZOI Valves and Fittings						0.00	
Total Zone of Influence (ZOI) Weight (Wp)						353.33	
Max Fpw per NFPA 13 2019, Section 18.5.5.2 including Section 18.5.5.2.4						312 lbs	

*Excludes tension-only bracing systems

NFPA 13 2019 Seismic Bracing Calculations

Project Name:	WBP - Care Center	Brace Design:	B7
Address:	707 39th Ave SE	Contractor Name:	Red Hawk Fire Protection
City, State, Zip:	Puyallup, WA 98374	Address:	801 Valley Ave NW
Prepared By:	McDaniels, Brooke	City, State, Zip:	Puyallup, Washington 98371
Date: 09-Apr-2026		Fax:	Phone: 2538409900

Brace Information

Maximum Length of Brace: 7'-0"
Size of Brace (in): 1" - Sch40
Type of Brace: Sch 40 Pipe
Brace Angle Range: 45-59 Degrees
Maximum Brace Spacing (ft): 80.00
Least Radius of Gyration* (in): 0.421
*kl/r Value:** 200
Maximum Horizontal Load (lbs): 1310

Seismic Brace Attachments

Structure Attachment Fitting: Universal Structural Bracket, EG, 9/16" Hole
Make: CADDY Model: CSBU1
UL Load Rating (lbs): 2000 Adjusted Per 18.5.2.3 (lbs): 1414

Structure Attachment Adapter: n/a
Make: CADDY Model: n/a
UL Load Rating (lbs): n/a Adjusted Per 18.5.2.3 (lbs): n/a

Sway Brace Fitting: Universal Sway Brace, EG, 2" Pipe
Make: CADDY Model: CSB0200
UL Load Rating (lbs): 1300 Adjusted Per 18.5.2.3 (lbs): 919

Fastener Information

Fastener Orientation: E
Structure: Wood - Lag Screw

Fastener Qty: 1

Fastener Type: Lag Screw

Fastener Size: 1/2" x 4 1/2
Fastener Embedment: 4 1/2"
Fastener Max. Load (lbs): 400

Brace Orientation: Longitudinal

Brace I.D. (on plan): B7

Sprinkler System Zone of Influence (ZOI) Load Calculation (*Fpw = Cp x Wp*)

Pipe Size	Pipe Description	Wt/ft (lbs)	15% for Fittings	Total Wt/ft	Length (ft)	Total Wt
2"	Sch 10	4.20	0.63	4.83	80.00	386.40
					Weight of Misc. ZOI Valves and Fittings	0.00
					Total Zone of Influence (ZOI) Weight (Wp)	386.40

Cp = 0.61 per
NFPA 13 2019
2018 IBC

Sway Brace Attached to
2" Sch10 Pipe

Horizontal Earthquake Load

Fpw = Cp x Wp
Fpw = 0.61 x 386.40
***Fpw* = 236.00 lbs**

*Excludes tension-only bracing systems

TOLBrace™ Seismic Bracing Calculations

V8.8.145

Project Address: WBP - Care Center
707 39th Ave SE, BLDG B
Puyallup, WA 98374
Job # 70120

Contractor: Red Hawk Fire Protection
Address: 801 Valley Ave NW, Suite D
Puyallup, WA 98371
Phone: 253-604-7311
License: REDHAHF901QP

Powering Business Worldwide

Calculations based on 2019 NFPA Pamphlet #13

Brace Information

Maximum Brace Length	7' 0" (2.134 m)
Diameter of Brace	1"
Type of Brace	Sch.40
Angle of Brace	45° Min.
Least Rad. of Gyration	0.42" (11 mm)
L/R Value	200
Max Horizontal Load	1310 lbs (594 kg)

Fastener Information

Orientation to Connecting Surface NFPA Type B

Fastener

Type	1/2in. x 2 1/2in. Thru Bolt
Diameter	1/2in.
Length	2 1/2in.
Maximum Load	200 lbs (91 kg)

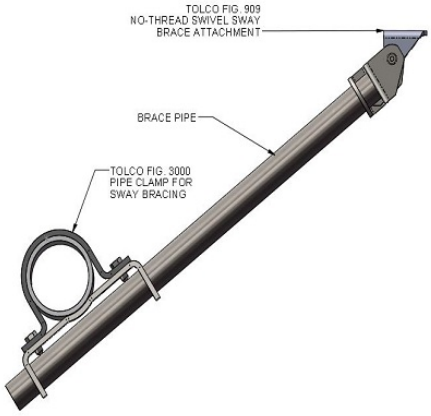
Prying Factor N/A

TOLCO™ Brace Components

TOLCO™ Component	Listed Load	Adjusted Load
Fig. 3000 Clamp	700 lbs (318 kg)	495 lbs (225 kg)
Fig.909 - 1/2" No-Thread Swivel	1370 lbs (621 kg)	969 lbs (440 kg)
See Fastener Information		

*Calculation Based on CONCENTRIC Loading
*Please Note: These calculations are for TOLCO™ components only. Use of any other components voids these calculations and the listing of the assembly.

Seismic Brace Assembly Detail



Brace Identification on Plans B8

Brace Type Lateral [X] Longitudinal [ ] 4-Way [ ]

Sprinkler System Load Calculation (Fpw = CpWp)

Cp before reduction = 0.59 **Reduction factor =** N/A **Cp =** 0.59

Diameter	Type	Length	Total Length	Weight Per Unit Length	Total Weight
2.5" (65 mm)	CPVC	30 ft (9.1 m)	30 ft (9.1 m)	3.254449 lb/ft (4.84 kg/m)	98 lbs (44 kg)
1.5" (40 mm)	CPVC	116 ft (35.4 m)	116 ft (35.4 m)	1.41666 lb/ft (2.11 kg/m)	164 lbs (74 kg)
1" (25 mm)	CPVC	23 ft (7 m)	23 ft (7 m)	0.674355 lb/ft (1 kg/m)	16 lbs (7 kg)

Subtotal Weight	278 lbs (126 kg)
Wp (incl. 15%)	320 lbs (145 kg)
Total (Fpw)	189 lbs (86 kg)
Maximum Fpw per 18.5.5.2 (if applicable)	188 lb (85 kg)

Main Size	Type/Sch.	Spacing (ft)
2.5"	CPVC	30

TOLBrace™ Seismic Calculations

WBP - Care Center Job # 70120

707 39th Ave SE, BLDG B

Brace Identification	B8
Brace Type (Per NFPA#13)	NFPA Type B
Braced Pipe (ft)	2.5" CPVC
Spacing of Brace	30' 0" (9.14 m)
Orientation of Brace	Lateral
Bracing Material	1" Sch.40
Maximum Brace Length	7' 0" (2.13 m)
Slenderness Ratio used for Load Calculation	200
True Angle of Brace for Calculation	45°
Type of Fastener	1/2in. x 2 1/2in. Thru Bolt
Length of Fastener	2 1/2in.

Summary of Pipe within Zone of Influence

2.5" CPVC (63.5 mm)	30 ft (9.1 m)
1.5" CPVC (38.1 mm)	116 ft (35.4 m)
1" CPVC (25.4 mm)	23 ft (7 m)

G-Factor Used 0.59

Allowance for Heads and Fittings	15%

Conclusions

Total Adjusted Load of Pipe in Zone of Influence	188 lbs (85 kg)
Material Capacity	1310 lbs (594 kg)
Fastener Capacity	200 lbs (91 kg)
Fig. 3000 Clamp	495 lbs (225 kg)
Fig.909 - 1/2" No-Thread Swivel	969 lbs (440 kg)
Structural Member	Wood Open-Web Truss

Calculations prepared by Brooke McDaniels

* The description of the Structural Member is for informational purposes only.
TOLBrace™ software calculates the brace assembly only, not the structure it is attached to.

TOLBrace™ Seismic Bracing Calculations

V8.8.145

Project Address: WBP - Care Center
707 39th Ave SE, BLDG B
Puyallup, WA 98374
Job # 70120

Contractor: Red Hawk Fire Protection
Address: 801 Valley Ave NW, Suite D
Puyallup, WA 98371
Phone: 253-604-7311
License: REDHAHF901QP

Powering Business Worldwide

Calculations based on 2019 NFPA Pamphlet #13

Brace Information

Maximum Brace Length	7' 0" (2.134 m)
Diameter of Brace	1"
Type of Brace	Sch.40
Angle of Brace	45° Min.
Least Rad. of Gyration	0.42" (11 mm)
L/R Value	200
Max Horizontal Load	1310 lbs (594 kg)

Fastener Information

Orientation to Connecting Surface NFPA Type B

Fastener

Type	1/2in. x 2 1/2in. Thru Bolt
Diameter	1/2in.
Length	2 1/2in.
Maximum Load	200 lbs (91 kg)

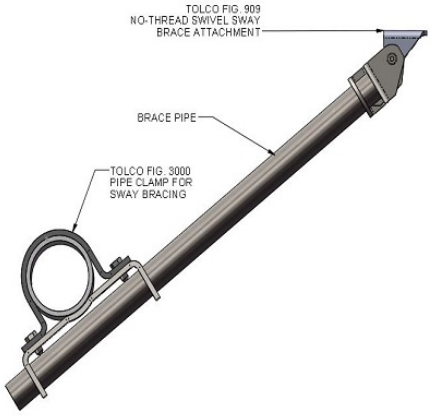
Prying Factor N/A

TOLCO™ Brace Components

TOLCO™ Component	Listed Load	Adjusted Load
Fig. 3000 Clamp	700 lbs (318 kg)	495 lbs (225 kg)
Fig.909 - 1/2" No-Thread Swivel	1370 lbs (621 kg)	969 lbs (440 kg)
See Fastener Information		

*Calculation Based on CONCENTRIC Loading
*Please Note: These calculations are for TOLCO™ components only. Use of any other components voids these calculations and the listing of the assembly.

Seismic Brace Assembly Detail



Brace Identification on Plans B9

Brace Type Lateral [X] Longitudinal [ ] 4-Way [ ]

Sprinkler System Load Calculation (Fpw = CpWp)

Cp before reduction = 0.59 **Reduction factor =** N/A **Cp =** 0.59

Diameter	Type	Length	Total Length	Weight Per Unit Length	Total Weight
2.5" (65 mm)	CPVC	40 ft (12.2 m)	40 ft (12.2 m)	3.254449 lb/ft (4.84 kg/m)	130 lbs (59 kg)

Subtotal Weight	130 lbs (59 kg)
Wp (incl. 15%)	150 lbs (68 kg)
Total (Fpw)	88 lbs (40 kg)
Maximum Fpw per 18.5.5.2 (if applicable)	135 lb (61 kg)

Main Size	Type/Sch.	Spacing (ft)
2.5"	CPVC	40

TOLBrace™ Seismic Calculations

WBP - Care Center Job # 70120

707 39th Ave SE, BLDG B

Brace Identification	B9
Brace Type (Per NFPA#13)	NFPA Type B
Braced Pipe (ft)	2.5" CPVC
Spacing of Brace	40' 0" (12.19 m)
Orientation of Brace	Lateral
Bracing Material	1" Sch.40
Maximum Brace Length	7' 0" (2.13 m)
Slenderness Ratio used for Load Calculation	200
True Angle of Brace for Calculation	45°
Type of Fastener	1/2in. x 2 1/2in. Thru Bolt
Length of Fastener	2 1/2in.

Summary of Pipe within Zone of Influence

2.5" CPVC (63.5 mm)	40 ft (12.2 m)

G-Factor Used 0.59	
Allowance for Heads and Fittings	15%
Conclusions	
Total Adjusted Load of Pipe in Zone of Influence	88 lbs (40 kg)
Material Capacity	1310 lbs (594 kg)
Fastener Capacity	200 lbs (91 kg)
Fig. 3000 Clamp	495 lbs (225 kg)
Fig.909 - 1/2" No-Thread Swivel	969 lbs (440 kg)
Structural Member	Wood Open-Web Truss

Calculations prepared by Brooke McDaniels

* The description of the Structural Member is for informational purposes only.
TOLBrace™ software calculates the brace assembly only, not the structure it is attached to.
Calculated with TOLBrace™ 8
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NFPA 13 2019 Seismic Bracing Calculations

Project Name:	WBP - Care Center	Brace Design:	B10
Address:	707 39th Ave SE	Contractor Name:	Red Hawk Fire Protection
City, State, Zip:	Puyallup, WA 98374	Address:	801 Valley Ave NW
Prepared By:	McDaniels, Brooke	City, State, Zip:	Puyallup, Washington 98371
Date: 09-Apr-2026	Fax:		Phone: 2538409900

Brace Information

Maximum Length of Brace: 7'-0"
Size of Brace (in): 1" - Sch40
Type of Brace: Sch 40 Pipe
Brace Angle Range: 45-59 Degrees
Maximum Brace Spacing (ft): 40.00
Least Radius of Gyration* (in): 0.421
*kl/r Value:** 200
Maximum Horizontal Load (lbs): 1310

Seismic Brace Attachments

Structure Attachment Fitting: Universal Structural Bracket, EG, 9/16" Hole
Make: CADDY Model: CSBU1
UL Load Rating (lbs): 2000 Adjusted Per 18.5.2.3 (lbs): 1414

Structure Attachment Adapter: n/a
Make: CADDY Model: n/a
UL Load Rating (lbs): n/a Adjusted Per 18.5.2.3 (lbs): n/a

Sway Brace Fitting: Universal Sway Brace, EG, 1 1/2" Pipe
Make: CADDY Model: CSB0150
UL Load Rating (lbs): 1800 Adjusted Per 18.5.2.3 (lbs): 1272

Fastener Information

Fastener Orientation: H
Structure: Wood - Lag Screw

Fastener Qty: 1

Fastener Type: Lag Screw

Fastener Size: 1/2" x 4 1/2
Fastener Embedment: 4 1/2"
Fastener Max. Load (lbs): 230

Brace Orientation: Lateral

Brace I.D. (on plan): B10

Sprinkler System Zone of Influence (ZOI) Load Calculation(*Fpw = Cp x Wp*)

Pipe Size	Pipe Description	Wt/ft (lbs)	15% for Fittings	Total Wt/ft	Length (ft)	Total Wt
1 1/2"	Sch 10	3.00	0.45	3.45	40.00	138.00
Weight of Misc. ZOI Valves and Fittings						0.00
Total Zone of Influence (ZOI) Weight (Wp)						138.00
Max Fpw per NFPA 13 2019, Section 18.5.5.2 including Section 18.5.5.2.4						114 lbs

Cp = 0.61 per
NFPA 13 2019
2018 IBC

Sway Brace Attached to
1 1/2" Sch10 Pipe

Max Fpw Based on
1 1/2" Sch10 Pipe

Horizontal Earthquake Load

Fpw = Cp x Wp
Fpw = 0.61 x 138.00
***Fpw* = 84.00 lbs**

*Excludes tension-only bracing systems

NFPA 13 2019 Seismic Bracing Calculations

Project Name:	WBP - Care Center	Brace Design:	B11
Address:	707 39th Ave SE	Contractor Name:	Red Hawk Fire Protection
City, State, Zip:	Puyallup, WA 98374	Address:	801 Valley Ave NW
Prepared By:	McDaniels, Brooke	City, State, Zip:	Puyallup, Washington 98371
Date: 09-Apr-2026		Fax:	Phone: 2538409900

Brace Information

Maximum Length of Brace: 7'-0"
Size of Brace (in): 1" - Sch40
Type of Brace: Sch 40 Pipe
Brace Angle Range: 45-59 Degrees
Maximum Brace Spacing (ft): 80.00
Least Radius of Gyration* (in): 0.421
*kl/r Value:** 200
Maximum Horizontal Load (lbs): 1310

Seismic Brace Attachments

Structure Attachment Fitting: Universal Structural Bracket, EG, 9/16" Hole
Make: CADDY Model: CSBU1
UL Load Rating (lbs): 2000 Adjusted Per 18.5.2.3 (lbs): 1414

Structure Attachment Adapter: n/a
Make: CADDY Model: n/a
UL Load Rating (lbs): n/a Adjusted Per 18.5.2.3 (lbs): n/a

Sway Brace Fitting: Universal Sway Brace, EG, 1 1/2" Pipe
Make: CADDY Model: CSB0150
UL Load Rating (lbs): 1000 Adjusted Per 18.5.2.3 (lbs): 707

Fastener Information

Fastener Orientation: E
Structure: Wood - Lag Screw

Fastener Qty: 1

Fastener Type: Lag Screw

Fastener Size: 1/2" x 4 1/2
Fastener Embedment: 4 1/2"
Fastener Max. Load (lbs): 400

Brace Orientation: Longitudinal

Brace I.D. (on plan): B11

Sprinkler System Zone of Influence (ZOI) Load Calculation (*Fpw = Cp x Wp*)

Pipe Size	Pipe Description	Wt/ft (lbs)	15% for Fittings	Total Wt/ft	Length (ft)	Total Wt
1 1/2"	Sch 10	3.00	0.45	3.45	80.00	276.00
					Weight of Misc. ZOI Valves and Fittings	0.00
					Total Zone of Influence (ZOI) Weight (Wp)	276.00

Cp = 0.61 per
NFPA 13 2019
2018 IBC

Sway Brace Attached to
1 1/2" Sch10 Pipe

Horizontal Earthquake Load

Fpw = Cp x Wp
Fpw = 0.61 x 276.00
***Fpw* = 168.00 lbs**

*Excludes tension-only bracing systems

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