

DISPLAY THIS CARD ON PRINCIPAL FRONTAGE OF WORK CITY OF PORTLAND

BUILDING DEPARTMENT PERMIT

Permit Number: 100237

Please Read
Application And
Notes, if Any,
Attached

This is to certify that BAXTER LIBRARY LP/Denver Fire Protection
has permission to install a Fire Suppression System
AT 619 CONGRESS ST City of Portland 046 D029001

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

PERMIT ISSUED

Apply to Public Works for street line and grade. If nature of work requires such information.

Notification of inspection must be given and written permission procured before this building or part thereof is lath or other work is used-in. 2 HOURLY NOTICE IS REQUIRED.

A certificate of occupancy must be procured by owner before this building or part thereof is occupied.

CITY OF PORTLAND
OTHER REQUIRED APPROVALS

Fire Dept. [Signature]
Health Dept. _____
Appeal Board _____
Other _____
Department Name

[Signature]
Director Building & Inspection Services

PENALTY FOR REMOVING THIS CARD

City of Portland, Maine - Building or Use Permit Application
 389 Congress Street, 04101 Tel: (207) 874-8703, Fax: (207) 874-8716

Permit No: 10-0237	Issue Date:	CBL: 046 D029001
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Location of Construction: 619 CONGRESS ST	Owner Name: BAXTER LIBRARY LP	Owner Address: ONE CITY CETNER 4TH FLOOR	Phone:
Business Name:	Contractor Name: Denali Fire Protection Inc	Contractor Address: 78 Roller Rink Oxford	Phone 2075394226
Lessee/Buyer's Name	Phone:	Permit Type: Fire Suppression System	Zone: B-3

Past Use: Commercial Office connected w/ permit#091038	Proposed Use: Commercial Office - install a Fire Suppression System	Permit Fee: \$350.00	Cost of Work: \$32,725.00	CEO District: 2
		FIRE DEPT.: w/conditions 3/15/10	<input checked="" type="checkbox"/> Approved <input type="checkbox"/> Denied	

INSPECTION:
 Use Group: C Type: Alarm
 UFRP
 Signature: [Signature]

Proposed Project Description:
 install a Fire Suppression System

PEDESTRIAN ACTIVITIES DISTRICT (P.A.D.)

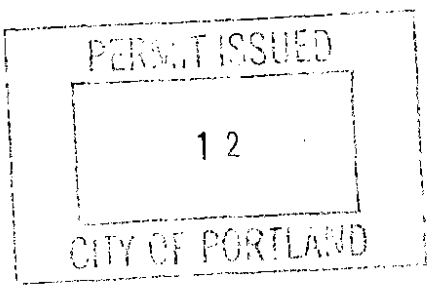
Action: Approved Approved w/Conditions Denied

Signature: _____ Date: _____

Permit Taken By: Idobson	Date Applied For: 03/11/2010	Zoning Approval
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- This permit application does not preclude the Applicant(s) from meeting applicable State and Federal Rules.
- Building permits do not include plumbing, septic or electrical work.
- 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..

Special Zone or Reviews	Zoning Appeal	Historic Preservation
<input type="checkbox"/> Shoreland	<input type="checkbox"/> Variance	<input type="checkbox"/> Not in District or Landmark
<input type="checkbox"/> Wetland	<input type="checkbox"/> Miscellaneous	<input type="checkbox"/> Does Not Require Review
<input type="checkbox"/> Flood Zone	<input type="checkbox"/> Conditional Use	<input type="checkbox"/> Requires Review
<input type="checkbox"/> Subdivision	<input type="checkbox"/> Interpretation	<input type="checkbox"/> Approved
<input type="checkbox"/> Site Plan	<input type="checkbox"/> Approved	<input type="checkbox"/> Approved w/Conditions
Major <input type="checkbox"/> Minor <input type="checkbox"/> MM <input checked="" type="checkbox"/>	<input type="checkbox"/> Denied	<input type="checkbox"/> Denied
Date: 3/12/10	Date: _____	Date: _____



any other work requires A
 separate review
 Approved

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

City of Portland, Maine - Building or Use Permit

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

Permit No: 10-0237	Date Applied For: 03/11/2010	CBL: 046 D029001
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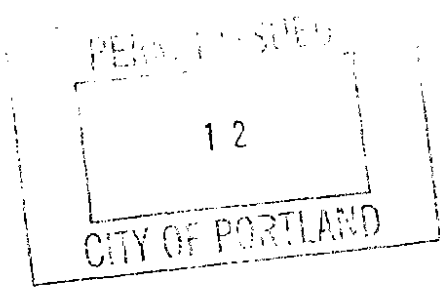
Location of Construction: 619 CONGRESS ST	Owner Name: BAXTER LIBRARY LP	Owner Address: ONE CITY CETNER 4TH FLOOR	Phone:
Business Name:	Contractor Name: Denali Fire Protection Inc	Contractor Address: 78 Roller Rink Oxford	Phone (207) 539-4226
Lessee/Buyer's Name	Phone:	Permit Type: Fire Suppression System	

Proposed Use: Commercial Office - install a Fire Suppression System	Proposed Project Description: install a Fire Suppression System
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Dept: Zoning **Status:** Approved with Conditions **Reviewer:** Marge Schmuckal **Approval Date:** 03/12/2010
Note: **Ok to Issue:**
1) This permit is being approved on the basis of plans submitted. Any deviations shall require a separate approval before starting that work.
2) All conditions on the original construction permit are still in force.
3) ANY exterior work requires a separate review and approval thru Historic Preservation. This property is located within an Historic District.

Dept: Building **Status:** Approved **Reviewer:** Tammy Munson **Approval Date:** 03/17/2010
Note: **Ok to Issue:**

Dept: Fire **Status:** Approved with Conditions **Reviewer:** Ben Wallace Jr. **Approval Date:** 03/15/2010
Note: **Ok to Issue:**
1) System acceptance and commissioning must be co-ordinated with alarm and suppression system contractors and the Fire Department. Call 874-8703 to schedule.
2) Sprinkler system shall be supervised by building fire alarm system.
3) The sprinkler system shall be installed in accordance with NFPA 13.
4) Application requires State Fire Marshal approval.
5) The Fire Department will require knock locking caps on all Fire Department Connections on the exterior of the building.



BUILDING PERMIT INSPECTION PROCEDURES

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

to schedule your inspections as agreed upon

Permits expire in 6 months, if the project is not started or ceases for 6 months.

The Owner or their designee is required to notify the inspections office for the following inspections and provide adequate notice. Notice must be called in 48-72 hours in advance in order to schedule an inspection:

By initializing at each inspection time, you are agreeing that you understand the inspection procedure and additional fees from a "Stop Work Order" and "Stop Work Order Release" will be incurred if the procedure is not followed as stated below.

A Pre-construction Meeting will take place upon receipt of your building permit.

 X **A fire alarm acceptance report must be submitted to the fire department upon completion of the system.**

Certificate of Occupancy is not required for certain projects. Your inspector can advise you if your project requires a Certificate of Occupancy. All projects DO require a final inspection.

If any of the inspections do not occur, the project cannot go on to the next phase, REGARDLESS OF THE NOTICE OR CIRCUMSTANCES.

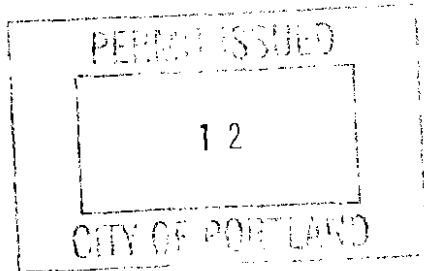
CERIFICATE OF OCCUPANICES MUST BE ISSUED AND PAID FOR, BEFORE THE SPACE MAY BE OCCUPIED.

Signature of Applicant/Designee

Date

Signature of Inspections Official

Date





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: 619 Congress St. Portland CBL: 46-D-29

Exact location: (within structure) ENTIRE BUILDING

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

Building owner: CK BENCHMARK CONSTRUCTION

Managing Supervisor: TIM HEALWAND License No: _____

Supervisor phone: 539-4226 E-mail: THHEALWAND@PORTLANDFIRE.COM

Installing contractor: DENALI FIRE PROTECTION INC. License No: 309

Contractor phone: 539-4226 E-mail: _____

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 will this system is designed to: 13 Edition: 2007

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

Attach all design information and complete approved submittals as may be required by the State Fire Marshal's Office.

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

<p>COST OF WORK: <u>\$32,725^{00/hrs}</u></p> <p>PERMIT FEE: <u>\$320^{00/hrs}</u> (\$10 PER \$1,000 + \$30 FOR THE FIRST \$1,000)</p> <p><u>\$130</u></p>

Download a new copy of this document from www.portlandmaine.gov for every submittal. 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: Chris Deane Date: 2/27/10

DENALI

FIRE PROTECTION Inc.

78 Roller Rink RD., Oxford, ME 04270

Phone (207) 539-4226 - Fax (207) 539-8544

LETTER OF TRANSMITTAL

DATE	2/27/10	JOB NO.	C3-10
ATTENTION	Fire Chief Ben WALLACE		
RE:	BOSTON LIBRARY		

TO PORTLAND FIRE DEPARTMENT
380 CONGRESS STREET
PORTLAND, MA - 04101

WE ARE SENDING YOU Attached Under separate cover via MAIL the following items:

- Shop drawings Descriptive data Hydraulic calculations
 Copy of letter Literature CD DISC

QUANTITY	DRAWING NO.	DATE	DESCRIPTION	STATUS
1	THW 4	2/27/10	SHOP DRAWINGS	C
1 EA.		2/27/10	HYDRAULIC CALCS	C
1		2/27/10	CD WITH DRAWINGS & CALCS	C
1		2/27/10	PERMIT APPLICATION	
1			CHECK FOR PERMIT	

Status code

A. Approved

B. Approved as noted

C. Submitted for approval

D. Corrected & resubmitted

E. For your files

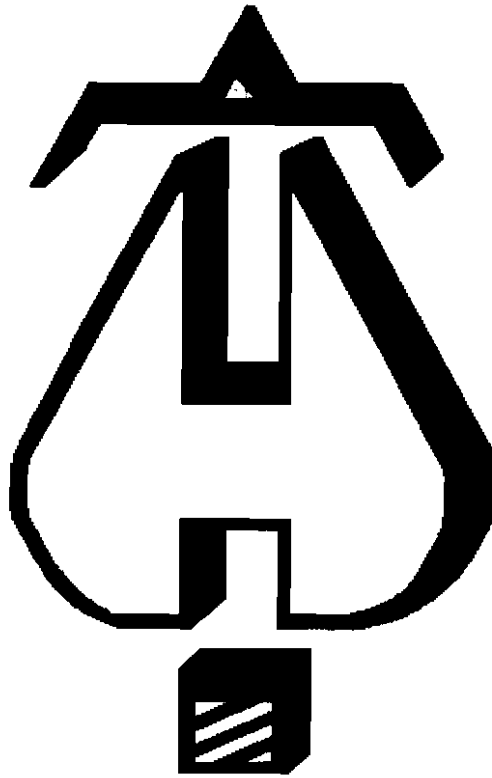
F. Refer to remarks

Please return 1 LETTER - copies each indicating your approval and/or comments.

REMARKS _____

COPY TO 60

SIGNED CR



... Fire Protection by Computer Design

DENALI FIRE PROTECTION, INC.
78 ROLLER RINK ROAD
OXFORD, MAINE 04270
(207)5394226

Job Name : BAXTER LIBRARY SECOND FLOOR MEZZ.
Building : WOOD/STEEL STRUCTURE
Location : 619 CONGRESS STREET PORTLAND, MAINE
System : 1
Contract : C3-10
Data File : 1-C310.WXF

Hydraulic Design Information Sheet

Name - BAXTER LIBRARY Date - 02/27/10
Location - 619 CONGRESS STREET PORTLAND, MAINE
Building - WOOD/STEEL STRUCTURE System No. - 1
Contractor - DENALI FIRE PROTECTION, INC. Contract No. - C3-10
Calculated By - CKD Drawing No. - 4
Construction: () Combustible (X) Non-Combustible Ceiling Height - 25'-7"
Occupancy - LIBRARY

S (X) NFPA 13 (X) Lt. Haz. Ord.Haz.Gp. () 1 () 2 () 3 () Ex.Haz.
Y () NFPA 231 () NFPA 231C (X) Figure 11.2.3.1.1 Curve LIGHT
S Other AREA INCREASED PER NFPA 13 SECTION 11.2.3.2.4
T Specific Ruling Made By Date

E
M Area of Sprinkler Operation - 2085 System Type Sprinkler/Nozzle
Density - .1 (X) Wet Make VICTAULIC
D Area Per Sprinkler - 148.8 () Dry Model V2710
E Elevation at Highest Outlet - 146.08 () Deluge Size 1/2"
S Hose Allowance - Inside - () Preaction K-Factor 5.6
I Rack Sprinkler Allowance - () Other Temp.Rat.155
G Hose Allowance - Outside - 100
N

Note

Calculation Flow Required - 559.267 Press Required - 51.761 AT TEST
Summary C-Factor Used: 120 Overhead 140 Underground

W Water Flow Test: Pump Data: Tank or Reservoir:
A Date of Test - 06/16/09 Cap. -
T Time of Test - Rated Cap.- Elev.-
E Static Press - 69 @ Press -
R Residual Press - 64 Elev. - Well
Flow - 1061 Proof Flow
S Elevation - 100.0
U
P Location - 150'-0" FROM THE BUILDING
P
L Source of Information - PORTLAND WATER DISTRICT
Y

C Commodity Class Location
O Storage Ht. Area Aisle W.
M Storage Method: Solid Piled % Palletized % Rack
M
S R () Single Row () Conven. Pallet () Auto. Storage () Encap.
T A () Double Row () Slave Pallet () Solid Shelf () Non
O C () Mult. Row () Open Shelf
R K Flue Spacing Clearance:Storage to Ceiling
A Longitudinal Transverse
G
E Horizontal Barriers Provided:

Water Supply Curve (C)

DENALI FIRE PROTECTION, INC.
BAXTER LIBRARY SECOND FLOOR MEZZ.

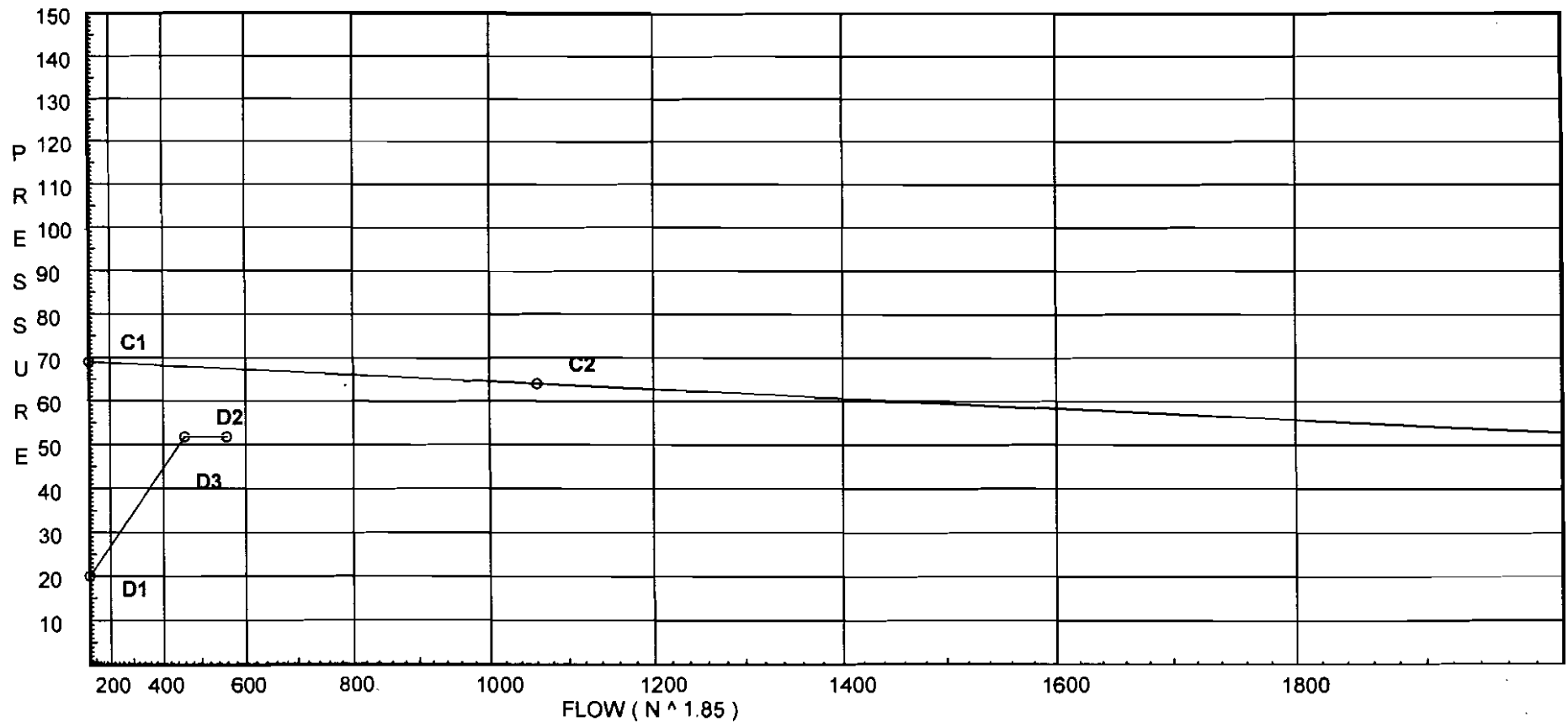
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Date 02/27/10

City Water Supply:

C1 - Static Pressure : 69
C2 - Residual Pressure: 64
C2 - Residual Flow : 1061

Demand:

D1 - Elevation : 19.957
D2 - System Flow : 459.267
D2 - System Pressure : 51.761
Hose (Adj City) : _____
Hose (Demand) : 100
D3 - System Demand : 559.267
Safety Margin : 15.710



Fittings Used Summary

DENALI FIRE PROTECTION, INC.
BAXTER LIBRARY SECOND FLOOR MEZZ.

Page 3
Date 02/27/10

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																					
A	Generic Alarm Valve	0	0	0	0	0	0	7.7	21.5	0	17	17	27	29	0	0	0	0	0	0	0	0
E	90' Standard Elbow	2	2	2	3	4	5	6	7	8	10	12	14	18	22	27	35	40	45	50	61	
G	Generic Gate Valve	0	0	0	0	0	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13	
L	Long Turn Elbow	1	1	2	2	2	3	4	5	5	6	8	9	13	16	18	24	27	30	34	40	
T	90' Flow thru Tee	3	4	5	6	8	10	12	15	17	20	25	30	35	50	60	71	81	91	101	121	

Units Summary

Diameter Units Inches
Length Units Feet
Flow Units US Gallons per Minute
Pressure Units Pounds per Square Inch

Pressure / Flow Summary - STANDARD

DENALI FIRE PROTECTION, INC.
 BAXTER LIBRARY SECOND FLOOR MEZZ.

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 Date 02/27/10

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
1	146.08	5.6	7.79	na	15.63	0.1	148.8	7.0
2	146.08	5.6	8.48	na	16.31	0.1	148.8	7.0
3	146.08	5.6	7.86	na	15.7	0.1	148.8	7.0
4	146.08	5.6	8.57	na	16.39	0.1	148.8	7.0
5	146.08	5.6	8.15	na	15.98	0.1	148.8	7.0
6	146.08	5.6	8.87	na	16.68	0.1	148.8	7.0
7	146.08	5.6	8.75	na	16.57	0.1	148.8	7.0
8	146.08	5.6	9.53	na	17.29	0.1	148.8	7.0
9	146.08	5.6	9.81	na	17.54	0.1	148.8	7.0
10	146.08	5.6	10.68	na	18.3	0.1	148.8	7.0
11	146.08	5.6	10.1	na	17.8	0.1	148.8	7.0
12	146.08	5.6	10.99	na	18.56	0.1	148.8	7.0
A	146.08		11.19	na				
B	146.08		11.3	na				
C	146.08		11.7	na				
D	146.08		12.55	na				
E	146.08		14.03	na				
F	146.08		14.43	na				
G	146.08		20.72	na				
N	146.08		20.83	na				
P	109.5		37.2	na				
13	146.08	5.6	7.06	na	14.88	0.1	148.8	7.0
14	146.08	5.6	7.7	na	15.54	0.1	148.8	7.0
15	146.08	5.6	10.09	na	17.79	0.1	148.8	7.0
16	146.08	5.6	7.21	na	15.03	0.1	148.8	7.0
17	146.08	5.6	7.86	na	15.7	0.1	148.8	7.0
18	146.08	5.6	10.29	na	17.97	0.1	148.8	7.0
19	146.08	5.6	7.74	na	15.58	0.1	148.8	7.0
20	146.08	5.6	8.43	na	16.26	0.1	148.8	7.0
21	146.08	5.6	11.03	na	18.6	0.1	148.8	7.0
22	146.08	5.6	8.9	na	16.7	0.1	148.8	7.0
23	146.08	5.6	9.69	na	17.43	0.1	148.8	7.0
24	146.08	5.6	12.65	na	19.92	0.1	148.8	7.0
25	146.08	5.6	9.26	na	17.04	0.1	148.8	7.0
26	146.08	5.6	10.08	na	17.78	0.1	148.8	7.0
27	146.08	5.6	13.15	na	20.3	0.1	148.8	7.0
H	146.08		11.7	na				
I	146.08		11.93	na				
J	146.08		12.79	na				
K	146.08		14.64	na				
L	146.08		15.21	na				
M	146.08		21.18	na				
O	146.08		21.34	na				
Q	109.5		38.0	na				
R	109.5		38.45	na				
TOR	109.5		44.77	na				
BASE	101.0		49.95	na				
TEST	100.0		51.76	na	100.0			

The maximum velocity is 24.53 and it occurs in the pipe between nodes L and M

Final Calculations - Hazen-Williams

DENALI FIRE PROTECTION, INC.
 BAXTER LIBRARY SECOND FLOOR MEZZ.

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 Date 02/27/10

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv. Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	*****	Notes	*****
1	15.63	1.049		8.460	7.787				
to		120		0.0	0.0			K Factor = 5.60	
2	15.63	0.0824		8.460	0.697			Vel = 5.80	
2	16.31	1.049	1T	3.750	8.484			K Factor = 5.60	
to		120		5.000	0.0				
A	31.94	0.3094		8.750	2.707			Vel = 11.86	
	0.0								
	31.94				11.191			K Factor = 9.55	
3	15.70	1.049		8.460	7.865			K Factor = 5.60	
to		120		0.0	0.0				
4	15.7	0.0831		8.460	0.703			Vel = 5.83	
4	16.40	1.049	1T	3.750	8.568			K Factor = 5.60	
to		120		5.000	0.0				
B	32.1	0.3122		8.750	2.732			Vel = 11.92	
	0.0								
	32.10				11.300			K Factor = 9.55	
5	15.98	1.049		8.460	8.147			K Factor = 5.60	
to		120		0.0	0.0				
6	15.98	0.0859		8.460	0.727			Vel = 5.93	
6	16.69	1.049	1T	3.750	8.874			K Factor = 5.60	
to		120		5.000	0.0				
C	32.67	0.3225		8.750	2.822			Vel = 12.13	
	0.0								
	32.67				11.696			K Factor = 9.55	
7	16.57	1.049		8.460	8.753			K Factor = 5.60	
to		120		0.0	0.0				
8	16.57	0.0920		8.460	0.778			Vel = 6.15	
8	17.29	1.049	1T	3.750	9.531			K Factor = 5.60	
to		120		5.000	0.0				
D	33.86	0.3446		8.750	3.015			Vel = 12.57	
	0.0								
	33.86				12.546			K Factor = 9.56	
9	17.54	1.049		8.460	9.812			K Factor = 5.60	
to		120		0.0	0.0				
10	17.54	0.1021		8.460	0.864			Vel = 6.51	
10	18.30	1.049	1T	3.750	10.676			K Factor = 5.60	
to		120		5.000	0.0				
E	35.84	0.3829		8.750	3.350			Vel = 13.30	
	0.0								
	35.84				14.026			K Factor = 9.57	
11	17.80	1.049		8.460	10.101			K Factor = 5.60	
to		120		0.0	0.0				
12	17.8	0.1048		8.460	0.887			Vel = 6.61	
12	18.56	1.049	1T	3.750	10.988			K Factor = 5.60	
to		120		5.000	0.0				
F	36.36	0.3933		8.750	3.441			Vel = 13.50	
	0.0								
	36.36				14.429			K Factor = 9.57	

Final Calculations - Standard

DENALI FIRE PROTECTION, INC.
BAXTER LIBRARY SECOND FLOOR MEZZ.

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Date 02/27/10

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	*****	Notes	*****
A	31.94	2.067		0.0	9.620	11.191				
to		120		0.0	0.0	0.0				
B	31.94	0.0113		0.0	9.620	0.109		Vel =	3.05	
B	32.09	2.067		0.0	9.620	11.300				
to		120		0.0	0.0	0.0				
C	64.03	0.0412		0.0	9.620	0.396		Vel =	6.12	
C	32.67	2.067		0.0	9.620	11.696				
to		120		0.0	0.0	0.0				
D	96.7	0.0884		0.0	9.620	0.850		Vel =	9.25	
D	33.86	2.067		0.0	9.620	12.546				
to		120		0.0	0.0	0.0				
E	130.56	0.1538		0.0	9.620	1.480		Vel =	12.48	
E	35.84	2.067		0.0	1.670	14.026				
to		120		0.0	0.0	0.0				
F	166.4	0.2413		0.0	1.670	0.403		Vel =	15.91	
F	36.36	2.067	1T	10.0	8.120	14.429				
to		120		0.0	10.000	0.0				
G	202.76	0.3474		0.0	18.120	6.295		Vel =	19.39	
G	0.0	4.26		0.0	10.000	20.724				
to		120		0.0	0.0	0.0				
N	202.76	0.0103		0.0	10.000	0.103		Vel =	4.56	
N	0.0	4.26	1T	26.334	25.000	20.827				
to		120		0.0	26.334	15.843				
P	202.76	0.0102		0.0	51.334	0.526		Vel =	4.56	
P	0.0	4.26	3T	79.002	42.960	37.196				
to		120		0.0	79.002	0.0				
R	202.76	0.0103		0.0	121.962	1.252		Vel =	4.56	
	0.0									
	202.76					38.448		K Factor =	32.70	
13	14.88	1.049		0.0	8.460	7.060		K Factor =	5.60	
to		120		0.0	0.0	0.0				
14	14.88	0.0753		0.0	8.460	0.637		Vel =	5.52	
14	15.54	1.049		0.0	8.460	7.697		K Factor =	5.60	
to		120		0.0	0.0	0.0				
15	30.42	0.2827		0.0	8.460	2.392		Vel =	11.29	
15	17.78	1.38	1T	6.0	3.250	10.089		K Factor =	5.60	
to		120		0.0	6.000	0.0				
H	48.2	0.1742		0.0	9.250	1.611		Vel =	10.34	
	0.0									
	48.20					11.700		K Factor =	14.09	
16	15.03	1.049		0.0	8.460	7.206		K Factor =	5.60	
to		120		0.0	0.0	0.0				
17	15.03	0.0768		0.0	8.460	0.650		Vel =	5.58	
17	15.70	1.049		0.0	8.460	7.856		K Factor =	5.60	
to		120		0.0	0.0	0.0				
18	30.73	0.2879		0.0	8.460	2.436		Vel =	11.41	
18	17.96	1.38	1T	6.0	3.250	10.292		K Factor =	5.60	
to		120		0.0	6.000	0.0				
I	48.69	0.1776		0.0	9.250	1.643		Vel =	10.44	

Final Calculations - Standard

DENALI FIRE PROTECTION, INC.
BAXTER LIBRARY SECOND FLOOR MEZZ.

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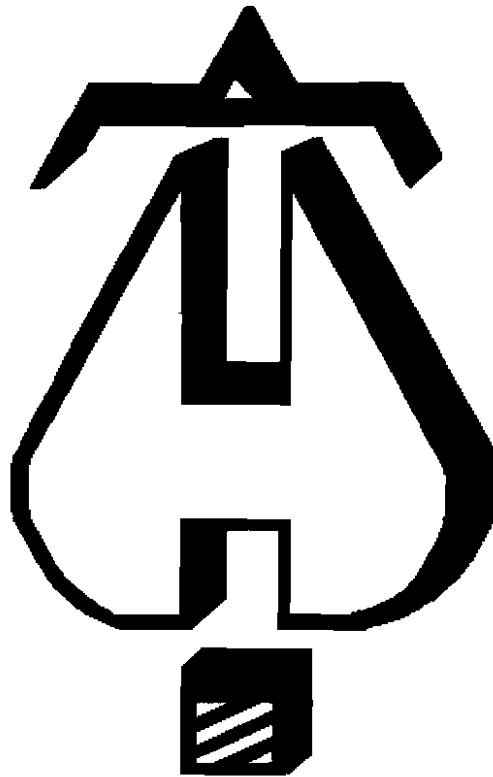
Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv. Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	*****	Notes	*****
	0.0								
	48.69					11.935		K Factor = 14.09	
19	15.58	1.049		8.460	7.739			K Factor = 5.60	
to		120	0.0	0.0	0.0				
20	15.58	0.0819		8.460	0.693			Vel = 5.78	
20	16.26	1.049		8.460	8.432			K Factor = 5.60	
to		120	0.0	0.0	0.0				
21	31.84	0.3076		8.460	2.602			Vel = 11.82	
21	18.60	1.38	1T	6.0	3.250	11.034		K Factor = 5.60	
to		120	0.0	6.000	0.0				
J	50.44	0.1895		9.250	1.753			Vel = 10.82	
	0.0								
	50.44					12.787		K Factor = 14.11	
22	16.70	1.049		8.460	8.898			K Factor = 5.60	
to		120	0.0	0.0	0.0				
23	16.7	0.0933		8.460	0.789			Vel = 6.20	
23	17.43	1.049		8.460	9.687			K Factor = 5.60	
to		120	0.0	0.0	0.0				
24	34.13	0.3499		8.460	2.960			Vel = 12.67	
24	19.92	1.38	1T	6.0	3.250	12.647		K Factor = 5.60	
to		120	0.0	6.000	0.0				
K	54.05	0.2154		9.250	1.992			Vel = 11.59	
	0.0								
	54.05					14.639		K Factor = 14.13	
25	17.04	1.049		8.460	9.258			K Factor = 5.60	
to		120	0.0	0.0	0.0				
26	17.04	0.0967		8.460	0.818			Vel = 6.33	
26	17.78	1.049		8.460	10.076			K Factor = 5.60	
to		120	0.0	0.0	0.0				
27	34.82	0.3629		8.460	3.070			Vel = 12.93	
27	20.30	1.38	1T	6.0	3.250	13.146		K Factor = 5.60	
to		120	0.0	6.000	0.0				
L	55.12	0.2234		9.250	2.066			Vel = 11.82	
	0.0								
	55.12					15.212		K Factor = 14.13	
H	48.20	2.067		9.620	11.700				
to		120	0.0	0.0	0.0				
I	48.2	0.0244		9.620	0.235			Vel = 4.61	
I	48.70	2.067		9.620	11.935				
to		120	0.0	0.0	0.0				
J	96.9	0.0886		9.620	0.852			Vel = 9.26	
J	50.44	2.067		9.620	12.787				
to		120	0.0	0.0	0.0				
K	147.34	0.1925		9.620	1.852			Vel = 14.09	
K	54.05	2.067		1.670	14.639				
to		120	0.0	0.0	0.0				
L	201.39	0.3431		1.670	0.573			Vel = 19.26	

Final Calculations - Standard

DENALI FIRE PROTECTION, INC.
BAXTER LIBRARY SECOND FLOOR MEZZ.

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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	*****
L	55.12	2.067	1L 3.0	8.120	15.212				
to		120	0.0	3.000	0.0				
M	256.51	0.5368	0.0	11.120	5.969		Vel = 24.53		
M	0.0	4.26	0.0	10.000	21.181				
to		120	0.0	0.0	0.0				
O	256.51	0.0158	0.0	10.000	0.158		Vel = 5.77		
O	0.0	4.26	1T 26.334	25.000	21.339				
to		120	0.0	26.334	15.843				
Q	256.51	0.0159	0.0	51.334	0.814		Vel = 5.77		
Q	0.0	4.26	1T 26.334	2.170	37.996				
to		120	0.0	26.334	0.0				
R	256.51	0.0159	0.0	28.504	0.452		Vel = 5.77		
R	202.76	4.26	7L 55.302	54.170	38.448				
to		120	1T 26.334	81.636	0.0				
TOR	459.27	0.0466	0.0	135.806	6.327		Vel = 10.34		
TOR	0.0	4.26	1A 22.384	7.000	44.775				
to		120	1G 2.633	25.017	3.681				
BASE	459.27	0.0466	0.0	32.017	1.492		Vel = 10.34		
BASE	0.0	6.16	2E 40.168	150.000	49.948				
to		140	1G 4.304	87.509	0.433				
TEST	459.27	0.0058	1T 43.037	237.509	1.380		Vel = 4.94		
	100.00						Qa = 100.00		
	559.27				51.761		K Factor = 77.74		



... Fire Protection by Computer Design

DENALI FIRE PROTECTION, INC.
78 ROLLER RINK ROAD
OXFORD, MAINE 04270
(207)5394226

Job Name : BAXTER LIBRARY SECOND FLOOR MEZZ.
Building : WOOD/STEEL STRUCTURE
Location : 619 CONGRESS STREET PORTLAND, MAINE
System : 1
Contract : C3-10
Data File : 1-C310.WXF

Hydraulic Design Information Sheet

Name - BAXTER LIBRARY Date - 02/27/10
 Location - 619 CONGRESS STREET PORTLAND, MAINE
 Building - WOOD/STEEL STRUCTURE System No. - 1
 Contractor - DENALI FIRE PROTECTION, INC. Contract No. - C3-10
 Calculated By - CKD Drawing No. - 4
 Construction: () Combustible (X) Non-Combustible Ceiling Height - 25'-7"
 Occupancy - LIBRARY

S (X) NFPA 13 (X) Lt. Haz. Ord.Haz.Gp. () 1 () 2 () 3 () Ex.Haz.
 Y () NFPA 231 () NFPA 231C (X) Figure 11.2.3.1.1 Curve LIGHT
 S Other AREA INCREASED PER NFPA 13 SECTION 11.2.3.2.4
 T Specific Ruling Made By Date

E
 M Area of Sprinkler Operation - 2085 System Type Sprinkler/Nozzle
 Density - .1 (X) Wet Make VICTAULIC
 D Area Per Sprinkler - 148.8 () Dry Model V2710
 E Elevation at Highest Outlet - 146.08 () Deluge Size 1/2"
 S Hose Allowance - Inside - () Preaction K-Factor 5.6
 I Rack Sprinkler Allowance - () Other Temp.Rat.155
 G Hose Allowance - Outside - 100
 N

Note

Calculation Flow Required - 559.267 Press Required - 51.761 AT TEST
 Summary C-Factor Used: 120 Overhead 140 Underground

W Water Flow Test: Pump Data: Tank or Reservoir:
 A Date of Test - 06/16/09 Cap. -
 T Time of Test - Rated Cap.- Elev.-
 E Static Press - 69 @ Press -
 R Residual Press - 64 Elev. - Well
 Flow - 1061 Proof Flow
 S Elevation - 100.0
 U
 P Location - 150'-0" FROM THE BUILDING
 P
 L Source of Information - PORTLAND WATER DISTRICT
 Y

C Commodity Class Location
 O Storage Ht. Area Aisle W.
 M Storage Method: Solid Piled % Palletized % Rack
 M
 S R () Single Row () Conven. Pallet () Auto. Storage () Encap.
 T A () Double Row () Slave Pallet () Solid Shelf () Non
 O C () Mult. Row () Open Shelf
 R K Flue Spacing Clearance:Storage to Ceiling
 A Longitudinal Transverse
 G
 E Horizontal Barriers Provided:

Water Supply Curve (C)

DENALI FIRE PROTECTION, INC.
BAXTER LIBRARY SECOND FLOOR MEZZ.

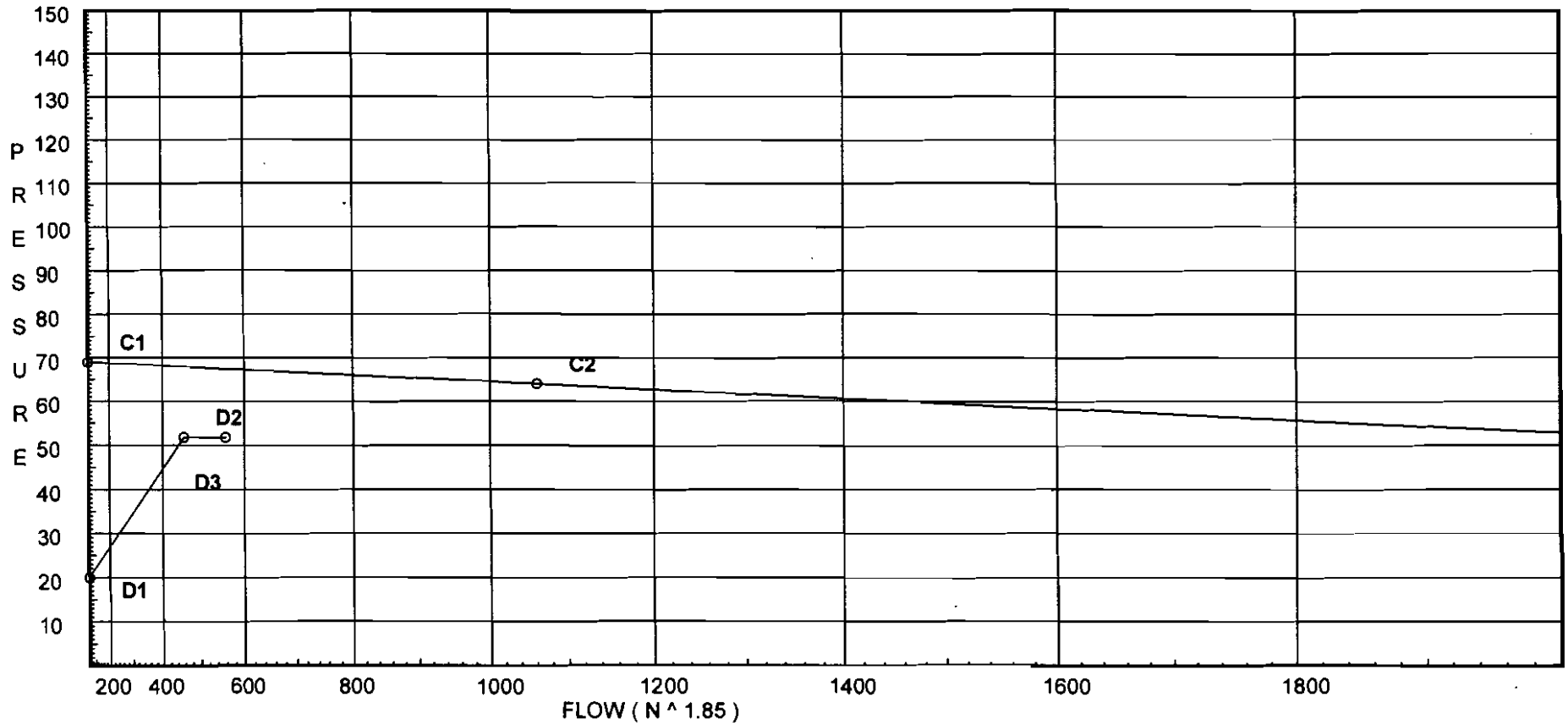
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City Water Supply:

C1 - Static Pressure : 69
C2 - Residual Pressure: 64
C2 - Residual Flow : 1061

Demand:

D1 - Elevation : 19.957
D2 - System Flow : 459.267
D2 - System Pressure : 51.761
Hose (Adj City) :
Hose (Demand) : 100
D3 - System Demand : 559.267
Safety Margin : 15.710



Fittings Used Summary

DENALI FIRE PROTECTION, INC.
BAXTER LIBRARY SECOND FLOOR MEZZ.

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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																					
A	Generic Alarm Valve	0	0	0	0	0	0	7.7	21.5	0	17	17	27	29	0	0	0	0	0	0	0	0
E	90° Standard Elbow	2	2	2	3	4	5	6	7	8	10	12	14	18	22	27	35	40	45	50	61	
G	Generic Gate Valve	0	0	0	0	0	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13	
L	Long Turn Elbow	1	1	2	2	2	3	4	5	5	6	8	9	13	16	18	24	27	30	34	40	
T	90° Flow thru Tee	3	4	5	6	8	10	12	15	17	20	25	30	35	50	60	71	81	91	101	121	

Units Summary

Diameter Units Inches
 Length Units Feet
 Flow Units US Gallons per Minute
 Pressure Units Pounds per Square Inch

Pressure / Flow Summary - STANDARD

DENALI FIRE PROTECTION, INC.
 BAXTER LIBRARY SECOND FLOOR MEZZ.

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Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
1	146.08	5.6	7.79	na	15.63	0.1	148.8	7.0
2	146.08	5.6	8.48	na	16.31	0.1	148.8	7.0
3	146.08	5.6	7.86	na	15.7	0.1	148.8	7.0
4	146.08	5.6	8.57	na	16.39	0.1	148.8	7.0
5	146.08	5.6	8.15	na	15.98	0.1	148.8	7.0
6	146.08	5.6	8.87	na	16.68	0.1	148.8	7.0
7	146.08	5.6	8.75	na	16.57	0.1	148.8	7.0
8	146.08	5.6	9.53	na	17.29	0.1	148.8	7.0
9	146.08	5.6	9.81	na	17.54	0.1	148.8	7.0
10	146.08	5.6	10.68	na	18.3	0.1	148.8	7.0
11	146.08	5.6	10.1	na	17.8	0.1	148.8	7.0
12	146.08	5.6	10.99	na	18.56	0.1	148.8	7.0
A	146.08		11.19	na				
B	146.08		11.3	na				
C	146.08		11.7	na				
D	146.08		12.55	na				
E	146.08		14.03	na				
F	146.08		14.43	na				
G	146.08		20.72	na				
N	146.08		20.83	na				
P	109.5		37.2	na				
13	146.08	5.6	7.06	na	14.88	0.1	148.8	7.0
14	146.08	5.6	7.7	na	15.54	0.1	148.8	7.0
15	146.08	5.6	10.09	na	17.79	0.1	148.8	7.0
16	146.08	5.6	7.21	na	15.03	0.1	148.8	7.0
17	146.08	5.6	7.86	na	15.7	0.1	148.8	7.0
18	146.08	5.6	10.29	na	17.97	0.1	148.8	7.0
19	146.08	5.6	7.74	na	15.58	0.1	148.8	7.0
20	146.08	5.6	8.43	na	16.26	0.1	148.8	7.0
21	146.08	5.6	11.03	na	18.6	0.1	148.8	7.0
22	146.08	5.6	8.9	na	16.7	0.1	148.8	7.0
23	146.08	5.6	9.69	na	17.43	0.1	148.8	7.0
24	146.08	5.6	12.65	na	19.92	0.1	148.8	7.0
25	146.08	5.6	9.26	na	17.04	0.1	148.8	7.0
26	148.08	5.6	10.08	na	17.78	0.1	148.8	7.0
27	146.08	5.6	13.15	na	20.3	0.1	148.8	7.0
H	146.08		11.7	na				
I	146.08		11.93	na				
J	146.08		12.79	na				
K	146.08		14.64	na				
L	146.08		15.21	na				
M	146.08		21.18	na				
O	146.08		21.34	na				
Q	109.5		38.0	na				
R	109.5		38.45	na				
TOR	109.5		44.77	na				
BASE	101.0		49.95	na				
TEST	100.0		51.76	na	100.0			

The maximum velocity is 24.53 and it occurs in the pipe between nodes L and M

Final Calculations - Hazen-Williams

DENALI FIRE PROTECTION, INC.
BAXTER LIBRARY SECOND FLOOR MEZZ.

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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	*****
1	15.63	1.049		0.0	8.460	7.787			K Factor = 5.60	
to		120		0.0	0.0	0.0				
2	15.63	0.0824		0.0	8.460	0.697			Vel = 5.80	
2	16.31	1.049	1T	5.0	3.750	8.484			K Factor = 5.60	
to		120		0.0	5.000	0.0				
A	31.94	0.3094		0.0	8.750	2.707			Vel = 11.86	
	0.0									
	31.94					11.191			K Factor = 9.55	
3	15.70	1.049		0.0	8.460	7.865			K Factor = 5.60	
to		120		0.0	0.0	0.0				
4	15.7	0.0831		0.0	8.460	0.703			Vel = 5.83	
4	16.40	1.049	1T	5.0	3.750	8.568			K Factor = 5.60	
to		120		0.0	5.000	0.0				
B	32.1	0.3122		0.0	8.750	2.732			Vel = 11.92	
	0.0									
	32.10					11.300			K Factor = 9.55	
5	15.98	1.049		0.0	8.460	8.147			K Factor = 5.60	
to		120		0.0	0.0	0.0				
6	15.98	0.0859		0.0	8.460	0.727			Vel = 5.93	
6	16.69	1.049	1T	5.0	3.750	8.874			K Factor = 5.60	
to		120		0.0	5.000	0.0				
C	32.67	0.3225		0.0	8.750	2.822			Vel = 12.13	
	0.0									
	32.67					11.696			K Factor = 9.55	
7	16.57	1.049		0.0	8.460	8.753			K Factor = 5.60	
to		120		0.0	0.0	0.0				
8	16.57	0.0920		0.0	8.460	0.778			Vel = 6.15	
8	17.29	1.049	1T	5.0	3.750	9.531			K Factor = 5.60	
to		120		0.0	5.000	0.0				
D	33.86	0.3446		0.0	8.750	3.015			Vel = 12.57	
	0.0									
	33.86					12.546			K Factor = 9.56	
9	17.54	1.049		0.0	8.460	9.812			K Factor = 5.60	
to		120		0.0	0.0	0.0				
10	17.54	0.1021		0.0	8.460	0.864			Vel = 6.51	
10	18.30	1.049	1T	5.0	3.750	10.676			K Factor = 5.60	
to		120		0.0	5.000	0.0				
E	35.84	0.3829		0.0	8.750	3.350			Vel = 13.30	
	0.0									
	35.84					14.026			K Factor = 9.57	
11	17.80	1.049		0.0	8.460	10.101			K Factor = 5.60	
to		120		0.0	0.0	0.0				
12	17.8	0.1048		0.0	8.460	0.887			Vel = 6.61	
12	18.56	1.049	1T	5.0	3.750	10.988			K Factor = 5.60	
to		120		0.0	5.000	0.0				
F	36.36	0.3933		0.0	8.750	3.441			Vel = 13.50	
	0.0									
	36.36					14.429			K Factor = 9.57	

Final Calculations - Standard

DENALI FIRE PROTECTION, INC.
BAXTER LIBRARY SECOND FLOOR MEZZ.

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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	*****
A	31.94	2.067		9.620	11.191				
to		120		0.0	0.0				
B	31.94	0.0113		9.620	0.109		Vel =	3.05	
B	32.09	2.067		9.620	11.300				
to		120		0.0	0.0				
C	64.03	0.0412		9.620	0.396		Vel =	6.12	
C	32.67	2.067		9.620	11.696				
to		120		0.0	0.0				
D	96.7	0.0884		9.620	0.850		Vel =	9.25	
D	33.86	2.067		9.620	12.546				
to		120		0.0	0.0				
E	130.56	0.1538		9.620	1.480		Vel =	12.48	
E	35.84	2.067		1.670	14.026				
to		120		0.0	0.0				
F	166.4	0.2413		1.670	0.403		Vel =	15.91	
F	36.36	2.067	1T	10.0	8.120	14.429			
to		120		0.0	10.000	0.0			
G	202.76	0.3474		0.0	18.120	6.295	Vel =	19.39	
G	0.0	4.26		0.0	10.000	20.724			
to		120		0.0	0.0	0.0			
N	202.76	0.0103		0.0	10.000	0.103	Vel =	4.56	
N	0.0	4.26	1T	26.334	25.000	20.827			
to		120		0.0	26.334	15.843			
P	202.76	0.0102		0.0	51.334	0.526	Vel =	4.56	
P	0.0	4.26	3T	79.002	42.960	37.196			
to		120		0.0	79.002	0.0			
R	202.76	0.0103		0.0	121.962	1.252	Vel =	4.56	
	0.0								
	202.76					38.448	K Factor =	32.70	
13	14.88	1.049		0.0	8.460	7.060	K Factor =	5.60	
to		120		0.0	0.0	0.0			
14	14.88	0.0753		0.0	8.460	0.637	Vel =	5.52	
14	15.54	1.049		0.0	8.460	7.697	K Factor =	5.60	
to		120		0.0	0.0	0.0			
15	30.42	0.2827		0.0	8.460	2.392	Vel =	11.29	
15	17.78	1.38	1T	6.0	3.250	10.089	K Factor =	5.60	
to		120		0.0	6.000	0.0			
H	48.2	0.1742		0.0	9.250	1.611	Vel =	10.34	
	0.0								
	48.20					11.700	K Factor =	14.09	
16	15.03	1.049		0.0	8.460	7.206	K Factor =	5.60	
to		120		0.0	0.0	0.0			
17	15.03	0.0768		0.0	8.460	0.650	Vel =	5.58	
17	15.70	1.049		0.0	8.460	7.856	K Factor =	5.60	
to		120		0.0	0.0	0.0			
18	30.73	0.2879		0.0	8.460	2.436	Vel =	11.41	
18	17.96	1.38	1T	6.0	3.250	10.292	K Factor =	5.60	
to		120		0.0	6.000	0.0			
I	48.69	0.1776		0.0	9.250	1.643	Vel =	10.44	

Final Calculations - Standard

DENALI FIRE PROTECTION, INC.
BAXTER LIBRARY SECOND FLOOR MEZZ.

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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	*****
	0.0									
	48.69					11.935			K Factor = 14.09	
19	15.58	1.049		0.0	8.460	7.739			K Factor = 5.60	
to		120		0.0	0.0	0.0				
20	15.58	0.0819		0.0	8.460	0.693			Vel = 5.78	
20	16.26	1.049		0.0	8.460	8.432			K Factor = 5.60	
to		120		0.0	0.0	0.0				
21	31.84	0.3076		0.0	8.460	2.602			Vel = 11.82	
21	18.60	1.38	1T	6.0	3.250	11.034			K Factor = 5.60	
to		120		0.0	6.000	0.0				
J	50.44	0.1895		0.0	9.250	1.753			Vel = 10.82	
	0.0									
	50.44					12.787			K Factor = 14.11	
22	16.70	1.049		0.0	8.460	8.898			K Factor = 5.60	
to		120		0.0	0.0	0.0				
23	16.7	0.0933		0.0	8.460	0.789			Vel = 6.20	
23	17.43	1.049		0.0	8.460	9.687			K Factor = 5.60	
to		120		0.0	0.0	0.0				
24	34.13	0.3499		0.0	8.460	2.960			Vel = 12.67	
24	19.92	1.38	1T	6.0	3.250	12.647			K Factor = 5.60	
to		120		0.0	6.000	0.0				
K	54.05	0.2154		0.0	9.250	1.992			Vel = 11.59	
	0.0									
	54.05					14.639			K Factor = 14.13	
25	17.04	1.049		0.0	8.460	9.258			K Factor = 5.60	
to		120		0.0	0.0	0.0				
26	17.04	0.0967		0.0	8.460	0.818			Vel = 6.33	
26	17.78	1.049		0.0	8.460	10.076			K Factor = 5.60	
to		120		0.0	0.0	0.0				
27	34.82	0.3629		0.0	8.460	3.070			Vel = 12.93	
27	20.30	1.38	1T	6.0	3.250	13.146			K Factor = 5.60	
to		120		0.0	6.000	0.0				
L	55.12	0.2234		0.0	9.250	2.066			Vel = 11.82	
	0.0									
	55.12					15.212			K Factor = 14.13	
H	48.20	2.067		0.0	9.620	11.700				
to		120		0.0	0.0	0.0				
I	48.2	0.0244		0.0	9.620	0.235			Vel = 4.61	
I	48.70	2.067		0.0	9.620	11.935				
to		120		0.0	0.0	0.0				
J	96.9	0.0886		0.0	9.620	0.852			Vel = 9.26	
J	50.44	2.067		0.0	9.620	12.787				
to		120		0.0	0.0	0.0				
K	147.34	0.1925		0.0	9.620	1.852			Vel = 14.09	
K	54.05	2.067		0.0	1.670	14.639				
to		120		0.0	0.0	0.0				
L	201.39	0.3431		0.0	1.670	0.573			Vel = 19.26	

Final Calculations - Standard

GENALI FIRE PROTECTION, INC.
 BAXTER LIBRARY SECOND FLOOR MEZZ.

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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	*****
L	55.12	2.067	1L	3.0	8.120	15.212				
to		120		0.0	3.000	0.0				
M	256.51	0.5368		0.0	11.120	5.969		Vel = 24.53		
M	0.0	4.26		0.0	10.000	21.181				
to		120		0.0	0.0	0.0				
O	256.51	0.0158		0.0	10.000	0.158		Vel = 5.77		
O	0.0	4.26	1T	26.334	25.000	21.339				
to		120		0.0	26.334	15.843				
Q	256.51	0.0159		0.0	51.334	0.814		Vel = 5.77		
Q	0.0	4.26	1T	26.334	2.170	37.996				
to		120		0.0	26.334	0.0				
R	256.51	0.0159		0.0	28.504	0.452		Vel = 5.77		
R	202.76	4.26	7L	55.302	54.170	38.448				
to		120	1T	26.334	81.636	0.0				
TOR	459.27	0.0466		0.0	135.806	6.327		Vel = 10.34		
TOR	0.0	4.26	1A	22.384	7.000	44.775				
to		120	1G	2.633	25.017	3.681				
BASE	459.27	0.0466		0.0	32.017	1.492		Vel = 10.34		
BASE	0.0	6.16	2E	40.168	150.000	49.948				
to		140	1G	4.304	87.509	0.433				
TEST	459.27	0.0058	1T	43.037	237.509	1.380		Vel = 4.94		
	100.00							Qa = 100.00		
	559.27					51.761		K Factor = 77.74		