

Hydraulic 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
19:33:59[®]
-05'00'

Job Name : BLDG 1 UNIT A
Drawing : 1
Location : 117 SOUTH RIVERSIDE DRIVE, POMPAÑO BEACH, FL
Remote Area : A
Contract : BC922
Data File : Bldg#2 UNIT E Fire Plans-rev-calc Area 1.WXF

HYDRAULIC DESIGN INFORMATION SHEET

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

Calculation Gpm Required 59.387 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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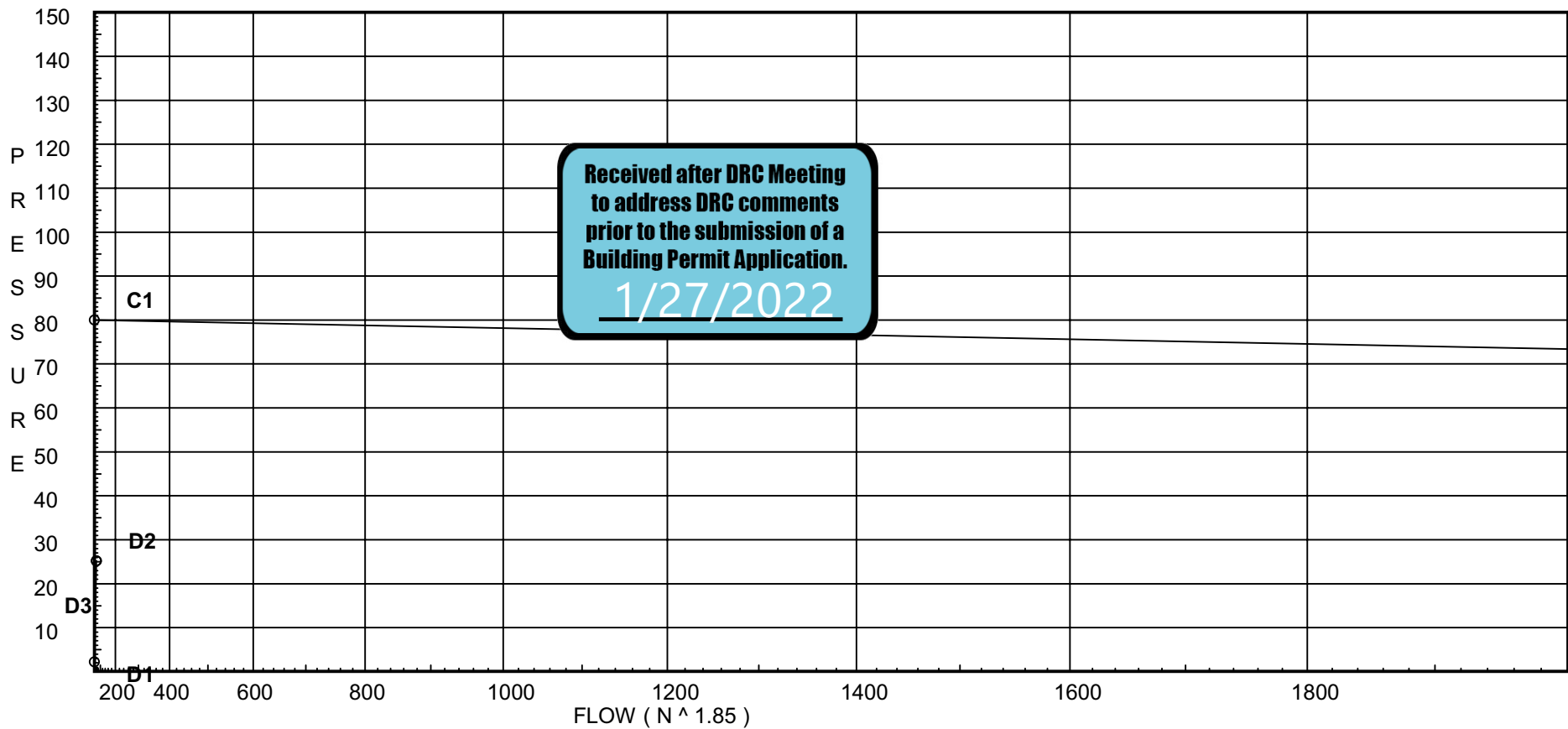
Water Supply Curve

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 : 2.196
D2 - System Flow : 54.387
D2 - System Pressure : 25.155
Hose (Demand) : 5
D3 - System Demand : 59.387
Safety Margin : 54.835



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.
11	7.67	4.9	7.0	na	12.96	0.05	171	7.0
S4	8.5		6.78	na				
S3	8.5		7.09	na				
A5	8.5		7.2	na				
A4	8.5		7.51	na				
A3	8.5		7.97	na				
A2	8.5		8.18	na				
A1	8.5		8.95	na				
TOR1	8.5		10.22	na				
BOR1	-1.5		19.31	na				
1	-1.5		19.66	na				
U8	-2.5		20.12	na				
U7	-2.5		20.46	na				
U6	-2.5		21.4	na				
U5	-2.5		21.44	na				
U4	-2.5		21.48	na				
BK4	-2.5		21.5	na				
BK3	1.5		25.42	na				
BK2	1.5		25.45	na				
BK1	-2.5		27.2	na				
U3	-2.5		27.22	na				
U2	-2.5		27.23	na				
U1	-2.5		27.28	na				
6	-2.5		27.32	na				
7	-2.5		27.32	na	5.0			
TEST	2.6							
12	7.67	4.9			13.08	0.05	160	7.0
13	7.67	4.9			13.86	0.05	160	7.0
S2	8.5							
14	7.67	4.9			14.48	0.05	171	7.0
S1	8.5							

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The maximum velocity is 11.43 and it occurs in the pipe between nodes A1 and TOR1

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 S4	7.67 8.5	4.90	12.96 12.96	1 1.101	E	3.825 3.825 4.655	150 150	7.000 -0.359 0.142			
S4 to S3	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		
S3 to A5	8.5 8.5		13.08 26.04	1 1.101		1.030 1.030	150 0.1107	7.088 0.0 0.114	Vel = 8.78		
A5 to A4	8.5 8.5		0.0 26.04	1.25 1.394	E	4.762 4.110 4.761 8.871	150 150	7.202 0.0 0.312	Vel = 5.47		
A4 to A3	8.5 8.5		0.0 26.04	1.25 1.394		13.060 13.060	150 0.0351	7.514 0.0 0.459	Vel = 5.47		
A3 to A2	8.5 8.5		0.0 26.04	1.25 1.394	E	4.762 1.030 4.761	150 0.0351	7.973 0.0 0.203	Vel = 5.47		
A2 to A1	8.5 8.5		13.87 39.91	1.25 1.394			150 0.0774	8.176 0.0 0.774	Vel = 8.39		
A1 to TOR1	8.5 8.5		14.48 54.39	1.25 1.394			150 0.1372	8.950 0.0 1.271	Vel = 11.43		
TOR1 to BOR1	8.5 -1.5		0.0 54.39	1.25 1.442	Fsp	0.0 10.000 10.000	120 120	10.221 7.331 1.759	** Fixed Loss = 3 Vel = 10.69		
BOR1 to 1	-1.5 -1.5		0.0 54.39	2 2.157	2E	12.307 1.730 12.307 14.037	120 0.0247	19.311 0.0 0.347	Vel = 4.78		
1 to U8	-1.5 -2.5		0.0 54.39	2 2.157		1.000 1.000	120 0.0250	19.658 0.433 0.025	Vel = 4.78		
U8 to U7	-2.5 -2.5		0.0 54.39	2 2.157	2E	12.307 1.600 12.307 13.907	120 0.0247	20.116 0.0 0.344	Vel = 4.78		
U7 to U6	-2.5 -2.5		0.0 54.39	2 2.157	T	12.307 25.770 12.307 38.077	120 0.0247	20.460 0.0 0.942	Vel = 4.78		
U6 to U5	-2.5 -2.5		0.0 54.39	4 4.1	E	10.928 24.150 10.928 35.078	120 0.0011	21.402 0.0 0.038	Vel = 1.32		
U5 to U4	-2.5 -2.5		0.0 54.39	4 4.1		33.860 33.860	120 0.0011	21.440 0.0 0.037	Vel = 1.32		
U4 to BK4	-2.5 -2.5		0.0 54.39	4 4.1	E	10.928 6.510 10.928 17.438	120 0.0011	21.477 0.0 0.019	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	*****
BK4 to BK3	-2.5 1.5		0.0 54.39	4 4.1	Zaf	0.0 4.000	120 0.0010	21.496 3.917 0.004		* * Fixed Loss = 5.649 Vel = 1.32	
BK3 to BK2	1.5 1.5		0.0 54.39	4 4.1	2E	21.855 13.160 21.855 35.015	120 0.0011	25.417 0.0 0.038		Vel = 1.32	
BK2 to BK1	1.5 -2.5		0.0 54.39	4 4.1	E	10.928 4.000 10.928 14.928	120 0.0011	25.455 1.732 0.016		Vel = 1.32	
BK1 to U3	-2.5 -2.5		0.0 54.39	4 4.1	E	14.534 5.380 14.534 19.914	140 0.0009	27.203 0.0 0.017		Vel = 1.32	
U3 to U2	-2.5 -2.5		0.0 54.39	4 4.1	E	14.534 3.810 14.534 18.344	140 0.0008	27.220 0.0 0.014		Vel = 1.32	
U2 to U1	-2.5 -2.5		0.0 54.39	4 4.1	T	29.067 32.190 29.067	140 0.0008	27.234 0.0 0.050		Vel = 1.32	
U1 to 6	-2.5 -2.5		0.0 54.39	4 4.1			140 0.0008	27.284 0.0 0.035		Vel = 1.32	
6 to 7	-2.5 -2.5		0.0 54.39	4 4.1			140 0.0008	27.319 0.0 0.001		Vel = 1.32	
7 to TEST	-2.5 2.600	H5	5.00 59.39	4 4.1	T	29.067 16.410 29.067 45.477	140 0.0010	27.320 -2.209 0.044		Vel = 1.44	
TEST			0.0 59.39					25.155		K Factor = 11.84	
12 to S3	7.67 8.5	4.90	13.08 13.08	1 1.101	T	9.563 0.830 9.562 10.392	150 0.0310	7.125 -0.359 0.322		Vel = 4.41	
S3			0.0 13.08					7.088		K Factor = 4.91	
13 to S2	7.67 8.5	4.90	13.86 13.86	1 1.101	E	3.825 0.830 3.825 4.655	150 0.0344	8.004 -0.359 0.160		Vel = 4.67	
S2 to A2	8.5 8.5		0.0 13.86	1 1.101	T	9.563 1.170 9.562 10.732	150 0.0346	7.805 0.0 0.371		Vel = 4.67	
A2			0.0 13.86					8.176		K Factor = 4.85	
14 to S1	7.67 8.5	4.90	14.48 14.48	1 1.101	E	3.825 0.830 3.825 4.655	150 0.0372	8.734 -0.359 0.173		Vel = 4.88	
S1 to A1	8.5 8.5		0.0 14.48	1 1.101	T	9.563 1.170 9.562 10.732	150 0.0375	8.548 0.0 0.402		Vel = 4.88	

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Node1	Elev1	K	Qa	Nom	Fitting or	Pipe	CFact	Pt			
to						Ftngs		Pe			
Node2	Elev2	Fact	Qt	Act	Equiv	Len	Pf/Ft	Pf		Notes	
A1			0.0 14.48					8.950		K Factor =	4.84

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