

. . . Fire Protection by Computer Design

GUY DEROSIER P&H
10 BRACKETT ST
BIDDEFORD ME 04005
207-590-4749

Job Name : 107 MONUMENT ST 3RD FL CALC
Building : FP-1
Location : 107 MONUMENT ST
System : #1
Contract :
Data File : 107 MONUMENT ST (GUY).WXF

HYDRAULIC CALCULATIONS
for

Project name: JUDKINS RESIDENCE
Location: 107 MONUMENT ST
Drawing no: FP-1
Date: 11-5-15

Design

Remote area number: #1
Remote area location: 3RD FLOOR
Occupancy classification: LIGHT HAZARD
Density: .05 - Gpm/SqFt
Area of application: 259 - SqFt
Coverage per sprinkler: 256 - SqFt
Type of sprinklers calculated: TYCO LFII SIDEWALLS
No. of sprinklers calculated: 2
In-rack demand: - GPM
Hose streams: 0 - GPM
Total water required (including hose streams): 32.9266 - GPI@ 51.2067 - Psi
Type of system: NFPA 13D WET
Volume of dry or preaction system: N/A - Gal

Water supply information

Date: 11-5-15
Location: BASEMENT
Source: GT-20 ALONG WITH 300 GAL OF WATER STORAGE

Name of contractor: GUY DEROSIER P&H
Address: 10 BRACKETT ST / / BIDDEFORD ME 04005
Phone number: 207-590-4749
Name of designer: TIM FORTIN
Authority having jurisdiction: STATE OF MAINE / CITY OF PORTLAND
Notes: (Include peaking information or gridded systems here.)

Water Supply Curve (C)

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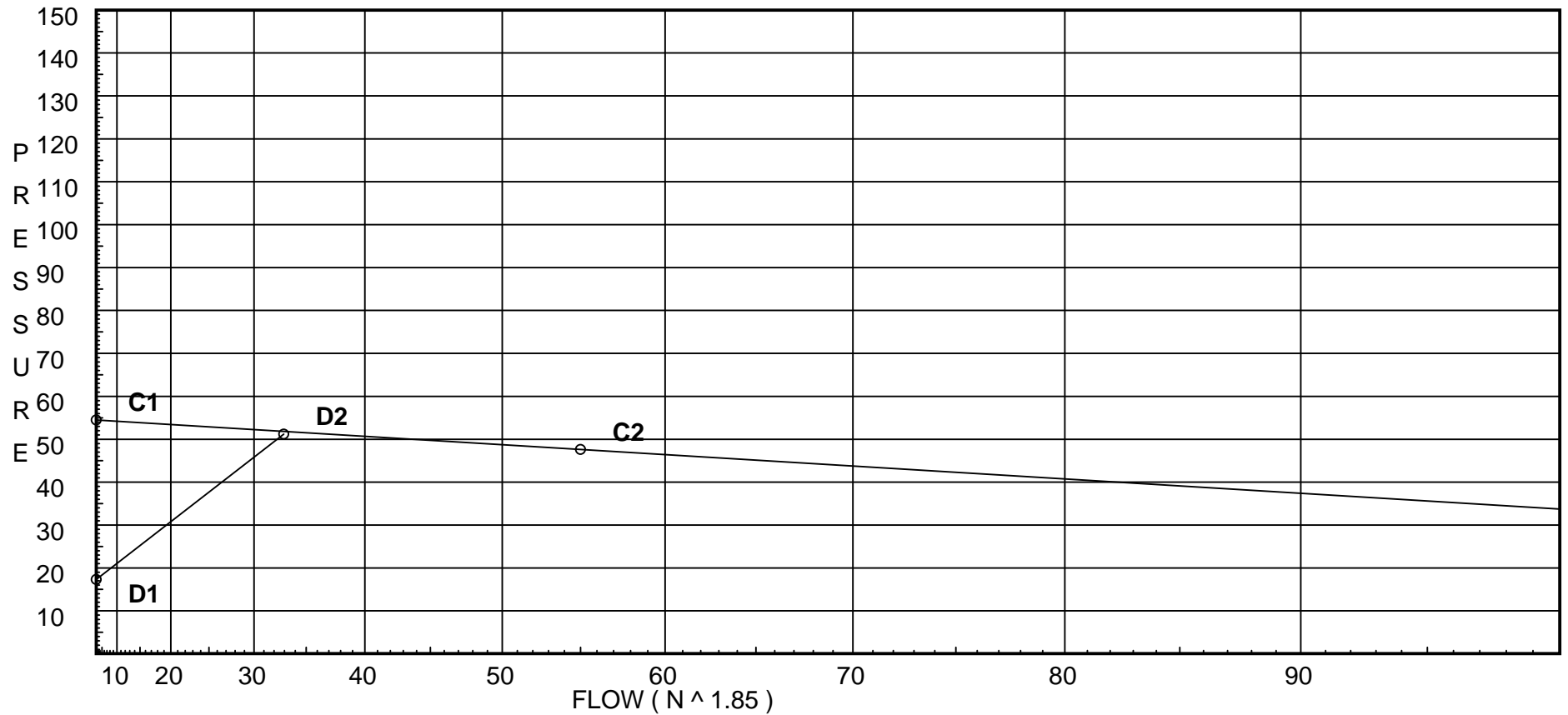
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City Water Supply:

C1 - Static Pressure : 54.5
C2 - Residual Pressure: 47.63
C2 - Residual Flow : 55

Demand:

D1 - Elevation : 17.324
D2 - System Flow : 32.9266
D2 - System Pressure : 51.207
Hose (Adj City) : _____
Hose (Demand) : _____
D3 - System Demand : 32.9266
Safety Margin : 0.634



Fittings Used Summary

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Fitting Legend

Abbrev.	Name	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6	8	10	12	14	16	18	20	24
G	Generic Gate Valve	0	0	1	1	1	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13
N *	CPVC 90'Ell Harvel-Spears	7	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
R *	CPVC Coupling Tee-Run	1	1	1	1	1	1	2	2	0	0	0	0	0	0	0	0	0	0	0	0
S	Generic Swing Check Vlv	4	5	5	7	9	11	14	16	19	22	27	32	45	55	65	76	87	98	109	130

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.

Pressure / Flow Summary - STANDARD

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Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
1	35.0	4.4	14.82	na	16.94	0.05	256	13.2
3	40.0	4.4	13.2	na	15.99	0.05	256	13.2
2	41.0		13.49	na				
4	41.0		17.76	na				
5	35.0		24.21	na				
6	26.0		29.03	na				
7	26.0		30.16	na				
8	17.0		35.36	na				
9	17.0		36.17	na				
10	17.0		39.06	na				
11	8.0		43.88	na				
12	8.0		45.34	na				
TOR	8.0		46.54	na				
BOR	0.0		51.21	na				

The maximum velocity is 11.1 and it occurs in the pipe between nodes 2 and 4

Final Calculations - Hazen-Williams

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Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	*****	Notes	*****
1	16.94	1.101	2N	14.0	11.200	14.824			K Factor = 4.40	
to		150.0		0.0	14.000	-2.599				
2	16.94	0.0500		0.0	25.200	1.261			Vel = 5.71	
	0.0									
	16.94					13.486			K Factor = 4.61	
3	15.99	1.101	2N	14.0	2.000	13.200			K Factor = 4.40	
to		150.0		0.0	14.000	-0.433				
2	15.99	0.0449		0.0	16.000	0.719			Vel = 5.39	
2	16.94	1.101	1O	5.0	20.000	13.486				
to		150.0		0.0	5.000	0.0				
4	32.93	0.1711		0.0	25.000	4.278			Vel = 11.10	
4	0.0	1.101	2N	14.0	8.500	17.764				
to		150.0		0.0	14.000	2.599				
5	32.93	0.1711		0.0	22.500	3.850			Vel = 11.10	
5	0.0	1.394	1N	8.0	9.000	24.213				
to		150.0		0.0	8.000	3.898				
6	32.93	0.0542		0.0	17.000	0.922			Vel = 6.92	
6	0.0	1.394	1N	8.0	6.800	29.033				
to		150.0	1O	6.0	14.000	0.0				
7	32.93	0.0542		0.0	20.800	1.128			Vel = 6.92	
7	0.0	1.394	1N	8.0	14.900	30.161				
to		150.0	1R	1.0	9.000	3.898				
8	32.93	0.0542		0.0	23.900	1.296			Vel = 6.92	
8	0.0	1.394	1O	6.0	9.000	35.355				
to		150.0		0.0	6.000	0.0				
9	32.93	0.0543		0.0	15.000	0.814			Vel = 6.92	
9	0.0	1.394	3N	24.0	15.300	36.169				
to		150.0	2O	12.0	38.000	0.0				
10	32.93	0.0542	2R	2.0	53.300	2.891			Vel = 6.92	
10	0.0	1.394	1N	8.0	9.000	39.060				
to		150.0		0.0	8.000	3.898				
11	32.93	0.0542		0.0	17.000	0.921			Vel = 6.92	
11	0.0	1.394	1N	8.0	13.000	43.879				
to		150.0	1O	6.0	14.000	0.0				
12	32.93	0.0543		0.0	27.000	1.465			Vel = 6.92	
12	0.0	1.394	2N	16.0	6.000	45.344				
to		150.0		0.0	16.000	0.0				
TOR	32.93	0.0542		0.0	22.000	1.193			Vel = 6.92	
TOR	0.0	1.38	1G	1.0	6.000	46.537				
to		120.0	1S	7.0	8.000	3.465				
BOR	32.93	0.0861		0.0	14.000	1.205			Vel = 7.06	

Final Calculations - Hazen-Williams

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Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv. Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	*****	Notes	*****
	0.0 32.93				51.207			K Factor = 4.60	