

**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 E	DATE:	12/2/2025	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:**NFPA SECTION: **7.2.2**
AREA MODIFIER **N/A**SPRINKLER MANUFACTURER: **TYCO**
K-FACTOR: **5.6K**
MODEL: **DS-1**
TEMPERATURE: **155°**
RESPONSE TYPE: **QR**SYSTEM TYPE: **WET**
MAX CEILING HEIGHT: **9'-1"**
CEILING HEIGHT: **9'-1"**
ROOF SLOPE: **NO**
CEILING SLOPE: **NO**TOTAL SPRINKLERS CALCULATED: **2**
MAX AREA OF COVERAGE PER SPRINKLER: **320 SQ. FT**
MAX DISTANCE BETWEEN SPRINKLERS: **20 FT**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.
STATIC 95 PSI	DATE OF TEST: 4/19/2001	
RESIDUAL 90 PSI	DATA PROVIDED BY: FRUITLAND WATER	
FLOW 1055 GPM	LOCATION OF TEST: FH @ 207 27TH AVE SE	

MAIN DRAIN TEST:

S: R:

INSPECTORS TEST:

TRIP TIME:

WET SYSTEM NUMBER 1

AREA	SQ. FT.	SPRINKLERS
BASEMENT 1	4198	44
FLOOR 1	8066	74
FLOOR 2	8194	75
FLOOR 3	8046	78
TOTAL:	28,504	271

NOTES:**MOST DEMANDING AREA: SYS. 1**

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

BASE OF RISER: 68.1 GPM REQUIRED AT 70.7 PSI**SUMMARY:** 68.1 GPM REQUIRED AT 87.7 PSIAT 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 E

DATE PUYALLUP, WA 98374

JOB NO. TC25207

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



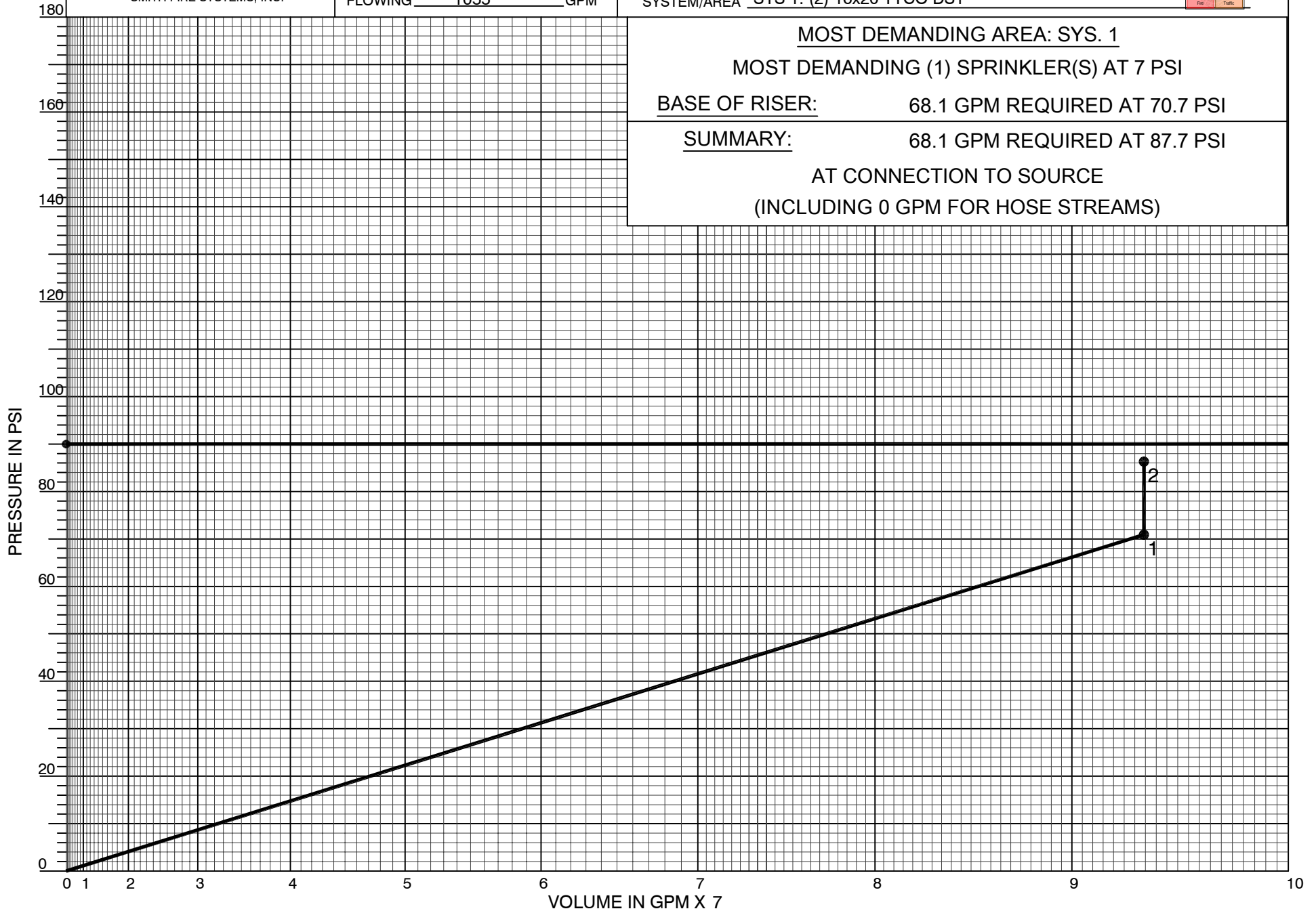
MOST DEMANDING AREA: SYS. 1

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

BASE OF RISER: 68.1 GPM REQUIRED AT 70.7 PSI

SUMMARY: 68.1 GPM REQUIRED AT 87.7 PSI

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



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

JOB TITLE: E - (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	68.1	87.7

Available pressure is 7.3 psi (8%) greater than required pressure.

AGGREGATE FLOW ANALYSIS:

TOTAL FLOW AT SOURCE	68.1 GPM
TOTAL HOSE STREAM ALLOWANCE AT SOURCE	0.0 GPM
OTHER HOSE STREAM ALLOWANCES	0.0 GPM
TOTAL DISCHARGE FROM ACTIVE SPRINKLERS	68.1 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	41.3	36.0
M2	38.8	- - - -	43.5	- - -
M4	38.8	- - - -	43.5	- - -
301	38.8	- - - -	45.4	- - -
302	38.8	- - - -	45.7	- - -
202	29.8	- - - -	49.9	- - -
201	29.8	- - - -	49.7	- - -
102	19.7	- - - -	54.7	- - -
101	19.7	- - - -	54.2	- - -
011	9.6	- - - -	58.7	- - -
012	9.6	- - - -	59.7	- - -
TOR	14.5	- - - -	67.3	- - -
BFP1	7.6	- - - -	70.7	- - -
BFP2	7.6	- - - -	77.7	- - -
UG1	0.0	- - - -	81.0	- - -
UG2	-5.6	- - - -	83.5	- - -
UG3	-15.3	- - - -	87.7	- - -
SOURCE	-15.3	SOURCE	87.7	68.1

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

JOB TITLE: E - (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	22.75	PF	11.0
M4		38.8	0.0	43.5	0.0	10.8	150	7E2T	PE	-0.2
							0.163	67.75	PV	
Pipe: 2										
S3		38.3	5.6	41.3	36.0	-36.0	1.101	1.75	PF	2.4
M2		38.8	0.0	43.5	0.0	12.1	150	ET	PE	-0.2
							0.202	11.75	PV	
Pipe: 3										
301		38.8	0.0	45.4	0.0	41.4	1.598	21.08	PF	1.9
M2		38.8	0.0	43.5	0.0	6.6	150	3T	PE	0.0
							0.043	45.08	PV	
Pipe: 4										
M2		38.8	0.0	43.5	0.0	5.4	1.598	4.58	PF	0.0
M4		38.8	0.0	43.5	0.0	0.9	150	FTG	PE	0.0
							0.001	4.58	PV	
Pipe: 5										
M4		38.8	0.0	43.5	0.0	-26.7	1.598	78.50	PF	2.2
302		38.8	0.0	45.7	0.0	4.3	150	2E3T	PE	0.0
							0.019	116.50	PV	
Pipe: 6										
302		38.8	0.0	45.7	0.0	-33.8	1.598	10.08	PF	0.3
202		29.8	0.0	49.9	0.0	5.4	150	FTG	PE	3.9
							0.029	10.08	PV	
Pipe: 7										
301		38.8	0.0	45.4	0.0	-34.2	1.598	10.08	PF	0.3
201		29.8	0.0	49.7	0.0	5.5	150	FTG	PE	3.9
							0.030	10.08	PV	
Pipe: 8										
202		29.8	0.0	49.9	0.0	-40.8	1.598	10.08	PF	0.4
102		19.7	0.0	54.7	0.0	6.5	150	FTG	PE	4.4
							0.041	10.08	PV	
Pipe: 9										
201		29.8	0.0	49.7	0.0	-27.2	1.598	10.08	PF	0.2
101		19.7	0.0	54.2	0.0	4.4	150	FTG	PE	4.4
							0.020	10.08	PV	
Pipe: 10										
102		19.7	0.0	54.7	0.0	-50.5	1.598	10.09	PF	0.6
012		9.6	0.0	59.7	0.0	8.1	150	FTG	PE	4.4
							0.062	10.09	PV	
Pipe: 11										
101		19.7	0.0	54.2	0.0	-17.5	1.598	10.09	PF	0.1
011		9.6	0.0	58.7	0.0	2.8	150	FTG	PE	4.4
							0.009	10.09	PV	
Pipe: 12										
301		38.8	0.0	45.4	0.0	-7.1	1.598	105.00	PF	0.3
302		38.8	0.0	45.7	0.0	1.1	150	2E6T	PE	0.0
							0.002	167.00	PV	
Pipe: 13										
201		29.8	0.0	49.7	0.0	-7.0	1.598	105.00	PF	0.3
202		29.8	0.0	49.9	0.0	1.1	150	2E6T	PE	0.0
							0.002	167.00	PV	

DATE: 12/2/2025AULICS\HASS FILES\BUILDING E\E - (2) 16X20 DS1 32.7PSI.SDF
 JOB TITLE: E - (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					-9.7	1.598	PL 105.00	PF	0.5
101		19.7	0.0	54.2	0.0	1.6	150	FTG 2E6T	PE	0.0
102		19.7	0.0	54.7	0.0		0.003	TL 167.00	PV	
	Pipe: 15					-17.5	1.598	PL 87.75	PF	1.0
011		9.6	0.0	58.7	0.0	2.8	150	FTG 2E2T	PE	0.0
012		9.6	0.0	59.7	0.0		0.009	TL 117.75	PV	
	Pipe: 16					-68.0	1.598	PL 34.00	PF	9.7
012		9.6	0.0	59.7	0.0	10.9	150	FTG 7ET	PE	-2.1
TOR		14.5	0.0	67.3	0.0		0.107	TL 91.00	PV	
	Pipe: 17					-68.0	2.185	PL 6.92	PF	0.4
TOR		14.5	0.0	67.3	0.0	5.8	150	FTG B	PE	3.0
BFP1		7.6	0.0	70.7	0.0		0.023	TL 16.29	PV	
	Pipe: 18									
BFP2		7.6	0.0	77.7	0.0		7.0 psi,	68.0 gpm		
BFP1		7.6	0.0	70.7	0.0					
	Pipe: 19					-68.0	4.100	PL 30.00	PF	0.1
BFP2		7.6	0.0	77.7	0.0	1.7	140	FTG ET2G	PE	3.3
UG1		0.0	0.0	81.0	0.0		0.001	TL 71.00	PV	
	Pipe: 20					-68.0	8.270	PL 250.00	PF	0.0
UG1		0.0	0.0	81.0	0.0	0.4	140	FTG 2ETG	PE	2.4
UG2		-5.6	0.0	83.5	0.0		0.000	TL 339.00	PV	
	Pipe: 21					-68.0	12.340	PL 460.00	PF	0.0
UG2		-5.6	0.0	83.5	0.0	0.2	140	FTG TFG	PE	4.2
UG3		-15.3	0.0	87.7	0.0		0.000	TL 567.00	PV	
	Pipe: 22					-68.1	6.160	PL 15.50	PF	0.0
UG3		-15.3	0.0	87.7	0.0	0.7	140	FTG EG	PE	0.0
SOURCE		-15.3	SRCE	87.7	(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 0.008 gpm and a maximum imbalance at any node of 0.143 gpm.
- Total pressure at each node is used in balancing the system. Maximum water velocity is 12.1 ft/sec at pipe 2.

DATE: 12/2/2025AULICS\HASS FILES\BUILDING E\E - (2) 16X20 DS1 32.7PSI.SDF
 JOB TITLE: E - (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 72.35 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

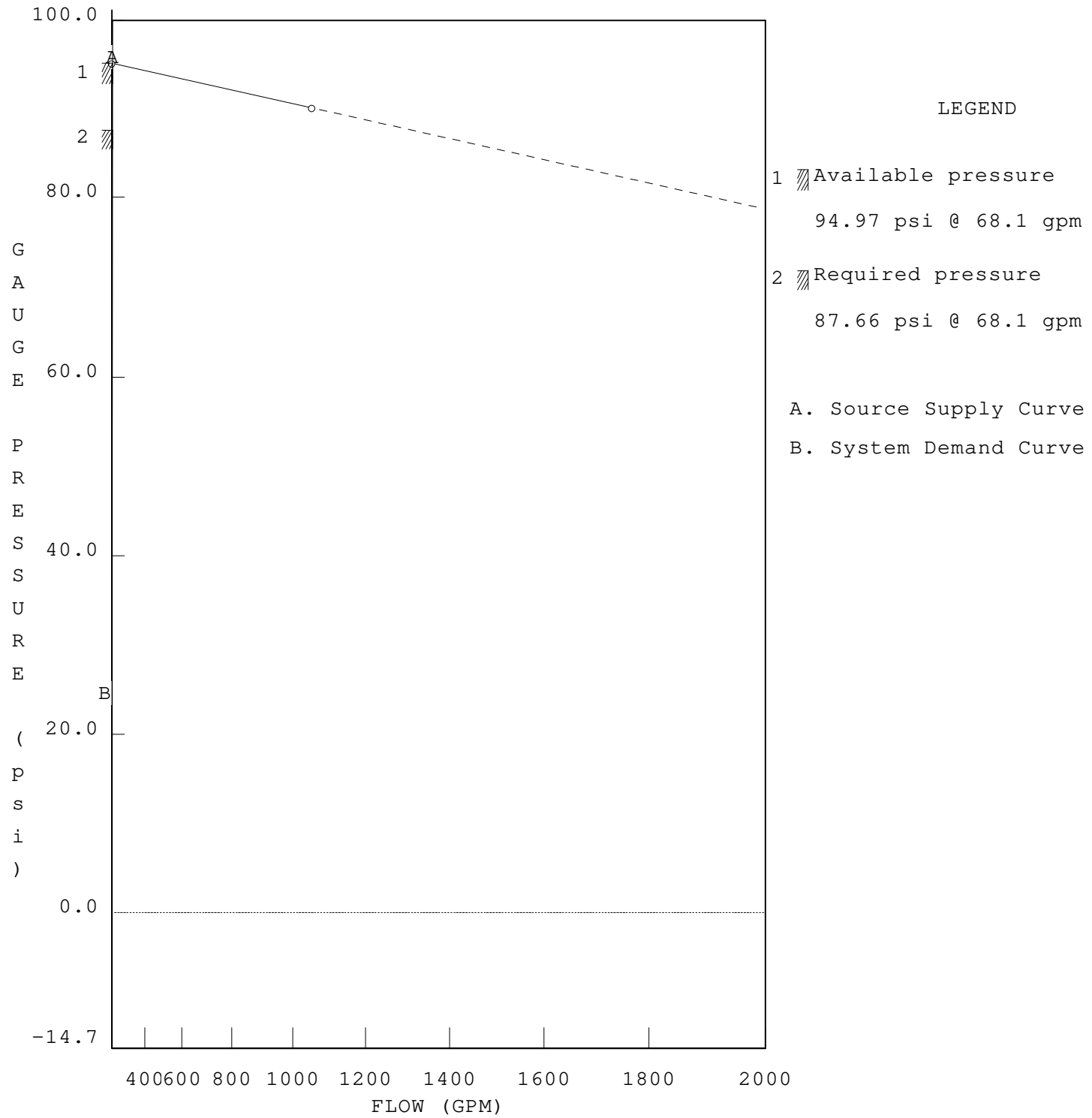
PAGE: Y	MATERIAL: SCH7	HWC: 120							
Diameter	Equivalent Fitting Lengths in Feet								
(in)	E	T	F	C	B	G	A	D	X
	Ell	Tee	45	ChkVlv	BfyVlv	GatVlv	AlmChk	DPVlv	flex
2.185	4.60	15.20	2.40	14.40	6.20	1.00	12.40	12.40	0.00

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

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

WATER SUPPLY ANALYSIS

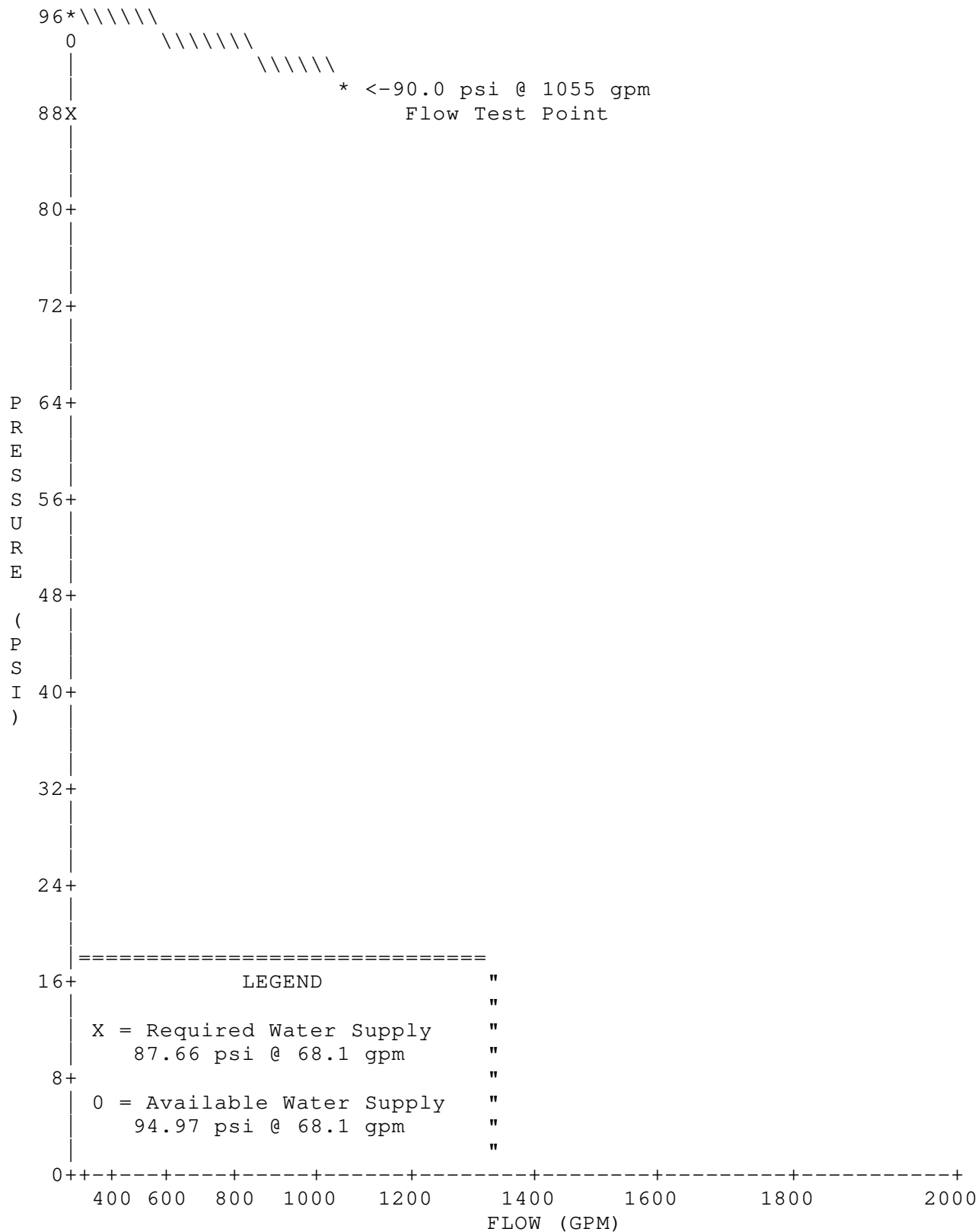
Static: 95.00 psi Resid: 90.00 psi Flow: 1055.0 gpm



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

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

WATER SUPPLY CURVE



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

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

DATE: 12/2/2025 LICs\HASS FILES\BUILDING E\E - (1) 20X20 RES49 16.7PSI.SDF
 JOB TITLE: E - (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	53.4

Available pressure is 41.6 psi (44%) 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	-5.3	- - - -	49.1	- - -
UG3	-15.3	- - - -	53.4	- - -
SOURCE	-15.3	SOURCE	53.4	20.0

DATE: 12/2/2025 LICs\HASS FILES\BUILDING E\E - (1) 20X20 RES49 16.7PSI.SDF

JOB TITLE: E - (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 34.00	PF	1.0
TOR		14.5	0.0	31.5	0.0	3.2	150	FTG 7ET	PE	-2.1
							0.011	TL 91.00	PV	

DATE: 12/2/2025 LICs\HASS FILES\BUILDING E\E - (1) 20X20 RES49 16.7PSI.SDF
 JOB TITLE: E - (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 B	PE 3.0
BFP1		7.6	0.0	34.5	0.0		0.002	TL 16.29	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 30.00	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 71.00	PV
Pipe: 17						-20.0	8.270	PL 250.00	PF 0.0
UG1		0.0	0.0	46.8	0.0	0.1	140	FTG 2ETG	PE 2.3
UG2		-5.3	0.0	49.1	0.0		0.000	TL 339.00	PV
Pipe: 18						-20.0	12.340	PL 460.00	PF 0.0
UG2		-5.3	0.0	49.1	0.0	0.1	140	FTG TFG	PE 4.3
UG3		-15.3	0.0	53.4	0.0		0.000	TL 567.00	PV
Pipe: 19						-20.0	6.160	PL 15.50	PF 0.0
UG3		-15.3	0.0	53.4	0.0	0.2	140	FTG EG	PE 0.0
SOURCE		-15.3	SRCE	53.4	(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 0.003 gpm and a maximum imbalance at any node of 0.052 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 34.77 gpm.

DATE: 12/2/2025 LICs\HASS FILES\BUILDING E\E - (1) 20X20 RES49 16.7PSI.SDF
 JOB TITLE: E - (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

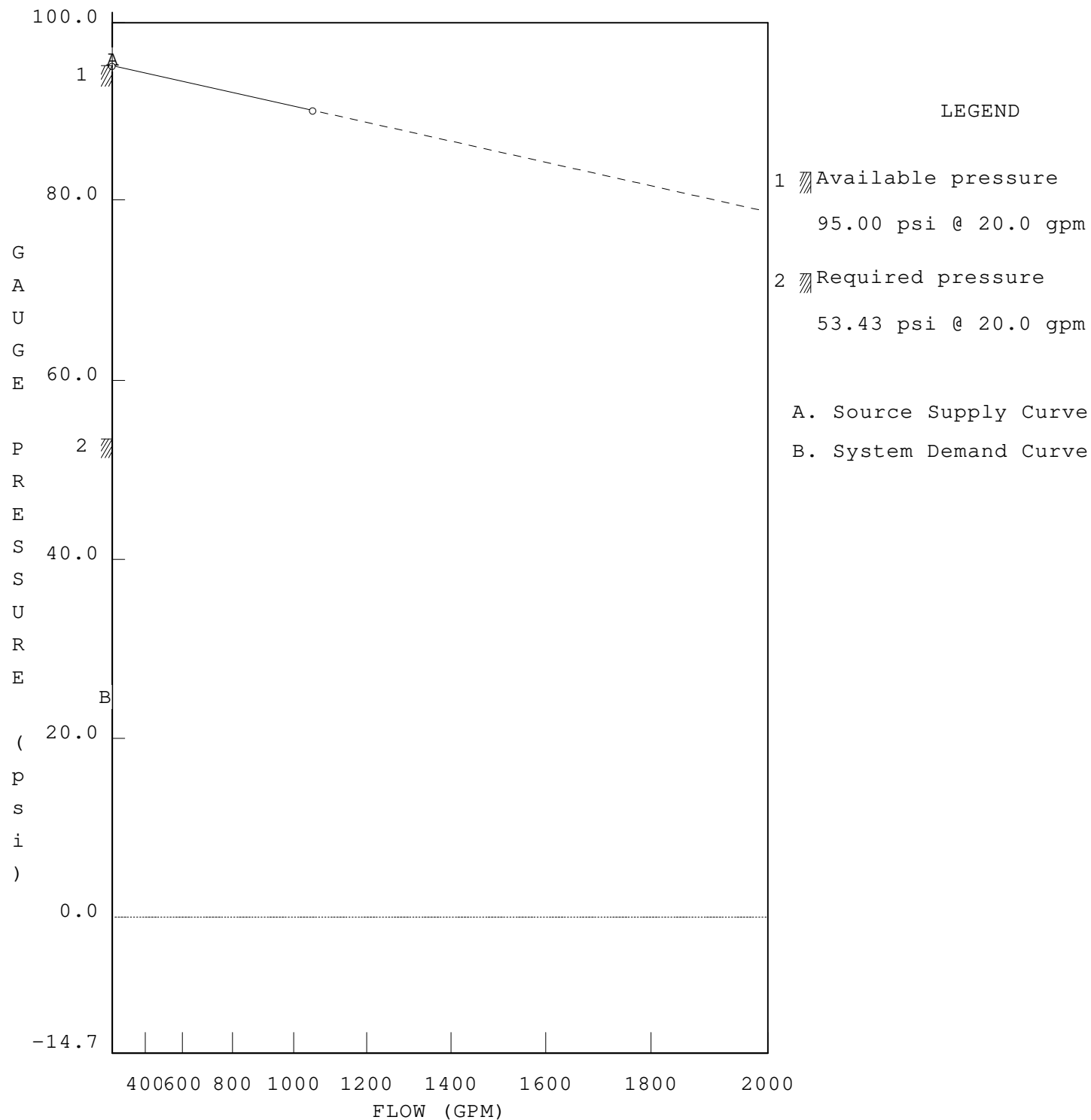
PAGE: Y	MATERIAL: SCH7	HWC: 120							
Diameter	Equivalent Fitting Lengths in Feet								
(in)	E	T	F	C	B	G	A	D	X
	Ell	Tee	45	ChkVlv	BfyVlv	GatVlv	AlmChk	DPVlv	flex
2.185	4.60	15.20	2.40	14.40	6.20	1.00	12.40	12.40	0.00

DATE: 12/2/2025 LICs\HASS FILES\BUILDING E\E - (1) 20X20 RES49 16.7PSI.SDF

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

WATER SUPPLY ANALYSIS

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

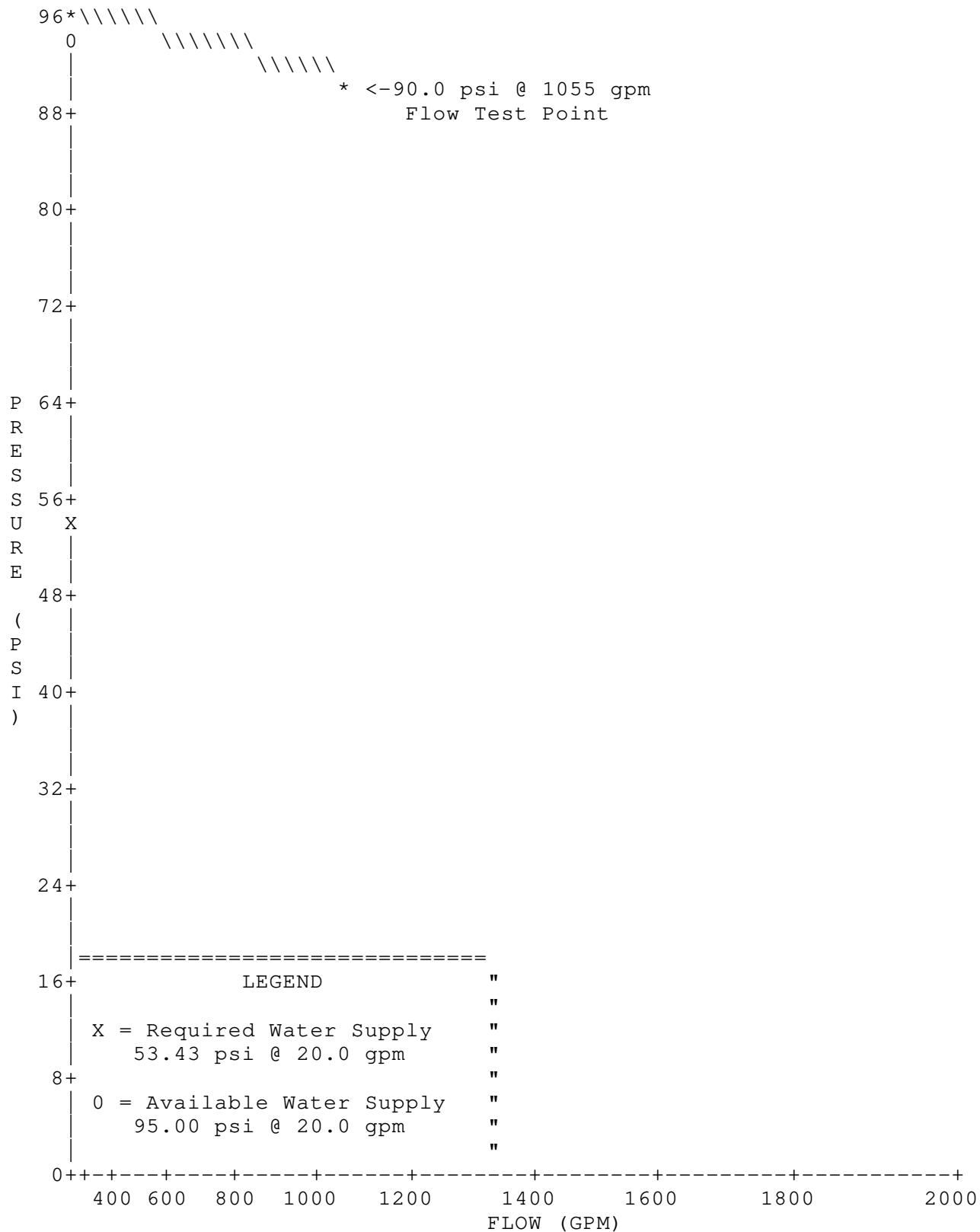


Note: (1) Dashed Lines indicate extrapolated values from Test Results

DATE: 12/2/2025 LICs\HASS FILES\BUILDING E\E - (1) 20X20 RES49 16.7PSI.SDF

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

WATER SUPPLY CURVE



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

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 56.9 PSI

DATE: 12/2/2025AULICS\HASS FILES\BUILDING E\E - (4) 18X18 RES49 12PSI.SDF

JOB TITLE: E - (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	74.0
--------	------	------	--------	------	------	------

Available pressure is 21.0 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	- - - -	53.4	- - -
BFP1	7.6	- - - -	56.9	- - -
BFP2	7.6	- - - -	63.9	- - -
UG1	0.0	- - - -	67.3	- - -
UG2	-5.3	- - - -	69.6	- - -
UG3	-15.3	- - - -	74.0	- - -
SOURCE	-15.3	SOURCE	74.0	81.5

DATE: 12/2/2025AULICS\HASS FILES\BUILDING E\E - (4) 18X18 RES49 12PSI.SDF

JOB TITLE: E - (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: 12/2/2025AULICS\HASS FILES\BUILDING E\E - (4) 18X18 RES49 12PSI.SDF
 JOB TITLE: E - (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
102		19.7	0.0	36.8	0.0	9.6	150	FTG	----	PE
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
101		19.7	0.0	36.0	0.0	3.4	150	FTG	----	PE
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
201		29.8	0.0	31.4	0.0	1.6	150	FTG	2E6T	PE
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
101		19.7	0.0	36.0	0.0	2.0	150	FTG	2E6T	PE
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
011		9.6	0.0	40.5	0.0	3.4	150	FTG	2E2T	PE
012		9.6	0.0	42.0	0.0		0.013	TL	117.75	PV
	Pipe: 19					-81.4	1.598	PL	34.00	PF
012		9.6	0.0	42.0	0.0	13.0	150	FTG	7ET	PE
TOR		14.5	0.0	53.4	0.0		0.149	TL	91.00	PV
	Pipe: 20					-81.4	2.185	PL	6.92	PF
TOR		14.5	0.0	53.4	0.0	7.0	150	FTG	B	PE
BFP1		7.6	0.0	56.9	0.0		0.032	TL	16.29	PV
	Pipe: 21									
BFP2		7.6	0.0	63.9	0.0					
BFP1		7.6	0.0	56.9	0.0					
	Pipe: 22					-81.4	4.100	PL	30.00	PF
BFP2		7.6	0.0	63.9	0.0	2.0	140	FTG	ET2G	PE
UG1		0.0	0.0	67.3	0.0		0.002	TL	71.00	PV
	Pipe: 23					-81.4	8.270	PL	250.00	PF
UG1		0.0	0.0	67.3	0.0	0.5	140	FTG	2ETG	PE
UG2		-5.3	0.0	69.6	0.0		0.000	TL	339.00	PV
	Pipe: 24					-81.4	12.340	PL	460.00	PF
UG2		-5.3	0.0	69.6	0.0	0.2	140	FTG	TFG	PE
UG3		-15.3	0.0	74.0	0.0		0.000	TL	567.00	PV
	Pipe: 25					-81.5	6.160	PL	15.50	PF
UG3		-15.3	0.0	74.0	0.0	0.9	140	FTG	EG	PE
SOURCE		-15.3	SRCE	74.0	(N/A)		0.000	TL	31.50	PV

FIXED PRESSURE LOSS DEVICE
 7.0 psi, 81.4 gpm

DATE: 12/2/2025AULICS\HASS FILES\BUILDING E\E - (4) 18X18 RES49 12PSI.SDF

JOB TITLE: E - (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 0.162 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 99.91 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

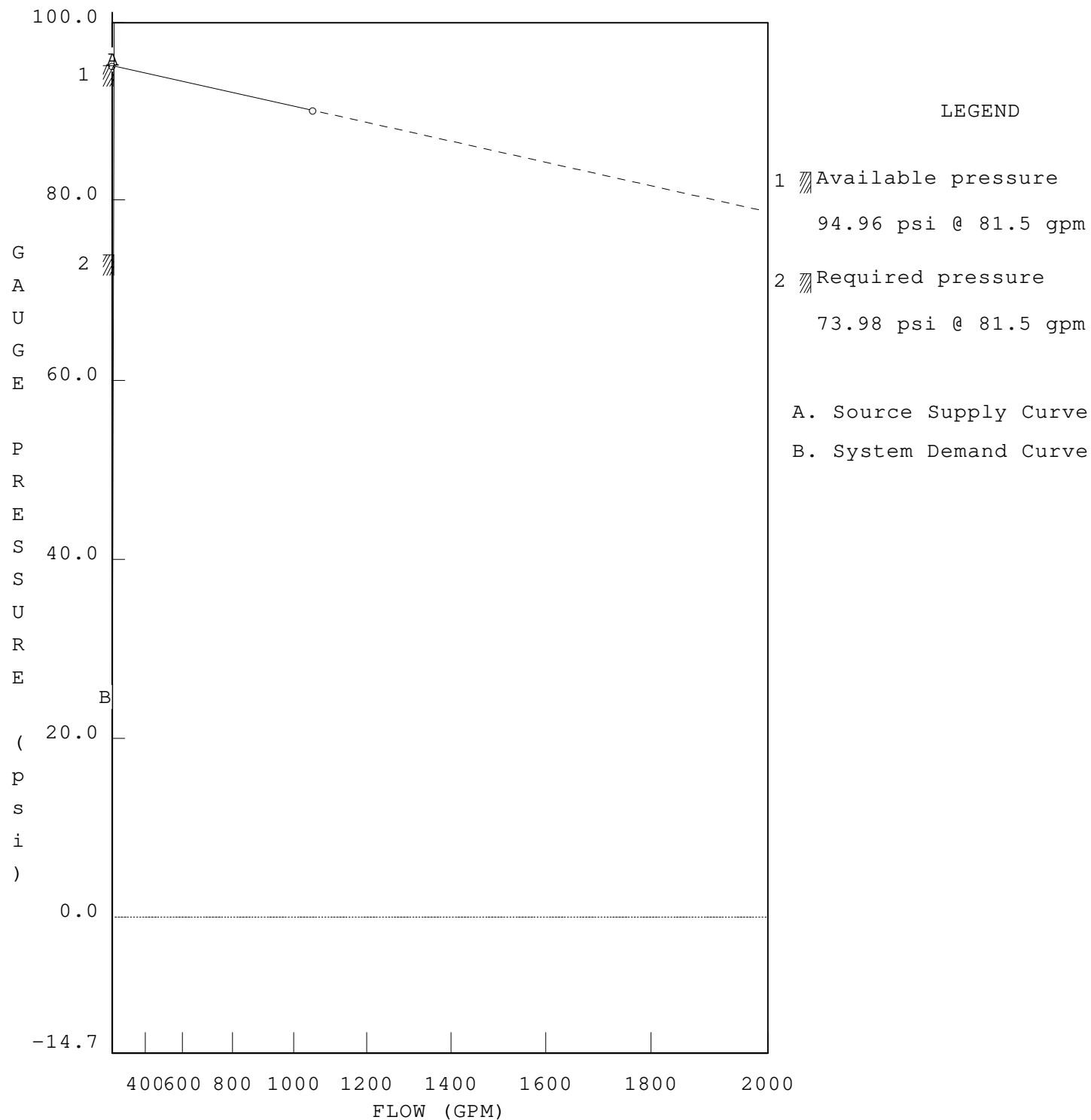
PAGE: Y	MATERIAL: SCH7		HWC: 120						
Diameter	Equivalent Fitting Lengths in Feet								
(in)	E	T	F	C	B	G	A	D	X
	Ell	Tee	45	ChkVlv	BfyVlv	GatVlv	AlmChk	DPVlv	flex
2.185	4.60	15.20	2.40	14.40	6.20	1.00	12.40	12.40	0.00

DATE: 12/2/2025AULICS\HASS FILES\BUILDING E\E - (4) 18X18 RES49 12PSI.SDF

JOB TITLE: E - (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: 12/2/2025AULICS\HASS FILES\BUILDING E\E - (4) 18X18 RES49 12PSI.SDF
 JOB TITLE: E - (4) 18x18 RES49 12PSI

WATER SUPPLY CURVE

