2017175

ADVANTAGE

FIRE PROTECTION SYSTEMS INC.

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404B N.W. 11th Street
Blue Springs, MO. 64015
Tel. (816) 224-3400

Advantage Fire Protection
404B NW 11th Street
Blue Springs, MO 64015
816-224-3400

Job Name	:	LS Management Hangar
Drawing	:	2751 NE Douglas Road
Location	:	Lee's Summit, Missouri 64064
Remote Area	:	AREA 1
Contract	:	J-2492
Data File	:	area 1 7-13-25.WXF

Hydraulic Design Information Sheet

Name - LS Management Hangar
Date - 7/13/25
Location - Lee's Summit, Missouri 64064
Building - 2751 NE Douglas Road
System No. - AREA 1
Contractor -
Contract No. - J-2492
Calculated By -
Drawing No. - 1
Construction: ( ) Combustible (X) Non-Combustible
Ceiling Height - 27-0
Occupancy - DEFUELED AIRCRAFT HANGAR

SYSTEM DESIGN

(X) NFPA 13 ( ) Lt. Haz. Ord.Haz.Gp. ( ) 1 (X) 2 ( ) 3 ( ) Ex.Haz.
( ) NFPA 231 ( ) NFPA 231C ( ) Figure Curve
Other PER NFPA 409 .17/5000
Specific Ruling Made By Date

Area of Sprinkler Operation	- 5000	System Type	Sprinkler/Nozzle
Density	- .17	(X) Wet	Make VIKING
Area Per Sprinkler	- 130	( ) Dry	Model QR
Elevation at Highest Outlet	- 125.208	( ) Deluge	Size 3/4"
Hose Allowance - Inside	-	( ) Preaction	K-Factor 8.0
Rack Sprinkler Allowance	-	( ) Other	Temp.Rat.286
Hose Allowance - Outside	- 500		

Note

Calculation Summary: Flow Required - 1496.34 Press Required - 55.562 TEST
C-Factor Used: 120 Overhead 150 Underground

WATER SUPPLY

Water Flow Test:		Pump Data:		Tank or Reservoir:
Date of Test	- 2/10/25			Cap. -
Time of Test	-	Rated Cap.-		Elev.-
Static Press	- 92	@ Press	-	
Residual Press	- 65	Elev.	-	Well
Flow	- 2025			Proof Flow
Elevation	- 95			

Location -

Source of Information -

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

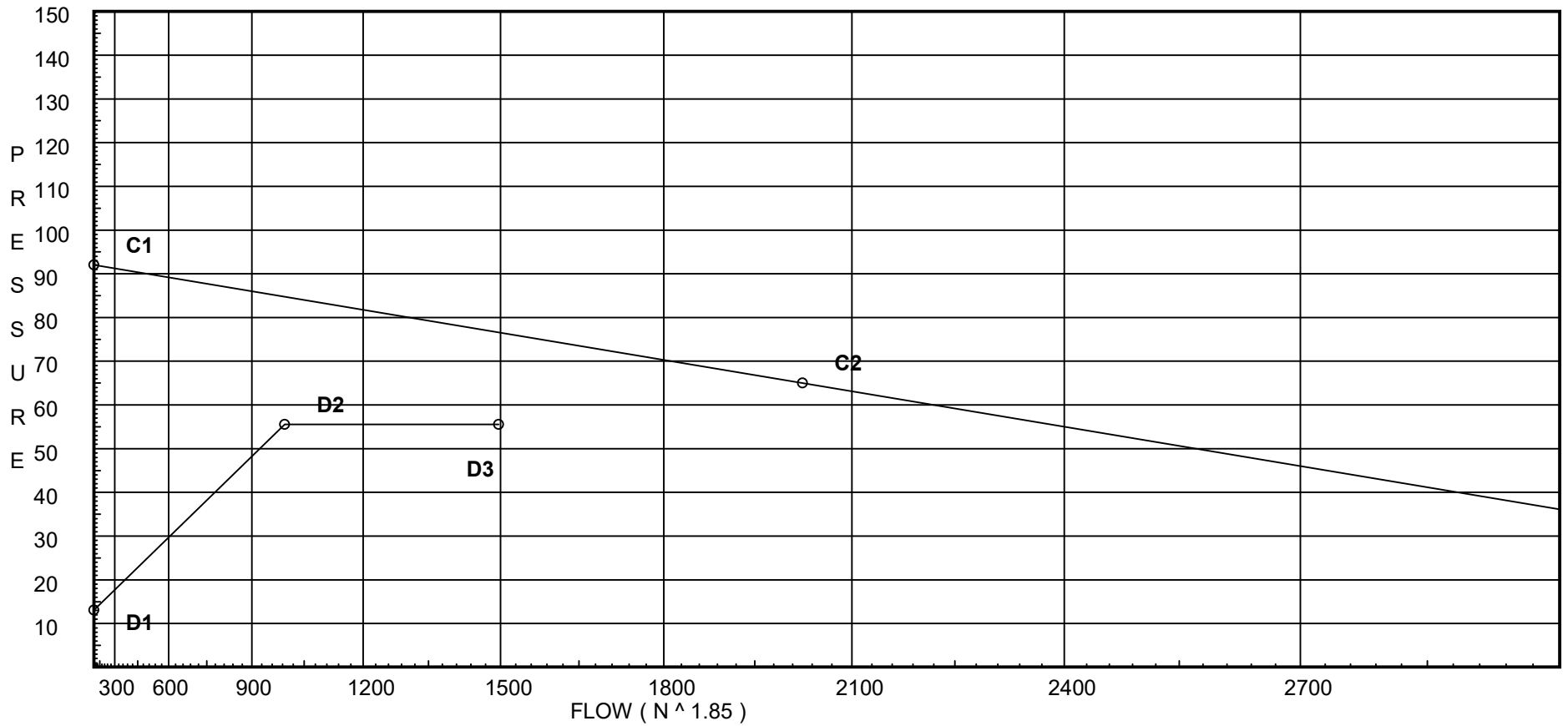
Flue Spacing — Clearance:Storage to Ceiling
Longitudinal — Transverse

Horizontal Barriers Provided:

Water Supply Curve

City Water Supply:
- C1 - Static Pressure : 92
- C2 - Residual Pressure: 65
- C2 - Residual Flow : 2025

Demand:
- D1 - Elevation : 13.083
- D2 - System Flow : 996.35
- D2 - System Pressure : 55.562
- Hose (Demand) : 500
- D3 - System Demand : 1496.35
- Safety Margin : 21.010



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
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
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
Zdj	Deringer 30x DCDA II Vert	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	92.0	65	2025.0	76.573	1496.35	55.562

NODE ANALYSIS

Node Tag	Elevation	Node Type	Pressure at Node	Discharge at Node	Notes	
A1	117.792		12.19			
1	121.292		9.71			
2	121.917	8	9.19	24.25	0.17	130
3	122.75	8	8.67	23.55	0.17	130
4	123.583	8	8.27	23.01	0.17	130
5	124.417	8	7.91	22.5	0.17	130
6	125.208	8	7.63	22.1	0.17	130
7	125.25	8	7.81	22.36	0.17	130
8	124.458	8	8.56	23.4	0.17	130
9	123.625	8	9.6	24.79	0.17	130
10	122.75	8	11.03	26.57	0.17	130
11	121.917		12.93			
12	121.417		16.19			
A2	117.792		12.25			
13	121.292		9.76			
14	121.917	8	9.24	24.31	0.17	130
15	122.75	8	8.71	23.62	0.17	130
16	123.583	8	8.32	23.07	0.17	130
17	124.417	8	7.96	22.57	0.17	130
18	125.208	8	7.68	22.17	0.17	130
19	125.25	8	7.86	22.43	0.17	130
20	124.458	8	8.6	23.47	0.17	130
21	123.625	8	9.65	24.85	0.17	130
22	122.75	8	11.08	26.63	0.17	130
23	121.917		12.98			
24	121.417		16.25			
A3	117.792		12.47			
25	121.292		9.95			
26	121.917	8	9.42	24.55	0.17	130
27	122.75	8	8.89	23.85	0.17	130
28	123.583	8	8.48	23.3	0.17	130
29	124.417	8	8.12	22.8	0.17	130
30	125.208	8	7.84	22.4	0.17	130
31	125.25	8	8.02	22.66	0.17	130
32	124.458	8	8.77	23.69	0.17	130
33	123.625	8	9.82	25.07	0.17	130
34	122.75	8	11.26	26.85	0.17	130
35	121.917		13.18			
36	121.417		16.48			
A4	117.792		12.95			
37	121.292		10.35			
38	121.917	8	9.8	25.04	0.17	130

NODE ANALYSIS (cont.)

Node Tag	*Elevation*	*Node Type*	*Pressure at Node*	*Discharge at Node*	*Notes*	
39	122.75	8	9.25	24.33	0.17	130
40	123.583	8	8.84	23.79	0.17	130
41	124.417	8	8.48	23.3	0.17	130
42	125.208	8	8.2	22.9	0.17	130
43	125.25	8	8.38	23.15	0.17	130
44	124.458	8	9.12	24.17	0.17	130
45	123.625	8	10.18	25.53	0.17	130
46	122.75	8	11.65	27.3	0.17	130
47	121.917		13.59			
48	121.417		16.96			
A5	117.792		13.78			
49	121.292		12.27			
50	121.917		12.0			
51	122.75		11.64			
52	123.583		11.28			
53	124.417		10.92			
54	125.208	8	10.57	26.01	0.17	130
55	125.25	8	10.63	26.08	0.17	130
56	124.458	8	11.23	26.8	0.17	130
57	123.625	8	12.11	27.84	0.17	130
58	122.75	8	13.39	29.28	0.17	130
59	121.917		15.16			
60	121.417		18.16			
A6	117.792		14.6			
61	121.292		14.53			
62	121.417		20.88			
A7	117.792		15.01			
63	121.292		15.15			
64	121.417		22.41			
A8	117.792		15.13			
65	121.292		15.59			
66	121.417		24.23			
B1	117.792		20.23			
B2	117.792		20.3			
B3	117.792		20.55			
B4	117.792		21.08			
B5	117.792		21.99			
B6	117.792		23.34			
B7	117.792		25.0			
B8	117.792		27.01			
TOR	117.792		32.2			
BFP	103.875		38.61			
BOR	101.0		45.42			
UG1	101.0		47.23	500.0		
TEST	95.0		55.56			

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 ******
A1	117.792		-67.19	2	T	12.307	3.583	120	12.191	
to					X	10.461	22.768		-1.516	
1	121.292		-67.19	2.157			26.351	-0.0366	-0.964	Vel = 5.90
1	121.292		0.0	2			6.875	120	9.711	
to									-0.271	
2	121.917		-67.19	2.157			6.875	-0.0367	-0.252	Vel = 5.90
2	121.917	8.00	24.25	2			10.042	120	9.188	
to									-0.361	
3	122.750		-42.94	2.157			10.042	-0.0159	-0.160	Vel = 3.77
3	122.750	8.00	23.55	2			10.042	120	8.667	
to									-0.361	
4	123.583		-19.39	2.157			10.042	-0.0036	-0.036	Vel = 1.70
4	123.583	8.00	23.01	2			10.042	120	8.270	
to									-0.361	
5	124.417		3.62	2.157			10.042	0.0001	0.001	Vel = 0.32
5	124.417	8.00	22.50	2			10.042	120	7.910	
to									-0.343	
6	125.208		26.12	2.157			10.042	0.0064	0.064	Vel = 2.29
6	125.208	8.00	22.10	2			10.042	120	7.631	
to									-0.018	
7	125.250		48.22	2.157			10.042	0.0198	0.199	Vel = 4.23
7	125.250	8.00	22.36	2			10.042	120	7.812	
to									0.343	
8	124.458		70.58	2.157			10.042	0.0400	0.402	Vel = 6.20
8	124.458	8.00	23.40	2			10.042	120	8.557	
to									0.361	
9	123.625		93.98	2.157			10.042	0.0681	0.684	Vel = 8.25
9	123.625	8.00	24.79	2			10.042	120	9.602	
to									0.379	
10	122.750		118.77	2.157			10.042	0.1050	1.054	Vel = 10.43
10	122.750	8.00	26.57	2			10.042	120	11.035	
to									0.361	
11	121.917		145.34	2.157			10.042	0.1525	1.531	Vel = 12.76
11	121.917		0.0	2	X	10.461	9.500	120	12.927	
to							10.461		0.217	
12	121.417		145.34	2.157			19.961	0.1524	3.043	Vel = 12.76
12	121.417		0.0	2	T	12.307	3.917	120	16.187	
to							12.307		1.570	
B1	117.792		145.34	2.157			16.224	0.1525	2.474	Vel = 12.76
			0.0							
B1			145.34						20.231	K Factor = 32.31
A2	117.792		-67.55	2	T	12.307	3.583	120	12.252	
to					X	10.461	22.768		-1.516	
13	121.292		-67.55	2.157			26.351	-0.0370	-0.974	Vel = 5.93
13	121.292		0.0	2			6.875	120	9.762	
to									-0.271	
14	121.917		-67.55	2.157			6.875	-0.0368	-0.253	Vel = 5.93
14	121.917	8.00	24.32	2			10.042	120	9.238	
to									-0.361	
15	122.750		-43.23	2.157			10.042	-0.0162	-0.163	Vel = 3.80

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 ******
15	122.750	8.00	23.61	2			10.042	120	8.714	
to									-0.361	
16	123.583		-19.62	2.157			10.042	-0.0037	-0.037	Vel = 1.72
16	123.583	8.00	23.07	2			10.042	120	8.316	
to									-0.361	
17	124.417		3.45	2.157			10.042	0.0001	0.001	Vel = 0.30
17	124.417	8.00	22.57	2			10.042	120	7.956	
to									-0.343	
18	125.208		26.02	2.157			10.042	0.0064	0.064	Vel = 2.28
18	125.208	8.00	22.17	2			10.042	120	7.677	
to									-0.018	
19	125.250		48.19	2.157			10.042	0.0198	0.199	Vel = 4.23
19	125.250	8.00	22.42	2			10.042	120	7.858	
to									0.343	
20	124.458		70.61	2.157			10.042	0.0400	0.402	Vel = 6.20
20	124.458	8.00	23.47	2			10.042	120	8.603	
to									0.361	
21	123.625		94.08	2.157			10.042	0.0682	0.685	Vel = 8.26
21	123.625	8.00	24.85	2			10.042	120	9.649	
to									0.379	
22	122.750		118.93	2.157			10.042	0.1052	1.056	Vel = 10.44
22	122.750	8.00	26.63	2			10.042	120	11.084	
to									0.361	
23	121.917		145.56	2.157			10.042	0.1530	1.536	Vel = 12.78
23	121.917		0.0	2	X	10.461	9.500	120	12.981	
to							10.461		0.217	
24	121.417		145.56	2.157			19.961	0.1529	3.052	Vel = 12.78
24	121.417		0.0	2	T	12.307	3.917	120	16.250	
to							12.307		1.570	
B2	117.792		145.56	2.157			16.224	0.1529	2.480	Vel = 12.78
			0.0							
B2			145.56						20.300	K Factor = 32.31
A3	117.792		-68.83	2	T	12.307	3.583	120	12.474	
to					X	10.461	22.768		-1.516	
25	121.292		-68.83	2.157			26.351	-0.0383	-1.008	Vel = 6.04
25	121.292		0.0	2			6.875	120	9.950	
to									-0.271	
26	121.917		-68.83	2.157			6.875	-0.0383	-0.263	Vel = 6.04
26	121.917	8.00	24.55	2			10.042	120	9.416	
to									-0.361	
27	122.750		-44.28	2.157			10.042	-0.0169	-0.170	Vel = 3.89
27	122.750	8.00	23.84	2			10.042	120	8.885	
to									-0.361	
28	123.583		-20.44	2.157			10.042	-0.0040	-0.040	Vel = 1.79
28	123.583	8.00	23.30	2			10.042	120	8.484	
to									-0.361	
29	124.417		2.86	2.157			10.042	0.0001	0.001	Vel = 0.25
29	124.417	8.00	22.81	2			10.042	120	8.124	
to									-0.343	
30	125.208		25.67	2.157			10.042	0.0062	0.062	Vel = 2.25

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 ******
30	125.208	8.00	22.40	2			10.042	120	7.843	
to									-0.018	
31	125.250		48.07	2.157			10.042	0.0197	0.198	Vel = 4.22
31	125.250	8.00	22.66	2			10.042	120	8.023	
to									0.343	
32	124.458		70.73	2.157			10.042	0.0402	0.404	Vel = 6.21
32	124.458	8.00	23.69	2			10.042	120	8.770	
to									0.361	
33	123.625		94.42	2.157			10.042	0.0686	0.689	Vel = 8.29
33	123.625	8.00	25.07	2			10.042	120	9.820	
to									0.379	
34	122.750		119.49	2.157			10.042	0.1062	1.066	Vel = 10.49
34	122.750	8.00	26.85	2			10.042	120	11.265	
to									0.361	
35	121.917		146.34	2.157			10.042	0.1544	1.550	Vel = 12.85
35	121.917		0.0	2	X	10.461	9.500	120	13.176	
to							10.461		0.217	
36	121.417		146.34	2.157			19.961	0.1544	3.082	Vel = 12.85
36	121.417		0.0	2	T	12.307	3.917	120	16.475	
to							12.307		1.570	
B3	117.792		146.34	2.157			16.224	0.1545	2.506	Vel = 12.85
			0.0							
B3			146.34						20.551	K Factor = 32.28
A4	117.792		-71.55	2	T	12.307	3.583	120	12.949	
to					X	10.461	22.768		-1.516	
37	121.292		-71.55	2.157			26.351	-0.0411	-1.083	Vel = 6.28
37	121.292		0.0	2			6.875	120	10.350	
to									-0.271	
38	121.917		-71.55	2.157			6.875	-0.0410	-0.282	Vel = 6.28
38	121.917	8.00	25.04	2			10.042	120	9.797	
to									-0.361	
39	122.750		-46.51	2.157			10.042	-0.0185	-0.186	Vel = 4.08
39	122.750	8.00	24.33	2			10.042	120	9.250	
to									-0.361	
40	123.583		-22.18	2.157			10.042	-0.0047	-0.047	Vel = 1.95
40	123.583	8.00	23.79	2			10.042	120	8.842	
to									-0.361	
41	124.417		1.61	2.157			10.042	0	0.0	Vel = 0.14
41	124.417	8.00	23.30	2			10.042	120	8.481	
to									-0.343	
42	125.208		24.91	2.157			10.042	0.0059	0.059	Vel = 2.19
42	125.208	8.00	22.91	2			10.042	120	8.197	
to									-0.018	
43	125.250		47.82	2.157			10.042	0.0195	0.196	Vel = 4.20
43	125.250	8.00	23.15	2			10.042	120	8.375	
to									0.343	
44	124.458		70.97	2.157			10.042	0.0405	0.407	Vel = 6.23
44	124.458	8.00	24.16	2			10.042	120	9.125	
to									0.361	
45	123.625		95.13	2.157			10.042	0.0695	0.698	Vel = 8.35

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 ******
45	123.625	8.00	25.53	2			10.042	120	10.184	
to									0.379	
46	122.750		120.66	2.157			10.042	0.1081	1.086	Vel = 10.59
46	122.750	8.00	27.31	2			10.042	120	11.649	
to									0.361	
47	121.917		147.97	2.157			10.042	0.1575	1.582	Vel = 12.99
47	121.917		0.0	2	X	10.461	9.500	120	13.592	
to							10.461		0.217	
48	121.417		147.97	2.157			19.961	0.1576	3.146	Vel = 12.99
48	121.417		0.0	2	T	12.307	3.917	120	16.955	
to							12.307		1.570	
B4	117.792		147.97	2.157			16.224	0.1576	2.557	Vel = 12.99
			0.0							
B4			147.97						21.082	K Factor = 32.23
A5	117.792		2.55	2	T	12.307	3.583	120	13.780	
to					X	10.461	22.768		-1.516	
49	121.292		2.55	2.157			26.351	0.0001	0.002	Vel = 0.22
49	121.292		0.0	2			6.875	120	12.266	
to									-0.271	
50	121.917		2.55	2.157			6.875	0.0001	0.001	Vel = 0.22
50	121.917		0.0	2			10.042	120	11.996	
to									-0.361	
51	122.750		2.55	2.157			10.042	0.0001	0.001	Vel = 0.22
51	122.750		0.0	2			10.042	120	11.636	
to									-0.361	
52	123.583		2.55	2.157			10.042	0.0001	0.001	Vel = 0.22
52	123.583		0.0	2			10.042	120	11.276	
to									-0.361	
53	124.417		2.55	2.157			10.042	0.0001	0.001	Vel = 0.22
53	124.417		0.0	2			10.042	120	10.916	
to									-0.343	
54	125.208		2.55	2.157			10.042	0.0001	0.001	Vel = 0.22
54	125.208	8.00	26.02	2			10.042	120	10.574	
to									-0.018	
55	125.250		28.57	2.157			10.042	0.0075	0.075	Vel = 2.51
55	125.250	8.00	26.08	2			10.042	120	10.631	
to									0.343	
56	124.458		54.65	2.157			10.042	0.0250	0.251	Vel = 4.80
56	124.458	8.00	26.81	2			10.042	120	11.225	
to									0.361	
57	123.625		81.46	2.157			10.042	0.0522	0.524	Vel = 7.15
57	123.625	8.00	27.84	2			10.042	120	12.110	
to									0.379	
58	122.750		109.3	2.157			10.042	0.0900	0.904	Vel = 9.60
58	122.750	8.00	29.27	2			10.042	120	13.393	
to									0.361	
59	121.917		138.57	2.157			10.042	0.1396	1.402	Vel = 12.17
59	121.917		0.0	2	X	10.461	9.500	120	15.156	
to							10.461		0.217	
60	121.417		138.57	2.157			19.961	0.1396	2.786	Vel = 12.17

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 ******
60	121.417		0.0	2	T	12.307	3.917	120	18.159	
to							12.307		1.570	
B5	117.792		138.57	2.157			16.224	0.1396	2.265	Vel = 12.17
			0.0							
B5			138.57						21.994	K Factor = 29.55
A6	117.792		83.77	2	T	12.307	3.583	120	14.596	
to					X	10.461	22.768		-1.516	
61	121.292		83.77	2.157			26.351	0.0550	1.450	Vel = 7.35
61	121.292		0.0	2	X	10.461	106.000	120	14.530	
to							10.461		-0.054	
62	121.417		83.77	2.157			116.461	0.0550	6.406	Vel = 7.35
62	121.417		0.0	2	T	12.307	3.917	120	20.882	
to							12.307		1.570	
B6	117.792		83.77	2.157			16.224	0.0550	0.893	Vel = 7.35
			0.0							
B6			83.77						23.345	K Factor = 17.34
A7	117.792		89.99	2	T	12.307	3.583	120	15.010	
to					X	10.461	22.768		-1.516	
63	121.292		89.99	2.157			26.351	0.0628	1.655	Vel = 7.90
63	121.292		0.0	2	X	10.461	106.000	120	15.149	
to							10.461		-0.054	
64	121.417		89.99	2.157			116.461	0.0628	7.315	Vel = 7.90
64	121.417		0.0	2	T	12.307	3.917	120	22.410	
to							12.307		1.570	
B7	117.792		89.99	2.157			16.224	0.0628	1.019	Vel = 7.90
			0.0							
B7			89.99						24.999	K Factor = 18.00
A8	117.792		98.81	2	T	12.307	3.583	120	15.134	
to					X	10.461	22.768		-1.516	
65	121.292		98.81	2.157			26.351	0.0747	1.968	Vel = 8.68
65	121.292		0.0	2	X	10.461	106.000	120	15.586	
to							10.461		-0.054	
66	121.417		98.81	2.157			116.461	0.0747	8.697	Vel = 8.68
66	121.417		0.0	2	T	12.307	3.917	120	24.229	
to							12.307		1.570	
B8	117.792		98.81	2.157			16.224	0.0747	1.212	Vel = 8.68
			0.0							
B8			98.81						27.011	K Factor = 19.01
A1	117.792		67.19	3			12.500	120	12.191	
to									0.0	
A2	117.792		67.19	3.26			12.500	0.0049	0.061	Vel = 2.58
A2	117.792		67.55	3			12.500	120	12.252	
to									0.0	
A3	117.792		134.74	3.26			12.500	0.0178	0.222	Vel = 5.18
A3	117.792		68.83	3			12.500	120	12.474	
to									0.0	
A4	117.792		203.57	3.26			12.500	0.0380	0.475	Vel = 7.82

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 ******
A4	117.792		71.55	3			12.500	120	12.949	
to									0.0	
A5	117.792		275.12	3.26			12.500	0.0665	0.831	Vel = 10.57
A5	117.792		-2.56	3			12.500	120	13.780	
to									0.0	
A6	117.792		272.56	3.26			12.500	0.0653	0.816	Vel = 10.48
A6	117.792		-83.76	3			12.500	120	14.596	
to									0.0	
A7	117.792		188.8	3.26			12.500	0.0331	0.414	Vel = 7.26
A7	117.792		-89.99	3			12.500	120	15.010	
to									0.0	
A8	117.792		98.81	3.26			12.500	0.0099	0.124	Vel = 3.80
			0.0							
A8			98.81						15.134	K Factor = 25.40
B1	117.792		145.34	4			12.500	120	20.231	
to									0.0	
B2	117.792		145.34	4.26			12.500	0.0055	0.069	Vel = 3.27
B2	117.792		145.57	4			12.500	120	20.300	
to									0.0	
B3	117.792		290.91	4.26			12.500	0.0201	0.251	Vel = 6.55
B3	117.792		146.34	4			12.500	120	20.551	
to									0.0	
B4	117.792		437.25	4.26			12.500	0.0425	0.531	Vel = 9.84
B4	117.792		147.96	4			12.500	120	21.082	
to									0.0	
B5	117.792		585.21	4.26			12.500	0.0730	0.912	Vel = 13.17
B5	117.792		138.58	4			12.500	120	21.994	
to									0.0	
B6	117.792		723.79	4.26			12.500	0.1081	1.351	Vel = 16.29
B6	117.792		83.76	4			12.500	120	23.345	
to									0.0	
B7	117.792		807.55	4.26			12.500	0.1323	1.654	Vel = 18.18
B7	117.792		89.99	4			12.500	120	24.999	
to									0.0	
B8	117.792		897.54	4.26			12.500	0.1610	2.012	Vel = 20.20
			0.0							
B8			897.54						27.011	K Factor = 172.70
B8	117.792		996.35	4	2V	17.907	8.667	120	27.011	
to							17.907		0.0	
TOR	117.792		996.35	4.26			26.574	0.1952	5.187	Vel = 22.43
TOR	117.792		0.0	6			13.917	120	32.198	
to									6.027	
BFP	103.875		996.35	6.357			13.917	0.0278	0.387	Vel = 10.07
BFP	103.875		0.0	6	Zdj	0.0	2.875	120	38.612	
to									6.727	* * Fixed Loss = 5.482
BOR	101		996.35	6.357			2.875	0.0278	0.080	Vel = 10.07
BOR	101		0.0	6	T	38.342	10.000	150	45.419	
to					E	17.893	56.235		0.0	
UG1	101		996.35	5.86			66.235	0.0273	1.811	Vel = 11.85

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	******
UG1	101	H500	500.00	8	2FE	22.555	275.000	150	47.230			
to						22.555	93.979		2.599			
TEST	95		1496.35	7.68	T	43.857	368.979	0.0155	5.733	Vel = 10.36		
					G	5.012						
			0.0									
TEST			1496.35						55.562	K Factor = 200.74		