Reviewed for Code Compliance
Inspections Division
Approved with Conditions

Date: 11/19/15

. . . Fire Protection by Computer Design

SPRINKLER SYSTEMS INC.
4 AVON STREET
P O BOX 1285
LEWISTON, ME. 04243
207-782-0104

| | | |
|---|---|---|
| Job Name | : | 3 CANAL PLAZA MECH. ROOM AREA 1 |
| Building | : | EXISTING |
| Location | : | 3 CANAL PLAZA PORTLAND, MAINE |
| System | : | 1 WET |
| Contract | : | 15100 |
| Data File | : | 3 CANAL PLAZA MECH. ROOM AREA 1.WXF |

SPRINKLER SYSTEMS INC.
3 CANAL PLAZA MECH. ROOM AREA 1

Reviewed for Code Compliance
Inspections Division
Approved with Conditions
Date: 11/19/15

## Hydraulic Design Information Sheet

Name - 3 CANAL PLAZA PENTHOUSE MECH. ROOM
Date - 10-
Location - 3 CANAL PLAZA PORTLAND, MAINE
Building - EXISTING
System No. - 1 WET
Contractor - SPRINKLER SYSTEMS INC
Contract No. - 151
Calculated By - CDS
Drawing No. - 1-1
Construction: ( ) Combustible (X) Non-Combustible
Ceiling Height - VARIES
Occupancy - MECHANICAL PENTHOUSE

**SYSTEM**

(X) NFPA 13 ( ) Lt. Haz. Ord.Haz.Gp. (X) 1 ( ) 2 ( ) 3 ( ) Ex.Haz.
( ) NFPA 231 ( ) NFPA 231C ( ) Figure Curve
Other
Specific Ruling Made By Date

**DESIGN**

| | | |
|---|---|---|
| Area of Sprinkler Operation - 1125 | System Type | Sprinkler/Nozzle |
| Density - .15 | (X) Wet | Make RELIABLE |
| Area Per Sprinkler - 130 | ( ) Dry | Model F1FR56 |
| Elevation at Highest Outlet - 199.500 | ( ) Deluge | Size 1/2" X 1/2" |
| Hose Allowance - Inside - 0 | ( ) Preaction | K-Factor 5.6 |
| Rack Sprinkler Allowance - 0 | ( ) Other | Temp.Rat.200 DEG. |
| Hose Allowance - Outside - 250 | | |

Note

Calculation Summary: Flow Required - 252.30 Press Required - 86.815 AT PUMP
C-Factor Used: 120 Overhead 120 Underground

**WATER SUPPLY**

| Water Flow Test: | Pump Data: | Tank or Reservoir: |
|---|---|---|
| Date of Test - N/A | | Cap. - |
| Time of Test - N/A | Rated Cap.- 506 | Elev.- |
| Static Press - N/A | @ Press - 130 | |
| Residual Press - N/A | Elev. - 100 | Well |
| Flow - N/A | | Proof Flow |
| Elevation - N/A | | |

Location - PUMP FLOW TEST DATED 8/21/15

Source of Information - OWNER

**COMMODITY STORAGE**

Commodity Class Location
Storage Ht. Area Aisle W.
Storage Method: Solid Piled % Palletized % Rack

( ) Single Row ( ) Conven. Pallet ( ) Auto. Storage ( ) Encap.
( ) Double Row ( ) Slave Pallet ( ) Solid Shelf ( ) Non
( ) Mult. Row ( ) Open Shelf

Flue Spacing Clearance:Storage to Ceiling
Longitudinal Transverse

Horizontal Barriers Provided:

# Fittings Used Summary

SPRINKLER SYSTEMS INC.
3 CANAL PLAZA MECH. ROOM AREA 1

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Date: 11/19/15

Fitting Legend

| Abbrev. | Name | ½ | ¾ | 1 | 1¼ | 1½ | 2 | 2½ | 3 | 3½ | 4 | 5 | 6 | 8 | 10 | 1 | 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E | NFPA 13 90' Standard Elbow | 1 | 2 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 10 | 12 | 14 | 18 | 22 | 2 | 1 |
| G | NFPA 13 Gate Valve | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 2 | 2 | 3 | 4 | 5 | 6 | 3 |
| S | NFPA 13 Swing Check | 0 | 0 | 5 | 7 | 9 | 11 | 14 | 16 | 19 | 22 | 27 | 32 | 45 | 55 | 6 | |
| T | NFPA 13 90' Flow thru Tee | 3 | 4 | 5 | 6 | 8 | 10 | 12 | 15 | 17 | 20 | 25 | 30 | 35 | 50 | 6 | 21 |

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

SPRINKLER SYSTEMS INC.
3 CANAL PLAZA MECH. ROOM AREA 1

Reviewed for Code Compliance
Inspections Division
Approved with Conditions

Date: 11/19/15

| Node No. | Elevation | K-Fact | Pt Actual | Pn | Flow Actual | Density |
|---|---|---|---|---|---|---|
| TYP | 0.0 | 5.6 | 12.13 | na | 19.5 | 0.15 |
| 14 | 199.5 | 5.6 | 20.53 | na | 25.37 | 0.15 |
| 13 | 199.5 | K = K @ SPRG | 23.16 | na | 23.15 | |
| 15 | 199.5 | | 23.46 | na | | |
| 7 | 199.5 | K = K @ SPRG | 16.94 | na | 19.8 | |
| 8 | 199.5 | K = K @ SPRG | 17.07 | na | 19.88 | |
| 9 | 199.5 | K = K @ SPRG | 18.04 | na | 20.43 | |
| 10 | 199.5 | K = K @ SPRG | 18.94 | na | 20.94 | |
| 11 | 199.5 | K = K @ SPRG | 20.39 | na | 21.72 | |
| 1 | 199.5 | K = K @ SPRG | 16.43 | na | 19.5 | |
| 2 | 199.5 | K = K @ SPRG | 16.66 | na | 19.64 | |
| 3 | 199.5 | K = K @ SPRG | 17.16 | na | 19.93 | |
| 4 | 199.5 | K = K @ SPRG | 18.15 | na | 20.49 | |
| 5 | 199.5 | K = K @ SPRG | 19.87 | na | 21.44 | |
| 6 | 199.5 | | 22.98 | na | | |
| 12 | 199.5 | | 23.33 | na | | |
| 16 | 199.5 | | 24.03 | na | | |
| A | 199.5 | | 33.47 | na | | |
| TSP | 199.5 | | 38.13 | na | | |
| HOSE | 100.0 | | 86.81 | na | 250.0 | |
| PUMP | 100.0 | | 86.85 | na | | |

The maximum velocity is 14.84 and it occurs in the pipe between nodes 11 and 12

# Final Calculations - Hazen-Williams

SPRINKLER SYSTEMS INC.
3 CANAL PLAZA MECH. ROOM AREA 1

Reviewed for Code Compliance
Inspections Division
Approved with Conditions

Date: 11/19/15

| Hyd. Ref. Point | Qa / Qt | Dia. / "C" / Pf/Ft | Fitting or Eqv. | Ln. | Pipe / Ftng's / Total | Pt / Pe / Pf | Pt / Pv / Pn | ** |
|---|---|---|---|---|---|---|---|---|
| TYP | 19.50 | 1.049 | T | 5.0 | 5.500 | 12.125 | | K Factor = 5.60 |
| to | | 120.0 | | 0.0 | 5.000 | 6.000 | | * * Fixed Loss = 3 |
| SPRG | 19.5 | -0.1615 | | 0.0 | 10.500 | -1.696 | | Vel = 7.24 |
| | 0.0 | | | | | | | |
| | 19.50 | | | | | 16.429 | | K Factor = 4.81 |
| 14 | 25.37 | 1.049 | E | 2.0 | 7.500 | 20.527 | | K Factor = 5.60 |
| to | | 120.0 | T | 5.0 | 7.000 | 0.0 | | |
| 15 | 25.37 | 0.2021 | | 0.0 | 14.500 | 2.930 | | Vel = 9.42 |
| | 0.0 | | | | | | | |
| | 25.37 | | | | | 23.457 | | K Factor = 5.24 |
| 13 | 23.15 | 1.682 | T | 9.9 | 7.750 | 23.155 | | K Factor @ node SPRG |
| to | | 120.0 | | 0.0 | 9.900 | 0.0 | | |
| 15 | 23.15 | 0.0171 | | 0.0 | 17.650 | 0.302 | | Vel = 3.34 |
| 15 | 25.37 | 2.157 | E | 6.153 | 10.000 | 23.457 | | |
| to | | 120.0 | T | 12.307 | 18.460 | 0.0 | | |
| 16 | 48.52 | 0.0200 | | 0.0 | 28.460 | 0.570 | | Vel = 4.26 |
| | 0.0 | | | | | | | |
| | 48.52 | | | | | 24.027 | | K Factor = 9.90 |
| 7 | 19.80 | 1.682 | | 0.0 | 10.250 | 16.941 | | K Factor @ node SPRG |
| to | | 120.0 | | 0.0 | 0.0 | 0.0 | | |
| 8 | 19.8 | 0.0128 | | 0.0 | 10.250 | 0.131 | | Vel = 2.86 |
| 8 | 19.88 | 1.682 | 2E | 9.9 | 11.000 | 17.072 | | K Factor @ node SPRG |
| to | | 120.0 | | 0.0 | 9.900 | 0.0 | | |
| 9 | 39.68 | 0.0464 | | 0.0 | 20.900 | 0.969 | | Vel = 5.73 |
| 9 | 20.43 | 1.682 | | 0.0 | 9.000 | 18.041 | | K Factor @ node SPRG |
| to | | 120.0 | | 0.0 | 0.0 | 0.0 | | |
| 10 | 60.11 | 0.1000 | | 0.0 | 9.000 | 0.900 | | Vel = 8.68 |
| 10 | 20.94 | 1.682 | | 0.0 | 8.330 | 18.941 | | K Factor @ node SPRG |
| to | | 120.0 | | 0.0 | 0.0 | 0.0 | | |
| 11 | 81.05 | 0.1738 | | 0.0 | 8.330 | 1.448 | | Vel = 11.70 |
| 11 | 21.72 | 1.682 | T | 9.9 | 1.000 | 20.389 | | K Factor @ node SPRG |
| to | | 120.0 | | 0.0 | 9.900 | 0.0 | | |
| 12 | 102.77 | 0.2697 | | 0.0 | 10.900 | 2.940 | | Vel = 14.84 |
| | 0.0 | | | | | | | |
| | 102.77 | | | | | 23.329 | | K Factor = 21.28 |
| 1 | 19.50 | 1.682 | 2E | 9.9 | 8.500 | 16.429 | | K Factor @ node SPRG |
| to | | 120.0 | | 0.0 | 9.900 | 0.0 | | |
| 2 | 19.5 | 0.0124 | | 0.0 | 18.400 | 0.229 | | Vel = 2.82 |
| 2 | 19.64 | 1.682 | | 0.0 | 11.000 | 16.658 | | K Factor @ node SPRG |
| to | | 120.0 | | 0.0 | 0.0 | 0.0 | | |
| 3 | 39.14 | 0.0453 | | 0.0 | 11.000 | 0.498 | | Vel = 5.65 |
| 3 | 19.92 | 1.682 | | 0.0 | 10.250 | 17.156 | | K Factor @ node SPRG |
| to | | 120.0 | | 0.0 | 0.0 | 0.0 | | |
| 4 | 59.06 | 0.0968 | | 0.0 | 10.250 | 0.992 | | Vel = 8.53 |
| 4 | 20.50 | 1.682 | | 0.0 | 10.250 | 18.148 | | K Factor @ node SPRG |
| to | | 120.0 | | 0.0 | 0.0 | 0.0 | | |
| 5 | 79.56 | 0.1679 | | 0.0 | 10.250 | 1.721 | | Vel = 11.49 |

# Final Calculations - Hazen-Williams

SPRINKLER SYSTEMS INC.
3 CANAL PLAZA MECH. ROOM AREA 1

Reviewed for Code Compliance
Inspections Division
Approved with Conditions

Date: 11/19/15

| Hyd. Ref. Point | Qa Qt | Dia. "C" Pf/Ft | Fitting or Eqv. | Ln. | Pipe Ftng's Total | Pt Pe Pf | Pt Pv Pn | ** |
|---|---|---|---|---|---|---|---|---|
| 5 | 21.44 | 1.682 | T | 9.9 | 2.000 | 19.869 | | K Factor @ node SPRG |
| to | | 120.0 | | 0.0 | 9.900 | 0.0 | | |
| 6 | 101.0 | 0.2611 | | 0.0 | 11.900 | 3.107 | | Vel = 14.58 |
| 6 | 0.0 | 2.635 | | 0.0 | 12.000 | 22.976 | | |
| to | | 120.0 | | 0.0 | 0.0 | 0.0 | | |
| 12 | 101.0 | 0.0294 | | 0.0 | 12.000 | 0.353 | | Vel = 5.94 |
| 12 | 102.78 | 2.635 | | 0.0 | 6.500 | 23.329 | | |
| to | | 120.0 | | 0.0 | 0.0 | 0.0 | | |
| 16 | 203.78 | 0.1074 | | 0.0 | 6.500 | 0.698 | | Vel = 11.99 |
| 16 | 48.52 | 2.635 | 3E | 24.711 | 18.000 | 24.027 | | |
| to | | 120.0 | T | 16.474 | 41.185 | 0.0 | | |
| A | 252.3 | 0.1596 | | 0.0 | 59.185 | 9.445 | | Vel = 14.84 |
| A | 0.0 | 2.635 | E | 8.237 | 4.500 | 33.472 | | |
| to | | 120.0 | T | 16.474 | 24.711 | 0.0 | | |
| TSP | 252.3 | 0.1596 | | 0.0 | 29.211 | 4.662 | | Vel = 14.84 |
| TSP | 0.0 | 4.26 | 10E | 131.671 | 200.000 | 38.134 | | |
| to | | 120.0 | G | 2.633 | 163.272 | 43.093 | | |
| HOSE | 252.3 | 0.0154 | S | 28.968 | 363.272 | 5.588 | | Vel = 5.68 |
| HOSE | 250.00 | 4.026 | | 0.0 | 0.500 | 86.815 | | Qa = 250.0 |
| to | | 120.0 | | 0.0 | 0.0 | 0.0 | | |
| PUMP | 502.3 | 0.0720 | | 0.0 | 0.500 | 0.036 | | Vel = 12.66 |
| | 0.0 | | | | | | | |
| | 502.30 | | | | | 86.851 | | K Factor = 53.90 |

Water Supply Curve C

SPRINKLER SYSTEMS INC.
3 CANAL PLAZA MECH. ROOM AREA 1

Reviewed for Code Compliance
Inspections Division
Approved with Conditions

Date: 11/19/15

Pump Data:

| | | |
|---|---|---|
| P1 - Pump Churn Pressure | : | 141 |
| P2 - Pump Rated Pressure | : | 130 |
| P2 - Pump Rated Flow | : | 506 |
| P3 - Pump Pressure @ Max Flow | : | 119 |
| P3 - Pump Max Flow | : | 750 |

Demand:

D1 - Ele
D2 - Sy
D2 - Sy
Hose (
D3 - Sy
Safety Margin : 43.308

SPRINKLER SYSTEMS INC.
3 CANAL PLAZA MECH. ROOM AREA 2

Reviewed for Code Compliance
Inspections Division
Approved with Conditions
Date: 11/19/15

## Hydraulic Design Information Sheet

Name - 3 CANAL PLAZA PENTHOUSE MECH. ROOM AREA 2 Date - 10-
Location - 3 CANAL PLAZA PORTLAND, MAINE
Building - EXISTING System No. - 1 WET
Contractor - SPRINKLER SYSTEMS INC Contract No. - 151
Calculated By - CDS Drawing No. - 1-1
Construction: ( ) Combustible (X) Non-Combustible Ceiling Height - VARIES
Occupancy - MECHANICAL PENTHOUSE

**SYSTEM**

(X) NFPA 13 ( ) Lt. Haz. Ord.Haz.Gp. (X) 1 ( ) 2 ( ) 3 ( ) Ex.Haz.
( ) NFPA 231 ( ) NFPA 231C ( ) Figure Curve
Other
Specific Ruling Made By Date

**DESIGN**

| | | | |
|---|---|---|---|
| Area of Sprinkler Operation | - ENTIRE | System Type | Sprinkler/Nozzle |
| Density | - .15 | (X) Wet | Make RELIABLE |
| Area Per Sprinkler | - 130 | ( ) Dry | Model F1FR56 |
| Elevation at Highest Outlet | - 208.500 | ( ) Deluge | Size 1/2" X 1/2" |
| Hose Allowance - Inside | - 0 | ( ) Preaction | K-Factor 5.6 |
| Rack Sprinkler Allowance | - 0 | ( ) Other | Temp.Rat.200 DEG. |
| Hose Allowance - Outside | - 250 | | |

Note

Calculation Summary: Flow Required - 182.95 Press Required - 78.003 AT PUMP
C-Factor Used: 120 Overhead 120 Underground

**WATER SUPPLY**

| Water Flow Test: | | Pump Data: | | Tank or Reservoir: |
|---|---|---|---|---|
| Date of Test | - N/A | | | Cap. - |
| Time of Test | - N/A | Rated Cap. | - 506 | Elev.- |
| Static Press | - N/A | @ Press | - 130 | |
| Residual Press | - N/A | Elev. | - 100 | Well |
| Flow | - N/A | | | Proof Flow |
| Elevation | - N/A | | | |

Location - PUMP FLOW TEST DATED 8/21/15

Source of Information - OWNER

**COMMODITY STORAGE**

Commodity Class Location
Storage Ht. Area Aisle W.
Storage Method: Solid Piled % Palletized % Rack

( ) Single Row ( ) Conven. Pallet ( ) Auto. Storage ( ) Encap.
( ) Double Row ( ) Slave Pallet ( ) Solid Shelf ( ) Non
( ) Mult. Row ( ) Open Shelf

Flue Spacing Clearance:Storage to Ceiling
Longitudinal Transverse

Horizontal Barriers Provided:

# Pressure / Flow Summary - STANDARD

SPRINKLER SYSTEMS INC.
3 CANAL PLAZA MECH. ROOM AREA 2

Reviewed for Code Compliance
Inspections Division
Approved with Conditions

Date: 11/19/15

| Node No. | Elevation | K-Fact | Pt Actual | Pn | Flow Actual | Density |
|---|---|---|---|---|---|---|
| TYP | 0.0 | 5.6 | 12.13 | na | 19.5 | 0.15 |
| 30 | 208.5 | K = K @ SPRG | 13.8 | na | 20.19 | |
| 31 | 208.5 | K = K @ SPRG | 14.2 | na | 20.48 | |
| 26 | 208.5 | K = K @ SPRG | 13.11 | na | 19.68 | |
| 27 | 208.5 | K = K @ SPRG | 13.48 | na | 19.96 | |
| 21 | 208.5 | K = K @ SPRG | 12.87 | na | 19.5 | |
| 22 | 208.5 | K = K @ SPRG | 13.24 | na | 19.78 | |
| 23 | 208.5 | | 14.75 | na | | |
| 24 | 208.5 | K = K @ SPRG | 14.76 | na | 20.88 | |
| 25 | 208.5 | K = K @ SPRG | 14.94 | na | 21.01 | |
| 28 | 208.5 | | 15.02 | na | | |
| 29 | 208.5 | K = K @ SPRG | 15.59 | na | 21.46 | |
| 32 | 208.5 | | 15.81 | na | | |
| 33 | 208.5 | | 18.06 | na | | |
| 34 | 199.5 | | 25.44 | na | | |
| 35 | 199.5 | | 26.02 | na | | |
| A | 199.5 | | 29.25 | na | | |
| TSP | 199.5 | | 31.83 | na | | |
| HOSE | 100.0 | | 78.0 | na | 250.0 | |
| PUMP | 100.0 | | 78.03 | na | | |

The maximum velocity is 16.06 and it occurs in the pipe between nodes 32 and 33

# Final Calculations - Hazen-Williams

SPRINKLER SYSTEMS INC.
3 CANAL PLAZA MECH. ROOM AREA 2

Reviewed for Code Compliance
Inspections Division
Approved with Conditions

Date: 11/19/15

| Hyd. Ref. Point | Qa / Qt | Dia. / "C" / Pf/Ft | Fitting or Eqv. | Ln. | Pipe / Ftng's / Total | Pt / Pe / Pf | Pt / Pv / Pn | ** |
|---|---|---|---|---|---|---|---|---|
| TYP | 19.50 | 1.049 | T | 5.0 | 1.000 | 12.125 | | K Factor = 5.60 |
| to | | 120.0 | | 0.0 | 5.000 | 0.0 | | |
| SPRG | 19.5 | 0.1242 | | 0.0 | 6.000 | 0.745 | | Vel = 7.24 |
| | 0.0 | | | | | | | |
| | 19.50 | | | | | 12.870 | | K Factor = 5.44 |
| 30 | 20.19 | 1.442 | | 0.0 | 14.000 | 13.804 | | K Factor @ node SPRG |
| to | | 120.0 | | 0.0 | 0.0 | 0.0 | | |
| 31 | 20.19 | 0.0281 | | 0.0 | 14.000 | 0.394 | | Vel = 3.97 |
| 31 | 20.49 | 1.442 | T | 7.432 | 8.250 | 14.198 | | K Factor @ node SPRG |
| to | | 120.0 | | 0.0 | 7.432 | 0.0 | | |
| 32 | 40.68 | 0.1027 | | 0.0 | 15.682 | 1.611 | | Vel = 7.99 |
| | 0.0 | | | | | | | |
| | 40.68 | | | | | 15.809 | | K Factor = 10.23 |
| 26 | 19.68 | 1.442 | | 0.0 | 14.000 | 13.109 | | K Factor @ node SPRG |
| to | | 120.0 | | 0.0 | 0.0 | 0.0 | | |
| 27 | 19.68 | 0.0268 | | 0.0 | 14.000 | 0.375 | | Vel = 3.87 |
| 27 | 19.96 | 1.442 | T | 7.432 | 8.250 | 13.484 | | K Factor @ node SPRG |
| to | | 120.0 | | 0.0 | 7.432 | 0.0 | | |
| 28 | 39.64 | 0.0979 | | 0.0 | 15.682 | 1.536 | | Vel = 7.79 |
| | 0.0 | | | | | | | |
| | 39.64 | | | | | 15.020 | | K Factor = 10.23 |
| 21 | 19.50 | 1.442 | | 0.0 | 14.000 | 12.870 | | K Factor @ node SPRG |
| to | | 120.0 | | 0.0 | 0.0 | 0.0 | | |
| 22 | 19.5 | 0.0264 | | 0.0 | 14.000 | 0.370 | | Vel = 3.83 |
| 22 | 19.78 | 1.442 | T | 7.432 | 8.250 | 13.240 | | K Factor @ node SPRG |
| to | | 120.0 | | 0.0 | 7.432 | 0.0 | | |
| 23 | 39.28 | 0.0963 | | 0.0 | 15.682 | 1.510 | | Vel = 7.72 |
| 23 | 0.0 | 2.157 | | 0.0 | 1.000 | 14.750 | | |
| to | | 120.0 | | 0.0 | 0.0 | 0.0 | | |
| 24 | 39.28 | 0.0130 | | 0.0 | 1.000 | 0.013 | | Vel = 3.45 |
| 24 | 20.88 | 2.157 | | 0.0 | 6.000 | 14.763 | | K Factor @ node SPRG |
| to | | 120.0 | | 0.0 | 0.0 | 0.0 | | |
| 25 | 60.16 | 0.0298 | | 0.0 | 6.000 | 0.179 | | Vel = 5.28 |
| 25 | 21.01 | 2.157 | | 0.0 | 1.500 | 14.942 | | K Factor @ node SPRG |
| to | | 120.0 | | 0.0 | 0.0 | 0.0 | | |
| 28 | 81.17 | 0.0520 | | 0.0 | 1.500 | 0.078 | | Vel = 7.13 |
| 28 | 39.64 | 2.157 | | 0.0 | 5.250 | 15.020 | | |
| to | | 120.0 | | 0.0 | 0.0 | 0.0 | | |
| 29 | 120.81 | 0.1084 | | 0.0 | 5.250 | 0.569 | | Vel = 10.61 |
| 29 | 21.46 | 2.157 | | 0.0 | 1.500 | 15.589 | | K Factor @ node SPRG |
| to | | 120.0 | | 0.0 | 0.0 | 0.0 | | |
| 32 | 142.27 | 0.1467 | | 0.0 | 1.500 | 0.220 | | Vel = 12.49 |
| 32 | 40.68 | 2.157 | E | 6.153 | 3.500 | 15.809 | | |
| to | | 120.0 | | 0.0 | 6.153 | 0.0 | | |
| 33 | 182.95 | 0.2334 | | 0.0 | 9.653 | 2.253 | | Vel = 16.06 |

# Final Calculations - Hazen-Williams

SPRINKLER SYSTEMS INC.
3 CANAL PLAZA MECH. ROOM AREA 2

Reviewed for Code Compliance
Inspections Division
Approved with Conditions

Date: 11/19/15

| Hyd. Ref. Point | Qa Qt | Dia. "C" Pf/Ft | Fitting or Eqv. | Ln. | Pipe Ftng's Total | Pt Pe Pf | Pt Pv Pn | ** |
|---|---|---|---|---|---|---|---|---|
| 33 | 0.0 | 2.157 | E | 6.153 | 8.750 | 18.062 | | |
| to | | 120.0 | | 0.0 | 6.153 | 3.898 | | |
| 34 | 182.95 | 0.2334 | | 0.0 | 14.903 | 3.478 | | Vel = 16.06 |
| 34 | 0.0 | 2.157 | | 0.0 | 2.500 | 25.438 | | |
| to | | 120.0 | | 0.0 | 0.0 | 0.0 | | |
| 35 | 182.95 | 0.2336 | | 0.0 | 2.500 | 0.584 | | Vel = 16.06 |
| 35 | 0.0 | 2.635 | E | 8.237 | 12.000 | 26.022 | | |
| to | | 120.0 | T | 16.474 | 24.711 | 0.0 | | |
| A | 182.95 | 0.0880 | | 0.0 | 36.711 | 3.232 | | Vel = 10.76 |
| A | 0.0 | 2.635 | E | 8.237 | 4.500 | 29.254 | | |
| to | | 120.0 | T | 16.474 | 24.711 | 0.0 | | |
| TSP | 182.95 | 0.0880 | | 0.0 | 29.211 | 2.572 | | Vel = 10.76 |
| TSP | 0.0 | 4.26 | 10E | 131.671 | 200.000 | 31.826 | | |
| to | | 120.0 | G | 2.633 | 163.272 | 43.093 | | |
| HOSE | 182.95 | 0.0085 | S | 28.968 | 363.272 | 3.084 | | Vel = 4.12 |
| HOSE | 250.00 | 4.026 | | 0.0 | 0.500 | 78.003 | | Qa = 250.0 |
| to | | 120.0 | | 0.0 | 0.0 | 0.0 | | |
| PUMP | 432.95 | 0.0540 | | 0.0 | 0.500 | 0.027 | | Vel = 10.91 |
| | 0.0 | | | | | | | |
| | 432.95 | | | | | 78.030 | | K Factor = 49.01 |

Water Supply Curve C

SPRINKLER SYSTEMS INC.
3 CANAL PLAZA MECH. ROOM AREA 2

Reviewed for Code Compliance
Inspections Division
Approved with Conditions
Date: 11/19/15

Pump Data:

| | | |
|---|---|---|
| P1 - Pump Churn Pressure | : | 141 |
| P2 - Pump Rated Pressure | : | 130 |
| P2 - Pump Rated Flow | : | 506 |
| P3 - Pump Pressure @ Max Flow | : | 119 |
| P3 - Pump Max Flow | : | 750 |

Demand:

D1 - Ele
D2 - Sy
D2 - Sy
Hose (
D3 - Sy
Safety Margin : 54.914