Hydraulic Calculations by HydraCALC

Century Fire Sprinklers, Inc.
1901 Bedford Ave,
North Kansas City, MO 64116
816-556-0808

Job Name	:	Lees Summit JOF
Drawing	:	1
Location	:	2 NE TUDOR RD - LEES SUMMIT, MO 64086
Remote Area	:	1
Contract	:	KC1-1508
Data File	:	Lees Summit JOF_FS Lower Area 1.WXF

06/11/2025

HYDRAULIC CALCULATIONS
for

JOB NAME Lees Summit JOF
Location 2 NE TUDOR RD - LEES SUMMIT, MO 64086
Drawing # 1
Contract # KC1-1508
Date 05/07/2025

DESIGN
Remote area # 1
Remote area location Lower Level - North Gen. Storage
Occupancy classification O.H. 2
Density 0.2 - Gpm/SqFt
Area of application 1500 - SqFt
Coverage/sprinkler 130 - SqFt
Type of sprinkler calculated QR UPR 8.0K
 # Sprinklers calculated 16
In-rack demand 0 - GPM
Hose streams 250 - GPM
Total water required (including hose streams) 712.955 - GPM @ 70.6618 - Psi
Type of system WET
Volume of system (dry or pre-action) 0 - Gal

WATER SUPPLY INFORMATION
Test date 08/15/2024
Location NW Sloan between Main St. and NE Tudor Rd.
Source of info SPEC. SECTION 211313

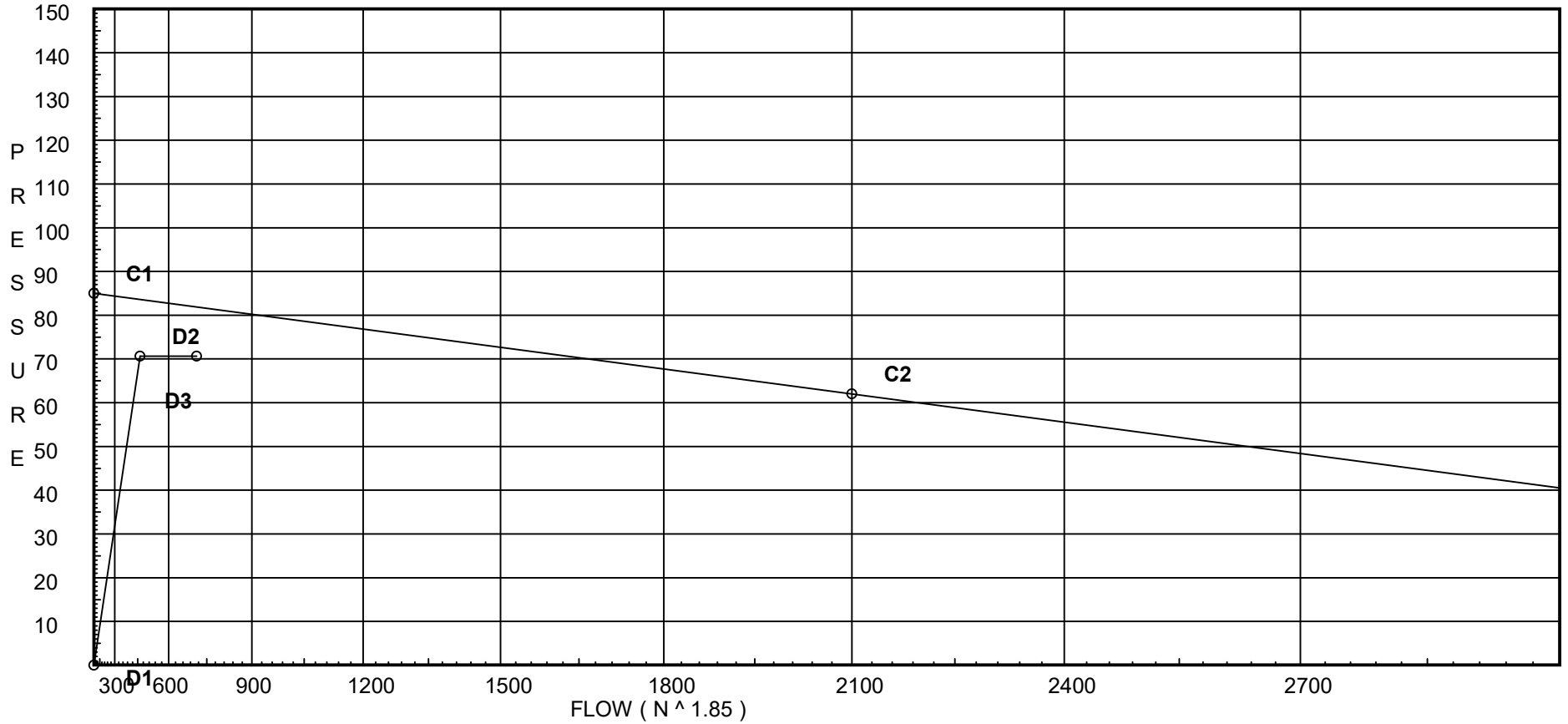
CONTRACTOR INFO Century Fire Sprinklers, Inc.
Address 1901 Bedford Ave, / North Kansas City, MO 64116
Phone # 816-556-0808
Name of designer DJS
Authority having jurisdiction
NOTES:

text1(35) - invisible

Water Supply Curve

City Water Supply:
- C1 - Static Pressure : 85
- C2 - Residual Pressure: 62
- C2 - Residual Flow : 2100

Demand:
- D1 - Elevation : -0.758
- D2 - System Flow : 462.955
- D2 - System Pressure : 70.662
- Hose (Demand) : 250
- D3 - System Demand : 712.955
- Safety Margin : 11.221



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
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
L	NFPA 13 Long Turn Elbow	0	1	2	2	2	3	4	5	5	6	8	9	13	16	18	24	27	30	34	40
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
Zca	Colt C200 Horiz	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	85.0	62	2100.0	81.883	712.96	70.662

NODE ANALYSIS

Node Tag	Elevation	Node Type	Pressure at Node	Discharge at Node	Notes	
105	98.25	8	10.65	26.1	0.2	130
106	98.25	8	10.96	26.48	0.2	130
107	98.25	8	11.63	27.28	0.2	130
108	98.25	8	11.63	27.29	0.2	130
109	98.25	8	11.94	27.64	0.2	130
T4	98.25		13.68			
110	97.67	8	14.18	30.12	0.2	130
111	97.67	8	14.43	30.39	0.2	130
112	97.67	8	15.34	31.33	0.2	130
T2	97.67		17.37			
113	97.5	8	16.32	32.32	0.2	130
114	97.5	8	16.78	32.77	0.2	130
T3	97.5		18.32			
115	98.08	8	21.35	36.96	0.2	130
116	96.71		22.4			
100	98.25	8	10.56	26.0	0.2	130
101	98.25	8	10.87	26.38	0.2	130
102	98.25	8	11.54	27.17	0.2	130
103	98.25	8	11.54	27.18	0.2	130
104	98.25	8	11.84	27.53	0.2	130
T5	98.25		13.58			
B5	96.71		19.3			
B4	96.71		19.44			
B3	96.71		19.9			
B2	96.71		20.17			
B1	96.71		22.85			
7	97.29		37.8			
6	95.5		44.26			
5	95.5		51.87			
4	94.88		53.1			
3	94.88		53.26			
2	94.88		55.05			
1	95.0		57.54			
BR1	87.0		64.84			
BF	87.0		72.22			
UG	90.0		72.05			
TEST	100.0		70.66	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 ******
105	98.25	8.00	26.10	1.5			14.670	120	10.645	
to									0.0	
106	98.25		26.1	1.682			14.670	0.0214	0.314	Vel = 3.77
106	98.25	8.00	26.48	1.5			8.550	120	10.959	
to									0.0	
107	98.25		52.58	1.682			8.550	0.0780	0.667	Vel = 7.59
107	98.25	8.00	27.28	1.5	T	9.9	2.260	120	11.626	
to							9.900		0.0	
T4	98.25		79.86	1.682			12.160	0.1692	2.057	Vel = 11.53
			0.0							
T4			79.86						13.683	K Factor = 21.59
108	98.25	8.00	27.29	1.5			13.000	120	11.635	
to									0.0	
109	98.25		27.29	1.682			13.000	0.0232	0.301	Vel = 3.94
109	98.25	8.00	27.64	1.5	T	9.9	10.740	120	11.936	
to							9.900		0.0	
T4	98.25		54.93	1.682			20.640	0.0846	1.747	Vel = 7.93
T4	98.25		79.86	1.5	T	9.9	1.540	120	13.683	
to							9.900		0.667	
B4	96.71		134.79	1.682			11.440	0.4454	5.095	Vel = 19.46
			0.0							
B4			134.79						19.445	K Factor = 30.57
110	97.67	8.00	30.12	1.5			9.000	120	14.179	
to									0.0	
111	97.67		30.12	1.682			9.000	0.0279	0.251	Vel = 4.35
111	97.67	8.00	30.39	1.5			9.000	120	14.430	
to									0.0	
112	97.67		60.51	1.682			9.000	0.1012	0.911	Vel = 8.74
112	97.67	8.00	31.34	1.5	L	2.475	6.790	120	15.341	
to							2.475		0.0	
T2	97.67		91.85	1.682			9.265	0.2191	2.030	Vel = 13.26
T2	97.67		0.0	1.5	T	9.9	0.960	120	17.371	
to							9.900		0.416	
B2	96.71		91.85	1.682			10.860	0.2190	2.378	Vel = 13.26
			0.0							
B2			91.85						20.165	K Factor = 20.45
113	97.5	8.00	32.32	1.5			14.670	120	16.318	
to									0.0	
114	97.5		32.32	1.682			14.670	0.0317	0.465	Vel = 4.67
114	97.5	8.00	32.77	1.5	L	2.475	10.810	120	16.783	
to							2.475		0.0	
T3	97.5		65.09	1.682			13.285	0.1158	1.539	Vel = 9.40
T3	97.5		0.0	1.5	T	9.9	0.790	120	18.322	
to							9.900		0.342	
B3	96.71		65.09	1.682			10.690	0.1159	1.239	Vel = 9.40
			0.0							
B3			65.09						19.903	K Factor = 14.59
115	98.08	8.00	36.96	1.5	T	9.9	1.380	120	21.346	
to							9.900		0.593	
116	96.71		36.96	1.682			11.280	0.0407	0.459	Vel = 5.34

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 ******
116	96.71		0.0	1.5	T	9.9	1.180	120	22.398	
to							9.900		0.0	
B1	96.71		36.96	1.682			11.080	0.0407	0.451	Vel = 5.34
			0.0							
B1			36.96						22.849	K Factor = 7.73
100	98.25	8.00	26.00	1.5			14.670	120	10.562	
to									0.0	
101	98.25		26.0	1.682			14.670	0.0213	0.312	Vel = 3.75
101	98.25	8.00	26.38	1.5			8.550	120	10.874	
to									0.0	
102	98.25		52.38	1.682			8.550	0.0774	0.662	Vel = 7.56
102	98.25	8.00	27.17	1.5	T	9.9	2.260	120	11.536	
to							9.900		0.0	
T5	98.25		79.55	1.682			12.160	0.1679	2.042	Vel = 11.49
			0.0							
T5			79.55						13.578	K Factor = 21.59
103	98.25	8.00	27.18	1.5			13.000	120	11.545	
to									0.0	
104	98.25		27.18	1.682			13.000	0.0230	0.299	Vel = 3.92
104	98.25	8.00	27.53	1.5	T	9.9	10.740	120	11.844	
to							9.900		0.0	
T5	98.25		54.71	1.682			20.640	0.0840	1.734	Vel = 7.90
T5	98.25		79.56	1.5	T	9.9	1.540	120	13.578	
to							9.900		0.667	
B5	96.71		134.27	1.682			11.440	0.4422	5.059	Vel = 19.39
B5	96.71		0.0	3			8.000	120	19.304	
to									0.0	
B4	96.71		134.27	3.26			8.000	0.0176	0.141	Vel = 5.16
B4	96.71		134.79	3			7.180	120	19.445	
to									0.0	
B3	96.71		269.06	3.26			7.180	0.0638	0.458	Vel = 10.34
B3	96.71		65.09	3			2.760	120	19.903	
to									0.0	
B2	96.71		334.15	3.26			2.760	0.0949	0.262	Vel = 12.84
B2	96.71		91.84	3	2L	13.44	4.550	120	20.165	
to							13.440		0.0	
B1	96.71		425.99	3.26			17.990	0.1492	2.684	Vel = 16.37
B1	96.71		36.97	3	4L	26.879	60.500	120	22.849	
to							26.879		-0.251	
7	97.29		462.96	3.26			87.379	0.1740	15.203	Vel = 17.79
7	97.29		0.0	3	3L	20.159	12.500	120	37.801	
to							20.159		0.775	
6	95.5		462.96	3.26			32.659	0.1740	5.683	Vel = 17.79
6	95.5		0.0	3			43.740	120	44.259	
to									0.0	
5	95.5		462.96	3.26			43.740	0.1740	7.610	Vel = 17.79
5	95.5		0.0	4	2L	15.8	4.600	120	51.869	
to							15.800		0.269	
4	94.88		462.96	4.26			20.400	0.0473	0.964	Vel = 10.42

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 ******
4	94.88		0.0	4			3.280	120	53.102	
to									0.0	
3	94.88		462.96	4.26			3.280	0.0473	0.155	Vel = 10.42
3	94.88		0.0	4	L	7.9	30.000	120	53.257	
to							7.900		0.0	
2	94.88		462.96	4.26			37.900	0.0473	1.792	Vel = 10.42
2	94.88		0.0	4	3L	23.701	30.000	120	55.049	
to							23.701		-0.052	
1	95		462.96	4.26			53.701	0.0473	2.539	Vel = 10.42
1	95		0.0	4	B	15.8	10.000	120	57.536	
to					S	28.968	71.102		3.465	
BR1	87		462.96	4.26	T	26.334	81.102	0.0473	3.834	Vel = 10.42
BR1	87		0.0	4	Zca	0.0	1.000	120	64.835	
to									7.341	* * Fixed Loss = 7.341
BF	87		462.96	4.26			1.000	0.0470	0.047	Vel = 10.42
BF	87		0.0	4	2L	15.8	8.000	120	72.223	
to							15.800		-1.299	
UG	90		462.96	4.26			23.800	0.0473	1.125	Vel = 10.42
UG	90		0.0	6	4L	51.645	400.000	140	72.049	
to					T	43.037	98.986		-4.331	
TEST	100		462.96	6.16	G	4.304	498.986	0.0059	2.944	Vel = 4.98
			250.00							Qa = 250.00
TEST			712.96						70.662	K Factor = 84.81

Hydraulic Calculations by HydraCALC

Century Fire Sprinklers, Inc.
1901 Bedford Ave,
North Kansas City, MO 64116
816-556-0808

Job Name	:	Lees Summit JOF
Drawing	:	2
Location	:	2 NE TUDOR RD - LEES SUMMIT, MO 64086
Remote Area	:	2
Contract	:	KC1-1508
Data File	:	Lees Summit JOF_FS Lower EC Area 2.WXF

HYDRAULIC CALCULATIONS
for

JOB NAME Lees Summit JOF
Location 2 NE TUDOR RD - LEES SUMMIT, MO 64086
Drawing # 2
Contract # KC1-1508
Date 05/07/2025

DESIGN
Remote area # 2
Remote area location Lower Level Dispatch
Occupancy classification Light
Density 0.1 - Gpm/SqFt
Area of application 1950 - SqFt
Coverage/sprinkler 256 - SqFt
Type of sprinkler calculated QR EC PEN 8.0K
 # Sprinklers calculated 11
In-rack demand 0 - GPM
Hose streams 100 - GPM
Total water required (including hose streams) 424.029 - GPM @ 64.0801 - Psi
Type of system Dbl Interlock- Pre Act
Volume of system (dry or pre-action) 135 - Gal

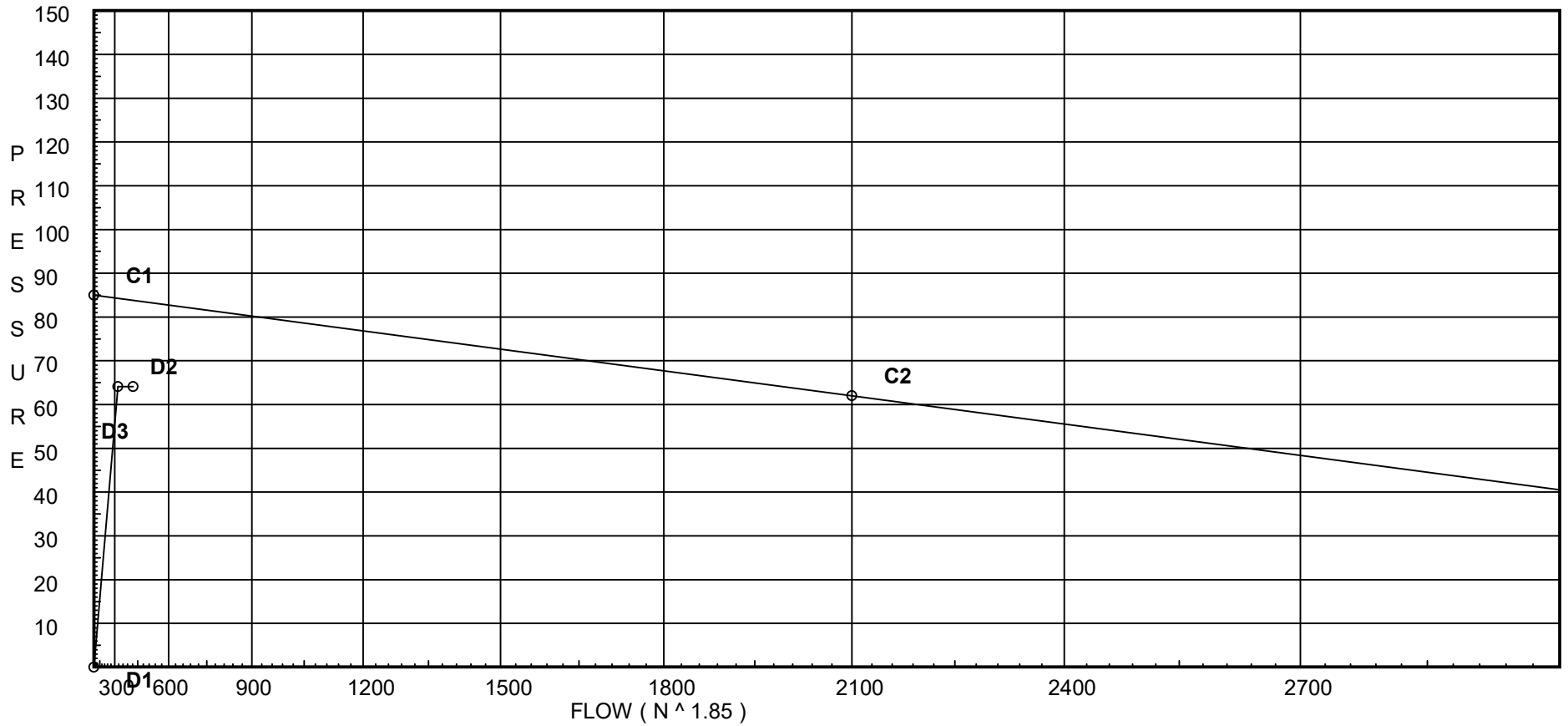
WATER SUPPLY INFORMATION
Test date 08/15/2024
Location NW Sloan between Main St. and NE Tudor Rd.
Source of info SPEC. SECTION 211313

CONTRACTOR INFO Century Fire Sprinklers, Inc.
Address 1901 Bedford Ave, / North Kansas City, MO 64116
Phone # 816-556-0808
Name of designer DJS
Authority having jurisdiction
NOTES:

text1(35) - invisible

City Water Supply:
- C1 - Static Pressure : 85
- C2 - Residual Pressure: 62
- C2 - Residual Flow : 2100

Demand:
- D1 - Elevation : -1.949
- D2 - System Flow : 324.029
- D2 - System Pressure : 64.080
- Hose (Demand) : 100
- D3 - System Demand : 424.029
- Safety Margin : 19.728



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	0	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
L	NFPA 13 Long Turn Elbow	0	1	2	2	2	3	4	5	5	6	8	9	13	16	18	24	27	30	34	40
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
Zca	Colt C200 Horiz	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	85.0	62	2100.0	83.808	424.03	64.08

NODE ANALYSIS

Node Tag	Elevation	Node Type	Pressure at Node	Discharge at Node	Notes	
204	96.17	8	10.87	26.38	0.1	256
205	96.17	8	12.33	28.09	0.1	256
206	95.5	8	10.84	26.33	0.1	256
207	96.58		12.85			
208	96.58		13.27			
209	96.58		15.05			
210	96.17	8	11.12	26.67	0.1	256
211	96.17	8	12.61	28.4	0.1	256
212	95.5	8	12.96	28.8	0.1	256
213	96.58		15.32			
214	96.58		15.9			
215	96.58		18.0			
216	95.5	8	13.43	29.32	0.1	256
217	95.5	8	15.19	31.18	0.1	256
218	96.17	8	18.99	34.86	0.1	256
219	97.17		22.57			
22	97.17		23.47			
220	95.5	8	22.5	37.95	0.1	256
200	95.5	8	10.6	26.05	0.1	256
201	96.58		12.56			
202	96.58		12.98			
203	96.58		14.72			
21	96.58		19.61			
20	96.58		20.04			
19	96.58		21.58			
18	96.58		22.63			
17	95.88		23.09			
16	95.88		24.46			
15	95.88		26.86			
14	95.88		30.7			
13	95.88		36.8			
12	95.5		43.67			
11	94.67		45.95			
10	94.67		53.08			
BR2	87.0		63.09			
BF	87.0		67.61			
UG	90.0		66.89			
TEST	100.0		64.08	100.0		

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 ******
204	96.17	8.00	26.38	1	2E	2.855	1.090	100	10.871	
to					T	3.568	6.423		-0.178	
202	96.58		26.38	1.049			7.513	0.3043	2.286	Vel = 9.79
			0.0							
202			26.38						12.979	K Factor = 7.32
205	96.17	8.00	28.09	1	2E	2.855	1.090	100	12.329	
to					T	3.568	6.423		-0.178	
203	96.58		28.09	1.049			7.513	0.3418	2.568	Vel = 10.43
			0.0							
203			28.09						14.719	K Factor = 7.32
206	95.5	8.00	26.33	1	2E	2.855	1.750	100	10.836	
to					T	3.568	6.423		-0.468	
207	96.58		26.33	1.049			8.173	0.3034	2.480	Vel = 9.77
207	96.58		0.0	1.5			14.000	100	12.848	
to									0.0	
208	96.58		26.33	1.682			14.000	0.0304	0.426	Vel = 3.80
208	96.58		26.68	1.5			16.000	100	13.274	
to									0.0	
209	96.58		53.01	1.682			16.000	0.1110	1.776	Vel = 7.65
209	96.58		28.40	1.5	T	7.065	13.250	100	15.050	
to							7.066		0.0	
20	96.58		81.41	1.682			20.316	0.2456	4.989	Vel = 11.75
			0.0							
20			81.41						20.039	K Factor = 18.19
210	96.17	8.00	26.67	1	2E	2.855	1.090	100	11.118	
to					T	3.568	6.423		-0.178	
208	96.58		26.67	1.049			7.513	0.3107	2.334	Vel = 9.90
			0.0							
208			26.67						13.274	K Factor = 7.32
211	96.17	8.00	28.40	1	2E	2.855	1.090	100	12.606	
to					T	3.568	6.423		-0.178	
209	96.58		28.4	1.049			7.513	0.3490	2.622	Vel = 10.54
			0.0							
209			28.40						15.050	K Factor = 7.32
212	95.5	8.00	28.80	1	T	3.568	1.500	100	12.956	
to					2E	2.855	6.423		-0.468	
213	96.58		28.8	1.049			7.923	0.3579	2.836	Vel = 10.69
213	96.58		0.0	1.5			16.000	100	15.324	
to									0.0	
214	96.58		28.8	1.682			16.000	0.0359	0.575	Vel = 4.16
214	96.58		29.32	1.5			16.000	100	15.899	
to									0.0	
215	96.58		58.12	1.682			16.000	0.1316	2.106	Vel = 8.39
215	96.58		31.18	1.5	T	7.065	5.210	100	18.005	
to							7.066		0.0	
19	96.58		89.3	1.682			12.276	0.2913	3.576	Vel = 12.89
			0.0							
19			89.30						21.581	K Factor = 19.22

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 ******
216	95.5	8.00	29.32	1	T	3.568	1.500	100	13.434	
to					2E	2.855	6.423		-0.468	
214	96.58		29.32	1.049			7.923	0.3702	2.933	Vel = 10.88
			0.0							
214			29.32						15.899	K Factor = 7.35
217	95.5	8.00	31.18	1	T	3.568	1.500	100	15.188	
to					2E	2.855	6.423		-0.468	
215	96.58		31.18	1.049			7.923	0.4146	3.285	Vel = 11.57
			0.0							
215			31.18						18.005	K Factor = 7.35
218	96.17	8.00	34.86	1	2E	2.855	1.460	100	18.987	
to					T	3.568	6.423		-0.433	
219	97.17		34.86	1.049			7.883	0.5097	4.018	Vel = 12.94
219	97.17		0.0	1.5	L	1.766	15.790	100	22.572	
to							1.766		0.0	
22	97.17		34.86	1.682			17.556	0.0511	0.897	Vel = 5.03
22	97.17		0.0	1.5	T	7.065	1.290	100	23.469	
to							7.066		0.559	
16	95.88		34.86	1.682			8.356	0.0511	0.427	Vel = 5.03
			0.0							
16			34.86						24.455	K Factor = 7.05
220	95.5	8.00	37.95	1	2E	2.855	1.170	100	22.501	
to					T	3.568	6.423		-0.165	
15	95.88		37.95	1.049			7.593	0.5963	4.528	Vel = 14.09
			0.0							
15			37.95						26.864	K Factor = 7.32
200	95.5	8.00	26.05	1	2E	2.855	1.750	100	10.600	
to					T	3.568	6.423		-0.468	
201	96.58		26.05	1.049			8.173	0.2973	2.430	Vel = 9.67
201	96.58		0.0	1.5			14.000	100	12.562	
to									0.0	
202	96.58		26.05	1.682			14.000	0.0298	0.417	Vel = 3.76
202	96.58		26.37	1.5			16.000	100	12.979	
to									0.0	
203	96.58		52.42	1.682			16.000	0.1088	1.740	Vel = 7.57
203	96.58		28.09	1.5	T	7.065	13.250	100	14.719	
to							7.066		0.0	
21	96.58		80.51	1.682			20.316	0.2405	4.887	Vel = 11.62
21	96.58		0.0	2.5			16.000	100	19.606	
to									0.0	
20	96.58		80.51	2.635			16.000	0.0271	0.433	Vel = 4.74
20	96.58		81.42	2.5			15.670	100	20.039	
to									0.0	
19	96.58		161.93	2.635			15.670	0.0984	1.542	Vel = 9.53
19	96.58		89.29	2.5	L	3.919	0.790	100	21.581	
to							3.919		0.0	
18	96.58		251.22	2.635			4.709	0.2219	1.045	Vel = 14.78

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 ******
18	96.58		0.0	2.5			0.710	100	22.626	
to									0.303	
17	95.88		251.22	2.635			0.710	0.2211	0.157	Vel = 14.78
17	95.88		0.0	2.5	L	3.919	2.250	100	23.086	
to							3.919		0.0	
16	95.88		251.22	2.635			6.169	0.2219	1.369	Vel = 14.78
16	95.88		34.86	2.5			8.540	100	24.455	
to									0.0	
15	95.88		286.08	2.635			8.540	0.2821	2.409	Vel = 16.83
15	95.88		37.95	2.5	L	3.919	6.890	100	26.864	
to							3.919		0.0	
14	95.88		324.03	2.635			10.809	0.3553	3.840	Vel = 19.06
14	95.88		0.0	3			48.390	100	30.704	
to									0.0	
13	95.88		324.03	3.26			48.390	0.1260	6.097	Vel = 12.45
13	95.88		0.0	3	4L	19.184	19.670	100	36.801	
to					T	14.388	33.571		0.165	
12	95.5		324.03	3.26			53.241	0.1260	6.708	Vel = 12.45
12	95.5		0.0	3	T	14.388	0.830	100	43.674	
to							14.387		0.359	
11	94.67		324.03	3.26			15.217	0.1260	1.917	Vel = 12.45
11	94.67		0.0	3	2L	9.592	47.000	100	45.950	
to							9.592		0.0	
10	94.67		324.03	3.26			56.592	0.1260	7.131	Vel = 12.45
10	94.67		0.0	3	B	9.592	8.000	100	53.081	
to					S	15.347	45.082		3.322	
BR2	87		324.03	3.26	Eql	20.143	53.082	0.1260	6.687	Vel = 12.45
BR2	87		0.0	4	Zca	0.0	1.000	120	63.090	
to									4.493	* * Fixed Loss = 4.493
BF	87		324.03	4.26			1.000	0.0250	0.025	Vel = 7.29
BF	87		0.0	4	2L	15.8	8.000	120	67.608	
to							15.800		-1.299	
UG	90		324.03	4.26			23.800	0.0244	0.581	Vel = 7.29
UG	90		0.0	6	4L	51.645	400.000	140	66.890	
to					T	43.037	98.986		-4.331	
TEST	100		324.03	6.16	G	4.304	498.986	0.0030	1.521	Vel = 3.49
			100.00							Qa = 100.00
TEST			424.03						64.080	K Factor = 52.97

Hydraulic Calculations by HydraCALC

Century Fire Sprinklers, Inc.
1901 Bedford Ave,
North Kansas City, MO 64116
816-556-0808

Job Name	:	Lees Summit JOF
Drawing	:	2
Location	:	2 NE TUDOR RD - LEES SUMMIT, MO 64086
Remote Area	:	3
Contract	:	KC1-1508
Data File	:	Lees Summit JOF_FS Main Level-CALC Area 3.WXF

HYDRAULIC CALCULATIONS
for

JOB NAME Lees Summit JOF
Location 2 NE TUDOR RD - LEES SUMMIT, MO 64086
Drawing # 2
Contract # KC1-1508
Date 05/07/2025

DESIGN

Remote area # 3
Remote area location Mian Level - North
Occupancy classification Light
Density 0.1 - Gpm/SqFt
Area of application 1500 - SqFt
Coverage/sprinkler 180 - SqFt
Type of sprinkler calculated QR PEN 5.6K
 # Sprinklers calculated 13
In-rack demand 0 - GPM
Hose streams 100 - GPM
Total water required (including hose streams) 375.796 - GPM @ 62.9899 - Psi
Type of system WET
Volume of system (dry or pre-action) 0 - Gal

WATER SUPPLY INFORMATION

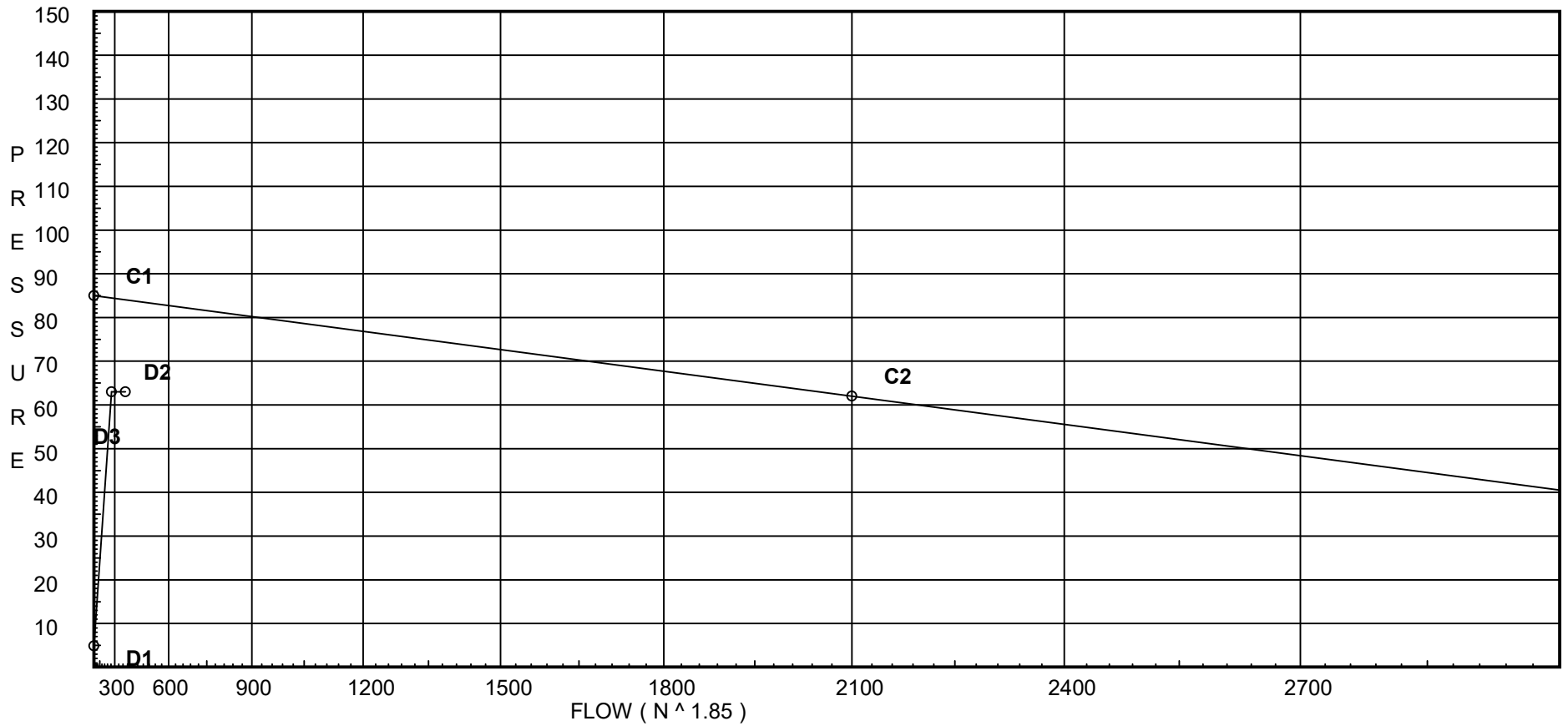
Test date 08/15/2024
Location NW Sloan between Main St. and NE Tudor Rd.
Source of info SPEC. SECTION 211313

CONTRACTOR INFO Century Fire Sprinklers, Inc.
Address 1901 Bedford Ave, / North Kansas City, MO 64116
Phone # 816-556-0808
Name of designer DJS
Authority having jurisdiction
NOTES:

text1(35) - invisible

City Water Supply:
- C1 - Static Pressure : 85
- C2 - Residual Pressure: 62
- C2 - Residual Flow : 2100

Demand:
- D1 - Elevation : 4.907
- D2 - System Flow : 275.796
- D2 - System Pressure : 62.990
- Hose (Demand) : 100
- D3 - System Demand : 375.796
- Safety Margin : 21.057



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	0	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
L	NFPA 13 Long Turn Elbow	0	1	2	2	2	3	4	5	5	6	8	9	13	16	18	24	27	30	34	40
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
Zca	Colt C200 Horiz	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	85.0	62	2100.0	84.047	375.8	62.99

NODE ANALYSIS

Node Tag	Elevation	Node Type	Pressure at Node	Discharge at Node	Notes	
307	111.33	5.6	10.49	18.13	0.1	180
308	111.33	5.6	10.94	18.52	0.1	180
309	111.33	5.6	10.94	18.52	0.15	100
310	111.33	5.6	12.81	20.04	0.1	180
311	111.33	5.6	16.35	22.64	0.1	180
312	111.33	5.6	13.03	20.22	0.1	180
313	111.33		19.54			
314	111.33		20.34			
315	111.33		23.41			
316	111.33		28.07			
317	110.67	5.6	13.78	20.79	0.1	180
318	111.33	5.6	13.12	20.28	0.1	180
319	111.33		19.26			
320	111.33	5.6	15.69	22.18	0.1	180
321	111.33	5.6	18.9	24.35	0.1	180
322	111.33	5.6	21.47	25.95	0.1	180
323	111.33		31.79			
324	111.33		32.33			
325	111.33	5.6	21.84	26.17	0.1	180
300	111.33	5.6	10.33	18.0	0.1	180
301	111.33		15.58			
302	111.33		15.81			
303	111.33		16.47			
304	111.33		19.21			
305	111.33		24.37			
36	111.33		32.93			
35	111.33		33.07			
34	111.33		33.17			
33	111.33		33.63			
32	111.33		35.82			
31	111.33		39.63			
30	111.33		40.93			
7	97.29		49.94			
6	95.5		52.89			
5	95.5		55.81			
4	94.88		56.45			
3	94.88		56.51			
2	94.88		57.2			
1	95.0		58.12			
BR1	87.0		63.06			
BF	87.0		67.06			
UG	90.0		66.19			

NODE ANALYSIS (cont.)

Node Tag	*Elevation*	*Node Type*	*Pressure at Node*	*Discharge at Node*	*Notes*
TEST	100.0		62.99	100.0	

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 ******
307	111.33	5.60	18.13	1	T	5.0	44.000	120	10.486	
to							5.000		0.0	
302	111.33		18.13	1.049			49.000	0.1086	5.320	Vel = 6.73
			0.0							
302			18.13						15.806	K Factor = 4.56
308	111.33	5.60	18.52	1	T	5.0	44.000	120	10.938	
to							5.000		0.0	
303	111.33		18.52	1.049			49.000	0.1129	5.532	Vel = 6.88
			0.0							
303			18.52						16.470	K Factor = 4.56
309	111.330	5.60	18.52	1	T	5.0	44.000	120	10.938	
to							5.000		0.0	
303	111.33		18.52	1.049			49.000	0.1129	5.532	Vel = 6.88
			0.0							
303			18.52						16.470	K Factor = 4.56
310	111.330	5.60	20.04	1	T	5.0	44.000	120	12.809	
to							5.000		0.0	
304	111.33		20.04	1.049			49.000	0.1306	6.401	Vel = 7.44
			0.0							
304			20.04						19.210	K Factor = 4.57
311	111.33	5.60	22.64	1	T	5.0	44.000	120	16.349	
to							5.000		0.0	
305	111.33		22.64	1.049			49.000	0.1637	8.022	Vel = 8.40
			0.0							
305			22.64						24.371	K Factor = 4.59
312	111.33	5.60	20.22	1	T	5.0	44.000	120	13.035	
to							5.000		0.0	
313	111.33		20.22	1.049			49.000	0.1328	6.506	Vel = 7.51
313	111.33		20.28	1.25			7.870	120	19.541	
to									0.0	
314	111.33		40.5	1.442			7.870	0.1019	0.802	Vel = 7.96
314	111.33		20.79	1.25			14.000	120	20.343	
to									0.0	
315	111.33		61.29	1.442			14.000	0.2194	3.071	Vel = 12.04
315	111.33		22.18	1.25			12.000	120	23.414	
to									0.0	
316	111.33		83.47	1.442			12.000	0.3884	4.661	Vel = 16.40
316	111.33		24.35	1.25	T	7.432	0.570	120	28.075	
to							7.432		0.0	
35	111.33		107.82	1.442			8.002	0.6237	4.991	Vel = 21.18
			0.0							
35			107.82						33.066	K Factor = 18.75
317	110.67	5.60	20.79	1	T	5.0	44.000	120	13.780	
to							5.000		-0.286	
314	111.33		20.79	1.049			49.000	0.1398	6.849	Vel = 7.72
			0.0							
314			20.79						20.343	K Factor = 4.61

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 ******
318	111.33	5.60	20.28	1	E	2.0	44.000	120	13.117	
to							2.000		0.0	
319	111.33		20.28	1.049			46.000	0.1335	6.143	Vel = 7.53
319	111.33		0.0	1.25			8.000	120	19.260	
to									0.0	
313	111.33		20.28	1.38			8.000	0.0351	0.281	Vel = 4.35
			0.0							
313			20.28						19.541	K Factor = 4.59
320	111.33	5.60	22.18	1	T	5.0	44.000	120	15.691	
to							5.000		0.0	
315	111.33		22.18	1.049			49.000	0.1576	7.723	Vel = 8.23
			0.0							
315			22.18						23.414	K Factor = 4.58
321	111.33	5.60	24.35	1	T	5.0	44.000	120	18.901	
to							5.000		0.0	
316	111.33		24.35	1.049			49.000	0.1872	9.174	Vel = 9.04
			0.0							
316			24.35						28.075	K Factor = 4.60
322	111.33	5.60	25.95	1	T	5.0	44.000	120	21.470	
to							5.000		0.0	
323	111.33		25.95	1.049			49.000	0.2107	10.322	Vel = 9.63
323	111.33		0.0	1.25			12.000	120	31.792	
to									0.0	
324	111.33		25.95	1.442			12.000	0.0447	0.536	Vel = 5.10
324	111.33		26.17	1.25	T	7.432	0.570	120	32.328	
to							7.432		0.0	
33	111.33		52.12	1.442			8.002	0.1626	1.301	Vel = 10.24
			0.0							
33			52.12						33.629	K Factor = 8.99
325	111.33	5.60	26.17	1	T	5.0	44.000	120	21.841	
to							5.000		0.0	
324	111.33		26.17	1.049			49.000	0.2140	10.487	Vel = 9.71
			0.0							
324			26.17						32.328	K Factor = 4.60
300	111.33	5.60	18.00	1	T	5.0	44.000	120	10.332	
to							5.000		0.0	
301	111.33		18.0	1.049			49.000	0.1071	5.247	Vel = 6.68
301	111.33		0.0	1.25			10.000	120	15.579	
to									0.0	
302	111.33		18.0	1.442			10.000	0.0227	0.227	Vel = 3.54
302	111.33		18.13	1.25			8.040	120	15.806	
to									0.0	
303	111.33		36.13	1.442			8.040	0.0826	0.664	Vel = 7.10
303	111.33		37.05	1.25			9.000	120	16.470	
to									0.0	
304	111.33		73.18	1.442			9.000	0.3044	2.740	Vel = 14.38
304	111.33		20.04	1.25			10.830	120	19.210	
to									0.0	
305	111.33		93.22	1.442			10.830	0.4765	5.161	Vel = 18.31

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 ******
305	111.33		22.64	1.25	T	7.432	4.580	120	24.371	
to							7.432		0.0	
36	111.33		115.86	1.442			12.012	0.7125	8.558	Vel = 22.76
36	111.33		0.0	3			10.170	120	32.929	
to									0.0	
35	111.33		115.86	3.26			10.170	0.0135	0.137	Vel = 4.45
35	111.33		107.82	3			2.270	120	33.066	
to									0.0	
34	111.33		223.68	3.26			2.270	0.0449	0.102	Vel = 8.60
34	111.33		0.0	3			10.170	120	33.168	
to									0.0	
33	111.33		223.68	3.26			10.170	0.0453	0.461	Vel = 8.60
33	111.33		52.12	3	T	20.159	12.620	120	33.629	
to							20.159		0.0	
32	111.33		275.8	3.26			32.779	0.0668	2.188	Vel = 10.60
32	111.33		0.0	3	T	20.159	37.000	120	35.817	
to							20.159		0.0	
31	111.33		275.8	3.26			57.159	0.0667	3.814	Vel = 10.60
31	111.33		0.0	3	L	6.72	12.750	120	39.631	
to							6.720		0.0	
30	111.33		275.8	3.26			19.470	0.0668	1.300	Vel = 10.60
30	111.33		0.0	3	L	6.72	17.000	120	40.931	
to					T	20.159	26.879		6.081	
7	97.29		275.8	3.26			43.879	0.0667	2.928	Vel = 10.60
			0.0							
7			275.80						49.940	K Factor = 39.03
7	97.29		275.80	3	3L	20.159	12.500	120	49.940	
to							20.159		0.775	
6	95.5		275.8	3.26			32.659	0.0668	2.180	Vel = 10.60
6	95.5		0.0	3			43.740	120	52.895	
to									0.0	
5	95.5		275.8	3.26			43.740	0.0667	2.919	Vel = 10.60
5	95.5		0.0	4	2L	15.8	4.600	120	55.814	
to							15.800		0.269	
4	94.88		275.8	4.26			20.400	0.0181	0.369	Vel = 6.21
4	94.88		0.0	4			3.280	120	56.452	
to									0.0	
3	94.88		275.8	4.26			3.280	0.0183	0.060	Vel = 6.21
3	94.88		0.0	4	L	7.9	30.000	120	56.512	
to							7.900		0.0	
2	94.88		275.8	4.26			37.900	0.0181	0.687	Vel = 6.21
2	94.88		0.0	4	3L	23.701	30.000	120	57.199	
to							23.701		-0.052	
1	95		275.8	4.26			53.701	0.0181	0.974	Vel = 6.21
1	95		0.0	4	B	15.8	10.000	120	58.121	
to					S	28.968	71.102		3.465	
BR1	87		275.8	4.26	T	26.334	81.102	0.0181	1.470	Vel = 6.21
BR1	87		0.0	4	Zca	0.0	1.000	120	63.056	
to									3.985	* * Fixed Loss = 3.985
BF	87		275.8	4.26			1.000	0.0190	0.019	Vel = 6.21

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 ******
BF	87		0.0	4	2L	15.8	8.000	120	67.060	
to							15.800		-1.299	
UG	90		275.8	4.26			23.800	0.0181	0.431	Vel = 6.21
UG	90		0.0	6	4L	51.645	400.000	140	66.192	
to					T	43.037	98.986		-4.331	
TEST	100		275.8	6.16	G	4.304	498.986	0.0023	1.129	Vel = 2.97
			100.00							Qa = 100.00
TEST			375.80						62.990	K Factor = 47.35

Hydraulic Calculations by HydraCALC

Century Fire Sprinklers, Inc.
1901 Bedford Ave,
North Kansas City, MO 64116
816-556-0808

Job Name	:	Lees Summit JOF
Drawing	:	2
Location	:	2 NE TUDOR RD - LEES SUMMIT, MO 64086
Remote Area	:	4
Contract	:	KC1-1508
Data File	:	Lees Summit JOF_FS Main Level-CALC Area 4.WXF

HYDRAULIC CALCULATIONS
for

JOB NAME Lees Summit JOF
Location 2 NE TUDOR RD - LEES SUMMIT, MO 64086
Drawing # 2
Contract # KC1-1508
Date 05/07/2025

DESIGN
Remote area # 4
Remote area location Lobby
Occupancy classification Light
Density 0.1 - Gpm/SqFt
Area of application 1500 - SqFt
Coverage/sprinkler 196 - SqFt
Type of sprinkler calculated QR PEN 5.6K
 # Sprinklers calculated 11
In-rack demand 0 - GPM
Hose streams 100 - GPM
Total water required (including hose streams) 337.268 - GPM @ 66.087 - Psi
Type of system WET
Volume of system (dry or pre-action) 0 - Gal

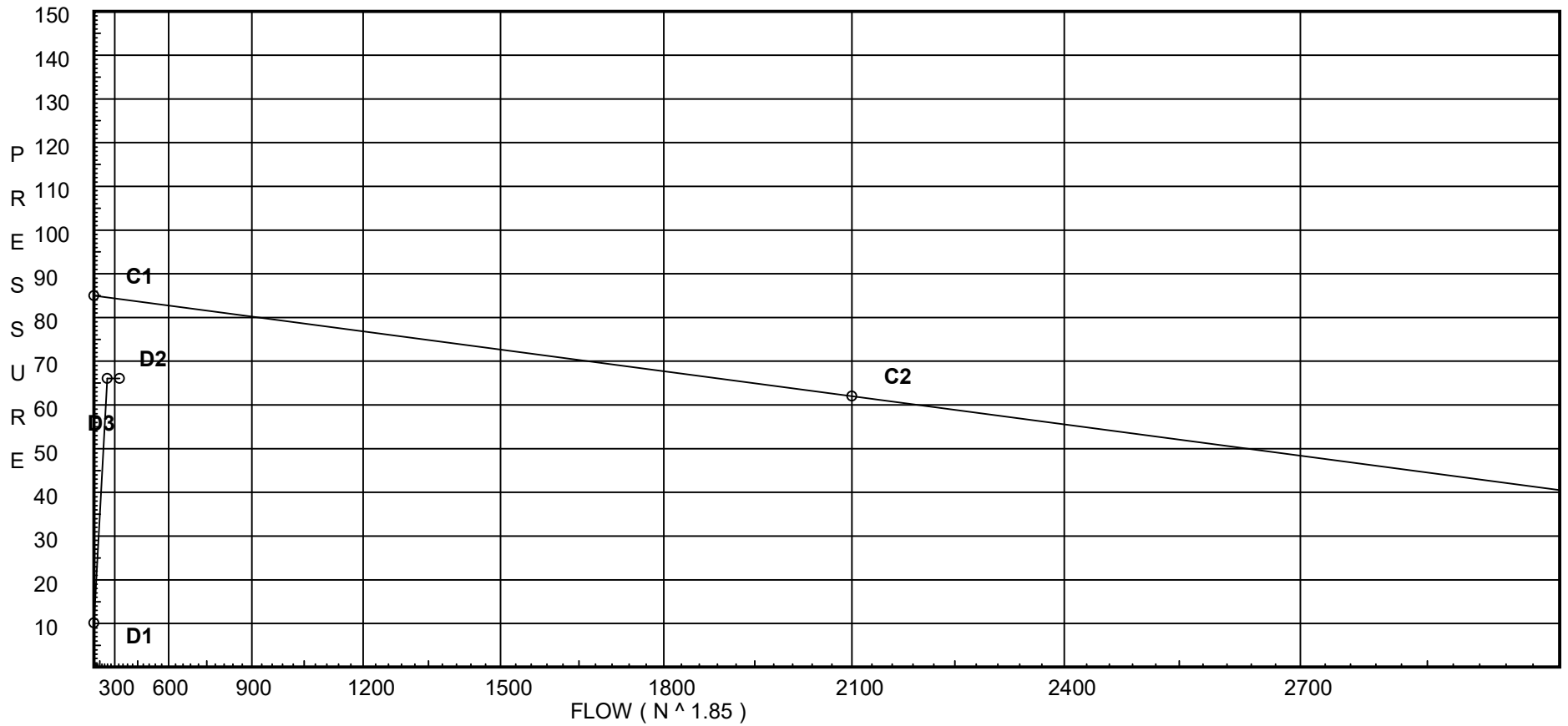
WATER SUPPLY INFORMATION
Test date 08/15/2024
Location NW Sloan between Main St. and NE Tudor Rd.
Source of info SPEC. SECTION 211313

CONTRACTOR INFO Century Fire Sprinklers, Inc.
Address 1901 Bedford Ave, / North Kansas City, MO 64116
Phone # 816-556-0808
Name of designer DJS
Authority having jurisdiction
NOTES:

text1(35) - invisible

City Water Supply:
- C1 - Static Pressure : 85
- C2 - Residual Pressure: 62
- C2 - Residual Flow : 2100

Demand:
- D1 - Elevation : 10.143
- D2 - System Flow : 237.268
- D2 - System Pressure : 66.087
- Hose (Demand) : 100
- D3 - System Demand : 337.268
- Safety Margin : 18.132



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	0	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
L	NFPA 13 Long Turn Elbow	0	1	2	2	2	3	4	5	5	6	8	9	13	16	18	24	27	30	34	40
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
Zca	Colt C200 Horiz	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	85.0	62	2100.0	84.219	337.27	66.087

NODE ANALYSIS

Node Tag	Elevation	Node Type	Pressure at Node	Discharge at Node	Notes	
405	123.42	5.6	12.29	19.63	0.1	196
406	124.0		17.82			
407	123.42	5.6	13.04	20.22	0.1	196
408	123.42	5.6	15.89	22.32	0.1	196
409	123.42	5.6	12.89	20.11	0.1	196
410	124.0		19.08			
411	124.0		20.29			
412	124.0		22.81			
44	124.0		28.42			
413	123.42	5.6	12.88	20.1	0.1	196
414	124.0		18.67			
415	123.42	5.6	13.72	20.74	0.1	196
416	123.42	5.6	15.45	22.01	0.1	196
417	123.42	5.6	17.97	23.74	0.1	196
418	124.0		26.48			
419	124.0		27.01			
420	123.42	5.6	18.34	23.98	0.1	196
421	123.42	5.6	19.63	24.81	0.1	196
422	124.0		28.88			
400	123.42	5.6	12.25	19.6	0.1	196
401	124.0		18.14			
402	124.0		19.29			
403	124.0		23.45			
43	124.0		28.92			
42	124.0		29.33			
41	124.0		32.03			
40	111.33		42.78			
31	111.33		46.27			
30	111.33		47.25			
7	97.29		55.55			
6	95.5		57.97			
5	95.5		60.18			
4	94.88		60.73			
3	94.88		60.78			
2	94.88		61.3			
1	95.0		61.98			
BR1	87.0		66.56			
BF	87.0		70.54			
UG	90.0		69.56			
TEST	100.0		66.09	100.0		

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 ******
405	123.42	5.60	19.63	1	E	2.0	44.000	120	12.289	
to							2.000		-0.251	
406	124		19.63	1.049			46.000	0.1257	5.783	Vel = 7.29
406	124		0.0	1.25			12.000	120	17.821	
to									0.0	
401	124		19.63	1.442			12.000	0.0267	0.320	Vel = 3.86
			0.0							
401			19.63						18.141	K Factor = 4.61
407	123.42	5.60	20.22	1	T	5.0	44.000	120	13.038	
to							5.000		-0.251	
402	124		20.22	1.049			49.000	0.1328	6.507	Vel = 7.51
			0.0							
402			20.22						19.294	K Factor = 4.60
408	123.42	5.60	22.32	1	T	5.0	44.000	120	15.890	
to							5.000		-0.251	
403	124		22.32	1.049			49.000	0.1595	7.814	Vel = 8.29
			0.0							
403			22.32						23.453	K Factor = 4.61
409	123.42	5.60	20.11	1	T	5.0	44.000	120	12.894	
to							5.000		-0.251	
410	124		20.11	1.049			49.000	0.1314	6.441	Vel = 7.47
410	124		20.10	1.25			12.000	120	19.084	
to									0.0	
411	124		40.21	1.442			12.000	0.1006	1.207	Vel = 7.90
411	124		20.74	1.25			11.600	120	20.291	
to									0.0	
412	124		60.95	1.442			11.600	0.2171	2.518	Vel = 11.97
412	124		22.01	1.25	T	7.432	7.190	120	22.809	
to							7.432		0.0	
44	124		82.96	1.442			14.622	0.3841	5.616	Vel = 16.30
44	124		47.72	2.5			10.500	120	28.425	
to									0.0	
43	124		130.68	2.635			10.500	0.0472	0.496	Vel = 7.69
			0.0							
43			130.68						28.921	K Factor = 24.30
413	123.42	5.60	20.10	1	E	2.0	44.000	120	12.880	
to							2.000		-0.251	
414	124		20.1	1.049			46.000	0.1313	6.040	Vel = 7.46
414	124		0.0	1.25			12.000	120	18.669	
to									0.0	
410	124		20.1	1.38			12.000	0.0346	0.415	Vel = 4.31
			0.0							
410			20.10						19.084	K Factor = 4.60
415	123.42	5.60	20.74	1	T	5.0	44.000	120	13.720	
to							5.000		-0.251	
411	124		20.74	1.049			49.000	0.1392	6.822	Vel = 7.70
			0.0							
411			20.74						20.291	K Factor = 4.60

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 ******
416	123.42	5.60	22.01	1	T	5.0	44.000	120	15.448	
to							5.000		-0.251	
412	124		22.01	1.049			49.000	0.1553	7.612	Vel = 8.17
			0.0							
412			22.01						22.809	K Factor = 4.61
417	123.42	5.60	23.74	1	T	5.0	44.000	120	17.974	
to							5.000		-0.251	
418	124		23.74	1.049			49.000	0.1787	8.756	Vel = 8.81
418	124		0.0	1.25			14.000	120	26.479	
to									0.0	
419	124		23.74	1.442			14.000	0.0380	0.532	Vel = 4.66
419	124		23.98	1.25	T	7.432	2.810	120	27.011	
to							7.432		0.0	
44	124		47.72	1.442			10.242	0.1381	1.414	Vel = 9.37
			0.0							
44			47.72						28.425	K Factor = 8.95
420	123.42	5.60	23.98	1	T	5.0	44.000	120	18.340	
to							5.000		-0.251	
419	124		23.98	1.049			49.000	0.1821	8.922	Vel = 8.90
			0.0							
419			23.98						27.011	K Factor = 4.61
421	123.42	5.60	24.81	1	T	5.0	44.000	120	19.629	
to							5.000		-0.251	
422	124		24.81	1.049			49.000	0.1939	9.500	Vel = 9.21
422	124		0.0	1.25	T	6.0	2.810	120	28.878	
to							6.000		0.0	
42	124		24.81	1.38			8.810	0.0511	0.450	Vel = 5.32
			0.0							
42			24.81						29.328	K Factor = 4.58
400	123.42	5.60	19.60	1	T	5.0	44.000	120	12.250	
to							5.000		-0.251	
401	124		19.6	1.049			49.000	0.1253	6.142	Vel = 7.28
401	124		19.63	1.25			12.000	120	18.141	
to									0.0	
402	124		39.23	1.442			12.000	0.0961	1.153	Vel = 7.71
402	124		20.22	1.25	2L	4.955	15.100	120	19.294	
to							4.955		0.0	
403	124		59.45	1.442			20.055	0.2074	4.159	Vel = 11.68
403	124		22.32	1.25	T	7.432	7.190	120	23.453	
to							7.432		0.0	
43	124		81.77	1.442			14.622	0.3740	5.468	Vel = 16.06
43	124		130.69	2.5			3.500	120	28.921	
to									0.0	
42	124		212.46	2.635			3.500	0.1163	0.407	Vel = 12.50
42	124		24.81	2.5	2L	10.983	7.980	120	29.328	
to							10.983		0.0	
41	124		237.27	2.635			18.963	0.1424	2.701	Vel = 13.96

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 ******
41	124		0.0	2.5	L	5.491	15.000	120	32.029	
to					T	16.474	21.965		5.487	
40	111.33		237.27	2.635			36.965	0.1425	5.266	Vel = 13.96
40	111.33		0.0	2.5	T	16.474	8.000	120	42.782	
to							16.474		0.0	
31	111.33		237.27	2.635			24.474	0.1424	3.486	Vel = 13.96
31	111.33		0.0	3	L	6.72	12.750	120	46.268	
to							6.720		0.0	
30	111.33		237.27	3.26			19.470	0.0505	0.983	Vel = 9.12
30	111.33		0.0	3	L	6.72	17.000	120	47.251	
to					T	20.159	26.879		6.081	
7	97.29		237.27	3.26			43.879	0.0505	2.217	Vel = 9.12
			0.0							
7			237.27						55.549	K Factor = 31.83
7	97.29		237.27	3	3L	20.159	12.500	120	55.549	
to							20.159		0.775	
6	95.5		237.27	3.26			32.659	0.0505	1.650	Vel = 9.12
6	95.5		0.0	3			43.740	120	57.974	
to									0.0	
5	95.5		237.27	3.26			43.740	0.0505	2.210	Vel = 9.12
5	95.5		0.0	4	2L	15.8	4.600	120	60.184	
to							15.800		0.269	
4	94.88		237.27	4.26			20.400	0.0137	0.279	Vel = 5.34
4	94.88		0.0	4			3.280	120	60.732	
to									0.0	
3	94.88		237.27	4.26			3.280	0.0140	0.046	Vel = 5.34
3	94.88		0.0	4	L	7.9	30.000	120	60.778	
to							7.900		0.0	
2	94.88		237.27	4.26			37.900	0.0137	0.520	Vel = 5.34
2	94.88		0.0	4	3L	23.701	30.000	120	61.298	
to							23.701		-0.052	
1	95		237.27	4.26			53.701	0.0137	0.737	Vel = 5.34
1	95		0.0	4	B	15.8	10.000	120	61.983	
to					S	28.968	71.102		3.465	
BR1	87		237.27	4.26	T	26.334	81.102	0.0137	1.113	Vel = 5.34
BR1	87		0.0	4	Zca	0.0	1.000	120	66.561	
to									3.961	* * Fixed Loss = 3.961
BF	87		237.27	4.26			1.000	0.0140	0.014	Vel = 5.34
BF	87		0.0	4	2L	15.8	8.000	120	70.536	
to							15.800		-1.299	
UG	90		237.27	4.26			23.800	0.0137	0.326	Vel = 5.34
UG	90		0.0	6	4L	51.645	400.000	140	69.563	
to					T	43.037	98.986		-4.331	
TEST	100		237.27	6.16	G	4.304	498.986	0.0017	0.855	Vel = 2.55
			100.00							Qa = 100.00
TEST			337.27						66.087	K Factor = 41.49

Hydraulic Calculations by HydraCALC

Century Fire Sprinklers, Inc.
1901 Bedford Ave,
North Kansas City, MO 64116
816-556-0808

Job Name	:	Lees Summit JOF_FS
Drawing	:	2
Location	:	2 NE TUDOR RD - LEES SUMMIT, MO 64086
Remote Area	:	5
Contract	:	KC1-1508
Data File	:	Lees Summit JOF_FS Main Level-CALC Area 5.WXF

HYDRAULIC CALCULATIONS
for

JOB NAME Lees Summit JOF
Location 2 NE TUDOR RD - LEES SUMMIT, MO 64086
Drawing # 2
Contract # KC1-1508
Date 05/07/2025

DESIGN

Remote area # 5
Remote area location Mian Level - South Mech
Occupancy classification O.H. 1
Density 0.15 - Gpm/SqFt
Area of application 1500 - SqFt
Coverage/sprinkler 100 - SqFt
Type of sprinkler calculated QR PEN 5.6K
 # Sprinklers calculated 20
In-rack demand 0 - GPM
Hose streams 250 - GPM
Total water required (including hose streams) 614.97 - GPM @ 61.1568 - Psi
Type of system WET
Volume of system (dry or pre-action) 0 - Gal

WATER SUPPLY INFORMATION

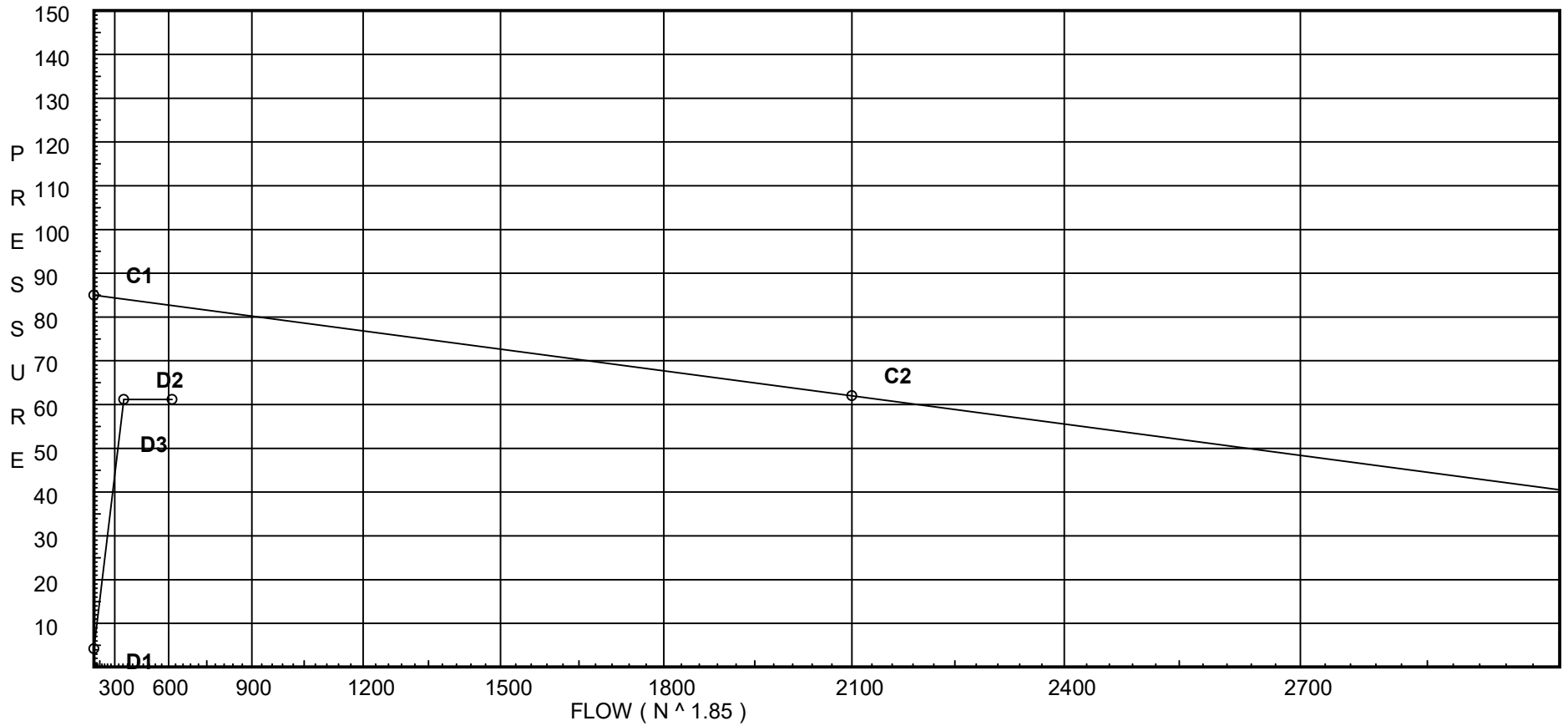
Test date 08/15/2024
Location NW Sloan between Main St. and NE Tudor Rd.
Source of info SPEC. SECTION 211313

CONTRACTOR INFO Century Fire Sprinklers, Inc.
Address 1901 Bedford Ave, / North Kansas City, MO 64116
Phone # 816-556-0808
Name of designer DJS
Authority having jurisdiction
NOTES:

text1(35) - invisible

City Water Supply:
- C1 - Static Pressure : 85
- C2 - Residual Pressure: 62
- C2 - Residual Flow : 2100

Demand:
- D1 - Elevation : 4.188
- D2 - System Flow : 364.97
- D2 - System Pressure : 61.157
- Hose (Demand) : 250
- D3 - System Demand : 614.97
- Safety Margin : 21.472



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	0	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
L	NFPA 13 Long Turn Elbow	0	1	2	2	2	3	4	5	5	6	8	9	13	16	18	24	27	30	34	40
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
Zca	Colt C200 Horiz	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	85.0	62	2100.0	82.629	614.97	61.157

NODE ANALYSIS

Node Tag	Elevation	Node Type	Pressure at Node	Discharge at Node	Notes	
505	109.67	5.6	12.47	19.77	0.1	196
506	109.67	5.6	13.13	20.29	0.1	196
507	109.67	5.6	15.13	21.78	0.1	196
508	113.21	5.6	8.58	16.41	0.15	100
509	113.21	5.6	8.62	16.44	0.15	100
69	113.21		8.87			
64	112.08		9.96			
63	112.08		10.0			
62	112.08		10.17			
61	112.58		10.34			
60	112.58		11.31			
59	112.58		12.11			
58	112.58		15.62			
57	112.58		18.48			
56	110.5		23.3			
510	113.21	5.6	8.65	16.47	0.15	100
511	113.21	5.6	8.63	16.45	0.15	100
68	113.21		8.91			
512	113.21	5.6	8.8	16.62	0.15	100
513	113.21	5.6	8.82	16.63	0.15	100
67	113.21		9.07			
514	113.21	5.6	9.14	16.93	0.15	100
515	113.21	5.6	9.38	17.15	0.15	100
516	113.21		9.82			
65	112.58		10.69			
517	112.58	5.6	9.55	17.31	0.15	100
518	112.58	5.6	9.81	17.54	0.15	100
66	112.58		10.65			
519	110.17	5.6	7.82	15.66	0.15	100
520	110.62		11.68			
521	110.17	5.6	7.92	15.76	0.15	100
522	110.62		11.57			
523	110.17	5.6	10.52	18.17	0.15	100
524	112.58		14.82			
525	110.17	5.6	10.64	18.26	0.15	100
526	112.58		14.65			
527	109.17	5.6	15.47	22.03	0.1	196
528	110.5		22.05			
529	109.42	5.6	21.08	25.71	0.1	196
530	110.5		30.14			
500	109.67	5.6	12.25	19.6	0.1	196
501	113.5		16.73			

NODE ANALYSIS (cont.)

Node Tag	*Elevation*	*Node Type*	*Pressure at Node*	*Discharge at Node*	*Notes*
502	113.5		17.05		
503	113.5		18.02		
504	113.5		20.94		
55	113.5		25.51		
54	110.5		30.68		
53	110.5		30.75		
52	110.5		30.82		
51	110.5		31.94		
50	110.5		37.62		
5	95.5		49.14		
4	94.88		50.03		
3	94.88		50.13		
2	94.88		51.29		
1	95.0		52.87		
BR1	87.0		58.8		
BF	87.0		64.17		
UG	90.0		63.59		
TEST	100.0		61.16	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 ******
505	109.67	5.60	19.77	1	T	5.0	44.000	120	12.468	
to							5.000		-1.659	
502	113.5		19.77	1.049			49.000	0.1274	6.244	Vel = 7.34
			0.0							
502			19.77						17.053	K Factor = 4.79
506	109.67	5.60	20.29	1	T	5.0	44.000	120	13.130	
to							5.000		-1.659	
503	113.5		20.29	1.049			49.000	0.1337	6.550	Vel = 7.53
			0.0							
503			20.29						18.021	K Factor = 4.78
507	109.67	5.60	21.78	1	T	5.0	44.000	120	15.133	
to							5.000		-1.659	
504	113.5		21.78	1.049			49.000	0.1524	7.469	Vel = 8.09
			0.0							
504			21.78						20.943	K Factor = 4.76
508	113.21	5.60	16.41	1.25	T	6.0	6.320	120	8.582	
to							6.000		0.0	
69	113.21		16.41	1.38			12.320	0.0238	0.293	Vel = 3.52
			0.0							
69			16.41						8.875	K Factor = 5.51
509	113.21	5.60	16.44	1.25	T	7.432	5.680	120	8.623	
to							7.432		0.0	
69	113.21		16.44	1.442			13.112	0.0192	0.252	Vel = 3.23
69	113.21		16.41	1.25	T	7.432	1.120	120	8.875	
to							7.432		0.489	
64	112.08		32.85	1.442			8.552	0.0692	0.592	Vel = 6.45
64	112.08		0.0	2			4.020	120	9.956	
to									0.0	
63	112.08		32.85	2.157			4.020	0.0097	0.039	Vel = 2.88
63	112.08		32.92	2			4.930	120	9.995	
to									0.0	
62	112.08		65.77	2.157			4.930	0.0351	0.173	Vel = 5.77
62	112.08		33.24	2	L	3.692	1.540	120	10.168	
to							3.692		-0.217	
61	112.58		99.01	2.157			5.232	0.0751	0.393	Vel = 8.69
61	112.58		0.0	2	L	3.692	9.150	120	10.344	
to							3.692		0.0	
60	112.58		99.01	2.157			12.842	0.0750	0.963	Vel = 8.69
60	112.58		68.93	2			4.020	120	11.307	
to									0.0	
59	112.58		167.94	2.157			4.020	0.1993	0.801	Vel = 14.74
59	112.58		31.41	2			12.830	120	12.108	
to									0.0	
58	112.58		199.35	2.157			12.830	0.2736	3.510	Vel = 17.50
58	112.58		36.43	2	L	3.692	3.970	120	15.618	
to							3.692		0.0	
57	112.58		235.78	2.157			7.662	0.3731	2.859	Vel = 20.70
57	112.58		0.0	2	L	3.692	6.820	120	18.477	
to							3.692		0.901	
56	110.5		235.78	2.157			10.512	0.3732	3.923	Vel = 20.70

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 ******
56	110.5		22.03	2	T	12.307	4.780	120	23.301	
to							12.307		0.0	
52	110.5		257.81	2.157			17.087	0.4403	7.523	Vel = 22.64
			0.0							
52			257.81						30.824	K Factor = 46.44
510	113.21	5.60	16.47	1.25	T	7.432	6.320	120	8.646	
to							7.432		0.0	
68	113.21		16.47	1.442			13.752	0.0193	0.266	Vel = 3.24
			0.0							
68			16.47						8.912	K Factor = 5.52
511	113.21	5.60	16.45	1.25	T	6.0	5.680	120	8.633	
to							6.000		0.0	
68	113.21		16.45	1.38			11.680	0.0239	0.279	Vel = 3.53
68	113.21		16.47	1.25	T	7.432	1.120	120	8.912	
to							7.432		0.489	
63	112.08		32.92	1.442			8.552	0.0695	0.594	Vel = 6.47
			0.0							
63			32.92						9.995	K Factor = 10.41
512	113.21	5.60	16.62	1.25	T	7.432	6.320	120	8.804	
to							7.432		0.0	
67	113.21		16.62	1.442			13.752	0.0196	0.270	Vel = 3.27
			0.0							
67			16.62						9.074	K Factor = 5.52
513	113.21	5.60	16.63	1.25	T	7.432	5.680	120	8.817	
to							7.432		0.0	
67	113.21		16.63	1.442			13.112	0.0196	0.257	Vel = 3.27
67	113.21		16.61	1.25	T	7.432	1.120	120	9.074	
to							7.432		0.489	
62	112.08		33.24	1.442			8.552	0.0707	0.605	Vel = 6.53
			0.0							
62			33.24						10.168	K Factor = 10.42
514	113.21	5.60	16.93	1.25			12.000	120	9.137	
to									0.0	
515	113.21		16.93	1.442			12.000	0.0203	0.244	Vel = 3.33
515	113.21	5.60	17.15	1.25	L	2.477	3.470	120	9.381	
to							2.477		0.0	
516	113.21		34.08	1.442			5.947	0.0740	0.440	Vel = 6.70
516	113.21		0.0	1.25	T	7.432	0.620	120	9.821	
to							7.432		0.273	
65	112.58		34.08	1.442			8.052	0.0740	0.596	Vel = 6.70
65	112.58		34.84	2	T	12.307	3.770	120	10.690	
to							12.307		0.0	
60	112.58		68.92	2.157			16.077	0.0384	0.617	Vel = 6.05
			0.0							
60			68.92						11.307	K Factor = 20.50
517	112.58	5.60	17.31	1.25			12.000	120	9.552	
to									0.0	
518	112.58		17.31	1.442			12.000	0.0212	0.254	Vel = 3.40

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 ******
518	112.58	5.60	17.53	1.25	T	7.432	3.470	120	9.806	
to							7.432		0.0	
66	112.58		34.84	1.442			10.902	0.0771	0.841	Vel = 6.84
66	112.58		0.0	2			4.000	120	10.647	
to									0.0	
65	112.58		34.84	2.157			4.000	0.0107	0.043	Vel = 3.06
			0.0							
65			34.84						10.690	K Factor = 10.66
519	110.17	5.60	15.66	1	T	5.0	44.000	120	7.820	
to							5.000		-0.195	
520	110.62		15.66	1.049			49.000	0.0828	4.055	Vel = 5.81
520	110.62		15.76	1.25	2E	7.432	5.170	120	11.680	
to					T	7.432	14.864		-0.849	
59	112.58		31.42	1.442			20.034	0.0637	1.277	Vel = 6.17
			0.0							
59			31.42						12.108	K Factor = 9.03
521	110.17	5.60	15.76	1	E	2.0	44.000	120	7.917	
to							2.000		-0.195	
522	110.62		15.76	1.049			46.000	0.0837	3.851	Vel = 5.85
522	110.62		0.0	1.25			6.000	120	11.573	
to									0.0	
520	110.62		15.76	1.442			6.000	0.0178	0.107	Vel = 3.10
			0.0							
520			15.76						11.680	K Factor = 4.61
523	110.17	5.60	18.17	1	T	5.0	44.000	120	10.523	
to							5.000		-1.044	
524	112.58		18.17	1.049			49.000	0.1089	5.338	Vel = 6.75
524	112.58		18.26	1.25	T	7.432	2.130	120	14.817	
to							7.432		0.0	
58	112.58		36.43	1.442			9.562	0.0838	0.801	Vel = 7.16
			0.0							
58			36.43						15.618	K Factor = 9.22
525	110.17	5.60	18.26	1	E	2.0	44.000	120	10.635	
to							2.000		-1.044	
526	112.58		18.26	1.049			46.000	0.1100	5.060	Vel = 6.78
526	112.58		0.0	1.25			7.080	120	14.651	
to									0.0	
524	112.58		18.26	1.442			7.080	0.0234	0.166	Vel = 3.59
			0.0							
524			18.26						14.817	K Factor = 4.74
527	109.17	5.60	22.03	1	E	2.0	44.000	120	15.474	
to							2.000		-0.576	
528	110.5		22.03	1.049			46.000	0.1556	7.157	Vel = 8.18
528	110.5		0.0	1	T	5.0	3.010	120	22.055	
to							5.000		0.0	
56	110.5		22.03	1.049			8.010	0.1556	1.246	Vel = 8.18
			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 ******
56			22.03						23.301	K Factor = 4.56
529	109.42	5.60	25.71	1	E	2.0	44.000	120	21.077	
to							2.000		-0.468	
530	110.5		25.71	1.049			46.000	0.2071	9.526	Vel = 9.54
530	110.5		0.0	1.25	T	7.432	6.510	120	30.135	
to							7.432		0.0	
53	110.5		25.71	1.442			13.942	0.0440	0.613	Vel = 5.05
			0.0							
53			25.71						30.748	K Factor = 4.64
500	109.67	5.60	19.60	1	T	5.0	44.000	120	12.250	
to							5.000		-1.659	
501	113.5		19.6	1.049			49.000	0.1254	6.143	Vel = 7.28
501	113.5		0.0	1.25			12.000	120	16.734	
to									0.0	
502	113.5		19.6	1.442			12.000	0.0266	0.319	Vel = 3.85
502	113.5		19.77	1.25			10.000	120	17.053	
to									0.0	
503	113.5		39.37	1.442			10.000	0.0968	0.968	Vel = 7.73
503	113.5		20.30	1.25			14.000	120	18.021	
to									0.0	
504	113.5		59.67	1.442			14.000	0.2087	2.922	Vel = 11.72
504	113.5		21.78	1.25	L	2.477	9.820	120	20.943	
to							2.477		0.0	
55	113.5		81.45	1.442			12.297	0.3712	4.565	Vel = 16.00
55	113.5		0.0	1.25	T	7.432	3.000	120	25.508	
to							7.432		1.299	
54	110.5		81.45	1.442			10.432	0.3713	3.873	Vel = 16.00
54	110.5		0.0	3			9.830	120	30.680	
to									0.0	
53	110.5		81.45	3.26			9.830	0.0069	0.068	Vel = 3.13
53	110.5		25.71	3			6.500	120	30.748	
to									0.0	
52	110.5		107.16	3.26			6.500	0.0117	0.076	Vel = 4.12
52	110.5		257.81	3			10.000	120	30.824	
to									0.0	
51	110.5		364.97	3.26			10.000	0.1120	1.120	Vel = 14.03
51	110.5		0.0	3	T	20.159	17.020	120	31.944	
to					2L	13.44	33.599		0.0	
50	110.5		364.97	3.26			50.619	0.1121	5.673	Vel = 14.03
50	110.5		0.0	3	L	6.72	18.000	120	37.617	
to					T	20.159	26.879		6.496	
5	95.5		364.97	3.26			44.879	0.1121	5.030	Vel = 14.03
			0.0							
5			364.97						49.143	K Factor = 52.06
5	95.5		364.97	4	2L	15.8	4.600	120	49.143	
to							15.800		0.269	
4	94.88		364.97	4.26			20.400	0.0304	0.620	Vel = 8.22
4	94.88		0.0	4			3.280	120	50.032	
to									0.0	
3	94.88		364.97	4.26			3.280	0.0305	0.100	Vel = 8.22

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 ******
3	94.88		0.0	4	L	7.9	30.000	120	50.132	
to							7.900		0.0	
2	94.88		364.97	4.26			37.900	0.0304	1.154	Vel = 8.22
2	94.88		0.0	4	3L	23.701	30.000	120	51.286	
to							23.701		-0.052	
1	95		364.97	4.26			53.701	0.0305	1.636	Vel = 8.22
1	95		0.0	4	B	15.8	10.000	120	52.870	
to					S	28.968	71.102		3.465	
BR1	87		364.97	4.26	T	26.334	81.102	0.0304	2.469	Vel = 8.22
BR1	87		0.0	4	Zca	0.0	1.000	120	58.804	
to									5.332	* * Fixed Loss = 5.332
BF	87		364.97	4.26			1.000	0.0300	0.030	Vel = 8.22
BF	87		0.0	4	2L	15.8	8.000	120	64.166	
to							15.800		-1.299	
UG	90		364.97	4.26			23.800	0.0305	0.725	Vel = 8.22
UG	90		0.0	6	4L	51.645	400.000	140	63.592	
to					T	43.037	98.986		-4.331	
TEST	100		364.97	6.16	G	4.304	498.986	0.0038	1.896	Vel = 3.93
			250.00							Qa = 250.00
TEST			614.97						61.157	K Factor = 78.64