

DISPLAY THIS CARD ON PRINCIPAL FRONTAGE OF WORK



# CITY OF PORTLAND BUILDING PERMIT



**This is to certify that**

AVESTA HOUSING DEVELOPMENT  
CORPORATION/Dean & Allyn Inc.

**PERMIT ID:** 2012-65641

**Located at**

34 MOODY ST

**CBL:** 003 H001001

has permission to **install NFPA 13R sprinkler systems.**

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 procured prior to occupancy.

*Bj Auvalley*  
Fire Prevention Officer

(58)

Code Enforcement Officer / Plan Reviewer

**THIS CARD MUST BE POSTED ON THE STREET SIDE OF THE PROPERTY  
THERE IS A PENALTY FOR REMOVING THIS CARD**

**BUILDING PERMIT INSPECTION PROCEDURES**  
Please call 874-8703 (ONLY)  
or email: [buildinginspections@portlandmaine.gov](mailto: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.**

**REQUIRED INSPECTIONS:**

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.

**City of Portland, Maine - Building or Use Permit**

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

<b>Permit No:</b> 201265641	<b>Date Applied For:</b> 12/17/2012	<b>CBL:</b> 003 H001001
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<b>Location of Construction:</b> 34 MOODY ST	<b>Owner Name:</b> AVESTA HOUSING DEVELOPM	<b>Owner Address:</b> 307 CUMBERLAND AVE	<b>Phone:</b>
<b>Business Name:</b>	<b>Contractor Name:</b> Dean & Allyn Inc.	<b>Contractor Address:</b> P.O. Box 709, 32 Lewiston Rd Gray	<b>Phone</b> (207) 657-5646
<b>Lessee/Buyer's Name</b>	<b>Phone:</b>	<b>Permit Type:</b> Fire Suppression Water Based	

<b>Proposed Use:</b> Same: 16 residential condos in two buildings on the same lot	<b>Proposed Project Description:</b> install NFPA 13R sprinkler systems.
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<b>Dept:</b> Zoning	<b>Status:</b> Approved	<b>Reviewer:</b> Marge Schmuckal	<b>Approval Date:</b> 12/18/2012
<b>Note:</b>	<b>Ok to Issue:</b> <input checked="" type="checkbox"/>		

<b>Dept:</b> Fire	<b>Status:</b> Approved w/Conditions	<b>Reviewer:</b> Ben Wallace Jr	<b>Approval Date:</b> 01/01/2013
<b>Note:</b>	<b>Ok to Issue:</b> <input checked="" type="checkbox"/>		

- 1) Notice: NFPA 1 prohibits obstructions to, and requires a minimum of 36 inches clearance around, fire protection equipment (ncluding alarm panels), fire department inlet connections, or fire protection system control valves. It also prohibits storage of combustible materials in boiler rooms, mechanical rooms, or electrical equipment rooms. (See 10.19.5 and 13.1.3 through 13.1.4.1)
- 2) All control, drain, and test connection valves shall be provided with permanently marked weatherproof metal or rigid plastic identification signs secured with corrosion-resistant wire, chain, or other approved means.
- 3) A 4100 series Knox Box is required for each building. A hinged 3200 series Knox Box may be installed if the building is master keyed.
- 4) The entire sprinkler system shall be maintained in accordance with NFPA 25, Standard for Inspection, Testing and Maintenance of Water-Based Fire Protection Systems, 2008 edition.
- 5) System acceptance and commissioning must be coordinated with alarm and suppression system contractors and the Fire Department. Call 874-8703 to schedule.
- 6) Fire department connection shall be one 2 ½" inlet for each building.
- 7) 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 the system has been placed back in service.
- 8) A sprinkler supervisory system shall be provided in accordance with NFPA 101, Life Safety Code, and NFPA 72, National Fire Alarm and Signaling Code. Sprinkler supervisory systems shall monitor for water flow and sprinkler supervisory signals via an approved fire alarm panel to central station. One smoke detector shall be located over the panel, a manual pull station located at the front door, and an audible water flow alarm provided. A separate fire alarm permit from a certified fire alarm compant is required.
- 9) Installation shall be in accordance with the City of Portland Fire Department Regulations and NFPA 13R as published. A copy of the State Sprinkler permit(s) with RMS date and signature and the Contractor's Material and Test Certificates for Aboveground Piping (NFPA 13R figure 10.1.2) shall be provided prior to scheduling of a final inspection.

**City of Portland, Maine - Building or Use Permit Application**

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

Permit No: 2012-65641	Issue Date:	CBL: 003 H001001
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<b>Location of Construction:</b> 34 MOODY ST	<b>Owner Name:</b> AVESTA HOUSING DEVELOPM	<b>Owner Address:</b> 307 CUMBERLAND AVE	<b>Phone:</b>
<b>Business Name:</b>	<b>Contractor Name:</b> Dean & Allyn Inc.	<b>Contractor Address:</b> P.O. Box 709, 32 Lewiston Rd Gray	<b>Phone:</b> (207) 657-5646
<b>Lessee/Buyer's Name</b>	<b>Phone:</b>	<b>Permit Type:</b> Fire Alarm / Suppression	<b>Zone:</b> R6
<b>Past Use:</b> 16 affordable residential condos in two buildings on the same lot	<b>Proposed Use:</b> Same: 16 residential condos in two buildings on the same lot	<b>Permit Fee:</b> \$410.00	<b>Cost of Work:</b> \$39,000.00
		<b>FIRE DEPT:</b> <input checked="" type="checkbox"/> Approved <input type="checkbox"/> Denied <input type="checkbox"/> N/A 1/2/13	<b>INSPECTION:</b> Use Group: Type:
<b>Proposed Project Description:</b> Install a Water-based Fire Suppression System		<b>Signature:</b> <i>[Signature]</i> (SO)	<b>Signature:</b>
		<b>PEDESTRIAN ACTIVITIES DISTRICT (P.A.D.)</b>	
		<b>Action:</b> <input type="checkbox"/> Approved <input type="checkbox"/> Approved w/Conditions <input type="checkbox"/> Denied	
		<b>Signature:</b>	<b>Date:</b>

<b>Permit Taken By:</b> Idobson	<b>Date Applied For:</b> 12/17/2012	<b>Zoning Approval</b>		
<ol style="list-style-type: none"> <li>This permit application does not preclude the Applicant(s) from meeting applicable State and Federal Rules.</li> <li>Building permits do not include plumbing, septic or electrical work.</li> <li>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..</li> </ol>		<b>Special Zone or Reviews</b> <input type="checkbox"/> Shoreland <input type="checkbox"/> Wetland <input type="checkbox"/> Flood Zone <input type="checkbox"/> Subdivision <input type="checkbox"/> Site Plan  Maj <input type="checkbox"/> Minor <input type="checkbox"/> MM <input type="checkbox"/> <i>OK</i> Date: 12/18/12	<b>Zoning Appeal</b> <input type="checkbox"/> Variance <input type="checkbox"/> Miscellaneous <input type="checkbox"/> Conditional Use <input type="checkbox"/> Interpretation <input type="checkbox"/> Approved <input type="checkbox"/> Denied  Date:	<b>Historic Preservation</b> <input checked="" type="checkbox"/> Not in District or Landmark <input type="checkbox"/> Does Not Require Review <input type="checkbox"/> Requires Review <input type="checkbox"/> Approved <input type="checkbox"/> Approved w/Conditions <input type="checkbox"/> Denied  Date: <i>[Signature]</i>

**CERTIFICATION**

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

2012-65641



# 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.

Installation address: School Adams Redevelopment CBL: 3 M-1

Exact location: (within structure) Vesper St

Type of occupancy(s) (NFPA & ICC): NFPA

Building owner: AVISTA

Managing Supervisor (RMS): DANA Stewart License No: 261

Supervisor phone: 657 5646 E-mail: dstewart@deanandallyn.com

Installing contractor: Dean and allyn License No: 262

Contractor phone: 657 5646 E-mail: hking@Maine.rr.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: \_\_\_\_\_

NFPA Standard this system is designed to: NFPA #13R Edition: \_\_\_\_\_

\*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](http://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.

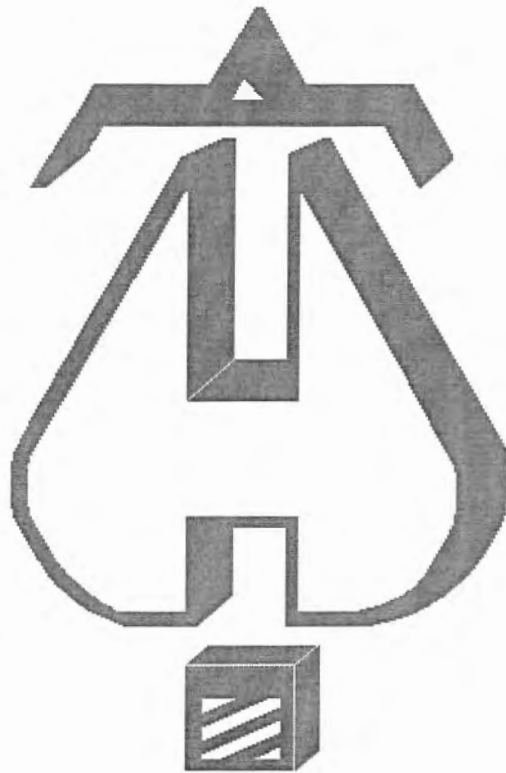
<b>COST OF WORK:</b> <u>38100</u>
<b>PERMIT FEE:</b> <u>\$416</u>
<small>(\$10 PER \$1,000 + \$30 FOR THE FIRST \$1,000)</small>
<b>RECEIVED</b>
<b>DEC 17 2012</b>
<b>Dept. of Building Inspections City of Portland Maine</b>

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: Harry King Date: 12-12-12



... Fire Protection by Computer Design

DEAN & ALLYN, INC.  
PO BOX 709  
116 LEWISTON ROAD  
GRAY, MAINE 04039  
207-657-5646

Job Name : ADAMS SCHOOL BUILDING A FIRST FLOOR  
Building : BUILDING A FIRST FLOOR CENTER  
Location : VESPER STREET PORTLAND MAINE  
System : ONE  
Contract : C121102  
Data File : ADAMS SCHOOL BUILDING A FIRST FLOOR CENTER.WXF

HYDRAULIC DESIGN INFORMATION SHEET

Name - ADAMS SCHOOL REDEVELOPMENT PROJECT Date - 11-1-12  
Location - VESPER STREET PORTLAND MAINE  
Building - BUILDING A FIRST FLOOR CENTER System No. - ONE  
Contractor - DEAN AND ALLYN, INC. Contract No. - C121102  
Calculated By - HARRY KING Drawing No. - 1 OF 2  
Construction: (X) Combustible ( ) Non-Combustible Ceiling Height 8'  
OCCUPANCY - HOUSING

S Type of Calculation: ( )NFPA 13 Residential (X)NFPA 13R ( )NFPA 13D  
Y Number of Sprinklers Flowing: ( )1 ( )2 (X)4 ( )  
S ( )Other  
T ( )Specific Ruling Made by Date  
E  
M Listed Flow at Start Point - 17 Gpm System Type  
Listed Pres. at Start Point - 12 Psi (X) Wet ( ) Dry  
D MAXIMUM LISTED SPACING 18 x 18 ( ) Deluge ( ) PreAction  
E Domestic Flow Added - Gpm Sprinkler or Nozzle  
S Additional Flow Added - Gpm Make VIKING Model FREEDOM  
I Elevation at Highest Outlet - 12 Feet Size 1/2" K-Factor 4.9  
G Note:CUSHION: 7.12 PSI Temperature Rating 155  
N

Calculation Summary Gpm Required 54.0 C-Factor Used: Psi Required 36.8 Overhead 120 At Test Underground 120

W Water Flow Test: Pump Data: Tank or Reservoir:  
A Date of Test - 6-2-2005 Rated Cap. Cap.  
T Time of Test - @ Psi Elev.  
E Static (Psi) - 44 Elev.  
R Residual (Psi) - 37 Other Well  
Flow (Gpm) - 503 Proof Flow Gpm  
S Elevation - 0

P Location: MUNJOY AT MOODY STREETS

L Source of Information: PORTLAND WATER DEPT  
Y

## Fittings Used Summary

DEAN & ALLYN, INC.  
ADAMS SCHOOL BUILDING A FIRST FLOOR

Page 2  
Date 11-1-12

Fitting Legend		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
Abbrev.	Name																				
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
S	NFPA 13 Swing Check	0	0	5	7	9	11	14	16	19	22	27	32	45	55	65					
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

## 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.



Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
1A	25.0	4.9	7.0	na	12.96	0.05	256	7.0
06	12.0	4.9	12.0	na	16.97	0.05	324	12.0
07	12.0	4.9	13.64	na	18.1	0.05	324	12.0
08	12.0	4.9	14.87	na	18.9	0.05	324	12.0
20	12.0		15.27	na				
21	12.0		15.93	na				
22	12.0		16.23	na				
15	12.0		19.88	na				
TR	7.0		24.52	na				
FF	0.0		36.2	na				
CTY	0.0		36.77	na				

The maximum velocity is 11.58 and it occurs in the pipe between nodes 22 and 15

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv. Ln.	Pipe Ftnng's Total	Pt Pe Pf	Pt Pv Pn	*****	Notes	*****
1A	12.96	1.049	1T 5.0	1.000	7.000			K Factor = 4.90	
to		120.0	0.0	5.000	10.828				
1	12.96	0.0583	0.0	6.000	0.350			Vel = 4.81	
	0.0								
	12.96				18.178			K Factor = 3.04	
06	16.97	1.049	1E 2.0	22.000	12.000			K Factor = 4.90	
to		120.0	2T 10.0	12.000	0.0				
20	16.97	0.0961	0.0	34.000	3.266			Vel = 6.30	
	0.0								
	16.97				15.266			K Factor = 4.34	
07	18.10	1.049	1T 5.0	10.000	13.644			K Factor = 4.90	
to		120.0	0.0	5.000	0.0				
20	18.1	0.1081	0.0	15.000	1.622			Vel = 6.72	
	0.0								
	18.10				15.266			K Factor = 4.63	
08	18.90	1.049	1T 5.0	4.000	14.871			K Factor = 4.90	
to		120.0	0.0	5.000	0.0				
21	18.9	0.1172	0.0	9.000	1.055			Vel = 7.02	
	0.0								
	18.90				15.926			K Factor = 4.74	
20	35.07	1.38	1T 6.0	4.000	15.266				
to		120.0	0.0	6.000	0.0				
22	35.07	0.0968	0.0	10.000	0.968			Vel = 7.52	
	0.0								
	35.07				16.234			K Factor = 8.70	
21	18.90	1.38	0.0	10.000	15.926				
to		120.0	0.0	0.0	0.0				
22	18.9	0.0308	0.0	10.000	0.308			Vel = 4.05	
22	35.07	1.38	1T 6.0	11.000	16.234				
to		120.0	0.0	6.000	0.0				
15	53.97	0.2147	0.0	17.000	3.650			Vel = 11.58	
15	0.0	1.38	1E 3.0	8.500	19.884				
to		120.0	0.0	3.000	2.166				
TR	53.97	0.2148	0.0	11.500	2.470			Vel = 11.58	
TR	0.0	1.38	1S 7.0	7.000	24.520				
to		120.0	1Z 0.0	7.000	8.032			* Fixed loss = 5	
FF	53.97	0.2607	0.0	14.000	3.650			Vel = 11.58	
FF	0.0	4.1	3E 32.783	500.000	36.202				
to		120.0	0.0	32.783	0.0				
CTY	53.97	0.0011	0.0	532.783	0.569			Vel = 1.31	
	0.0								

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv. Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	*****	Notes	*****
	53.97				36.771		K Factor =	8.90	

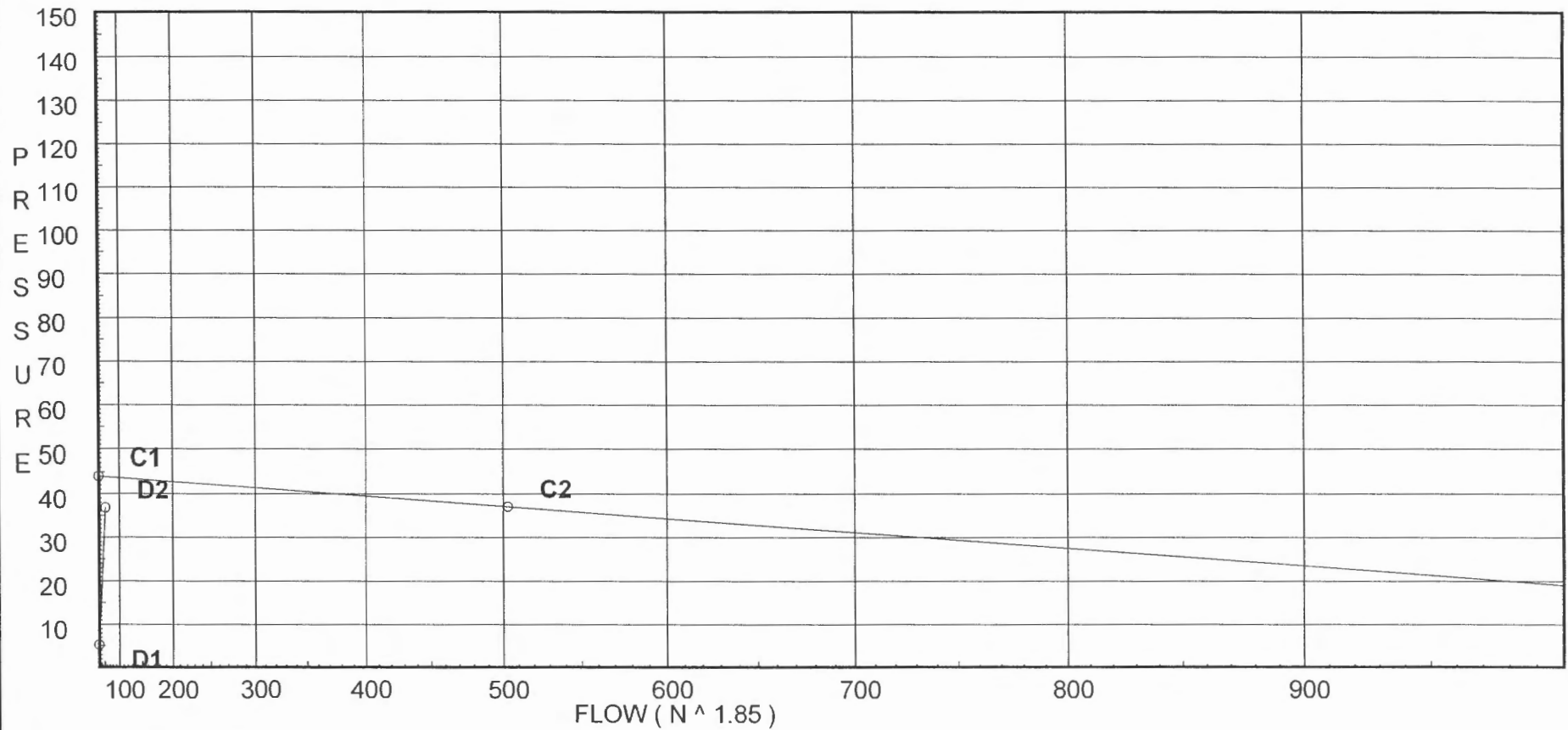
# Water Supply Curve (C)

DEAN & ALLYN, INC.  
ADAMS SCHOOL BUILDING A FIRST FLOOR

Page 6  
Date 11-1-12

City Water Supply:  
C1 - Static Pressure : 44  
C2 - Residual Pressure: 37  
C2 - Residual Flow : 503

Demand:  
D1 - Elevation : 5.197  
D2 - System Flow : 53.969  
D2 - System Pressure : 36.771  
Hose ( Demand ) :  
D3 - System Demand : 53.969  
Safety Margin : 7.116





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

DEAN & ALLYN, INC.  
PO BOX 709  
116 LEWISTON ROAD  
GRAY, MAINE 04039  
207-657-5646

Job Name : ADAMS SCHOOL BUILDING A FIRST FLOOR  
Building : BUILDING A FIRST FLOOR CENTER  
Location : VESPER STREET PORTLAND MAINE  
System : ONE  
Contract : C121102  
Data File : ADAMS SCHOOL BUILDING A FIRST FLOOR CENTER.WXF

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Building - BUILDING A FIRST FLOOR CENTER System No. - ONE  
Contractor - DEAN AND ALLYN, INC. Contract No. - C121102  
Calculated By - HARRY KING Drawing No. - 1 OF 2  
Construction: (X) Combustible ( ) Non-Combustible Ceiling Height 8'  
OCCUPANCY - HOUSING

S Type of Calculation: ( )NFPA 13 Residential (X)NFPA 13R ( )NFPA 13D  
Y Number of Sprinklers Flowing: ( )1 ( )2 (X)4 ( )  
S ( )Other  
T ( )Specific Ruling Made by Date  
E  
M Listed Flow at Start Point - 17 Gpm System Type  
Listed Pres. at Start Point - 12 Psi (X) Wet ( ) Dry  
D MAXIMUM LISTED SPACING 18 x 18 ( ) Deluge ( ) PreAction  
E Domestic Flow Added - Gpm Sprinkler or Nozzle  
S Additional Flow Added - Gpm Make VIKING Model FREEDOM  
I Elevation at Highest Outlet - 12 Feet Size 1/2" K-Factor 4.9  
G Note:CUSHION: 7.12 PSI Temperature Rating 155  
N

Calculation Gpm Required 54.0 Psi Required 36.8 At Test  
Summary C-Factor Used: Overhead 120 Underground 120

W Water Flow Test: Pump Data: Tank or Reservoir:  
A Date of Test - 6-2-2005 Rated Cap. Cap.  
T Time of Test - @ Psi Elev.  
E Static (Psi) - 44 Elev.  
R Residual (Psi) - 37 Other Well  
Flow (Gpm) - 503 Proof Flow Gpm  
S Elevation - 0

P Location: MUNJOY AT MOODY STREETS  
P  
L Source of Information: PORTLAND WATER DEPT  
Y

## Fittings Used Summary

DEAN & ALLYN, INC.  
ADAMS SCHOOL BUILDING A FIRST FLOOR

Page 2  
Date 11-1-12

Fitting Legend		½	¾	1	1¼	1½	2	2½	3	3½	4	5	6	8	10	12	14	16	18	20	24
Abbrev.	Name																				
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
S	NFPA 13 Swing Check	0	0	5	7	9	11	14	16	19	22	27	32	45	55	65					
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

## 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

DEAN & ALLYN, INC.  
ADAMS SCHOOL BUILDING A FIRST FLOOR

Page 3  
Date 11-1-12

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
1A	25.0	4.9	7.0	na	12.96	0.05	256	7.0
06	12.0	4.9	12.0	na	16.97	0.05	324	12.0
07	12.0	4.9	13.64	na	18.1	0.05	324	12.0
08	12.0	4.9	14.87	na	18.9	0.05	324	12.0
20	12.0		15.27	na				
21	12.0		15.93	na				
22	12.0		16.23	na				
15	12.0		19.88	na				
TR	7.0		24.52	na				
FF	0.0		36.2	na				
CTY	0.0		36.77	na				

The maximum velocity is 11.58 and it occurs in the pipe between nodes 22 and 15



Final Calculations - Hazen-Williams

DEAN & ALLYN, INC.  
ADAMS SCHOOL BUILDING A FIRST FLOOR

Page 4  
Date 11-1-12

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv. Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	***** Notes *****
1A to 1	12.96 12.96	1.049 120.0 0.0583	1T 5.0 0.0 0.0	1.000 5.000 6.000	7.000 10.828 0.350		K Factor = 4.90 Vel = 4.81
	0.0 12.96					18.178	K Factor = 3.04
06 to 20	16.97 16.97	1.049 120.0 0.0961	1E 2.0 2T 10.0 0.0	22.000 12.000 34.000	12.000 0.0 3.266		K Factor = 4.90 Vel = 6.30
	0.0 16.97					15.266	K Factor = 4.34
07 to 20	18.10 18.1	1.049 120.0 0.1081	1T 5.0 0.0 0.0	10.000 5.000 15.000	13.644 0.0 1.622		K Factor = 4.90 Vel = 6.72
	0.0 18.10					15.266	K Factor = 4.63
08 to 21	18.90 18.9	1.049 120.0 0.1172	1T 5.0 0.0 0.0	4.000 5.000 9.000	14.871 0.0 1.055		K Factor = 4.90 Vel = 7.02
	0.0 18.90					15.926	K Factor = 4.74
20 to 22	35.07 35.07	1.38 120.0 0.0968	1T 6.0 0.0 0.0	4.000 6.000 10.000	15.266 0.0 0.968		Vel = 7.52
	0.0 35.07					16.234	K Factor = 8.70
21 to 22	18.90 18.9	1.38 120.0 0.0308	0.0 0.0 0.0	10.000 0.0 10.000	15.926 0.0 0.308		Vel = 4.05
22 to 15	35.07 53.97	1.38 120.0 0.2147	1T 6.0 0.0 0.0	11.000 6.000 17.000	16.234 0.0 3.650		Vel = 11.58
15 to TR	0.0 53.97	1.38 120.0 0.2148	1E 3.0 0.0 0.0	8.500 3.000 11.500	19.884 2.166 2.470		Vel = 11.58
TR to FF	0.0 53.97	1.38 120.0 0.2607	1S 7.0 1Z 0.0 0.0	7.000 7.000 14.000	24.520 8.032 3.650		* Fixed loss = 5 Vel = 11.58
FF to CTY	0.0 53.97	4.1 120.0 0.0011	3E 32.783 0.0 0.0	500.000 32.783 532.783	36.202 0.0 0.569		Vel = 1.31
	0.0						

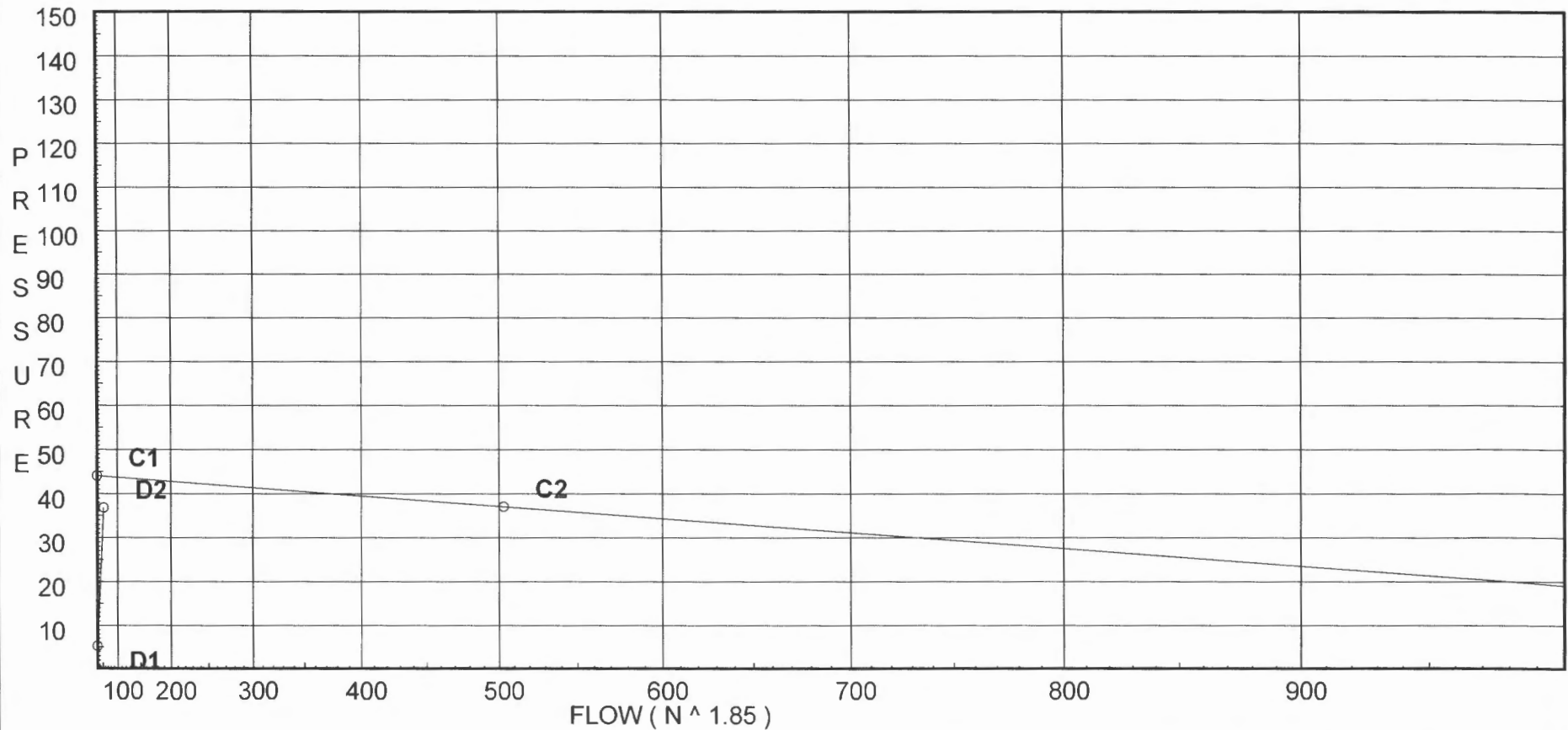
# Water Supply Curve (C)

DEAN & ALLYN, INC.  
ADAMS SCHOOL BUILDING A FIRST FLOOR

Page 6  
Date 11-1-12

City Water Supply:  
C1 - Static Pressure : 44  
C2 - Residual Pressure: 37  
C2 - Residual Flow : 503

Demand:  
D1 - Elevation : 5.197  
D2 - System Flow : 53.969  
D2 - System Pressure : 36.771  
Hose ( Demand ) :  
D3 - System Demand : 53.969  
Safety Margin : 7.116





... Fire Protection by Computer Design

DEAN & ALLYN, INC.  
PO BOX 709  
116 LEWISTON ROAD  
GRAY, MAINE 04039  
207-657-5646

Job Name : ADAMS SCHOOL BUILDING A FIRST FLOOR  
Building : BUILDING A FIRST FLOOR  
Location : VESPER STREET PORTLAND MAINE  
System : ONE  
Contract : C121102  
Data File : ADAMS SCHOOL BUILDING A FIRST FLOOR.WXF

HYDRAULIC DESIGN INFORMATION SHEET

Name - ADAMS SCHOOL REDEVELOPMENT PROJECT Date - 11-1-12  
Location - VESPER STREET PORTLAND MAINE  
Building - BUILDING A FIRST FLOOR System No. - ONE  
Contractor - DEAN AND ALLYN, INC. Contract No. - C121102  
Calculated By - HARRY KING Drawing No. - 1 OF 2  
Construction: (X) Combustible ( ) Non-Combustible Ceiling Height 8'  
OCCUPANCY - HOUSING

S Type of Calculation: ( )NFPA 13 Residential (X)NFPA 13R ( )NFPA 13D  
Y Number of Sprinklers Flowing: ( )1 ( )2 (X)4 ( )  
S ( )Other  
T ( )Specific Ruling Made by Date  
E  
M Listed Flow at Start Point - 20 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 - Gpm Sprinkler or Nozzle  
S Additional Flow Added - Gpm Make VIKING Model FREEDOM  
I Elevation at Highest Outlet - 12 Feet Size 1/2" K-Factor 4.9  
G Note:CUSHION: 5.8 PSI Temperature Rating 155  
N

Calculation Summary Gpm Required 40.3 C-Factor Used: Psi Required 38.1 Overhead 120 At Test Underground 120

W Water Flow Test: Pump Data: Tank or Reservoir:  
A Date of Test - 6-2-2005 Rated Cap. Cap.  
T Time of Test - @ Psi Elev.  
E Static (Psi) - 44 Elev.  
R Residual (Psi) - 37 Other Well  
Flow (Gpm) - 503 Proof Flow Gpm  
S Elevation - 0

P Location: MUNJOY AT MOODY STREETS

P  
L Source of Information: PORTLAND WATER DEPT  
Y

# Fittings Used Summary

DEAN & ALLYN, INC.  
ADAMS SCHOOL BUILDING A FIRST FLOOR

Page 2  
Date 11-1-12

Fitting Legend		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
Abbrev.	Name																				
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
S	NFPA 13 Swing Check	0	0	5	7	9	11	14	16	19	22	27	32	45	55	65					
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

## 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.

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
1A	25.0	4.9	7.0	na	12.96	0.05	256	7.0
04	12.0	4.9	16.7	na	20.02	0.05	400	16.7
05	12.0	4.9	17.18	na	20.31	0.05	400	16.7
4.5	12.0		17.35	na				
14	12.0		17.85	na				
15	12.0		23.99	na				
TR	7.0		27.6	na				
FF	0.0		37.76	na				
CTY	0.0		38.1	na				

The maximum velocity is 8.65 and it occurs in the pipe between nodes 14 and 15

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv. Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	***** Notes *****
1A to 1	12.96	1.049 120.0	1T 5.0 0.0	1.000 5.000	7.000 10.828		K Factor = 4.90 Vel = 4.81
	12.96	0.0583	0.0	6.000	0.350		
	0.0						
	12.96				18.178		K Factor = 3.04
04 to 4.5	20.02	1.38 120.0	1T 6.0 0.0	13.000 6.000	16.700 0.0		K Factor = 4.90 Vel = 4.29
	20.02	0.0343	0.0	19.000	0.652		
	0.0						
	20.02				17.352		K Factor = 4.81
05 to 14	20.31	1.38 120.0	1T 6.0 0.0	13.000 6.000	17.180 0.0		K Factor = 4.90 Vel = 4.36
	20.31	0.0352	0.0	19.000	0.669		
	0.0						
	20.31				17.849		K Factor = 4.81
4.5 to 14	20.02	1.38 120.0	0.0 0.0	14.500 0.0	17.352 0.0		Vel = 4.29
	20.02	0.0343	0.0	14.500	0.497		
14 to 15	20.31	1.38 120.0	1T 6.0 0.0	43.000 6.000	17.849 0.0		Vel = 8.65
	40.33	0.1253	0.0	49.000	6.140		
15 to TR	0.0	1.38 120.0	1E 3.0 0.0	8.500 3.000	23.989 2.166		Vel = 8.65
	40.33	0.1252	0.0	11.500	1.440		
TR to FF	0.0	1.38 120.0	1S 7.0 1Z 0.0	7.000 7.000	27.595 8.032		* Fixed loss = 5 Vel = 8.65
	40.33	0.1521	0.0	14.000	2.130		
FF to CTY	0.0	4.1 120.0	4E 43.71 0.0	500.000 43.710	37.757 0.0		Vel = 0.98
	40.33	0.0006	0.0	543.710	0.339		
	0.0						
	40.33				38.096		K Factor = 6.53

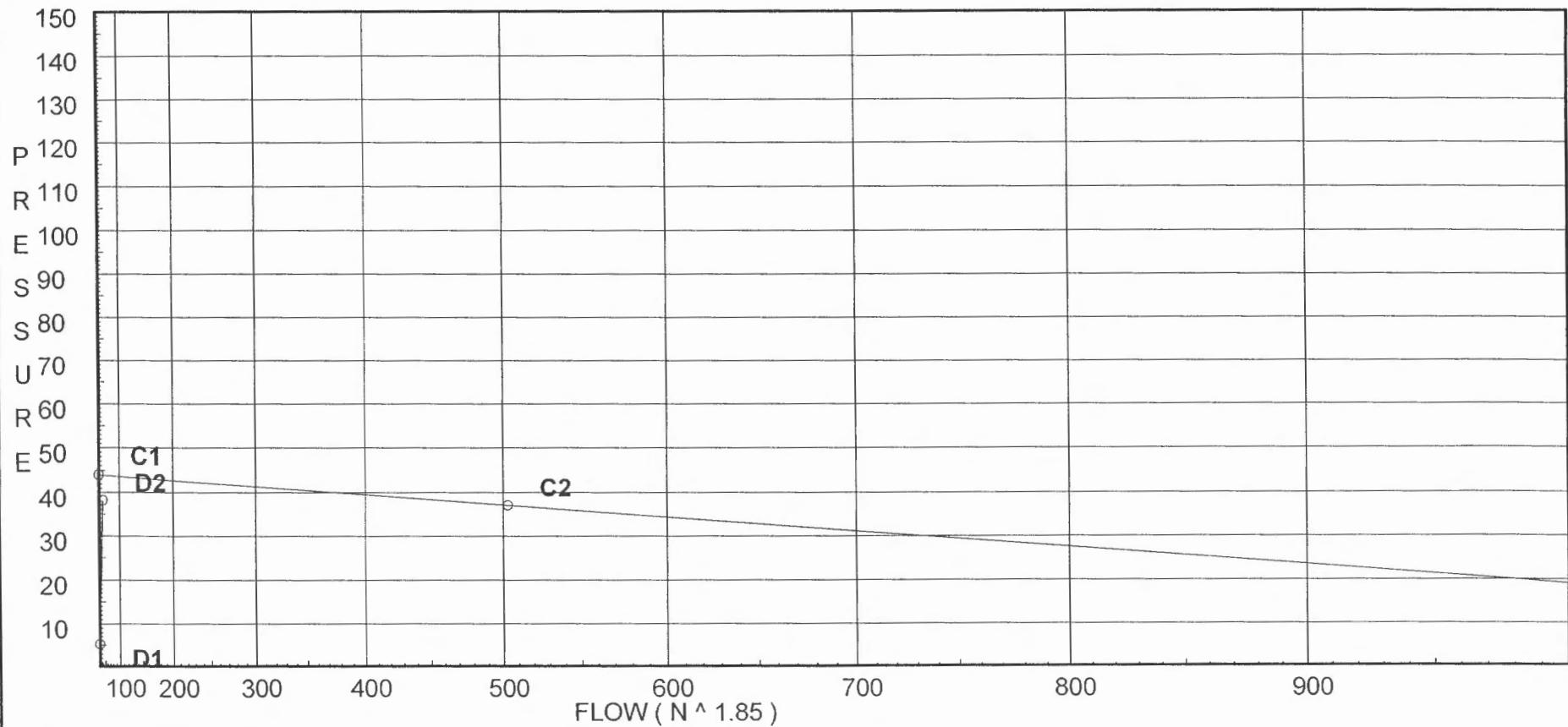
# Water Supply Curve (C)

DEAN & ALLYN, INC.  
ADAMS SCHOOL BUILDING A FIRST FLOOR

Page 5  
Date 11-1-12

City Water Supply:  
C1 - Static Pressure : 44  
C2 - Residual Pressure: 37  
C2 - Residual Flow : 503

Demand:  
D1 - Elevation : 5.197  
D2 - System Flow : 40.334  
D2 - System Pressure : 38.096  
Hose ( Demand ) :  
D3 - System Demand : 40.334  
Safety Margin : 5.839







... Fire Protection by Computer Design

DEAN & ALLYN, INC.  
PO BOX 709  
116 LEWISTON ROAD  
GRAY, MAINE 04039  
207-657-5646

Job Name : ADAMS SCHOOL BUILDING A FIRST FLOOR  
Building : BUILDING A FIRST FLOOR  
Location : VESPER STREET PORTLAND MAINE  
System : ONE  
Contract : C121102  
Data File : ADAMS SCHOOL BUILDING A FIRST FLOOR.WXF

HYDRAULIC DESIGN INFORMATION SHEET

Name - ADAMS SCHOOL REDEVELOPMENT PROJECT Date - 11-1-12  
Location - VESPER STREET PORTLAND MAINE  
Building - BUILDING A FIRST FLOOR System No. - ONE  
Contractor - DEAN AND ALLYN, INC. Contract No. - C121102  
Calculated By - HARRY KING Drawing No. - 1 OF 2  
Construction: (X) Combustible ( ) Non-Combustible Ceiling Height 8'  
OCCUPANCY - HOUSING

S Type of Calculation: ( )NFPA 13 Residential (X)NFPA 13R ( )NFPA 13D  
Y Number of Sprinklers Flowing: ( )1 ( )2 (X)4 ( )  
S ( )Other  
T ( )Specific Ruling Made by Date  
E  
M Listed Flow at Start Point - 20 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 - Gpm Sprinkler or Nozzle  
S Additional Flow Added - Gpm Make VIKING Model FREEDOM  
I Elevation at Highest Outlet - 12 Feet Size 1/2" K-Factor 4.9  
G Note:CUSHION: 5.8 PSI Temperature Rating 155  
N

Calculation Summary Gpm Required 40.3 C-Factor Used: Psi Required 38.1 Overhead 120 At Test Underground 120

W Water Flow Test: Pump Data: Tank or Reservoir:  
A Date of Test - 6-2-2005 Rated Cap. Cap.  
T Time of Test - @ Psi Elev.  
E Static (Psi) - 44 Elev.  
R Residual (Psi) - 37 Other Well  
Flow (Gpm) - 503 Proof Flow Gpm  
S Elevation - 0

P Location: MUNJOY AT MOODY STREETS

P  
L Source of Information: PORTLAND WATER DEPT  
Y

## Fittings Used Summary

DEAN & ALLYN, INC.  
ADAMS SCHOOL BUILDING A FIRST FLOOR

Page 2  
Date 11-1-12

Fitting Legend		½	¾	1	1¼	1½	2	2½	3	3½	4	5	6	8	10	12	14	16	18	20	24
Abbrev.	Name																				
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
S	NFPA 13 Swing Check	0	0	5	7	9	11	14	16	19	22	27	32	45	55	65					
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

## 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

DEAN & ALLYN, INC.  
ADAMS SCHOOL BUILDING A FIRST FLOOR

Page 3  
Date 11-1-12

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
1A	25.0	4.9	7.0	na	12.96	0.05	256	7.0
04	12.0	4.9	16.7	na	20.02	0.05	400	16.7
05	12.0	4.9	17.18	na	20.31	0.05	400	16.7
4.5	12.0		17.35	na				
14	12.0		17.85	na				
15	12.0		23.99	na				
TR	7.0		27.6	na				
FF	0.0		37.76	na				
CTY	0.0		38.1	na				

The maximum velocity is 8.65 and it occurs in the pipe between nodes 14 and 15

Final Calculations - Hazen-Williams

DEAN & ALLYN, INC.  
ADAMS SCHOOL BUILDING A FIRST FLOOR

Page 4  
Date 11-1-12

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv. Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	***** Notes *****
1A	12.96	1.049	1T 5.0	1.000	7.000		K Factor = 4.90
to		120.0	0.0	5.000	10.828		
1	12.96	0.0583	0.0	6.000	0.350		Vel = 4.81
	0.0						
	12.96				18.178		K Factor = 3.04
04	20.02	1.38	1T 6.0	13.000	16.700		K Factor = 4.90
to		120.0	0.0	6.000	0.0		
4.5	20.02	0.0343	0.0	19.000	0.652		Vel = 4.29
	0.0						
	20.02				17.352		K Factor = 4.81
05	20.31	1.38	1T 6.0	13.000	17.180		K Factor = 4.90
to		120.0	0.0	6.000	0.0		
14	20.31	0.0352	0.0	19.000	0.669		Vel = 4.36
	0.0						
	20.31				17.849		K Factor = 4.81
4.5	20.02	1.38	0.0	14.500	17.352		
to		120.0	0.0	0.0	0.0		
14	20.02	0.0343	0.0	14.500	0.497		Vel = 4.29
14	20.31	1.38	1T 6.0	43.000	17.849		
to		120.0	0.0	6.000	0.0		
15	40.33	0.1253	0.0	49.000	6.140		Vel = 8.65
15	0.0	1.38	1E 3.0	8.500	23.989		
to		120.0	0.0	3.000	2.166		
TR	40.33	0.1252	0.0	11.500	1.440		Vel = 8.65
TR	0.0	1.38	1S 7.0	7.000	27.595		
to		120.0	1Z 0.0	7.000	8.032		* Fixed loss = 5
FF	40.33	0.1521	0.0	14.000	2.130		Vel = 8.65
FF	0.0	4.1	4E 43.71	500.000	37.757		
to		120.0	0.0	43.710	0.0		
CTY	40.33	0.0006	0.0	543.710	0.339		Vel = 0.98
	0.0						
	40.33				38.096		K Factor = 6.53

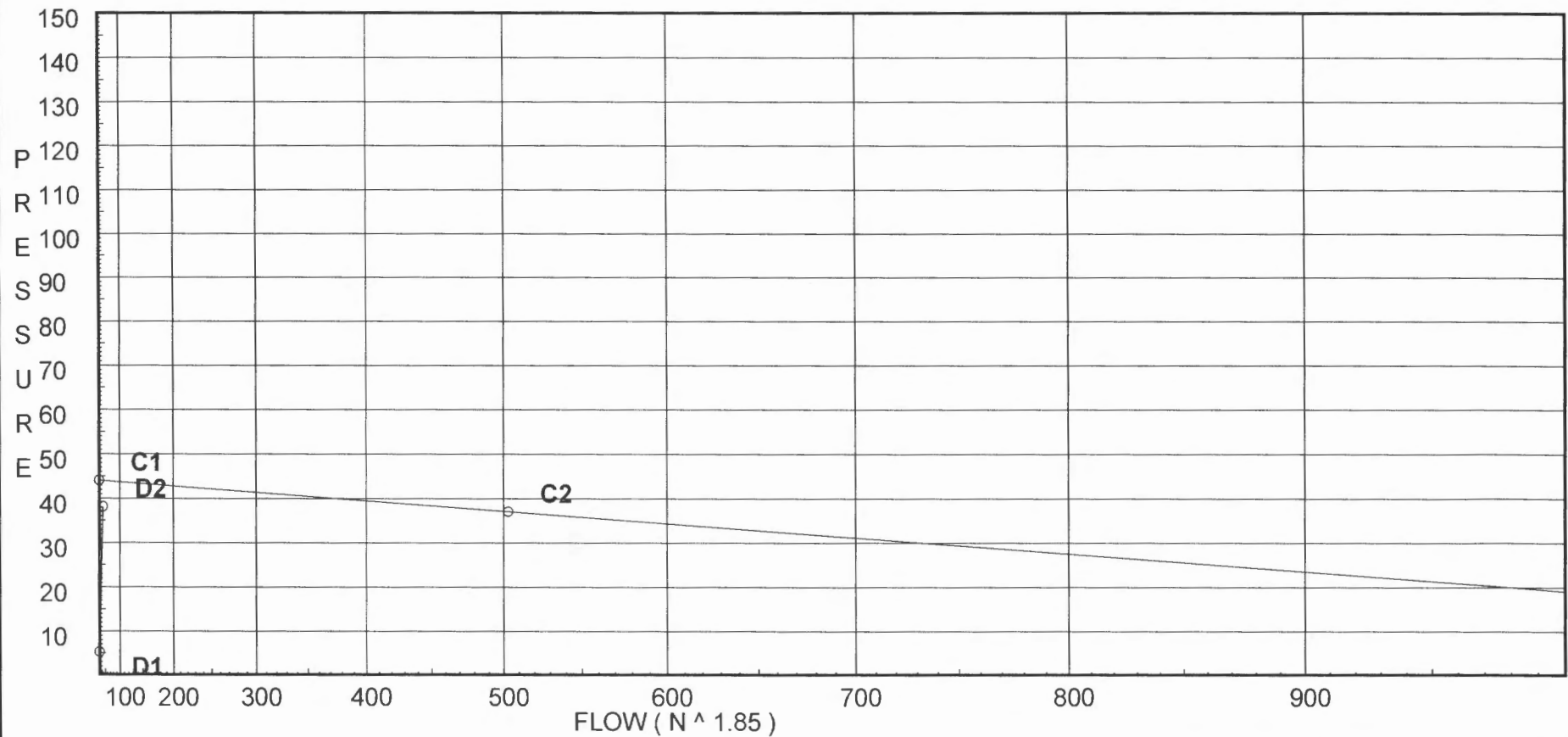
# Water Supply Curve (C)

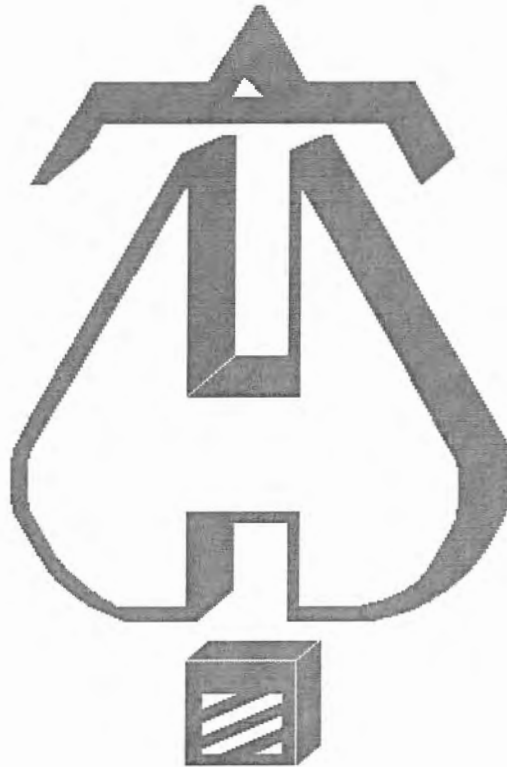
DEAN & ALLYN, INC.  
ADAMS SCHOOL BUILDING A FIRST FLOOR

Page 5  
Date 11-1-12

City Water Supply:  
C1 - Static Pressure : 44  
C2 - Residual Pressure: 37  
C2 - Residual Flow : 503

Demand:  
D1 - Elevation : 5.197  
D2 - System Flow : 40.334  
D2 - System Pressure : 38.096  
Hose ( Demand ) :  
D3 - System Demand : 40.334  
Safety Margin : 5.839





... Fire Protection by Computer Design

DEAN & ALLYN, INC.  
PO BOX 709  
116 LEWISTON ROAD  
GRAY, MAINE 04039  
207-657-5646

Job Name : ADAMS SCHOOL BUILDING A SECOND FLOOR  
Building : BUILDING A SECOND FLOOR  
Location : VESPER STREET PORTLAND MAINE  
System : ONE  
Contract : C121102  
Data File : ADAMS SCHOOL BUILDING A SECOND FLOOR.WXF

HYDRAULIC DESIGN INFORMATION SHEET

Name - ADAMS SCHOOL REDEVELOPMENT PROJECT Date - 11-1-12  
Location - VESPER STREET PORTLAND MAINE  
Building - BUILDING A SECOND FLOOR System No. - ONE  
Contractor - DEAN AND ALLYN, INC. Contract No. - C121102  
Calculated By - HARRY KING Drawing No. - 1 OF 2  
Construction: (X) Combustible ( ) Non-Combustible Ceiling Height 8'  
OCCUPANCY - HOUSING

S Type of Calculation: ( )NFPA 13 Residential (X)NFPA 13R ( )NFPA 13D  
Y Number of Sprinklers Flowing: ( )1 ( )2 (X)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 - 10.6 Psi (X) Wet ( ) Dry  
D MAXIMUM LISTED SPACING 16 x 16 ( ) Deluge ( ) PreAction  
E Domestic Flow Added - Gpm Sprinkler or Nozzle  
S Additional Flow Added - Gpm Make VIKING Model FREEDOM  
I Elevation at Highest Outlet - 20 Feet Size 1/2" K-Factor 4.0  
G Note:CUSHION: 7.9PSI Temperature Rating 155  
N

Calculation Gpm Required 39.7 Psi Required 36.0 At Test  
Summary C-Factor Used: Overhead 120 Underground 140

W Water Flow Test: Pump Data: Tank or Reservoir:  
A Date of Test - 6-2-2005 Rated Cap. Cap.  
T Time of Test - @ Psi Elev.  
E Static (Psi) - 44 Elev.  
R Residual (Psi) - 37 Other Well  
Flow (Gpm) - 503 Proof Flow Gpm  
S Elevation - 0

P Location: MUNJOY AT MOODY STREETS

L Source of Information: PORTLAND WATER DEPT  
Y



# Fittings Used Summary

DEAN & ALLYN, INC.  
ADAMS SCHOOL BUILDING A SECOND FLOOR

Page 2  
Date 11-1-12

Fitting Legend		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
Abbrev.	Name																				
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
S	NFPA 13 Swing Check	0	0	5	7	9	11	14	16	19	22	27	32	45	55	65					
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

## 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.

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
1A	25.0	4.9	7.0	na	12.96	0.05	256	7.0
01	20.0	4	10.86	na	13.18	0.05	256	10.6
02	20.0	4	10.6	na	13.02	0.05	256	10.6
03	20.0	4	11.38	na	13.5	0.05	256	10.6
10	12.0		15.23	na				
11	12.0		14.95	na				
12	12.0		15.79	na				
13	12.0		15.59	na				
14	12.0		16.05	na				
15	12.0		22.01	na				
TR	7.0		25.57	na				
FF	0.0		35.67	na				
CTY	0.0		36.0	na				

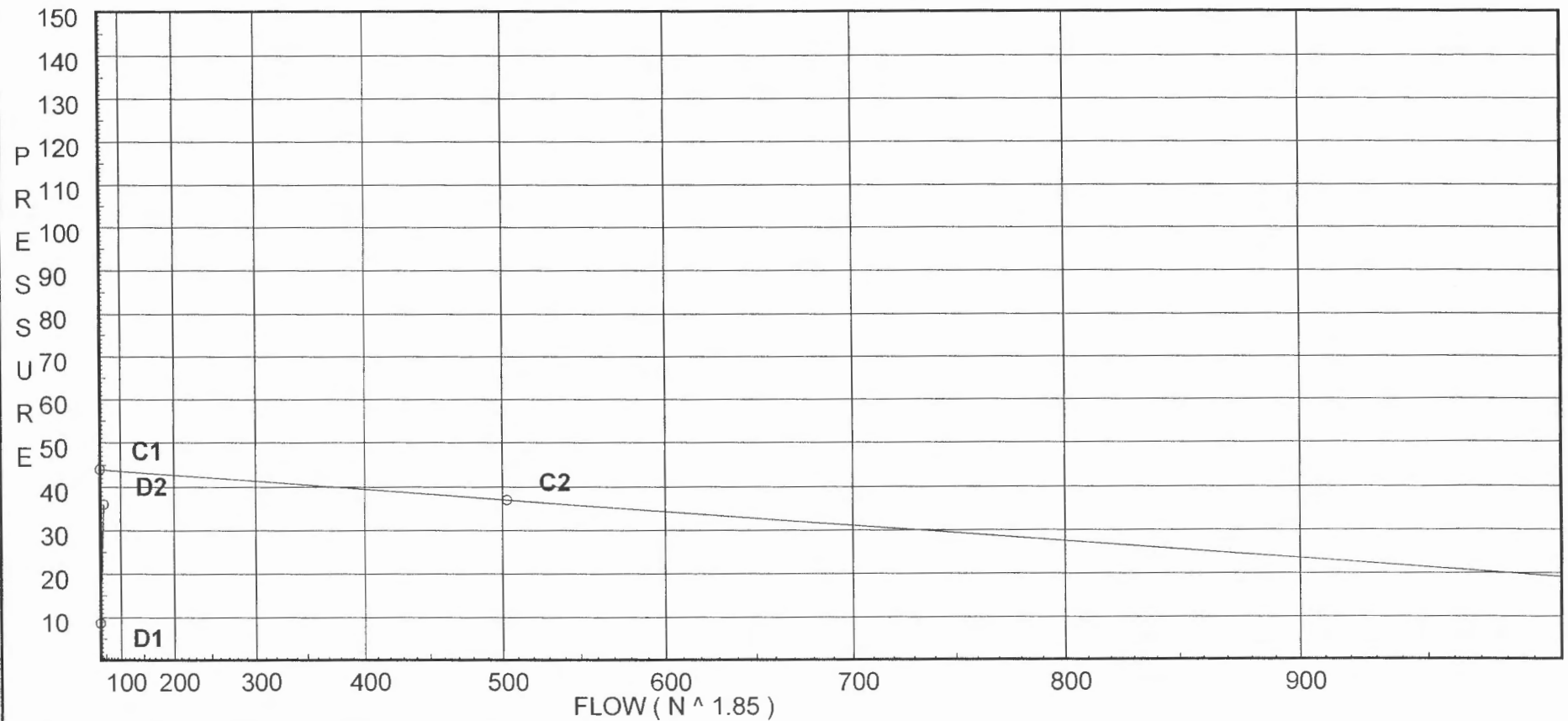
The maximum velocity is 8.52 and it occurs in the pipe between nodes 14 and 15

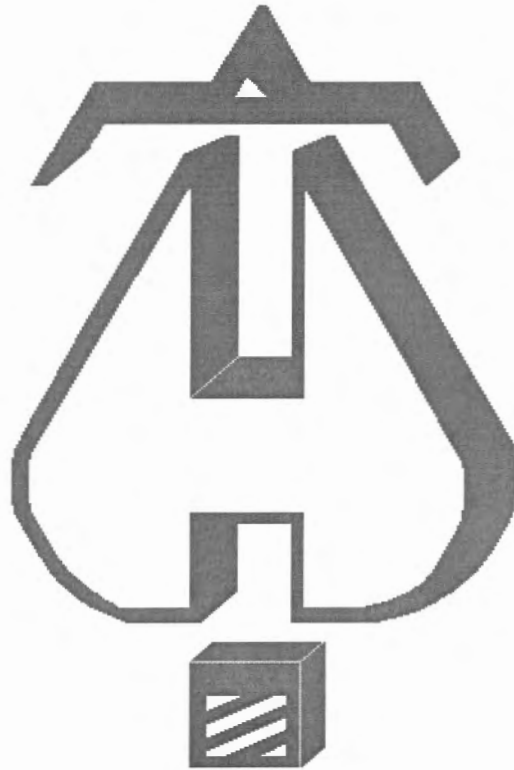
Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv. Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	***** Notes *****
1A to 1	12.96 12.96	1.049 120.0 0.0583	1T 5.0 0.0 0.0	1.000 5.000 6.000	7.000 10.828 0.350		K Factor = 4.90 Vel = 4.81
	0.0 12.96				18.178		K Factor = 3.04
01 to 10	13.18 13.18	1.049 120.0 0.0601	1T 5.0 1E 2.0 0.0	8.000 7.000 15.000	10.859 3.465 0.902		K Factor = 4.00 Vel = 4.89
	0.0 13.18				15.226		K Factor = 3.38
02 to 11	13.02 13.02	1.049 120.0 0.0588	1T 5.0 1E 2.0 0.0	8.000 7.000 15.000	10.600 3.465 0.882		K Factor = 4.00 Vel = 4.83
	0.0 13.02				14.947		K Factor = 3.37
03 to 12	13.50 13.5	1.049 120.0 0.0629	1T 5.0 1E 2.0 0.0	8.000 7.000 15.000	11.382 3.465 0.943		K Factor = 4.00 Vel = 5.01
	0.0 13.50				15.790		K Factor = 3.40
10 to 13	13.18 13.18	1.38 120.0 0.0158	2T 12.0 0.0 0.0	11.300 12.000 23.300	15.226 0.0 0.369		Vel = 2.83
	0.0 13.18				15.595		K Factor = 3.34
11 to 13	13.02 13.02	1.049 120.0 0.0589	1T 5.0 0.0 0.0	6.000 5.000 11.000	14.947 0.0 0.648		Vel = 4.83
	0.0 13.02				15.595		K Factor = 3.30
12 to 14	13.50 13.5	1.38 120.0 0.0165	2T 12.0 0.0 0.0	3.500 12.000 15.500	15.790 0.0 0.256		Vel = 2.90
	0.0 13.50				16.046		K Factor = 3.37
13 to 14	26.20 26.2	1.38 120.0 0.0564	0.0 0.0 0.0	8.000 0.0 8.000	15.595 0.0 0.451		Vel = 5.62
14 to 15	13.50 39.7	1.38 120.0 0.1217	1T 6.0 0.0 0.0	43.000 6.000 49.000	16.046 0.0 5.962		Vel = 8.52

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv. Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	***** Notes *****
15 to TR	0.0 39.7	1.38 120.0 0.1217	1E 3.0 0.0 0.0	8.500 3.000 11.500	22.008 2.166 1.399		Vel = 8.52
TR to FF	0.0 39.7	1.38 120.0 0.1477	1S 7.0 1Z 0.0 0.0	7.000 7.000 14.000	25.573 8.032 2.068		* Fixed loss = 5 Vel = 8.52
FF to CTY	0.0 39.7	4.1 120.0 0.0006	4E 43.71 0.0 0.0	500.000 43.710 543.710	35.673 0.0 0.329		Vel = 0.96
	0.0 39.70				36.002		K Factor = 6.62

City Water Supply:  
 C1 - Static Pressure : 44  
 C2 - Residual Pressure: 37  
 C2 - Residual Flow : 503

Demand:  
 D1 - Elevation : 8.662  
 D2 - System Flow : 39.699  
 D2 - System Pressure : 36.002  
 Hose ( Demand ) :  
 D3 - System Demand : 39.699  
 Safety Margin : 7.934





... Fire Protection by Computer Design

DEAN & ALLYN, INC.  
PO BOX 709  
116 LEWISTON ROAD  
GRAY, MAINE 04039  
207-657-5646

Job Name : ADAMS SCHOOL BUILDING A SECOND FLOOR  
Building : BUILDING A SECOND FLOOR  
Location : VESPER STREET PORTLAND MAINE  
System : ONE  
Contract : C121102  
Data File : ADAMS SCHOOL BUILDING A SECOND FLOOR.WXF

HYDRAULIC DESIGN INFORMATION SHEET

Name - ADAMS SCHOOL REDEVELOPMENT PROJECT Date - 11-1-12  
 Location - VESPER STREET PORTLAND MAINE  
 Building - BUILDING A SECOND FLOOR System No. - ONE  
 Contractor - DEAN AND ALLYN, INC. Contract No. - C121102  
 Calculated By - HARRY KING Drawing No. - 1 OF 2  
 Construction: (X) Combustible ( ) Non-Combustible Ceiling Height 8'  
 OCCUPANCY - HOUSING

S Type of Calculation: ( ) NFPA 13 Residential (X) NFPA 13R ( ) NFPA 13D  
 Y Number of Sprinklers Flowing: ( ) 1 ( ) 2 (X) 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 - 10.6 Psi (X) Wet ( ) Dry  
 D MAXIMUM LISTED SPACING 16 x 16 ( ) Deluge ( ) PreAction  
 E Domestic Flow Added - Gpm Sprinkler or Nozzle  
 S Additional Flow Added - Gpm Make VIKING Model FREEDOM  
 I Elevation at Highest Outlet - 20 Feet Size 1/2" K-Factor 4.0  
 G Note: CUSHION: 7.9PSI Temperature Rating 155  
 N

Calculation Summary Gpm Required 39.7 C-Factor Used: Psi Required 36.0 Overhead 120 At Test Underground 140

W Water Flow Test: Pump Data: Tank or Reservoir:  
 A Date of Test - 6-2-2005 Rated Cap. Cap.  
 T Time of Test - @ Psi Elev.  
 E Static (Psi) - 44 Elev.  
 R Residual (Psi) - 37 Other Well  
 Flow (Gpm) - 503 Proof Flow Gpm  
 S Elevation - 0

P Location: MUNJOY AT MOODY STREETS  
 P  
 L Source of Information: PORTLAND WATER DEPT  
 Y

Pressure / Flow Summary - STANDARD

DEAN & ALLYN, INC.  
 ADAMS SCHOOL BUILDING A SECOND FLOOR

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 Date 11-1-12

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
1A	25.0	4.9	7.0	na	12.96	0.05	256	7.0
01	20.0	4	10.86	na	13.18	0.05	256	10.6
02	20.0	4	10.6	na	13.02	0.05	256	10.6
03	20.0	4	11.38	na	13.5	0.05	256	10.6
10	12.0		15.23	na				
11	12.0		14.95	na				
12	12.0		15.79	na				
13	12.0		15.59	na				
14	12.0		16.05	na				
15	12.0		22.01	na				
TR	7.0		25.57	na				
FF	0.0		35.67	na				
CTY	0.0		36.0	na				

The maximum velocity is 8.52 and it occurs in the pipe between nodes 14 and 15



Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv. Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	***** Notes *****
1A to 1	12.96	1.049 120.0	1T 5.0 0.0	1.000 5.000	7.000 10.828		K Factor = 4.90
	12.96	0.0583	0.0	6.000	0.350		Vel = 4.81
	0.0 12.96					18.178	K Factor = 3.04
01 to 10	13.18	1.049 120.0	1T 5.0 1E 2.0	8.000 7.000	10.859 3.465		K Factor = 4.00
	13.18	0.0601	0.0	15.000	0.902		Vel = 4.89
	0.0 13.18					15.226	K Factor = 3.38
02 to 11	13.02	1.049 120.0	1T 5.0 1E 2.0	8.000 7.000	10.600 3.465		K Factor = 4.00
	13.02	0.0588	0.0	15.000	0.882		Vel = 4.83
	0.0 13.02					14.947	K Factor = 3.37
03 to 12	13.50	1.049 120.0	1T 5.0 1E 2.0	8.000 7.000	11.382 3.465		K Factor = 4.00
	13.5	0.0629	0.0	15.000	0.943		Vel = 5.01
	0.0 13.50					15.790	K Factor = 3.40
10 to 13	13.18	1.38 120.0	2T 12.0 0.0	11.300 12.000	15.226 0.0		
	13.18	0.0158	0.0	23.300	0.369		Vel = 2.83
	0.0 13.18					15.595	K Factor = 3.34
11 to 13	13.02	1.049 120.0	1T 5.0 0.0	6.000 5.000	14.947 0.0		
	13.02	0.0589	0.0	11.000	0.648		Vel = 4.83
	0.0 13.02					15.595	K Factor = 3.30
12 to 14	13.50	1.38 120.0	2T 12.0 0.0	3.500 12.000	15.790 0.0		
	13.5	0.0165	0.0	15.500	0.256		Vel = 2.90
	0.0 13.50					16.046	K Factor = 3.37
13 to 14	26.20	1.38 120.0	0.0 0.0	8.000 0.0	15.595 0.0		
	26.2	0.0564	0.0	8.000	0.451		Vel = 5.62
14 to 15	13.50	1.38 120.0	1T 6.0 0.0	43.000 6.000	16.046 0.0		
	39.7	0.1217	0.0	49.000	5.962		Vel = 8.52

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv. Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	*****	Notes	*****
15	0.0	1.38	1E 3.0	8.500	22.008				
to		120.0	0.0	3.000	2.166				
TR	39.7	0.1217	0.0	11.500	1.399		Vel = 8.52		
TR	0.0	1.38	1S 7.0	7.000	25.573				
to		120.0	1Z 0.0	7.000	8.032		* Fixed loss = 5		
FF	39.7	0.1477	0.0	14.000	2.068		Vel = 8.52		
FF	0.0	4.1	4E 43.71	500.000	35.673				
to		120.0	0.0	43.710	0.0				
CTY	39.7	0.0006	0.0	543.710	0.329		Vel = 0.96		
	0.0								
	39.70				36.002		K Factor = 6.62		

Water Supply Curve (C)

DEAN & ALLYN, INC.  
 ADAMS SCHOOL BUILDING A SECOND FLOOR

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 Date 11-1-12

City Water Supply:  
 C1 - Static Pressure : 44  
 C2 - Residual Pressure: 37  
 C2 - Residual Flow : 503

Demand:  
 D1 - Elevation : 8.662  
 D2 - System Flow : 39.699  
 D2 - System Pressure : 36.002  
 Hose ( Demand ) :  
 D3 - System Demand : 39.699  
 Safety Margin : 7.934

