Hydraulic Calculations by HydraCALC

Heritage Sprinkler Design
812 Superior St
Lasalle, ON N9J 3E6
226-787-3436

Job Name	:	MEAFORD RESTAURANT
Drawing	:	FP-1
Location	:	26 NELSON ST MEAFORD ON
Remote Area	:	1
Contract	:	23-136
Data File	:	23-135 retail.WXF

HYDRAULIC CALCULATIONS
for

JOB NAME MEAFORD RESTAURANT
Location 26 NELSON ST MEAFORD ON
Drawing # FP-1
Contract # 23-136
Date 6/4/23

DESIGN

Remote area # 1
Remote area location RETAIL
Occupancy classification OH-2
Density .2 - Gpm/SqFt
Area of application 1050 - SqFt
Coverage/sprinkler 117 - SqFt
Type of sprinkler calculated K-5.6 QR BR UPR/TY3488 WINDOW
 # Sprinklers calculated 12
In-rack demand - GPM
Hose streams 250 - GPM
Total water required (including hose streams) 550.204 - GPM @ 61.0189 - Psi
Type of system WET
Volume of system (dry or pre-action) - Gal

WATER SUPPLY INFORMATION

Test date 6/5/23
Location NELSON AND BAYFIELD
Source of info 71-67-1267

CONTRACTOR INFO Heritage Sprinkler Design / Miller Fire Prevention
Address 812 Superior St / Lasalle, ON N9J 3E6
Phone # 226-787-3436
Name of designer PAF
Authority having jurisdiction
NOTES:
WINDOW SPRINKLERS BALANCED IN CALC

text1(35) - invisible

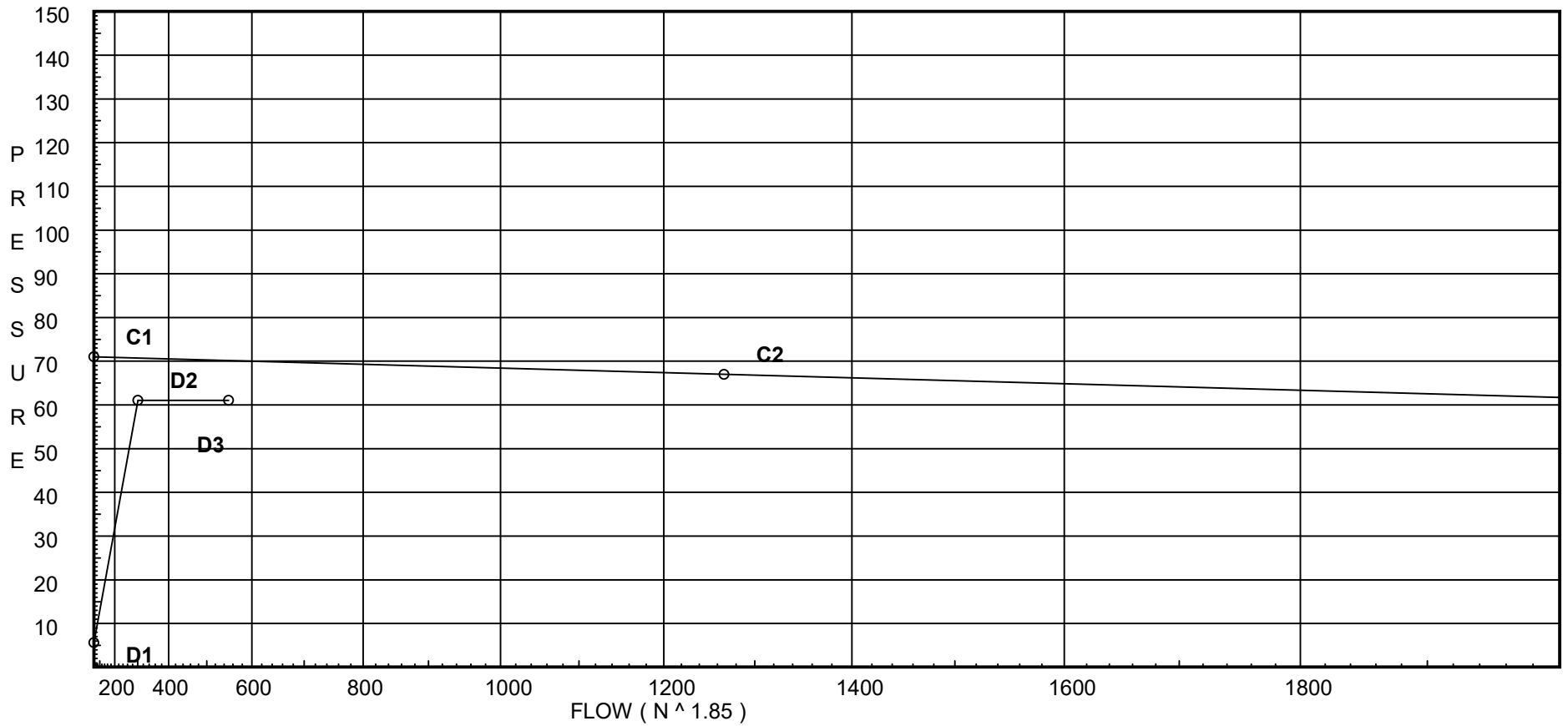
Water Supply Curve

Heritage Sprinkler Design
MEAFORD RESTAURANT

Page 2
Date 6/4/23

City Water Supply:
- C1 - Static Pressure : 71
- C2 - Residual Pressure: 67
- C2 - Residual Flow : 1267

Demand:
- D1 - Elevation : 5.630
- D2 - System Flow : 300.204
- D2 - System Pressure : 61.019
- Hose (Demand) : 250
- D3 - System Demand : 550.204
- Safety Margin : 9.126



Fittings Used Summary

Fitting Legend

Abbrev.	Name	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6	8	10	12	14	16	18	20	24
B	NFPA 13 Butterfly Valve	0	0	0	0	0	6	7	10	0	12	9	10	12	19	21	23	25	0	0	0
E	90 - NFPA	1	2	2	3	4	5	6	7	8	10	12	14	18	22	27	35	40	45	50	61
Fsp	Flow Switch Potter VSR	Fitting generates a Fixed Loss Based on Flow																			
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
T	TEE - NFPA	3	4	5	6	8	10	12	15	17	20	25	30	35	50	60	71	81	91	101	121
V	90 - GROOVED	0	0	1.7	2.2	2.6	3.5	4.3	5	0	6.8	8.5	10	13	17	20	24.5	28	31	34	42
X	TEE - GROOVED	0	0	4.2	5.3	6.4	8.5	10.8	13	0	16	21	25	33	41	50	70	80	90	100	120
Zib	Wilkins 350A	Fitting generates a Fixed Loss Based on Flow																			

Units Summary

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

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

SUPPLY ANALYSIS

Node at Source	Static Pressure	Residual Pressure	Flow	Available Pressure	Total Demand	Required Pressure
CITY	71.0	67	1267.0	70.145	550.2	61.019

NODE ANALYSIS

Node Tag	Elevation	Node Type	Pressure at Node	Discharge at Node	Notes	
101	15.0	5.6	16.87	23.0	0.2	115
102	15.0	5.6	17.03	23.11	0.2	115
103	15.0	5.6	17.63	23.51	0.2	115
104	15.0	5.6	18.91	24.35	0.2	115
105	15.0	5.6	21.14	25.75	0.2	115
107	15.0	5.6	17.2	23.22	0.2	115
108	15.0	5.6	17.36	23.33	0.2	115
109	15.0	5.6	17.97	23.74	0.2	115
110	15.0	5.6	19.27	24.58	0.2	115
111	15.0	5.6	21.54	25.99	0.2	115
106	15.0		24.49			
112	15.0		24.95			
113	2.0		45.72			
T1SR	2.0		49.64			
B1SR	-6.0		57.65			
SPGT	-6.0		61.57			
UG1	-6.0		64.0			
CITY	2.0		61.02	250.0		
901	9.0	5.6	27.93	29.6	0.1	150
902	9.0	5.6	28.72	30.01	0.1	150
903	9.0		34.58			
904	-1.0		41.57			
TWSR	-1.0		51.76			
BWSR	-6.0		57.65			

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 ******
101	15	5.60	23.00	1.5			9.750	120	16.869	
to									0.0	
102	15		23.0	1.682			9.750	0.0169	0.165	Vel = 3.32
102	15	5.60	23.11	1.5			9.750	120	17.034	
to									0.0	
103	15		46.11	1.682			9.750	0.0611	0.596	Vel = 6.66
103	15	5.60	23.52	1.5			9.750	120	17.630	
to									0.0	
104	15		69.63	1.682			9.750	0.1313	1.280	Vel = 10.05
104	15	5.60	24.35	1.5			9.750	120	18.910	
to									0.0	
105	15		93.98	1.682			9.750	0.2285	2.228	Vel = 13.57
105	15	5.60	25.74	1.5	Eql	8.662	0.708	120	21.138	
to							8.662		0.0	
106	15		119.72	1.682			9.370	0.3577	3.352	Vel = 17.29
			0.0							
106			119.72						24.490	K Factor = 24.19
107	15	5.60	23.22	1.5			9.750	120	17.195	
to									0.0	
108	15		23.22	1.682			9.750	0.0172	0.168	Vel = 3.35
108	15	5.60	23.34	1.5			9.750	120	17.363	
to									0.0	
109	15		46.56	1.682			9.750	0.0623	0.607	Vel = 6.72
109	15	5.60	23.74	1.5			9.750	120	17.970	
to									0.0	
110	15		70.3	1.682			9.750	0.1336	1.303	Vel = 10.15
110	15	5.60	24.58	1.5			9.750	120	19.273	
to									0.0	
111	15		94.88	1.682			9.750	0.2326	2.268	Vel = 13.70
111	15	5.60	25.99	1.5	Eql	8.662	0.708	120	21.541	
to							8.662		0.0	
112	15		120.87	1.682			9.370	0.3640	3.411	Vel = 17.45
			0.0							
112			120.87						24.952	K Factor = 24.20
106	15		119.72	2.5			11.500	120	24.490	
to									0.0	
112	15		119.72	2.635			11.500	0.0402	0.462	Vel = 7.04
112	15		120.88	2.5	2X	29.654	50.333	120	24.952	
to					4V	23.613	53.267		5.630	
113	2		240.6	2.635			103.600	0.1462	15.142	Vel = 14.16
113	2		0.0	2.5	2V	11.807	15.000	120	45.724	
to							11.807		0.0	
T1SR	2		240.6	2.635			26.807	0.1462	3.919	Vel = 14.16
T1SR	2		0.0	2.5	B	9.61	5.000	120	49.643	
to					T	16.474	26.084		3.465	
B1SR	-6		240.6	2.635			31.084	0.1462	4.543	Vel = 14.16
B1SR	-6		59.60	4	Zib	0.0	9.000	120	57.651	
to					2V	17.907	38.974		2.903	* * Fixed Loss = 2.903
SPGT	-6		300.2	4.26	X	21.067	47.974	0.0212	1.017	Vel = 6.76

Final Calculations : Hazen-Williams

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 ******
SPGT	-6		0.0	4	E	10.928	60.000	120	61.571	
to					G	2.186	34.969		0.0	
UG1	-6		300.2	4.1	T	21.855	94.969	0.0256	2.428	Vel = 7.30
UG1	-6		0.0	6	T	43.037	140.000	140	63.999	
to							43.037		-3.465	
CITY	2		300.2	6.16			183.037	0.0026	0.485	Vel = 3.23
			250.00							Qa = 250.00
CITY			550.20						61.019	K Factor = 70.43
901	9	5.60	29.60	1	3E	6.0	8.750	120	27.932	
to					2T	10.0	16.000		0.0	
903	9		29.6	1.049			24.750	0.2687	6.651	Vel = 10.99
			0.0							
903			29.60						34.583	K Factor = 5.03
902	9	5.60	30.01	1	2E	4.0	7.250	120	28.724	
to					2T	10.0	14.000		0.0	
903	9		30.01	1.049			21.250	0.2757	5.859	Vel = 11.14
903	9		29.60	1.25	V	2.725	10.000	120	34.583	
to							2.725		4.331	
904	-1		59.61	1.442			12.725	0.2083	2.651	Vel = 11.71
904	-1		0.0	1.25	3V	8.175	40.750	120	41.565	
to							8.175		0.0	
TWSR	-1		59.61	1.442			48.925	0.2084	10.195	Vel = 11.71
TWSR	-1		0.0	2	B	7.384	5.000	120	51.760	
to					Fsp	0.0	19.691		5.166	* * Fixed Loss = 3
BWSR	-6		59.61	2.157	T	12.307	24.691	0.0293	0.723	Vel = 5.23
BWSR	-6		0.0	4			1.500	120	57.649	
to									0.0	
B1SR	-6		59.61	4.26			1.500	0.0013	0.002	Vel = 1.34
			0.0							
B1SR			59.61						57.651	K Factor = 7.85