TRANSMITTAL

BENNETT DESIGN ASSOCAITED INC.

Attention: **AMANDA HUGESSEN**

Transmittal # **#1**

Project : **6925 CENTURY AVE**
MISSISSAUGA

Date: 5/Jun/24

Project # **SP0004334**

Subject: **Fire Protection Drawing & Hydraulic Calculations requiring review & acceptance**

Qty.	Drawing #	Fire Protection Drawing Title	Date	Revision #1	
1	**SP-1**	Site Plan, Details, Ex. Riser Diagram Unit 502 - sprinkler system layout	5/Jun/24	#1	PDF ✓

Qty.	Calc. #	Hydraulic Calculation Description	Date	Revision #1	
1	**#1**	DA #1 SP-1 Unit 502	5/Jun/24	#1	PDF ✓

Regards,

Akash Sheth
Project Coordinator
ONYX Sprinkler Installation
Phone: 647 334 2643
asheth@onyx-sprinkler.com

SCOPE OF WORK:

MODIFY EXISTING SPRINKLER SYSTEM @ UNIT 502 - 6925 CENTURY AVENUE , IN MISSISSAUGA, ONTARIO. BASED ON NEW TENANT LAYOUT SPRINKLER SYSTEM TO MEET NFPA 13 (2013ED), OBC 2012.

SPRINKLER SYSTEM DESIGN CRITERIA:

NFPA 13 2013 EDITION.
ONTARIO BUILDING CODE 2012 (AS AMENDED).

- LIGHT HAZARD (GROUP I) 0.10 USGPM OVER 900 SQ.FT. (ACTUAL 948 SQ.FT) (DESIGN AREA REDUCED BY 40.0% BASED ON NFPA 13 (2013): 11.2.3.2.3.1, AND 10'-0" CEILINGS) PLUS 100 USGPM HOSE ALLOWANCE.

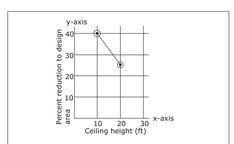
GENERAL NOTES:

1) ALL PIPE LOCATIONS ARE TO BE FIELD MEASURED PRIOR TO FABRICATION.
2) PIPE LENGTHS ARE SHOWN CENTRE TO CENTRE.
3) REUSE EXISTING BRANCH LINES WHERE POSSIBLE - TAKE BACK EXISTING ARM OVERS WHERE NEW PIPE IS REQUIRED.
4) NEW 1" PIPING TO BE SCH. 40 BLACK STEEL PIPE WITH THREADED ENDS AND CAST IRON SCREWED FITTINGS.
5) NEW PIPING 1¼" AND LARGER TO BE SCH. 10 BLACK STEEL PIPE WITH GROOVED ENDS AND GROOVED FITTINGS.
6) SCHEDULE 7 PIPE NOT PERMITTED
7) ALL 1" ARM OVERS EXCEEDING 2'-0" IN LENGTH REQUIRE HANGERS WITH UNSUPPORTED PIPE LENGTHS BETWEEN HANGER AND END HEAD NOT TO EXCEED 3'-0" HORIZONTALLY.
8) PROVIDE INTERMEDIATE AND HIGH TEMPERATURE SPRINKLERS WHERE REQUIRED BY CODE.
9) AS PER NFPA 13 (2013) 25.2.1.5 WHERE ADDITION OR MODIFICATION IS MADE TO AN EXISTING SYSTEM AFFECTING MORE THAN 20 SPRINKLERS, THE NEW PORTION SHALL BE ISOLATED AND TESTED AT NOT LESS THAN 200 PSI (13.8 BAR) FOR 2 HOURS.
10) AS PER NFPA 13 (2013) 25.2.1.6 MODIFICATIONS THAT CANNOT BE ISOLATED, SUCH AS RELOCATED DROPS, SHALL NOT REQUIRE TESTING IN EXCESS OF SYSTEM WORKING PRESSURE.
11) HATCHED AREA NOT IN CONTRACT.

WATER FLOW TEST INFORMATION:

THE WATER SUPPLY INFORMATION USED TO PERFORM THE HYDRAULIC CALCULATIONS IS BASED ON THE WATER FLOW TEST PERFORMED BY THE EXISTING FIRE PUMP TEST REPORT:

FIRE PUMP DATA:
60 PSI @ 600.5 GPM



Note: $y = \frac{-3x}{2} + 55$

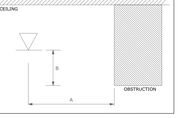
For ceiling height >10 ft and <20 ft, $y = \frac{-3x}{2} + 55$
For ceiling height <10 ft, y=40
For ceiling height >20 ft, y=0
For SI units, 1 ft=0.31 m.

FIGURE 11.2.3.2.3.1 Design Area Reduction for Quick-Response Sprinklers.

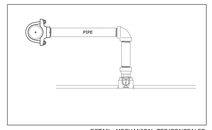
TABLE 8.6.5.1.2 POSITIONING OF SPRINKLERS TO AVOID OBSTRUCTIONS TO DISCHARGE (STANDARD SPRAY UPRIGHT/STANDARD SPRAY PENDENT (ft-in) 2013 EDITION

DISTANCE FROM SPRINKLERS TO SIDE OF OBSTRUCTION (A)	MAXIMUM ALLOWABLE DISTANCE OF DEFLECTOR BELOW BOTTOM OF OBSTRUCTION (B) (in)
LESS THAN 1ft	0
1ft TO LESS THAN 1ft 6in	2
1ft 6in TO LESS THAN 2ft	3
2ft TO LESS THAN 2ft 6in	5
2ft 6in TO LESS THAN 3ft	7
3ft TO LESS THAN 3ft 6in	9
3ft 6in TO LESS THAN 4ft	12
4ft TO LESS THAN 4ft 6in	14
4ft 6in TO LESS THAN 5ft	16
5ft TO LESS THAN 5ft 6in	18
5ft 6in TO LESS THAN 6ft	20
6ft TO LESS THAN 6ft 6in	24
6ft 6in TO LESS THAN 7ft	30
7ft TO LESS THAN 7ft 6in	35

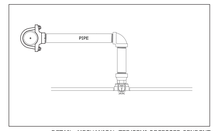
FIGURE 8.6.5.1.2 (a) POSITIONING OF STANDARD PENDENT OR UPRIGHT SPRINKLER TO AVOID OBSTRUCTION TO DISCHARGE (ft-in.)



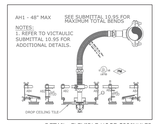
DETAIL: OBSTRUCTION
SCALE: N.T.S.



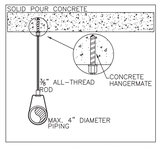
DETAIL: MECHANICAL-TEE/CONCEALED
SCALE: N.T.S.



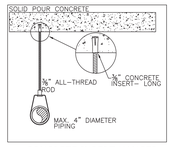
DETAIL: MECHANICAL-TEE/SEMI-RECESSED PENDENT
SCALE: N.T.S.



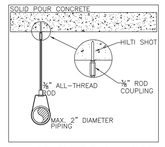
DETAIL: FLEXIBLE HOSE SPRINKLER
SCALE: N.T.S.



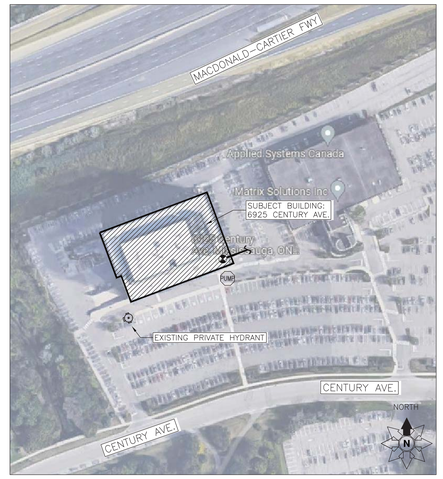
CONCRETE HANGERMATE HANGER
SCALE: N.T.S.



CONCRETE INSERT HANGER
SCALE: N.T.S.



CONCRETE SHOT HANGER
SCALE: N.T.S.



SITE PLAN
SCALE: N.T.S

REVISIONS

1.0	ISSUED FOR PERMIT	05/06/2024

IMPORTANT

OWNERS MUST MAINTAIN SUFFICIENT HEAT (MINIMUM 5°C/41°F) THROUGHOUT THE AREAS WHERE "WET" SYSTEM ARE INSTALLED TO PREVENT FREEZING OF WATER UNLESS AN ANTI-FREEZE OR A "DRY" SYSTEM IS PROVIDED.

INDICATES THE DISTANCE/ELEVATION IN FT./- FROM THE C/L OF THE PIPE TO THE FLOOR

(4) HYDRAULIC REFERENCE POINT

SPRINKLERS IN CENTER OF TILES
NONE ☐ 1 WAY ■ 2 WAYS ■

DRAWING LEGEND

SYB	SPRINKLER DESCRIPTION	SNpl	K	DIAM	TEMP	FINISH	QTY.
⊕	NEW QR SC SSW-RECESSED PENDENT	-	5.6	1/2"	155°F	CHROME	12
⊕	NEW QR SC SSW-RECESSED PENDENT	-	5.6	1/2"	200°F	CHROME	2
◐	EXISTING SPRINKLER TO REMAIN						
●	EXISTING OUTLET						
✕	EXISTING OUTLET TO BE PLUGGED						
⊞	NEW WCH. TEE						

* COORDINATE SPRINKLER FINISH WITH ARCHITECT TOTAL 14

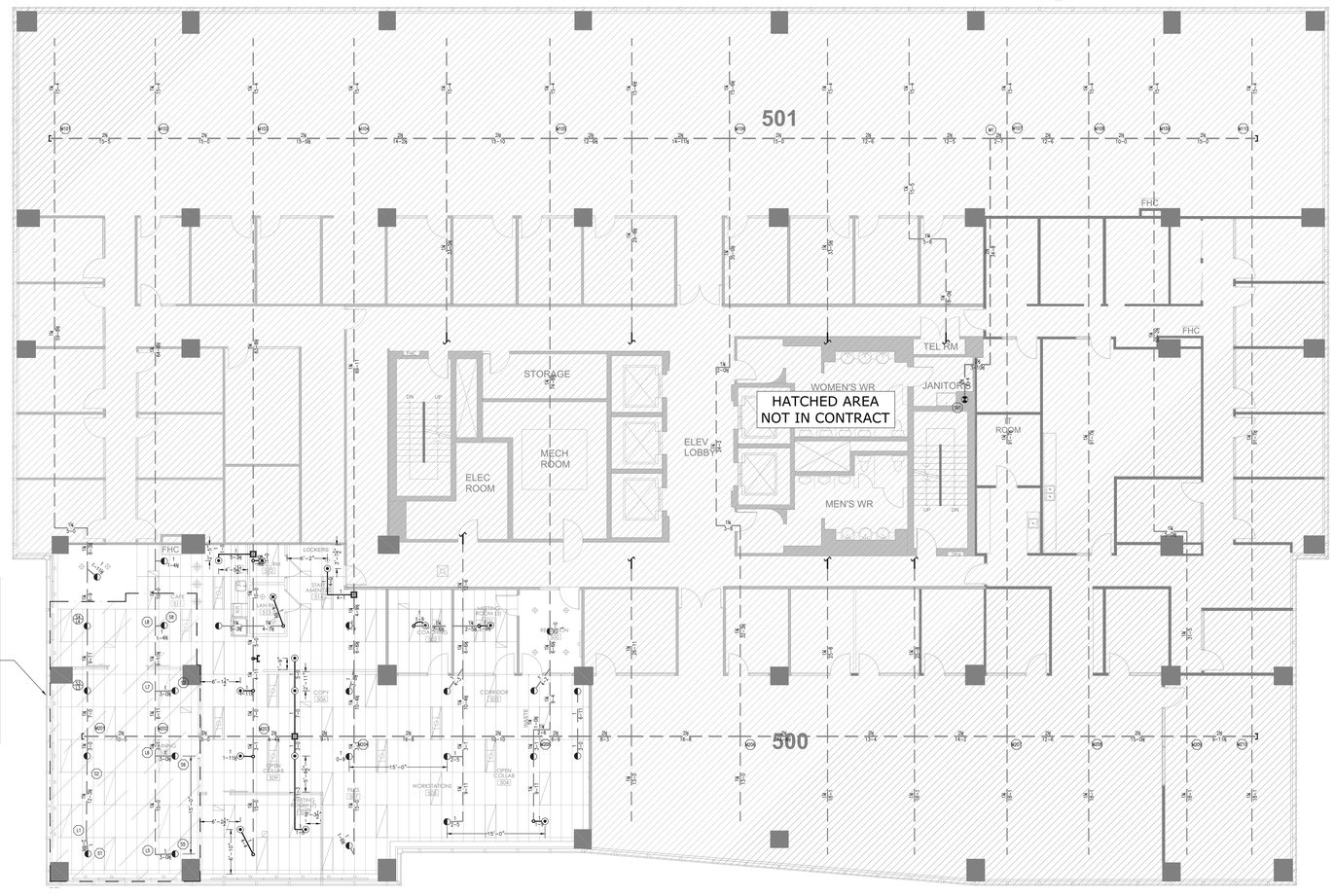
APPLICABLE CODES & STANDARDS

☐ NFPA 10 ☐ NFPA 20
■ NFPA 13 ☐ NFPA 30
☐ NFPA 14 ■ OBC

TYPE OF SYSTEM

■ WET ☐ PREACTION
☐ DRY ☐ SINGLE INTERLOCK
☐ DELUGE WATER-FOAM ☐ DOUBLE INTERLOCK

LEGEND:
RISE UP OR DOWN
ELBOW UP/DOWN
CAPPED PIPE
NEW PIPING
EXISTING PIPING

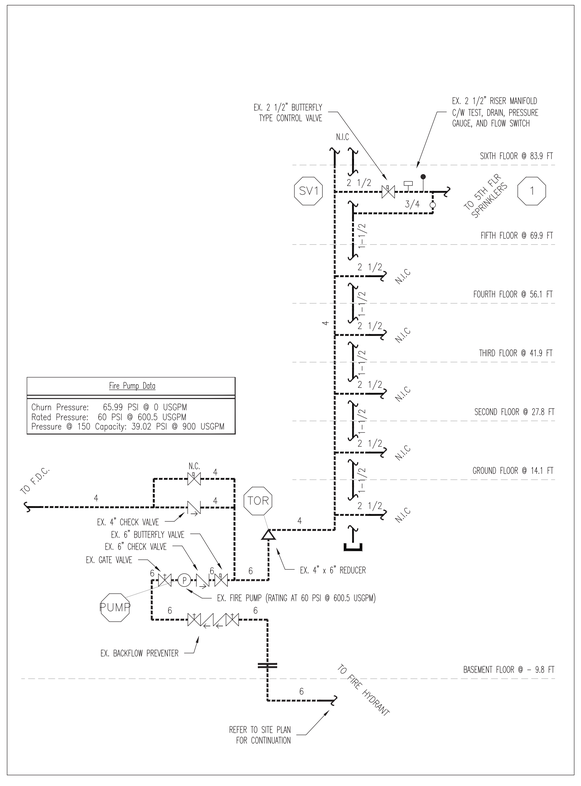


UNIT 502 - NEW SPRINKLER SYSTEM LAYOUT
SCALE: 1/8"=1'-0"

HYDRAULIC CALCULATION DATA

DESIGN AREA NUMBER:	1
DESIGN AREA LOCATION:	UNIT 502
HAZARD/OCCUPANCY:	LIGHT HAZARD
DESIGN DENSITY:	0.1
COVERAGE PER HEAD:	225 SQ.FT
NUMBER OF SPRINKLERS IN DESIGN AREA:	8
SYSTEM FLOW:	292.1 USGPM
SYSTEM PRESSURE:	36.9 PSI
HOSE ALLOWANCE (INCLUDED):	100
SAFETY MARGIN:	29.1 PSI

*LIGHT HAZARD 0.10 USGPM OVER 948 SQ.FT. (DESIGN AREA REDUCED BY 40% BASED ON NFPA 13 (2013): 11.2.3.2.3.1, AND 10' - 0" CEILINGS).
PLUS 100 USGPM HOSE ALLOWANCE.



EXISTING RISER DIAGRAM
SCALE: N.T.S

NORTH

ONYX-FIRE PROTECTION SERVICES INC.
Address: 400 Matheson Blvd West, MISSISSAUGA, ON, L5R 0H1
Phone: 416-674-5633
Fax: 416-674-9623
Email: info@onyx-fire.com

STAMP

LICENSED PROFESSIONAL ENGINEER
DATE: 05, 2024
90218512
M.M. BASSILY
PROVINCE OF ONTARIO

PROJECT

6925 CENTURY AVE

UNIT 502 - 6925 CENTURY AVE, MISSISSAUGA. ON

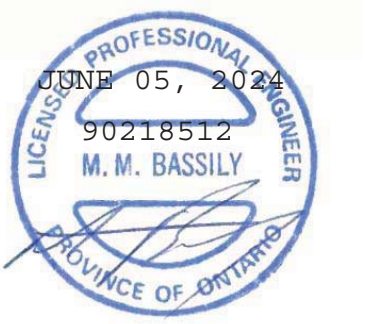
DWG TITLE
SITE PLAN, DETAILS, EX.RISER DIAGRAM
UNIT 502 - SPRRINKLER SYSTEM LAYOUT

DATE: 2024 JUNE	PROJECT NO.: SP0004334
SCALE: AS SHOWN	CHC BY.: R.R.
DWN BY: C.B.	DWG NO.: SP 1
ISSUED FOR REVISION NO.: 1.0	of 1

ONYX-FIRE

PROTECTION SERVICES INC.

Onyx-Fire Protection Services
400 Matheson Blvd. West
Mississauga, ON
L5R 0H1
416-674-5633



Job Name	:	SP0004334 - UNIT 502, 6925 CENTURY AVE - CALC #1
Drawing	:	UNIT 502
Location	:	UNIT 502 - 6925 CNETURY AVE, MISSISSAUGA, ON
Remote Area	:	D.A. #1
Contract	:	SP0004334
Data File	:	SP0004334 - 6925 CENTURY AVE - UNIT 502 - CALC #1.WXF

Hydraulic Design Information Sheet

Name - Remote Area #1 Date - 2024 JUNE
Location - UNIT 502 - 6925 CNETURY AVE, MISSISSAUGA, ON
Building - UNIT 502 System No. - D.A. #1
Contractor - Onyx-Sprinkler Insatllation Inc. Contract No. - SP0004334
Calculated By - JC Drawing No. - SP-1
Construction: ( ) Combustible (X) Non-Combustible Ceiling Height - 92.68 Ft
Occupancy - LIGHT HAZARD

SYSTEM

(X) NFPA 13 (X) Lt. Haz. Ord.Haz.Gp. ( ) 1 ( ) 2 ( ) 3 ( ) Ex.Haz.
( ) NFPA 231 ( ) NFPA 231C ( ) Figure Curve
Other
Specific Ruling NFPA13-13,11.2.3.2.3.1 Made By Date

DESIGN

Area of Sprinkler Operation	- 995 SQ.FT	System Type		Sprinkler/Nozzle
Density	- 0.1	(X) Wet		Make
Area Per Sprinkler	- 225 SQ.FT	( ) Dry		Model
Elevation at Highest Outlet	- 78'7"	( ) Deluge		Size 1/2"
Hose Allowance - Inside	- 50	( ) Preaction		K-Factor 5.6
Rack Sprinkler Allowance	-	( ) Other		Temp.Rat.155°F
Hose Allowance - Outside	- 50			

Note

Calculation Summary: Flow Required - 292.1 Press Required - 36.9 S.F= 29.1
C-Factor Used: 120 Overhead 140 Underground

WATER SUPPLY

Water Flow Test:		Pump Data:		Tank or Reservoir:
Date of Test	-		Cap. -	
Time of Test	-	Rated Cap.- 600.5 Gpm	Elev.- 0	
Static Press	-	@ Press - 60 Psi		
Residual Press	-	Elev. - 0		Well
Flow	-			Proof Flow
Elevation	-			

Location - EXISTING FIRE PUMP

Source of Information - Onyx-Sprinkler Installation Inc.

COMMODITY

Commodity		Class	Location
Storage Ht.		Area	Aisle W.
Storage Method:	Solid Piled %	Palletized %	Rack

( ) Single Row ( ) Conven. Pallet ( ) Auto. Storage ( ) Encap.
( ) Double Row ( ) Slave Pallet ( ) Solid Shelf ( ) Non
( ) Mult. Row ( ) Open Shelf

STORAGE

Flue Spacing
Longitudinal
Clearance:Storage to Ceiling
Transverse

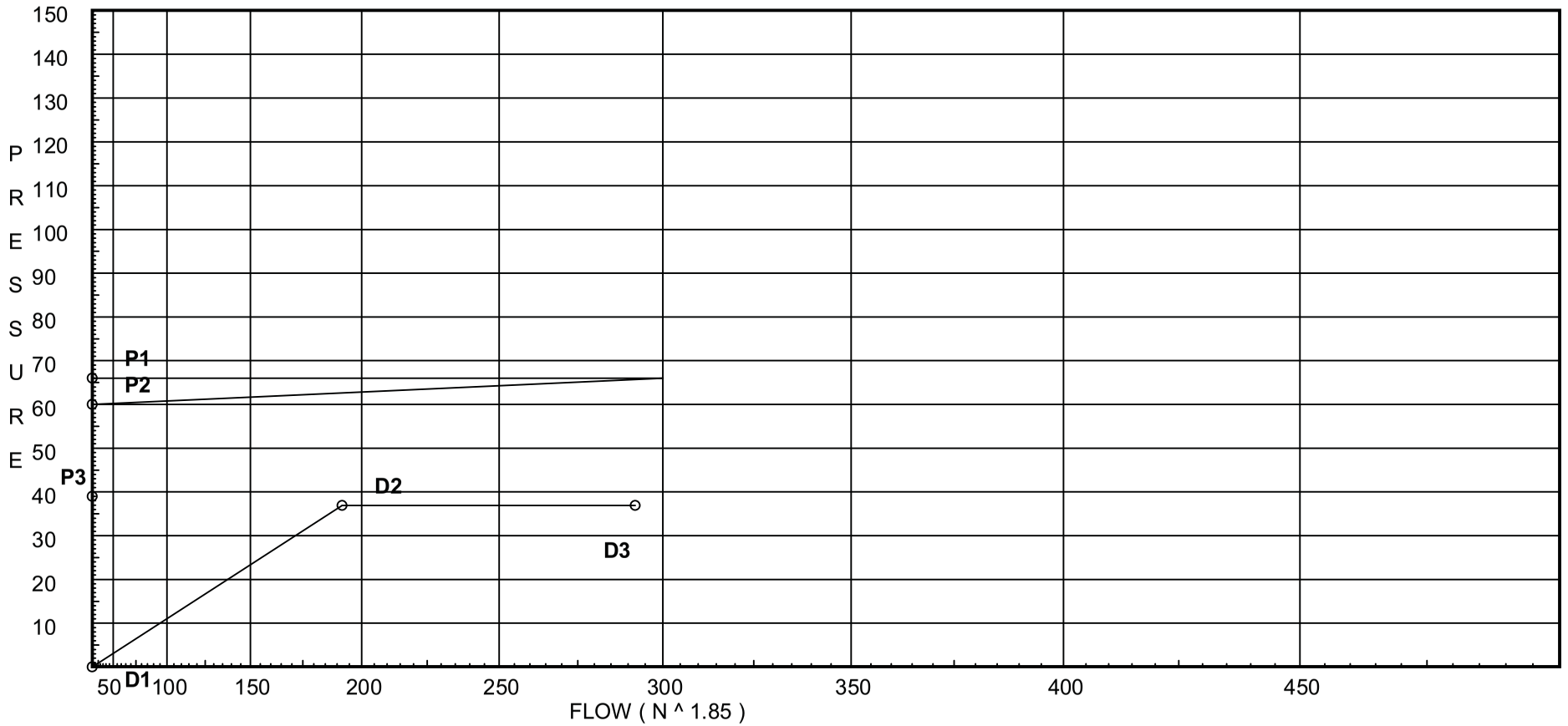
Horizontal Barriers Provided:

Pump Data:

P1 - Pump Churn Pressure	: 65.99
P2 - Pump Rated Pressure	: 60
P2 - Pump Rated Flow	: 0
P3 - Pump Pressure @ Max Flow	: 38.999
P3 - Pump Max Flow	: 0

Demand:

D1 - Elevation	: -1.912
D2 - System Flow	: 192.105
D2 - System Pressure	: 36.889
Hose (Demand)	: 100
D3 - System Demand	: 292.105
Safety Margin	: 29.102



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	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
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

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
PUMP	See Information on Pump Curve			65.991	292.1	36.889

NODE ANALYSIS

Node Tag	Elevation	Node Type	Pressure at Node	Discharge at Node	Notes	
S1	78.576	5.6	16.14	22.5	0.1	225
L1	82.99		25.4			
S2	78.576	5.6	16.4	22.68	0.1	225
L2	82.99		25.82			
M201	82.99		27.12			
S3	78.576	5.6	17.09	23.15	0.1	225
L3	82.99		26.94			
S4	78.576	5.6	17.09	23.15	0.1	225
L4	82.99		26.95			
S5	78.576	5.6	16.16	22.51	0.1	225
L5	82.99		25.42			
S6	78.576	5.6	16.47	22.73	0.1	225
L6	82.99		25.94			
M202	82.99		27.25			
S7	78.576	5.6	24.72	27.84	0.1	225
L7	82.99		26.53			
S8	78.576	5.6	24.19	27.54	0.1	225
L8	82.99		25.94			
M203	82.99		28.18			
M204	82.99		28.89			
M205	82.99		29.81			
M206	82.99		30.56			
M207	82.99		31.2			
M208	82.99		31.32			
M209	82.99		31.38			
M210	82.99		31.39			
M101	82.99		31.53			
M102	82.99		31.57			
M103	82.99		31.65			
M104	82.99		31.85			
M105	82.99		32.46			
M106	82.99		33.29			
M110	82.99		33.76			
M109	82.99		33.78			
M108	82.99		33.82			
M107	82.99		33.93			
M1	82.99		35.56			
TOR	-2.0		73.45	100.0		
PUMP	82.99		36.89			

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 ******
*EQUIVALENT K'S										
*LN 1										
S1	78.576	5.60	22.50	1			62.000	120	16.143	
to									-1.912	
L1	82.990		22.5	1.049			62.000	0.1801	11.166	Vel = 8.35
L1	82.990		0.0	1.25			12.292	120	25.397	
to									0.0	
L2	82.990		22.5	1.442			12.292	0.0343	0.422	Vel = 4.42
			0.0							
L2			22.50						25.819	K Factor = 4.43
S2	78.576	5.60	22.68	1			62.000	120	16.401	
to									-1.912	
L2	82.990		22.68	1.049			62.000	0.1827	11.330	Vel = 8.42
L2	82.990		22.50	1.25	T	7.432	3.000	120	25.819	
to							7.432		0.0	
M201	82.990		45.18	1.442			10.432	0.1248	1.302	Vel = 8.88
M201	82.990		-64.41	1.25			7.000	120	27.121	
to									0.0	
L3	82.990		-19.23	1.442			7.000	-0.0257	-0.180	Vel = 3.78
			0.0							
L3			-19.23						26.941	K Factor = -3.70
S3	78.576	5.60	23.15	1			62.000	120	17.086	
to									-1.912	
L3	82.990		23.15	1.049			62.000	0.1898	11.767	Vel = 8.59
L3	82.990		-19.24	1.25			9.917	120	26.941	
to									0.0	
L4	82.99		3.91	1.442			9.917	0.0013	0.013	Vel = 0.77
			0.0							
L4			3.91						26.954	K Factor = 0.75
S4	78.576	5.60	23.15	1			62.000	120	17.094	
to									-1.912	
L4	82.99		23.15	1.049			62.000	0.1899	11.772	Vel = 8.59
L4	82.99		3.92	1.25	2E	7.432	79.750	120	26.954	
to					T	7.432	14.864		0.0	
M101	82.99		27.07	1.442			94.614	0.0484	4.576	Vel = 5.32
			0.0							
M101			27.07						31.530	K Factor = 4.82
*LN 2										
S5	78.576	5.60	22.51	1			62.000	120	16.159	
to									-1.912	
L5	82.99		22.51	1.049			62.000	0.1802	11.175	Vel = 8.36
L5	82.99		0.0	1.25			15.000	120	25.422	
to									0.0	
L6	82.990		22.51	1.442			15.000	0.0344	0.516	Vel = 4.42
			0.0							
L6			22.51						25.938	K Factor = 4.42
S6	78.576	5.60	22.73	1			62.000	120	16.474	
to									-1.912	
L6	82.990		22.73	1.049			62.000	0.1835	11.376	Vel = 8.44

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 ******
L6	82.990		22.51	1.25	T	7.432	3.083	120	25.938	
to							7.432		0.0	
M202	82.990		45.24	1.442			10.515	0.1252	1.316	Vel = 8.89
M202	82.990		-86.25	1.25			6.917	120	27.254	
to									0.0	
L7	82.99		-41.01	1.442			6.917	-0.1044	-0.722	Vel = 8.06
			0.0							
L7			-41.01						26.532	K Factor = -7.96
S7	78.576	5.60	27.84	1.25			62.000	120	24.717	
to									-1.912	
L7	82.99		27.84	1.442			62.000	0.0601	3.727	Vel = 5.47
L7	82.99		-41.01	1			9.917	120	26.532	
to									0.0	
L8	82.99		-13.17	1.049			9.917	-0.0601	-0.596	Vel = 4.89
			0.0							
L8			-13.17						25.936	K Factor = -2.59
S8	78.576	5.60	27.54	1.25			62.000	120	24.194	
to									-1.912	
L8	82.99		27.54	1.442			62.000	0.0589	3.654	Vel = 5.41
L8	82.99		-13.17	1	T	5.0	74.750	120	25.936	
to							5.000		0.0	
M102	82.99		14.37	1.049			79.750	0.0706	5.633	Vel = 5.33
			0.0							
M102			14.37						31.569	K Factor = 2.56
*TRANSFER LINES										
M203	82.99		21.91	1.25	2T	14.864	91.460	120	28.176	
to							14.864		0.0	
M103	82.99		21.91	1.442			106.324	0.0327	3.478	Vel = 4.30
			0.0							
M103			21.91						31.654	K Factor = 3.89
M204	82.99		20.08	1.25	2T	14.864	91.460	120	28.886	
to							14.864		0.0	
M104	82.99		20.08	1.442			106.324	0.0278	2.959	Vel = 3.94
			0.0							
M104			20.08						31.845	K Factor = 3.56
M205	82.99		18.92	1.25	2T	14.864	91.460	120	29.812	
to							14.864		0.0	
M105	82.990		18.92	1.442			106.324	0.0249	2.652	Vel = 3.72
			0.0							
M105			18.92						32.464	K Factor = 3.32
M206	82.99		17.45	1.25	4E	14.864	97.550	120	30.559	
to					2T	14.864	29.728		0.0	
M106	82.990		17.45	1.442			127.278	0.0215	2.733	Vel = 3.43
			0.0							
M106			17.45						33.292	K Factor = 3.02
M207	82.99		19.22	1.25	2T	14.864	91.460	120	31.205	
to							14.864		0.0	
M107	82.990		19.22	1.442			106.324	0.0257	2.729	Vel = 3.78

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 ******
			0.0							
M107			19.22						33.934	K Factor = 3.30
M208	82.99		18.36	1.25	2T	14.864	91.460	120	31.316	
to							14.864		0.0	
M108	82.99		18.36	1.442			106.324	0.0236	2.507	Vel = 3.61
			0.0							
M108			18.36						33.823	K Factor = 3.16
M209	82.99		16.89	1.25	2E	7.432	96.668	120	31.378	
to					2T	14.864	22.296		0.0	
M109	82.990		16.89	1.442			118.964	0.0202	2.404	Vel = 3.32
			0.0							
M109			16.89						33.782	K Factor = 2.91
M210	82.990		17.83	1.25	2T	14.864	91.460	120	31.389	
to							14.864		0.0	
M110	82.99		17.83	1.442			106.324	0.0223	2.375	Vel = 3.50
			0.0							
M110			17.83						33.764	K Factor = 3.07
* MAIN 2										
M201	82.990		64.41	2.5			10.417	120	27.121	
to									0.0	
M202	82.990		64.41	2.635			10.417	0.0128	0.133	Vel = 3.79
M202	82.990		86.25	2.5			15.000	120	27.254	
to									0.0	
M203	82.99		150.66	2.635			15.000	0.0615	0.922	Vel = 8.86
M203	82.99		-21.91	2.5			15.458	120	28.176	
to									0.0	
M204	82.99		128.75	2.635			15.458	0.0459	0.710	Vel = 7.57
M204	82.99		-20.07	2.5			27.542	120	28.886	
to									0.0	
M205	82.99		108.68	2.635			27.542	0.0336	0.926	Vel = 6.39
M205	82.99		-18.93	2.5			31.668	120	29.812	
to									0.0	
M206	82.99		89.75	2.635			31.668	0.0236	0.747	Vel = 5.28
M206	82.99		-17.45	2.5			40.875	120	30.559	
to									0.0	
M207	82.99		72.3	2.635			40.875	0.0158	0.646	Vel = 4.25
M207	82.99		-19.22	2.5			12.500	120	31.205	
to									0.0	
M208	82.99		53.08	2.635			12.500	0.0089	0.111	Vel = 3.12
M208	82.99		-18.36	2.5			15.042	120	31.316	
to									0.0	
M209	82.99		34.72	2.635			15.042	0.0041	0.062	Vel = 2.04
M209	82.99		-16.89	2.5			9.750	120	31.378	
to									0.0	
M210	82.990		17.83	2.635			9.750	0.0011	0.011	Vel = 1.05
			0.0							
M210			17.83						31.389	K Factor = 3.18

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 ******
*MAIN 1 - L										
M101	82.99		27.07	2.5			15.417	120	31.530	
to									0.0	
M102	82.99		27.07	2.635			15.417	0.0025	0.039	Vel = 1.59
M102	82.99		14.37	2.5			15.000	120	31.569	
to									0.0	
M103	82.99		41.44	2.635			15.000	0.0057	0.085	Vel = 2.44
M103	82.99		21.91	2.5			15.458	120	31.654	
to									0.0	
M104	82.99		63.35	2.635			15.458	0.0124	0.191	Vel = 3.73
M104	82.99		20.08	2.5			30.042	120	31.845	
to									0.0	
M105	82.990		83.43	2.635			30.042	0.0206	0.619	Vel = 4.91
M105	82.990		18.92	2.5			27.542	120	32.464	
to									0.0	
M106	82.990		102.35	2.635			27.542	0.0301	0.828	Vel = 6.02
M106	82.990		17.46	2.5	T	16.474	39.958	120	33.292	
to							16.474		0.0	
M1	82.990		119.81	2.635			56.432	0.0402	2.271	Vel = 7.05
			0.0							
M1			119.81						35.563	K Factor = 20.09
*MAIN 1 - L										
M110	82.99		17.83	2.5			15.000	120	33.764	
to									0.0	
M109	82.990		17.83	2.635			15.000	0.0012	0.018	Vel = 1.05
M109	82.990		16.89	2.5			10.000	120	33.782	
to									0.0	
M108	82.99		34.72	2.635			10.000	0.0041	0.041	Vel = 2.04
M108	82.99		18.36	2.5			12.500	120	33.823	
to									0.0	
M107	82.990		53.08	2.635			12.500	0.0089	0.111	Vel = 3.12
M107	82.990		19.22	2.5	B	9.61	44.000	120	33.934	
to					2T	32.948	59.032		0.0	
M1	82.990		72.3	2.635	2E	16.474	103.032	0.0158	1.629	Vel = 4.25
M1	82.990		119.80	4	2E	26.334	90.000	120	35.563	
to							26.334		36.809	
TOR	-2		192.1	4.26			116.334	0.0093	1.081	Vel = 4.32
TOR	-2	H100	100.00	6	B	12.573	15.000	120	73.453	
to					S	40.235	70.411		-36.809	
PUMP	82.990		292.1	6.357	E	17.603	85.411	0.0029	0.245	Vel = 2.95
			0.0							
PUMP			292.10						36.889	K Factor = 48.09