Reviewed for Code Compliance
Inspections Division
Approved with Conditions

Date: 08/01/13

. . . Fire Protection by Computer Design

HAMPSHIRE FIRE PROTECTION
8 N. WENTWORTH AVE.
LONDONDERRY, NH 03053
603-432-8221

Job Name	:	Courtyard by Marriott Standpipe Calc
Building	:	3 of 8
Location	:	Portland ME
System	:	Standpipe Calc
Contract	:	4396CME
Data File	:	Standpipe Calc revised.WXF

Water Supply Curve C

HAMPSHIRE FIRE PROTECTION
Courtyard by Marriott Standpipe Calc

City Water Supply:
C1 - Static Pressure : 150
C2 - Residual Pressure: 150
C2 - Residual Flow : 750

Demand:
D1 - El
D2 - Sy
D2 - Sy
Hose (
D3 - Sy
Safety Margin : 12.752

RESURGAM CITY OF PORTLAND, MAINE
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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
B	NFPA 13 Butterfly Valve	0	0	0	6	6	6	7	10	0	12	9	10	12	19	2					
E	NFPA 13 90' Standard Elbow	1	2	2	3	4	5	6	7	8	10	12	14	18	22	2					1
S	NFPA 13 Swing Check	0	0	5	7	9	11	14	16	19	22	27	32	45	55	6					
V	90' Ell Firelock #001	0	0	0	0	0	3.5	4.3	5	0	6.8	8.5	10	13	0	0					
X	90'Tee-BranchFirelock002	0	0	0	0	0	8.5	10.8	13	0	16	21	25	33	0	0	0	0	0	0	0

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

HAMPSHIRE FIRE PROTECTION
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Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density
FV1	68.333	25	100.0	na	250.0	1.0
FV2	58.0		105.22	na	250.0	
ST01	11.67		129.54	na		
ST02	11.67		131.75	na	250.0	
CONN	2.0		135.95	na		
FDC	5.0		137.25	na		

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The maximum velocity is 11.25 and it occurs in the pipe between nodes FV2 and ST01

Final Calculations - Hazen-Williams - 2007

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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	**
FV1	250.00	4.26	2V	17.907	15.630	100.000		K Factor = 25.00
to		120.0	1B	15.8	33.707	4.475		
FV2	250.0	0.0151		0.0	49.337	0.746		Vel = 5.63
FV2	250.00	4.26	1V	8.954	48.000	105.221		Qa = 250
to		120.0	1X	21.067	30.021	20.066		
ST01	500.0	0.0545		0.0	78.021	4.253		Vel = 11.25
ST01	0.0	6.357	3V	37.72	202.670	129.540		
to		120.0	1X	31.433	81.726	0.0		
ST02	500.0	0.0078	1B	12.573	284.396	2.207		Vel = 5.05
ST02	250.00	6.357		0.0	1.000	131.747		Qa = 250
to		120.0		0.0	0.0	4.188		
CONN	750.0	0.0170		0.0	1.000	0.017		Vel = 7.58
CONN	0.0	6.357	1S	40.235	75.000	135.952		
to		120.0	2V	25.147	82.985	-1.299		
FDC	750.0	0.0164	1E	17.603	157.985	2.596		Vel = 7.58
	0.0							
	750.00					137.249		K Factor = 64.02