Hydraulic Summary

Job Number: NC-1390
Report Description: Ordinary Group I (Canopy)

Job

Job Number: NC-1390	Designer: DB
Job Name: WestLake Lee's Summit	State Certification/License Number:
Address 1: 3511 SW Market Street Lee's Summit MO64082	AHJ:
Address 2:	Job Site/Building:
Address 3:	Drawing Name: Westlake Lees summit draw

System

Most Demanding Sprinkler Data: 5.6 K-Factor 15.00 at 7.175

Hose Allowance At Source: 0.00

Additional Hose Supplies

Node	Flow(gpm)
Hydrant At Node 27	250.00

Total Hose Streams: 250.00

System Flow Demand	Total Water Required (Including Hose Allowance)
456.64	456.64

Maximum Pressure Unbalance In Loops: 0.000

Maximum Velocity Above Ground: 20.42 between nodes 39 and 44

Maximum Velocity Under Ground	
5.03 between nodes 11 and 10	

Volume capacity of Wet Pipes	Volume capacity of Dry Pipes
754.26 gal	

Remote Area(s)

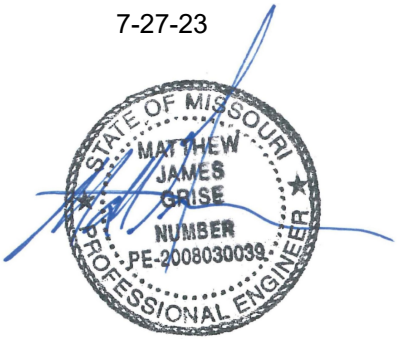
Occupancy	Job Suffix
Ordinary Group I	

Density	Area of Application
0.150 gpm/ft²	1500.00 ft² (Actual 1127.78 ft²)

Number Of Sprinklers Calculated	Number Of Nozzles Calculated	Coverage Per Sprinkler
12	0	100.00 ft²

AutoPeak Results: Pressure For Remote Area(s) Adjacent To Most Remote Area

7-27-23



Supplies

Node	Name	Hose Flow (gpm)	Static (psi)	Residual (psi)	@	Flow (gpm)	Available (psi)	@	Total Demand (gpm)	Required (psi)	Safety Margin (psi)
11	Water Supply		84.000	68.000		2000.00	82.959		456.64	63.773	19.186

Contractor

	Contractor Number	Contact Name	Contact Title
	1	Derek Bisoglio	Design

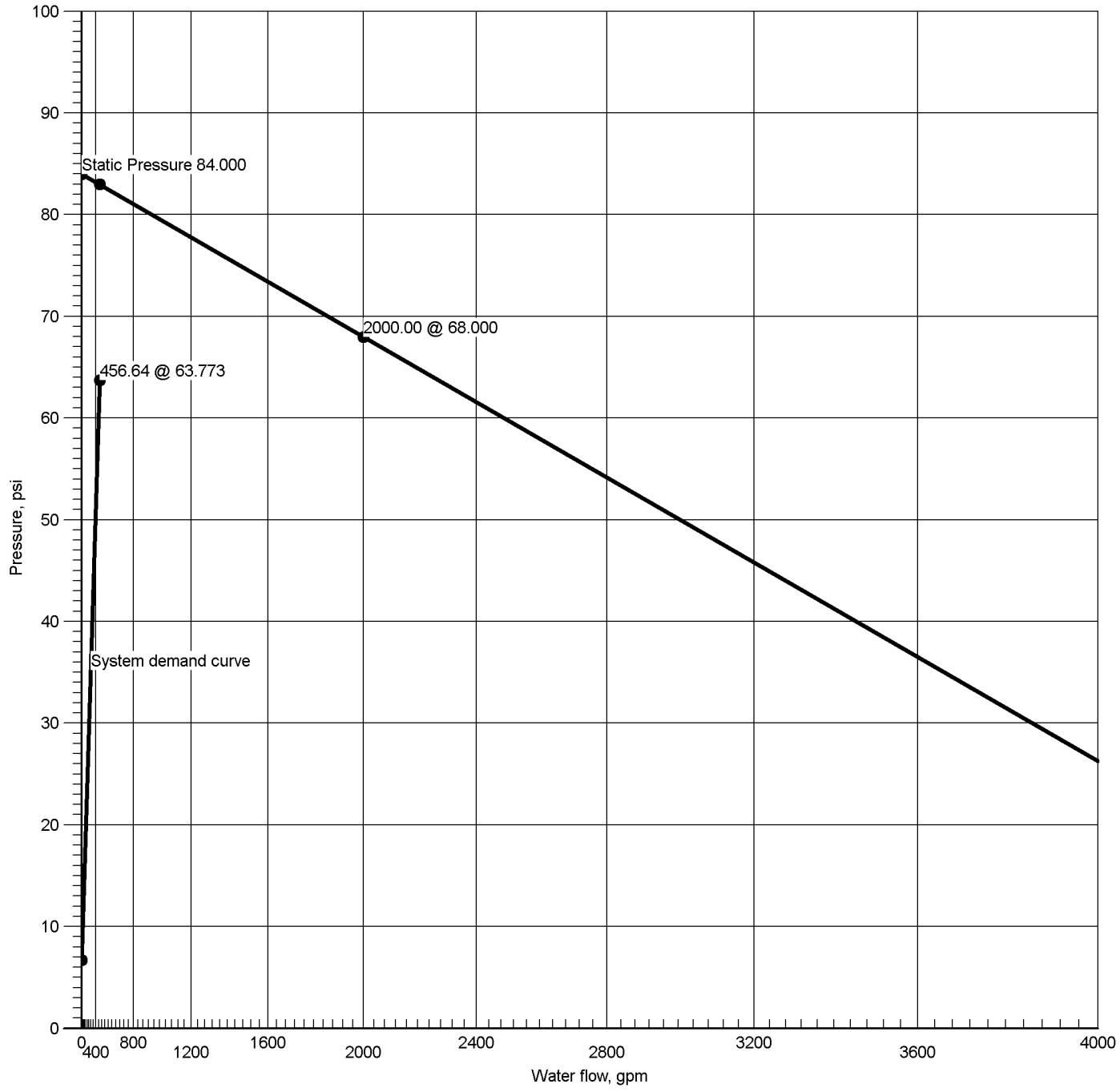
Name of Contractor:	Phone	Extension
Alliance Fire Protection		

Address 1	FAX
130 w 9th Ave. Suite 100	

Address 2	E-mail
North Kansas City, MO 64116	dbisoglio@afpsprink.com

Address 3	Web-Site

Water Supply at Node 11



Hydraulic Graph	Water Supply at Node 11
Static: Pressure	84.000
Residual: Pressure	68.000 @ 2000.00
Available Pressure at System Demand	82.959 @ 456.64
Required Pressure at System Demand	63.773 @ 456.64
Required Pressure at System Demand (Including Hose Allowance at Source)	63.773 @ 456.64

Summary Of Outflowing Devices

Job Number: NC-1390
Report Description: Ordinary Group I (Canopy)

Device		Actual Flow (gpm)	Minimum Flow (gpm)	K-Factor (K)	Pressure (psi)			
Hydrant	27	250.00	250.00	0	57.393			
Sprinkler	401	21.80	15.00	5.6	15.155			
Sprinkler	402	18.85	15.00	5.6	11.329			
Sprinkler	403	16.93	15.00	5.6	9.138			
Sprinkler	404	15.75	15.00	5.6	7.908			
Sprinkler	405	15.17	15.00	5.6	7.336			
Sprinkler	406	15.00	15.00	5.6	7.175			
Sprinkler	**407**	**15.00**	**15.00**	**5.6**	**7.175**			
Sprinkler	408	15.15	15.00	5.6	7.318			
Sprinkler	409	15.70	15.00	5.6	7.857			
Sprinkler	410	16.84	15.00	5.6	9.038			
Sprinkler	411	18.71	15.00	5.6	11.157			

Most Demanding Sprinkler Data

Node Analysis

Job Number: NC-1390
Report Description: Ordinary Group I (Canopy)

Node	Elevation(Foot)	Fittings	Pressure(psi)	Discharge(gpm)	
11	-4'-0	S	63.773	456.64	
27	1'-6	Hyd	57.393	250.00	
401	11'-6	Spr(-15.155)	15.155	21.80	
402	11'-6	Spr(-11.329)	11.329	18.85	
403	11'-6	Spr(-9.138)	9.138	16.93	
404	11'-6	Spr(-7.908)	7.908	15.75	
405	11'-6	Spr(-7.336)	7.336	15.17	
406	11'-6	Spr(-7.175)	7.175	15.00	
407	11'-6	Spr(-7.175)	7.175	15.00	
408	11'-6	Spr(-7.318)	7.318	15.15	
409	11'-6	Spr(-7.857)	7.857	15.70	
410	11'-6	Spr(-9.038)	9.038	16.84	
411	11'-6	Spr(-11.157)	11.157	18.71	
412	11'-6	Spr(-15.102)	15.102	21.76	
4	16'-6	PO(7'-5)	42.255		
5	13'-10	PO(6'-0)	44.472		
6	13'-10	T(12'-3½)	44.697		
7	13'-10		46.660		
8	1'-6	BOR	57.456		
9	-4'-0	E(22'-1)	59.874		
10	-4'-0	T(46'-2½)	59.933		
14	16'-6	PO(7'-5)	29.734		
15	16'-3	PO(7'-5)	30.324		
16	15'-11½	PO(7'-5)	30.574		
17	15'-8	PO(7'-5)	30.710		
18	15'-8	PO(7'-5)	35.814		
19	13'-10	PO(6'-0)	36.997		
20	13'-10	PO(6'-0)	38.326		
21	13'-10	PO(6'-0)	40.207		
25	16'-3	PO(7'-5)	38.496		
28	-4'-0	E(22'-1)	59.825		
29	15'-11½	PO(7'-5)	37.021		
30	15'-4½	PO(7'-5)	35.176		
31	13'-10	PO(6'-0)	36.165		
32	15'-1	PO(7'-5)	34.921		
33	13'-10	PO(6'-0)	35.685		
34	14'-9½	PO(7'-5)	34.723		
35	13'-10	PO(6'-0)	35.425		
36	15'-4½	PO(7'-5)	30.797		
37	15'-1	PO(7'-5)	30.738		
38	14'-9½	PO(7'-5)	30.465		
39	14'-6	PO(7'-5)	29.859		
40	13'-10	PO(7'-5)	35.346		
43	11'-6	PO(5'-0)	16.167		
44	11'-6	T(7'-5)	16.588		
45	11'-6	PO(5'-0)	12.103		
46	11'-6	PO(5'-0)	9.773		
47	11'-6	PO(5'-0)	8.462		
48	11'-6	PO(5'-0)	7.682		
49	11'-6	PO(5'-0)	7.682		
50	11'-6	PO(5'-0)	7.835		
51	11'-6	PO(5'-0)	8.408		
52	11'-6	PO(5'-0)	9.666		
53	11'-6	PO(5'-0)	11.920		
54	11'-6	T(7'-5)	16.511		
55	11'-6	PO(5'-0)	16.112		
57	11'-6	PO(5'-0)	7.854		

Pipe Type / Downstream / Upstream	Diameter / Elevation	Flow / Discharge	Velocity / K-Factor	HWC / Pt	Pn	Friction Loss / Fittings	Length / Eq. Length / Total Length	Pressure Summary
• • • • • Route 1 • • • • •								
BL	1.0490	15.00	5.57	120		0.076427	1'-7½	Pf 0.507
407	11'-6	15.00	5.6	7.175		Sprinkler,	5'-0	Pe
49	11'-6			7.682		PO(5'-0)	6'-7½	Pv
BL	1.4420	0.47	0.09	120		0.000027	10'-0	Pf 0.000
49	11'-6			7.682				Pe
48	11'-6			7.682			10'-0	Pv
BL	1.4420	15.47	3.04	120		0.017191	10'-0	Pf 0.172
48	11'-6	15.00		7.682		Flow (q) from Route 2		Pe
57	11'-6			7.854			10'-0	Pv
BL	1.4420	30.64	6.02	120		0.060841	10'-0	Pf 0.608
57	11'-6	15.17		7.854		Flow (q) from Route 4		Pe
47	11'-6			8.462			10'-0	Pv
BL	1.4420	46.39	9.11	120		0.131032	10'-0	Pf 1.310
47	11'-6	15.75		8.462		Flow (q) from Route 6		Pe
46	11'-6			9.773			10'-0	Pv
BL	1.4420	63.32	12.44	120		0.232985	10'-0	Pf 2.330
46	11'-6	16.93		9.773		Flow (q) from Route 8		Pe
45	11'-6			12.103			10'-0	Pv
BL	1.4420	82.17	16.14	120		0.377301	4'-5½	Pf 4.485
45	11'-6	18.85		12.103		Flow (q) from Route 10	7'-5	Pe
44	11'-6			16.588		T(7'-5)	11'-10½	Pv
BL	1.4420	103.97	20.42	120		0.583116	13'-10	Pf 14.570
44	11'-6	21.80		16.588		Flow (q) from Route 12	11'-2	Pe -1.298
39	14'-6			29.859		E(3'-8½), PO(7'-5)	25'-0	Pv
CM	2.1570	80.05	7.03	120		0.050589	14'-6	Pf 0.734
39	14'-6			29.859				Pe -0.128
38	14'-9½			30.465			14'-6	Pv
CM	2.1570	57.92	5.09	120		0.027801	14'-4	Pf 0.399
38	14'-9½			30.465				Pe -0.126
37	15'-1			30.738			14'-4	Pv
CM	2.1570	39.10	3.43	120		0.013439	14'-0	Pf 0.188
37	15'-1			30.738				Pe -0.129
36	15'-4½			30.797			14'-0	Pv
BL	1.4420	22.47	4.41	120		0.034268	112'-11	Pf 4.379
36	15'-4½			30.797		PO(7'-5)	14'-10½	Pe -0.000
30	15'-4½			35.176		PO(7'-5)	127'-9½	Pv
RN	1.3800	22.47	4.82	120		0.042446	1'-6½	Pf 0.320
30	15'-4½			35.176			6'-0	Pe 0.669
31	13'-10			36.165		PO(6'-0)	7'-6½	Pv
CM	2.1570	87.33	7.67	120		0.059428	14'-0	Pf 0.832
31	13'-10	64.87		36.165		Flow (q) from Route 17		Pe
19	13'-10			36.997			14'-0	Pv
CM	2.1570	111.74	9.81	120		0.093761	14'-2	Pf 1.328
19	13'-10	24.41		36.997		Flow (q) from Route 16		Pe
20	13'-10			38.326			14'-2	Pv
CM	2.1570	135.52	11.90	120		0.133962	14'-0½	Pf 1.881
20	13'-10	23.77		38.326		Flow (q) from Route 15		Pe
21	13'-10			40.207			14'-0½	Pv
CM	2.1570	167.00	14.66	120		0.197155	10'-5½	Pf 4.491
21	13'-10	31.48		40.207		Flow (q) from Route 14	12'-3½	Pe
6	13'-10			44.697		T(12'-3½)	22'-9½	Pv
CM	2.1570	206.64	18.14	120		0.292388	6'-8½	Pf 1.963
6	13'-10	39.65		44.697		Flow (q) from Route 3		Pe
7	13'-10			46.660			6'-8½	Pv
FR	2.6350	206.64	12.16	120		0.110308	12'-4	Pf 5.449
7	13'-10			46.660			37'-1	Pe 5.347
8	1'-6			57.456		E(8'-3), sCV(19'-2½), BV(9'-7½), BOR	49'-5	Pv
UG	6.2800	206.64	2.14	140		0.001208	5'-6	Pf 0.033
8	1'-6			57.456			22'-1	Pe 2.384
9	-4'-0			59.874		E(22'-1)	27'-7	Pv
UG	6.0900	206.64	2.28	150		0.001234	26'-8½	Pf 0.060
9	-4'-0			59.874			21'-7	Pe
10	-4'-0			59.933		2EE(10'-9½)	48'-3½	Pv
UG	6.0900	456.64	5.03	150		0.005352	182'-4½	Pf 3.840
10	-4'-0	250.00		59.933		Flow (q) from Route 13	21'-7	Pe
11	-4'-0			63.773		2EE(10'-9½), BFP(-2.748), S	203'-11	Pv

Pipe Type / Downstream / Upstream	Diameter / Elevation	Flow / Discharge	Velocity / K-Factor	HWC / Pt	Pn	Friction Loss / Fittings	Length / Eq. Length / Total Length	Pressure Summary
		0.00				Hose Allowance At Source		
11		456.64						
• • • • • Route 2 • • • • •								
BL	1.0490	15.00	5.57	120		0.076429	1'-7½	Pf 0.507
406	11'-6	15.00	5.6	7.175		Sprinkler,	5'-0	Pe
48	11'-6			7.682		PO(5'-0)	6'-7½	Pv
• • • • • Route 3 • • • • •								
BL	1.0490	15.15	5.62	120		0.077840	1'-7½	Pf 0.516
408	11'-6	15.15	5.6	7.318		Sprinkler,	5'-0	Pe
50	11'-6			7.835		PO(5'-0)	6'-7½	Pv
BL	1.4420	29.67	5.83	120		0.057333	10'-0	Pf 0.573
50	11'-6	14.53		7.835		Flow (q) from Route 23		Pe
51	11'-6			8.408			10'-0	Pv
BL	1.4420	45.37	8.91	120		0.125758	10'-0	Pf 1.258
51	11'-6	15.70		8.408		Flow (q) from Route 5		Pe
52	11'-6			9.666			10'-0	Pv
BL	1.4420	62.21	12.22	120		0.225470	10'-0	Pf 2.255
52	11'-6	16.84		9.666		Flow (q) from Route 7		Pe
53	11'-6			11.920			10'-0	Pv
BL	1.4420	80.91	15.90	120		0.366706	5'-1	Pf 4.590
53	11'-6	18.71		11.920		Flow (q) from Route 9	7'-5	Pe -0.000
54	11'-6			16.511		T(7'-5)	12'-6	Pv
BL	1.4420	102.67	20.17	120		0.569771	15'-10½	Pf 15.398
54	11'-6	21.76		16.511		Flow (q) from Route 11	11'-2	Pe -2.175
14	16'-6			29.734		E(3'-8½), PO(7'-5)	27'-0½	Pv
BL	1.4420	39.65	7.79	120		0.097989	112'-11	Pf 12.521
14	16'-6			29.734		PO(7'-5)	14'-10½	Pe 0.000
4	16'-6			42.255		PO(7'-5)	127'-9½	Pv
RN	1.3800	39.65	8.50	120		0.121374	2'-8	Pf 1.054
4	16'-6			42.255			6'-0	Pe 1.163
5	13'-10			44.472		PO(6'-0)	8'-8	Pv
CM	2.1570	39.65	3.48	120		0.013788	4'-0½	Pf 0.225
5	13'-10			44.472			12'-3½	Pe
6	13'-10			44.697		T(12'-3½)	16'-4	Pv
• • • • • Route 4 • • • • •								
BL	1.0490	15.17	5.63	120		0.078015	1'-7½	Pf 0.518
405	11'-6	15.17	5.6	7.336		Sprinkler,	5'-0	Pe
57	11'-6			7.854		PO(5'-0)	6'-7½	Pv
• • • • • Route 5 • • • • •								
BL	1.0490	15.70	5.83	120		0.083122	1'-7½	Pf 0.551
409	11'-6	15.70	5.6	7.857		Sprinkler,	5'-0	Pe
51	11'-6			8.408		PO(5'-0)	6'-7½	Pv
• • • • • Route 6 • • • • •								
BL	1.0490	15.75	5.85	120		0.083621	1'-7½	Pf 0.555
404	11'-6	15.75	5.6	7.908		Sprinkler,	5'-0	Pe
47	11'-6			8.462		PO(5'-0)	6'-7½	Pv
• • • • • Route 7 • • • • •								
BL	1.0490	16.84	6.25	120		0.094621	1'-7½	Pf 0.628
410	11'-6	16.84	5.6	9.038		Sprinkler,	5'-0	Pe
52	11'-6			9.666		PO(5'-0)	6'-7½	Pv
• • • • • Route 8 • • • • •								
BL	1.0490	16.93	6.28	120		0.095595	1'-7½	Pf 0.634
403	11'-6	16.93	5.6	9.138		Sprinkler,	5'-0	Pe
46	11'-6			9.773		PO(5'-0)	6'-7½	Pv
• • • • • Route 9 • • • • •								
BL	1.0490	18.71	6.94	120		0.114980	1'-7½	Pf 0.763
411	11'-6	18.71	5.6	11.157		Sprinkler,	5'-0	Pe
53	11'-6			11.920		PO(5'-0)	6'-7½	Pv
• • • • • Route 10 • • • • •								
BL	1.0490	18.85	7.00	120		0.116613	1'-7½	Pf 0.774
402	11'-6	18.85	5.6	11.329		Sprinkler,	5'-0	Pe
45	11'-6			12.103		PO(5'-0)	6'-7½	Pv
• • • • • Route 11 • • • • •								
BL	1.0490	21.76	8.08	120		0.152140	1'-7½	Pf 1.009
412	11'-6	21.76	5.6	15.102		Sprinkler,	5'-0	Pe
55	11'-6			16.112		PO(5'-0)	6'-7½	Pv

Pipe Type / Downstream / Upstream	Diameter / Elevation	Flow / Discharge	Velocity / K-Factor	HWC / Pt / Pn	Friction Loss / Fittings	Length / Eq. Length / Total Length	Pressure Summary
BL	1.4420	21.76	4.28	120	0.032304	4'-11	Pf 0.399
55	11'-6			16.112		7'-5	Pe -0.000
54	11'-6			16.511	T(7'-5)	12'-4	Pv
• • • • • Route 12 • • • • •							
BL	1.0490	21.80	8.09	120	0.152627	1'-7½	Pf 1.013
401	11'-6	21.80	5.6	15.155	Sprinkler,	5'-0	Pe
43	11'-6			16.167	PO(5'-0)	6'-7½	Pv
BL	1.4420	21.80	4.28	120	0.032408	5'-6½	Pf 0.421
43	11'-6			16.167		7'-5	Pe
44	11'-6			16.588	T(7'-5)	12'-11½	Pv
• • • • • Route 13 • • • • •							
UG	6.2800	250.00	2.59	140	0.001718	5'-6	Pf 0.047
27	1'-6	250.00		57.393	Hydrant,	22'-1	Pe 2.384
28	-4'-0			59.825	E(22'-1)	27'-7	Pv
UG	6.0900	250.00	2.75	150	0.001756	15'-8	Pf 0.109
28	-4'-0			59.825		46'-2½	Pe
10	-4'-0			59.933	T(46'-2½)	61'-10½	Pv
• • • • • Route 14 • • • • •							
RN	1.3800	31.48	6.75	120	0.079216	2'-5	Pf 0.666
25	16'-3	31.48		38.496	Flow (q) from Route 19	6'-0	Pe 1.044
21	13'-10			40.207	PO(6'-0)	8'-5	Pv
• • • • • Route 15 • • • • •							
RN	1.3800	23.77	5.10	120	0.047113	2'-1½	Pf 0.383
29	15'-11½	23.77		37.021	Flow (q) from Route 24	6'-0	Pe 0.922
20	13'-10			38.326	PO(6'-0)	8'-1½	Pv
• • • • • Route 16 • • • • •							
RN	1.3800	24.41	5.24	120	0.049482	1'-10	Pf 0.388
18	15'-8	24.41		35.814	Flow (q) from Route 20	6'-0	Pe 0.795
19	13'-10			36.997	PO(6'-0)	7'-10	Pv
• • • • • Route 17 • • • • •							
RN	1.3800	18.82	4.04	120	0.030585	1'-3	Pf 0.222
32	15'-1	18.82		34.921	Flow (q) from Route 22	6'-0	Pe 0.542
33	13'-10			35.685	PO(6'-0)	7'-3	Pv
CM	2.1570	64.87	5.70	120	0.034280	14'-0	Pf 0.480
33	13'-10	46.05		35.685	Flow (q) from Route 18		Pe
31	13'-10			36.165		14'-0	Pv
• • • • • Route 18 • • • • •							
RN	1.3800	22.13	4.75	120	0.041276	0'-11½	Pf 0.287
34	14'-9½	22.13		34.723	Flow (q) from Route 27	6'-0	Pe 0.415
35	13'-10			35.425	PO(6'-0)	6'-11½	Pv
CM	2.1570	46.05	4.04	120	0.018185	14'-4	Pf 0.261
35	13'-10	23.91		35.425	Flow (q) from Route 25		Pe
33	13'-10			35.685		14'-4	Pv
• • • • • Route 19 • • • • •							
CM	2.1570	63.03	5.53	120	0.032504	14'-6	Pf 0.471
14	16'-6	39.65		29.734	Flow (q) from Route 3		Pe 0.119
15	16'-3			30.324		14'-6	Pv
BL	1.4420	31.48	6.18	120	0.063953	112'-11	Pf 8.172
15	16'-3			30.324	PO(7'-5)	14'-10½	Pe -0.000
25	16'-3			38.496	PO(7'-5)	127'-9½	Pv
• • • • • Route 20 • • • • •							
CM	2.1570	31.55	2.77	120	0.009034	14'-0½	Pf 0.127
15	16'-3	31.48		30.324	Flow (q) from Route 19		Pe 0.123
16	15'-11½			30.574		14'-0½	Pv
CM	2.1570	7.78	0.68	120	0.000677	14'-2	Pf 0.010
16	15'-11½			30.574			Pe 0.126
17	15'-8			30.710		14'-2	Pv
BL	1.4420	24.41	4.80	120	0.039948	112'-11	Pf 5.105
17	15'-8	16.63		30.710	PO(7'-5), Flow (q) from Route 21	14'-10½	Pe
18	15'-8			35.814	PO(7'-5)	127'-9½	Pv
• • • • • Route 21 • • • • •							
CM	2.1570	16.63	1.46	120	0.002765	14'-0	Pf 0.039
36	15'-4½	22.47		30.797	Flow (q) from Route 1		Pe -0.126
17	15'-8			30.710		14'-0	Pv
• • • • • Route 22 • • • • •							
BL	1.4420	18.82	3.70	120	0.024692	124'-11	Pf 4.185
37	15'-1			30.738	PO(7'-5)	44'-7	Pe -0.002
32	15'-1			34.921	8E(3'-8½), PO(7'-5)	169'-6	Pv

Pipe Type / Downstream / Upstream	Diameter / Elevation	Flow / Discharge	Velocity / K-Factor	HWC / Pt	Pn	Friction Loss / Fittings	Length / Eq. Length / Total Length	Pressure Summary
• • • • • **Route 23** • • • • •								
BL	1.4420	14.53	2.85	120		0.015291	10'-0	**Pf** 0.153
49	11'-6	0.47		7.682		Flow (q) from Route 1		**Pe**
50	11'-6			7.835			10'-0	**Pv**
• • • • • **Route 24** • • • • •								
BL	1.4420	23.77	4.67	120		0.038035	124'-11	**Pf** 6.447
16	15'-11½			30.574		PO(7'-5)	44'-7	**Pe** -0.000
29	15'-11½			37.021		8E(3'-8½), PO(7'-5)	169'-6	**Pv**
• • • • • **Route 25** • • • • •								
CM	2.1570	23.91	2.10	120		0.005412	14'-6	**Pf** 0.078
40	13'-10	23.91		35.346		Flow (q) from Route 26		**Pe**
35	13'-10			35.425			14'-6	**Pv**
• • • • • **Route 26** • • • • •								
BL	1.4420	23.91	4.70	120		0.038461	112'-11	**Pf** 5.200
39	14'-6			29.859		PO(7'-5)	22'-3½	**Pe** 0.286
40	13'-10			35.346		2PO(7'-5)	135'-2½	**Pv**
• • • • • **Route 27** • • • • •								
BL	1.4420	22.13	4.35	120		0.033323	112'-11	**Pf** 4.258
38	14'-9½			30.465		PO(7'-5)	14'-10½	**Pe** 0.000
34	14'-9½			34.723		PO(7'-5)	127'-9½	**Pv**

Equivalent Pipe Lengths of Valves and Fittings (C=120 only)

$$\left(\frac{\text{Actual Inside Diameter}}{\text{Schedule 40 Steel Pipe Inside Diameter}}\right)^{4.87} = \text{Factor}$$

C Value Multiplier

Value Of C	100	130	140	150
Multiplying Factor	0.713	1.16	1.33	1.51

Pipe Type	Diameter	Flow	Velocity	HWC		Friction Loss	Length	Pressure
Downstream	Elevation	Discharge	K-Factor	Pt	Pn	Fittings	Eq. Length	Summary
Upstream							Total Length	

Pipe Type Legend

AO	Arm-Over
BL	Branch Line
CM	Cross Main
DN	Drain
DR	Drop
DY	Dynamic
FM	Feed Main
FR	Feed Riser
MS	Miscellaneous
OR	Outrigger
RN	Riser Nipple
SN	Swing Nipple
SP	Sprig
ST	Stand Pipe
UG	Underground

Units Legend

Diameter	Inch
Elevation	Foot
Flow	gpm
Discharge	gpm
Velocity	fps
Pressure	psi
Length	Foot
Friction Loss	psi/Foot
HWC	Hazen-Williams Constant
Pt	Total pressure at a point in a pipe
Pn	Normal pressure at a point in a pipe
Pf	Pressure loss due to friction between points
Pe	Pressure due to elevation difference between indicated points
Pv	Velocity pressure at a point in a pipe

Fittings Legend

ALV	Alarm Valve
AngV	Angle Valve
b	Bushing
BalV	Ball Valve
BFP	Backflow Preventer
BV	Butterfly Valve
C	Cross Flow Turn 90°
cplg	Coupling
Cr	Cross Run
CV	Check Valve
DelV	Deluge Valve
DPV	Dry Pipe Valve
E	90° Elbow
EE	45° Elbow
Ee1	11¼° Elbow
Ee2	22½° Elbow
f	Flow Device
fd	Flex Drop
FDC	Fire Department Connection
fE	90° FireLock(TM) Elbow
fEE	45° FireLock(TM) Elbow
flg	Flange
FN	Floating Node
fT	FireLock(TM) Tee
g	Gauge
GloV	Globe Valve
GV	Gate Valve
Ho	Hose
Hose	Hose
HV	Hose Valve
Hyd	Hydrant
LtE	Long Turn Elbow
mecT	Mechanical Tee
Noz	Nozzle
P1	Pump In
P2	Pump Out
PIV	Post Indicating Valve
PO	Pipe Outlet
PRV	Pressure Reducing Valve
PrV	Pressure Relief Valve
red	Reducer/Adapter
S	Supply
sCV	Swing Check Valve
Spr	Sprinkler
St	Strainer
T	Tee Flow Turn 90°
Tr	Tee Run
U	Union
WirF	Wirsbo
WMV	Water Meter Valve
Z	Cap