

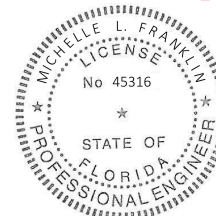


Hydraulic Analysis by HydraCALC

**Received after DRC Meeting
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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
19:39:39
-05'00'

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

HYDRAULIC DESIGN INFORMATION SHEET

Name - RIVERSIDE TOWNHOMES Date - 1/2022
Location - 117 SOUTH RIVERSIDE DRIVE, POMPANO BEACH FL
Building - 1 System No. - B 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 64.905 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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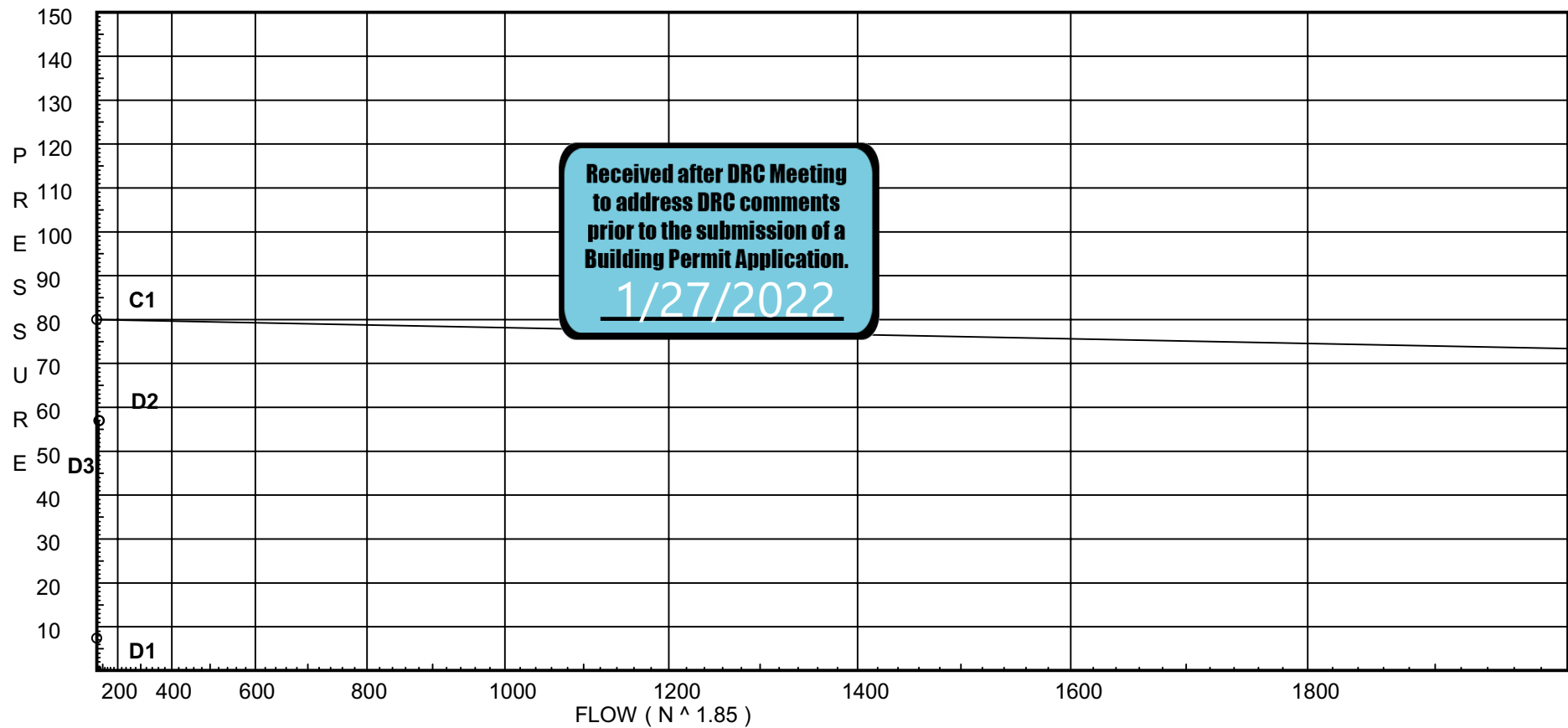
Water Supply Curve

SUMMERS FIRE SPRINKLERS, INC
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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 : 56.973
Hose (Demand) : 5
D3 - System Demand : 64.905
Safety Margin : 23.015



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

SUMMERS FIRE SPRINKLERS, INC
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Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
18	19.67	4.9	7.6	na	13.51	0.05	156	7.6
P6	20.5		7.39	na				
19	20.5		7.75	na				
20	20.5		11.33	na				
X4	20.5		26.31	na				
X3	8.5		33.48	na				
21	8.5		37.42	na				
22	8.5		38.37	na				
TOR2	8.5		40.75	na				
BOR2	-1.5		51.29	na				
2	-1.5		51.34	na				
U12	-2.5		52.16	na				
U11	-2.5		52.29	na				
U10	-2.5		53.6	na				
U9	-2.5		53.6	na				
U6	-2.5		53.61	na				
U5	-2.5		53.65	na				
U4	-2.5		53.7	na				
BK4	-2.5		53.72	na				
BK3	1.5		57.2	na				
BK2	1.5		57.25	na				
BK1	-2.5		59.0	na				
U3	-2.5		59.02	na				
U2	-2.5		59.04	na				
U1	-2.5		59.1	na				
TEST	2.6				5.0			
23	19.67	4.9			13.71	0.05	156	7.6
P7	20.5							
24	19.67	4.9			16.23	0.05	231	7.6
P5	20.5							
25	19.67	4.9			16.46	0.05	156	7.6
P8	20.5							

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The maximum velocity is 20.19 and it occurs in the pipe between nodes 20 and X4

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	*****
18 to P6	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		Vel = 4.55	
P6 to 19	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	
19 to 20	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 = 9.17	
20 to X4	20.5 20.5		32.70 59.91	1 1.101	T 2E 7.65	11.720 17.212 28.932	150 0.5178	11.330 0.0 14.982		Vel = 20.19	
X4 to X3	20.5 8.5		0.0 59.91	1.25 1.394		12.000 12.000	150 0.1641	26.312 5.197 1.969		Vel = 12.59	
X3 to 21	8.5 8.5		0.0 59.91	1.25 1.394	E T 4.762 9.523	9.750 14.284	150 0.1641	33.478 0.0 3.944		Vel = 12.59	
21 to 22	8.5 8.5		0.0 59.91	1.25 1.394			150 0.1640	37.422 0.0 0.950		Vel = 12.59	
22 to TOR2	8.5 8.5		0.0 59.91	1.25 1.394			150 0.1641	38.372 0.0 2.380		Vel = 12.59	
TOR2 to BOR2	8.5 -1.5		0.0 59.91	1.25 1.394	2E Fsp 9.523 0.0	10.000 9.523 19.523	150 0.1641	40.752 7.331 3.204		** Fixed Loss = 3 Vel = 12.59	
BOR2 to 2	-1.5 -1.5		0.0 59.91	2 2.157		1.730 1.730	120 0.0295	51.287 0.0 0.051		Vel = 5.26	
2 to U12	-1.5 -2.5		0.0 59.91	2 2.157	2E 12.307	1.000 12.307 13.307	120 0.0296	51.338 0.433 0.394		Vel = 5.26	
U12 to U11	-2.5 -2.5		0.0 59.91	2 2.157		4.190 4.190	120 0.0296	52.165 0.0 0.124		Vel = 5.26	
U11 to U10	-2.5 -2.5		0.0 59.91	2 2.157	E T 6.153 12.307	25.770 18.460 44.230	120 0.0296	52.289 0.0 1.308		Vel = 5.26	
U10 to U9	-2.5 -2.5		0.0 59.91	4 4.1		1.280 1.280	120 0.0016	53.597 0.0 0.002		Vel = 1.46	
U9 to U6	-2.5 -2.5		0.0 59.91	4 4.1		7.700 7.700	120 0.0013	53.599 0.0 0.010		Vel = 1.46	
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	53.609 0.0 0.045		Vel = 1.46	

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Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqiv	Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
U5 to U4	-2.5 -2.5		0.0 59.91	4 4.1			33.860 33.860	120 0.0013	53.654 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	53.698 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	53.721 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	57.201 0.0 0.046		Vel = 1.46	
BK2 to BK1	1.5 -2.5		0.0 59.91	4 4.1	E	10.928	4.000 10.928 14.928	120 0.0013	57.247 1.732 0.019		Vel = 1.46	
BK1 to U3	-2.5 -2.5		0.0 59.91	4 4.1	E	14.534	5.380 14.534	140 0.0010	58.998 0.0 0.020		Vel = 1.46	
U3 to U2	-2.5 -2.5		0.0 59.91	4 4.1				140 0.0010	59.018 0.0 0.018		Vel = 1.46	
U2 to U1	-2.5 -2.5		0.0 59.91	4 4.1				140 0.0010	59.036 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 29.067	30.930 58.134 89.064	140 0.0010	59.095 -2.209 0.087		Vel = 1.46	
TEST			5.00 64.91								Qa = 5.00 K Factor = 8.60	
23 to P7	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	
P7 to 19	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	
19			0.0 13.71						7.752		K Factor = 4.92	
24 to P5	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	
P5 to 20	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	
20			0.0 16.23						11.330		K Factor = 4.82	
25 to P8	19.67 20.5	4.90	16.46	1 1.101	E	3.825	0.830 3.825 4.655	150 0.0473	11.286 -0.359 0.220		Vel = 5.55	

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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	*****
P8 to 20	20.5 20.5		0.0 16.46	1 1.101		3.860 3.860	150 0.0474	11.147 0.0 0.183		Vel = 5.55	
20			0.0 16.46					11.330		K Factor = 4.89	

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