



## 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 C Fire Plans-cALAC  
Drawing : BLDG 1  
Location : 117 SOUTH RIVERSIDE DRIVE, POMPANO BEACH FLORIDA 33062  
Remote Area : UNIT C  
Contract : BC922  
Data File : Bldg#3 UNIT C Fire Plans-cALAC Area 4.WXF

# DRC

HYDRAULIC DESIGN INFORMATION SHEET

Name - RIVERSIDE TOWNHOUSE Date - 10/23/21  
Location - 117 SOUTH RIVERSIDE DRIVE, POMPANO BEACH FLORIDA 33062  
Building - BLDG 1 System No. - UNIT C  
Contractor - SUMMERS FIRE SPRINKLERS, INC Contract No. - BC922  
Calculated By - CD Drawing No. - FP2  
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 30.99 Psi Required 63.87 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 C Fire Plans-cALAC

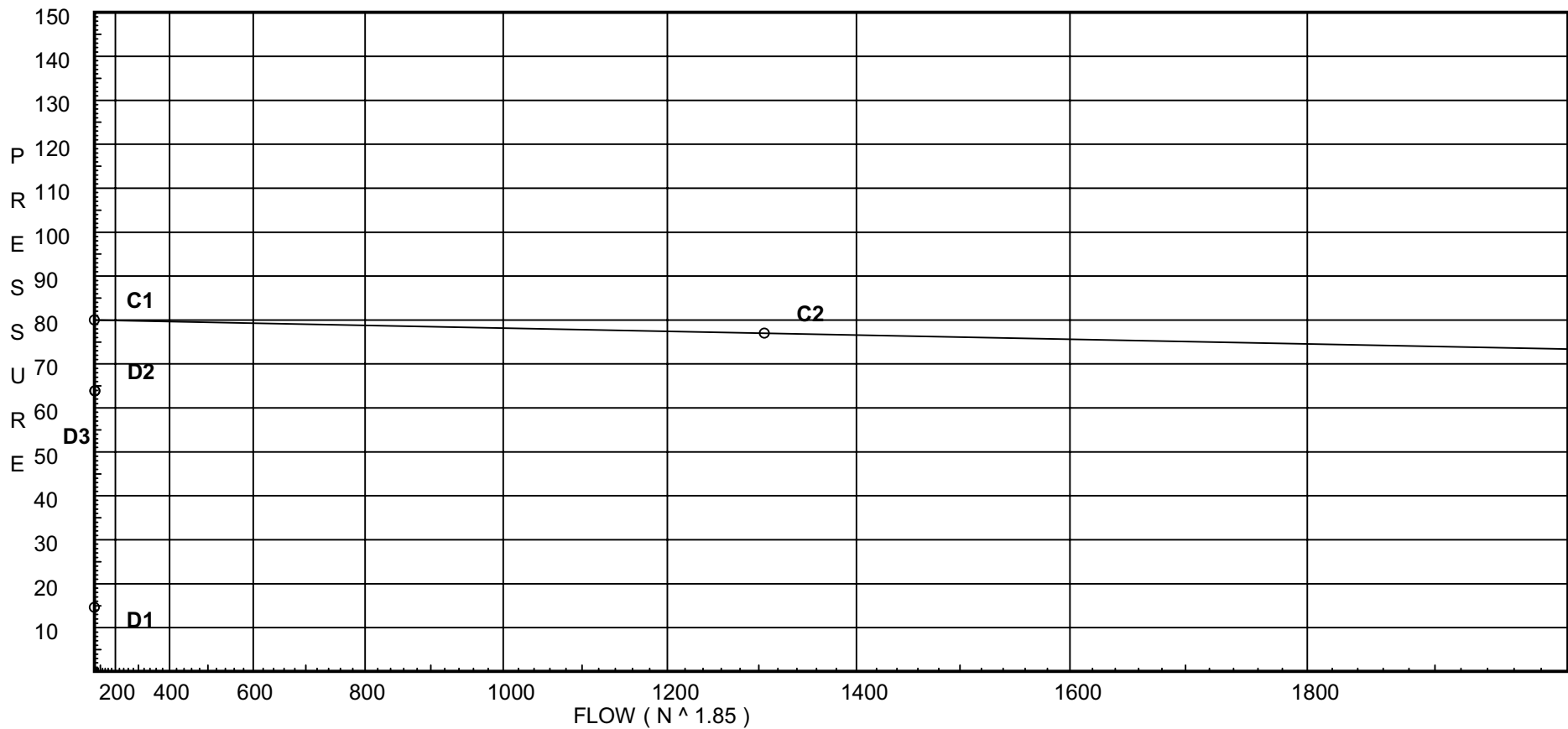
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## City Water Supply:

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

## Demand:

D1 - Elevation : 14.617  
D2 - System Flow : 25.994  
D2 - System Pressure : 63.874  
Hose ( Demand ) : 5  
D3 - System Demand : 30.994  
Safety Margin : 16.123



Fittings Used Summary

SUMMERS FIRE SPRINKLERS, INC  
Bldg#1 UNIT C 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

SUMMERS FIRE SPRINKLERS, INC  
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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				
S7	36.25	K = K @ EQ01	6.71	na	12.96			
C10	36.25		6.89	na				
C9	36.25		7.09	na				
C8	36.25		7.52	na				
C7	36.25		8.67	na				
C6	25.0		16.96	na				
C5	25.0		17.49	na				
C4	13.0		24.01	na				
C3	13.0		25.77	na				
C2	13.0		27.64	na				
C1	13.0		29.08	na				
TOR	13.0		31.64	na				
BOR	-2.0		44.65	na				
1	-2.0		45.76	na				
U23	-2.0		46.17	na				
U22	-2.0		60.33	na				
2	-2.0		61.73	na				
U20	-2.0		65.81	na				
TEST	2.5		63.87	na	5.0			
S8	36.25	K = K @ EQ02	6.78	na	13.03			

The maximum velocity is 8.82 and it occurs in the pipe between nodes BOR and 1

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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	
S7 to C10	36.25 36.25	5.0	12.96 12.96	1 1.101		5.830 5.830	150 0.0305	6.714 0.0 0.178		K = K @ EQ01 Vel = 4.37	
C10 to C9	36.25 36.25		0.0 12.96	1 1.101	E 3.825	2.740 3.825 6.565	150 0.0305	6.892 0.0 0.200		Vel = 4.37	
C9 to C8	36.25 36.25		13.03 25.99	1 1.101		3.880 3.880	150 0.1106	7.092 0.0 0.429		Vel = 8.76	
C8 to C7	36.25 36.25		0.0 25.99	1 1.101		10.420 10.420	150 0.1106	7.521 0.0 1.152		Vel = 8.76	
C7 to C6	36.25 25		0.0 25.99	1 1.101	4E 15.3	15.560 15.301 30.861	150 0.1105	8.673 4.872 3.410		Vel = 8.76	
C6 to C5	25 25		0.0 25.99	1 1.101	E 3.825	1.000 3.825 4.825	150 0.1105	16.955 0.0 0.533		Vel = 8.76	
C5 to C4	25 13		0.0 25.99	1 1.101		12.000 12.000	150 0.1106	17.488 5.197 1.327		Vel = 8.76	
C4 to C3	13 13		0.0 25.99	1 1.101	E T 3.825 9.563	2.500 13.387 15.887	150 0.1105	24.012 0.0 1.755		Vel = 8.76	
C3 to C2	13 13		0.0 25.99	1 1.101	T 9.563	7.380 9.562 16.942	150 0.1106	25.767 0.0 1.873		Vel = 8.76	
C2 to C1	13 13		0.0 25.99	1 1.101		13.060 13.060	150 0.1105	27.640 0.0 1.443		Vel = 8.76	
C1 to TOR	13 13		0.0 25.99	1 1.101	2E 7.65	15.530 7.650 23.180	150 0.1105	29.083 0.0 2.561		Vel = 8.76	
TOR to BOR	13 -2		0.0 25.99	1 1.101	Zaa 0.0	15.000 15.000	120 0.1670	31.644 10.496 2.505		** Fixed Loss = 4 Vel = 8.76	
BOR to 1	-2 -2		0.0 25.99	1 1.097	2E 4.974	1.590 4.974 6.564	120 0.1700	44.645 0.0 1.116		Vel = 8.76	

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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	*****
1 to U23	-2 -2		0.0 25.99	1 1.097		3.200 3.200	140 0.1278	45.761 0.0 0.409		Vel = 8.82	
U23 to U22	-2 -2		0.0 25.99	1 1.097	3E 9.923	100.860 9.923 110.783	140 0.1278	46.170 0.0 14.158		Vel = 8.82	
U22 to 2	-2 -2		0.0 25.99	1 1.097	T 8.269	2.680 8.269 10.949	140 0.1278	60.328 0.0 1.399		Vel = 8.82	
2 to U20	-2 -2		0.0 25.99	1 1.097		0.660 0.660	140 0.1273	61.727 4.000 0.084		** Fixed Loss = 4 Vel = 8.82	
U20 to TEST	-2 2.500		0.0 25.99	4 4.1	T 29.067	26.490 29.067 55.557	140 0.0002	65.811 -1.949 0.012		Vel = 0.63	
TEST			5.00 30.99					63.874		Qa = 5.00 K Factor = 3.88	
S8 to C9	36.25 36.25	5.0	13.03	1 1.101	T 9.563	0.500 9.562 10.062	150 0.0308	6.782 0.0 0.310		K = K @ EQ02 Vel = 4.39	
C9			0.0 13.03					7.092		K Factor = 4.89	

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