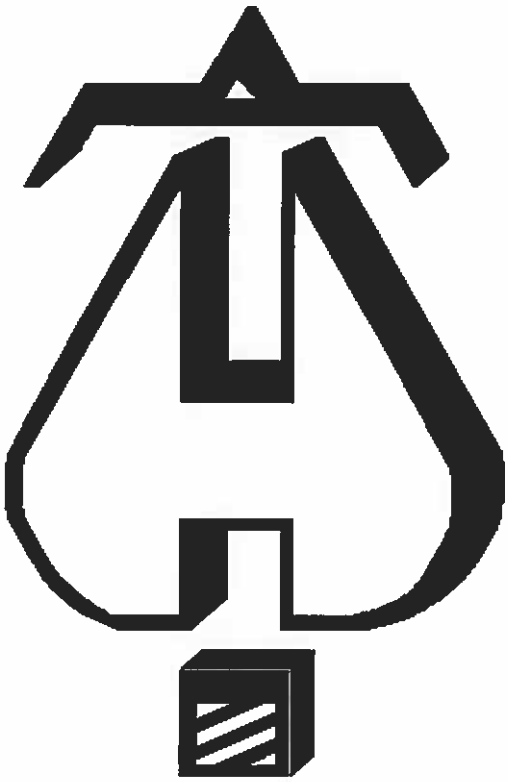


. . . Fire Protection by Computer Design

EASTERN FIRE PROTECTION
170 KITTYHAWK AVE
P.O. BOX 1390
AUBURN, ME. 04210
207-784-1507

Job Name	:	Allagash Brewing Co.
Drawing	:	1 of 2
Location	:	New Fermentation and Production Additions
Remote Area	:	#1
Contract	:	AU-5227-14
Data File	:	ALLAGASH BREWING-FERMENTATION ADDITION.WXF

HYDRAULIC CALCULATIONS
for

Project name: Allagash Brewing Co.
Location: New Fermentation and Production Additions
Drawing no: 1 of 2
Date: 12/1/14

Design

Remote area number: #1
Remote area location: New Fermentation Structure #3
Occupancy classification: Ordinary Group II
Density: .2 - Gpm/SqFt
Area of application: 1001 - SqFt
Coverage per sprinkler: 120 - SqFt
Type of sprinklers calculated: 3/4" Tyco TY-FRB 286 Brass Pendent k=8.0
No. of sprinklers calculated: 11
In-rack demand: - GPM
Hose streams: 250 - GPM
Total water required (including hose streams): 572.33 - GPM @ 53.26 - Psi
Type of system: Wet
Volume of dry or preaction system: - Gal

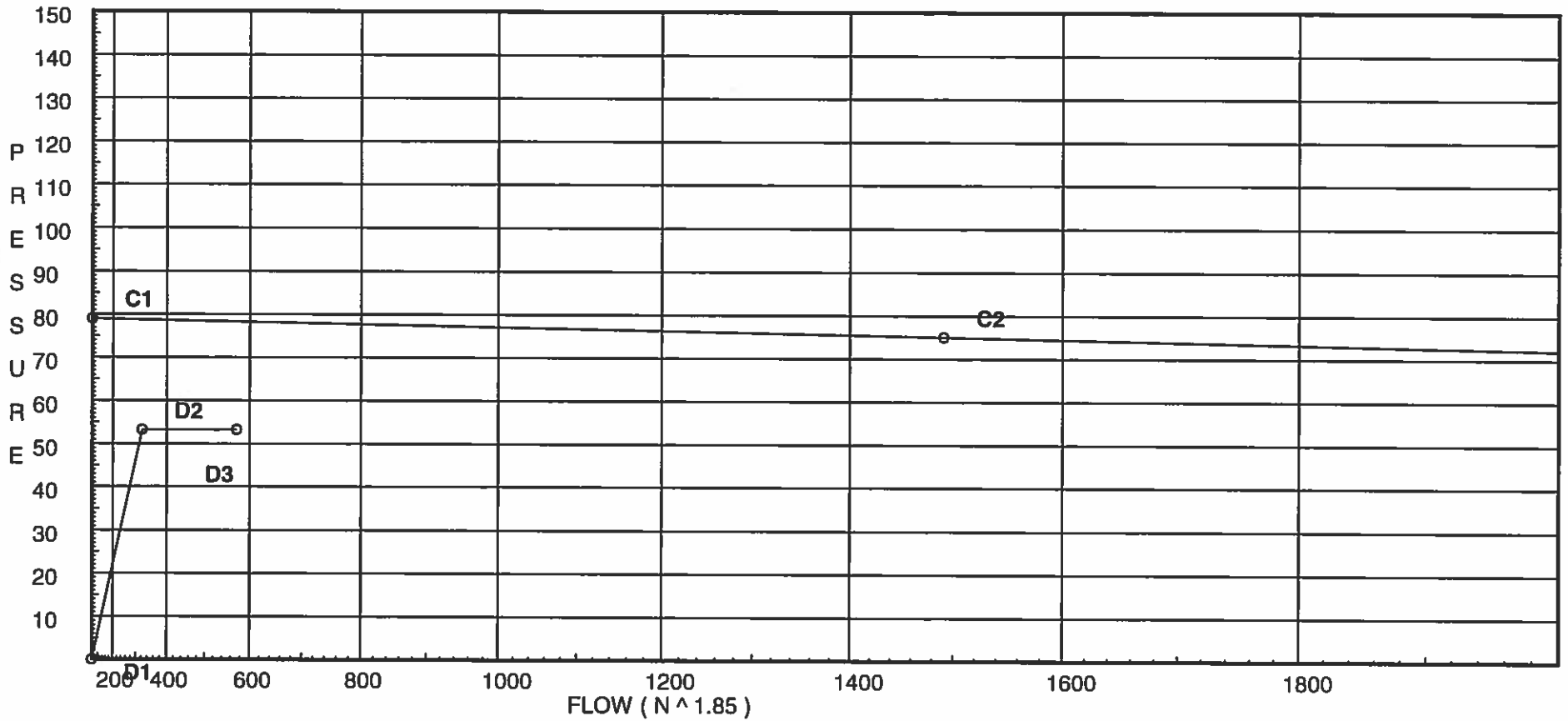
Water supply information

Date: 10/17/14
Location: Industrial Way
Source: Portland Water District

Name of contractor: Eastern Fire Protection
Address: 170 Kittyhawk Ave
Phone number: 207-784-1507
Name of designer: T. Pray
Authority having jurisdiction: S.F.M.O.
Notes: (Include peaking information or gridded systems here.) Remote design area reduced in accordance with NFPA 13 section 11.2.3.2.3.1

City Water Supply:
C1 - Static Pressure : 79
C2 - Residual Pressure: 75
C2 - Residual Flow : 1491

Demand:
D1 - Elevation : -3.411
D2 - System Flow : 322.326
D2 - System Pressure : 53.245
Hose (Demand) : 250
D3 - System Demand : 572.326
Safety Margin : 25.074



Fitting Legend

Abbrev.	Name	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6	8	10	12	14	16	18	20	24
F	NFPA 13 45' Elbow	1	1	1	1	2	2	3	3	3	4	5	7	9	11	13	17	19	21	24	28
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
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
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
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
V	90' Ell Firelock #001	0	0	0	0	0	3.5	4.3	5	0	6.8	8.5	10	13	0	0	0	0	0	0	0

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.

SUPPLY ANALYSIS

Node at Source	Static Pressure	Residual Pressure	Flow	Available Pressure	Total Demand	Required Pressure
TEST	79.0	75	1491.0	78.32	572.33	53.245

NODE ANALYSIS

Node Tag	Elevation	Node Type	Pressure at Node	Discharge at Node	Notes
1	92.125	8	10.35	25.73	
2	92.125	8	10.51	25.94	
3	92.125	8	9.0	24.0	
3A	92.125		10.93		
4	92.125	8	11.77	27.45	
5	92.125	8	13.94	29.87	
6	92.125	8	11.76	27.44	
7	92.125	8	11.95	27.66	
8	92.125	8	14.68	30.65	
9	92.125	8	16.22	32.22	
10	92.125	8	17.67	33.63	
10A	92.125		21.42		
11	92.125	8	22.25	37.74	
20	91.5		22.0		
21	91.5		22.73		
22	91.5		24.98		
23	91.5		38.58		
24	106.79		45.15		
TOR	106.79		45.9		
BOR	100.0		52.59		
TEST	100.0		53.25	250.0	

EASTERN FIRE PROTECTION
Allagash Brewing Co.

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	******
1	92.125	8.00	25.73	1.5		0.0	8.000	120	10.347			
to						0.0	0.0		0.0			
2	92.125		25.73	1.682		0.0	8.000	0.0208	0.166	Vel = 3.72		
2	92.125	8.00	25.94	1.5		0.0	5.500	120	10.513			
to						0.0	0.0		0.0			
3A	92.125		51.67	1.682		0.0	5.500	0.0756	0.416	Vel = 7.46		
			0.0									
3A			51.67						10.929	K Factor = 15.63		
3	92.125	8.00	24.00	1	1T	5.0	5.580	120	9.000			
to						0.0	5.000		0.0			
3A	92.125		24.0	1.049		0.0	10.580	0.1823	1.929	Vel = 8.91		
3A	92.125		51.67	1.5		0.0	5.500	120	10.929			
to						0.0	0.0		0.0			
4	92.125		75.67	1.682		0.0	5.500	0.1531	0.842	Vel = 10.93		
4	92.125	8.00	27.45	1.5		0.0	8.000	120	11.771			
to						0.0	0.0		0.0			
5	92.125		103.12	1.682		0.0	8.000	0.2714	2.171	Vel = 14.89		
5	92.125	8.00	29.87	1.5	1l	4.95	3.080	120	13.942			
to					1T	9.9	14.850		0.271			
20	91.5		132.99	1.682		0.0	17.930	0.4345	7.790	Vel = 19.20		
			0.0									
20			132.99						22.003	K Factor = 28.35		
6	92.125	8.00	27.44	1.5		0.0	8.000	120	11.764			
to						0.0	0.0		0.0			
7	92.125		27.44	1.682		0.0	8.000	0.0234	0.187	Vel = 3.96		
7	92.125	8.00	27.66	1.5	4l	19.799	12.250	120	11.951			
to						0.0	19.799		0.0			
8	92.125		55.1	1.682		0.0	32.049	0.0851	2.728	Vel = 7.96		
8	92.125	8.00	30.65	1.5		0.0	8.000	120	14.679			
to						0.0	0.0		0.0			
9	92.125		85.75	1.682		0.0	8.000	0.1929	1.543	Vel = 12.38		
9	92.125	8.00	32.22	1.5	1l	4.95	3.080	120	16.222			
to					1T	9.9	14.850		0.271			
21	91.5		117.97	1.682		0.0	17.930	0.3480	6.240	Vel = 17.03		
			0.0									
21			117.97						22.733	K Factor = 24.74		
10	92.125	8.00	33.63	1	1T	5.0	6.000	120	17.674			
to						0.0	5.000		0.0			
10A	92.125		33.63	1.049		0.0	11.000	0.3404	3.744	Vel = 12.48		
10A	92.125		0.0	1.5	2l	9.9	14.500	120	21.418			
to						0.0	9.900		0.0			
11	92.125		33.63	1.682		0.0	24.400	0.0341	0.833	Vel = 4.86		
11	92.125	8.00	37.74	1.5	1l	4.95	3.080	120	22.251			
to					1T	9.9	14.850		0.271			
22	91.5		71.37	1.682		0.0	17.930	0.1374	2.463	Vel = 10.31		

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	******
			0.0									
22			71.37						24.985	K Factor = 14.28		
20	91.5		132.99	2.5		0.0	14.960	120	22.003			
to						0.0	0.0		0.0			
21	91.5		132.99	2.635		0.0	14.960	0.0488	0.730	Vel = 7.82		
21	91.5		117.97	2.5		0.0	14.250	120	22.733			
to						0.0	0.0		0.0			
22	91.5		250.96	2.635		0.0	14.250	0.1580	2.252	Vel = 14.76		
22	91.5		71.37	2.5	2V	11.807	42.330	120	24.985			
to						0.0	11.807		0.0			
23	91.500		322.33	2.635		0.0	54.137	0.2511	13.592	Vel = 18.96		
23	91.500		0.0	3	2I	13.44	114.580	120	38.577			
to					1T	20.159	33.599		-6.622			
24	106.790		322.33	3.26		0.0	148.179	0.0890	13.195	Vel = 12.39		
24	106.790		0.0	4	1I	9.217	0.830	120	45.150			
to					1J	21.067	30.284		0.0			
TOR	106.790		322.33	4.26		0.0	31.114	0.0242	0.753	Vel = 7.26		
TOR	106.790		0.0	4	2F	10.534	20.290	120	45.903			
to						0.0	10.534		5.941	* * Fixed Loss = 3		
BOR	100		322.33	4.26		0.0	30.824	0.0242	0.746	Vel = 7.26		
BOR	100		0.0	6	1L	12.911	157.000	140	52.590			
to					1G	4.304	60.252		0.0			
TEST	100		322.33	6.16	1T	43.037	217.252	0.0030	0.655	Vel = 3.47		
			250.00							Qa = 250.00		
TEST			572.33						53.245	K Factor = 78.43		