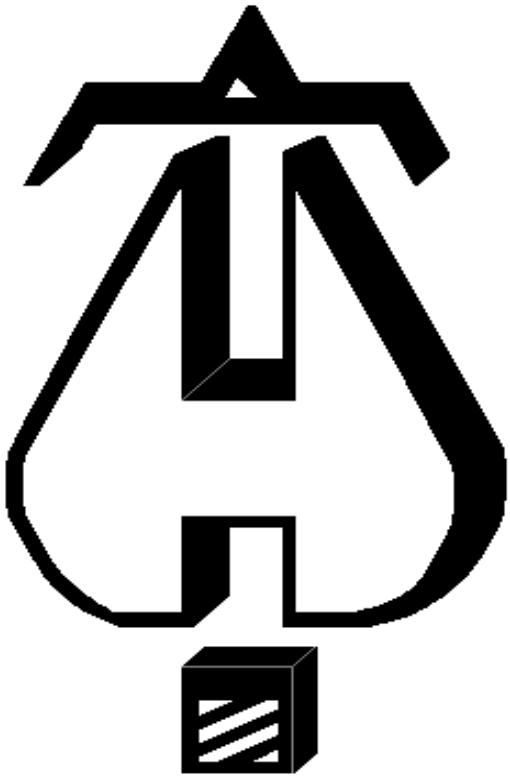


. . . Fire Protection by Computer Design

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

Job Name	:	THOMAS STREET APARTMENTS
Building	:	WOOD STRUCTURE
Location	:	ATTIC #2
System	:	2
Contract	:	C16021
Data File	:	THOMAS ST APT- ATTIC#2.WXF

Hydraulic Design Information Sheet

Name - 32 THOMAS STREET APARTMENTS Date - 8/23/16
Location - ATTIC #2
Building - WOOD STRUCTURE System No. - 2
Contractor - RSIDENTIAL FIRE PROTECTION Contract No. - C16021
Calculated By - T. PRAY Drawing No. - 1 OF 2
Construction: (X) Combustible ( ) Non-Combustible Ceiling Height - VARIES
Occupancy - UNUSED ATTIC SPACE

SYSTEM DESIGN

(X) NFPA 13 (X) Lt. Haz. Ord.Haz.Gp. ( ) 1 ( ) 2 ( ) 3 ( ) Ex.Haz.
( ) NFPA 231 ( ) NFPA 231C ( ) Figure Curve
Other
Specific Ruling | Made By | Date

Area of Sprinkler Operation	- 338	System Type	Sprinkler/Nozzle
Density	- .1	( ) Wet	Make VIKING
Area Per Sprinkler	- 120	(X) Dry	Model VK300
Elevation at Highest Outlet	- 137.92	( ) Deluge	Size 1/2"
Hose Allowance - Inside	-	( ) Preaction	K-Factor 5.6
Rack Sprinkler Allowance	-	( ) Other	Temp.Rat.200
Hose Allowance - Outside	- 100		

Note

DESIGN

Calculation Summary: Flow Required - 223.29 Press Required - 46.24 AT TEST
C-Factor Used: 120 Overhead 140 Underground

WATER SUPPLY

Water Flow Test:		Pump Data:		Tank or Reservoir:
Date of Test	- 8/22/16			Cap. -
Time of Test	- 11:30 AM	Rated Cap.-		Elev.-
Static Press	- 51	@ Press	-	
Residual Press	- 49	Elev.	-	Well
Flow	- 903			Proof Flow
Elevation	- 100			

Location - HYDRANTS ARE LOCATED ON THOMAS STREET, SEE PLOT PLAN

Source of Information - PORTLAND WATER DISTRICT

COMMODITY

Commodity Class Location
Storage Ht. Area Aisle W.
Storage Method: Solid Piled % Palletized % Rack

( ) Single Row	( ) Conven. Pallet	( ) Auto. Storage	( ) Encap.	
R ( ) Double Row	( ) Slave Pallet	( ) Solid Shelf	( ) Non	
A ( ) Mult. Row		( ) Open Shelf		
C				
K Flue Spacing		Clearance:Storage to Ceiling		
Longitudinal		Transverse		

Horizontal Barriers Provided:

Water Supply Curve (C)

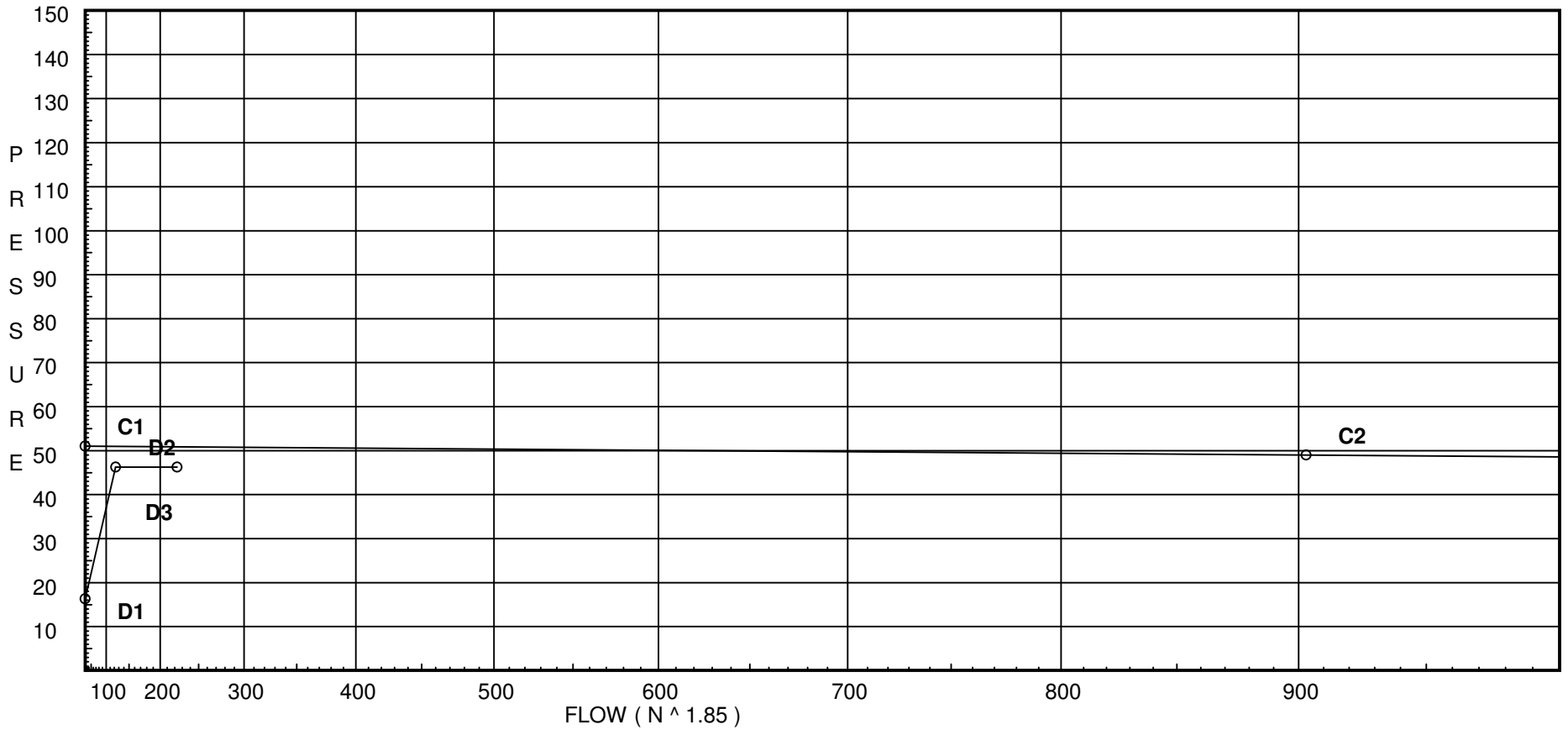
Residential Fire Protection
THOMAS STREET APARTMENTS

Date 8/23/2016

City Water Supply:
- C1 - Static Pressure : 51
- C2 - Residual Pressure: 49
- C2 - Residual Flow : 903

Demand:

D1 - Elevation	:	16.315
D2 - System Flow	:	123.294
D2 - System Pressure	:	46.239
Hose (Adj City)	:	_____
Hose (Demand)	:	100
D3 - System Demand	:	223.294
Safety Margin	:	4.610



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
B	Generic Butterfly Valve	0	0	0	0	0	0	7	10	0	12	9	10	12	19	21	0	0	0	0	0
D	Generic Dry Pipe Valve	0	0	0	0	0	0	9.5	17	0	28	0	47	0	0	0	0	0	0	0	0
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

Pressure / Flow Summary - STANDARD

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
200	131.67	5.6	11.52	na	19.01	0.1	149	7.0
201	131.67	5.6	11.7	na	19.15	0.1	149	7.0
202	137.67	5.6	7.08	na	14.9	0.1	149	7.0
203	137.67	5.6	7.77	na	15.61	0.1	149	7.0
204	137.67	5.6	7.81	na	15.65	0.1	149	7.0
205	131.83	5.6	12.02	na	19.41	0.1	149	7.0
206	131.83	5.6	12.2	na	19.56	0.1	149	7.0
220	131.67		12.89	na				
221	137.67		8.58	na				
222	131.83		13.44	na				
230	128.04		15.88	na				
231	128.04		16.0	na				
232	128.04		16.5	na				
TOR1	101.88		38.0	na				
DPV	97.88		39.89	na				
HDR1	97.88		40.07	na				
HDR	97.88		40.08	na				
BFP	97.88		40.08	na				
6UG	97.88		47.1	na				
TEST	100.0		46.24	na	100.0			

The maximum velocity is 9.9 and it occurs in the pipe between nodes 221 and 231

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
200	19.01	1.049	1T	3.568	4.670	11.521		K Factor = 5.60
to		100		0.0	3.568	0.0		
220	19.01	0.1659		0.0	8.238	1.367		Vel = 7.06
	0.0							
	19.01					12.888		K Factor = 5.30
201	19.15	1.049	1T	3.568	3.500	11.698		K Factor = 5.60
to		100		0.0	3.568	0.0		
220	19.15	0.1684		0.0	7.068	1.190		Vel = 7.11
	0.0							
	19.15					12.888		K Factor = 5.33
202	14.90	1.049		0.0	6.500	7.079		K Factor = 5.60
to		100		0.0	0.0	0.0		
203	14.9	0.1058		0.0	6.500	0.688		Vel = 5.53
203	15.61	1.38	1T	4.282	3.460	7.767		K Factor = 5.60
to		100		0.0	4.282	0.0		
221	30.51	0.1048		0.0	7.742	0.811		Vel = 6.54
	0.0							
	30.51					8.578		K Factor = 10.42
204	15.65	1.049	1T	3.568	3.040	7.812		K Factor = 5.60
to		100		0.0	3.568	0.0		
221	15.65	0.1159		0.0	6.608	0.766		Vel = 5.81
	0.0							
	15.65					8.578		K Factor = 5.34
205	19.41	1.049	1T	3.568	4.670	12.017		K Factor = 5.60
to		100		0.0	3.568	0.0		
222	19.41	0.1725		0.0	8.238	1.421		Vel = 7.21
	0.0							
	19.41					13.438		K Factor = 5.29
206	19.56	1.049	1T	3.568	3.500	12.201		K Factor = 5.60
to		100		0.0	3.568	0.0		
222	19.56	0.1750		0.0	7.068	1.237		Vel = 7.26
	0.0							
	19.56					13.438		K Factor = 5.34
220	38.16	1.38	1T	4.282	4.670	12.888		
to		100		0.0	4.282	1.572		
230	38.16	0.1585		0.0	8.952	1.419		Vel = 8.19
	0.0							
	38.16					15.879		K Factor = 9.58
221	46.16	1.38	1T	4.282	10.170	8.578		
to		100		0.0	4.282	4.171		
231	46.16	0.2253		0.0	14.452	3.256		Vel = 9.90
	0.0							
	46.16					16.005		K Factor = 11.54
222	38.97	1.38	1T	4.282	4.330	13.438		
to		100		0.0	4.282	1.641		
232	38.97	0.1649		0.0	8.612	1.420		Vel = 8.36
	0.0							

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
	38.97					16.499		K Factor = 9.59
230	38.16	2.157		0.0	7.000	15.879		
to		100		0.0	0.0	0.0		
231	38.16	0.0180		0.0	7.000	0.126		Vel = 3.35
231	46.16	2.157		0.0	6.330	16.005		
to		100		0.0	0.0	0.0		
232	84.32	0.0780		0.0	6.330	0.494		Vel = 7.40
232	38.97	2.635	14I	82.303	76.960	16.499		
to		100	1T	11.758	94.061	11.330		
TOR1	123.29	0.0594		0.0	171.021	10.167		Vel = 7.25
TOR1	0.0	4.26	1D	26.313	2.000	37.996		
to		100		0.0	26.313	1.732		
DPV	123.29	0.0058		0.0	28.313	0.163		Vel = 2.78
DPV	0.0	4.26	1B	15.8	2.000	39.891		
to		120	1T	26.334	42.134	0.0		
HDR1	123.29	0.0041		0.0	44.134	0.181		Vel = 2.78
HDR1	0.0	4.26		0.0	2.500	40.072		
to		120		0.0	0.0	0.0		
HDR	123.29	0.0040		0.0	2.500	0.010		Vel = 2.78
HDR	0.0	4.26		0.0	0.500	40.082		
to		120		0.0	0.0	0.0		
BFP	123.29	0.0040		0.0	0.500	0.002		Vel = 2.78
BFP	0.0	4.26		0.0	3.000	40.084		
to		120		0.0	0.0	7.000		* Fixed loss = 7
6UG	123.29	0.0040		0.0	3.000	0.012		Vel = 2.78
6UG	0.0	6.16	1L	12.911	60.000	47.096		
to		140	1G	4.304	60.252	-0.918		
TEST	123.29	0.0005	1T	43.037	120.252	0.061		Vel = 1.33
	100.00							Qa = 100.00
	223.29					46.239		K Factor = 32.84