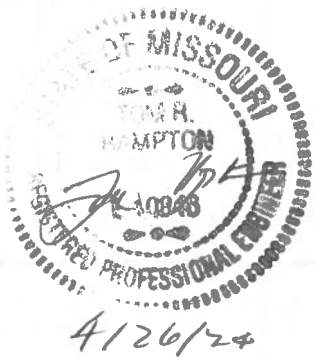


Hydraulic Calculations by HydraCALC

ADVANTAGE FIRE PROTECTION
404B N.W. 11TH ST
BLUE SPRINGS, MO 64015
816-224-3400

Job Name	:	LOT 1
Drawing	:	NE MAGUIRE BLVD.
Location	:	LEE'S SUMMIT, MO
Remote Area	:	AREA #1
Contract	:	J-2351
Data File	:	4-19-2024 reliable Extended coverage AREA#1.WXF

Hydraulic Design Information Sheet

Name - LOT 1 Date - 4-4-2024
Location - LEE'S SUMMIT, MO
Building - NE MAGUIRE BLVD. System No. - AREA #1
Contractor - Contract No. - J-2351
Calculated By - DANIAL LOGSTON Drawing No. - 2 OF 4
Construction: ( ) Combustible (X) Non-Combustible Ceiling Height - 28-0
Occupancy - WAREHOUSE

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	- 1894.226	System Type		Sprinkler/Nozzle
Density	- .2	(X) Wet		Make RELIABLE
Area Per Sprinkler	- 400	( ) Dry		Model R6553
Elevation at Highest Outlet	- 126.958	( ) Deluge		Size 3/4"
Hose Allowance - Inside	-	( ) Preaction		K-Factor 14
Rack Sprinkler Allowance	-	( ) Other		Temp.Rat.212
Hose Allowance - Outside	- 250			

Note

Calculation Summary — Flow Required - 745.764 Press Required - 95.124
C-Factor Used: 120 Overhead 140 Underground

WATER SUPPLY

Water Flow Test:		Pump Data:		Tank or Reservoir:
Date of Test	- 8-10-2023			Cap. -
Time of Test	- 10:20AM	Rated Cap.-		Elev.-
Static Press	- 105	@ Press	-	
Residual Press	- 76	Elev.	-	Well
Flow	- 2300			Proof Flow
Elevation	- 95			

Location -

Source of Information - LS WATER DEPT

COMMODITY

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			

STORAGE

Flue Spacing — Clearance:Storage to Ceiling
Longitudinal — Transverse

Horizontal Barriers Provided:

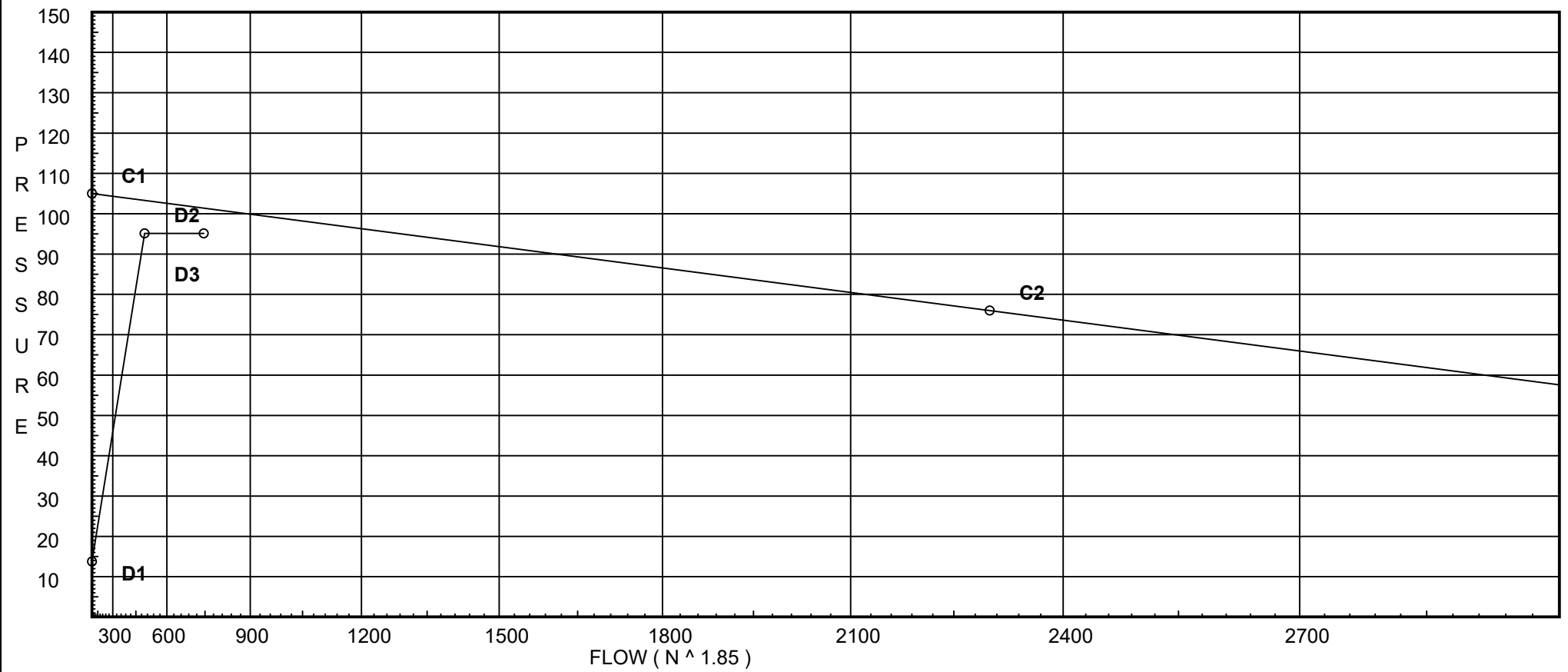
Water Supply Curve

ADVANTAGE FIRE PROTECTION
LOT 1

Date 4-4-2024

City Water Supply:
- C1 - Static Pressure : 105
- C2 - Residual Pressure: 76
- C2 - Residual Flow : 2300

Demand:
- D1 - Elevation : 13.751
- D2 - System Flow : 495.764
- D2 - System Pressure : 95.124
- Hose (Demand) : 250
- D3 - System Demand : 745.764
- Safety Margin : 6.266



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
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
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
S	NFPA 13 Swing Check	0	0	5	7	9	11	14	16	19	22	27	32	45	55	65					
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
V	90' Ell Firelock #001	0	0	0	0	0	3.5	4.3	5	0	6.8	8.5	10	13	4.5	5.1	0	0	0	0	0
X	90'Tee-BranchFirelock002	0	0	0	0	0	8.5	10.8	13	0	16	21	25	33	9.3	11	0	0	0	0	0
Zce	Colt C300 Vert Butt	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.

SUPPLY ANALYSIS

Node at Source	Static Pressure	Residual Pressure	Flow	Available Pressure	Total Demand	Required Pressure
TEST	105.0	76	2300.0	101.39	745.76	95.124

NODE ANALYSIS

Node Tag	Elevation	Node Type	Pressure at Node	Discharge at Node	Notes	
1	126.75	14	32.7	80.06	0.2	400
2	125.917	14	33.99	81.62	0.2	400
3	125.084	14	37.75	86.02	0.2	400
7	124.542		47.79			
4	126.75	14	32.92	80.33	0.2	400
5	126.75	14	33.85	81.46	0.2	400
6	125.084	14	37.98	86.28	0.2	400
14	124.542		48.05			
A1	122.667		54.4			
A2	122.667		54.67			
A4	122.667		75.03			
TOR1	122.667		78.2			
BOR1	101.833		87.72			
BOR2	101.833		87.74			
UNG	101.0		88.53			
UNG1	95.0		94.9			
TEST	95.0		95.12	250.0		

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 ******
1	126.750	14.00	80.06	2			18.333	120	32.700	
to									0.361	
2	125.917		80.06	2.157			18.333	0.0506	0.927	Vel = 7.03
2	125.917	14.00	81.62	2			18.333	120	33.988	
to									0.361	
3	125.084		161.68	2.157			18.333	0.1857	3.404	Vel = 14.20
3	125.084	14.00	86.02	2	T	12.307	11.667	120	37.753	
to							12.307		0.235	
7	124.542		247.7	2.157			23.974	0.4089	9.802	Vel = 21.75
7	124.542		0.0	2	T	12.307	1.875	120	47.790	
to							12.307		0.812	
A1	122.667		247.7	2.157			14.182	0.4088	5.798	Vel = 21.75
			0.0							
A1			247.70						54.400	K Factor = 33.58
4	126.750	14.00	80.33	2			18.333	120	32.920	
to									0.0	
5	126.750		80.33	2.157			18.333	0.0509	0.933	Vel = 7.05
5	126.750	14.00	81.45	2			18.333	120	33.853	
to									0.722	
6	125.084		161.78	2.157			18.333	0.1859	3.408	Vel = 14.20
6	125.084	14.00	86.29	2	T	12.307	11.667	120	37.983	
to							12.307		0.235	
14	124.542		248.07	2.157			23.974	0.4099	9.828	Vel = 21.78
14	124.542		0.0	2	T	12.307	1.875	120	48.046	
to							12.307		0.812	
A2	122.667		248.07	2.157			14.182	0.4100	5.815	Vel = 21.78
			0.0							
A2			248.07						54.673	K Factor = 33.55
A1	122.667		247.70	4			18.333	120	54.400	
to									0.0	
A2	122.667		247.7	4.26			18.333	0.0149	0.273	Vel = 5.58
A2	122.667		248.06	4	T	26.334	352.958	120	54.673	
to							26.334		0.0	
A4	122.667		495.76	4.26			379.292	0.0537	20.354	Vel = 11.16
A4	122.667		0.0	4	V	8.954	50.167	120	75.027	
to							8.954		0.0	
TOR1	122.667		495.76	4.26			59.121	0.0537	3.173	Vel = 11.16
TOR1	122.667		0.0	6	B	12.573	20.833	120	78.200	
to					X	31.433	44.006		9.023	
BOR1	101.833		495.76	6.357			64.839	0.0076	0.495	Vel = 5.01
BOR1	101.833		0.0	6			2.500	120	87.718	
to									0.0	
BOR2	101.833		495.76	6.357			2.500	0.0080	0.020	Vel = 5.01
BOR2	101.833		0.0	6	S	40.235	3.396	120	87.738	
to					V	12.573	52.808		0.361	
UNG	101		495.76	6.357			56.204	0.0076	0.429	Vel = 5.01
UNG	101		0.0	6	Zce	0.0	79.000	140	88.528	
to					E	20.084	67.425		5.391	* * Fixed Loss = 2.792
UNG1	95		495.76	6.16	G	4.304	146.425	0.0067	0.980	Vel = 5.34

Final Calculations : Hazen-Williams

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	******
					T	43.037						
UNG1	95		0.0	12	E	42.195	937.000	140	94.899			
to					G	9.377	51.572		0.0			
TEST	95		495.76	12.34			988.572	0.0002	0.225	Vel = 1.33		
			250.00							Qa = 250.00		
TEST			745.76						95.124	K Factor = 76.46		