

Hydraulic Design Information Sheet

Name - Inn at Diamond Cove Date - 7/11/14
 Location - Attic
 Building - System No. - 1 of 2
 Contractor - Residential Fire Protection Contract No. - C14017
 Calculated By - JAL Drawing No. - 4 of 5
 Construction: (X) Combustible () Non-Combustible Ceiling Height - Varies
 Occupancy - Unoccupied

S (X) NFPA 13 () Lt. Haz. Ord.Haz.Gp. () 1 () 2 () 3 () Ex.Haz.
 Y () NFPA 231 () NFPA 231C () Figure Curve

S Other

T Specific Ruling Made By Date

M	Area of Sprinkler Operation	- 7 heads	System Type	Sprinkler/Nozzle
	Density	- .1	() Wet	Make Tyco
D	Area Per Sprinkler	- 250	() Dry	Model BB1
E	Elevation at Highest Outlet	- 43.75	() Deluge	Size 1/2"
S	Hose Allowance - Inside	-	() Preaction	K-Factor 5.6
I	Rack Sprinkler Allowance	-	() Other	Temp.Rat.200
G	Hose Allowance - Outside	- 100		

N Note Safety Margi: 9.105

Calculation Flow Required - 276.242 Press Required - 59.311
 Summary C-Factor Used: 100 Overhead 140 Underground

W	Water Flow Test:	Pump Data:	Tank or Reservoir:
A	Date of Test - 6-24-13		Cap. -
T	Time of Test -	Rated Cap.-	Elev.-
E	Static Press - 81	@ Press -	
R	Residual Press - 27.5	Elev. -	Well
	Flow - 604		Proof Flow
S	Elevation - 0		

U Location -

P Source of Information -

C	Commodity	Class	Location
O	Storage Ht.	Area	Aisle W.
M	Storage Method:	%	Palletized % Rack
	() Single Row	() Conven. Pallet	() Auto. Storage () Encap.
S	() Double Row	() Slave Pallet	() Solid Shelf () Non
T	() Mult. Row		() Open Shelf

R K Flue Spacing Clearance:Storage to Ceiling
 A Longitudinal Transverse

G Horizontal Barriers Provided:

Water Supply Curve (C)

Residential Fire Protection
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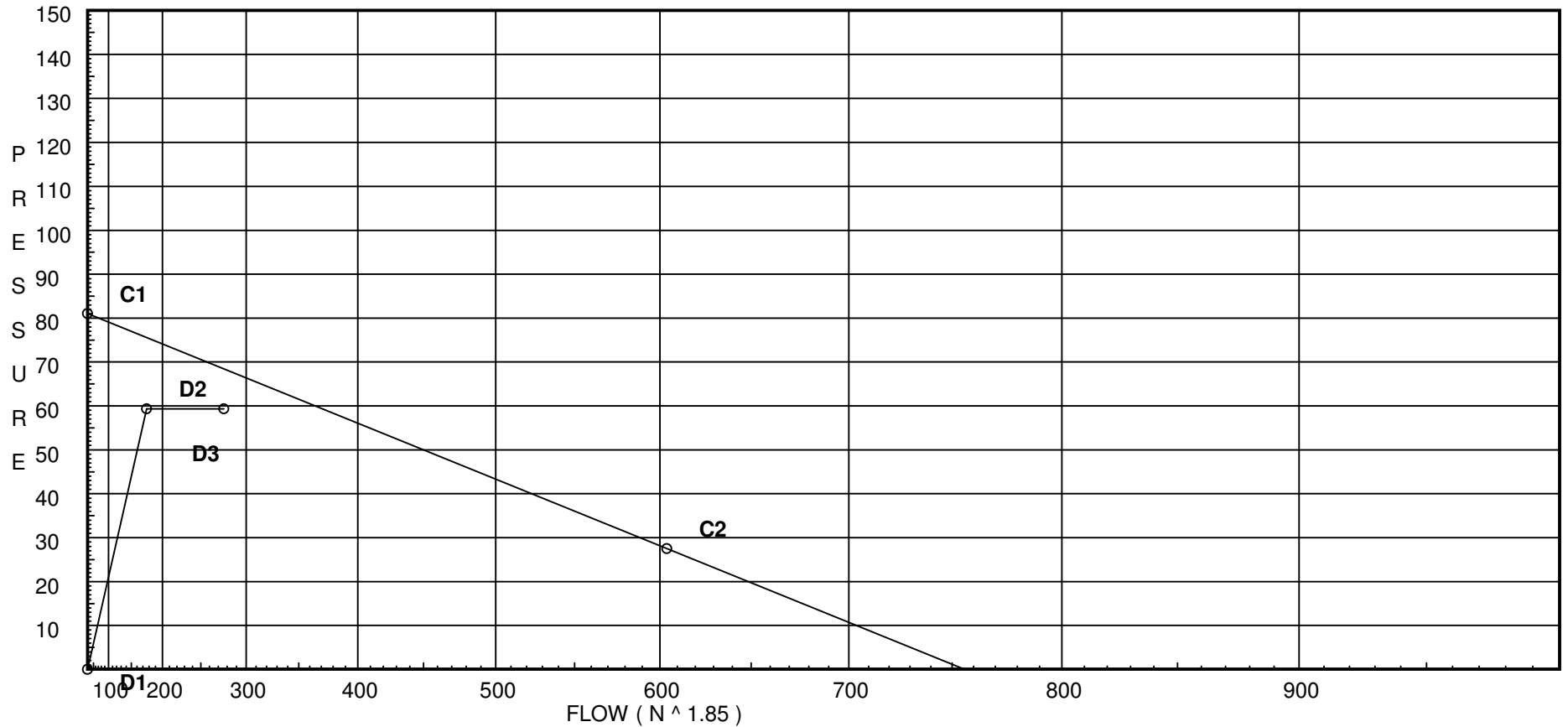
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City Water Supply:

C1 - Static Pressure : 81
C2 - Residual Pressure: 27.5
C2 - Residual Flow : 604

Demand:

D1 - Elevation : _____
D2 - System Flow : 176.242
D2 - System Pressure : 59.311
Hose (Adj City) : _____
Hose (Demand) : 100
D3 - System Demand : 276.242
Safety Margin : 9.105



Fittings Used Summary

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Fitting Legend

Abbrev.	Name	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	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
D	Generic Dry Pipe Valve	0	0	0	0	0	0	9.5	17	0	28	0	47	0	0	0	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
G	Generic Gate Valve	0	0	0	0	0	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13
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
Zia	Wilkins 350	Fitting generates a Fixed Loss Based on Flow																			

Pressure / Flow Summary - STANDARD

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Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
SPG1	43.75	5.6	20.0	na	25.04	0.1	250	20.0
1	0.0	K = K @ HD1	40.03	na	25.04			
2	0.0	K = K @ HD1	40.05	na	25.05			
3	0.0	K = K @ HD1	40.12	na	25.07			
4	0.0	K = K @ HD1	40.26	na	25.12			
5	0.0	K = K @ HD1	40.51	na	25.19			
6	0.0	K = K @ HD1	40.87	na	25.31			
7	0.0	K = K @ HD1	41.39	na	25.47			
10	0.0		48.61	na				
11	0.0		52.02	na				
TR	0.0		55.12	na				
HDR	0.0		55.71	na				
BR	0.0		58.85	na				
UG1	0.0		59.25	na	100.0			
TEST	0.0		59.31	na				

The maximum velocity is 10.37 and it occurs in the pipe between nodes 7 and 10

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	*****
SPG1 to HD1	25.04 25.04	1.049 120 0.1973	1T	5.0 0.0 0.0	0.500 5.000 5.500	20.000 18.948 1.085			K Factor = 5.60 Vel = 9.30	
	0.0 25.04						40.033		K Factor = 3.96	
1 to 2	25.04 25.04	2.635 100 0.0032		0.0 0.0 0.0	6.000 0.0 6.000	40.033 0.0 0.019			K Factor @ node HD1 Vel = 1.47	
2 to 3	25.05 50.09	2.635 100 0.0112		0.0 0.0 0.0	6.000 0.0 6.000	40.052 0.0 0.067			K Factor @ node HD1 Vel = 2.95	
3 to 4	25.07 75.16	2.635 100 0.0238		0.0 0.0 0.0	6.000 0.0 6.000	40.119 0.0 0.143			K Factor @ node HD1 Vel = 4.42	
4 to 5	25.12 100.28	2.635 100 0.0407		0.0 0.0 0.0	6.000 0.0 6.000	40.262 0.0 0.244			K Factor @ node HD1 Vel = 5.90	
5 to 6	25.19 125.47	2.635 100 0.0613		0.0 0.0 0.0	6.000 0.0 6.000	40.506 0.0 0.368			K Factor @ node HD1 Vel = 7.38	
6 to 7	25.31 150.78	2.635 100 0.0863		0.0 0.0 0.0	6.000 0.0 6.000	40.874 0.0 0.518			K Factor @ node HD1 Vel = 8.87	
7 to 10	25.46 176.24	2.635 100 0.1151		0.0 0.0 0.0	62.670 0.0 62.670	41.392 0.0 7.216			K Factor @ node HD1 Vel = 10.37	
10 to 11	0.0 176.24	3.26 100 0.0408	3E 1T	20.143 14.388 0.0	49.000 34.530 83.530	48.608 0.0 3.411			Vel = 6.77	
11 to TR	0.0 176.24	4.26 100 0.0111	9E	84.576 0.0 0.0	195.000 84.576 279.576	52.019 0.0 3.102			Vel = 3.97	
TR to HDR	0.0 176.24	4.26 100 0.0111	1D 1B 1E	26.313 11.277 9.397	6.000 46.986 52.986	55.121 0.0 0.588			Vel = 3.97	
HDR to BR	0.0 176.24	4.26 120 0.0079	1Zia 1E	0.0 13.167 0.0	4.000 13.167 17.167	55.709 3.000 0.136			* Fixed loss = 3 Vel = 3.97	
BR to UG1	0.0 176.24	4.1 140 0.0072	1G 1T	2.907 29.067 0.0	25.000 31.974 56.974	58.845 0.0 0.409			Vel = 4.28	
UG1 to TEST	100.00 276.24	6.16 140 0.0023		0.0 0.0 0.0	25.000 0.0 25.000	59.254 0.0 0.057			Qa = 100 Vel = 2.97	
	0.0 276.24						59.311		K Factor = 35.87	