

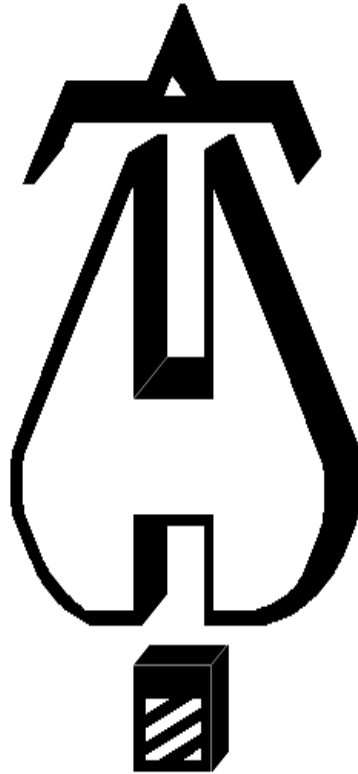


1731 Round Rock Drive, Raleigh, NC 27615 • (919) 872-3250 • fax (919) 877-5775 • www.flsamerica.com

OAKHAVEN LOT 9

HYDRAULIC CALCULATIONS

8/25/2021



Hydraulic calculations using HydraCALC

Fire & Life Safety America
1731 Roundrock Drive
Raleigh, NC 27615
P: (919) 872-3250
F: (919) 877-5775

Job Name : Oakhaven Lot 9
Drawing : FP1
Location : 312 Oakhaven Dr.
Remote Area : RA1
Contract : 21NC1533
Data File : RA1- Master Bedroom.WXF

HYDRAULIC CALCULATIONS
for

Project name: Oakhaven Lot 9

Location: 312 Oakhaven Dr.

Drawing no: FP1

Date: 8/25/2021

Design

Remote area number: RA1

Remote area location: Master Bedroom

Occupancy classification: Residential

Density: .05 - Gpm/SqFt

Area of application: 286 - SqFt

Coverage per sprinkler: 400 - SqFt

Type of sprinklers calculated: VK494

No. of sprinklers calculated: 2

In-rack demand: N/A` - GPM

Hose streams: 3 - GPM

Total water required (including hose streams): 23.03 - GPM @ 29.72 - Psi

Type of system: Wet

Volume of dry or preaction system: N/A - Gal

Water supply information

Date: 4/21/2021

Location: NC 42, NC 27540

Source: Fire & Life Safety America

Name of contractor: Fire & Life Safety America

Address: 1731 Roundrock Drive / Raleigh, NC 27615 / P: (919) 872-3250

Phone number: F: (919) 877-57

Name of designer: H. WEYANT

Authority having jurisdiction: Harnett County

Notes: (Include peaking information or gridded systems here.)

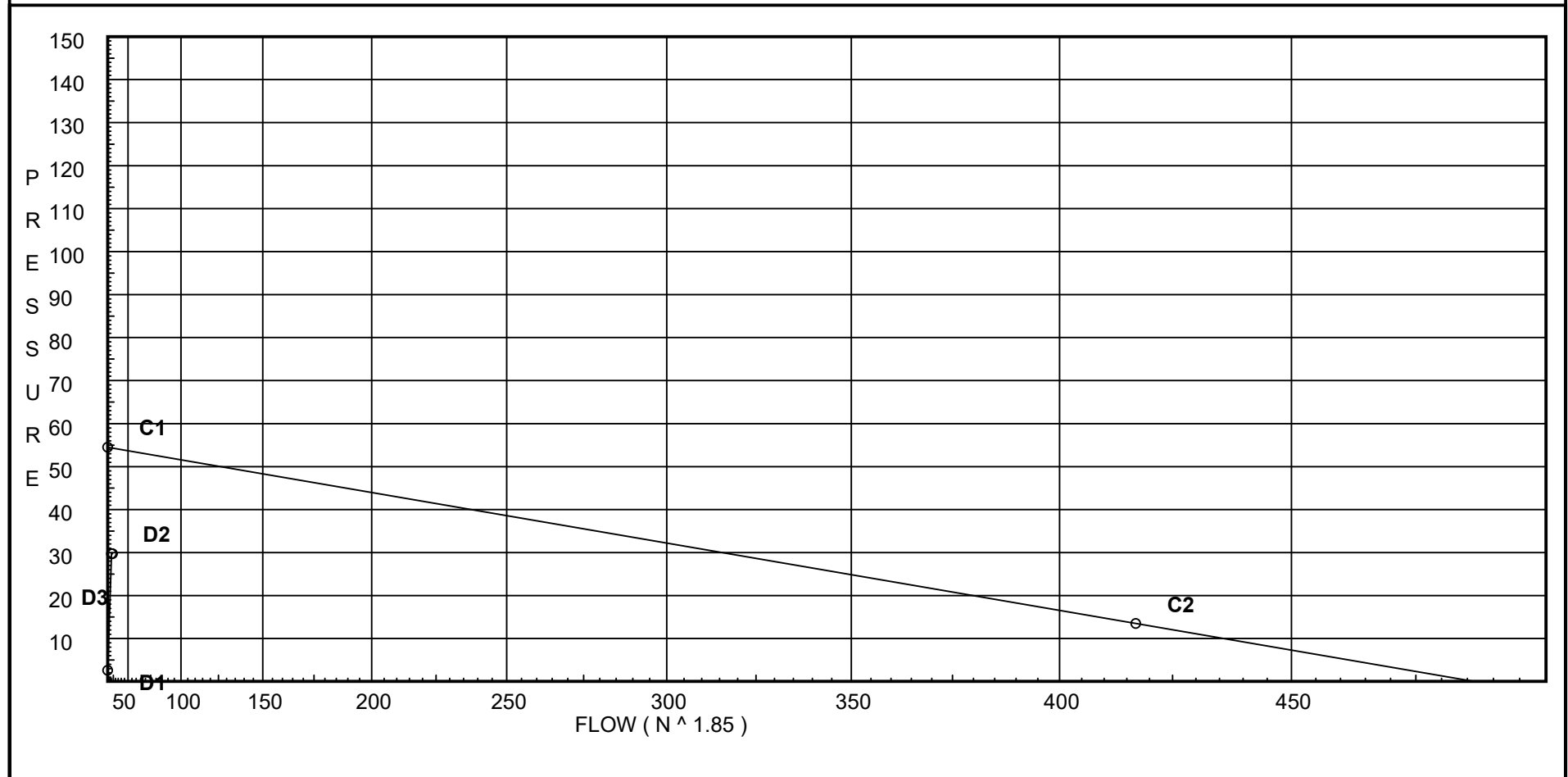
Water Supply Curve C

Fire & Life Safety America
Oakhaven Lot 9

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City Water Supply:
C1 - Static Pressure : 54.5
C2 - Residual Pressure: 13.5
C2 - Residual Flow : 417

Demand:
D1 - Elevation : 2.599
D2 - System Flow : 20.024
D2 - System Pressure : 29.716
Hose (Demand) : 3
D3 - System Demand : 23.024
Safety Margin : 24.591



Fittings Used Summary

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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
Ball	B Ball Milw BB-SC100			2.25	2	2.5	2.25	10													
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
F	NFPA 13 45' Elbow	1	1	1	1	2	2	3	3	3	4	5	7	9	11	13	17	19	21	24	28
G	NFPA 13 Gate Valve	0	0	0	0	0	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13
N *	CPVC 90'ElI Harvel-Spears		7	7	8	9	11	12	13	0	0	0	0	0	0	0	0	0	0	0	0
O *	CPVC Tee - Branch	3	3	5	6	8	10	12	15	0	0	0	0	0	0	0	0	0	0	0	0
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

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.

SUPPLY ANALYSIS

Node at Source	Static Pressure	Residual Pressure	Flow	Available Pressure	Total Demand	Required Pressure
TEST	54.5	13.5	417.0	54.307	23.02	29.716

NODE ANALYSIS

Node Tag	Elevation	Node Type	Pressure at Node	Discharge at Node	Notes
S101	9.0	4.9	16.7	20.02	
S102	0.0		22.49		
101	10.0		16.81		
102	10.0		18.16		
M101	10.0		17.55		
M102	10.0		18.16		
M103	10.0		19.01		
TOR	8.0		23.31		
BOR	3.0		26.79		
UG1	3.0		27.59	3.0	
UG2	-3.0		32.26		
UG3	-3.0		32.29		
TEST	3.0		29.72		

Final Calculations : Hazen-Williams

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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	*****
S101 to 101	9 10	4.90	20.02 20.02	1 1.101	N	7.0 0.0 0.0	1.000 7.000 8.000	150 0.0681	16.700 -0.433 0.545		Vel = 6.75	
101			0.0 20.02						16.812		K Factor = 4.88	
S102 to 102	0 10		0.0 0.0	1 1.101	N	7.0 0.0 0.0	1.000 7.000 8.000	150 0	22.490 -4.331 0.0		Vel = 0	
102			0.0 0.0						18.159		K Factor = 0	
101 to M101	10 10		20.02 20.02	1 1.101	N	7.0 0.0 0.0	3.750 7.000 10.750	150 0.0683	16.812 0.0 0.734		Vel = 6.75	
M101			0.0 20.02						17.546		K Factor = 4.78	
102 to M102	10 10		0.0 0.0	1 1.101	O	5.0 0.0 0.0	0.750 5.000 5.750	150 0	18.159 0.0 0.0		Vel = 0	
M102			0.0 0.0						18.159		K Factor = 0	
M101 to M102	10 10		20.02 20.02	1 1.101		0.0 0.0 0.0	9.000 0.0 9.000	150 0.0681	17.546 0.0 0.613		Vel = 6.75	
M102 to M103	10 10		0.0 20.02	1 1.101	O	5.0 0.0 0.0	7.500 5.000 12.500	150 0.0682	18.159 0.0 0.853		Vel = 6.75	
M103 to TOR	10 8		0.0 20.02	1 1.101	2O 2N	10.0 14.0 0.0	26.333 24.000 50.333	150 0.0682	19.012 0.866 3.432		Vel = 6.75	
TOR			0.0 20.02						23.310		K Factor = 4.15	
TOR to BOR	8 3		20.02 20.02	1 1.101	N Ball	7.0 4.303 0.0	8.000 11.303 19.303	150 0.0682	23.310 2.166 1.316		Vel = 6.75	
BOR to UG1	3 3		0.0 20.02	1 1.101	2E	7.65 0.0 0.0	4.000 7.650 11.650	150 0.0682	26.792 0.0 0.794		Vel = 6.75	
UG1 to UG2	3 -3	H3	3.00 23.02	1.25 1.394	T 2E	9.523 9.523 0.0	55.000 19.046 74.046	150 0.0280	27.586 2.599 2.072		Vel = 4.84	
UG2 to UG3	-3 -3		0.0 23.02	6 6.09	2G 3E 2F	9.25 64.749 21.583	1567.667 95.581 1663.248	150 0	32.257 0.0 0.035		Vel = 0.25	
UG3 to TEST	-3 3		0.0 23.02	6 6.16	T 2E G	48.896 45.637 4.89	1000.000 99.422 1099.422	150 0	32.292 -2.599 0.023		Vel = 0.25	
TEST			0.0 23.02						29.716		K Factor = 4.22	

Final Calculations : Hazen-Williams

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Node1	Elev1	K	Qa	Nom	Fitting		Pipe	CFact	Pt			
to					or		Ftngs		Pe	*****	Notes	*****
Node2	Elev2	Fact	Qt	Act	Equiv	Len	Total	Pf/Ft	Pf			
