Reviewed for Code Compliance
Inspections Division
Approved with Conditions

Date: 05/31/16

. . . Fire Protection by Computer Design

ALTERNATIVE SPRINKLER
39 JACKSON RD.
POLAND SPRING, ME
04274
207-838-8930

Job Name	:	72 MUNJOY ST CALC
Building	:	FP-01
Location	:	72 MUNJOY ST
System	:	#1
Contract	:	
Data File	:	72 MUNJOY CALC.WXF

Water Supply Curve (C)

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City Water Supply:
C1 - Static Pressure : 75
C2 - Residual Pressure: 64
C2 - Residual Flow : 1034

Demand:
D1 - El
D2 - Sy
D2 - Sy
Hose (Adj City) :
Hose (Demand) :
D3 - System Demand : 55.5823
Safety Margin : 9.999

Fittings Used Summary

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Fitting Legend

Abbrev.	Name	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6	8	10	1					4
E	90' Standard Elbow	2	2	2	3	4	5	6	7	8	10	12	14	18	22	2					1
G	Generic Gate Valve	0	0	1	1	1	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13
N *	CPVC 90'Ell Harvel-Spears	7	7	7	8	9	11	12	13	0	0	0	0	0	0	0	0	0	0	0	0
O *	CPVC Tee-Branch	3	3	5	6	8	10	12	15	0	0	0	0	0	0	0	0	0	0	0	0
R *	CPVC Coupling Tee-Run	1	1	1	1	1	1	2	2	0	0	0	0	0	0	0	0	0	0	0	0
T	90' Flow Thru Tee	3	4	5	6	8	10	12	15	17	20	25	30	35	50	60	71	81	91	101	121
Z	Generic Flow Switch	2	2	2	3	4	5	6	7	8	10	12	14	18	22	27	35	40	45	50	61
Zik	Wilkins 950XL	Fitting generates a Fixed Loss Based on Flow																			

Units Summary

Diameter Units	Inches
Length Units	Feet
Flow Units	US Gallons per Minute
Pressure Units	Pounds per Square Inch

Note: Fitting Legend provides equivalent pipe lengths for fittings types of various diameters. Equivalent lengths shown are standard for actual diameters of Sched 40 pipe and CFactors of 120 except as noted with *. The fittings marked with a * show equivalent lengths values supplied by manufacturers based on specific pipe diameters and CFactors and they require no adjustment. All values for fittings not marked with a * will be adjusted in the calculation for CFactors of other than 120 and diameters other than Sched 40 per NFPA.

Pressure / Flow Summary - STANDARD

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Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density		
1	40.0	4.9	7.0	na	12.96	0.05		
2	40.0	4.9	7.08	na	13.04	0.05	256	7.0
3	40.0		7.56	na				
4	40.0	4.9	9.06	na	14.75	0.05	256	7.0
5	40.0	4.9	9.16	na	14.83	0.05	256	7.0
6	40.0		9.78	na				
7	40.0		26.46	na				
8	40.0		31.17	na				
9	31.0		36.35	na				
10	22.0		41.54	na				
11	13.0		46.72	na				
12	13.0		49.15	na				
TOR	13.0		50.85	na				
BOR	0.0		64.8	na				
UG	0.0		64.9	na				
UG1	-35.0		80.08	na				
TEST	0.0		64.95	na				

The maximum velocity is 18.73 and it occurs in the pipe between nodes 6 and 7

Final Calculations - Hazen-Williams

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Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	*	
1	12.96	1.101	1N	7.0	6.500	7.000			K Factor = 4.90
to		150.0	1O	5.0	12.000	0.0			
3	12.96	0.0305		0.0	18.500	0.564			Vel = 4.37
	0.0								
	12.96					7.564			K Factor = 4.71
2	13.04	1.101	1N	7.0	3.700	7.080			K Factor = 4.90
to		150.0	1O	5.0	12.000	0.0			
3	13.04	0.0308		0.0	15.700	0.484			Vel = 4.39
3	12.96	1.101	1R	1.0	14.000	7.564			
to		150.0	1O	5.0	6.000	0.0			
6	26.0	0.1106		0.0	20.000	2.212			Vel = 8.76
	0.0								
	26.00					9.776			K Factor = 8.32
4	14.75	1.101	1N	7.0	6.500	9.059			K Factor = 4.90
to		150.0	1O	5.0	12.000	0.0			
6	14.75	0.0388		0.0	18.500	0.717			Vel = 4.97
	0.0								
	14.75					9.776			K Factor = 4.72
5	14.83	1.101	1N	7.0	3.700	9.161			K Factor = 4.90
to		150.0	1O	5.0	12.000	0.0			
6	14.83	0.0392		0.0	15.700	0.615			Vel = 5.00
6	40.75	1.101	4R	4.0	28.000	9.776			
to		150.0	1O	5.0	9.000	0.0			
7	55.58	0.4508		0.0	37.000	16.680			Vel = 18.73
7	0.0	1.394	1R	1.0	18.000	26.456			
to		150.0	1O	6.0	15.000	0.0			
8	55.58	0.1429	1N	8.0	33.000	4.715			Vel = 11.68
8	0.0	1.394		0.0	9.000	31.171			
to		150.0		0.0	0.0	3.898			
9	55.58	0.1428		0.0	9.000	1.285			Vel = 11.68
9	0.0	1.394		0.0	9.000	36.354			
to		150.0		0.0	0.0	3.898			
10	55.58	0.1429		0.0	9.000	1.286			Vel = 11.68
10	0.0	1.394		0.0	9.000	41.538			
to		150.0		0.0	0.0	3.898			
11	55.58	0.1429		0.0	9.000	1.286			Vel = 11.68
11	0.0	1.394	1N	8.0	9.000	46.722			
to		150.0		0.0	8.000	0.0			
12	55.58	0.1429		0.0	17.000	2.429			Vel = 11.68

Final Calculations - Hazen-Williams

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Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	*	
12	0.0	1.394	1N	8.0	3.900	49.151			
to		150.0		0.0	8.000	0.0			
TOR	55.58	0.1429		0.0	11.900	1.700			Vel = 11.68
TOR	0.0	1.682	1E	4.95	8.000	50.851			
to		120.0	1Z	4.95	9.900	12.397			* Fixed loss = 6.767
BOR	55.58	0.0865	1Zik	0.0	17.900	1.548			Vel = 8.03
BOR	0.0	4.1	1G	2.907	85.000	64.796			
to		140.0	1T	29.067	31.974	0.0			
UG	55.58	0.0008		0.0	116.974	0.099			Vel = 1.35
UG	0.0	8.27	4T	221.418	800.000	64.895			
to		140.0		0.0	221.418	15.158			
UG1	55.58	0.0		0.0	1021.418	0.029			Vel = 0.33
UG1	0.0	6.16	1E	20.084	175.000	80.082			
to		140.0	1T	43.037	63.121	-15.158			
TEST	55.58	0.0001		0.0	238.121	0.028			Vel = 0.60
	0.0								
	55.58					64.952			K Factor = 6.90