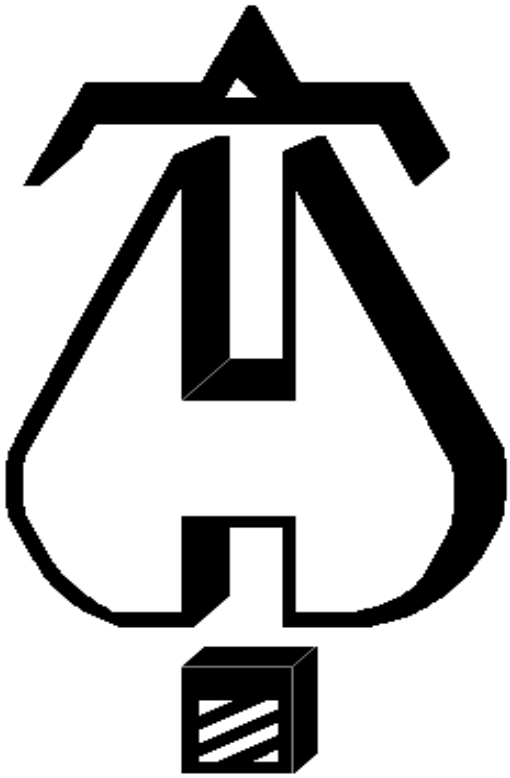


. . . Fire Protection by Computer Design

ACCENDO FIRE PROTECTION LLC
38 ADDITON RD
GREENE, MAINE 04236
207-946-6182

Job Name	:	502 DEERING CENTER 3RD FLOOR
Drawing	:	WOOD FRAMED
Location	:	PORTLAND, MAINE
Remote Area	:	WET
Contract	:	17-1010
Data File	:	17-1019 205 DEERING 3RD FLOOR.WXF

HYDRAULIC DESIGN INFORMATION SHEET

Name - 502 DEERING CENTER — Date - 7/10/17
Location - PORTLAND, MAINE
Building - WOOD FRAMED — System No. - WET
Contractor - AFP — Contract No. - 17-1010
Calculated By - JWD — Drawing No. - 1 OF 1
Construction: (X) Combustible ( ) Non-Combustible Ceiling Height 8'-8"
OCCUPANCY - RESIDENTIAL

SYSTEM DESIGN

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

Listed Flow at Start Point - 17 Gpm — System Type
Listed Pres. at Start Point - 12 Psi — (X) Wet ( ) Dry
MAXIMUM LISTED SPACING 18 x 18 — ( ) Deluge ( ) PreAction
Domestic Flow Added - Gpm — Sprinkler or Nozzle
Additional Flow Added - Gpm — Make VICTAULIC Model VK2730
Elevation at Highest Outlet - 130.5Feet — Size 1/2" K-Factor 4.9
Note: — Temperature Rating 155

Calculation Summary — Gpm Required 69.1 Psi Required 53.7 At NODE BASE
C-Factor Used: Overhead 150 Underground 140

WATER SUPPLY

Water Flow Test:
Date of Test - 7/6/17
Time of Test - 6:30 AM
Static (Psi) - 61
Residual (Psi) - 60
Flow (Gpm) - 1061
Elevation - 100

Pump Data:
Rated Cap.
@ Psi
Elev.
Other

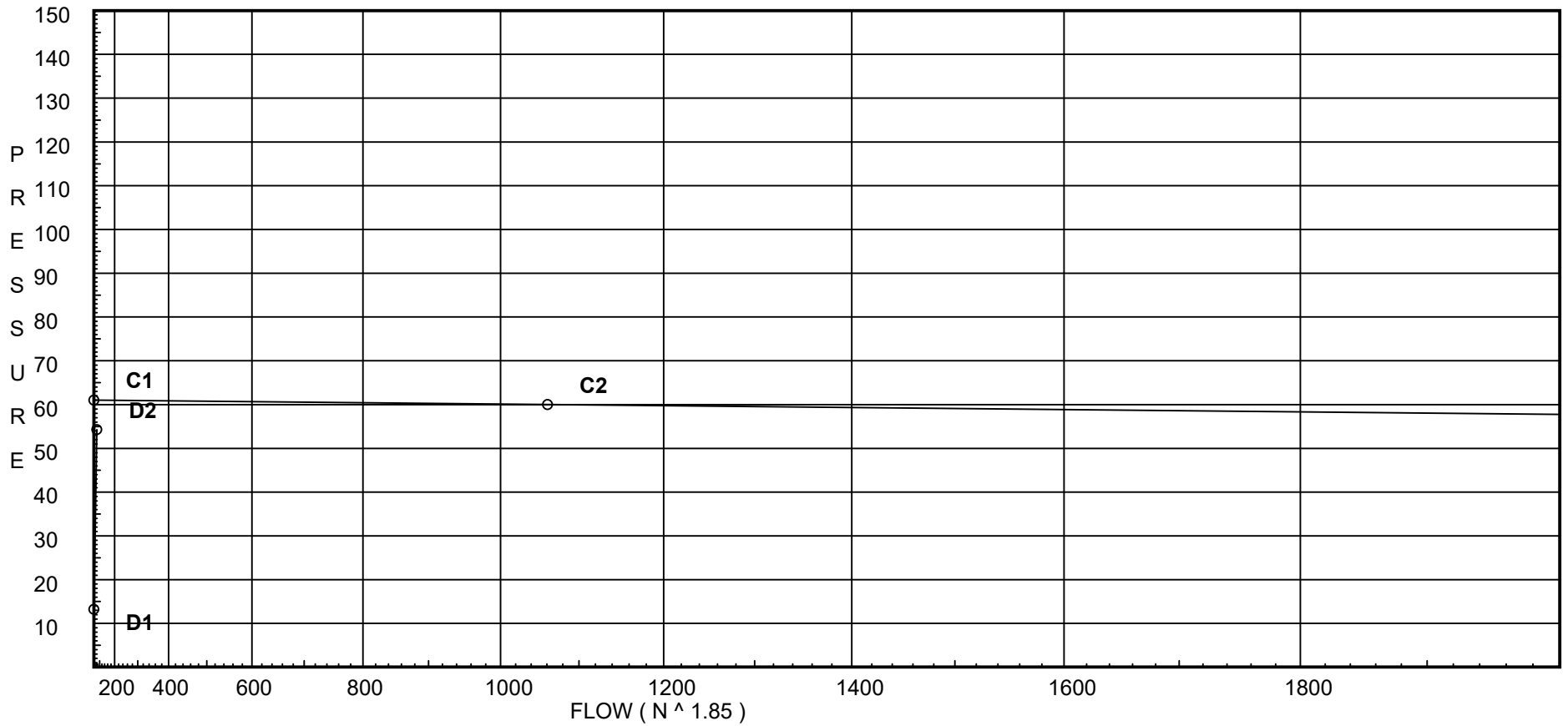
Tank or Reservoir:
Cap.
Elev.

Well
Proof Flow Gpm

Location: TEST HYDRANT LOCATED ON CORNER OF HARTLEY AND STEVENS AVE
Source of Information:
PORTLAND WATER DISTRICT

City Water Supply:
- C1 - Static Pressure : 61
- C2 - Residual Pressure: 60
- C2 - Residual Flow : 1061

Demand:
- D1 - Elevation : 13.210
- D2 - System Flow : 69.126
- D2 - System Pressure : 54.303
- Hose (Demand) : _____
- D3 - System Demand : 69.126
- Safety Margin : 6.690



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	NFPA 13 90' Standard Elbow	1	2	2	3	4	5	6	7	8	10	12	14	18	22	27	35	40	45	50	61
G	NFPA 13 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	NFPA 13 Long Turn Elbow	0.5	1	2	2	2	3	4	5	5	6	8	9	13	16	18	24	27	30	34	40
N *	CPVC 90'Ell Harvel-Spears		7	7	8	9	11	12	13	0	0	0	0	0	0	0	0	0	0	0	0
O *	CPVC Tee - Branch	3	3	5	6	8	10	12	15	0	0	0	0	0	0	0	0	0	0	0	0
T	NFPA 13 90' Flow thru Tee	3	4	5	6	8	10	12	15	17	20	25	30	35	50	60	71	81	91	101	121
Zca	Colt C200 Horz Butt	Fitting generates a Fixed Loss Based on Flow																			

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.
DROP	0.0	4.9	7.0	na	12.96	0.1	10	7.0
DR2	0.0	4.9	12.0	na	16.97	0.1	10	12.0
D1	0.0	4.9	7.0	na	12.96	0.1	10	7.0
100	130.5	K = K @ LN2	12.65	na	16.97			
102	130.5	K = K @ LN2	13.16	na	17.31			
104	130.5	K = K @ LINE	13.16	na	17.26			
103	130.5	K = K @ LINE	13.66	na	17.58			
101	130.5		13.86	na				
105	130.5		13.95	na				
106	130.5		14.41	na				
107	130.5		21.26	na				
108	130.5		22.68	na				
109	108.0		40.23	na				
110	108.0		42.86	na				
17	108.0		42.91	na				
18	108.0		42.92	na				
TOR	108.0		42.95	na				
BFP	108.0		42.96	na				
BASE	101.0		53.68	na				
TEST	100.0		54.3	na				

The maximum velocity is 14.53 and it occurs in the pipe between nodes 106 and 107

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqv.	Ln.	Pipe Ftng's Total	CFact Pf/Ft	Pt Pe Pf	******* Notes ******
DROP	0	4.90	12.96	1	N	7.0	2.000	150	7.000	
to					O	5.0	12.000		0.0	
LINE	0		12.96	1.101		0.0	14.000	0.0305	0.427	Vel = 4.37
			0.0							
LINE			12.96						7.427	K Factor = 4.76
DR2	0	4.90	16.97	1	N	7.0	1.000	150	12.000	
to					O	5.0	12.000		0.0	
LN2	0		16.97	1.101		0.0	13.000	0.0502	0.653	Vel = 5.72
			0.0							
LN2			16.97						12.653	K Factor = 4.77
D1	0	4.90	12.96	1	O	5.0	1.000	150	7.000	
to						0.0	5.000		0.0	
L1	0		12.96	1.101		0.0	6.000	0.0305	0.183	Vel = 4.37
			0.0							
L1			12.96						7.183	K Factor = 4.84
100	130.500	4.77	16.97	1	O	5.0	19.080	150	12.653	K = K @ LN2
to						0.0	5.000		0.0	
101	130.500		16.97	1.101		0.0	24.080	0.0502	1.210	Vel = 5.72
			0.0							
101			16.97						13.863	K Factor = 4.56
102	130.500	4.77	17.31	1	O	5.0	19.080	150	13.160	K = K @ LN2
to						0.0	5.000		0.0	
106	130.500		17.31	1.101		0.0	24.080	0.0521	1.255	Vel = 5.83
			0.0							
106			17.31						14.415	K Factor = 4.56
104	130.500	4.76	17.26	1	O	5.0	10.250	150	13.164	K = K @ LINE
to						0.0	5.000		0.0	
105	130.500		17.26	1.101		0.0	15.250	0.0518	0.790	Vel = 5.82
			0.0							
105			17.26						13.954	K Factor = 4.62
103	130.500	4.76	17.58	1	O	5.0	0.500	150	13.659	K = K @ LINE
to						0.0	5.000		0.0	
105	130.500		17.58	1.101		0.0	5.500	0.0536	0.295	Vel = 5.92
			0.0							
105			17.58						13.954	K Factor = 4.71
101	130.500		16.97	1.25		0.0	5.750	150	13.863	
to						0.0	0.0		0.0	
105	130.500		16.97	1.394		0.0	5.750	0.0158	0.091	Vel = 3.57
105	130.500		34.84	1.25		0.0	3.670	150	13.954	
to						0.0	0.0		0.0	
106	130.500		51.81	1.394		0.0	3.670	0.1256	0.461	Vel = 10.89
106	130.500		17.32	1.25	2N	16.0	10.000	150	14.415	
to					O	6.0	22.000		0.0	
107	130.500		69.13	1.394		0.0	32.000	0.2138	6.843	Vel = 14.53
107	130.500		0.0	1.25	O	6.0	0.625	150	21.258	
to						0.0	6.000		0.0	
108	130.500		69.13	1.394		0.0	6.625	0.2139	1.417	Vel = 14.53
108	130.500		0.0	1.25	O	6.0	22.500	150	22.675	
to					N	8.0	14.000		9.745	
109	108		69.13	1.394		0.0	36.500	0.2139	7.806	Vel = 14.53

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqv.	Ln.	Pipe Ftng's Total	CFact Pf/Ft	Pt Pe Pf	******* Notes ******
109	108		0.0	1.5	E	4.95	5.500	120	40.226	
to					T	9.9	14.850		0.0	
110	108		69.13	1.682		0.0	20.350	0.1295	2.635	Vel = 9.98
110	108		0.0	4	T	26.334	9.500	120	42.861	
to						0.0	26.334		0.0	
17	108		69.13	4.26		0.0	35.834	0.0014	0.050	Vel = 1.56
17	108		0.0	4		0.0	6.920	120	42.911	
to						0.0	0.0		0.0	
18	108		69.13	4.26		0.0	6.920	0.0014	0.010	Vel = 1.56
18	108		0.0	4	2I	18.434	3.710	120	42.921	
to						0.0	18.434		0.0	
TOR	108		69.13	4.26		0.0	22.144	0.0014	0.031	Vel = 1.56
TOR	108		0.0	4		0.0	7.500	120	42.952	
to						0.0	0.0		0.0	
BFP	108		69.13	4.26		0.0	7.500	0.0015	0.011	Vel = 1.56
BFP	108		0.0	4	Zca	0.0	2.000	120	42.963	
to						0.0	0.0		10.715	* * Fixed Loss = 7.683
BASE	101		69.13	4.26		0.0	2.000	0.0010	0.002	Vel = 1.56
BASE	101		0.0	4	2L	17.44	100.000	140	53.680	
to					T	29.067	49.414		0.433	
TEST	100		69.13	4.1	G	2.907	149.414	0.0013	0.190	Vel = 1.68
			0.0							
TEST			69.13						54.303	K Factor = 9.38