



Hydraulic Calculations by HydraCALC

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

Job Name : Bldg#1 UNIT D Fire Plans-CALAC
Drawing : BLDG #1
Location : 117 SOUTH RIVERSIDE DRIVE, POMPAHO FLORIDA 33062
Remote Area : UNIT D
Contract : BC922
Data File : Bldg#3 UNIT Fire Plans-cALAC Area 5.WXF

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HYDRAULIC DESIGN INFORMATION SHEET

Name - RIVERSIDE TOWNHOUSE Date - 10/23/21
Location - 117 SOUTH RIVERSIDE DRIVE, POMPAÑO FLORIDA 33062
Building - BLDG #1 System No. - UNIT D
Contractor - SUMMERSFIRE 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 (X)2 ()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 TY3596
I Elevation at Highest Outlet - Feet Size 1/2" K-Factor 4.9
G Note: Temperature Rating 155
N

Calculation Gpm Required 31.00 Psi Required 62.218 At Test
Summary C-Factor Used: Overhead 150 Underground 140

W Water Flow Test: Pump Data: Tank or Reservoir:
A Date of Test - 10/22/21 Rated Cap. Cap.
T Time of Test - 9:15 @ Psi Elev.
E Static (Psi) - 80 Elev.
R Residual (Psi) - 77 Other Well
Flow (Gpm) - 1306 Proof Flow Gpm
S Elevation -
P Location:
P
L Source of Information:
Y

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Water Supply Curve

SUMMERS FIRE SPRINKLERS, INC
Bldg#1 UNIT D Fire Plans-CALAC

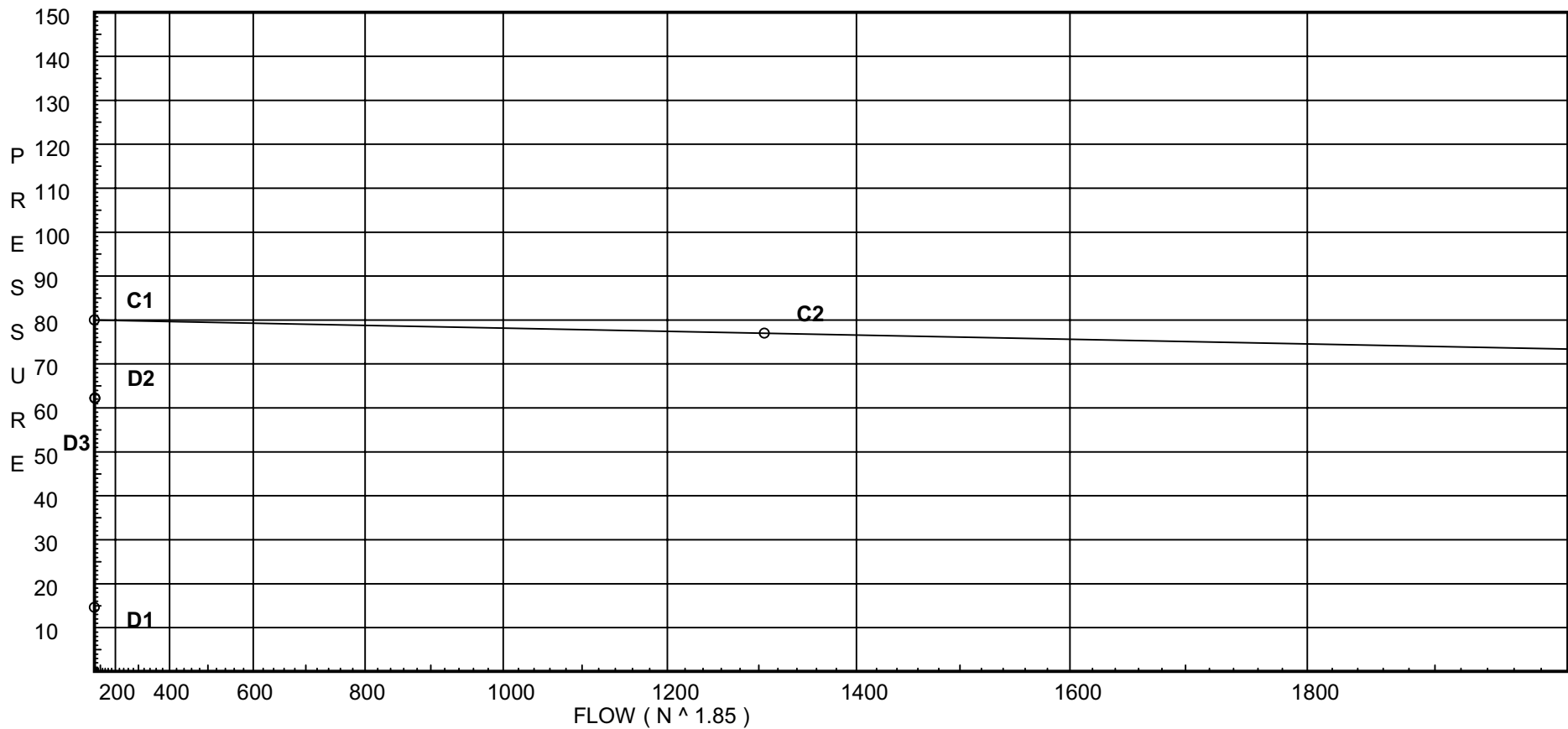
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City Water Supply:

C1 - Static Pressure : 80
C2 - Residual Pressure: 77
C2 - Residual Flow : 1306

Demand:

D1 - Elevation : 14.617
D2 - System Flow : 26.004
D2 - System Pressure : 62.218
Hose (Demand) : 5
D3 - System Demand : 31.004
Safety Margin : 17.779



Fittings Used Summary

SUMMERS FIRE SPRINKLERS, INC
Bldg#1 UNIT D Fire Plans-CALAC

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
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
Zaa	Ames 2000B	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 Inch

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.
DP01	35.25	4.9	7.0	na	12.96	0.05	94	7.0
EQ01	36.25		6.71	na				
DP02	35.25	4.9	7.0	na	12.96	0.05	204	7.0
EQ02	36.25		6.71	na				
S10	36.25	K = K @ EQ01	6.71	na	12.96			
D9	36.25		7.01	na				
D8	36.25		7.1	na				
D7	36.25		7.53	na				
D6	36.25		8.57	na				
D5	36.25		10.39	na				
D4	13.0		23.03	na				
D3	13.0		25.27	na				
D2	13.0		27.09	na				
D1	13.0		28.53	na				
TOR	13.0		31.09	na				
BOR	-2.0		44.14	na				
U27	-2.0		45.26	na				
U26	-2.0		46.37	na				
U25	-2.0		58.0	na				
2	-2.0		58.26	na				
U24	-2.0		58.35	na				
3	-2.0		59.02	na				
U20	-2.0		64.16	na				
TEST	2.5		62.22	na	5.0			
S9	36.25	K = K @ EQ02	6.79	na	13.04			

The maximum velocity is 8.83 and it occurs in the pipe between nodes TOR and BOR

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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	*****
DP01 to EQ01	35.25 36.25	4.90	12.96 12.96	1 1.101	E 3.825	1.000 3.825 4.825	150 0.0305	7.000 -0.433 0.147		Vel = 4.37	
EQ01			0.0 12.96					6.714		K Factor = 5.00	
DP02 to EQ02	35.25 36.25	4.90	12.96 12.96	1 1.101	E 3.825	1.000 3.825 4.825	150 0.0305	7.000 -0.433 0.147		Vel = 4.37	
EQ02			0.0 12.96					6.714		K Factor = 5.00	
S10 to D9	36.25 36.25	5.0	12.96 12.96	1 1.101	E 3.825	6.010 3.825 9.835	150 0.0305	6.714 0.0 0.300		K = K @ EQ01 Vel = 4.37	
D9 to D8	36.25 36.25		0.0 12.96	1 1.101		2.740 2.740	150 0.0307	7.014 0.0 0.084		Vel = 4.37	
D8 to D7	36.25 36.25		13.04 26.0	1 1.101		3.880 3.880	150 0.1106	7.098 0.0 0.429		Vel = 8.76	
D7 to D6	36.25 36.25		0.0 26.0	1 1.101		9.420 9.420	150 0.1106	7.527 0.0 1.042		Vel = 8.76	
D6 to D5	36.25 36.25		0.0 26.0	1 1.101	T E 3.825	3.110 13.387 16.497	150 0.1106	8.569 0.0 1.824		Vel = 8.76	
D5 to D4	36.25 13		0.0 26.0	1 1.101		23.250 23.250	150 0.1106	10.393 10.070 2.571		Vel = 8.76	
D4 to D3	13 13		0.0 26.0	1 1.101	2E T 9.563	3.000 17.212 20.212	150 0.1106	23.034 0.0 2.235		Vel = 8.76	
D3 to D2	13 13		0.0 26.0	1 1.101	T 9.563	6.880 9.562 16.442	150 0.1106	25.269 0.0 1.818		Vel = 8.76	
D2 to D1	13 13		0.0 26.0	1 1.101		13.060 13.060	150 0.1106	27.087 0.0 1.444		Vel = 8.76	
D1 to TOR	13 13		0.0 26.0	1 1.101	2E 7.65	15.530 7.650 23.180	150 0.1106	28.531 0.0 2.564		Vel = 8.76	
TOR to BOR	13 -2		0.0 26.0	1 1.097	Zaa 0.0	15.000 15.000	120 0.1701	31.095 10.496 2.551		** Fixed Loss = 4 Vel = 8.83	
BOR to U27	-2 -2		0.0 26.0	1 1.097	2E 4.974	1.590 4.974 6.564	120 0.1702	44.142 0.0 1.117		Vel = 8.83	
U27 to U26	-2 -2		0.0 26.0	1 1.097		8.720 8.720	140 0.1279	45.259 0.0 1.115		Vel = 8.83	

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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	*****
U26 to U25	-2 -2		0.0 26.0	1 1.097	E 3.308	87.620 3.308 90.928	140 0.1279	46.374 0.0 11.629		Vel = 8.83	
U25 to 2	-2 -2		0.0 26.0	1 1.097		2.030 2.030	140 0.1276	58.003 0.0 0.259		Vel = 8.83	
2 to U24	-2 -2		0.0 26.0	1 1.097		0.700 0.700	140 0.1286	58.262 0.0 0.090		Vel = 8.83	
U24 to 3	-2 -2		0.0 26.0	1 1.097	E 3.308	1.910 3.308 5.218	140 0.1278	58.352 0.0 0.667		Vel = 8.83	
3 to U20	-2 -2		0.0 26.0	1 1.097	T 8.269	0.660 8.269 8.929	140 0.1279	59.019 4.000 1.142		* * Fixed Loss = 4 Vel = 8.83	
U20 to TEST	-2 2.500		0.0 26.0	4 4.1		26.490 26.490	140 0.0002	64.161 -1.949 0.006		Vel = 0.63	
TEST			5.00 31.00					62.218		Qa = 5.00 K Factor = 3.93	
S9 to D8	36.25 36.25	5.0	13.04 13.04	1 1.101	T 9.563	0.320 9.562 9.882	150 0.0309	6.793 0.0 0.305		K = K @ EQ02 Vel = 4.39	
D8			0.0 13.04					7.098		K Factor = 4.89	

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