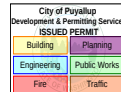


**SMITH FIRE SYSTEMS, INC**

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 D	DATE:	11/20/2025	CRP/TP BRADLEY HEIGHTS LLC	
ADDRESS:	206 27TH AVE SE	BY:	A. RIDEOUT	AHJ:	
	PUYALLUP, WA 98374			PUYALLUP	

SYSTEM DESIGNATION: **SYSTEM #1 -L3 (4) HEAD COMPARTMENT**DESIGN PER: **NFPA 13R (2019 EDITION)**OCCUPANCY CLASSIFICATION: **RESIDENTIAL****DESIGN CRITERIA:**NFPA SECTION: **7.2.3**
AREA MODIFIER **N/A**SPRINKLER MANUFACTURER: **RELIABLE**
K-FACTOR: **4.9K**
MODEL: **F1RES49**
TEMPERATURE: **155°**
RESPONSE TYPE: **QR**SYSTEM TYPE: **WET**
MAX CEILING HEIGHT: **9'-1"**
CEILING HEIGHT: **9'-1"**
ROOF SLOPE: **4:12**
CEILING SLOPE: **2:12**TOTAL SPRINKLERS CALCULATED: **4**
MAX AREA OF COVERAGE PER SPRINKLER: **256 SQ. FT**
MAX DISTANCE BETWEEN SPRINKLERS: **16 FT**FIRE PUMP: **N**
RATED CAPACITY OF PUMP: **N/A****DESIGN AREA**

THE (4) HYDRAULICALLY MOST DEMANDING ADJACENT SPRINKLERS DELIVERING .05 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	5958	57
LEVEL 1	11633	115
LEVEL 2	11570	112
LEVEL 3	11540	120
TOTAL:	40,701	404

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

MOST DEMANDING (4) SPRINKLER(S) AT 7 PSI

BASE OF RISER: 64.8 GPM REQUIRED AT 58.4 PSI**SUMMARY:** 64.8 GPM REQUIRED AT 77.5 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 D

DATE PUYALLUP, WA 98374

JOB NO. TC25207

SYSTEM/AREA SYS 1: (4) 16x16 RES49



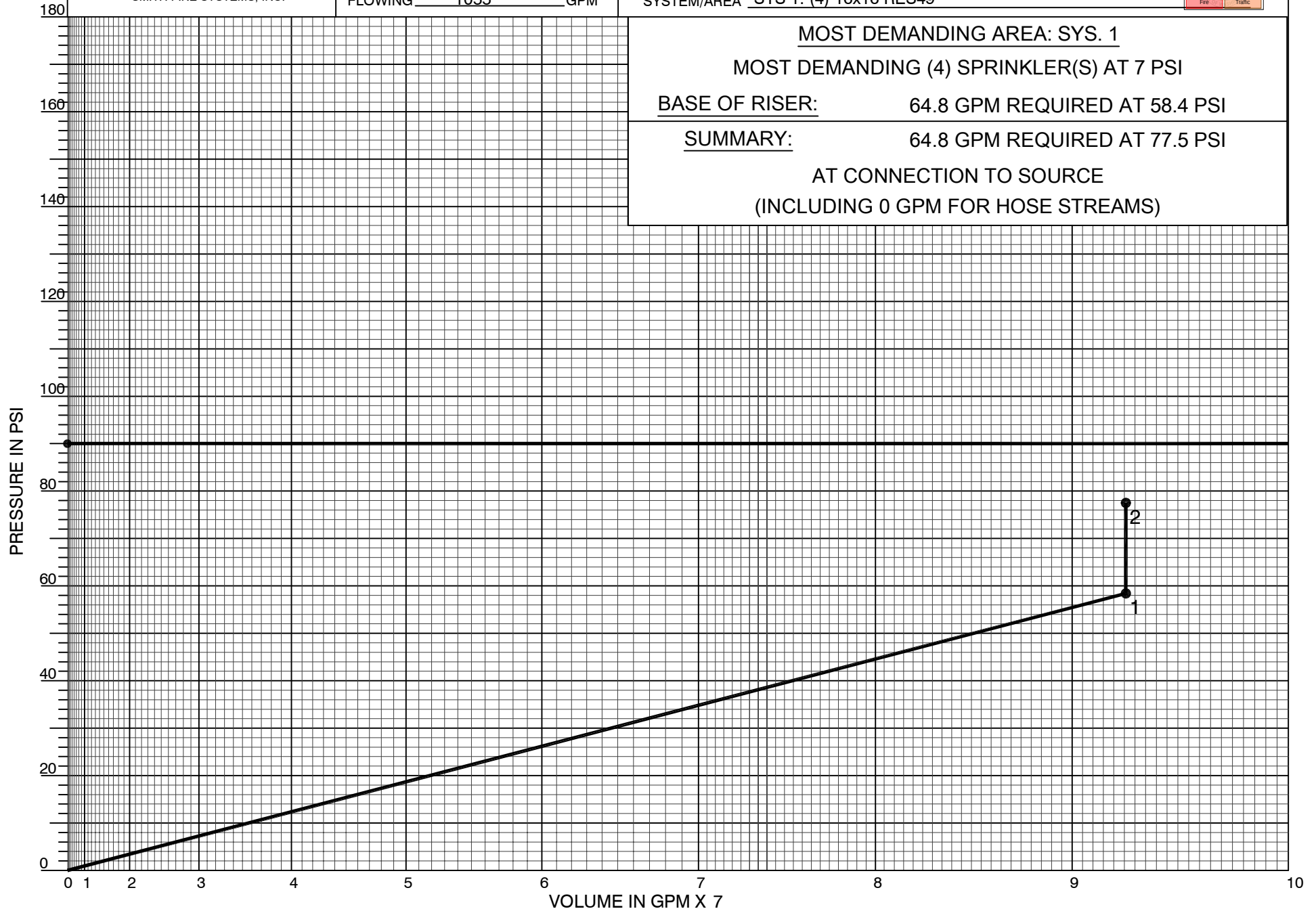
MOST DEMANDING AREA: SYS. 1

MOST DEMANDING (4) SPRINKLER(S) AT 7 PSI

BASE OF RISER: 64.8 GPM REQUIRED AT 58.4 PSI

SUMMARY: 64.8 GPM REQUIRED AT 77.5 PSI

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



DATE: 12/4/2025RAULICS\HASS FILES\BUILDING D\D - (4) 16X16 RES49 7PSI.SDF
 JOB TITLE: D - (4) 16x16 RES49 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	64.8	77.5

Available pressure is 17.5 psi (18%) greater than required pressure.

AGGREGATE FLOW ANALYSIS:

TOTAL FLOW AT SOURCE	64.8 GPM
TOTAL HOSE STREAM ALLOWANCE AT SOURCE	0.0 GPM
OTHER HOSE STREAM ALLOWANCES	0.0 GPM
TOTAL DISCHARGE FROM ACTIVE SPRINKLERS	64.8 GPM

NODE ANALYSIS DATA

NODE TAG	ELEVATION (FT)	NODE TYPE	PRESSURE (PSI)	DISCHARGE (GPM)
S2	40.2	K= 4.90	7.8	13.7
S3	42.0	K= 4.90	7.0	13.0
S4	39.3	K= 4.90	14.9	18.9
S5	39.3	K= 4.90	15.4	19.2
B1	39.3	- - - -	8.6	- - -
M6	39.3	- - - -	16.2	- - -
M2	39.3	- - - -	16.3	- - -
M3	39.3	- - - -	17.0	- - -
31	39.3	- - - -	17.1	- - -
01	9.6	- - - -	36.4	- - -
TOR	14.5	- - - -	54.7	- - -
BFP1	7.6	- - - -	58.4	- - -
BFP2	7.6	- - - -	65.4	- - -
UG1	5.0	- - - -	66.6	- - -
UG2	5.0	- - - -	66.6	- - -
UG3	-20.1	- - - -	77.5	- - -
SOURCE	-20.1	SOURCE	77.5	64.8

DATE: 12/4/2025RAULICS\HASS FILES\BUILDING D\D - (4) 16X16 RES49 7PSI.SDF
 JOB TITLE: D - (4) 16x16 RES49 7PSI

PIPE DATA

PIPE TAG						Q (GPM)	DIA (IN)		LENGTH	PRESS.	
END	ELEV.	NOZ.	PT	DISC.	VEL (FPS)	HW (C)			(FT)	SUM.	
NODES	(FT)	(K)	(PSI)	(GPM)		FL/FT				(PSI)	
Pipe: 1											
S2	40.2	4.9	7.8	13.7	-13.7	1.101	PL	3.75	PF	0.5	
B1	39.3	0.0	8.6	0.0	4.6	150	FTG	2T	PE	0.4	
						0.034	TL	13.75	PV		
Pipe: 2											
S3	42.0	4.9	7.0	13.0	-13.0	1.101	PL	5.75	PF	0.5	
B1	39.3	0.0	8.6	0.0	4.4	150	FTG	ET	PE	1.2	
						0.031	TL	15.75	PV		
Pipe: 3											
S4	39.3	4.9	14.9	18.9	-18.9	1.101	PL	11.67	PF	1.3	
M6	39.3	0.0	16.2	0.0	6.4	150	FTG	ET	PE	0.0	
						0.061	TL	21.67	PV		
Pipe: 4											
B1	39.3	0.0	8.6	0.0	-26.7	1.101	PL	31.17	PF	7.7	
M2	39.3	0.0	16.3	0.0	9.0	150	FTG	6ET	PE	0.0	
						0.116	TL	66.17	PV		
Pipe: 5											
M6	39.3	0.0	16.2	0.0	-18.9	1.598	PL	6.00	PF	0.1	
M2	39.3	0.0	16.3	0.0	3.0	150	FTG	----	PE	0.0	
						0.010	TL	6.00	PV		
Pipe: 6											
S5	39.3	4.9	15.4	19.2	-19.2	1.101	PL	14.42	PF	1.5	
M3	39.3	0.0	17.0	0.0	6.5	150	FTG	2T	PE	0.0	
						0.063	TL	24.42	PV		
Pipe: 7											
M3	39.3	0.0	17.0	0.0	-19.2	1.598	PL	5.25	PF	0.1	
31	39.3	0.0	17.1	0.0	3.1	150	FTG	T	PE	0.0	
						0.010	TL	13.25	PV		
Pipe: 8											
M2	39.3	0.0	16.3	0.0	-45.6	1.598	PL	7.75	PF	0.8	
31	39.3	0.0	17.1	0.0	7.3	150	FTG	T	PE	0.0	
						0.051	TL	15.75	PV		
Pipe: 9											
31	39.3	0.0	17.1	0.0	-64.8	1.598	PL	29.75	PF	6.4	
01	9.6	0.0	36.4	0.0	10.4	150	FTG	4ET	PE	12.9	
						0.098	TL	65.75	PV		
Pipe: 10											
01	9.6	0.0	36.4	0.0	-64.8	1.598	PL	180.00	PF	20.4	
TOR	14.5	0.0	54.7	0.0	10.4	150	FTG	3ET	PE	-2.1	
						0.098	TL	209.00	PV		
Pipe: 11											
TOR	14.5	0.0	54.7	0.0	-64.8	1.598	PL	6.92	PF	0.7	
BFP1	7.6	0.0	58.4	0.0	10.4	150	FTG	----	PE	3.0	
						0.098	TL	6.92	PV		
Pipe: 12											
BFP2	7.6	0.0	65.4	0.0	FIXED PRESSURE LOSS DEVICE						
BFP1	7.6	0.0	58.4	0.0	7.0 psi, 64.8 gpm						
Pipe: 13											
BFP2	7.6	0.0	65.4	0.0	-64.8	4.100	PL	50.50	PF	0.1	
UG1	5.0	0.0	66.6	0.0	1.6	140	FTG	ET2G	PE	1.1	
						0.001	TL	91.50	PV		

DATE: 12/4/2025RAULICS\HASS FILES\BUILDING D\D - (4) 16X16 RES49 7PSI.SDF
 JOB TITLE: D - (4) 16x16 RES49 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										
						-64.8	8.270	PL	545.00	PF 0.0
UG1		5.0	0.0	66.6	0.0	0.4	140	FTG	2ETG	PE 0.0
UG2		5.0	0.0	66.6	0.0		0.000	TL	634.00	PV
Pipe: 15										
						-64.8	12.340	PL	460.00	PF 0.0
UG2		5.0	0.0	66.6	0.0	0.2	140	FTG	TFG	PE 10.9
UG3		-20.1	0.0	77.5	0.0		0.000	TL	567.00	PV
Pipe: 16										
						-64.8	6.160	PL	15.50	PF 0.0
UG3		-20.1	0.0	77.5	0.0	0.7	140	FTG	EG	PE -0.0
SOURCE		-20.1	SRCE	77.5	(N/A)		0.000	TL	31.50	PV

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 0.004 gpm and a maximum imbalance at any node of 0.063 gpm.
- (3) Total pressure at each node is used in balancing the system. Maximum water velocity is 10.4 ft/sec at pipe 9.
- (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 77.28 gpm.
- (6) PIPE FITTINGS TABLE

User Pipe Table Name: SMITH

DATE: 12/4/2025RAULICS\HASS FILES\BUILDING D\D - (4) 16X16 RES49 7PSI.SDF

JOB TITLE: D - (4) 16x16 RES49 7PSI

PAGE: D MATERIAL: DI HWC: 140

Diameter (in)	Equivalent Fitting Lengths in Feet					
	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

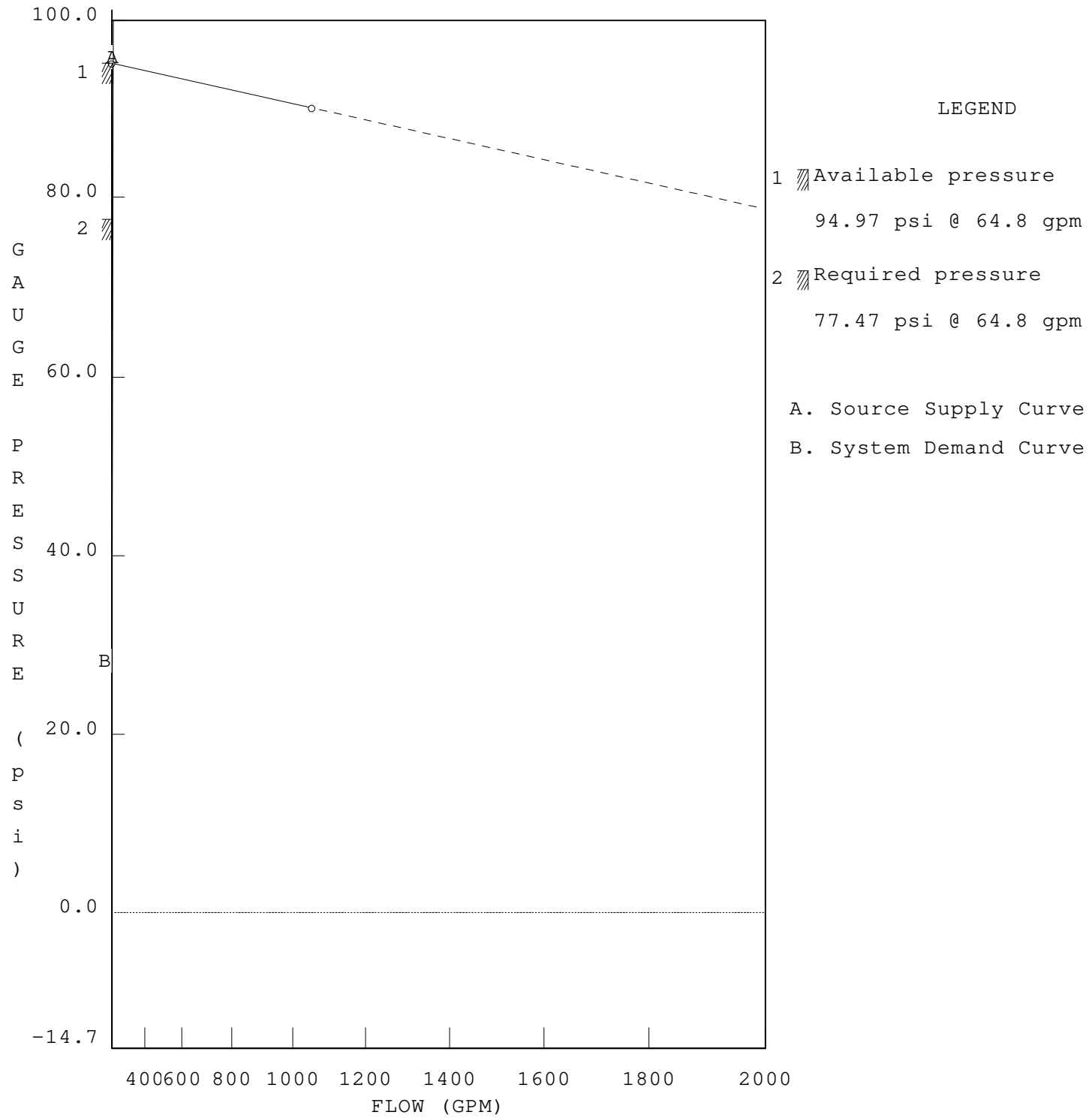
Diameter (in)	Equivalent Fitting Lengths in Feet						
	E	T	F	R	C	G	B
	Ell	Tee	45	teeRun	Coup	Gva	Bfy
1.101	5.00	5.00	1.00	1.00	1.00	1.00	4.00
1.598	7.00	8.00	2.00	1.00	1.00	1.00	6.00

DATE: 12/4/2025RAULICS\HASS FILES\BUILDING D\D - (4) 16X16 RES49 7PSI.SDF

JOB TITLE: D - (4) 16x16 RES49 7PSI

WATER SUPPLY ANALYSIS

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

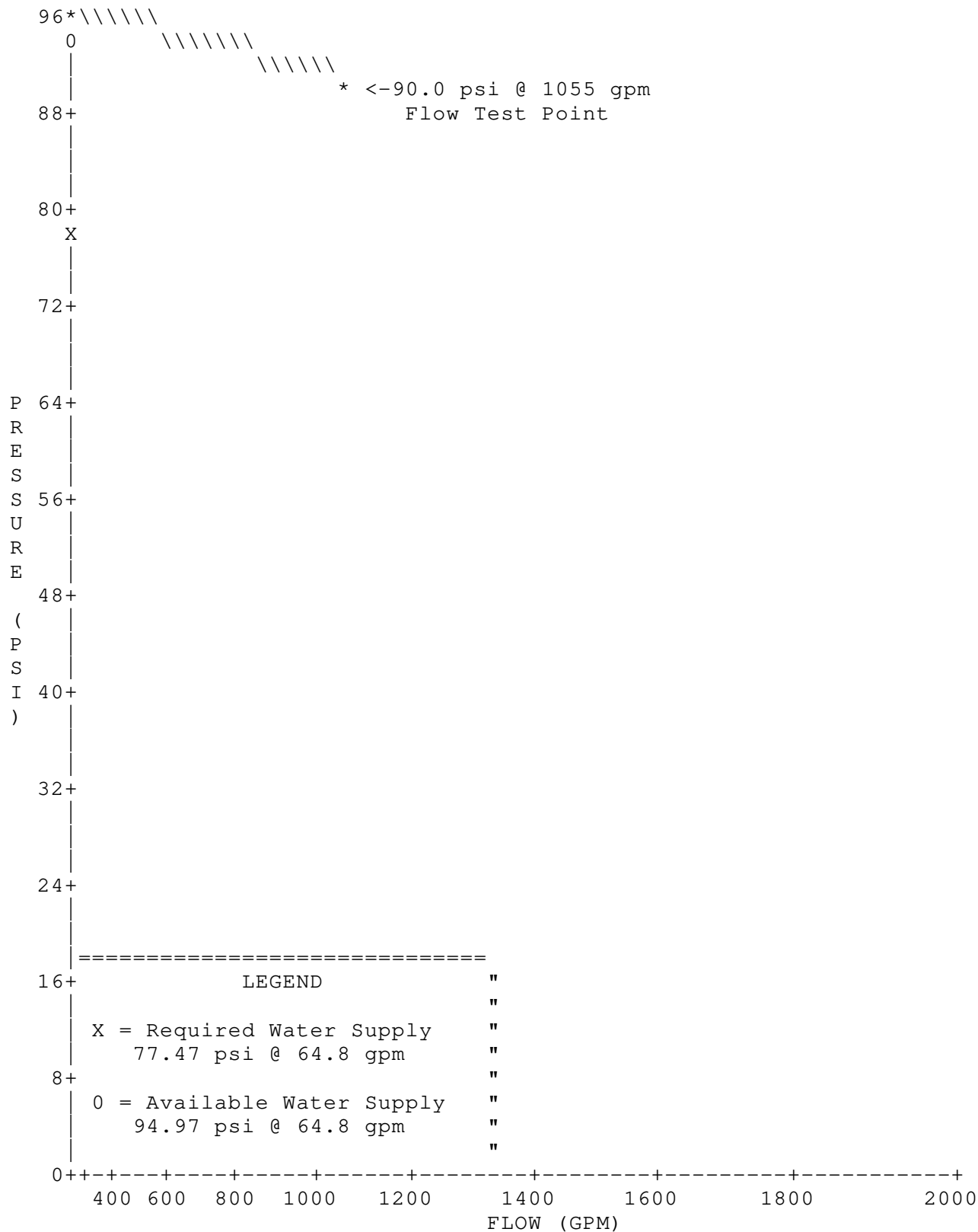


Note: (1) Dashed Lines indicate extrapolated values from Test Results

DATE: 12/4/2025RAULICS\HASS FILES\BUILDING D\D - (4) 16X16 RES49 7PSI.SDF

JOB TITLE: D - (4) 16x16 RES49 7PSI

WATER SUPPLY CURVE



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

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 36.9 PSI

DATE: 12/4/2025FILES\BUILDING D\AUX CALCS\D - (1) 20X20 RES49 16.7PSI.SDF
 JOB TITLE: D - (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	56.9

Available pressure is 38.1 psi (40%) 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	38.8	K= 4.90	16.7	20.0
M1	39.3	- - - -	19.8	- - -
31	39.3	- - - -	20.1	- - -
01	9.6	- - - -	33.7	- - -
TOR	14.5	- - - -	33.9	- - -
BFP1	7.6	- - - -	36.9	- - -
BFP2	7.6	- - - -	44.9	- - -
UG1	5.0	- - - -	46.1	- - -
UG2	5.0	- - - -	46.1	- - -
UG3	-20.1	- - - -	56.9	- - -
SOURCE	-20.1	SOURCE	56.9	20.0

DATE: 12/4/2025 FILES\BUILDING D\AUX CALCS\D - (1) 20X20 RES49 16.7PSI.SDF
 JOB TITLE: D - (1) 20x20 RES49 16.7PSI

PIPE DATA

PIPE TAG					Q (GPM)	DIA (IN)	LENGTH	PRESS.
END	ELEV.	NOZ.	PT	DISC.	VEL (FPS)	HW (C)	(FT)	SUM.
NODES	(FT)	(K)	(PSI)	(GPM)		FL/FT		(PSI)
Pipe: 1								
S1	38.8	4.9	16.7	20.0	-20.0 6.7	1.101 150	PL FTG	PF PE
M1	39.3	0.0	19.8	0.0		0.068	TL	PV
Pipe: 2								
M1	39.3	0.0	19.8	0.0	-20.0 3.2	1.598 150	PL FTG	PF T PE
31	39.3	0.0	20.1	0.0		0.011	TL	PV
Pipe: 3								
31	39.3	0.0	20.1	0.0	-20.0 3.2	1.598 150	PL FTG	PF 4ET PE
01	9.6	0.0	33.7	0.0		0.011	TL	PV
Pipe: 4								
01	9.6	0.0	33.7	0.0	-20.0 3.2	1.598 150	PL FTG	PF 3ET PE
TOR	14.5	0.0	33.9	0.0		0.011	TL	PV
Pipe: 5								
TOR	14.5	0.0	33.9	0.0	-20.0 1.7	2.185 150	PL FTG	PF ---- PE
BFP1	7.6	0.0	36.9	0.0		0.002	TL	PV
Pipe: 6								
BFP2	7.6	0.0	44.9	0.0	FIXED PRESSURE LOSS DEVICE			
BFP1	7.6	0.0	36.9	0.0	8.0 psi, 20.0 gpm			
Pipe: 7								
BFP2	7.6	0.0	44.9	0.0	-20.0 0.5	4.100 140	PL FTG	PF ET2G PE
UG1	5.0	0.0	46.1	0.0		0.000	TL	PV
Pipe: 8								
UG1	5.0	0.0	46.1	0.0	-20.0 0.1	8.270 140	PL FTG	PF 2ETG PE
UG2	5.0	0.0	46.1	0.0		0.000	TL	PV
Pipe: 9								
UG2	5.0	0.0	46.1	0.0	-20.0 0.1	12.340 140	PL FTG	PF TFG PE
UG3	-20.1	0.0	56.9	0.0		0.000	TL	PV
Pipe: 10								
UG3	-20.1	0.0	56.9	0.0	-20.0 0.2	6.160 140	PL FTG	PF EG PE
SOURCE	-20.1	SRCE	56.9	(N/A)		0.000	TL	PV

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

DATE: 12/4/2025FILES\BUILDING D\AUX CALCS\D - (1) 20X20 RES49 16.7PSI.SDF

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

- (2) The system has been calculated to provide an average imbalance at each node of 0.009 gpm and a maximum imbalance at any node of 0.087 gpm.
- (3) Total pressure at each node is used in balancing the system. Maximum water velocity is 6.7 ft/sec at pipe 1.
- (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 94.99 psi with a flow of 32.81 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

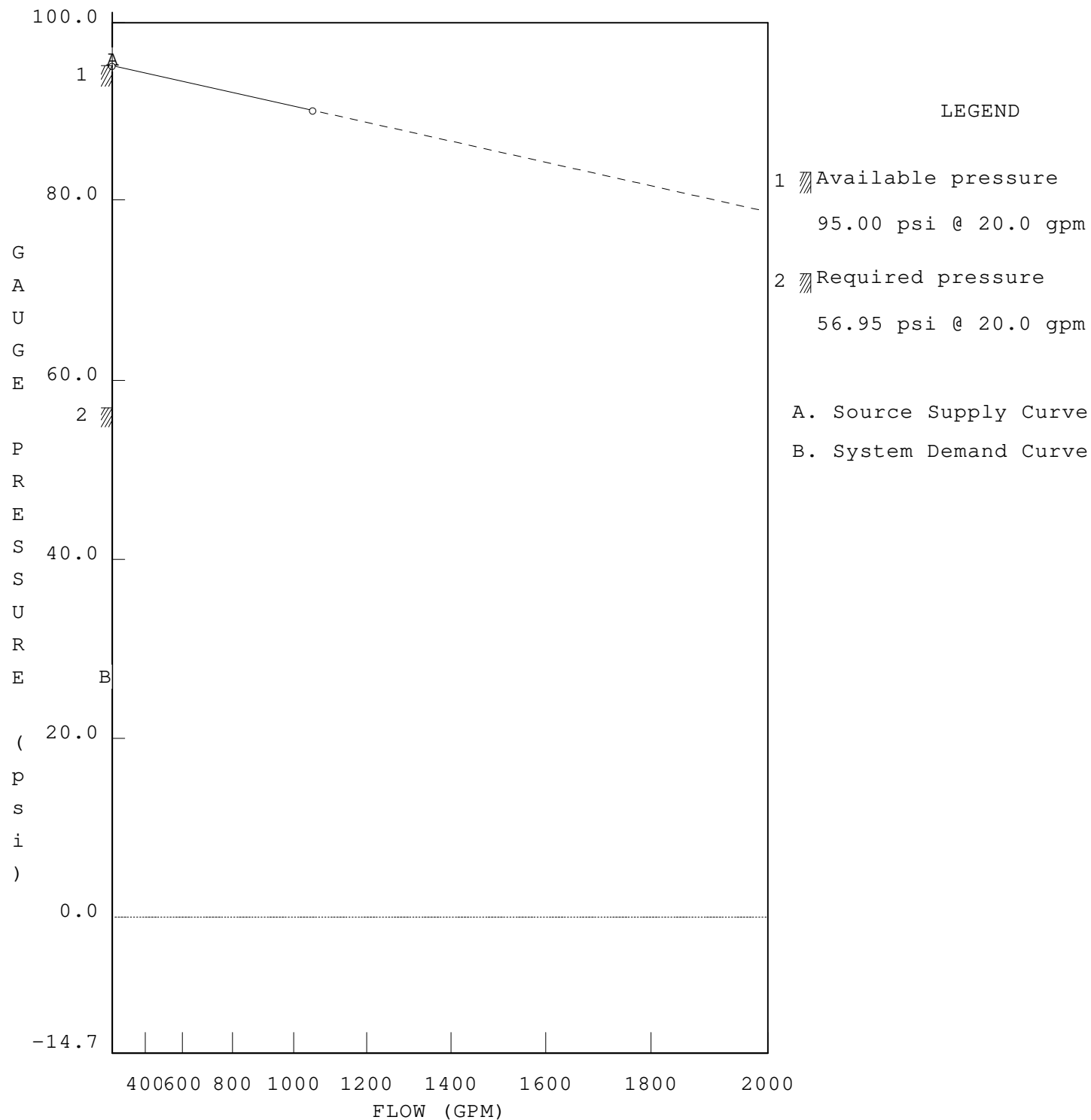
PAGE: Y	MATERIAL: SCH7		HWC: 120						
Diameter	Equivalent Fitting Lengths in Feet								
(in)	E	T	F	C	B	G	A	D	X
	Ell	Tee	45	ChkVlv	BfyVlv	GatVlv	AlmChk	DPVlv	flex
2.185	4.60	15.20	2.40	14.40	6.20	1.00	12.40	12.40	0.00

DATE: 12/4/2025FILES\BUILDING D\AUX CALCS\D - (1) 20X20 RES49 16.7PSI.SDF

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

WATER SUPPLY ANALYSIS

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

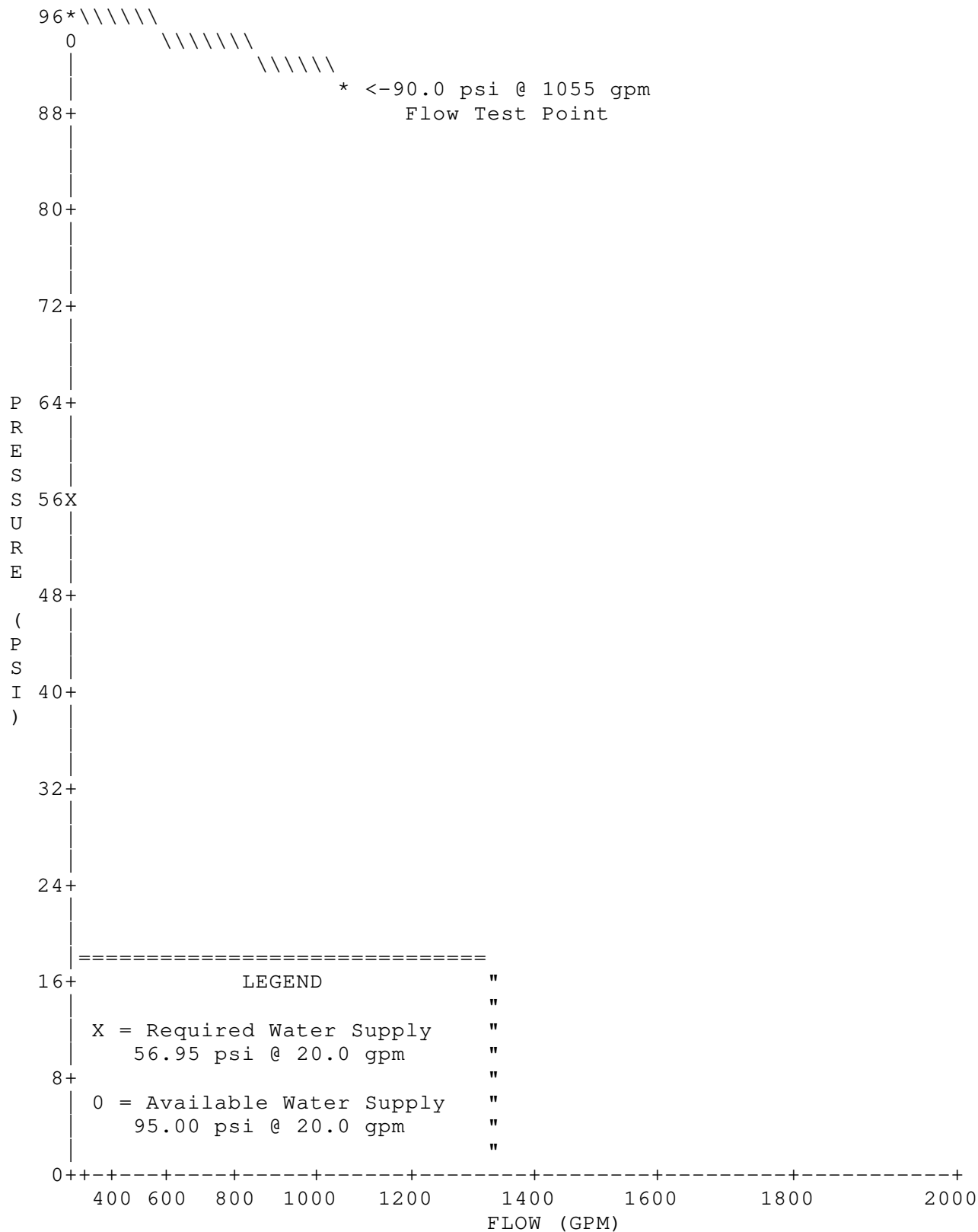


Note: (1) Dashed Lines indicate extrapolated values from Test Results

DATE: 12/4/2025FILES\BUILDING D\AUX CALCS\D - (1) 20X20 RES49 16.7PSI.SDF

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

WATER SUPPLY CURVE



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

SYSTEM # 1

L3 (2) HEAD COMPARTMENT

AUXILIARY HYDRAULIC CALCULATION

DENSITY: 0.05 GPM OVER 2 HEADS

SYSTEM DEMAND AT BASE OF RISER

35.3 GPM AT 37.1 PSI

DATE: 12/4/2025S FILES\BUILDING D\AUX CALCS\D - (2) 18X18 RES49 12PSI.SDF
 JOB TITLE: D - (2) 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	35.3	56.9

Available pressure is 38.1 psi (40%) greater than required pressure.

AGGREGATE FLOW ANALYSIS:

TOTAL FLOW AT SOURCE	35.3 GPM
TOTAL HOSE STREAM ALLOWANCE AT SOURCE	0.0 GPM
OTHER HOSE STREAM ALLOWANCES	0.0 GPM
TOTAL DISCHARGE FROM ACTIVE SPRINKLERS	35.3 GPM

NODE ANALYSIS DATA

NODE TAG	ELEVATION (FT)	NODE TYPE	PRESSURE (PSI)	DISCHARGE (GPM)
S10	38.8	K= 4.90	12.0	17.0
S11	38.8	K= 4.90	14.0	18.4
B4	39.3	- - - -	12.4	- - -
B5	39.3	- - - -	14.1	- - -
M4	39.3	- - - -	16.3	- - -
M5	39.3	- - - -	16.4	- - -
32	41.8	- - - -	16.7	- - -
02	12.1	- - - -	30.6	- - -
TOR	14.5	- - - -	34.1	- - -
BFP1	7.6	- - - -	37.1	- - -
BFP2	7.6	- - - -	44.1	- - -
UG1	5.0	- - - -	46.0	- - -
UG2	5.0	- - - -	46.0	- - -
UG3	-20.1	- - - -	56.9	- - -
SOURCE	-20.1	SOURCE	56.9	35.3

DATE: 12/4/2025S FILES\BUILDING D\AUX CALCS\D - (2) 18X18 RES49 12PSI.SDF

JOB TITLE: D - (2) 18x18 RES49 12PSI

PIPE DATA

PIPE TAG						Q (GPM)	DIA (IN)		LENGTH	PRESS.	
END	ELEV.	NOZ.	PT	DISC.	VEL (FPS)	HW (C)			(FT)	SUM.	
NODES	(FT)	(K)	(PSI)	(GPM)		FL/FT				(PSI)	
Pipe: 1											
S10					-17.0	1.101	PL	2.50	PF	0.6	
	38.8	4.9	12.0	17.0	5.7	150	FTG	ET	PE	-0.2	
B4	39.3	0.0	12.4	0.0		0.050	TL	12.50	PV		
Pipe: 2											
S11					-18.4	1.101	PL	0.50	PF	0.3	
	38.8	4.9	14.0	18.4	6.2	150	FTG	T	PE	-0.2	
B5	39.3	0.0	14.1	0.0		0.058	TL	5.50	PV		
Pipe: 3											
B4					-17.0	1.101	PL	39.50	PF	4.0	
	39.3	0.0	12.4	0.0	5.7	150	FTG	7ET	PE	0.0	
M5	39.3	0.0	16.4	0.0		0.050	TL	79.50	PV		
Pipe: 4											
B5					-18.4	1.101	PL	12.42	PF	2.2	
	39.3	0.0	14.1	0.0	6.2	150	FTG	4ET	PE	0.0	
M4	39.3	0.0	16.3	0.0		0.058	TL	37.42	PV		
Pipe: 5											
M4					-18.4	1.598	PL	8.42	PF	0.1	
	39.3	0.0	16.3	0.0	2.9	150	FTG	----	PE	0.0	
M5	39.3	0.0	16.4	0.0		0.009	TL	8.42	PV		
Pipe: 6											
M5					-35.3	1.598	PL	22.50	PF	1.4	
	39.3	0.0	16.4	0.0	5.7	150	FTG	2ET	PE	-1.1	
32	41.8	0.0	16.7	0.0		0.032	TL	44.50	PV		
Pipe: 7											
32					-35.3	1.598	PL	29.75	PF	0.9	
	41.8	0.0	16.7	0.0	5.7	150	FTG	----	PE	12.9	
02	12.1	0.0	30.6	0.0		0.032	TL	29.75	PV		
Pipe: 8											
02					-35.3	1.598	PL	121.00	PF	4.5	
	12.1	0.0	30.6	0.0	5.7	150	FTG	2ET	PE	-1.0	
TOR	14.5	0.0	34.1	0.0		0.032	TL	143.00	PV		
Pipe: 9											
TOR					-35.3	2.185	PL	6.92	PF	0.0	
	14.5	0.0	34.1	0.0	3.0	150	FTG	----	PE	3.0	
BFP1	7.6	0.0	37.1	0.0		0.007	TL	6.92	PV		
Pipe: 10											
BFP2					FIXED PRESSURE LOSS DEVICE						
	7.6	0.0	44.1	0.0	7.0 psi, 35.3 gpm						
BFP1	7.6	0.0	37.1	0.0							
Pipe: 11											
BFP2					-35.3	2.003	PL	50.50	PF	0.8	
	7.6	0.0	44.1	0.0	3.6	150	FTG	ET2G	PE	1.1	
UG1	5.0	0.0	46.0	0.0		0.011	TL	73.50	PV		
Pipe: 12											
UG1					-35.3	8.270	PL	545.00	PF	0.0	
	5.0	0.0	46.0	0.0	0.2	140	FTG	2ETG	PE	0.0	
UG2	5.0	0.0	46.0	0.0		0.000	TL	634.00	PV		
Pipe: 13											
UG2					-35.3	12.340	PL	460.00	PF	0.0	
	5.0	0.0	46.0	0.0	0.1	140	FTG	TFG	PE	10.9	
UG3	-20.1	0.0	56.9	0.0		0.000	TL	567.00	PV		

DATE: 12/4/2025S FILES\BUILDING D\AUX CALCS\D - (2) 18X18 RES49 12PSI.SDF
 JOB TITLE: D - (2) 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.	(PSI)
Pipe: 14					-35.3	6.160	PL	15.50	PF 0.0
UG3	-20.1	0.0	56.9	0.0	0.4	140	FTG	EG	PE 0.0
SOURCE	-20.1	SRCE	56.9	(N/A)		0.000	TL	31.50	PV

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 0.008 gpm and a maximum imbalance at any node of 0.105 gpm.
- (3) Total pressure at each node is used in balancing the system. Maximum water velocity is 6.2 ft/sec at pipe 2.
- (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 94.98 psi with a flow of 57.52 gpm.
- (6) PIPE FITTINGS TABLE

User Pipe Table Name: SMITH

PAGE: D	MATERIAL: DI	HWC: 140
Diameter (in)	E	T
6.160	12.00	40.00
8.270	18.00	47.00
12.340	24.00	80.00

Equivalent Fitting Lengths in Feet

	F	C	B	G
45 ChkVlv	10.00	43.00	16.00	4.00
BfyVlv	12.00	60.00	20.00	6.00
GatVlv	19.00	87.00	34.00	8.00

DATE: 12/4/2025S FILES\BUILDING D\AUX CALCS\D - (2) 18X18 RES49 12PSI.SDF
 JOB TITLE: D - (2) 18x18 RES49 12PSI

PAGE: P MATERIAL: CPVC HWC: 150

Diameter (in)	Equivalent Fitting Lengths in Feet						
	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
2.003	9.00	10.00	2.00	1.00	1.00	2.00	7.00

PAGE: Y MATERIAL: SCH7 HWC: 120

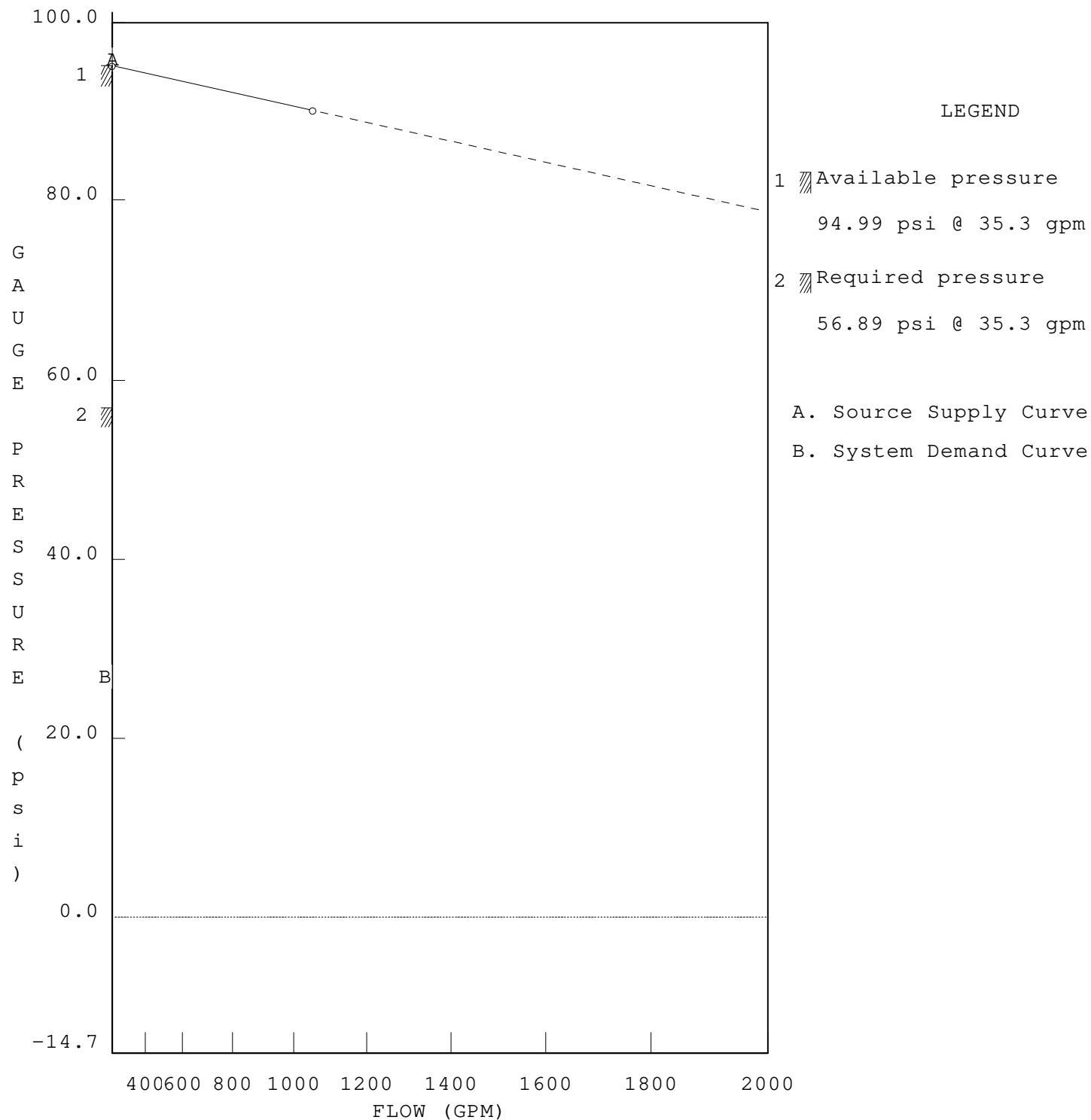
Diameter (in)	Equivalent Fitting Lengths in Feet								
	E	T	F	C	B	G	A	D	X
	Ell	Tee	45 ChkVlv	BfyVlv	GatVlv	AlmChk	DPVlv	flex	
2.185	4.60	15.20	2.40	14.40	6.20	1.00	12.40	12.40	0.00

DATE: 12/4/2025S FILES\BUILDING D\AUX CALCS\D - (2) 18X18 RES49 12PSI.SDF

JOB TITLE: D - (2) 18x18 RES49 12PSI

WATER SUPPLY ANALYSIS

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

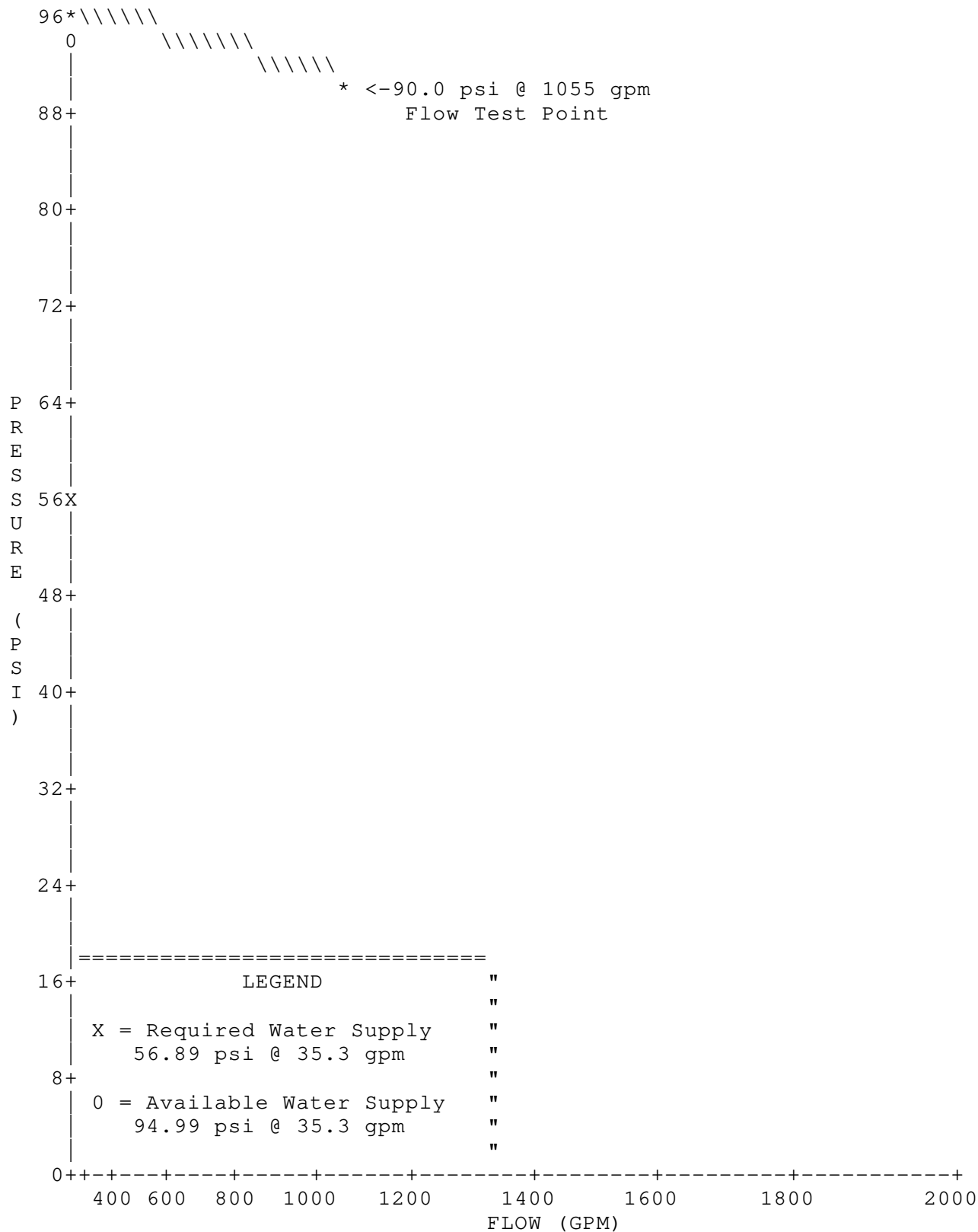


Note: (1) Dashed Lines indicate extrapolated values from Test Results

DATE: 12/4/2025S FILES\BUILDING D\AUX CALCS\D - (2) 18X18 RES49 12PSI.SDF

JOB TITLE: D - (2) 18x18 RES49 12PSI

WATER SUPPLY CURVE



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

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 PSI

SPRINKLER SYSTEM INPUT DATA

Page 1

DATE: 12/4/2025\\smithfire.com\datastorage\SFSDOCS\South Puget Sound\Team2\Job files\TC2
JOB TITLE: D - (4) F3QR 7PSI

Node Tag	Elevation (ft)	Static Pressure (psi)	Source Nodes		Hose Stream Allowance (gpm)
			Residual Pressure (psi)	Flow (gpm)	
SOURCE	-20.10	95.0	90.0	1055	0

Node Data

Node Tag	Elevation (ft)	K	Req.Den. (gpm/ft^2)	Area (ft^2)
S7	38.83	5.60	0.000	0.0
S8	38.83	5.60	0.000	0.0
S6	38.83	5.60	0.000	0.0
S9	38.83	5.60	0.000	0.0
M3	39.33	0.00	0.000	0.0
M4	39.33	0.00	0.000	0.0
31	39.33	0.00	0.000	0.0
32	41.83	0.00	0.000	0.0
01	9.58	0.00	0.000	0.0
02	12.08	0.00	0.000	0.0
TOR	14.50	0.00	0.000	0.0
BFP1	7.58	0.00	0.000	0.0
BFP2	7.58	0.00	0.000	0.0
UG1	5.00	0.00	0.000	0.0
UG2	5.00	0.00	0.000	0.0
UG3	-20.10	0.00	0.000	0.0
SOURCE	-20.1	SOURCE	0.000	0.0

Pipe Data

Pipe Tag	End Node Tags		Length (ft)	Fittings (ft)	Diameter (in)	HWC
1	S6	M3	35.50	7ET	1.101 (P1.000)	150
2	S7	M3	26.00	3ET	1.101 (P1.000)	150
3	S8	M4	17.25	2E2T	1.101 (P1.000)	150
4	S9	M4	11.75	2E2T	1.101 (P1.000)	150
6	M4	32	32.00	2ET	1.598 (P1.500)	150
7	M3	31	5.25	T	1.598 (P1.500)	150
8	31	01	29.75	0.0	1.598 (P1.500)	150
9	32	02	29.75	0.0	1.598 (P1.500)	150
10	01	02	54.00	0.0	1.598 (P1.500)	150
11	02	TOR	121.00	8ET	1.598 (P1.500)	150
12	TOR	BFP1	6.92	0.0	2.185 (2.000)	150
13	BFP2	BFP1	Fixed Loss Device		-7.00	psi
14	BFP2	UG1	50.50	ET2G	4.100 (D4.000)	140
15	UG1	UG2	545.00	2ETG	8.270 (D8.000)	140
16	UG2	UG3	460.00	TFG	12.340 (D12.00)	140
17	UG3	SOURCE	15.50	EG	6.160 (D6.000)	140

DATE: 12/4/2025\\smithfire.com\datastorage\SFSDOCS\South Puget Sound\Team2\Job files\TC2
JOB TITLE: D - (4) F3QR 7PSI