

City of Portland, Maine - Building or Use Permit Application

389 Congress Street, 04101 Tel: (207) 874-8703, FAX: (207) 8716

| | | | |
|--------------------------------------------------------|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|--------------------------------------------------|
| Job No: 2012-09-5040-FAFS | Date Applied: 9/26/2012 | CBL: 433- I-003-001 | |
| Location of Construction: 23 OREGON ST | Owner Name: SUSAN NADEAU | Owner Address: 23 OREGON STREET PORTLAND, ME 0410 | Phone: 767-7604 |
| Business Name: | Contractor Name: Freedom Fire Protection, Inc. | Contractor Address: 209 QUAKER RIDGE RD CASCO MAINE 04015 | Phone: (207) -627-4109 |
| Lessee/Buyer's Name: | Phone: | Permit Type: FIRE SUPPRESSION | Zone: R-5 |
| Past Use: Single Family Dwelling | Proposed Use: Same: Single Family Dwelling - to install fire suppression system | Cost of Work: \$9,000.00 | CEO District: |
| | | Fire Dept: <u>1</u> Approved w/ conditions 10/15/12 ___ Denied ___ N/A | Inspection: Use Group: Type: Signature: |
| Proposed Project Description: fire sprinkler system | | Pedestrian Activities District (P.A.D.) | |

| | |
|------------------------|------------------------|
| Permit Taken By: Gayle | Zoning Approval |
|------------------------|------------------------|

| | | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1. This permit application does not preclude the Applicant(s) from meeting applicable State and Federal Rules.</p> <p>2. Building Permits do not include plumbing, septic or electrical work.</p> <p>3. Building permits are void if work is not started within six (6) months of the date of issuance. False informatin may invalidate a building permit and stop all work.</p> | <p>Special Zone or Reviews</p> <p>___ Shoreland</p> <p>___ Wetlands</p> <p>___ Flood Zone</p> <p>___ Subdivision</p> <p>___ Site Plan</p> | <p>Zoning Appeal</p> <p>___ Variance</p> <p>___ Miscellaneous</p> <p>___ Conditional Use</p> <p>___ Interpretation</p> <p>___ Approved</p> <p>___ Denied</p> | <p>Historic Preservation</p> <p><input checked="" type="checkbox"/> Not in Dist or Landmark</p> <p>___ Does not Require Review</p> <p>___ Requires Review</p> <p>___ Approved</p> <p>___ Approved w/Conditions</p> <p>___ Denied</p> |
| | <p>SCANNED</p> <p>Date: <u>9/26/12</u></p> <p style="text-align: center;">CERTIFICATION</p> | <p>Date: <u>9/26/12</u></p> | <p>Date: <u>[Signature]</u></p> |

I hereby certify that I am the owner of record of the named property, or that the proposed work is authorized by the owner of record and that I have been authorized by the owner to make this application as his authorized agent and I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in the application is issued, I certify that the code official's authorized representative shall have the authority to enter all areas covered by such permit at any reasonable hour to enforce the provision of the code(s) applicable to such permit.

| | | | |
|---------------------------------------------|---------|------|-------|
| SIGNATURE OF APPLICANT | ADDRESS | DATE | PHONE |
| RESPONSIBLE PERSON IN CHARGE OF WORK, TITLE | | DATE | PHONE |

DISPLAY THIS CARD ON PRINCIPAL FRONTAGE OF WORK



CITY OF PORTLAND BUILDING PERMIT

This is to certify that
FREEDOM FIRE PROTECTION
209 QUAKER RIDGE RD
CASCO, ME 04015

For installation at
23 OREGON ST
SINGLE-FAMILY

Job ID: **2012-09-5040-FAFS**

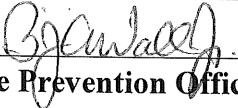
CBL: **433- I-003-001**

has permission to **install NFPA 13D sprinkler system**

provided that the person or persons, firm or corporation accepting this permit shall comply with all of the provisions of the Statutes of Maine and of the Ordinances of the City of Portland regulating the construction, maintenance and use of the buildings and structures, and of the application on file in the department.

Notification of inspection and written permission procured before this building or part thereof is lathed or otherwise closed-in. 48 HOUR NOTICE IS REQUIRED.

A final inspection must be completed by owner before this building or part thereof is occupied. If a certificate of occupancy is required, it must be


Fire Prevention Officer

(58)

Code Enforcement Officer / Plan Reviewer

THIS CARD MUST BE POSTED ON THE STREET SIDE OF THE PROPERTY
PENALTY FOR REMOVING THIS CARD

SCANNED

BUILDING PERMIT INSPECTION PROCEDURES

Please call 874-8703 or 874-8693 (ONLY)

or email: buildinginspections@portlandmaine.gov

With the issuance of this permit, the owner, builder or their designee is required to provide adequate notice to the city of Portland Inspections Services for the following inspections. Appointments must be requested 48 to 72 hours in advance of the required inspection. The inspection date will need to be confirmed by this office.

- **Please read the conditions of approval that is attached to this permit!! Contact this office if you have any questions.**
- **Permits expire in 6 months. If the project is not started or ceases for 6 months.**
- **If the inspection requirements are not followed as stated below additional fees may be incurred due to the issuance of a "Stop Work Order" and subsequent release to continue.**

Final Fire

The project cannot move to the next phase prior to the required inspection and approval to continue, REGARDLESS OF THE NOTICE OF CIRCUMSTANCES.

IF THE PERMIT REQUIRES A CERTIFICATE OF OCCUPANCY, IT MUST BE PAID FOR AND ISSUED TO THE OWNER OR DESIGNEE BEFORE THE SPACE MAY BE OCCUPIED.



PORTLAND MAINE

Strengthening a Remarkable City, Building a Community for Life • www.portlandmaine.gov

Director of Planning and Urban Development
Jeff Levine

Job ID: 2012-09-5040-FAFS
install NFPA 13D sprinkler system

For installation at:
23 OREGON ST
SINGLE-FAMILY

CBL: 433- I-003-001

Conditions of Approval:

Fire

The sprinkler system shall be installed in accordance with NFPA 13D. A compliance letter is required.

All control valves shall be supervised in accordance with NFPA 13D. Pad locks shall only be installed on valves designed to be secured in the open position by pad lock.

Application requires State Fire Marshal approval.

Entered 308

2012 09 5040

60

One- or Two-family Fire Sprinkler Permit

If you or the property owner owes real estate or property taxes or user charges on any property within the city, payment arrangements must be made before permits of any kind are accepted.

433 I 008

Installation address: 23 Oregon Street, Portland Me.

Building owner: Susan Nadeau Phone: 207-767-7604

Installer: Freedom Fire Protection, Inc. Phone: 207-627-4109

Total sq/ft of building floor space per unit: 3,700sq/ft Single-family home
or

Sq/ft of sprinklered floor space per unit: 3,700sq/ft Two-family home

Is this a multipurpose piping system? Y / N Sprinkler piping uses Pex? Y / N

Water supply: Municipal Water Well pump Stored water Other

Include electronic copy of approved State Sprinkler Permit plans:

Additional cost to the owner for the home fire sprinkler system for each dwelling unit minus costs necessary for domestic needs (See below): **A=** \$8,200.00

Attach cost breakdown: A City plumbing permit has been pulled:

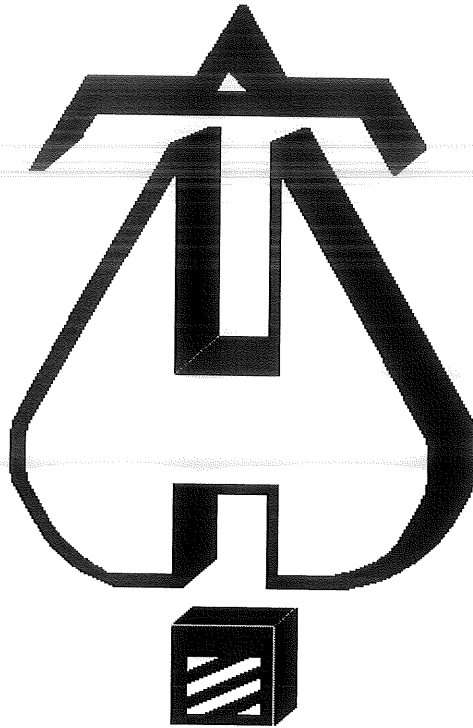
RECEIVED
SEP 26 2012
Dept. of Building Inspections
City of Portland Maine

COST OF WORK: \$8,200.00
(A times number of units)

NO FEE REQUIRED

Additional information and Frequently asked questions about home fire sprinkler systems may be found at www.portlandmaine.gov/fireprevention.

Sprinkler system cost must deduct costs that would have been incurred if the system did not provide sprinkler service. In a well pump system it would include the difference between the well pump to be installed and the one that would have been installed if there were no sprinkler demand on the system. Includes additional piping and valves that are required only because of NFPA Standard 13D, and not already required for domestic needs. Includes cost of sprinkler heads and additional installation costs.



... Fire Protection by Computer Design

FREEDOM FIRE PROTECTION INC.
209 QUAKER RIDGE ROAD
CASCO, MAINE 04015
207-627-4109

Job Name : NADEAU STOVER RESIDENCE
Building : 23 OREGON STREET
Location : PORTLAND, MAINE 04103
System : #1 AREA #1
Contract :
Data File : Nadeau Stover Residence HC1.WXF

HYDRAULIC DESIGN INFORMATION SHEET

Name - NADEAU STOVER RESIDENCE Date - 9/24/12
 Location - PORTLAND, MAINE 04103
 Building - 23 OREGON STREET System No. - #1 AREA #1
 Contractor - FREEDOM FIRE PROTECTION Contract No. -
 Calculated By - MICHAEL NOBLIT Drawing No. - FP-2
 Construction: (X) Combustible () Non-Combustible Ceiling Height VARIES
 OCCUPANCY - HOUSE

S Type of Calculation: (X)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 - 13 Gpm System Type
 Listed Pres. at Start Point - 7 Psi (X) Wet () Dry
 D MAXIMUM LISTED SPACING 16' x 16' () Deluge () PreAction
 E Domestic Flow Added - 0 Gpm Sprinkler or Nozzle
 S Additional Flow Added - 0 Gpm Make TYCO Model LFII
 I Elevation at Highest Outlet - 25'-3"Feet Size 1/2" K-Factor 4.9
 G Note: Temperature Rating 155
 N

Calculation Summary Gpm Required 26.156 C-Factor Used: Psi Required 72.520 Overhead 150 At Test Underground 140

W Water Flow Test: Pump Data: Tank or Reservoir:
 A Date of Test - 3/9/2012 Rated Cap. Cap.
 T Time of Test - @ Psi Elev.
 E Static (Psi) - 101 Elev.
 R Residual (Psi) - 0 Other Well
 S Flow (Gpm) - 1321 Proof Flow Gpm
 S Elevation -
 P Location:
 P
 L Source of Information: PORTLAND WATER DISTRICT
 Y

Water Supply Curve (C)

FREEDOM FIRE PROTECTION INC.
NADEAU STOVER RESIDENCE

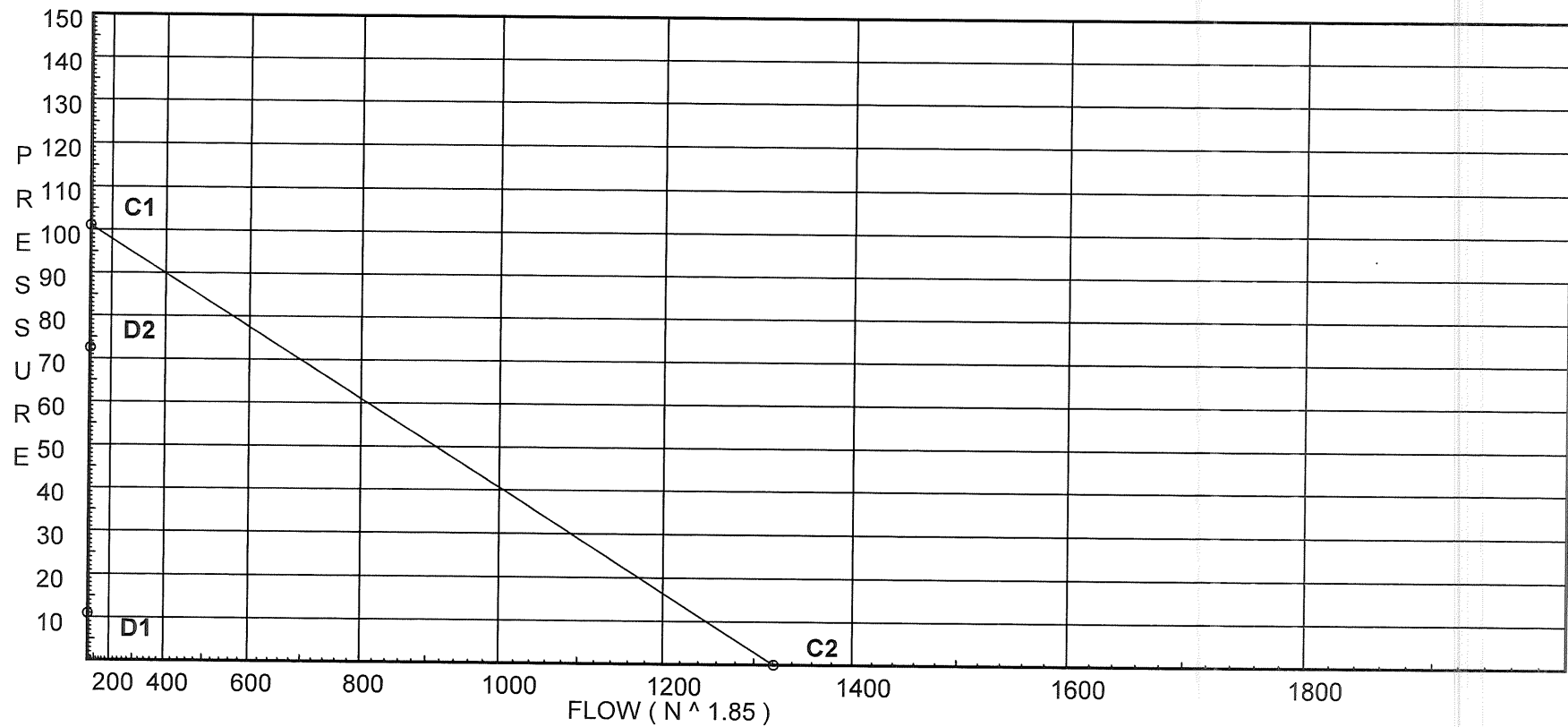
Page 2
Date 9/24/12

City Water Supply:

C1 - Static Pressure : 101
C2 - Residual Pressure: 0
C2 - Residual Flow : 1321

Demand:

D1 - Elevation : 10.936
D2 - System Flow : 26.1561
D2 - System Pressure : 72.520
Hose (Adj City) : _____
Hose (Demand) : _____
D3 - System Demand : 26.1561
Safety Margin : 28.409



Fittings Used Summary

FREEDOM FIRE PROTECTION INC.
 NADEAU STOVER RESIDENCE

Page 3
 Date 9/24/12

Fitting Legend

| Abbrev. | Name | 1/2 | 3/4 | 1 | 1 1/4 | 1 1/2 | 2 | 2 1/2 | 3 | 3 1/2 | 4 | 5 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 24 |
|---------|--------------------|----------------------------------------------|-----|---|-------|-------|----|-------|----|-------|----|----|----|----|----|----|----|----|----|-----|-----|
| E | 90° Standard Elbow | 2 | 2 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 10 | 12 | 14 | 18 | 22 | 27 | 35 | 40 | 45 | 50 | 61 |
| 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 |
| Zaa | Ames 2000B | Fitting generates a Fixed Loss Based on Flow | | | | | | | | | | | | | | | | | | | |

Pressure / Flow Summary - STANDARD

FREEDOM FIRE PROTECTION INC.
NADEAU STOVER RESIDENCE

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Date 9/24/12

| Node No. | Elevation | K-Fact | Pt Actual | Pn | Flow Actual | Density | Area | Press Req. |
|----------|-----------|--------|-----------|----|-------------|---------|------|------------|
| 101 | 25.25 | 4.9 | 7.0 | na | 12.96 | 0.05 | 256 | 7.0 |
| 18 | 27.25 | | 6.33 | na | | | | |
| 102 | 25.25 | 4.9 | 7.25 | na | 13.19 | 0.05 | 256 | 7.0 |
| 17 | 27.25 | | 6.58 | na | | | | |
| 16 | 27.75 | | 6.58 | na | | | | |
| 15 | 27.75 | | 8.77 | na | | | | |
| 14 | 27.75 | | 10.44 | na | | | | |
| 13 | 22.75 | | 13.78 | na | | | | |
| 12 | 22.75 | | 15.39 | na | | | | |
| 11 | 14.083 | | 21.18 | na | | | | |
| 10 | 14.083 | | 22.61 | na | | | | |
| 9 | 14.083 | | 24.38 | na | | | | |
| 8 | 14.083 | | 27.62 | na | | | | |
| 7 | 4.66 | | 33.19 | na | | | | |
| 6 | 4.66 | | 34.68 | na | | | | |
| 5 | 4.66 | | 38.53 | na | | | | |
| 4 | 4.66 | | 40.13 | na | | | | |
| 3 | 4.66 | | 41.38 | na | | | | |
| 2 | 0.0 | | 48.4 | na | | | | |
| 1 | 0.0 | | 54.41 | na | | | | |
| 0 | 0.0 | | 72.51 | na | | | | |
| TEST | 0.0 | | 72.52 | na | | | | |

The maximum velocity is 19.25 and it occurs in the pipe between nodes 1 and 0

Final Calculations - Hazen-Williams

FREEDOM FIRE PROTECTION INC.
NADEAU STOVER RESIDENCE

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Date 9/24/12

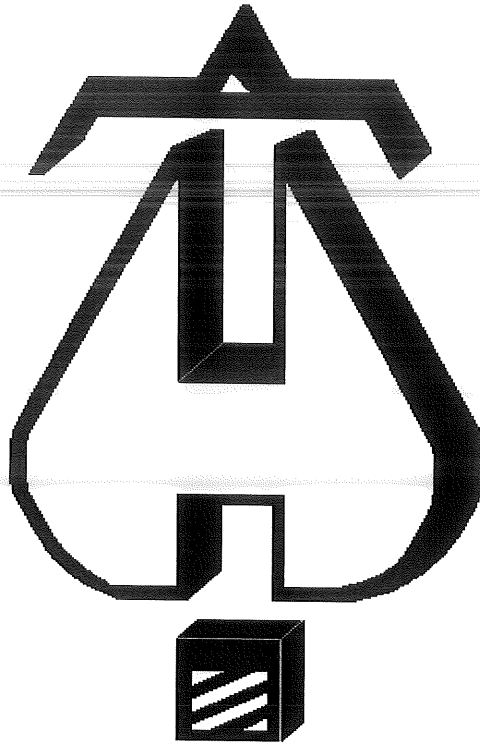
| Hyd. Ref. Point | Qa Qt | Dia. "C" Pf/Ft | Fitting or Eqv. | Ln. | Pipe Ftng's Total | Pt Pe Pf | Pt Pv Pn | ***** Notes ***** |
|-----------------------|--------------|----------------------|-----------------------|----------------|-------------------------|-----------------|----------------|-------------------------|
| 101 to 18 | 12.96 | 1.101 150 | 1E | 3.825 0.0 | 2.500 3.825 | 7.000 -0.866 | | K Factor = 4.90 |
| 18 to 16 | 12.96 | 0.0305 | | 0.0 | 6.325 | 0.193 | | Vel = 4.37 |
| 18 to 16 | 0.0 | 1.101 150 | 1E 1T | 3.825 9.563 | 2.000 13.387 | 6.327 -0.217 | | |
| | 12.96 | 0.0305 | | 0.0 | 15.387 | 0.470 | | Vel = 4.37 |
| | 0.0 12.96 | | | | | 6.580 | | K Factor = 5.05 |
| 102 to 17 | 13.19 | 1.101 150 | 1E | 3.825 0.0 | 2.500 3.825 | 7.248 -0.866 | | K Factor = 4.90 |
| 17 to 16 | 13.19 | 0.0315 | | 0.0 | 6.325 | 0.199 | | Vel = 4.44 |
| 17 to 16 | 0.0 | 1.101 150 | 1E | 3.825 0.0 | 3.000 3.825 | 6.581 -0.217 | | |
| | 13.19 | 0.0316 | | 0.0 | 6.825 | 0.216 | | Vel = 4.44 |
| 16 to 15 | 12.97 | 1.101 150 | 1T | 9.563 0.0 | 10.000 9.562 | 6.580 0.0 | | |
| | 26.16 | 0.1117 | | 0.0 | 19.562 | 2.186 | | Vel = 8.82 |
| 15 to 14 | 0.0 | 1.101 150 | 3E | 11.475 0.0 | 3.500 11.475 | 8.766 0.0 | | |
| | 26.16 | 0.1118 | | 0.0 | 14.975 | 1.674 | | Vel = 8.82 |
| 14 to 13 | 0.0 | 1.101 150 | 1E | 3.825 0.0 | 6.660 3.825 | 10.440 2.166 | | |
| | 26.16 | 0.1118 | | 0.0 | 10.485 | 1.172 | | Vel = 8.82 |
| 13 to 12 | 0.0 | 1.101 150 | 1E 1T | 3.825 9.563 | 1.000 13.387 | 13.778 0.0 | | |
| | 26.16 | 0.1118 | | 0.0 | 14.387 | 1.608 | | Vel = 8.82 |
| 12 to 11 | 0.0 | 1.101 150 | 1T | 9.563 0.0 | 8.660 9.562 | 15.386 3.754 | | |
| | 26.16 | 0.1118 | | 0.0 | 18.222 | 2.037 | | Vel = 8.82 |
| 11 to 10 | 0.0 | 1.101 150 | 1T | 9.563 0.0 | 3.250 9.562 | 21.177 0.0 | | |
| | 26.16 | 0.1118 | | 0.0 | 12.812 | 1.432 | | Vel = 8.82 |
| 10 to 9 | 0.0 | 1.101 150 | 1T | 9.563 0.0 | 6.250 9.562 | 22.609 0.0 | | |
| | 26.16 | 0.1118 | | 0.0 | 15.812 | 1.767 | | Vel = 8.82 |
| 9 to 8 | 0.0 | 1.101 150 | 1E 1T | 3.825 9.563 | 15.660 13.387 | 24.376 0.0 | | |
| | 26.16 | 0.1118 | | 0.0 | 29.047 | 3.247 | | Vel = 8.82 |
| 8 to 7 | 0.0 | 1.101 150 | 1E | 3.825 0.0 | 9.500 3.825 | 27.623 4.081 | | |
| | 26.16 | 0.1118 | | 0.0 | 13.325 | 1.490 | | Vel = 8.82 |
| 7 to 6 | 0.0 | 1.049 150 | 1E | 3.022 0.0 | 7.500 3.022 | 33.194 0.0 | | |
| | 26.16 | 0.1415 | | 0.0 | 10.522 | 1.489 | | Vel = 9.71 |

Final Calculations - Standard

FREEDOM FIRE PROTECTION INC.
NADEAU STOVER RESIDENCE

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| Hyd. Ref. Point | Qa Qt | Dia. "C" Pf/Ft | Fitting or Eqv. Ln. | Pipe Ftng's Total | Pt Pe Pf | Pt Pv Pn | ***** Notes ***** |
|-----------------|----------|-------------------|------------------------|-------------------------|----------------|----------------|-------------------------|
| 6 | 0.0 | 1.049 | 3E 6.0 | 12.000 | 34.683 | | |
| to | | 120 | 0.0 | 6.000 | 0.0 | | |
| 5 | 26.16 | 0.2138 | 0.0 | 18.000 | 3.848 | | Vel = 9.71 |
| 5 | 0.0 | 1.049 | 1E 2.0 | 5.500 | 38.531 | | |
| to | | 120 | 0.0 | 2.000 | 0.0 | | |
| 4 | 26.16 | 0.2137 | 0.0 | 7.500 | 1.603 | | Vel = 9.71 |
| 4 | 0.0 | 1.049 | 1T 5.0 | 0.830 | 40.134 | | |
| to | | 120 | 0.0 | 5.000 | 0.0 | | |
| 3 | 26.16 | 0.2139 | 0.0 | 5.830 | 1.247 | | Vel = 9.71 |
| 3 | 0.0 | 1.049 | 1Zaa 0.0 | 4.660 | 41.381 | | |
| to | | 120 | 0.0 | 0.0 | 6.018 | | * Fixed loss = 4 |
| 2 | 26.16 | 0.2137 | 0.0 | 4.660 | 0.996 | | Vel = 9.71 |
| 2 | 0.0 | 1.125 | 0.0 | 20.000 | 48.395 | | |
| to | | 150 | 0.0 | 0.0 | 4.000 | | * Fixed loss = 4 |
| 1 | 26.16 | 0.1006 | 0.0 | 20.000 | 2.013 | | Vel = 8.44 |
| 1 | 0.0 | 0.745 | 0.0 | 17.750 | 54.408 | | |
| to | | 140 | 0.0 | 0.0 | 3.000 | | * Fixed loss = 3 |
| 0 | 26.16 | 0.8509 | 0.0 | 17.750 | 15.104 | | Vel = 19.25 |
| 0 | 0.0 | 6.16 | 0.0 | 250.000 | 72.512 | | |
| to | | 140 | 0.0 | 0.0 | 0.0 | | |
| TEST | 26.16 | 0.0 | 0.0 | 250.000 | 0.008 | | Vel = 0.28 |
| | 0.0 | | | | | | |
| | 26.16 | | | | 72.520 | | K Factor = 3.07 |



... Fire Protection by Computer Design

FREEDOM FIRE PROTECTION INC.
209 QUAKER RIDGE ROAD
CASCO, MAINE 04015
207-627-4109

Job Name : NADEAU STOVER RESIDENCE HC2
Building : 23 OREGON STREET
Location : PORTLAND, MAINE 04103
System : #1 AREA #2
Contract :
Data File : Nadeau Stover Residence HC2.WXF

HYDRAULIC DESIGN INFORMATION SHEET

Name - NADEAU STOVER RESIDENCE Date - 9/24/12
Location - PORTLAND, MAINE 04103
Building - 23 OREGON STREET System No. - #1 AREA #2
Contractor - FREEDOM FIRE PROTECTION Contract No. -
Calculated By - MICHAEL NOBLIT Drawing No. - FP-2
Construction: (X) Combustible () Non-Combustible Ceiling Height 7'-6"
OCCUPANCY - HOUSE

S Type of Calculation: (X)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 - 16 Gpm System Type
Listed Pres. at Start Point - 13.2 Psi (X) Wet () Dry
D MAXIMUM LISTED SPACING 16' x 16' () Deluge () PreAction
E Domestic Flow Added - 0 Gpm Sprinkler or Nozzle
S Additional Flow Added - 0 Gpm Make TYCO Model LFII
I Elevation at Highest Outlet - Feet Size 1/2" K-Factor 4.4
G Note: Temperature Rating 155
N

Calculation Gpm Required 32.025 Psi Required 74.153 At Test
Summary C-Factor Used: Overhead 150 Underground 140

W Water Flow Test: Pump Data: Tank or Reservoir:
A Date of Test - 3/9/2012 Rated Cap. Cap.
T Time of Test - @ Psi Elev.
E Static (Psi) - 101 Elev.
R Residual (Psi) - 0 Other Well
Flow (Gpm) - 1321 Proof Flow Gpm
S Elevation -

P Location:

P

L Source of Information: PORTLAND WATER DISTRICT

Y

Water Supply Curve (C)

FREEDOM FIRE PROTECTION INC.
NADEAU STOVER RESIDENCE HC2

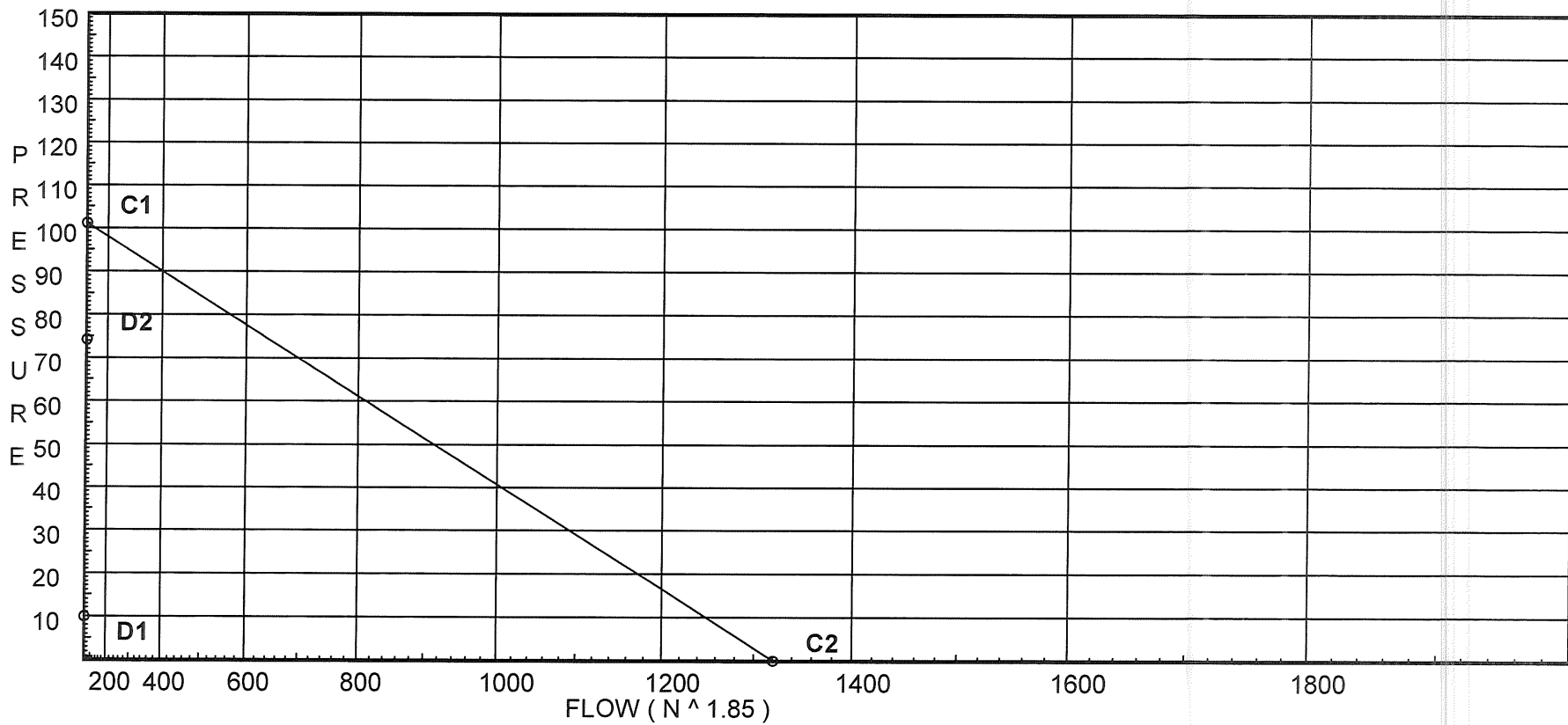
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Date 9/24/12

City Water Supply:

C1 - Static Pressure : 101
C2 - Residual Pressure: 0
C2 - Residual Flow : 1321

Demand:

D1 - Elevation : 9.853
D2 - System Flow : 32.025
D2 - System Pressure : 74.153
Hose (Adj City) : _____
Hose (Demand) : _____
D3 - System Demand : 32.025
Safety Margin : 26.744



Fittings Used Summary

FREEDOM FIRE PROTECTION INC.
 NADEAU STOVER RESIDENCE HC2

Page 3
 Date 9/24/12

Fitting Legend

| Abbrev. Name | ½ | ¾ | 1 | 1¼ | 1½ | 2 | 2½ | 3 | 3½ | 4 | 5 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 24 |
|----------------------|----------------------------------------------|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|-----|
| E 90° Standard Elbow | 2 | 2 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 10 | 12 | 14 | 18 | 22 | 27 | 35 | 40 | 45 | 50 | 61 |
| 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 |
| Zaa Ames 2000B | Fitting generates a Fixed Loss Based on Flow | | | | | | | | | | | | | | | | | | | |

Pressure / Flow Summary - STANDARD

FREEDOM FIRE PROTECTION INC.
 NADEAU STOVER RESIDENCE HC2

Page 4
 Date 9/24/12

| Node No. | Elevation | K-Fact | Pt Actual | Pn | Flow Actual | Density | Area | Press Req. |
|----------|-----------|--------|-----------|----|-------------|---------|-------|------------|
| 201 | 22.75 | 4.4 | 13.29 | na | 16.04 | 0.05 | 0.001 | 13.2 |
| 26 | 22.75 | | 13.48 | na | | | | |
| 202 | 22.75 | 4.4 | 13.2 | na | 15.99 | 0.05 | 0.001 | 13.2 |
| 25 | 22.75 | | 13.39 | na | | | | |
| 24 | 14.083 | | 17.71 | na | | | | |
| 23 | 14.083 | | 18.06 | na | | | | |
| 22 | 14.083 | | 19.28 | na | | | | |
| 21 | 4.66 | | 26.46 | na | | | | |
| 20 | 4.66 | | 32.81 | na | | | | |
| 3 | 4.66 | | 34.52 | na | | | | |
| 2 | 0.0 | | 42.25 | na | | | | |
| 1 | 0.0 | | 49.18 | na | | | | |
| 0 | 0.0 | | 74.14 | na | | | | |
| TEST | 0.0 | | 74.15 | na | | | | |

The maximum velocity is 23.57 and it occurs in the pipe between nodes 1 and 0

Final Calculations - Hazen-Williams

FREEDOM FIRE PROTECTION INC.
NADEAU STOVER RESIDENCE HC2

Page 5
Date 9/24/12

| Hyd. Ref. Point | Qa Qt | Dia. "C" Pf/Ft | Fitting or Eqv. Ln. | Pipe Ftng's Total | Pt Pe Pf | Pt Pv Pn | ***** Notes ***** |
|-----------------------|----------|------------------------|---------------------------|-------------------------|--------------------------|--------------------------|-------------------------------------|
| 201 to 26 | 16.04 | 1.101 150 | 1E | 3.825 0.0 | 0.500 3.825 | 13.288 0.0 | K Factor = 4.40 |
| 26 to 23 | 16.04 | 0.0451 1.101 150 | | 0.0 9.563 0.0 | 4.325 8.660 9.562 | 0.195 13.483 3.754 | Vel = 5.41 |
| 23 to 26 | 16.04 | 0.0452 0.0 16.04 | | 0.0 | 18.222 | 0.824 | Vel = 5.41 |
| 202 to 25 | 15.99 | 1.101 150 | 1E | 3.825 0.0 | 0.500 3.825 | 13.200 0.0 | K Factor = 3.77 K Factor = 4.40 |
| 25 to 24 | 15.99 | 0.0449 1.101 150 | | 0.0 3.825 0.0 | 4.325 8.660 3.825 | 0.194 13.394 3.754 | Vel = 5.39 |
| 24 to 23 | 15.99 | 0.0449 1.101 150 | | 0.0 3.825 0.0 | 12.485 4.000 3.825 | 0.561 17.709 0.0 | Vel = 5.39 |
| 23 to 22 | 15.99 | 0.0450 1.101 150 | | 0.0 3.825 0.0 | 7.825 3.660 3.825 | 0.352 18.061 0.0 | Vel = 5.39 |
| 22 to 21 | 16.03 | 0.1626 1.101 150 | 1E | 3.825 0.0 | 3.660 3.825 | 18.061 0.0 | Vel = 10.79 |
| 21 to 20 | 32.02 | 0.1626 1.101 150 | 1T | 9.563 0.0 | 9.500 9.562 | 19.278 4.081 | Vel = 10.79 |
| 20 to 3 | 32.02 | 0.3109 1.049 120 | 1T | 5.0 0.0 | 15.416 5.000 | 26.458 0.0 | Vel = 11.89 |
| 3 to 2 | 32.02 | 0.3109 1.049 120 | | 0.0 5.0 0.0 | 20.416 0.500 5.000 | 6.347 32.805 0.0 | Vel = 11.89 |
| 2 to 1 | 0.0 | 0.3109 1.049 120 | 1Zaa | 0.0 0.0 | 4.660 0.0 | 34.515 6.285 | * Fixed loss = 4.267 Vel = 11.89 |
| 1 to 0 | 32.02 | 0.1464 1.125 150 | | 0.0 0.0 | 20.000 0.0 | 42.249 4.000 | * Fixed loss = 4 Vel = 10.33 |
| 0 to TEST | 32.02 | 0.1464 0.745 140 | | 0.0 0.0 | 20.000 17.750 | 2.927 49.176 3.000 | * Fixed loss = 3 Vel = 23.57 |
| TEST to 0 | 0.0 | 0.0 6.16 140 | | 0.0 0.0 | 250.000 0.0 | 74.142 0.0 | Vel = 0.34 |

Final Calculations - Standard

FREEDOM FIRE PROTECTION INC.
 NADEAU STOVER RESIDENCE HC2

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 Date 9/24/12

| Hyd. Ref. Point | Qa Qt | Dia. "C" Pf/Ft | Fitting or Eqv. Ln. | Pipe Ftng's Total | Pt Pe Pf | Pt Pv Pn | ***** | Notes | ***** |
|-----------------------|----------|----------------------|---------------------------|-------------------------|----------------|----------------|-------|------------|-------|
| | 32.02 | | | | 74.153 | | | K Factor = | 3.72 |



PORTLAND MAINE

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Receipts Details:

Receipt Header:

Cashier Id: gguertin

Receipt Date: 9/26/2012

Receipt Number: 48616

Receipt Details:

| | | | |
|-----------------------------------------------------------|--------|----------------|-----------|
| Referance ID: | 8139 | Fee Type: | BP-Constr |
| Receipt Number: | 0 | Payment Date: | |
| Transaction Amount: | 110.00 | Charge Amount: | 110.00 |
| Job ID: Job ID: 2012-09-5040-FAFS - fire sprinkler system | | | |
| Additional Comments: | | | |

Thank You for your Payment!