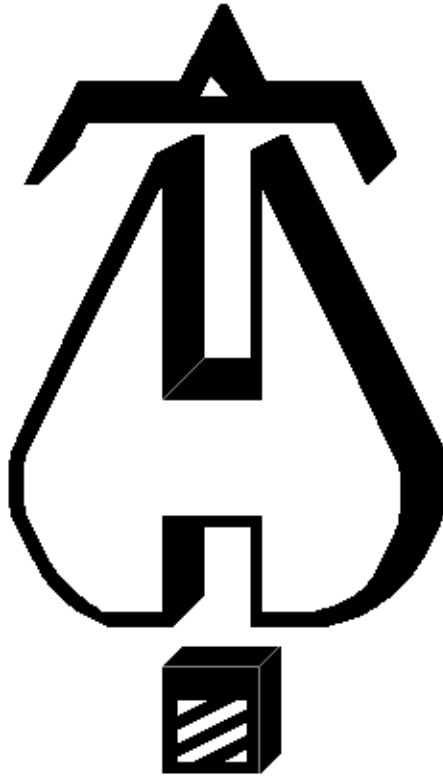




Hydraulic calculations using HydraCALC

Concentric Fire Protection LLC  
13900 Albrook Dr.  
Denver, CO 80239  
(720) 309-5694

Job Name : Tarczali Residence  
Drawing : 820 S. Saint Vrain Ave., Estes Park, CO  
Location : Primary Bedroom  
Remote Area : Calc #1  
Contract :  
Data File : Tarczali Residence Calc 1.WXF

HYDRAULIC DESIGN INFORMATION SHEET

Name - Tarczali Residence Date - 05-03-2024  
Location - Primary Bedroom  
Building - 820 S. Saint Vrain Ave., Estes Park, CO System No. - Calc #1  
Contractor - Concentric Fire Protection Contract No. -  
Calculated By - Integrity Fire Protection Design Drawing No. - FP-1  
Construction: (X) Combustible ( ) Non-Combustible Ceiling Height 9'-0"  
OCCUPANCY - 13D Residential

S Type of Calculation: ( ) NFPA 13 Residential ( ) NFPA 13R (X) NFPA 13D  
Y Number of Sprinklers Flowing: (X) 1 ( ) 2 ( ) 4 ( )  
S ( ) Other  
T ( ) Specific Ruling Made by Date  
E  
M Listed Flow at Start Point - 20.0 Gpm System Type  
Listed Pres. at Start Point - 16.7 Psi (X) Wet ( ) Dry  
D MAXIMUM LISTED SPACING 20' x 20' ( ) Deluge ( ) PreAction  
E Domestic Flow Added - -0- Gpm Sprinkler or Nozzle  
S Additional Flow Added - -0- Gpm Make Viking Model VK494  
I Elevation at Highest Outlet - 10.0 Feet Size 1/2" K-Factor 4.9  
G Note: Temperature Rating 155°  
N

Calculation Gpm Required 20.024 Psi Required 39.058 At TEST  
Summary C-Factor Used: Overhead 150 Underground 150

W Water Flow Test: Pump Data: Tank or Reservoir:  
A Date of Test - Rated Cap. Cap.  
T Time of Test - @ Psi Elev.  
E Static (Psi) - 134.1 Elev.  
R Residual (Psi) - 131.1 Other Well  
Flow (Gpm) - 755 Proof Flow Gpm  
S Elevation - 2  
P Location: 820 S. Saint Vrain Ave.,  
P Estes Park, Colorado 80517  
L Source of Information: Concentric Fire & Estes Park Water  
Y

# Water Supply Curve C

Concentric Fire Protection LLC  
Tarczali Residence

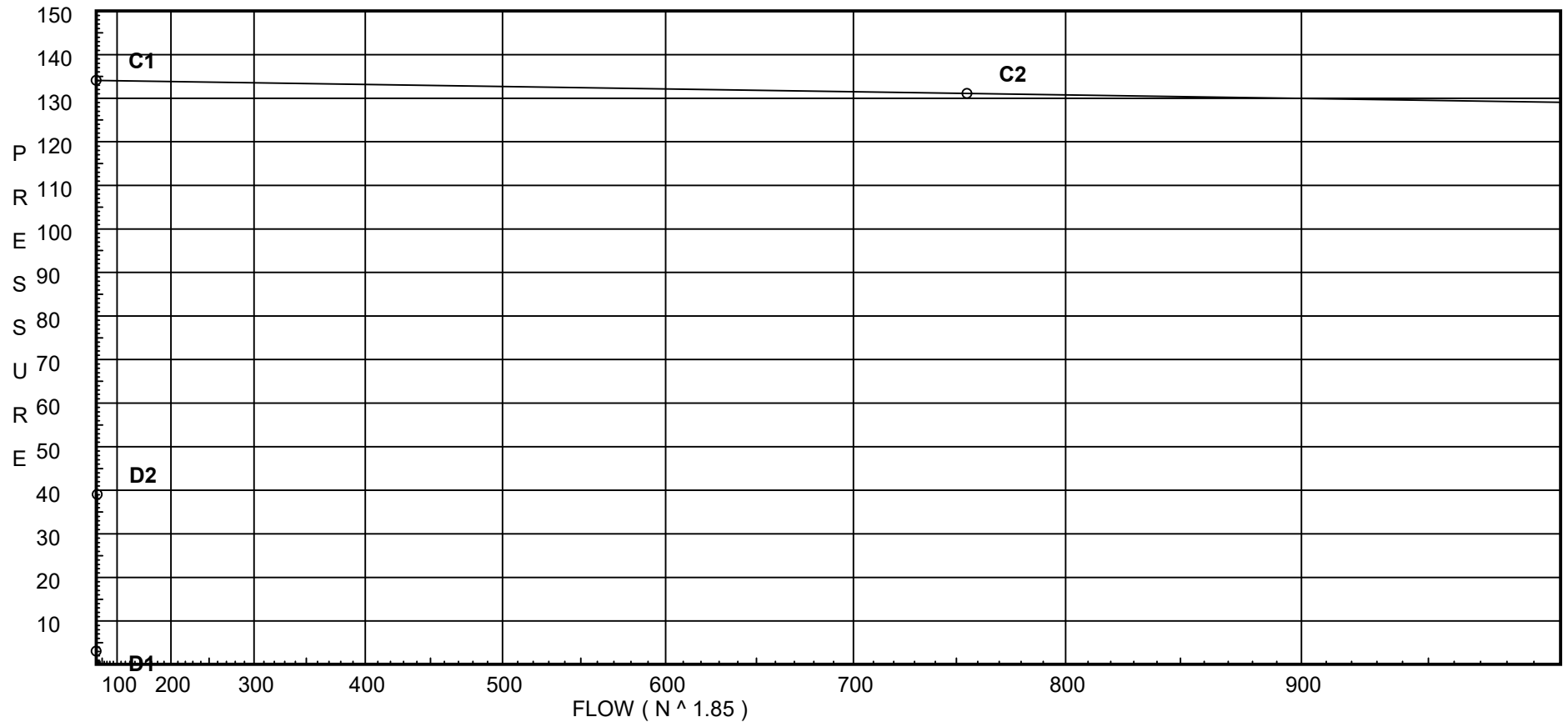
Page 2  
Date 05-03-2024

## City Water Supply:

C1 - Static Pressure : 134.1  
C2 - Residual Pressure: 131.1  
C2 - Residual Flow : 755

## Demand:

D1 - Elevation : 3.032  
D2 - System Flow : 20.024  
D2 - System Pressure : 39.058  
Hose ( Demand ) :  
D3 - System Demand : 20.024  
Safety Margin : 95.038



Fittings Used Summary

Concentric Fire Protection LLC  
Tarczali Residence

| Fitting Legend |                            |                                              |   |   |    |     |     |    |     |    |      |    |    |    |    |    |    |    |    |    |    |
|----------------|----------------------------|----------------------------------------------|---|---|----|-----|-----|----|-----|----|------|----|----|----|----|----|----|----|----|----|----|
| Abbrev.        | Name                       | ½                                            | ¾ | 1 | 1¼ | 1½  | 2   | 2½ | 3   | 3½ | 4    | 5  | 6  | 8  | 10 | 12 | 14 | 16 | 18 | 20 | 24 |
| Ce *           | Copper 90' Ell             | 1                                            | 1 | 2 | 2  | 2.5 | 3.5 | 4  | 5   | 6  | 7    | 9  | 10 | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| Ct *           | Copper Tee-Branch          | 1.5                                          | 2 | 2 | 3  | 3.5 | 5   | 6  | 7.5 | 9  | 10.5 | 13 | 15 | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| E              | NFPA 13 90' Standard Elbow | 1                                            | 2 | 2 | 3  | 4   | 5   | 6  | 7   | 8  | 10   | 12 | 14 | 18 | 22 | 27 | 35 | 40 | 45 | 50 | 61 |
| N *            | CPVC 90'Ell Harvel-Spears  |                                              | 7 | 7 | 8  | 9   | 11  | 12 | 13  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| O *            | CPVC Tee - Branch          | 3                                            | 3 | 5 | 6  | 8   | 10  | 12 | 15  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| Zag            | Ames 4000B                 | Fitting generates a Fixed Loss Based on Flow |   |   |    |     |     |    |     |    |      |    |    |    |    |    |    |    |    |    |    |

Units Summary

|                |                        |
|----------------|------------------------|
| Diameter Units | Inches                 |
| Length Units   | Feet                   |
| Flow Units     | US Gallons per Minute  |
| Pressure Units | Pounds per Square Inch |

Note: Fitting Legend provides equivalent pipe lengths for fittings types of various diameters. Equivalent lengths shown are standard for actual diameters of Sched 40 pipe and CFactors of 120 except as noted with \*. The fittings marked with a \* show equivalent lengths values supplied by manufacturers based on specific pipe diameters and CFactors and they require no adjustment. All values for fittings not marked with a \* will be adjusted in the calculation for CFactors of other than 120 and diameters other than Sched 40 per NFPA.

## Pressure / Flow Summary - STANDARD

Concentric Fire Protection LLC  
Tarczali Residence

Page 4  
Date 05-03-2024

| Node No. | Elevation | K-Fact | Pt Actual | Pn | Flow Actual | Density | Area | Press Req. |
|----------|-----------|--------|-----------|----|-------------|---------|------|------------|
| S1       | 9.0       | 4.9    | 16.7      | na | 20.02       | 0.05    | 400  | 16.7       |
| 102      | 10.0      |        | 18.94     | na |             |         |      |            |
| TOR      | 10.0      |        | 20.82     | na |             |         |      |            |
| BOR      | 1.0       |        | 36.38     | na |             |         |      |            |
| TEST     | 2.0       |        | 39.06     | na |             |         |      |            |

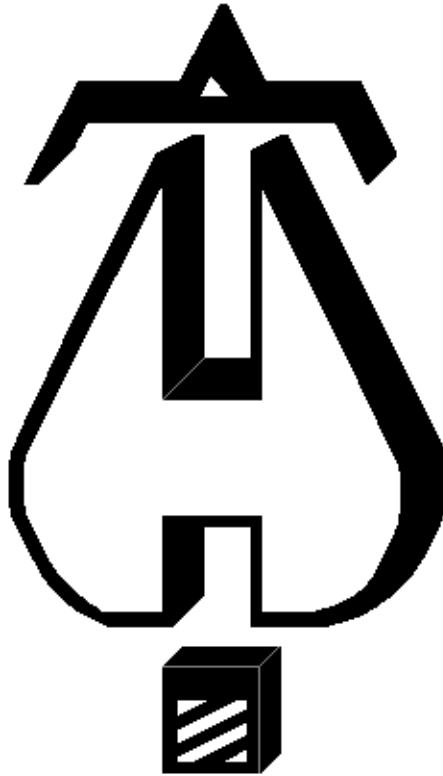
The maximum velocity is 6.97 and it occurs in the pipe between nodes TOR and BOR

# Final Calculations : Hazen-Williams

Concentric Fire Protection LLC  
Tarczali Residence

Page 5  
Date 05-03-2024

| Node1<br>to<br>Node2 | Elev1<br>Elev2 | K<br>Fact | Qa<br>Qt | Nom<br>Act | Fitting<br>or<br>Eqiv | Len                 | Pipe<br>Ftngs<br>Total      | CFact<br>Pf/Ft | Pt<br>Pe<br>Pf            | *****               | Notes | ***** |
|----------------------|----------------|-----------|----------|------------|-----------------------|---------------------|-----------------------------|----------------|---------------------------|---------------------|-------|-------|
| *PRIMARY BEDROOM     |                |           |          |            |                       |                     |                             |                |                           |                     |       |       |
| S1<br>to<br>102      | 9<br>10        | 4.90      | 20.02    | 1          | N<br>2O               | 7.0<br>10.0         | 22.210<br>17.000            | 150            | 16.700<br>-0.433          |                     |       |       |
| 102<br>to<br>TOR     | 10<br>10       |           | 20.02    | 1.101      |                       | 0.0                 | 39.210                      | 0.0682         | 2.674                     | Vel =               | 6.75  |       |
| 102<br>to<br>TOR     | 10<br>10       |           | 0.0      | 1          | 2N                    | 14.0<br>0.0         | 13.540<br>14.000            | 150            | 18.941<br>0.0             |                     |       |       |
|                      |                |           | 20.02    | 1.101      |                       | 0.0                 | 27.540                      | 0.0682         | 1.878                     | Vel =               | 6.75  |       |
|                      |                |           | 0.0      |            |                       |                     |                             |                |                           |                     |       |       |
| TOR                  |                |           | 20.02    |            |                       |                     |                             |                | 20.819                    | K Factor =          | 4.39  |       |
| *FIRE RISER          |                |           |          |            |                       |                     |                             |                |                           |                     |       |       |
| TOR<br>to<br>BOR     | 10<br>1        |           | 20.02    | 1          | Zag<br>E<br>Ct        | 0.0<br>2.336<br>2.0 | 10.540<br>4.336<br>14.876   | 120            | 20.819<br>13.898<br>1.661 | * * Fixed Loss = 10 |       |       |
| BOR<br>to<br>TEST    | 1<br>2         |           | 20.02    | 1.083      |                       |                     |                             | 0.1117         |                           | Vel =               | 6.97  |       |
| BOR<br>to<br>TEST    | 1<br>2         |           | 0.0      | 1.5        | 2Ce<br>Ct             | 5.0<br>3.5<br>0.0   | 185.000<br>8.500<br>193.500 | 150            | 36.378<br>-0.433<br>3.113 |                     |       |       |
|                      |                |           | 20.02    | 1.481      |                       |                     |                             | 0.0161         |                           | Vel =               | 3.73  |       |
|                      |                |           | 0.0      |            |                       |                     |                             |                |                           |                     |       |       |
| TEST                 |                |           | 20.02    |            |                       |                     |                             |                | 39.058                    | K Factor =          | 3.20  |       |



Hydraulic calculations using HydraCALC

Concentric Fire Protection LLC  
13900 Albrook Dr.  
Denver, CO 80239  
(720) 309-5694

Job Name : Tarczali Residence  
Drawing : 820 S. Saint Vrain Ave., Estes Park, CO  
Location : Living Bedroom  
Remote Area : Calc #2  
Contract :  
Data File : Tarczali Residence Calc 2.WXF

HYDRAULIC DESIGN INFORMATION SHEET

Name - Tarczali Residence Date - 05-03-2024  
Location - Living Bedroom  
Building - 820 S. Saint Vrain Ave., Estes Park, CO System No. - Calc #2  
Contractor - Concentric Fire Protection Contract No. -  
Calculated By - Integrity Fire Protection Design Drawing No. - FP-1  
Construction: (X) Combustible ( ) Non-Combustible Ceiling Height 9'-0"  
OCCUPANCY - 13D Residential

S Type of Calculation: ( ) NFPA 13 Residential ( ) NFPA 13R (X) NFPA 13D  
Y Number of Sprinklers Flowing: ( ) 1 (X) 2 ( ) 4 ( )  
S ( ) Other  
T ( ) Specific Ruling Made by Date  
E  
M Listed Flow at Start Point - 17.0 Gpm System Type  
Listed Pres. at Start Point - 12.0 Psi (X) Wet ( ) Dry  
D MAXIMUM LISTED SPACING 18' x 18' ( ) Deluge ( ) PreAction  
E Domestic Flow Added - -0- Gpm Sprinkler or Nozzle  
S Additional Flow Added - -0- Gpm Make Viking Model VK494  
I Elevation at Highest Outlet - 10.0 Feet Size 1/2" K-Factor 4.9  
G Note: Temperature Rating 155°  
N

Calculation Gpm Required 34.707 Psi Required 51.396 At TEST  
Summary C-Factor Used: Overhead 150 Underground 150

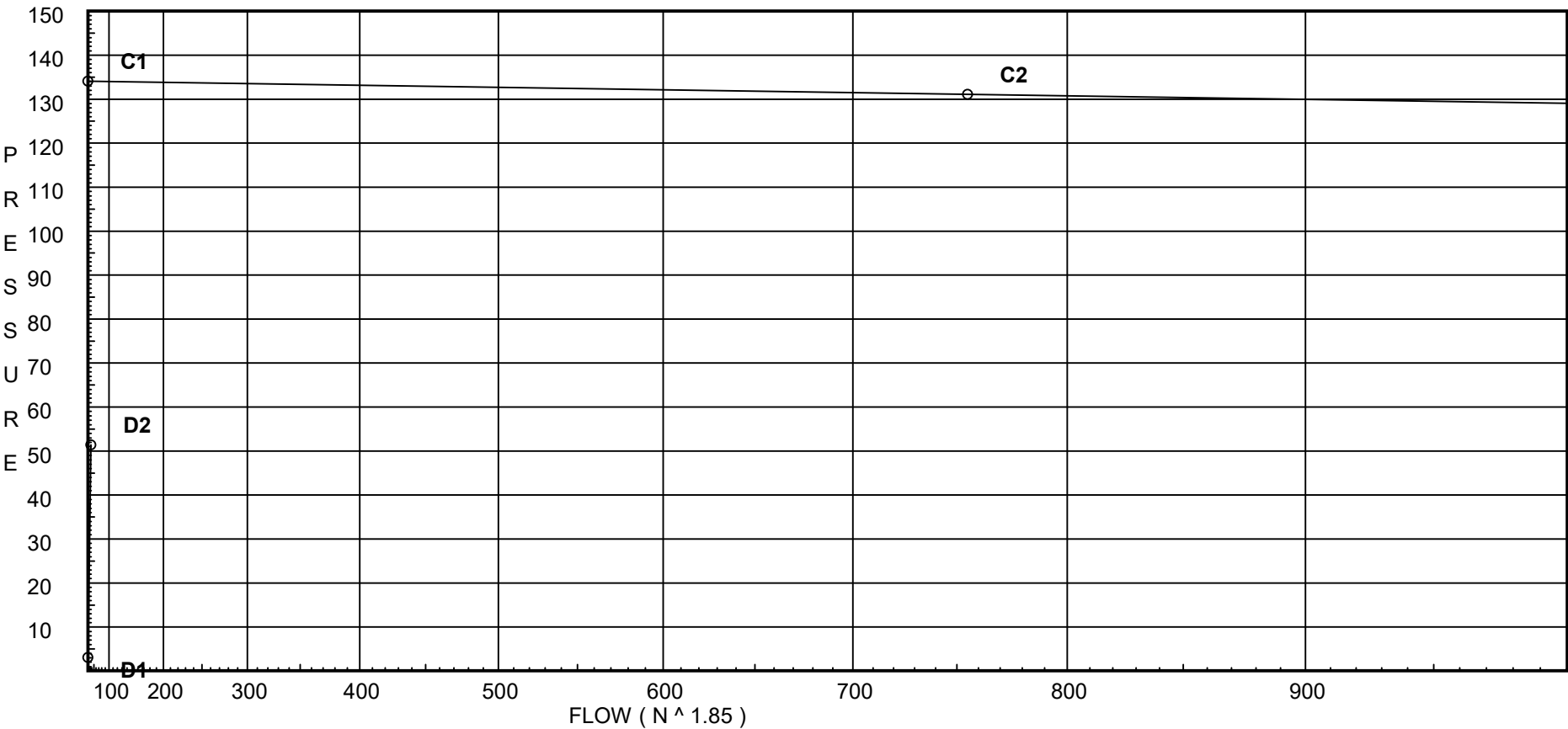
W Water Flow Test: Pump Data: Tank or Reservoir:  
A Date of Test - Rated Cap. Cap.  
T Time of Test - @ Psi Elev.  
E Static (Psi) - 134.1 Elev.  
R Residual (Psi) - 131.1 Other Well  
Flow (Gpm) - 755 Proof Flow Gpm  
S Elevation - 2  
P Location: 820 S. Saint Vrain Ave.,  
P Estes Park, Colorado 80517  
L Source of Information: Concentric Fire & Estes Park Water  
Y

Water Supply Curve C

Concentric Fire Protection LLC  
Tarczali Residence

City Water Supply:  
C1 - Static Pressure : 134.1  
C2 - Residual Pressure: 131.1  
C2 - Residual Flow : 755

Demand:  
D1 - Elevation : 3.032  
D2 - System Flow : 34.707  
D2 - System Pressure : 51.396  
Hose ( Demand ) :  
D3 - System Demand : 34.707  
Safety Margin : 82.694



Fittings Used Summary

Concentric Fire Protection LLC  
Tarczali Residence

| Fitting Legend |                            |                                              |   |   |    |     |     |    |     |    |      |    |    |    |    |    |    |    |    |    |    |
|----------------|----------------------------|----------------------------------------------|---|---|----|-----|-----|----|-----|----|------|----|----|----|----|----|----|----|----|----|----|
| Abbrev.        | Name                       | ½                                            | ¾ | 1 | 1¼ | 1½  | 2   | 2½ | 3   | 3½ | 4    | 5  | 6  | 8  | 10 | 12 | 14 | 16 | 18 | 20 | 24 |
| Ce *           | Copper 90' Ell             | 1                                            | 1 | 2 | 2  | 2.5 | 3.5 | 4  | 5   | 6  | 7    | 9  | 10 | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| Ct *           | Copper Tee-Branch          | 1.5                                          | 2 | 2 | 3  | 3.5 | 5   | 6  | 7.5 | 9  | 10.5 | 13 | 15 | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| E              | NFPA 13 90' Standard Elbow | 1                                            | 2 | 2 | 3  | 4   | 5   | 6  | 7   | 8  | 10   | 12 | 14 | 18 | 22 | 27 | 35 | 40 | 45 | 50 | 61 |
| N *            | CPVC 90'Ell Harvel-Spears  |                                              | 7 | 7 | 8  | 9   | 11  | 12 | 13  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| O *            | CPVC Tee - Branch          | 3                                            | 3 | 5 | 6  | 8   | 10  | 12 | 15  | 0  | 0    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| Zag            | Ames 4000B                 | Fitting generates a Fixed Loss Based on Flow |   |   |    |     |     |    |     |    |      |    |    |    |    |    |    |    |    |    |    |

Units Summary

|                |                        |
|----------------|------------------------|
| Diameter Units | Inches                 |
| Length Units   | Feet                   |
| Flow Units     | US Gallons per Minute  |
| Pressure Units | Pounds per Square Inch |

Note: Fitting Legend provides equivalent pipe lengths for fittings types of various diameters. Equivalent lengths shown are standard for actual diameters of Sched 40 pipe and CFactors of 120 except as noted with \*. The fittings marked with a \* show equivalent lengths values supplied by manufacturers based on specific pipe diameters and CFactors and they require no adjustment. All values for fittings not marked with a \* will be adjusted in the calculation for CFactors of other than 120 and diameters other than Sched 40 per NFPA.

## Pressure / Flow Summary - STANDARD

Concentric Fire Protection LLC  
Tarczali Residence

Page 4  
Date 05-03-2024

| Node No. | Elevation | K-Fact | Pt Actual | Pn | Flow Actual | Density | Area | Press Req. |
|----------|-----------|--------|-----------|----|-------------|---------|------|------------|
| S2       | 9.0       | 4.9    | 12.28     | na | 17.17       | 0.053   | 324  | 12.0       |
| S3       | 9.0       | 4.9    | 12.81     | na | 17.54       | 0.053   | 324  | 12.0       |
| 101      | 10.0      |        | 13.63     | na |             |         |      |            |
| 102      | 10.0      |        | 17.86     | na |             |         |      |            |
| TOR      | 10.0      |        | 23.06     | na |             |         |      |            |
| BOR      | 1.0       |        | 43.22     | na |             |         |      |            |
| TEST     | 2.0       |        | 51.4      | na |             |         |      |            |

The maximum velocity is 12.09 and it occurs in the pipe between nodes TOR and BOR

# Final Calculations : Hazen-Williams

Concentric Fire Protection LLC  
Tarczali Residence

Page 5  
Date 05-03-2024

| Node1<br>to<br>Node2 | Elev1<br>Elev2 | K<br>Fact | Qa<br>Qt       | Nom<br>Act   | Fitting<br>or<br>Equiv<br>Len  | Pipe<br>Ftngs<br>Total      | CFact<br>Pf/Ft | Pt<br>Pe<br>Pf            | ***** | Notes                                  | ***** |
|----------------------|----------------|-----------|----------------|--------------|--------------------------------|-----------------------------|----------------|---------------------------|-------|----------------------------------------|-------|
| *LIVING ROOM         |                |           |                |              |                                |                             |                |                           |       |                                        |       |
| S2<br>to<br>101      | 9<br>10        | 4.90      | 17.17<br>17.17 | 1<br>1.101   | N<br>O<br>7.0<br>5.0<br>0.0    | 22.750<br>12.000<br>34.750  | 150            | 12.281<br>-0.433<br>1.784 |       | Vel = 5.79                             |       |
| 101                  |                |           | 0.0<br>17.17   |              |                                |                             |                | 13.632                    |       | K Factor = 4.65                        |       |
| S3<br>to<br>101      | 9<br>10        | 4.90      | 17.53<br>17.53 | 1<br>1.101   | N<br>O<br>7.0<br>5.0<br>0.0    | 11.580<br>12.000<br>23.580  | 150            | 12.807<br>-0.433<br>1.258 |       | Vel = 5.91                             |       |
| 101<br>to<br>102     | 10<br>10       |           | 17.18<br>34.71 | 1<br>1.101   | O<br>5.0<br>0.0                | 17.420<br>5.000<br>22.420   | 150            | 13.632<br>0.0<br>4.229    |       | Vel = 11.70                            |       |
| 102<br>to<br>TOR     | 10<br>10       |           | 0.0<br>34.71   | 1<br>1.101   | 2N<br>14.0<br>0.0<br>0.0       | 13.540<br>14.000<br>27.540  | 150            | 17.861<br>0.0<br>5.195    |       | Vel = 11.70                            |       |
| TOR                  |                |           | 0.0<br>34.71   |              |                                |                             |                | 23.056                    |       | K Factor = 7.23                        |       |
| *FIRE RISER          |                |           |                |              |                                |                             |                |                           |       |                                        |       |
| TOR<br>to<br>BOR     | 10<br>1        |           | 34.71<br>34.71 | 1<br>1.083   | Zag<br>E<br>2.336<br>2.0       | 10.540<br>4.336<br>14.876   | 120            | 23.056<br>15.565<br>4.594 |       | * * Fixed Loss = 11.667<br>Vel = 12.09 |       |
| BOR<br>to<br>TEST    | 1<br>2         |           | 0.0<br>34.71   | 1.5<br>1.481 | 2Ce<br>Ct<br>5.0<br>3.5<br>0.0 | 185.000<br>8.500<br>193.500 | 150            | 43.215<br>-0.433<br>8.614 |       | Vel = 6.46                             |       |
| TEST                 |                |           | 0.0<br>34.71   |              |                                |                             |                | 51.396                    |       | K Factor = 4.84                        |       |



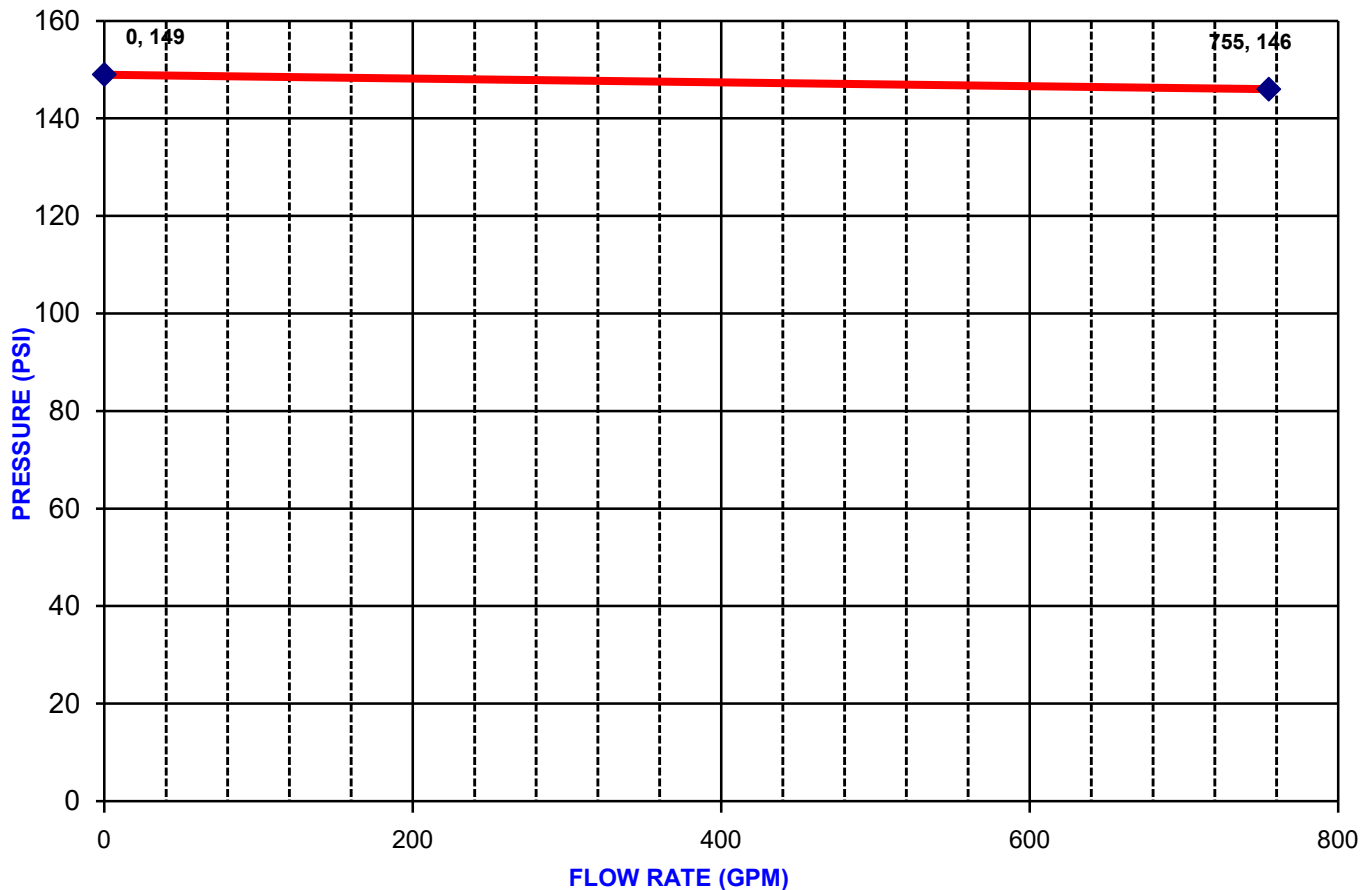
13900 Albrook Dr., Denver, CO 80239

## HYDRANT FLOW TEST REPORT

Site Name: Tarczali Residence  
Site Address: 820 S. Saint Vrain Ave., Estes Park, CO 80517  
Purpose of Test: Hydraulic Calculations for New Fire Sprinkler System  
Test Date 4/26/2024 Test Time 10:49 AM Approximate Temp 49°  
Test Conducted By Jose Jose - Concentric Fire Protection Contact 720-435-0352  
Test Witnessed By Jesse Shull - Estes Park Water Department Contact 970-577-3619

| HYDRANT DATA                                                 |       |     | PRESSURE DATA                                               |     |     |
|--------------------------------------------------------------|-------|-----|-------------------------------------------------------------|-----|-----|
| Size of Flowing Outlet                                       | 2.5   | in. | Static Pressure                                             | 149 | psi |
| Coefficient of Flowing Outlet                                | 0.9   |     | Residual Pressure                                           | 146 | psi |
| Elevation Difference Between Gauge Hydrant and Base of Riser | 2'-0" |     | Pitot Pressure                                              | 52  | psi |
| Looped or Dead End Main (L/D)                                | L     |     | Flow Rate                                                   | 755 | gpm |
|                                                              |       |     | (Based on 1¾" Pitotless Nozzle Hose Monster Chart attached) |     |     |

### PLOTTED FLOW GRAPH





# 1 3/4" PITOTLESS NOZZLE®

## PN1.75GRV - GPM FLOW CHART

FC-PN175GRV.2023.04.30.MA



### THIS DEVICE IS FM APPROVED

The pressure vs. flow rate data developed within this flow chart is based on the average K-factor measured during laboratory testing. This data has been determined to be within the acceptable limitations for accuracy. It is the user's responsibility to verify that the correct chart and column is being used.

**HML | Little Hose Monster™** - Use this column when the Pitotless Nozzle® is connected to a Little Hose Monster™.

**OA | Open Atmosphere** - Use this column when the Pitotless Nozzle® is connected directly to a test header or hydrant flowing openly to atmosphere.

### GET THE MOST OUT OF YOUR HOSE MONSTER® HARDWARE

### FIRE PUMP TESTING SOFTWARE

Professional-grade software that helps you work better! Keep your reports clean, your results accurate, and your process streamlined with Hose Monster's FPT Software.

LEARN MORE AT [HOSEMONSTER.COM/RESOURCES](https://www.hosemonster.com/resources)

|      | HML | OA  |     | HML | OA  |     | HML | OA  |
|------|-----|-----|-----|-----|-----|-----|-----|-----|
| PSI  | GPM | GPM | PSI | GPM | GPM | PSI | GPM | GPM |
| 5.2* |     | 250 | 36  | 628 | 658 | 64  | 838 | 878 |
| 5.7* | 250 |     | 37  | 637 | 667 | 65  | 844 | 884 |
| 10   | 331 | 347 | 38  | 645 | 676 | 66  | 851 | 891 |
| 11   | 347 | 364 | 39  | 654 | 685 | 67  | 857 | 898 |
| 12   | 363 | 380 | 40  | 662 | 694 | 68  | 863 | 905 |
| 13   | 378 | 396 | 41  | 670 | 702 | 69  | 870 | 911 |
| 14   | 392 | 410 | 42  | 679 | 711 | 70  | 876 | 918 |
| 15   | 406 | 425 | 43  | 687 | 719 | 71  | 882 | 924 |
| 16   | 419 | 439 | 44  | 695 | 728 | 72  | 888 | 931 |
| 17   | 432 | 452 | 45  | 702 | 736 | 73  | 895 | 937 |
| 18   | 444 | 465 | 46  | 710 | 744 | 74  | 901 | 944 |
| 19   | 456 | 478 | 47  | 718 | 752 | 75  | 907 | 950 |
| 20   | 468 | 491 | 48  | 725 | 760 | 76  | 913 | 956 |
| 21   | 480 | 503 | 49  | 733 | 768 | 77  | 919 | 963 |
| 22   | 491 | 515 | 50  | 740 | 776 | 78  | 925 | 969 |
| 23   | 502 | 526 | 51  | 748 | 783 | 79  | 931 | 975 |
| 24   | 513 | 537 | 52  | 755 | 791 | 80  | 936 | 981 |
| 25   | 524 | 549 | 53  | 762 | 799 |     |     |     |
| 26   | 534 | 559 | 54  | 769 | 806 |     |     |     |
| 27   | 544 | 570 | 55  | 776 | 814 |     |     |     |
| 28   | 554 | 580 | 56  | 784 | 821 |     |     |     |
| 29   | 564 | 591 | 57  | 790 | 828 |     |     |     |
| 30   | 573 | 601 | 58  | 797 | 835 |     |     |     |
| 31   | 583 | 611 | 59  | 804 | 843 |     |     |     |
| 32   | 592 | 621 | 60  | 811 | 850 |     |     |     |
| 33   | 601 | 630 | 61  | 818 | 857 |     |     |     |
| 34   | 611 | 640 | 62  | 824 | 864 |     |     |     |
| 35   | 619 | 649 | 63  | 831 | 871 |     |     |     |

\* Special flow rate point determined to be within the acceptable limitations of accuracy.

# PITOTLESS NOZZLE®

## GROOVED INSTRUCTIONS

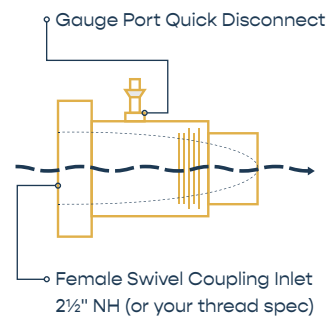
The Pitotless Nozzle® Grooved (PN#GRV) must be used in conjunction with the Little Hose Monster™ (HML) or attached directly to a hydrant or test header valve, discharging into open atmosphere.

The flow chart has two columns entitled Little Hose Monster™ and Open Atmosphere. Be sure to use the appropriate column to determine flow rates. Contact Hose Monster® if you are considering a configuration not listed here.

## PITOTLESS NOZZLE® SETUP

The gauge connection on the Pitotless Nozzle® is a factory-installed male end of a quick disconnect coupling. One female counterpart is included and additional ones can be purchased separately. Attach the female end of the quick-disconnect coupling directly to the gauge or remote reader adapter and use the quick-disconnect feature to attach and remove. Do not remove the male quick disconnect from the Pitotless Nozzle® as it will damage the threads on the Pitotless Nozzle®.

We recommend a gauge with an accuracy rating of ½% or better and of a suitable range.



## PITOTLESS NOZZLE® USE

### WITH LITTLE HOSE MONSTER™

Line up the Pitotless Nozzle® outlet at the inlet of the Little Hose Monster™ with the gauge port rotated to 45° off either side of vertical. Push the Nozzle all the way in until the latch lever arms hook into the groove. Rotate the Nozzle right or left until the latch levers snap parallel to the body and the gauge port is in the desired position. The gauge port can be positioned so that a gauge can be viewed in a vertical position, or horizontal to the left or right side of the Little Hose Monster™. Insert the locking pins all the way through the pinhole and latch-lever arm. When the Pitotless Nozzle® is installed, securely attach a hose using a spanner wrench. Make sure the hose lays flat and is not twisted.

### ON A HYDRANT OR TEST HEADER VALVE

The Pitotless Nozzle® must be attached securely to a pump test header valve or hydrant. Secure the female swivel coupling of the Pitotless Nozzle® directly to a hydrant nozzle or test header valve. The Pitotless Nozzle® points in the direction the water will flow. Clear water discharge path.

## WARNING

- **Do not** attach the Pitotless Nozzle® to the end of a hose unless the Hose Monster® is attached or it is **permanently** secured.
- **Do not** attach a hose to the male outlet end of the Pitotless Nozzle® **under any circumstance**. The backpressure will distort flow rate reading.
- **Do not** remove the gauge port quick disconnect fitting. The aluminum threads **will be damaged**. Contact Hose Monster® for any repairs.

| LHM |     |     | OA  |      |     |
|-----|-----|-----|-----|------|-----|
| PSI | GPM | GPM | PSI | GPM  | GPM |
| 10  | 533 | 282 | 41  | 1080 | 570 |
| 11  | 559 | 295 | 42  | 1093 | 577 |
| 12  | 584 | 308 | 43  | 1106 | 584 |
| 13  | 608 | 321 | 44  | 1119 | 591 |
| 14  | 631 | 333 | 45  | 1131 | 597 |
| 15  | 653 | 345 | 46  | 1144 | 604 |
| 16  | 675 | 356 | 47  | 1156 | 610 |
| 17  | 695 | 367 | 48  | 1169 | 617 |
| 18  | 716 | 378 | 49  | 1181 | 623 |
| 19  | 735 | 388 | 50  | 1193 | 630 |
| 20  | 754 | 398 | 51  | 1205 | 636 |
| 21  | 773 | 408 | 52  | 1216 | 642 |
| 22  | 791 | 418 | 53  | 1228 | 648 |
| 23  | 809 | 427 | 54  | 1239 | 654 |
| 24  | 826 | 436 | 55  | 1251 | 660 |
| 25  | 843 | 445 | 56  | 1262 | 666 |

## FLOW CHARTS

Pitotless Nozzle® flow charts must be used to determine discharge flow rate. The use of flow charts of a different device or size will result in incorrect readings. Within the flow chart is a column for “Little Hose Monster™” and for “Open Atmosphere”. Use the “Little Hose Monster™” flows if the Pitotless Nozzle® is attached to a Little Hose Monster™. Use the “Open Atmosphere” flows if the Pitotless Nozzle® is attached directly on a hydrant or test header valve discharging out into the open.

Flow charts are provided with the Pitotless Nozzle® and additional copies are available on our website at [www.hosemonster.com](http://www.hosemonster.com)



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