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

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning | Engineering | Public Works | Fire | Traffic

GENERAL / HYDRAULIC CALCULATION INFORMATION SHEET

PROJECT NAME:	BRADLEY HEIGHTS	JOB NO. :	TC25207	CONTRACTOR :
	BUILDING B	DATE:	10/17/2025	RUSH COMMERCIAL CONSTR.
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**	SPRINKLER MANUFACTURER:	**RELIABLE**
AREA MODIFIER	**N/A**	K-FACTOR:	**4.9K**
		MODEL:	**F1RES49**
		TEMPERATURE:	**155°**
		RESPONSE TYPE:	**QR**
SYSTEM TYPE:	**WET**	TOTAL SPRINKLERS CALCULATED:	**4**
MAX CEILING HEIGHT:	**9'-1"**	MAX AREA OF COVERAGE PER SPRINKLER:	**256 SQ. FT**
CEILING HEIGHT:	**9'-1"**	MAX DISTANCE BETWEEN SPRINKLERS:	**16 FT**
ROOF SLOPE:	**4:12**		
CELING SLOPE:	**2:12**		
		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.

STATIC	**95** PSI	DATE OF TEST:	4/19/2001
RESIDUAL	**90** PSI	DATA PROVIDED BY:	FRUITLAND WATER
FLOW	**1055** GPM	LOCATION OF TEST:	FH 523 @ 207 27TH AVE SE

MAIN DRAIN TEST:
S: R:

INSPECTORS TEST:
TRIP TIME:

WET SYSTEM NUMBER 1

AREA	SQ. FT.	SPRINKLERS
BASEMENT	2605	23
FLOOR 1	4960	49
FLOOR 2	4960	48
FLOOR 3	4960	52
TOTAL:	17485	172

MOST DEMANDING AREA: SYS. 1

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

BASE OF RISER: 61.8 GPM REQUIRED AT 59.0 PSI

SUMMARY: 61.8 GPM REQUIRED AT 83.1 PSI
AT CONNECTION TO **SOURCE**
(INCLUDING **0** GPM FOR HOSE STREAMS)

NOTES:

Expires 12/31/25
WASHINGTON STATE
CERTIFICATE OF COMPETENCY
FIRE SPRINKLER SYSTEMS
Aaron Stewart Nelson
2345-1019-C Level 3
Smith Fire Systems, Inc.
SMITHFS136OT
Signature — Date 11/06/2025

SMITH FIRE SYSTEMS, INC.

WATER SUPPLY DATA		
STATIC	95	PSI
RESIDUAL	90	PSI
FLOWING	1055	GPM

JOB NAME	BRADLEY HEIGHTS - BUILDING B
ADDRESS	202 27TH AVE SE
DATE	PUYALLUP, WA 98374
JOB NO.	TC25207
SYSTEM/AREA	SYSTEM 1: (4) HEAD COMPARTMENT @16X16

MOST DEMANDING AREA: SYS. 1

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

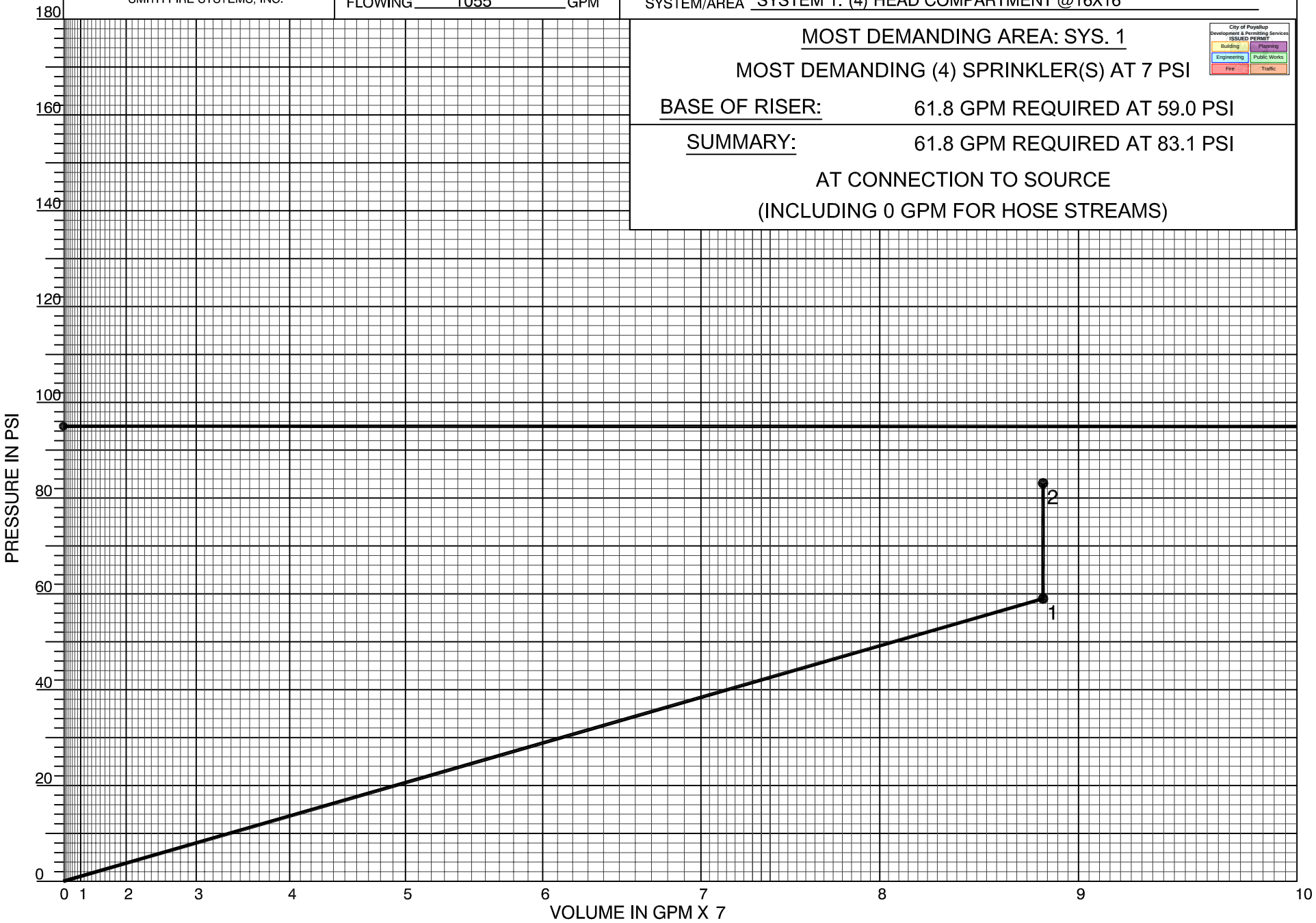
BASE OF RISER: 61.8 GPM REQUIRED AT 59.0 PSI

SUMMARY: 61.8 GPM REQUIRED AT 83.1 PSI

AT CONNECTION TO SOURCE

(INCLUDING 0 GPM FOR HOSE STREAMS)

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic



DATE: 10/30/2025AULICS\HASS FILES\BUILDING B\B - (4) 16X16 RES49 7PSI.SDF
JOB TITLE: B - (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	61.8	83.1

Available pressure is 11.9 psi (12%) greater than required pressure.

AGGREGATE FLOW ANALYSIS:

TOTAL FLOW AT SOURCE	61.8 GPM
TOTAL HOSE STREAM ALLOWANCE AT SOURCE	0.0 GPM
OTHER HOSE STREAM ALLOWANCES	0.0 GPM
TOTAL DISCHARGE FROM ACTIVE SPRINKLERS	61.8 GPM

NODE ANALYSIS DATA

NODE TAG	ELEVATION (FT)	NODE TYPE	PRESSURE (PSI)	DISCHARGE (GPM)
S2	39.3	K= 4.90	7.1	13.0
S3	39.3	K= 4.90	7.0	13.0
S4	39.3	K= 4.90	13.0	17.7
S5	39.3	K= 4.90	13.6	18.1
B1	39.8	- - - -	7.3	- - -
M1	39.8	- - - -	13.9	- - -
M2	39.8	- - - -	14.2	- - -
M3	39.8	- - - -	14.3	- - -
M4	39.8	- - - -	14.8	- - -
31	39.8	- - - -	15.0	- - -
01	9.6	- - - -	37.5	- - -
TOR	12.0	- - - -	58.3	- - -
BFP1	8.1	- - - -	60.1	- - -
BFP2	8.1	- - - -	67.1	- - -
BOR	10.5	- - - -	59.0	- - -
UG1	0.0	- - - -	70.7	- - -
UG2	0.0	- - - -	70.7	- - -
UG3	-28.6	- - - -	83.1	- - -
SOURCE	-28.6	SOURCE	83.1	61.8

DATE: 10/30/2025AULICS\HASS FILES\BUILDING B\B - (4) 16X16 RES49 7PSI.SDF
JOB TITLE: B - (4) 16x16 RES49 7PSI

PIPE DATA

PIPE TAG / END NODES	ELEV. (FT)	NOZ. (K)	PT (PSI)	DISC. (GPM)	Q(GPM) VEL(FPS)	DIA(IN) HW(C) FL/FT		LENGTH (FT)		PRESS. SUM. (PSI)
Pipe: 1					-13.0	1.101	PL	4.25	PF	0.4
S2	39.3	4.9	7.1	13.0	4.4	150	FTG	2T	PE	-0.2
B1	39.8	0.0	7.3	0.0		0.031	TL	14.25	PV	
Pipe: 2					-13.0	1.101	PL	6.25	PF	0.5
S3	39.3	4.9	7.0	13.0	4.4	150	FTG	ET	PE	-0.2
B1	39.8	0.0	7.3	0.0		0.030	TL	16.25	PV	
Pipe: 3					-26.0	1.101	PL	28.33	PF	7.0
B1	39.8	0.0	7.3	0.0	8.8	150	FTG	6ET	PE	0.0
M3	39.8	0.0	14.3	0.0		0.110	TL	63.33	PV	
Pipe: 4					-17.7	1.101	PL	11.25	PF	1.2
S4	39.3	4.9	13.0	17.7	6.0	150	FTG	ET	PE	-0.2
M1	39.8	0.0	13.9	0.0		0.054	TL	21.25	PV	
Pipe: 5					-18.1	1.101	PL	14.00	PF	1.4
S5	39.3	4.9	13.6	18.1	6.1	150	FTG	2T	PE	-0.2
M4	39.8	0.0	14.8	0.0		0.057	TL	24.00	PV	
Pipe: 6					-17.7	1.394	PL	12.75	PF	0.2
M1	39.8	0.0	13.9	0.0	3.7	150	FTG	----	PE	0.0
M2	39.8	0.0	14.2	0.0		0.017	TL	12.75	PV	
Pipe: 7					-17.7	1.394	PL	6.00	PF	0.1
M2	39.8	0.0	14.2	0.0	3.7	150	FTG	----	PE	0.0
M3	39.8	0.0	14.3	0.0		0.017	TL	6.00	PV	
Pipe: 8					-43.7	1.394	PL	1.75	PF	0.7
M3	39.8	0.0	14.3	0.0	9.2	150	FTG	T	PE	0.0
31	39.8	0.0	15.0	0.0		0.091	TL	7.75	PV	
Pipe: 9					-18.1	1.394	PL	5.25	PF	0.2
M4	39.8	0.0	14.8	0.0	3.8	150	FTG	T	PE	0.0
31	39.8	0.0	15.0	0.0		0.018	TL	11.25	PV	
Pipe: 10					-61.8	1.394	PL	30.25	PF	9.4
31	39.8	0.0	15.0	0.0	13.0	150	FTG	4E	PE	13.1
01	9.6	0.0	37.5	0.0		0.174	TL	54.25	PV	
Pipe: 11					-61.8	1.394	PL	71.75	PF	21.8
01	9.6	0.0	37.5	0.0	13.0	150	FTG	8ET	PE	-1.0
TOR	12.0	0.0	58.3	0.0		0.174	TL	125.75	PV	
Pipe: 12					-61.8	2.185	PL	1.50	PF	0.0
TOR	12.0	0.0	58.3	0.0	5.3	150	FTG	----	PE	0.6
BOR	10.5	0.0	59.0	0.0		0.019	TL	1.50	PV	
Pipe: 13					-61.8	2.185	PL	2.42	PF	0.1
BOR	10.5	0.0	59.0	0.0	5.3	120	FTG	----	PE	1.0
BFP1	8.1	0.0	60.1	0.0		0.029	TL	2.42	PV	

DATE: 10/30/2025AULICS\HASS FILES\BUILDING B\B - (4) 16X16 RES49 7PSI.SDF
JOB TITLE: B - (4) 16x16 RES49 7PSI

PIPE TAG END NODES	ELEV. (FT)	NOZ. (K)	PT (PSI)	DISC. (GPM)	Q(GPM) VEL(FPS)	DIA(IN) HW(C) FL/FT		LENGTH (FT)		PRESS. SUM. (PSI)
Pipe: 14						FIXED PRESSURE LOSS DEVICE				
BFP2	8.1	0.0	67.1	0.0		7.0 psi, 61.8 gpm				
BFP1	8.1	0.0	60.1	0.0						
Pipe: 15					-61.8	4.100	PL	60.00	PF	0.1
BFP2	8.1	0.0	67.1	0.0	1.5	140	FTG	2ET2G	PE	3.5
UG1	0.0	0.0	70.7	0.0		0.001	TL	109.00	PV	
Pipe: 16					-61.8	8.270	PL	390.00	PF	0.0
UG1	0.0	0.0	70.7	0.0	0.4	140	FTG	TBG	PE	0.0
UG2	0.0	0.0	70.7	0.0		0.000	TL	463.00	PV	
Pipe: 17					-61.8	12.340	PL	920.00	PF	0.0
UG2	0.0	0.0	70.7	0.0	0.2	140	FTG	F	PE	12.4
UG3	-28.6	0.0	83.1	0.0		0.000	TL	939.00	PV	
Pipe: 18					-61.8	6.160	PL	15.00	PF	0.0
UG3	-28.6	0.0	83.1	0.0	0.7	140	FTG	TG	PE	0.0
SOURCE	-28.6	SRCE	83.1	(N/A)		0.000	TL	59.00	PV	

NOTES (HASS):

(1) Calculations were performed by the HASS 2023 D 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 0.005 gpm and a maximum imbalance at any node of 0.089 gpm.

(3) Total pressure at each node is used in balancing the system. Maximum water velocity is 13.0 ft/sec at pipe 10.

(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 94.97 psi with a flow of 69.63 gpm.

DATE: 10/30/2025AULICS\HASS FILES\BUILDING B\B - (4) 16X16 RES49 7PSI.SDF
JOB TITLE: B - (4) 16x16 RES49 7PSI

(6) PIPE FITTINGS TABLE

User Pipe Table Name: SMITH

PAGE: D MATERIAL: DI HWC: 140

Diameter (in)	Equivalent Fitting Lengths in Feet E Ell	T Tee	F 45	C ChkVlv	B BfyVlv	G 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 Ell	T Tee	F 45	R teeRun	C Coup	G Gva	B Bfy
1.101	5.00	5.00	1.00	1.00	1.00	1.00	4.00
1.394	6.00	6.00	2.00	1.00	1.00	1.00	5.00

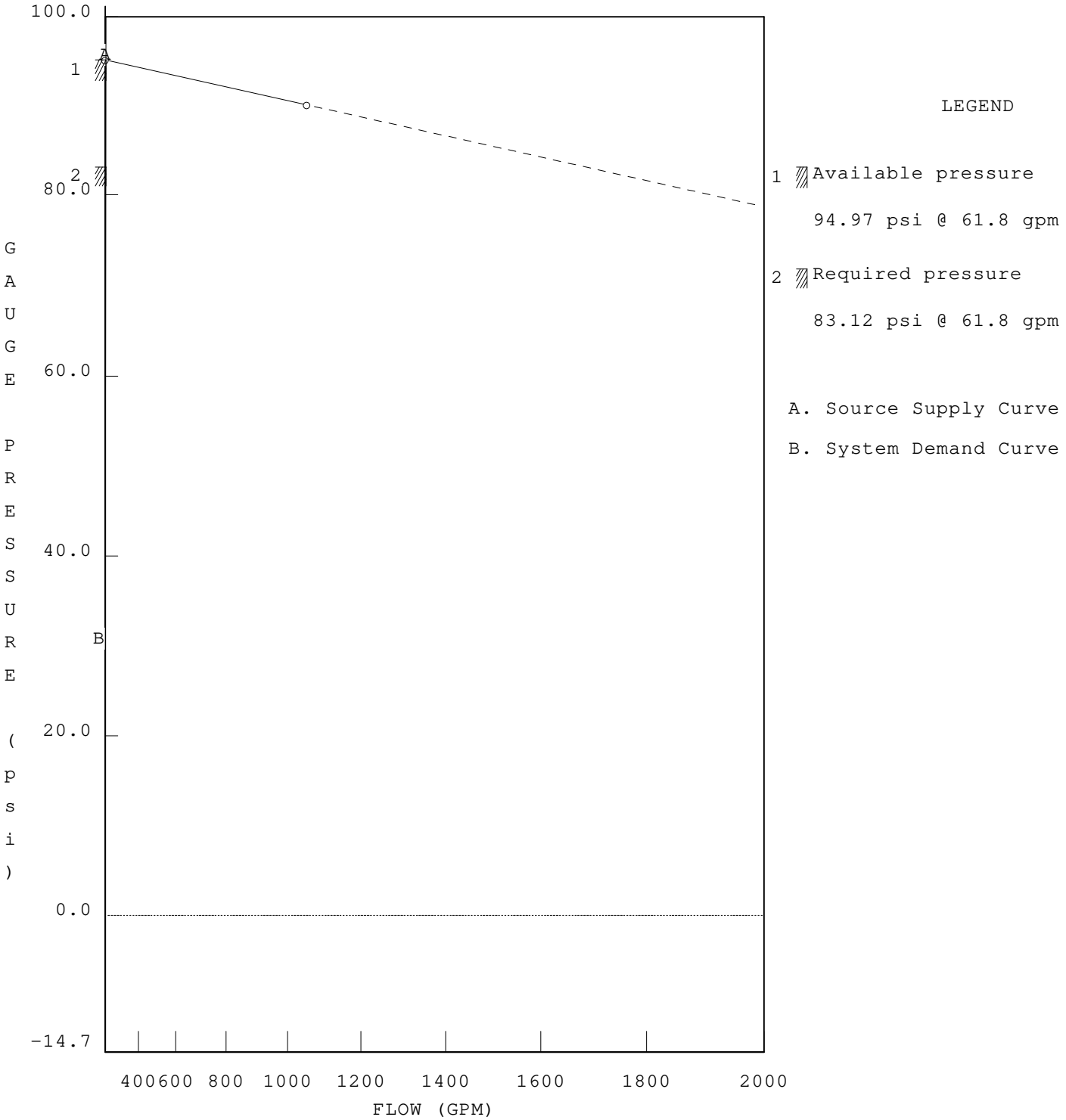
PAGE: Y MATERIAL: SCH7 HWC: 120

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

DATE: 10/30/2025AULICS\HASS FILES\BUILDING B\B - (4) 16X16 RES49 7PSI.SDF
JOB TITLE: B - (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: 10/30/2025AULICS\HASS FILES\BUILDING B\B - (4) 16X16 RES49 7PSI.SDF
JOB TITLE: B - (4) 16x16 RES49 7PSI

WATER SUPPLY CURVE

```
   96*\\\\\\
     0      \\\\\\\
     |             \\\\\\
     |                  * <-90.0 psi @ 1055 gpm
   88+                      Flow Test Point
     |
     X
     |
   80+
     |
     |
     |
   72+
     |
     |
     |
 P 64+
 R   |
 E   |
 S   |
 S 56+
 U   |
 R   |
 E   |
   48+
 (   |
 P   |
 S   |
 I 40+
 )   |
     |
     |
   32+
     |
     |
     |
   24+
     |
     |
     |==============================
   16+            LEGEND            "
     |                              "
     | X = Required Water Supply    "
     |    83.12 psi @ 61.8 gpm      "
    8+                              "
     | 0 = Available Water Supply   "
     |    94.97 psi @ 61.8 gpm      "
     |                              "
    0++-+---+----+-----+------+--------+--------+---------+-----------+
       400 600  800  1000   1200     1400     1600      1800        2000
                                    FLOW (GPM)
```

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

SYSTEM # 1

L3 (4) DRY HSW

AUXILIARY HYDRAULIC CALCULATION

DENSITY: 0.1 GPM OVER 4 HEADS

SYSTEM DEMAND AT BASE OF RISER

67 GPM AT 50.5 PSI

DATE: 10/30/2025SS FILES\BUILDING B\AUX CALCS\B - (4) F3QR56 HSW 7PSI.SDF
JOB TITLE: (4) F3QR HSW 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	67.0	74.7

Available pressure is 20.2 psi (21%) greater than required pressure.

AGGREGATE FLOW ANALYSIS:

TOTAL FLOW AT SOURCE	67.0 GPM
TOTAL HOSE STREAM ALLOWANCE AT SOURCE	0.0 GPM
OTHER HOSE STREAM ALLOWANCES	0.0 GPM
TOTAL DISCHARGE FROM ACTIVE SPRINKLERS	67.0 GPM

NODE ANALYSIS DATA

NODE TAG	ELEVATION (FT)	NODE TYPE	PRESSURE (PSI)	DISCHARGE (GPM)
S6	39.0	K= 5.60	7.0	14.8
S7	39.0	K= 5.60	8.1	15.9
S8	39.8	K= 5.60	10.3	18.0
S9	39.0	K= 5.60	10.8	18.4
B2	39.8	- - - -	8.6	- - -
M5	39.8	- - - -	14.9	- - -
M4	39.8	- - - -	12.2	- - -
32	39.8	- - - -	15.4	- - -
31	39.8	- - - -	12.9	- - -
02	9.6	- - - -	30.2	- - -
01	9.6	- - - -	28.4	- - -
TOR	12.0	- - - -	48.8	- - -
BFP1	8.1	- - - -	51.7	- - -
BFP2	8.1	- - - -	58.7	- - -
BOR	10.5	- - - -	50.5	- - -
UG1	0.0	- - - -	62.3	- - -
UG2	0.0	- - - -	62.3	- - -
UG3	-28.6	- - - -	74.7	- - -
SOURCE	-28.6	SOURCE	74.7	67.0

DATE: 10/30/2025SS FILES\BUILDING B\AUX CALCS\B - (4) F3QR56 HSW 7PSI.SDF
JOB TITLE: (4) F3QR HSW 7PSI

PIPE DATA

PIPE TAG END NODES	ELEV. (FT)	NOZ. (K)	PT (PSI)	DISC. (GPM)	Q(GPM) VEL(FPS)	DIA(IN) HW(C) FL/FT		LENGTH (FT)		PRESS. SUM. (PSI)
Pipe: 1					-18.0	1.101	PL	15.00	PF	1.9
S8	39.8	5.6	10.3	18.0	6.1	150	FTG	E3T	PE	-0.0
M4	39.8	0.0	12.2	0.0		0.056	TL	35.00	PV	
Pipe: 2					-18.4	1.101	PL	10.50	PF	1.8
S9	39.0	5.6	10.8	18.4	6.2	150	FTG	E3T	PE	-0.4
M4	39.8	0.0	12.2	0.0		0.058	TL	30.50	PV	
Pipe: 3					-14.8	1.101	PL	25.00	PF	2.0
S6	39.0	5.6	7.0	14.8	5.0	150	FTG	4ET	PE	-0.4
B2	39.8	0.0	8.6	0.0		0.039	TL	50.00	PV	
Pipe: 4					-15.9	1.101	PL	4.75	PF	0.9
S7	39.0	5.6	8.1	15.9	5.4	150	FTG	E2T	PE	-0.4
B2	39.8	0.0	8.6	0.0		0.045	TL	19.75	PV	
Pipe: 6					-30.7	1.101	PL	16.83	PF	6.3
B2	39.8	0.0	8.6	0.0	10.4	150	FTG	4ET	PE	0.0
M5	39.8	0.0	14.9	0.0		0.151	TL	41.83	PV	
Pipe: 7					-30.7	1.394	PL	5.25	PF	0.5
M5	39.8	0.0	14.9	0.0	6.5	150	FTG	T	PE	0.0
32	39.8	0.0	15.4	0.0		0.048	TL	11.25	PV	
Pipe: 8					-36.3	1.394	PL	5.25	PF	0.7
M4	39.8	0.0	12.2	0.0	7.6	150	FTG	T	PE	0.0
31	39.8	0.0	12.9	0.0		0.065	TL	11.25	PV	
Pipe: 9					-36.3	1.394	PL	30.25	PF	2.4
31	39.8	0.0	12.9	0.0	7.6	150	FTG	T	PE	13.1
01	9.6	0.0	28.4	0.0		0.065	TL	36.25	PV	
Pipe: 10					-30.7	1.394	PL	30.25	PF	1.7
32	39.8	0.0	15.4	0.0	6.5	150	FTG	T	PE	13.1
02	9.6	0.0	30.2	0.0		0.048	TL	36.25	PV	
Pipe: 11					-36.3	1.394	PL	28.75	PF	1.9
01	9.6	0.0	28.4	0.0	7.6	150	FTG	----	PE	-0.0
02	9.6	0.0	30.2	0.0		0.065	TL	28.75	PV	
Pipe: 12					-67.1	1.394	PL	43.00	PF	19.6
02	9.6	0.0	30.2	0.0	14.1	150	FTG	8ET	PE	-1.0
TOR	12.0	0.0	48.8	0.0		0.202	TL	97.00	PV	
Pipe: 13					-67.1	1.394	PL	5.00	PF	1.0
TOR	12.0	0.0	48.8	0.0	14.1	150	FTG	----	PE	0.6
BOR	10.5	0.0	50.5	0.0		0.202	TL	5.00	PV	
Pipe: 14					-67.1	2.185	PL	4.00	PF	0.1
BOR	10.5	0.0	50.5	0.0	5.7	120	FTG	----	PE	1.0
BFP1	8.1	0.0	51.7	0.0		0.034	TL	4.00	PV	

DATE: 10/30/2025SS FILES\BUILDING B\AUX CALCS\B - (4) F3QR56 HSW 7PSI.SDF
JOB TITLE: (4) F3QR HSW 7PSI

PIPE TAG END NODES	ELEV. (FT)	NOZ. (K)	PT (PSI)	DISC. (GPM)	Q(GPM) VEL(FPS)	DIA(IN) HW(C) FL/FT		LENGTH (FT)		PRESS. SUM. (PSI)
Pipe: 15						FIXED PRESSURE LOSS DEVICE				
BFP2	8.1	0.0	58.7	0.0		7.0 psi,		67.1 gpm		
BFP1	8.1	0.0	51.7	0.0						
Pipe: 16					-67.1	4.100	PL	60.00	PF	0.1
BFP2	8.1	0.0	58.7	0.0	1.6	140	FTG	2ET2G	PE	3.5
UG1	0.0	0.0	62.3	0.0		0.001	TL	109.00	PV	
Pipe: 16A					-67.1	8.270	PL	390.00	PF	0.0
UG1	0.0	0.0	62.3	0.0	0.4	140	FTG	TBG	PE	0.0
UG2	0.0	0.0	62.3	0.0		0.000	TL	463.00	PV	
Pipe: 16B					-67.1	12.340	PL	920.00	PF	0.0
UG2	0.0	0.0	62.3	0.0	0.2	140	FTG	F	PE	12.4
UG3	-28.6	0.0	74.7	0.0		0.000	TL	939.00	PV	
Pipe: 17					-67.0	6.160	PL	15.00	PF	0.0
UG3	-28.6	0.0	74.7	0.0	0.7	140	FTG	TG	PE	0.0
SOURCE	-28.6	SRCE	74.7	(N/A)		0.000	TL	59.00	PV	

NOTES (HASS):

(1) Calculations were performed by the HASS 2023 D 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 0.080 gpm.

(3) Total pressure at each node is used in balancing the system. Maximum water velocity is 14.1 ft/sec at pipe 12.

(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 94.95 psi with a flow of 83.93 gpm.

DATE: 10/30/2025SS FILES\BUILDING B\AUX CALCS\B - (4) F3QR56 HSW 7PSI.SDF
JOB TITLE: (4) F3QR HSW 7PSI

(6) PIPE FITTINGS TABLE

User Pipe Table Name: SMITH

PAGE: D MATERIAL: DI HWC: 140

Diameter (in)	Equivalent Fitting Lengths in Feet E Ell	T Tee	F 45	C ChkVlv	B BfyVlv	G 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 Ell	T Tee	F 45	R teeRun	C Coup	G Gva	B Bfy
1.101	5.00	5.00	1.00	1.00	1.00	1.00	4.00
1.394	6.00	6.00	2.00	1.00	1.00	1.00	5.00

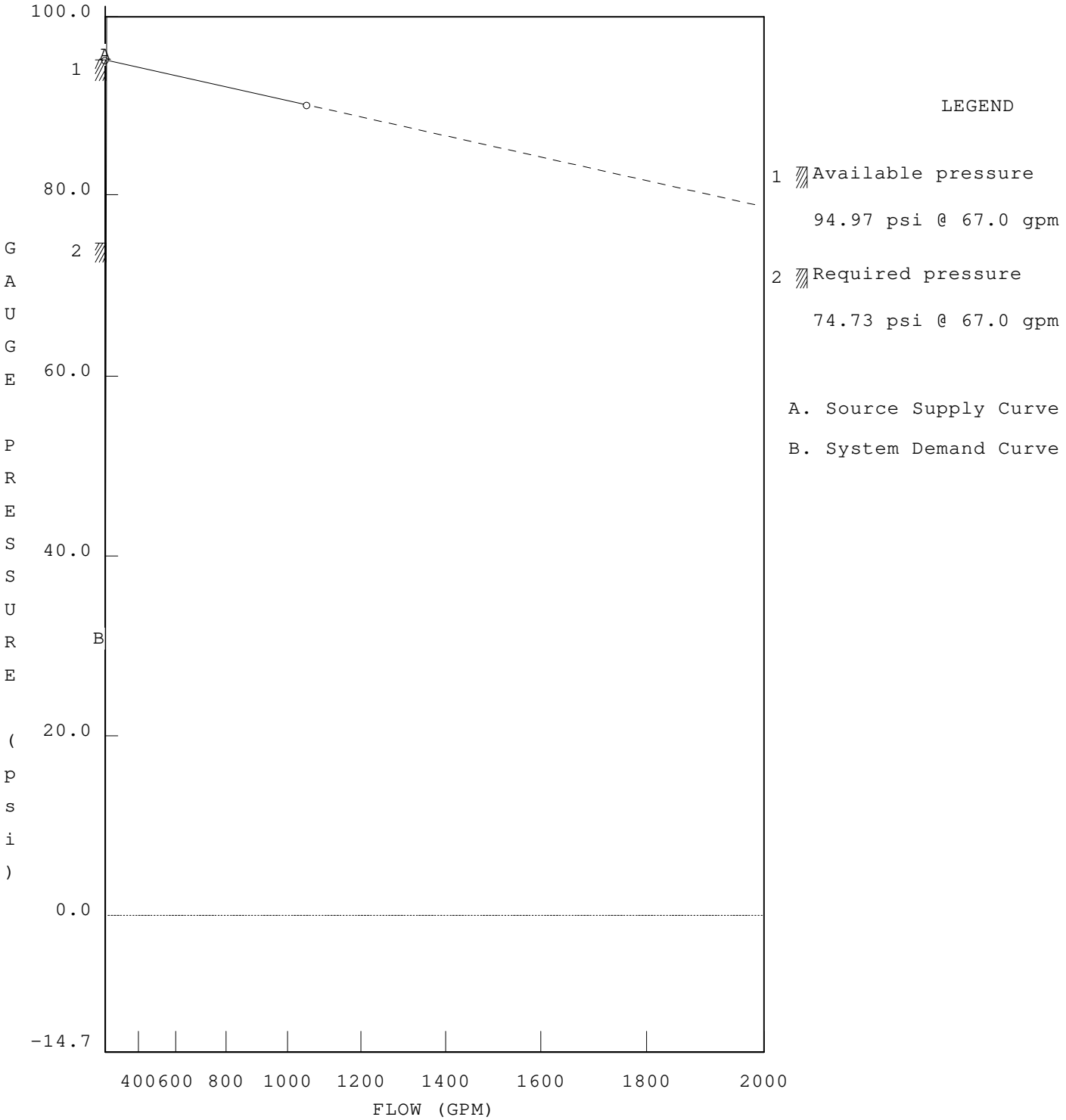
PAGE: Y MATERIAL: SCH7 HWC: 120

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

DATE: 10/30/2025SS FILES\BUILDING B\AUX CALCS\B - (4) F3QR56 HSW 7PSI.SDF
JOB TITLE: (4) F3QR HSW 7PSI

WATER SUPPLY ANALYSIS

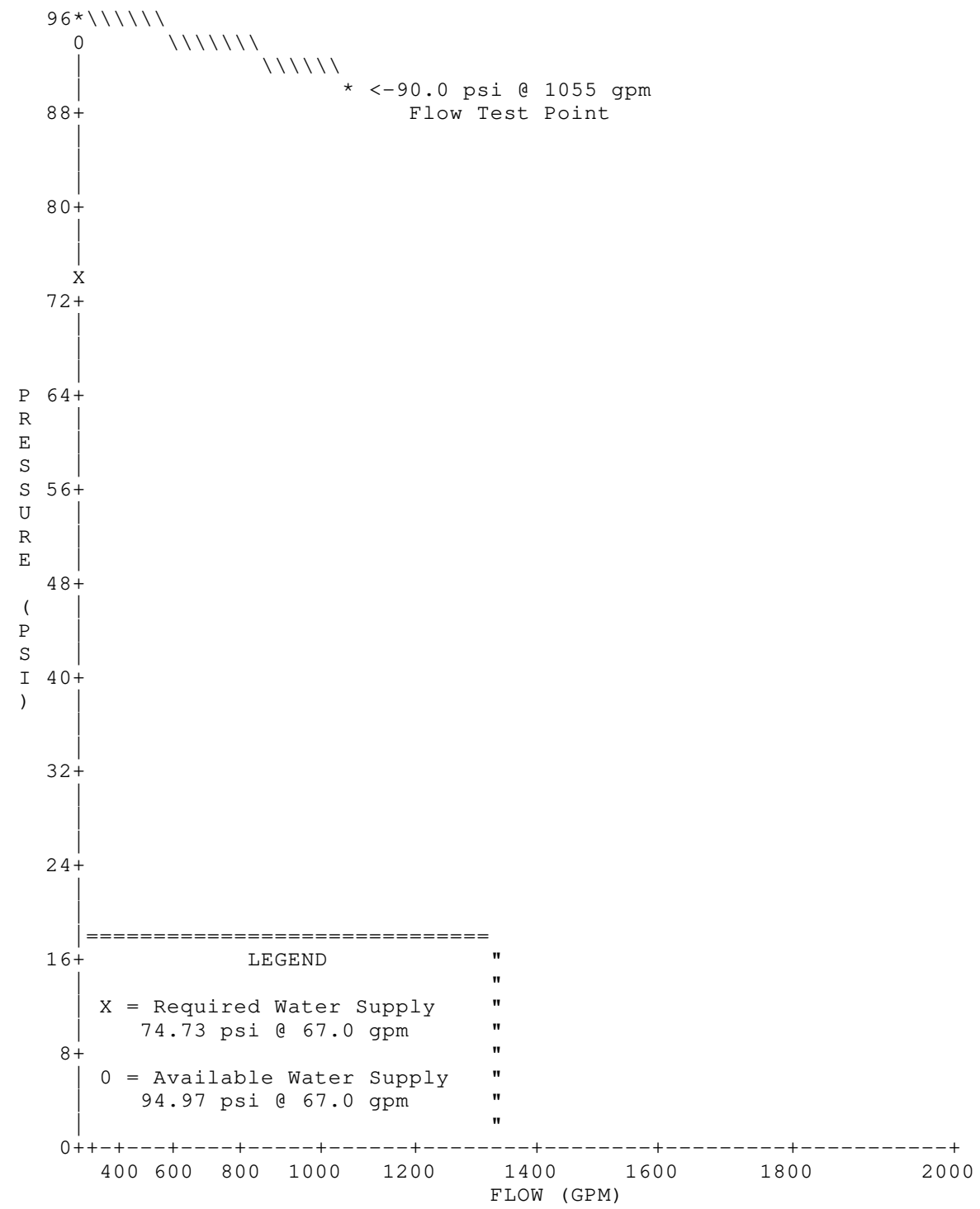
Static: 95.00 psi Resid: 90.00 psi Flow: 1055.0 gpm



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

DATE: 10/30/2025SS FILES\BUILDING B\AUX CALCS\B - (4) F3QR56 HSW 7PSI.SDF
JOB TITLE: (4) F3QR HSW 7PSI

WATER SUPPLY CURVE



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

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: 10/30/2025ILES\BUILDING B\AUX CALCS\B - (1) 20X20 RES49 16.7PSI.SDF
JOB TITLE: B - (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	60.8

Available pressure is 34.2 psi (36%) 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	39.3	K= 4.90	16.7	20.0
M1	39.8	- - - -	19.7	- - -
31	39.8	- - - -	20.8	- - -
01	9.6	- - - -	34.6	- - -
TOR	12.0	- - - -	36.2	- - -
BFP1	8.1	- - - -	37.9	- - -
BFP2	8.1	- - - -	44.9	- - -
BOR	10.5	- - - -	36.9	- - -
UG1	0.0	- - - -	48.4	- - -
UG2	0.0	- - - -	48.5	- - -
UG3	-28.6	- - - -	60.8	- - -
SOURCE	-28.6	SOURCE	60.8	20.0

DATE: 10/30/2025ILES\BUILDING B\AUX CALCS\B - (1) 20X20 RES49 16.7PSI.SDF
JOB TITLE: B - (1) 20x20 RES49 16.7PSI

PIPE DATA

PIPE TAG END NODES	ELEV. (FT)	NOZ. (K)	PT (PSI)	DISC. (GPM)	Q(GPM) VEL(FPS)	DIA(IN) HW(C) FL/FT		LENGTH (FT)		PRESS. SUM. (PSI)
Pipe: 1					-20.0	1.101	PL	17.25	PF	3.2
S1	39.3	4.9	16.7	20.0	6.7	150	FTG	5ET	PE	-0.2
M1	39.8	0.0	19.7	0.0		0.068	TL	47.25	PV	
Pipe: 2					-20.0	1.394	PL	20.50	PF	1.1
M1	39.8	0.0	19.7	0.0	4.2	150	FTG	4ET	PE	0.0
31	39.8	0.0	20.8	0.0		0.022	TL	50.50	PV	
Pipe: 3					-20.0	1.394	PL	30.25	PF	0.7
31	39.8	0.0	20.8	0.0	4.2	150	FTG	----	PE	13.1
01	9.6	0.0	34.6	0.0		0.022	TL	30.25	PV	
Pipe: 4					-20.0	1.394	PL	71.75	PF	2.7
01	9.6	0.0	34.6	0.0	4.2	150	FTG	8ET	PE	-1.0
TOR	12.0	0.0	36.2	0.0		0.022	TL	125.75	PV	
Pipe: 5					-20.0	2.185	PL	1.50	PF	0.0
TOR	12.0	0.0	36.2	0.0	1.7	150	FTG	----	PE	0.6
BOR	10.5	0.0	36.9	0.0		0.002	TL	1.50	PV	
Pipe: 6					-20.0	2.185	PL	2.42	PF	0.0
BOR	10.5	0.0	36.9	0.0	1.7	120	FTG	----	PE	1.0
BFP1	8.1	0.0	37.9	0.0		0.004	TL	2.42	PV	
Pipe: 7					FIXED PRESSURE LOSS DEVICE					
BFP2	8.1	0.0	44.9	0.0	7.0 psi, 20.0 gpm					
BFP1	8.1	0.0	37.9	0.0						
Pipe: 8					-20.0	4.100	PL	60.00	PF	0.0
BFP2	8.1	0.0	44.9	0.0	0.5	140	FTG	2ET2G	PE	3.5
UG1	0.0	0.0	48.4	0.0		0.000	TL	109.00	PV	
Pipe: 9					-20.0	8.270	PL	390.00	PF	0.0
UG1	0.0	0.0	48.4	0.0	0.1	140	FTG	TBG	PE	0.0
UG2	0.0	0.0	48.5	0.0		0.000	TL	463.00	PV	
Pipe: 10					-20.0	12.340	PL	920.00	PF	0.0
UG2	0.0	0.0	48.5	0.0	0.1	140	FTG	F	PE	12.4
UG3	-28.6	0.0	60.8	0.0		0.000	TL	939.00	PV	
Pipe: 11					-20.0	6.160	PL	15.00	PF	0.0
UG3	-28.6	0.0	60.8	0.0	0.2	140	FTG	TG	PE	0.0
SOURCE	-28.6	SRCE	60.8	(N/A)		0.000	TL	59.00	PV	

DATE: 10/30/2025ILES\BUILDING B\AUX CALCS\B - (1) 20X20 RES49 16.7PSI.SDF
JOB TITLE: B - (1) 20x20 RES49 16.7PSI

NOTES (HASS):

(1) Calculations were performed by the HASS 2023 D 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 0.072 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 31.30 gpm.

(6) PIPE FITTINGS TABLE

User Pipe Table Name: SMITH

PAGE: D MATERIAL: DI HWC: 140

Diameter (in)	Equivalent Fitting Lengths in Feet					
	E Ell	T Tee	F 45	C ChkVlv	B BfyVlv	G 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 Ell	T Tee	F 45	R teeRun	C Coup	G Gva	B Bfy
1.101	5.00	5.00	1.00	1.00	1.00	1.00	4.00
1.394	6.00	6.00	2.00	1.00	1.00	1.00	5.00

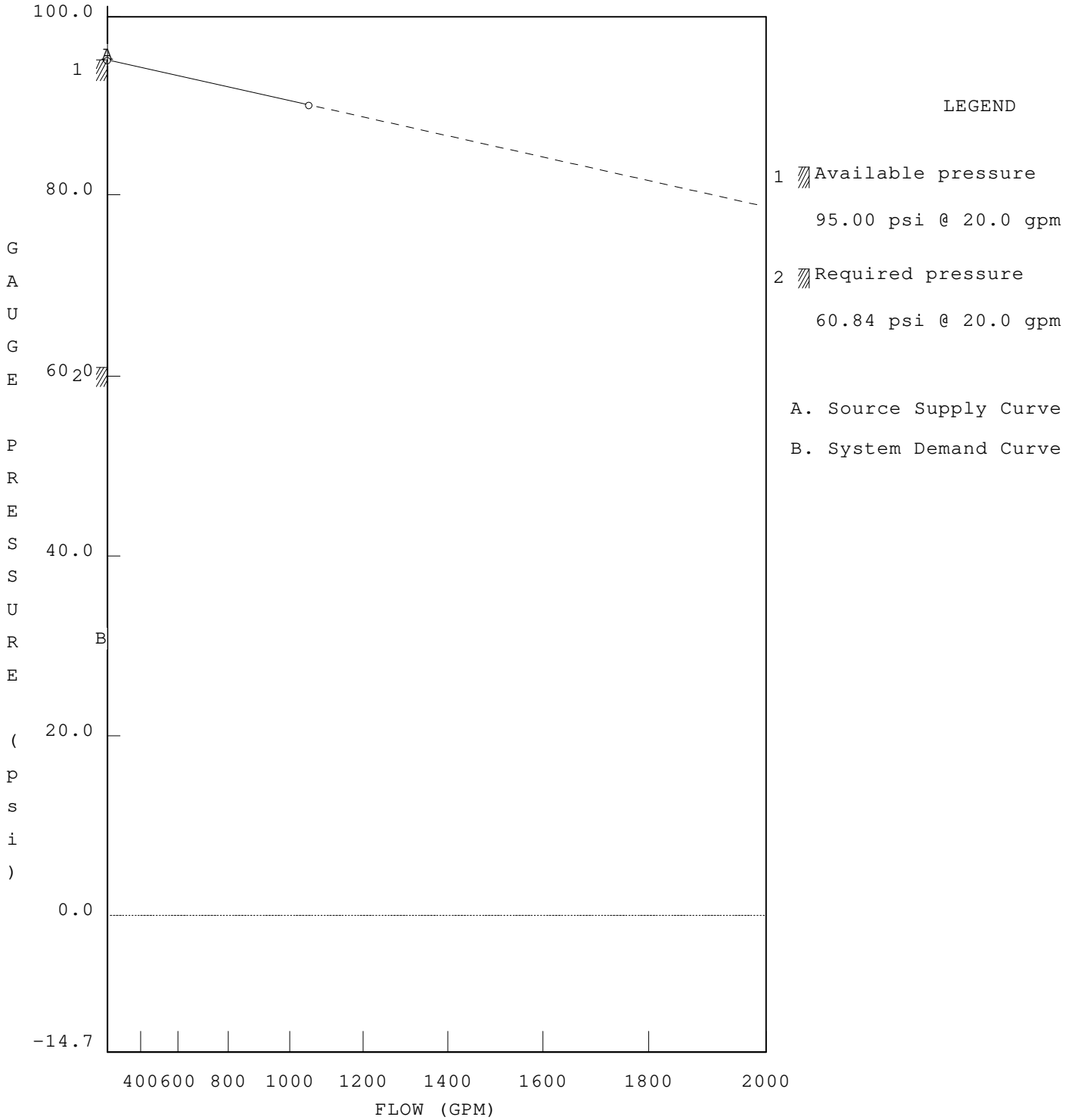
PAGE: Y MATERIAL: SCH7 HWC: 120

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

DATE: 10/30/2025ILES\BUILDING B\AUX CALCS\B - (1) 20X20 RES49 16.7PSI.SDF
JOB TITLE: B - (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: 10/30/2025ILES\BUILDING B\AUX CALCS\B - (1) 20X20 RES49 16.7PSI.SDF
JOB TITLE: B - (1) 20x20 RES49 16.7PSI

WATER SUPPLY CURVE

```
   96*\\\\\\
     0      \\\\\\\
     |             \\\\\\
     |                  * <-90.0 psi @ 1055 gpm
   88+                      Flow Test Point
     |
     |
     |
   80+
     |
     |
     |
   72+
     |
     |
     |
 P 64+
 R   |
 E   X
 S   |
 S 56+
 U   |
 R   |
 E   |
   48+
 (   |
 P   |
 S   |
 I 40+
 )   |
     |
     |
   32+
     |
     |
     |
   24+
     |
     |
     |==============================
   16+            LEGEND            "
     |                              "
     | X = Required Water Supply    "
     |    60.84 psi @ 20.0 gpm      "
    8+                              "
     | 0 = Available Water Supply   "
     |    95.00 psi @ 20.0 gpm      "
     |                              "
    0++-+---+----+-----+------+--------+--------+---------+-----------+
       400 600  800  1000   1200     1400     1600      1800        2000
                                    FLOW (GPM)
```