

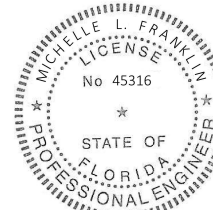


Hydraulic Analysis by HydraCALC

**Received after DRC Meeting
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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
19:35:02
-05'00'

Job Name : Bldg#2 LEVEL 2-rev-calc
Drawing : 2
Location : 117 SOUTH RIVERSDIE DRIVE, POMPAÑO BEACH FL
Remote Area : A LEVEL 2
Contract : BC922
Data File : Bldg#2 LEVEL 2-rev-calc Area 1.WXF

HYDRAULIC DESIGN INFORMATION SHEET

Name - RIVERSIDE TOWNHOMES Date - 1/2022
Location - 117 SOUTH RIVERSIDE DRIVE, POMPANO BEACH FL
Building - 2 System No. - A LEVEL 2
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: (X)NFPA 13 Residential ()NFPA 13R (X)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 LFII
I Elevation at Highest Outlet - Feet Size 1/2" K-Factor 4.9
G Note: Temperature Rating 175
N

Calculation Gpm Required 59.905 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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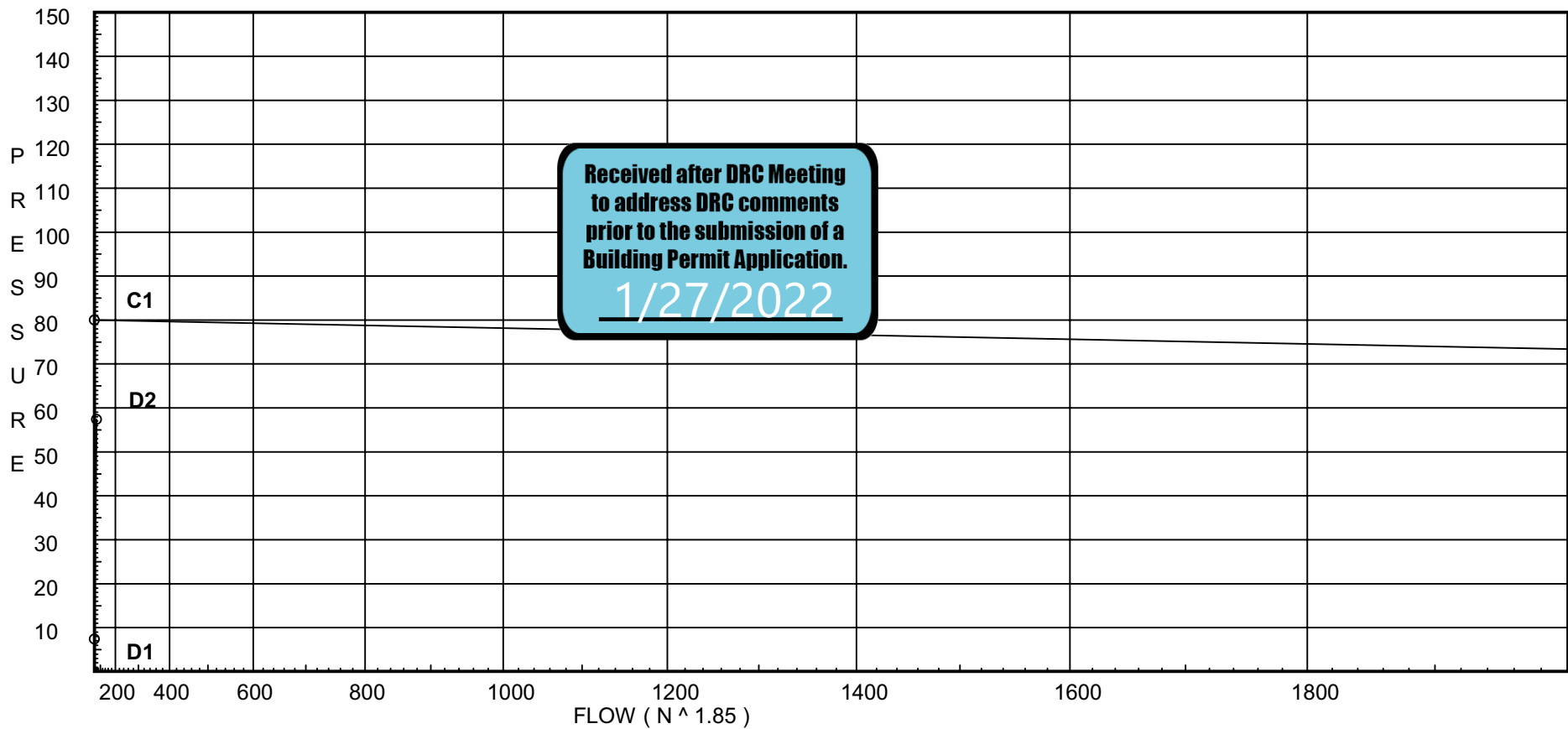
Water Supply Curve

SUMMERS FIRE SPRINKLERS, INC
Bldg#2 LEVEL 2-rev-calc

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

Demand:
D1 - Elevation : 7.393
D2 - System Flow : 59.905
D2 - System Pressure : 57.363
Hose (Demand) :
D3 - System Demand : 59.905
Safety Margin : 22.627



Fittings Used Summary

SUMMERS FIRE SPRINKLERS, INC
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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

SUMMERS FIRE SPRINKLERS, INC
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Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
11	19.67	4.9	7.6	na	13.51	0.05	156	7.6
P3	20.5		7.39	na				
12	20.5		7.75	na				
13	20.5		11.33	na				
14	20.5		21.99	na				
X2	20.5		22.81	na				
X1	8.5		29.98	na				
A4	8.5		35.3	na				
A3	8.5		37.44	na				
A2	8.5		38.39	na				
A1	8.5		40.03	na				
TOR1	8.5		40.77	na				
BOR1	-1.5		51.76	na				
1	-1.5		51.82	na				
U8	-2.5		52.64	na				
U7	-2.5		52.87	na				
U6	-2.5		54.0	na				
U5	-2.5		54.04	na				
U4	-2.5		54.09	na				
BK4	-2.5		54.11	na				
BK3	1.5		57.59	na				
BK2	1.5		57.64	na				
BK1	-2.5		59.39	na				
U3	-2.5		59.41	na				
U2	-2.5		59.43	na				
U1	-2.5							
TEST	2.6							
15	19.67	4.9			13.71	0.05	156	7.6
P2	20.5							
16	19.67	4.9			16.23	0.05	231	7.6
P4	20.5							
17	19.67	4.9			16.46	0.05	156	7.6
P1	20.5							

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The maximum velocity is 20.19 and it occurs in the pipe between nodes 13 and 14

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	*****
11 to P3	19.67 20.5	4.90	13.51 13.51	1 1.101	E 3.825	0.830 3.825 4.655	150 0.0329	7.600 -0.359 0.153			
P3 to 12	20.5 20.5		0.0 13.51	1 1.101		10.880 10.880	150 0.0329	7.394 0.0 0.358		Vel = 4.55	
12 to 13	20.5 20.5		13.70 27.21	1 1.101	2T 19.125	10.620 19.126 29.746	150 0.1203	7.752 0.0 3.578		Vel = 4.55	
13 to 14	20.5 20.5		32.70 59.91	1 1.101	T 2E 7.65	3.380 17.212 20.592	150 0.5178	11.330 0.0 10.663		Vel = 20.19	
14 to X2	20.5 20.5		0.0 59.91	1.25 1.394	E 4.762	0.240 4.761 5.001	150 0.1642	21.993 0.0 0.821		Vel = 12.59	
X2 to X1	20.5 8.5		0.0 59.91	1.25 1.394		12.000 5.197	150 0.1641	22.814 5.197 1.969		Vel = 12.59	
X1 to A4	8.5 8.5		0.0 59.91	1.25 1.394		150 0.1641	29.980 0.0 5.315			Vel = 12.59	
A4 to A3	8.5 8.5		0.0 59.91	1.25 1.394		150 0.1641	35.295 0.0 2.143			Vel = 12.59	
A3 to A2	8.5 8.5		0.0 59.91	1.25 1.394	E 4.762	1.030 4.761 5.791	150 0.1642	37.438 0.0 0.951		Vel = 12.59	
A2 to A1	8.5 8.5		0.0 59.91	1.25 1.394		10.000 10.000	150 0.1641	38.389 0.0 1.641		Vel = 12.59	
A1 to TOR1	8.5 8.5		0.0 59.91	1.25 1.394		4.500 4.500	150 0.1640	40.030 0.0 0.738		Vel = 12.59	
TOR1 to BOR1	8.5 -1.5		0.0 59.91	1.25 1.442	2E Fsp 7.432 0.0	10.000 7.432 17.432	120 0.2103	40.768 7.331 3.666		** Fixed Loss = 3 Vel = 11.77	
BOR1 to 1	-1.5 -1.5		0.0 59.91	2 2.157		1.730 1.730	120 0.0295	51.765 0.0 0.051		Vel = 5.26	
1 to U8	-1.5 -2.5		0.0 59.91	2 2.157	2E 12.307	1.000 12.307 13.307	120 0.0296	51.816 0.433 0.394		Vel = 5.26	
U8 to U7	-2.5 -2.5		0.0 59.91	2 2.157	E 6.153	1.600 6.153 7.753	120 0.0295	52.643 0.0 0.229		Vel = 5.26	
U7 to U6	-2.5 -2.5		0.0 59.91	2 2.157	T 12.307	25.770 12.307 38.077	120 0.0296	52.872 0.0 1.127		Vel = 5.26	

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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	*****
U6 to U5	-2.5 -2.5		0.0 59.91	4 4.1	E 10.928	24.150 10.928 35.078	120 0.0013	53.999 0.0 0.045		Vel = 1.46	
U5 to U4	-2.5 -2.5		0.0 59.91	4 4.1		33.860 33.860	120 0.0013	54.044 0.0 0.044		Vel = 1.46	
U4 to BK4	-2.5 -2.5		0.0 59.91	4 4.1	E 10.928	6.510 10.928 17.438	120 0.0013	54.088 0.0 0.023		Vel = 1.46	
BK4 to BK3	-2.5 1.5		0.0 59.91	4 4.1	Zaf 0.0	4.000 4.000	120 0.0012	54.111 3.475 0.005	** Fixed Loss = 5.208	Vel = 1.46	
BK3 to BK2	1.5 1.5		0.0 59.91	4 4.1	2E 21.855	13.160 21.855 35.015	120 0.0013	57.591 0.0 0.045		Vel = 1.46	
BK2 to BK1	1.5 -2.5		0.0 59.91	4 4.1	E 10.928	4.000 4.000	120 0.0013	57.636 1.732 0.020		Vel = 1.46	
BK1 to U3	-2.5 -2.5		0.0 59.91	4 4.1			140 0.0010	59.388 0.0 0.020		Vel = 1.46	
U3 to U2	-2.5 -2.5		0.0 59.91	4 4.1			140 0.0010	59.408 0.0 0.018		Vel = 1.46	
U2 to U1	-2.5 -2.5		0.0 59.91	4 4.1	T 29.067	32.190 29.067 61.257	140 0.0010	59.426 0.0 0.059		Vel = 1.46	
U1 to TEST	-2.5 2.600		0.0 59.91	4 4.1	2E T 29.067	30.930 58.134 89.064	140 0.0010	59.485 -2.209 0.087		Vel = 1.46	
TEST			0.0 59.91					57.363	K Factor = 7.91		
15 to P2	19.67 20.5	4.90	13.71	1 1.101	E 3.825	0.830 3.825 4.655	150 0.0337	7.823 -0.359 0.157		Vel = 4.62	
P2 to 12	20.5 20.5		0.0 13.71	1 1.101		3.860 3.860	150 0.0339	7.621 0.0 0.131		Vel = 4.62	
12			0.0 13.71					7.752	K Factor = 4.92		
16 to P4	19.67 20.5	4.90	16.23	1 1.101	E 3.825	0.830 3.825 4.655	150 0.0462	10.971 -0.359 0.215		Vel = 5.47	
P4 to 13	20.5 20.5		0.0 16.23	1 1.101		10.880 10.880	150 0.0462	10.827 0.0 0.503		Vel = 5.47	
13			0.0 16.23					11.330	K Factor = 4.82		

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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	*****
17 to P1	19.67 20.5	4.90	16.46	1	E	3.825	0.830	11.286			
						3.825		-0.359			
P1 to 13	20.5 20.5		16.46	1.101		4.655	0.0473	0.220	Vel =	5.55	
			0.0	1		3.860	150	11.147			
								0.0			
			16.46	1.101		3.860	0.0474	0.183	Vel =	5.55	
			0.0								
13			16.46					11.330	K Factor =	4.89	

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