	lydraulic Su	Immary						Donort Doo		Jo	b Number: S24
Job								Report Des	cription: 0	Ordinary Gr	oup II - Sales R
S24-02	8					Design E	ngineer en				
Job Name: Powell I	Ryka Survey					State Certi	fication/License Number				
Address 1 4102 S	Meridian Ste D					AHJ					
Address 2						Job Site/B	luilding				
Puyallug Address 3	p, VVA 98373					Drawing b	lama				
N						S24-	028 Powell Ryk	a Survey - 1-8	th scale	12	
Most Demanding	ig Sprinkler Data				10.200	Remot	te Area(s)		lob Suffix		
11.2 K-F	Factor 29.63 at 7	.00				Ordi	nary Group II - S	Sales RA#2	JOO Sullix		
250.00	2					0.20	gpm/ft²		Area of Appli 1500.	^{ication} 00ft² (Actua	l 1521.30ft2)
Node	Supplies	Flo	w(apm)			Number Of 20	Sprinklers Calculated		Coverage Pe	er Sprinkler Oft²	
							Theodore	M. Queen 5-C Level :	GTON S CATE O RINKLE	STATE F COMPE R SYSTE	TENCY MS
otal Hose Stream 250.00	ms						Archer Co	onstruction, In	с.		
ystem Flow Dem 618.69	mand		Total Water Required (II	cluding Hose Allowance)			ARCHEI*	219DR			
aximum Pressur	ire Unbalance In Loops		000.03			_	Jel	Jun		12.	6.24
0.00											
aximum Velocity	y Above Ground					_		Signature		Da	ite
9.71 betv aximum Velocity	y Above Ground Ween nodes 132 at y Under Ground	nd 160				_		Signature • • • • • • • •	City of Development &	Da Puyallup Permitting Services	
aximum Velocity 9.71 betv aximum Velocity 3.59 betv	y Above Ground Ween nodes 132 a y Under Ground Ween nodes 4 and	nd 160 14						Signature = = = = = = = = = = = = = = = = = = =	City of Development & /ISSUE Building	Puyallup Permitting Services D PERMIT Planning Public Works	
aximum Velocity 9.71 betv aximum Velocity 3.59 betv lume capacity o 11010.64	y Above Ground Ween nodes 132 a y Under Ground Ween nodes 4 and of Wet Pipes 4gal	nd 160 14	Volume capacity of Dry	Pipes				Signature	City of Development & SUE Building Engineering Fire	Puyallup Permitting Services D PERMIT Planning Public Works Works	
aximum Velocity 9.71 betv aximum Velocity 3.59 betv Iume capacity o 11010.64 Ipplies	y Above Ground Ween nodes 132 at y Under Ground Ween nodes 4 and of Wet Pipes 4gal	nd 160 14	Volume capacity of Dry	Pipes				Signature	City of Development & ISSUE Building Engineering Fire	Pusting Services De PERMT Public Works Works	
aximum Velocity 9.71 betv aximum Velocity 3.59 betv lume capacity of 11010.64 Ipplies	y Above Ground ween nodes 132 a y Under Ground ween nodes 4 and of Wet Pipes 4gal	nd 160 14 Hose Flow	Volume capacity of Dry	Residua	I @	Flow	Available	Signature Total Demar	City of Development & /ISSUE Building Engineering Fire	Pusallup Permiting services PERMT PEND Public Works Traffic Required	Safety Margi
aximum Velocity 9.71 betv iximum Velocity 3.59 betv lume capacity of 11010.64 ipplies Node 1	y Above Ground ween nodes 132 a y Under Ground ween nodes 4 and of Wet Pipes 4gal Name Water Supply	nd 160 14 Hose Flow (gpm) 250.00	Volume capacity of Dry V Static (psi) 40.00	Pipes Residua (psi) 38.00	I @	Flow (gpm) 950.00	Available (psi) 38.31	Total Demar (gpm) 868.69	City of Development & ISSUE Building Engineering Fire	Payalup permiting services permit Planing Plan	Safety Margi (psi) 0.07
aximum Velocit, 9.71 betv 3.59 betv 3.59 betv 11010.64 Jupplies Node 1 Node 1 A g calc spa hea min at 1 Thu wat	y Above Ground ween nodes 132 ar y Under Ground ween nodes 4 and of Wet Pipes 4gal Name Water Supply preat deal of a culations due ace are 11.24 ad condition, nimum of 29. 100 sq. ft., us the floor is ter vs. a typic	nd 160 14 Hose Flow (gpm) 250.00 addition e to the k. In ord the exis 6 gpm e 100 ft ² x s going c cal OH2	Volume capacity of Dry Static (psi) 40.00 al 'Safety fact that der to me sting 11.2 each. Wi 0.2 dens to be get	³ 'res Residua (psi) 38.00 / Margin' i the existir et the mir 2k heads a th max. ex sity = 20 g ting hit wit on with 5.	is program from the second sec	Flow (gpm) 950.00 ovided eads in m 7 ps lowing ng head require pout 50 8.0k h	Available (psi) 38.31 in these the i end at a d spacing d/head. % more. eads.	Total Demar (gpm) 868.69 Q = k 11.2	$\frac{1}{p_{\text{relevance}}} = \frac{1}{p_{\text{relevance}}}$	Pupelup Provide Service PERMT Public Voks Traffic Required (psi) 38.24 = 11.2 \ 55 = 29.	Safety Marg (psi) 0.07
aximum Velocity 9.71 betx 3.59 betx 3.59 betx 11010.64 Jpplies Node 1 Node 1 Node 1 Node 1 ntractor ne of Contractor ress 1 '8355 Sout	y Above Ground ween nodes 132 ar y Under Ground ween nodes 4 and of Wet Pipes 4gal Name Water Supply great deal of a culations due ace are 11.24 ad condition, nimum of 29. 100 sq. ft., f us the floor is ter vs. a typic Contractor Numbe 22 r onstruction	nd 160 14 Hose Flow (gpm) 250.00 addition addition addition to the to the to the control the exis 6 gpm e 100 ft ² x s going f cal OH2	Volume capacity of Day Volume	Residua (psi) 38.00 / Margin' i the existir et the mir 2k heads a th max. ex sity = 20 g ting hit wit on with 5.	is pr ng he nimu are f xistir pm th at .6 or	Flow (gpm) 950.00 ovided eads in m 7 ps lowing ng head require pout 50 8.0k h	Available (psi) 38.31 in these the i end at a d spacing d/head. % more. eads.	Signature Total Demar (gpm) 868.69 Q = k 11.2	$\begin{array}{c c} \hline \begin{array}{c} City of \\ \hline Development A \\ \hline Building \\ \hline Engineering \\ \hline Fire \\ \hline \end{array}$	Provinting generations Provinting generations Provin	Safety Marg (psi) 0.07
aximum Velocity 9.71 betx 3.59 betx 3.59 betx 11010.64 11010.64 1 Node 1 Node 1 Node 1 Node 1 ntractor ess 1 855 Southers Cent, WA	y Above Ground ween nodes 132 ar y Under Ground ween nodes 4 and of Wet Pipes 4gal Name Water Supply great deal of a culations due ace are 11.2P ad condition, nimum of 29. 100 sq. ft., us the floor is ter vs. a typic Contractor Number 22 for Destruction th 206th ST 98032	nd 160 14 Hose Flow (gpm) 250.00 addition e to the x. In ord the exis 6 gpm e 100 ft ² x s going cal OH2	Volume capacity of Day Volume	Residua (psi) 38.00 / Margin' i the existir et the mir 2k heads a th max. ep sity = 20 g ting hit wit on with 5.	is pr ng ha nimu are f xistin pm th at .6 or	Flow (gpm) 950.00 ovided eads in m 7 ps lowing ng head require bout 50 8.0k h	Available (psi) 38.31 in these the i end at a d spacing d/head. % more. eads.	Total Demar (gpm) 868.69 Q = k 11.2	d f	Provide provide a constraint of the second s	Safety Marg (psi) 0.07 7 = 6 gpm



Summary Of Outflowing Devices

Job Number: S24-028

Devic	ce	Actual Flow (gpm)	Minimum Flow (gpm)	K-Factor (K)	Pressure	Clandy Cloup II Cales IVIII
Sprinkler	2001	30.60	29.63	11.2	7.47	
Sprinkler	2002	30.01	29.63	11.2	7.47	
Sprinkler	2003	29.68	29.63	11.2	7.18	
	2004	29.63	29.63	11.2	7.02	
Sprinkler	2005	29.66	29.63	11.2	7.00	
Sprinkler	2006	29.93	29.63	11.2	7.01	
Sprinkler	2007	30.58	29.63	11.2	7.14	
Sprinkler	2008	31.08	29.63	11.2	7.45	
Sprinkler	2009	30.45	29.63	11.2	7.70	
Sprinkler	2010	30.08	29.63	11.2	7.39	
Sprinkler	2011	30.03	20.00	11.2	7.21	
Sprinkler	2012	30.05	29.63	11.2	7.19	
Sprinkler	2013	30.30	20.63	11.2	7.20	
Sprinkler	2014	30.91	29.03	11.2	7.32	
Sprinkler	2015	33.12	29.03	11.2	7.62	
Sprinkler	2016	32.51	29.63	11.2	8.74	
Sprinkler	2010	32.01	29.63	11.2	8.42	
Sprinkler	2017	32.34	29.63	11.2	8.34	
Sprinkler	2010	32.34	29.63	11.2	8.34	
Sprinkler	2019	32.47	29.63	11.2	8.41	
ophinkler	2020	32.92	29.63	11.2	8.64	

Solution → Most Demanding Sprinkler Data

Node	Elevation(Foot)	Fittings	Report De	scription: Ordinary Group II - Sales	s RA#2
1	-4-0	S	Pressure(psi)	Discharge(gpm)	
2001	23-6	Spr(-7.47)		618.69	
2002	23-6	Spr(-7.18)	7.47	30.60	
2003	23-6	Spr(-7.10)	7.18	30.01	
2004	23-6	Spr(-7.02)	7.02	29.68	
2005	23-0	Spr(-7.00)	7.00	29.63	
2006	23-0	Spr(-7.01)	7.01	29.66	
2007	23-0	Spr(-7.14)	7.14	29.93	
2008	23-0	Spr(-7.45)	7.45	30.58	
2009	23-51/2	Spr(-7.70)	7.70	31.08	
2010	23-51/2	Spr(-7.39)	7.39	30.45	
2010	23-51/2	Spr(-7.21)	7.21	30.08	
2011	23-51/2	Spr(-7.19)	7.19	30.03	
2012	23-51/2	Spr(-7.20)	7.20	30.05	
2013	23-51/2	Spr(-7.32)	7.32	30.30	
2014	23-51/2	Spr(-7.62)	7.62	30.91	
2015	23-41/2	Spr(-8.74)	8.74	33.12	
2010	23-41/2	Spr(-8.42)	8.42	32.51	
2017	23-41/2	Spr(-8.34)	8.34	32.34	
2018	23-41/2	Spr(-8.34)	8.34	32.34	
2019	23-41/2	Spr(-8.41)	8.41	32.47	
2020	23-41/2	Spr(-8.64)	8.64	32.92	
2	-4-0	T(42-11½)	38.23	52.52	
3	-4-0	T(59-41⁄2)	38.05		
4	-4-0	T(59-41⁄2)	37.70		
5	-4-0	T(98-3½)	38 15		
14	0-7		30.38		
20	1-81⁄2	PO(41-1½)	29.37		
30	4-81/2	LtE(15-3)	28.12		
40	1-8½	PO(37-81/2)	20.12		
104	17-1	PO(6-0)	29.23		
105	18-41⁄2	PO(6-0)	21.10		
106	19-8	PO(6-0)	20.65		
107	20-7	PO(12-3½)	19.57		
108	20-7	PO(12-3½)	18.30		
109	20-8	PO(12-3½)	10.79		
110	20-8 F	PO(12-31/2)	10.94		
111	20-9 F	PO(12-31/2)	16.00		
112	20-9 F	PO(12-31/2)	10.90		
113	20-9½ F	PO(12-3½)	10.01		
114	20-9½ F	PO(12-3½)	10.84		
115	20-10½ F	PO(12-3½)	16.38		
116	20-10½ F	PO(12-3½)	16.78		
117	20-11½ F	PO(12-31/2)	18.27		
118	20-11½ F	PO(12-31/2)	16.70		
119	21-0 P	O(12-31/2)	18.16		
120	21-0 P	O(12-31/2)	16.59		
121	21-1 P	O(12-31/2)	18.06		
122	21-1 P	O(12-31/2)	16.46		
123	21-2 P	0(12-31/2)	17.97		
124	21-2 P	O(12 - 31/2)	16.30		
125	21-3 P	O(12-31/2)	17.88		
126	21-3 P	O(12.372)	16.11		
127	21-316	$O(12 \cdot 372)$	17.80		
128	21-3/2	O(12 - 3/2)	15.89		
129	21-3/2	O(12 - 3/2)	17.72		
130	21-4/2 P	O(12 - 372)	15.63		
131	21-4/2 P	O(12 - 3/2)	17.66		
132	21-5½ P(J(12-3/2)	15.48		
132	21-5½ P(D(12-3½)	17.61		
124	21-6 PC	J(12-3½)	17.57		
125	21-6 PC	J(12-3½)	15.42		
130	22-7 PC	D(12-3½)	16.22		
130	22-7 PC	D(12-3½)	17.81		

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Node	Elevation(Foot)	Fittings	Pressure(psi)	Discharge(gpm)
137	22-8	PO(12-3½)	16.17	Discharge(gpin)
138	22-8	PO(12-3 ¹ / ₂)	17.67	
139	22-9	PO(12-31/2)	16.12	
140	22-9	PO(12-31/2)	17.53	
141	22-91/2	PO(12-31/2)	16.08	
142	22-91⁄2	PO(12-31/2)	17.42	
143	22-10½	PO(12-31/2)	16.00	
144	22-10½	PO(12-31/2)	17.31	
145	22-111/2	PO(12-31/2)	15.91	
146	22-111/2	PO(12-31/2)	17.20	
147	23-0	PO(12-31/2)	17.20	
148	23-0	PO(12-31/2)	17.11	
149	23-1	PO(12-31/2)	15.69	
150	23-1	PO(12-31/2)	17.01	
151	23-2	PO(12-31/2)	15.53	
152	23-2	PO(12-31/2)	16.00	
153	23-3	PO(12-31/2)	15.34	
154	23-3	PO(12-31/2)	16.82	
155	23-31/2	PO(12-31/2)	15.02	
156	23-31/2	PO(12-31/2)	16.75	
157	23-41/2	PO(12-31/2)	13.76	
158	23-41/2	PO(12-31/2)	15.69	
159	23-51⁄2	PO(12-31/2)	13.05	
160	23-51/2	PO(12-31/2)	15.47	
161	23-6	PO(12-31/2)	15.48	

	Job Number: S24-028
port Description: Ordinary	Group II - Sales PA#2

Pipe Type	Diameter	Flow	Velocity	LIMC	Report Descriptio	n: Ordinary Group	II - Sales RA#
Downstream	Elevation	Discharge	K-Factor	HWC Df	Friction Loss	Length	Pressure
Upstream		go	Nº actor	гı	FIL Fittings	Eq. Length	Summary
Route	1 • • • • •					Total Length	
BL	2.1570	16.60	1.46	120	0.002755		
2004	23-6	29.63	11.40	7.00	0.002755 Sprinklor	7-81/2	Pf 0.02
2003	23-6			7.00	Sprinkler		Pe
BL	2.1570	46.28	4.06	120	0.018357	7-81/2	Pv
2003	23-6	29.68	11.2	7.02	Sprinkler		Pf 0.16
2002	23-6			7.18	opiniker	0.0	Pe
BL	2.1570	76.29	6.70	120	0.046280	8-8	Pv
2002	23-6	30.01	11.2	7.18	Sprinkler	6-2	Pt 0.29
2001	23-6			7.47		6.2	Pe
BL	2.1570	106.89	9.39	120	0.086372	73.1	
161	23-6	30.60	11.2	7.47	Sprinkler,	19-81/	PI 0.01
DNI	23-6			15.48	2LtE(3-81/2), PO(12-31/2)	92-91/2	Pv
161	2.1570	106.89	9.39	120	0.086372	2-0	Pf 123
133	21-6			15.48		12-31/2	Pe 0.86
CM	6 3570	106.90	1.00	17.57	PO(12-31/2)	14-31/2	Pv
133	21-6	100.09	1.08	120	0.000447	9-31/2	Pf 0.00
132	21-51/2			17.57			Pe 0.03
СМ	6.3570	217 50	2.20	17.01	0.001001	9-31/2	Pv
132	21-51/2	110.61	2.20	17.61	0.001664	10-7	Pf 0.02
130	21-41/2			17.66	Flow (q) from Route 3		Pe 0.03
СМ	6.3570	318.03	3.21	120	0.002360	10-7	Pv
130	21-41/2	100.53	0.21	17.66	Elow (a) from Pourto 5	11-0	Pf 0.04
128	21-31/2			17.72	now (q) nom Roule 5		Pe 0.03
CM	6.3570	347.36	3.51	120	0.003956	11-0	Pv
128	21-31/2	29.33		17.72	Flow (g) from Boute 2	10-8	Pf 0.04
126	21-3			17.80		10.0	Pe 0.03
CM	6.3570	375.40	3.79	120	0.004567	10-8	
126	21-3	28.04		17.80	Flow (g) from Route 7		Pr 0.05
124	21-2			17.88		11-0	Pe 0.03
124	6.3570	402.46	4.07	120	0.005195	11-0	Pf 0.06
124	21-2	27.06		17.88	Flow (q) from Route 8		
CM	21-1	100.07		17.97	201202	11-0 F	v 0.05
122	0.3570	428.87	4.34	120	0.005843	11-0	Pf 0.06
120	21-1	26.40		17.97	Flow (q) from Route 9	F	Pe 0.03
CM	6 3570	454.02	1.00	18.06		11-0 F	v
120	21-0	454.95	4.60	120	0.006517	10-9 F	Pf 0.07
118	20-11%	20.07		18.06	Flow (q) from Route 10	F	Pe 0.03
СМ	6.3570	480.95	1.96	18.16	0.007000	10-9 P	°v .
118	20-111/2	26.02	4.00	120	0.00/223	10-3 F	Pf 0.07
116	20-101/2	20.02		10.10	Flow (q) from Route 11	F	e 0.03
СМ	6.3570	507 19	5.13	120	0.003000	10-3 P	'v
116	20-101/2	26.24	0.10	18.27	Elow (g) from Doute 10	10-3 P	Pf 0.08
114	20-91/2			18.38	1 low (q) from Route 12	P	e 0.03
CM	6.3570	533.88	5.40	120	0.008762	10-3 P	v
114	20-91/2	26.68	0.10	18.38	Flow (d) from Route 13	11-0 P	f 0.10
112	20-9			18.51	(q) non (d)	11.0 P	e 0.03
CM	6.3570	561.24	5.67	120	0.009610	11-0 P	V
112	20-9	27.37		18.51	Flow (g) from Route 14	11-0 P	f 0.11
110	20-8			18.64	(4)	11 0 P	e 0.03
<u>110</u>	6.3570	589.47	5.96	120	0.010524	11-0 P	V f 0.12
110	20-8	28.22		18.64	Flow (g) from Route 15	P	0.12
100	20-7			18.79		11-0 P	e 0.03
108	6.3570	618.69	6.25	120	0.011509	9-5 P	f 0.37
106	20-7	29.22		18.79	Flow (q) from Route 16	22-7½ P	e 0.41
100 M	6.2570	010.00		19.57	2LtE(11-4)	32-0½ P	
106	0.3570	618.69	6.25	120	0.011509	30-7 P	F 1.89
40	1-814			19.57		133-3½ P	e 7.78
10	1-0/2			29.23	2PO(37-8½), 4LtE(11-4),	163-10½ P	
M	8 2400	619.00	0.74		BV(12-7)		
40	1-81%	010.09	3.71	120	0.003236	1-10½ Pf	0.14
20	1-81%			29.23		41-1½ Pe	∋ -0.00
R	8 2490	618.60	2 71	29.37	PO(41-1½)	42-11½ Pv	/
20	1-81/2	010.09	3.71	20.27	0.003236	3-0 Pf	0.06
30	4-81/2			29.3/		15-3 Pe	e -1.30
M	8.2490	618 69	3 71	120.12	LIE(15-3)	18-3½ Pv	<u> </u>
30	4-81/2	010.00	5.71	28.12	0.003236	15-3½ Pf	0.46
14	0-7			30.38	31 tE/15 2) 2D///44 4)	126-10 Pe	1.79
				50.50	SL(E(15-3), 2BV(14-1), CV(52, 40)	142-1½ Pv	
					GV(52-10)		

Pipe Type	Diameter	Flow	Velocity	HWC	Friction Loss	Longth	Drees
Downstream Upstream	Elevation	Discharge	K-Factor	Pt	Pn Fittings	Eq. Length	Pressur Summa
JG 14	8.3900	618.69	3.59	140	0.002240	24-1	Pf 5.34
4	-4-0			30.38 37.70	2E(30-6½), BFP(-5.00),	127-3 151-3½	Pe 1.99 Pv
G	8.3900	358.10	2.08	140	0.000815	402 441/	D (0.11
4	-4-0			37.70	0.00010	483-11½	Pt 0.44
<u> </u>	-4-0	250.40		38.15	4EE(15-3)	545-01/2	Pv
5	-4-0	358.10	0.94	140	0.000119	770-01⁄2	Pf 0.09
	-4-0			38.24	Water Supply	770.01/	Pe
		250.00			Hose Allowance At Source	170-0%	PV
AAAAA Bouto 0		868.69					
Roule 2	2 1570	12.02		100			
2004	23-6	29.63	1.14	120	0.001759	8-0	Pf 0.01
005	23-6	20.00	11.2	7.00	Sprinkler		Pe
-	2.1570	42.69	3.75	120	0.015810	8-0	PV Df 0.12
2005	23-6	29.66	11.2	7.01	Sprinkler		Pe
	23-0	72.63	6 20	7.14	0.0/20/2	8-2	Pv
006	23-6	29.93	0.38	7 14	0.042249 Sprinkler	7-4	Pf 0.31
007	23-6			7.45	ophilkier		Pe
	2.1570	103.20	9.06	120	0.080932	61-3	PV Df 5.05
007	23-6	30.58	11.2	7.45	Sprinkler,	12-31/2	PI 5.95 Pe
J	2 1570	102.00	0.00	13.41	PO(12-3½)	73-61/2	Pv
62	23-6	103.20	9.06	120	0.080932	2-0	Pf 1.16
34	21-6			15.41	PO(12-31/4)	12-31/2	Pe 0.86
1	4.2600	103.20	2.32	120	0.002943	14-31/2	
34	21-6			15.42		10-9/2	Pr 0.03
01	21-51/2	005.40		15.48		10-91/2	Pv
31	4.2600	205.48	4.63	120	0.010521	10-7	Pf 0.11
29	21-41/2	102.20		15.48	Flow (q) from Route 4		Pe 0.03
1	4.2600	300.65	6.77	120	0 021274	10-7	Pv
29	21-41/2	95.17		15.63	Flow (g) from Route 6	11-0	Pt 0.23
27	21-31/2			15.89		11-0	Pe 0.03
77	2.15/0	29.33	2.58	120	0.007894	2-0	Pf 0.11
55	23-31/2			15.89	PO(12-3½)	12-3½	Pe -0.86
	2.1570	29.33	2.58	13.14	0.007804	14-3½ F	Pv
55	23-31/2		2.00	15.14	PO(12-31/2)		Pf 1.61
56	23-31/2			16.75	PO(12-31/2)	24-772 F	e v
6	2.1570	29.33	2.58	120	0.007894	2-0 F	Pf 0.11
28	23-31/2			16.75		12-3½ F	Pe 0.86
•••• Route 3 •	••••			17.72	PO(12-3½)	14-3½ F	Pv .
	2.1570	19.00	1.67	120	0.003535		
)11	23-51/2	30.03	11.2	7.19	Sprinkler	7-8½ F	Pf 0.03
10	23-51/2			7.21	•	7-8½ P	v
10	2.1570	49.08	4.31	120	0.020464	8-8 F	of 0.18
09	23-51/2	30.08	11.2	7.21	Sprinkler	F	e
	2.1570	79.53	6.98	120	0.049979	8-8 P	'v
009	23-51/2	30.45	11.2	7.39	Sprinkler	6-2 P	f 0.31
08	23-51/2			7.70		6-2 P	ve v
00	2.1570	110.61	9.71	120	0.092004	71-7 P	v f 772
0	23-51/2	31.08	11.2	7.70	Sprinkler,	12-3½ P	e
-	2.1570	110.61	9 71	15.42	PO(12-3½)	83-10½ P	<u>v</u>
0	23-51/2	110.01	3.71	15.42	0.092004	2-0 P	f 1.32
2	21-51⁄2			17.61	PO(12-31/2)	12-3½ P 14-4 P	e 0.87 v
Noule 4	2 1570	11.02	0.07	400	0.001000		
11	23-51%	30.03	0.97	7 10	0.001292	8-0 P	f 0.01
12	23-51/2	50.00	11.2	7.20	ophinkier	P	е
	2.1570	41.07	3.61	120	0.014719	8-0 P	V
12	23-51/2	30.05	11.2	7.20	Sprinkler	δ-2 P	r 0.12 e
3	23-51/2	74.07	0.05	7.32		8-2 P	v
	2.1570	(1.3/	6.27	120	0.040908	7 4 5	
3	23-51/2	30.30	11.0	7.00	Cardell	7-4 P	0.30

Dourset	Diameter	Flow	Velocity	HWC	Friction Loss	Length	Preseur
Downstream Upstream	Elevation	Discharge	K-Factor	Pt	Pn Fittings	Eq. Length	Summai
L	2.1570	102.28	8.98	120	0.079602		Df 5.96
2014	23-51/2	30.91	11.2	7.62	Sprinkler,	12-3½	Pe
N	23-372	102.29	0.00	13.47	PO(12-31/2)	73-61/2	Pv
59	23-51/2	102.20	8.98	120	0.079602	2-0	Pf 1.14
31	21-51/2			15.47	PO(12-31/4)	12-31/2	Pe 0.87
•••• Route 5				10.10	1 0(12-072)	14-4	Pv
-	2.1570	2.56	0.22	120	0.000087	8-0	Pf 0.00
2018	23-41/2	32.34	11.2	8.34	Sprinkler		Pe
	2 1570	3/ 01	2.06	8.34	0.010000	8-0	Pv
2017	23-41/2	32.34	11.2	8 34	Sprinkler	7-81⁄2	Pf 0.08
2016	23-41/2			8.42	Optimiler	7 01/	Pe
-	2.1570	67.41	5.92	120	0.036810	7-8/2	PV Df 0.22
2016	23-41/2	32.51	11.2	8.42	Sprinkler	0-0	Pe 0.32
.015	23-4 1/2	100 52	0.00	8.74		8-8	Pv
2015	23-41/2	33.12	<u>8.83</u>	9.74	0.077097	77-9	Pf 6.94
58	23-41/2	00.1L	11.4	15 69	PO(12-31/4)	12-31/2	Pe
N	2.1570	100.53	8.83	120	0.077097	90-01/2	
58	23-41/2			15.69		2-0 12_31/	PE 0.97
SU Pouto C	21-4½			17.66	PO(12-31/2)	14-31/2	Pv
Koute 6	2 1570	00.70	0.01				
018	2.1570	29.78	2.61	120	0.008121	8-2	Pf 0.07
019	23-41/2	02.04	11.2	0.34 8.41	Sprinkler		Pe
	2.1570	62.25	5.47	120	0.031769	8-2	Pv
019	23-41/2	32.47	11.2	8.41	Sprinkler	7-4	Pf 0.23
020	23-41/2			8.64		7-4	Pv
020	2.1570	95.17	8.36	120	0.069670	61-3	Pf 512
57	23-4/2	32.92	11.2	8.64	Sprinkler,	12-31⁄2	Pe
1	2 1570	95 17	8 36	13.76	PO(12-3½)	73-6½	ν
57	23-41/2	00.17	0.50	13.76	0.069670	2-0	Pf 1.00
29	21-41/2			15.63	PO(12-3 ¹ / ₂)	12-3/2	Pe 0.87
•••• Route 7						14-372 P	v
/I 27	4.2600	271.33	6.11	120	0.017595	10-8	Pf 0.19
25	21-372			15.89		F	Pe 0.03
1	2 1570	28.04	2.46	16.11	0.007005	10-8 F	٧v
25	21-3	20.04	2.40	16.11	PO(12-31/4)	2-0 F	Pf 0.10
53	23-3			15.34	10(12-372)	12-3½ F	Pe -0.87
	2.1570	28.04	2.46	120	0.007265	178-101/ F	0f 1 40
53	23-3			15.34	PO(12-31/2)	24-7½ F	е 1.40 Ре
94	23-3	28.04	0.10	16.82	PO(12-31/2)	203-6 F	Pv .
54	23-3	28.04	2.46	120	0.007265	2-0 F	Pf 0.10
26	21-3			17.80	PO(12-31/4)	12-3½ F	e 0.87
•••• Route 8 •					10(12-072)	14-4 P	v
	4.2600	243.28	5.48	120	0.014379	11.0	of 0.16
5	21-3			16.11			e 0.16
5	21-2	27.00	0.00	16.30		11-0 P	V 0.00
3	21-2	27.06	2.38	120	0.006801	2-0 P	f 0.10
1	23-2			15.50	PU(12-3½)	12-3½ P	e -0.87
	2.1570	27.06	2.38	120	0.006801	14-4 P	V
1	23-2			15.53	PO(12-3 ¹ / ₂)	1/8-10½ P	1.38
2	23-2			16.91	PO(12-31/2)	24-772 P 203-6 P	e v
2	2.1570	27.06	2.38	120	0.006801	2-0 P	f 0.10
4	23-2			16.91		12-3½ P	e 0.87
•••• Route 9 •	••••			17.88	PU(12-3½)	14-4 P	v
	4.2600	216,22	4.87	120	0.011561		
3	21-2		1.07	16.30	0.011001	11-0 P	f 0.13
1	21-1			16.46		11 O D	e 0.03
1	2.1570	26.40	2.32	120	0.006500	2_0 0	f 0.00
۱ ۵	21-1			16.46	PO(12-31/2)	12-3½ P	e -0.87
2	23-1	26.40	0.00	15.69		14-3½ P	/
Э	23-1	20.40	2.32	120	0.006500	178-10½ P	f 1.32
				10.09	PO(12-3/2)	24-7½ P	e

Hydraulic Analysis Job Number: S24-028 Report Description: Ordinary Group II - Sales RA#2 Pipe Type Diameter Flow Velocity HWC Friction Loss Length Pressure Downstream Elevation Discharge **K-Factor** Pt Pn Fittings Eq. Length Summary Upstream Total Length RN 2.1570 26.40 2.32 120 0.006500 2-0 Pf 0.09 150 23-1 17.01 12-31/2 Pe 0.87 122 21-1 17.97 PO(12-31/2) 14-31/2 Pv ----- Route 10 -----4.2600 CM 189.82 4.27 120 0.009086 11-0 Pf 0.10 121 21-1 16.46 Pe 0.03 119 21-0 16.59 2.1570 21-0 11-0 Pv RN 26.07 2.29 0.006347 120 2-0 Pf 0.09 119 16.59 PO(12-31/2) 12-31/2 Pe -0.86 147 23-0 15.82 14-31/2 Pv BL 2.1570 26.07 2.29 0.006347 120 178-10½ Pf 1.29 147 23-0 15.82 PO(12-31/2) 24-71/2 Pe 148 23-0 17.11 PO(12-31/2) 203-6 Pv RN 2.1570 26.07 2.29 120 0.006347 2-0 Pf 0.09 148 23-0 17.11 12-31/2 Pe 0.86 120 21-0 18.06 PO(12-31/2) 14-31/2 Pv 📾 • • • • • Route 11 • • • • • CM 4.2600 163.75 3.69 120 0.006913 10-9 Pf 0.07 119 21-0 16.59 Pe 0.03 117 20-111/2 16.70 10-9 Pv RN 2.1570 26.02 2.28 120 0.006327 2-0 Pf 0.09 117 20-111/2 16.70 PO(12-31/2) 12-31/2 Pe -0.87 145 22-111/2 15.91 14-4 Pv BL 2.1570 26.02 2.28 0.006327 120 178-10½ Pf 145 1.29 22-111/2 15.91 PO(12-31/2) 24-71/2 Pe 146 22-111/2 PO(12-31/2) 17.20 203-6 Pv RN 2.1570 26.02 2.28 120 0.006327 2-0 Pf 0.09 146 22-111/2 17.20 12-31/2 Pe 0.87 118 20-111/2 18.16 PO(12-31/2) 14-4 Pv ••••• Route 12 •••• CM 4.2600 137.73 3.10 120 0.005019 10-3 Pf 0.05 117 20-11% 16.70 115 Pe 0.03 20-101/2 16.78 10-3 Pv RN 2.1570 26.24 2.30 120 0.006425 2-0 Pf 0.09 115 20-101/2 16.78 PO(12-31/2) 12-31/2 Pe -0.87 143 22-101/2 16.00 14-31/2 Pv BL 2.1570 26.24 2.30 120 0.006425 178-10½ Pf 24-7½ Pe 1.31 143 22-101/2 16.00 PO(12-31/2) 144 22-101/2 17.31 PO(12-31/2) 203-6 Pv RN 2.1570 26.24 2.30 120 0.006425 2-0 Pf 0.09 144 22-101/2 17.31 12-31/2 Pe 0.87 116 20-101/2 18.27 PO(12-31/2) ----- Route 13 -----14-31/2 Pv CM 4.2600 111.49 2.51 120 0.003395 10-3 Pf 0.03 115 20-101/2 16.78 113 Pe 0.03 20-91/2 16.84 10-3 Pv RN 2.1570 26.68 2.34 120 0.006628 2-0 Pf 0.09 113 20-91/2 16.84 PO(12-31/2) 12-31/2 Pe -0.86 141 22-91/2 16.08 14-31/2 Pv BL 2.1570 26.68 2.34 120 0.006628 178-101/2 Pf 1.35 141 22-91/2 16.08 PO(12-31/2) 142 24-71/2 Pe 22-91/2 17.42 PO(12-31/2) 203-6 Pv RN 2.1570 26.68 2.34 120 0.006628 2-0 Pf 0.09 142 22-91/2 17.42 12-31/2 Pe 0.86 114 20-91/2 18.38 PO(12-31/2) 14-31/2 Pv Route 14 CM 4.2600 84.81 1.91 120 0.002047 11-0 Pf 0.02 113 20-91/2 16.84 Pe 0.03 111 20-9 16.90 11-0 Pv RN 2.1570 27.37 2.40 120 0.006944 2-0 Pf 0.10 111 20-9 16.90 PO(12-31/2) 12-31/2 Pe -0.87 139 22-9 16.12 14-4 Pv BL 2.1570 27.37 2.40 120 0.006944 178-10½ Pf 1.41 139 22-9 16.12 PO(12-31/2) 24-71/2 Pe 140 22-9 17.53 PO(12-31/2) 203-6 Pv RN 2.1570 27.37 2.40 120 0.006944 2-0 Pf 0.10 140 22-9 17.53 12-31/2 Pe 0.87 112 20-9 18.51 PO(12-31/2) 14-4 Pv Route 15 CM 4.2600 57.44 1.29 120 0.000995 11-0 Pf 0.01 20-9 111 16.90 Pe 0.03 109

20-8

16.94

Page 9

11-0 Pv

Downstream Upstream 109 137 L 137 138	Elevation 2.1570 20-8 22-8 2.1570	Discharge 28.22	K-Factor	Pt	Pn	Filting and	oss	 Length	Pre	ssure
N 109 137 L 137 138	2.1570 20-8 22-8 2.1570	28.22	2 4 9			Fittings		Eq. Length	Sur	nmary
109 137 L 137 138	20-8 22-8 2.1570		2.40	120		0.007353		Total Length	Df	0.14
137 L 137 138	22-8			16.94		PO(12-31/2)		PT	0.11
L 137 138	2.1570			16.17		· · · · · ·	, ,	12-3/2	Pe	-0.87
137 138		28.22	2.48	120		0.007353		179 101/	PV Df	1 50
138	22-8			16.17		PO(12-31/2))		PT	1.50
	22-8			17.67		PO(12-31/2)		24-772	Pe	
N	2.1570	28.22	2.48	120		0.007353		203-6	PV	0.11
138	22-8			17.67				2-0	PT	0.11
110	20-8			18.64		PO(12-31/2)		12-3/2	Pe	0.87
•••• Route 1	6 • • • • •							14-4	PV	
M	4.2600	29.22	0.66	120		0.000285		 11.0		
109	20-8			16.94		0.000200		 11-0	Pf	0.00
107	20-7			16.97					Pe	0.03
N	2.1570	29.22	2.57	120		0.007839		11-0	Pv	
07	20-7			16.97		PO(12-31/4)		2-0	Pf	0.11
35	22-7			16.22		10(12-372)		12-31/2	Pe	-0.87
_	2.1570	29.22	2.57	120		0.007830		14-31/2	Pv	
35	22-7		2.07	16.22		PO(12-31/4)		 178-101/2	Pf	1.60
36	22-7			17.81		PO(12-31/2)		24-71/2	Pe	
1	2.1570	29.22	2 57	120		0.007830		203-6	Pv	
36	22-7		2.01	17.81		0.007039		 2-0	Pf	0.11
08	20-7			18 79		PO(12 21/)		12-31/2	Pe	0.87
••••• Route 17	* • • • • •			10.75		FO(12-372)		 14-31/2	Pv	
3	7.8500	260.58	1 73	140		0.000626				
	-4-0	260.58	1.10	38.05		5.000626	Davida do	 249-21/2	Pf	0.18
	-4-0			38.23		T(42 111()	II Route 18	42-111/2	Pe	
3	12.4600	260 58	0.69	140		0.000066		292-2	PV	
	-4-0	200.00	0.03	38.23		0.000066		106-01/2	Pf	0.01
	-4-0			38.24					Pe	
•••• Route 18				30.24				106-01/2	P۷	
6	8.3900	260.58	1.51	140		0.000450				
	-4-0	200.00	1.01	37.70		0.000452		 704-8	Pf (0.35
	-4-0			37.70		T/50 41()		59-41/2	Ъе	
				30.05		1(59-4%)		764-0½	Pv .	
livalent Pipe Lei	ngths of Valves a	nd Fittings (C=12	0 only)		C Value	e Multiplier				

Pipe Type Downstream Upstream	Diameter Elevation	Flow Dischar	Velocity ge K-Factor	HWC Pt	Pn	Friction Loss Fittings	nt Descript	Length Eq. Length	Pressure Summary
Pipe Type Lege	end	den en e	Un	its Legen	d and the second			Total Length	
AO Arm-Over BL Branch Line CM Cross Main DN Drain DR Drop DY Dynamic FM Feed Main FR Feed Riser MS Miscellaneou. OR Outrigger RN Riser Nipple SP Sprig ST Stand Pipe UG Underground	S F F F F F	Diameter Elevation Flow Discharge Velocity Pressure Length Friction Loss HWC Pt Pn Pr Pe Pv	Inch Foot gpm gpm fps psi Foot Hazen-Williams Co Total pressure at a Normal pressure at Pressure loss due t Pressure due to ele Velocity pressure at	nstant point in a a point in o friction t vation diff a point in	pipe a pipe between p erence be a pipe	oints tween indicated poin	ALV Ang'b BalV BBV C cplg Cr CV DelV DPV E EE Ee1 Ee2 f fd FDC fE ffg FN fT g GloV GV Hose HV Hyd LtE mecT Noz P1 P2 PIV PO PrV PO PrV PO PrV PO PrV RV red S SCV Spr T T T U WirF WMV Z	Alarm Valve Angle Valve Bushing Ball Valve Backflow Preven Butterfly Valve Cross Flow Turn Coupling Cross Run Check Valve Deluge Valve Dry Pipe Valve 90° Elbow 45° Elbow 11¼° Elbow 22½° Elbow Flow Device Flex Drop Fire Department (C 90° FireLock(TM) 45° FireLock(TM) Tee Gauge Globe Valve Hose Hose Valve Hose Hose Valve Hose Hose Valve Hose Valve Hose Nozzle Pump In Pump Out Post Indicating Val Pire Sure Reducing Reducer/Adapter Supply Swing Check Valve Sprinkler Strainer Tee Flow Turn 90° Tee Run Union Wirsbo Water Meter Valve Cap	ter 90° Connection Elbow Elbow

	Hydraulic Summary
Job	

Jub Number S24-028 Jub Nume Size Powell Ryka Survey Adress 1 Adress 1 A Adress 3 D System R Most Demanders Spinkter Data R Mathema Resource R Z50.00 Spinkter Data System Node Powell Ryka Status Node Powell Ryka Status Node Spinkter Demand R Mathema Resource 869.32 Mathema Resource 869.32 Mathema Resource Incodes 132 and 160 Mathema Resource Resource R 3.59 between nodes 132 and 160 Mathema Resource Resource R Supplies Valuer Capardy of Dry Pipes 1010.64gal Year Supply S	sireer 2n cation/License Number arre D28 Powell Ryka Survey - 1-4 e Area(s) arry Group II - Sales RA#1 gpm/ft ² Sprinklers Calculated	Bth scale 12 Job Suffix Area of Application 1500.00ft ² (Actual 153 Coverage Per Sprinkler 130.00ft ² GTON STATE CATE OF COMPETEN RINKLER SYSTEMS 3 IC. 12.6.2 Date	:8.00ft²)
Job Name So Powell Ryka Survey A Address 1 A Address 3 D Moti Demander Spirkker Data R 11.2 K-Factor 29.63 at 7.00 R Hose Demander Spirkker Data C 11.2 K-Factor 29.63 at 7.00 C Hose Demander Spirkker Data C 11.2 K-Factor 29.63 at 7.00 C Hose Bleams C 250.00 So System So 260.00 Spister Please System Please Urbalance in Loops No 0.00 So System Please Urbalance in Loops So 0.00 Spister Please System Please Urbalance in Loops So 0.00 Spister Please System Researe Urbalance in Loops So 0.00 Spister Please System Researe Urbalance in Loops So 0.00 So System Researe Urbalance in Loops So 0.01 So S	Available Total Deman	Bth scale 12 Job Suffix Area of Application 1500.00ft ² (Actual 153 Coverage Per Sprinkler 130.00ft ² GTON STATE CATE OF COMPETEN RINKLER SYSTEMS 3 Ic. 12.6.2 Date	8.00ft²)
Advess 1 4102 S. Meridian, Ste D A Advess 2 Puyallup, WA 98373 x Mote States 3 D System R Mote Domandreg Spreker Data R 11.2 K-Factor 29.63 at 7.00 C Here Mexance At Source De 250.00 Addecraf Here Supplies Node Flow(gpm) Teal Hore Streams Second 250.00 System flow Demand 619.32 Total Water Required (including Here Advource) 869.32 Materian Webby Above Ground 11.8 Detween nodes 132 and 160 Markman Webby Above Ground 3.59 between nodes 132 and 160 Markman Webby Above Ground 11.9 Detween nodes 132 and 160 Markman Webby Above Ground 3.69 between nodes 132 and 160 Markman Webby Above Ground 3.69 between nodes 132 and 160 Markman Webby Under Ground 3.69 between nodes 132 and 160 Markman Webby Under Ground 3.69 between nodes 132 and 160 Markman Webby Above Ground 11.89 between nodes 132 and 160 Markman Webby Under Ground 3.69 between nodes 132 and 160 Markman Webby Above Ground 11.9 Detween nodes 132 and 160 Markman Webby Above Gro	Available Total Deman	Sth scale 12 Job Suffix Area of Application 1500.00ft ² (Actual 153 Coverage Per Sprinkler 130.00ft ² GGTON STATE CATE OF COMPETEN RINKLER SYSTEMS 3 IC. 12.6.2 Date	8.00ft²)
Address 2 Puyallup, WA 98373 Jo Address 3 D System R MotoDemander Spiricker Data R 11.2 K-Factor 29.63 at 7.00 D Here Alexander & Source D 250.00 Source Address 2 Flow(gpm) Mode Flow(gpm) Total Hore Supplies No. Node Flow(gpm) Total Hore Supplies No. Node Flow(gpm) Total Hore Supplies No. Node Flow Jemand 619.32 S69.32 Mamum Presser Urbalance in Loops S69.32 Mathemark Presser Urbalance in Loops Mumeur Presser 0.00 Mathemark Presser Urbalance in Loops 0.00 System Flow Demand 619.32 S69.32 Mathemark Presser Urbalance in Loops Mumeur Presser 0.00 Walmer capacity of Dry Pipes 11.10 Presser Walme capacity of Dry Pipes 1010.64gal Walmer capacity of Dry Pipes 1010.64gal Q Node Name Node Name (psi) (psi) (psi) (psi) (psi) (psi) (psi)	Available Total Deman	Sth scale 12 Job Suffix Area of Application 1500.00ft ² (Actual 153 Coverage Per Sprinkler 130.00ft ² GGTON STATE CATE OF COMPETEN RINKLER SYSTEMS 3 12.6.2 Date	8.00ft²)
Address 3 D Address 3 D System R Met Demanding Syncher Oata D 11.2 K-Factor 29.63 at 7.00 D Heas Allowance A Source D 250.00 D Address 3 Node Mode Demanding Syncher Obta D Address 4 Source System Node Total Mode Streams Elow(gpm) System Flow Demand Folat Water Required (including Mode Allowance) 619.32 Total Water Required (including Mode Allowance) 619.32 Total Water Required (including Mode Allowance) Maximum Velocity Above Ground 1132 and 160 Maximum Velocity Above Ground 132 and 160 Maximum Velocity Above Ground 132 and 160 Maximum Velocity Above Ground 132 and 160 Maximum Velocity Above Ground 100.64gal Supplies Velocity C Day 9 10 10.64gal Velocity C Day 9 Node Name (gpm) 1 Water Supply 250.00 40.00 38.00 950.0	Available Total Deman	Sth scale 12 Job Suffix Area of Application 1500.00ft ² (Actual 153 Coverage Per Sprinkler 130.00ft ² GTON STATE CATE OF COMPETENS RINKLER SYSTEMS 3 IC. 12.6.2 Date	8.00ft²)
System R Motil Demanding Sprinkler Data 11.2 K-Factor 29.63 at 7.00 Hose Allevance Al Source 250.00 Additional Hose Supplies Nu Node Flow(gpm) Teld Mase Supplies Nu System Tech Supplies Nu System Tech Supplies Nu System Tech Supplies Nu Teld Mase Streams 250.00 System Tech Demand 619.32 Bigston Tech Demand 869.32 Maximum Velocity Above Ground 11.89 between nodes 132 and 160 Maximum Velocity Above Ground 13.29 between nodes 132 and 160 Maximum Velocity Above Ground 11.89 between nodes 132 and 160 Maximum Velocity Above Ground 14 Volume capacity of Dry Press 1010.64gal Supplies Volume capacity of Dry Press Node Name (gpm) 1 Water Supply 250.00 40.00 38.00 950.0	Available Total Deman	Bith scale 12 Job Suffix Area of Application 1500.00ft ² (Actual 153 Coverage Per Sprinkler 130.00ft ² GTON STATE CATE OF COMPETEN RINKLER SYSTEMS 3 IC. 12.6.2 Date	:8.00ft²)
Meil Demotring Spricker Data No. 11.2 K-Factor 29.63 at 7.00 Or Additional Titles Supplies No. Node Elow(gpm) Total House Streams Supplies 250.00 System Flow Demand 619.32 B69.32 Maximum Noder Ground 11.39 between nodes 132 and 160 Maximum Volder Ground 3.59 between nodes 132 and 160 Maximum Volder Ground Supplies Supplies Volume capacity of Dry Pipes Node Name Hose Flow Static Residual (psi) Qpm) (psi) 1 Water Supply 250.00 38.00	Available Total Deman	Job Suffix Area of Application 1500.00ft ² (Actual 153 Coverage Per Sprinkler 130.00ft ² GTON STATE CATE OF COMPETEN RINKLER SYSTEMS 3 1C. 12.6.2 Date	18.00ft²)
Hose Allowance At Source 250.00 Additional Hole Supplies No. Node Flow(gpm) Total Hole Streams 250.00 System Flow Demand 619.32 619.32 Total Water Required (including Hose Allowance) 869.32 869.32 Maximum Vacioty Above Ground 11.89 between nodes 132 and 160 Maximum Vacioty Under Ground 3.59 between nodes 132 and 160 Maximum Vacioty Under Ground 3.59 between nodes 4 and 14 Volume capacity of Dry Pipes 11010.64gal Supplies Node Node Name Hose Flow Static Residual @ Flow (gpm) (gpn) 1 Water Supply 250.00 40.00 38.00 950.0	Available Total Deman	Area of Application 1500.00ft ² (Actual 153 Coverage Per Sprinkler 130.00ft ² GTON STATE CATE OF COMPETEN RINKLER SYSTEMS 3 12.6.2 Date	8.00ft²)
Addisonal fuel Supplies No. Node Flow(gpm) Total Hose Streams 250.00 System Flow Demand Total Water Required (Including Hose Allowance) 619.32 869.32 Maximum Pressure Unbalance in Loops 0.00 Maximum Pressure Unbalance in Loops 0.00 Maximum Velocity Above Ground 11.89 between nodes 132 and 160 Maximum Velocity Under Ground 3.59 between nodes 4 and 14 Volume capacity of Dry Pipes 1010.64gal Supplies Volume capacity of Dry Pipes Node Name (gpm) 1 Water Supply 250.00 40.00 38.00 950.00	Sprinklers Calculated Sprinklers Calculated	1500.00ft² (Actual 153 Coverage Per Sprinkler 130.00ft² GGTON STATE CATE OF COMPETEN RINKLER SYSTEMS 3 IC. 12.6.2 Date	18.00ft²)
Node Flow(gpm) Total Hose Steams 250.00 System Flow Demand 619.32 Maximum Pressure Unbalance in Loops 0.00 Maximum Velocity Above Ground 11.89 between nodes 132 and 160 Maximum Velocity Under Ground 3.59 between nodes 4 and 14 Volume capacity of Dry Pipes 11010.64gal Supplies Node Name (gpm) (psi) (psi) (psi) (psi) 950.0	Expires WASHIN DEC 31, 24 CERTIFI Fire spires Fire spires Theodore M. Queen 4930-0205-C 4930-0205-C Level 3 Archer Construction, Ir ARCHEI*219DR JJ JM Signature Signature	130.00ft ² GTON STATE CATE OF COMPETEN RINKLER SYSTEMS 3 12.6.2 Date	ICY .4
Total Hose Streams 250.00 System Flow Demand 619.32 Maximum Pressure Unbalance In Loops 0.00 Maximum Vectory Above Ground 11.89 between nodes 132 and 160 Maximum Vectory Under Ground 3.59 between nodes 4 and 14 Volume capacity of Dry Pipes 11010.64gal Volume (agandy of Vet Flogs) Node Name (gpm) (psi) 1 Water Supply 250.00 40.00 38.00 950.0	Expires WASHIN DEC 31, 24 CERTIFIE Theodore M. Queen 4930-0205-C 4930-0205-C Level 3 Archer Construction, Ir ARCHEI*219DR JA Ja Signature Signature	GTON STATE CATE OF COMPETEN RINKLER SYSTEMS 3 IC. 12.6.2 Date	CY
3.59 between nodes 4 and 14 Volume capacity of Vet Pipes 11010.64gal Supplies Node Name (gpm) (psi) 1 Water Supply 250.00 40.00 38.00 950.4	Available Total Deman		
Volume capacity of Dry Pipes 11010.64gal Supplies Node Hose Flow (gpm) Static (psi) Residual (psi) Flow (gpn) 1 Water Supply 250.00 40.00 38.00 950.4	Available Total Deman		
Supplies Hose Flow Static Residual @ [gpn] Flow (gpn] Node Name (gpm) (psi) @ (gpn] (gpn] 1 Water Supply 250.00 40.00 38.00 950.4	Available Total Demar		
NodeHose Flow (gpm)Static (psi)Residual (psi)Flow (gpm)1Water Supply250.0040.0038.00950.00	Available Total Demai		
1 Water Supply 250.00 40.00 38.00 950.	(DSI) (apm)	nd Required Sa	afety Margir
	38.30 869.32	36.29	2.01
Contractor Number Co		Contact Title	
ame of Contractor: Ph	me		
ddress 1 FA	me	Extension	
1000 SOULD 2000 ST Iddess 2 E.	me	Extension	
Kent, WA 98032	me	Extension	



Summary Of Outflowing Devices

Job Number: S24-028 o ...

U SA KA URA				Report Description: Ordinary Group II - Sales RA#			
Device		Actual Flow (gpm)	Minimum Flow (gpm)	K-Factor (K)	Pressure (psi)		
Sprinkler	1001	33.54	29.63	11.2	8.97		
Sprinkler	1002	32.65	29.63	11.2	8.50		
Sprinkler	1003	32.21	29.63	11.2	8.27		
Sprinkler	1004	32.09	29.63	11.2	8.21		
Sprinkler	1005	32.09	29.63	11.2	9.21		
Sprinkler	1006	32.26	29.63	11.2	8.20		
Sprinkler	1007	31.92	29.63	11.2	0.29		
Sprinkler	1008	30.77	29.63	11.2	0.12		
Sprinkler	1009	30.10	20.63	11.2	7.55		
Sprinkler	1010	29.83	20.00	11.2	7.22		
Sprinkler	1011	29.80	29.03	11.2	7.09		
Sprinkler	1012	29.84	29.03	11.2	7.08		
Sprinkler	1013	30.18	29.03	11.2	7.10		
Sprinkler	1014	31.00	29.63	11.2	7.26		
Sprinkler	1014	31.99	29.63	11.2	8.16		
Sprinkler	1015	30.00	29.63	11.2	7.59		
Sprinklor	1010	30.21	29.63	11.2	7.27		
Sprinkler	1017	29.66	29.63	11.2	7.01		
Carialda	1018	29.63	29.63	11.2	7.00		
Sprinkler	1019	29.68	29.63	11.2	7.02		
Sprinkler	1020	30.03	29.63	11.2	7 19		

Solution → Most Demanding Sprinkler Data

Node	Elevation(Foot) Fittings	Pressure/psi)	Discharge (nmm)	s RA#1
123	21-2	PO(12-3½)	Flessure(psi)	Discharge(gpm)	
124	21-2	PO(12-3½)	15.07		
125	21-3	PO(12-3½)	14.04		
126	21-3	PO(12-31/2)	14.94		
127	21-31/2	PO(12-31/2)	14.80		
128	21-31/2	PO(12-31/2)	15.67		
129	21-41/2	PO(12-31/2)	14.63		
130	21-41/2	PO(12-31/2)	14.85		
131	21-51/2	PO(12-3½)	14.54		
132	21-51/2	PO(12-31/2)	15.53		
133	21-6	PO(12-31/2)	15.35		
134	21-6	PO(12-31/2)	14.49		
135	22-7	PO(12-31/2)	14.49		
136	22-7	PO(12-31/2)	15.90		
137	22-8	PO(12-31/2)	14.75		
138	22-8	PO(12-31/2)	15.75		
139	22-9	PO(12-31/2)	14 70		
140	22-9	PO(12-31/2)	15.61		
141	22-91/2	PO(12-31/2)	14.66		
142	22-91/2	PO(12-31/2)	15.50		
143	22-101/2	PO(12-31/2)	14.60		
144	22-101/2	PO(12-31/2)	15.38		
145	22-111/2	PO(12-31/2)	14 53		
146	22-111/2	PO(12-31/2)	15.26		
147	23-0	PO(12-31/2)	14.46		
148	23-0	PO(12-31/2)	15.16		
149	23-1	PO(12-31/2)	14.36		
150	23-1	PO(12-31/2)	15.05		
151	23-2	PO(12-31/2)	14.25		
152	23-2	PO(12-31/2)	14.25		
153	23-3	PO(12-31/2)	14.54		
154	23-3	PO(12-31/2)	14.12		
155	23-31/2	PO(12-31/2)	13.99		
156	23-31/2	PO(12-31/2)	13.99		
157	23-41/2	PO(12-31/2)	13.23		
158	23-41/2	PO(12-31/2)	13.03		
159	23-51/2	PO(12-31/2)	12.99		
160	23-51⁄2	PO(12-31/2)	12.00		
161	23-6	PO(12-31/2)	12.74		
1	-4-0	S	36.20	610.22	
1001	23-41/2	Spr(-8.97)	8.97	22 54	
1002	23-41/2	Spr(-8.50)	8.50	33.54	
1003	23-41/2	Spr(-8.27)	8.27	32.05	
1004	23-41/2	Spr(-8.21)	8.21	32.21	
1005	23-41/2	Spr(-8.21)	8.21	32.09	
1006	23-41/2	Spr(-8.29)	8.29	32.09	
1007	23-51/2	Spr(-8.12)	8.12	32.20	
1008	23-51/2	Spr(-7.55)	7.55	30.77	
1009	23-51/2	Spr(-7.22)	7.00	30.10	
1010	23-51/2	Spr(-7.09)	7.09	30.10	
1011	23-51/2	Spr(-7.08)	7.05	29.83	
1012	23-51/2	Spr(-7,10)	7.00	29.80	
1013	23-51/2	Spr(-7.26)	7.10	29.04	
1014	23-6	Spr(-8.16)	2.20 2.16	30.18	
1015	23-6	Spr(-7.59)	7.50	31.99	
1016	23-6	Spr(-7.27)	7.58	30.85	
1017	23-6	Spr(-7.01)	7.04	30.21	
1018	23-6	Spr(-7.00)	7.01	29.66	
1019	23-6	Spr(-7.02)	7.00	29.63	
1020	23-6	Spr(-7,19)	7.02	29.68	
2	-4-0	T(42-11½)	7.19	30.03	
3	-4-0	T(59-41⁄2)	36.29		
the second se			36.10		

Job Number: S24-028 . .

Mada			Report Description: Ordinary Group II - Sales RA#			
Node	Elevation(Foot)	Fittings	Pressure(psi)	Discharge(gpm)		
4	-4-0	T(59-4½)	35.76			
5	-4-0	T(98-3½)	36.20			
14	0-7		28.43			
20	1-81⁄2	PO(41-11/2)	27.42			
30	4-81/2	LtE(15-3)	26.18			
40	1-81⁄2	PO(37-81/2)	27.28			
104	17-1	PO(6-0)	19.23			
105	18-41⁄2	PO(6-0)	18.68			
106	19-8	PO(6-0)	17.62			
107	20-7	PO(12-31/2)	15.58			
108	20-7	PO(12-31/2)	16.84			
109	20-8	PO(12-31/2)	15.55			
110	20-8	PO(12-31/2)	16.69			
111	20-9	PO(12-31/2)	15.51			
112	20-9	PO(12-31/2)	16.51			
113	20-91⁄2	PO(12-31/2)	15.65			
114	20-91⁄2	PO(12-3½)	16.42			
115	20-101/2	PO(12-31/2)	15.41			
116	20-10½	PO(12-31/2)	16.30			
117	20-111/2	PO(12-31%)	15.35			
118	20-111/2	PO(12-3½)	16.10			
119	21-0	PO(12-3½)	15.15			
120	21-0	PO(12-3½)	10.27			
121	21-1	PO(12-31%)	15.10			
122	21-1	PO(12-31%)	15.18			
		10(12:072)	15.90			

Hydraulic Analysis Job Number: S24-028 Report Description: Ordinary Group II - Sales RA#1 Pipe Type Diameter Flow Velocity HWC Friction Loss Length Pressure Downstream Elevation Discharge K-Factor Pt Pn Fittings Eq. Length Summary Upstream **Total Length** Route 1 BL 2.1570 12.09 1.06 120 0.001533 8-31/2 Pf 0.01 23-6 1018 29.63 11.2 7.00 Sprinkler Pe 1017 23-6 7.01 8-31/2 Pv 2.1570 BL 41.75 3.67 0.015173 120 9-101/2 Pf 0.26 1017 23-6 29.66 11.2 7.01 Sprinkler, 7-41/2 Pe 1016 23-6 7.27 2LtE(3-81/2) 17-3 Pv BL 2.1570 71.96 6.32 120 0.041536 7-7 Pf 0.31 1016 23-6 30.21 11.2 7.27 Sprinkler Pe 1015 23-6 7.59 7-7 Pv BL 2.1570 102.82 9.03 120 0.080373 7-1 Pf 0.57 1015 23-6 30.86 11.2 7 59 Sprinkler Pe 1014 23-6 8.16 7-1 Pv BL 2.1570 134.81 11.84 0.132669 120 22-21/2 Pf 4.58 1014 23-6 31.99 11.2 8.16 Sprinkler. 12-31/2 Pe 161 23-6 12.74 PO(12-31/2) 34-6 Pv RN 2.1570 134.81 0.132669 11.84 120 2-0 Pf 1.90 161 23-6 12.74 12-31/2 Pe 0.86 133 21-6 15.49 PO(12-31/2) 14-31/2 Pv CM 6.3570 134.81 1.36 120 0.000687 9-31/2 Pf 0.01 133 21-6 15.49 Pe 0.03 132 21-51/2 15.53 9-31/2 Pv 6.3570 CM 270.25 2.73 0.002486 120 10-7 Pf 0.03 132 21-51/2 135.44 15.53 Flow (q) from Route 3 Pe 0.03 21-41/2 130 15.59 10-7 Pv СМ 6.3570 396.68 4.01 0.005057 120 11-0 Pf 0.06 130 21-41/2 126.43 15.59 Flow (q) from Route 5 Pe 0.03 128 21-31/2 15.67 11-0 Pv CM 6.3570 416.34 4.21 120 0.005531 10-8 Pf 0.06 128 21-31/2 19.66 15.67 Flow (q) from Route 2 Pe 0.03 126 21-3 15.76 10-8 Pv CM 6.3570 435.37 4.40 120 0.006008 11-0 Pf 0.07 126 21-3 19.03 15.76 Flow (g) from Route 7 Pe 0.03 124 21-2 15.86 11-0 Pv CM 6.3570 454.04 4.59 120 0.006493 11-0 Pf 0.07 124 21-2 18.68 15.86 Flow (q) from Route 8 Pe 0.03 122 21-1 15.96 11-0 Pv CM 6.3570 472.65 4.78 120 0.006994 11-0 Pf 0.08 122 21-1 18.60 15.96 Flow (q) from Route 9 Pe 0.03 120 21-0 16.07 11-0 Pv СМ 6.3570 491.44 4.97 120 0.007517 10-9 Pf 0.08 120 21-0 18.79 16.07 Flow (q) from Route 10 Pe 0.03 118 20-111/2 16.19 10-9 Pv CM 6.3570 510.65 5.16 120 0.008069 10-3 Pf 0.08 118 20-11% 19.21 16.19 Flow (q) from Route 11 Pe 0.03 116 20-101/2 16.30 10-3 Pv CM 6.3570 530.46 5.36 120 0.008658 10-3 Pf 0.09 116 20-101/2 19.82 16.30 Flow (q) from Route 12 Pe 0.03 114 20-91/2 16.42 10-3 Pv CM 6.3570 551.07 5.57 120 0.009291 11-0 Pf 0.10 114 20-91/2 20.60 16.42 Flow (q) from Route 13 Pe 0.03 112 20-9 16.55 11-0 Pv CM 6.3570 572.66 5.79 120 0.009975 11-0 Pf 0.11 112 20-9 21.60 16.55 Flow (q) from Route 14 Pe 0.03 110 20-8 16.69 11-0 Pv CM 6.3570 595.38 6.02 120 0.010720 11-0 Pf 0.12 110 20-8 22.72 16.69 Flow (q) from Route 15 Pe 0.03 108 20-7 16.84 11-0 Pv CM 6.3570 619.32 6.26 120 0.011531 9-5 Pf 0.37 108 20-7 23.94 16.84 Flow (q) from Route 16 22-71/2 Pe 0.41 106 19-8 17.62 2LtE(11-4) 32-01/2 Pv CM 6.3570 619.32 6.26 120 0.011531 30-7 Pf 1.89 106 19-8 17.62 133-31/2 Pe 7.78 40 1-81/2 2PO(37-81/2), 4LtE(11-4), 27.28 163-101/2 Pv BV(12-7) CM 8.2490 619.32 3.72 120 0.003242 1-101/2 Pf 0.14 40 1-81/2 27.28 41-11/2 Pe -0.00 20 1-81/2 27.42 PO(41-11/2) 42-111/2 Pv FR 8.2490 619.32 3.72 120 0.003242 3-0 Pf 0.06 20 1-81/2 27.42 15-3 Pe -1.30 30 4-81/2 26.18 LtE(15-3) 18-31/2 Pv

Downstream	Diameter	Flow	Velocity	HWC	Friction Loss	Length	Pressure
Upstream	Elevation	Discharge	K-Factor	Pt	Pn Fittings	Eq. Length	Summar
<u>M</u>	8.2490	619.32	3.72	120	0.003242	15-31/	Pf 0.46
30 14	4-81/2			26.18		126-10	Pe 179
	0-7			28.43	3LtE(15-3), 2BV(14-1), CV(52-10)	142-11/2	Pv
G	8.3900	619.32	3.59	140	0.002245	24.4	Df FOI
4	0-7			28.43		24-1	PT 5.34
•	-4-0			35.76	2E(30-6½), BFP(-5.00),	151-3½	Pv Pv
G	8.3900	358.47	2.08	140	0.000816		
	-4-0			35.76	0.000010	483-111/2	Pt 0.44
2	-4-0			36.20	4EE(15-3)	545-01%	Pv
<u> </u>	12.4600	358.47	0.94	140	0.000119	770-01/2	Pf 0.09
	-4-0			36.20			Pe
		250.00		36.29	Hose Allowance At Source	770-01/2	Pv
		869.32			Hose Allowance At Source		
•••• Route 2							
	2.1570	17.54	1.54	120	0.003050		D/
018	23-6	29.63	11.2	7.00	Sprinkler	7-21/2	Pf 0.02
019	23-6			7.02		7_214	Pv
019	2.1570	47.22	4.15	120	0.019051	8-8	Pf 0.17
020	23-6	29.68	11.2	7.02	Sprinkler		Pe
	2,1570	77 24	6.78	120	0.047254	8-8	Pv
020	23-6	30.03	11.2	7 19	0.047354 Sprinkler	109-51/2	Pf 5.77
62	23-6		11.2	12.95	PO(12-31/4)	12-31/2	Pe
	2.1570	77.24	6.78	120	0.047354	121-9	
2	23-6			12.95	0.011004	2-0	Pt 0.68
4	21-6			14.49	PO(12-3½)	12-3/2	Pe 0.00
1	4.2600	77.24	1.74	120	0.001722	10-91/2	Pf 0.02
54 51	21-0			14.49		10 0/2	Pe 0.03
	4 2600	154.24	2 47	14.54	0.000100	10-91⁄2	Pv
31	21-51/2	76.99	3.47	120	0.006188	10-7	Pf 0.07
9	21-41/2			14.63	now (q) nom Roule 4	10 7	Pe 0.03
	4.2600	222.64	5.01	120	0.012204	10-7	
9	21-41/2	68.40		14.63	Flow (g) from Route 6	11-0	PT 0.13
.7	21-31/2			14.80		11-0	-e 0.03 V
7	2.15/0	19.66	1.73	120	0.003766	2-0	Pf 0.05
5	21-3/2			14.80	PO(12-31⁄2)	12-31/2	Pe -0.86
-	2.1570	19.66	1 73	13.99	0.000300	14-3½ F	Pv
5	23-31/2	13.00	1.75	13.00	0.003766 PO(12,21/)	178-10½ F	Pf 0.77
6	23-31/2			14 76	PO(12-3%)	24-7½	Pe
	2.1570	19.66	1.73	120	0.003766	203-6 F	V V 0.05
6	23-31/2			14.76		2-0 F	1 0.05
••••Route 3	21-31/2			15.67	PO(12-31/2)	14-3½ F	°v
	2.1570	12.83	1 13	120	0.001700		
11	23-51/2	29.80	11.2	7.08	Sprinkler	8-3½ F	Pf 0.01
10	23-51⁄2	1.5.5.9 P.C.8 (001 52		7.09	opinition	9 21/ D	'e
10	2.1570	42.65	3.74	120	0.015784	0-3/2 P 8_41/ E	v f 0.12
10	23-51/2	29.83	11.2	7.09	Sprinkler	0-4/2 F	e 0.13
13	23-5%	70.70	0.00	7.22		8-4½ P	v
)9	23-51/2	30.10	6.39	120	0.042392	7-7 P	f 0.32
8	23-51/2	00.10	11.2	7.55	Sprinkler	P	e
	2.1570	103.52	9.09	120	0.081401	7-7 P	v
8	23-51/2	30.77	11.2	7.55	Sprinkler	7-1 P	1 0.58
17	23-51/2			8.12	- 1	P م 1 ₇₋ 1	e
17	2.1570	135.44	11.89	120	0.133832	22-21% P	f 4.62
1	23-51/2	31.92	11.2	8.12	Sprinkler,	12-3½ P	e 4.02
	23-372	125.44	11.00	12.74	PO(12-3½)	34-6 P	v
	23-51%	135.44	11.89	120	0.133832	2-0 P	f 1.92
	21-51/2			12.74	PO/12 21/)	12-3½ P	e 0.87
••• Route 4 •	••••			10.00	PU(12-3½)	14-4 P	V
	2.1570	16.97	1.49	120	0.002869	7.01/ 5	0.00
1	23-51/2	29.80	11.2	7.08	Sprinkler	/-2/2 P	o 0.02
	13-5%			7 10	S	F	U

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Job Number: S24-028 Report Description: Ordinary Group IL- Sales B4#1

Pipe Type	Diameter	Flow	Velocity	HWC	Eriotion Lass	scription: Ordinary Group I	I - Sales RA#
Downstream Upstream	Elevation	Discharge	K-Factor	Pt	Pn Fittings	Eq. Length Eq. Length	Pressure Summary
BL	2.1570	46.81	4.11	120	0.018748		Df 0.16
1012	23-51/2	29.84	11.2	7.10	Sprinkler	0-0	Pr 0.16
BI	23-5/2	70.00	0.70	7.26	22	8-8	Pv
1013	23-51/2	76.99	6.76	120	0.047067	109-51⁄2	Pf 5.73
159	23-51/2	50.18	11.2	12.00	Sprinkler,	12-31⁄2	Pe
RN	2.1570	76.99	6 76	12.99	0.047067	121-9	Pv
159	23-51/2		0.10	12.99	0.047007	2-0	Pf 0.67
131	21-51/2			14.54	PO(12-31/2)	12-3/2	Pe 0.87
BI						14-4	
BL 1004	2.1570	28.04	2.46	120	0.007262	8-41/2	Pf 0.06
1004	23-4%	32.09	11.2	8.21	Sprinkler		Pe
BL	2 1570	60.24	5.20	8.27	0.000007	8-41/2	Pv
1003	23-41/2	32.21	11.2	8.27	0.029897	7-7	Pf 0.23
1002	23-41/2	02.21	11.2	8.50	Sprinkier		Pe
BL	2.1570	92.89	8.16	120	0.066611		
1002	23-41/2	32.65	11.2	8.50	Sprinkler		PT 0.47
1001 PI	23-41/2			8.97		7-1	Pv
1001	2.15/0	126.43	11.10	120	0.117823	22-21/2	Pf 4.07
158	23-41/2	33.54	11.2	8.97	Sprinkler,	12-31/2	Pe
RN	2 1570	126.43	11 10	13.03	PO(12-3½)	34-6 F	Pv .
158	23-41/2	120.45	11.10	13.03	0.117823	2-0 F	Pf 1.69
130	21-41/2			15.00	PO(12-31/4)	12-31/2	Pe 0.87
Gerrore Route 6	••••			10.00	10(12-372)	14-3/2	v
BL	2.1570	4.05	0.36	120	0.000203	9 21/ 1	26 0.00
1004	23-41/2	32.09	11.2	8.21	Sprinkler	0-372 F	
1005	23-41/2			8.21	-	8-3½ P	Pv
1005	2.15/0	36.15	3.17	120	0.011621	7-2½ F	Pf 0.08
1005	23-4/2	32.09	11.2	8.21	Sprinkler	F	Pe
BL	2 1570	68.40	6.01	8.29	0.007040	7-2½ P	°v .
1006	23-41/2	32.26	11.2	8 20	U.U37818 Sprinklor	118-1½ F	Pf 4.93
157	23-41/2		11.2	13 23	PO(12-31/4)	12-3½ P	Pe
RN	2.1570	68.40	6.01	120	0.037818	130-5 P	V .
157	23-41/2			13.23	0.001010	2-0 P	1 0.54
129	21-41⁄2			14.63	PO(12-31/2)	14-3½ P	e 0.87
CM						11 0/2	•
127	4.2600	202.98	4.57	120	0.010285	10-8 P	f 0.11
125	21-3/2			14.80		P	e 0.03
RN	2 1570	19.03	1.67	14.94	0.002540	10-8 P	v
125	21-3	10.00	1.07	14 94	PO(12-316)	2-0 P	f 0.05
153	23-3			14.12	1 0(12-372)	12-3½ P	e -0.87
BL	2.1570	19.03	1.67	120	0.003546	14-4 P	V
153	23-3			14.12	PO(12-31/2)	170-10/2 P 24-71⁄2 P	0.72
154 DN	23-3			14.84	PO(12-31/2)	203-6 P	v
154	2.15/0	19.03	1.67	120	0.003546	2-0 P	f 0.05
126	23-3			14.84		12-3½ P	e 0.87
	21-0			15.76	PO(12-3½)	14-4 Pv	v
CM	4.2600	183 95	4 14	120	0.000572		
125	21-3	100.00	7.14	14 94	0.000073	11-0 P1	f 0.09
123	21-2			15.07		Pe	e 0.03
RN	2.1570	18.68	1.64	120	0.003425	11-0 P\	/
123	21-2			15.07	PO(12-3½)	2-0 Pt	r 0.05
151	23-2			14.25		14-4 Pv	-0.07
151	2.1570	18.68	1.64	120	0.003425	178-10½ Pf	0.70
152	23-2			14.25	PO(12-3½)	24-7½ Pe	e
RN	2 1570	18.69	1.64	14.94	PO(12-3½)	203-6 Pv	/
152	23-2	10.00	1.04	120	0.003425	2-0 Pf	0.05
124	21-2			15.86	PO/12 31/)	12-3½ Pe	0.87
••••• Route 9 •	••••			10.00	1 0(12-3/2)	14-4 Pv	/
CM	4.2600	165.28	3.72	120	0.007033	44.0 54	0.00
123	21-2			15.07		11-0 Pt	0.08
121	21-1			15.18		11-0 Pv	0.03
121	2.1570	18.60	1.63	120	0.003400	2-0 Pf	0.05
149	∠ 1-1 23-1			15.18	PO(12-3½)	12-3½ Pe	-0.87
	20-1			14.36		14-3½ Pv	

	Job Number: S24-028
Report Description: Ordinary	Group IL- Sales RA#1

Pipe Type	Diameter	Flow	Velocity	HMC	Report Des	scription: Ordinary Group I	I - Sales RA#
Downstream Upstream	Elevation	Discharge	K-Factor	Pt	Pn Fittings	Length Eq. Length	Pressure Summary
BL	2.1570	18.60	1.63	120	0.003400	178 101/	Df 0.00
149	23-1			14.36	PO(12-31/2)	24-71/2	Pf 0.69
RN	23-1	10.00		15.05	PO(12-31/2)	203-6	Pv
150	23-1	18.60	1.63	120	0.003400	2-0	Pf 0.05
122	21-1			15.05	PO(12,21/)	12-31⁄2	Pe 0.87
Route 1	0 • • • • •			15.96	PO(12-3½)	14-3½	Pv
СМ	4.2600	146.67	3.30	120	0.005639	11.0	
121	21-1			15.18	0.000003	11-0	Pf 0.06
119 DN	21-0			15.27		11-0	PV 0.03
110	2.1570	18.79	1.65	120	0.003464	2-0	Pf 0.05
147	21-0			15.27	PO(12-31/2)	12-31/2	Pe -0.86
BL	2 1570	18 79	1 65	14.46	0.000.40.4	14-31/2	Pv
147	23-0	10.75	1.05	14 46	0.003464 PO(12, 314)	178-10½	Pf 0.70
148	23-0			15.16	PO(12-31/2)	24-71/2	Pe
RN	2.1570	18.79	1.65	120	0.003464	203-6	
148	23-0			15.16		12-31/4	Pr 0.05 Pe 0.86
======= Route 1	21-0			16.07	PO(12-31/2)	14-31/2	e 0.00
CM	4 2600	107.00	0.00				
119	21-0	127.00	2.88	120	0.004376	10-9	Pf 0.05
117	20-111/2			15.27		F	Pe 0.03
RN	2.1570	19.21	1.69	120	0.003609	10-9 F	Pv
117	20-111/2		1.00	15.35	PO(12-3½)	2-0 F	Pf 0.05
145	22-111/2			14.53	(-= (,-))	12-3/2	e -0.87
145	2.1570	19.21	1.69	120	0.003609	178-101% F	Pf 0.73
146	22-11/2			14.53	PO(12-31/2)	24-7½ F	Pe
RN	2 1570	10.21	1.60	15.26	PO(12-3½)	203-6 P	'v
146	22-111/2	13.21	1.09	120	0.003609	2-0 F	Pf 0.05
118	20-111/2			16.19	PO(12-31/4)	12-3½ F	e 0.87
e · · · · · Route 12	••••			10.10	10(12-372)	14-4 P	v
CM	4.2600	108.67	2.45	120	0.003238	10.2	f 0.00
117	20-111/2			15.35		IU-3 P	T 0.03
DN DN	20-101/2	10.00		15.41		10-3 P	v 0.03
115	2.1570	19.82	1.74	120	0.003823	2-0 P	f 0.05
143	22-101/2			15.41	PO(12-3½)	12-3½ P	e -0.87
BL	2.1570	19.82	1 74	120	0.002822	14-3½ P	v
143	22-101/2	10102	1.77	14 60	PO(12-31/4)	178-10½ P	f 0.78
144	22-101⁄2			15.38	PO(12-3½)	24-1½ P	e
RN	2.1570	19.82	1.74	120	0.003823	203-0 P	f 0.05
144	22-10/2			15.38		12-3½ P	e 0.87
Route 13	20-10/2			16.30	PO(12-31⁄2)	14-3½ P	/
CM	4 2600	88.86	2.00	100	0.000004		
115	20-101/2	00.00	2.00	15.41	0.002231	10-3 Pt	f 0.02
113	20-91⁄2			15.46		P	e 0.03
RN	2.1570	20.60	1.81	120	0.004107	10-3 P\	/
113	20-91/2			15.46	PO(12-31/2)	2-0 P1 12-3½ Pc	0.06
RI	22-91/2	20.00	1.0.	14.66		14-3½ P	0.00
141	22-91/2	20.60	1.81	120	0.004107	178-10½ Pf	0.84
142	22-91/2			14.66	PO(12-3½)	24-7½ Pe	9
RN	2.1570	20.60	1.81	120	0.004107	203-6 Pv	,
142	22-91/2		1.01	15.50	0.004107	2-0 Pf	0.06
114	20-91/2			16.42	PO(12-31/2)	12-3/2 PE	0.86
••••• Route 14						14-3/2 FV	
113	4.2600	68.25	1.54	120	0.001370	11-0 Pf	0.02
111	20-972			15.46		Pe	0.03
RN	2 1570	21.60	1.00	15.51	0.001101	11-0 Pv	
111	20-9	21.00	1.90	120	U.UU4481 PO(12,21/)	2-0 Pf	0.06
139	22-9			14 70	FO(12-372)	12-3½ Pe	-0.87
BL	2.1570	21.60	1.90	120	0.004481	14-4 Pv	
139	22-9			14.70	PO(12-31/2)	24-71/ Pa	0.91
140 2N	22-9	04.00		15.61	PO(12-31/2)	203-6 PV	52
140	2.15/0	21.60	1.90	120	0.004481	2-0 Pf	0.06
112	20-9			15.61		12-3½ Pe	0.87
••••• Route 15 •				10.55	PU(12-3½)	14-4 Pv	

M.E.P.CAD, Inc.

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Hydraulic Analysis Job Number: S24-028 Report Description: Ordinary Group II - Sales RA#1 Pipe Type Diameter Flow Velocity HWC Friction Loss Length Downstream Pressure Elevation Discharge K-Factor Pt Fittings Pn Eq. Length Summary Upstream Total Length CM 4.2600 46.66 1.05 120 0.000678 11-0 Pf 0.01 111 20-9 15.51 109 Pe 0.03 20-8 15.55 11-0 Pv RN 2.1570 22.72 1.99 120 0.004922 109 2-0 Pf 0.07 20-8 15.55 PO(12-31/2) 12-31/2 Pe -0.87 137 22-8 14.75 14-4 Pv BL 2.1570 22.72 1.99 120 0.004922 178-101/2 Pf 1.00 137 22-8 14.75 PO(12-31/2) 138 24-71/2 Pe 22-8 PO(12-31/2) 15.75 203-6 Pv RN 2.1570 22.72 1.99 120 0.004922 138 2-0 Pf 0.07 22-8 15.75 12-31/2 Pe 0.87 110 20-8 16.69 PO(12-31/2) ••••• Route 16•••• 14-4 Pv CM 4.2600 23.94 0.54 120 0.000197 11-0 Pf 0.00 109 20-8 15.55 107 Pe 0.03 20-7 15.58 RN 11-0 Pv 2.1570 23.94 2.10 120 0.005421 107 2-0 Pf 0.08 20 - 715.58 PO(12-31/2) 12-31/2 Pe -0.87 135 22-7 14.79 14-31/2 Pv BL 2.1570 23.94 2.10 120 0.005421 178-10½ Pf 135 1.10 22-7 14.79 PO(12-31/2) 24-71/2 Pe 136 22-7 15.90 PO(12-31/2) 203-6 Pv RN 2.1570 22-7 23.94 2.10 120 0.005421 136 2-0 Pf 0.08 15.90 12-31/2 Pe 0.87 108 20-7 16.84 PO(12-31/2) Route 17 14-31/2 Pv UG 7.8500 260.85 1.73 140 0.000627 249-21/2 Pf 0.18 3 -4-0 260.85 Flow (q) from Route 18 36.10 42-11½ Pe 2 -4-0 36.29 T(42-111/2) 292-2 Pv UG 12.4600 260.85 0.69 140 0.000066 106-01/2 Pf 0.01 2 -4-0 36.29 Pe 1 -4-0 36.29 106-0½ Pv ••••• Route 18 •••• UG 8.3900 260.85 1.51 140 0.000453 4 704-8 Pf 0.35 -4-0 35.76 3 59-41/2 Pe -4-0 36.10 T(59-41/2) 764-01/2 Pv Equivalent Pipe Lengths of Valves and Fittings (C=120 only) C Value Multiplier 4.87 Actual Inside Diameter Value Of C 100 130 140 = Factor 150 Schedule 40 Steel Pipe Inside Diameter Multiplying Factor 0.713 1.16 1.33 1.51

Downstream Upstream	Diameter	Flow Discharge	Velocity K-Factor	HWC Pt	Pn	Friction Loss Fittings	Length Pressure Eq. Length Summar
Pipe Type Lege	nd		Un	its Legend	a sata		Total Length
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 SP Sprig ST Stand Pipe UG Underground	S Di Elu Di: Ve Pro Le Fri HV Pt Pn Pf Pe Pv	iameter Inch levation Foot ow gpm ischarge gpm elocity fps ressure psi ength Foot iction Loss psi/Foo WC Hazer Total p Norma Pressu Veloci	not n-Williams Co pressure at a al pressure at ure loss due t ure due to ele ty pressure at	nstant point in a j a point in o friction b vation diffi a point in	bipe a pipe etween po erence be a pipe	pints Iween indicated point	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 DeIV 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 flg Flange FN Floating Node fT FireLock(TM) Tee g Gauge GloV Globe Valve HV Hose Hose Hose Hose Hose Hoze Noz Noz Nozzle P1 P1 Pump In P2 Pu

	Hydraulic Su	mmary								Jo	b Number: S24-
Job								Report Des	cription: Or	rdinary Gi	oup II - Sales RA
S24-02	28					Design Engineer Queen					
Powell	l Ryka Survey					State Certification/License Number					
Address 1 4102 S	S. Meridian, Ste D					AHJ	AHJ				
Address 2 Puyallup, WA 98373						Job Site/B	uilding				
Address 3						Drawing N	ame				
System					Balleon	S24-	028 Powell Ry	ka Survey - 1-8	th scale 12	2	
^{Aost Demandir} 11.2 K-	^{ing Sprinkler Data} -Factor 29.63 at 7	.00		anadignal anto mora		Occupancy		Colos DA#2	Job Suffix	la dala dala	
lose Allowance 250.00	ce At Source					Density		Sales RA#3	Area of Application	ion	
Additional Hose Supplies				Number Of	3pm/ft ² Sprinklers Calculated		1500.00 Coverage Per Sp	Oft ² (Actua	l 1544.55ft²)		
Node		<u>Flow</u>	(gpm)			19			130.00ft	t²	
tal Hose Stream 250.00 Istem Flow Der 582.20	ams	Tot {	al Water Required (Inclui	ding Hose Allowance)			Theodore 4930-020 Archer Co ARCHEI*	M. Queen 5-C Level 3 onstruction, Inc 219DR	2.	12.6	5.24
aximum Pressu 0.00	ure Unbalance In Loops							Signature		Da	te
aximum Pressu 0.00 aximum Velocit; 8.01 bety	ure Unbalance In Loops ity Above Ground WEEN NODES 134 ar	nd 162				_		Signature		Da	te
aximum Pressu 0.00 aximum Velocity 8.01 bety aximum Velocity 3.38 bety	IVE Unbalance In Loops IV Above Ground IVE ON TO A State of the Stat	nd 162						Signature		Da	te
ximum Pressu 0.00 ximum Vekotit 3.01 betv ximum Vekotity 3.38 betv ume capacity of	ty Above Ground Ween nodes 134 ar ty Under Ground Ween nodes 4 and of Wet Pipes 4 co 1	nd 162 14	me capacity of Dry Pipe	25				Signature = = = = = = = =		Da	te
iximum Pressi 0.00 iximum Vekotit 8.01 betr ximum Vekotit 3.38 betru ume capacity o 11010.64 pplies	ure Unbalance In Loops Ity Above Ground Itween nodes 134 ar Ity Under Ground Ity Under Ground Ity Ween nodes 4 and of Wet Pipes 4gal	nd 162 14 voit	me capacity of Dry Pipe	15				Signature		Da	te
ximum Pressu D.00 ximum Vekotit 3.01 betr ximum Vekotit 3.38 betr 1010.64 pplies	ure Unbalance In Loops ity Above Ground tween nodes 134 ar ty Under Ground tween nodes 4 and of Wet Pipes 4gal	nd 162 14 Hose Flow	ime capacity of Dry Pipe	Residual		Flow	Available	Signature	d Ro	Da	te Sofotu Marcia
ximum Press. 0.00 ximum Velocit 3.01 betr ximum Velocit 3.38 betr 1.3.38 betr 1.010.62 pplies 1.0de	ty Above Ground ty Above Ground tween nodes 134 ar ty Under Ground tween nodes 4 and of Wet Pipes 4gal Name Water Supply	nd 162 14 volu Hose Flow (gpm) 250.00	me capacity of Dry Pipe Static (psi)	Residual (psi)	@	Flow (gpm)	Available (psi)	Signature	d Rei	Da quired (psi)	Safety Margin (psi)
ximum Press. 0.00 ximum Vekoti 3.01 betv ximum Vekoti 3.38 betv 11010.64 pplies 1 1	In the second se	nd 162 14 Vote Hose Flow (gpm) 250.00	me capacity of Dry Pipe Static (psi) 40.00	Residual (psi) 38.00	@	Flow (gpm) 950.00	Available (psi) 38.43	Signature Total Demand (gpm) 832.30	d Rei (3	Da quired (psi) 5.63	Safety Margin (psi) 2.81
taximum Press. 0.00 0.00 1aximum Velocit 8.01 bet 13.38 betv 11010.62 1pplies Node 1	ive Unbalance In Loops ity Above Ground tween nodes 134 ar ivween nodes 4 and of Wet Pipes 4gal Name Water Supply	nd 162 14 Volu Hose Flow (gpm) 250.00	me capacity of Dry Pipe Static (psi) 40.00	Residual (psi) 38.00	0	Flow (gpm) 950.00	Available (psi) 38.43	Signature Total Demand (gpm) 832.30	d Re (quired (psi) 5.63	Safety Margin (psi) 2.81
Aximum Veloat Aximum Veloat 8.01 bet Aximum Veloat 3.38 betv Intractor	Ive Unbalance In Loops Ity Above Ground Ive en nodes 134 an Ive en nodes 134 an Ive en nodes 4 and of Wet Pipes Ive en nodes 4 and Water Supply Vater Supply Contractor Number	nd 162 14 Hose Flow (gpm) 250.00	me capacity of Dry Pipe Static (psi) 40.00	Residual (psi) 38.00	@	Flow (gpm) 950.00	Available (psi) 38.43	Signature Total Demand (gpm) 832.30	d Req (quired (psi) 5.63	Safety Margin (psi) 2.81
Arractor	ure Unbalance In Loops ty Above Ground tween nodes 134 ar ty Under Ground tween nodes 4 and of Wet Pipes 4gal Name Water Supply Water Supply Contractor Number 22	nd 162 14 volu Hose Flow (gpm) 250.00	me capacity of Dry Pipe Static (psi) 40.00	Residual (psi) 38.00	@	Flow (gpm) 950.00	Available (psi) 38.43	Signature Total Demand (gpm) 832.30	d Re. (Quired (psi) 55.63	Safety Margir (psi) 2.81
ximum Vekott 3.01 bet ximum Vekott 3.38 bet 11010.64 pplies Jode 1	ure Unbalance In Loops ty Above Ground tween nodes 134 ar ty Under Ground wween nodes 4 and of Wet Pipes 4gal Name Water Supply Utater Supply Contractor Number 22 rc Distruction	nd 162 14 volu Hose Flow (gpm) 250.00	me capacity of Dry Pipe Static (psi) 40.00	Residual (psi) 38.00	@	Flow (gpm) 950.00	Available (psi) 38.43	Dignature	d Req (Quired (psi) 5.63 Contact Tille Extension	Safety Margir (psi) 2.81
vitractor of Contractor cher Coss 1 55 Sout	ty Above Ground tween nodes 134 ar ty Under Ground tween nodes 4 and of Wet Pipes 4gal Water Supply Water Supply Contractor Number 22 r: Donstruction th 206th ST	nd 162 14 volu Hose Flow (gpm) 250.00	me capacity of Dry Pipe Static (psi) 40.00	Residual (psi) 38.00	@	Flow (gpm) 950.00 950.00	Available (psi) 38.43	Signature Total Demand (gpm) 832.30	d Rei	Quired (psi) 55.63 Contact Title Extension	Safety Margir (psi) 2.81
tractor of Contractor cher Co is 1 555 Sout is 2 int, WA	ty Above Ground tween nodes 134 ar ty Under Ground tween nodes 4 and of Wet Pipes 4gal Name Water Supply Vater Supply Contractor Number 22 rc ponstruction tth 206th ST 98032	nd 162 14 volu Hose Flow (gpm) 250.00	me capacity of Dry Pipe Static (psi) 40.00	Residual (psi) 38.00	@	Flow (gpm) 950.00 950.00	Available (psi) 38.43	Dignature	d Req (Quired (psi) 55.63 Contact Title Extension	Safety Margir (psi) 2.81



Summary Of Outflowing Devices

Job Number: S24-028

				Report Description: Ordinary Group II - S				
Devi	ce	Actual Flow (gpm)	Minimum Flow (gpm)	K-Factor (K)	Pressure (psi)			
Sprinkler	2003	30.20	29.63	11.2	7.27			
Sprinkler	2004	29.76	29.63	11.2	7.06			
	2005	29.63	29.63	11.2	7.00			
Sprinkler	2006	29.63	29.63	11.2	7.00			
Sprinkler	2007	29.77	29.63	11.2	7.00			
Sprinkler	2010	30.55	29.63	11.2	7.07			
Sprinkler	2011	30.07	29.63	11.2	7.44			
Sprinkler	2012	29.93	29.63	11.2	7.21			
Sprinkler	2013	29.93	29.63	11.2	7.14			
Sprinkler	2014	30.06	29.63	11.2	7.14			
Sprinkler	2016	30.65	29.63	11.2	7.20			
Sprinkler	2017	30.18	29.63	11.2	7.49			
Sprinkler	2018	30.04	29.63	11.2	7.26			
Sprinkler	2019	30.04	20.00	11.2	7.20			
Sprinkler	2020	30.17	29.03	11.2	7.20			
Sprinkler	2021	30.29	29.03	11.2	7.26			
Sprinkler	2022	30.56	29.03	11.2	7.31			
Sprinkler	2023	30.68	29.03	11.2	7.44			
Sprinkler	2023	30.00 40.1E	29.63	11.2	7.50			
	2024	40.15	29.63	11.2	12.85			

Solution → Most Demanding Sprinkler Data

Job Number: S24-028

Node	Elevation(Foot)	Fittings	Report Descrip	tion: Ordinary Group II - Sales RA
1	-4-0	S	Pressure(psi)	Discharge(gpm)
2003	23-6	Spr(-7.27)	35.63	582.30
2004	23-6	Spr(-7.06)	7.27	30.20
2005	20 0	Spr(7.00)	7.06	29.76
2006	23-6	Spr(-7.00)	7.00	29.63
2007	23-6	Spr(-7.00)	7.00	29.63
2010	23-0	Spr(-7.07)	7.07	29.77
2011	23-57/2	Spr(-7.44)	7.44	30.55
2012	23-5/2	Spr(-7.21)	7.21	30.07
2012	23-5/2	Spr(-7.14)	7.14	29.93
2014	23-572	Spr(-7.14)	7.14	29.93
2016	23-3/2	Spr(-7.20)	7.20	30.06
2017	23-4/2	Spr(-7.49)	7.49	30.65
2018	23-4/2	Spr(-7.26)	7.26	30.18
2010	23-4½	Spr(-7.20)	7.20	30.04
2019	23-4/2	Spr(-7.20)	7.20	30.04
2020	23-4½	Spr(-7.26)	7.26	30.17
2021	23-6	Spr(-7.31)	7.31	30.29
2022	23-51/2	Spr(-7.44)	7.44	30.56
2023	23-41/2	Spr(-7.50)	7.50	30.68
2024	23-31/2	Spr(-12.85)	12.85	40.15
2	-4-0	T(42-11½)	35.62	
3	-4-0	T(59-41⁄2)	35.46	
4	-4-0	T(59-41⁄2)	35.15	
5	-4-0	T(98-31⁄2)	35.55	
14	0-7		27.86	
20	1-81/2	PO(41-11/2)	26.91	
30	4-81/2	LtE(15-3)	25.66	
40	1-8½	PO(37-81/2)	26.78	
104	17-1	PO(6-0)	18.88	
105	18-41⁄2	PO(6-0)	18.33	
106	19-8	PO(6-0)	17.32	
107	20-7	PO(12-31/2)	14.80	
108	20-7	PO(12-31/2)	16.58	
109	20-8	PO(12-31/2)	14.76	
110	20-8	PO(12-31/2)	16.45	
111	20-9	PO(12-31/2)	14.72	
112	20-9	PO(12-31/2)	16.32	
113	20-91⁄2	PO(12-31/2)	14.66	
114	20-91/2	PO(12-31/2)	16.21	
115	20-101⁄2	PO(12-31/2)	14.60	
116	20-101⁄2	PO(12-31/2)	16.11	
117	20-11½	PO(12-31/2)	14.52	
118	20-111⁄2	PO(12-31/2)	16.01	
119	21-0	PO(12-31/2)	14.42	
120	21-0	PO(12-31/2)	15.92	
121	21-1	PO(12-31/2)	14.28	
122	21-1	PO(12-31/2)	15.84	
123	21-2	PO(12-31/2)	14.12	
124	21-2	PO(12-31/2)	15.76	
125	21-3	PO(12-31/2)	13.70	
126	21-3	PO(12-31/2)	15.68	
127	21-31/2	PO(12-3½)	13.00	
128	21-31/2	PO(12-3½)	15.71	
129	21-41/2	PO(12-31/2)	12.02	
130	21-41/2	PO(12-31/2)	15.49	
131	21-51/2	PO(12-31/2)	10.00	
132	21-51/2	PO(12-3½)	13.37	
133	21-6	PO(12-3½)	15.52	
134	21-6	PO(12-3½)	15.48	
135	22-7	PO(12-3½)	13.31	
136	22-7	PO(12-31/2)	14.04	
137	22-8	PO(12-31/4)	15.61	
	22-0 F	5(12-0/2)	14.00	

Job Number: S24-028 Report Description: Ordinary Group IL, Salos PA#2

Node	Elevation(Foot)	Fittings	Processing (no.1)	scription. Ordinary Group II - Sales RA#3
138	22-8	PO(12-31/4)	Pressure(psi)	Discharge(gpm)
139	22-9	PO(12-31/4)	15.47	
140	22.9	PO(12-372)	13.94	
141	22-01/2	PO(12-372)	15.35	
142	22-9/2	PO(12-372)	13.90	
143	22-5/2	PO(12-3/2)	15.25	
144	22-10/2	PO(12-3½)	13.83	
145	22-10/2	PO(12-3½)	15.15	
145	22-11/2	PO(12-3½)	13.74	
140	22-11/2	PO(12-3½)	15.05	
147	23-0	PO(12-3½)	13.65	
140	23-0	PO(12-3½)	14.97	
149	23-1	PO(12-31/2)	13.51	
150	23-1	PO(12-31/2)	14.87	
151	23-2	PO(12-31⁄2)	13.35	
152	23-2	PO(12-31/2)	14.79	
153	23-3	PO(12-3½)	13.17	
154	23-3	PO(12-31/2)	14.70	
155	23-31/2	PO(12-31/2)	12.85	
156	23-31/2	PO(12-31/2)	14.56	
157	23-41/2	PO(12-31/2)	11.70	
158	23-41/2	PO(12-31/2)	13.78	
159	23-51⁄2	PO(12-31/2)	11 59	
160	23-51/2	PO(12-31/2)	13.73	
161	23-6	PO(12-31/2)	13.75	

Pipe Type	Diameter	Flow	Velocity	HWC	Friction Loss	Length	Pr	essur
Upstream	Elevation	Discharge	K-Factor	Pt	Pn Fittings	Eq. Length	Su	Imma
•••• Route	1 • • • •					Longin	1	
-	2.1570	28.08	2.46	120	0.007281	8-0	Pf	0.06
2004	23-6	29.63	11.2	7.00	Sprinkler		Pe	
_	2,1570	57.83	5.08	120	0.027700	8-0	Pv	
2004	23-6	29.76	11.2	7.06	Sprinkler	7-81⁄2	Pf	0.21
003	23-6	1132 30 39 31 02.		7.27	oprinker	7 91/	Pe	
	2.1570	88.03	7.73	120	0.060311	87_11	Df	6 40
003	23-6	30.20	11.2	7.27	Sprinkler,	19-81/2	Pe	0.48
01	23-6	00.00		13.76	2LtE(3-81/2), PO(12-31/2)	107-71/2	Pv	
61	23-6	88.03	7.73	120	0.060311	2-0	Pf	0.86
33	21-6			15.70	PO(12,21/)	12-31/2	Pe	0.86
1	6.3570	88.03	0.89	120	FO(12-372)	14-31/2	P٧	
33	21-6		0.00	15.48	0.000312	9-31/2	Pf	0.00
32	21-51/2			15.52		9-31/2	Pu	0.03
	6.3570	178.74	1.81	120	0.001157	10-7	Pf	0.01
30	21-5%	90.70		15.52	Flow (q) from Route 3		Pe	0.03
	6 3570	260 43	0.70	15.56	0.000.170	10-7	Ρv	
0	21-41/2	90 70	2.12	120	0.002473	11-0	Pf	0.03
28	21-31/2			15.50	Flow (q) Iron Route 5	11.0	Pe	0.03
	6.3570	309.30	3.13	120	0.003192	11-0	PV	0.00
28	21-31/2	39.86		15.62	Flow (q) from Route 7	10-8	PT	0.03
26	21-3			15.68		10-8	Pv	0.05
26	6.3570	337.91	3.42	120	0.003759	11-0	Pf	0.04
4	21-3	28.61		15.68	Flow (q) from Route 2		Pe	0.03
	6 3570	365.46	3.60	15.76	0.004246	11-0	P٧	
4	21-2	27.55	5.05	15.76	Elow (g) from Pouto 9	11-0	Pf	0.05
2	21-1			15.84		11.0	Pe	0.03
	6.3570	392.28	3.97	120	0.004954	11-0		0.05
22	21-1	26.82		15.84	Flow (q) from Route 10		Pe	0.05
20	21-0	110.00		15.92		11-0	Pv	0.00
20	21-0	418.66	4.23	120	0.005588	10-9	Pf	0.06
8	20-11%	20.39		15.92	Flow (q) from Route 11		Ре	0.03
	6.3570	444,91	4 50	120	0.006254	10-9	Pv	
8	20-111/2	26.25	1.00	16.01	Flow (a) from Boute 12	10-3	Pf	0.06
6	20-101⁄2			16.11		10.3	Pe	0.03
6	6.3570	471.29	4.76	120	0.006957	10-3	Pf	0.07
4	20-101/2	26.37		16.11	Flow (q) from Route 13		Pe	0.03
-	6 3570	409.01	F 00	16.21		10-3	Pv	
4	20-91/2	26.72	5.03	120	0.007704	11-0 I	Pf	0.08
2	20-9	20.72		16.21	Flow (q) from Route 14		Pe	0.03
	6.3570	525.31	5.31	120	0.008503	11-0 F	Pv	
2	20-9	27.30	0.01	16.32	Flow (a) from Route 15	11-0 I	Pt	0.09
)	20-8			16.45		11-0 F		0.03
)	6.3570	553.36	5.59	120	0.009362	11-0	Pf	0.10
3	20-8	28.05		16.45	Flow (q) from Route 16	F	Pe	0.03
	6 3570	582 30	5 90	16.58	0.040000	11-0 F	٧	
3	20-7	28.94	5.69	16.58	0.010288	9-5 F	Pf	0.33
6	19-8			17.32	21 tF(11-4)	22-7½ F	Pe	0.41
	6.3570	582.30	5.89	120	0.010288	32-0½ F	<u>v</u>	1.00
5	19-8			17.32			20	1.69
	1-81⁄2			26.78	2PO(37-81/2), 4LtE(11-4),	163-10½ P	v	1.10
	8 2400	592.20	2.50	100	BV(12-7)			
	1-81%	302.30	3.50	26.79	0.002893	1-10½ F	Pf	0.12
	1-81/2			26.70	PO(41-11/4)	41-1½ F	e ·	-0.00
	8.2490	582.30	3.50	120	0.002893	42-11½ P	V V	0.05
	1-81/2			26.91		3-0 P	1 1	1.05
	4-81/2			25.66	LtE(15-3)	18-3% P	e ·	1.30
	8.2490	582.30	3.50	120	0.002893	15-3½ P	Pf () 41
	4-0½ 0-7			25.66	the second second second second	126-10 P	e ·	1.79
	0-7			27.86	3LtE(15-3), 2BV(14-1),	142-1½ P	v	
	8,3900	582.30	3 38	140	0.002002			
	0-7	002.00	0.00	27.86	0.002003	24-1 P	f t	5.30
	-4-0			35.15	2E(30-6½), BFP(-5.00),	127-3 P 151-3½ P	re 1 v	.99

Pipe Type Downstream	Diameter	Flow	Velocity	HWC	Friction Loss	Lenath	Pressur
Upstream	Elevation	Discharge	K-Factor	Pt	Pn Fittings	Eq. Length	Summa
JG	8.3900	337.04	1.96	140	0.000728	Total Length	Dr. o. r
4	-4-0			35.15	0.000120	483-11½	Pf 0.4(
<u> </u>	-4-0	007.04		35.55	4EE(15-3)	545-0%	Pv
5	-4-0	337.04	0.89	140	0.000106	770-01/2	Pf 0.08
1	-4-0			35.55	Mater Supply		Pe
		250.00		00.00	Hose Allowance At Source	770-01⁄2	Pv
1		832.30			Hose Allowance At Source		
••••• Route	2 • • • • •						
2005	2.1570	1.56	0.14	120	0.000035	8.2	Df 0.00
2005	23-6	29.63	11.2	7.00	Sprinkler	0-2	Pr 0.00 Pe
L.	2 1570	21.10	0.74	7.00		8-2	Pv
2006	23-6	29.63	2.74	120	0.008846	7-4	Pf 0.06
2007	23-6	20.00	11.2	7.00	Sprinkler		Pe
L	2.1570	60.96	5.35	120	0.030559	7-4	Pv
2007	23-6	29.77	11.2	7.07	Sprinkler	8-2	Pf 0.25
2021	23-6			7.31		8.0	Pe
2021	2.1570	91.25	8.01	120	0.064454	<u> </u>	Pf 4.24
62	23-0 23-6	30.29	11.2	7.31	Sprinkler,	12-31/2	Pe 4.21
N	2 1570	01.25	9.01	11.53	PO(12-31/2)	65-41/2	Pv
62	23-6	91.20	8.01	120	0.064454	2-0	Pf 0.92
34	21-6			13 31	PO(12 21/)	12-31/2	Pe 0.86
И	4.2600	91.25	2.05	120	0.002344	14-31/2	Pv
34	21-6			13.31	0.002344	10-9½	Pf 0.03
31	21-51/2			13.37		10.01/	Pe 0.03
21	4.2600	181.66	4.09	120	0.008376	10-9/2	
20	21-51/2	90.40		13.37	Flow (q) from Route 4	10-7	Pr 0.09
A	21-4/2	070 70		13.49		10-7 F	οv
29	21-41%	212.72	6.14	120	0.017762	11-0	Pf 0.20
27	21-31/2	91.06		13.49	Flow (q) from Route 6	F	Pe 0.03
Λ	4,2600	273.00	6 16	13.71	0.047207	11-0 F	v
27	21-31/2	0.29	0.15	13 71	0.017797 Elow (a) from Doute 0	10-8 F	Pf 0.19
25	21-3			13.93	r low (q) noni Route 8	F	Pe 0.03
	2.1570	28.61	2.51	120	0.007541	10-8 F	v v
25	21-3			13.93	PO(12-31/2)	2-U F	1 0.11
55	23-3	00.01		13.17		14-4 P	v -0.07
53	23-3	28.61	2.51	120	0.007541	178-10½ F	Pf 1.53
54	23-3			13.17	PO(12-3½)	24-7½ F	Pe
	2 1570	28.61	2.51	14.70	PO(12-3½)	203-6 P	v
54	23-3	20.01	2.51	14 70	0.007541	2-0 P	Pf 0.11
26	21-3			15.68	PO(12-31/4)	12-3½ P	e 0.87
•••• Route 3	• • • • •			10.00	10(12-372)	14-4 P	v
10	2.1570	0.15	0.01	120	0.000000	0.0 0	4 0.00
12	23-51/2	29.93	11.2	7.14	Sprinkler	0-2 P	0.00
/12	23-572	20.00	0.01	7.14	20 	8-2 P	v
)12	23-51/2	29 93	2.64	120	0.008273	8-0 P	f 0.07
)11	23-51/2	20.00	11.2	7.14	Sprinkler	P	e
	2.1570	60.15	5.28	120	0.020940	8-0 P	v
)11	23-51/2	30.07	11.2	7.21	Sprinkler	7-8½ P	f 0.23
10	23-51/2		197-0000 - 50	7.44	oprinter	P	е
10	2.1570	90.70	7.96	120	0.063739	7-8½ P	V 6 00
0	23-51/2	30.55	11.2	7.44	Sprinkler,	12-31/ D	0.29 P
•	23-372	00.70	7.00	13.73	PO(12-31/2)	98-81% P	v
0	23-51/2	90.70	7.96	120	0.063739	2-0 Pf	f 0.91
2	21-51/2			13.73	DO(42.21/)	12-3½ P	e 0.87
•••• Route 4 •				10.52	PU(12-3½)	14-4 Pv	/
	2.1570	29,79	2.62	120	0.008122		
13	23-51/2	29.93	11.2	7.14	Sprinkler	7-4 Pf	0.06
14	23-51/2	1401 (1994) (1997) (1997)		7.20	Ophinkler	Pe	e
	2.1570	59.85	5.25	120	0.029533	7-4 Pv	
14	23-51/2	30.06	11.2	7.20	Sprinkler	8-2 Pf	0.24
22	23-5½			7.44	 Month Table 	8 2 PH	;
22	2.1570	90.40	7.94	120	0.063350	0-2 PV	111
2	23-3/2	30.56	11.2	7.44	Sprinkler,	12-31/2 Pe	4.14
U	23-572			11.59	PO(12-31/2)	CE 41/ D	

Downstream	Diameter Elevation	Flow Discharge	Velocity K-Factor	HWC Pt	Friction Loss Pn Fittings	Length	Pressur
	2 1570					Total Length	Summa
159	23-51/2	90.40	7.94	120	0.063350	2-0	Pf 0.9
131	21-51/2			11.59	DO(12.21/)	12-31/2	Pe 0.87
••••• Route	5 • • • • •			15.57	PO(12-3%)	14-4	Pv
BL	2.1570	29.87	2.62	120	0.008165		
2018	23-41/2	30.04	11.2	7.20	Sprinkler		Pf 0.07
BL	23-4/2	60.05	5.07	7.26		8-0	Pv
2017	23-41/2	30.18	5.27	120	0.029717	7-81/2	Pf 0.23
2016	23-41/2	00.10	11.2	7.20	Sprinkler		Pe
	2.1570	90.70	7.96	120	0.063731	7-8½	Pv
2016	23-41/2	30.65	11.2	7.49	Sprinkler,		Pt 6.29
N	23-4/2	00.70	7.00	13.78	PO(12-3½)	98-81/2	re Pv
158	23-41/2	90.70	7.96	120	0.063731	2-0	Pf 0.91
130	21-41/2			15.78	PO(12,21()	12-31⁄2	Pe 0.87
••••• Route 6	5••••			10.00	FO(12-372)	14-31⁄2	Pv
010	2.1570	0.17	0.02	120	0.000001	0.0	D (
2018	23-41/2	30.04	11.2	7.20	Sprinkler		PT 0.00
	2 1570	30.22	0.05	7.20		8-2	Pv
2019	23-41/2	30.22	2.65	120	0.008342	7-4	Pf 0.06
2020	23-41/2	00.01	11.2	7.20	Sprinkler		Pe
-	2.1570	60.39	5.30	120	0.030029	7-4	^v
020	23-41/2	30.17	11.2	7.26	Sprinkler	8-2	Pf 0.25
.025	23-4 1/2	01.00		7.50		8-2	-e Dv
023	23-41/2	30.68	8.00	120	0.064206	53-1	Pf 4 20
57	23-41/2	50.00	11.2	7.50	Sprinkler,	12-31/2	Pe
1	2.1570	91.06	8.00	120	PO(12-3½)	65-4½ F	°v –
57	23-41/2		0.00	11.70	0.004200	2-0 F	of 0.92
29	21-41/2			13.49	PO(12-31/2)	12-3½ F	e 0.87
Route /	0.4570					14-372 P	~
024	23-31/2	39.86	3.50	120	0.013927	110-3½ F	f 171
56	23-31/2	40.15	11.2	12.85	Sprinkler,	12-3½ F	e line
1	2.1570	39.86	3.50	120	PO(12-3½)	122-7 P	v
56	23-31/2			14.56	0.013327	2-0 P	f 0.20
28	21-31/2			15.62	PO(12-31/2)	12-3/2 P	e 0.86
Koule a	2 1570	0.00			. ,	14-372 F	v
)24	23-31/2	0.29	0.03	120	0.000002	68-7 P	f 0.00
55	23-31/2	40.15	11.2	12.85	Sprinkler,	12-3½ P	e
	2.1570	0.29	0.03	12.00	0.000002	80-10½ P	v
55	23-31/2			12.85	0.000002	2-0 P	f 0.00
./	21-31/2			13.71	PO(12-31/2)	12-3/2 P	e 0.86
Noule 9	4.2600	044.00				14-372 F	v
5	21-3	244.39	5.50	120	0.014501	11-0 P	F 0.16
3	21-2			13.93		P	e 0.03
	2.1570	27.55	2.42	120	0.007033	11-0 Pv	/
3	21-2			14.12	PO(12-3 ¹ / ₂)	2-0 Pf	0.10
1	23-2	07.55		13.35		12-3/2 Pt	9 -0.87
1	23-2	27.55	2.42	120	0.007033	178-10½ Pf	143
2	23-2			13.35	PO(12-3½)	24-7½ Pe	9
	2.1570	27.55	2.42	120	0.007033	203-6 Pv	
2	23-2			14.79	0.007033	2-0 Pf	0.10
+ • • • • Route 10	21-2			15.76	PO(12-31/2)	12-3/2 PE	9 0.87
Noule IU	4 2600	210.04	1.00			14-4 F V	
3	21-2	210.84	4.88	120	0.011622	11-0 Pf	0.13
	21-1			14.12		Pe	0.03
	2.1570	26.82	2.35	120	0.006688	11-0 Pv	8
	21-1			14.28	PO(12-3½)	2-0 Pf	0.10
1	23-1	00.05		13.51		12-3½ Pe	-0.87
1	2.1570	26.82	2.35	120	0.006688	178-101/ Df	1 36
	23-1			13.51	PO(12-3½)	24-7½ Pe	1.50
	2.1570	26.82	2 35	14.87	PO(12-3½)	203-6 Pv	
	23-1	-0.01	2.00	14.87	0.006688	2-0 Pf	0.10
	21-1			15.84	PO(12 31/)	12-3½ Pe	0.87

140

112

RN

CM

111

109

109

137

RN

20-9

20-9

20-8

22-8

2.1570 20-8

2.1570 22-9

4.2600

27.30

56.99

28.05

Pipe Type	Diameter	Flow	Velocity	HWC		Friction Loss	scription: Ordinary Group	II - Sales F
Downstream Upstream	Elevation	Discharge	K-Factor	Pt	Pn	Fittings	Length Eq. Length	Pressure Summary
121	4.2600	190.02	4.28	120		0.009104		Df 0.40
119	21-1			14.28				Pr 0.10
RN	2 1570	26.20	0.00	14.42			11-0	Pv
119	21-0	20.39	2.32	120		0.006492	2-0	Pf 0.09
147	23-0			14.42		PO(12-3½)	12-31/2	Pe -0.86
3L	2.1570	26.39	2.32	120		0.006402	14-3½	Pv
147	23-0			13.65		PO(12-31/4)	178-101/2	Pf 1.32
148	23-0			14.97		PO(12-3½)	24-71/2	Pe
148	2.1570	26.39	2.32	120		0.006492	203-6	
120	23-0			14.97			12-31/6	Pr 0.09
••••• Route 1	2 • • • • •			15.92		PO(12-31/2)	14-31/2	Pv 0.00
M	4 2600	163.63	2.00	100				
119	21-0	105.05	3.68	120		0.006904	10-9	Pf 0.07
117	20-111/2			14.42				Pe 0.03
N	2.1570	26.25	2.30	120		0.006430	10-9	Pv
11/	20-111/2			14.52		PO(12-31/2)	2-0	Pf 0.09
145	22-111/2			13.74			12-31/2	Pe -0.87
L 145	2.1570	26.25	2.30	120		0.006430	14-4	
146	22-111/2			13.74		PO(12-31/2)	2/1/8-101/2	PT 1.31
N	22-11/2	20.25		15.05		PO(12-31/2)	203-6	
146	22-11%	20.25	2.30	120		0.006430	2-0	Pf n ng
18	20-111/2			15.05			12-31/2	Pe 0.87
•••• Route 13				16.01		PO(12-3½)	14-4 F	v
M	4.2600	137.39	3.09	120		0.001000		
117	20-111/2		0.09	14 52		0.004996	10-3 F	Pf 0.05
15	20-101⁄2			14.60			F	Pe 0.03
	2.1570	26.37	2.32	120		0.006486	10-3 P	°v
13	20-101/2			14.60		PO(12-3½)	2-0 F	Pf 0.09
45	22-101/2			13.83		(= = = =)	12-3/2 F	e -0.87
43	2.15/0	26.37	2.32	120		0.006486	178-101/ P	V 0F 1.20
44	22-10/2			13.83		PO(12-31/2)	24-7½ P	1 1.3Z
١	2 1570	26.37	2.22	15.15		PO(12-31/2)	203-6 P	v
44	22-101/2	20.37	2.32	120		0.006486	2-0 P	f 0.09
16	20-101/2			15.15		DO(12,21()	12-3½ P	e 0.87
••••• Route 14	• • • • •			10.11		PO(12-3/2)	14-3½ P	v
<u> </u>	4.2600	111.01	2.50	120		0.003368		
15	20-101/2			14.60		0.00000	10-3 P	f 0.03
13	20-9½			14.66			10.0 P	e 0.03
13	2.1570	26.72	2.35	120		0.006645	10-3 P	v f 0.00
41	20-972			14.66		PO(12-31/2)	12-31/ P	e -0.86
	2 1570	26.72	2.25	13.90			14-3½ P	/
41	22-91/2	20.72	2.35	120		0.006645	178-10½ Pt	f 1.35
12	22-91/2			15.90		PO(12-3½)	24-7½ P	Ð
	2.1570	26.72	2.35	120		0 006645	203-6 Pv	/
2	22-91⁄2			15.25		0.000040	2-0 Pf	0.09
4	20-91⁄2			16.21		PO(12-31/3)	12-3½ Pe	e 0.86
•••• Route 15 •						-(14-3½ Pv	/
3	4.2600	84.29	1.90	120		0.002023	44.0 54	0.00
1	20-91/2			14.66			11-0 Pf	0.02
	20-9	07.00		14.72				÷ 0.03
1	20-9	27.30	2.40	120		0.006913	2_0 Df	0.10
9	22-9			14.72		PO(12-3 ¹ / ₂)	12-3½ Pe	-0.87
	2,1570	27 30	2.40	13.94		0.0000	14-4 Pv	0.07
9	22-9	21.00	2.40	13.04		0.006913	178-10½ Pf	1.41
0	22-9			15.94		PO(12-3½)	24-7½ Pe	100 000

..... Route 16

2.40

1.28

2.46

15.35

15.35

16.32

120

14.72

14.76

120

14.76

14.00

120

PO(12-31/2)

0.006913

PO(12-31/2)

0.000981

0.007270

PO(12-31/2)

203-6 Pv

14-4 Pv

11-0 Pv

14-4 Pv

2-0 Pf 0.10

12-31/2 Pe 0.87

11-0 Pf 0.01

2-0 Pf 0.10

12-31/2 Pe -0.87

Pe 0.03

lydraulic Analysis Job Number: S24-028 Report Description: Ordinary Group II - Sales RA#3 Pipe Type Diameter Flow Velocity HWC Friction Loss Length Downstream Pressure Elevation Discharge K-Factor Pt Pn Fittings Eq. Length Total Length Upstream Summary BL 2.1570 28.05 2.46 120 0.007270 137 178-10½ Pf 1.48 22-8 14.00 PO(12-31/2) 24-71/2 Pe 138 22-8 PO(12-31/2) 15.47 RN 2.1570 203-6 Pv 28.05 2.46 120 0.007270 2-0 Pf 138 22-8 0.10 15.47 12-31/2 Pe 0.87 110 20-8 16.45 PO(12-31/2) ••••• Route 17 ••••• 14-4 Pv CM 4.2600 28.94 0.65 120 0.000280 11-0 Pf 0.00 109 20-8 14.76 107 Pe 0.03 20-7 14.80 11-0 Pv RN 2.1570 28.94 2.54 120 0.007701 107 2-0 Pf 0.11 20 - 714.80 PO(12-31/2) 135 12-31/2 Pe -0.87 22-7 14.04 14-31/2 Pv BL 2.1570 28.94 2.54 120 0.007701 178-101/2 Pf 1.57 135 22-7 14.04 PO(12-31/2) 136 24-71/2 Pe 22-7 PO(12-31/2) 15.61 203-6 Pv RN 2.1570 28.94 2.54 120 0.007701 2-0 Pf 0.11 136 22-7 15.61 12-31/2 Pe 0.87 108 20-7 16.58 PO(12-31/2) ••••• Route 18 ••••• 14-31/2 Pv UG 7.8500 245.26 1.63 140 0.000559 249-2½ Pf 0.16 42-11½ Pe 3 -4-0 245.26 35.46 Flow (q) from Route 19 2 -4-0 35.62 T(42-111/2) 292-2 Pv UG 12.4600 245.26 0.65 140 0.000059 2 106-0½ Pf 0.01 -4-0 35.62 1 Pe -4-0 35.63 106-01/2 Pv ----- Route 19 -----UG 8.3900 245.26 1.42 140 0.000404 704-8 Pf 0.31 4 -4-0 35.15 59-4½ Pe 3 -4-0 35.46 T(59-41/2) 764-01/2 Pv Equivalent Pipe Lengths of Valves and Fittings (C=120 only) C Value Multiplier 4.87 Actual Inside Diameter Value Of C 100 130 = Factor 140 150 Schedule 40 Steel Pipe Inside Diameter **Multiplying Factor** 0.713 1.16 1.33 1.51

Downstream Upstream	Diameter Elevation	Flow Discharge	Velocity K-Factor	HWC Pt	Pn	Friction Loss Fittings	Length Pressur Eq. Length Summa
Pipe Type Lege	end		Un	its Legend	1		Total Length
 Arm-Over Branch Line Cross Main Drop Y Dynamic M Feed Main R Feed Riser M Siscellaneou R Outrigger N Riser Nipple P Sprig T Stand Pipe IG Underground 	Is Bis Bis Bis Bis Bis Bis Bis Bis Bis Bi	ameter Inch evation Foot w gpm ocity fps essure psi ngth Foot ction Loss psi/Fo /C Hazer Total p Norma Press Veloci	oot n-Williams Co pressure at a la pressure at ure loss due to ure due to ele ty pressure at	nstant point in a p a point in o friction b vation diffe a point in	bipe a pipe etween p erence be a pipe	points etween indicated poin	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 DEV Dry Pipe Valve E 90° Elbow E1 11½° Elbow E2 22½° Elbow f Flow Device fd Flex Drop FDC Fire Department Connectio fE 90° FireLock(TM) Elbow fg Flange FN Floating Node fT FireLock(TM) Tee g Gauge GloV Globe Valve Hyd Hydrant LtE Long Turn Elbow mecT Mechanical Tee Noz Nozzle P1 Pump In P2 Pump Out PIV Post Indicating Valve <t< td=""></t<>

ob						Report Desc	cription: Ordinary G	roup II - Sales R	
Job Number S24-028				Design Er	gineer				
ob Name: Powell Ryka Survey				State Certif	State Certification/License Number				
ddress 1				AHJ					
ddress 2	D								
Puyallup, WA 98373				Job Site/B	uilding				
				Drawing N S24-	ame 028 Powell Rvk	a Survey - 1-8t	h scale 12		
ystem ost Demanding Sprinkler Data	alahar a Markana.		an a	Remot	e Area(s)				
11.2 K-Factor 29.63 a	t 7.00			Occupancy	ary Group II - S	Sales RA#4	Job Suffix		
250.00				Density 0.200	ipm/ft²		Area of Application		
Iditional Hose Supplies	Flo	w(apm)		Number Of	Sprinklers Calculated		Coverage Per Sprinkler	al 1513.83ft²)	
	<u>1 10</u>	w(gpm)		19			130.00ft ²		
Hose Streams 50.00 m Flow Demand 94.47 num Pressure Unbalance In Loops 00 num Velocity Above Ground .07 between nodes 129 and 157			Archer Cor ARCHEI*2	nstruction, Inc. 19DR					
sm Flow Demand 94.47 mum Pressure Unbalance In Loops 00 num Vekicity Above Ground 1.07 between nodes 12	29 and 157	844.47			Jel	Signature	2·(Da	5·24 te	
tem Flow Demand 194.47 .00 imum Pressure Unbalance In Loops .00 imum Velocity Above Ground 1.07 between nodes 12 imum Velocity Under Ground .45 between nodes 4 a	29 and 157 nd 14	844.47			Jel	Signature	12•0 	<u>5·24</u> te	
iem Flox Demand 94.47 imum Pressure Unbalance In Loops .00 imum Velocity Above Ground 1.07 between nodes 12 imum Velocity Under Ground .45 between nodes 4 a me capacity of Wet Pipes 1010.640al	29 and 157 nd 14	844.47	pes		Jel -	Signature	12•0 	5·24 te	
tem Flow Demand 94.47 imum Pressure Unbalance In Loops .00 imum Vekotiy Above Ground 1.07 between nodes 12 imum Vekotiy Under Ground .45 between nodes 4 a me capacity of Wet Pipes 1010.64gal ipplies	29 and 157 nd 14	844.47	pos		Jel	Signature	12•0 	5 · 24 ite	
iem Flox Demand 94.47 imum Pressure Unbalance In Loops .00 imum Velocity Above Ground 1.07 between nodes 1; imum Velocity Under Ground .45 between nodes 4 a me capacity of Wet Pipes 1010.64gal opties	29 and 157 nd 14 Hose Flov	604 valet required (inc) 844.47	Residual	Flow	Jel	Signature	12.0		
em Flow Demand 94.47 imum Pressure Unbalance In Loops .00 mum Vekcity Above Ground 1.07 between nodes 1; mum Vekcity Under Ground 45 between nodes 4 a ne capacity of Wet Pipes 1010.64gal plies pde Name 1 Water Supply	29 and 157 nd 14 Hose Flov (gpm)	Value required (inc) 844.47 Volume capacity of Dry Pig Volume Capacity of D	Residual (psi)	Flow (gpm)	Available (psi)	Signature	I2·0 Da Required (psi)	5 • 24 te Safety Margi (psi)	
All of the second secon	29 and 157 nd 14 Hose Flov (gpm) 250.00	// Static (psi) 40.00	Pes Residual (psi) @ 38.00	Flow (gpm) 950.00	Available (psi) @ 38.39	Signature Total Demand (gpm) 844.47	2.0 Da Required (psi) 34.99	Safety Margi (psi) 3.40	
item Flow Demand 994.47 imum Pressure Unbalance In Loops 0.00 imum Velocity Above Ground 1.07 between nodes 1; imum Velocity Under Ground .45 between nodes 4 æ me capacity of Wet Pipes 1010.64gal oplies ode Name 1 Water Supply	29 and 157 nd 14 Hose Flov (gpm) 250.00	//dlume capacity of Dry Pig //clume capacity of Dry Pig //	Pes Residual (psi) @ 38.00	Flow (gpm) 950.00	Available (psi) @ 38.39	Signature Total Demand (gpm) 844.47	12.0 Da Required (psi) 34.99	Safety Margi (psi) 3.40	
ractor	29 and 157 nd 14 Hose Flov (gpm) 250.00	844.47	Pes Residual (psi) @ 38.00	Flow (gpm) 950.00	Available (psi) 38.39	Signature Total Demand (gpm) 844.47	Required (psi) 34.99	Safety Margi (psi) 3.40	
ractor	29 and 157 nd 14 Hose Flov (gpm) 250.00	Valar Required (inc) 844.47	Pes Residual @ 38.00	Flow (gpm) 950.00	Available (psi) 38.39	Signature Signature Total Demand (gpm) 844.47	I2.0 Da Required (psi) 34.99 34.99	Safety Margi (psi) 3.40	
ractor ref Flow Demand 94.47 mum Pressure Unbalance In Loops .00 mum Velocity Above Ground 1.07 between nodes 1; mum Velocity Under Ground 45 between nodes 4 a ne capacity of Wet Pipes 1010.64gal plies pde Name 1 Water Supply ractor contractor. 22 f Contractor: ther Construction	29 and 157 nd 14 Hose Flov (gpm) 250.00	844.47	pes Residual @ 38.00	Flow (gpm) 950.00	Available (psi) @ 38.39	Signature Total Demand (gpm) 844.47	I2-0 Da Required (psi) 34.99 34.99	Safety Marg (psi) 3.40	
Plant Pressure Unbalance In Loops and 94.47 mum Pressure Unbalance In Loops .000 mum Velocity Above Ground 1.07 between nodes 1: num Velocity Under Ground 45 between nodes 4 a ne capacity of Wet Pipes ID10.64gal plies pde Name 1 Water Supply Vater Supply Vater Supply Contractor Nu 22 Contractor: her Construction 1 5 South 206th ST 2	29 and 157 nd 14 Hose Flov (gpm) 250.00	844.47	Pes Residual @ 38.00	Flow (gpm) 950.00 950.00	Available (psi) @ 38.39	Signature Signature Total Demand (gpm) 844.47	I2-0 Da Required (psi) 34.99 34.99 Contact Title Extension	Safety Margi (psi) 3.40	
ractor ra	29 and 157 nd 14 Hose Flov (gpm) 250.00	844.47	pes Residual @ 38.00	Flow (gpm) 950.00 950.00 Phone FAX E-mail	Available (psi) @ 38.39	Signature Total Demand (gpm) 844.47	I 2 · 0 Da Required (psi) 34.99 34.99	Safety Marg (psi) 3.40	



Summary Of Outflowing Devices

Devic	e	Actual Flow (gpm)	Minimum Flow (gpm)	K-Factor (K)	Pressure	ion. Ordinary Group II - Sales RA#4
Sprinkler	3001	31.87	29.63	11.2	(p3i)	
Sprinkler	3002	31.75	29.63	11.2	8.10	
Sprinkler	3003	31.75	20.00	11.2	8.04	
Sprinkler	3004	30.30	29.63	11.2	8.04	
Sprinkler	3005	29.76	20.00	11.2	7.32	
	3006	20.63	29.05	11.2	7.06	
Sprinkler	3007	23.03	29.63	11.2	7.00	
Sprinkler	3007	32.02	29.63	11.2	8.18	
Sprinkler	3008	31.90	29.63	11.2	8.11	
Sprinkler	3009	31.90	29.63	11.2	8 11	
Sprinkler	3010	30.43	29.63	11.2	7.39	
Sprinkler	3011	29.89	29.63	11.2	7.30	
Sprinkler	3012	29.76	29.63	11.2	7.12	
Sprinkler	3013	32.28	29.63	11.2	7.06	
Sprinkler	3014	32 16	20.63	11.2	8.30	
Sprinkler	3015	32.16	29.05	11.2	8.25	
Sprinkler	3016	20.70	29.63	11.2	8.25	
Corinkler	3016	30.70	29.63	11.2	7.51	
Sprinkler	3017	30.15	29.63	11.2	7.25	
Sprinkler	3018	30.02	29.63	11.2	7 18	
Sprinkler	3019	36.03	29.63	11.2	10.35	

Solution → Most Demanding Sprinkler Data

Job Number: S24-028

Node	Elevation(Foot)	Fittings	Report De	scription: Ordinary Group II - Sales RA#
1	-4-0	S	Pressure(psi)	Discharge(gpm)
3001	23-6	Spr(-8 10)	34.99	594.47
3002	23-6	Spr(-8.04)	8.10	31.87
3003	23-0	Spr(-8.04)	8.04	31.75
3004	23-6	Spr(-0.04)	8.04	31.75
3005	23-0	Spr(-7.32)	7.32	30.30
3006	23-0	Spr(-7.06)	7.06	29.76
3007	23-0	Spr(-7.00)	7.00	29.63
2009	23-51/2	Spr(-8.18)	8.18	32.02
3000	23-51/2	Spr(-8.11)	8.11	31.90
3009	23-51/2	Spr(-8.11)	8.11	31.90
3010	23-5½	Spr(-7.38)	7.38	30.43
3011	23-51/2	Spr(-7.12)	7.12	29.89
3012	23-51/2	Spr(-7.06)	7.06	29.76
3013	23-41⁄2	Spr(-8.30)	8.30	32.28
3014	23-41/2	Spr(-8.25)	8.25	32.16
3015	23-41⁄2	Spr(-8.25)	8.25	32.16
3016	23-41/2	Spr(-7.51)	7.51	30.70
3017	23-41/2	Spr(-7.25)	7.01	20.15
3018	23-41/2	Spr(-7.18)	7.25	30.15
3019	23-31/2	Spr(-10.35)	10.25	30.02
2	-4-0	T(42-11½)	10.35	36.03
3	-4-0	T(59-4 ¹ ⁄ ₂)	34.98	
4	-4-0	T(59_41/2)		
5	-4-0	T(08 31/)	34.49	
14	-4-0	1(90-372)	34.91	
20	1 01/	DO(44_41()	27.19	
30	1-0/2	PO(41-1½)	26.22	
40	4-8/2	LtE(15-3)	24.97	
40	1-8½	PO(37-8½)	26.09	
104	1/-1	PO(6-0)	18.14	
105	18-41⁄2	PO(6-0)	17.59	
106	19-8	PO(6-0)	16.56	
107	20-7	PO(12-31/2)	12.99	
108	20-7	PO(12-31/2)	15.81	
109	20-8	PO(12-31/2)	12.95	
110	20-8	PO(12-31/2)	15.68	
111	20-9	PO(12-31/2)	12.90	
112	20-9	PO(12-31/2)	15.55	
113	20-91/2	PO(12-3½)	13.55	
114	20-91/2	PO(12-3½)	12.04	
115	20-101/2	PO(12-31/2)	15.44	
116	20-101/2	PO(12-31/2)	12.75	
117	20-111/2	PO(12-372)	15.35	
118	20-11/2	PO(12-372)	12.64	
119	20-11/2	PO(12-31/2)	15.26	
120	21-0	FU(12-3/2)	12.48	
120	21-0	FU(12-3½)	15.18	
121	21-1	PO(12-3½)	12.28	
122	21-1	PO(12-3½)	15.11	
123	21-2	PU(12-3½)	12.03	
124	21-2	PO(12-3½)	15.04	
125	21-3	PO(12-3½)	11.73	
126	21-3	PO(12-3½)	14.98	
127	21-31/2	PO(12-3½)	11.37	
128	21-31/2	PO(12-3½)	14 93	
129	21-41/2	PO(12-31/2)	10.98	
130	21-41/2	PO(12-31/2)	14.80	
131	21-51/2	PO(12-31/2)	14.09	
132	21-51/2	PO(12-3½)	10.00	
133	21-6	PO(12-3½)	14.85	
134	21-6	PO(12-31/4)	14.82	
135	21-0	O(12 - 3/2)	10.72	
136	22-7	O(12 - 3/2)	12.30	
137	22-1 1	O(12 - 3/2)	14.77	
	22-0	0(12-372)	12.25	
©MEPCAD Inc		12.12.1.1.0	12.20	

Job Number: S24-028

Node	F I. (* /F		Report Description: Ordinary Group							
Node	Elevation(Foot)	Fittings	Pressure(psi)	Discharge(gpm)						
138	22-8	PO(12-3½)	14.64	3-(3)-(4)						
139	22-9	PO(12-3½)	12.19							
140	22-9	PO(12-31/2)	14.52							
141	22-91⁄2	PO(12-31/2)	12.14							
142	22-91⁄2	PO(12-31/2)	14 42							
143	22-101⁄2	PO(12-31/2)	12.04							
144	22-101⁄2	PO(12-31/2)	14 32							
145	22-11½	PO(12-31/2)	11.02							
146	22-111/2	PO(12-31/2)	14.22							
147	23-0	PO(12-31/2)	11.22							
148	23-0	PO(12-31/2)	14.15							
149	23-1	PO(12-31/2)	14.15							
150	23-1	PO(12-31/2)	14.07							
151	23-2	PO(12-31/2)	14.07							
152	23-2	PO(12-31/2)	12.09							
153	23-3	PO(12-3½)	11.05							
154	23-3	PO(12-31/2)	11.05							
155	23-31/2	PO(12-31/2)	10.51							
156	23-31/2	PO(12-31/2)	10.51							
157	23-41/2	PO(12-3 ¹ ⁄ ₂)	13.84							
158	23-41/2	PO(12-31/4)	8.44							
159	23-51/2	PO(12-3%)	13.58							
160	23-51/2	PO(12-31/)	8.29							
161	23-572	PO(12-372)	13.53							
101	23-0	PU(12-3/2)	13.53							

	Job Number: S24-028
scription: Ordinary	Group IL - Sales PA#4

Downstream	Elevation	Flow	Velocity	HWC	Friction Loss	Length		
Upstream	Lievation	Discharge	K-Factor	Pt	Pn Fittings	Eq. Length	Summa	
••••• Route	1 • • • • •					Total Length		
3L	2,1570	29.63	2.60	100	0.000040			
3006	23-6	29.63	11.2	7.00	0.008046 Sprinklor	7-71/2	Pf 0.06	
3005	23-6			7.00	Sprinkier		Pe	
BL	2.1570	59.39	5.21	120	0.029123	7-71/2	Pv	
3005	23-6	29.76	11.2	7.06	Sprinkler	8-10½	Pf 0.26	
3004	23-6			7.32		9 101/	Pe	
3L	2.1570	89.70	7.88	120	0.062436	0-10/2	PV Df 0.04	
162	23-6	30.30	11.2	7.32	Sprinkler,	12-2/2	PT 0.9	
	23-0	10.1.1.		8.23	PO(12-31/2)	14-6	Pv	
162	2.1570	124.44	10.93	120	0.114407	2-0	Pf 163	
134	21-6	34.74		8.23	Flow (q) from Route 5	12-31/2	Pe 0.86	
CM	4 2600	104.44	0.00	10.72	PO(12-31/2)	14-31/2	Pv	
134	21-6	124.44	2.80	120	0.004160	10-91/2	Pf 0.04	
131	21-51/2			10.72			Pe 0.03	
M	4.2600	248 50	5 50	10.60	0.04.4055	10-91⁄2	Pv	
131	21-51/2	124.07	0.09	10.80	0.014955	10-7	Pf 0.16	
129	21-41/2			10.80	Flow (q) from Route 2		Pe 0.03	
M	4.2600	374.64	8.43	120	0.031960	10-7	Pv	
129	21-41/2	126.13	0.10	10.98	Flow (a) from Route 2	11-0	Pf 0.35	
127	21-31/2			11.37	(q) non route s		Pe 0.03	
N	2.1570	7.40	0.65	120	0.000619	11-0		
127	21-31/2			11.37	PO(12-3½)	2-0	Pt 0.01	
100	23-31/2			10.51		12-3/2	re -0.86	
155	2.1570	43.43	3.81	120	0.016321	14-3/2		
155	23-31/2	36.03		10.51	PO(12-31/2), Flow (g) from Route	24-71/2	Pr 3.32	
100	23-3/2			13.84	10	203_6	Pv	
N	2 1570	42.40	0.61		PO(12-3½)	200-0		
156	23_31/	43.43	3.81	120	0.016321	2-0	Pf 0.23	
128	21-31/2			13.84		12-31/2	Pe 0.86	
M	6.3570	227.22	2.20	14.93	PO(12-31/2)	14-31/2	Pv	
28	21-31/2	183.80	2.30	120	0.001804	10-8	Pf 0.02	
26	21-3	100.00		14.93	Flow (q) from Route 4	1	Pe 0.03	
M	6.3570	267 24	2 70	14.90	0.002425	10-8 F	Pv .	
26	21-3	40.00	2.10	14 09		11-0 F	Pf 0.03	
24	21-2			15.04	riow (q) from Route 11	F	e 0.03	
N	6.3570	305.57	3.09	120	0.003121	11-0 F	°v .	
24	21-2	38.33		15.04	Flow (a) from Route 12	11-0 F	Pf 0.03	
22	21-1			15.11		F	e 0.03	
<u>N</u>	6.3570	342.63	3.46	120	0.003857	11-0 P	V V	
22	21-1	37.06		15.11	Flow (g) from Route 13	11-0 F	1 0.04	
20	21-0			15.18		11 0 0	e 0.03	
20	6.3570	378.78	3.83	120	0.004643	10.0 P	V 0.05	
18	∠1-U 20.111/	36.15		15.18	Flow (q) from Route 14	10-9 P	0.05	
1	6 2570	44.4.00		15.26		10-9 P	v 0.03	
18	20-1114	414.39	4.19	120	0.005483	10-3 P	f 0.06	
16	20-11/2	33.01		15.26	Flow (q) from Route 15	P	e 0.03	
1	6.3570	449.70	1 55	15.35		10-3 P	v	
16	20-101/3	35 40	4.55	120	0.006381	10-3 P	f 0.07	
14	20-91/2	00.40		15.35	Flow (q) from Route 16	P	e 0.03	
1	6.3570	485.27	4 91	10.44	0.007340	10-3 P	v	
14	20-91/2	35.47	4.01	15 //	0.007343	11-0 P	f 0.08	
2	20-9			15 55	Flow (q) from Route 17	P	e 0.03	
	6.3570	521.07	5.27	120	0.008377	11-0 P	v	
2	20-9	35.80		15.55	Flow (a) from Poute 40	11-0 P	f 0.09	
0	20-8			15.68	riow (q) norn Route 18	P	e 0.03	
	6.3570	557.41	5.63	120	0.009489	11-0 P	/	
U	20-8	36.34		15.68	Flow (g) from Route 19	11-0 Pi	0.10	
Ø	20-7			15.81		Pe	e 0.03	
0	6.3570	594.47	6.01	120	0.010689	11-0 P	/	
Ø	20-7	37.06		15.81	Flow (g) from Route 20	9-5 Pf	0.34	
סו	19-8			16.56	2LtE(11-4)	22-1½ Pe	9 0.41	
C	6.3570	594.47	6.01	120	0.010689	32-0½ Pv	4	
0	19-8			16.56		30-7 Pt	1.75	
	1-81/2			26.09	2PO(37-81/2), 4LtE(11-4)	163 101/ D	# 1.18	
	0.0.400				BV(12-7)	103-10/2 PV		
	8.2490	594.47	3.57	120	0.003005	1_101/ 04	0.12	
	1-0/2			26.09		41-11/ Pr	0.13	
	1-0 /2			20.22		-1-1/2 FE	-0.00	

Downstream Upstream	Diameter Elevation	Flow Discharge	Velocity K-Factor	HWC Pt	Pn Fittings	Length Eq. Length	Pressure Summar
FR	8.2490	594.47	3.57	120	0.003005	Total Length	
20	1-81⁄2		0.07	26.22	0.003003	3-0	Pf 0.05
30	4-81/2			24.97	LtE(15-3)	15-3	Pe -1.3(
30	<u>8.2490</u> 4-8 ¹ ⁄c	594.47	3.57	120	0.003005	10-3/2	PV Pf 0.43
14	0-7			24.97		126-10	Pe 1.79
47.35	• •			27.19	3LtE(15-3), 2BV(14-1),	142-11/2	Pv
JG	8.3900	594.47	3.45	140	0.002081		
14	0-7			27.19	0.002081	24-1	Pf 5.31
4	-4-0			34.49	2E(30-6½), BFP(-5.00), GV(6-9½), T(59-4½)	127-3 151-3½	Pe 1.99 Pv
4	8.3900	344.08	2.00	140	0.000757	183 111/	Df 0.44
5	-4-0			34.49		61-1	Pr 0.41
G	12 4600	344.08	0.01	34.91	4EE(15-3)	545-01/2	Pv
5	-4-0	544.00	0.91	140	0.000110	770-01/2	Pf 0.08
1	-4-0			34.91	Mator Supply		Pe
		250.00		01.00	Hose Allowance At Source	770-01⁄2	Pv
1		844.47			risse / nowance At Source		
••••• Route 2	••••						
3012	23-51/2	29.76	2.61	120	0.008109	7_71/	Pf 0.06
3011	23-51%	29.70	11.2	7.06	Sprinkler	1-1/2	Pe
_	2.1570	59.64	5.24	7.12	0.000050	7-71/2	Pv
3011	23-51/2	29.89	11.2	7 12	0.029350	8-101/2	Pf 0.26
010	23-51⁄2			7.38	Sprinkler		Pe
010	2.1570	90.07	7.91	120	0.062922	8-10½ F	² V
59	23-51/2	30.43	11.2	7.38	Sprinkler,	2-2½	Pf 0.91
<u> </u>	23-51/2	101.07		8.29	PO(12-31/2)	14.6	e v
59	23-516	124.07	10.89	120	0.113780	2-0 6	-V
31	21-51/2	33.99		8.29	Flow (q) from Route 7	12-3½ F	² e 0.87
••••• Route 3				10.80	PO(12-3½)	14-4 F	v
-	2.1570	30.02	2 64	120	0.008341		
018	23-41/2	30.02	11.2	7.18	Sprinkler	7-7½ F	f 0.06
017	23-41/2			7.25	opinition	F 7 71/ P	'e
017	2.1570	60.17	5.28	120	0.029830	-//2 P	V V
016	23-4%	30.15	11.2	7.25	Sprinkler	0-10/2 P	T 0.26
	2.1570	90.87	7.09	7.51		8-10½ P	v
016	23-41/2	30.70	11.2	7.51	0.063952	2-21/2 P	f 0.93
57	23-41/2	00.10	11.2	7.51	Sprinkler,	12-3½ P	е
	2.1570	126.13	11.07	120	0 117311	14-6 P	v
57	23-41/2	35.27		8.44	Flow (g) from Boute 9	2-0 P	f 1.68
29	21-41/2			10.98	PO(12-3½)	12-3/2 P	e 0.87
Route 4	2 1570	00 77				14-372 F	/
002	23-6	28.77	2.53	120	0.007616	7-7 P	f 0.06
01	23-6	01.70	11.2	8.04	Sprinkler	P	e
	2.1570	60.63	5.32	120	0.020256	7-7 P	/
01	23-6	31.87	11.2	8.10	Sprinkler	159-9½ Pi	5.43
	23-6		49500 I ~0 JD	13.53	2LtE(3-8½), PO(12-31/4)	19-8½ Pe	e
1	2.1570	60.63	5.32	120	0.030256	1/9-6 PV	0.40
3	23-0 21-6			13.53		2-0 Pt 12-31/ P	0.43
	6.3570	60.63	0.61	14.82	PO(12-31/2)	14-3½ PV	/ 0.00
3	21-6	00.00	0.01	120	0.000157	9-31/2 Pf	0.00
2	21-51/2			14.82		Pe	0.03
	6.3570	122.47	1.24	120	0.000575	9-3½ Pv	
∠ ∩	21-51/2	61.84		14.85	Flow (a) from Route 6	10-7 Pf	0.01
	21-41/2	100.05		14.89		10.7 Pe	0.03
0	0.35/0	183.80	1.86	120	0.001219	10-7 PV	0.01
3	21-31/2	01.33		14.89	Flow (q) from Route 8		0.01
••• Route 5 ••	•••			14.93		11-0 Pv	0.00
	2.1570	2 99	0.26	120	0.000445		
)2	23-6	31.75	11.2	8.04	0.000115	7-11 Pf	0.00
)3	23-6			8 04	ophinkier	Pe	erronovite del tradi Se Se
2	2.1570	34.74	3.05	120	0.010798	7-11 Pv	
13	23-6	31.75	11.2	8.04	Sprinkler.	5-1 Pf	0.19
>	00.0						

Pipe Type	Diameter	Flow	Velocity	HWC	Eriction Lass	Description. Ordinary Group II - Sales
Downstream Upstream	Elevation	Discharge	K-Factor	Pt	Pn Fittings	Eq. Length Pressur Eq. Length Summar
3009	2.1570	29.81	2.62	120	0.008136	
3007	23-51/2	31.90	11.2	8.11	Sprinkler	
31	2 1570	61.04		8.18		7-7 Pv
3007	23-51/6	61.84	5.43	120	0.031376	158-31⁄2 Pf 5 35
160	23-51/2	32.02	11.2	8.18	Sprinkler,	12-3½ Pe
RN	2.1570	61.84	5 42	13.53	PO(12-31⁄2)	170-7 Pv
160	23-51/2	01.04	5.45	120	0.031376	2-0 Pf 0.45
132	21-51/2			14.85	PO(12 21/)	12-3½ Pe 0.87
••••• Route 7				14.00	FO(12-372)	14-4 Pv
BL	2.1570	2.09	0.18	120	0.000060	
3008	23-51/2	31.90	11.2	8.11	Sprinkler	7-11 Pf 0.00
3009	23-51/2			8.11	oprintier	Pe
1000	2.1570	33.99	2.98	120	0.010373	/-11 Pv
3009	23-51/2	31.90	11.2	8.11	Sprinkler	5-1 Pf 0.18
159 159	23-51/2			8.29	PO(12-31/2)	12-3½ Pe
Route 8	•••••					17-4½ Pv
L 2014	2.1570	29.06	2.55	120	0.007760	77.06
3014	23-4/2	32.16	11.2	8.25	Sprinkler	/-/ Pt 0.06
6100	23-41/2			8.30	•	7 7 0
-	2.1570	61.33	5.39	120	0.030907	150 21/ PC 5 25
58	23-41/	32.28	11.2	8.30	Sprinkler,	12.31/ Pc
N	23-4/2	04.00		13.58	PO(12-31/2)	12-3/2 Pe 170.7 Dy
58	2.15/0	61.33	5.39	120	0.030907	20 Pf 0.44
30	23-4/2			13.58		2-0 PT U.44 12-314 Pa 0.97
· · · · · Route 8 -	21-4/2			14.89	PO(12-31/2)	14-31/2 PC 0.87
Route 9	2 1570	0.40				17-3/2 FV
014	2.1570	3.10	0.27	120	0.000124	7 11 Df 0.00
014	23-4%	32.16	11.2	8.25	Sprinkler	/-11 PI 0.00
015	23-4/2			8.25		7.11 Pv
015	2.1570	35.27	3.10	120	0.011103	5.1 Pf 0.10
57	23-4/2	32.16	11.2	8.25	Sprinkler,	
···· Route 10	23-472			8.44	PO(12-31/2)	17-41/ Dv
Noule 10	0.4570					17-472 FV
-	2.15/0	36.03	3.16	120	0.011550	2 21/ Df 0 17
55	23-31/	36.03	11.2	10.35	Sprinkler,	2-2/2 PT 0.17
· · · · · Pouto 11	23-372			10.51	PO(12-31/2)	14-6 Pv
A	4.0000					14-0 PV
27	4.2600	367.23	8.27	120	0.030801	10.8 Df 0.22
25	21-3/2			11.37		
1	21-3	10.00		11.73		10-8 Pv
25	2.15/0	40.00	3.51	120	0.014017	2.0 Pf 0.20
53	21-3			11.73	PO(12-31/2)	12-31/2 Po .0.87
	23-3	10.00		11.05	105 et al 1	14-4 Pv
53	2.15/0	40.00	3.51	120	0.014017	178-10% Pf 2.85
54	23-3			11.05	PO(12-3½)	24-7½ Pa
	2 1 5 7 0	10.00	0.51	13.91	PO(12-31/2)	203-6 Pv
54	23-3	40.00	3.51	120	0.014017	2-0 Pf 0.20
26	21-3			13.91		12-3½ Pe 0.87
•••• Route 12 •	21-5			14.98	PO(12-31/2)	14-4 Pv
	4 2600	227.00	7.0-			· · · · · · · · · · · · · · · · · · ·
5	21-3	321.23	1.37	120	0.024883	11_0 Pf 0.27
3	21-2			11.73		Pe 0.03
	2 1570	20.22	0.07	12.03		11-0 Pv
3	21-2	30.33	3.37	120	0.012955	2-0 Pf 0.10
1	23-2			12.03	PO(12-31/2)	12-3½ Pe -0.87
-	2 1570	20.22	0.07	11.35	and Sanda	14-4 Pv
1	23-2	30.33	3.37	120	0.012955	178-10½ Pf 2.64
2	23-2			11.35	PO(12-31/2)	24-7½ Pe
	2 1570	38.33	0.07	13.98	PO(12-31/2)	203-6 Pv
2	23-2	30.33	3.37	120	0.012955	2-0 Pf 0.19
4	21-2			13.98		12-3½ Pe 0.87
· · · · Route 13 ·				15.04	PO(12-3½)	14-4 Pv
	1 2600	288.00	0.50			
3	4.2000	288.90	6.50	120	0.019761	11_0 Df 0.22
, I	∠ I-∠ 21_1			12.03		PT 0.22
1	21-1	07.04		12.28		11_0 Pv
	2.15/0	37.06	3.25	120	0.012167	20 Pf 047
1	21-1			12.28	PO(12-31/2)	
,	23-1			11.59	,	14 31/ Dec
1	2.15/0	37.06	3.25	120	0.012167	14-3/2 PV 179 101/ Df 0 10
/	23-1			11.59	PO(12-31/2)	1/0-10/2 Pt 2.48
1	00.4					14 /1/ 11-

	Job Number: S24-028
Description: Ordinary	Group IL- Sales PA#4

Ріре Туре	Diameter	Flow	Velocity	HWC	Report Desc	ription: Ordinary Group II - Sales RA
Downstream	Elevation	Discharge	K-Factor	Pt	Pn Fittings	Length Pressure
Upstream			and the second second		Hungs	Eq. Length Summary
150	2.1570	37.06	3.25	120	0.012167	
122	23-1			14.07		2-0 Pt 0.17
Route 1	14 • • • • •			15.11	PO(12-31/2)	14-3½ Pv
СМ	4 2600	251.94	F 07	100		
121	21-1	201.04	5.67	120	0.015329	11-0 Pf 0.17
119	21-0			12.28		Pe 0.03
RN	2.1570	36.15	3.17	12.40	0.011625	11-0 Pv
119	21-0			12.48	PO(12-31/4)	2-0 Pf 0.17
147 Pl	23-0			11.79		12-3½ Pe -0.86
147	2.1570	36.15	3.17	120	0.011625	179 101/ Df 0.07
148	23-0			11.79	PO(12-3½)	24-71/2 Pf 2.37
RN	2 1570	36.15	0.47	14.15	PO(12-31/2)	203-6 Pv
148	23-0	30.15	3.17	120	0.011625	2-0 Pf 0.17
120	21-0			14.15	DO(42.01/)	12-3½ Pe 0.86
••••• Route 1	5 • • • • •			15.10	PO(12-3½)	14-3½ Pv
CM	4.2600	215.69	4 86	120	0.011508	
119	21-0			12 48	0.011508	10-9 Pf 0.12
117 DN	20-111/2			12.64		Pe 0.03
117	2.1570	35.61	3.13	120	0.011304	10-9 Pv
145	20-111/2			12.64	PO(12-31/2)	2-0 Pf 0.16
BL	2 1570	25.04		11.92		12-372 PC -U.87
145	22-111/2	35.61	3.13	120	0.011304	178-10 ¹ / ₂ Pf 2 30
146	22-111/2			11.92	PO(12-3½)	24-7½ Pe
RN	2.1570	35.61	3 1 2	14.22	PO(12-3½)	203-6 Pv
146	22-111/2	00.01	0.10	14.22	0.011304	2-0 Pf 0.16
118	20-111/2			15.26	$PO(12_{314})$	12-3½ Pe 0.87
••••• Route 16				10.20	10(12-372)	14-4 Pv
	4.2600	180.08	4.05	120	0.008242	
117	20-111/2			12.64		10-3 Pf 0.08
RN	20-101/2			12.75		10.2 Pv
115	2.1570	35.40	3.11	120	0.011183	2-0 Pf 0.16
143	20-10/2			12.75	PO(12-3½)	12-3½ Pe -0.87
3L	2.1570	35.40	2 11	12.04	0.0	14-3½ Pv
143	22-101/2	00.40	5.11	120	0.011183	178-10½ Pf 2.28
144	22-101/2			14 32	PO(12-3½)	24-7½ Pe
RN	2.1570	35.40	3.11	120	0.011183	203-6 Pv
144	22-101/2			14.32		2-0 Pf 0.16
***** Route 17	20-10/2			15.35	PO(12-31/2)	12-3/2 Pe 0.8/
CM	4.2600	111.07				14-372 PV
115	20-101%	144.67	3.26	120	0.005497	10-3 Pf 0.06
113	20-9%			12.75		Pe 0.03
RN	2.1570	35.47	3 11	12.84	0.044004	10-3 Pv
113	20-91/2		5.11	12.84	D.011224	2-0 Pf 0.16
141	22-91/2			12.04	FO(12-372)	12-3½ Pe -0.86
L 1.4.1	2.1570	35.47	3.11	120	0.011224	14-3½ Pv
141	22-91/2			12.14	PO(12-3½)	1/8-10½ Pf 2.28
N	22-91/2	05.45		14.42	PO(12-31/2)	24-7 1/2 Pe 203.6 Pr
142	2.1570	35.47	3.11	120	0.011224	200-0 PV 2_0 Df 0.16
114	20-91/2			14.42		12-3½ Pe 0.86
••••• Route 18 •				15.44	PO(12-3½)	14-3½ Pv
M	4.2600	109.20	2.46	120	0.000007	
113	20-91/2		2.40	12.84	0.003267	11-0 Pf 0.04
111	20-9			12.90		Pe 0.03
	2.1570	35.80	3.14	120	0.011414	11-0 Pv
130	20-9			12.90	PO(12-31/2)	2-0 Pf 0.16
00	22-9	25.00		12.19		12-3/2 Pe -0.8/
39	22.1570	35.80	3.14	120	0.011414	178-10% Pf 2.32
40	22-9			12.19	PO(12-3½)	24-7½ Pe
N	2,1570	35.80	3 14	14.52	PO(12-3½)	203-6 Pv
40	22-9	55.00	3.14	14.52	0.011414	2-0 Pf 0.16
12	20-9			15.55	PO(12 21/)	12-3½ Pe 0.87
••••• Route 19 •	••••			10.00	FU(12-3½)	14-4 Pv
Λ	4.2600	73.40	1.65	120	0.001567	
11	20-9			12.90	0.001007	11-0 Pf 0.02
09	20-8			12.95		Pe 0.03

Pipe Type	Diameter	Flow	Velocity	HIMC			Report De	escription:	Ordinary Group	II - Sal	es F
Downstream Upstream	Elevation	Discharge	K-Factor	Pt	Pn	Fittings	LOSS		Length Eq. Length	Press Summ	sure
<u>{N</u>	2.1570	36.34	3.19	120		0.011738			Total Length	-	
109	20-8			12.95		PO(12-31/	5)			Pf 0	1.17
137	22-8			12.25		-(-7		12-3/2	Pe -(0.87
L	2.1570	36.34	3.19	120		0.011738			14-4	PV	
137	22-8			12.25		PO(12-31/	5)			Pf 2	.39
138	22-8			14.64		PO(12-31/	5)		24-1 1/2	Pe	
N	2.1570	36.34	3.19	120		0.011738	9		203-6	PV	
38	22-8			14.64						Pf 0.	.17
10	20-8		5	15.68		PO(12-31/2	.)		12-3/2	Pe U.	.87
••••• Route 2	0 • • • •						1		14-4	PV	
VI	4.2600	37.06	0.83	120		0 000442			11.0		
09	20-8			12.95		0.000112			11-0	Pf 0.	.00
07	20-7			12.99						Pe 0.	.03
N	2.1570	37.06	3.25	120		0.012168			11-0	Pv	
07	20-7			12.99		PO(12-31/2)		2-0	Pf 0.	17
35	22-7			12.30			/		12-31/2	Pe -0	1.87
	2.1570	37.06	3.25	120		0.012168			14-31/2	Pv	
35	22-7			12.30		PO(12-31/2)	1		1/8-10½	Pf 2.4	48
36	22-7			14.77		PO(12-31/2)			24-11/2	Pe	
1	2.1570	37.06	3.25	120		0.012168	·		203-6	Pv	
36	22-7			14.77		0.012100			2-0	Pf 0.1	17
08	20-7			15.81		PO(12-31/4)			12-31/2	Pe 0.8	87
•••• Route 2'	••••					10(12 072)			14-31/2	Pv	
6	7.8500	250.38	1.66	140		0.000581					
	-4-0	250.38		34.81		Elow (g) fro	m Pouto 22		249-21/2	Pf 0.1	17
	-4-0			34.98		T(42-1116)	in Roule 22		42-111/2	Pe	
5	12.4600	250.38	0.66	140		0.000061			292-2	^o v	
	-4-0			34.98		0.000001			106-01/2	Pf 0.0)1
	-4-0			34 99						² e	
•••• Route 22									106-01/2	v	
1	8.3900	250.38	1.45	140		0.000420					
	-4-0			34 49		0.000420			704-8	Pf 0.3	32
	-4-0			34.81		T/50 41/)			59-4½ F	Pe	
involgent Direct				54.01		1 (39-472)			764-0½ F	°v –	
ivalent Pipe Le	ngths of Valves a	nd Fittings (C=12	0 only)		C Value I	Multiplier					
(Actual Inside D	iameter	۱ ^{4.87}		Value Of	10	100		The second s		-
Sched	ule 40 Steel Pine	Inside Diameter	—) = Fac	tor	value Of	С	100	130	140	150	
	is stoor ipe	morae Diameter	/		wuitiplyi	ng Factor	0.713	1 16	1 3 3	1 6 1	

ipe Type Downstream Upstream	Diameter Elevation	Flow Discharge	Velocity K-Factor	HWC Pt	Pn	Friction Loss Fittings	2000101	Length Eq. Length	Pressure Summary
Pipe Type Lege	nd		Un	its Legend	1			Fittings Logon	d
AO Arm-Over BL Branch Line CM Cross Main DN Drain DR Drop DY Dynamic FM Feed Main FR Feed Riser VS Miscellaneous OR Outrigger RN Riser Nipple SP Sprig ST Stand Pipe JG Underground	S H	iameter Inc levation Foo low gpn ischarge gpn elocity fps ressure psi ength Foo riction Loss psi// WC Haz WC Haz MC Haz Pres Pres V Velo	t Foot en-Williams Co Il pressure at a mal pressure at ssure loss due t ssure due to ele city pressure at	nstant point in a a point in o friction b vation diff a point in	oipe a pipe etween p erence be a pipe	pints tween indicated poin	ALV Angb BalV BFP BV C cplg Cr CV DPV E EE Ee1 Ee2 f f fd FDC fE ffg FN fT g GloV GV Hose HV Hyd LtE mecT Noz P1 P2 PIV PO PrV PRV red S SCV Spr St T Tr U WirF WMV	Alarm Valve Alarm Valve J Angle Valve Bushing Ball Valve Backflow Prevente Butterfly Valve Cross Flow Turn S Coupling Cross Run Check Valve Deluge Valve Dry Pipe Valve 90° Elbow 45° Elbow 11¼° Elbow 21¼° Elbow Flow Device Flex Drop Fire Department C 90° FireLock(TM) 1 45° FireLock(TM) 1 Flange Floating Node FireLock(TM) Tee Gauge Globe Valve Hose Valve	er 30° Elbow Elbow

FRUITLAND MUTUAL WATER COMPANY

P.O. Box 73759 ~ 4001 9th St. S.W.~ Puyallup, WA 98373 ~ (253) 848-5519

FIRE FLOW TESTS

Area Surveyed: Best Buy

Flow Test Conducted By: Ben Ames, Charles Blar Date: 10/5/2010

Pumps and Tanks Operating During Flow Test: 2A, 3

System Consumption Rate During Test:

Time of Day: 1:45 pm

	PRESSU	PRESSURE-LBS/SQ. IN.			DISCHARGE GPM			*
LOCATION	STATIC	RESID.	PITOT	ORIFICE	OBSERVED	REC.	20 LBS.	DISTRICT
Parking lot at Best Buy	40	38	36	2.5	950		3183	

Flow Formulas from Fair and Geyer-"Elements of Water Supply and Waste Water Disposal".

$$Q_1$$
 (GPM) = 29.82cd² \sqrt{p}
(Using c = 0.9 and d = 2¹/₂")
 $Q_1 = 167.74 \sqrt{p}$

$$Q_{2}$$
 (GPM) = $Q_{1} \bullet P_{1}/P_{2} = Q_{1} \sqrt{\frac{(P_{s} - 20)}{(P_{s} - P_{r})}}$

Where:

"Static" pressure- (P_s) -indicates normal pressure in main at time of test.

"Residual" pressure-(P_r)-indicates pressure in main during flow at hydrant (s).

"Pitot" pressure-(p)-indicates measured velocity head of stream at hydrant outlet.

"Observed" discharge- (Q_1) -shows flow computed from noted pressures.

"Discharged-20psi"- (Q_2) -is computed flow available for pumping engines.

"Recommended" discharge-(Rec.)-is the flow considered for fire insurance grading purposes.

Column headed "Orifice" shows number and size (inches) of outlets opened.

NOTE: Tests are taken to determine ability of the distribution system to deliver supply for fire use at designated residual pressures.

All comments and recommendations made by these Departments relate solely to Fire Insurance rating or grading considerations and other uses by these Departments. No representations or warranties of any kind are intended or made.

Ted Queen

From: Sent: To: Subject: Attachments:

Ted Hardiman <ted@fruitlandwater.com> Wednesday, April 3, 2024 8:47 AM Ted Queen Emailing: Best Buy Best Buy.xls

Ted,

The test is older but our hydraulics have not changed.

Ted

Your message is ready to be sent with the following file or link attachments:

Best Buy

Note: To protect against computer viruses, e-mail programs may prevent sending or receiving certain types of file attachments. Check your e-mail security settings to determine how attachments are handled.



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NGES

