

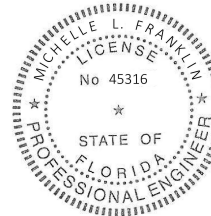


Hydraulic Analysis by HydraCALC

**Received after DRC Meeting
to address DRC comments
prior to the submission of a
Building Permit Application.**

1/27/2022

SUMMERS FIRE SPRINKLERS, INC
751 PARK OF COMMERCE DR, #100
BOCA RATON, FL 33487
MICHELLE MEISEL, P.E. #45316
561-393-6718



Digitally signed by
Michelle L. Franklin
Date: 2022.01.26
19:55:05 -05'00'

Job Name : Bldg#2 Fire Plans-rev-calc
Drawing : 2
Location : 117 SOUTH RIVERSIDE DRIVE, POMPAÑO BEACH FLORIDA
Remote Area : E
Contract : BC922
Data File : Bldg#2 Fire Plans-rev-calc Area 5.WXF

HYDRAULIC DESIGN INFORMATION SHEET

Name - RIVERSIDE TOWNHOME Date - 1/2022
Location - 117 SOUTH RIVERSIDE DRIVE, POMPANO BEACH FLORIDA
Building - 2 System No. - E
Contractor - SUMMERS FIRE SPRINKLERS, INC Contract No. - BC922
Calculated By - CD Drawing No. - FP-2
Construction: () Combustible () Non-Combustible Ceiling Height
OCCUPANCY -

S Type of Calculation: () NFPA 13 Residential (X) NFPA 13R () NFPA 13D
Y Number of Sprinklers Flowing: () 1 () 2 (X) 4 ()
S () Other
T () Specific Ruling Made by Date
E
M Listed Flow at Start Point - Gpm System Type
Listed Pres. at Start Point - Psi (X) Wet () Dry
D MAXIMUM LISTED SPACING 16 x 16 () Deluge () PreAction
E Domestic Flow Added - Gpm Sprinkler or Nozzle
S Additional Flow Added - Gpm Make TYCO Model LF II
I Elevation at Highest Outlet - Feet Size 1/2" K-Factor 4.9
G Note: Temperature Rating 175
N

Calculation Gpm Required 59.260 At Test
Summary C-Factor Used: Underground 140

W Water Flow Test:
A Date of Test -
T Time of Test -
E Static (Psi) - 80
R Residual (Psi) - 77
Flow (Gpm) - 1306
S Elevation - 2.6
P Location:
P
L Source of Information:
Y

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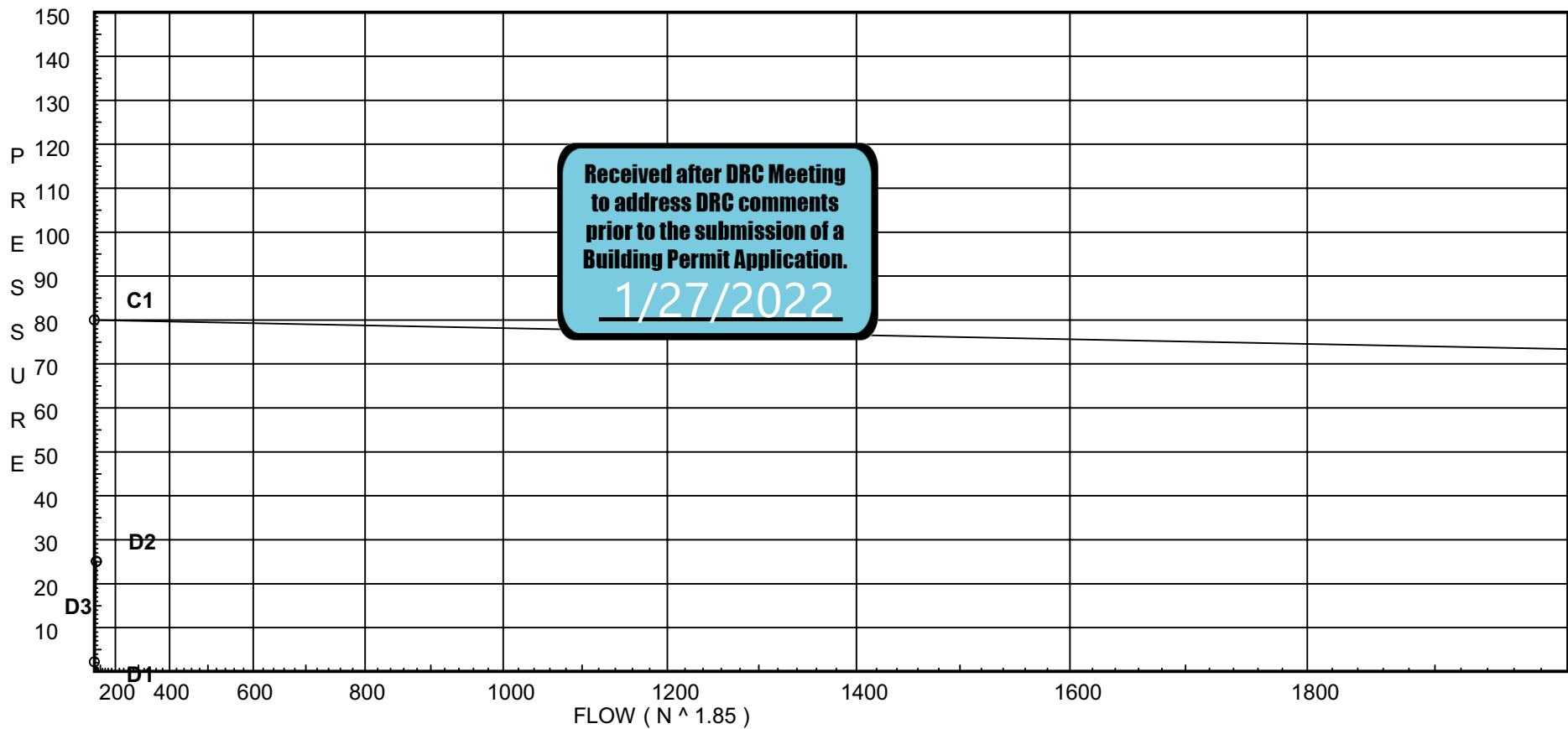
Water Supply Curve

SUMMERS FIRE SPRINKLERS, INC
Bldg#2 Fire Plans-rev-calc

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City Water Supply:
C1 - Static Pressure : 80
C2 - Residual Pressure: 77
C2 - Residual Flow : 1306

Demand:
D1 - Elevation : 2.196
D2 - System Flow : 54.26
D2 - System Pressure : 25.064
Hose (Demand) : 5
D3 - System Demand : 59.26
Safety Margin : 54.926



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
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
Fsp	Flow Switch Potter VSR	Fitting generates a Fixed Loss Based on Flow																			
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
Zaf	Ames 3000SS	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

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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.
33	7.67	4.9	7.0	na	12.96	0.05	176	7.0
S20	8.5		6.78	na				
S19	8.5		7.09	na				
34	8.5		8.12	na				
35	8.5		8.89	na				
TOB5	8.5		10.21	na				
BOR5	-1.5		19.94	na				
U20	-1.5		19.98	na				
U9	-2.5		21.3	na				
U6	-2.5		21.31	na				
U5	-2.5		21.35	na				
U4	-2.5		21.38	na				
BK4	-2.5		21.4	na				
BK3	1.5		25.33	na				
BK2	1.5		25.37	na				
BK1	-2.5		27.12	na				
U3	-2.5		27.14	na				
U2	-2.5		27.15	na				
U1	-2.5		27.2	na				
6	-2.5		27.23	na				
7	-2.5		27.24	na				
TEST	2.6		25.06	na	5.0			
36	7.67	4.9	7.12	na	13.08	0.05	160	7.0
37	7.67	4.9	7.93	na	13.8	0.05	160	7.0
S18	8.5		7.73	na				
38	7.67	4.9			14.42	0.05	167	7.0
S17	8.5							

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The maximum velocity is 11.41 and it occurs at U1 and TOB5

Final Calculations : Hazen-Williams

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Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
33 to S20	7.67 8.5	4.90	12.96 12.96	1 1.101	E	3.825 3.825 4.655	150 0.0305	7.000 -0.359 0.142			
S20 to S19	8.5 8.5		0.0 12.96	1 1.101		10.000 10.000	150 0.0305	6.783 0.0 0.305	Vel = 4.37		
S19 to 34	8.5 8.5		13.08 26.04	1.25 1.394	2E	9.523 19.940 9.523 29.463	150 0.0351	7.088 0.0 1.035	Vel = 5.47		
34 to 35	8.5 8.5		13.80 39.84	1.25 1.394		10.000 10.000	150 0.0772	8.123 0.0 0.772	Vel = 8.37		
35 to TOB5	8.5 8.5		14.42 54.26	1.25 1.394	E	4.762 4.880 4.761 9.641	150 0.1366	8.895 0.0 1.317	Vel = 11.41		
TOB5 to BOR5	8.5 -1.5		0.0 54.26	1.25 1.44	E Esp	3.716 10.000 0.0 3.716	120 0.1751	10.212 7.331 2.402	* * Fixed Loss = 3 Vel = 10.66		
BOR5 to U20	-1.5 -1.5		0.0 54.26	2 2.15			120 0.0245	19.945 0.0 0.037	Vel = 4.76		
U20 to U9	-1.5 -2.5		0.0 54.26	2 2.15			120 0.0246	19.982 0.433 0.886	Vel = 4.76		
U9 to U6	-2.5 -2.5		0.0 54.26	4 4.1		7.700 7.700	120 0.0010	21.301 0.0 0.008	Vel = 1.32		
U6 to U5	-2.5 -2.5		0.0 54.26	4 4.1	E	10.928 24.150 10.928 35.078	120 0.0011	21.309 0.0 0.038	Vel = 1.32		
U5 to U4	-2.5 -2.5		0.0 54.26	4 4.1		33.860 33.860	120 0.0011	21.347 0.0 0.036	Vel = 1.32		
U4 to BK4	-2.5 -2.5		0.0 54.26	4 4.1	E	10.928 6.510 10.928 17.438	120 0.0011	21.383 0.0 0.019	Vel = 1.32		
BK4 to BK3	-2.5 1.5		0.0 54.26	4 4.1	Zaf	0.0 4.000	120 0.0010	21.402 3.927 0.004	* * Fixed Loss = 5.659 Vel = 1.32		
BK3 to BK2	1.5 1.5		0.0 54.26	4 4.1	2E	21.855 13.160 21.855 35.015	120 0.0011	25.333 0.0 0.038	Vel = 1.32		
BK2 to BK1	1.5 -2.5		0.0 54.26	4 4.1	E	10.928 4.000 10.928 14.928	120 0.0011	25.371 1.732 0.017	Vel = 1.32		
BK1 to U3	-2.5 -2.5		0.0 54.26	4 4.1	E	14.534 5.380 14.534 19.914	140 0.0008	27.120 0.0 0.016	Vel = 1.32		

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Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
U3 to U2	-2.5 -2.5		0.0 54.26	4 4.1	E 14.534	3.810 14.534 18.344	140 0.0008	27.136 0.0 0.015		Vel = 1.32	
U2 to U1	-2.5 -2.5		0.0 54.26	4 4.1	T 29.067	32.190 29.067 61.257	140 0.0008	27.151 0.0 0.049		Vel = 1.32	
U1 to 6	-2.5 -2.5		0.0 54.26	4 4.1	2E 29.067	13.260 29.067 42.327	140 0.0008	27.200 0.0 0.035		Vel = 1.32	
6 to 7	-2.5 -2.5		0.0 54.26	4 4.1		1.260 1.260	140 0.0008	27.235 0.0 0.001		Vel = 1.32	
7 to TEST	-2.5 2.600		0.0 54.26	4 4.1	T 29.067	16.410 29.067 45.477	140 0.0008	27.236 -2.209 0.037		Vel = 1.32	
TEST			5.00 59.26							Qa = 5.00 K Factor = 11.84	
36 to S19	7.67 8.5	4.90	13.08	1			150 0.0310	7.125 -0.359 0.322		Vel = 4.41	
S19			0.0 13.08					7.088		K Factor = 4.91	
37 to S18	7.67 8.5	4.90	13.80	1			150 0.0342	7.931 -0.359 0.159		Vel = 4.65	
S18 to 34	8.5 8.5		0.0 13.8	1 1.101	T 9.563	1.880 9.562 11.442	150 0.0343	7.731 0.0 0.392		Vel = 4.65	
34			0.0 13.80					8.123		K Factor = 4.84	
38 to S17	7.67 8.5	4.90	14.42	1	E 3.825	0.830 3.825 4.655	150 0.0369	8.657 -0.359 0.172		Vel = 4.86	
S17 to 35	8.5 8.5		0.0 14.42	1 1.101	T 9.563	1.880 9.562 11.442	150 0.0371	8.470 0.0 0.425		Vel = 4.86	
35			0.0 14.42					8.895		K Factor = 4.83	

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