



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 A Fire Plans-cALAC
Drawing : BUILDING #1
Location : 117 SOUTHRIVERSIDE DRIVE, POMPAÑO BEACH FL 33062
Remote Area : UNIT A
Contract : BC922
Data File : Bldg#1 UNIT A Fire Plans-cALAC Area 1.WXF

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HYDRAULIC DESIGN INFORMATION SHEET

Name - RIVERSIDE TOWNHOUSE Date - 10/23/21
Location - 117 SOUTHRIVERSIDE DRIVE, POMPANO BEACH FL 33062
Building - BUILDING #1 System No. - UNIT A
Contractor - SUMMERS FIRE SPRINKLERS, INC Contract No. - BC922
Calculated By - CD Drawing No. - FP-2
Construction: () Combustible () Non-Combustible Ceiling Height
OCCUPANCY - 13 D

S Type of Calculation: () 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 31.004 Psi Required 64.817 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 AM @ 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 A Fire Plans-cALAC

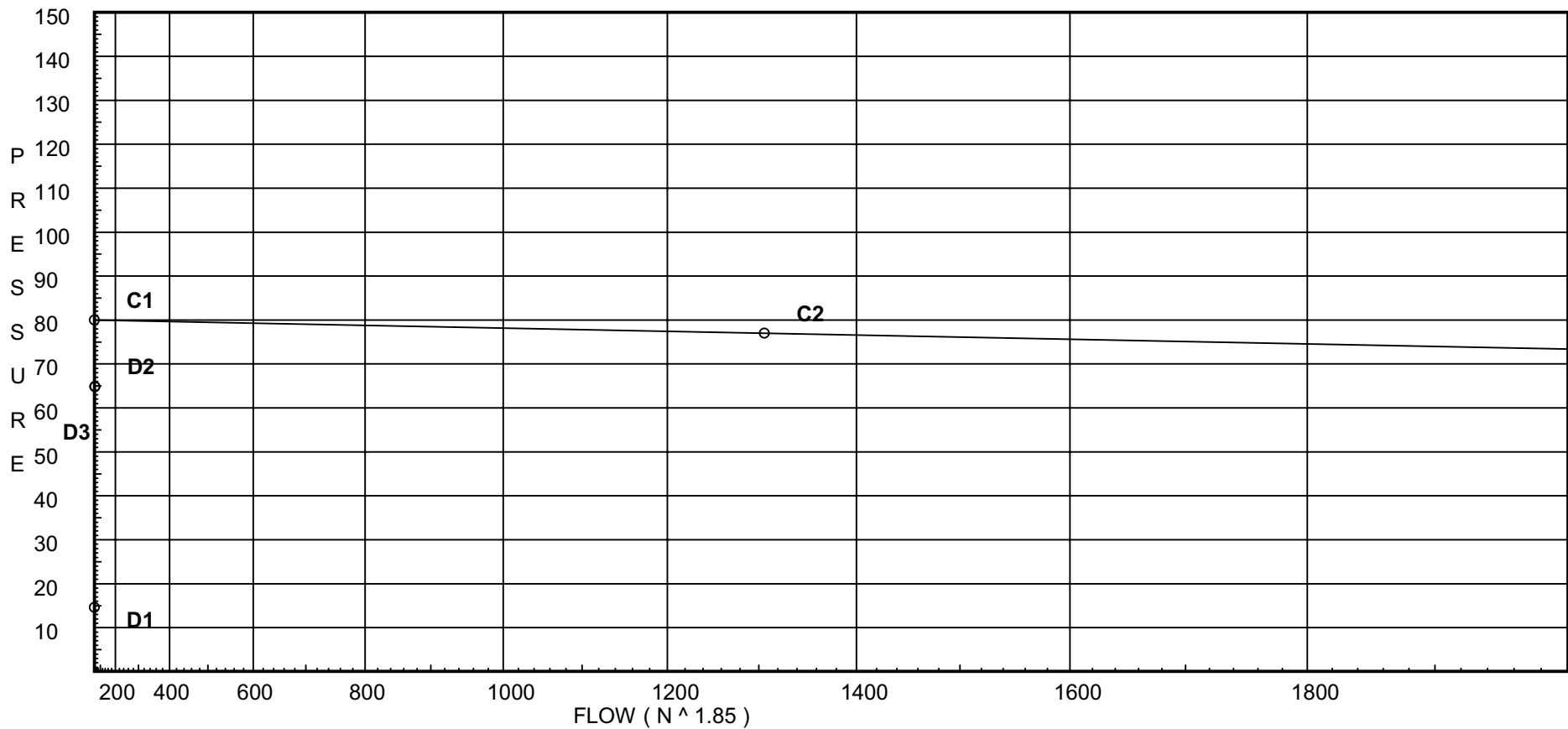
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City Water Supply:

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 : 64.817
Hose (Demand) : 5
D3 - System Demand : 31.004
Safety Margin : 15.180



Fittings Used Summary

SUMMERS FIRE SPRINKLERS, INC
Bldg#1 UNIT A 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	92	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				
S2	36.25	K = K @ EQ01	6.71	na	12.96			
A10	36.25		7.01	na				
A9	36.25		7.1	na				
A8	36.25		7.53	na				
A7	36.25		8.57	na				
A6	36.25		10.39	na				
A5	13.0		23.03	na				
A4	13.0		23.51	na				
A3	13.0		25.1	na				
A2	13.0		25.91	na				
A1	13.0		27.78	na				
TOR	13.0		31.27	na				
BOR	-2.0		44.32	na				
U7	-2.0		45.5	na				
U6	-2.0		60.71	na				
U5	-2.0		61.46	na				
U4	-2.0		65.71	na				
U3	-2.0		65.8	na				
U2	-2.0		66.76	na				
TEST	2.5		64.82	na	5.0			
S1	36.25	K = K @ EQ02	6.79	na	13.04			

The maximum velocity is 8.83 and it occurs in the pipe between nodes A1 and TOR

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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	
S2 to A10	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	
A10 to A9	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	
A9 to A8	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	
A8 to A7	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	
A7 to A6	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	
A6 to A5	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	
A5 to A4	13 13		0.0 26.0	1 1.101	E 3.825	0.500 3.825 4.325	150 0.1105	23.034 0.0 0.478		Vel = 8.76	
A4 to A3	13 13		0.0 26.0	1 1.101	E T 3.825 9.563	0.950 13.387 14.337	150 0.1106	23.512 0.0 1.585		Vel = 8.76	
A3 to A2	13 13		0.0 26.0	1 1.101		7.380 7.380	150 0.1107	25.097 0.0 0.817		Vel = 8.76	
A2 to A1	13 13		0.0 26.0	1 1.101	E 3.825	13.060 3.825 16.885	150 0.1106	25.914 0.0 1.867		Vel = 8.76	
A1 to TOR	13 13		0.0 26.0	1 1.097	2E 4.974	15.530 4.974 20.504	120 0.1701	27.781 0.0 3.487		Vel = 8.83	
TOR to BOR	13 -2		0.0 26.0	1 1.097	Zaa 0.0	15.000 15.000	120 0.1701	31.268 10.496 2.552		** Fixed Loss = 4 Vel = 8.83	
BOR to U7	-2 -2		0.0 26.0	1 1.097	2E 4.974	1.970 4.974 6.944	120 0.1701	44.316 0.0 1.181		Vel = 8.83	

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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	*****
U7 to U6	-2 -2		0.0 26.0	1 1.097	3E	9.923 118.963	140 0.1279	45.497 0.0 15.214		Vel = 8.83	
U6 to U5	-2 -2		0.0 26.0	1 1.097	E	3.308 5.858	140 0.1279	60.711 0.0 0.749		Vel = 8.83	
U5 to U4	-2 -2		0.0 26.0	1 1.097		1.980 1.980	140 0.1283	61.460 4.000 0.254		* * Fixed Loss = 4 Vel = 8.83	
U4 to U3	-2 -2		0.0 26.0	1 1.097		0.700 0.700	140 0.1271	65.714 0.0 0.089		Vel = 8.83	
U3 to U2	-2 -2		0.0 26.0	1 1.097	2E	6.615 7.485	140 0.1279	65.803 0.0 0.957		Vel = 8.83	
U2 to TEST	-2 2.500		0.0 26.0	4 4.1		26.620 26.620	140 0.0002	66.760 -1.949 0.006		Vel = 0.63	
TEST			5.00 31.00					64.817		Qa = 5.00 K Factor = 3.85	
S1 to A9	36.25 36.25	5.0	13.04 13.04	1 1.101	T	9.563 9.562 9.882	150 0.0309	6.793 0.0 0.305		K = K @ EQ02 Vel = 4.39	
A9			0.0 13.04					7.098		K Factor = 4.89	

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