AquaSAFE™ FIRE SAFETY SYSTEM

Uponor EP
5925 148th Street West

Apple Valley, MN 55124
800-321-4739

Job Name	:	FISHER RESIDENCE - One Head Calculation (H.6)
Drawing	:	RESIDENTIAL
Location	:	67 HIGH ST PORTLAND ME 04103
Remote Area	:	1
Contract	:	120606-41L
Data File	:	120606-41L Fisher Residence.wx1

HYDRAULIC DESIGN INFORMATION SHEET

Name - FISHER RESIDENCE Date - 6/19/12
Location - PORTLAND ME 04103
Building - RESIDENTIAL System No. - 1
Contractor - BRADBURYS PLG & HTG Contract No. - 120606-41L
Calculated By - MELISA RODRIGUEZ CET III Drawing No. - F100
Construction: (X) Combustible ( ) Non-Combustible Ceiling Height VARIES
OCCUPANCY - RESIDENTIAL

S Type of Calculation: ( )NFPA 13 Residential ( )NFPA 13R (X)NFPA 13D
Y Number of Sprinklers Flowing: (X)1 ( )2 ( )4 ( )
S ( )Other
T ( )Specific Ruling Made by Date
E
M Listed Flow at Start Point - 17 Gpm System Type
Listed Pres. at Start Point - 12.03Psi (X) Wet ( ) Dry
D MAXIMUM LISTED SPACING 18 x 18 ( ) Deluge ( ) PreAction
E Domestic Flow Added - 0 Gpm Sprinkler or Nozzle
S Additional Flow Added - Gpm Make RELIABLE Model RFC49
I Elevation at Highest Outlet - 119 Feet Size 3/8 K-Factor 4.9
G Note: Temperature Rating 165
N

Calculation Gpm Required 17 Psi Required 34.57 At Ref Pt Pump
Summary C-Factor Used: Overhead 150 Underground 150

W Water Flow Test: Pump Data: Tank or Reservoir:
A Date of Test - x Rated Cap. Cap.
T Time of Test - x @ Psi Elev.
E Static (Psi) - 0 Elev.
R Residual (Psi) - 0 Other Well
Flow (Gpm) - 0 Proof Flow Gpm
S Elevation - 100

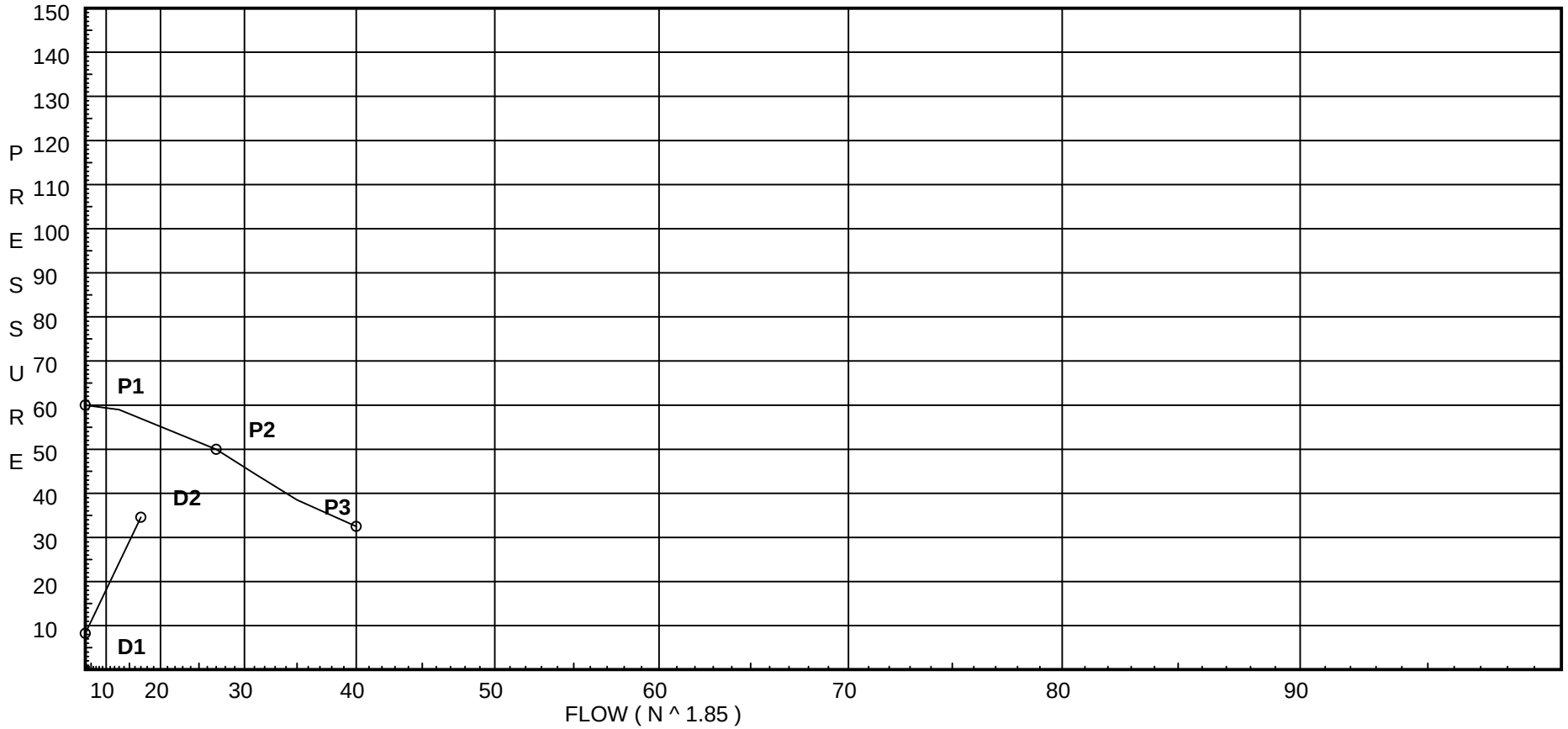
P Location: x
P
L Source of Information: x
Y

Pump Data:

P1 - Pump Churn Pressure	:	60
P2 - Pump Rated Pressure	:	50
P2 - Pump Rated Flow	:	27
P3 - Pump Pressure @ Max Flow	:	32.5
P3 - Pump Max Flow	:	40

Demand:

D1 - Elevation	:	8.229
D2 - System Flow	:	16.9953
D2 - System Pressure	:	34.567
Hose (Adj City)	:	_____
Hose (Demand)	:	_____
D3 - System Demand	:	16.9953
Safety Margin	:	22.418



Fittings Used Summary

Fitting Legend

Abbrev.	Name	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6	8	10	12	14	16	18	20	24
E	90' Standard Elbow	2	2	2	3	4	5	6	7	8	10	12	14	18	22	27	35	40	45	50	61
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
Utb	Aquapex Tee - Branch	2	17	14	9	12	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Utr	Aquapex Tee - Run	1	2	2	4	2	1	0	0	0	0	0	0	0	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

SUPPLY ANALYSIS

Node at Source	Static Pressure	Residual Pressure	Flow	Available Pressure	Total Demand	Required Pressure
PUMP	See Information on Pump Curve			56.985	0.0	34.567

NODE ANALYSIS

Node Tag	Elevation	Node Type	Pressure at Node	Discharge at Node	Notes
H.6	119.0	4.9	12.03	17.0	
T.27	119.0		15.95		
T.25	109.0		20.85		
T.33	109.0		21.91		
T.32	99.0		26.9		
H.12	99.0		28.89		
H.11	99.0		29.48		
H.19	99.0		30.82		
H.18	99.0		31.32		
T.38	99.0		32.46		
S.1	96.0		35.58		
X01	100.0		34.4		
PUMP	100.0		34.57		
T.26	119.0		12.42		
T.35	119.0		15.65		
T.34	109.0		20.35		
H.10	119.0		15.92		
H.14	119.0		16.11		
T.37	119.0		16.42		
T.36	109.0		20.9		
H.9	109.0		22.83		
T.31	109.0		24.63		
T.30	99.0		29.92		
H.7	119.0		16.03		
H.13	119.0		16.15		
H.15	119.0		16.26		
H.8	109.0		20.54		
H.16	109.0		20.66		
H.17	109.0		20.73		
H.3	109.0		21.72		
T.23	109.0		21.94		
H.1	109.0		22.56		
T.20	109.0		23.12		
T.21	109.0		23.96		
H.2	109.0		24.23		
T.28	109.0		24.37		
H.4	99.0		27.43		
H.5	99.0		27.71		
T.24	99.0		28.34		

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
H.6	9.34	0.67	1Utr	2.0	2.000	12.030		K Factor = 4.90
to		150.0	1Utb	17.0	19.000	0.0		
T.27	9.34	0.1868		0.0	21.000	3.923		Vel = 8.50
T.27	-1.77	0.86		0.0	15.000	15.953		
to		150.0		0.0	0.0	4.331		
T.25	7.57	0.0375		0.0	15.000	0.563		Vel = 4.18
T.25	-4.27	0.67	2Utb	34.0	5.000	20.847		
to		150.0		0.0	34.000	0.0		
T.33	3.3	0.0273		0.0	39.000	1.066		Vel = 3.00
T.33	4.18	0.86		0.0	18.000	21.913		
to		150.0		0.0	0.0	4.331		
T.32	7.48	0.0367		0.0	18.000	0.661		Vel = 4.13
T.32	-2.92	0.67	1Utr	2.0	21.000	26.905		
to		150.0	1Utb	17.0	19.000	0.0		
H.12	4.56	0.0496		0.0	40.000	1.983		Vel = 4.15
H.12	0.0	0.67	1Utr	2.0	10.000	28.888		
to		150.0		0.0	2.000	0.0		
H.11	4.56	0.0496		0.0	12.000	0.595		Vel = 4.15
H.11	0.0	0.67	1Utr	2.0	25.000	29.483		
to		150.0		0.0	2.000	0.0		
H.19	4.56	0.0496		0.0	27.000	1.338		Vel = 4.15
H.19	0.0	0.67		0.0	10.000	30.821		
to		150.0		0.0	0.0	0.0		
H.18	4.56	0.0495		0.0	10.000	0.495		Vel = 4.15
H.18	0.0	0.67	1Utr	2.0	4.000	31.316		
to		150.0	1Utb	17.0	19.000	0.0		
T.38	4.56	0.0496		0.0	23.000	1.140		Vel = 4.15
T.38	12.44	0.86	1T	2.871	8.000	32.456		
to		150.0		0.0	2.871	1.299		
S.1	17.0	0.1678		0.0	10.871	1.824		Vel = 9.39
S.1	0.0	0.86	2E	2.297	1.000	35.579		
to		150.0		0.0	2.297	-1.732		
X01	17.0	0.1674		0.0	3.297	0.552		Vel = 9.39
X01	0.0	0.86		0.0	1.000	34.399		
to		150.0		0.0	0.0	0.0		
PUMP	17.0	0.1680		0.0	1.000	0.168		Vel = 9.39
	0.0							
	17.00					34.567		K Factor = 2.89
H.6	-9.34	0.67	1Utr	2.0	1.000	12.030		
to		150.0		0.0	2.000	0.0		
T.26	7.66	0.1293		0.0	3.000	0.388		Vel = 6.97
T.26	0.0	0.67	1Utb	17.0	8.000	12.418		
to		150.0		0.0	17.000	0.0		
T.35	7.66	0.1294		0.0	25.000	3.235		Vel = 6.97
T.35	-1.97	0.86		0.0	16.645	15.653		
to		150.0		0.0	0.0	4.331		
T.34	5.69	0.0222		0.0	16.645	0.369		Vel = 3.14
T.34	-1.51	0.67	2Utb	34.0	3.000	20.353		
to		150.0		0.0	34.000	0.0		
T.33	4.18	0.0422		0.0	37.000	1.560		Vel = 3.80

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	*******	Notes	******
	0.0									
	4.18					21.913		K Factor = 0.89		
T.35	1.97	0.67	1Utr	2.0	6.000	15.653				
to		150.0	1Utb	17.0	19.000	0.0				
H.10	1.97	0.0105		0.0	25.000	0.262		Vel = 1.79		
H.10	0.0	0.67	1Utr	2.0	17.000	15.915				
to		150.0		0.0	2.000	0.0				
H.14	1.97	0.0105		0.0	19.000	0.199		Vel = 1.79		
H.14	0.0	0.67	1Utb	17.0	12.000	16.114				
to		150.0		0.0	17.000	0.0				
T.37	1.97	0.0104		0.0	29.000	0.303		Vel = 1.79		
T.37	1.77	0.86		0.0	15.000	16.417				
to		150.0		0.0	0.0	4.331				
T.36	3.74	0.0102		0.0	15.000	0.153		Vel = 2.07		
T.36	1.51	0.67	1Utb	17.0	13.000	20.901				
to		150.0		0.0	17.000	0.0				
H.9	5.25	0.0644		0.0	30.000	1.931		Vel = 4.78		
H.9	0.0	0.67	1Utr	2.0	9.000	22.832				
to		150.0	1Utb	17.0	19.000	0.0				
T.31	5.25	0.0644		0.0	28.000	1.802		Vel = 4.78		
T.31	2.21	0.86	1Utb	14.0	12.000	24.634				
to		150.0		0.0	14.000	4.331				
T.30	7.46	0.0366		0.0	26.000	0.951		Vel = 4.12		
T.30	4.98	0.86	1Utr	2.0	25.000	29.916				
to		150.0		0.0	2.000	0.0				
T.38	12.44	0.0941		0.0	27.000	2.540		Vel = 6.87		
	0.0									
	12.44					32.456		K Factor = 2.18		
T.27	1.77	0.67	1Utr	2.0	7.000	15.953				
to		150.0		0.0	2.000	0.0				
H.7	1.77	0.0086		0.0	9.000	0.077		Vel = 1.61		
H.7	0.0	0.67	1Utr	2.0	12.000	16.030				
to		150.0		0.0	2.000	0.0				
H.13	1.77	0.0086		0.0	14.000	0.121		Vel = 1.61		
H.13	0.0	0.67	1Utr	2.0	11.000	16.151				
to		150.0		0.0	2.000	0.0				
H.15	1.77	0.0085		0.0	13.000	0.111		Vel = 1.61		
H.15	0.0	0.67	1Utb	17.0	1.000	16.262				
to		150.0		0.0	17.000	0.0				
T.37	1.77	0.0086		0.0	18.000	0.155		Vel = 1.61		
	0.0									
	1.77					16.417		K Factor = 0.44		
T.34	1.51	0.67	1Utr	2.0	10.000	20.353				
to		150.0	1Utb	17.0	19.000	0.0				
H.8	1.51	0.0064		0.0	29.000	0.187		Vel = 1.37		
H.8	0.0	0.67	1Utr	2.0	17.000	20.540				
to		150.0		0.0	2.000	0.0				
H.16	1.51	0.0064		0.0	19.000	0.122		Vel = 1.37		

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
H.16	0.0	0.67		0.0	11.000	20.662		
to		150.0		0.0	0.0	0.0		
H.17	1.51	0.0065		0.0	11.000	0.071		Vel = 1.37
H.17	0.0	0.67	1Utr	2.0	7.000	20.733		
to		150.0	1Utb	17.0	19.000	0.0		
T.36	1.51	0.0065		0.0	26.000	0.168		Vel = 1.37
	0.0							
	1.51					20.901		K Factor = 0.33
T.25	4.26	0.67	1Utb	17.0	3.000	20.847		
to		150.0		0.0	17.000	0.0		
H.3	4.26	0.0438		0.0	20.000	0.876		Vel = 3.88
H.3	0.0	0.67	1Utr	2.0	3.000	21.723		
to		150.0		0.0	2.000	0.0		
T.23	4.26	0.0438		0.0	5.000	0.219		Vel = 3.88
T.23	0.0	0.67	1Utr	2.0	12.000	21.942		
to		150.0		0.0	2.000	0.0		
H.1	4.26	0.0439		0.0	14.000	0.614		Vel = 3.88
H.1	0.0	0.67	1Utr	2.0	11.000	22.556		
to		150.0		0.0	2.000	0.0		
T.20	4.26	0.0438		0.0	13.000	0.569		Vel = 3.88
T.20	0.0	0.67	1Utb	17.0	2.000	23.125		
to		150.0		0.0	17.000	0.0		
T.21	4.26	0.0438		0.0	19.000	0.833		Vel = 3.88
T.21	-2.05	0.67	1Utr	2.0	2.000	23.958		
to		150.0	1Utb	17.0	19.000	0.0		
H.2	2.21	0.0130		0.0	21.000	0.273		Vel = 2.01
H.2	0.0	0.67	1Utr	2.0	9.000	24.231		
to		150.0		0.0	2.000	0.0		
T.28	2.21	0.0130		0.0	11.000	0.143		Vel = 2.01
T.28	0.0	0.67	1Utb	17.0	3.000	24.374		
to		150.0		0.0	17.000	0.0		
T.31	2.21	0.0130		0.0	20.000	0.260		Vel = 2.01
	0.0							
	2.21					24.634		K Factor = 0.45
T.32	2.92	0.67	1Utb	17.0	7.000	26.905		
to		150.0		0.0	17.000	0.0		
H.4	2.92	0.0218		0.0	24.000	0.523		Vel = 2.66
H.4	0.0	0.67	1Utr	2.0	11.000	27.428		
to		150.0		0.0	2.000	0.0		
H.5	2.92	0.0218		0.0	13.000	0.283		Vel = 2.66
H.5	0.0	0.67	1Utb	17.0	12.000	27.711		
to		150.0		0.0	17.000	0.0		
T.24	2.92	0.0218		0.0	29.000	0.631		Vel = 2.66
T.24	2.05	0.67	1Utb	17.0	8.000	28.342		
to		150.0	1Utr	2.0	19.000	0.0		
T.30	4.97	0.0583		0.0	27.000	1.574		Vel = 4.52
	0.0							
	4.97					29.916		K Factor = 0.91

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	*******	Notes	******
T.21	2.05	0.86		0.0	16.000	23.958				
to		150.0		0.0	0.0	4.331				
T.24	2.05	0.0033		0.0	16.000	0.053		Vel = 1.13		
	0.0									
	2.05					28.342		K Factor = 0.39		