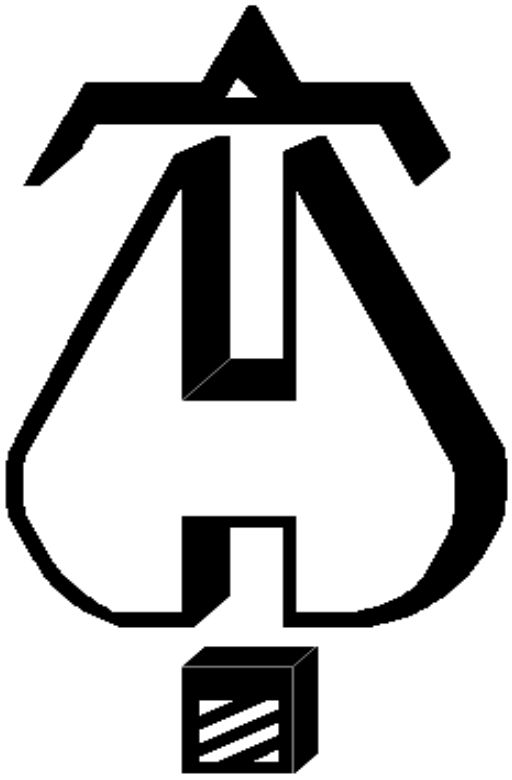


. . . Fire Protection by Computer Design

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

Job Name	:	YORK STREET, STANDPIPES
Building	:	STANDPIPES
Location	:	PORTLAND, ME
System	:	STP
Contract	:	4833CME
Data File	:	YSSTP.wxf

HYDRAULIC DESIGN INFORMATION SHEET

Name - YORK STREET, STANDPIPES
Date - 8-17-16
Location - PORTLAND, ME
Building - STANDPIPES
System No. - STP
Contractor - OPECHEE
Contract No. - 4833CME
Calculated By - BENOIT
Drawing No. - 8
Occupancy - STANDPIPES

SYSTEM DESIGN

(X)NFPA 14 Number of Standpipes ( )1 (X)2 ( )3 ( )4 ( )
( )Other
( )Specific Ruling Made by Date

Flow at Top Most Outlet	- 250	Gpm	System Type	
Pres. at Top Most Outlet	- 100	Psi	(X) Wet	( ) Dry
Flow For Ea. Additional Standpipe	- 250	Gpm		
Total Additional Flow	- 500	Gpm		
Elevation at Highest Outlet	-	Feet		

Hose Valve Connection (X)1 1/2" (X)2 1/2"
Class Service ( )I (X)II ( )III
Note:165 PSI @ 750 GMP PUMPER REQUIRED AT FDC

Calculation Summary: Gpm Required 750; Psi Required 165 At FDC; C-Factor Used: Overhead 120, Underground 120

WATER SUPPLY

Water Flow Test:		Pump Data:	Tank or Reservoir:
Date of Test	- NA		Cap.
Time of Test	- NA	Rated Cap.	Elev.
Static (Psi)	- 165	@ Psi	
Residual (Psi)	- 165	Elev.	Well
Flow (Gpm)	- 750		Proof Flow Gpm
Elevation	- 0		

Location: FD PUMPER ASSIST AT FDC, WET MANUAL

Source of Information: PORTLAND FIRE DEPT.

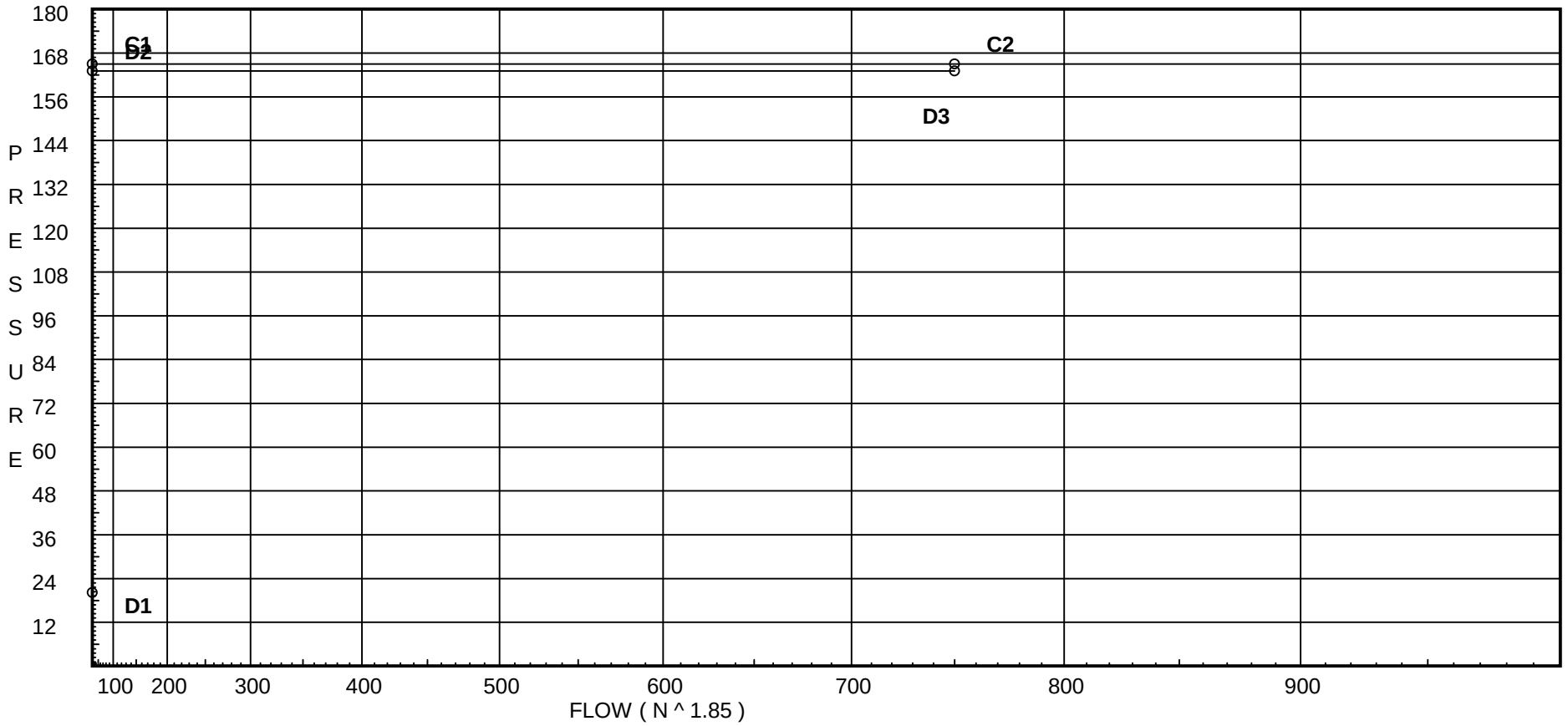
Water Supply Curve C

HAMPSHIRE FIRE PROTECTION
YORK STREET, STANDPIPES

Date 8-17-16

City Water Supply:
- C1 - Static Pressure : 165
- C2 - Residual Pressure: 165
- C2 - Residual Flow : 750

Demand:
- D1 - Elevation : 20.139
- D2 - System Flow : _____
- D2 - System Pressure : 163.098
- Hose (Demand) : 750
- D3 - System Demand : 750
- Safety Margin : 1.902



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	NFPA 13 Butterfly Valve	0	0	2.25	2	2.5	6	7	10	0	12	9	10	12	19	21	0	0	0	0	0
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
J	90'Tee-Branch Grv Vic #20	0	0	4.5	6	8	8.5	10.8	13	17	16	21	25	33	41	50	65	78	88	98	120
S	NFPA 13 Swing Check	0	0	5	7	9	11	14	16	19	22	27	32	45	55	65					

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.

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
S1	49.5		100.0	na	250.0			
S2	48.5		100.45	na	250.0			
SA	11.5		120.25	na				
S3	48.5		116.71	na	250.0			
SB	11.5		134.19	na				
SC	11.5		134.33	na				
SD	11.5		146.05	na				
FDC	3.0		163.1	na				

The maximum velocity is 16.88 and it occurs in the pipe between nodes SC and SD

Final Calculations - Hazen-Williams

HAMPSHIRE FIRE PROTECTION
YORK STREET, STANDPIPES

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
S1	250.00	4.26		0.0	1.000	100.000		Qa = 250
to		120.0		0.0	0.0	0.433		
S2	250.0	0.0150		0.0	1.000	0.015		Vel = 5.63
S2	250.00	4.26	I	9.217	39.000	100.448		Qa = 250
to		120.0	J	21.067	30.284	16.025		
SA	500.0	0.0545		0.0	69.284	3.777		Vel = 11.25
SA	0.0	4.26	2I	18.434	203.000	120.250		
to		120.0	J	21.067	55.301	0.0		
SC	500.0	0.0545	B	15.8	258.301	14.081		Vel = 11.25
	0.0							
	500.00					134.331		K Factor = 43.14
S3	250.00	4.26	2I	18.434	41.000	116.707		Qa = 250
to		120.0	J	21.067	55.301	16.025		
SB	250.0	0.0151	B	15.8	96.301	1.456		Vel = 5.63
SB	0.0	4.26		0.0	9.500	134.188		
to		120.0		0.0	0.0	0.0		
SC	250.0	0.0151		0.0	9.500	0.143		Vel = 5.63
SC	500.00	4.26	2I	18.434	62.000	134.331		
to		120.0	J	21.067	39.501	0.0		
SD	750.0	0.1154		0.0	101.501	11.716		Vel = 16.88
SD	0.0	4.26	4I	36.868	50.000	146.047		
to		120.0	S	28.968	65.836	3.681		
FDC	750.0	0.1154		0.0	115.836	13.370		Vel = 16.88
	0.0							
	750.00					163.098		K Factor = 58.73