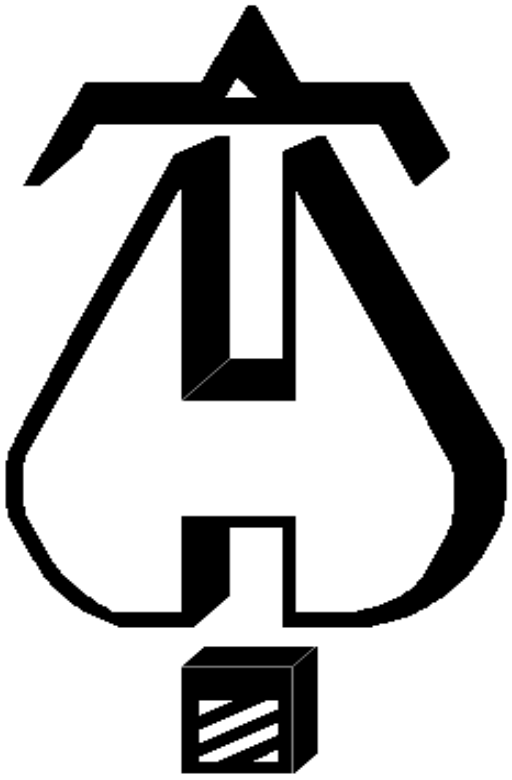


. . . Fire Protection by Computer Design

Residential Fire Protection
64 Daggett Hill Rd.
Greene, ME 04236
(207)946-343

Job Name : THOMAS STREET APARTMENTS
Building : WOOD STRUCTURE
Location : 1ST FLOOR- E.C. SIDEWALLS
System : WET
Contract : C16021
Data File : THOMAS ST APT- 1ST FLR E.C. SIDEWALLS.WXF

## Hydraulic Design Information Sheet

Name - 32 THOMAS STREET APARTMENTS
Date - 8/23/16
Location - 1ST FLOOR- E.C. SIDEWALLS
Building - WOOD STRUCTURE
System No. - WET
Contractor - RESIDENTIAL FIRE PROTECTION
Contract No. - C16021
Calculated By - T. PRAY
Drawing No. - 1 OF 2
Construction: (X) Combustible ( ) Non-Combustible
Ceiling Height - 11'-10"
Occupancy - OFFICE & CONFERENCE ROOMS

SYSTEM DESIGN

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

| | | | |
|---|---|---|---|
| Area of Sprinkler Operation | - 938 SF | System Type | Sprinkler/Nozzle |
| Density | - .1 | (X) Wet | Make VIKING |
| Area Per Sprinkler | - 320 | ( ) Dry | Model VK606 |
| Elevation at Highest Outlet | - 111.42 | ( ) Deluge | Size 3/4 |
| Hose Allowance - Inside | - | ( ) Preaction | K-Factor 8.0 |
| Rack Sprinkler Allowance | - | ( ) Other | Temp.Rat.155 |
| Hose Allowance - Outside | - 100 | | |

Note

Calculation Summary: Flow Required - 232.71 Press Required - 48.34 AT TEST
C-Factor Used: 120 Overhead 140 Underground

WATER SUPPLY

| Water Flow Test: | | Pump Data: | | Tank or Reservoir: |
|---|---|---|---|---|
| Date of Test | - 8/22/16 | | | Cap. - |
| Time of Test | - 11:30PM | Rated Cap.- | | Elev.- |
| Static Press | - 51 | @ Press | - | |
| Residual Press | - 49 | Elev. | - | Well |
| Flow | - 903 | | | Proof Flow |
| Elevation | - 100 | | | |

Location - HYDRANTS ARE LOCATED ON THOMAS STREET, SEE PLOT PLAN

Source of Information - PORTLAND WATER DISTRICT

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
Longitudinal
Clearance:Storage to Ceiling
Transverse

Horizontal Barriers Provided:

# Water Supply Curve (C)

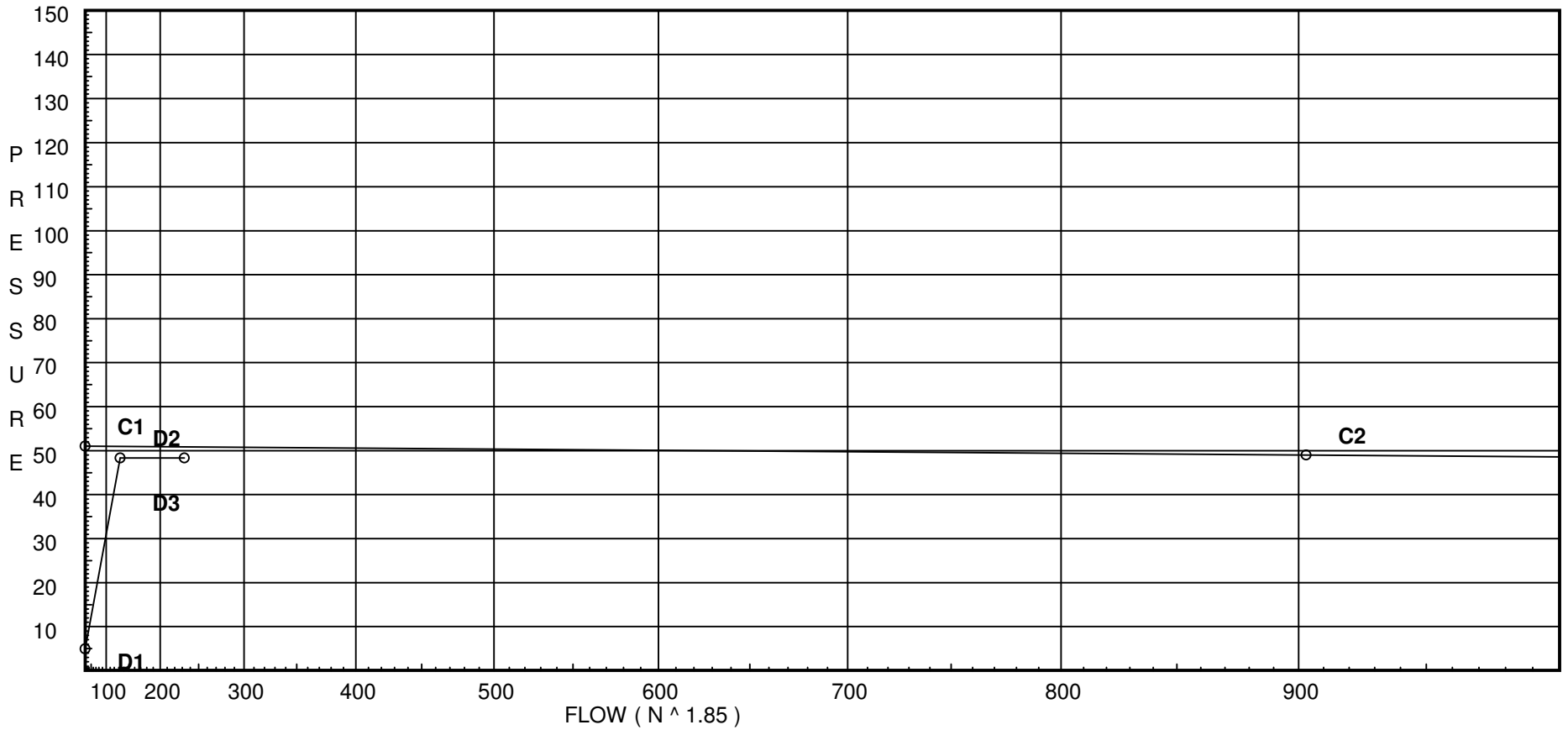
Residential Fire Protection
THOMAS STREET APARTMENTS


Date 8/23/2016

City Water Supply:
- C1 - Static Pressure : 51
- C2 - Residual Pressure: 49
- C2 - Residual Flow : 903

Demand:

| | | |
|---|---|---|
| D1 - Elevation | : | 4.946 |
| D2 - System Flow | : | 132.709 |
| D2 - System Pressure | : | 48.338 |
| Hose ( Adj City ) | : | _____ |
| Hose ( Demand ) | : | 100 |
| D3 - System Demand | : | 232.709 |
| Safety Margin | : | 2.499 |



# Fittings Used Summary



Fitting Legend

| Abbrev. | Name | ½ | ¾ | 1 | 1¼ | 1½ | 2 | 2½ | 3 | 3½ | 4 | 5 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 24 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| G | Generic Gate Valve | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 2 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 10 | 11 | 13 |
| I | 90' Grvd-Vic Elbow #10 | 0 | 0 | 2 | 3 | 4 | 3.5 | 6 | 5 | 8 | 7 | 8.5 | 10 | 13 | 17 | 20 | 23 | 25 | 33 | 36 | 40 |
| J | 90'Tee-Branch Grv Vic #20 | 0 | 0 | 4.5 | 6 | 8 | 8.5 | 10.8 | 13 | 17 | 16 | 21 | 25 | 33 | 41 | 50 | 65 | 78 | 88 | 98 | 120 |
| L | Long Turn Elbow | 1 | 1 | 2 | 2 | 2 | 3 | 4 | 5 | 5 | 6 | 8 | 9 | 13 | 16 | 18 | 24 | 27 | 30 | 34 | 40 |
| T | 90' Flow thru Tee | 3 | 4 | 5 | 6 | 8 | 10 | 12 | 15 | 17 | 20 | 25 | 30 | 35 | 50 | 60 | 71 | 81 | 91 | 101 | 121 |
| Z | Generic Flow Switch | 2 | 2 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 10 | 12 | 14 | 18 | 22 | 27 | 35 | 40 | 45 | 50 | 61 |

# Pressure / Flow Summary - STANDARD



| Node No. | Elevation | K-Fact | Pt Actual | Pn | Flow Actual | Density | Area | Press Req. |
|---|---|---|---|---|---|---|---|---|
| DO01 | 0.0 | 8 | 16.0 | na | 32.0 | 0.1 | 320 | 16.0 |
| 180 | 111.42 | K = K @ EQ01 | 17.92 | na | 32.0 | | | |
| 181 | 111.42 | 8 | 17.94 | na | 33.88 | 0.1 | 320 | 16.0 |
| 182 | 111.42 | K = K @ EQ01 | 18.24 | na | 32.29 | | | |
| 183 | 111.42 | 8 | 18.64 | na | 34.54 | 0.1 | 320 | 16.0 |
| 163 | 110.67 | | 24.97 | na | | | | |
| 164 | 110.67 | | 25.82 | na | | | | |
| 155 | 110.67 | | 29.12 | na | | | | |
| TOR | 97.88 | | 41.12 | na | | | | |
| HDR | 97.88 | | 44.17 | na | | | | |
| BFP | 97.88 | | 44.17 | na | | | | |
| 6UG | 97.88 | | 49.19 | na | | | | |
| TEST | 100.0 | | 48.34 | na | 100.0 | | | |

The maximum velocity is 11.88 and it occurs in the pipe between nodes DO01 and EQ01

| Hyd. Ref. Point | Qa Qt | Dia. "C" Pf/Ft | Fitting or Eqv. | Ln. | Pipe Ftng's Total | Pt Pe Pf | Pt Pv Pn | ******* Notes ****** |
|---|---|---|---|---|---|---|---|---|
| DO01 | 32.00 | 1.049 | 1T | 5.0 | 1.170 | 16.000 | | K Factor = 8.00 |
| to | | 120 | | 0.0 | 5.000 | 0.0 | | |
| EQ01 | 32.0 | 0.3105 | | 0.0 | 6.170 | 1.916 | | Vel = 11.88 |
| | 0.0 | | | | | | | |
| | 32.00 | | | | | 17.916 | | K Factor = 7.56 |
| 180 | 32.00 | 2.157 | | 0.0 | 2.330 | 17.916 | | K Factor @ node EQ01 |
| to | | 120 | | 0.0 | 0.0 | 0.0 | | |
| 181 | 32.0 | 0.0090 | | 0.0 | 2.330 | 0.021 | | Vel = 2.81 |
| 181 | 33.88 | 2.157 | | 0.0 | 8.670 | 17.937 | | K Factor = 8.00 |
| to | | 120 | | 0.0 | 0.0 | 0.0 | | |
| 182 | 65.88 | 0.0353 | | 0.0 | 8.670 | 0.306 | | Vel = 5.78 |
| 182 | 32.29 | 2.157 | | 0.0 | 5.330 | 18.243 | | K Factor @ node EQ01 |
| to | | 120 | | 0.0 | 0.0 | 0.0 | | |
| 183 | 98.17 | 0.0737 | | 0.0 | 5.330 | 0.393 | | Vel = 8.62 |
| 183 | 34.54 | 2.157 | 2I | 8.615 | 25.670 | 18.636 | | K Factor = 8.00 |
| to | | 120 | 1T | 12.307 | 20.922 | 0.325 | | |
| 163 | 132.71 | 0.1289 | | 0.0 | 46.592 | 6.005 | | Vel = 11.65 |
| 163 | 0.0 | 2.157 | 1I | 4.307 | 2.330 | 24.966 | | |
| to | | 120 | | 0.0 | 4.307 | 0.0 | | |
| 164 | 132.71 | 0.1288 | | 0.0 | 6.637 | 0.855 | | Vel = 11.65 |
| 164 | 0.0 | 2.157 | 2I | 8.615 | 6.500 | 25.821 | | |
| to | | 120 | 1J | 10.461 | 19.076 | 0.0 | | |
| 155 | 132.71 | 0.1289 | | 0.0 | 25.576 | 3.296 | | Vel = 11.65 |
| 155 | 0.0 | 2.157 | 5I | 21.537 | 28.590 | 29.117 | | |
| to | | 120 | | 0.0 | 21.537 | 5.539 | | |
| TOR | 132.71 | 0.1289 | | 0.0 | 50.127 | 6.460 | | Vel = 11.65 |
| TOR | 0.0 | 2.157 | 1G | 1.231 | 4.000 | 41.116 | | |
| to | | 120 | 1Z | 6.153 | 19.691 | 0.0 | | |
| HDR | 132.71 | 0.1289 | 1T | 12.307 | 23.691 | 3.054 | | Vel = 11.65 |
| HDR | 0.0 | 4.26 | | 0.0 | 0.500 | 44.170 | | |
| to | | 120 | | 0.0 | 0.0 | 0.0 | | |
| BFP | 132.71 | 0.0040 | | 0.0 | 0.500 | 0.002 | | Vel = 2.99 |
| BFP | 0.0 | 4.26 | | 0.0 | 3.000 | 44.172 | | |
| to | | 120 | | 0.0 | 0.0 | 5.000 | | * Fixed loss = 5 |
| 6UG | 132.71 | 0.0047 | | 0.0 | 3.000 | 0.014 | | Vel = 2.99 |
| 6UG | 0.0 | 6.16 | 1L | 12.911 | 60.000 | 49.186 | | |
| to | | 140 | 1G | 4.304 | 60.252 | -0.918 | | |
| TEST | 132.71 | 0.0006 | 1T | 43.037 | 120.252 | 0.070 | | Vel = 1.43 |
| | 100.00 | | | | | | | Qa = 100.00 |
| | 232.71 | | | | | 48.338 | | K Factor = 33.47 |