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	:	2
Contract	:	23-136
Data File	:	23-135 dining.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 # 2
Remote area location 2ND FLR DINING
Occupancy classification LIGHT
Density .1 - Gpm/SqFt
Area of application 950 - SqFt
Coverage/sprinkler 168 - SqFt
Type of sprinkler calculated K-5.6 QR BR UPR
 # Sprinklers calculated 8
In-rack demand - GPM
Hose streams 100 - GPM
Total water required (including hose streams) 282.665 - GPM @ 41.9539 - 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:

text1(35) - invisible

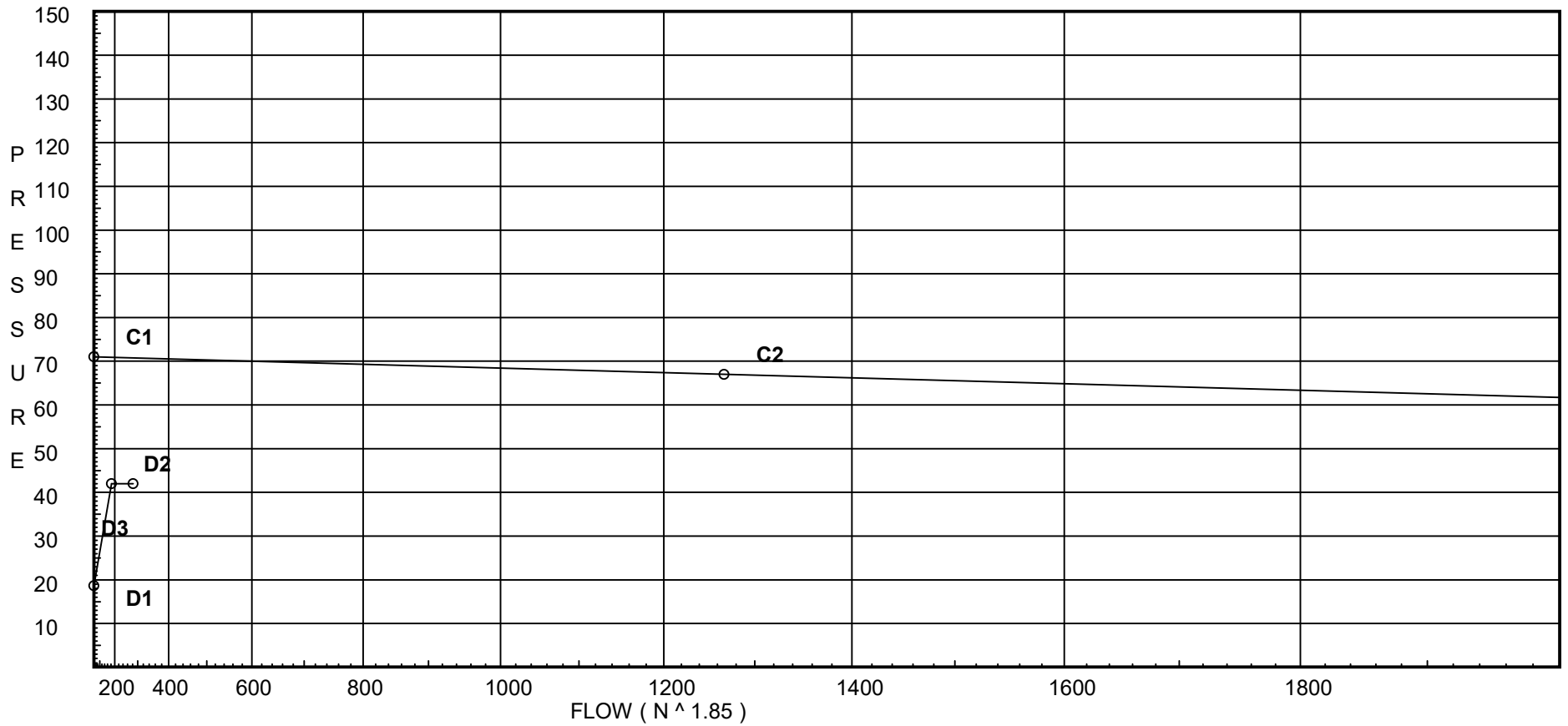
Water Supply Curve

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 : 18.623
- D2 - System Flow : 182.665
- D2 - System Pressure : 41.954
- Hose (Demand) : 100
- D3 - System Demand : 282.665
- Safety Margin : 28.797



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
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	70.751	282.67	41.954

NODE ANALYSIS

Node Tag	Elevation	Node Type	Pressure at Node	Discharge at Node	Notes	
201	25.0	5.6	18.0	23.76	0.1	150
201A	25.0	5.6	18.23	23.91	0.1	150
202	45.0	5.6	7.0	14.82	0.1	120
203	25.0		18.47			
204	25.0	5.6	19.41	24.67	0.1	150
206	25.0	5.6	17.2	23.22	0.1	150
207	25.0	5.6	17.41	23.37	0.1	150
208	25.0	5.6	18.19	23.89	0.1	150
210	25.0	5.6	19.97	25.03	0.1	150
211	25.0		20.28			
209	25.0		20.3			
205	25.0		20.56			
212	2.0		31.1			
T2SR	2.0		35.03			
B2SR	-6.0		41.22			
SPGT	-6.0		44.26			
UG1	-6.0		45.23			
CITY	2.0		41.95	100.0		

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 ******
201	25	5.60	23.76	1.5			12.500	120	18.004	
to									0.0	
201A	25		23.76	1.682			12.500	0.0180	0.225	Vel = 3.43
201A	25	5.60	23.91	1.5			3.750	120	18.229	
to									0.0	
203	25		47.67	1.682			3.750	0.0651	0.244	Vel = 6.88
			0.0							
203			47.67						18.473	K Factor = 11.09
202	45	5.60	14.82	1	2E	4.0	28.625	120	7.000	
to					T	5.0	9.000		8.662	
203	25		14.82	1.049			37.625	0.0747	2.811	Vel = 5.50
203	25		47.67	1.5			8.750	120	18.473	
to									0.0	
204	25		62.49	1.682			8.750	0.1074	0.940	Vel = 9.02
204	25	5.60	24.67	1.5			5.791	120	19.413	
to									0.0	
205	25		87.16	1.682			5.791	0.1988	1.151	Vel = 12.59
			0.0							
205			87.16						20.564	K Factor = 19.22
206	25	5.60	23.22	1.5			12.500	120	17.198	
to									0.0	
207	25		23.22	1.682			12.500	0.0173	0.216	Vel = 3.35
207	25	5.60	23.37	1.5			12.500	120	17.414	
to									0.0	
208	25		46.59	1.682			12.500	0.0624	0.780	Vel = 6.73
208	25	5.60	23.89	1.5	T	9.9	5.791	120	18.194	
to							9.900		0.0	
209	25		70.48	1.682			15.691	0.1342	2.106	Vel = 10.18
			0.0							
209			70.48						20.300	K Factor = 15.64
210	25	5.60	25.03	1.5	T	9.9	5.791	120	19.972	
to							9.900		0.0	
211	25		25.03	1.682			15.691	0.0198	0.310	Vel = 3.61
211	25		0.0	2.5			8.000	120	20.282	
to									0.0	
209	25		25.03	2.635			8.000	0.0022	0.018	Vel = 1.47
209	25		70.47	2.5			10.000	120	20.300	
to									0.0	
205	25		95.5	2.635			10.000	0.0264	0.264	Vel = 5.62
205	25		87.16	2.5	V	5.903	0.666	120	20.564	
to							5.903		9.961	
212	2		182.66	2.635			6.569	0.0878	0.577	Vel = 10.75
212	2		0.0	2.5	3V	17.71	27.000	120	31.102	
to							17.710		0.0	
T2SR	2		182.66	2.635			44.710	0.0878	3.926	Vel = 10.75
T2SR	2		0.0	2.5	B	9.61	5.000	120	35.028	
to					T	16.474	26.084		3.465	
B2SR	-6		182.66	2.635			31.084	0.0878	2.729	Vel = 10.75

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 ******
B2SR	-6		0.0	4	Zib	0.0	9.000	120	41.222	
to					2V	17.907	38.974		2.629	* * Fixed Loss = 2.629
SPGT	-6		182.66	4.26	X	21.067	47.974	0.0085	0.406	Vel = 4.11
SPGT	-6		0.0	4	E	10.928	60.000	120	44.257	
to					G	2.186	34.969		0.0	
UG1	-6		182.66	4.1	T	21.855	94.969	0.0102	0.969	Vel = 4.44
UG1	-6		0.0	6	T	43.037	140.000	140	45.226	
to							43.037		-3.465	
CITY	2		182.66	6.16			183.037	0.0011	0.193	Vel = 1.97
			100.00							Qa = 100.00
CITY			282.66						41.954	K Factor = 43.64