Harnett COUNTY

Emergency Services Department
www.harnett.org

Application for Plan Review

Sprinkler Plan review

Application # FbFL01911-0004

Date Received: 5-13-2020 Received By: _____

Name of Project: CARLIE C's IGA

Physical Address of Project: 333 N. RALEIGH RD.
ANGIER NC _____

Plans Submitted By: MARK FORD / ANDREW DORMAN

Project Phone: (9)-_____-_____

Contact Person/Address: MARK FORD
P.O. BOX 250
DUNN, N.C. 28335

Contact Phone: (910)-892-1700 (_____)-_____-_____

Contractor's Name/Info: CAROLINA FIRE PROTECTION, INC.
P.O. BOX 250
DUNN, N.C. 28335

Contractor's Phone: (910)-892-1700

- **Plans that are submitted will be reviewed as quickly as possible with an average time of review between 7-10 working days.**
- **Status checks may be conducted on plan reviews by visiting the website http://hteweb.harnett.org/Click2GovBP/Index.jsp or by calling the Harnett County Central Permitting Office (910-893-7525, Option #2), or the Harnett County Fire Marshal's Office (910-893-7580).**
- **Approved plans must be picked up from the Central Permitting Office and all fees paid before any required inspections can be conducted.**

Carolina Fire Protection

4055 Hodges Chapel Road
Dunn,N.C. 28334
Phone #(910)-892-1700
Fax#(910)-892-7322

Transmittal Letter

Date April 24, 2020

To Central Permitting
108 E. Front Street
Lillington, NC 27546

Attention Plan Review

From Mark Ford / Andrew Dorman

Subject Carlie C's
Angier, NC

# SETS	PAGES	DESCRIPTION	APPROVAL	FOR YOUR USE	INFORMATION	RECORDS	OTHER
3	FP-1	Sprinkler Drawings	X				
1		Hydraulic Calculation	X				
1		Permit Application	X				

MAILED FED EX UPS HAND DELIVERED

X PLEASE RETURN (1) COPY OF DRAWINGS MARKED WITH YOUR STAMP OF APPROVAL AND/OR YOUR COMMENTS

REMARKS:

_____

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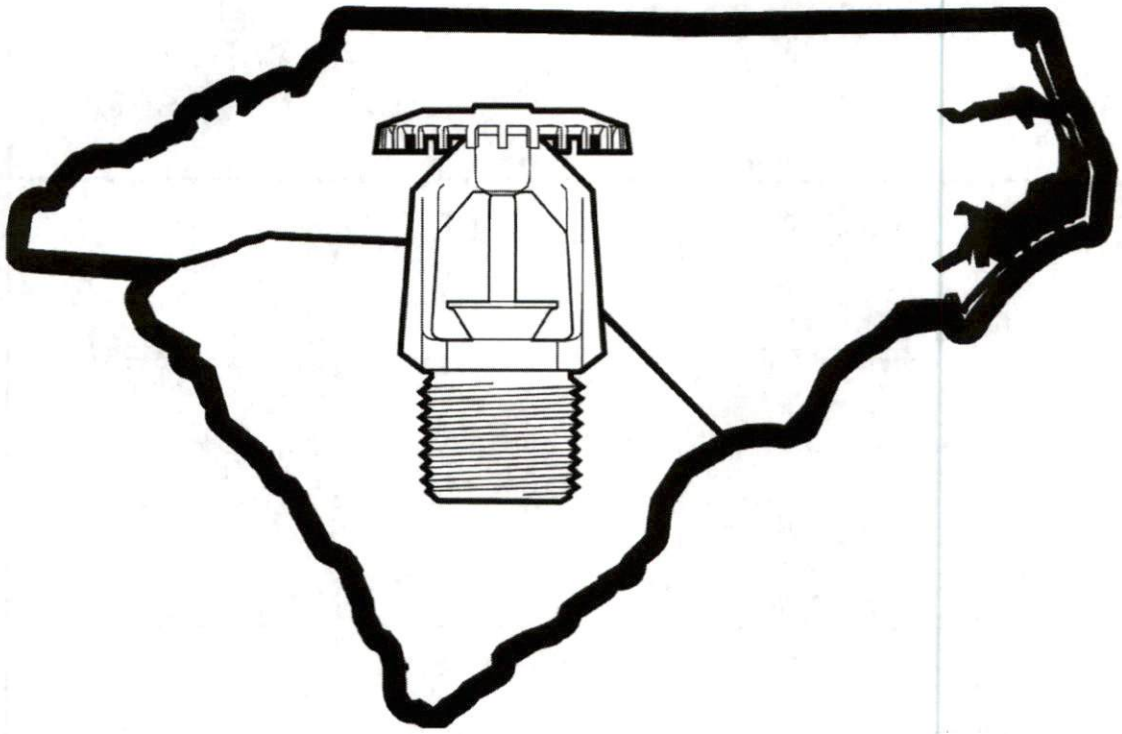


Carolina Fire Protection, Inc.
4055 Hodges Chapel Road
P.O. Box 250 (28335)
Dunn, NC 28334
910-892-1700

Job Name	:	Carlie C'S Angier
Building	:	New addition
Location	:	Angier, NC
System	:	
Contract	:	20D471
Data File	:	CARLIE C'S ANGIER 1500.wxtmp

Hydraulic Design Information Sheet

Name - Carlie C'S Angier — Date - 4-24-2020
Location - Angier, NC
Building - New addition — System No. -
Contractor - Carolina Fire Protection, Inc. — Contract No. - 20D471
Calculated By - M.Ford — Drawing No. -
Construction: ( ) Combustible (X) Non-Combustible — Ceiling Height - Varies
Occupancy - Mercantile

SYSTEM DESIGN

(X) NFPA 13 ( ) Lt. Haz. Ord.Haz.Gp. ( ) 1 (X) 2 ( ) 3 ( ) Ex.Haz.
( ) NFPA 231 ( ) NFPA 231C ( ) Figure Curve
Other
Specific Ruling — Made By — Date

Area of Sprinkler Operation	- 1500	System Type	Sprinkler/Nozzle
Density	- .20	(X) Wet	Make Reliable
Area Per Sprinkler	- 130	( ) Dry	Model Upright
Elevation at Highest Outlet	- 14.833	( ) Deluge	Size 3/4"
Hose Allowance - Inside	- n/a	( ) Preaction	K-Factor 8.0
Rack Sprinkler Allowance	- n/a	( ) Other	Temp.Rat.155
Hose Allowance - Outside	- 250		

Note

Calculation Summary — Flow Required - 606.29 Press Required - 32.784 Test
C-Factor Used: 120 Overhead 140 Underground

WATER SUPPLY

Water Flow Test:		Pump Data:		Tank or Reservoir:
Date of Test	- 12-14-18			Cap. -
Time of Test	- 10:30 am	Rated Cap.-		Elev.-
Static Press	- 53	@ Press	-	
Residual Press	- 44	Elev.	-	Well
Flow	- 748			Proof Flow
Elevation	- 0			

Location - See Attached

Source of Information - Carolina Fire Protection, Inc.

COMMODITY STORAGE

Commodity — Class — Location
Storage Ht. — Area — Aisle W.
Storage Method: Solid Piled % Palletized % Rack

( ) Single Row	( ) Conven. Pallet	( ) Auto. Storage	( ) Encap.
( ) Double Row	( ) Slave Pallet	( ) Solid Shelf	( ) Non
( ) Mult. Row		( ) Open Shelf	

Flue Spacing — Clearance:Storage to Ceiling
Longitudinal — Transverse

Horizontal Barriers Provided:

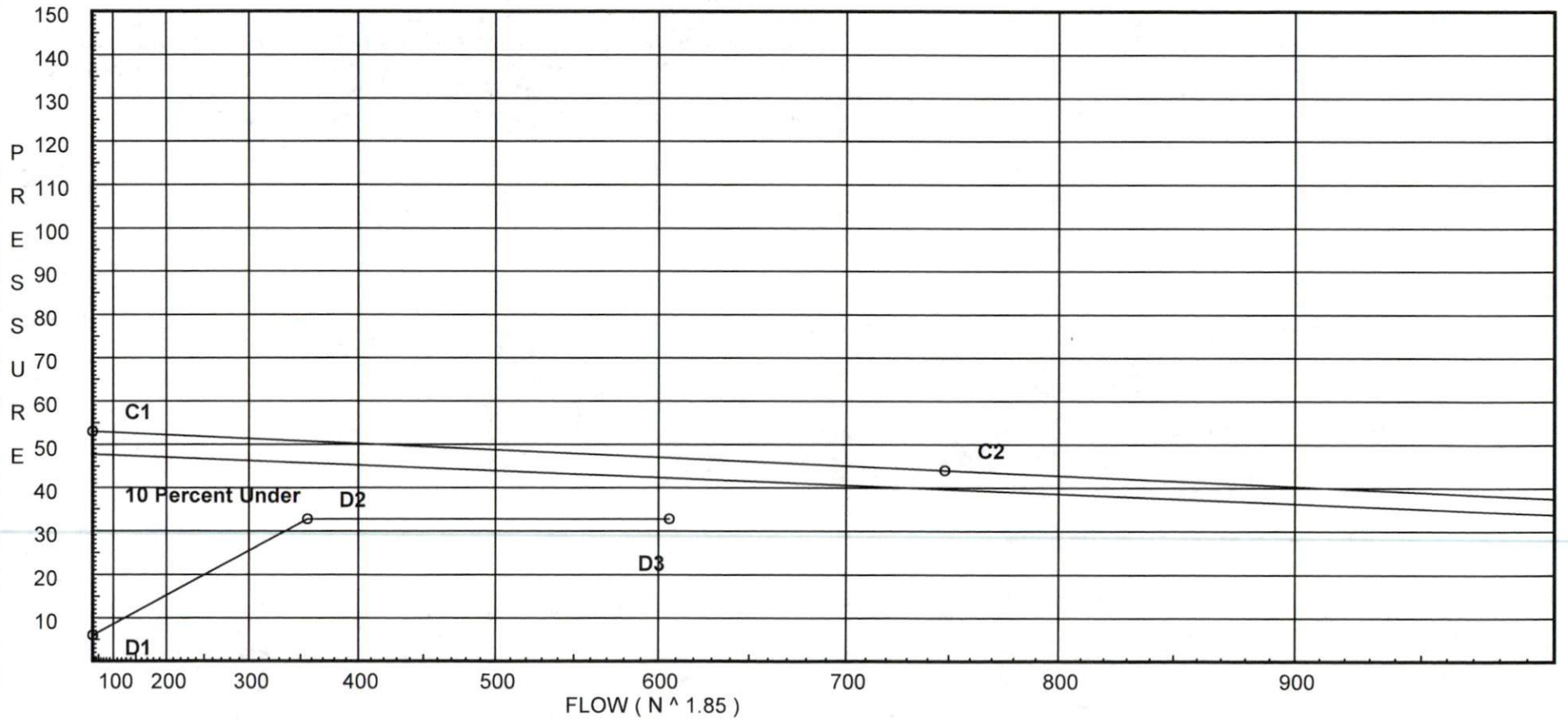
Water Supply Curve

Carolina Fire Protection, Inc.
Carlie C'S Angier

Date 4-24-2020

City Water Supply:
- C1 - Static Pressure : 53
- C2 - Residual Pressure: 44
- C2 - Residual Flow : 748

Demand:
- D1 - Elevation : 5.991
- D2 - System Flow : 356.291
- D2 - System Pressure : 32.784
- Hose (Demand) : 250
- D3 - System Demand : 606.291
- Safety Margin : 14.113



Fittings Used Summary

Fitting Legend

Abbrev.	Name	½	¾	1	1¼	1½	2	2½	3	3½	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
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
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	53.0	44	748.0	46.898	606.29	32.784

NODE ANALYSIS

Node Tag	Elevation	Node Type	Pressure at Node	Discharge at Node		Notes
1	14.833	8	9.0	24.0	0.2	120
2	14.833	8	9.05	24.07	0.2	120
3	14.833	8	9.25	24.33	0.2	120
4	14.833	8	9.67	24.88	0.2	120
6	14.833	8	9.06	24.09	0.2	120
7	14.833	8	9.12	24.16	0.2	120
8	14.833	8	9.32	24.42	0.2	120
9	14.833	8	9.74	24.97	0.2	120
11	14.833	8	10.48	25.9	0.2	120
12	14.833	8	10.55	25.98	0.2	120
13	14.833	8	10.77	26.26	0.2	120
M1	12.5		12.83			
5	14.833	8	11.89	27.58	0.2	120
M2	12.5		12.91			
10	14.833	8	11.96	27.67	0.2	120
M3	12.5		13.22			
14	14.833	8	12.24	27.99	0.2	120
M4	12.5		13.79			
M5	12.5		14.25			
M7	11.75		14.68			
M8	11.75		14.71			
M9	11.75		14.78			
M10	11.75		14.94			
M11	11.75		15.17			
F1	17.667		14.18			
F2	17.667		14.17			
F3	17.667		14.13			
F4	17.667		14.13			
F5	17.667		14.22			
F6	17.667		14.26			
F7	17.667		14.27			
F8	17.667		14.27			
F9	17.667		14.26			
F10	17.667		14.23			
F11	17.667		14.29			
F12	17.667		14.31			
M6	17.667		14.08			
M12	17.667		14.22			
N1	17.667		15.28			
N2	17.667		15.28			
N3	17.667		15.29			
N4	17.667		15.32			

NODE ANALYSIS (cont.)

Node Tag	*Elevation*	*Node Type*	*Pressure at Node*	*Discharge at Node*	*Notes*
N5	17.667		15.35		
N6	17.667		15.41		
N7	17.667		15.49		
N8	17.667		15.6		
N9	17.667		15.74		
N10	17.667		15.93		
N11	17.667		16.14		
N12	17.667		16.4		
BASR	1.0		26.16	250.0	
TEST	1.0		32.78		

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 ******
1	14.833	8.00	24.00	2			10.000	120	9.000	
to									0.0	
2	14.833		24.0	2.157			10.000	0.0054	0.054	Vel = 2.11
2	14.833	8.00	24.07	2			10.000	120	9.054	
to									0.0	
3	14.833		48.07	2.157			10.000	0.0197	0.197	Vel = 4.22
3	14.833	8.00	24.34	2			10.000	120	9.251	
to									0.0	
4	14.833		72.41	2.157			10.000	0.0421	0.421	Vel = 6.36
4	14.833	8.00	24.87	2	2T	24.613	5.000	120	9.672	
to							24.613		1.010	
M1	12.500		97.28	2.157			29.613	0.0726	2.149	Vel = 8.54
			0.0							
M1			97.28						12.831	K Factor = 27.16
6	14.833	8.00	24.09	2			10.000	120	9.064	
to									0.0	
7	14.833		24.09	2.157			10.000	0.0055	0.055	Vel = 2.12
7	14.833	8.00	24.15	2			10.000	120	9.119	
to									0.0	
8	14.833		48.24	2.157			10.000	0.0198	0.198	Vel = 4.24
8	14.833	8.00	24.42	2			10.000	120	9.317	
to									0.0	
9	14.833		72.66	2.157			10.000	0.0423	0.423	Vel = 6.38
9	14.833	8.00	24.97	2	2T	24.613	5.000	120	9.740	
to							24.613		1.010	
M2	12.500		97.63	2.157			29.613	0.0730	2.163	Vel = 8.57
			0.0							
M2			97.63						12.913	K Factor = 27.17
11	14.833	8.00	25.90	2			10.000	120	10.484	
to									0.0	
12	14.833		25.9	2.157			10.000	0.0062	0.062	Vel = 2.27
12	14.833	8.00	25.98	2			10.000	120	10.546	
to									0.0	
13	14.833		51.88	2.157			10.000	0.0227	0.227	Vel = 4.56
13	14.833	8.00	26.26	2	2T	24.613	5.000	120	10.773	
to							24.613		1.010	
M3	12.500		78.14	2.157			29.613	0.0484	1.433	Vel = 6.86
			0.0							
M3			78.14						13.216	K Factor = 21.49
M1	12.500		13.51	2	2T	24.613	10.333	120	12.831	
to							24.613		-1.010	
5	14.833		13.51	2.157			34.946	0.0019	0.065	Vel = 1.19
5	14.833	8.00	27.58	2	2T	24.613	74.667	120	11.886	
to							24.613		1.335	
M7	11.750		41.09	2.157			99.280	0.0147	1.463	Vel = 3.61
			0.0							
M7			41.09						14.684	K Factor = 10.72
M2	12.500		12.61	2	2T	24.613	10.333	120	12.913	
to							24.613		-1.010	
10	14.833		12.61	2.157			34.946	0.0017	0.058	Vel = 1.11

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 ******
10	14.833	8.00	27.67	2	2T	24.613	74.667	120	11.961	
to							24.613		1.335	
M8	11.750		40.28	2.157			99.280	0.0142	1.410	Vel = 3.54
			0.0							
M8			40.28						14.706	K Factor = 10.50
M3	12.500		9.13	2	2T	24.613	10.333	120	13.216	
to							24.613		-1.010	
14	14.833		9.13	2.157			34.946	0.0009	0.032	Vel = 0.80
14	14.833	8.00	27.98	2	2T	24.613	74.667	120	12.238	
to							24.613		1.335	
M9	11.750		37.11	2.157			99.280	0.0122	1.211	Vel = 3.26
			0.0							
M9			37.11						14.784	K Factor = 9.65
M4	12.500		25.70	2	4T	49.227	85.000	120	13.787	
to							49.227		0.325	
M10	11.750		25.7	2.157			134.227	0.0062	0.829	Vel = 2.26
			0.0							
M10			25.70						14.941	K Factor = 6.65
M5	12.500		21.45	2	4T	49.227	85.000	120	14.249	
to							49.227		0.325	
M11	11.750		21.45	2.157			134.227	0.0044	0.594	Vel = 1.88
			0.0							
M11			21.45						15.168	K Factor = 5.51
M1	12.500		83.78	3			11.250	120	12.831	
to									0.0	
M2	12.500		83.78	3.26			11.250	0.0073	0.082	Vel = 3.22
M2	12.500		85.02	3			11.250	120	12.913	
to									0.0	
M3	12.500		168.8	3.26			11.250	0.0269	0.303	Vel = 6.49
M3	12.500		69.01	3			11.250	120	13.216	
to									0.0	
M4	12.500		237.81	3.26			11.250	0.0508	0.571	Vel = 9.14
M4	12.500		-25.69	3			11.250	120	13.787	
to									0.0	
M5	12.500		212.12	3.26			11.250	0.0411	0.462	Vel = 8.15
M5	12.500		-21.45	3	2E	18.815	22.333	120	14.249	
to					T	20.159	38.974		-2.238	
M6	17.667		190.67	3.26			61.307	0.0337	2.067	Vel = 7.33
			0.0							
M6			190.67						14.078	K Factor = 50.82
M7	11.750		41.09	3			11.250	120	14.684	
to									0.0	
M8	11.750		41.09	3.26			11.250	0.0020	0.022	Vel = 1.58
M8	11.750		40.28	3			11.250	120	14.706	
to									0.0	
M9	11.750		81.37	3.26			11.250	0.0069	0.078	Vel = 3.13
M9	11.750		37.11	3			11.250	120	14.784	
to									0.0	
M10	11.750		118.48	3.26			11.250	0.0140	0.157	Vel = 4.55

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 ******
M10	11.750		25.70	3			11.250	120	14.941	
to									0.0	
M11	11.750		144.18	3.26			11.250	0.0202	0.227	Vel = 5.54
M11	11.750		21.44	3	2E	18.815	23.083	120	15.168	
to					T	20.159	38.974		-2.563	
M12	17.667		165.62	3.26			62.057	0.0260	1.612	Vel = 6.37
			0.0							
M12			165.62						14.217	K Factor = 43.92
F1	17.667		26.47	2	2T	24.613	144.000	120	14.179	
to							24.613		0.0	
N1	17.667		26.47	2.157			168.613	0.0065	1.101	Vel = 2.32
			0.0							
N1			26.47						15.280	K Factor = 6.77
F2	17.667		26.64	2	2T	24.613	144.000	120	14.168	
to							24.613		0.0	
N2	17.667		26.64	2.157			168.613	0.0066	1.114	Vel = 2.34
			0.0							
N2			26.64						15.282	K Factor = 6.81
F3	17.667		27.26	2	2T	24.613	144.000	120	14.130	
to							24.613		0.0	
N3	17.667		27.26	2.157			168.613	0.0069	1.163	Vel = 2.39
			0.0							
N3			27.26						15.293	K Factor = 6.97
F4	17.667		27.53	2	2T	24.613	144.000	120	14.131	
to							24.613		0.0	
N4	17.667		27.53	2.157			168.613	0.0070	1.184	Vel = 2.42
			0.0							
N4			27.53						15.315	K Factor = 7.03
F5	17.667		26.92	2	2T	24.613	144.000	120	14.217	
to							24.613		0.0	
N5	17.667		26.92	2.157			168.613	0.0067	1.136	Vel = 2.36
			0.0							
N5			26.92						15.353	K Factor = 6.87
F6	17.667		27.13	2	2T	24.613	144.000	120	14.259	
to							24.613		0.0	
N6	17.667		27.13	2.157			168.613	0.0068	1.152	Vel = 2.38
			0.0							
N6			27.13						15.411	K Factor = 6.91
F7	17.667		28.00	2	2T	24.613	144.000	120	14.271	
to							24.613		0.0	
N7	17.667		28.0	2.157			168.613	0.0072	1.221	Vel = 2.46
			0.0							
N7			28.00						15.492	K Factor = 7.11
F8	17.667		29.32	2	2T	24.613	144.000	120	14.271	
to							24.613		0.0	
N8	17.667		29.32	2.157			168.613	0.0079	1.331	Vel = 2.57
			0.0							

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 ******
N8			29.32						15.602	K Factor = 7.42
F9	17.667		31.11	2	2T	24.613	144.000	120	14.259	
to							24.613		0.0	
N9	17.667		31.11	2.157			168.613	0.0088	1.485	Vel = 2.73
			0.0							
N9			31.11						15.744	K Factor = 7.84
F10	17.667		33.41	2	2T	24.613	144.000	120	14.232	
to							24.613		0.0	
N10	17.667		33.41	2.157			168.613	0.0100	1.694	Vel = 2.93
			0.0							
N10			33.41						15.926	K Factor = 8.37
F11	17.667		35.06	2	2T	24.613	144.000	120	14.291	
to							24.613		0.0	
N11	17.667		35.06	2.157			168.613	0.0110	1.852	Vel = 3.08
			0.0							
N11			35.06						16.143	K Factor = 8.73
F12	17.667		37.44	2	2T	24.613	144.000	120	14.309	
to							24.613		0.0	
N12	17.667		37.44	2.157			168.613	0.0124	2.091	Vel = 3.29
			0.0							
N12			37.44						16.400	K Factor = 9.25
F1	17.667		-26.47	3			12.000	120	14.179	
to									0.0	
F2	17.667		-26.47	3.26			12.000	-0.0009	-0.011	Vel = 1.02
F2	17.667		-26.64	3			12.000	120	14.168	
to									0.0	
F3	17.667		-53.11	3.26			12.000	-0.0032	-0.038	Vel = 2.04
F3	17.667		-27.26	3			7.667	120	14.130	
to									0.0	
M6	17.667		-80.37	3.26			7.667	-0.0068	-0.052	Vel = 3.09
M6	17.667		190.67	3			4.333	120	14.078	
to									0.0	
F4	17.667		110.3	3.26			4.333	0.0122	0.053	Vel = 4.24
F4	17.667		-27.53	3			12.000	120	14.131	
to									0.0	
F5	17.667		82.77	3.26			12.000	0.0072	0.086	Vel = 3.18
F5	17.667		-26.92	3			12.000	120	14.217	
to									0.0	
F6	17.667		55.85	3.26			12.000	0.0035	0.042	Vel = 2.15
F6	17.667		-27.13	3			12.000	120	14.259	
to									0.0	
F7	17.667		28.72	3.26			12.000	0.0010	0.012	Vel = 1.10
F7	17.667		-28.00	3			12.000	120	14.271	
to									0.0	
F8	17.667		0.72	3.26			12.000	0	0.0	Vel = 0.03
F8	17.667		-29.32	3			12.000	120	14.271	
to									0.0	
F9	17.667		-28.6	3.26			12.000	-0.0010	-0.012	Vel = 1.10

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 ******
F9	17.667		-31.11	3			10.667	120	14.259	
to									0.0	
M12	17.667		-59.71	3.26			10.667	-0.0039	-0.042	Vel = 2.30
M12	17.667		165.62	3			1.333	120	14.217	
to									0.0	
F10	17.667		105.91	3.26			1.333	0.0113	0.015	Vel = 4.07
F10	17.667		-33.41	3			10.333	120	14.232	
to									0.0	
F11	17.667		72.5	3.26			10.333	0.0057	0.059	Vel = 2.79
F11	17.667		-35.06	3			10.833	120	14.291	
to									0.0	
F12	17.667		37.44	3.26			10.833	0.0017	0.018	Vel = 1.44
			0.0							
F12			37.44						14.309	K Factor = 9.90
N1	17.667		26.47	4			12.000	120	15.280	
to									0.0	
N2	17.667		26.47	4.26			12.000	0.0002	0.002	Vel = 0.60
N2	17.667		26.64	4			12.000	120	15.282	
to									0.0	
N3	17.667		53.11	4.26			12.000	0.0009	0.011	Vel = 1.20
N3	17.667		27.26	4			12.000	120	15.293	
to									0.0	
N4	17.667		80.37	4.26			12.000	0.0018	0.022	Vel = 1.81
N4	17.667		27.53	4			12.000	120	15.315	
to									0.0	
N5	17.667		107.9	4.26			12.000	0.0032	0.038	Vel = 2.43
N5	17.667		26.92	4			12.000	120	15.353	
to									0.0	
N6	17.667		134.82	4.26			12.000	0.0048	0.058	Vel = 3.03
N6	17.667		27.13	4			12.000	120	15.411	
to									0.0	
N7	17.667		161.95	4.26			12.000	0.0068	0.081	Vel = 3.65
N7	17.667		27.99	4			12.000	120	15.492	
to									0.0	
N8	17.667		189.94	4.26			12.000	0.0092	0.110	Vel = 4.28
N8	17.667		29.32	4			12.000	120	15.602	
to									0.0	
N9	17.667		219.26	4.26			12.000	0.0118	0.142	Vel = 4.94
N9	17.667		31.12	4			12.000	120	15.744	
to									0.0	
N10	17.667		250.38	4.26			12.000	0.0152	0.182	Vel = 5.64
N10	17.667		33.41	4			11.333	120	15.926	
to									0.0	
N11	17.667		283.79	4.26			11.333	0.0191	0.217	Vel = 6.39
N11	17.667		35.06	4			10.833	120	16.143	
to									0.0	
N12	17.667		318.85	4.26			10.833	0.0237	0.257	Vel = 7.18
N12	17.667		37.44	4	3E	39.501	47.667	120	16.400	
to							39.501		7.218	
BASR	1		356.29	4.26			87.168	0.0291	2.539	Vel = 8.02

Final Calculations : Hazen-Williams

Carolina Fire Protection, Inc.
Carlie C'S Angier

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 ******
BASR	1	H250	250.00	6	2E	40.168	80.000	140	26.157	
to					T	43.037	87.509		5.000	* * Fixed Loss = 5
TEST	1		606.29	6.16	G	4.304	167.509	0.0097	1.627	Vel = 6.53
			0.0							
TEST			606.29						32.784	K Factor = 105.89

Carolina Fire Protection, Inc.

P.O. Box 250
Dunn, NC 28335

Phone: (910) 892-1700
Fax: (910) 892-7322

Fire Flow Analysis
Fire Sprinkler and / or Standpipe Design

SERVICE LOCATION

Address 333 N. RALEIGH ST. ANGIER, NC
Proposed Tap Location EXISTING
Requested Flow Location 333 N. RALEIGH ST.

TESTING AGENT

Firm Name CAROLINA FIRE PROTECTION, INC
Address P.O. Box 250 DUNN, NC 28335
Phone 910-892-1700 Fax 910-892-7322

RESULTS

Static Pressure 53 psi Flowing Pressure 20 psi (LKM 2" PL GUAGE OPENED)
Residual Pressure 44 psi Volume 748 gpm
Comments

Completed By: K. WILDER Date: 12-14-18

Time of Test: 10:03 AM

FIRE FLOW LOCATION SKETCH: