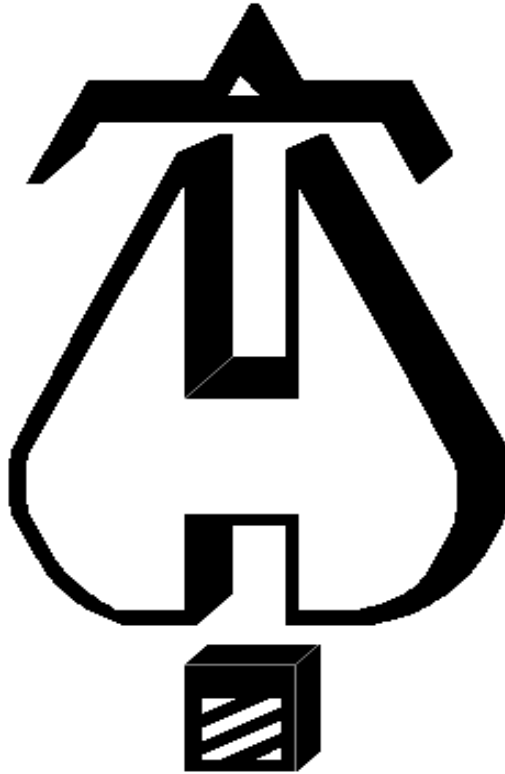




. . . Fire Protection by Computer Design

STAR FIRE SPRINKLERS, INC
686 EDGEWOOD AVE. N.
JACKSONVILLE, FL 32254
904 384-1066

Job Name : TEXAS ROADHOUSE LAKE CITY
Building : ATTIC
Location : 117 NW KNIGHTS AVE., LAKE CITY, FL
System : 1, DRY
Contract :
Data File : TEXAS ROADHOUSE - AREA 4.WXF

Hydraulic Design Information Sheet

Name - TEXAS ROADHOUSE Date - 02/27/2020
Location - 117 NW KNUGHTS AVE. , LAKE CITY , FL
Building - ATTIC System No. - 1, DRY
Contractor - STAR FIRE SPRINKLER, INC. Contract No. -
Calculated By - Drawing No. - FP-2
Construction: () Combustible () Non-Combustible Ceiling Height - VARIES
Occupancy - RESTAURANT

S (X) NFPA 13 (X) Lt. Haz. Ord.Haz.Gp. () 1 () 2 () 3 () Ex.Haz.
Y () NFPA 231 () NFPA 231C () Figure Curve
S Other

T Specific Ruling Made By Date

E
M Area of Sprinkler Operation - ENTIRE A. System Type Sprinkler/Nozzle
Density - 0.10 () Wet Make VIKING
D Area Per Sprinkler - 160 (X) Dry Model UPRIGHT
E Elevation at Highest Outlet - 22.33' () Deluge Size 1/2"
S Hose Allowance - Inside () Preaction K-Factor 5.6
I Rack Sprinkler Allowance - () Other Temp.Rat.200
G Hose Allowance - Outside - 100
N

Note

Calculation Flow Required - 418.7 Press Required - 66.1 AT TEST
Summary C-Factor Used: 100 Overhead 140 Underground

W Water Flow Test: Pump Data: Tank or Reservoir:
A Date of Test - 02/20/2020 Cap. -
T Time of Test - 10:30AM Rated Cap.- Elev.-
E Static Press - 85 @ Press -
R Residual Press - 65 Elev. - Well
Flow - 1340 Proof Flow
S Elevation - NA

U Location - NW KNIGHTS AVE & NW MEDICAL CENTER LN.

P
L Source of Information - STAR FIRE SPRINKLERS, INC.
Y

C Commodity Class Location
O Storage Ht. Area Aisle W.
M Storage Method: Solid Piled % Palletized % Rack
M
() Single Row () Conven. Pallet () Auto. Storage () Encap.
S R () Double Row () Slave Pallet () Solid Shelf () Non
T A () Mult. Row () Open Shelf
O C
R K Flue Spacing Clearance:Storage to Ceiling
A Longitudinal Transverse
G
E Horizontal Barriers Provided:

Water Supply Curve C

STAR FIRE SPRINKLERS, INC
TEXAS ROADHOUSE LAKE CITY

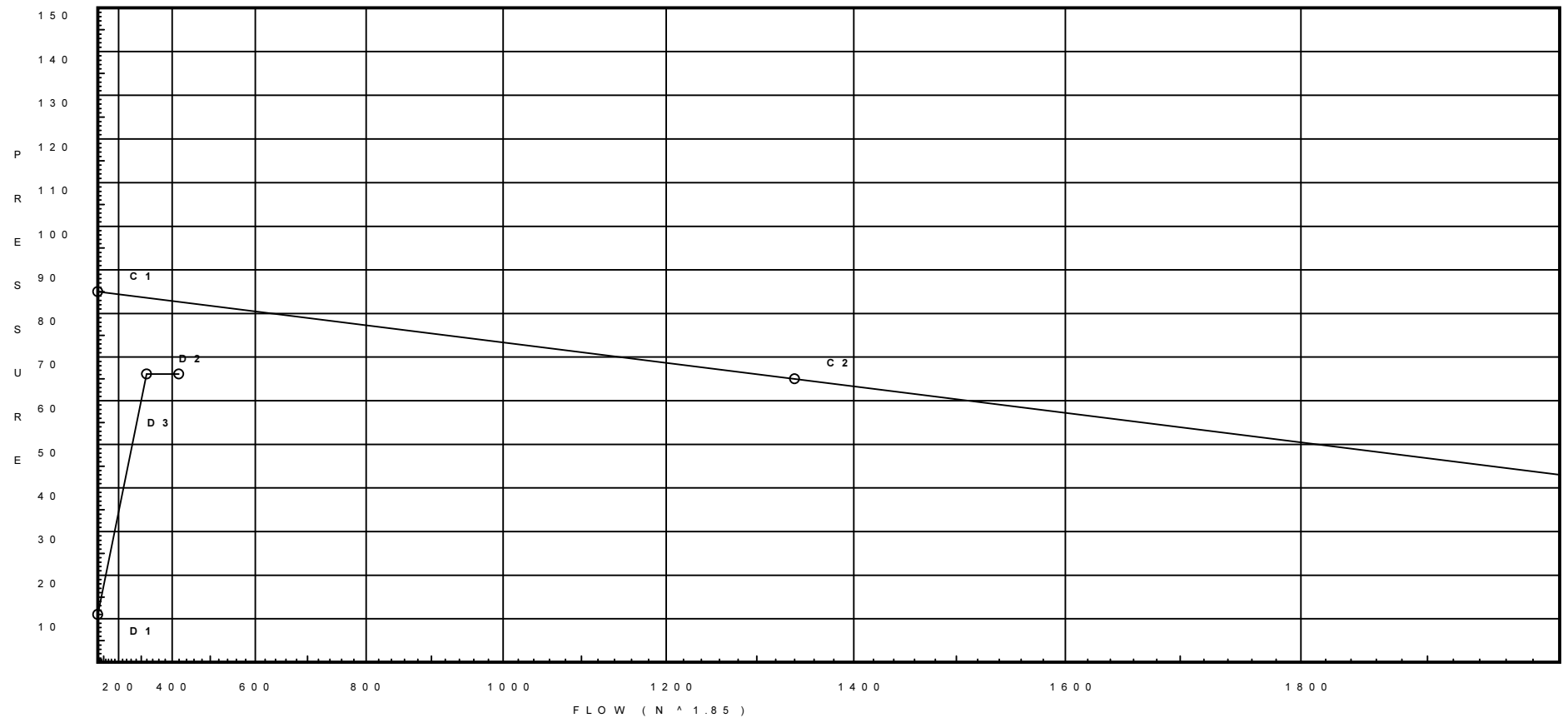
Page 2
Date 02/27/2020

City Water Supply:

C 1 - Static Pressure : 85
C 2 - Residual Pressure: 65
C 2 - Residual Flow : 1340

Demand:

D 1 - Elevation : 10.970
D 2 - System Flow : 318.726
D 2 - System Pressure : 66.148
Hose (Demand) : 100
D 3 - System Demand : 418.726
Safety Margin : 16.527



Fittings Used Summary

STAR FIRE SPRINKLERS, INC
TEXAS ROADHOUSE LAKE CITY

Fitting Legend																					
Abbrev.	Name	½	¾	1	1 ¼	1 ½	2	2 ½	3	3 ½	4	5	6	8	10	12	14	16	18	20	24
B	NFPA 13 Butterfly Valve	0	0	0	0	0	6	7	10	0	12	9	10	12	19	21	0	0	0	0	0
Dvk	Dry Viking F1								3		5		49								
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
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 C Factors of 120 except as noted with *. The fittings marked with a * show equivalent lengths values supplied by manufacturers based on specific pipe diameters and C Factors and they require no adjustment. All values for fittings not marked with a * will be adjusted in the calculation for C Factors of other than 120 and diameters other than Sched 40 per NFPA.

Pressure / Flow Summary - STANDARD

STAR FIRE SPRINKLERS, INC
TEXAS ROADHOUSE LAKE CITY

Page 4
Date 02/27/2020

Node No.	Elevation	K-Fact	P t Actual	P n	Flow Actual	Density	Area	Press Req.
300	22.33	5.6	7.45	na	15.28	0.1	100	7.0
301	22.33	5.6	8.72	na	16.54	0.1	100	7.0
302	22.33	5.6	13.53	na	20.6	0.1	100	7.0
303	22.33	5.6	7.0	na	14.82	0.1	100	7.0
304	22.33	5.6	8.21	na	16.05	0.1	100	7.0
305	22.33	5.6	16.67	na	22.86	0.1	100	7.0
306	12.92		33.67	na				
S308	13.18	5.6	16.86	na	22.99	0.1	160	7.0
S309	13.18	5.6	19.6	na	24.79	0.1	160	7.0
S310	13.18	5.6	30.86	na	31.11	0.1	160	7.0
S313	12.92	5.6	15.13	na	21.79	0.1	100	7.0
S314	12.92	5.6	16.87	na	23.0	0.1	100	7.0
S315	12.92	5.6	24.23	na	27.57	0.1	100	7.0
S316	12.92	5.6	28.94	na	30.12	0.1	100	7.0
S320	12.92	5.6	31.06	na	31.21	0.1	160	7.0
321	12.92		31.93	na				
308	12.92		17.97	na				
309	12.92		20.86	na				
310	12.92		32.72	na				
311	12.92		35.78	na				
313	12.66		16.63	na				
314	12.66		18.52	na				
315	12.66		26.48	na				
316	12.66		31.57	na				
312	12.66		37.14	na				
TEE	12.66		39.46	na				
317	12.66		44.46	na				
TDR	12.66		47.47	na				
BDR	1.0		55.84	na				
STUB	-3.0		58.27	na				
UG 1	-3.0		58.5	na				
UG 2	-3.0		65.77	na				
UG 3	-3.0		65.86	na				
TEST	-3.0		66.15	na	100.0			

The maximum velocity is 21.98 and it occurs in the pipe between nodes 316 and 317

STAR FIRE SPRINKLERS, INC
TEXAS ROADHOUSE LAKE CITY

Page 5
Date 02/27/2020

Hyd. Ref. Point	Q a Q t	D i a . "C" P f/F t	F i t t i n g o r E q v . L n .	P i p e F t n g 's T o t a l	P t P e P f	P t P v P n	***** Notes *****
300 to 301	15.28	1.049 100.0	0.0 0.0	11.500 0.0	7.445 0.0		K Factor = 5.60
301 to 302	15.28	0.1109	0.0	11.500	1.275		Vel = 5.67
301 to 302	16.54	1.049 100.0	0.0 0.0	11.180 0.0	8.720 0.0		K Factor = 5.60
302 to 306	31.82	0.4303	0.0	11.180	4.811		Vel = 11.81
302 to 306	20.60	1.38 100.0	4 E 1 T	8.564 4.282	43.510 12.846	13.531 4.075	K Factor = 5.60
306 to 306	52.42	0.2851	0.0	56.356	16.066		Vel = 11.24
306 to 306	0.0 52.42					33.672	K Factor = 9.03
303 to 304	14.82	1.049 100.0	0.0 0.0	11.580 0.0	7.000 0.0		K Factor = 5.60
304 to 305	14.82	0.1047	0.0	11.580	1.212		Vel = 5.50
304 to 305	16.04	1.049 100.0	4 E 1 T	5.71 3.568	11.500 9.278	8.212 0.0	K Factor = 5.60
305 to 306	30.86	0.4069	0.0	20.778	8.454		Vel = 11.46
305 to 306	22.87	1.38 100.0	4 E 1 T	8.564 4.282	30.490 12.846	16.666 4.075	K Factor = 5.60
306 to TEE	53.73	0.2984	0.0	43.336	12.931		Vel = 11.53
306 to TEE	52.41	2.157 100.0	1 T 0.0	8.783 8.783	38.750 0.113	33.672 0.113	
TEE to TEE	106.14	0.1194	0.0	47.533	5.677		Vel = 9.32
TEE to TEE	0.0 106.14					39.462	K Factor = 16.90
S308 to 308	22.99	1.049 100.0	1 T 0.0	3.568 0.0	0.660 3.568	16.859 0.113	K Factor = 5.60
308 to 308	22.99	0.2358	0.0	4.228	0.997		Vel = 8.53
308 to 308	0.0 22.99					17.969	K Factor = 5.42
S309 to 309	24.79	1.049 100.0	1 T 0.0	3.568 0.0	0.660 3.568	19.600 0.113	K Factor = 5.60
309 to 309	24.79	0.2713	0.0	4.228	1.147		Vel = 9.20
309 to 309	0.0 24.79					20.860	K Factor = 5.43
S310 to 310	31.11	1.049 100.0	1 T 0.0	3.568 0.0	0.660 3.568	30.865 0.113	K Factor = 5.60
310 to 310	31.11	0.4130	0.0	4.228	1.746		Vel = 11.55
310 to 310	0.0 31.11					32.724	K Factor = 5.44
S313 to 313	21.79	1.049 100.0	1 T 0.0	3.568 0.0	2.920 3.568	15.135 0.113	K Factor = 5.60
313 to 313	21.79	0.2135	0.0	6.488	1.385		Vel = 8.09
313 to 313	0.0 21.79					16.633	K Factor = 5.34
S314 to 314	23.00	1.049 100.0	1 T 0.0	3.568 0.0	2.920 3.568	16.874 0.113	K Factor = 5.60
314 to 314	23.0	0.2361	0.0	6.488	1.532		Vel = 8.54

STAR FIRE SPRINKLERS, INC
TEXAS ROADHOUSE LAKE CITY

Page 6
Date 02/27/2020

Hyd. Ref. Point	Q a Q t	D ia. "C" P f/F t	F itting or E q v . L n .	P ipe F t n g 's T o t a l	P t P e P f	P t P v P n	***** Notes *****
	0.0 23.00				18.519		K Factor = 5.34
S 315 to 315	27.57 27.57	1.049 0.3300	1 T 0.0	3.568 3.568	2.920 0.113	24.230 0.113	K Factor = 5.60 Vel = 10.23
	0.0 27.57				26.484		K Factor = 5.36
S 316 to 316	30.12 30.12	1.049 0.3890	1 T 0.0	3.568 3.568	2.920 0.113	28.935 0.113	K Factor = 5.60 Vel = 11.18
	0.0 30.12				31.572		K Factor = 5.36
S 320 to 321 321 to 311	31.21 31.21 0.0 31.21	1.049 0.4154 1.049 0.2964	1 E 0.0 1 T 0.0	1.427 1.427 5.0 5.000	0.660 0.0 8.000 13.000	31.060 0.0 31.927 3.853	K Factor = 5.60 Vel = 11.59 Vel = 11.59
	0.0 31.21				35.780		K Factor = 5.22
308 to 309 309 to 310 310 to 311 311 to 312	22.99 22.99 24.80 47.79 31.11 78.9 31.21 110.11	1.049 0.2360 1.049 0.9135 1.38 0.6073 2.469 0.0662	0.0 0.0 1 T 0.0 1 T 0.0 2 E 0.0	0.0 0.0 3.568 0.0 4.282 5.032 8.564 18.814	12.250 0.0 9.420 12.988 0.750 4.282 10.250 8.564	17.969 0.0 20.860 11.864 32.724 3.056 35.780 0.113	Vel = 8.53 Vel = 17.74 Vel = 16.92 Vel = 7.38
	0.0 110.11				37.138		K Factor = 18.07
313 to 314 314 to 315 315 to 316 316 to 317	21.79 21.79 23.00 44.79 27.57 72.36 30.12 102.48	1.049 0.2136 1.049 0.8103 1.38 0.5176 1.38 0.9853	0.0 0.0 0.0 0.0 0.0 0.0 1 E 1 T 0.0	8.830 8.830 9.830 9.830 9.830 9.830 2.141 4.282	16.633 0.0 16.633 7.965 26.484 5.088 6.660 6.423	16.633 0.0 18.519 16.63 15.52 31.572 0.0	Vel = 8.09 Vel = 16.63 Vel = 15.52 Vel = 21.98
	0.0						

STAR FIRE SPRINKLERS, INC
TEXAS ROADHOUSE LAKE CITY

Page 7
Date 02/27/2020

Hyd.	Q a	D ia.	F itting	P ipe	P t	P t			
Ref.		"C"	or	F tng's	P e	P v	*****	Notes	*****
Point	Q t	P f/F t	E qv.	L n.	T otal	P f	P n		
	102.48				44.463			K Factor = 15.37	
312	110.11	2.635		0.0	48.180	37.138			
to		100.0		0.0	0.0	0.0			
TEE	110.11	0.0482		0.0	48.180	2.324		Vel = 6.48	
TEE	106.14	2.635		0.0	29.750	39.462			
to		100.0		0.0	0.0	0.0			
317	216.25	0.1681		0.0	29.750	5.001		Vel = 12.72	
317	102.48	2.635	1E	5.879	2.850	44.463			
to		100.0		0.0	5.879	0.0			
TDR	318.73	0.3446		0.0	8.729	3.008		Vel = 18.75	
TDR	0.0	3.26	1E	6.714	8.000	47.471			
to		100.0	1B	9.592	19.183	5.050			
BDR	318.73	0.1222	1Dvk	2.878	27.183	3.322		Vel = 12.25	
BDR	0.0	4.26	1T	18.795	2.000	55.843			
to		100.0		0.0	18.795	1.732			
STUB	318.73	0.0332		0.0	20.795	0.691		Vel = 7.17	
STUB	0.0	6.16	2E	40.168	39.000	58.266			
to		140.0		0.0	40.168	0.0			
UG 1	318.73	0.0030		0.0	79.168	0.234		Vel = 3.43	
UG 1	0.0	8.27	1T	55.354	303.000	58.500			
to		140.0	1F	14.234	75.914	7.000		* * Fixed Loss = 7	
UG 2	318.73	0.0007	1G	6.326	378.914	0.267		Vel = 1.90	
UG 2	0.0	10.28	1T	75.336	300.000	65.767			
to		140.0	1G	7.534	82.870	0.0			
UG 3	318.73	0.0002		0.0	382.870	0.093		Vel = 1.23	
UG 3	0.0	6.16	1T	43.037	50.000	65.860			
to		140.0	1G	4.304	47.341	0.0			
TEST	318.73	0.0030		0.0	97.341	0.288		Vel = 3.43	
	100.00							Qa = 100.00	
	418.73				66.148			K Factor = 51.48	