



SMITH FIRE SYSTEMS, INC
1106 54TH AVENUE EAST TACOMA, WASHINGTON 98424
(253) 926-1880 Fax (253) 926-2350
CONTR. REG. NO. SMITHFS1360T



GENERAL / HYDRAULIC CALCULATION INFORMATION SHEET

PROJECT NAME:	BRADLEY HEIGHTS	JOB NO. :	TC25207	OWNER :	
	BUILDING F	DATE:	11/22/2025	CRP/TP BRADLEY HEIGHTS LLC	
ADDRESS:	206 27TH AVE SE	BY:	A. RIDEOUT	AHJ :	
	PUYALLUP, WA 98374			PUYALLUP	

SYSTEM DESIGNATION: **SYSTEM #1 -L3 (2) DRY E.C. HSW SPRINKLERS**
DESIGN PER: **NFPA 13R (2019 EDITION)**

OCCUPANCY CLASSIFICATION: **RESIDENTIAL**

DESIGN CRITERIA:		SPRINKLER MANUFACTURER:	TYCO
NFPA SECTION:	7.2.2	K-FACTOR:	5.6K
AREA MODIFIER	N/A	MODEL:	DS-1
		TEMPERATURE:	155°
		RESPONSE TYPE:	QR
SYSTEM TYPE:	WET	TOTAL SPRINKLERS CALCULATED:	2
MAX CEILING HEIGHT:	9'-1"	MAX AREA OF COVERAGE PER SPRINKLER:	320 SQ. FT
CEILING HEIGHT:	9'-1"	MAX DISTANCE BETWEEN SPRINKLERS:	20 FT
ROOF SLOPE:	NO		
CEILING SLOPE:	NO		
		FIRE PUMP:	N
		RATED CAPACITY OF PUMP:	N/A

DESIGN AREA

THE (2) HYDRAULICALLY MOST DEMANDING ADJACENT SPRINKLERS DELIVERING .1 GPM/SQ. FT. OR PER THE SPRINKLER LISTING, WHICHEVER IS MORE DEMANDING.

ALLOWANCES INCLUDED IN CALCULATIONS:

ADDED AT:

OUTSIDE HOSE **0 GPM**

CITY CONNECTION

WATER SUPPLY:	ELEVATION OF TEST: 0 FT.	ELEVATION OF LEVEL 1: 0 FT.	MAIN DRAIN TEST:
STATIC 95 PSI	DATE OF TEST: 4/19/2001		S: R:
RESIDUAL 90 PSI	DATA PROVIDED BY: FRUITLAND WATER		INSPECTORS TEST:
FLOW 1055 GPM	LOCATION OF TEST: FH @ 207 27TH AVE SE		TRIP TIME:

WET SYSTEM NUMBER 1

AREA	SQ. FT.	SPRINKLERS
BASEMENT 1	4198	44
FLOOR 1	8066	74
FLOOR 2	8194	74
FLOOR 3	8046	78
TOTAL:	28,504	270

NOTES:

MOST DEMANDING AREA: SYS. 1

MOST DEMANDING (1) SPRINKLER(S) AT 7 PSI

BASE OF RISER: 64.5 GPM REQUIRED AT 64.2 PSI

SUMMARY: 64.5 GPM REQUIRED AT 78.8 PSI

AT CONNECTION TO **SOURCE**

(INCLUDING **0 GPM** FOR HOSE STREAMS)





SMITH FIRE SYSTEMS, INC.

WATER SUPPLY DATA

STATIC 90 PSI
RESIDUAL 95 PSI
FLOWING 1055 GPM

JOB NAME BRADLEY HEIGHTS APARTMENTS

ADDRESS 206 27TH AVE SE, BLDG F

DATE PUYALLUP, WA 98374

JOB NO. TC25207

SYSTEM/AREA SYS 1: (2) 16x20 TYCO DS1



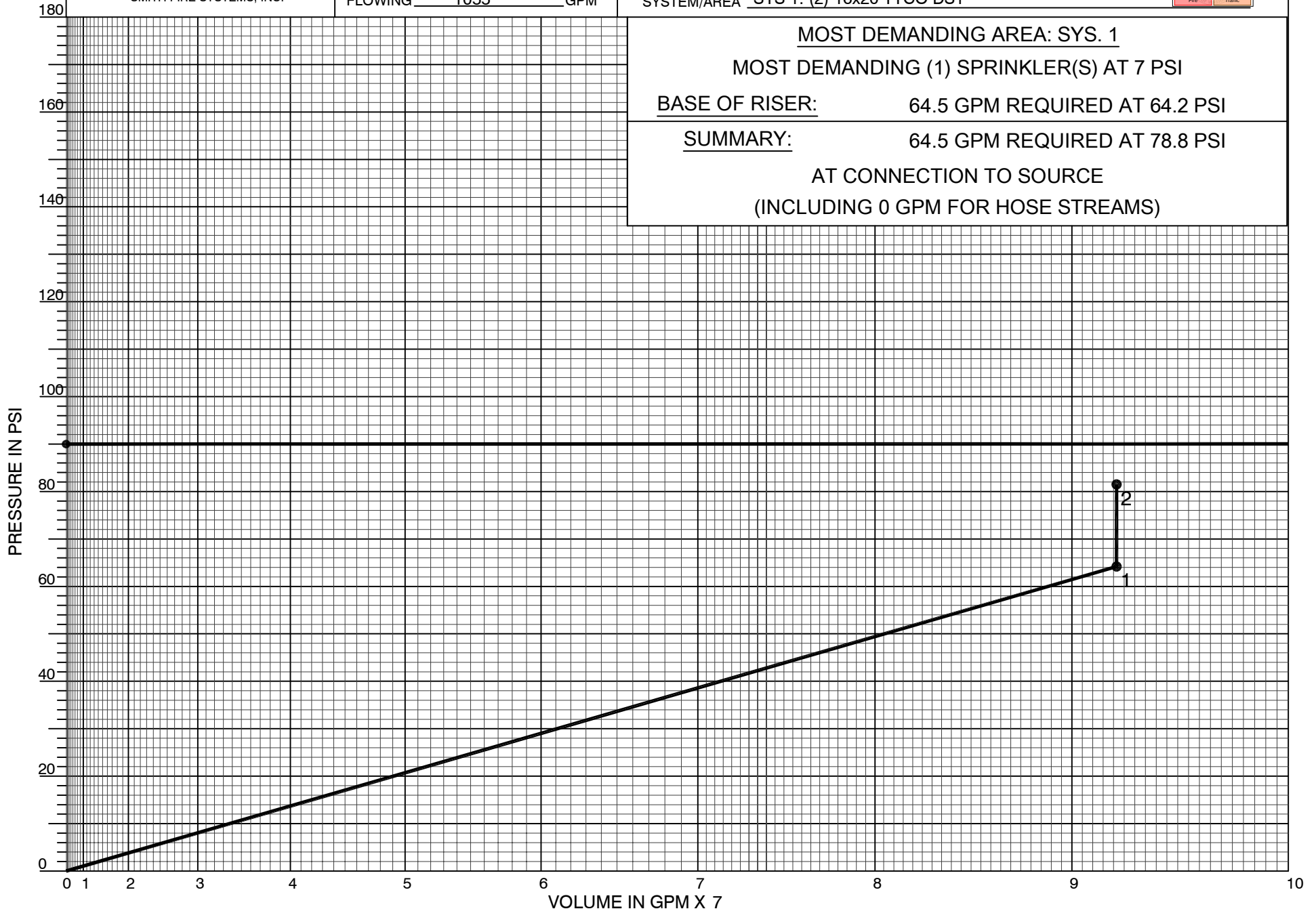
MOST DEMANDING AREA: SYS. 1

MOST DEMANDING (1) SPRINKLER(S) AT 7 PSI

BASE OF RISER: 64.5 GPM REQUIRED AT 64.2 PSI

SUMMARY: 64.5 GPM REQUIRED AT 78.8 PSI

AT CONNECTION TO SOURCE
(INCLUDING 0 GPM FOR HOSE STREAMS)



DATE: 12/3/2025AULICS\HASS FILES\BUILDING F\F - (2) 16X20 DS1 32.7PSI.SDF
 JOB TITLE: F - (2) 16x20 DS1 32.7PSI

WATER SUPPLY DATA

SOURCE NODE TAG	STATIC PRESS. (PSI)	RESID. PRESS. (PSI)	FLOW @ (GPM)	AVAIL. PRESS. (PSI)	TOTAL @ DEMAND (GPM)	REQ'D PRESS. (PSI)
SOURCE	95.0	90.0	1055.0	95.0	65.4	78.8

Available pressure is 16.2 psi (17%) greater than required pressure.

AGGREGATE FLOW ANALYSIS:

TOTAL FLOW AT SOURCE	65.4 GPM
TOTAL HOSE STREAM ALLOWANCE AT SOURCE	0.0 GPM
OTHER HOSE STREAM ALLOWANCES	0.0 GPM
TOTAL DISCHARGE FROM ACTIVE SPRINKLERS	65.4 GPM

NODE ANALYSIS DATA

NODE TAG	ELEVATION (FT)	NODE TYPE	PRESSURE (PSI)	DISCHARGE (GPM)
S2	38.3	K= 5.60	32.7	32.0
S3	38.3	K= 5.60	35.5	33.4
M2	38.8	- - - -	37.4	- - -
M3	38.8	- - - -	37.4	- - -
301	38.8	- - - -	39.1	- - -
302	38.8	- - - -	39.4	- - -
202	29.8	- - - -	43.6	- - -
201	29.8	- - - -	43.4	- - -
102	19.7	- - - -	48.4	- - -
101	19.7	- - - -	47.9	- - -
011	9.6	- - - -	52.4	- - -
012	9.6	- - - -	53.3	- - -
TOR	14.5	- - - -	61.0	- - -
BFP1	7.6	- - - -	64.2	- - -
BFP2	7.6	- - - -	71.2	- - -
UG1	0.0	- - - -	74.6	- - -
UG2	-8.7	- - - -	78.4	- - -
UG3	-9.7	- - - -	78.8	- - -
SOURCE	-9.7	SOURCE	78.8	65.4

DATE: 12/3/2025AULICS\HASS FILES\BUILDING F\F - (2) 16X20 DS1 32.7PSI.SDF

JOB TITLE: F - (2) 16x20 DS1 32.7PSI

PIPE DATA

PIPE TAG	END	ELEV.	NOZ.	PT	DISC.	Q (GPM)	DIA (IN)	LENGTH	PRESS.	
	NODES	(FT)	(K)	(PSI)	(GPM)	VEL (FPS)	HW (C)	(FT)	SUM.	
							FL/FT		(PSI)	
Pipe: 1										
S2		38.3	5.6	32.7	32.0	-32.0	1.101	PL 15.00	PF	4.9
M3		38.8	0.0	37.4	0.0	10.8	150	FTG 2ET	PE	-0.2
							0.163	TL 30.00	PV	
Pipe: 2										
S3		38.3	5.6	35.5	33.4	-33.4	1.101	PL 1.75	PF	2.1
M2		38.8	0.0	37.4	0.0	11.2	150	FTG ET	PE	-0.2
							0.175	TL 11.75	PV	
Pipe: 3										
301		38.8	0.0	39.1	0.0	39.8	1.598	PL 21.08	PF	1.8
M2		38.8	0.0	37.4	0.0	6.4	150	FTG 3T	PE	0.0
							0.040	TL 45.08	PV	
Pipe: 4										
M2		38.8	0.0	37.4	0.0	6.4	1.598	PL 4.58	PF	0.0
M3		38.8	0.0	37.4	0.0	1.0	150	FTG ----	PE	0.0
							0.001	TL 4.58	PV	
Pipe: 5										
M3		38.8	0.0	37.4	0.0	-25.6	1.598	PL 78.50	PF	2.0
302		38.8	0.0	39.4	0.0	4.1	150	FTG 2E3T	PE	0.0
							0.018	TL 116.50	PV	
Pipe: 6										
302		38.8	0.0	39.4	0.0	-32.5	1.598	PL 10.08	PF	0.3
202		29.8	0.0	43.6	0.0	5.2	150	FTG ----	PE	3.9
							0.027	TL 10.08	PV	
Pipe: 7										
301		38.8	0.0	39.1	0.0	-32.9	1.598	PL 10.08	PF	0.3
201		29.8	0.0	43.4	0.0	5.3	150	FTG ----	PE	3.9
							0.028	TL 10.08	PV	
Pipe: 8										
202		29.8	0.0	43.6	0.0	-39.2	1.598	PL 10.08	PF	0.4
102		19.7	0.0	48.4	0.0	6.3	150	FTG ----	PE	4.4
							0.039	TL 10.08	PV	
Pipe: 9										
201		29.8	0.0	43.4	0.0	-26.2	1.598	PL 10.08	PF	0.2
101		19.7	0.0	47.9	0.0	4.2	150	FTG ----	PE	4.4
							0.018	TL 10.08	PV	
Pipe: 10										
102		19.7	0.0	48.4	0.0	-48.6	1.598	PL 10.09	PF	0.6
012		9.6	0.0	53.3	0.0	7.8	150	FTG ----	PE	4.4
							0.057	TL 10.09	PV	
Pipe: 11										
101		19.7	0.0	47.9	0.0	-16.8	1.598	PL 10.09	PF	0.1
011		9.6	0.0	52.4	0.0	2.7	150	FTG ----	PE	4.4
							0.008	TL 10.09	PV	
Pipe: 12										
301		38.8	0.0	39.1	0.0	-6.8	1.598	PL 105.00	PF	0.3
302		38.8	0.0	39.4	0.0	1.1	150	FTG 2E6T	PE	0.0
							0.002	TL 167.00	PV	
Pipe: 13										
201		29.8	0.0	43.4	0.0	-6.7	1.598	PL 105.00	PF	0.2
202		29.8	0.0	43.6	0.0	1.1	150	FTG 2E6T	PE	0.0
							0.001	TL 167.00	PV	

DATE: 12/3/2025AULICS\HASS FILES\BUILDING F\F - (2) 16X20 DS1 32.7PSI.SDF
 JOB TITLE: F - (2) 16x20 DS1 32.7PSI

PIPE TAG	END	ELEV.	NOZ.	PT	DISC.	Q (GPM)	DIA (IN)	LENGTH	PRESS.	
	NODES	(FT)	(K)	(PSI)	(GPM)	VEL (FPS)	HW (C)	(FT)	SUM.	
							FL/FT		(PSI)	
	Pipe: 14					-9.3	1.598	PL 105.00	PF	0.5
101		19.7	0.0	47.9	0.0	1.5	150	FTG 2E6T	PE	0.0
102		19.7	0.0	48.4	0.0		0.003	TL 167.00	PV	
	Pipe: 15					-16.8	1.598	PL 87.75	PF	0.9
011		9.6	0.0	52.4	0.0	2.7	150	FTG 2E2T	PE	0.0
012		9.6	0.0	53.3	0.0		0.008	TL 117.75	PV	
	Pipe: 16					-65.4	1.598	PL 35.00	PF	9.8
012		9.6	0.0	53.3	0.0	10.5	150	FTG 8ET	PE	-2.1
TOR		14.5	0.0	61.0	0.0		0.099	TL 99.00	PV	
	Pipe: 17					-65.4	2.185	PL 6.92	PF	0.1
TOR		14.5	0.0	61.0	0.0	5.6	150	FTG ----	PE	3.0
BFP1		7.6	0.0	64.2	0.0		0.022	TL 6.92	PV	
	Pipe: 18									
BFP2		7.6	0.0	71.2	0.0		7.0 psi,	65.4 gpm		
BFP1		7.6	0.0	64.2	0.0					
	Pipe: 19					-65.4	4.100	PL 95.00	PF	0.2
BFP2		7.6	0.0	71.2	0.0	1.6	140	FTG ET2G	PE	3.3
UG1		0.0	0.0	74.6	0.0		0.001	TL 136.00	PV	
	Pipe: 20					-65.4	8.270	PL 195.00	PF	0.0
UG1		0.0	0.0	74.6	0.0	0.4	140	FTG 2ETG	PE	3.8
UG2		-8.7	0.0	78.4	0.0		0.000	TL 284.00	PV	
	Pipe: 21					-65.4	12.340	PL 35.00	PF	0.0
UG2		-8.7	0.0	78.4	0.0	0.2	140	FTG TFG	PE	0.4
UG3		-9.7	0.0	78.8	0.0		0.000	TL 142.00	PV	
	Pipe: 22					-65.4	6.160	PL 15.50	PF	0.0
UG3		-9.7	0.0	78.8	0.0	0.7	140	FTG EG	PE	0.0
SOURCE		-9.7	SRCE	78.8	(N/A)		0.000	TL 31.50	PV	

NOTES (HASS):

- Calculations were performed by the HASS computer program in accordance with NFPA (2020) under license no. 64621553 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 0.008 gpm and a maximum imbalance at any node of 0.152 gpm.
- Total pressure at each node is used in balancing the system. Maximum water velocity is 11.2 ft/sec at pipe 2.

DATE: 12/3/2025AULICS\HASS FILES\BUILDING F\F - (2) 16X20 DS1 32.7PSI.SDF

JOB TITLE: F - (2) 16x20 DS1 32.7PSI

(4) Items listed in bold print on the cover sheet

are automatically transferred from the calculation report.

(5) Available pressure at source node SOURCE under full flow conditions is 94.96 psi with a flow of 75.31 gpm.

(6) PIPE FITTINGS TABLE

User Pipe Table Name: SMITH

PAGE: D	MATERIAL: DI	HWC: 140				
Diameter	Equivalent Fitting Lengths in Feet					
(in)	E	T	F	C	B	G
	Ell	Tee	45	ChkVlv	BfyVlv	GatVlv
4.100	8.00	27.00	6.00	30.00	20.00	3.00
6.160	12.00	40.00	10.00	43.00	16.00	4.00
8.270	18.00	47.00	12.00	60.00	20.00	6.00
12.340	24.00	80.00	19.00	87.00	34.00	8.00

PAGE: P	MATERIAL: CPVC	HWC: 150					
Diameter	Equivalent Fitting Lengths in Feet						
(in)	E	T	F	R	C	G	B
	Ell	Tee	45	teeRun	Coup	Gva	Bfy
1.101	5.00	5.00	1.00	1.00	1.00	1.00	4.00
1.598	7.00	8.00	2.00	1.00	1.00	1.00	6.00

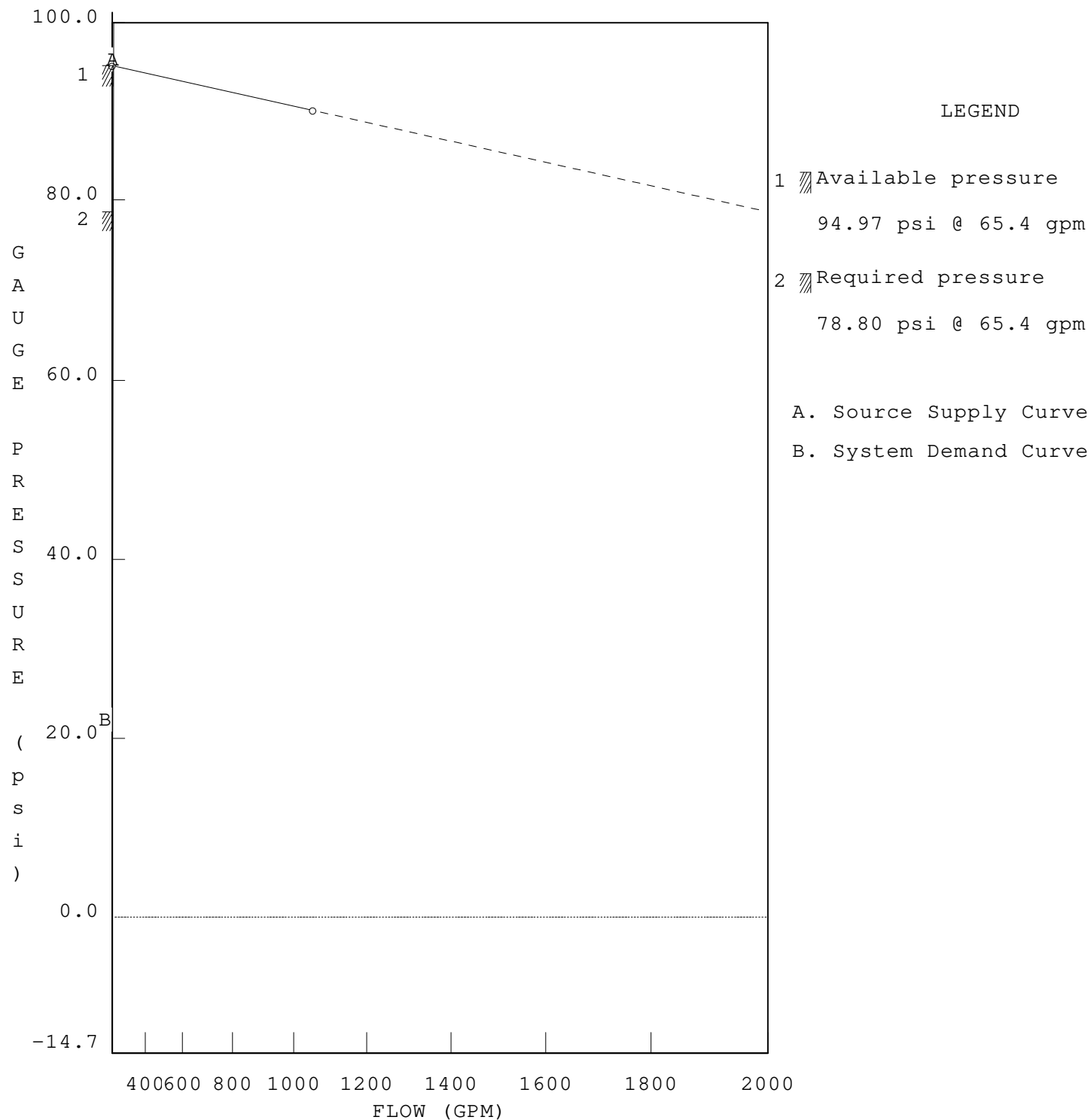
PAGE: Y	MATERIAL: SCH7	HWC: 120							
Diameter	Equivalent Fitting Lengths in Feet								
(in)	E	T	F	C	B	G	A	D	X
	Ell	Tee	45	ChkVlv	BfyVlv	GatVlv	AlmChk	DPVlv	flex
2.185	4.60	15.20	2.40	14.40	6.20	1.00	12.40	12.40	0.00

DATE: 12/3/2025AULICS\HASS FILES\BUILDING F\F - (2) 16X20 DS1 32.7PSI.SDF

JOB TITLE: F - (2) 16x20 DS1 32.7PSI

WATER SUPPLY ANALYSIS

Static: 95.00 psi Resid: 90.00 psi Flow: 1055.0 gpm

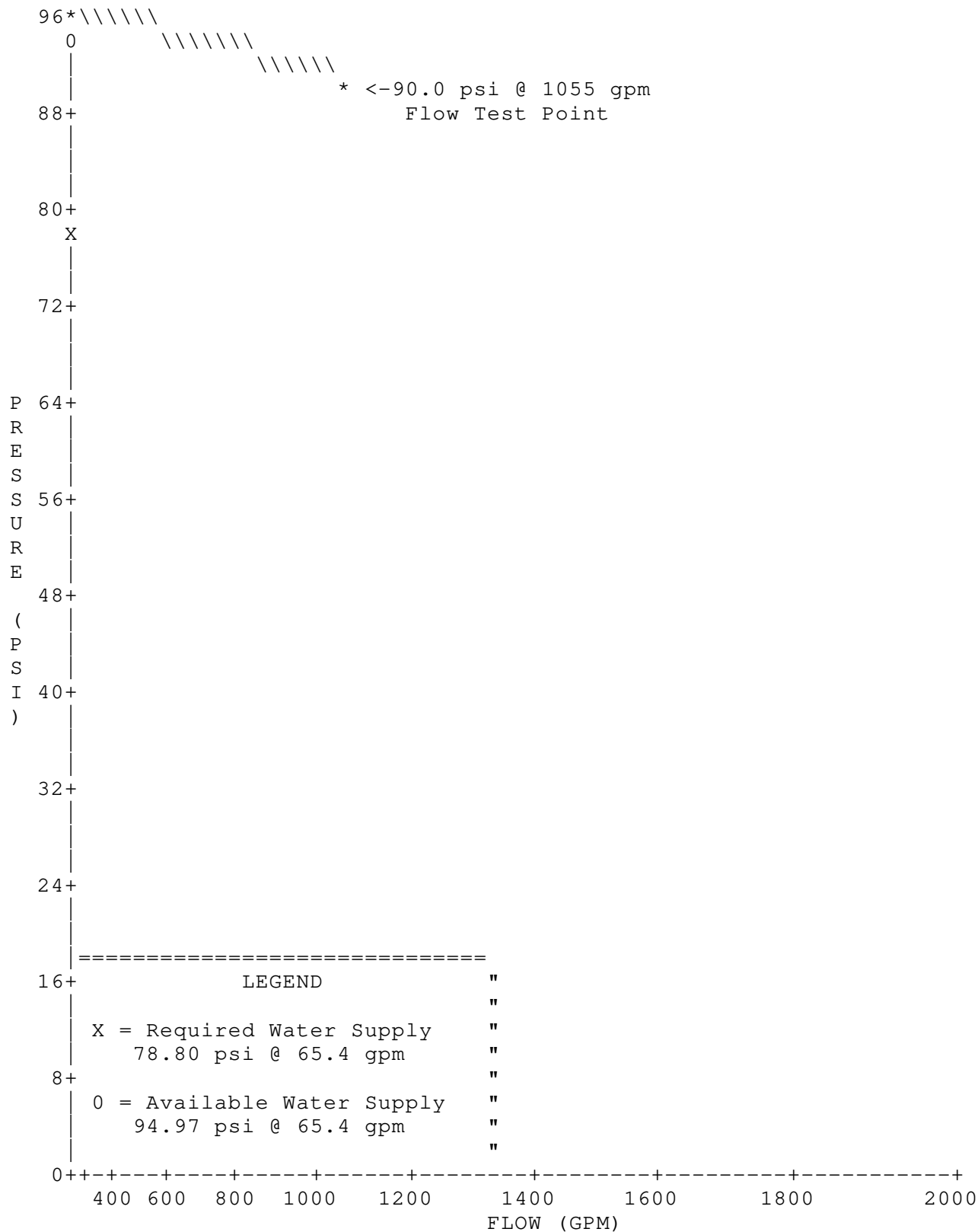


Note: (1) Dashed Lines indicate extrapolated values from Test Results

DATE: 12/3/2025AULICS\HASS FILES\BUILDING F\F - (2) 16X20 DS1 32.7PSI.SDF

JOB TITLE: F - (2) 16x20 DS1 32.7PSI

WATER SUPPLY CURVE



SMITH FIRE SYSTEMS, INC.
JOB NO. TC25207
BRADLEY HEIGHTS: BUILDING F

SYSTEM # 1

L3 (1) HEAD COMPARTMENT

AUXILIARY HYDRAULIC CALCULATION

DENSITY: 0.05 GPM OVER 1 HEADS

SYSTEM DEMAND AT BASE OF RISER

20 GPM AT 34.5 PSI

DATE: 12/3/2025 LICs\HASS FILES\BUILDING F\F - (1) 20X20 RES49 16.7PSI.SDF

JOB TITLE: F - (1) 20x20 RES49 16.7PSI

WATER SUPPLY DATA

SOURCE NODE TAG	STATIC PRESS. (PSI)	RESID. PRESS. (PSI)	FLOW @ (GPM)	AVAIL. PRESS. (PSI)	TOTAL @ DEMAND (GPM)	REQ'D PRESS. (PSI)
SOURCE	95.0	90.0	1055.0	95.0	20.0	53.7

Available pressure is 41.3 psi (43%) greater than required pressure.

AGGREGATE FLOW ANALYSIS:

TOTAL FLOW AT SOURCE	20.0 GPM
TOTAL HOSE STREAM ALLOWANCE AT SOURCE	0.0 GPM
OTHER HOSE STREAM ALLOWANCES	0.0 GPM
TOTAL DISCHARGE FROM ACTIVE SPRINKLERS	20.0 GPM

NODE ANALYSIS DATA

NODE TAG	ELEVATION (FT)	NODE TYPE	PRESSURE (PSI)	DISCHARGE (GPM)
S1	38.3	K= 4.90	16.7	20.0
M1	38.8	- - - -	19.4	- - -
301	38.8	- - - -	19.7	- - -
302	38.8	- - - -	19.8	- - -
202	29.8	- - - -	23.8	- - -
201	29.8	- - - -	23.7	- - -
102	19.7	- - - -	28.2	- - -
101	19.7	- - - -	28.1	- - -
011	9.6	- - - -	32.5	- - -
012	9.6	- - - -	32.6	- - -
TOR	14.5	- - - -	31.5	- - -
BFP1	7.6	- - - -	34.5	- - -
BFP2	7.6	- - - -	43.5	- - -
UG1	0.0	- - - -	46.8	- - -
UG2	-14.9	- - - -	53.3	- - -
UG3	-15.9	- - - -	53.7	- - -
SOURCE	-15.9	SOURCE	53.7	20.0

DATE: 12/3/2025 LICs\HASS FILES\BUILDING F\F - (1) 20X20 RES49 16.7PSI.SDF
 JOB TITLE: F - (1) 20x20 RES49 16.7PSI

PIPE DATA

PIPE TAG	END	ELEV.	NOZ.	PT	DISC.	Q (GPM)	DIA (IN)	LENGTH	PRESS.	
	NODES	(FT)	(K)	(PSI)	(GPM)	VEL (FPS)	HW (C)	(FT)	SUM.	
							FL/FT		(PSI)	
Pipe: 1										
S1		38.3	4.9	16.7	20.0	-20.0	1.101	PL 17.25	PF	2.9
M1		38.8	0.0	19.4	0.0	6.7	150	FTG 4ET	PE	-0.2
							0.068	TL 42.25	PV	
Pipe: 2										
M1		38.8	0.0	19.4	0.0	-20.0	1.598	PL 20.50	PF	0.3
301		38.8	0.0	19.7	0.0	3.2	150	FTG T	PE	0.0
							0.011	TL 28.50	PV	
Pipe: 3										
302		38.8	0.0	19.8	0.0	-5.3	1.598	PL 10.08	PF	0.0
202		29.8	0.0	23.8	0.0	0.9	150	FTG ----	PE	3.9
							0.001	TL 10.08	PV	
Pipe: 4										
301		38.8	0.0	19.7	0.0	-14.7	1.598	PL 10.08	PF	0.1
201		29.8	0.0	23.7	0.0	2.3	150	FTG ----	PE	3.9
							0.006	TL 10.08	PV	
Pipe: 5										
202		29.8	0.0	23.8	0.0	-9.6	1.598	PL 10.08	PF	0.0
102		19.7	0.0	28.2	0.0	1.5	150	FTG ----	PE	4.4
							0.003	TL 10.08	PV	
Pipe: 6										
201		29.8	0.0	23.7	0.0	-10.4	1.598	PL 10.08	PF	0.0
101		19.7	0.0	28.1	0.0	1.7	150	FTG ----	PE	4.4
							0.003	TL 10.08	PV	
Pipe: 7										
102		19.7	0.0	28.2	0.0	-13.9	1.598	PL 10.09	PF	0.1
012		9.6	0.0	32.6	0.0	2.2	150	FTG ----	PE	4.4
							0.006	TL 10.09	PV	
Pipe: 8										
101		19.7	0.0	28.1	0.0	-6.2	1.598	PL 10.09	PF	0.0
011		9.6	0.0	32.5	0.0	1.0	150	FTG ----	PE	4.4
							0.001	TL 10.09	PV	
Pipe: 9										
301		38.8	0.0	19.7	0.0	-5.3	1.598	PL 105.00	PF	0.2
302		38.8	0.0	19.8	0.0	0.9	150	FTG 2E6T	PE	0.0
							0.001	TL 167.00	PV	
Pipe: 10										
201		29.8	0.0	23.7	0.0	-4.3	1.598	PL 105.00	PF	0.1
202		29.8	0.0	23.8	0.0	0.7	150	FTG 2E6T	PE	0.0
							0.001	TL 167.00	PV	
Pipe: 11										
101		19.7	0.0	28.1	0.0	-4.2	1.598	PL 105.00	PF	0.1
102		19.7	0.0	28.2	0.0	0.7	150	FTG 2E6T	PE	0.0
							0.001	TL 167.00	PV	
Pipe: 12										
011		9.6	0.0	32.5	0.0	-6.2	1.598	PL 87.75	PF	0.1
012		9.6	0.0	32.6	0.0	1.0	150	FTG 2E2T	PE	0.0
							0.001	TL 117.75	PV	
Pipe: 13										
012		9.6	0.0	32.6	0.0	-20.0	1.598	PL 30.00	PF	1.0
TOR		14.5	0.0	31.5	0.0	3.2	150	FTG 8ET	PE	-2.1
							0.011	TL 94.00	PV	

DATE: 12/3/2025\HASS FILES\BUILDING F\F - (1) 20X20 RES49 16.7PSI.SDF

JOB TITLE: F - (1) 20x20 RES49 16.7PSI

PIPE TAG	END	ELEV.	NOZ.	PT	DISC.	Q (GPM)	DIA (IN)	LENGTH	PRESS.	
	NODES	(FT)	(K)	(PSI)	(GPM)	VEL (FPS)	HW (C)	(FT)	SUM.	
							FL/FT		(PSI)	
Pipe: 14						-20.0	2.185	PL	6.92	PF 0.0
TOR		14.5	0.0	31.5	0.0	1.7	150	FTG	----	PE 3.0
BFP1		7.6	0.0	34.5	0.0		0.002	TL	6.92	PV
Pipe: 15										
BFP2		7.6	0.0	43.5	0.0		9.0 psi,	20.0 gpm		
BFP1		7.6	0.0	34.5	0.0					
Pipe: 16						-20.0	4.100	PL	95.00	PF 0.0
BFP2		7.6	0.0	43.5	0.0	0.5	140	FTG	ET2G	PE 3.3
UG1		0.0	0.0	46.8	0.0		0.000	TL	136.00	PV
Pipe: 17						-20.0	8.270	PL	195.00	PF 0.0
UG1		0.0	0.0	46.8	0.0	0.1	140	FTG	2ETG	PE 6.5
UG2		-14.9	0.0	53.3	0.0		0.000	TL	284.00	PV
Pipe: 18						-20.0	12.340	PL	35.00	PF 0.0
UG2		-14.9	0.0	53.3	0.0	0.1	140	FTG	TFG	PE 0.4
UG3		-15.9	0.0	53.7	0.0		0.000	TL	142.00	PV
Pipe: 19						-20.0	6.160	PL	15.50	PF 0.0
UG3		-15.9	0.0	53.7	0.0	0.2	140	FTG	EG	PE 0.0
SOURCE		-15.9	SRCE	53.7	(N/A)		0.000	TL	31.50	PV

NOTES (HASS):

- Calculations were performed by the HASS computer program in accordance with NFPA (2020) under license no. 64621553 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 0.002 gpm and a maximum imbalance at any node of 0.038 gpm.
- Total pressure at each node is used in balancing the system. Maximum water velocity is 6.7 ft/sec at pipe 1.
- Items listed in bold print on the cover sheet
are automatically transferred from the calculation report.
- Available pressure at source node SOURCE under full flow conditions is 94.99 psi with a flow of 34.68 gpm.

DATE: 12/3/2025 LICs\HASS FILES\BUILDING F\F - (1) 20X20 RES49 16.7PSI.SDF
 JOB TITLE: F - (1) 20x20 RES49 16.7PSI

(6) PIPE FITTINGS TABLE

User Pipe Table Name: SMITH

PAGE: D	MATERIAL: DI		HWC: 140			
Diameter	Equivalent Fitting Lengths in Feet					
(in)	E	T	F	C	B	G
	Ell	Tee	45	ChkVlv	BfyVlv	GatVlv
4.100	8.00	27.00	6.00	30.00	20.00	3.00
6.160	12.00	40.00	10.00	43.00	16.00	4.00
8.270	18.00	47.00	12.00	60.00	20.00	6.00
12.340	24.00	80.00	19.00	87.00	34.00	8.00

PAGE: P	MATERIAL: CPVC		HWC: 150				
Diameter	Equivalent Fitting Lengths in Feet						
(in)	E	T	F	R	C	G	B
	Ell	Tee	45	teeRun	Coup	Gva	Bfy
1.101	5.00	5.00	1.00	1.00	1.00	1.00	4.00
1.598	7.00	8.00	2.00	1.00	1.00	1.00	6.00

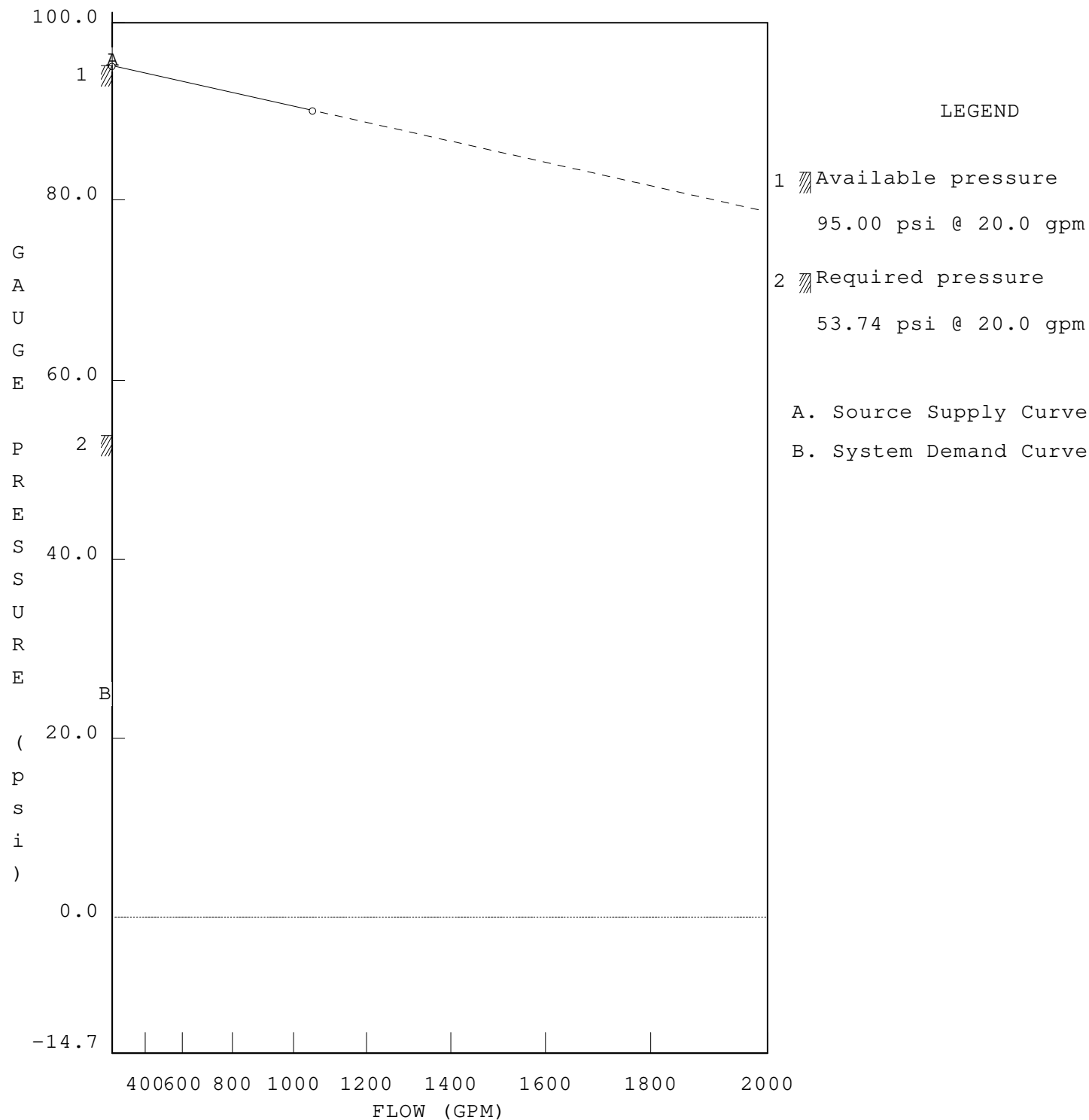
PAGE: Y	MATERIAL: SCH7		HWC: 120						
Diameter	Equivalent Fitting Lengths in Feet								
(in)	E	T	F	C	B	G	A	D	X
	Ell	Tee	45	ChkVlv	BfyVlv	GatVlv	AlmChk	DPVlv	flex
2.185	4.60	15.20	2.40	14.40	6.20	1.00	12.40	12.40	0.00

DATE: 12/3/2025 LICs\HASS FILES\BUILDING F\F - (1) 20X20 RES49 16.7PSI.SDF

JOB TITLE: F - (1) 20x20 RES49 16.7PSI

WATER SUPPLY ANALYSIS

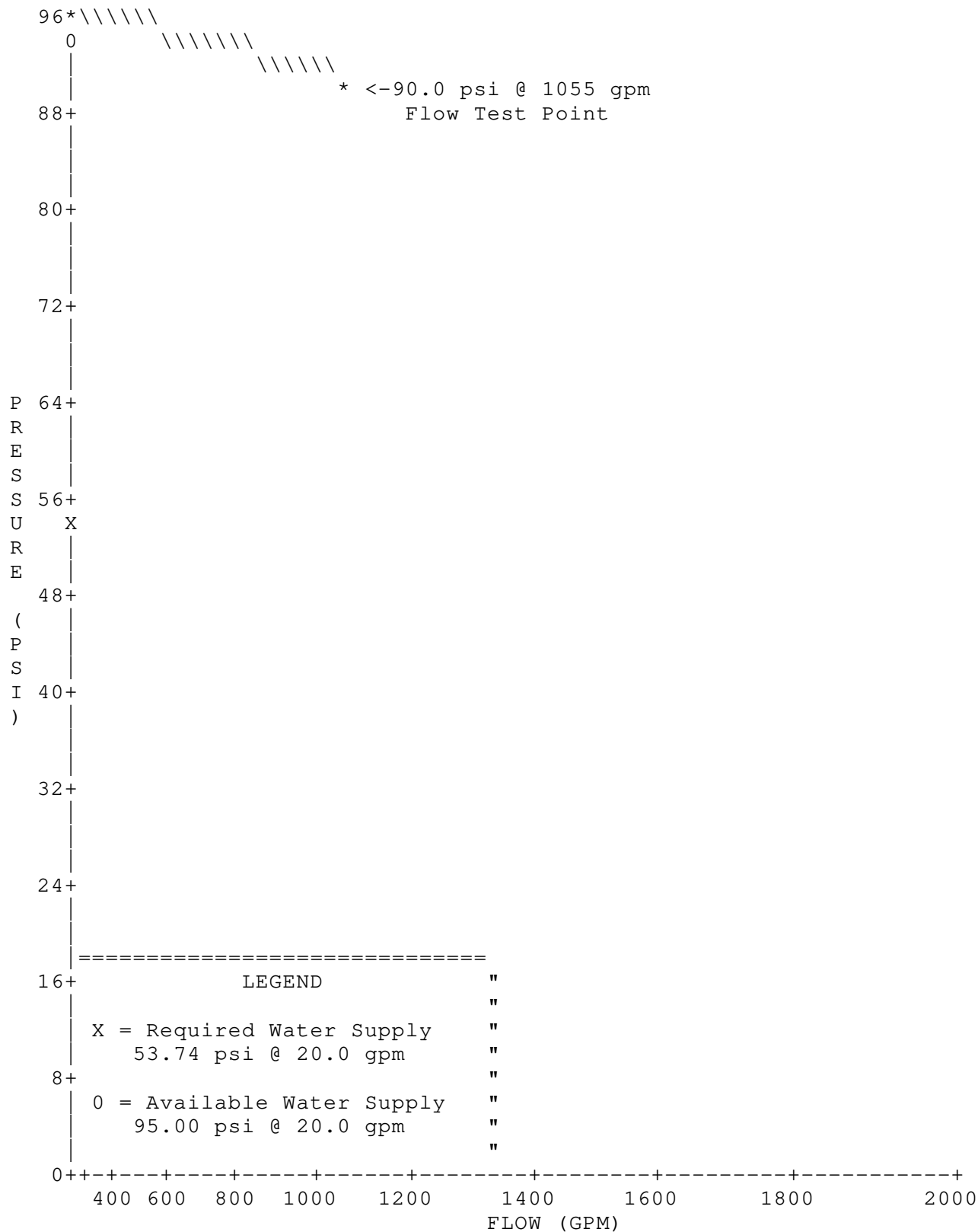
Static: 95.00 psi Resid: 90.00 psi Flow: 1055.0 gpm



DATE: 12/3/2025 LICs\HASS FILES\BUILDING F\F - (1) 20X20 RES49 16.7PSI.SDF

JOB TITLE: F - (1) 20x20 RES49 16.7PSI

WATER SUPPLY CURVE



SMITH FIRE SYSTEMS, INC.
JOB NO. TC25207
BRADLEY HEIGHTS: BUILDING F

SYSTEM # 1

L3 (4) HEAD COMPARTMENT

AUXILIARY HYDRAULIC CALCULATION

DENSITY: 0.05 GPM OVER 4 HEADS

SYSTEM DEMAND AT BASE OF RISER

81.5 GPM AT 57.1 PSI

DATE: 12/3/2025AULICS\HASS FILES\BUILDING F\F - (4) 18X18 RES49 12PSI.SDF
 JOB TITLE: F - (4) 18x18 RES49 12PSI

WATER SUPPLY DATA

SOURCE NODE TAG	STATIC PRESS. (PSI)	RESID. PRESS. (PSI)	FLOW @ (GPM)	AVAIL. PRESS. (PSI)	TOTAL @ DEMAND (GPM)	REQ'D PRESS. (PSI)
SOURCE	95.0	90.0	1055.0	95.0	81.5	74.5

Available pressure is 20.4 psi (22%) greater than required pressure.

AGGREGATE FLOW ANALYSIS:

TOTAL FLOW AT SOURCE	81.5 GPM
TOTAL HOSE STREAM ALLOWANCE AT SOURCE	0.0 GPM
OTHER HOSE STREAM ALLOWANCES	0.0 GPM
TOTAL DISCHARGE FROM ACTIVE SPRINKLERS	81.5 GPM

NODE ANALYSIS DATA

NODE TAG	ELEVATION (FT)	NODE TYPE	PRESSURE (PSI)	DISCHARGE (GPM)
S4	38.3	K= 4.90	12.3	17.2
S5	38.3	K= 4.90	12.0	17.0
S6	38.3	K= 4.90	23.3	23.6
S7	38.3	K= 4.90	23.2	23.6
B1	38.8	- - - -	12.9	- - -
M5	38.8	- - - -	24.2	- - -
M4	38.8	- - - -	24.3	- - -
M3	38.8	- - - -	24.6	- - -
301	38.8	- - - -	27.0	- - -
302	38.8	- - - -	27.5	- - -
202	29.8	- - - -	31.8	- - -
201	29.8	- - - -	31.4	- - -
102	19.7	- - - -	36.8	- - -
101	19.7	- - - -	36.0	- - -
011	9.6	- - - -	40.5	- - -
012	9.6	- - - -	42.0	- - -
TOR	14.5	- - - -	53.9	- - -
BFP1	7.6	- - - -	57.1	- - -
BFP2	7.6	- - - -	64.1	- - -
UG1	0.0	- - - -	67.6	- - -
UG2	-14.9	- - - -	74.1	- - -
UG3	-15.9	- - - -	74.5	- - -
SOURCE	-15.9	SOURCE	74.5	81.5

DATE: 12/3/2025AULICS\HASS FILES\BUILDING F\F - (4) 18X18 RES49 12PSI.SDF

JOB TITLE: F - (4) 18x18 RES49 12PSI

PIPE DATA

PIPE TAG	END	ELEV.	NOZ.	PT	DISC.	Q (GPM)	DIA (IN)	LENGTH	PRESS.
	NODES	(FT)	(K)	(PSI)	(GPM)	VEL (FPS)	HW (C)	(FT)	SUM.
							FL/FT		(PSI)
Pipe: 1									
S4		38.3	4.9	12.3	17.2	-17.2	1.101	PL 5.25	PF 0.8
B1		38.8	0.0	12.9	0.0	5.8	150	FTG 2T	PE -0.2
							0.051	TL 15.25	PV
Pipe: 2									
S5		38.3	4.9	12.0	17.0	-17.0	1.101	PL 7.25	PF 1.1
B1		38.8	0.0	12.9	0.0	5.7	150	FTG E2T	PE -0.2
							0.050	TL 22.25	PV
Pipe: 3									
S6		38.3	4.9	23.3	23.6	-23.6	1.101	PL 2.83	PF 1.2
M4		38.8	0.0	24.3	0.0	8.0	150	FTG ET	PE -0.2
							0.093	TL 12.83	PV
Pipe: 4									
S7		38.3	4.9	23.2	23.6	-23.6	1.101	PL 2.83	PF 1.2
M5		38.8	0.0	24.2	0.0	8.0	150	FTG ET	PE -0.2
							0.092	TL 12.83	PV
Pipe: 5									
B1		38.8	0.0	12.9	0.0	-34.2	1.101	PL 26.50	PF 11.3
M5		38.8	0.0	24.2	0.0	11.5	150	FTG 6ET	PE 0.0
							0.183	TL 61.50	PV
Pipe: 6									
301		38.8	0.0	27.0	0.0	43.4	1.598	PL 25.67	PF 2.3
M3		38.8	0.0	24.6	0.0	6.9	150	FTG 3T	PE 0.0
							0.047	TL 49.67	PV
Pipe: 7									
M3		38.8	0.0	24.6	0.0	43.4	1.598	PL 8.00	PF 0.4
M4		38.8	0.0	24.3	0.0	6.9	150	FTG ----	PE 0.0
							0.047	TL 8.00	PV
Pipe: 8									
M4		38.8	0.0	24.3	0.0	19.8	1.598	PL 8.42	PF 0.1
M5		38.8	0.0	24.2	0.0	3.2	150	FTG ----	PE 0.0
							0.011	TL 8.42	PV
Pipe: 9									
M5		38.8	0.0	24.2	0.0	-38.0	1.598	PL 62.50	PF 3.4
302		38.8	0.0	27.5	0.0	6.1	150	FTG 2E2T	PE 0.0
							0.036	TL 92.50	PV
Pipe: 10									
302		38.8	0.0	27.5	0.0	-38.0	1.598	PL 10.08	PF 0.4
202		29.8	0.0	31.8	0.0	6.1	150	FTG ----	PE 3.9
							0.036	TL 10.08	PV
Pipe: 11									
301		38.8	0.0	27.0	0.0	-43.4	1.598	PL 10.08	PF 0.5
201		29.8	0.0	31.4	0.0	6.9	150	FTG ----	PE 3.9
							0.047	TL 10.08	PV
Pipe: 12									
202		29.8	0.0	31.8	0.0	-47.7	1.598	PL 10.08	PF 0.6
102		19.7	0.0	36.8	0.0	7.6	150	FTG ----	PE 4.4
							0.055	TL 10.08	PV
Pipe: 13									
201		29.8	0.0	31.4	0.0	-33.7	1.598	PL 10.08	PF 0.3
101		19.7	0.0	36.0	0.0	5.4	150	FTG ----	PE 4.4
							0.029	TL 10.08	PV

DATE: 12/3/2025AULICS\HASS FILES\BUILDING F\F - (4) 18X18 RES49 12PSI.SDF
 JOB TITLE: F - (4) 18x18 RES49 12PSI

PIPE TAG	END	ELEV.	NOZ.	PT	DISC.	Q (GPM)	DIA (IN)	LENGTH	PRESS.	
	NODES	(FT)	(K)	(PSI)	(GPM)	VEL (FPS)	HW (C)	(FT)	SUM.	
							FL/FT		(PSI)	
	Pipe: 14					-60.0	1.598	PL	10.09	PF 0.9
102		19.7	0.0	36.8	0.0	9.6	150	FTG	----	PE 4.4
012		9.6	0.0	42.0	0.0		0.085	TL	10.09	PV
	Pipe: 15					-21.4	1.598	PL	10.09	PF 0.1
101		19.7	0.0	36.0	0.0	3.4	150	FTG	----	PE 4.4
011		9.6	0.0	40.5	0.0		0.013	TL	10.09	PV
	Pipe: 16					-9.7	1.598	PL	105.00	PF 0.5
201		29.8	0.0	31.4	0.0	1.6	150	FTG	2E6T	PE 0.0
202		29.8	0.0	31.8	0.0		0.003	TL	167.00	PV
	Pipe: 17					-12.3	1.598	PL	105.00	PF 0.8
101		19.7	0.0	36.0	0.0	2.0	150	FTG	2E6T	PE 0.0
102		19.7	0.0	36.8	0.0		0.005	TL	167.00	PV
	Pipe: 18					-21.4	1.598	PL	87.75	PF 1.5
011		9.6	0.0	40.5	0.0	3.4	150	FTG	2E2T	PE 0.0
012		9.6	0.0	42.0	0.0		0.013	TL	117.75	PV
	Pipe: 19					-81.4	1.598	PL	30.00	PF 14.0
012		9.6	0.0	42.0	0.0	13.0	150	FTG	8ET	PE -2.1
TOR		14.5	0.0	53.9	0.0		0.149	TL	94.00	PV
	Pipe: 20					-81.4	2.185	PL	6.92	PF 0.2
TOR		14.5	0.0	53.9	0.0	7.0	150	FTG	----	PE 3.0
BFP1		7.6	0.0	57.1	0.0		0.032	TL	6.92	PV
	Pipe: 21									
BFP2		7.6	0.0	64.1	0.0					
BFP1		7.6	0.0	57.1	0.0					
	Pipe: 22					-81.4	4.100	PL	95.00	PF 0.2
BFP2		7.6	0.0	64.1	0.0	2.0	140	FTG	ET2G	PE 3.3
UG1		0.0	0.0	67.6	0.0		0.002	TL	136.00	PV
	Pipe: 23					-81.4	8.270	PL	195.00	PF 0.0
UG1		0.0	0.0	67.6	0.0	0.5	140	FTG	2ETG	PE 6.5
UG2		-14.9	0.0	74.1	0.0		0.000	TL	284.00	PV
	Pipe: 24					-81.4	12.340	PL	35.00	PF 0.0
UG2		-14.9	0.0	74.1	0.0	0.2	140	FTG	TFG	PE 0.4
UG3		-15.9	0.0	74.5	0.0		0.000	TL	142.00	PV
	Pipe: 25					-81.5	6.160	PL	15.50	PF 0.0
UG3		-15.9	0.0	74.5	0.0	0.9	140	FTG	EG	PE 0.0
SOURCE		-15.9	SRCE	74.5	(N/A)		0.000	TL	31.50	PV

FIXED PRESSURE LOSS DEVICE
 7.0 psi, 81.4 gpm

DATE: 12/3/2025AULICS\HASS FILES\BUILDING F\F - (4) 18X18 RES49 12PSI.SDF

JOB TITLE: F - (4) 18x18 RES49 12PSI

NOTES (HASS):

- (1) Calculations were performed by the HASS computer program in accordance with NFPA (2020) under license no. 64621553 granted by
HRS Systems, Inc.
208 Southside Square
Petersburg, TN 37144
(931) 659-9760
- (2) The system has been calculated to provide an average imbalance at each node of 0.007 gpm and a maximum imbalance at any node of 0.146 gpm.
- (3) Total pressure at each node is used in balancing the system. Maximum water velocity is 13.0 ft/sec at pipe 19.
- (4) Items listed in bold print on the cover sheet

are automatically transferred from the calculation report.
- (5) Available pressure at source node SOURCE under full flow conditions is 94.94 psi with a flow of 99.39 gpm.

(6) PIPE FITTINGS TABLE

User Pipe Table Name: SMITH

PAGE: D	MATERIAL: DI		HWC: 140			
Diameter	Equivalent Fitting Lengths in Feet					
(in)	E	T	F	C	B	G
	Ell	Tee	45	ChkVlv	BfyVlv	GatVlv
4.100	8.00	27.00	6.00	30.00	20.00	3.00
6.160	12.00	40.00	10.00	43.00	16.00	4.00
8.270	18.00	47.00	12.00	60.00	20.00	6.00
12.340	24.00	80.00	19.00	87.00	34.00	8.00

PAGE: P	MATERIAL: CPVC		HWC: 150				
Diameter	Equivalent Fitting Lengths in Feet						
(in)	E	T	F	R	C	G	B
	Ell	Tee	45	teeRun	Coup	Gva	Bfy
1.101	5.00	5.00	1.00	1.00	1.00	1.00	4.00
1.598	7.00	8.00	2.00	1.00	1.00	1.00	6.00

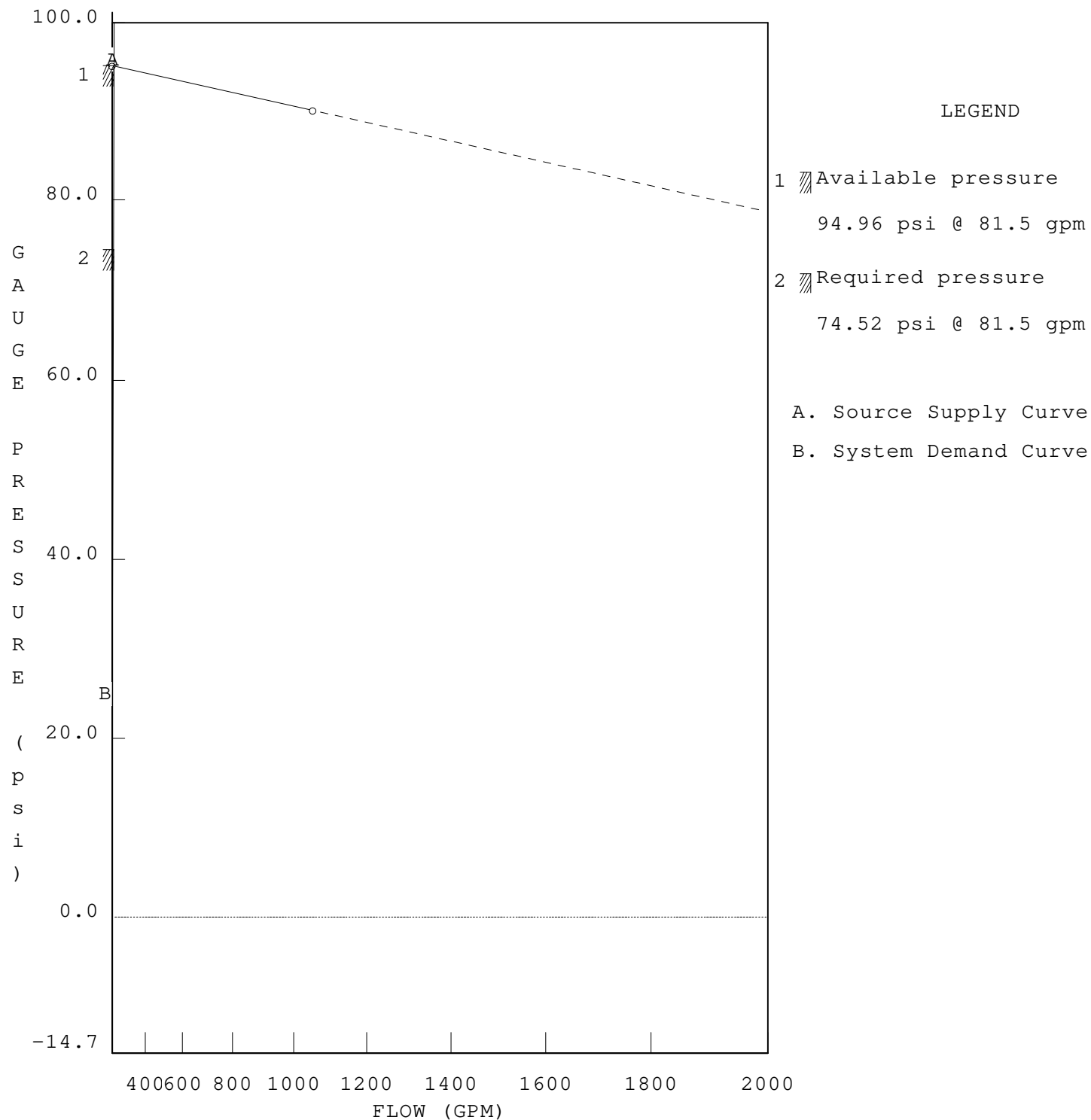
PAGE: Y	MATERIAL: SCH7		HWC: 120						
Diameter	Equivalent Fitting Lengths in Feet								
(in)	E	T	F	C	B	G	A	D	X
	Ell	Tee	45	ChkVlv	BfyVlv	GatVlv	AlmChk	DPVlv	flex
2.185	4.60	15.20	2.40	14.40	6.20	1.00	12.40	12.40	0.00

DATE: 12/3/2025AULICS\HASS FILES\BUILDING F\F - (4) 18X18 RES49 12PSI.SDF

JOB TITLE: F - (4) 18x18 RES49 12PSI

WATER SUPPLY ANALYSIS

Static: 95.00 psi Resid: 90.00 psi Flow: 1055.0 gpm



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

DATE: 12/3/2025AULICS\HASS FILES\BUILDING F\F - (4) 18X18 RES49 12PSI.SDF

JOB TITLE: F - (4) 18x18 RES49 12PSI

WATER SUPPLY CURVE

