

Hydraulic Design Information Sheet

Name - Sheridan St. Town Homes Date - 7-31-14
 Location - Garage
 Building - System No. - 2 of 2
 Contractor - Residential Fire Protection Contract No. - C14018
 Calculated By - JAL Drawing No. - 1 of 1
 Construction: (X) Combustible () Non-Combustible Ceiling Height - 8'-11"
 Occupancy - Auto Parking

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	- 900	System Type	Sprinkler/Nozzle
	Density	- .15	(X) Wet	Make Viking
D	Area Per Sprinkler	- 120	() Dry	Model VK302
E	Elevation at Highest Outlet	- 7.500	() Deluge	Size 1/2"
S	Hose Allowance - Inside	-	() Preaction	K-Factor 5.6
I	Rack Sprinkler Allowance	-	() Other	Temp.Rat.155
G	Hose Allowance - Outside	- 100		

N Note Safety Margin: 7.258

Calculation Flow Required - 251.541 Press Required - 52.239
 Summary C-Factor Used: 120 Overhead 140 Underground

W	Water Flow Test:	Pump Data:	Tank or Reservoir:
A	Date of Test - 7-16-12		Cap. -
T	Time of Test -	Rated Cap.-	Elev.-
E	Static Press - 60	@ Press -	
R	Residual Press - 55	Elev. -	Well
	Flow - 871		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)

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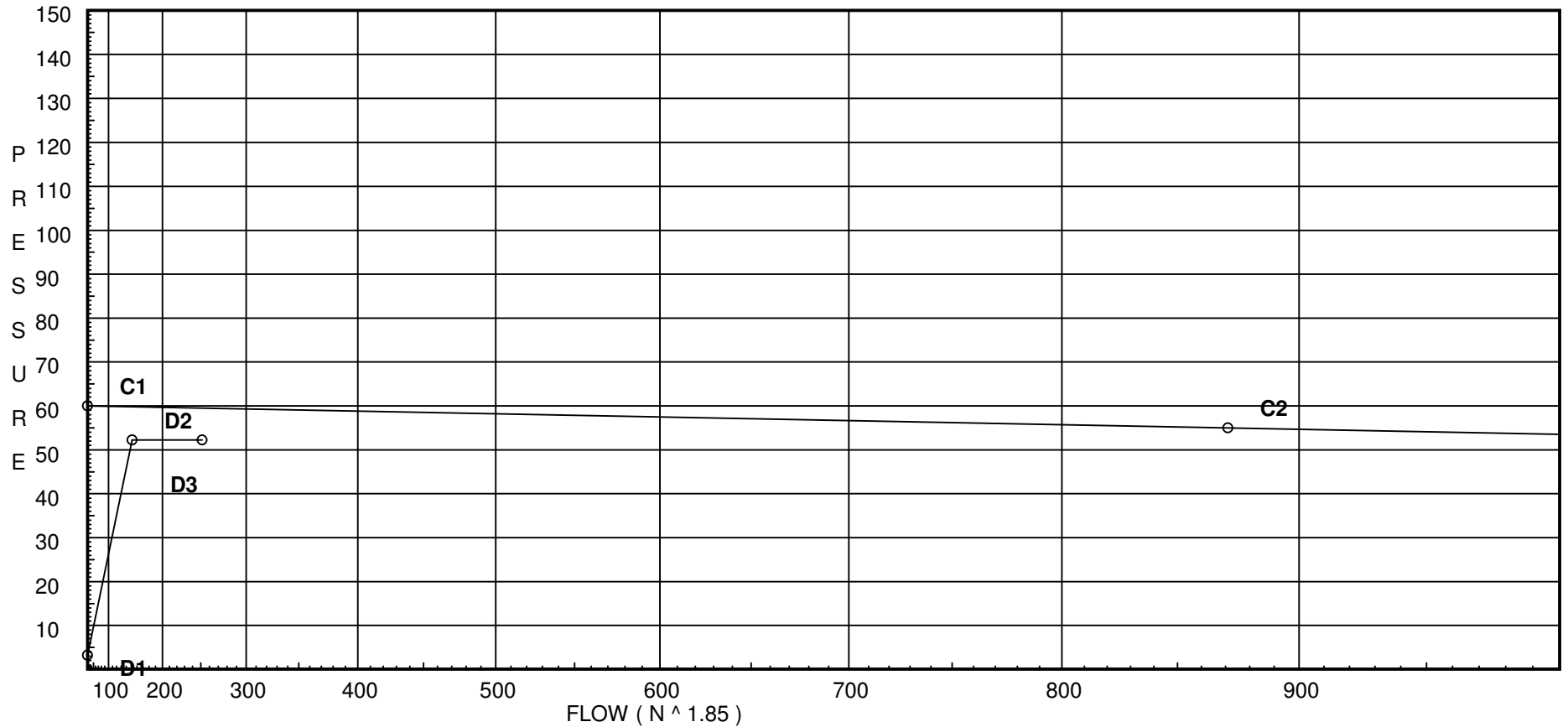
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City Water Supply:

C1 - Static Pressure : 60
C2 - Residual Pressure: 55
C2 - Residual Flow : 871

Demand:

D1 - Elevation : 3.248
D2 - System Flow : 151.541
D2 - System Pressure : 52.240
Hose (Adj City) : _____
Hose (Demand) : 100
D3 - System Demand : 251.541
Safety Margin : 7.258



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.
30	7.5	5.6	9.01	na	16.81	0.15	100	7.0
31	7.5	5.6	10.33	na	18.0	0.15	120	7.0
32	7.5	5.6	11.67	na	19.13	0.15	120	7.0
33	7.5	5.6	14.67	na	21.45	0.15	120	7.0
34	7.5	5.6	9.2	na	16.98	0.15	100	7.0
35	7.5	5.6	10.54	na	18.18	0.15	120	7.0
36	7.5	5.6	11.91	na	19.32	0.15	120	7.0
37	7.5	5.6	14.97	na	21.66	0.15	120	7.0
40	0.0		23.88	na				
41	0.0		24.28	na				
TRD	0.0		40.26	na				
HDR	0.0		41.94	na				
BR	0.0		51.74	na				
UG1	0.0		52.05	na				
TEST	0.0		52.24	na	100.0			

The maximum velocity is 16.33 and it occurs in the pipe between nodes 37 and 41

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	*****
30 to 31	16.81	1.049 120		0.0	14.000	9.011			K Factor = 5.60	
31 to 32	16.81	0.0944 1.38 120		0.0	14.000	1.321			Vel = 6.24	
31 to 32	18.00	1.38 120		0.0	14.000	10.332			K Factor = 5.60	
32 to 33	34.81	0.0954 1.38 120		0.0	14.000	1.335			Vel = 7.47	
32 to 33	19.13	1.38 120		0.0	14.000	11.667			K Factor = 5.60	
33 to 40	53.94	0.2145 1.38 120		0.0	14.000	3.003			Vel = 11.57	
33 to 40	21.45	1.38 120	1E 1T	3.0 6.0	5.950 9.000	14.670 3.248			K Factor = 5.60	
40 to 34	75.39	0.3986 0.0 75.39		0.0	14.950	5.959			Vel = 16.17	
34 to 35	16.98	1.049 120		0.0	14.000	9.198			K Factor = 5.60	
35 to 36	16.98	0.0961 1.38 120		0.0	14.000	1.346			Vel = 6.30	
35 to 36	18.19	1.38 120		0.0	14.000	10.544			K Factor = 5.60	
36 to 37	35.17	0.0972 1.38 120		0.0	14.000	1.361			Vel = 7.54	
36 to 37	19.32	1.38 120		0.0	14.000	11.905			K Factor = 5.60	
37 to 41	54.49	0.2186 1.38 120		0.0	14.000	3.061			Vel = 11.69	
37 to 41	21.66	1.38 120	1E 1T	3.0 6.0	5.950 9.000	14.966 3.248			K Factor = 5.60	
41 to 40	76.15	0.4060 0.0 76.15		0.0	14.950	6.070			Vel = 16.33	
40 to 41	75.39	2.157 120		0.0	9.000	23.877			K Factor = 15.43	
41 to 41	75.39	0.0452 2.157 120		0.0	9.000	0.407			Vel = 6.62	
41 to TRD	76.15	0.1647 2.157 120		0.0	96.960	15.973			Vel = 13.31	
TRD to HDR	0.0	2.635 120	1B 1D	9.61 13.042	4.500 22.652	40.257 0.0				
HDR to BR	151.54	0.0621 2.635 120		0.0	27.152	1.687			Vel = 8.92	
HDR to BR	0.0	2.635 120	2E 2T	16.474 32.948	8.000 49.422	41.944 6.229			* Fixed loss = 6.229	
BR to UG1	151.54	0.0621 4.1 140	1Zia	0.0	57.422	3.568			Vel = 8.92	
BR to UG1	0.0	4.1 140	1G 1T	2.907 29.067	25.000 31.974	51.741 0.0				
UG1 to TEST	151.54	0.0054 8.27 140		0.0	56.974	0.309			Vel = 3.68	
UG1 to TEST	0.0	8.27 140	1G 1T	6.326 55.354	1000.000 61.680	52.050 0.0				
TEST to 100.00 251.54	151.54	0.0002 0.0 100.00 251.54		0.0	1061.680	0.190			Vel = 0.91	
						52.240			Qa = 100.00 K Factor = 34.80	

Final Calculations - Standard

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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	*****
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