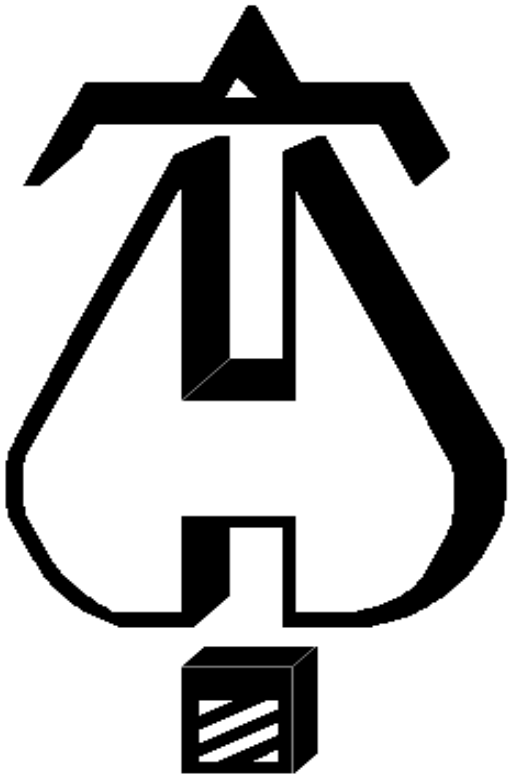


. . . Fire Protection by Computer Design

Residential Fire Protection
64 Daggett Hill Rd.
Greene, ME 04236
(207)946-343

Job Name	:	93 SAINT LAWRENCE STREET BLDG
Building	:	WOOD STRUCTURE
Location	:	MEZZANINE
System	:	1 (WET)
Contract	:	C16014
Data File	:	93 ST LAWRENCE ST- MEZZ- HYD CALC.WXF

HYDRAULIC DESIGN INFORMATION SHEET

Name - 93 ST. LAWRENCE STREET — Date - 4/18/2016
Location - MEZZANINE
Building - WOOD STRUCTURE — System No. - 1 (WET)
Contractor - RESIDENTIAL FIRE PROTECTION — Contract No. - C16014
Calculated By - — Drawing No. - 2 OF 2
Construction: (X) Combustible ( ) Non-Combustible — Ceiling Height VARIES
OCCUPANCY - BEDROOM

SYSTEM DESIGN

Type of Calculation: (X)NFPA 13 Residential ( )NFPA 13R ( )NFPA 13D
Number of Sprinklers Flowing: ( )1 ( )2 (X)4 ( )
( )Other
( )Specific Ruling — Made by — Date

Listed Flow at Start Point - 13 Gpm — System Type
Listed Pres. at Start Point - 10.6 Psi — (X) Wet ( ) Dry
MAXIMUM LISTED SPACING 16' x 16' — ( ) Deluge ( ) PreAction
Domestic Flow Added - Gpm — Sprinkler or Nozzle
Additional Flow Added - Gpm — Make VIKING Model VK468
Elevation at Highest Outlet - 130.34Feet — Size 7/16" K-Factor 4.0
Note: — Temperature Rating 155

Calculation Summary — Gpm Required 33.06 — Psi Required 48.58 — At Test
C-Factor Used: Overhead 150 Underground 140

WATER SUPPLY

Water Flow Test:		Pump Data:	Tank or Reservoir:
Date of Test	- 4/30/2014	Rated Cap.	Cap.
Time of Test	- N/A	@ Psi	Elev.
Static (Psi)	- 50	Elev.	
Residual (Psi)	- 44	Other	Well
Flow (Gpm)	- 919		Proof Flow Gpm
Elevation	- 100		

Location: TEST HYDRANT AT THE CORNER OF MONUMENT ST AND ST LAWRENCE ST,
SEE PLOT PLAN FOR MORE INFORMATION
Source of Information: PORTLAND WATER DISTRICT

Water Supply Curve (C)

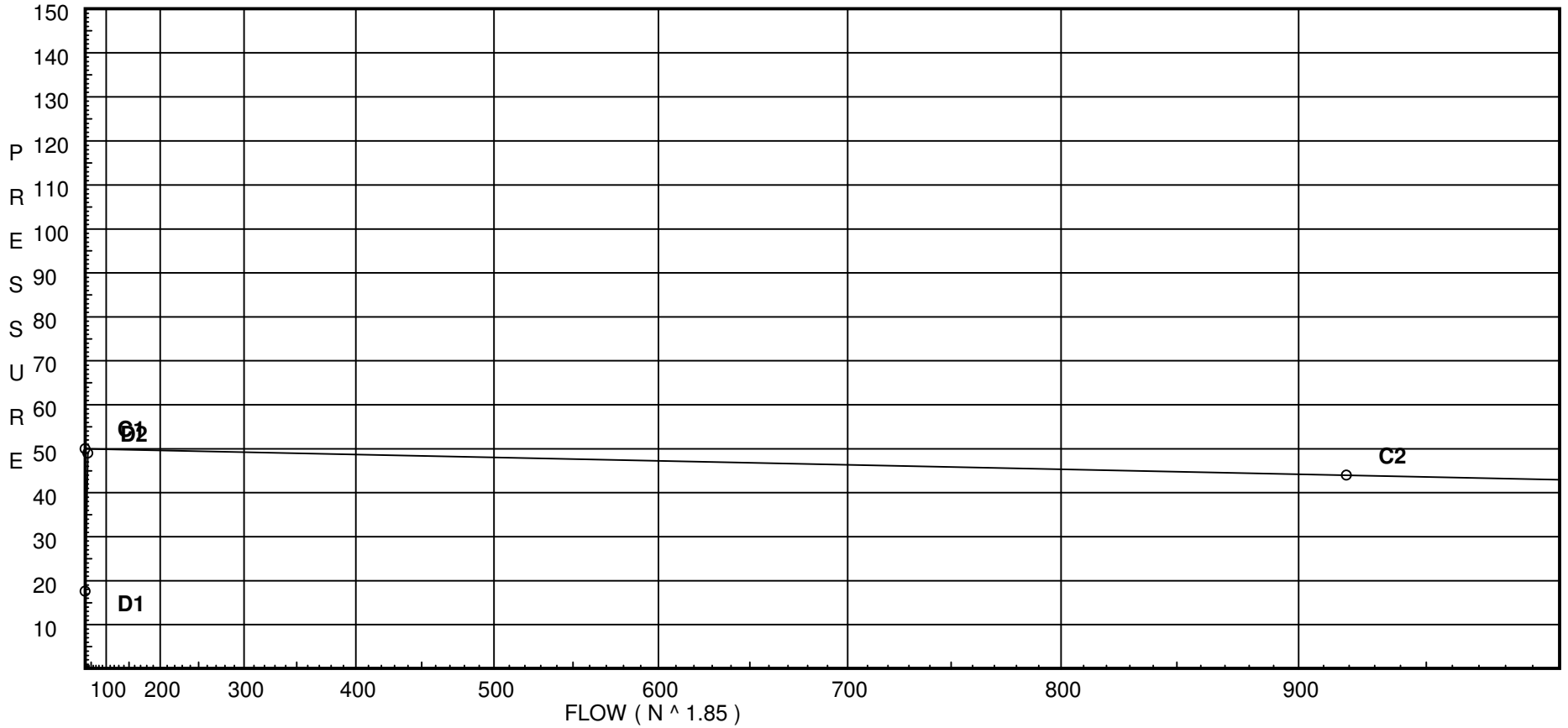
Residential Fire Protection
93 SAINT LAWRENCE STREET BLDG

Date 4/18/16

City Water Supply:
- C1 - Static Pressure : 50
- C2 - Residual Pressure: 44
- C2 - Residual Flow : 919

Demand:

D1 - Elevation	:	17.597
D2 - System Flow	:	33.0579
D2 - System Pressure	:	49.017
Hose (Adj City)	:	_____
Hose (Demand)	:	_____
D3 - System Demand	:	33.0579
Safety Margin	:	0.970



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
G	Generic Gate Valve	0	0	0	0	0	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13
I	90' Grvd-Vic Elbow #10	0	0	2	3	4	3.5	6	5	8	7	8.5	10	13	17	20	23	25	33	36	40
L	Long Turn Elbow	1	1	2	2	2	3	4	5	5	6	8	9	13	16	18	24	27	30	34	40
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

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
30	140.63	4.9	10.6	na	15.95	0.0508	256	10.6
31	139.55	4.9	12.19	na	17.1	0.0508	256	10.6
50	139.55		18.72	na				
51	130.34		23.56	na				
23	130.34		24.0	na				
52	130.34		25.86	na				
54	109.08		35.99	na				
55	109.08		36.39	na				
AD	109.08		36.52	na				
TOR	108.5		37.58	na				
BOR	102.08		40.99	na				
BFP	102.08		41.06	na				
6UG	101.0		48.58	na				
TEST	100.0		49.02	na				

The maximum velocity is 11.14 and it occurs in the pipe between nodes 31 and 50

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
30	15.95	0.874	1E	4.026	4.080	10.600		K Factor = 4.90
to		150		0.0	4.026	0.468		
31	15.95	0.1378		0.0	8.106	1.117		Vel = 8.53
31	17.11	1.101	4E	15.3	22.620	12.185		K Factor = 4.90
to		150		0.0	15.301	0.0		
50	33.06	0.1724		0.0	37.921	6.538		Vel = 11.14
50	0.0	1.394	1T	9.523	6.000	18.723		
to		150		0.0	9.523	3.989		
51	33.06	0.0546		0.0	15.523	0.848		Vel = 6.95
51	0.0	1.394		0.0	8.000	23.560		
to		150		0.0	0.0	0.0		
23	33.06	0.0546		0.0	8.000	0.437		Vel = 6.95
23	0.0	1.394	2T	19.046	15.000	23.997		
to		150		0.0	19.047	0.0		
52	33.06	0.0546		0.0	34.047	1.860		Vel = 6.95
52	0.0	1.598	1T	11.656	21.210	25.857		
to		150		0.0	11.656	9.208		
54	33.06	0.0281		0.0	32.866	0.923		Vel = 5.29
54	0.0	1.598	1T	11.656	2.670	35.988		
to		150		0.0	11.656	0.0		
55	33.06	0.0281		0.0	14.326	0.402		Vel = 5.29
55	0.0	1.598		0.0	4.500	36.390		
to		150		0.0	0.0	0.0		
AD	33.06	0.0282		0.0	4.500	0.127		Vel = 5.29
AD	0.0	1.61	2E	8.0	3.750	36.517		
to		120	1T	8.0	16.000	0.251		
TOR	33.06	0.0409		0.0	19.750	0.808		Vel = 5.21
TOR	0.0	1.61	1Z	4.0	3.500	37.576		
to		120	1T	8.0	12.000	2.780		
BOR	33.06	0.0410		0.0	15.500	0.635		Vel = 5.21
BOR	0.0	2.469	2I	12.0	2.000	40.991		
to		120		0.0	12.000	0.0		
BFP	33.06	0.0051		0.0	14.000	0.072		Vel = 2.22
BFP	0.0	2.469	1I	6.0	3.000	41.063		
to		120		0.0	6.000	7.468		* Fixed loss = 7
6UG	33.06	0.0050		0.0	9.000	0.045		Vel = 2.22
6UG	0.0	6.16	2L	25.822	95.000	48.576		
to		140	1G	4.304	73.163	0.433		
TEST	33.06	0.0	1T	43.037	168.163	0.008		Vel = 0.36
	0.0							
	33.06					49.017		K Factor = 4.72