

DISPLAY THIS CARD ON PRINCIPAL FRONTAGE OF WORK



CITY OF PORTLAND BUILDING PERMIT



This is to certify that

PROPRIETORS OF CUSTOM HOUSE WHARF ATTN G
E MACGOWA/High Tech Fire Protection

PERMIT ID: 2013-00044

Located at

86 COMMERCIAL ST/ 6 Custom House Wharf

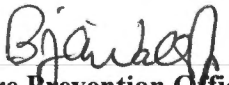
CBL: 030 A001001

has permission to **Install NFPA 13 sprinkler system for new restaurant (Poppy's Fish Shack).**

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

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

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


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**

PERMIT ID: 2013-00044

Located at: 86 COMMERCIAL ST/ 6 Custom

CBL: 030 A001001

BUILDING PERMIT INSPECTION PROCEDURES
Please call 874-8703 (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.**

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

Permit No:	Date Applied For:	CBL:
2013-00044	01/08/2013	030 A001001

Location of Construction: 86 COMMERCIAL ST/ 6 Custom H	Owner Name: PROPRIETORS OF CUSTOM HO	Owner Address: 5 EASTERN PROMENADE	Phone:
Business Name: Poppy's Fish Shack & Oyster Room	Contractor Name: High Tech Fire Protection	Contractor Address: - P.O. Box 156 Minot	Phone (207) 998-2551
Lessee/Buyer's Name Harding Smith	Phone: 2073194368	Permit Type: Fire Suppression System	

Proposed Use: Same: Restaurant (see permit #2013-00044)	Proposed Project Description: Install NFPA 13 sprinkler system for new restaurant (Poppy's Fish Shack).
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Dept: Zoning	Status: Approved	Reviewer: Marge Schmuckal	Approval Date: 01/08/2013
Note:			Ok to Issue: ☒
Dept: Fire	Status: Approved w/Conditions	Reviewer: Ben Wallace Jr	Approval Date: 02/19/2013
Note:			Ok to Issue: ☒
1) Private fire mains and fire hydrants shall be maintained, tested and painted in accordance with Fire Department Regulations prior to issuance of any certificate of occupancy.			
2) Notice: The first scheduled final inspection fee is at no charge. Additional inspections shall be billed at \$75 for each inspector.			
3) System acceptance and commissioning must be coordinated with alarm and suppression system contractors and the Fire Department. Call 874-8703 to schedule.			
4) Sprinkler supervision shall be provided in accordance with NFPA 101, Life Safety Code, and NFPA 72, National Fire Alarm and Signaling Code.			
5) 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.			
6) Installation shall be in accordance with the City of Portland Fire Department Regulations and NFPA 13 as published. A copy of the State Sprinkler permit with RMS date and signature and the Contractor's Material and Test Certificate for Aboveground Piping (NFPA 13 figure 24.1) shall be provided prior to scheduling of the final inspection.			
7) A Knox Box is required.			

City of Portland, Maine - Building or Use Permit Application

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

Permit No:

2013-00044

Issue Date:

CBL:

030 A001001

Location of Construction: 86 COMMERCIAL ST/ 6 Custom House Wharf	Owner Name: PROPRIETORS OF CUSTOM HOUSE WHARF ATTN G E MAGGOWA	Owner Address: 5 EASTERN PROMENADE PORTLAND, ME 04101		Phone:
Business Name: Poppy's Fish Shack & Oyster Room	Contractor Name: High Tech Fire Protection	Contractor Address: P.O. Box 156 Minot ME 04258		Phone: (207) 998-2551
Lessee/Buyer's Name Harding Smith	Phone: (207) 319-4368	Permit Type: Fire Suppression System		Zone: XS OS WCZ
Past Use: Restaurant	Proposed Use: Same: Restaurant (see permit #2013-00044)	Permit Fee: \$260.00	Cost of Work: \$24,000.00	CEO District: 2
Proposed Project Description: Install WB Fire Suppression for the whole structure. 6 Custom House Wharf		FIRE DEPT: ☒ Approved ☐ Denied ☐ N/A 2/19/13		
		INSPECTION: Use Group: Type:		
		Signature: <i>Bjorn [Signature]</i> (58) Signature:		
		PEDESTRIAN ACTIVITIES DISTRICT (P.A.D.) Action: ☐ Approved ☐ Approved w/Conditions ☐ Denied Signature: Date:		

Permit Taken By: bjs	Date Applied For: 01/08/2013	Zoning Approval		
1. This permit application does not preclude the Applicant(s) from meeting applicable State and Federal Rules. 2. Building permits do not include plumbing, septic or electrical work. 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..		Special Zone or Reviews ☐ Shoreland ☐ Wetland ☐ Flood Zone ☐ Subdivision ☐ Site Plan Maj ☐ Minor ☐ MM ☐ Date: <i>01/8/2013</i>	Zoning Appeal ☐ Variance ☐ Miscellaneous ☐ Conditional Use ☐ Interpretation ☐ Approved ☐ Denied Date:	Historic Preservation ☒ Not in District or Landmark ☐ Does Not Require Review ☐ Requires Review ☐ Approved ☐ Approved w/Conditions ☐ Denied Date:

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



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: 86 Commercial
6 Custom House Wharf CBL: 030 A001

Exact location: (within structure) Entire Structure

Type of occupancy(s) (NFPA & ICC): Business - Restaurant

Building owner: Proprietors of Custom House Wharf

Managing Supervisor (RMS): Jeremy A Foss License No: 808

Supervisor phone: (207) 998-2551 E-mail: JFoss@fairpoint.net

Installing contractor: High Tech Fire Protection License No: 102

Contractor phone: (207) 998-2551 E-mail: htfp@fairpoint.net

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: 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: \$24,000

PERMIT FEE: \$260

(\$10 PER \$1,000 + \$30 FOR THE FIRST \$1,000)

RECEIVED

DEC 08 2013

Dept. of Building Inspections
City of Portland Maine

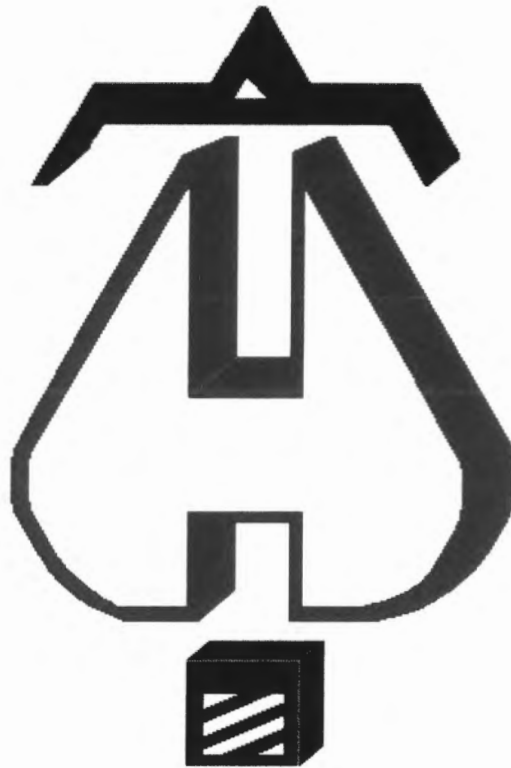
Submit all information to the Building Inspections Department, 389 Congress Street, Room 315, Portland, Maine 04101.

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: _____

Date: 01/02/2013



... Fire Protection by Computer Design

High Tech Fire Protection
84 Hackett Mills Road
P.O. Box 156
Minot, Maine 04258-0156
998-2551

Job Name : Outdoor Bar / Seating Area Calc.
Building : Custom House Wharf
Location : Custom House Wharf
System : NFPA 13
Contract : 061112-1
Data File : Outdoor Bar - Seating Area Calc.wxf

Hydraulic Design Information Sheet

Name - Outdoor Bar / Seating Area Calc.

Date - 12/28/2012

Location - Custom House Wharf

Building - Custom House Wharf

Contractor - High Tech Fire Protection

Calculated By - Jeremy A Foss

Construction: (X) Combustible () Non-Combustible

Occupancy - Bar / Seating

System No. - NFPA 13

Contract No. - 061112-1

Drawing No. - FP-1.1

Ceiling Height - 10'-0"

S (X) NFPA 13 (X) Lt. Haz. Ord.Haz.Gp. () 1 () 2 () 3 () Ex.Haz.

Y () NFPA 231 () NFPA 231C () Figure Curve

S Other

T Specific Ruling

Made By

Date

M Area of Sprinkler Operation - 900 System Type Sprinkler/Nozzle

Density - .1 (X) Wet Make Globe

D Area Per Sprinkler - 196 () Dry Model GL5615

E Elevation at Highest Outlet - 10 () 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 - 336 Press Required - 89
Summary C-Factor Used: 120 Overhead 140 Underground

W Water Flow Test: Pump Data: Tank or Reservoir:
A Date of Test - 06/09/2000 Cap. -
T Time of Test - Rated Cap.- Elev.-
E Static Press - 102 @ Press -
R Residual Press - 96 Elev. - Well
Flow - 1162 Proof Flow
S Elevation - 3

U
P Location - Test Hydrant Located at Corner of Commercial and Silver Streets
P Test Hydrant #00052 and Flow Hydrant #00051
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)

High Tech Fire Protection
Outdoor Bar / Seating Area Calc.

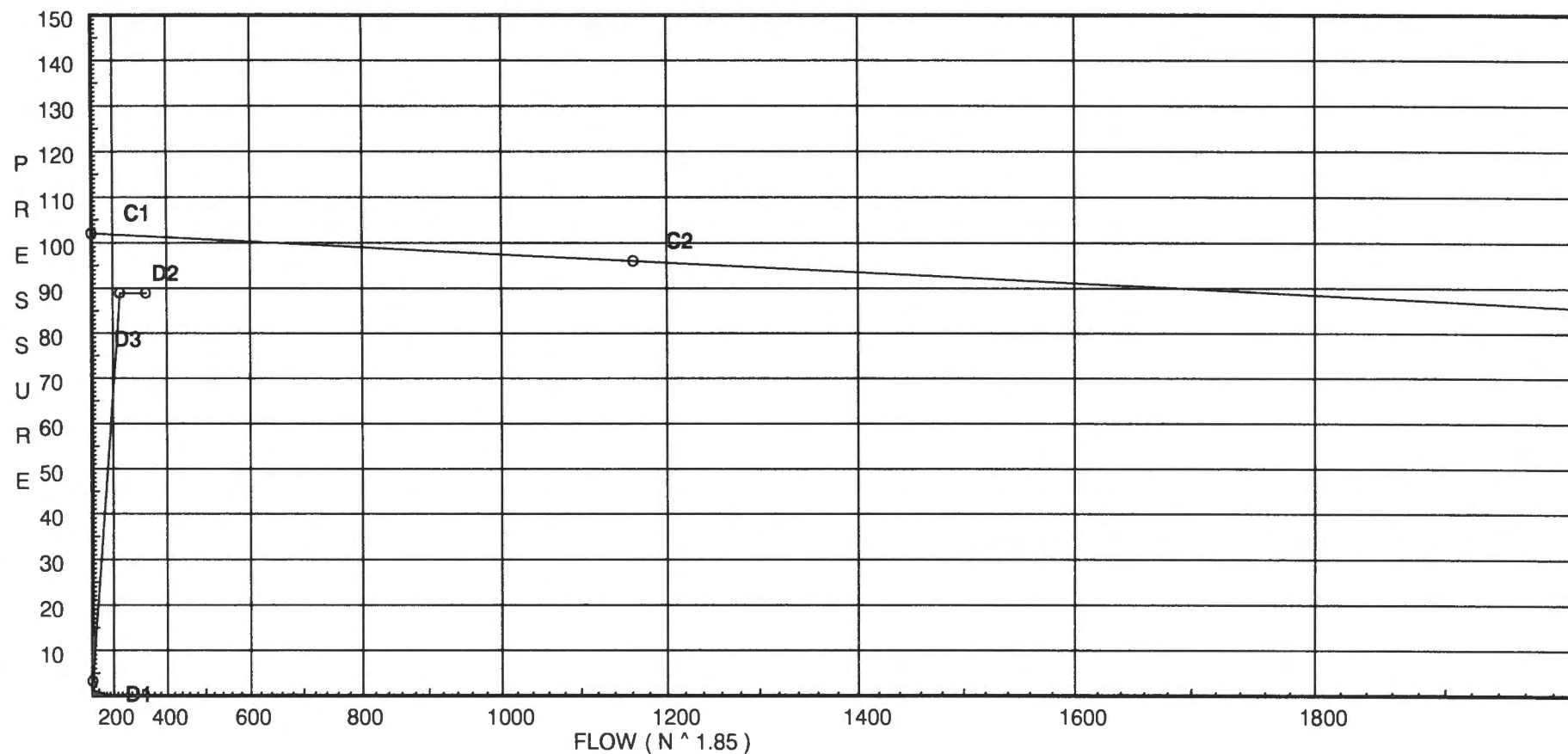
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City Water Supply:

C1 - Static Pressure : 102
C2 - Residual Pressure: 96
C2 - Residual Flow : 1162

Demand:

D1 - Elevation : 3.248
D2 - System Flow : 235.602
D2 - System Pressure : 88.911
Hose (Adj City) :
Hose (Demand) : 100
D3 - System Demand : 335.602
Safety Margin : 12.486



Fittings Used Summary

High Tech Fire Protection
Outdoor Bar / Seating Area Calc.

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Date 12/28/2012

Fitting Legend

Abbrev.	Name	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6	8	10	12	14	16	18	20	24
B	Generic Butterfly Valve	0	0	0	0	7	7	7	10	0	12	9	10	12	19	21	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
Fsp	Flow Switch Potter VSR	Fitting generates a Fixed Loss Based on Flow																			
G	Generic Gate Valve	0	0	0	0	0	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13
S	Generic Swing Check Valve	4	5	5	7	9	11	14	16	19	22	27	32	45	55	65	76	87	98	109	130
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
V	90° Ell Firelock #001	0	0	0	0	0	3.5	4.3	5	0	6.8	8.5	10	13	0	0	0	0	0	0	0

Pressure / Flow Summary - STANDARD

High Tech Fire Protection
Outdoor Bar / Seating Area Calc.

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Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
401	10.5	5.6	12.25	na	19.6	0.1	196	7.0
B1	10.5		14.41	na				
402	10.5	5.6	13.52	na	20.59	0.1	196	7.0
B2	10.5		14.41	na				
403	10.5	5.6	13.33	na	20.45	0.1	196	7.0
B3	10.5		14.47	na				
404	10.5	5.6	12.83	na	20.06	0.1	196	7.0
405	10.5	5.6	13.65	na	20.69	0.1	196	7.0
B4	10.5		14.59	na				
406	10.5	5.6	13.6	na	20.65	0.1	196	7.0
407	10.5	5.6	14.46	na	21.29	0.1	196	7.0
B5	10.5		15.45	na				
408	10.5	5.6	15.18	na	21.82	0.1	196	7.0
409	10.5	5.6	16.13	na	22.49	0.1	196	7.0
B6	10.5		17.23	na				
410	10.5	5.6	17.79	na	23.62	0.1	196	7.0
411	10.5	5.6	18.89	na	24.34	0.1	196	7.0
B7	10.5		20.17	na				
B8	10.5		30.61	na				
B9	4.0		35.17	na				
B10	4.0		38.98	na				
B11	10.0		38.06	na				
B12	10.0		43.68	na				
B13	10.0		46.14	na				
B14	9.0		47.55	na				
B15	9.0		48.57	na				
B16	10.0		49.11	na				
B17	10.0		51.95	na				
B18	9.0		53.35	na				
B19	9.0		54.38	na				
B20	10.0		54.92	na				
TOR	10.0		60.47	na				
BOR	1.0		78.64	na				
H1	0.0		80.25	na	100.0			
H2	3.0		88.51	na				
H3	3.0		88.57	na				
TEST	3.0		88.91	na				

The maximum velocity is 20.69 and it occurs in the pipe between nodes B7 and B8

Final Calculations - Hazen-Williams

High Tech Fire Protection
Outdoor Bar / Seating Area Calc.

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Date 12/28/2012

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv. Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	*****	Notes	*****
401 to B1	19.60 19.6	1.049 120 0.1253	1E 2.0 1T 5.0	10.200 7.000	12.250 0.0			K Factor = 5.60	
B1 to B2	0.0 19.6	2.157 120 0.0040	0.0 0.0	1.000 0.0	14.406 0.0			Vel = 7.28	
	0.0 19.60					14.410		K Factor = 5.16	
402 to B2	20.59 20.59	1.049 120 0.1374	1T 5.0	1.500 5.000	13.517 0.0			K Factor = 5.60	
B2 to B3	19.60 40.19	2.157 120 0.0140	0.0 0.0	4.200 0.0	14.410 0.0			Vel = 7.64	
	0.0 40.19		0.0	4.200	0.059			Vel = 3.53	
	0.0 40.19					14.469		K Factor = 10.57	
403 to B3	20.45 20.45	1.049 120 0.1355	1T 5.0	3.400 5.000	13.331 0.0			K Factor = 5.60	
B3 to B4	40.19 60.64	2.157 120 0.0303	0.0 0.0	3.900 0.0	14.469 0.0			Vel = 7.59	
	0.0 60.64		0.0	3.900	0.118			Vel = 5.32	
	0.0 60.64					14.587		K Factor = 15.88	
404 to B4	20.06 20.06	1.049 120 0.1308	1T 5.0	8.400 5.000	12.834 0.0			K Factor = 5.60	
	0.0 20.06		0.0	13.400	1.753			Vel = 7.45	
	0.0 20.06					14.587		K Factor = 5.25	
405 to B4	20.69 20.69	1.049 120 0.1385	1T 5.0	1.800 5.000	13.645 0.0			K Factor = 5.60	
B4 to B5	80.69 101.38	2.157 120 0.0784	0.0 0.0	11.000 0.0	14.587 0.0			Vel = 7.68	
	0.0 101.38		0.0	11.000	0.862			Vel = 8.90	
	0.0 101.38					15.449		K Factor = 25.79	
406 to B5	20.65 20.65	1.049 120 0.1381	1T 5.0	8.400 5.000	13.599 0.0			K Factor = 5.60	
	0.0 20.65		0.0	13.400	1.850			Vel = 7.67	
	0.0 20.65					15.449		K Factor = 5.25	
407 to B5	21.29 21.29	1.049 120 0.1462	1T 5.0	1.800 5.000	14.455 0.0			K Factor = 5.60	
B5 to B6	122.03 143.32	2.157 120 0.1486	0.0 0.0	12.000 0.0	15.449 0.0			Vel = 7.90	
	0.0 143.32		0.0	12.000	1.783			Vel = 12.58	

Final Calculations - Standard

High Tech Fire Protection
Outdoor Bar / Seating Area Calc.

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Date 12/28/2012

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	*****	Notes	*****
	0.0 143.32					17.232			K Factor = 34.53	
408 to B6	21.82	1.049 120 0.1529	1T	5.0 0.0 0.0	8.400 5.000 13.400	15.183 0.0 2.049			K Factor = 5.60 Vel = 8.10	
	0.0 21.82					17.232			K Factor = 5.26	
409 to B6	22.49	1.049 120 0.1618	1T	5.0 0.0 0.0	1.800 5.000 6.800	16.132 0.0 1.100			K Factor = 5.60 Vel = 8.35	
B6 to B7	165.15 187.64	2.157 120 0.2446		0.0 0.0 0.0	12.000 0.0 12.000	17.232 0.0 2.935			Vel = 16.47	
	0.0 187.64					20.167			K Factor = 41.78	
410 to B7	23.62	1.049 120 0.1771	1T	5.0 0.0 0.0	8.400 5.000 13.400	17.794 0.0 2.373			K Factor = 5.60 Vel = 8.77	
	0.0 23.62					20.167			K Factor = 5.26	
411 to B7	24.34	1.049 120 0.1872	1T	5.0 0.0 0.0	1.800 5.000 6.800	18.894 0.0 1.273			K Factor = 5.60 Vel = 9.04	
B7 to B8	211.26 235.6	2.157 120 0.3727	2V	8.615 0.0 0.0	19.400 8.615 28.015	20.167 0.0 10.441			Vel = 20.69	
B8 to B9	0.0 235.6	2.635 120 0.1406	1V	5.903 0.0 0.0	6.500 5.903 12.403	30.608 2.815 1.744			Vel = 13.86	
B9 to B10	0.0 235.6	2.635 120 0.1406	1S 1V	19.22 5.903 0.0	2.000 25.123 27.123	35.167 0.0 3.813			Vel = 13.86	
B10 to B11	0.0 235.6	2.635 120 0.1406	1V	5.903 0.0 0.0	6.000 5.903 11.903	38.980 -2.599 1.674			Vel = 13.86	
B11 to B12	0.0 235.6	2.635 120 0.1406	2V 1B	11.807 9.61 0.0	18.600 21.417 40.017	38.055 0.0 5.626			Vel = 13.86	
B12 to B13	0.0 235.6	2.635 120 0.1406	1V	5.903 0.0 0.0	11.600 5.903 17.503	43.681 0.0 2.461			Vel = 13.86	
B13 to B14	0.0 235.6	2.635 120 0.1407	1V	5.903 0.0 0.0	1.000 5.903 6.903	46.142 0.433 0.971			Vel = 13.86	
B14 to B15	0.0 235.6	2.635 120 0.1406	1V	5.903 0.0 0.0	1.400 5.903 7.303	47.546 0.0 1.027			Vel = 13.86	

Final Calculations - Standard

High Tech Fire Protection
Outdoor Bar / Seating Area Calc.

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Date 12/28/2012

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv. Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	*****	Notes	*****
B15 to B16	0.0 235.6	2.635 120 0.1405	1V	5.903 0.0 0.0	1.000 5.903 6.903	48.573 -0.433 0.970		Vel = 13.86	
B16 to B17	0.0 235.6	2.635 120 0.1406	1V	5.903 0.0 0.0	14.300 5.903 20.203	49.110 0.0 2.841		Vel = 13.86	
B17 to B18	0.0 235.6	2.635 120 0.1405	1V	5.903 0.0 0.0	1.000 5.903 6.903	51.951 0.433 0.970		Vel = 13.86	
B18 to B19	0.0 235.6	2.635 120 0.1406	1V	5.903 0.0 0.0	1.400 5.903 7.303	53.354 0.0 1.027		Vel = 13.86	
B19 to B20	0.0 235.6	2.635 120 0.1407	1V	5.903 0.0 0.0	1.000 5.903 6.903	54.381 -0.433 0.971		Vel = 13.86	
B20 to TOR	0.0 235.6	2.635 120 0.1406	2V	11.807 0.0 0.0	27.700 11.807 39.507	54.919 0.0 5.554		Vel = 13.86	
TOR to BOR	0.0 235.6	2.635 120 0.1407	1Fsp	0.0 0.0 0.0	9.000 0.0 9.000	60.473 16.898 1.266		* Fixed loss = 10 Vel = 13.86	
BOR to H1	0.0 235.6	4.1 140 0.0123	1E 1G 1T	14.534 2.907 29.067	50.000 46.508 96.508	78.637 0.433 1.184		Vel = 5.73	
H1 to H2	100.00 335.6	4.1 100 0.0440	1G 1T	1.56 15.598 0.0	200.000 17.157 217.157	80.254 -1.299 9.560		Qa = 100 Vel = 8.16	
H2 to H3	0.0 335.6	12.24 100 0.0002		0.0 0.0 0.0	250.000 0.0 250.000	88.515 0.0 0.053		Vel = 0.92	
H3 to TEST	0.0 335.6	6.14 100 0.0062	1E 1G 1T	10.608 2.273 22.732	20.000 35.613 55.613	88.568 0.0 0.343		Vel = 3.64	
	0.0 335.60					88.911		K Factor = 35.59	



. . . Fire Protection by Computer Design

High Tech Fire Protection
84 Hackett Mills Road
P.O. Box 156
Minot, Maine 04258-0156
998-2551

Job Name : Second Floor Restaurant / Seating Area Calc.
Building : Custom House Wharf
Location : Custom House Wharf
System : NFPA 13
Contract : 061112-1
Data File : Second Floor Restaurant - Seating Area Calc.wxf

Hydraulic Design Information Sheet

Name - Second Floor Restaurant / Seating Area Calc. Date - 12/28/2012
Location - Custom House Wharf
Building - Custom House Wharf
Contractor - High Tech Fire Protection
Calculated By - Jeremy A Foss
Construction: (X) Combustible () Non-Combustible
Occupancy - Restaurant Seating / Kitchen

System No. - NFPA 13
Contract No. - 061112-1
Drawing No. - FP-1.1
Ceiling Height - 15'-0"

S (X) NFPA 13 () Lt. Haz. Ord.Haz.Gp. (X) 1 () 2 () 3 () Ex.Haz.
Y () NFPA 231 () NFPA 231C () Figure Curve
S Other

T Specific Ruling Made By Date

E
M Area of Sprinkler Operation - 1000 System Type Sprinkler/Nozzle
Density - .15 (X) Wet Make Globe
D Area Per Sprinkler - 130 () Dry Model GL5615
E Elevation at Highest Outlet - 25 () Deluge Size 1/2"
S Hose Allowance - Inside - () Preaction K-Factor 5.6
I Rack Sprinkler Allowance - () Other Temp.Rat.155 / 200
G Hose Allowance - Outside - 250
N

Note

Calculation Flow Required - 497 Press Required - 84
Summary C-Factor Used: 120 Overhead 140 Underground

W Water Flow Test: Pump Data: Tank or Reservoir:
A Date of Test - 06/09/2000 Cap. -
T Time of Test - Rated Cap.- Elev.-
E Static Press - 102 @ Press -
R Residual Press - 96 Elev. - Well
Flow - 1162 Proof Flow
S Elevation - 3

U
P Location - Test Hydrant Located at Corner of Commercial and Silver Streets
P Test Hydrant #00052 and Flow Hydrant #00051
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)

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Second Floor Restaurant / Seating Area Calc.

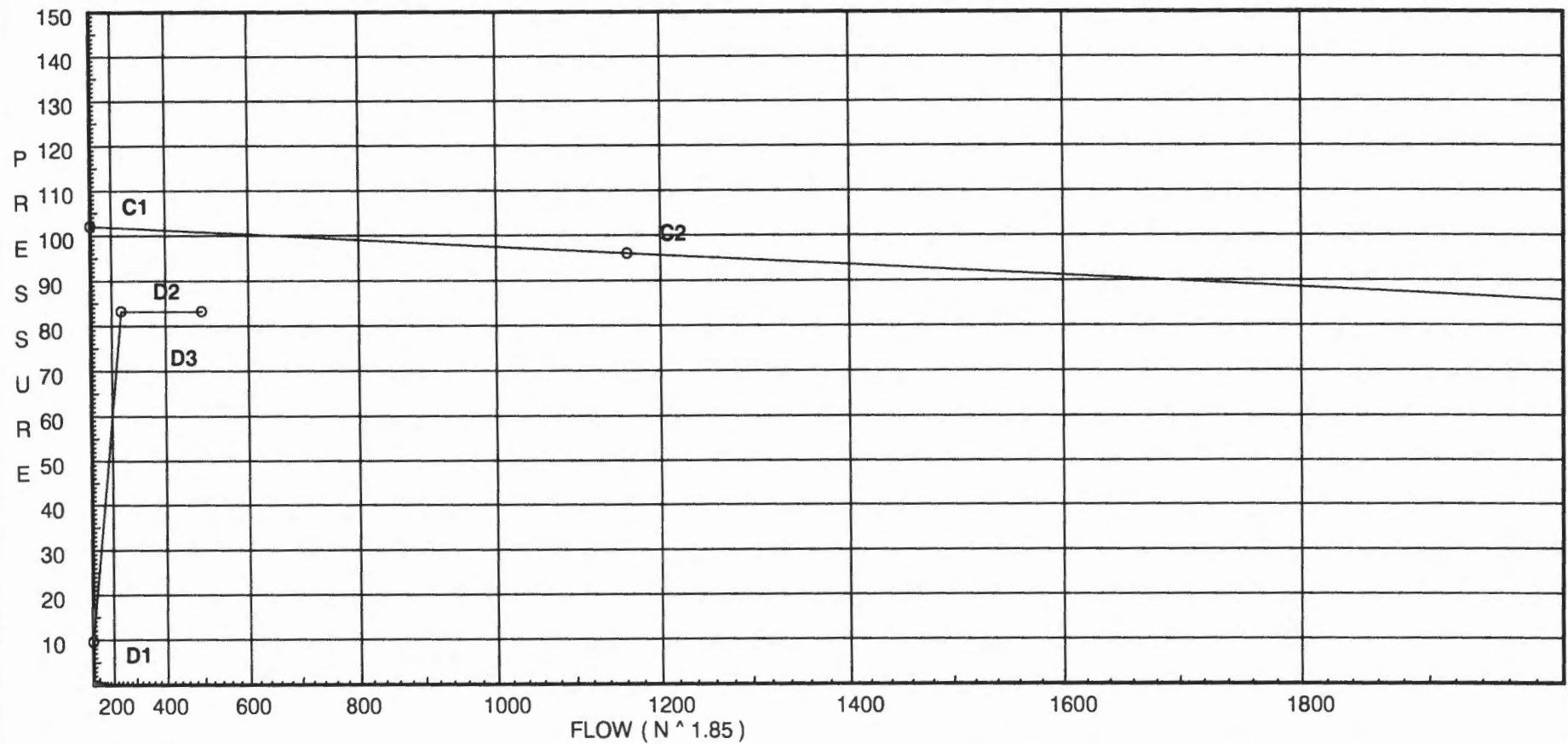
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City Water Supply:

C1 - Static Pressure : 102
C2 - Residual Pressure: 96
C2 - Residual Flow : 1162

Demand:

D1 - Elevation : 9.528
D2 - System Flow : 246.452
D2 - System Pressure : 83.230
Hose (Adj City) :
Hose (Demand) : 250
D3 - System Demand : 496.452
Safety Margin : 17.526



Fittings Used Summary

High Tech Fire Protection
Second Floor Restaurant / Seating Area Calc.

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Fitting Legend

Abbrev.	Name	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6	8	10	12	14	16	18	20	24
E	90' Standard Elbow	2	2	2	3	4	5	6	7	8	10	12	14	18	22	27	35	40	45	50	61
Fsp	Flow Switch Potter VSR	Fitting generates a Fixed Loss Based on Flow																			
G	Generic Gate Valve	0	0	0	0	0	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13
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
V	90' Ell Firelock #001	0	0	0	0	0	3.5	4.3	5	0	6.8	8.5	10	13	0	0	0	0	0	0	0
X	90'Tee-BranchFirelock002	0	0	0	0	0	8.5	10.8	13	0	16	21	25	33	0	0	0	0	0	0	0

Pressure / Flow Summary - STANDARD

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Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
201	25.0	5.6	12.91	na	20.12	0.15	130	7.0
202	25.0	5.6	13.08	na	20.25	0.15	130	7.0
203	25.0	5.6	13.7	na	20.73	0.15	130	7.0
204	25.0	5.6	15.04	na	21.72	0.15	130	7.0
205	25.0	5.6	12.13	na	19.5	0.15	130	7.0
206	25.0	5.6	12.25	na	19.6	0.15	130	7.0
207	25.0	5.6	12.7	na	19.96	0.15	130	7.0
208	25.0	5.6	13.38	na	20.48	0.15	130	7.0
209	25.0	5.6	13.51	na	20.59	0.15	130	7.0
210	25.0	5.6	13.61	na	20.66	0.15	130	7.0
211	25.0	5.6	14.11	na	21.03	0.15	130	7.0
212	25.0	5.6	15.17	na	21.81	0.15	130	7.0
A1	25.0		17.61	na				
A2	25.0		17.79	na				
A3	25.0		18.37	na				
A4	24.0		19.29	na				
A5	24.0		19.81	na				
A6	25.0		19.86	na				
A7	25.0		20.07	na				
A8	25.0		22.8	na				
A9	24.0		24.29	na				
A10	24.0		25.41	na				
A11	25.0		26.03	na				
A12	25.0		31.81	na				
A13	10.0		42.86	na				
TOR	10.0		43.99	na				
BOR	1.0		62.27	na				
H1	0.0		63.99	na	250.0			
H2	3.0		82.41	na				
H3	3.0		82.52	na				
TEST	3.0		83.23	na				

The maximum velocity is 14.5 and it occurs in the pipe between nodes A7 and A8

Final Calculations - Hazen-Williams

High Tech Fire Protection
Second Floor Restaurant / Seating Area Calc.

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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	*****
201 to 202	20.12	1.682 120 0.0132		0.0 0.0 0.0	13.000 0.0 13.000	12.908 0.0 0.172			K Factor = 5.60	
202 to 203	20.25	1.682 120 0.0478		0.0 0.0 0.0	13.000 0.0 13.000	13.080 0.0 0.622			K Factor = 5.60	
203 to 204	20.73	1.682 120 0.1031		0.0 0.0 0.0	13.000 0.0 13.000	13.702 0.0 1.340			K Factor = 5.60	
204 to A1	21.72	1.682 120 0.1808	1T	9.9 0.0 0.0	4.300 9.900 14.200	15.042 0.0 2.568			K Factor = 5.60	
	0.0 82.82					17.610			K Factor = 19.74	
205 to 206	19.50	1.682 120 0.0125		0.0 0.0 0.0	10.000 0.0 10.000	12.125 0.0 0.125			K Factor = 5.60	
206 to 207	19.60	1.682 120 0.0451		0.0 0.0 0.0	10.000 0.0 10.000	12.250 0.0 0.451			K Factor = 5.60	
207 to 208	19.96	1.682 120 0.0967		0.0 0.0 0.0	7.000 0.0 7.000	12.701 0.0 0.677			K Factor = 5.60	
208 to A2	20.48	1.682 120 0.1679	1T	9.9 0.0 0.0	16.400 9.900 26.300	13.378 0.0 4.416			K Factor = 5.60	
	0.0 79.54					17.794			K Factor = 18.86	
209 to 210	20.59	1.682 120 0.0139		0.0 0.0 0.0	7.000 0.0 7.000	13.512 0.0 0.097			K Factor = 5.60	
210 to 211	20.65	1.682 120 0.0498		0.0 0.0 0.0	10.000 0.0 10.000	13.609 0.0 0.498			K Factor = 5.60	
211 to 212	21.04	1.682 120 0.1067		0.0 0.0 0.0	10.000 0.0 10.000	14.107 0.0 1.067			K Factor = 5.60	
212 to A7	21.81	1.682 120 0.1861	1T	9.9 0.0 0.0	16.400 9.900 26.300	15.174 0.0 4.894			K Factor = 5.60	
	0.0 84.09					20.068			K Factor = 18.77	
A1 to A2	82.82	2.635 120 0.0204		0.0 0.0 0.0	9.000 0.0 9.000	17.610 0.0 0.184				Vel = 4.87
A2 to A3	79.54	2.635 120 0.0706	1V	5.903 0.0 0.0	2.300 5.903 8.203	17.794 0.0 0.579				Vel = 9.55

Final Calculations - Standard

High Tech Fire Protection
Second Floor Restaurant / Seating Area Calc.

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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	*****
A3 to A4	0.0 162.36	2.635 120 0.0705	1V	5.903 0.0 0.0	1.000 5.903 6.903	18.373 0.433 0.487		Vel = 9.55	
A4 to A5	0.0 162.36	2.635 120 0.0707	1V	5.903 0.0 0.0	1.400 5.903 7.303	19.293 0.0 0.516		Vel = 9.55	
A5 to A6	0.0 162.36	2.635 120 0.0705	1V	5.903 0.0 0.0	1.000 5.903 6.903	19.809 -0.433 0.487		Vel = 9.55	
A6 to A7	0.0 162.36	2.635 120 0.0707		0.0 0.0 0.0	2.900 0.0 2.900	19.863 0.0 0.205		Vel = 9.55	
A7 to A8	84.09 246.45	2.635 120 0.1528	1V	5.903 0.0 0.0	12.000 5.903 17.903	20.068 0.0 2.736		Vel = 14.50	
A8 to A9	0.0 246.45	2.635 120 0.1528	1V	5.903 0.0 0.0	1.000 5.903 6.903	22.804 0.433 1.055		Vel = 14.50	
A9 to A10	0.0 246.45	2.635 120 0.1528	1V	5.903 0.0 0.0	1.400 5.903 7.303	24.292 0.0 1.116		Vel = 14.50	
A10 to A11	0.0 246.45	2.635 120 0.1527	1V	5.903 0.0 0.0	1.000 5.903 6.903	25.408 -0.433 1.054		Vel = 14.50	
A11 to A12	0.0 246.45	2.635 120 0.1528	2V	11.807 0.0 0.0	26.000 11.807 37.807	26.029 0.0 5.778		Vel = 14.50	
A12 to A13	0.0 246.45	2.635 120 0.1528	1X	14.827 0.0 0.0	15.000 14.827 29.827	31.807 6.496 4.558		Vel = 14.50	
A13 to TOR	0.0 246.45	2.635 120 0.1528	1V	5.903 0.0 0.0	1.500 5.903 7.403	42.861 0.0 1.131		Vel = 14.50	
TOR to BOR	0.0 246.45	2.635 120 0.1529	1Fsp	0.0 0.0 0.0	9.000 0.0 9.000	43.992 16.898 1.376		* Fixed loss = 10 Vel = 14.50	
BOR to H1	0.0 246.45	4.1 140 0.0133	1E 1G 1T	14.534 2.907 29.067	50.000 46.508 96.508	62.266 0.433 1.287		Vel = 5.99	
H1 to H2	250.00 496.45	4.1 100 0.0908	1G 1T	1.56 15.598 0.0	200.000 17.157 217.157	63.986 -1.299 19.725		Qa = 250 Vel = 12.06	
H2 to H3	0.0 496.45	12.24 100 0.0004		0.0 0.0 0.0	250.000 0.0 250.000	82.412 0.0 0.111		Vel = 1.35	
H3 to TEST	0.0 496.45	6.14 100 0.0127	1E 1G 1T	10.608 2.273 22.732	20.000 35.613 55.613	82.523 0.0 0.707		Vel = 5.38	

Final Calculations - Standard

High Tech Fire Protection
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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	*****
	0.0 496.45				83.230			K Factor = 54.42	