



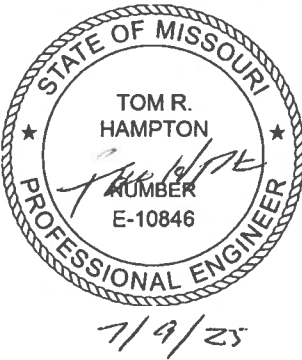
Hydraulic Overview

Job Number: SK1265
Report Description: Light Hazard

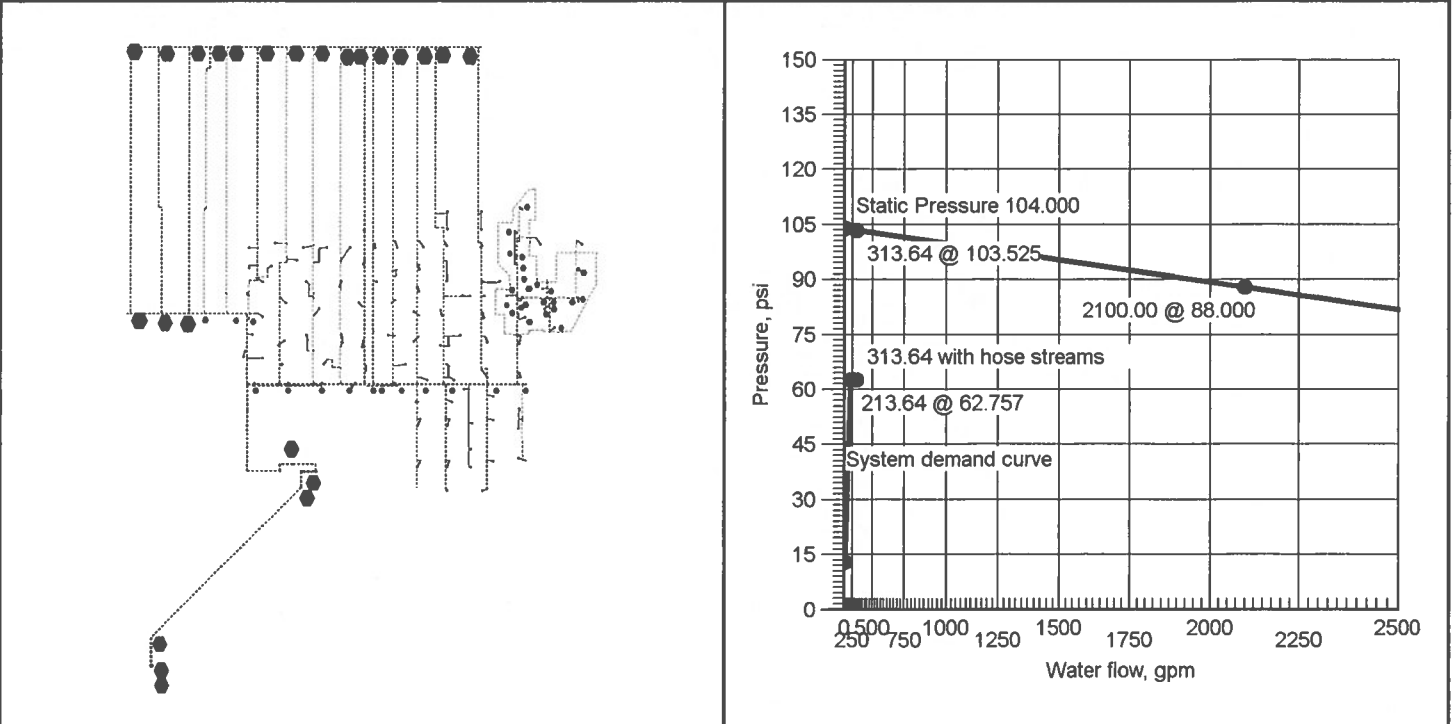
Job		
Job Number SK1265	Designer JONATHAN THOMPSON	
Job Name: St. Luke's East Summit GI Addition	Phone 913-722-6900	FAX 913-722-6969
Address 1 100 NE Saint Luke's Blvd	State Certification/License Number	
Address 2 Lee's Summit, MO 64086	AHJ	
Address 3	Job Site/Building	

System		
Density 0.10gpm/ft ²	Area of Application 1500ft ² (Actual 908ft ²)	
Most Demanding Sprinkler Data 5.6 K-Factor 19.60 at 12.250	Hose Streams 100.00	
Coverage Per Sprinkler 225ft ²	Number Of Sprinklers Calculated 11	Number Of Nozzles Calculated 0
System Pressure Demand 62.757	System Flow Demand 213.64	
Total Demand 313.64 @ 62.757	Pressure Result +40.768 (39.4%)	

Supplies						Check Point Gauges			
Node	Name	Flow(gpm)	Hose Flow(gpm)	Static(psi)	Residual(psi)	Identifier	Pressure(psi)	K-Factor(K)	Flow(gpm)
24	Water Supply	2100.00	100.00	104.000	88.000	BOR (341)	61.574	27.23	213.64



SLE GI ADDITION DWG.cad Water Supply at Node 24 (2100.00, 0.00, 104.000, 88.000)





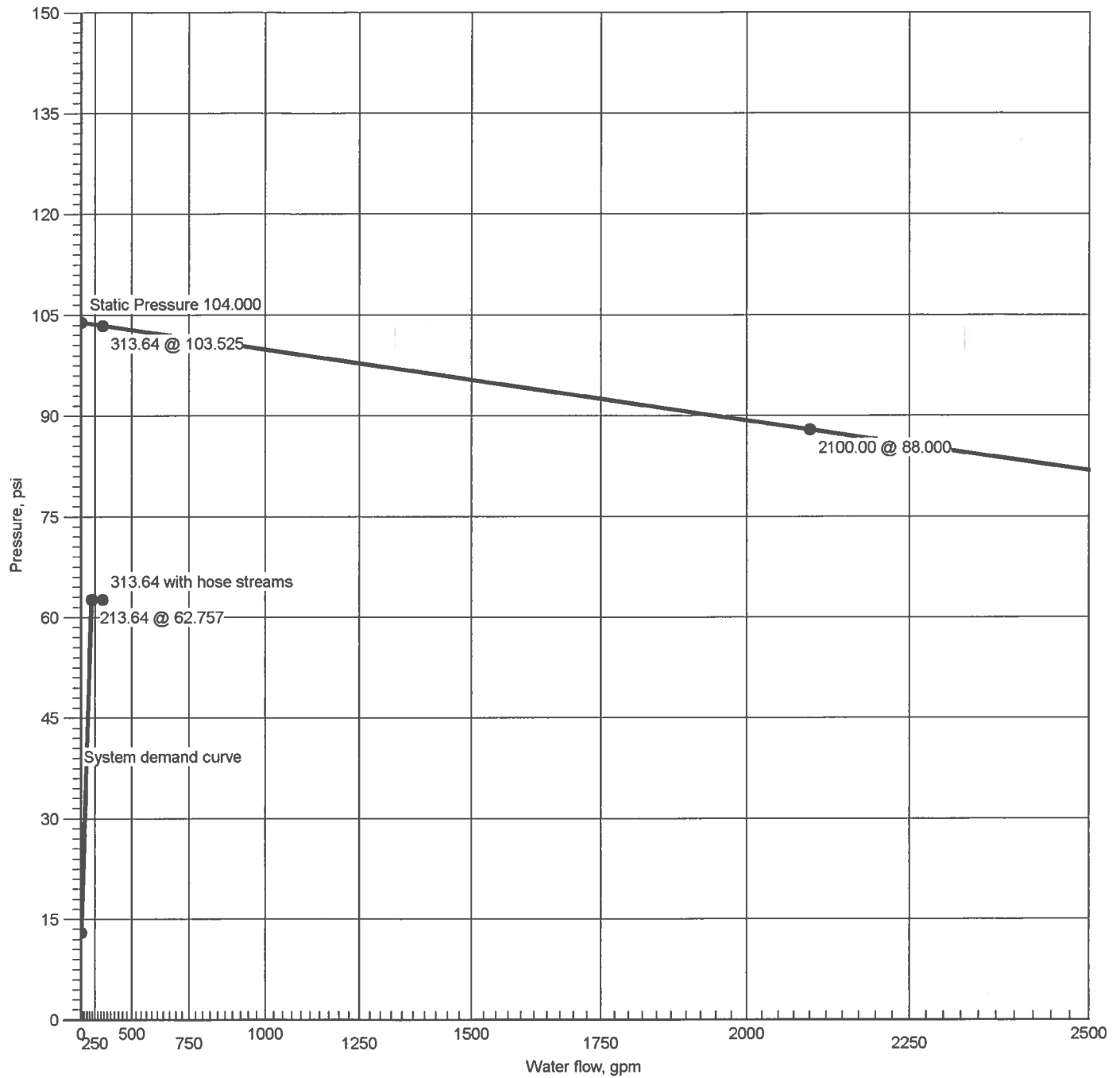
Job Number: SK1265

Report Description: Light Hazard

Job Number SK1265						Designer JONATHAN THOMPSON					
Job Name: St. Luke's East Summit GI Addition						State Certification/License Number					
Address 1 100 NE Saint Luke's Blvd						AHJ					
Address 2 Lee's Summit, MO 64086						Job Site/Building					
Address 3						Drawing Name SLE GI ADDITION DWG.cad					
System						Remote Area(s)					
Most Demanding Sprinkler Data 5.6 K-Factor 19.60 at 12.250						Occupancy Light Hazard				Job Suffix	
Hose Allowance At Source 100.00						Density 0.10gpm/ft²				Area of Application 1500ft² (Actual 908ft²)	
Additional Hose Supplies Node Flow(gpm)						Number Of Sprinklers Calculated 11		Number Of Nozzles Calculated 0		Coverage Per Sprinkler 225ft²	
						AutoPeak Results: Pressure For Remote Area(s) Adjacent To Most Remote Area					
Total Hose Streams 100.00											
System Flow Demand 213.64				Total Water Required (Including Hose Allowance) 313.64							
Maximum Pressure Unbalance In Loops 0.000											
Maximum Velocity Above Ground 18.41 between nodes 8 and 7											
Maximum Velocity Under Ground 4.90 between nodes 22 and 21											
Volume capacity of Wet Pipes 402.18gal				Volume capacity of Dry Pipes							
Supplies											
Node	Name	Hose Flow (gpm)	Static (psi)	Residual (psi)	@	Flow (gpm)	Available (psi)	@	Total Demand (gpm)	Required (psi)	Safety Margin (psi)
24	Water Supply	100.00	104.000	88.000		2100.00	103.525		313.64	62.757	40.768
Contractor											
Contractor Number		Contact Name				Contact Title					
Name of Contractor:		Phone				Extension					
Address 1		FAX									
Address 2		E-mail									
Address 3		Web-Site									



Water Supply at Node 24



Hydraulic Graph

Water Supply at Node 24

Static Pressure

104.000

Residual Pressure

88.000 @ 2100.00

Available Flow @ 20 PSI:

5141.68

Available Pressure at System Demand

103.525 @ 313.64

Required Pressure at System Demand

62.757 @ 213.64

Required Pressure at System Demand (Including Hose Allowance at Source)

62.757 @ 313.64



Summary Of Outflowing Devices

Job Number: SK1265
Report Description: Light Hazard

Device		Actual Flow (gpm)	Minimum Flow (gpm)	K-Factor (K)	Pressure (psi)			
⇒ Sprinkler	101	19.60	19.60	5.6	12.250			
Sprinkler	102	23.26	22.50	5.6	17.258			
Sprinkler	103	16.36	14.82	5.6	8.533			
Sprinkler	104	16.50	14.82	5.6	8.683			
Sprinkler	105	16.76	14.82	5.6	8.952			
Sprinkler	106	17.81	14.82	5.6	10.119			
Sprinkler	107	18.11	14.82	5.6	10.457			
Sprinkler	108	19.01	14.82	5.6	11.523			
Sprinkler	109	23.01	19.60	5.6	16.877			
Sprinkler	110	20.28	14.82	5.6	13.115			
Sprinkler	111	22.94	14.82	5.6	16.780			

⇒ Most Demanding Sprinkler Data



Node Analysis

Job Number: SK1265

Report Description: Light Hazard

Node	Elevation(Foot)	Fittings	Pressure(psi)	Discharge(gpm)
24	-15'-1½	S	62.757	213.64
101	9'-0	Spr(-12.250), fd(32'-0)	12.250	19.60
102	9'-0	Spr(-17.258), fd(32'-0)	17.258	23.26
103	9'-0	Spr(-8.533), fd(32'-0)	8.533	16.36
104	9'-0	Spr(-8.683), fd(32'-0)	8.683	16.50
105	9'-0	Spr(-8.952), fd(32'-0)	8.952	16.76
106	9'-0	Spr(-10.119), fd(32'-0)	10.119	17.81
107	15'-0	Spr(-10.457)	10.457	18.11
108	9'-0	Spr(-11.523), fd(32'-0)	11.523	19.01
109	9'-0	Spr(-16.877), fd(32'-0)	16.877	23.01
110	9'-0	Spr(-13.115), fd(32'-0)	13.115	20.28
111	7'-6	Spr(-16.780), fd(32'-0)	16.780	22.94
1	10'-5		15.647	
2	10'-5	T(5'-0)	20.372	
3	10'-5		21.542	
4	10'-5	mecT(5'-0)	22.217	
5	10'-5	T(6'-0)	22.462	
6	10'-5	T(5'-0)	22.597	
7	10'-5	T(5'-0)	23.691	
8	10'-5	PO(12'-10½)	34.629	
9	10'-5	PO(8'-6)	35.825	
10	10'-5	PO(8'-6)	37.273	
11	10'-5	PO(8'-6)	38.022	
12	10'-5	PO(8'-6)	38.617	
13	10'-5	PO(8'-6)	39.058	
14	10'-5	PO(8'-6)	39.222	
15	10'-5	PO(8'-6)	39.644	
16	10'-5	PO(8'-6)	40.105	
17	10'-5	PO(8'-6)	40.689	
18	10'-5	T(14'-10), Tr(4'-3½)	42.123	
19	-6'-11½		54.307	
20	-20'-1½	E(13'-2)	64.077	
21	-20'-1½	EE(5'-0½)	64.202	
22	-20'-1½	EE(6'-8½)	64.902	
23	-20'-1½	E(30'-6½)	64.915	
25	10'-5	T(5'-0)	11.504	
26	10'-5	T(5'-0)	14.055	
27	10'-5	T(6'-0)	14.356	
28	10'-5	T(5'-0)	13.203	
29	10'-5	T(5'-0)	14.090	
30	10'-5	PO(8'-6)	41.499	
31	10'-5	PO(8'-6)	41.550	
32	10'-5	PO(8'-6)	41.722	
33	10'-5	PO(8'-6)	39.678	
34	10'-5	PO(8'-6)	39.719	
35	10'-5	PO(8'-6)	39.856	
36	10'-5	PO(8'-6)	40.035	
37	10'-5	PO(8'-6)	39.489	
38	10'-5	PO(8'-6)	39.510	
39	10'-5	PO(8'-6)	39.537	
40	10'-5	PO(8'-6)	39.601	
41	10'-5	PO(8'-6)	40.196	
42	10'-5	PO(8'-6)	40.346	
43	10'-5	PO(8'-6)	40.451	
44	10'-5	PO(8'-6)	40.537	
45	10'-5	PO(8'-6)	41.462	
46	10'-5	PO(8'-6)	41.479	
47	10'-5	PO(8'-6)	40.541	
48	10'-5	PO(8'-6)	41.456	
49	10'-5	PO(8'-6)	40.489	
50	10'-5	PO(8'-6)	40.518	
341	-14'-10	E(13'-2), BOR	61.574	



Hydraulic Analysis

Job Number: SK1265

Report Description: Light Hazard

Pipe Type	Diameter	Flow	Velocity	HWC	Friction Loss	Length	Pressure
Downstream	Elevation	Discharge	K-Factor	Pt	Pn	Eq. Length	Summary
Upstream					Fittings	Total Length	
Route 1							
DY	1.0490	19.60	7.28	120	0.125357	0'-0	Pf 4.011
101	9'-0	19.60	5.6	12.250	Sprinkler,	32'-0	Pe -0.614
1	10'-5			15.647	, fd(32'-0)	32'-0	Pv
BL	1.0490	38.61	14.33	120	0.439401	3'-9	Pf 4.725
1	10'-5	19.01		15.647	Flow (q) from Route 8	7'-0	Pe
2	10'-5			20.372	E(2'-0), T(5'-0)	10'-9	Pv
BL	1.3800	58.89	12.63	120	0.252356	4'-7½	Pf 1.170
2	10'-5	20.28		20.372	Flow (q) from Route 10		Pe
3	10'-5			21.542		4'-7½	Pv
BL	1.6100	58.89	9.28	120	0.119120	5'-8	Pf 0.674
3	10'-5			21.542			Pe
4	10'-5			22.217		5'-8	Pv
BL	1.6100	81.83	12.90	120	0.218923	1'-1½	Pf 0.245
4	10'-5	22.94		22.217	Flow (q) from Route 11		Pe
5	10'-5			22.462		1'-1½	Pv
BL	2.1770	167.37	14.43	120	0.189266	0'-8½	Pf 0.135
5	10'-5	85.54		22.462	Flow (q) from Route 3		Pe
6	10'-5			22.597		0'-8½	Pv
BL	2.1770	190.37	16.41	120	0.240188	4'-6½	Pf 1.094
6	10'-5	23.01		22.597	Flow (q) from Route 9		Pe
7	10'-5			23.691		4'-6½	Pv
BL	2.1770	213.64	18.41	120	0.297291	23'-11	Pf 10.938
7	10'-5	23.26		23.691	Flow (q) from Route 2	12'-10½	Pe
8	10'-5			34.629	PO(12'-10½)	36'-9½	Pv
CM	2.6350	213.64	12.57	120	0.117314	10'-2½	Pf 1.196
8	10'-5			34.629			Pe
9	10'-5			35.825		10'-2½	Pv
CM	2.6350	193.63	11.39	120	0.097802	14'-9½	Pf 1.448
9	10'-5			35.825			Pe
10	10'-5			37.273		14'-9½	Pv
CM	2.6350	177.80	10.46	120	0.083524	8'-11½	Pf 0.749
10	10'-5			37.273			Pe
11	10'-5			38.022		8'-11½	Pv
CM	2.6350	164.39	9.67	120	0.072250	8'-3	Pf 0.595
11	10'-5			38.022			Pe
12	10'-5			38.617		8'-3	Pv
CM	2.6350	153.78	9.05	120	0.063856	6'-11	Pf 0.442
12	10'-5			38.617			Pe
13	10'-5			39.058		6'-11	Pv
CM	2.6350	145.51	8.56	120	0.057650	2'-10	Pf 0.164
13	10'-5			39.058			Pe
14	10'-5			39.222		2'-10	Pv
CM	2.6350	138.18	8.13	120	0.052391	8'-0½	Pf 0.422
14	10'-5			39.222			Pe
15	10'-5			39.644		8'-0½	Pv
CM	2.6350	133.54	7.86	120	0.049186	9'-4½	Pf 0.461
15	10'-5			39.644			Pe
16	10'-5			40.105		9'-4½	Pv
CM	2.6350	136.07	8.01	120	0.050924	11'-6	Pf 0.585
16	10'-5	2.53		40.105	Flow (q) from Route 13		Pe
17	10'-5			40.689		11'-6	Pv
CM	2.6350	143.07	8.42	120	0.055875	10'-10	Pf 1.433
17	10'-5	7.00		40.689	Flow (q) from Route 18	14'-10	Pe
18	10'-5			42.123	T(14'-10)	25'-8	Pv
CM	3.2600	213.64	8.21	120	0.041609	64'-6½	Pf 4.643
18	10'-5	70.57		42.123	Flow (q) from Route 12	47'-0½	Pe
19	-6'-11½			54.307	BV(9'-5), 4E(9'-5)	111'-7	Pv
CM	4.2600	213.64	4.81	120	0.011306	22'-10	Pf 3.854
19	-6'-11½			54.307		52'-8	Pe
341	-14'-10			61.574	4E(13'-2), BFP(-3.000), BOR	75'-6	Pv
CM	4.2600	213.64	4.81	120	0.011306	5'-3½	Pf 0.209
341	-14'-10			61.574		13'-2	Pe
20	-20'-1½			64.077	E(13'-2)	18'-5½	Pv
UG	4.2200	213.64	4.90	120	0.011838	5'-6	Pf 0.124
20	-20'-1½			64.077		5'-0½	Pe
21	-20'-1½			64.202	EE(5'-0½)	10'-6	Pv



Hydraulic Analysis

Job Number: SK1265

Report Description: Light Hazard

Pipe Type	Diameter	Flow	Velocity	HWC	Friction Loss	Length	Pressure
Downstream	Elevation	Discharge	K-Factor	Pt	Pn	Eq. Length	Summary
Upstream					Fittings	Total Length	
UG	4.2200	213.64	4.90	140	0.008901	72'-0"	Pf 0.700
21	-20'-1½"			64.202		6'-8½"	Pe
22	-20'-1½"			64.902	EE(6'-8½")	78'-8½"	Pv
UG	8.3900	213.64	1.24	140	0.000313	9'-6"	Pf 0.013
22	-20'-1½"			64.902		30'-6½"	Pe
23	-20'-1½"			64.915	E(30'-6½")	40'-0½"	Pv
UG	6.0650	213.64	2.37	120	0.002024	5'-0"	Pf 0.010
23	-20'-1½"			64.915			Pe -2.168
24	-15'-1½"			62.757	Water Supply	5'-0"	Pv
		100.00			Hose Allowance At Source		
24		313.64					
Route 2							
BL	1.0490	23.26	8.64	120	0.172120	1'-11½"	Pf 7.047
102	9'-0"	23.26	5.6	17.258	Sprinkler,	39'-0"	Pe -0.614
7	10'-5"			23.691	E(2'-0"), T(5'-0"), fd(32'-0")	40'-11½"	Pv
Route 3							
BL	1.0490	16.36	6.07	120	0.089720	7'-11½"	Pf 3.585
103	9'-0"	16.36	5.6	8.533	Sprinkler,	32'-0"	Pe -0.614
25	10'-5"			11.504	, fd(32'-0")	39'-11½"	Pv
BL	1.0490	32.86	12.20	120	0.326068	2'-10"	Pf 2.551
25	10'-5"	16.50		11.504	Flow (q) from Route 4	5'-0"	Pe
26	10'-5"			14.055	T(5'-0")	7'-10"	Pv
BL	1.3800	67.43	14.46	120	0.324195	0'-11"	Pf 0.301
26	10'-5"	34.57		14.055	Flow (q) from Route 5		Pe
27	10'-5"			14.356		0'-11"	Pv
BL	1.3800	85.54	18.35	120	0.503423	10'-1"	Pf 8.106
27	10'-5"	18.11		14.356	Flow (q) from Route 7	6'-0"	Pe
5	10'-5"			22.462	T(6'-0")	16'-1"	Pv
Route 4							
BL	1.0490	16.50	6.13	120	0.091180	0'-8"	Pf 3.435
104	9'-0"	16.50	5.6	8.683	Sprinkler,	37'-0"	Pe -0.614
25	10'-5"			11.504	T(5'-0"), fd(32'-0")	37'-8"	Pv
Route 5							
BL	1.0490	16.76	6.22	120	0.093790	9'-10½"	Pf 4.865
105	9'-0"	16.76	5.6	8.952	Sprinkler,	42'-0"	Pe -0.614
28	10'-5"			13.203	2T(5'-0"), fd(32'-0")	51'-10½"	Pv
BL	1.3800	34.57	7.42	120	0.094192	9'-0½"	Pf 0.852
28	10'-5"	17.81		13.203	Flow (q) from Route 6		Pe
26	10'-5"			14.055		9'-0½"	Pv
Route 6							
BL	1.0490	17.81	6.61	120	0.105045	1'-2½"	Pf 3.698
106	9'-0"	17.81	5.6	10.119	Sprinkler,	34'-0"	Pe -0.614
28	10'-5"			13.203	E(2'-0"), fd(32'-0")	35'-2½"	Pv
Route 7							
SP	1.0490	18.11	6.72	120	0.108287	6'-2½"	Pf 1.646
107	15'-0"	18.11	5.6	10.457	Sprinkler,	9'-0"	Pe 1.987
29	10'-5"			14.090	2E(2'-0"), T(5'-0")	15'-2½"	Pv
BL	1.3800	18.11	3.88	120	0.028480	3'-4"	Pf 0.266
29	10'-5"			14.090		6'-0"	Pe
27	10'-5"			14.356	T(6'-0")	9'-4"	Pv
Route 8							
BL	1.0490	19.01	7.06	120	0.118460	8'-0"	Pf 4.738
108	9'-0"	19.01	5.6	11.523	Sprinkler,	32'-0"	Pe -0.614
1	10'-5"			15.647	, fd(32'-0")	40'-0"	Pv
Route 9							
BL	1.0490	23.01	8.54	120	0.168605	0'-7"	Pf 6.334
109	9'-0"	23.01	5.6	16.877	Sprinkler,	37'-0"	Pe -0.614
6	10'-5"			22.597	T(5'-0"), fd(32'-0")	37'-7"	Pv
Route 10							
BL	1.0490	20.28	7.53	120	0.133524	19'-11½"	Pf 7.871
110	9'-0"	20.28	5.6	13.115	Sprinkler,	39'-0"	Pe -0.614
2	10'-5"			20.372	E(2'-0"), T(5'-0"), fd(32'-0")	58'-11½"	Pv
Route 11							
BL	1.0490	22.94	8.52	120	0.167710	2'-11½"	Pf 6.701
111	7'-6"	22.94	5.6	16.780	Sprinkler,	37'-0"	Pe -1.264
4	10'-5"			22.217	mecT(5'-0"), fd(32'-0")	39'-11½"	Pv
Route 12							



Hydraulic Analysis

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Pipe Type	Diameter	Flow	Velocity	HWC	Friction Loss	Length	Pressure
Downstream	Elevation	Discharge	K-Factor	Pt	Pn	Eq. Length	Summary
Upstream					Fittings	Total Length	
CM	2.6350	44.96	2.65	120	0.006565	7'-8½"	Pf 0.051
30	10'-5	33.97 + 10.99		41.499	Flow (q) from Route 25 and 27		Pe
31	10'-5			41.550		7'-8½"	Pv
CM	2.6350	57.52	3.38	120	0.010353	8'-5"	Pf 0.172
31	10'-5	12.55		41.550	Flow (q) from Route 16	8'-3"	Pe
32	10'-5			41.722	E(8'-3)	16'-7½"	Pv
CM	2.6350	70.57	4.15	120	0.015113	22'-2½"	Pf 0.400
32	10'-5	13.05		41.722	Flow (q) from Route 17	4'-3½"	Pe
18	10'-5			42.123	Tr(4'-3½)	26'-6"	Pv
***** Route 13 *****							
CM	2.6350	68.13	4.01	120	0.014161	2'-10"	Pf 0.040
33	10'-5	8.27 + 59.86		39.678	Flow (q) from Route 14 and 15		Pe
34	10'-5			39.719		2'-10"	Pv
CM	2.6350	75.46	4.44	120	0.017109	8'-0½"	Pf 0.138
34	10'-5	7.33		39.719	Flow (q) from Route 20		Pe
35	10'-5			39.856		8'-0½"	Pv
CM	2.6350	80.09	4.71	120	0.019103	9'-4½"	Pf 0.179
35	10'-5	4.63		39.856	Flow (q) from Route 19		Pe
36	10'-5			40.035		9'-4½"	Pv
BL	1.4820	2.53	0.47	120	0.000528	114'-5"	Pf 0.069
36	10'-5			40.035	PO(8'-6)	17'-0"	Pe
16	10'-5			40.105	PO(8'-6)	131'-4½"	Pv
***** Route 14 *****							
BL	1.4820	8.27	1.54	120	0.004719	114'-5"	Pf 0.620
13	10'-5			39.058	PO(8'-6)	17'-0"	Pe
33	10'-5			39.678	PO(8'-6)	131'-4½"	Pv
***** Route 15 *****							
CM	2.6350	20.01	1.18	120	0.001468	14'-5"	Pf 0.021
37	10'-5	20.01		39.489	Flow (q) from Route 24		Pe
38	10'-5			39.510		14'-5"	Pv
CM	2.6350	35.84	2.11	120	0.004315	6'-3½"	Pf 0.027
38	10'-5	15.83		39.510	Flow (q) from Route 23		Pe
39	10'-5			39.537		6'-3½"	Pv
CM	2.6350	49.24	2.90	120	0.007768	8'-3"	Pf 0.064
39	10'-5	13.40		39.537	Flow (q) from Route 22		Pe
40	10'-5			39.601		8'-3"	Pv
CM	2.6350	59.86	3.52	120	0.011147	6'-11"	Pf 0.077
40	10'-5	10.62		39.601	Flow (q) from Route 21		Pe
33	10'-5			39.678		6'-11"	Pv
***** Route 16 *****							
CM	2.6350	70.57	4.15	120	0.015113	9'-11½"	Pf 0.150
41	10'-5			40.196			Pe
42	10'-5			40.346		9'-11½"	Pv
CM	2.6350	57.52	3.38	120	0.010353	10'-2½"	Pf 0.106
42	10'-5			40.346			Pe
43	10'-5			40.451		10'-2½"	Pv
BL	1.4820	12.55	2.33	120	0.010216	90'-6½"	Pf 1.098
43	10'-5			40.451	PO(8'-6)	17'-0"	Pe
31	10'-5			41.550	PO(8'-6)	107'-6½"	Pv
***** Route 17 *****							
BL	1.4820	13.05	2.43	120	0.010977	95'-8"	Pf 1.376
42	10'-5			40.346	PO(8'-6)	29'-8½"	Pe
32	10'-5			41.722	3E(4'-3), PO(8'-6)	125'-4½"	Pv
***** Route 18 *****							
CM	2.6350	77.56	4.56	120	0.018002	8'-11"	Pf 0.160
36	10'-5	2.53		40.035	Flow (q) from Route 13		Pe
41	10'-5			40.196		8'-11"	Pv
BL	1.4820	7.00	1.30	120	0.003466	116'-11½"	Pf 0.494
41	10'-5			40.196	PO(8'-6)	25'-5½"	Pe
17	10'-5			40.689	2E(4'-3), PO(8'-6)	142'-5½"	Pv
***** Route 19 *****							
BL	1.4820	4.63	0.86	120	0.001617	114'-5"	Pf 0.212
15	10'-5			39.644	PO(8'-6)	17'-0"	Pe
35	10'-5			39.856	PO(8'-6)	131'-4½"	Pv
***** Route 20 *****							
BL	1.4820	7.33	1.36	120	0.003778	114'-5"	Pf 0.496
14	10'-5			39.222	PO(8'-6)	17'-0"	Pe
34	10'-5			39.719	PO(8'-6)	131'-4½"	Pv



Hydraulic Analysis

Job Number: SK1265

Report Description: Light Hazard

Pipe Type	Diameter	Flow	Velocity	HWC	Friction Loss	Length	Pressure
Downstream	Elevation	Discharge	K-Factor	Pt	Pn	Eq. Length	Summary
Upstream					Fittings	Total Length	
Route 21							
BL	1.4820	10.62	1.97	120	0.007494	114'-5"	Pf 0.985
12	10'-5"			38.617	PO(8'-6)	17'-0"	Pe
40	10'-5"			39.601	PO(8'-6)	131'-4½"	Pv
Route 22							
BL	1.4820	13.40	2.49	120	0.011534	114'-5"	Pf 1.515
11	10'-5"			38.022	PO(8'-6)	17'-0"	Pe
39	10'-5"			39.537	PO(8'-6)	131'-4½"	Pv
Route 23							
BL	1.4820	15.83	2.94	120	0.015696	117'-0½"	Pf 2.237
10	10'-5"			37.273	PO(8'-6)	25'-5½"	Pe
38	10'-5"			39.510	2E(4'-3), PO(8'-6)	142'-6½"	Pv
Route 24							
BL	1.4820	20.01	3.72	120	0.024200	117'-5½"	Pf 3.664
9	10'-5"			35.825	PO(8'-6)	33'-11½"	Pe
37	10'-5"			39.489	4E(4'-3), PO(8'-6)	151'-5"	Pv
Route 25							
BL	1.4820	10.92	2.03	120	0.007900	91'-7½"	Pf 0.925
44	10'-5"	22.30		40.537	PO(8'-6), Flow (q) from Route 29	25'-5½"	Pe
45	10'-5"			41.462	2E(4'-3), PO(8'-6)	117'-1½"	Pv
CM	2.6350	22.30	1.31	120	0.001793	9'-5½"	Pf 0.017
45	10'-5"	11.37		41.462	Flow (q) from Route 26		Pe
46	10'-5"			41.479		9'-5½"	Pv
CM	2.6350	33.97	2.00	120	0.003909	5'-3½"	Pf 0.021
46	10'-5"	11.68		41.479	Flow (q) from Route 28		Pe
30	10'-5"			41.499		5'-3½"	Pv
Route 26							
CM	2.6350	11.37	0.67	120	0.000516	9'-5"	Pf 0.005
44	10'-5"	22.30		40.537	Flow (q) from Route 29		Pe
47	10'-5"			40.541		9'-5"	Pv
BL	1.4820	11.37	2.11	120	0.008509	90'-6½"	Pf 0.915
47	10'-5"			40.541	PO(8'-6)	17'-0"	Pe
48	10'-5"			41.456	PO(8'-6)	107'-6½"	Pv
CM	2.6350	11.37	0.67	120	0.000516	10'-6"	Pf 0.005
48	10'-5"			41.456			Pe
45	10'-5"			41.462		10'-6"	Pv
Route 27							
BL	1.4820	10.99	2.04	120	0.007988	92'-5½"	Pf 1.010
49	10'-5"	44.96		40.489	PO(8'-6), Flow (q) from Route 30	33'-11½"	Pe
30	10'-5"			41.499	4E(4'-3), PO(8'-6)	126'-5"	Pv
Route 28							
CM	2.6350	33.97	2.00	120	0.003909	7'-2½"	Pf 0.028
49	10'-5"	44.96		40.489	Flow (q) from Route 30		Pe
50	10'-5"			40.518		7'-2½"	Pv
BL	1.4820	11.68	2.17	120	0.008939	90'-6½"	Pf 0.961
50	10'-5"			40.518	PO(8'-6)	17'-0"	Pe
46	10'-5"			41.479	PO(8'-6)	107'-6½"	Pv
Route 29							
CM	2.6350	22.30	1.31	120	0.001793	10'-6½"	Pf 0.019
50	10'-5"	11.68		40.518	Flow (q) from Route 28		Pe
44	10'-5"			40.537		10'-6½"	Pv
Route 30							
CM	2.6350	44.96	2.65	120	0.006565	5'-9½"	Pf 0.038
43	10'-5"	12.55		40.451	Flow (q) from Route 16		Pe
49	10'-5"			40.489		5'-9½"	Pv

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

C Value Multiplier

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

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



Hydraulic Analysis

Job Number: SK1265

Report Description: Light Hazard

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

Pipe Type Legend	Units Legend	Fittings Legend
AO Arm-Over	Diameter Inch	ALV Alarm Valve
BL Branch Line	Elevation Foot	AngV Angle Valve
CM Cross Main	Flow gpm	b Bushing
DN Drain	Discharge gpm	BaV Ball Valve
DR Drop	Velocity fps	BFP Backflow Preventer
DY Dynamic	Pressure psi	BV Butterfly Valve
FM Feed Main	Length Foot	C Cross Flow Turn 90°
FR Feed Riser	Friction Loss psi/Foot	cplg Coupling
MS Miscellaneous	HWC Hazen-Williams Constant	Cr Cross Run
OR Outrigger	Pt Total pressure at a point in a pipe	CV Check Valve
RN Riser Nipple	Pn Normal pressure at a point in a pipe	DeV Deluge Valve
SN Swing Nipple	Pf Pressure loss due to friction between points	DPV Dry Pipe Valve
SP Sprig	Pe Pressure due to elevation difference between indicated points	E 90° Elbow
ST Stand Pipe	Pv Velocity pressure at a point in a pipe	EE 45° Elbow
UG Underground		Ee1 11¼° Elbow
		Ee2 22¼° 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