

DISPLAY THIS CARD ON PRINCIPAL FRONTAGE OF WORK



CITY OF PORTLAND BUILDING PERMIT

This is to certify that
MAINE FIRE PROTECTION SYSTEMS
PO BOX 1050
BANGOR, ME 04402-1050

For installation at
184 PEARL ST
PEARL PLACE II

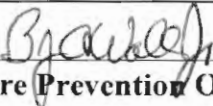

Job ID: 2012-05-4090-FAFS

CBL: 026- E-002-001

has permission to install NFPA 13 sprinkler and Class I standpipes
provided that the person or persons, firm or corporation accepting this permit shall comply with all of the provisions of the Statues 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

Code Enforcement Officer / Plan Reviewer

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

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
Penny St. Louis

Job ID: 2012-05-4090-FAFS
install NFPA 13 sprinkler and Class I
standpipes

For installation at:
184 PEARL ST
PEARL PLACE II

CBL: 026- E-002-001

Conditions of Approval:

Fire

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

A separate sprinkler permit is required from the State Fire Marshal's Office.

Sprinkler supervision shall be provided in accordance with NFPA 101, *Life Safety Code*, and NFPA 72, *National Fire Alarm and Signaling Code*. Sprinkler supervision shall monitor for water flow and sprinkler supervisory signals by floor.

Sprinkler protection shall be maintained. Where the system is to be shut down for maintenance or repair the system shall be checked at the end of each day to insure it has been placed back in service.

Fire department connections shall be located so that connected, charged fire hoses do not obstruct access and egress paths. The Fire Department will require Knox locking caps on all Fire Department Connections on the exterior of the building. Sprinkler system FDC shall use two 2 ½" connections (13:6.8.1) and the Standpipe shall use four 2 ½" connections (14:7.12.3).

System acceptance and commissioning must be coordinated with alarm and suppression system contractors and the Fire Department. Call 874-8703 to schedule.

City ordinance requires Knox Boxes for all structures with a sprinkler or fire alarm system.

The Standpipe system shall be installed in accordance with NFPA 14. A signed compliance letter will be required.

This system is a manual wet standpipe. Each hose connection shall be provided with a conspicuous sign that reads "MANUAL STANDPIPE FOR FIRE DEPARTMENT USE ONLY." (14:5.4.2) Letters shall be red with a white background and shall be 2 ½" in height. (14:6.3.8.5.2)

The Fire Department requires the installer to provide two Kochek 2 ½" NH 45 Degree Line Gauge [LG25-45] to the Fire Department for each new Class I standpipe. (FD 6.5.5)

City of Portland, Maine - Building or Use Permit Application

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

| | | | |
|--|---|--|------------------------------------|
| Job No: 2012-05-4090-FAFS | Date Applied: 5/25/2012 | CBL: 026- E-002-001 | |
| Location of Construction: 184 PEARL ST | Owner Name: AVESTA HOUSING | Owner Address: 307 CUMBERLAND AVE PORTLAND, ME 04101 | Phone: |
| Business Name: | Contractor Name: MAINE FIRE PROTECTION SYSTEMS | Contractor Address: 6 DOWD RD BANGOR MAINE 04401 | Phone: 942-8809 |
| Lessee/Buyer's Name: | Phone: | Permit Type: FIRE ALARM | Zone: B-7 |
| Past Use: 54 residential dwelling units with interior parking on 1 st floor (under construction #2011-10-2374) | Proposed Use: Same: 54 residential dwelling units - to install a fire suppression system | Cost of Work: \$159,000.00 | CEO District: |
| | | Fire Dept: 6/13/12 <input checked="" type="checkbox"/> Approved w/ condition <input type="checkbox"/> Denied <input type="checkbox"/> N/A | Inspection: Use Group: Type: |
| | | Signature: <i>Bjawaef</i> (58) | Signature: |
| Proposed Project Description: waterbased fire suppression 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 information may invalidate a building permit and stop all work.</p> | <p>Special Zone or Reviews</p> <p><input type="checkbox"/> Shoreland</p> <p><input type="checkbox"/> Wetlands</p> <p><input type="checkbox"/> Flood Zone</p> <p><input type="checkbox"/> Subdivision</p> <p><input type="checkbox"/> Site Plan</p> | <p>Zoning Appeal</p> <p><input type="checkbox"/> Variance</p> <p><input type="checkbox"/> Miscellaneous</p> <p><input type="checkbox"/> Conditional Use</p> <p><input type="checkbox"/> Interpretation</p> | <p>Historic Preservation</p> <p><input checked="" type="checkbox"/> Not in Dist or Landmark</p> <p><input type="checkbox"/> Does not Require Review</p> <p><input type="checkbox"/> Requires Review</p> |
| | <p>184 Pearl St. _____ itions</p> <p>_____ Maj _____ Min _____</p> <p>Date: <i>05/29/12</i> Dwaine Witham <i>3</i></p> <p>CERTIFICATE OR</p> <p>Chris or Ralph _____ ed by</p> <p><i>9</i> 942-8809 _____ rided in</p> <p>2012-05-4090-FAFS _____ ble hour</p> <p>sprinkler sys. _____</p> | | |

I hereby certify that I am the owner of record of the named property, or that the proposed work is the owner to make this application as his authorized agent and I agree to conform to all applicable provisions of the application is issued, I certify that the code official's authorized representative shall have the authority 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 | |
| | | | |

received permit by email

2012-05-4090

66



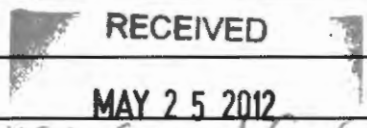
Water-Based Fire Suppression System Permit

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.

B-7

Installation address: 184 Pearl Street, Portland, ME CBL: 026-E-002-001

Exact location: (within structure) Mechanical Room



Type of occupancy(s) (NFPA & ICC): Light Hazard, Residential

Building owner: Avesta Housing

SA Res. units with interior sprinklers on ground floor 2011-10-23-74

City of Portland Maine
Dept. of Building Inspections

Managing Supervisor (RMS): Chris Maheux License No: 789

Supervisor phone: 207-942-8809 E-mail: cmaheux@mefirepro.com

Installing contractor: Maine Fire Protection Systems License No: 1

Contractor phone: 207-942-8809 E-mail: service@mefirepro.com

The suppression work to be done will be: New: Renovation: Addition to existing system:

This is an amendment to an existing permit: Yes: NO: Permit no: 9988

NFPA Standard this system is designed to: NFPA 13 Edition: 2010

*Non-NFPA systems are not approved for use within the City of Portland.

Download a new copy of this document from www.portlandmaine.gov/fire for every submittal. Attach all working documents and complete approved submittals as may be required by the State Fire Marshal's Office on electronic PDF's in addition to full sized plans.

Contractor shall verify location and type of all FDCs shall be approved in writing by the Fire Prevention Bureau.

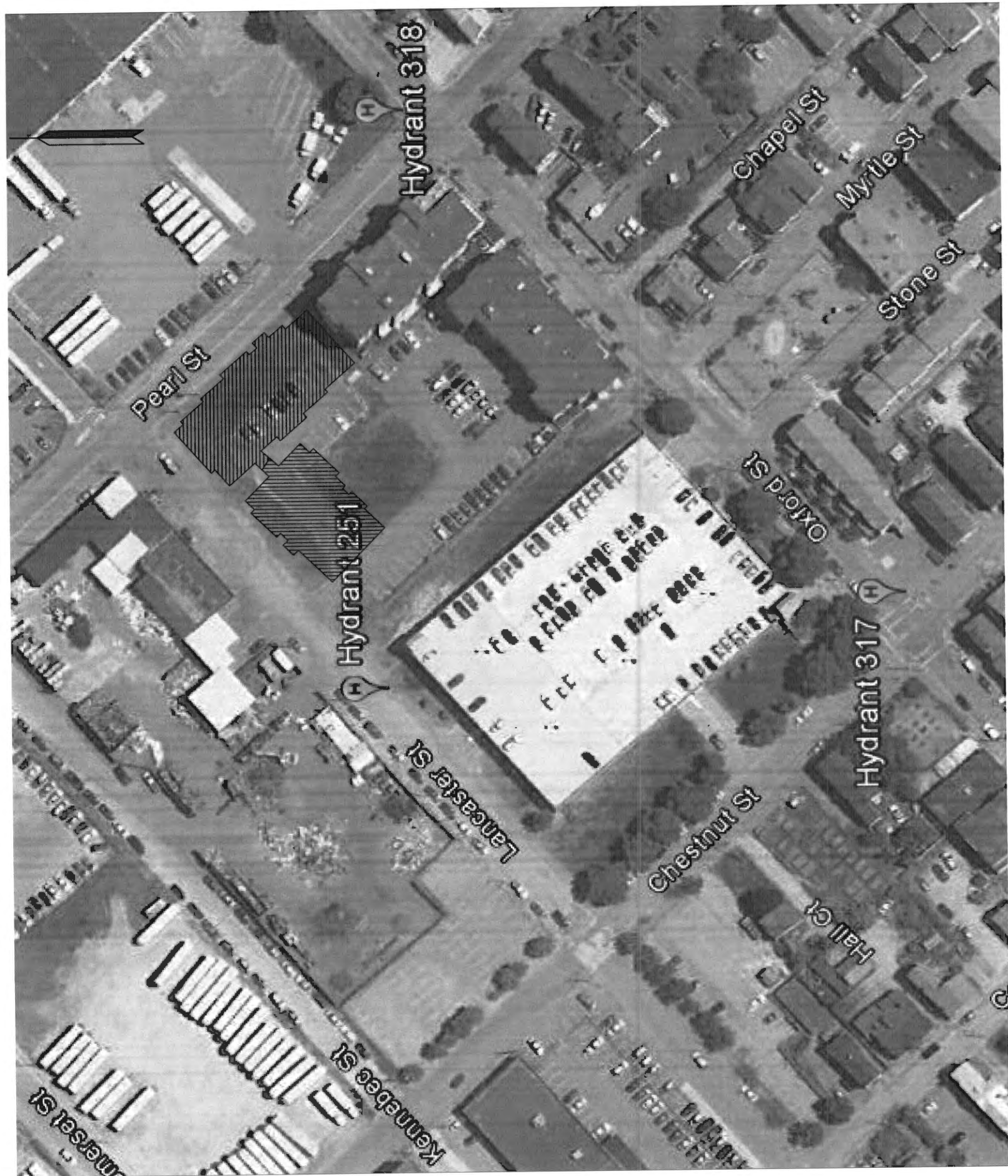
| |
|---|
| COST OF WORK: <u>\$158,639.00</u> |
| PERMIT FEE: <u>\$1616.39</u> |
| (\$10 PER \$1,000 + \$30 FOR THE FIRST \$1,000) |
| <i>1,610.00</i> |

Submit all information to the Building Inspections Department, 389 Congress Street, Room 315, Portland, Maine 04101.

Prior to acceptance of any fire protection system, a complete commissioning and acceptance test must be coordinated with all fire system contractors and the Fire Department, and proper documentation of such test(s) provided.

All installation(s) must comply with NFPA and the Fire Department Technical Standard(s).

Applicant signature: *[Signature]* Date: 05/18/2012



Hydrant 318

Pearl St

Chapel St

Myrtle St

Stone St

Hydrant 251

Lancaster St

Oxford St

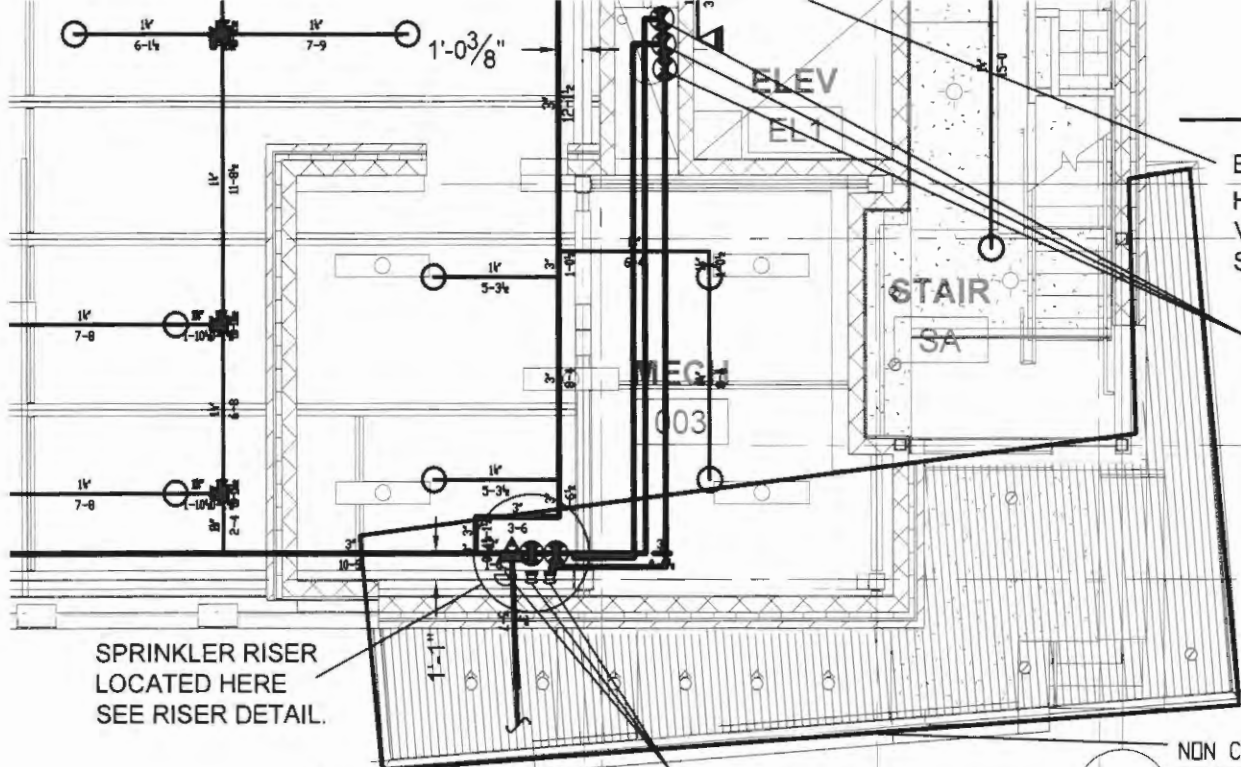
Hydrant 317

Chestnut St

Hall Ct

Kennebec St

Mersel St



ELEVATOR FEED TO HAVE 1 1/4" CONTROL VALVE W/ TAMPER PER STATE FIRE MARSHALL.

A & B WING RISERS AND STANDPIPE FEED LOCATED HERE.

SPRINKLER RISER LOCATED HERE SEE RISER DETAIL.

NEW 6" FIRE SERVICE FEED FROM STREET

4" STORZ FDC, STAND PIPE FEED, ELECTRIC BELL AND MAIN DRAIN HERE. INSTALL PER NFPA 13

NON COMBUSTIBLE CANOPY. NO COVERAGE REQUIRED PER NFPA 13 8.15.7.3

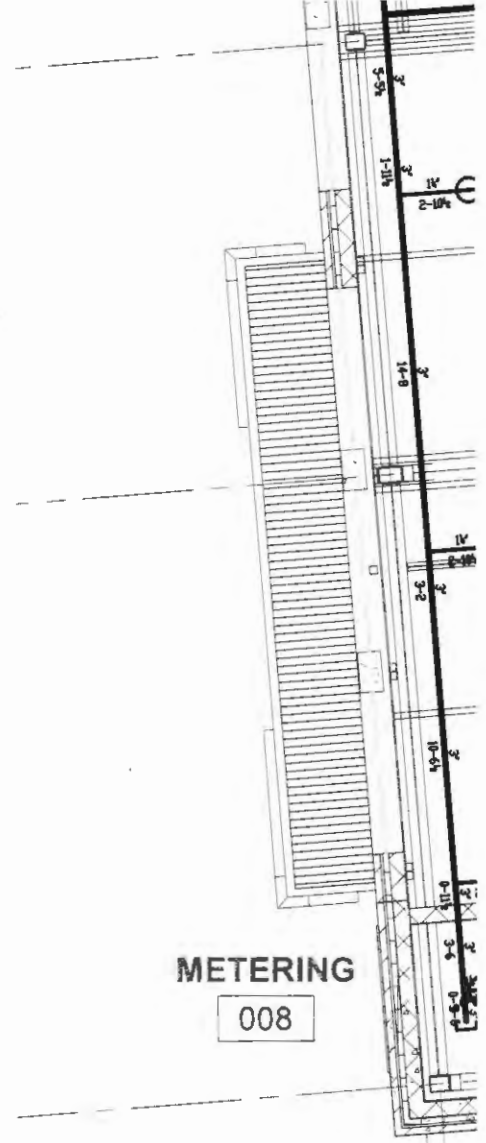
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6.1

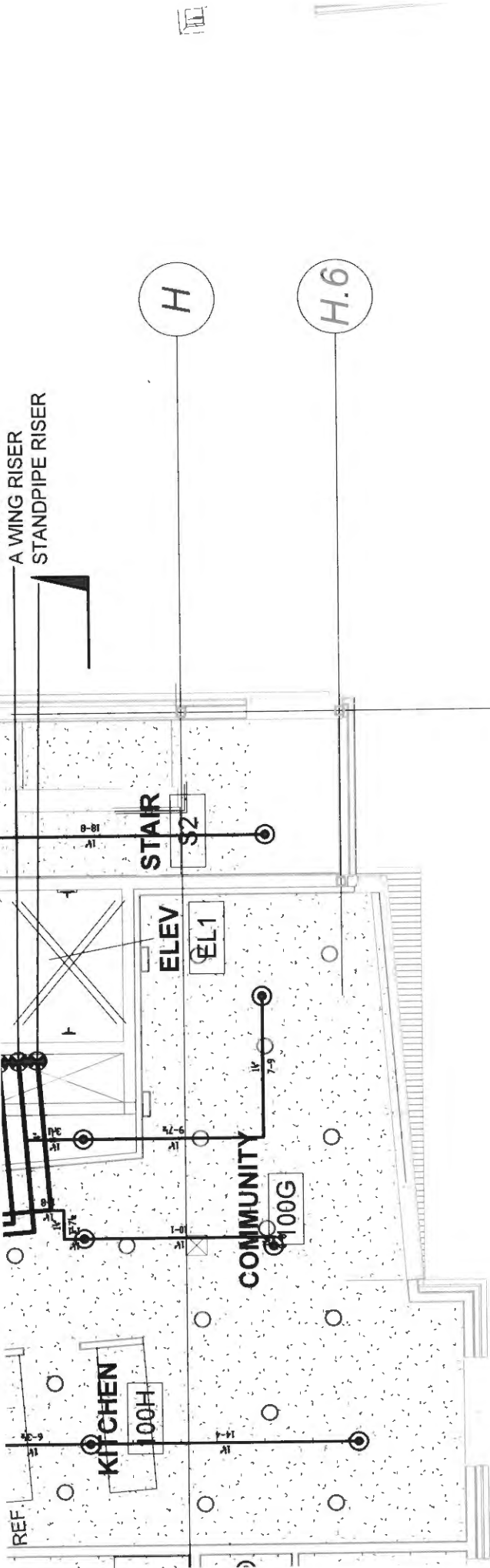
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8

9



METERING 008

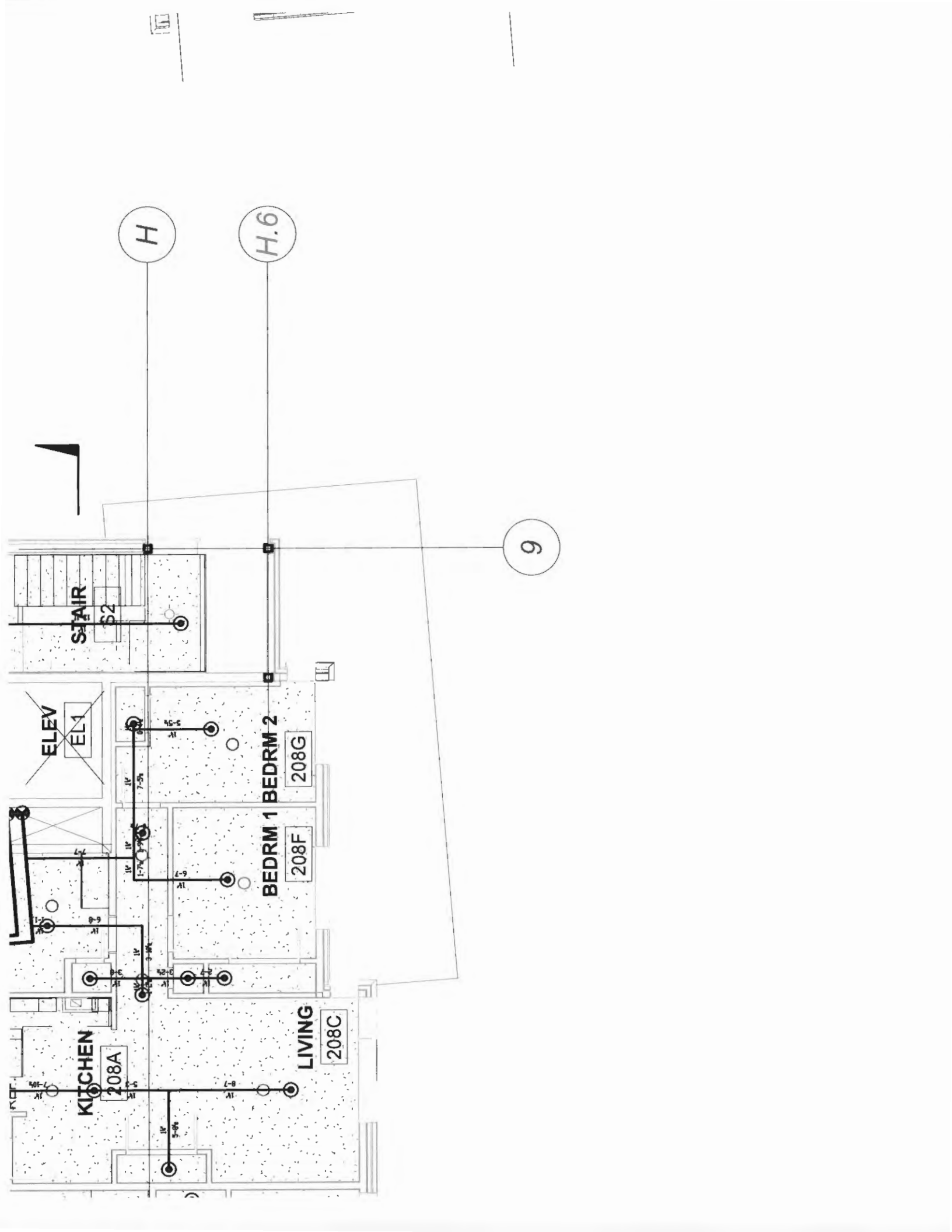


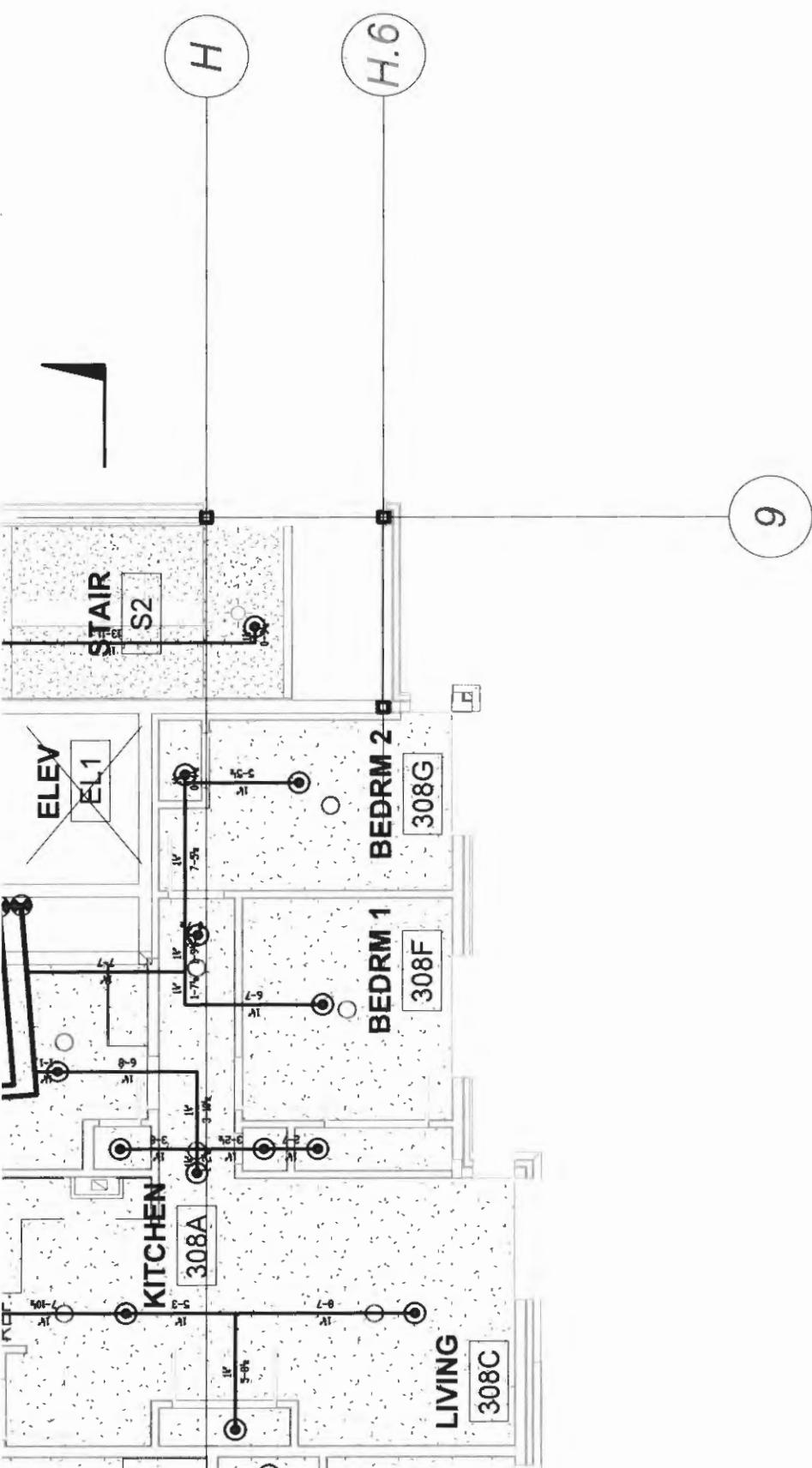
A WING RISER
STANDPIPE RISER

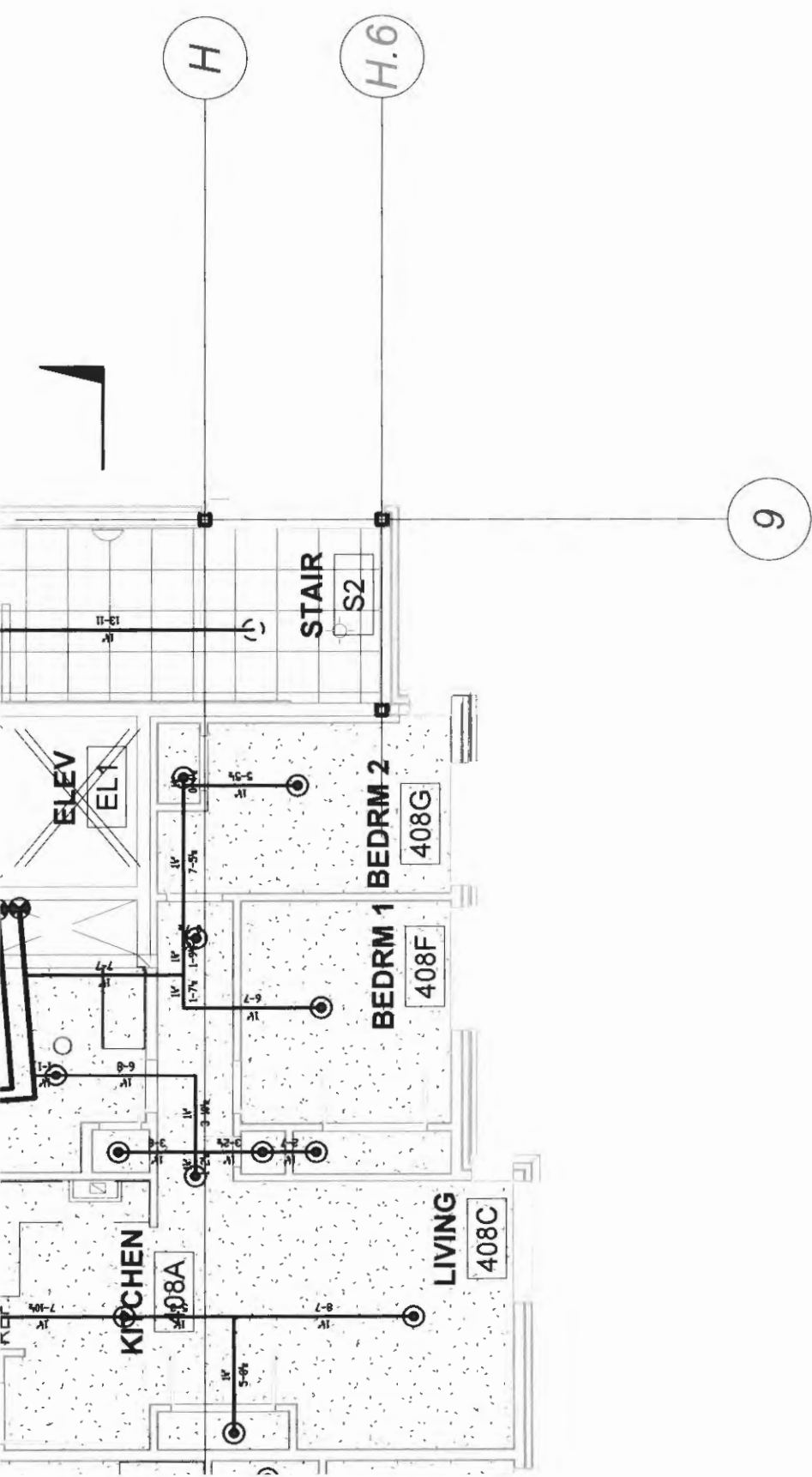
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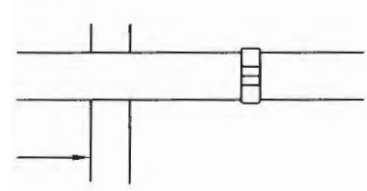
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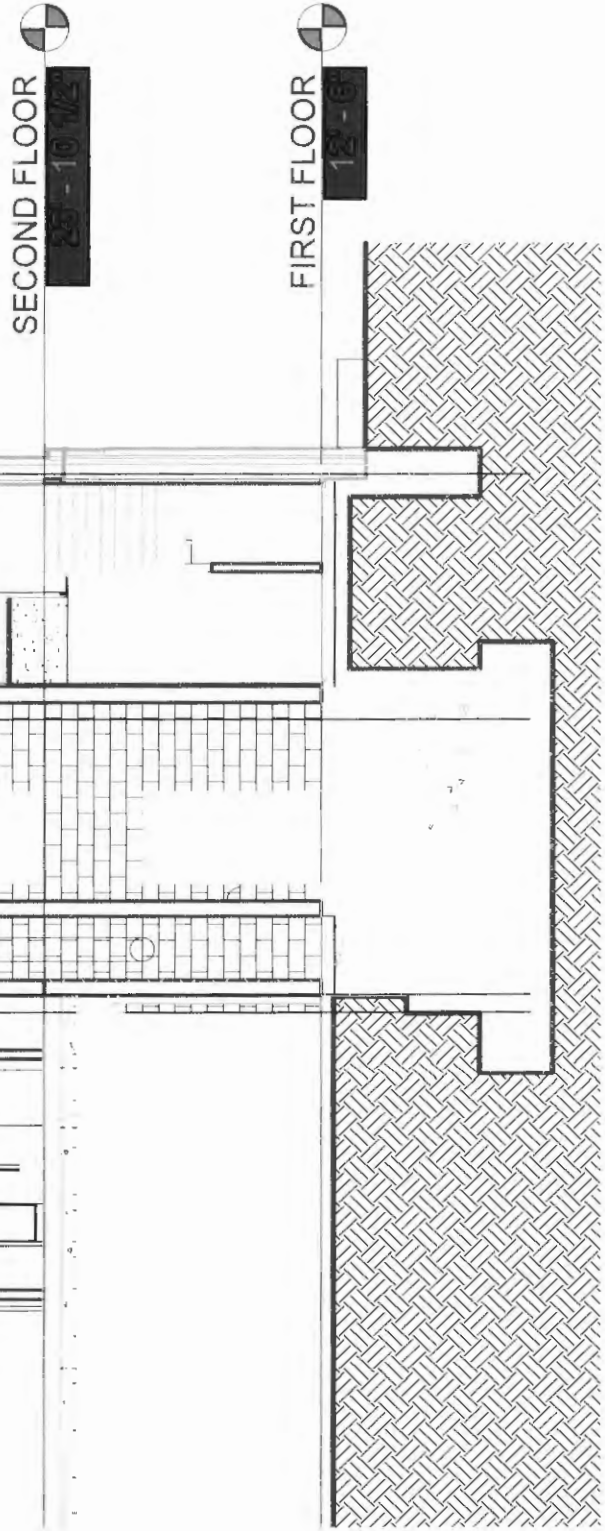








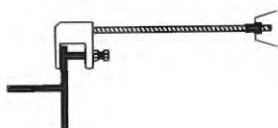
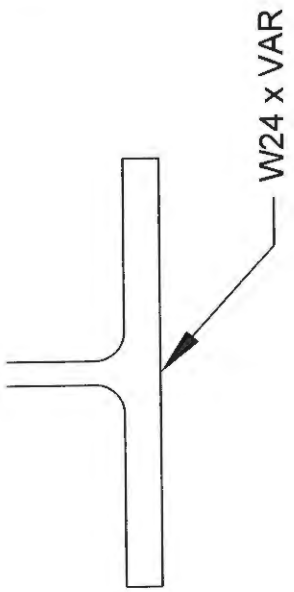
STA
NTS

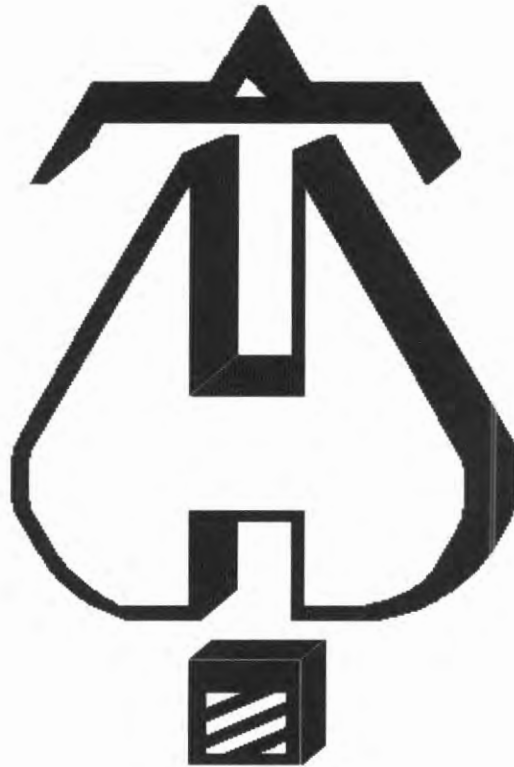


A

ROOF
66' - 11"

FIFTH FLOOR





... Fire Protection by Computer Design

Maine Fire Protection
P.O. Box 1050
Bangor, ME 04401
(207) 942-8809

Job Name : Pearl Place II Parking Garage
Drawing :
Location : 184 PEARL STREET, PORTLAND, ME
Remote Area : 2
Contract :
Data File : 1ST FLOOR PARKING GARAGE.WX2

HYDRAULIC CALCULATIONS
for

Project name: PEARL PLACE II
Location: 184 PEARL STREET, PORTLAND, ME
Drawing no:
Date: 4/12/12

Design

Remote area number: 2
Remote area location: FIRST FLOOR PARKING GARAGE DRY SYSTEM
Occupancy classification: ORDINARY HAZARD GROUP 1
Density: .15 - Gpm/SqFt
Area of application: 1998 - SqFt
Coverage per sprinkler: 121 - SqFt
Type of sprinklers calculated: TYCO QUICK RESPONSE UPRIGHTS
No. of sprinklers calculated: 13
In-rack demand: N/A - GPM
Hose streams: 250 - GPM
Total water required (including hose streams): 576 - GPM @ 44 - Psi
Type of system: DRY
Volume of dry or preaction system: 560 - Gal

Water supply information

Date: 1993
Location: OXFORD STREET PORTLAND, ME
Source: PORTLAND WATER DISTRICT

Name of contractor:

Address:

Phone number: 2079428809

Name of designer: chris maheux

Authority having jurisdiction: City of Portland, State of Maine Fire Marshall

Notes: (Include peaking information or gridded systems here.)

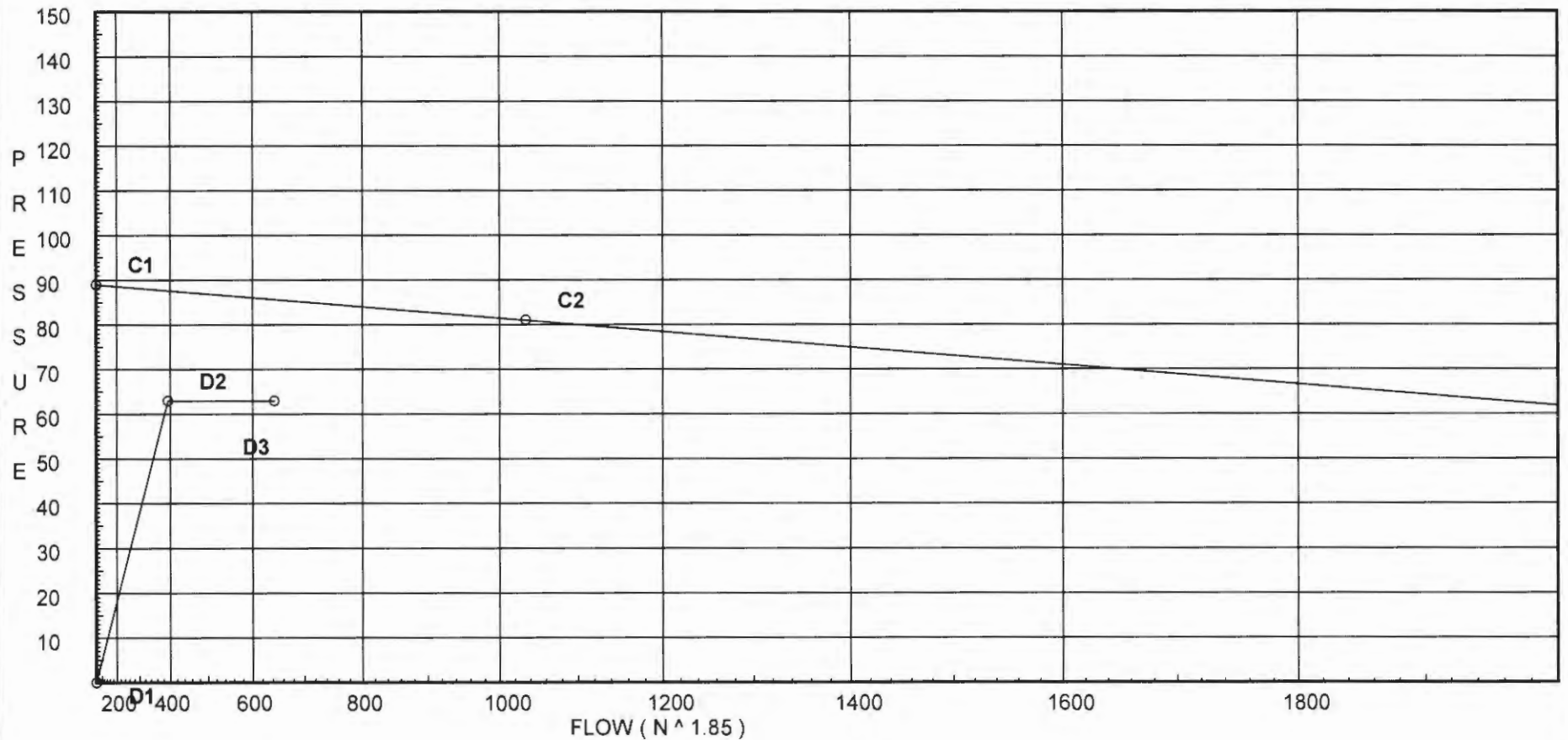
Water Supply Curve (C)

Maine Fire Protection
Pearl Place II Parking Garage

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Date 032712

City Water Supply:
C1 - Static Pressure : 89
C2 - Residual Pressure: 81
C2 - Residual Flow : 1034

Demand:
D1 - Elevation : -2.165
D2 - System Flow : 393.202
D2 - System Pressure : 62.946
Hose (Demand) : 250
D3 - System Demand : 643.202
Safety Margin : 22.730



Fittings Used Summary

Maine Fire Protection
 Pearl Place II Parking Garage

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Fitting Legend

| Abbrev. | Name | ½ | ¾ | 1 | 1¼ | 1½ | 2 | 2½ | 3 | 3½ | 4 | 5 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 24 | |
|---------|----------------------------|--|---|---|----|----|----|-----|-----|----|-----|----|----|----|----|----|----|----|----|-----|-----|--|
| Dge | Dry Gem DPV-1 | | | | | | | 2.2 | 4.9 | | 8.9 | | 22 | | | | | | | | | |
| 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 | |
| T | NFPA 13 90' Flow thru Tee | 3 | 4 | 5 | 6 | 8 | 10 | 12 | 15 | 17 | 20 | 25 | 30 | 35 | 50 | 60 | 71 | 81 | 91 | 101 | 121 | |
| Zac | Ames 2000SS | 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.

Final Calculations - Hazen-Williams

Maine Fire Protection
 Pearl Place II Parking Garage

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| Hyd. Ref. Point | Qa Qt | Dia. "C" Pf/Ft | Fitting or Eqv. | Ln. | Pipe Ftg's Total | Pt Pe Pf | Pt Pv Pn | ***** | Notes | ***** |
|-----------------|--------------|-------------------|-----------------|----------------|------------------|---------------|----------|-------|------------------|-------|
| 26 to 27 | 18.15 | 1.38 100.0 | | 0.0 | 10.710 | 10.504 0.0 | | | K Factor = 5.60 | |
| 27 to 25 | 18.15 | 0.0401 | | 0.0 | 10.710 | 0.430 | | | Vel = 3.89 | |
| 27 to 25 | 18.52 | 1.38 100.0 | 1E 1T | 2.141 4.282 | 7.270 6.423 | 10.934 0.0 | | | K Factor = 5.60 | |
| | 36.67 | 0.1472 | | 0.0 | 13.693 | 2.015 | | | Vel = 7.87 | |
| | 0.0 36.67 | | | | | 12.949 | | | K Factor = 10.19 | |
| 23 to 24 | 18.15 | 1.38 100.0 | | 0.0 | 10.700 | 10.510 0.0 | | | K Factor = 5.60 | |
| | 18.15 | 0.0401 | | 0.0 | 10.700 | 0.429 | | | Vel = 3.89 | |
| 24 to 25 | 18.53 | 1.38 100.0 | 1E 1T | 2.141 4.282 | 7.230 6.423 | 10.939 0.0 | | | K Factor = 5.60 | |
| | 36.68 | 0.1472 | | 0.0 | 13.653 | 2.010 | | | Vel = 7.87 | |
| 25 to 10 | 36.66 | 1.38 100.0 | 1T | 4.282 | 5.900 | 12.949 0.0 | | | | |
| | 73.34 | 0.5306 | | 0.0 | 10.182 | 5.403 | | | Vel = 15.73 | |
| | 0.0 73.34 | | | | | 18.352 | | | K Factor = 17.12 | |
| 21 to 22 | 22.47 | 1.38 100.0 | | 0.0 | 8.220 | 16.103 0.0 | | | K Factor = 5.60 | |
| | 22.47 | 0.0595 | | 0.0 | 8.220 | 0.489 | | | Vel = 4.82 | |
| 22 to 11 | 22.81 | 1.38 100.0 | 1T | 4.282 | 4.470 | 16.592 0.0 | | | K Factor = 5.60 | |
| | 45.28 | 0.2174 | | 0.0 | 8.752 | 1.903 | | | Vel = 9.71 | |
| | 0.0 45.28 | | | | | 18.495 | | | K Factor = 10.53 | |
| 20 to 12 | 24.29 | 1.38 100.0 | 1T | 4.282 | 1.020 | 18.820 0.0 | | | K Factor = 5.60 | |
| | 24.29 | 0.0688 | | 0.0 | 5.302 | 0.365 | | | Vel = 5.21 | |
| | 0.0 24.29 | | | | | 19.185 | | | K Factor = 5.55 | |
| 18 to 19 | 23.10 | 1.38 100.0 | | 0.0 | 11.750 | 17.014 0.0 | | | K Factor = 5.60 | |
| | 23.1 | 0.0626 | | 0.0 | 11.750 | 0.735 | | | Vel = 4.95 | |
| 19 to 13 | 23.59 | 1.38 100.0 | 1T | 4.282 | 3.530 | 17.749 0.0 | | | K Factor = 5.60 | |
| | 46.69 | 0.2302 | | 0.0 | 7.812 | 1.798 | | | Vel = 10.02 | |
| | 0.0 46.69 | | | | | 19.547 | | | K Factor = 10.56 | |
| 17 to 13 | 24.15 | 1.38 100.0 | 1T | 4.282 | 9.710 | 18.596 0.0 | | | K Factor = 5.60 | |
| | 24.15 | 0.0680 | | 0.0 | 13.992 | 0.951 | | | Vel = 5.18 | |
| | 0.0 24.15 | | | | | 19.547 | | | K Factor = 5.46 | |
| 14 to 15 | 21.54 | 1.38 100.0 | | 0.0 | 8.290 | 14.794 0.0 | | | K Factor = 5.60 | |
| | 21.54 | 0.0550 | | 0.0 | 8.290 | 0.456 | | | Vel = 4.62 | |

Final Calculations - Hazen-Williams

Maine Fire Protection
 Pearl Place II Parking Garage

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| Hyd. Ref. Point | Qa Qt | Dia. "C" Pf/Ft | Fitting or Eqv. | Ln. | Pipe Ftg's Total | Pt Pe Pf | Pt Pv Pn | ***** | Notes | ***** |
|-----------------|-----------------|-------------------------|-------------------|---------------------------|-------------------------------|-------------------------|-------------|-------|--------------------------------|-------|
| 15 to 16 | 21.87 43.41 | 1.38 100.0 0.2011 | | 0.0 0.0 0.0 | 8.290 0.0 8.290 | 15.250 0.0 1.667 | | | K Factor = 5.60 Vel = 9.31 | |
| 16 to 5 | 23.03 66.44 | 1.38 100.0 0.4419 | 1T | 4.282 0.0 0.0 | 2.860 4.282 7.142 | 16.917 0.0 3.156 | | | K Factor = 5.60 Vel = 14.25 | |
| | 0.0 66.44 | | | | | 20.073 | | | K Factor = 14.83 | |
| 7 to 8 | 22.37 22.37 | 1.38 100.0 0.0591 | | 0.0 0.0 0.0 | 8.220 0.0 8.220 | 15.962 0.0 0.486 | | | K Factor = 5.60 Vel = 4.80 | |
| 8 to 9 | 22.71 45.08 | 1.38 100.0 0.2156 | 1T | 4.282 0.0 0.0 | 4.470 4.282 8.752 | 16.448 0.0 1.887 | | | K Factor = 5.60 Vel = 9.67 | |
| 9 to 10 | 0.0 45.08 | 3.26 100.0 0.0033 | | 0.0 0.0 0.0 | 5.200 0.0 5.200 | 18.335 0.0 0.017 | | | Vel = 1.73 | |
| 10 to 11 | 73.35 118.43 | 3.26 100.0 0.0196 | | 0.0 0.0 0.0 | 7.290 0.0 7.290 | 18.352 0.0 0.143 | | | Vel = 4.55 | |
| 11 to 12 | 45.28 163.71 | 3.26 100.0 0.0357 | 2E | 13.428 0.0 0.0 | 5.920 13.429 19.349 | 18.495 0.0 0.690 | | | Vel = 6.29 | |
| 12 to 13 | 24.29 188.0 | 3.26 100.0 0.0459 | | 0.0 0.0 0.0 | 7.880 0.0 7.880 | 19.185 0.0 0.362 | | | Vel = 7.23 | |
| 13 to 6 | 70.85 258.85 | 3.26 100.0 0.0832 | 2E | 13.428 0.0 0.0 | 19.060 13.429 32.489 | 19.547 0.0 2.702 | | | Vel = 9.95 | |
| | 0.0 258.85 | | | | | 22.249 | | | K Factor = 54.88 | |
| 1 to 2 | 22.02 22.02 | 1.38 100.0 0.0573 | | 0.0 0.0 0.0 | 8.290 0.0 8.290 | 15.462 0.0 0.475 | | | K Factor = 5.60 Vel = 4.72 | |
| 2 to 3 | 22.36 44.38 | 1.38 100.0 0.2094 | | 0.0 0.0 0.0 | 8.290 0.0 8.290 | 15.937 0.0 1.736 | | | K Factor = 5.60 Vel = 9.52 | |
| 3 to 4 | 23.54 67.92 | 1.38 100.0 0.4604 | 1E | 2.141 0.0 0.0 | 2.850 2.141 4.991 | 17.673 0.0 2.298 | | | K Factor = 5.60 Vel = 14.57 | |
| 4 to 5 | 0.0 67.92 | 3.26 100.0 0.0070 | | 0.0 0.0 0.0 | 14.660 0.0 14.660 | 19.971 0.0 0.102 | | | Vel = 2.61 | |
| 5 to 6 | 66.44 134.36 | 3.26 100.0 0.0247 | 2T | 28.775 0.0 0.0 | 59.230 28.775 88.005 | 20.073 0.0 2.176 | | | Vel = 5.16 | |
| 6 to TODR | 258.84 393.2 | 3.26 120.0 0.1286 | 10E 1T 1Dge | 94.077 20.159 6.585 | 163.830 120.821 284.651 | 22.249 0.0 36.613 | | | Vel = 15.11 | |

Final Calculations - Hazen-Williams

Maine Fire Protection
 Pearl Place II Parking Garage

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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 | ***** |
|-----------------------|------------------|--------------------------|---------------------------|------------------------------|---------------------------|----------------|-------|------------------------------------|-------|
| TODR to BOR | 0.0 393.2 | 4.26 120.0 0.0349 | 1E 13.167 1Zac 0.0 | 3.000 13.167 16.167 | 58.862 6.357 0.565 | | | * Fixed loss = 3.758 Vel = 8.85 | |
| BOR to W1 | 0.0 393.2 | 6.16 140.0 0.0044 | 2T 86.075 | 341.580 86.075 427.655 | 65.784 0.866 1.865 | | | Vel = 4.23 | |
| W1 to TEST | 0.0 393.2 | 12.34 140.0 0.0001 | 1T 93.767 | 324.750 93.767 418.517 | 68.515 -5.630 0.061 | | | Vel = 1.05 | |
| | 250.00 643.20 | | | | | | | Qa = 250.00 K Factor = 81.07 | |
| | | | | | 62.946 | | | | |



... **Fire Protection by Computer Design**

Maine Fire Protection
P.O. Box 1050
Bangor, ME 04401
(207) 942-8809

Job Name : Pearl Place II 5TH Floor
Drawing :
Location : 184 PEARL STREET, PORTLAND, ME
Remote Area : 1
Contract :
Data File : 5th floor.WX1

HYDRAULIC CALCULATIONS
for

Project name: PEARL PLACE II
Location: 184 PEARL STREET, PORTLAND, ME
Drawing no:
Date: 4/12/12

Design

Remote area number: 1
Remote area location: 5TH FLOOR
Occupancy classification: LIGHT HAZARD
Density: .1 - Gpm/SqFt
Area of application: 1071 - SqFt
Coverage per sprinkler: VARIES - SqFt
Type of sprinklers calculated: TYCO QUICK RESPONSE
No. of sprinklers calculated: 16
In-rack demand: N/A - GPM
Hose streams: 100 - GPM
Total water required (including hose streams): 382 - GPM @ 55 - Psi
Type of system: WET PIPE
Volume of dry or preaction system: N/A - Gal

Water supply information

Date: 1993
Location: OXFORD STREET, PORTLAND MAINE
Source: PORTLAND WATER DISTRICT

Name of contractor: MAINE FIRE PROTECTION
Address: 6 DOWD ROAD, BANGOR, ME 04401
Phone number: 2079428809
Name of designer: chris maheux
Authority having jurisdiction: City of Portland, State of Maine Fire Marshall
Notes: (Include peaking information or gridded systems here.)

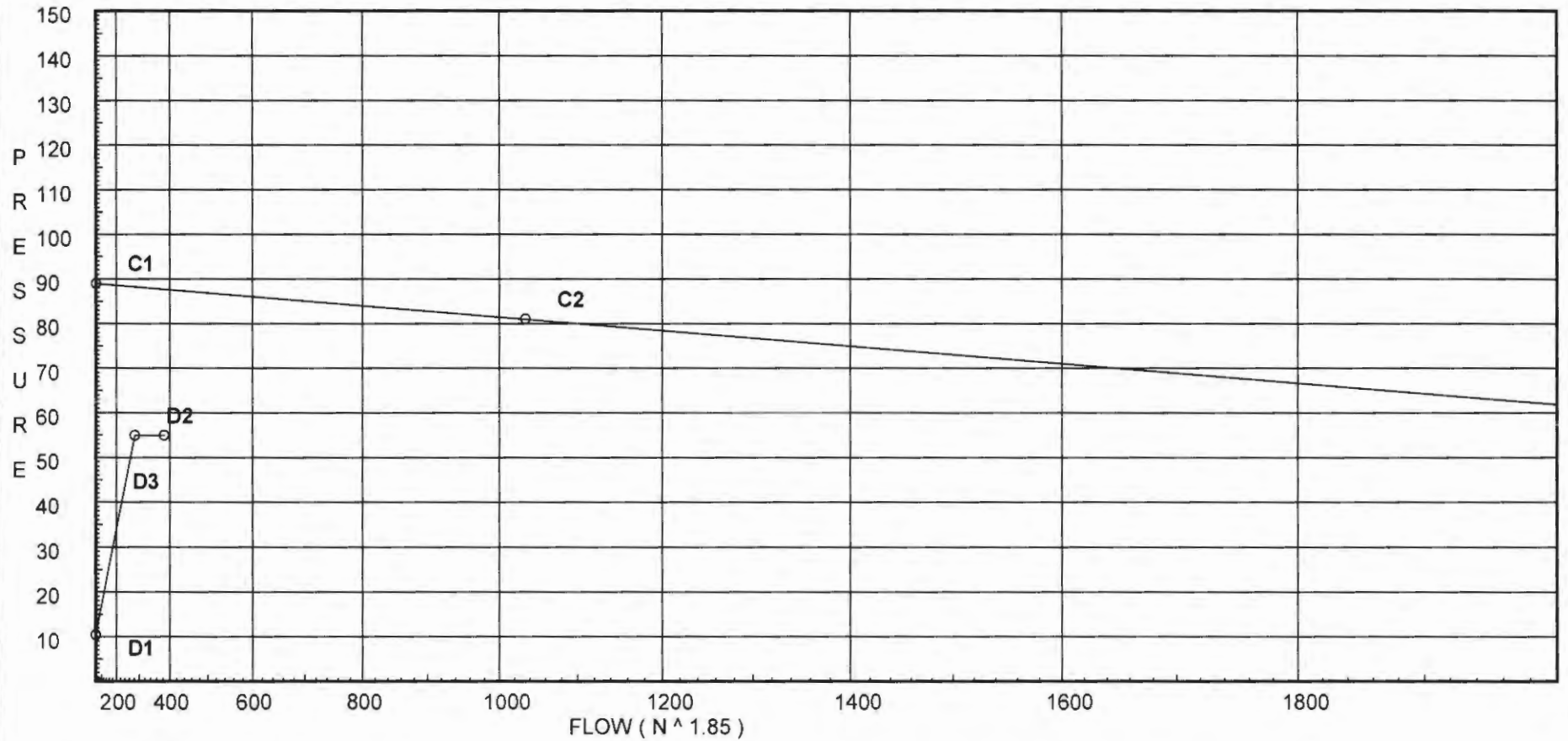
Water Supply Curve (C)

Maine Fire Protection
Pearl Place II 5TH Floor

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City Water Supply:
C1 - Static Pressure : 89
C2 - Residual Pressure: 81
C2 - Residual Flow : 1034

Demand:
D1 - Elevation : 10.394
D2 - System Flow : 282.699
D2 - System Pressure : 54.918
Hose (Demand) : 100
D3 - System Demand : 382.699
Safety Margin : 32.809



Fittings Used Summary

Maine Fire Protection
 Pearl Place II 5TH Floor

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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 | 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 |
| Fsp | Flow Switch Potter VSR | Fitting generates a Fixed Loss Based on Flow | | | | | | | | | | | | | | | | | | | |
| T | NFPA 13 90' Flow thru Tee | 3 | 4 | 5 | 6 | 8 | 10 | 12 | 15 | 17 | 20 | 25 | 30 | 35 | 50 | 60 | 71 | 81 | 91 | 101 | 121 |
| Zac | Ames 2000SS | 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

Maine Fire Protection
 Pearl Place II 5TH Floor

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| Node No. | Elevation | K-Fact | Pt Actual | Pn | Flow Actual | Density | Area | Press Req. |
|----------|-----------|--------|-----------|----|-------------|---------|------|------------|
| D001 | 52.0 | 5.6 | 7.09 | na | 14.91 | 0.1 | 21 | 7.0 |
| D002 | 52.0 | 5.6 | 10.47 | na | 18.12 | 0.1 | 116 | 7.0 |
| D003 | 52.0 | 5.6 | 10.27 | na | 17.94 | 0.1 | 141 | 7.0 |
| D004 | 52.0 | 5.6 | 7.0 | na | 14.82 | 0.1 | 21 | 7.0 |
| D005 | 52.0 | 5.6 | 10.87 | na | 18.47 | 0.1 | 116 | 7.0 |
| D006 | 52.0 | 5.6 | 7.19 | na | 15.02 | 0.1 | 80 | 7.0 |
| D007 | 52.0 | 5.6 | 10.62 | na | 18.25 | 0.1 | 124 | 7.0 |
| D008 | 52.0 | 5.6 | 10.58 | na | 18.22 | 0.1 | 10 | 7.0 |
| D009 | 52.0 | 5.6 | 7.82 | na | 15.66 | 0.1 | 13 | 7.0 |
| D010 | 52.0 | 5.6 | 7.94 | na | 15.78 | 0.1 | 84 | 7.0 |
| D011 | 52.0 | 5.6 | 11.56 | na | 19.04 | 0.1 | 116 | 7.0 |
| D012 | 52.0 | 5.6 | 9.1 | na | 16.89 | 0.1 | 4 | 7.0 |
| D013 | 52.0 | 5.6 | 12.08 | na | 19.47 | 0.1 | 150 | 7.0 |
| D014 | 52.0 | 5.6 | 11.12 | na | 18.67 | 0.1 | 63 | 7.0 |
| D015 | 52.0 | 5.6 | 12.61 | na | 19.88 | 0.1 | 10 | 7.0 |
| D016 | 52.0 | 5.6 | 14.82 | na | 21.56 | 0.1 | 84 | 7.0 |
| 29 | 52.0 | | 7.22 | na | | | | |
| 28 | 52.0 | | 7.42 | na | | | | |
| 27 | 52.0 | | 8.06 | na | | | | |
| 26 | 52.0 | | 8.2 | na | | | | |
| 25 | 52.0 | | 9.39 | na | | | | |
| 24 | 62.0 | | 7.13 | na | | | | |
| 23 | 62.0 | | 6.62 | na | | | | |
| 22 | 62.0 | | 6.58 | na | | | | |
| 21 | 62.0 | | 8.13 | na | | | | |
| 20 | 62.0 | | 8.66 | na | | | | |
| 13 | 52.0 | | 7.31 | na | | | | |
| 14 | 62.0 | | 3.27 | na | | | | |
| 15 | 62.0 | | 3.54 | na | | | | |
| 16 | 62.0 | | 4.24 | na | | | | |
| 17 | 62.0 | | 4.44 | na | | | | |
| 18 | 62.0 | | 5.64 | na | | | | |
| 19 | 62.0 | | 7.77 | na | | | | |
| 9 | 52.0 | | 10.8 | na | | | | |
| 10 | 62.0 | | 7.22 | na | | | | |
| 11 | 62.0 | | 7.94 | na | | | | |
| 12 | 62.0 | | 11.39 | na | | | | |
| 1 | 62.0 | | 6.26 | na | | | | |
| 2 | 62.0 | | 7.32 | na | | | | |
| 3 | 62.0 | | 7.51 | na | | | | |
| 4 | 62.0 | | 8.89 | na | | | | |
| 5 | 62.0 | | 9.75 | na | | | | |
| 6 | 62.0 | | 13.94 | na | | | | |
| 7 | 62.0 | | 14.03 | na | | | | |
| 8 | 62.0 | | 14.55 | na | | | | |
| 4F | 62.0 | | 24.4 | na | | | | |
| BF | 18.0 | | 47.04 | na | | | | |
| TOR | 18.0 | | 54.29 | na | | | | |
| BOR | 12.0 | | 60.86 | na | | | | |
| W1 | 10.0 | | 62.68 | na | | | | |
| TEST | 28.0 | | 54.92 | na | 100.0 | | | |

The maximum velocity is 21.95 and it occurs in the pipe between nodes 19 and 7

Final Calculations - Hazen-Williams

Maine Fire Protection
 Pearl Place II 5TH Floor

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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 | ***** |
|-----------------------|--------------------|--------------------------|-----------------------|-------------------|-------------------------|---------------------------|----------------|-------|-----------------------------------|-------|
| D001 to 13 | 14.91 14.91 | 1.049 120.0 0.0757 | 1E | 2.0 0.0 0.0 | 1.000 2.000 3.000 | 7.087 0.0 0.227 | | | K Factor = 5.60 Vel = 5.53 | |
| | 0.0 14.91 | | | | | | 7.314 | | K Factor = 5.51 | |
| D002 to 9 | 18.12 18.12 | 1.049 120.0 0.1087 | 1E | 2.0 0.0 0.0 | 1.000 2.000 3.000 | 10.474 0.0 0.326 | | | K Factor = 5.60 Vel = 6.73 | |
| | 0.0 18.12 | | | | | | 10.800 | | K Factor = 5.51 | |
| D003 to 1 | 17.94 17.94 | 1.049 120.0 0.1063 | 1E | 2.0 0.0 0.0 | 1.000 2.000 3.000 | 10.268 -4.331 0.319 | | | K Factor = 5.60 Vel = 6.66 | |
| | 0.0 17.94 | | | | | | 6.256 | | K Factor = 7.17 | |
| D004 to 29 | 14.82 14.82 | 1.049 120.0 0.0747 | 1E | 2.0 0.0 0.0 | 1.000 2.000 3.000 | 7.000 0.0 0.224 | | | K Factor = 5.60 Vel = 5.50 | |
| | 0.0 14.82 | | | | | | 7.224 | | K Factor = 5.51 | |
| D005 to 10 | 18.47 18.47 | 1.049 120.0 0.1122 | 1T | 5.0 0.0 0.0 | 1.000 5.000 6.000 | 10.873 -4.331 0.673 | | | K Factor = 5.60 Vel = 6.86 | |
| | 0.0 18.47 | | | | | | 7.215 | | K Factor = 6.88 | |
| D006 to 28 | 15.02 15.02 | 1.049 120.0 0.0767 | 1E | 2.0 0.0 0.0 | 1.000 2.000 3.000 | 7.192 0.0 0.230 | | | K Factor = 5.60 Vel = 5.58 | |
| | 0.0 15.02 | | | | | | 7.422 | | K Factor = 5.51 | |
| D007 to 23 | 18.25 18.25 | 1.049 120.0 0.1097 | 1E | 2.0 0.0 0.0 | 1.000 2.000 3.000 | 10.620 -4.331 0.329 | | | K Factor = 5.60 Vel = 6.77 | |
| | 0.0 18.25 | | | | | | 6.618 | | K Factor = 7.09 | |
| D008 to 22 | 18.22 18.22 | 1.049 120.0 0.1093 | 1E | 2.0 0.0 0.0 | 1.000 2.000 3.000 | 10.582 -4.331 0.328 | | | K Factor = 5.60 Vel = 6.76 | |
| | 0.0 18.22 | | | | | | 6.579 | | K Factor = 7.10 | |
| D009 to 27 | 15.66 15.66 | 1.049 120.0 0.0827 | 1E | 2.0 0.0 0.0 | 1.000 2.000 3.000 | 7.816 0.0 0.248 | | | K Factor = 5.60 Vel = 5.81 | |
| | 0.0 15.66 | | | | | | 8.064 | | K Factor = 5.51 | |
| D010 to 26 | 15.78 15.78 | 1.049 120.0 0.0840 | 1E | 2.0 0.0 0.0 | 1.000 2.000 3.000 | 7.944 0.0 0.252 | | | K Factor = 5.60 Vel = 5.86 | |

Final Calculations - Hazen-Williams

Maine Fire Protection
 Pearl Place II 5TH Floor

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| Hyd. Ref. Point | Qa Qt | Dia. "C" Pf/Ft | Fitting or Eqv. | Ln. | Pipe Ftn'g's Total | Pt Pe Pf | Pt Pv Pn | ***** | Notes | ***** |
|-----------------|----------------|--------------------------|-----------------|---------------------|-------------------------|---------------------------|-------------|-------|-------------------------------|-------|
| | 0.0 15.78 | | | | | 8.196 | | | K Factor = 5.51 | |
| D011 to 11 | 19.04 19.04 | 1.049 120.0 0.1187 | 1T | 5.0 0.0 0.0 | 1.000 5.000 6.000 | 11.557 -4.331 0.712 | | | K Factor = 5.60 Vel = 7.07 | |
| | 0.0 19.04 | | | | | 7.938 | | | K Factor = 6.76 | |
| D012 to 25 | 16.89 16.89 | 1.049 120.0 0.0953 | 1E | 2.0 0.0 0.0 | 1.000 2.000 3.000 | 9.101 0.0 0.286 | | | K Factor = 5.60 Vel = 6.27 | |
| | 0.0 16.89 | | | | | 9.387 | | | K Factor = 5.51 | |
| D013 to 21 | 19.47 19.47 | 1.049 120.0 0.1237 | 1E | 2.0 0.0 0.0 | 1.000 2.000 3.000 | 12.085 -4.331 0.371 | | | K Factor = 5.60 Vel = 7.23 | |
| | 0.0 19.47 | | | | | 8.125 | | | K Factor = 6.83 | |
| D014 to 24 | 18.67 18.67 | 1.049 120.0 0.1147 | 1E | 2.0 0.0 0.0 | 1.000 2.000 3.000 | 11.119 -4.331 0.344 | | | K Factor = 5.60 Vel = 6.93 | |
| | 0.0 18.67 | | | | | 7.132 | | | K Factor = 6.99 | |
| D015 to 20 | 19.88 19.88 | 1.049 120.0 0.1287 | 1E | 2.0 0.0 0.0 | 1.000 2.000 3.000 | 12.608 -4.331 0.386 | | | K Factor = 5.60 Vel = 7.38 | |
| | 0.0 19.88 | | | | | 8.663 | | | K Factor = 6.75 | |
| D016 to 12 | 21.56 21.56 | 1.049 120.0 0.1495 | 1T | 5.0 0.0 0.0 | 1.000 5.000 6.000 | 14.823 -4.331 0.897 | | | K Factor = 5.60 Vel = 8.00 | |
| | 0.0 21.56 | | | | | 11.389 | | | K Factor = 6.39 | |
| 29 to 14 | 14.82 14.82 | 1.097 120.0 0.0600 | 1T | 6.217 0.0 0.0 | 0.080 6.217 6.297 | 7.224 -4.331 0.378 | | | Vel = 5.03 | |
| | 0.0 14.82 | | | | | 3.271 | | | K Factor = 8.19 | |
| 28 to 15 | 15.02 15.02 | 1.097 120.0 0.0616 | 1T | 6.217 0.0 0.0 | 1.010 6.217 7.227 | 7.422 -4.331 0.445 | | | Vel = 5.10 | |
| | 0.0 15.02 | | | | | 3.536 | | | K Factor = 7.99 | |
| 27 to 16 | 15.66 15.66 | 1.097 120.0 0.0665 | 1T | 6.217 0.0 0.0 | 1.450 6.217 7.667 | 8.064 -4.331 0.510 | | | Vel = 5.32 | |
| | 0.0 15.66 | | | | | 4.243 | | | K Factor = 7.60 | |

Final Calculations - Hazen-Williams

Maine Fire Protection
 Pearl Place II 5TH Floor

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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 | ***** |
|-----------------------|----------------|--------------------------|-----------------------|---------------------|--------------------------|--------------------------|----------------|-------|-----------------|-------|
| 26 to 17 | 15.78 15.78 | 1.097 120.0 0.0676 | 1T | 6.217 0.0 0.0 | 2.290 6.217 8.507 | 8.196 -4.331 0.575 | | | Vel = 5.36 | |
| | 0.0 15.78 | | | | | | 4.440 | | K Factor = 7.49 | |
| 25 to 18 | 16.89 16.89 | 1.097 120.0 0.0766 | 1T | 6.217 0.0 0.0 | 1.450 6.217 7.667 | 9.387 -4.331 0.587 | | | Vel = 5.73 | |
| | 0.0 16.89 | | | | | | 5.643 | | K Factor = 7.11 | |
| 24 to 19 | 18.67 18.67 | 1.097 120.0 0.0921 | 1T | 6.217 0.0 0.0 | 0.680 6.217 6.897 | 7.132 0.0 0.635 | | | Vel = 6.34 | |
| | 0.0 18.67 | | | | | | 7.767 | | K Factor = 6.70 | |
| 23 to 2 | 18.25 18.25 | 1.097 120.0 0.0884 | 1T | 6.217 0.0 0.0 | 1.720 6.217 7.937 | 6.618 0.0 0.702 | | | Vel = 6.19 | |
| | 0.0 18.25 | | | | | | 7.320 | | K Factor = 6.75 | |
| 22 to 3 | 18.22 18.22 | 1.097 120.0 0.0881 | 1T | 6.217 0.0 0.0 | 4.310 6.217 10.527 | 6.579 0.0 0.927 | | | Vel = 6.18 | |
| | 0.0 18.22 | | | | | | 7.506 | | K Factor = 6.65 | |
| 21 to 4 | 19.47 19.47 | 1.097 120.0 0.0995 | 1T | 6.217 0.0 0.0 | 1.510 6.217 7.727 | 8.125 0.0 0.769 | | | Vel = 6.61 | |
| | 0.0 19.47 | | | | | | 8.894 | | K Factor = 6.53 | |
| 20 to 5 | 19.88 19.88 | 1.097 120.0 0.1035 | 1T | 6.217 0.0 0.0 | 4.310 6.217 10.527 | 8.663 0.0 1.090 | | | Vel = 6.75 | |
| | 0.0 19.88 | | | | | | 9.753 | | K Factor = 6.37 | |
| 13 to 14 | 14.91 14.91 | 1.097 120.0 0.0606 | | 0.0 0.0 0.0 | 4.750 0.0 4.750 | 7.314 -4.331 0.288 | | | Vel = 5.06 | |
| 14 to 15 | 14.81 29.72 | 1.442 120.0 0.0576 | | 0.0 0.0 0.0 | 4.600 0.0 4.600 | 3.271 0.0 0.265 | | | Vel = 5.84 | |
| 15 to 16 | 15.02 44.74 | 1.442 120.0 0.1225 | | 0.0 0.0 0.0 | 5.770 0.0 5.770 | 3.536 0.0 0.707 | | | Vel = 8.79 | |
| 16 to 17 | 15.66 60.4 | 1.442 120.0 0.2141 | | 0.0 0.0 0.0 | 0.920 0.0 0.920 | 4.243 0.0 0.197 | | | Vel = 11.87 | |



PORTLAND MAINE

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Receipts Details:

Tender Information: Check , BusinessName: Maine Fire Protection Systems, Check Number: 10335

Tender Amount: 1610.00

Receipt Header:

Cashier Id: gguertin

Receipt Date: 5/25/2012

Receipt Number: 44346

Receipt Details:

| | | | |
|---|---------|----------------|-----------|
| Referance ID: | 6667 | Fee Type: | BP-Constr |
| Receipt Number: | 0 | Payment Date: | |
| Transaction Amount: | 1610.00 | Charge Amount: | 1610.00 |
| Job ID: Job ID: 2012-05-4090-FAFS - waterbased firre suppression system | | | |
| Additional Comments: Avesta Housing | | | |

Thank You for your Payment!