



2709 Jahn Ave NW, Suite H2, Gig Harbor WA 98335

Ph. (253) 853-7780– www.SprinxFire.com

Hydraulic Calculations

SPRINX FIRE PROTECTION INC.
2709 JAHN AVE NW SUITE H2
GIG HARBOR, WA 98335
253-853-7780

Job Name : ETC Building F
Drawing : FP-3.0
Location : 2902 E PIONEER PUYALLUP, WA 98372
Remote Area : RA#1
Contract : 24-093CM
Data File : ETC Building F Area 1.WXF

HYDRAULIC CALCULATIONS
for

JOB NAME East Town Crossing Building F
Location 2902 E PIONEER PUYALLUP, WA 98372
Drawing # FP-3.0
Contract # 24-093CM
Date 04/08/2025

DESIGN

Remote area # RA#1
Remote area location UNIT 307 - LIVING ROOM
Occupancy classification RESIDENTIAL NFPA 13R
Density 0.05 - Gpm/SqFt
Area of application 256 - SqFt
Coverage/sprinkler 256 16'X16' - SqFt
Type of sprinkler calculated VIKING VK468 RESIDENTIAL PENDENT K=4.9
Sprinklers calculated 4
In-rack demand N/A - GPM
Hose streams N/A - GPM
Total water required (including hose streams) 55.4349 - GPM @ 33.8637 - Psi
Type of system WET-CPVC
Volume of system (dry or pre-action) N/A - Gal

WATER SUPPLY INFORMATION

Test date 4/16/2024
Location 2902 E PIONEER
Source of info CITY OF PUYALLUP WATER DIVISON

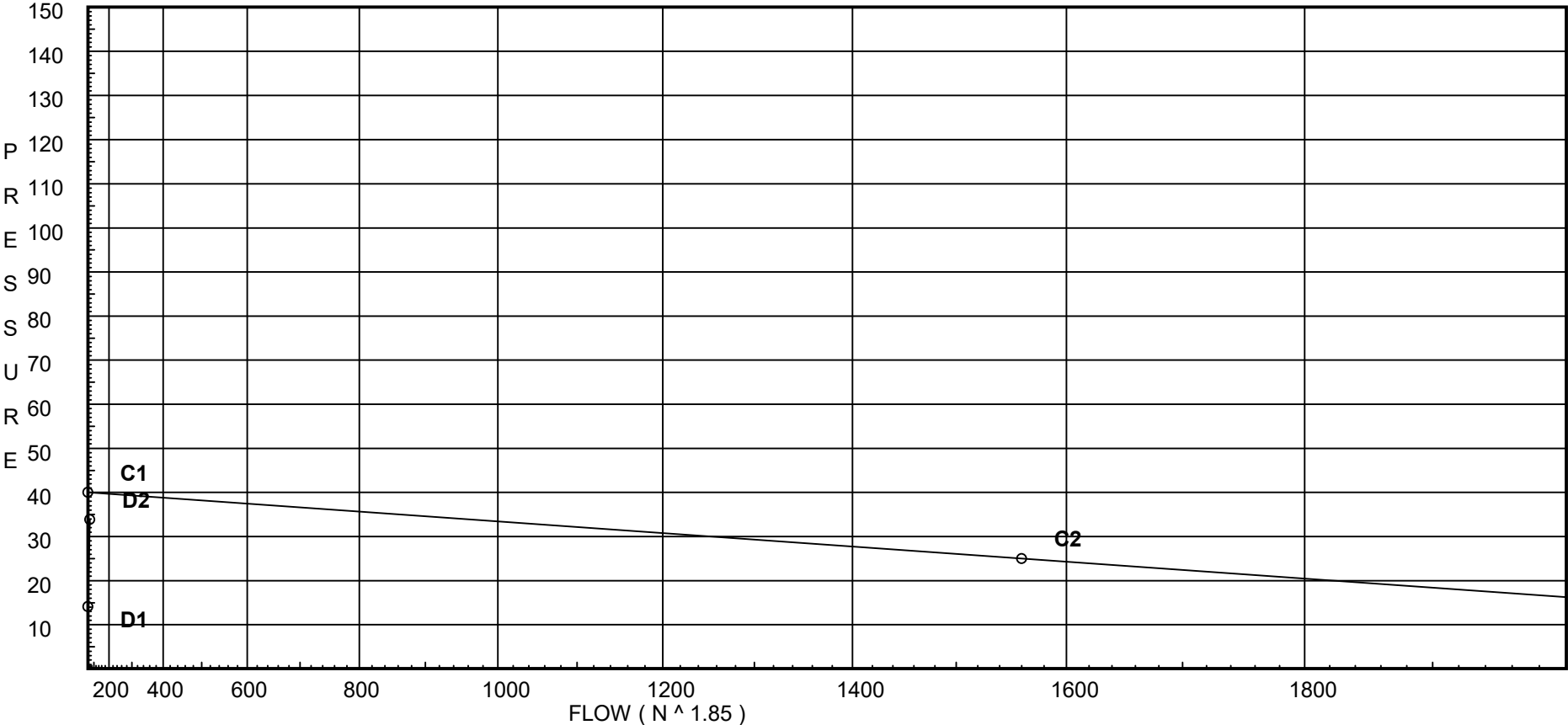
CONTRACTOR INFO SPRINX FIRE PROTECTION
Address 2709 JAHN AVE. / SUITE H2 / GIG HARBOR
Phone # 253-853-7780
Name of designer ALEXANDER J PARADIS
Authority having jurisdiction CITY OF PUYALLUP
NOTES:

Water Supply Curve

SPRINX FIRE PROTECTION INC.
ETC Building F

City Water Supply:
C1 - Static Pressure : 40
C2 - Residual Pressure: 25
C2 - Residual Flow : 1560

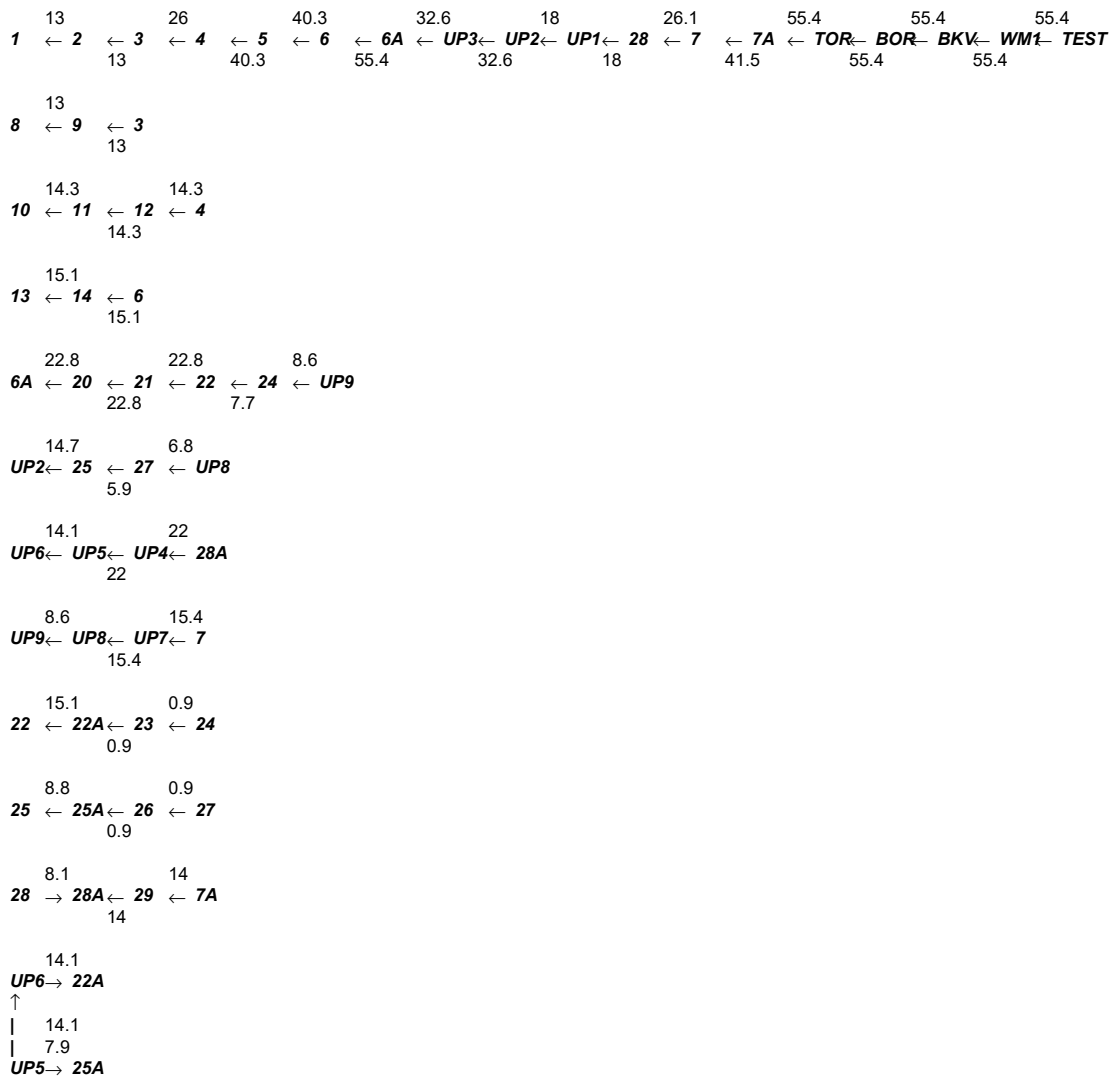
Demand:
D1 - Elevation : 14.110
D2 - System Flow : 55.435
D2 - System Pressure : 33.864
Hose (Demand) :
D3 - System Demand : 55.435
Safety Margin : 6.105



Flow Diagram

SPRINX FIRE PROTECTION INC.
ETC Building F

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Fittings Used Summary

SPRINX FIRE PROTECTION INC.
ETC Building F

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Fitting Legend

Abbrev.	Name	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6	8	10	12	14	16	18	20	24
B	NFPA 13 Butterfly Valve	0	0	0	0	0	6	7	10	0	12	9	10	12	19	21	0	0	0	0	0
E	NFPA 13 90' Standard Elbow	1	2	2	3	4	5	6	7	8	10	12	14	18	22	27	35	40	45	50	61
G	NFPA 13 Gate Valve	0	0	0	0	0	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13
N *	CPVC 90' Ell Harvel-Spears		7	7	8	9	11	12	13	0	0	0	0	0	0	0	0	0	0	0	0
O *	CPVC Tee - Branch	3	3	5	6	8	10	12	15	0	0	0	0	0	0	0	0	0	0	0	0
R *	CPVC Coupling Tee - Run	1	1	1	1	1	1	2	2	0	0	0	0	0	0	0	0	0	0	0	0
S	NFPA 13 Swing Check	0	0	5	7	9	11	14	16	19	22	27	32	45	55	65					
T	NFPA 13 90' Flow thru Tee	3	4	5	6	8	10	12	15	17	20	25	30	35	50	60	71	81	91	101	121
Ziw	Wilkins 350AST	Fitting generates a Fixed Loss Based on Flow																			

Units Summary

Diameter Units	Inches
Length Units	Feet
Flow Units	US Gallons per Minute
Pressure Units	Pounds per Square Inch

Note: Fitting Legend provides equivalent pipe lengths for fittings types of various diameters. Equivalent lengths shown are standard for actual diameters of Sched 40 pipe and CFactors of 120 except as noted with *. The fittings marked with a * show equivalent lengths values supplied by manufacturers based on specific pipe diameters and CFactors and they require no adjustment. All values for fittings not marked with a * will be adjusted in the calculation for CFactors of other than 120 and diameters other than Sched 40 per NFPA.

Flow Summary - NFPA

SPRINX FIRE PROTECTION INC.
ETC Building F

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SUPPLY ANALYSIS

<i>Node at Source</i>	<i>Static Pressure</i>	<i>Residual Pressure</i>	<i>Flow</i>	<i>Available Pressure</i>	<i>Total Demand</i>	<i>Required Pressure</i>
TEST	40.0	25	1560.0	39.969	55.43	33.864

NODE ANALYSIS

<i>Node Tag</i>	<i>Elevation</i>	<i>Node Type</i>	<i>Pressure at Node</i>	<i>Discharge at Node</i>	<i>Notes</i>	
1	109.58	4.9	7.04	13.0	0.05	256
2	110.08		6.99			
3	110.08		7.27			
4	110.08		8.99			
5	110.08		9.65			
6	110.08		9.95			
6A	110.08		10.42			
UP3	110.08		10.57			
UP2	99.83		15.11			
UP1	89.58		19.61			
28	89.58		19.93			
7	89.58		20.14			
7A	89.58		20.7			
TOR	89.58		21.38			
BOR	80.0		26.28			
BKV	77.0		33.86			
WM1	77.0		33.86			
TEST	77.0		33.86			
8	109.58	4.9	7.05	13.01	0.05	256
9	110.08	4.9	7.01			
10	108.58		8.55	14.33	0.05	256
11	110.08		8.21			
12	110.08		8.45			
13	109.58	4.9	9.48	15.09	0.05	256
14	110.08		9.49			
20	110.08		10.63			
21	110.08		10.73			
22	110.08		10.85			
24	110.08		10.86			
25	99.83		15.33			
27	99.83		15.34			
UP6	110.08		10.88			
UP5	99.83		15.34			
UP4	89.58		19.87			
UP9	110.08		10.95			
UP8	99.83		15.39			
UP7	89.58		19.88			
22A	110.08		10.86			
23	110.08		10.86			
25A	99.83		15.33			
26	99.83		15.34			
28A	89.58		19.93			

Flow Summary - NFPA

SPRINX FIRE PROTECTION INC.
ETC Building F

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NODE ANALYSIS (cont.)

<i>Node Tag</i>	<i>Elevation</i>	<i>Node Type</i>	<i>Pressure at Node</i>	<i>Discharge at Node</i>	<i>Notes</i>
29	89.58		20.3		

Final Calculations : Hazen-Williams

SPRINX FIRE PROTECTION INC.
ETC Building F

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Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqiv	Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
1 to 2	109.580 110.080	4.90	13.00 13.0	1 1.101	O	5.0	0.500 5.000 5.500	150 0.0307	7.040 -0.217 0.169		Vel = 4.38	
2 to 3	110.080 110.080		0.0 13.0	1 1.101	R	1.0	8.000 1.000 9.000	150 0.0307	6.992 0.0 0.276		Vel = 4.38	
3 to 4	110.080 110.080		13.01 26.01	1 1.101	O	5.0	10.550 5.000 15.550	150 0.1107	7.268 0.0 1.721		Vel = 8.77	
4 to 5	110.080 110.080		14.33 40.34	1.25 1.394	R	1.0	7.420 1.000 8.420	150 0.0790	8.989 0.0 0.665		Vel = 8.48	
5 to 6	110.080 110.080		0.0 40.34	1.25 1.394	R	1.0	2.750 1.000 3.750	150 0.0789	9.654 0.0 0.296		Vel = 8.48	
6 to 6A	110.080 110.080		15.09 55.43	2 2.003	O	10.0	9.250 10.000 19.250	150 0.0244	9.950 0.0 0.469		Vel = 5.64	
6A to UP3	110.080 110.080		-22.78 32.65	2 2.003	N	11.0	5.080 11.000 16.080	150 0.0091	10.419 0.0 0.147		Vel = 3.32	
UP3 to UP2	110.080 99.830		0.0 32.65	2 2.003	R	1.0	10.250 1.000 11.250	150 0.0092	10.566 4.439 0.103		Vel = 3.32	
UP2 to UP1	99.830 89.580		-14.66 17.99	2 2.003	N	11.0	10.250 11.000 21.250	150 0.0030	15.108 4.439 0.064		Vel = 1.83	
UP1 to 28	89.580 89.580		0.0 17.99	2 2.003	10R 2O	10.0 20.0	76.000 30.000 106.000	150 0.0030	19.611 0.0 0.322		Vel = 1.83	
28 to 7	89.580 89.580		8.06 26.05	2 2.003	2R O	2.0 10.0	21.580 12.000 33.580	150 0.0060	19.933 0.0 0.202		Vel = 2.65	
7 to 7A	89.580 89.580		15.41 41.46	2 2.003	3R O	3.0 10.0	27.000 13.000 40.000	150 0.0142	20.135 0.0 0.569		Vel = 4.22	
7A to TOR	89.580 89.580		13.97 55.43	2 2.003	3R N	3.0 11.0	13.670 14.000 27.670	150 0.0243	20.704 0.0 0.673		Vel = 5.64	
TOR to BOR	89.580 80		0.0 55.43	2 2.203	B S	8.183 15.003	9.500 23.186 32.686	120 0.0231	21.377 4.149 0.756		Vel = 4.67	
BOR to BKV	80 77		0.0 55.43	6 6.16	T 3E Ziw	43.037 60.252 0.0	38.000 103.289 141.289	140 0.0001	26.282 7.560 0.017		* * Fixed Loss = 6.261 Vel = 0.60	
BKV to WM1	77 77		0.0 55.43	8 8.27	T G	55.354 6.326	37.000 61.680 98.680	140 0	33.859 0.0 0.003		Vel = 0.33	

Final Calculations : Hazen-Williams

SPRINX FIRE PROTECTION INC.
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Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
WM1 to TEST	77 77		0.0 55.43	8 8.27	T	55.354	20.000 55.354 75.354	140 0	33.862 0.0 0.002		
TEST			0.0 55.43						33.864	K Factor =	9.53
8 to 9	109.580 110.080	4.90	13.01	1	O	5.0	0.500 5.000 5.500	150	7.053 -0.217 0.170		Vel = 4.38
9 to 3	110.080 110.080		0.0 13.01	1	O	5.0	3.540 5.000 8.540	150	7.006 0.0 0.262		Vel = 4.38
3			0.0 13.01						7.268	K Factor =	4.83
10 to 11	108.580 110.080	4.90	14.33	1	N	7.0	1.500 7.000 8.500	150	8.552 -0.650 0.313		Vel = 4.83
11 to 12	110.080 110.080		0.0 14.33	1	O	5.0	1.500 5.000 6.500	150	8.215 0.0 0.239		Vel = 4.83
12 to 4	110.080 110.080		0.0 14.33	1	2O	10.0	4.580 10.000 14.580	150	8.454 0.0 0.535		Vel = 4.83
4			0.0 14.33						8.989	K Factor =	4.78
13 to 14	109.580 110.080	4.90	15.09	1	O	5.0	0.500 5.000 5.500	150	9.484 -0.217 0.223		Vel = 5.09
14 to 6	110.080 110.080		0.0 15.09	1	O	5.0	6.390 5.000 11.390	150	9.490 0.0 0.460		Vel = 5.09
6			0.0 15.09						9.950	K Factor =	4.78
6A to 20	110.080 110.080		22.79	2	4R O	4.0 10.0	31.420 14.000 45.420	150	10.419 0.0 0.213		Vel = 2.32
20 to 21	110.080 110.080		0.0 22.79	2	3R	3.0	18.580 3.000 21.580	150	10.632 0.0 0.101		Vel = 2.32
21 to 22	110.080 110.080		0.0 22.79	2	4R	4.0	20.170 4.000 24.170	150	10.733 0.0 0.114		Vel = 2.32
22 to 24	110.080 110.080		-15.09 7.7	2	3R	3.0	22.330 3.000 25.330	150	10.847 0.0 0.016		Vel = 0.78
24 to UP9	110.080 110.080		0.94 8.64	2	10R 2O N	10.0 20.0 11.0	65.670 41.000 106.670	150	10.863 0.0 0.083		Vel = 0.88

Final Calculations : Hazen-Williams

SPRINX FIRE PROTECTION INC.
ETC Building F

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Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv	Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
UP9			0.0 8.64						10.946		K Factor = 2.61	
UP2 to 25	99.830 99.830		14.65 14.65	2 2.003	11R 2O	11.0 20.0	76.080 31.000 107.080	150 0.0021	15.108 0.0 0.222		Vel = 1.49	
25 to 27	99.830 99.830		-8.75 5.9	2 2.003	3R	3.0	21.580 3.000 24.580	150 0.0004	15.330 0.0 0.009		Vel = 0.60	
27 to UP8	99.830 99.830		0.87 6.77	2 2.003	9R 2O N	9.0 20.0 11.0	70.830 40.000 110.830	150 0.0005	15.339 0.0 0.055		Vel = 0.69	
UP8			0.0 6.77						15.394		K Factor = 1.73	
UP6 to UP5	110.080 99.830		14.14 14.14	2 2.003	R	1.0	10.250 1.000 11.250	150 0.0020	10.880 4.439 0.022		Vel = 1.44	
UP5 to UP4	99.830 89.580		7.89 22.03	2 2.003	N	11.0	10.250 11.000 21.250	150 0.0044	15.341 4.439 0.094		Vel = 2.24	
UP4 to 28A	89.580 89.580		0.0 22.03	2 2.003	O	10.0	2.670 10.000 12.670	150 0.0044	19.874 0.0 0.056		Vel = 2.24	
28A			0.0 22.03						19.930		K Factor = 4.93	
UP9 to UP8	110.080 99.830		8.64 8.64	2 2.003	R	1.0	10.250 1.000 11.250	150 0.0008	10.946 4.439 0.009		Vel = 0.88	
UP8 to UP7	99.830 89.580		6.77 15.41	2 2.003	O	10.0	10.250 10.000 20.250	150 0.0023	15.394 4.439 0.047		Vel = 1.57	
UP7 to 7	89.580 89.580		0.0 15.41	2 2.003	11R 3O	11.0 30.0	71.000 41.000 112.000	150 0.0023	19.880 0.0 0.255		Vel = 1.57	
7			0.0 15.41						20.135		K Factor = 3.43	
22 to 22A	110.080 110.080		15.09 15.09	2 2.003	R	1.0	2.920 1.000 3.920	150 0.0023	10.847 0.0 0.009		Vel = 1.54	
22A to 23	110.080 110.080		-14.15 0.94	1.25 1.394	4R O	4.0 6.0	23.080 10.000 33.080	150 0.0001	10.856 0.0 0.002		Vel = 0.20	
23 to 24	110.080 110.080		0.0 0.94	1.25 1.394	5R 2O	5.0 12.0	47.580 17.000 64.580	150 0.0001	10.858 0.0 0.005		Vel = 0.20	
24			0.0 0.94						10.863		K Factor = 0.29	
25 to 25A	99.830 99.830		8.76 8.76	2 2.003	R	1.0	2.920 1.000 3.920	150 0.0008	15.330 0.0 0.003		Vel = 0.89	

Final Calculations : Hazen-Williams

SPRINX FIRE PROTECTION INC.
ETC Building F

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Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqiv	Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
25A to 26	99.830 99.830		-7.89 0.87	1.25 1.394	3R O	3.0 6.0	23.080 9.000 32.080	150 0.0001	15.333 0.0 0.002		Vel = 0.18	
26 to 27	99.830 99.830		0.0 0.87	1.25 1.394	5R 2O	5.0 12.0	47.580 17.000 64.580	150 0.0001	15.335 0.0 0.004		Vel = 0.18	
27			0.0 0.87						15.339		K Factor = 0.22	
28 to 28A	89.580 89.580		-8.06 -8.06	2 2.003	R	1.0	2.920 1.000 3.920	150 -0.0008	19.933 0.0 -0.003		Vel = 0.82	
28A to 29	89.580 89.580		22.03 13.97	1.25 1.394	4R O	4.0 6.0	23.080 10.000 33.080	150 0.0111	19.930 0.0 0.368		Vel = 2.94	
29 to 7A	89.580 89.580		0.0 13.97	1.25 1.394	R N O	1.0 8.0 6.0	21.580 15.000 36.580	150 0.0111	20.298 0.0 0.406		Vel = 2.94	
7A			0.0 13.97						20.704		K Factor = 3.07	
UP6 to 22A	110.080 110.080		-14.14 -14.14	2 2.003	O	10.0	2.670 10.000 12.670	150 -0.0019	10.880 0.0 -0.024		Vel = 1.44	
22A			0.0 -14.14						10.856		K Factor = -4.29	
UP5 to 25A	99.830 99.830		-7.89 -7.89	2 2.003	O	10.0	2.670 10.000 12.670	150 -0.0006	15.341 0.0 -0.008		Vel = 0.80	
25A			0.0 -7.89						15.333		K Factor = -2.01	



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Hydraulic Calculations

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2709 JAHN AVE NW SUITE H2
GIG HARBOR, WA 98335
253-853-7780

Job Name : ETC Building F
Drawing : FP-3.0
Location : 2902 E PIONEER PUYALLUP, WA 98372
Remote Area : RA#3
Contract : 24-093CM
Data File : ETC Building F Area 3.WXF

HYDRAULIC CALCULATIONS
for

JOB NAME East Town Crossing Building F
Location 2902 E PIONEER PUYALLUP, WA 98372
Drawing # FP-3.0
Contract # 24-093CM
Date 04/08/2025

DESIGN

Remote area # RA#3
Remote area location STAIRWELL
Occupancy classification LIGHT HAZARD
Density 0.10 - Gpm/SqFt
Area of application 273 - SqFt
Coverage/sprinkler 4 HEADS - SqFt
Type of sprinkler calculated VIKING VK178 QR CHROME DRY HORIZ. SIDEWALL
Sprinklers calculated 4
In-rack demand N/A - GPM
Hose streams N/A - GPM
Total water required (including hose streams) 60.0854 - GPM @ 32.7651 - Psi
Type of system WET-CPVC
Volume of system (dry or pre-action) N/A - Gal

WATER SUPPLY INFORMATION

Test date 4/16/2024
Location 2902 E PIONEER
Source of info CITY OF PUYALLUP WATER DIVISON

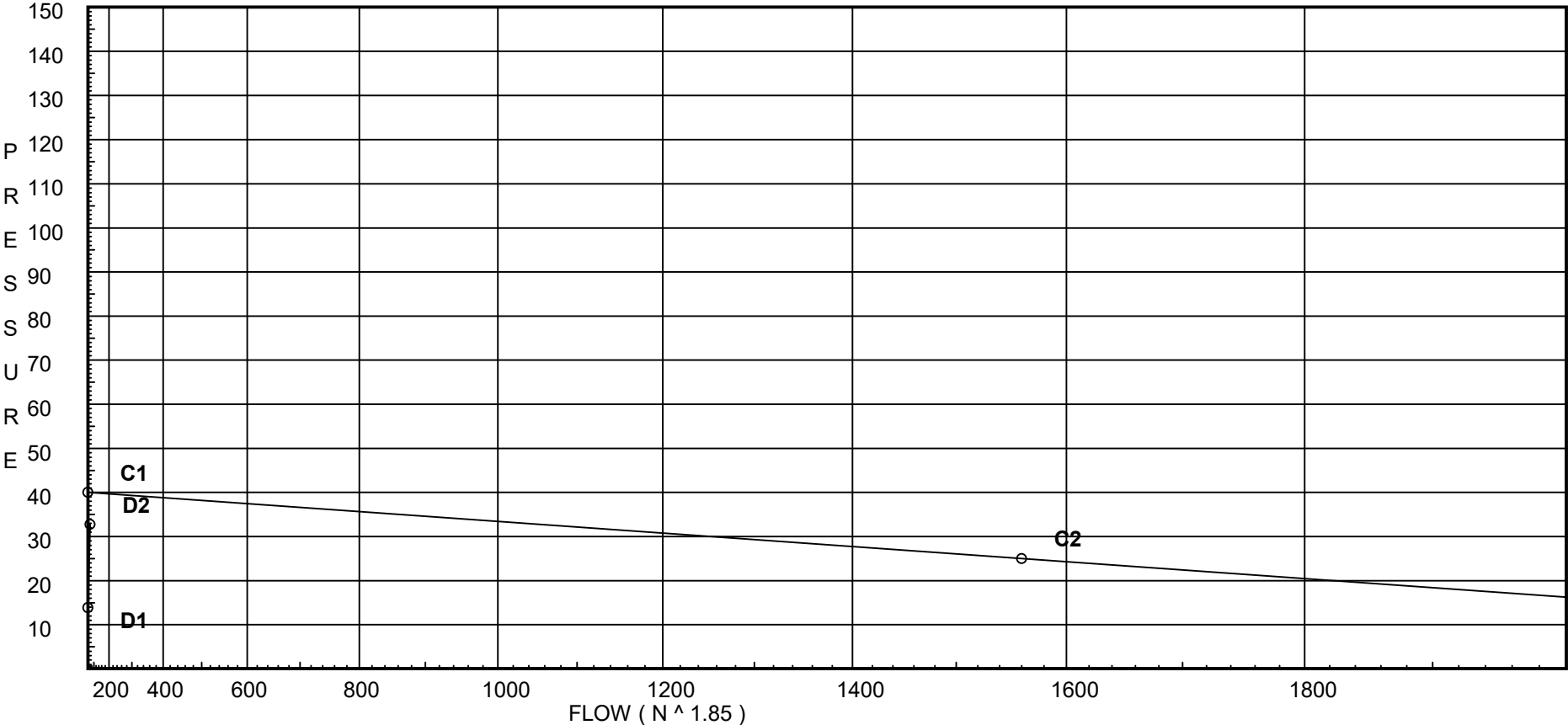
CONTRACTOR INFO SPRINX FIRE PROTECTION
Address 2709 JAHN AVE. / SUITE H2 / GIG HARBOR
Phone # 253-853-7780
Name of designer ALEXANDER J PARADIS
Authority having jurisdiction CITY OF PUYALLUP
NOTES:

Water Supply Curve

SPRINX FIRE PROTECTION INC.
ETC Building F

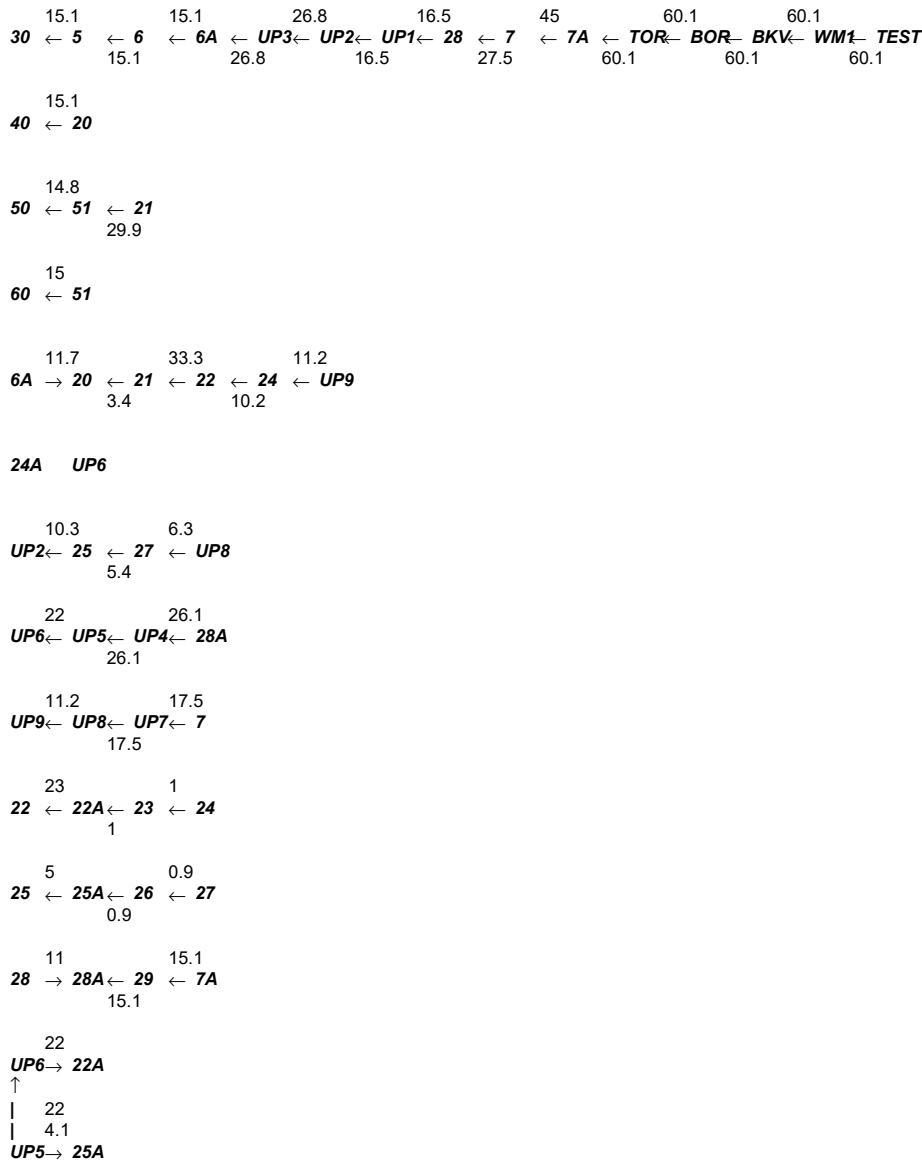
City Water Supply:
C1 - Static Pressure : 40
C2 - Residual Pressure: 25
C2 - Residual Flow : 1560

Demand:
D1 - Elevation : 13.859
D2 - System Flow : 60.085
D2 - System Pressure : 32.765
Hose (Demand) :
D3 - System Demand : 60.085
Safety Margin : 7.199



Flow Diagram

SPRINX FIRE PROTECTION INC.
ETC Building F



Fittings Used Summary

SPRINX FIRE PROTECTION INC.
ETC Building F

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Fitting Legend

Abbrev.	Name	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6	8	10	12	14	16	18	20	24
B	NFPA 13 Butterfly Valve	0	0	0	0	0	6	7	10	0	12	9	10	12	19	21	0	0	0	0	0
E	NFPA 13 90' Standard Elbow	1	2	2	3	4	5	6	7	8	10	12	14	18	22	27	35	40	45	50	61
G	NFPA 13 Gate Valve	0	0	0	0	0	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13
N *	CPVC 90' Ell Harvel-Spears		7	7	8	9	11	12	13	0	0	0	0	0	0	0	0	0	0	0	0
O *	CPVC Tee - Branch	3	3	5	6	8	10	12	15	0	0	0	0	0	0	0	0	0	0	0	0
R *	CPVC Coupling Tee - Run	1	1	1	1	1	1	2	2	0	0	0	0	0	0	0	0	0	0	0	0
S	NFPA 13 Swing Check	0	0	5	7	9	11	14	16	19	22	27	32	45	55	65					
T	NFPA 13 90' Flow thru Tee	3	4	5	6	8	10	12	15	17	20	25	30	35	50	60	71	81	91	101	121
Ziw	Wilkins 350AST	Fitting generates a Fixed Loss Based on Flow																			

Units Summary

Diameter Units	Inches
Length Units	Feet
Flow Units	US Gallons per Minute
Pressure Units	Pounds per Square Inch

Note: Fitting Legend provides equivalent pipe lengths for fittings types of various diameters. Equivalent lengths shown are standard for actual diameters of Sched 40 pipe and CFactors of 120 except as noted with *. The fittings marked with a * show equivalent lengths values supplied by manufacturers based on specific pipe diameters and CFactors and they require no adjustment. All values for fittings not marked with a * will be adjusted in the calculation for CFactors of other than 120 and diameters other than Sched 40 per NFPA.

Flow Summary - NFPA

SPRINX FIRE PROTECTION INC.
ETC Building F

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SUPPLY ANALYSIS

<i>Node at Source</i>	<i>Static Pressure</i>	<i>Residual Pressure</i>	<i>Flow</i>	<i>Available Pressure</i>	<i>Total Demand</i>	<i>Required Pressure</i>
TEST	40.0	25	1560.0	39.964	60.09	32.765

NODE ANALYSIS

<i>Node Tag</i>	<i>Elevation</i>	<i>Node Type</i>	<i>Pressure at Node</i>	<i>Discharge at Node</i>	<i>Notes</i>	
30	109.0	5.6	7.28	15.11	0.1	130.24
5	110.08		9.08			
6	110.08		9.12			
6A	110.08		9.17			
UP3	110.08		9.27			
UP2	99.83		13.78			
UP1	89.58		18.27			
28	89.58		18.55			
7	89.58		18.77			
7A	89.58		19.43			
TOR	89.58		20.22			
BOR	80.0		25.24			
BKV	77.0		32.76			
WM1	77.0		32.76			
TEST	77.0		32.77			
40	109.0	5.6	7.28	15.11	0.1	82.25
50	109.0	5.6	7.0	14.82	0.1	123.37
51	110.08	5.6	7.96			
60	109.0		7.22	15.05	0.1	73.5
20	110.08		9.1			
21	110.08		9.11			
22	110.08		9.34			
24	110.08		9.36			
25	99.83		13.9			
27	99.83		13.9			
UP6	110.08		9.41			
UP5	99.83		13.9			
UP4	89.58		18.47			
UP9	110.08		9.5			
UP8	99.83		13.95			
UP7	89.58		18.45			
22A	110.08		9.35			
23	110.08		9.36			
25A	99.83		13.9			
26	99.83		13.9			
28A	89.58		18.54			
29	89.58		18.97			

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Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqiv	Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
30 to 5	109 110.080	5.60	15.11	1	4N 2R O	28.0 2.0 5.0	20.830 35.000 55.830	150	7.282 -0.468 2.263			
										Vel =	5.09	
5 to 6	110.080 110.080		0.0	1.25	R	1.0	2.750 1.000 3.750	150	9.077 0.0 0.048			
										Vel =	3.18	
6 to 6A	110.080 110.080		0.0	2	O	10.0	9.250 10.000 19.250	150	9.125 0.0 0.042			
										Vel =	1.54	
6A to UP3	110.080 110.080		11.72	2	N	11.0	5.080 11.000 16.080	150	9.167 0.0 0.102			
										Vel =	2.73	
UP3 to UP2	110.080 99.830		0.0	2	R	1.0	10.250 1.000 11.250	150	9.269 4.439 0.072			
										Vel =	2.73	
UP2 to UP1	99.830 89.580		-10.32	2	N	11.0	10.250 11.000 21.250	150	13.780 4.439 0.055			
										Vel =	1.68	
UP1 to 28	89.580 89.580		0.0	2	10R 2O	10.0 20.0	76.000 30.000 106.000	150	18.274 0.0 0.274			
										Vel =	1.68	
28 to 7	89.580 89.580		11.01	2	2R O	2.0 10.0	21.580 12.000 33.580	150	18.548 0.0 0.224			
										Vel =	2.80	
7 to 7A	89.580 89.580		17.49	2	3R O	3.0 10.0	27.000 13.000 40.000	150	18.772 0.0 0.662			
										Vel =	4.58	
7A to TOR	89.580 89.580		15.08	2	3R N	3.0 11.0	13.670 14.000 27.670	150	19.434 0.0 0.782			
										Vel =	6.12	
TOR to BOR	89.580 80		0.0	2	B S	8.183 15.003	9.500 23.186 32.686	120	20.216 4.149 0.877			
										Vel =	5.06	
BOR to BKV	80 77		0.0	6	T 3E Ziw	43.037 60.252 0.0	38.000 103.289 141.289	140	25.242 7.498 0.020			
										* * Fixed Loss =	6.199	
BKV to WM1	77 77		60.09	6.16				0.0001	0.020	Vel =	0.65	
WM1 to WM1	77 77		0.0	8	T G	55.354 6.326	37.000 61.680 98.680	140	32.760 0.0 0.003			
										Vel =	0.36	
WM1 to TEST	77 77		0.0	8	T	55.354	20.000 55.354 75.354	140	32.763 0.0 0.002			
										Vel =	0.36	
TEST			0.0 60.09						32.765	K Factor =	10.50	
40 to 20	109 110.080	5.60	15.11	1	4N 3R O	28.0 3.0 5.0	20.580 36.000 56.580	150	7.281 -0.468 2.292			
										Vel =	5.09	
			0.0									

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Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqiv	Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
20			15.11						9.105		K Factor = 5.01	
50 to 51	109 110.080	5.60	14.82	1 1.101	3N O	21.0 5.0	10.670 26.000 36.670	150 0.0391	7.000 -0.468 1.433		Vel = 4.99	
51 to 21	110.080 110.080		15.04	1.25 1.394	2R O	2.0 6.0	17.250 8.000 25.250	150 0.0453	7.965 0.0 1.143		Vel = 6.28	
21			0.0 29.86						9.108		K Factor = 9.89	
60 to 51	109 110.080	5.60	15.05	1 1.101	3N O	21.0 5.0	4.170 26.000 30.170	150 0.0402	7.220 -0.468 1.213		Vel = 5.07	
51			0.0 15.05						7.965		K Factor = 5.33	
6A to 20	110.080 110.080		-11.72	2 2.003	4R O	4.0 10.0	31.420 14.000 45.420	150 -0.0014	9.167 0.0 -0.062		Vel = 1.19	
20 to 21	110.080 110.080		15.11	2 2.003	3R	3.0	18.580 3.000 21.580	150 0.0001	9.105 0.0 0.003		Vel = 0.35	
21 to 22	110.080 110.080		29.87	2 2.003	4R	4.0	20.170 4.000 24.170	150 0.0094	9.108 0.0 0.228		Vel = 3.39	
22 to 24	110.080 110.080		-23.03	2 2.003	3R	3.0	22.330 3.000 25.330	150 0.0011	9.336 0.0 0.027		Vel = 1.04	
24 to UP9	110.080 110.080		1.00	2 2.003	10R 2O N	10.0 20.0 11.0	65.670 41.000 106.670	150 0.0013	9.363 0.0 0.135		Vel = 1.14	
UP9			0.0 11.23						9.498		K Factor = 3.64	
UP2 to 25	99.830 99.830		10.32	2 2.003	11R 2O	11.0 20.0	76.080 31.000 107.080	150 0.0011	13.780 0.0 0.116		Vel = 1.05	
25 to 27	99.830 99.830		-4.96	2 2.003	3R	3.0	21.580 3.000 24.580	150 0.0003	13.896 0.0 0.008		Vel = 0.55	
27 to UP8	99.830 99.830		0.91	2 2.003	9R 2O N	9.0 20.0 11.0	70.830 40.000 110.830	150 0.0004	13.904 0.0 0.048		Vel = 0.64	
UP8			0.0 6.27						13.952		K Factor = 1.68	
UP6 to UP5	110.080 99.830		22.03	2 2.003	R	1.0	10.250 1.000 11.250	150 0.0044	9.411 4.439 0.050		Vel = 2.24	
UP5 to UP4	99.830 89.580		4.06	2 2.003	N	11.0	10.250 11.000 21.250	150 0.0060	13.900 4.439 0.128		Vel = 2.66	

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Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv	Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
UP4 to 28A	89.580 89.580		0.0 26.09	2 2.003	O	10.0	2.670 10.000 12.670	150 0.0061	18.467 0.0 0.077		Vel = 2.66	
28A			0.0 26.09						18.544		K Factor = 6.06	
UP9 to UP8	110.080 99.830		11.23 11.23	2 2.003	R	1.0	10.250 1.000 11.250	150 0.0013	9.498 4.439 0.015		Vel = 1.14	
UP8 to UP7	99.830 89.580		6.26 17.49	2 2.003	O	10.0	10.250 10.000 20.250	150 0.0029	13.952 4.439 0.059		Vel = 1.78	
UP7 to 7	89.580 89.580		0.0 17.49	2 2.003	11R 3O	11.0 30.0	71.000 41.000 112.000	150 0.0029	18.450 0.0 0.322		Vel = 1.78	
7			0.0 17.49						18.772		K Factor = 4.04	
22 to 22A	110.080 110.080		23.03 23.03	2 2.003	R	1.0	2.920 1.000 3.920	150 0.0048	9.336 0.0 0.019		Vel = 2.34	
22A to 23	110.080 110.080		-22.03 1.0	1.25 1.394	4R O	4.0 6.0	23.080 10.000 33.080	150 0.0001	9.355 0.0 0.003		Vel = 0.21	
23 to 24	110.080 110.080		0.0 1.0	1.25 1.394	5R 2O	5.0 12.0	47.580 17.000 64.580	150 0.0001	9.358 0.0 0.005		Vel = 0.21	
24			0.0 1.00						9.363		K Factor = 0.33	
25 to 25A	99.830 99.830		4.96 4.96	2 2.003	R	1.0	2.920 1.000 3.920	150 0.0003	13.896 0.0 0.001		Vel = 0.51	
25A to 26	99.830 99.830		-4.05 0.91	1.25 1.394	3R O	3.0 6.0	23.080 9.000 32.080	150 0.0001	13.897 0.0 0.003		Vel = 0.19	
26 to 27	99.830 99.830		0.0 0.91	1.25 1.394	5R 2O	5.0 12.0	47.580 17.000 64.580	150 0.0001	13.900 0.0 0.004		Vel = 0.19	
27			0.0 0.91						13.904		K Factor = 0.24	
28 to 28A	89.580 89.580		-11.01 -11.01	2 2.003	R	1.0	2.920 1.000 3.920	150 -0.0010	18.548 0.0 -0.004		Vel = 1.12	
28A to 29	89.580 89.580		26.09 15.08	1.25 1.394	4R O	4.0 6.0	23.080 10.000 33.080	150 0.0128	18.544 0.0 0.422		Vel = 3.17	
29 to 7A	89.580 89.580		0.0 15.08	1.25 1.394	R N O	1.0 8.0 6.0	21.580 15.000 36.580	150 0.0128	18.966 0.0 0.468		Vel = 3.17	

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Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
7A			0.0 15.08					19.434		K Factor = 3.42	
UP6 to 22A	110.080 110.080		-22.03 -22.03	2 2.003	O 10.0	2.670 10.000 12.670	150 150	9.411 0.0 -0.056		Vel = 2.24	
22A			0.0 -22.03					9.355		K Factor = -7.20	
UP5 to 25A	99.830 99.830		-4.06 -4.06	2 2.003	O 10.0	2.670 10.000 12.670	150 150	13.900 0.0 -0.003		Vel = 0.41	
25A			0.0 -4.06					13.897		K Factor = -1.09	