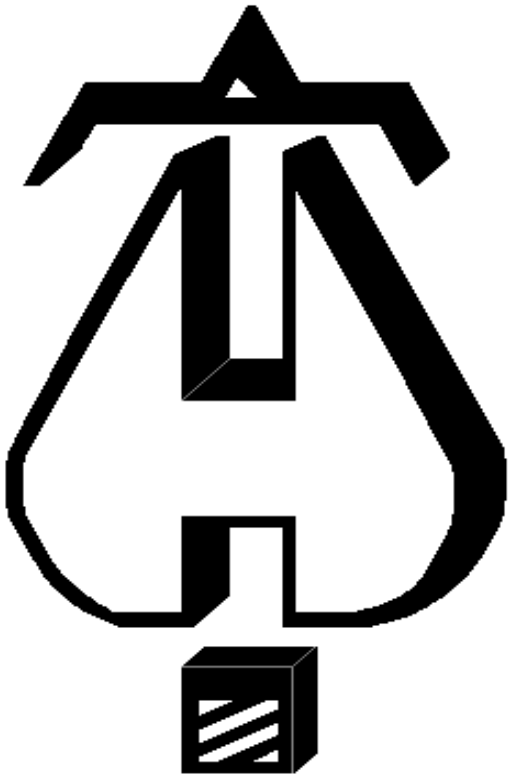


. . . Fire Protection by Computer Design

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

Job Name : THOMAS STREET APARTMENTS
Building : WOOD STRUCTURE
Location : 3RD FLOOR- RESIDENTIAL UPRIGHTS
System : WET
Contract : C16021
Data File : THOMAS ST APT- 3RD FLR RES UPRIGHT.WXF

Hydraulic Design Information Sheet

Name - 32 THOMAS STREET APARTMENTS — Date - 8/23/16
Location - 3RD FLOOR- RESIDENTIAL UPRIGHTS
Building - WOOD STRUCTURE — System No. - WET
Contractor - RESIDENTIAL FIRE PROTECTION — Contract No. - C16021
Calculated By - T. PRAY — Drawing No. - 1 OF 2
Construction: (X) Combustible ( ) Non-Combustible — Ceiling Height - 23.67'
Occupancy - APARTMENT

SYSTEM DESIGN

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

Area of Sprinkler Operation - 4 HEADS	System Type	Sprinkler/Nozzle	
Density - .0508	(X) Wet	Make VIKING	
Area Per Sprinkler - 256	( ) Dry	Model VK467	
Elevation at Highest Outlet - 136.55	( ) Deluge	Size 7/16	
Hose Allowance - Inside -	( ) Preaction	K-Factor	
Rack Sprinkler Allowance -	( ) Other	Temp.Rat.155	
Hose Allowance - Outside - 100			

Note

Calculation Summary — Flow Required - 156.72 Press Required - 47.44 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 - 11:30PM	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 STORAGE

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

( ) Single Row	( ) Conven. Pallet	( ) Auto. Storage	( ) Encap.	
( ) Double Row	( ) Slave Pallet	( ) Solid Shelf	( ) Non	
( ) Mult. Row		( ) Open Shelf		

Flue Spacing — Clearance:Storage to Ceiling
Longitudinal — Transverse

Horizontal Barriers Provided:

Water Supply Curve (C)

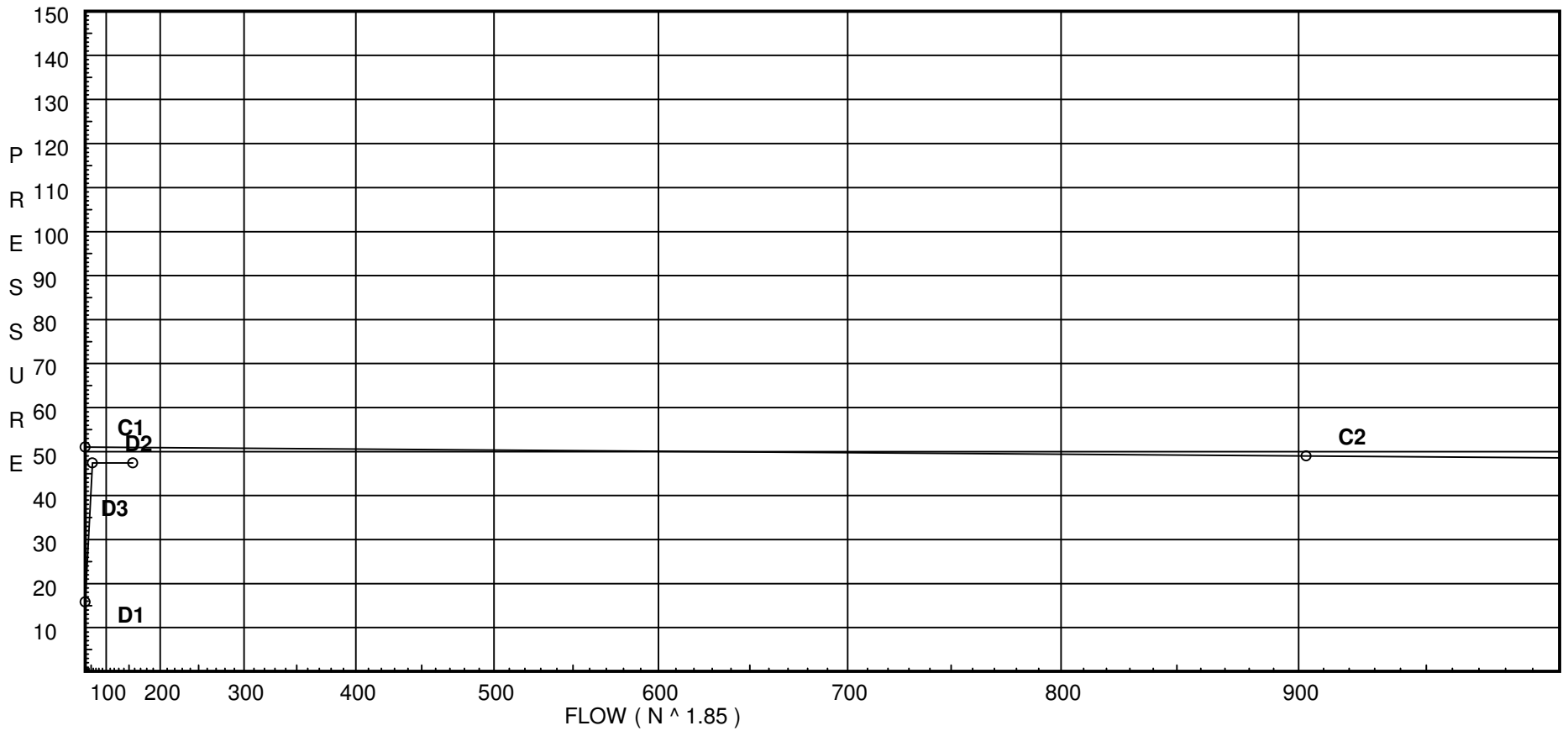
Residential Fire Protection
THOMAS STREET APARTMENTS

Date 8/2/2016

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

Demand:

D1 - Elevation	:	15.830
D2 - System Flow	:	56.722
D2 - System Pressure	:	47.443
Hose (Adj City)	:	_____
Hose (Demand)	:	100
D3 - System Demand	:	156.722
Safety Margin	:	3.479



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
E	90' Standard Elbow	2	2	2	3	4	5	6	7	8	10	12	14	18	22	27	35	40	45	50	61
F	45' Elbow	1	1	1	1	2	2	3	3	3	4	5	7	9	11	13	17	19	21	24	28
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.
100	136.55	4.9	7.04	na	13.0	0.0508	256	7.0
101	136.55	4.9	7.61	na	13.51	0.0508	256	7.0
102	136.55	4.9	8.07	na	13.92	0.0508	256	7.0
103	136.55	4.9	11.05	na	16.29	0.0508	256	7.0
150	136.55		11.28	na				
151	136.55		11.43	na				
152	136.55		13.77	na				
153	122.21		24.23	na				
154	122.21		27.62	na				
155	110.67		34.75	na				
TOR	97.88		41.0	na				
HDR	97.88		41.34	na				
BFP	97.88		41.34	na				
6UG	97.88		48.35	na				
TEST	100.0		47.44	na	100.0			

The maximum velocity is 8.94 and it occurs in the pipe between nodes 151 and 152

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
100	13.00	1.049		0.0	9.580	7.044		K Factor = 4.90
to		120		0.0	0.0	0.0		
101	13.0	0.0587		0.0	9.580	0.562		Vel = 4.83
101	13.52	1.38		0.0	7.960	7.606		K Factor = 4.90
to		120		0.0	0.0	0.0		
102	26.52	0.0577		0.0	7.960	0.459		Vel = 5.69
102	13.91	1.38	1E	3.0	17.710	8.065		K Factor = 4.90
to		120	1T	6.0	9.000	0.0		
151	40.43	0.1259		0.0	26.710	3.362		Vel = 8.67
	0.0							
	40.43					11.427		K Factor = 11.96
103	16.29	1.38	1T	6.0	4.040	11.050		K Factor = 4.90
to		120		0.0	6.000	0.0		
150	16.29	0.0234		0.0	10.040	0.235		Vel = 3.49
150	0.0	1.61	1T	8.0	4.920	11.285		
to		120		0.0	8.000	0.0		
151	16.29	0.0110		0.0	12.920	0.142		Vel = 2.57
151	40.43	1.61	1T	8.0	9.040	11.427		
to		120	1E	4.0	12.000	0.0		
152	56.72	0.1112		0.0	21.040	2.339		Vel = 8.94
152	0.0	1.61	2E	8.0	18.250	13.766		
to		120	2F	4.0	20.000	6.211		
153	56.72	0.1111	1T	8.0	38.250	4.250		Vel = 8.94
153	0.0	1.61	1T	8.0	22.540	24.227		
to		120		0.0	8.000	0.0		
154	56.72	0.1111		0.0	30.540	3.394		Vel = 8.94
154	0.0	1.61	2E	8.0	11.210	27.621		
to		120		0.0	8.000	4.998		
155	56.72	0.1111		0.0	19.210	2.135		Vel = 8.94
155	0.0	2.635	5I	41.186	28.590	34.754		
to		120		0.0	41.186	5.539		
TOR	56.72	0.0101		0.0	69.776	0.705		Vel = 3.34
TOR	0.0	2.635	1F	4.119	4.000	40.998		
to		120	1B	9.61	30.203	0.0		
HDR	56.72	0.0101	1T	16.474	34.203	0.345		Vel = 3.34
HDR	0.0	4.26		0.0	0.500	41.343		
to		120		0.0	0.0	0.0		
BFP	56.72	0.0		0.0	0.500	0.0		Vel = 1.28
BFP	0.0	4.26		0.0	3.000	41.343		
to		120		0.0	0.0	7.000		* Fixed loss = 7
6UG	56.72	0.0010		0.0	3.000	0.003		Vel = 1.28
6UG	0.0	6.16	1L	12.911	60.000	48.346		
to		140	1G	4.304	60.252	-0.918		
TEST	56.72	0.0001	1T	43.037	120.252	0.015		Vel = 0.61
	100.00							Qa = 100.00
	156.72					47.443		K Factor = 22.75