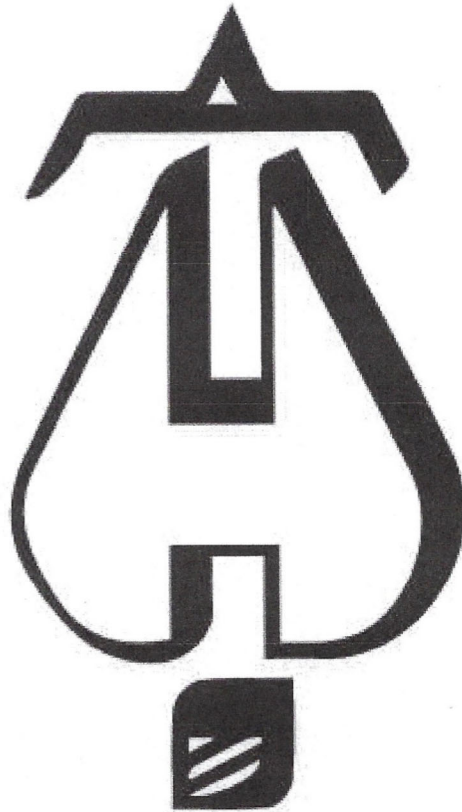




Hydraulic Calculations by HydraCALC

PERFORMANCE FIRE SYSTEMS
11425 W 59TH STREET SOUTH
SAND SPRINGS, OK 74063
(918) 630-7344

Job Name : Lakeview Storage
Drawing : FP 5 of 5
Location : Lee's Summit, Missouri
Remote Area : 1
Contract : LS-01-23
Data File : Lakeview Storage - Fire Submit Area 1.WXF

HYDRAULIC CALCULATIONS
for

JOB NAME Lakeview Storage
Location Lee's Summit, Missouri
Drawing # FP 5 of 5
Contract # LS-01-23
Date 9/10/2023

DESIGN

Remote area # 1
Remote area location LEVEL 3 - AREA 1
Occupancy classification ORDINARY HAZARD GROUP II
Density 0.2 - Gpm/SqFt
Area of application 1287 - SqFt
Coverage/sprinkler 100 - SqFt
Type of sprinkler calculated QUICK RESPONSE
Sprinklers calculated 16
In-rack demand N/A - GPM
Hose streams 250 - GPM
Total water required (including hose streams) 639.862 - GPM @ 76.3784 - Psi
Type of system WET
Volume of system (dry or pre-action) N/A - Gal

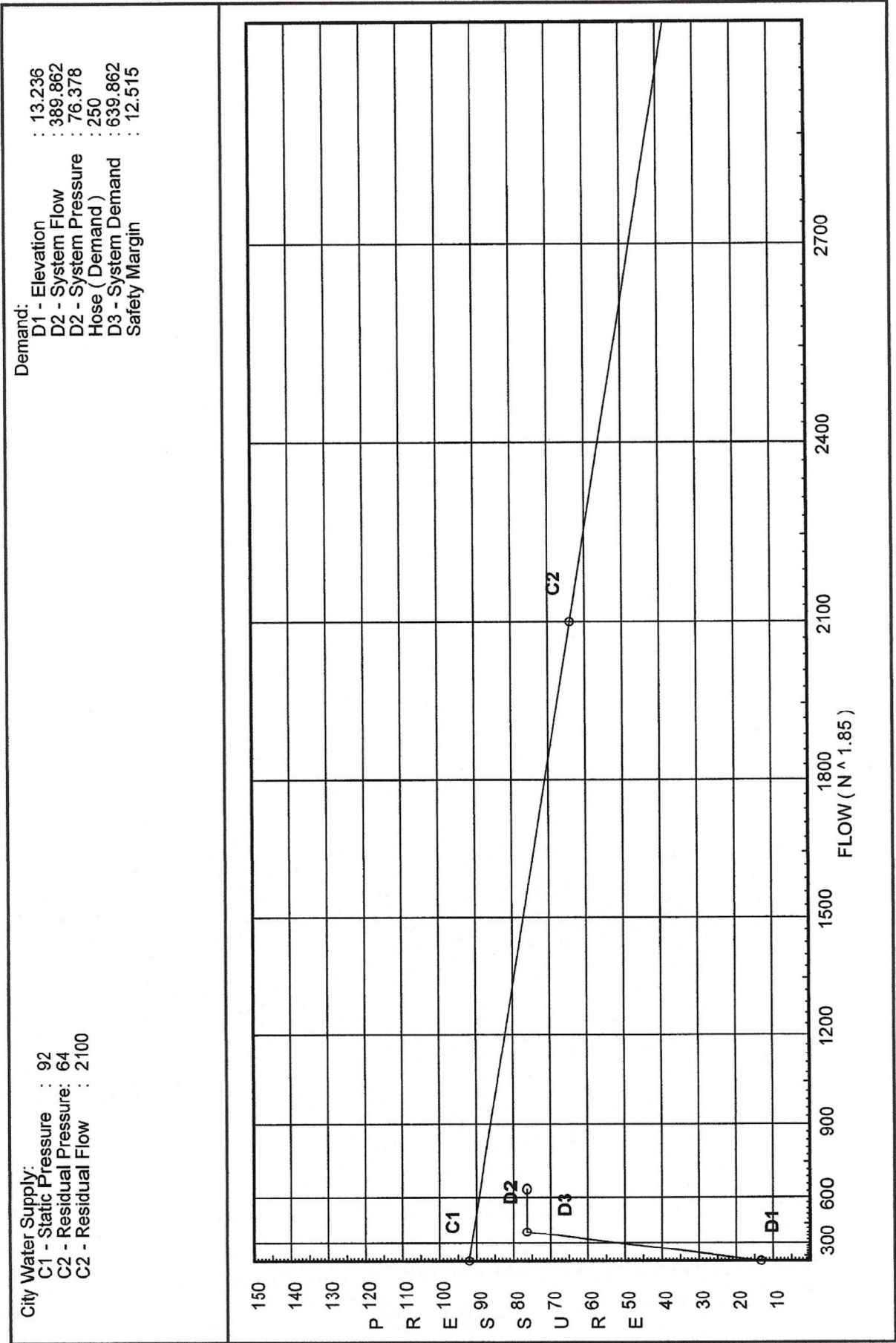
WATER SUPPLY INFORMATION

Test date 8/17/2023
Location NE PORT DRIVE
Source of info CITY OF LEES SUMMIT

CONTRACTOR INFO PERFORMANCE FIRE SYSTEMS

Address 11425 W 59TH STREET SOUTH / SAND SPRINGS, OK 74063
Phone # (918) 630-7344
Name of designer XSTREAM FIRE SYSTEMS
Authority having jurisdiction LOCAL
NOTES:

text1(35) - invisible



Fittings Used Summary

PERFORMANCE FIRE SYSTEMS
Lakeview Storage

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
Bvca B Fly Vic 705	1	2	2	3	4	6	6	7	8	8	12	14	16	18	19	35	40	45	50	61
E NFPA 13 90' Standard Elbow	Fitting generates a Fixed Loss Based on Flow																			
Fsp Flow Switch Potter VSR	0	0	0	0	0	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13
G NFPA 13 Gate Valve	3	4	5	6	8	10	12	15	17	20	25	30	35	50	60	71	81	91	101	121
T NFPA 13 90' Flow thru Tee	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
V 90' Ell Firelock #001	0	0	0	0	0	8.5	10.8	13	0	16	21	25	33	9.3	11	0	0	0	0	0
X 90'Tee-BranchFirelock002	Fitting generates a Fixed Loss Based on Flow																			
Zfb Febco 850																				

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.

Flow Summary - NFPA

PERFORMANCE FIRE SYSTEMS
Lakeview Storage

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SUPPLY ANALYSIS

Node at Source	Static Pressure	Residual Pressure	Flow	Available Pressure	Total Demand	Required Pressure
TEST	92.0	64	2100.0	88.893	639.86	76.378

NODE ANALYSIS

Node Tag	Elevation	Node Type	Pressure at Node	Discharge at Node	Notes	
100	30.56	5.6	12.76	20.0	0.2	100
101	30.35	5.6	13.12	20.29	0.2	100
102	30.14	5.6	14.22	21.12	0.2	100
103	29.93	5.6	16.51	22.76	0.2	100
104	29.77		22.67			
105	29.77		24.64			
106	29.77		27.32			
107	29.87		32.73			
108	29.87		33.93			
109	29.87		35.21			
110	29.87		36.52			
111	29.87		37.63			
112	29.87		38.59			
113	29.87		39.47			
114	29.87		40.28			
115	29.87		41.05			
116	29.87		41.81			
117	29.87		42.55			
118	29.87		43.28			
119	29.87		43.98			
120	29.87		44.66			
121	29.87		45.29			
122	29.87		45.84			
123	29.87		46.3			
124	29.87		46.65			
125	29.87		46.92			
126	29.87		47.01			
127	29.87		47.06			
128	31.88		50.69			
129	31.88		51.81			
TR1	9.833		64.22			
BR1	2.5		71.73			
UG1	-4.0		74.75			
TEST	0.0		76.38	250.0		
132	29.77		22.19			
133	29.77		22.1			
134	29.93	5.6	20.22	25.18	0.2	100
135	30.14	5.6	19.9	24.98	0.2	100
136	30.35	5.6	19.84	24.94	0.2	100
137	30.56	5.6	20.39	25.29	0.2	100
138	31.98		34.16			
139	31.98		34.18			

Flow Summary - NFPA

PERFORMANCE FIRE SYSTEMS
Lakeview Storage

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NODE ANALYSIS (cont.)

Node Tag	Elevation	Node Type	Pressure at Node	Discharge at Node	Notes	
140	31.98		34.4			
141	31.98		34.62			
142	31.88		35.5			
143	31.88		35.77			
144	31.88		36.19			
145	31.88		36.77			
146	31.88		37.4			
147	31.88		38.07			
148	31.88		38.77			
149	31.88		39.48			
150	31.88		40.21			
151	31.88		40.94			
152	31.88		41.68			
153	31.88		42.43			
154	31.88		43.18			
155	31.88		43.94			
156	31.88		44.72			
157	31.88		45.53			
158	31.88		46.38			
159	31.88		47.28			
160	31.88		48.44			
161	31.88		49.27			
162	29.93	5.6	20.3	25.23	0.2	100
163	30.14	5.6	19.97	25.02	0.2	100
164	30.35	5.6	19.91	24.99	0.2	100
165	30.56	5.6	20.46	25.33	0.2	100
166	29.93	5.6	22.17	26.37	0.2	100
167	30.14	5.6	21.68	26.07	0.2	100
168	30.35	5.6	21.59	26.02	0.2	100
169	30.56	5.6	22.0	26.27	0.2	100
170	30.52		47.37			
171	30.96		48.28			

Final Calculations : Hazen-Williams

PERFORMANCE FIRE SYSTEMS
Lakeview Storage

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Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv	Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
100 to 101	30.56 30.35	5.60	20.00 20.0	1.25 1.442			10.000 10.000	120 0.0276	12.755 0.091 0.276		Vel = 3.93	
101 to 102	30.35 30.14	5.60	20.29 40.29	1.25 1.442			10.000 10.000	120 0.1010	13.122 0.091 1.010		Vel = 7.92	
102 to 103	30.14 29.93	5.60	21.12 61.41	1.25 1.442			10.000 10.000	120 0.2201	14.223 0.091 2.201		Vel = 12.06	
103 to 104	29.93 29.77	5.60	22.75 84.16	1.25 1.442	T	7.432	8.000 7.432 15.432	120 0.3944	16.515 0.069 6.087		Vel = 16.53	
104 to 105	29.77 29.77		87.44 171.6	2 2.157			9.500 9.500	120 0.2074	22.671 0.0 1.970		Vel = 15.07	
105 to 106	29.77 29.77		50.89 222.49	2 2.157			8.000 8.000	120 0.3351	24.641 0.0 2.681		Vel = 19.53	
106 to 107	29.77 29.87		-32.61 189.88	2 2.157	2E	12.307	9.500 12.307 21.807	120 0.2500	27.322 -0.043 5.452		Vel = 16.67	
107 to 108	29.87 29.87		-21.97 167.91	2 2.157			6.000 6.000	120 0.1992	32.731 0.0 1.195		Vel = 14.74	
108 to 109	29.87 29.87		-18.74 149.17	2 2.157			8.000 8.000	120 0.1600	33.926 0.0 1.280		Vel = 13.10	
109 to 110	29.87 29.87		-15.23 133.94	2 2.157			10.000 10.000	120 0.1311	35.206 0.0 1.311		Vel = 11.76	
110 to 111	29.87 29.87		-11.62 122.32	2 2.157			10.000 10.000	120 0.1108	36.517 0.0 1.108		Vel = 10.74	
111 to 112	29.87 29.87		-8.62 113.7	2 2.157			10.000 10.000	120 0.0969	37.625 0.0 0.969		Vel = 9.98	
112 to 113	29.87 29.87		-6.14 107.56	2 2.157			10.000 10.000	120 0.0873	38.594 0.0 0.873		Vel = 9.44	
113 to 114	29.87 29.87		-4.17 103.39	2 2.157			10.000 10.000	120 0.0812	39.467 0.0 0.812		Vel = 9.08	
114 to 115	29.87 29.87		-2.64 100.75	2 2.157			10.000 10.000	120 0.0775	40.279 0.0 0.775		Vel = 8.85	
115 to 116	29.87 29.87		-1.53 99.22	2 2.157			10.000 10.000	120 0.0752	41.054 0.0 0.752		Vel = 8.71	

Final Calculations : Hazen-Williams

PERFORMANCE FIRE SYSTEMS
Lakeview Storage

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Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
116 to 117	29.87 29.87		-0.87 98.35	2 2.157		10.000	120 0.0740	41.806 0.740		Vel = 8.64	
117 to 118	29.87 29.87		-0.83 97.52	2 2.157		10.000	120 0.0729	42.546 0.729		Vel = 8.56	
118 to 119	29.87 29.87		-1.42 96.1	2 2.157		10.000	120 0.0709	43.275 0.709		Vel = 8.44	
119 to 120	29.87 29.87		-2.46 93.64	2 2.157		10.000	120 0.0676	43.984 0.676		Vel = 8.22	
120 to 121	29.87 29.87		-3.91 89.73	2 2.157		10.000	120 0.0625	44.660 0.625		Vel = 7.88	
121 to 122	29.87 29.87		-5.74 83.99	2 2.157		10.000	120 0.0553	45.285 0.553		Vel = 7.37	
122 to 123	29.87 29.87		-7.99 76.0	2 2.157		10.000	120 0.0460	45.838 0.460		Vel = 6.67	
123 to 124	29.87 29.87		-10.61 65.39	2 2.157		10.000	120 0.0348	46.298 0.348		Vel = 5.74	
124 to 125	29.87 29.87		-13.60 51.79	2 2.157		12.000	120 0.0226	46.646 0.271		Vel = 4.55	
125 to 126	29.87 29.87		-16.41 35.38	2 2.157		8.000	120 0.0111	46.917 0.089		Vel = 3.11	
126 to 127	29.87 29.87		-11.88 23.5	2 2.157		10.000	120 0.0053	47.006 0.053		Vel = 2.06	
127 to 128	29.87 31.88		0.0 23.5	1.25 1.442	2T 2E	14.864 7.432	98.500 22.296	120 -0.871		Vel = 4.62	
128 to 129	31.88 31.88		366.36 389.86	3 3.26	V	6.72	2.170 6.720	120 0.0		Vel = 14.99	
129 to TR1	31.88 9.833		0.0 389.86	4 4.26	5V	44.768	38.300 44.768	120 9.549		Vel = 8.78	
TR1 to BR1	9.833 2.5		0.0 389.86	4 4.26	X Bvca Fsp	21.067 10.534	7.333 31.601	120 6.176		** Fixed Loss = 3	
BR1 to UG1	2.5 -4		0.0 389.86	6 6.357	X	31.433	8.960 31.433	120 2.815		Vel = 3.94	

Final Calculations : Hazen-Williams

PERFORMANCE FIRE SYSTEMS
Lakeview Storage

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Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv	Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
UG1 to TEST	-4 0		0.0 389.86	6 6.09	2E Zfb 2G	43.166 0.0 9.25	96.030 52.415 148.445	150 0.0040	74.746 1.040 0.592		** Fixed Loss = 2.772 Vel = 4.29	
TEST			250.00 639.86						76.378		Qa = 250.00 K Factor = 73.22	
104 to 132	29.77 29.77		-87.44	2			8.000	120	22.671 0.0		Vel = 7.68	
132 to 133	29.77 29.77		43.86	2			6.000	120	22.194 0.0		Vel = 3.83	
133 to 134	29.77 29.93		0.0	1.25	T	7.432	8.000 7.432 15.432	120	22.096 -0.069 -1.802		Vel = 8.56	
134 to 135	29.93 30.14	5.60	25.18	1.25			10.000	120	20.225 -0.091 -0.237		Vel = 3.61	
135 to 136	30.14 30.35	5.60	24.98	1.25			10.000	120	19.897 -0.091 0.036		Vel = 1.29	
136 to 137	30.35 30.56	5.60	24.94	1.25			10.000	120	19.842 -0.091 0.641		Vel = 6.19	
137 to 138	30.56 31.98	5.60	25.29	1.25	T	7.432	68.000 7.432 75.432	120	20.392 -0.615 14.380		Vel = 11.16	
138 to 139	31.98 31.98		0.0	3			6.000	120	34.157 0.0 0.021		Vel = 2.18	
139 to 140	31.98 31.98		56.81	3.26			6.000	0.0035	0.021		Vel = 2.18	
139 to 140	31.98 31.98		56.72	3			17.500	120	34.178 0.0 0.226		Vel = 4.36	
140 to 141	31.98 31.98		113.53	3.26			17.500	0.0129	0.226		Vel = 4.36	
140 to 141	31.98 31.98		53.84	3			8.000	120	34.404 0.0 0.212		Vel = 6.43	
141 to 142	31.98 31.88		167.37	3.26			8.000	0.0265	0.212		Vel = 6.43	
141 to 142	31.98 31.88		32.61	3	2V	13.44	9.500 13.440 22.940	120	34.616 0.043 0.845		Vel = 7.69	
142 to 143	31.88 31.88		199.98	3.26			22.940	0.0368	0.845		Vel = 7.69	
142 to 143	31.88 31.88		21.97	3			6.000	120	35.504 0.0 0.268		Vel = 8.53	
143 to 144	31.88 31.88		221.95	3.26			6.000	0.0447	0.268		Vel = 8.53	
143 to 144	31.88 31.88		18.74	3			8.000	120	35.772 0.0 0.415		Vel = 9.25	
144 to 145	31.88 31.88		240.69	3.26			8.000	0.0519	0.415		Vel = 9.25	
144 to 145	31.88 31.88		15.24	3			10.000	120	36.187 0.0 0.581		Vel = 9.84	
145 to 146	31.88 31.88		255.93	3.26			10.000	0.0581	0.581		Vel = 9.84	
145 to 146	31.88 31.88		11.62	3			10.000	120	36.768 0.0 0.631		Vel = 10.28	
145 to 146	31.88 31.88		267.55	3.26			10.000	0.0631	0.631		Vel = 10.28	

Final Calculations : Hazen-Williams

PERFORMANCE FIRE SYSTEMS
Lakeview Storage

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Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
146 to 147	31.88 31.88		8.61 276.16	3 3.26		10.000 10.000	120 0.0669	37.399 0.0 0.669		Vel = 10.61	
147 to 148	31.88 31.88		6.14 282.3	3 3.26		10.000 10.000	120 0.0697	38.068 0.0 0.697		Vel = 10.85	
148 to 149	31.88 31.88		4.17 286.47	3 3.26		10.000 10.000	120 0.0716	38.765 0.0 0.716		Vel = 11.01	
149 to 150	31.88 31.88		2.64 289.11	3 3.26		10.000 10.000	120 0.0728	39.481 0.0 0.728		Vel = 11.11	
150 to 151	31.88 31.88		1.53 290.64	3 3.26		10.000 10.000	120 0.0736	40.209 0.0 0.736		Vel = 11.17	
151 to 152	31.88 31.88		0.88 291.52	3 3.26		10.000 10.000	120 0.0739	40.945 0.0 0.739		Vel = 11.21	
152 to 153	31.88 31.88		0.82 292.34	3 3.26		10.000 10.000	120 0.0744	41.684 0.0 0.744		Vel = 11.24	
153 to 154	31.88 31.88		1.42 293.76	3 3.26		10.000 10.000	120 0.0750	42.428 0.0 0.750		Vel = 11.29	
154 to 155	31.88 31.88		2.46 296.22	3 3.26		10.000 10.000	120 0.0761	43.178 0.0 0.761		Vel = 11.39	
155 to 156	31.88 31.88		3.91 300.13	3 3.26		10.000 10.000	120 0.0781	43.939 0.0 0.781		Vel = 11.54	
156 to 157	31.88 31.88		5.75 305.88	3 3.26		10.000 10.000	120 0.0808	44.720 0.0 0.808		Vel = 11.76	
157 to 158	31.88 31.88		7.98 313.86	3 3.26		10.000 10.000	120 0.0848	45.528 0.0 0.848		Vel = 12.06	
158 to 159	31.88 31.88		10.61 324.47	3 3.26		10.000 10.000	120 0.0901	46.376 0.0 0.901		Vel = 12.47	
159 to 160	31.88 31.88		13.61 338.08	3 3.26		12.000 12.000	120 0.0972	47.277 0.0 1.167		Vel = 12.99	
160 to 161	31.88 31.88		12.08 350.16	3 3.26		8.000 8.000	120 0.1039	48.444 0.0 0.831		Vel = 13.46	
161 to 128	31.88 31.88		16.20 366.36	3 3.26		12.500 12.500	120 0.1128	49.275 0.0 1.410		Vel = 14.08	

Final Calculations : Hazen-Williams

PERFORMANCE FIRE SYSTEMS
Lakeview Storage

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Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv	Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
128			0.0 366.36						50.685		K Factor = 51.46	
132 to 162	29.77 29.93		-43.86 -43.86	1.25 1.442	T	7.432	8.000 7.432 15.432	120 -0.1181	22.194 -0.069 -1.823		Vel = 8.62	
162 to 163	29.93 30.14	5.60	25.24 -18.62	1.25 1.442			10.000 10.000	120 -0.0242	20.302 -0.091 -0.242		Vel = 3.66	
163 to 164	30.14 30.35	5.60	25.02 6.4	1.25 1.442			10.000 10.000	120 0.0034	19.969 -0.091 0.034		Vel = 1.26	
164 to 165	30.35 30.56	5.60	24.99 31.39	1.25 1.442			10.000 10.000	120 0.0636	19.912 -0.091 0.636		Vel = 6.17	
165 to 139	30.56 31.98	5.60	25.33 56.72	1.25 1.442	T	7.432	68.000 7.432 75.432	120 -0.615 0.1901	20.457 -0.615 14.336		Vel = 11.14	
139			0.0 56.72						34.178		K Factor = 9.70	
105 to 166	29.77 29.93		-50.89 -50.89	1.25 1.442	T	7.432	8.000 7.432 15.432	120 -0.1555	24.641 -0.069 -2.400		Vel = 10.00	
166 to 167	29.93 30.14	5.60	26.37 -24.52	1.25 1.442			10.000 10.000	120 -0.0403	22.172 -0.091 -0.403		Vel = 4.82	
167 to 168	30.14 30.35	5.60	26.08 1.56	1.25 1.442			10.000 10.000	120 0.0003	21.678 -0.091 0.003		Vel = 0.31	
168 to 169	30.35 30.56	5.60	26.02 27.58	1.25 1.442			10.000 10.000	120 0.0500	21.590 -0.091 0.500		Vel = 5.42	
169 to 140	30.56 31.98	5.60	26.26 53.84	1.25 1.442	T	7.432	68.000 7.432 75.432	120 -0.615 0.1726	21.999 -0.615 13.020		Vel = 10.58	
140			0.0 53.84						34.404		K Factor = 9.18	
106 to 141	29.77 31.98		32.61 32.61	1.25 1.442	2T	14.864	106.000 14.864 120.864	120 0.0683	27.322 -0.957 8.251		Vel = 6.41	
141			0.0 32.61						34.616		K Factor = 5.54	
107 to 142	29.87 31.88		21.97 21.97	1.25 1.442	2T	14.864	96.000 14.864 110.864	120 0.0329	32.731 -0.871 3.644		Vel = 4.32	
142			0.0 21.97						35.504		K Factor = 3.69	
108 to 143	29.87 31.88		18.74 18.74	1.25 1.442	2T	14.864	96.000 14.864 110.864	120 0.0245	33.926 -0.871 2.717		Vel = 3.68	

Final Calculations : Hazen-Williams

PERFORMANCE FIRE SYSTEMS
Lakeview Storage

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Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
143			0.0 18.74					35.772		K Factor = 3.13	
109 to 144	29.87 31.88		15.23 15.23	1.25 1.442	2T 14.864	96.000 14.864 110.864	120 0.0167	35.206 -0.871 1.852		Vel = 2.99	
144			0.0 15.23					36.187		K Factor = 2.53	
110 to 145	29.87 31.88		11.62 11.62	1.25 1.442	2T 14.864	96.000 14.864 110.864	120 0.0101	36.517 -0.871 1.122		Vel = 2.28	
145			0.0 11.62					36.768		K Factor = 1.92	
111 to 146	29.87 31.88		8.61 8.61	1.25 1.442	2T 14.864	96.000 14.864 110.864	120 0.0058	37.625 -0.871 0.645		Vel = 1.69	
146			0.0 8.61					37.399		K Factor = 1.41	
112 to 147	29.87 31.88		6.15 6.15	1.25 1.442	2T 14.864	96.000 14.864 110.864	120 0.0031	38.594 -0.871 0.345		Vel = 1.21	
147			0.0 6.15					38.068		K Factor = 1.00	
113 to 148	29.87 31.88		4.17 4.17	1.25 1.442	2T 14.864	96.000 14.864 110.864	120 0.0015	39.467 -0.871 0.169		Vel = 0.82	
148			0.0 4.17					38.765		K Factor = 0.67	
114 to 149	29.87 31.88		2.64 2.64	1.25 1.442	2T 14.864	96.000 14.864 110.864	120 0.0007	40.279 -0.871 0.073		Vel = 0.52	
149			0.0 2.64					39.481		K Factor = 0.42	
115 to 150	29.87 31.88		1.53 1.53	1.25 1.442	2T 14.864	96.000 14.864 110.864	120 0.0002	41.054 -0.871 0.026		Vel = 0.30	
150			0.0 1.53					40.209		K Factor = 0.24	
116 to 151	29.87 31.88		0.87 0.87	1.25 1.442	2T 14.864	96.000 14.864 110.864	120 0.0001	41.806 -0.871 0.010		Vel = 0.17	
151			0.0 0.87					40.945		K Factor = 0.14	
117 to 152	29.87 31.88		0.83 0.83	1.25 1.442	2T 14.864	96.000 14.864 110.864	120 0.0001	42.546 -0.871 0.009		Vel = 0.16	
152			0.0 0.83					41.684		K Factor = 0.13	

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Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
118 to 153	29.87 31.88		1.42 1.42	1.25 1.442	2T 14.864	96.000 14.864 110.864	120 0.0002	43.275 -0.871 0.024		Vel = 0.28	
153			0.0 1.42					42.428		K Factor = 0.22	
119 to 154	29.87 31.88		2.46 2.46	1.25 1.442	2T 14.864	96.000 14.864 110.864	120 0.0006	43.984 -0.871 0.065		Vel = 0.48	
154			0.0 2.46					43.178		K Factor = 0.37	
120 to 155	29.87 31.88		3.91 3.91	1.25 1.442	2T 14.864	96.000 14.864 110.864	120 0.0014	44.660 -0.871 0.150		Vel = 0.77	
155			0.0 3.91					43.939		K Factor = 0.59	
121 to 156	29.87 31.88		5.75 5.75	1.25 1.442	2T 14.864	96.000 14.864 110.864	120 0.0028	45.285 -0.871 0.306		Vel = 1.13	
156			0.0 5.75					44.720		K Factor = 0.86	
122 to 157	29.87 31.88		7.98 7.98	1.25 1.442	2T 14.864	96.000 14.864 110.864	120 0.0051	45.838 -0.871 0.561		Vel = 1.57	
157			0.0 7.98					45.528		K Factor = 1.18	
123 to 158	29.87 31.88		10.61 10.61	1.25 1.442	2T 14.864	96.000 14.864 110.864	120 0.0086	46.298 -0.871 0.949		Vel = 2.08	
158			0.0 10.61					46.376		K Factor = 1.56	
124 to 159	29.87 31.88		13.61 13.61	1.25 1.442	2T 14.864	96.000 14.864 110.864	120 0.0135	46.646 -0.871 1.502		Vel = 2.67	
159			0.0 13.61					47.277		K Factor = 1.98	
125 to 170	29.87 30.52		16.40 16.4	1.25 1.442	T 7.432	31.000 7.432 38.432	120 0.0192	46.917 -0.282 0.736		Vel = 3.22	
170 to 171	30.52 30.96		11.89 28.29	1.25 1.442		21.000 21.000	120 0.0525	47.371 -0.191 1.103		Vel = 5.56	
171 to 161	30.96 31.88		-12.09 16.2	1.25 1.442	3T 22.296	52.000 22.296 74.296	120 0.0187	48.283 -0.398 1.390		Vel = 3.18	
161			0.0 16.20					49.275		K Factor = 2.31	
126 to 170	29.87 30.52		11.88 11.88	1.25 1.442	3T 22.296	39.010 22.296 61.306	120 0.0106	47.006 -0.282 0.647		Vel = 2.33	

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Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
170			0.0 11.88					47.371		K Factor = 1.73	
171 to 160	30.96 31.88		12.09	1.25	T 7.432	44.000 7.432	120	48.283 -0.398			
			12.09	1.442		51.432	0.0109	0.559		Vel = 2.38	
160			0.0 12.09					48.444		K Factor = 1.74	