

# Hydraulic Calculations for

**Project:** Homewood Suites  
3500 South Meridian  
Puyallup, WA. 98373

**Drawing no.:** FS-3  
**Date:** 4/3/2024

## Design

**Remote area number:** SP  
**Remote area location:** Standpipe  
**Occupancy classification:** -  
**Density:** -  
**Area of application:** Standpipe  
**Coverage per sprinkler:** -  
**Type of sprinklers calculated:**  
**No. of sprinklers calculated:** 0  
**In rack demand:** -  
**Hose streams:** - outside + - inside  
**Total water required (including hose streams):** 750.0 gpm at 166.72 psi [ 1.34 psi safety margin ]  
**Type of system:** -  
**Volume of dry or preaction system:**

## Water Supply Information

**Date:** 01-26-2024  
**Location:** 3601 9th Street Southwest  
**Source:** Fruitland Mutual Water Company

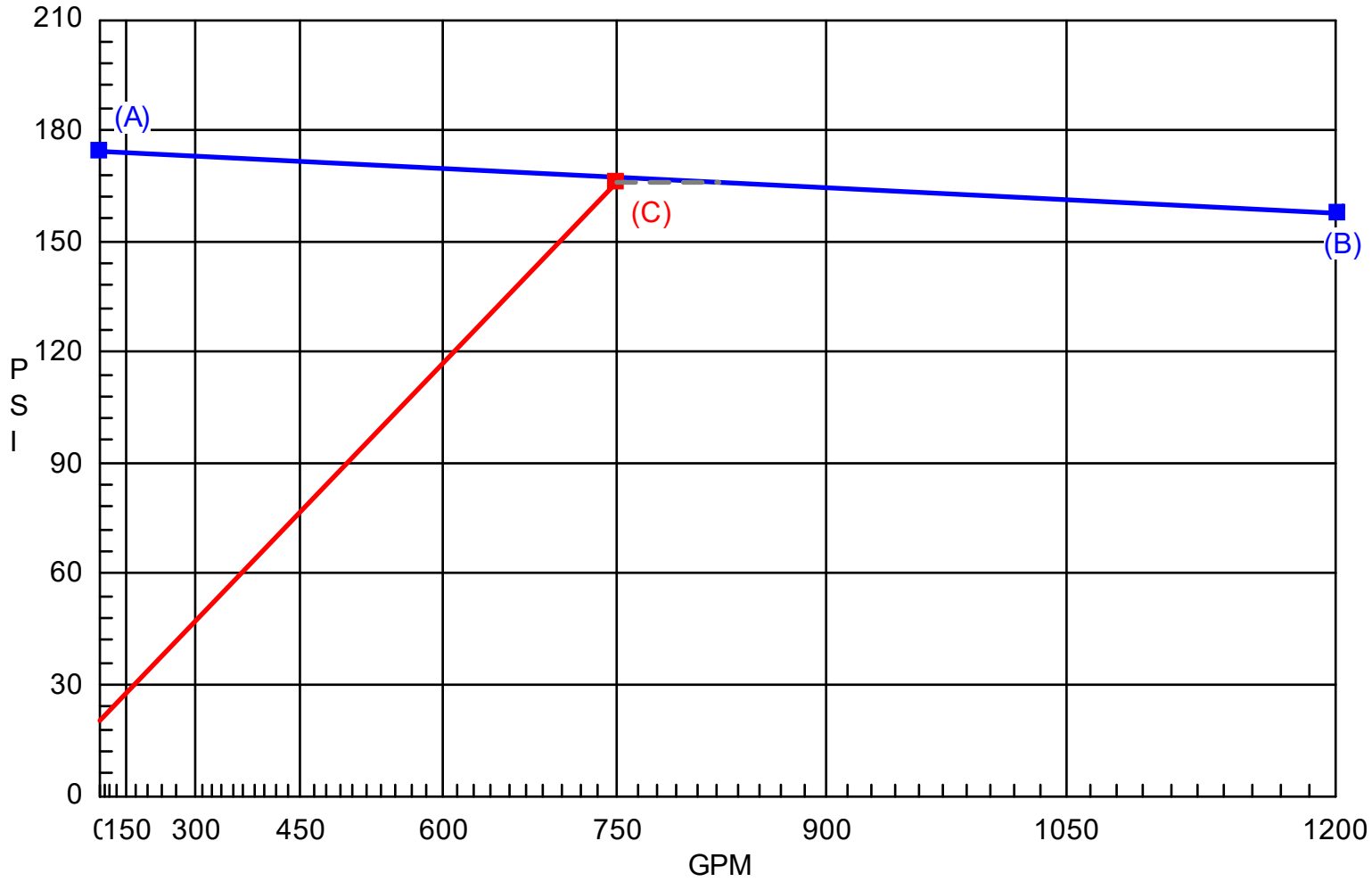
**Contractor:** Discount Fire Protection, LLC.  
4 Red Bluff Court  
Mansfield, TX. 76063

**Name of designer:** Timothy McBride

**Authority having jurisdiction:**

## Notes

### Hydraulic Demand Graph



Water Source:  
A) 175 psi Static  
B) 1200 gpm at 158.46 psi

Demand at Source:  
C) 750 gpm at 166.72 psi

## Supply Analysis

Node at	Static Pressure [psi]	Residual Pressure [psi]	Flow [gpm]	Available Pressure [psi]	Total Demand [gpm]	Required Pressure [psi]
CTZ	175.0	150.0	1500.0	168.07	750.0	166.72

## Node Analysis

Node Tag	Elev [ft]	Type	Pressure [psi]	Discharge [gpm]
CTZ	1.000	source	166.722	-750.000
Z01	48.917	ref	100.000	500.000
Z02	13.667	ref	117.220	0.000
ZP1	13.667	ref	137.829	0.000
ZP2	13.667	ref	137.912	0.000
ZP3	13.667	ref	140.105	0.000
M02	-1.000	ref	149.510	0.000
Z11	48.917	ref	120.621	250.000
Z12	40.667	ref	124.286	0.000
Z13	20.333	ref	133.319	0.000
Z14	13.667	ref	136.281	0.000

## Pipe Information

negative pipe flow (Q) indicates flow is from node 2 towards node 1

Node 1	Elev [ft]	K-factor	Discharge & Flow [gpm]	Nom i.d. [in]	Fittings num & length [ft]	L [ft] F [ft] T [ft]	C factor psi/ft	total (Pt) elev (Pe) frict (Pf)	Notes
Z01	48.917		q= 500.000 Q=-500.000	4 4.26		35.250 0.000	C=120	Pt=100.000 Pe=-15.298	Mat="1-WL10"
Z02	13.667					35.250	0.055	Pf= -1.922	
Z02	13.667		q= 0.000 Q=-500.000	4 4.26	3E=39.501 1B=15.800	297.917 81.636	C=120	Pt=117.220 Pe= 0.000	Mat="1-WL10"
ZP2	13.667				1T=26.334	379.553	0.055	Pf=-20.692	
ZP2	13.667		q= 0.000 Q=-750.000	6 6.357	1E=17.603 1T=37.720	37.917 95.558	C=120	Pt=137.912 Pe= 0.000	Mat="1-WL10"
ZP3	13.667				1C=40.235	133.474	0.016	Pf= -2.193	
ZP3	13.667		q= 0.000 Q=-750.000	4 4.026	1E=10.000	10.000 10.000	C=120	Pt=140.105 Pe= -6.365	Mat="S40"
M02	-1.000					20.000	0.152	Pf= -3.040	
M02	-1.000		q= 0.000 Q=-750.000	4 4.24	3E=58.337	173.000 58.337	C=150	Pt=149.510 Pe= 0.868	Mat="1-PVC"
CTZ	1.000					231.337	0.078	Pf=-18.080	
Z11	48.917		q= 250.000 Q=-250.000	4 4.24		8.250 0.000	C=150	Pt=120.621 Pe= -3.581	Mat="1-PVC"
Z12	40.667					8.250	0.01	Pf= -0.084	
Z12	40.667		q= 0.000 Q=-250.000	4 4.24		20.333 0.000	C=150	Pt=124.286 Pe= -8.825	Mat="1-PVC"
Z13	20.333					20.333	0.01	Pf= -0.208	
Z13	20.333		q= 0.000 Q=-250.000	4 4.24		6.667 0.000	C=150	Pt=133.319 Pe= -2.893	Mat="1-PVC"
Z14	13.667					6.667	0.01	Pf= -0.068	
Z14	13.667		q= 0.000 Q=-250.000	4 4.24	2E=38.891 1B=23.335	50.083 101.117	C=150	Pt=136.281 Pe= 0.000	Mat="1-PVC"
ZP1	13.667				1T=38.891	151.200	0.01	Pf= -1.548	
ZP1	13.667		q= 0.000 Q=-250.000	4 4.24		8.083 0.000	C=150	Pt=137.829 Pe= 0.000	Mat="1-PVC"
ZP2	13.667					8.083	0.01	Pf= -0.083	

## Material Codes

- |   |   |
|---|---|
| <p><b>Pipe Material</b></p> <ul style="list-style-type: none"> <li>S40 - Schedule 40 Steel</li> <li>1-PVC - PVC C900 Underround Pipe</li> <li>1-WL10 - Wheatland's schedule 10</li> </ul> | <p><b>Fittings</b></p> <ul style="list-style-type: none"> <li>B - Butterfly Valve</li> <li>C - Check Valve</li> <li>E - Standard 90 degree elbow</li> <li>T - Tee - Flow turn 90 degrees</li> </ul> |
|---|---|