

**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    | CONTRACTOR :<br>RUSH COMMERCIAL CONSTR.<br><br>AHJ :<br>PUYALLUP |
|               | BUILDING A         | DATE:     | 9/26/2025  |                                                                  |
| ADDRESS:      | 202 27TH AVE SE    | BY:       | A. RIDEOUT |                                                                  |
|               | PUYALLUP, WA 98374 |           |            |                                                                  |

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: **260 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

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

**WET SYSTEM NUMBER 1**

| AREA     | SQ. FT. | SPRINKLERS |
|----------|---------|------------|
| BASEMENT | 3898    | 39         |
| FLOOR 1  | 7592    | 74         |
| FLOOR 2  | 7550    | 72         |
| FLOOR 3  | 7491    | 76         |
| TOTAL:   | 26531   | 261        |

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

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

**BASE OF RISER:** 59.9 GPM REQUIRED AT 47.9 PSI**SUMMARY:** 59.9 GPM REQUIRED AT 77.3 PSIAT CONNECTION TO **SOURCE**(INCLUDING **0 GPM** FOR HOSE STREAMS)

DATE: 9/26/2025RAULICS\HASS FILES\BUILDING A\A - (4) 16X16 RES49 7PSI.SDF

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

## WATER SUPPLY DATA

| SOURCE<br>NODE<br>TAG | STATIC<br>PRESS.<br>(PSI) | RESID.<br>PRESS.<br>(PSI) | FLOW<br>@<br>(GPM) | AVAIL.<br>PRESS.<br>(PSI) | TOTAL<br>@<br>DEMAND<br>(GPM) | REQ'D<br>PRESS.<br>(PSI) |
|-----------------------|---------------------------|---------------------------|--------------------|---------------------------|-------------------------------|--------------------------|
| SOURCE                | 95.0                      | 90.0                      | 1055.0             | 95.0                      | 59.9                          | 77.3                     |

Available pressure is 17.7 psi (19%) greater than required pressure.

## AGGREGATE FLOW ANALYSIS:

|                                        |          |
|----------------------------------------|----------|
| TOTAL FLOW AT SOURCE                   | 59.9 GPM |
| TOTAL HOSE STREAM ALLOWANCE AT SOURCE  | 0.0 GPM  |
| OTHER HOSE STREAM ALLOWANCES           | 0.0 GPM  |
| TOTAL DISCHARGE FROM ACTIVE SPRINKLERS | 59.9 GPM |

## NODE ANALYSIS DATA

| NODE TAG | ELEVATION<br>(FT) | NODE TYPE | PRESSURE<br>(PSI) | DISCHARGE<br>(GPM) |
|----------|-------------------|-----------|-------------------|--------------------|
| S2       | 41.8              | K= 4.90   | 7.0               | 13.0               |
| S3       | 41.8              | K= 4.90   | 7.3               | 13.2               |
| S4       | 41.8              | K= 4.90   | 8.0               | 13.9               |
| S5       | 41.8              | K= 4.90   | 16.4              | 19.8               |
| B1       | 42.4              | - - - -   | 7.7               | - - -              |
| B2       | 42.4              | - - - -   | 8.4               | - - -              |
| M2       | 42.4              | - - - -   | 17.1              | - - -              |
| M3       | 42.4              | - - - -   | 17.4              | - - -              |
| 31       | 42.4              | - - - -   | 17.5              | - - -              |
| 01       | 12.1              | - - - -   | 35.5              | - - -              |
| TOR      | 9.6               | - - - -   | 47.3              | - - -              |
| BFP1     | 7.2               | - - - -   | 48.4              | - - -              |
| BFP2     | 7.2               | - - - -   | 55.4              | - - -              |
| BOR      | 8.2               | - - - -   | 47.9              | - - -              |
| UG1      | 0.0               | - - - -   | 62.6              | - - -              |
| UG2      | 0.0               | - - - -   | 62.6              | - - -              |
| UG3      | -34.0             | - - - -   | 77.3              | - - -              |
| SOURCE   | -34.0             | SOURCE    | 77.3              | 59.9               |

DATE: 9/26/2025RAULICS\HASS FILES\BUILDING A\A - (4) 16X16 RES49 7PSI.SDF  
 JOB TITLE: A - (4) 16x16 RES49 7PSI

PIPE DATA

| PIPE TAG | END   | ELEV. | NOZ. | PT    | DISC. | Q (GPM)                    | VEL (FPS) | DIA (IN) | LENGTH | PRESS. |      |
|----------|-------|-------|------|-------|-------|----------------------------|-----------|----------|--------|--------|------|
|          | NODES | (FT)  | (K)  | (PSI) | (GPM) |                            |           | HW (C)   | (FT)   | SUM.   |      |
|          |       |       |      |       |       |                            |           | FL/FT    |        | (PSI)  |      |
| Pipe: 1  |       |       |      |       |       |                            |           |          |        |        |      |
| S2       |       | 41.8  | 4.9  | 7.0   | 13.0  | -13.0                      | 4.4       | 1.101    | 16.00  | PF     | 0.9  |
| B1       |       | 42.4  | 0.0  | 7.7   | 0.0   |                            |           | 150      | 2ET    | PE     | -0.2 |
|          |       |       |      |       |       |                            |           | 0.030    | 31.00  | PV     |      |
| Pipe: 2  |       |       |      |       |       |                            |           |          |        |        |      |
| S3       |       | 41.8  | 4.9  | 7.3   | 13.2  | -13.2                      | 4.5       | 1.101    | 6.50   | PF     | 0.7  |
| B1       |       | 42.4  | 0.0  | 7.7   | 0.0   |                            |           | 150      | 2ET    | PE     | -0.2 |
|          |       |       |      |       |       |                            |           | 0.032    | 21.50  | PV     |      |
| Pipe: 2A |       |       |      |       |       |                            |           |          |        |        |      |
| S4       |       | 41.8  | 4.9  | 8.0   | 13.9  | -13.9                      | 4.7       | 1.101    | 6.50   | PF     | 0.6  |
| B2       |       | 42.4  | 0.0  | 8.4   | 0.0   |                            |           | 150      | ET     | PE     | -0.2 |
|          |       |       |      |       |       |                            |           | 0.035    | 16.50  | PV     |      |
| Pipe: 3  |       |       |      |       |       |                            |           |          |        |        |      |
| B1       |       | 42.4  | 0.0  | 7.7   | 0.0   | -26.2                      | 8.8       | 1.101    | 5.75   | PF     | 0.6  |
| B2       |       | 42.4  | 0.0  | 8.4   | 0.0   |                            |           | 150      | FTG    | PE     | 0.0  |
|          |       |       |      |       |       |                            |           | 0.112    | 5.75   | PV     |      |
| Pipe: 4  |       |       |      |       |       |                            |           |          |        |        |      |
| B2       |       | 42.4  | 0.0  | 8.4   | 0.0   | -40.0                      | 13.5      | 1.101    | 10.75  | PF     | 8.8  |
| M2       |       | 42.4  | 0.0  | 17.1  | 0.0   |                            |           | 150      | 4ET    | PE     | 0.0  |
|          |       |       |      |       |       |                            |           | 0.246    | 35.75  | PV     |      |
| Pipe: 4A |       |       |      |       |       |                            |           |          |        |        |      |
| S5       |       | 41.8  | 4.9  | 16.4  | 19.8  | -19.8                      | 6.7       | 1.101    | 13.50  | PF     | 1.2  |
| M3       |       | 42.4  | 0.0  | 17.4  | 0.0   |                            |           | 150      | T      | PE     | -0.2 |
|          |       |       |      |       |       |                            |           | 0.067    | 18.50  | PV     |      |
| Pipe: 5  |       |       |      |       |       |                            |           |          |        |        |      |
| M3       |       | 42.4  | 0.0  | 17.4  | 0.0   | -19.8                      | 3.2       | 1.598    | 5.25   | PF     | 0.1  |
| 31       |       | 42.4  | 0.0  | 17.5  | 0.0   |                            |           | 150      | FTG    | T      | PE   |
|          |       |       |      |       |       |                            |           | 0.011    | 13.25  | PV     | 0.0  |
| Pipe: 5A |       |       |      |       |       |                            |           |          |        |        |      |
| M2       |       | 42.4  | 0.0  | 17.1  | 0.0   | -40.0                      | 6.4       | 1.598    | 1.75   | PF     | 0.4  |
| 31       |       | 42.4  | 0.0  | 17.5  | 0.0   |                            |           | 150      | FTG    | T      | PE   |
|          |       |       |      |       |       |                            |           | 0.040    | 9.75   | PV     | 0.0  |
| Pipe: 6  |       |       |      |       |       |                            |           |          |        |        |      |
| 31       |       | 42.4  | 0.0  | 17.5  | 0.0   | -59.9                      | 9.6       | 1.598    | 30.25  | PF     | 4.9  |
| 01       |       | 12.1  | 0.0  | 35.5  | 0.0   |                            |           | 150      | 4E     | PE     | 13.1 |
|          |       |       |      |       |       |                            |           | 0.084    | 58.25  | PV     |      |
| Pipe: 7  |       |       |      |       |       |                            |           |          |        |        |      |
| 01       |       | 12.1  | 0.0  | 35.5  | 0.0   | -59.9                      | 9.6       | 1.598    | 105.00 | PF     | 10.6 |
| TOR      |       | 9.6   | 0.0  | 47.3  | 0.0   |                            |           | 150      | 3E     | PE     | 1.1  |
|          |       |       |      |       |       |                            |           | 0.084    | 126.00 | PV     |      |
| Pipe: 8  |       |       |      |       |       |                            |           |          |        |        |      |
| TOR      |       | 9.6   | 0.0  | 47.3  | 0.0   | -59.9                      | 5.1       | 2.185    | 3.00   | PF     | 0.1  |
| BOR      |       | 8.2   | 0.0  | 47.9  | 0.0   |                            |           | 150      | FTG    | PE     | 0.6  |
|          |       |       |      |       |       |                            |           | 0.018    | 3.00   | PV     |      |
| Pipe: 9  |       |       |      |       |       |                            |           |          |        |        |      |
| BOR      |       | 8.2   | 0.0  | 47.9  | 0.0   | -59.9                      | 5.1       | 2.185    | 1.00   | PF     | 0.0  |
| BFP1     |       | 7.2   | 0.0  | 48.4  | 0.0   |                            |           | 120      | FTG    | PE     | 0.4  |
|          |       |       |      |       |       |                            |           | 0.028    | 1.00   | PV     |      |
| Pipe: 10 |       |       |      |       |       |                            |           |          |        |        |      |
| BFP2     |       | 7.2   | 0.0  | 55.4  | 0.0   | FIXED PRESSURE LOSS DEVICE |           |          |        |        |      |
| BFP1     |       | 7.2   | 0.0  | 48.4  | 0.0   | 7.0 psi, 59.9 gpm          |           |          |        |        |      |

DATE: 9/26/2025RAULICS\HASS FILES\BUILDING A\A - (4) 16X16 RES49 7PSI.SDF  
 JOB TITLE: A - (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)  | FL/FT    | (FT)   | SUM.    |
|           |       |       |       |       |           |         |          |        | (PSI)   |
| Pipe: 11  |       |       |       |       | -59.9     | 2.003   | PL       | 112.84 | PF 4.1  |
| BFP2      | 7.2   | 0.0   | 55.4  | 0.0   | 6.1       | 150     | FTG      | 2ET2G  | PE 3.1  |
| UG1       | 0.0   | 0.0   | 62.6  | 0.0   |           | 0.028   | TL       | 144.84 | PV      |
| Pipe: 11A |       |       |       |       | -59.9     | 8.270   | PL       | 105.00 | PF 0.0  |
| UG1       | 0.0   | 0.0   | 62.6  | 0.0   | 0.4       | 140     | FTG      | TBG    | PE 0.0  |
| UG2       | 0.0   | 0.0   | 62.6  | 0.0   |           | 0.000   | TL       | 178.00 | PV      |
| Pipe: 11B |       |       |       |       | -59.9     | 12.340  | PL       | 920.00 | PF 0.0  |
| UG2       | 0.0   | 0.0   | 62.6  | 0.0   | 0.2       | 140     | FTG      | F      | PE 14.7 |
| UG3       | -34.0 | 0.0   | 77.3  | 0.0   |           | 0.000   | TL       | 939.00 | PV      |
| Pipe: 12  |       |       |       |       | -59.9     | 6.160   | PL       | 15.00  | PF 0.0  |
| UG3       | -34.0 | 0.0   | 77.3  | 0.0   | 0.6       | 140     | FTG      | TG     | PE 0.0  |
| SOURCE    | -34.0 | SRCE  | 77.3  | (N/A) |           | 0.000   | TL       | 59.00  | PV      |

NOTES (HASS):

- 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
- 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 0.081 gpm.
- Total pressure at each node is used in balancing the system. Maximum water velocity is 13.5 ft/sec at pipe 4.
- 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 94.96 psi with a flow of 73.43 gpm.
- PIPE FITTINGS TABLE

User Pipe Table Name: SMITH

DATE: 9/26/2025RAULICS\HASS FILES\BUILDING A\A - (4) 16X16 RES49 7PSI.SDF

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

PAGE: D MATERIAL: DI HWC: 140

| Diameter<br>(in) | Equivalent Fitting Lengths in Feet |       |       |        |        |        |
|------------------|------------------------------------|-------|-------|--------|--------|--------|
|                  | E                                  | T     | F     | C      | B      | G      |
|                  | Ell                                | Tee   | 45    | ChkVlv | BfyVlv | GatVlv |
| 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<br>(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

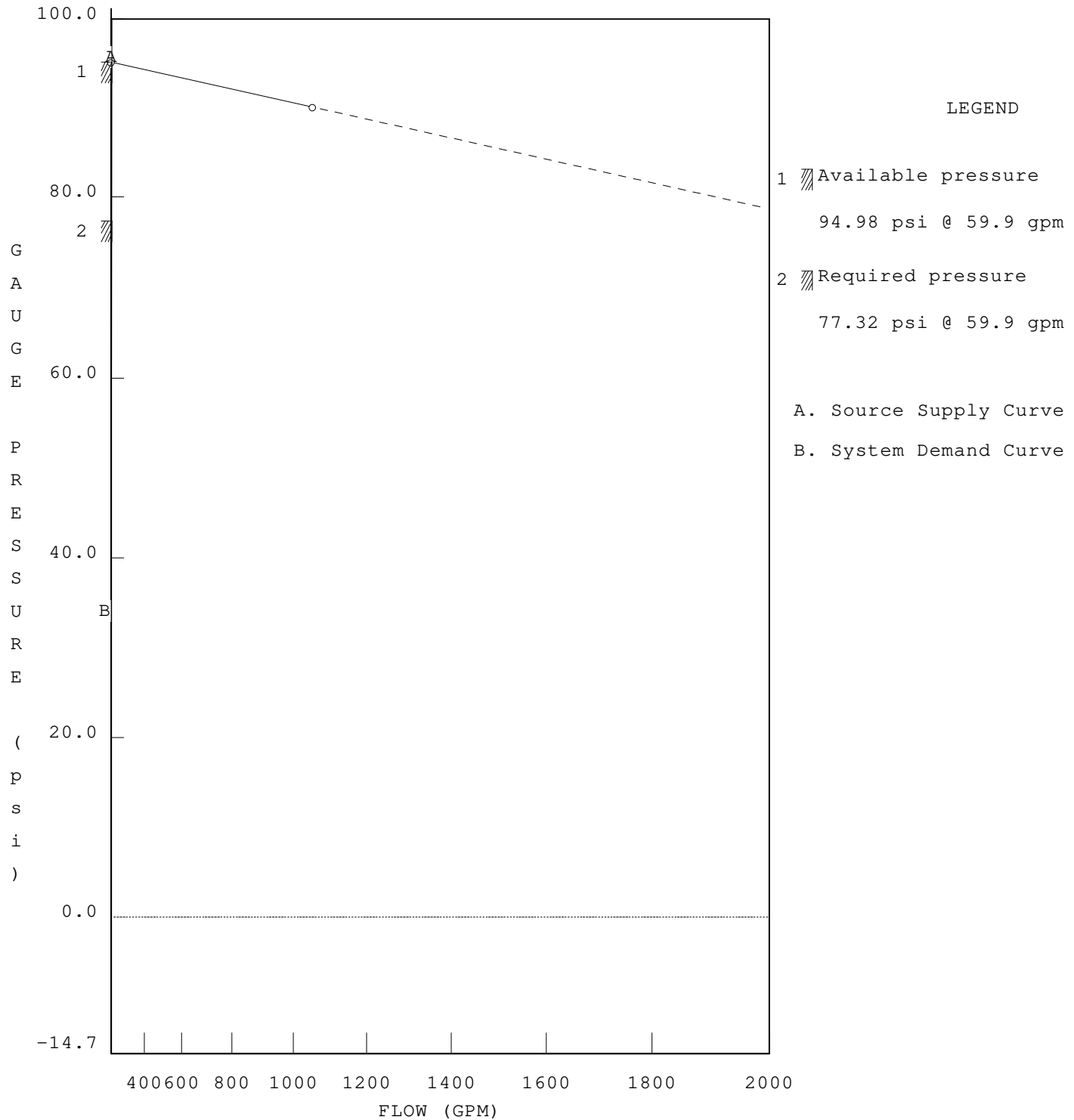
| Diameter<br>(in) | Equivalent Fitting Lengths in Feet |       |      |        |        |        |        |       |      |
|------------------|------------------------------------|-------|------|--------|--------|--------|--------|-------|------|
|                  | E                                  | 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: 9/26/2025RAULICS\HASS FILES\BUILDING A\A - (4) 16X16 RES49 7PSI.SDF

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

WATER SUPPLY ANALYSIS

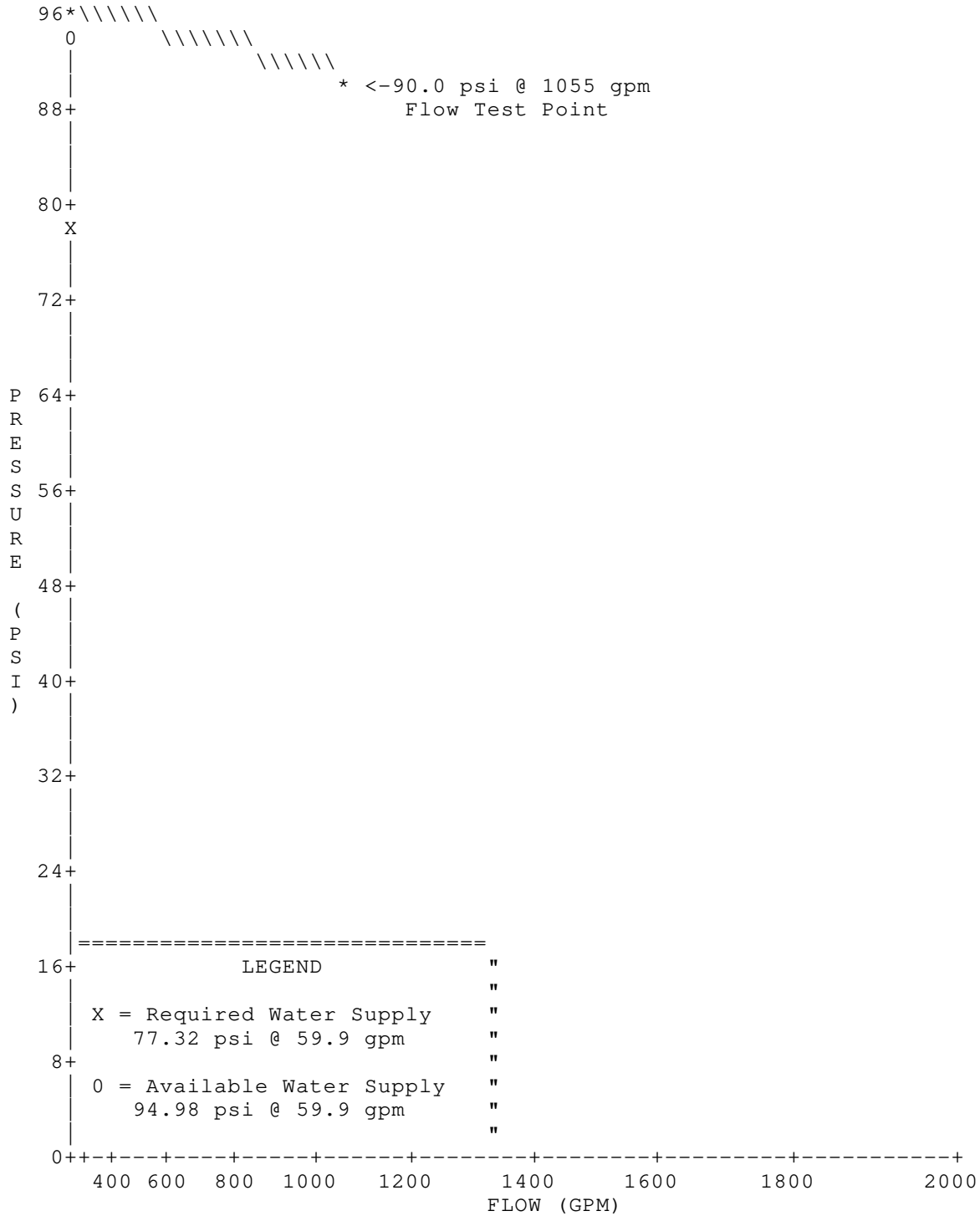
Static: 95.00 psi Resid: 90.00 psi Flow: 1055.0 gpm



DATE: 9/26/2025RAULICS\HASS FILES\BUILDING A\A - (4) 16X16 RES49 7PSI.SDF

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

WATER SUPPLY CURVE





SMITH FIRE SYSTEMS, INC.

### WATER SUPPLY DATA

STATIC 95 PSI  
RESIDUAL 90 PSI  
FLOWING 1055 GPM

JOB NAME BRADLEY HEIGHTS - BUILDING A

ADDRESS 202 27TH AVE SE

DATE PUYALLUP, WA 98374

JOB NO. TC25207

SYSTEM/AREA SYSTEM 1: (4) HEAD COMPARTMENT @16X16

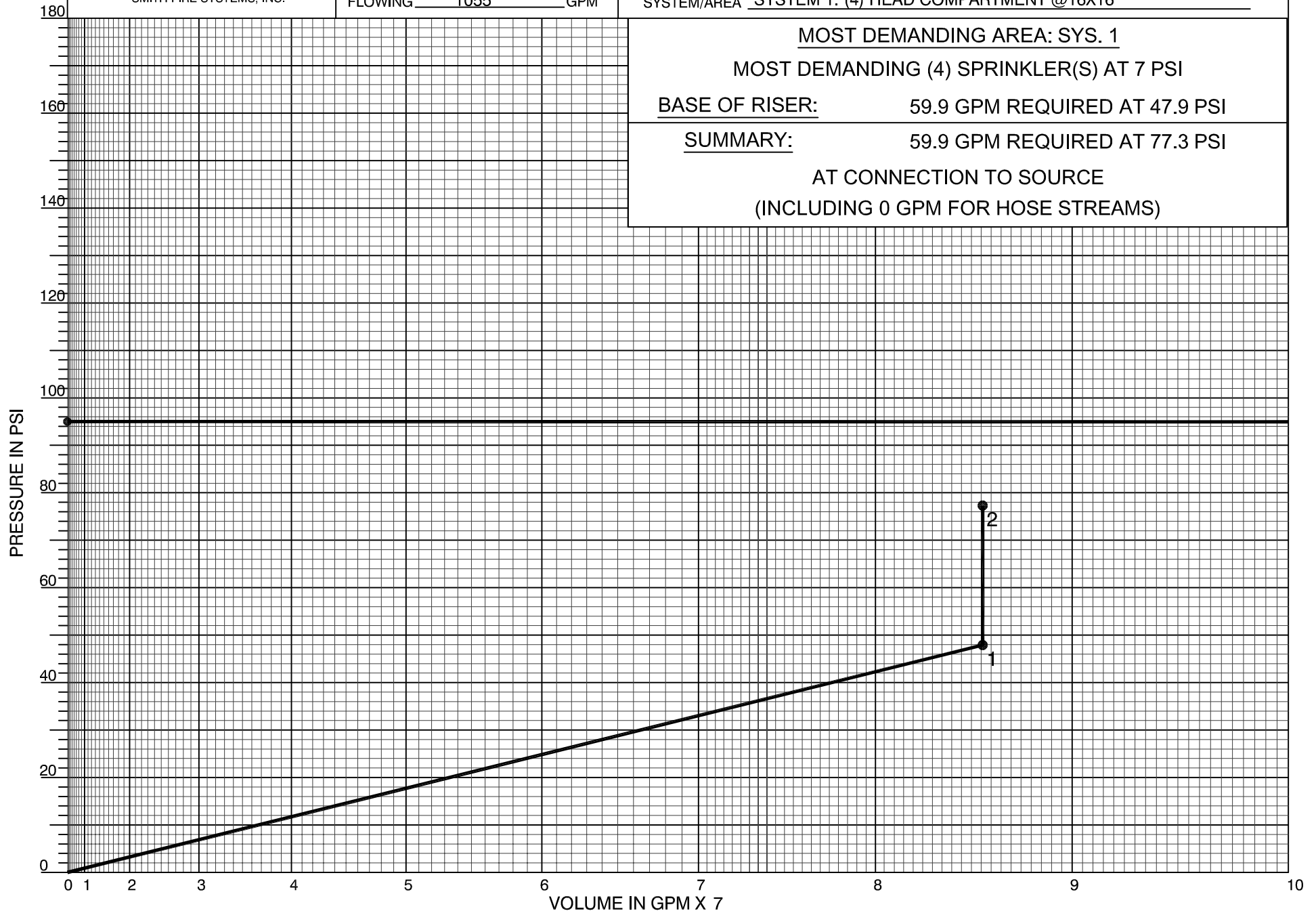
MOST DEMANDING AREA: SYS. 1

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

BASE OF RISER: 59.9 GPM REQUIRED AT 47.9 PSI

SUMMARY: 59.9 GPM REQUIRED AT 77.3 PSI

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



**SMITH FIRE SYSTEMS, INC.**  
**JOB NO. TC25207**

**SYSTEM # 1**

**L3 (2) HEAD COMPARTMENT**

**AUXILIARY HYDRAULIC CALCULATION**

**DENSITY: 0.05 GPM OVER 2 HEADS**

**SYSTEM DEMAND AT BASE OF RISER**

**34.9 GPM AT 40.2 PSI**

DATE: 9/26/2025SS FILES\BUILDING A\AUX CLCS\A - (2) 18X18 RES49 12PSI.SDF

JOB TITLE: A- (2) 18X18 RES49 12PSI

## WATER SUPPLY DATA

| SOURCE<br>NODE<br>TAG | STATIC<br>PRESS.<br>(PSI) | RESID.<br>PRESS.<br>(PSI) | FLOW<br>@<br>(GPM) | AVAIL.<br>PRESS.<br>(PSI) | TOTAL<br>@<br>DEMAND<br>(GPM) | REQ'D<br>PRESS.<br>(PSI) |
|-----------------------|---------------------------|---------------------------|--------------------|---------------------------|-------------------------------|--------------------------|
| SOURCE                | 95.0                      | 90.0                      | 1055.0             | 95.0                      | 34.9                          | 67.0                     |

Available pressure is 28.0 psi (30%) greater than required pressure.

## AGGREGATE FLOW ANALYSIS:

|                                        |          |
|----------------------------------------|----------|
| TOTAL FLOW AT SOURCE                   | 34.9 GPM |
| TOTAL HOSE STREAM ALLOWANCE AT SOURCE  | 0.0 GPM  |
| OTHER HOSE STREAM ALLOWANCES           | 0.0 GPM  |
| TOTAL DISCHARGE FROM ACTIVE SPRINKLERS | 34.9 GPM |

## NODE ANALYSIS DATA

| NODE TAG | ELEVATION<br>(FT) | NODE TYPE | PRESSURE<br>(PSI) | DISCHARGE<br>(GPM) |
|----------|-------------------|-----------|-------------------|--------------------|
| S10      | 39.3              | K= 4.90   | 12.0              | 17.0               |
| S11      | 39.3              | K= 4.90   | 13.4              | 17.9               |
| B4       | 39.8              | - - - -   | 13.5              | - - -              |
| M4       | 39.8              | - - - -   | 20.4              | - - -              |
| 32       | 39.8              | - - - -   | 22.9              | - - -              |
| 02       | 9.6               | - - - -   | 37.2              | - - -              |
| TOR      | 9.6               | - - - -   | 39.5              | - - -              |
| BFP1     | 7.2               | - - - -   | 40.6              | - - -              |
| BFP2     | 7.2               | - - - -   | 47.6              | - - -              |
| BOR      | 8.2               | - - - -   | 40.2              | - - -              |
| UG1      | 0.0               | - - - -   | 52.2              | - - -              |
| UG2      | 0.0               | - - - -   | 52.2              | - - -              |
| UG3      | -34.0             | - - - -   | 67.0              | - - -              |
| SOURCE   | -34.0             | SOURCE    | 67.0              | 34.9               |

DATE: 9/26/2025SS FILES\BUILDING A\AUX CLCS\A - (2) 18X18 RES49 12PSI.SDF  
 JOB TITLE: A- (2) 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   |       |       |      |       |       |                            |               |           |                 |          |
| S10       |       | 39.3  | 4.9  | 12.0  | 17.0  | -17.0<br>5.7               | 1.101<br>150  | PL<br>FTG | 14.00<br>3ET    | PF<br>PE |
| B4        |       | 39.8  | 0.0  | 13.5  | 0.0   |                            | 0.050         | TL        | 34.00           | PV       |
| Pipe: 2   |       |       |      |       |       |                            |               |           |                 |          |
| S11       |       | 39.3  | 4.9  | 13.4  | 17.9  | -17.9<br>6.0               | 1.101<br>150  | PL<br>FTG | 0.55<br>T       | PF<br>PE |
| B4        |       | 39.8  | 0.0  | 13.5  | 0.0   |                            | 0.056         | TL        | 5.55            | PV       |
| Pipe: 3   |       |       |      |       |       |                            |               |           |                 |          |
| B4        |       | 39.8  | 0.0  | 13.5  | 0.0   | -34.9<br>11.8              | 1.101<br>150  | PL<br>FTG | 11.50<br>4ET    | PF<br>PE |
| M4        |       | 39.8  | 0.0  | 20.4  | 0.0   |                            | 0.191         | TL        | 36.50           | PV       |
| Pipe: 4   |       |       |      |       |       |                            |               |           |                 |          |
| M4        |       | 39.8  | 0.0  | 20.4  | 0.0   | -34.9<br>5.6               | 1.598<br>150  | PL<br>FTG | 28.42<br>6ET    | PF<br>PE |
| 32        |       | 39.8  | 0.0  | 22.9  | 0.0   |                            | 0.031         | TL        | 78.42           | PV       |
| Pipe: 5   |       |       |      |       |       |                            |               |           |                 |          |
| 32        |       | 39.8  | 0.0  | 22.9  | 0.0   | -34.9<br>5.6               | 1.598<br>150  | PL<br>FTG | 30.25<br>T      | PF<br>PE |
| 02        |       | 9.6   | 0.0  | 37.2  | 0.0   |                            | 0.031         | TL        | 38.25           | PV       |
| Pipe: 6   |       |       |      |       |       |                            |               |           |                 |          |
| 02        |       | 9.6   | 0.0  | 37.2  | 0.0   | -34.9<br>5.6               | 1.598<br>150  | PL<br>FTG | 55.00<br>3E     | PF<br>PE |
| TOR       |       | 9.6   | 0.0  | 39.5  | 0.0   |                            | 0.031         | TL        | 76.00           | PV       |
| Pipe: 7   |       |       |      |       |       |                            |               |           |                 |          |
| TOR       |       | 9.6   | 0.0  | 39.5  | 0.0   | -34.9<br>3.0               | 2.185<br>150  | PL<br>FTG | 3.00<br>----    | PF<br>PE |
| BOR       |       | 8.2   | 0.0  | 40.2  | 0.0   |                            | 0.007         | TL        | 3.00            | PV       |
| Pipe: 8   |       |       |      |       |       |                            |               |           |                 |          |
| BOR       |       | 8.2   | 0.0  | 40.2  | 0.0   | -34.9<br>3.0               | 2.185<br>120  | PL<br>FTG | 1.00<br>----    | PF<br>PE |
| BFP1      |       | 7.2   | 0.0  | 40.6  | 0.0   |                            | 0.010         | TL        | 1.00            | PV       |
| Pipe: 9   |       |       |      |       |       |                            |               |           |                 |          |
| BFP2      |       | 7.2   | 0.0  | 47.6  | 0.0   | FIXED PRESSURE LOSS DEVICE |               |           |                 |          |
| BFP1      |       | 7.2   | 0.0  | 40.6  | 0.0   | 7.0 psi, 34.9 gpm          |               |           |                 |          |
| Pipe: 10  |       |       |      |       |       |                            |               |           |                 |          |
| BFP2      |       | 7.2   | 0.0  | 47.6  | 0.0   | -34.9<br>3.6               | 2.003<br>150  | PL<br>FTG | 112.84<br>2ET2G | PF<br>PE |
| UG1       |       | 0.0   | 0.0  | 52.2  | 0.0   |                            | 0.010         | TL        | 144.84          | PV       |
| Pipe: 10A |       |       |      |       |       |                            |               |           |                 |          |
| UG1       |       | 0.0   | 0.0  | 52.2  | 0.0   | -34.9<br>0.2               | 8.270<br>140  | PL<br>FTG | 105.00<br>TBG   | PF<br>PE |
| UG2       |       | 0.0   | 0.0  | 52.2  | 0.0   |                            | 0.000         | TL        | 178.00          | PV       |
| Pipe: 10B |       |       |      |       |       |                            |               |           |                 |          |
| UG2       |       | 0.0   | 0.0  | 52.2  | 0.0   | -34.9<br>0.1               | 12.340<br>140 | PL<br>FTG | 920.00<br>F     | PF<br>PE |
| UG3       |       | -34.0 | 0.0  | 67.0  | 0.0   |                            | 0.000         | TL        | 939.00          | PV       |
| Pipe: 11  |       |       |      |       |       |                            |               |           |                 |          |
| UG3       |       | -34.0 | 0.0  | 67.0  | 0.0   | -34.9<br>0.4               | 6.160<br>140  | PL<br>FTG | 105.00<br>TG    | PF<br>PE |
| SOURCE    |       | -34.0 | SRCE | 67.0  | (N/A) |                            | 0.000         | TL        | 149.00          | PV       |

DATE: 9/26/2025SS FILES\BUILDING A\AUX CLCS\A - (2) 18X18 RES49 12PSI.SDF  
 JOB TITLE: A- (2) 18X18 RES49 12PSI

## 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 0.011 gpm and a maximum imbalance at any node of 0.145 gpm.
- (3) Total pressure at each node is used in balancing the system. Maximum water velocity is 11.8 ft/sec at pipe 3.
- (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 50.01 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  |
| 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 |
| 2.003    | 9.00                               | 10.00    | 2.00      | 1.00 | 1.00 | 2.00 | 7.00 |

DATE: 9/26/2025SS FILES\BUILDING A\AUX CLCS\A - (2) 18X18 RES49 12PSI.SDF

JOB TITLE: A- (2) 18X18 RES49 12PSI

PAGE: Y MATERIAL: SCH7 HWC: 120

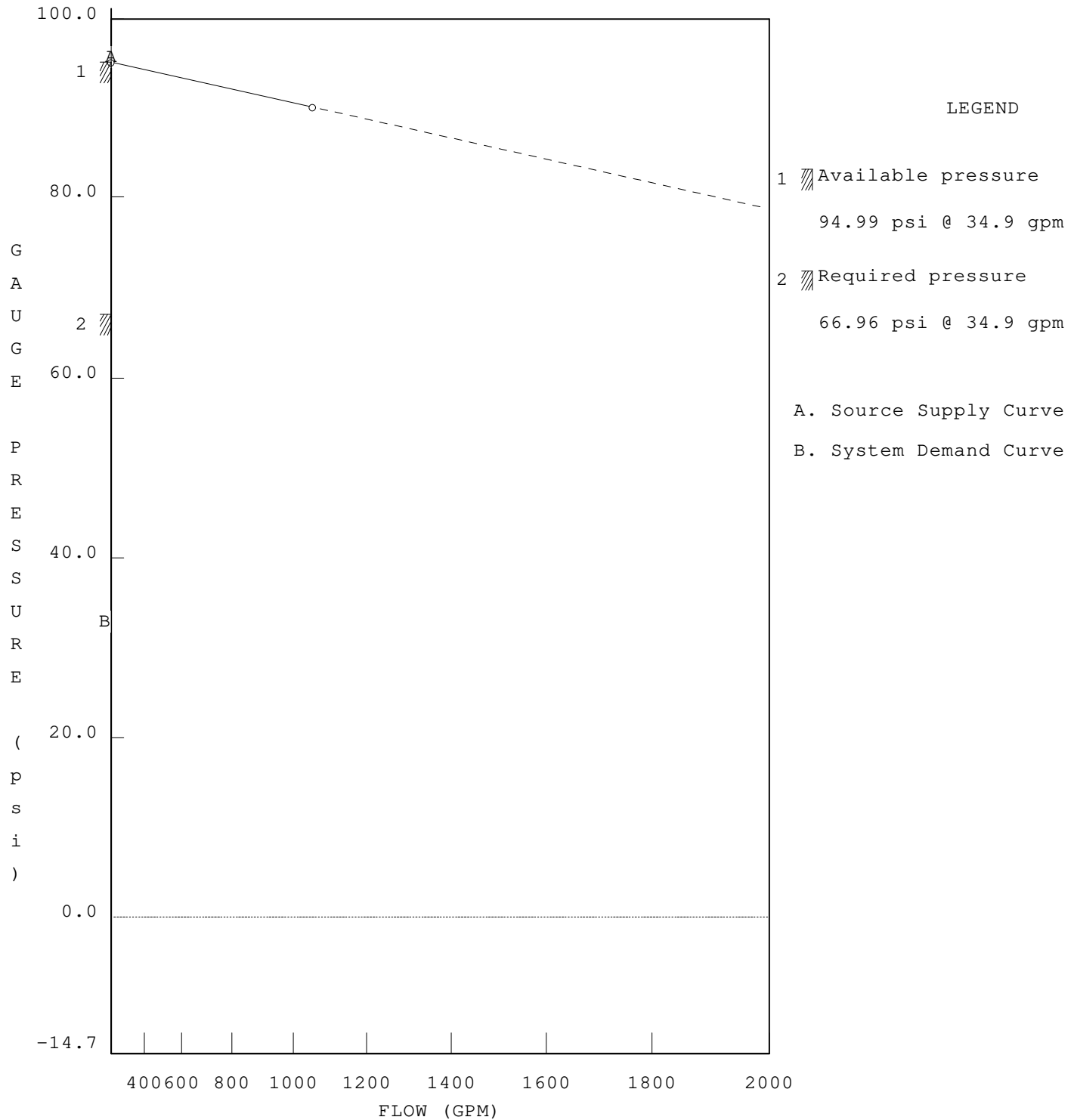
| Diameter<br>(in) | Equivalent Fitting Lengths in Feet |       |      |        |        |        |        |       |      |
|------------------|------------------------------------|-------|------|--------|--------|--------|--------|-------|------|
|                  | E                                  | 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: 9/26/2025SS FILES\BUILDING A\AUX CLCS\A - (2) 18X18 RES49 12PSI.SDF

JOB TITLE: A- (2) 18X18 RES49 12PSI

WATER SUPPLY ANALYSIS

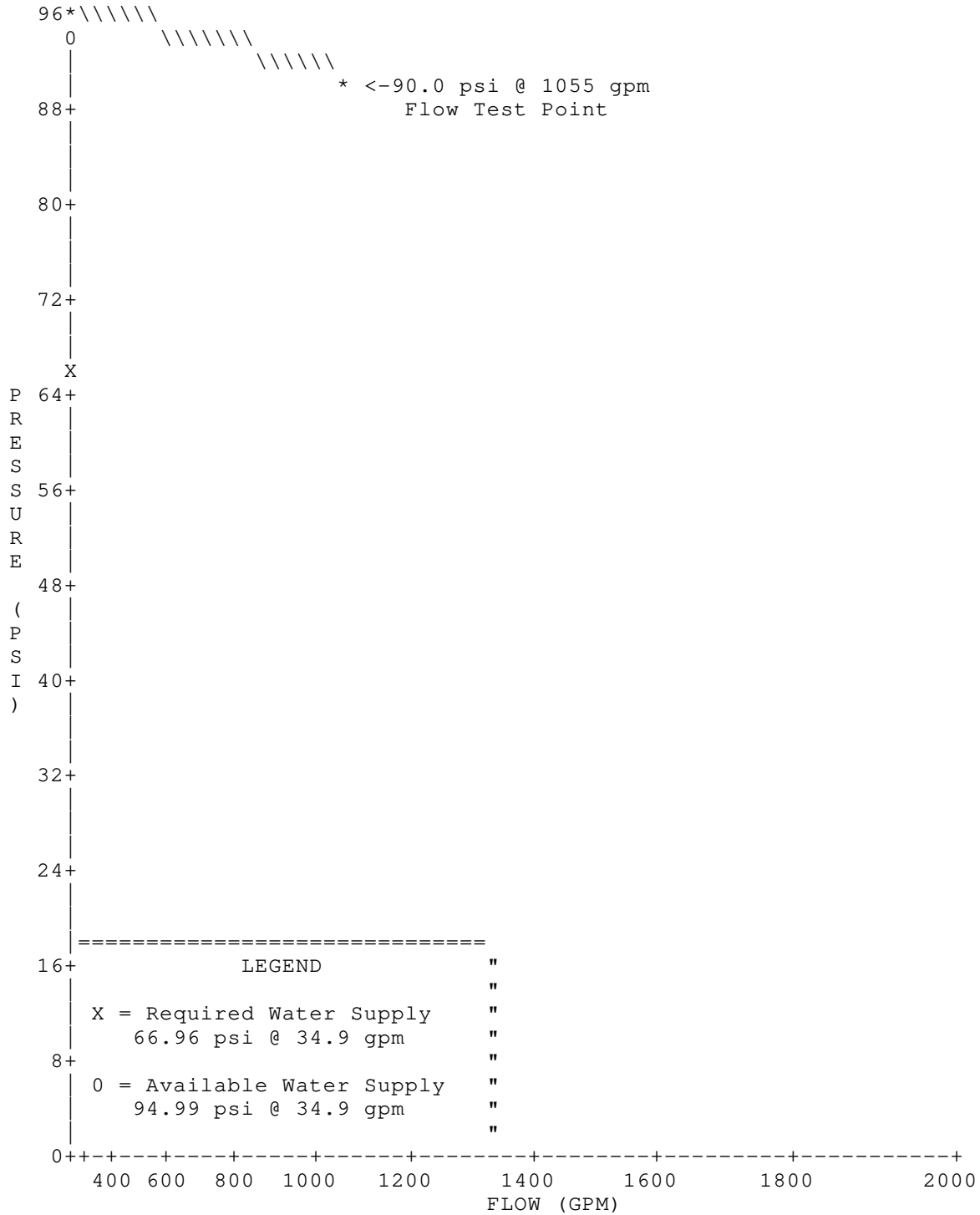
Static: 95.00 psi Resid: 90.00 psi Flow: 1055.0 gpm



DATE: 9/26/2025SS FILES\BUILDING A\AUX CLCS\A - (2) 18X18 RES49 12PSI.SDF

JOB TITLE: A- (2) 18X18 RES49 12PSI

WATER SUPPLY CURVE







**SMITH FIRE SYSTEMS, INC.**  
**JOB NO. TC25207**

**SYSTEM # 1**

**L3 (4) DRY HSW**

**AUXILIARY HYDRAULIC CALCULATION**

**DENSITY: 0.1 GPM OVER 4 HEADS**

**SYSTEM DEMAND AT BASE OF RISER**

**64.2 GPM AT 34.7 PSI**

DATE: 9/26/2025HASS FILES\BUILDING A\AUX CLCS\A - (4) F3QR56 HSW 7PSI.SDF

JOB TITLE: (4) F3QR HSW 7PSI

## WATER SUPPLY DATA

| SOURCE<br>NODE<br>TAG | STATIC<br>PRESS.<br>(PSI) | RESID.<br>PRESS.<br>(PSI) | FLOW<br>@<br>(GPM) | AVAIL.<br>PRESS.<br>(PSI) | TOTAL<br>@<br>DEMAND<br>(GPM) | REQ'D<br>PRESS.<br>(PSI) |
|-----------------------|---------------------------|---------------------------|--------------------|---------------------------|-------------------------------|--------------------------|
| SOURCE                | 95.0                      | 90.0                      | 1055.0             | 95.0                      | 64.2                          | 64.7                     |

Available pressure is 30.3 psi (32%) greater than required pressure.

## AGGREGATE FLOW ANALYSIS:

|                                        |          |
|----------------------------------------|----------|
| TOTAL FLOW AT SOURCE                   | 64.2 GPM |
| TOTAL HOSE STREAM ALLOWANCE AT SOURCE  | 0.0 GPM  |
| OTHER HOSE STREAM ALLOWANCES           | 0.0 GPM  |
| TOTAL DISCHARGE FROM ACTIVE SPRINKLERS | 64.2 GPM |

## NODE ANALYSIS DATA

| NODE TAG | ELEVATION<br>(FT) | NODE TYPE | PRESSURE<br>(PSI) | DISCHARGE<br>(GPM) |
|----------|-------------------|-----------|-------------------|--------------------|
| S6       | 39.0              | K= 5.60   | 8.4               | 16.2               |
| S7       | 39.0              | K= 5.60   | 9.4               | 17.2               |
| S8       | 39.8              | K= 5.60   | 7.0               | 14.8               |
| S9       | 39.0              | K= 5.60   | 8.3               | 16.1               |
| B3       | 39.8              | - - - -   | 8.6               | - - -              |
| M4       | 39.8              | - - - -   | 11.9              | - - -              |
| M3       | 39.8              | - - - -   | 10.3              | - - -              |
| 32       | 39.8              | - - - -   | 13.1              | - - -              |
| 31       | 39.8              | - - - -   | 11.4              | - - -              |
| 02       | 9.6               | - - - -   | 27.2              | - - -              |
| 01       | 9.6               | - - - -   | 25.6              | - - -              |
| TOR      | 9.6               | - - - -   | 33.8              | - - -              |
| BFP1     | 7.2               | - - - -   | 35.2              | - - -              |
| BFP2     | 7.2               | - - - -   | 42.2              | - - -              |
| BOR      | 8.2               | - - - -   | 34.7              | - - -              |
| UG1      | 0.0               | - - - -   | 49.9              | - - -              |
| UG2      | 0.0               | - - - -   | 50.0              | - - -              |
| UG3      | -34.0             | - - - -   | 64.7              | - - -              |
| SOURCE   | -34.0             | SOURCE    | 64.7              | 64.2               |

DATE: 9/26/2025HASS FILES\BUILDING A\AUX CLCS\A - (4) F3QR56 HSW 7PSI.SDF  
 JOB TITLE: (4) F3QR HSW 7PSI

PIPE DATA

| PIPE TAG | END | ELEV. | NOZ. | PT    | DISC. | Q (GPM) | VEL (FPS) | DIA (IN) | LENGTH | PRESS. | SUM.  |
|----------|-----|-------|------|-------|-------|---------|-----------|----------|--------|--------|-------|
| NODES    |     | (FT)  | (K)  | (PSI) | (GPM) |         |           | HW (C)   | (FT)   |        | (PSI) |
|          |     |       |      |       |       |         |           | FL/FT    |        |        |       |
| Pipe: 1  |     |       |      |       |       |         |           |          |        |        |       |
| S8       |     | 39.8  | 5.6  | 7.0   | 14.8  | -14.8   | 5.0       | 1.101 PL | 16.50  | PF     | 1.6   |
| B3       |     | 39.8  | 0.0  | 8.6   | 0.0   |         |           | 150 FTG  | 5E     | PE     | -0.0  |
|          |     |       |      |       |       |         |           | 0.039 TL | 41.50  | PV     |       |
| Pipe: 2  |     |       |      |       |       |         |           |          |        |        |       |
| S9       |     | 39.0  | 5.6  | 8.3   | 16.1  | -16.1   | 5.4       | 1.101 PL | 5.25   | PF     | 0.7   |
| B3       |     | 39.8  | 0.0  | 8.6   | 0.0   |         |           | 150 FTG  | ET     | PE     | -0.4  |
|          |     |       |      |       |       |         |           | 0.045 TL | 15.25  | PV     |       |
| Pipe: 3  |     |       |      |       |       |         |           |          |        |        |       |
| S6       |     | 39.0  | 5.6  | 8.4   | 16.2  | -16.2   | 5.5       | 1.101 PL | 13.33  | PF     | 2.2   |
| M3       |     | 39.8  | 0.0  | 10.3  | 0.0   |         |           | 150 FTG  | 5E2T   | PE     | -0.4  |
|          |     |       |      |       |       |         |           | 0.046 TL | 48.33  | PV     |       |
| Pipe: 4  |     |       |      |       |       |         |           |          |        |        |       |
| S7       |     | 39.0  | 5.6  | 9.4   | 17.2  | -17.2   | 5.8       | 1.101 PL | 8.83   | PF     | 1.2   |
| M3       |     | 39.8  | 0.0  | 10.3  | 0.0   |         |           | 150 FTG  | E2T    | PE     | -0.4  |
|          |     |       |      |       |       |         |           | 0.051 TL | 23.83  | PV     |       |
| Pipe: 6  |     |       |      |       |       |         |           |          |        |        |       |
| B3       |     | 39.8  | 0.0  | 8.6   | 0.0   | -30.9   | 10.4      | 1.101 PL | 16.67  | PF     | 3.3   |
| M4       |     | 39.8  | 0.0  | 11.9  | 0.0   |         |           | 150 FTG  | T      | PE     | 0.0   |
|          |     |       |      |       |       |         |           | 0.152 TL | 21.67  | PV     |       |
| Pipe: 7  |     |       |      |       |       |         |           |          |        |        |       |
| M4       |     | 39.8  | 0.0  | 11.9  | 0.0   | -30.9   | 4.9       | 1.598 PL | 28.42  | PF     | 1.2   |
| 32       |     | 39.8  | 0.0  | 13.1  | 0.0   |         |           | 150 FTG  | 2ET    | PE     | 0.0   |
|          |     |       |      |       |       |         |           | 0.025 TL | 50.42  | PV     |       |
| Pipe: 8  |     |       |      |       |       |         |           |          |        |        |       |
| M3       |     | 39.8  | 0.0  | 10.3  | 0.0   | -33.4   | 5.3       | 1.598 PL | 5.25   | PF     | 1.2   |
| 31       |     | 39.8  | 0.0  | 11.4  | 0.0   |         |           | 150 FTG  | 4ET    | PE     | 0.0   |
|          |     |       |      |       |       |         |           | 0.029 TL | 41.25  | PV     |       |
| Pipe: 9  |     |       |      |       |       |         |           |          |        |        |       |
| 31       |     | 39.8  | 0.0  | 11.4  | 0.0   | -33.4   | 5.3       | 1.598 PL | 30.25  | PF     | 1.1   |
| 01       |     | 9.6   | 0.0  | 25.6  | 0.0   |         |           | 150 FTG  | T      | PE     | 13.1  |
|          |     |       |      |       |       |         |           | 0.029 TL | 38.25  | PV     |       |
| Pipe: 10 |     |       |      |       |       |         |           |          |        |        |       |
| 32       |     | 39.8  | 0.0  | 13.1  | 0.0   | -30.9   | 4.9       | 1.598 PL | 30.25  | PF     | 0.9   |
| 02       |     | 9.6   | 0.0  | 27.2  | 0.0   |         |           | 150 FTG  | T      | PE     | 13.1  |
|          |     |       |      |       |       |         |           | 0.025 TL | 38.25  | PV     |       |
| Pipe: 11 |     |       |      |       |       |         |           |          |        |        |       |
| 01       |     | 9.6   | 0.0  | 25.6  | 0.0   | -33.4   | 5.3       | 1.598 PL | 53.92  | PF     | 1.5   |
| 02       |     | 9.6   | 0.0  | 27.2  | 0.0   |         |           | 150 FTG  | ----   | PE     | 0.0   |
|          |     |       |      |       |       |         |           | 0.029 TL | 53.92  | PV     |       |
| Pipe: 12 |     |       |      |       |       |         |           |          |        |        |       |
| 02       |     | 9.6   | 0.0  | 27.2  | 0.0   | -64.3   | 10.3      | 1.598 PL | 48.17  | PF     | 6.7   |
| TOR      |     | 9.6   | 0.0  | 33.8  | 0.0   |         |           | 150 FTG  | 3E     | PE     | 0.0   |
|          |     |       |      |       |       |         |           | 0.096 TL | 69.17  | PV     |       |
| Pipe: 13 |     |       |      |       |       |         |           |          |        |        |       |
| TOR      |     | 9.6   | 0.0  | 33.8  | 0.0   | -64.3   | 10.3      | 1.598 PL | 3.00   | PF     | 0.3   |
| BOR      |     | 8.2   | 0.0  | 34.7  | 0.0   |         |           | 150 FTG  | ----   | PE     | 0.6   |
|          |     |       |      |       |       |         |           | 0.096 TL | 3.00   | PV     |       |
| Pipe: 14 |     |       |      |       |       |         |           |          |        |        |       |
| BOR      |     | 8.2   | 0.0  | 34.7  | 0.0   | -64.3   | 5.5       | 2.185 PL | 1.00   | PF     | 0.0   |
| BFP1     |     | 7.2   | 0.0  | 35.2  | 0.0   |         |           | 120 FTG  | ----   | PE     | 0.4   |
|          |     |       |      |       |       |         |           | 0.032 TL | 1.00   | PV     |       |

DATE: 9/26/2025 HASS FILES\BUILDING A\AUX CLCS\A - (4) F3QR56 HSW 7PSI.SDF  
 JOB TITLE: (4) F3QR HSW 7PSI

| PIPE TAG                   | END   | ELEV. | NOZ.  | PT    | DISC.     | Q (GPM)  | DIA (IN) | LENGTH   | PRESS.  |
|----------------------------|-------|-------|-------|-------|-----------|----------|----------|----------|---------|
| NODES                      | (FT)  | (K)   | (PSI) | (GPM) | VEL (FPS) | HW (C)   | FL/FT    | (FT)     | SUM.    |
|                            |       |       |       |       |           |          |          |          | (PSI)   |
| Pipe: 15                   |       |       |       |       |           |          |          |          |         |
| BFP2                       | 7.2   | 0.0   | 42.2  | 0.0   |           |          |          |          |         |
| BFP1                       | 7.2   | 0.0   | 35.2  | 0.0   |           |          |          |          |         |
| FIXED PRESSURE LOSS DEVICE |       |       |       |       |           |          |          |          |         |
|                            |       |       |       |       |           | 7.0 psi, |          | 64.3 gpm |         |
| Pipe: 16                   |       |       |       |       |           |          |          |          |         |
| BFP2                       | 7.2   | 0.0   | 42.2  | 0.0   | -64.3     | 2.003    | PL       | 112.84   | PF 4.6  |
| UG1                        | 0.0   | 0.0   | 49.9  | 0.0   | 6.5       | 150      | FTG      | 2ET2G    | PE 3.1  |
|                            |       |       |       |       |           | 0.032    | TL       | 144.84   | PV      |
| Pipe: 16A                  |       |       |       |       |           |          |          |          |         |
| UG1                        | 0.0   | 0.0   | 49.9  | 0.0   | -64.3     | 8.270    | PL       | 105.00   | PF 0.0  |
| UG2                        | 0.0   | 0.0   | 50.0  | 0.0   | 0.4       | 140      | FTG      | TBG      | PE 0.0  |
|                            |       |       |       |       |           | 0.000    | TL       | 178.00   | PV      |
| Pipe: 16B                  |       |       |       |       |           |          |          |          |         |
| UG2                        | 0.0   | 0.0   | 50.0  | 0.0   | -64.3     | 12.340   | PL       | 920.00   | PF 0.0  |
| UG3                        | -34.0 | 0.0   | 64.7  | 0.0   | 0.2       | 140      | FTG      | F        | PE 14.7 |
|                            |       |       |       |       |           | 0.000    | TL       | 939.00   | PV      |
| Pipe: 17                   |       |       |       |       |           |          |          |          |         |
| UG3                        | -34.0 | 0.0   | 64.7  | 0.0   | -64.2     | 6.160    | PL       | 15.00    | PF 0.0  |
| SOURCE                     | -34.0 | SRCE  | 64.7  | (N/A) | 0.7       | 140      | FTG      | TG       | PE 0.0  |
|                            |       |       |       |       |           | 0.000    | TL       | 59.00    | PV      |

NOTES (HASS):

- 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
- The system has been calculated to provide an average imbalance at each node of 0.011 gpm and a maximum imbalance at any node of 0.195 gpm.
- Total pressure at each node is used in balancing the system. Maximum water velocity is 10.4 ft/sec at pipe 6.
- 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 94.94 psi with a flow of 96.53 gpm.

DATE: 9/26/2025 HASS FILES\BUILDING A\AUX CLCS\A - (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<br>(in) | Equivalent Fitting Lengths in Feet |       |       |        |        |        |
|------------------|------------------------------------|-------|-------|--------|--------|--------|
|                  | E                                  | T     | F     | C      | B      | G      |
|                  | Ell                                | Tee   | 45    | ChkVlv | BfyVlv | GatVlv |
| 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<br>(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

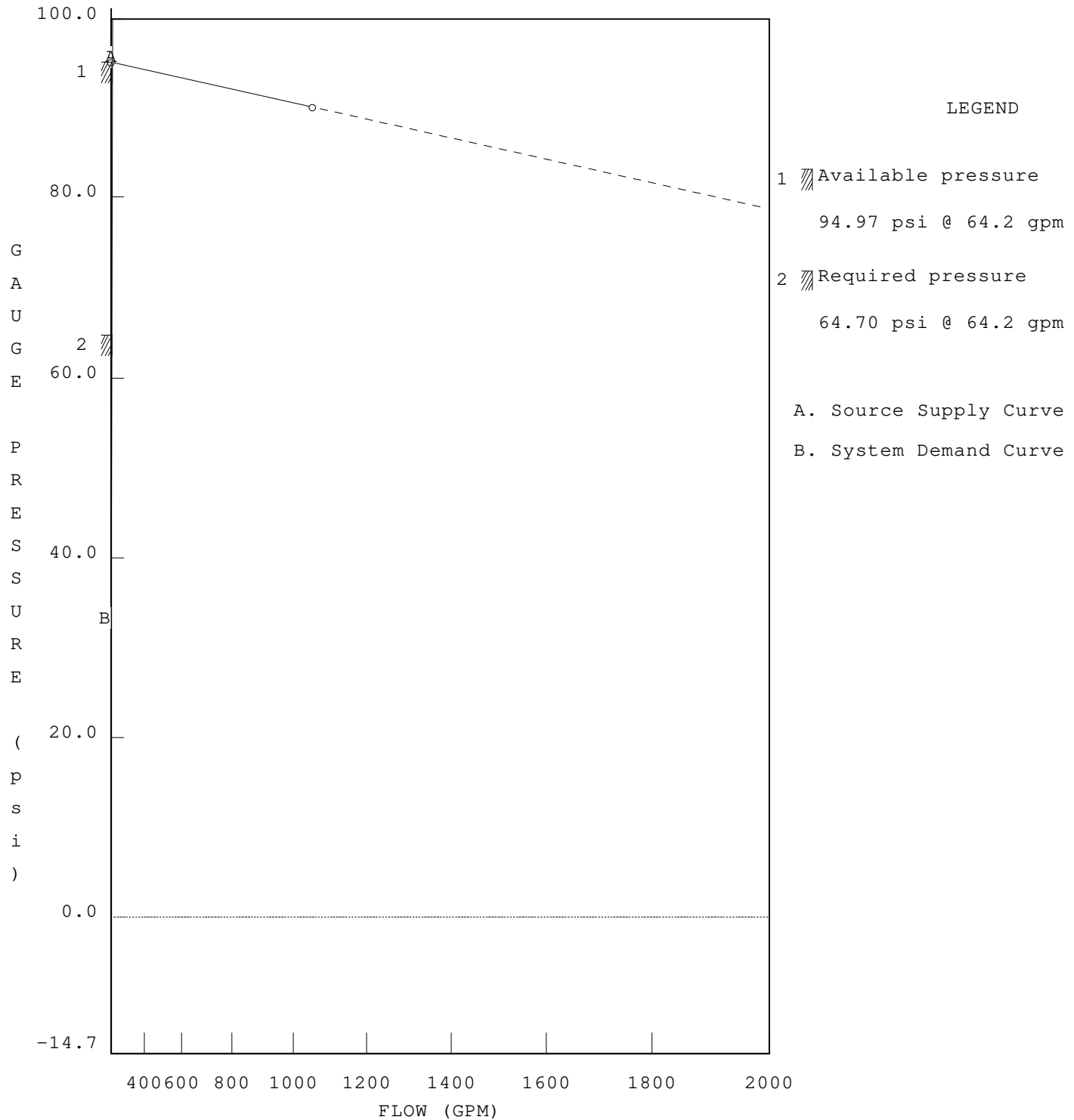
| Diameter<br>(in) | Equivalent Fitting Lengths in Feet |       |      |        |        |        |        |       |      |
|------------------|------------------------------------|-------|------|--------|--------|--------|--------|-------|------|
|                  | E                                  | 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: 9/26/2025 HASS FILES\BUILDING A\AUX CLCS\A - (4) F3QR56 HSW 7PSI.SDF

JOB TITLE: (4) F3QR HSW 7PSI

WATER SUPPLY ANALYSIS

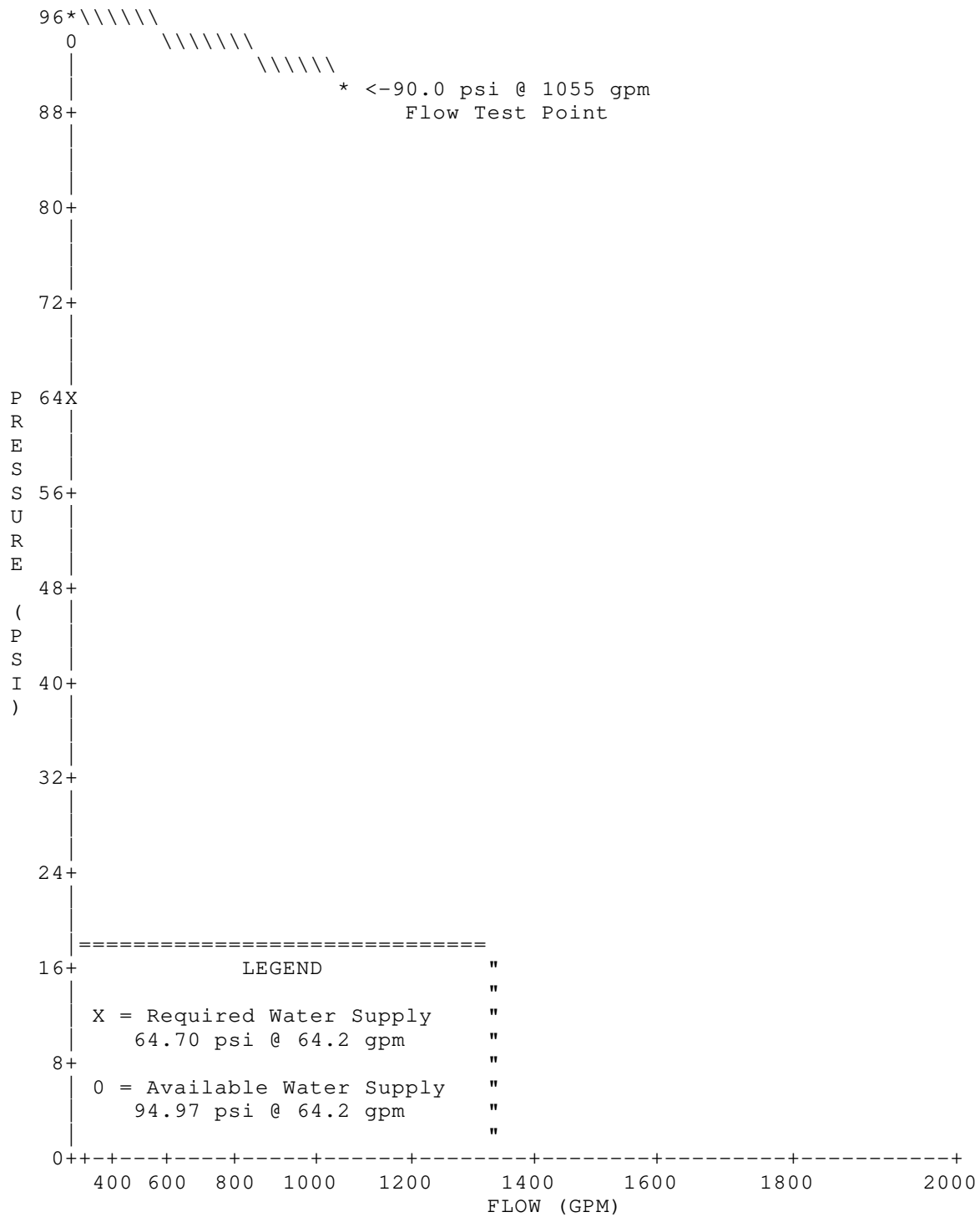
Static: 95.00 psi Resid: 90.00 psi Flow: 1055.0 gpm



DATE: 9/26/2025HASS FILES\BUILDING A\AUX CLCS\A - (4) F3QR56 HSW 7PSI.SDF

JOB TITLE: (4) F3QR HSW 7PSI

WATER SUPPLY CURVE



**SMITH FIRE SYSTEMS, INC.**  
**JOB NO. TC25207**

**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 38.2 PSI**

DATE: 9/26/2025 FILES\BUILDING A\AUX CLCS\A - (1) 20X20 RES49 16.7PSI.SDF

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

## WATER SUPPLY DATA

| SOURCE<br>NODE<br>TAG | STATIC<br>PRESS.<br>(PSI) | RESID.<br>PRESS.<br>(PSI) | FLOW<br>@<br>(GPM) | AVAIL.<br>PRESS.<br>(PSI) | TOTAL<br>@<br>DEMAND<br>(GPM) | REQ'D<br>PRESS.<br>(PSI) |
|-----------------------|---------------------------|---------------------------|--------------------|---------------------------|-------------------------------|--------------------------|
| SOURCE                | 95.0                      | 90.0                      | 1055.0             | 95.0                      | 20.0                          | 61.8                     |

Available pressure is 33.2 psi (35%) 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<br>(FT) | NODE TYPE | PRESSURE<br>(PSI) | DISCHARGE<br>(GPM) |
|----------|-------------------|-----------|-------------------|--------------------|
| S1       | 39.3              | K= 4.90   | 16.7              | 20.0               |
| M1       | 39.8              | - - - -   | 19.7              | - - -              |
| 31       | 39.8              | - - - -   | 20.3              | - - -              |
| 01       | 9.6               | - - - -   | 33.8              | - - -              |
| TOR      | 9.6               | - - - -   | 35.3              | - - -              |
| BFP1     | 7.2               | - - - -   | 36.4              | - - -              |
| BFP2     | 7.2               | - - - -   | 43.4              | - - -              |
| BOR      | 8.2               | - - - -   | 36.0              | - - -              |
| UG1      | 0.0               | - - - -   | 47.1              | - - -              |
| UG2      | 0.0               | - - - -   | 47.1              | - - -              |
| UG3      | -34.0             | - - - -   | 61.8              | - - -              |
| SOURCE   | -34.0             | SOURCE    | 61.8              | 20.0               |

DATE: 9/26/2025 FILES\BUILDING A\AUX CLCS\A - (1) 20X20 RES49 16.7PSI.SDF  
 JOB TITLE: A- (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       |       | 39.3  | 4.9  | 16.7  | 20.0  | -20.0 6.7                  | 1.101 PL 150  | 17.25 5ET    | PF PE  | 3.2 -0.2 |
| M1       |       | 39.8  | 0.0  | 19.7  | 0.0   |                            | 0.068 TL      | 47.25        | PV     |          |
| Pipe: 3  |       |       |      |       |       |                            |               |              |        |          |
| M1       |       | 39.8  | 0.0  | 19.7  | 0.0   | -20.0 3.2                  | 1.598 PL 150  | 20.50 4ET    | PF PE  | 0.6 0.0  |
| 31       |       | 39.8  | 0.0  | 20.3  | 0.0   |                            | 0.011 TL      | 56.50        | PV     |          |
| Pipe: 4  |       |       |      |       |       |                            |               |              |        |          |
| 31       |       | 39.8  | 0.0  | 20.3  | 0.0   | -20.0 3.2                  | 1.598 PL 150  | 30.25 ----   | PF PE  | 0.3 13.1 |
| 01       |       | 9.6   | 0.0  | 33.8  | 0.0   |                            | 0.011 TL      | 30.25        | PV     |          |
| Pipe: 5  |       |       |      |       |       |                            |               |              |        |          |
| 01       |       | 9.6   | 0.0  | 33.8  | 0.0   | -20.0 3.2                  | 1.598 PL 150  | 103.00 5E    | PF PE  | 1.5 0.0  |
| TOR      |       | 9.6   | 0.0  | 35.3  | 0.0   |                            | 0.011 TL      | 138.00       | PV     |          |
| Pipe: 6  |       |       |      |       |       |                            |               |              |        |          |
| TOR      |       | 9.6   | 0.0  | 35.3  | 0.0   | -20.0 1.7                  | 2.185 PL 150  | 3.00 3E      | PF PE  | 0.1 0.6  |
| BOR      |       | 8.2   | 0.0  | 36.0  | 0.0   |                            | 0.002 TL      | 23.85        | PV     |          |
| Pipe: 7  |       |       |      |       |       |                            |               |              |        |          |
| BOR      |       | 8.2   | 0.0  | 36.0  | 0.0   | -20.0 1.7                  | 2.185 PL 120  | 1.00 ----    | PF PE  | 0.0 0.4  |
| BFP1     |       | 7.2   | 0.0  | 36.4  | 0.0   |                            | 0.004 TL      | 1.00         | PV     |          |
| Pipe: 8  |       |       |      |       |       |                            |               |              |        |          |
| BFP2     |       | 7.2   | 0.0  | 43.4  | 0.0   | FIXED PRESSURE LOSS DEVICE |               |              |        |          |
| BFP1     |       | 7.2   | 0.0  | 36.4  | 0.0   | 7.0 psi, 20.0 gpm          |               |              |        |          |
| Pipe: 9  |       |       |      |       |       |                            |               |              |        |          |
| BFP2     |       | 7.2   | 0.0  | 43.4  | 0.0   | -20.0 2.0                  | 2.003 PL 150  | 112.84 2ET2G | PF PE  | 0.5 3.1  |
| UG1      |       | 0.0   | 0.0  | 47.1  | 0.0   |                            | 0.004 TL      | 144.84       | PV     |          |
| Pipe: 9A |       |       |      |       |       |                            |               |              |        |          |
| UG1      |       | 0.0   | 0.0  | 47.1  | 0.0   | -20.0 0.1                  | 8.270 PL 140  | 105.00 TBG   | PF PE  | 0.0 0.0  |
| UG2      |       | 0.0   | 0.0  | 47.1  | 0.0   |                            | 0.000 TL      | 178.00       | PV     |          |
| Pipe: 9B |       |       |      |       |       |                            |               |              |        |          |
| UG2      |       | 0.0   | 0.0  | 47.1  | 0.0   | -20.0 0.1                  | 12.340 PL 140 | 920.00 F     | PF PE  | 0.0 14.7 |
| UG3      |       | -34.0 | 0.0  | 61.8  | 0.0   |                            | 0.000 TL      | 939.00       | PV     |          |
| Pipe: 10 |       |       |      |       |       |                            |               |              |        |          |
| UG3      |       | -34.0 | 0.0  | 61.8  | 0.0   | -20.0 0.2                  | 6.160 PL 140  | 15.00 TG     | PF PE  | 0.0 0.0  |
| SOURCE   |       | -34.0 | SRCE | 61.8  | (N/A) |                            | 0.000 TL      | 59.00        | PV     |          |

DATE: 9/26/2025 FILES\BUILDING A\AUX CLCS\A - (1) 20X20 RES49 16.7PSI.SDF  
 JOB TITLE: A- (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 0.008 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 31.56 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  
 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  
 2.003 9.00 10.00 2.00 1.00 1.00 2.00 7.00

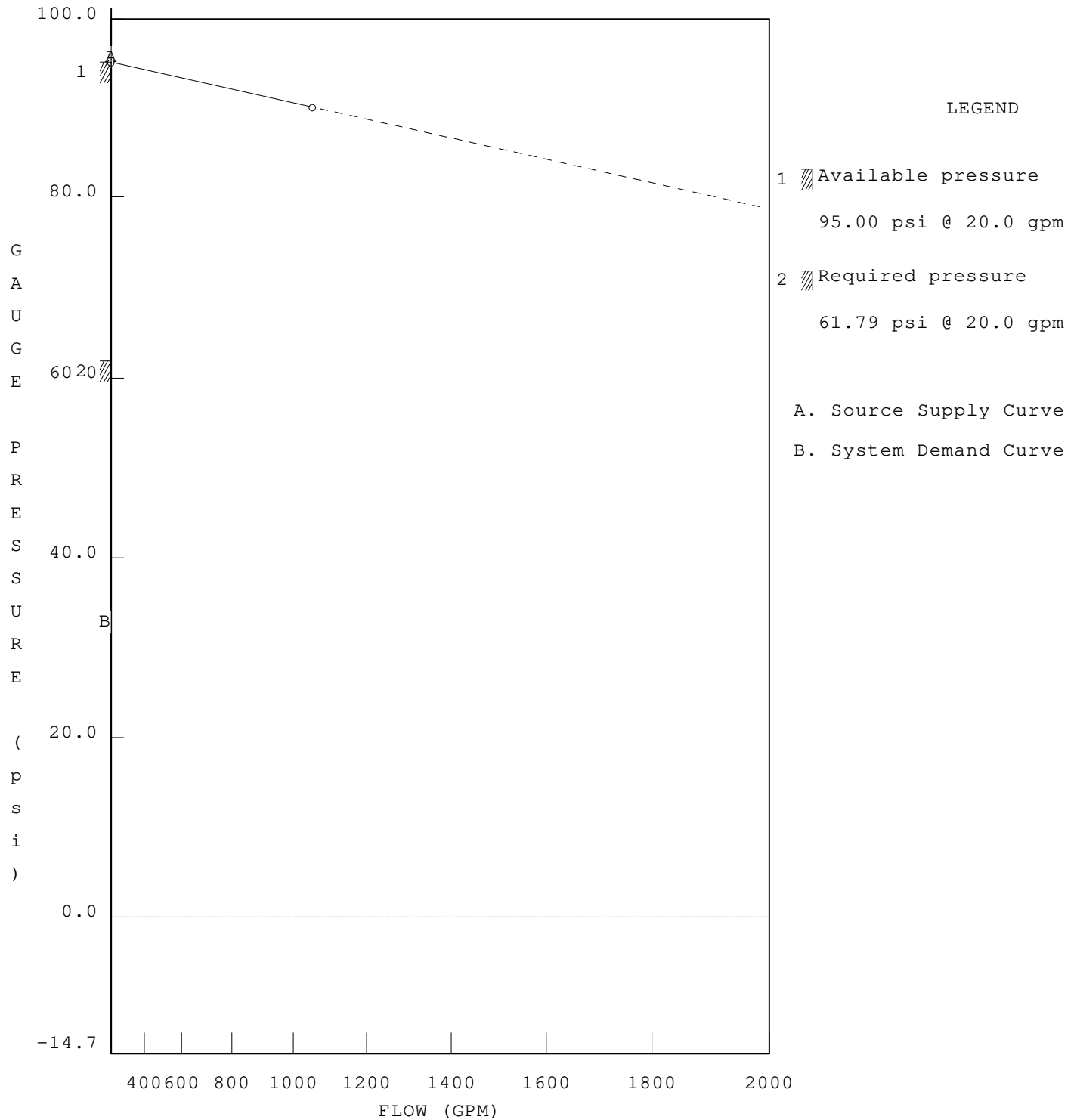
PAGE: Y MATERIAL: SCH7 HWC: 120  
 Diameter Equivalent Fitting Lengths in Feet  
 (in) E T F C B G A D X  
 Ell Tee 45 ChkVlv BfyVlv GatVlv AlmChk DPVlv fleX  
 2.185 4.60 15.20 2.40 14.40 6.20 1.00 12.40 12.40 0.00

DATE: 9/26/2025 FILES\BUILDING A\AUX CLCS\A - (1) 20X20 RES49 16.7PSI.SDF

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

WATER SUPPLY ANALYSIS

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



DATE: 9/26/2025 FILES\BUILDING A\AUX CLCS\A - (1) 20X20 RES49 16.7PSI.SDF

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

WATER SUPPLY CURVE

