Hydrauli y HydraCALC

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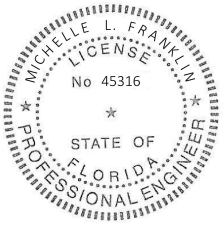
1/27/2022

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 19:39:07 -05'00'

Job Name	:	Bldg#1 UNIT B
Drawing	:	1
Location	:	117 S RIVERSIDE DRIVR, POMPANO BEACH FL
Remote Area	:	B
Contract	:	B922
Data File	:	Bldg#2 UNIT E Fire Plans-rev-calc Area 2.WXF

HYDRAULIC DESIGN INFORMATION SHEET

Name - RIVERSIDE TOWNHOMES Date - 1/2022
Location - 117 S RIVERSIDE DRIVR, POMPANO BEACH FL
Building - 1 System No. - B
Contractor - SUMMERS FIRE SPRINKLERS, INC Contract No. - B922
Calculated By - CD Drawing No. - FP-2
Construction: ( ) Combustible ( ) Non-Combustible Ceiling Height
OCCUPANCY -

SYSTEM DESIGN

Type of Calculation: ( )NFPA 13 Residential (X)NFPA 13R ( )NFPA 13D
Number of Sprinklers Flowing: ( )1 ( )2 (X)4 ( )
( )Other
( )Specific Ruling Made by Date

Listed Flow at Start Point - Gpm System Type
Listed Pres. at Start Point - Psi (X) Wet ( ) Dry
MAXIMUM LISTED SPACING 16 x 16 ( ) Deluge ( ) PreAction
Domestic Flow Added - Gpm Sprinkler or Nozzle
Additional Flow Added - Gpm Make TYCO Model LFII
Elevation at Highest Outlet - Feet Size 1/2 K-Factor 4.9
Note: Temperature Rating 175

Calculation Summary — Gpm Required 59.26 — At Test
C-Factor Used: Underground 140

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WATER SUPPLY

Water Flow Test: Tank or Reservoir:
Date of Test -
Time of Test -
Static (Psi) - 80
Residual (Psi) - 77 Well
Flow (Gpm) - 1306 Proof Flow Gpm
Elevation - 2.6

PIPELINE

Location:

Source of Information:

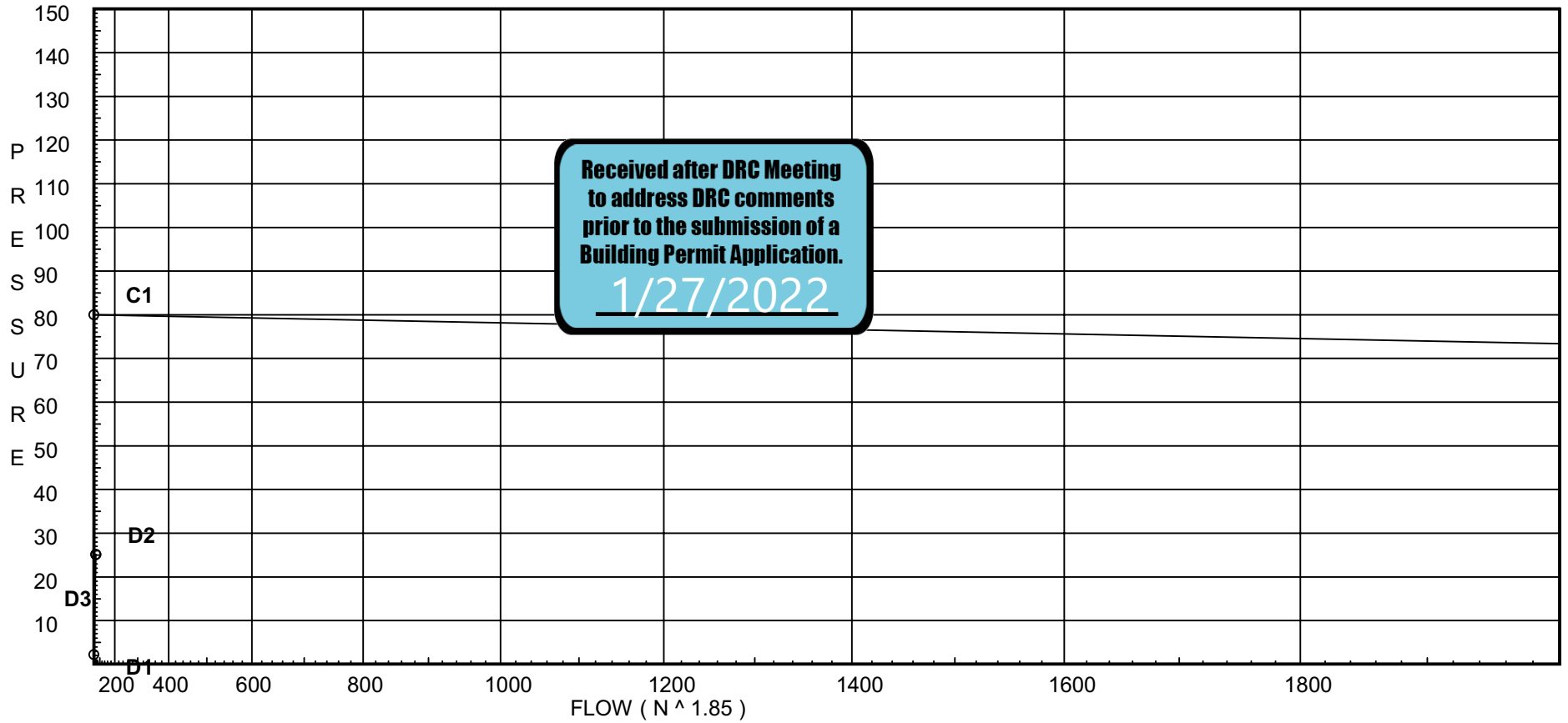
Water Supply Curve

SUMMERS FIRE SPRINKLERS, INC
Bldg#1 UNIT B

Date

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 : 25.130
- Hose (Demand) : 5
- D3 - System Demand : 59.26
- Safety Margin : 54.860



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Fitting Legend

Abbrev.	Name	½	¾	1	1¼	1½	2	2½	3	3½	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 Minu
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
Bldg#1 UNIT B

Date

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
15	7.67	4.9	7.0	na	12.96	0.05	171	7.0
S8	8.5		6.78	na				
S7	8.5		7.09	na				
16	8.5		8.1	na				
17	8.5		8.87	na				
TOR2	8.5		10.14	na				
BOR2	-1.5		19.22	na				
2	-1.5		19.56	na				
U12	-2.5		20.02	na				
U11	-2.5		20.28	na				
U10	-2.5		21.37	na				
U9	-2.5		21.37	na				
U6	-2.5		21.38	na				
U5	-2.5		21.41	na				
U4	-2.5		21.45	na				
BK4	-2.5		21.47	na				
BK3	1.5		25.4	na				
BK2	1.5		25.44	na				
BK1	-2.5		27.19	na				
U3	-2.5		27.2	na				
U2	-2.5		27.22	na				
U1	-2.5		27.27	na				
6	-2.5		27.3	na				
7	-2.5		27.3	na				
TEST	2.6		25.13	na	5.0			
18	7.67	4.9			13.08	0.05	160	7.0
19	7.67	4.9			13.8	0.05	160	7.0
S6	8.5							
20	7.67	4.9			14.42	0.05	171	7.0
S5	8.5							

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The maximum velocity is 11.41 and it occurs in the pipe between nodes 17 and TOR2

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 ******
15	7.67	4.90	12.96	1	E	3.825	0.830	150	7.000	
to							3.825		-0.359	
S8	8.5		12.96	1.101			4.655	0.0305	0.142	Vel = 4.37
S8	8.5		0.0	1			10.000	150	6.783	
to									0.0	
S7	8.5		12.96	1.101			10.000	0.0305	0.305	Vel = 4.37
S7	8.5		13.08	1.25	2E	9.523	19.230	150	7.088	
to							9.523		0.0	
16	8.5		26.04	1.394			28.753	0.0351	1.010	Vel = 5.47
16	8.5		13.80	1.25			10.000	150	8.098	
to									0.0	
17	8.5		39.84	1.394			10.000	0.0772	0.772	Vel = 8.37
17	8.5		14.42	1.25	E	4.762	4.500	150	8.870	
to							4.761		0.0	
TOR2	8.5		54.26	1.394			9.261	0.1366	1.265	Vel = 11.41
TOR2	8.5		0.0	1.25	Fsp	0.0	10.000	120	10.135	
to									7.331	* * Fixed Loss = 3
BOR2	-1.5		54.26	1.44				0.1751	1.751	Vel = 10.66
BOR2	-1.5		0.0	2				120	19.217	
to									0.0	
2	-1.5		54.26	2.15				0.0246	0.346	Vel = 4.76
2	-1.5		0.0	2				120	19.563	
to									0.433	
U12	-2.5		54.26	2.15				0.0250	0.025	Vel = 4.76
U12	-2.5		0.0	2	E	6.153	4.190	120	20.021	
to							6.153		0.0	
U11	-2.5		54.26	2.157			10.343	0.0247	0.255	Vel = 4.76
U11	-2.5		0.0	2	E	6.153	25.770	120	20.276	
to					T	12.307	18.460		0.0	
U10	-2.5		54.26	2.157			44.230	0.0246	1.090	Vel = 4.76
U10	-2.5		0.0	4			1.280	120	21.366	
to									0.0	
U9	-2.5		54.26	4.1			1.280	0.0008	0.001	Vel = 1.32
U9	-2.5		0.0	4			7.700	120	21.367	
to									0.0	
U6	-2.5		54.26	4.1			7.700	0.0010	0.008	Vel = 1.32
U6	-2.5		0.0	4	E	10.928	24.150	120	21.375	
to							10.928		0.0	
U5	-2.5		54.26	4.1			35.078	0.0011	0.038	Vel = 1.32
U5	-2.5		0.0	4			33.860	120	21.413	
to									0.0	
U4	-2.5		54.26	4.1			33.860	0.0011	0.037	Vel = 1.32
U4	-2.5		0.0	4	E	10.928	6.510	120	21.450	
to							10.928		0.0	
BK4	-2.5		54.26	4.1			17.438	0.0010	0.018	Vel = 1.32
BK4	-2.5		0.0	4	Zaf	0.0	4.000	120	21.468	
to									3.927	* * Fixed Loss = 5.659
BK3	1.5		54.26	4.1			4.000	0.0012	0.005	Vel = 1.32

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BK3	1.5		0.0	4	2E	21.855	13.160	120	25.400	
to							21.855		0.0	
BK2	1.5		54.26	4.1			35.015	0.0011	0.037	Vel = 1.32
BK2	1.5		0.0	4	E	10.928	4.000	120	25.437	
to							10.928		1.732	
BK1	-2.5		54.26	4.1			14.928	0.0011	0.017	Vel = 1.32
BK1	-2.5		0.0	4	E	14.534	5.380	140	27.186	
to							14.534		0.0	
U3	-2.5		54.26	4.1			19.914	0.0008	0.016	Vel = 1.32
U3	-2.5		0.0	4	E	14.534	3.810	140	27.202	
to							14.534		0.0	
U2	-2.5		54.26	4.1			18.344	0.0008	0.015	Vel = 1.32
U2	-2.5		0.0	4	T	29.067	32.190	140	27.217	
to							29.067		0.0	
U1	-2.5		54.26	4.1			61.257	0.0008	0.050	Vel = 1.32
U1	-2.5		0.0	4	2E	29.067	13.260	140	27.267	
to							[illegible]		0.0	
6	-2.5		54.26	4.1			[illegible]	0.0008	0.034	Vel = 1.32
6	-2.5		0.0	4			[illegible]	140	27.301	
to							[illegible]		0.0	
7	-2.5		54.26	4.1			[illegible]	0.0008	0.001	Vel = 1.32
7	-2.5		0.0	4			[illegible]	140	27.302	
to							[illegible]		-2.209	
TEST	2.600		54.26	4.1			[illegible]	0.0008	0.037	Vel = 1.32
			5.00							Qa = 5.00
TEST			59.26						25.130	K Factor = 11.82
18	7.67	4.90	13.08	1	T	9.563	0.830	150	7.125	
to							9.562		-0.359	
S7	8.5		13.08	1.101			10.392	0.0310	0.322	Vel = 4.41
			0.0							
S7			13.08						7.088	K Factor = 4.91
19	7.67	4.90	13.80	1	E	3.825	0.830	150	7.931	
to							3.825		-0.359	
S6	8.5		13.8	1.101			4.655	0.0342	0.159	Vel = 4.65
S6	8.5		0.0	1	T	9.563	1.170	150	7.731	
to							9.562		0.0	
16	8.5		13.8	1.101			10.732	0.0342	0.367	Vel = 4.65
			0.0							
16			13.80						8.098	K Factor = 4.85
20	7.67	4.90	14.42	1	E	3.825	0.830	150	8.658	
to							3.825		-0.359	
S5	8.5		14.42	1.101			4.655	0.0369	0.172	Vel = 4.86
S5	8.5		0.0	1	T	9.563	1.170	150	8.471	
to							9.562		0.0	
17	8.5		14.42	1.101			10.732	0.0372	0.399	Vel = 4.86
			0.0							
17			14.42						8.870	K Factor = 4.84

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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	******