



## 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#2 UNIT E Fire Plans-cALAC  
Drawing : BLDG 2  
Location : 117 SOUTH RIVERSIDE DRIVE, POMPANO BEACH, FLORIDA 33062  
Remote Area : UNIT E  
Contract : BC922  
Data File : Bldg#1 UNIT A Fire Plans-cALAC Area 3.WXF

# DRC

HYDRAULIC DESIGN INFORMATION SHEET

Name - RIVERSIDE TOWNHOUSE Date - 10/22/21  
Location - 117 SOUTH RIVERSIDE DRIVE, POMPANO BEACH, FLORIDA 33062  
Building - BLDG 2 System No. - UNIT E  
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: (X)NFPA 13 Residential ( )NFPA 13R (X)NFPA 13D  
Y Number of Sprinklers Flowing: ( )1 ( )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 31.02 Psi Required 55.49 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#2 UNIT E Fire Plans-cALAC

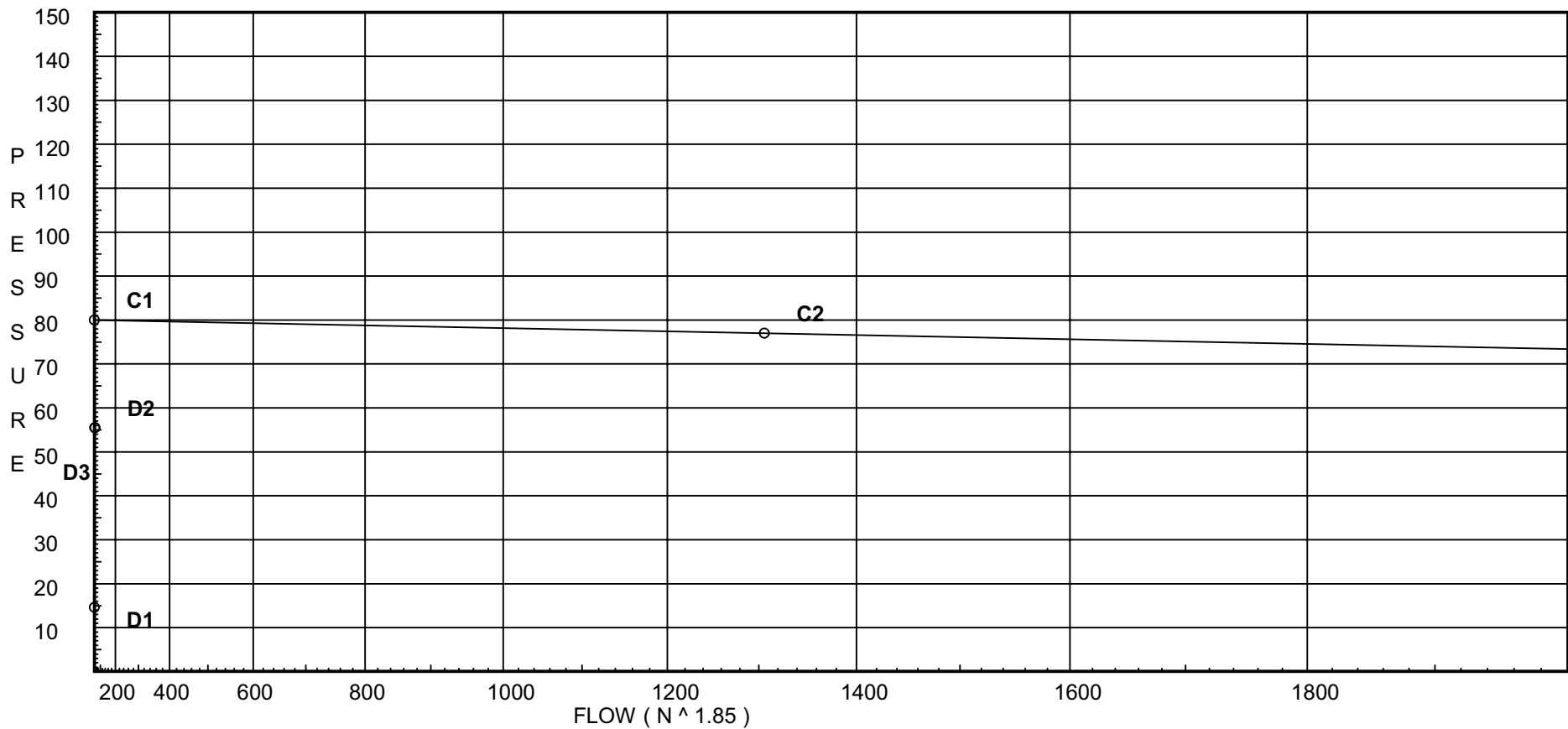
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## City Water Supply:

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

## Demand:

D1 - Elevation : 14.617  
D2 - System Flow : 26.026  
D2 - System Pressure : 55.492  
Hose ( Demand ) : 5  
D3 - System Demand : 31.026  
Safety Margin : 24.505



Fittings Used Summary

SUMMERS FIRE SPRINKLERS, INC  
Bldg#2 UNIT E 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	84	7.0
EQ01	36.25		6.71	na				
DP02	35.25	4.9	7.0	na	12.96	0.05	200	7.0
EQ02	36.25		6.71	na				
S6	36.25	K = K @ EQ01	6.71	na	12.96			
E9	36.25		6.93	na				
E8	36.25		7.16	na				
E7	36.25		7.42	na				
E6	36.25		7.77	na				
E5	36.25		9.58	na				
E4	13.0		22.23	na				
E2	13.0		25.43	na				
E1	13.0		26.52	na				
BOR	13.0		28.7	na				
TOR	-2.0		40.86	na				
U15	-2.0		41.52	na				
U14	-2.0		46.05	na				
U13	-2.0		50.24	na				
1	-2.0		51.4	na				
U12	-2.0		55.52	na				
U8	-2.0		56.24	na				
U2	-2.0		57.44	na				
TEST	2.5		55.49	na	5.0			
S5	36.25	K = K @ EQ02	6.82	na	13.06			

The maximum velocity is 8.84 and it occurs in the pipe between nodes U15 and U14

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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	
S6 to E9	36.25 36.25	5.0	12.96 12.96	1 1.101		6.940 6.940	150 0.0305	6.714 0.0 0.212		K = K @ EQ01 Vel = 4.37	
E9 to E8	36.25 36.25		0.0 12.96	1 1.101	E 3.825	4.010 3.825 7.835	150 0.0305	6.926 0.0 0.239		Vel = 4.37	
E8 to E7	36.25 36.25		13.07 26.03	1 1.101		2.260 2.260	150 0.1106	7.165 0.0 0.250		Vel = 8.77	
E7 to E6	36.25 36.25		0.0 26.03	1 1.101		3.170 3.170	150 0.1107	7.415 0.0 0.351		Vel = 8.77	
E6 to E5	36.25 36.25		0.0 26.03	1 1.101	T E 3.825	3.000 13.387 16.387	150 0.1108	7.766 0.0 1.815		Vel = 8.77	
E5 to E4	36.25 13		0.0 26.03	1 1.101		23.250 23.250	150 0.1108	9.581 10.070 2.575		Vel = 8.77	
E4 to E2	13 13		0.0 26.03	1 1.101	3E T 11.475 9.563	7.880 21.037 28.917	150 0.1107	22.226 0.0 3.202		Vel = 8.77	
E2 to E1	13 13		0.0 26.03	1 1.101	E 3.825	5.990 3.825 9.815	150 0.1109	25.428 0.0 1.088		Vel = 8.77	
E1 to BOR	13 13		0.0 26.03	1 1.101	E 3.825	15.910 3.825 19.735	150 0.1107	26.516 0.0 2.185		Vel = 8.77	
BOR to TOR	13 -2		0.0 26.03	1 1.101	Zaa 0.0	15.000 15.000	150 0.1108	28.701 10.496 1.662		** Fixed Loss = 4 Vel = 8.77	
TOR to U15	-2 -2		0.0 26.03	1 1.101	E 3.825	2.100 3.825 5.925	150 0.1107	40.859 0.0 0.656		Vel = 8.77	
U15 to U14	-2 -2		0.0 26.03	1 1.097	E 3.758	36.480 3.758 40.238	150 0.1128	41.515 0.0 4.537		Vel = 8.84	
U14 to U13	-2 -2		0.0 26.03	1 1.097	E 2.487	22.130 2.487 24.617	120 0.1703	46.052 0.0 4.193		Vel = 8.84	

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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	*****
U13 to 1	-2 -2		0.0 26.03	1 1.097	E 2.487	4.270 2.487 6.757	120 0.1703	50.245 0.0 1.151		Vel = 8.84	
1 to U12	-2 -2		0.0 26.03	1 1.097		0.700 0.700	120 0.1700	51.396 4.000 0.119		* * Fixed Loss = 4 Vel = 8.84	
U12 to U8	-2 -2		0.0 26.03	1 1.097	E 2.487	1.740 2.487 4.227	120 0.1703	55.515 0.0 0.720		Vel = 8.84	
U8 to U2	-2 -2		0.0 26.03	1 1.097	T 6.217	0.830 6.217 7.047	120 0.1704	56.235 0.0 1.201		Vel = 8.84	
U2 to TEST	-2 2.500		0.0 26.03	4 4.1		26.620 26.620	140 0.0002	57.436 -1.949 0.005		Vel = 0.63	
TEST			5.00 31.03					55.492		Qa = 5.00 K Factor = 4.17	
S5 to E8	36.25 36.25	5.0	13.06 13.06	1 1.101	T 9.563	1.740 9.562 11.302	150 0.0310	6.815 0.0 0.350		K = K @ EQ02 Vel = 4.40	
E8			0.0 13.06					7.165		K Factor = 4.88	

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