

HYDRAULIC CALCULATIONS FOR DRY PIPE SYSTEM

DESIGN DATA:

Remote Area Location : Parking

System Type : Dry System

Hazard : Ordinary Hazard System - Group 1

Design Density : 0.15 gpm / sq. ft

Remote Area : 1950 sq. ft

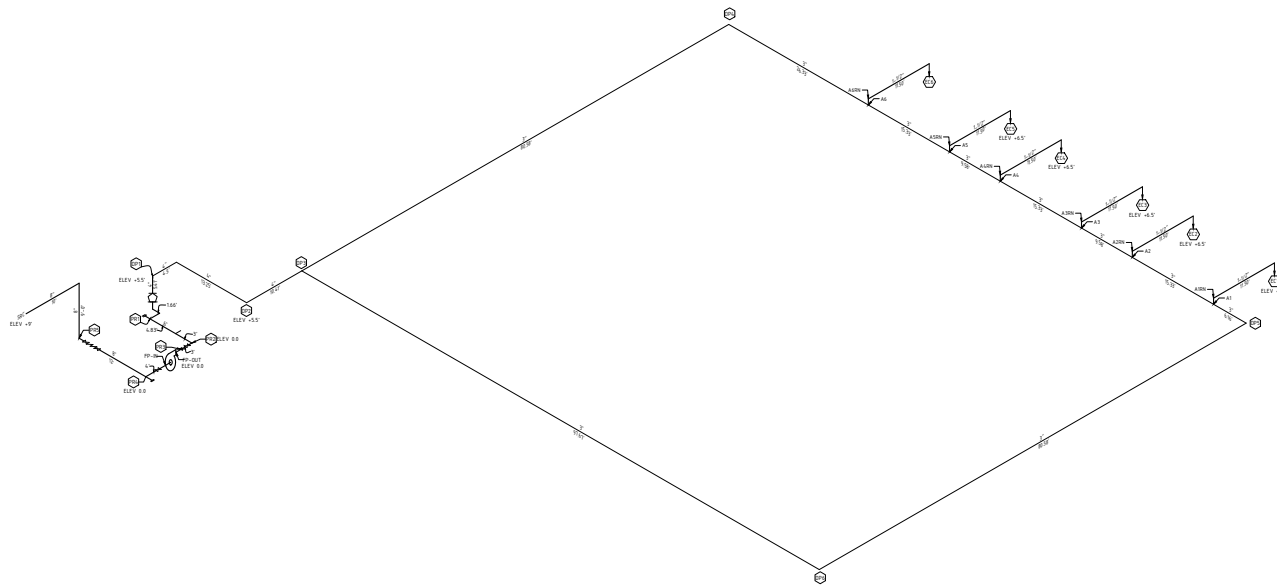
Number of Sprinklers in Remote Area : 10 Nos

Sprinkler Classification : Extended Coverage (EC) Upright

Maximum sprinkler Coverage : 400 sq. ft

Sprinkler K- factor : K14

Exterior Hose System allowance :



PROJECT

315 SPADINA MIXED-USE DEVELOPMENT

315-325 SPADINA AVENUE

DRAWING TITLE

HYDRAULIC CALCULATION
ISOMETRIC DIAGRAMS
DRY PIPE SYSTEM



50 Cosmair Court, Concord, ON
L4K 4J5
(416)850-9477



22-0007
PROJECT
SK RJ
BY REVIEWED
CALC-4

Hydraulic Calculations

Project Name: 315 Spadina

DESIGN DATA:

Remote Area Location: Parking (U/G)

System Type: Dry System

Hazard: Ordinary Hazard Group-1

Design Density: 0.15 gpm/ sq. ft

Remote Area: Maximum 1950 SQ. FT (1500 sq.ft times 1.3)

Sprinkler Classification: Extended Coverage Upright

Maximum Sprinkler Coverage: 400 sq. ft

Sprinkler K-Factor: K14

CALCULATING END SPRINKLER FLOW IN REMOTE AREA

Design Density = 0.15 gpm/sq ft

Maximum area covered by one sprinkler = 400 sq. ft

Flow required at end sprinkler = 0.15 x 400 gpm

$$= 60 \text{ gpm}$$

CALCULATING END SPRINKLER PRESSURE

Using equation.

$$Q = K \times \sqrt{P}$$

Where, Q = Flow in gpm (gallons per minute)

K = Sprinkler constant given by manufacture data sheet

P = Pressure at sprinkler in psi (pound per square inch)

Once the flow (Q) is calculated, the required pressure (P) can be calculated by simply rearranging the above formula:

$$P = \left(\frac{Q}{K}\right)^2$$

$$Q = 60 \text{ gpm}$$

$$K = 14$$

$$\text{Therefore, Pressure required at end sprinkler} = (60/14)^2 = 18.36 \text{ psi.}$$

Therefore, our calculation shall start at Pressure P = 18.36 psi.

This pressure shall be inserted into hydraulic calculation software of minimum end conditions.

DATE: 5/25/2024\REZA\315 SPADINA\HYDRAULIC CALC\DRY SYSTEM HYDR CALC2.SDF

JOB TITLE: 315 Spadina

DRY PIPE DEMAND HYDRAULIC CALCULATIONS

WATER SUPPLY DATA

SOURCE NODE TAG	STATIC PRESS. (PSI)	RESID. PRESS. (PSI)	FLOW @ (GPM)	AVAIL. PRESS. (PSI)	TOTAL @ DEMAND (GPM)	REQ'D PRESS. (PSI)
SRC	75.0	64.0	1200.0	73.8	361.6	20.0

AGGREGATE FLOW ANALYSIS:

TOTAL FLOW AT SOURCE	361.6 GPM
TOTAL HOSE STREAM ALLOWANCE AT SOURCE	0.0 GPM
OTHER HOSE STREAM ALLOWANCES	0.0 GPM
TOTAL DISCHARGE FROM ACTIVE SPRINKLERS	361.6 GPM

NODE ANALYSIS DATA

NODE TAG	ELEVATION (FT)	NODE TYPE	PRESSURE		DISCHARGE (GPM)
			TOTAL (PSI)	NORMAL (PSI)	
A5RN	6.5	- - - -	21.5	20.9	- - -
A6RN	6.5	- - - -	22.1	21.4	- - -
EC6	6.5	K=14.00	19.0	19.0	61.0
EC5	6.5	K=14.00	18.5	18.5	60.2
A4RN	6.5	- - - -	21.4	20.8	- - -
EC4	6.5	K=14.00	18.4	18.4	60.0
A3RN	6.5	- - - -	21.3	20.7	- - -
EC3	6.5	K=14.00	18.4	18.4	60.0
A2RN	6.5	- - - -	21.4	20.8	- - -
EC2	6.5	K=14.00	18.4	18.4	60.0
A1RN	6.5	- - - -	21.6	21.0	- - -
EC1	6.5	K=14.00	18.6	18.6	60.4
A6	5.5	- - - -	23.7	23.1	- - -
A5	5.5	- - - -	23.1	22.8	- - -
A4	5.5	- - - -	22.9	22.9	- - -
A3	5.5	- - - -	22.9	22.9	- - -
A2	5.5	- - - -	22.9	22.8	- - -
A1	5.5	- - - -	23.2	22.9	- - -
DP1	5.5	- - - -	33.3	32.7	- - -
DP2	5.5	- - - -	32.6	32.0	- - -
DP3	5.5	- - - -	32.0	31.4	- - -
DP4	5.5	- - - -	26.0	25.5	- - -
DP5	5.5	- - - -	23.7	23.4	- - -
DP6	5.5	- - - -	27.4	27.1	- - -
PR1	0.0	- - - -	37.7	37.6	- - -
PR2	0.0	- - - -	37.8	37.7	- - -
FP-OUT	0.0	- - - -	38.1	38.1	- - -
FP-IN	0.0	- - - -	23.7	23.7	- - -
PR3	0.0	- - - -	38.1	37.9	- - -
PR4	0.0	- - - -	23.7	23.7	- - -
PR5	0.0	- - - -	23.8	23.8	- - -
SRC	9.0	SOURCE	20.0	20.0	361.6

DATE: 5/25/2024\REZA\315 SPADINA\HYDRAULIC CALC\DRY SYSTEM HYDR CALC2.SDF

JOB TITLE: 315 Spadina

PIPE DATA

PIPE TAG	END	ELEV.	PT	P2	DISC.	Q (GPM)	DIA (IN)	LENGTH	PRESS.	
NODES	(FT)	(PSI)	(PSI)	(GPM)	VEL (FPS)	HW (C)	FL/FT	(FT)	SUM.	
									(PSI)	
Pipe: 1										
A5RN	6.5	21.5	20.9	0.0	9.5	100	FTG	T	PE	0.0
EC5	6.5	18.5	18.5	60.2		0.174	TL	17.21	PV	0.6
Pipe: 2										
A6RN	6.5	22.1	21.4	0.0	9.6	100	FTG	T	PE	0.0
EC6	6.5	19.0	19.0	61.0		0.178	TL	17.21	PV	0.6
Pipe: 3										
A4RN	6.5	21.4	20.8	0.0	9.5	100	FTG	T	PE	0.0
EC4	6.5	18.4	18.4	60.0		0.173	TL	17.21	PV	0.6
Pipe: 4										
A3RN	6.5	21.3	20.7	0.0	9.5	100	FTG	T	PE	0.0
EC3	6.5	18.4	18.4	60.0		0.173	TL	17.21	PV	0.6
Pipe: 5										
A2RN	6.5	21.4	20.8	0.0	9.5	100	FTG	T	PE	0.0
EC2	6.5	18.4	18.4	60.0		0.173	TL	17.21	PV	0.6
Pipe: 6										
A1RN	6.5	21.6	21.0	0.0	9.5	100	FTG	T	PE	0.0
EC1	6.5	18.6	18.6	60.4		0.175	TL	17.21	PV	0.6
Pipe: 7										
A6RN	6.5	22.1	21.4	0.0	9.6	100	FTG	T	PE	0.4
A6	5.5	23.7	23.1	0.0		0.178	TL	6.71	PV	0.6
Pipe: 8										
A5RN	6.5	21.5	20.9	0.0	9.5	100	FTG	T	PE	0.4
A5	5.5	23.1	22.8	0.0		0.174	TL	6.71	PV	0.6
Pipe: 9										
A5	5.5	23.1	22.8	0.0	3.7	100	FTG	----	PE	0.0
A4	5.5	22.9	22.9	0.0		0.015	TL	9.58	PV	0.1
Pipe: 10										
A5	5.5	23.1	22.8	0.0	6.4	100	FTG	----	PE	0.0
A6	5.5	23.7	23.1	0.0		0.039	TL	15.33	PV	0.3
Pipe: 11										
A4RN	6.5	21.4	20.8	0.0	9.5	100	FTG	T	PE	0.4
A4	5.5	22.9	22.9	0.0		0.173	TL	6.71	PV	0.6
Pipe: 12										
A4	5.5	22.9	22.9	0.0	1.1	100	FTG	----	PE	0.0
A3	5.5	22.9	22.9	0.0		0.002	TL	15.33	PV	0.0
Pipe: 13										
A3RN	6.5	21.3	20.7	0.0	9.5	100	FTG	T	PE	0.4
A3	5.5	22.9	22.9	0.0		0.173	TL	6.71	PV	0.6
Pipe: 14										
A3	5.5	22.9	22.9	0.0	1.5	100	FTG	----	PE	0.0
A2	5.5	22.9	22.8	0.0		0.003	TL	9.58	PV	0.0

DATE: 5/25/2024\REZA\315 SPADINA\HYDRAULIC CALC\DRY SYSTEM HYDR CALC2.SDF

JOB TITLE: 315 Spadina

PIPE TAG	END	ELEV.	PT	P2	DISC.	Q (GPM)	DIA (IN)	LENGTH	PRESS.	
NODES	(FT)	(PSI)	(PSI)	(GPM)	VEL (FPS)	HW (C)	FL/FT	(FT)	SUM.	
									(PSI)	
Pipe: 15										
A2RN	6.5	21.4	20.8	0.0	9.5	1.610	PL	1.00	PF	1.2
A2	5.5	22.9	22.8	0.0		100	FTG	T	PE	0.4
						0.173	TL	6.71	PV	0.6
Pipe: 16										
A2	5.5	22.9	22.8	0.0	4.1	3.068	PL	15.33	PF	0.3
A1	5.5	23.2	22.9	0.0		100	FTG	----	PE	0.0
						0.017	TL	15.33	PV	0.1
Pipe: 17										
A1RN	6.5	21.6	21.0	0.0	9.5	1.610	PL	1.00	PF	1.2
A1	5.5	23.2	22.9	0.0		100	FTG	T	PE	0.4
						0.175	TL	6.71	PV	0.6
Pipe: 18										
A1	5.5	23.2	22.9	0.0	6.7	3.068	PL	6.16	PF	0.5
DP5	5.5	23.7	23.4	0.0		100	FTG	E	PE	0.0
						0.043	TL	11.16	PV	0.3
Pipe: 19										
DP5	5.5	23.7	23.4	0.0	6.7	3.068	PL	80.58	PF	3.7
DP6	5.5	27.4	27.1	0.0		100	FTG	E	PE	0.0
						0.043	TL	85.58	PV	0.3
Pipe: 20										
DP6	5.5	27.4	27.1	0.0	6.7	3.068	PL	97.67	PF	4.6
DP3	5.5	32.0	31.4	0.0		100	FTG	T	PE	0.0
						0.043	TL	108.38	PV	0.3
Pipe: 21										
A6	5.5	23.7	23.1	0.0	9.0	3.068	PL	26.33	PF	2.3
DP4	5.5	26.0	25.5	0.0		100	FTG	E	PE	0.0
						0.074	TL	31.33	PV	0.5
Pipe: 22										
DP4	5.5	26.0	25.5	0.0	9.0	3.068	PL	80.58	PF	6.0
DP3	5.5	32.0	31.4	0.0		100	FTG	----	PE	0.0
						0.074	TL	80.58	PV	0.5
Pipe: 23										
DP3	5.5	32.0	31.4	0.0	9.1	4.026	PL	10.41	PF	0.6
DP2	5.5	32.6	32.0	0.0		100	FTG	----	PE	0.0
						0.055	TL	10.41	PV	0.6
Pipe: 24										
DP2	5.5	32.6	32.0	0.0	9.1	4.026	PL	13.25	PF	0.7
DP1	5.5	33.3	32.7	0.0		100	FTG	----	PE	0.0
						0.055	TL	13.25	PV	0.6
Pipe: 25										
DP1	5.5	33.3	32.7	0.0	9.1	4.026	PL	8.73	PF	2.1
PR1	0.0	37.7	37.6	0.0		100	FTG	2ED	PE	2.4
						0.055	TL	37.28	PV	0.6
Pipe: 26										
PR1	0.0	37.7	37.6	0.0	4.0	6.065	PL	7.83	PF	0.0
PR2	0.0	37.8	37.7	0.0		120	FTG	----	PE	0.0
						0.005	TL	7.83	PV	0.1
Pipe: 27										
PR3	0.0	38.1	37.9	0.0	4.0	6.065	PL	2.00	PF	0.3
PR2	0.0	37.8	37.7	0.0		120	FTG	ECG	PE	0.0
						0.005	TL	51.00	PV	0.1
Pipe: 28										
FP-OUT	0.0	38.1	38.1	0.0	4.0	6.065	PL	1.00	PF	0.0
PR3	0.0	38.1	37.9	0.0		120	FTG	----	PE	0.0
						0.005	TL	1.00	PV	0.1
Pipe: 29										
FIRE PUMP				Rating:		500.0 gpm @ 80.0 psi				
FP-IN				Avail.:		361.6 gpm @ 80.0 psi				
FP-OUT				Req'd.:		361.6 gpm @ 14.4 psi				

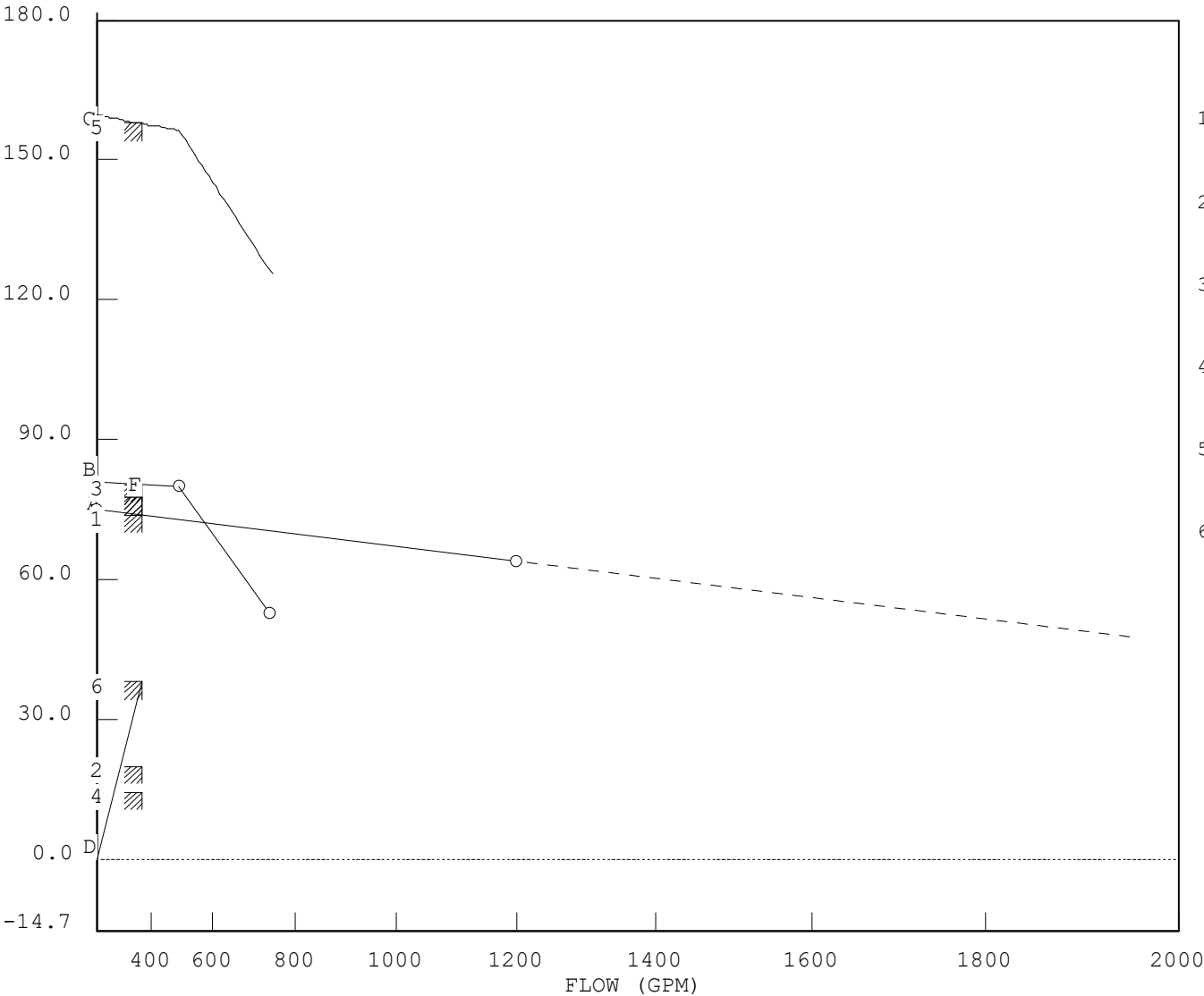
Calculation - 4 Dry Pipe System

Static: 75.00 psi Resid: 64.00 psi Flow: 1200.0 gpm

G
A
U
G
E

P
R
E
S
S
U
R
E

(
P
S
I
)



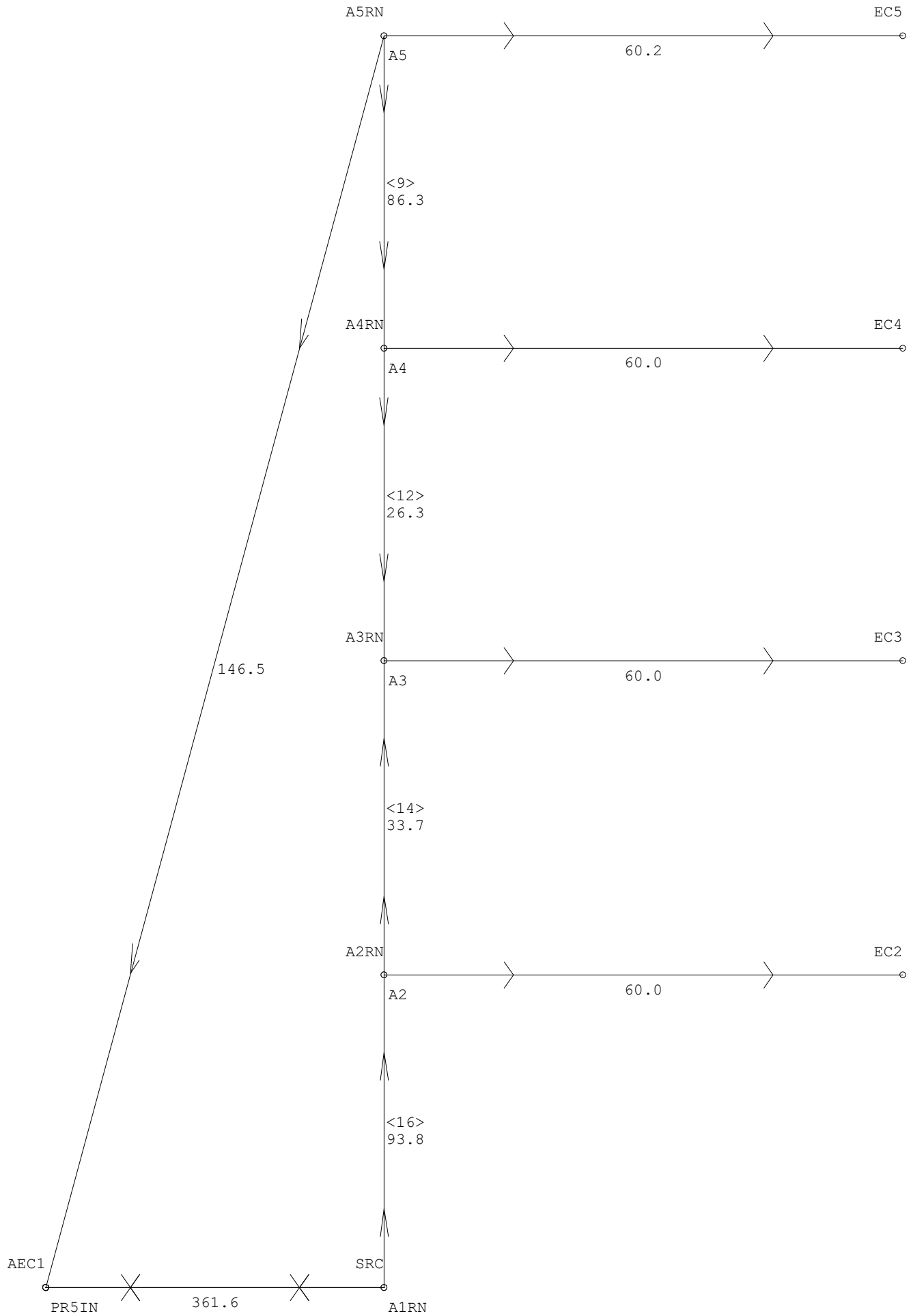
LEGEND

- 1 Pressure available at source
73.80 psi @ 361.6 gpm
 - 2 Pressure required at source
20.00 psi @ 361.6 gpm
 - 3 Pressure available from pump
80.22 psi @ 361.6 gpm
 - 4 Pressure required from pump
14.41 psi @ 361.6 gpm
 - 5 Total Pressure available at pump dschg.
157.68 psi @ 361.6 gpm
 - 6 Total Pressure required at pump dschg.
38.06 psi @ 361.6 gpm
- A. Source Supply Curve
B. Net Pump Supply Curve
C. Pump Discharge Curve
D. System Demand Curve
F. Available at Pump Suction

DATE: 5/25/2024\REZA\315 SPADINA\HYDRAULIC CALC\DRY SYSTEM HYDR CALC2.SDF

JOB TITLE: 315 Spadina

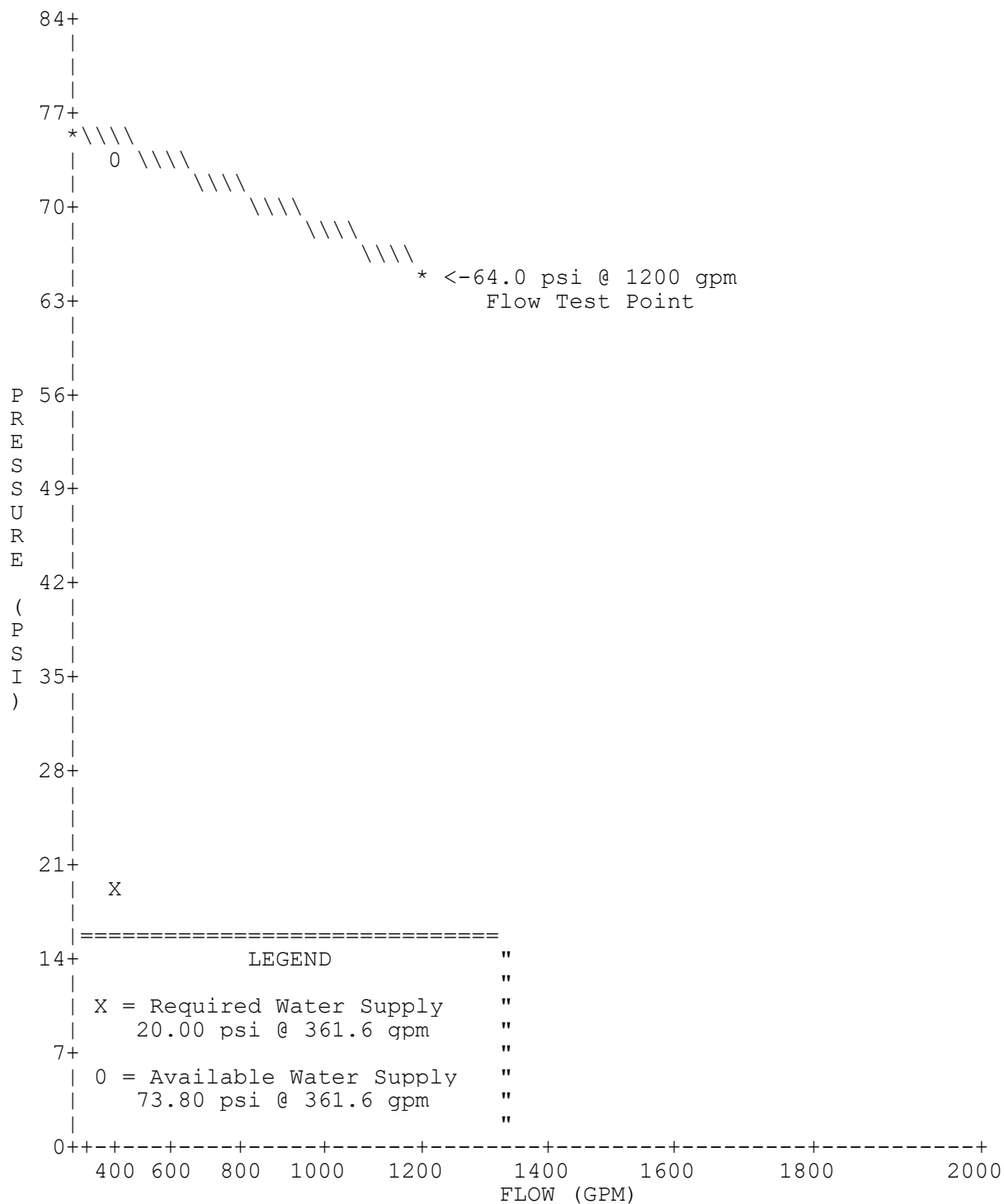
SPRINKLER SYSTEM DIAGRAM WITH FLOWPLOT



DATE: 5/25/2024\REZA\315 SPADINA\HYDRAULIC CALC\DRY SYSTEM HYDR CALC2.SDF

JOB TITLE: 315 Spadina

WATER SUPPLY CURVE



DATE: 5/25/2024\REZA\315 SPADINA\HYDRAULIC CALC\DRY SYSTEM HYDR CALC2.SDF

JOB TITLE: 315 Spadina

DRY PIPE SUPPLY HYDRAULIC CALCULATIONS

WATER SUPPLY DATA

SOURCE NODE TAG	STATIC PRESS. (PSI)	RESID. PRESS. (PSI)	FLOW @ (GPM)	AVAIL. PRESS. (PSI)	TOTAL @ DEMAND (GPM)	REQ'D PRESS. (PSI)
SRC	75.0	64.0	1200.0	70.9	707.0	

AGGREGATE FLOW ANALYSIS:

TOTAL FLOW AT SOURCE	707.0 GPM
TOTAL HOSE STREAM ALLOWANCE AT SOURCE	0.0 GPM
OTHER HOSE STREAM ALLOWANCES	0.0 GPM
TOTAL DISCHARGE FROM ACTIVE SPRINKLERS	707.0 GPM

NODE ANALYSIS DATA

NODE TAG	ELEVATION (FT)	NODE TYPE	PRESSURE		DISCHARGE (GPM)
			TOTAL (PSI)	NORMAL (PSI)	
A5RN	6.5	- - - -	81.0	78.7	- - -
A6RN	6.5	- - - -	83.0	80.7	- - -
EC6	6.5	K=14.00	72.4	72.4	119.2
EC5	6.5	K=14.00	70.7	70.7	117.7
A4RN	6.5	- - - -	80.6	78.3	- - -
EC4	6.5	K=14.00	70.3	70.3	117.4
A3RN	6.5	- - - -	80.5	78.2	- - -
EC3	6.5	K=14.00	70.2	70.2	117.3
A2RN	6.5	- - - -	80.6	78.3	- - -
EC2	6.5	K=14.00	70.3	70.3	117.4
A1RN	6.5	- - - -	81.4	79.1	- - -
EC1	6.5	K=14.00	71.1	71.1	118.0
A6	5.5	- - - -	87.6	85.5	- - -
A5	5.5	- - - -	85.5	84.5	- - -
A4	5.5	- - - -	85.0	84.7	- - -
A3	5.5	- - - -	84.9	84.9	- - -
A2	5.5	- - - -	85.0	84.6	- - -
A1	5.5	- - - -	85.9	84.8	- - -
DP1	5.5	- - - -	120.8	118.7	- - -
DP2	5.5	- - - -	118.3	116.1	- - -
DP3	5.5	- - - -	116.3	114.2	- - -
DP4	5.5	- - - -	95.6	93.5	- - -
DP5	5.5	- - - -	87.6	86.4	- - -
DP6	5.5	- - - -	100.3	99.1	- - -
PR1	0.0	- - - -	130.3	129.9	- - -
PR2	0.0	- - - -	130.5	130.0	- - -
FP-OUT	0.0	- - - -	131.4	131.4	- - -
FP-IN	0.0	- - - -	73.9	73.9	- - -
PR3	0.0	- - - -	131.4	131.0	- - -
PR4	0.0	- - - -	74.1	73.9	- - -
PR5	0.0	- - - -	74.6	74.4	- - -
SRC	9.0	SOURCE	70.9	70.9	707.0

DATE: 5/25/2024\REZA\315 SPADINA\HYDRAULIC CALC\DRY SYSTEM HYDR CALC2.SDF

JOB TITLE: 315 Spadina

PIPE DATA

PIPE TAG	END	ELEV.	PT	P2	DISC.	Q (GPM)	DIA (IN)	LENGTH	PRESS.	
NODES		(FT)	(PSI)	(PSI)	(GPM)	VEL (FPS)	HW (C)	(FT)	SUM.	
							FL/FT		(PSI)	
Pipe: 1										
A5RN		6.5	81.0	78.7	0.0	117.7	1.610 PL	11.50	PF	10.3
EC5		6.5	70.7	70.7	117.7	18.6	100 FTG	T	PE	0.0
		6.5					0.601 TL	17.21	PV	2.3
Pipe: 2										
A6RN		6.5	83.0	80.7	0.0	119.2	1.610 PL	11.50	PF	10.6
EC6		6.5	72.4	72.4	119.2	18.8	100 FTG	T	PE	0.0
		6.5					0.615 TL	17.21	PV	2.4
Pipe: 3										
A4RN		6.5	80.6	78.3	0.0	117.4	1.610 PL	11.50	PF	10.3
EC4		6.5	70.3	70.3	117.4	18.5	100 FTG	T	PE	0.0
		6.5					0.598 TL	17.21	PV	2.3
Pipe: 4										
A3RN		6.5	80.5	78.2	0.0	117.3	1.610 PL	11.50	PF	10.3
EC3		6.5	70.2	70.2	117.3	18.5	100 FTG	T	PE	0.0
		6.5					0.597 TL	17.21	PV	2.3
Pipe: 5										
A2RN		6.5	80.6	78.3	0.0	117.4	1.610 PL	11.50	PF	10.3
EC2		6.5	70.3	70.3	117.4	18.5	100 FTG	T	PE	0.0
		6.5					0.598 TL	17.21	PV	2.3
Pipe: 6										
A1RN		6.5	81.4	79.1	0.0	118.0	1.610 PL	11.50	PF	10.4
EC1		6.5	71.1	71.1	118.0	18.6	100 FTG	T	PE	0.0
		6.5					0.604 TL	17.21	PV	2.3
Pipe: 7										
A6RN		6.5	83.0	80.7	0.0	-119.2	1.610 PL	1.00	PF	4.1
A6		5.5	87.6	85.5	0.0	18.8	100 FTG	T	PE	0.4
		5.5					0.615 TL	6.71	PV	2.4
Pipe: 8										
A5RN		6.5	81.0	78.7	0.0	-117.7	1.610 PL	1.00	PF	4.0
A5		5.5	85.5	84.5	0.0	18.6	100 FTG	T	PE	0.4
		5.5					0.601 TL	6.71	PV	2.3
Pipe: 9										
A5		5.5	85.5	84.5	0.0	168.8	3.068 PL	9.58	PF	0.5
A4		5.5	85.0	84.7	0.0	7.3	100 FTG	----	PE	0.0
		5.5					0.051 TL	9.58	PV	0.4
Pipe: 10										
A5		5.5	85.5	84.5	0.0	-286.5	3.068 PL	15.33	PF	2.1
A6		5.5	87.6	85.5	0.0	12.4	100 FTG	----	PE	0.0
		5.5					0.135 TL	15.33	PV	1.0
Pipe: 11										
A4RN		6.5	80.6	78.3	0.0	-117.4	1.610 PL	1.00	PF	4.0
A4		5.5	85.0	84.7	0.0	18.5	100 FTG	T	PE	0.4
		5.5					0.598 TL	6.71	PV	2.3
Pipe: 12										
A4		5.5	85.0	84.7	0.0	51.4	3.068 PL	15.33	PF	0.1
A3		5.5	84.9	84.9	0.0	2.2	100 FTG	----	PE	0.0
		5.5					0.006 TL	15.33	PV	0.0
Pipe: 13										
A3RN		6.5	80.5	78.2	0.0	-117.3	1.610 PL	1.00	PF	4.0
A3		5.5	84.9	84.9	0.0	18.5	100 FTG	T	PE	0.4
		5.5					0.597 TL	6.71	PV	2.3
Pipe: 14										
A3		5.5	84.9	84.9	0.0	-65.9	3.068 PL	9.58	PF	0.1
A2		5.5	85.0	84.6	0.0	2.9	100 FTG	----	PE	0.0
		5.5					0.009 TL	9.58	PV	0.1

DATE: 5/25/2024\REZA\315 SPADINA\HYDRAULIC CALC\DRY SYSTEM HYDR CALC2.SDF

JOB TITLE: 315 Spadina

PIPE TAG	END	ELEV.	PT	P2	DISC.	Q (GPM)	DIA (IN)	LENGTH	PRESS.	
NODES	(FT)	(PSI)	(PSI)	(GPM)	VEL (FPS)	HW (C)	FL/FT	(FT)	SUM.	
									(PSI)	
Pipe: 15										
A2RN	6.5	80.6	78.3	0.0	18.5	1.610	PL	1.00	PF	4.0
A2	5.5	85.0	84.6	0.0		100	FTG	T	PE	0.4
						0.598	TL	6.71	PV	2.3
Pipe: 16										
A2	5.5	85.0	84.6	0.0	8.0	3.068	PL	15.33	PF	0.9
A1	5.5	85.9	84.8	0.0		100	FTG	----	PE	0.0
						0.059	TL	15.33	PV	0.4
Pipe: 17										
A1RN	6.5	81.4	79.1	0.0	18.6	1.610	PL	1.00	PF	4.1
A1	5.5	85.9	84.8	0.0		100	FTG	T	PE	0.4
						0.604	TL	6.71	PV	2.3
Pipe: 18										
A1	5.5	85.9	84.8	0.0	13.1	3.068	PL	6.16	PF	1.7
DP5	5.5	87.6	86.4	0.0		100	FTG	E	PE	0.0
						0.148	TL	11.16	PV	1.2
Pipe: 19										
DP5	5.5	87.6	86.4	0.0	13.1	3.068	PL	80.58	PF	12.7
DP6	5.5	100.3	99.1	0.0		100	FTG	E	PE	0.0
						0.148	TL	85.58	PV	1.2
Pipe: 20										
DP6	5.5	100.3	99.1	0.0	13.1	3.068	PL	97.67	PF	16.0
DP3	5.5	116.3	114.2	0.0		100	FTG	T	PE	0.0
						0.148	TL	108.38	PV	1.2
Pipe: 21										
A6	5.5	87.6	85.5	0.0	17.6	3.068	PL	26.33	PF	8.0
DP4	5.5	95.6	93.5	0.0		100	FTG	E	PE	0.0
						0.257	TL	31.33	PV	2.1
Pipe: 22										
DP4	5.5	95.6	93.5	0.0	17.6	3.068	PL	80.58	PF	20.7
DP3	5.5	116.3	114.2	0.0		100	FTG	----	PE	0.0
						0.257	TL	80.58	PV	2.1
Pipe: 23										
DP3	5.5	116.3	114.2	0.0	17.8	4.026	PL	10.41	PF	2.0
DP2	5.5	118.3	116.1	0.0		100	FTG	----	PE	0.0
						0.191	TL	10.41	PV	2.1
Pipe: 24										
DP2	5.5	118.3	116.1	0.0	17.8	4.026	PL	13.25	PF	2.5
DP1	5.5	120.8	118.7	0.0		100	FTG	----	PE	0.0
						0.191	TL	13.25	PV	2.1
Pipe: 25										
DP1	5.5	120.8	118.7	0.0	17.8	4.026	PL	8.73	PF	7.1
PR1	0.0	130.3	129.9	0.0		100	FTG	2ED	PE	2.4
						0.191	TL	37.28	PV	2.1
Pipe: 26										
PR1	0.0	130.3	129.9	0.0	7.9	6.065	PL	7.83	PF	0.1
PR2	0.0	130.5	130.0	0.0		120	FTG	----	PE	0.0
						0.019	TL	7.83	PV	0.4
Pipe: 27										
PR3	0.0	131.4	131.0	0.0	7.9	6.065	PL	2.00	PF	0.9
PR2	0.0	130.5	130.0	0.0		120	FTG	ECG	PE	0.0
						0.019	TL	51.00	PV	0.4
Pipe: 28										
FP-OUT	0.0	131.4	131.4	0.0	7.9	6.065	PL	1.00	PF	0.0
PR3	0.0	131.4	131.0	0.0		120	FTG	----	PE	0.0
						0.019	TL	1.00	PV	0.4
Pipe: 29										
FIRE PUMP					Rating:	500.0 gpm @ 80.0 psi				
FP-IN	0.0	0.0	73.9	0.0	Avail.:	707.0 gpm @ 57.5 psi				
FP-OUT	0.0	0.0	131.4	0.0	Req'd.:	707.0 gpm @ 57.5 psi				

DATE: 5/25/2024\REZA\315 SPADINA\HYDRAULIC CALC\DRY SYSTEM HYDR CALC2.SDF

JOB TITLE: 315 Spadina

PIPE TAG	END	ELEV.	PT	P2	DISC.	Q (GPM)	DIA (IN)	LENGTH	PRESS.
NODES	(FT)	(PSI)	(PSI)	(GPM)	VEL (FPS)	HW (C)	FL/FT	(FT)	SUM.
									(PSI)
Pipe: 30					707.0	6.065	PL	4.00	PF 0.1
PR4	0.0	74.1	73.9	0.0	7.9	120	FTG	G	PE 0.0
FP-IN	0.0	73.9	73.9	0.0		0.019	TL	7.00	PV 0.4
Pipe: 31					-707.0	7.981	PL	12.00	PF 0.5
PR4	0.0	74.1	73.9	0.0	4.5	120	FTG	2C2G	PE 0.0
PR5	0.0	74.6	74.4	0.0		0.005	TL	110.00	PV 0.1
Pipe: 32					-707.0	7.981	PL	19.00	PF 0.2
PR5	0.0	74.6	74.4	0.0	4.5	120	FTG	E	PE -3.9
SRC	9.0	70.9	70.9	(N/A)		0.005	TL	37.00	PV 0.1

NOTES (HASS):

- Calculations were performed by the HASS 2023 D computer program in accordance with (2020) under license no. 65699794 granted by
HRS Systems, Inc.
208 Southside Square
Petersburg, TN 37144
(931) 659-9760
- The system has been calculated to provide an average imbalance at each node of 0.001 gpm and a maximum imbalance at any node of 0.012 gpm.
- Velocity pressures have been included in the calculation of the system pressures and flows. Maximum water velocity is 18.8 ft/sec at pipe 7.
- The Minimum pump suction pressure under maximum calculated demand is 73.92 (psi)
- Items listed in bold print on the cover sheet
are automatically transferred from the calculation report.
- Available pressure at source node SRC under full flow conditions is 70.87 psi with a flow of 706.97 gpm.

(7) PIPE FITTINGS TABLE

HASS Pipe Table Name: standard

PAGE: A	MATERIAL: S40	HWC: 120							
Diameter	Equivalent Fitting Lengths in Feet								
(in)	E	T	L	C	B	G	A	D	N
	Ell	Tee	LngEll	ChkVlv	BfyVlv	GatVlv	AlmChk	DPVlv	NTee

	F								
	F45Ell								
1.610	4.00	8.00	2.00	9.00	6.00	1.00	10.00	10.00	8.00
	2.00								
3.068	7.00	15.00	5.00	16.00	10.00	1.00	13.00	13.00	15.00
	3.50								
4.026	10.00	20.00	6.00	22.00	12.00	2.00	20.00	20.00	20.00
	5.00								

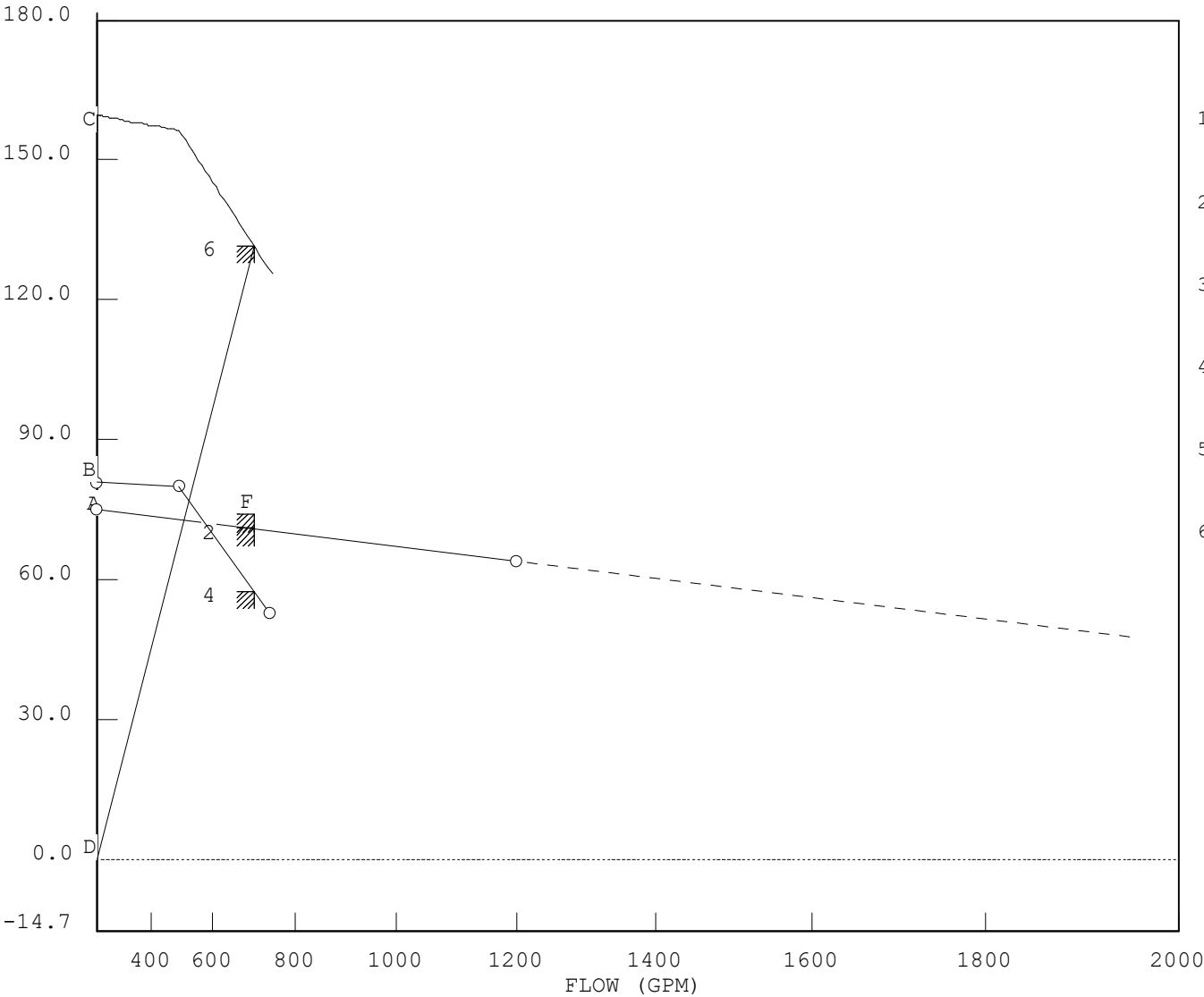
WATER SUPPLY ANALYSIS

Static: 75.00 psi Resid: 64.00 psi Flow: 1200.0 gpm

G
A
U
G

P
R
E
S
S
U
R
E

(
P
S
i
)



Note: (1) Dashed Lines indicate extrapolated values from Test Results

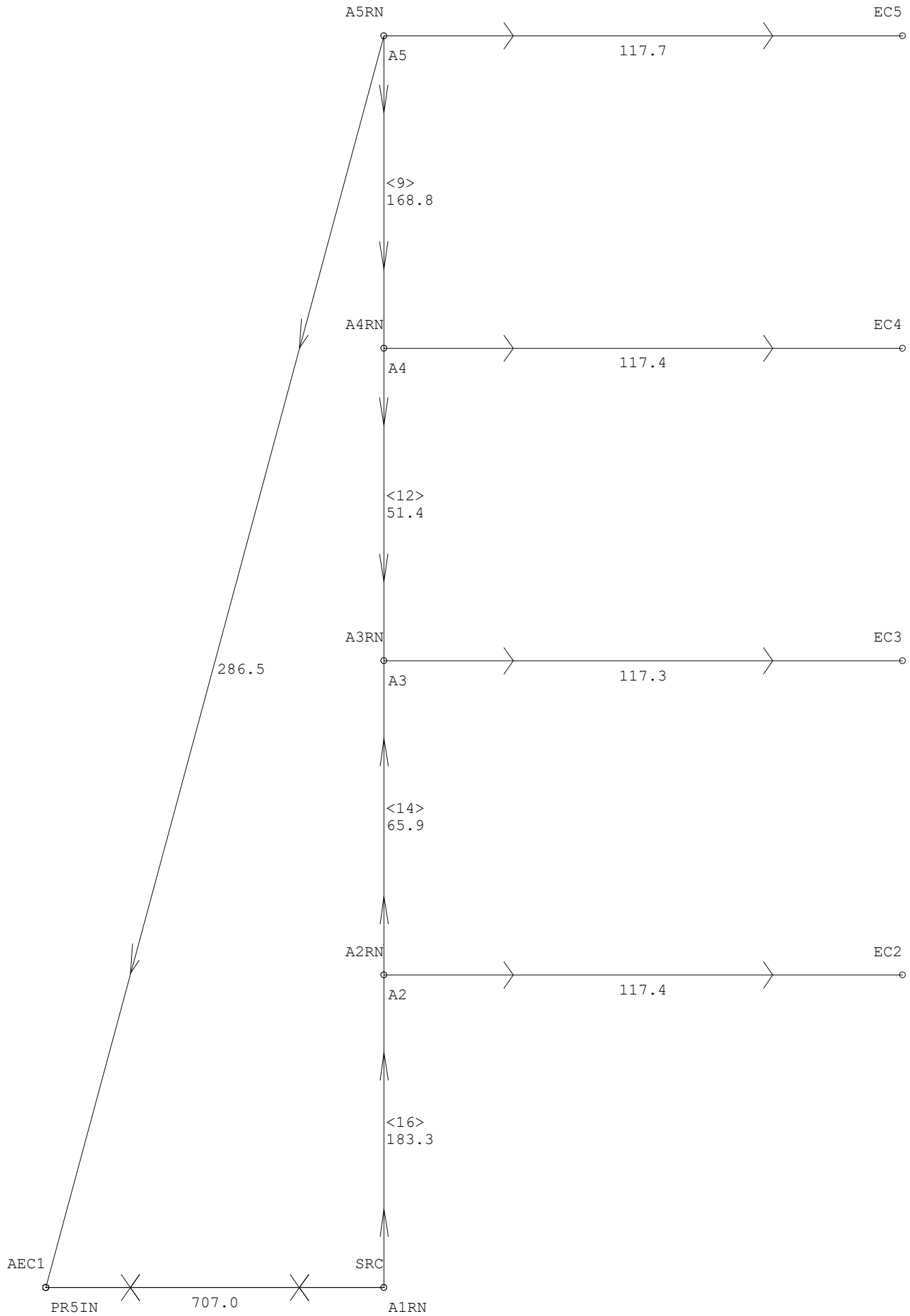
LEGEND

- 1 Pressure available at source
70.87 psi @ 707.0 gpm
 - 2 Pressure required at source
70.87 psi @ 707.0 gpm
 - 3 Pressure available from pump
57.49 psi @ 707.0 gpm
 - 4 Pressure required from pump
57.49 psi @ 707.0 gpm
 - 5 Total Pressure available at pump dschg.
131.42 psi @ 707.0 gpm
 - 6 Total Pressure required at pump dschg.
131.41 psi @ 707.0 gpm
- A. Source Supply Curve
B. Net Pump Supply Curve
C. Pump Discharge Curve
D. System Demand Curve
F. Available at Pump Suction

DATE: 5/25/2024\REZA\315 SPADINA\HYDRAULIC CALC\DRY SYSTEM HYDR CALC2.SDF

JOB TITLE: 315 Spadina

SPRINKLER SYSTEM DIAGRAM WITH FLOWPLOT



DATE: 5/25/2024\REZA\315 SPADINA\HYDRAULIC CALC\DRY SYSTEM HYDR CALC2.SDF

JOB TITLE: 315 Spadina

WATER SUPPLY CURVE

