

DISPLAY THIS CARD ON PRINCIPAL FRONTAGE OF WORK



CITY OF PORTLAND

BUILDING PERMIT

This is to certify that
EASTERN FIRE SERVICES
PO Box 1390
AUBURN, ME 04211

For installation at
33 BISHOP ST
PLASMINE

Job ID: 2012-08-4744-FAFS

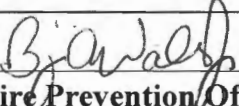
CBL: 293- A-008-001

has permission to install new NFPA 13 sprinkler system

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

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

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


Fire Prevention Officer



Code Enforcement Officer / Plan Reviewer

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

BUILDING PERMIT INSPECTION PROCEDURES

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

or email: buildinginspections@portlandmaine.gov

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

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

Final Fire

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

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



PORTLAND MAINE

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

Director of Planning and Urban Development
Jeff Levine

Job ID: 2012-08-4744-FAFS
install new NFPA 13 sprinkler system

For installation at:
33 BISHOP ST
PLASMINE

CBL: 293- A-008-001

Conditions of Approval:

Fire

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

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

Sprinkler supervision shall be provided in accordance with NFPA 101, *Life Safety Code*, and NFPA 72, *National Fire Alarm and Signaling Code*.

Sprinkler 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.

Fire department connection shall be 2 1/2". The Fire Department will require Knox locking caps on all Fire Department Connections on the exterior of the building.

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

A Knox Box is required.

City of Portland, Maine - Building or Use Permit Application

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

Job No: 2012-08-4744-FAFS	Date Applied: 8/20/2012	CBL: 293- A-008-001	
Location of Construction: 33 BISHOP ST	Owner Name: PLASMINE TECHNOLOGY INC.	Owner Address: 3298 SUMMIT BLVD BLDG 35 PENSACOLA, FL 32503	Phone:
Business Name:	Contractor Name: EASTERN FIRE SERVICES	Contractor Address: PO BOX 1390 AUBURN MAINE 04211	Phone: (207) -784-1507
Lessee/Buyer's Name:	Phone:	Permit Type: FIRE ALARM	Zone: I-M
Past Use: Production and Warehouse	Proposed Use: Same: Production and Warehouse – to install fire suppression system	Cost of Work: \$38,000.00	CEO District:
		Fire Dept: 9/7/12 <input checked="" type="checkbox"/> Approved w/ conditions <input type="checkbox"/> Denied <input type="checkbox"/> N/A	Inspection: Use Group: Type:
		Signature: <i>Bjawa</i> (58)	Signature:
Proposed Project Description: WB Fire Supression		Pedestrian Activities District (P.A.D.)	
Permit Taken By: Brad		Zoning Approval	

<p>1. This permit application does not preclude the Applicant(s) from meeting applicable State and Federal Rules.</p> <p>2. Building Permits do not include plumbing, septic or electrical work.</p> <p>3. Building permits are void if work is not started within six (6) months of the date of issuance. False informatin may invalidate a building permit and stop all work.</p>	<p>Special Zone or Reviews</p> <p><input type="checkbox"/> Shoreland <input type="checkbox"/> Wetlands <input type="checkbox"/> Flood Zone <input type="checkbox"/> Subdivision <input type="checkbox"/> Site Plan</p> <p>___ Maj ___ Min ___ MM Date: <i>OK - S</i> <i>9/20/12</i></p>	<p>Zoning Appeal</p> <p><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</p> <p>Date:</p>	<p>Historic Preservation</p> <p><input checked="" type="checkbox"/> Not in Dist 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</p> <p>Date: <i>S</i></p>
	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 appication 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



Entered 8/20/12

Water-Based Fire Suppression System Permit

2012-08-4741-FAPS

(13)

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: 33 BISHOP ST. PORTLAND CBL: 293 A008 I-m

Exact location: (within structure) WHOLE BUILDING Warehouse i production

Type of occupancy(s) (NFPA & ICC): ORDINARY HAZARD GROUP II CHEMICAL MANU.

Building owner: PLASMINE TECHNOLOGY Inc - 3

Managing Supervisor (RMS): WILL FLYNT License No: 368

Supervisor phone: 784-1507 E-mail: FLYNTWA@TEAMEASTERN.C

Installing contractor: EASTERN FIRE PROTECTION License No: 101

Contractor phone: 784-1507 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 this system is designed to: 13 & 30 Edition: 2012

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

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

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

COST OF WORK: <u>38000</u>
PERMIT FEE: <u>400</u>
(\$10 PER \$1,000 + \$30 FOR THE FIRST \$1,000)
RECEIVED
AUG 17 2012
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: Blair Peters Date: 08/10/2012



PORTLAND MAINE

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Receipts Details:

Tender Information: Check , Check Number: 107138
Tender Amount: 400.00

Receipt Header:

Cashier Id: bsaucier
Receipt Date: 8/20/2012
Receipt Number: 47258

Receipt Details:

Referance ID:	7701	Fee Type:	BP-Constr
Receipt Number:	0	Payment Date:	
Transaction Amount:	400.00	Charge Amount:	400.00
Job ID: Job ID: 2012-08-4744-FAFS - WB Fire Supression			
Additional Comments: 33 Bishop			

Thank You for your Payment!



EASTERN FIRE PROTECTION

P.O. Box 1390
Kittyhawk Ave.
Auburn, ME 04210

PH # (207) 784-1507
FAX # (207) 782-0566

LETTER OF TRANSMITTAL

DATE	8/10/12	JOB NO.	4903
ATTENTION	Inspector		
RE:	Plasmine Technology		

TO Building Inspections Department
389 Congress St. RM 315 Portland, ME

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

- Shop drawings
- Descriptive data
- Hydraulic calculations
- Copy of letter
- Literature
- Permit Request / check

QUANTITY	DRAWING NO.	DATE	DESCRIPTION	STATUS
12	1 of 1	8/3	Shop Drawing	C/E
1	-	8/8	Calc	C/E
1	-	8/8	Calc	C/E
1	-	8/10	Permit Request	C/E
1	-	8/10	Check	C/E

RECEIVED
AUG 17 2012
Dept. of Building Inspections
City of Portland Maine

- 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 0 copies each indicating your approval and/or comments.

REMARKS _____

COPY TO File SIGNED [Signature]

If enclosures are not as noted, kindly notify us at once



... Fire Protection by Computer Design

RECEIVED

AUG 17 2012

Dept. of Building Inspections
City of Portland Maine

EASTERN FIRE PROTECTION
170 KITTY HAWK AVE
AUBURN, ME 04210
207-784-1507

Job Name : Plasmine Technologies
Drawing : 1 of 1
Location : 33 Bishop St. Portland, ME
Remote Area : 1
Contract : AN-4903-12
Data File : Plasmine Technologies RECEIVING CALC.WXF

HYDRAULIC CALCULATIONS
for

Project name: Plasmine Technologies
Location: 33 Bishop St. Portland, ME
Drawing no: 1 of 1
Date: 08/08/12

Design

Remote area number: 1
Remote area location: Recieving
Occupancy classification: Ordinary Hazard II Group II
Density: .2 - Gpm/SqFt
Area of application: 1500 - SqFt
Coverage per sprinkler: 116 - SqFt
Type of sprinklers calculated: TY4151 TY-B Brass Upright 200 3/4" 8.0K
No. of sprinklers calculated: 13
In-rack demand: - GPM
Hose streams: 250 - GPM
Total water required (including hose streams): 610.4 - GPM @ 61 - Psi
Type of system: Wet
Volume of dry or preaction system: - Gal

Water supply information

Date: 07/19/06
Location: Hydrant Acroos the Street
Source: Portland Water District

Name of contractor: EASTERN FIRE PROTECTION
Address: 170 KITTY HAWK AVE / / AUBURN, ME 04210
Phone number: 207-784-1507
Name of designer: Robert Peters
Authority having jurisdiction: State Fire Marshall
Notes: (Include peaking information or gridded systems here.)

Water Supply Curve (C)

EASTERN FIRE PROTECTION
Plasmine Technologies

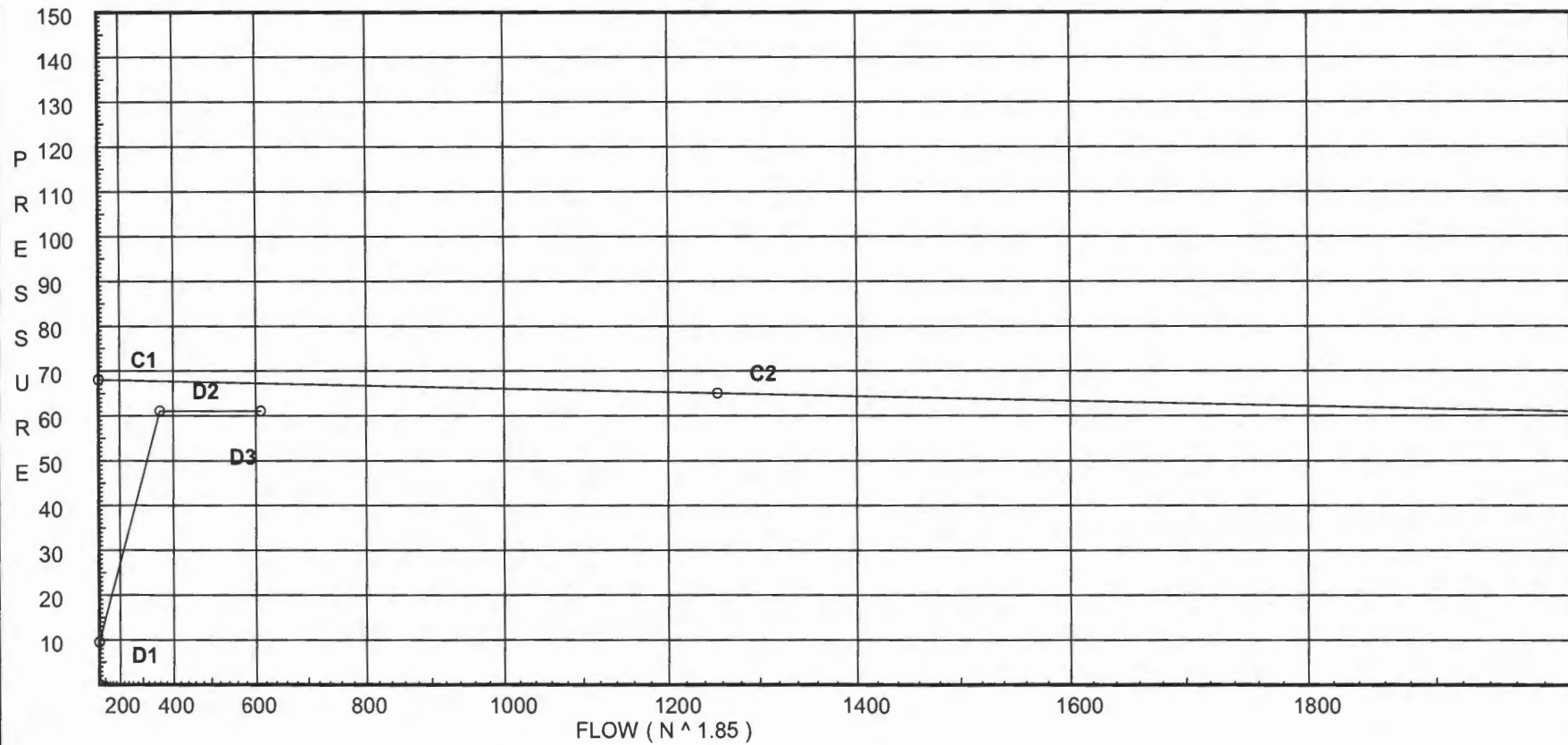
Page 2
Date 07/31/12

City Water Supply:

C1 - Static Pressure : 68
C2 - Residual Pressure: 65
C2 - Residual Flow : 1255

Demand:

D1 - Elevation : 9.494
D2 - System Flow : 360.345
D2 - System Pressure : 61.041
Hose (Demand) : 250
D3 - System Demand : 610.345
Safety Margin : 6.168



Fittings Used Summary

EASTERN FIRE PROTECTION
Plasmine Technologies

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Date 07/31/12

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	
Fsp	Flow Switch Potter VSR	Fitting generates a Fixed Loss Based on Flow																				
G	NFPA 13 Gate Valve	0	0	0	0	0	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13	
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	
Zmb	Maxim M200 Vert Butt	Fitting generates a Fixed Loss Based on Flow																				

Units Summary

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

Note: Fitting Legend provides equivalent pipe lengths for fittings types of various diameters. Equivalent lengths shown are standard for actual diameters of Sched 40 pipe and CFactors of 120 except as noted with *. The fittings marked with a * show equivalent lengths values supplied by manufacturers based on specific pipe diameters and CFactors and they require no adjustment. All values for fittings not marked with a * will be adjusted in the calculation for CFactors of other than 120 and diameters other than Sched 40 per NFPA.

Flow Summary - NFPA 2007

EASTERN FIRE PROTECTION
Plasmine Technologies

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Date 07/31/12

SUPPLY ANALYSIS

<i>Node at Source</i>	<i>Static Pressure</i>	<i>Residual Pressure</i>	<i>Flow</i>	<i>Available Pressure</i>	<i>Total Demand</i>	<i>Required Pressure</i>
TEST	68.0	65	1255.0	67.209	610.34	61.041

NODE ANALYSIS

<i>Node Tag</i>	<i>Elevation</i>	<i>Node Type</i>	<i>Pressure at Node</i>	<i>Discharge at Node</i>	<i>Notes</i>
1	121.92	8	8.27	23.0	
2	121.92	8	8.43	23.22	
3	121.92	8	9.01	24.01	
4	121.92	8	10.28	25.65	
5	121.92	8	14.88	30.86	
6	121.92	8	8.28	23.02	
7	121.92	8	8.44	23.25	
8	121.92	8	9.03	24.04	
9	121.92	8	10.3	25.67	
10	121.92	8	14.91	30.89	
11	121.92	8	17.01	32.99	
12	121.92	8	17.32	33.29	
13	121.92	8	19.64	35.46	
A	119.92		29.15		
B	119.92		29.2		
C	119.92		29.39		
E	119.92		31.06		
TOR	117.92		39.02		
BFP	101.0		49.82		
BASE	101.0		54.02	5.0	
TEST	100.0		61.04	250.0	

Final Calculations - Hazen-Williams - 2007

EASTERN FIRE PROTECTION
Plasmine Technologies

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Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqv.	Ln.	Pipe Ftng's Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
1 to 2	121.920 121.92	8.00	23.00 23.0	1.5 1.682		0.0 0.0	9.500 0.0	120 0.0168	8.266 0.0 0.160			Vel = 3.32
2 to 3	121.92 121.92	8.00	23.22 46.22	1.5 1.682		0.0 0.0	9.500 0.0	120 0.0615	8.426 0.0 0.584			Vel = 6.67
3 to 4	121.92 121.92	8.00	24.02 70.24	1.5 1.682		0.0 0.0	9.500 0.0	120 0.1334	9.010 0.0 1.267			Vel = 10.14
4 to 5	121.92 121.92	8.00	25.64 95.88	1.5 1.682	2E	9.9 0.0	9.500 9.900	120 0.2372	10.277 0.0 4.602			Vel = 13.84
5 to A	121.92 119.920	8.00	30.86 126.74	1.5 1.682	2T	19.799 0.0	13.917 19.799	120 0.3975	14.879 0.866 13.401			Vel = 18.30
A			0.0 126.74						29.146			K Factor = 23.48
6 to 7	121.92 121.92	8.00	23.02 23.02	1.5 1.682		0.0 0.0	9.500 0.0	120 0.0169	8.282 0.0 0.161			Vel = 3.32
7 to 8	121.92 121.92	8.00	23.25 46.27	1.5 1.682		0.0 0.0	9.500 0.0	120 0.0616	8.443 0.0 0.585			Vel = 6.68
8 to 9	121.92 121.92	8.00	24.04 70.31	1.5 1.682		0.0 0.0	9.500 0.0	120 0.1336	9.028 0.0 1.269			Vel = 10.15
9 to 10	121.92 121.92	8.00	25.67 95.98	1.5 1.682	2E	9.9 0.0	9.500 9.900	120 0.2376	10.297 0.0 4.610			Vel = 13.86
10 to B	121.92 119.920	8.00	30.89 126.87	1.5 1.682	2T	19.799 0.0	13.917 19.799	120 0.3982	14.907 0.866 13.425			Vel = 18.32
B			0.0 126.87						29.198			K Factor = 23.48
11 to 12	121.92 121.92	8.00	32.99 32.99	1.5 1.682		0.0 0.0	9.500 0.0	120 0.0329	17.005 0.0 0.313			Vel = 4.76
12 to 13	121.92 121.920	8.00	33.29 66.28	1.5 1.682	2E	9.9 0.0	9.500 9.900	120 0.1198	17.318 0.0 2.324			Vel = 9.57
13 to C	121.920 119.920	8.00	35.46 101.74	1.5 1.682	2T	19.799 0.0	13.750 19.799	120 0.2647	19.642 0.866 8.880			Vel = 14.69
C			0.0 101.74						29.388			K Factor = 18.77
A to B	119.920 119.920		126.74 126.74	4 4.26		0.0 0.0	12.250 0.0	120 0.0042	29.146 0.0 0.052			Vel = 2.85

Final Calculations - Hazen-Williams - 2007

EASTERN FIRE PROTECTION
Plasmine Technologies

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Date 07/31/12

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqv.	Ln.	Pipe Ftng's Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
B to C	119.920 119.920		126.87 253.61	4 4.26		0.0 0.0	12.250 0.0	120 0.0155	29.198 0.0 0.190		Vel = 5.71	
C to E	119.920 119.920		101.73 355.34	4 4.26	1T	26.334 0.0	31.500 26.334	120 0.0290	29.388 0.0 1.677		Vel = 8.00	
E to TOR	119.920 117.920		0.0 355.34	4 4.26	1T 6E	26.334 79.002	139.420 105.336	120 0.0290	31.065 0.866 7.093		Vel = 8.00	
TOR to BFP	117.920 101		0.0 355.34	4 4.26	1Fsp	0.0 0.0	16.000 0.0	120 0.0290	39.024 10.328 0.464		* Fixed loss = 3 Vel = 8.00	
BFP to BASE	101 101		0.0 355.34	4 4.26	1Zmb 1T	0.0 26.334	1.000 26.334	120 0.0290	49.816 3.407 0.793		* Fixed loss = 3.407 Vel = 8.00	
BASE to TEST	101 100	+ 5.00	5.00 360.34	4 4.1	2T 2G 3E	58.134 5.813 43.601	100.000 107.548 207.548	140 0.0269	54.016 1.433 5.592		* Fixed loss = 1 Vel = 8.76	
TEST			250.00 610.34						61.041		Qa = 250.00 K Factor = 78.12	



... Fire Protection by Computer Design

EASTERN FIRE PROTECTION
170 KITTY HAWK AVE
AUBURN, ME 04210
207-784-1507

Job Name : Plasmine Technologies
Drawing : 1 of 1
Location : 33 Bishop St. Portland, ME
Remote Area : 14
Contract : AN-4903-12
Data File : Plasmine Technologies Urea Storage .25.WXF

HYDRAULIC CALCULATIONS
for

Project name: Plasmine Technologies
Location: 33 Bishop St. Portland, ME
Drawing no: 1 of 1
Date: 08/3/12

Design

Remote area number: 14
Remote area location: Urea Storage
Occupancy classification: STORAGE CLASS III B LIQUID
Density: .25 - Gpm/SqFt
Area of application: 1439 - SqFt
Coverage per sprinkler: 97 - SqFt
Type of sprinklers calculated: TY4151 TY-B Brass Upright 200 3/4" 8.0k
No. of sprinklers calculated: 15
In-rack demand: - GPM
Hose streams: 250 - GPM
Total water required (including hose streams): 633 - GPM @ 56.35 - Psi
Type of system: Wet
Volume of dry or preaction system: - Gal

Water supply information

Date: 07/19/06
Location: Hydrant Across the Street
Source: Portland Water District

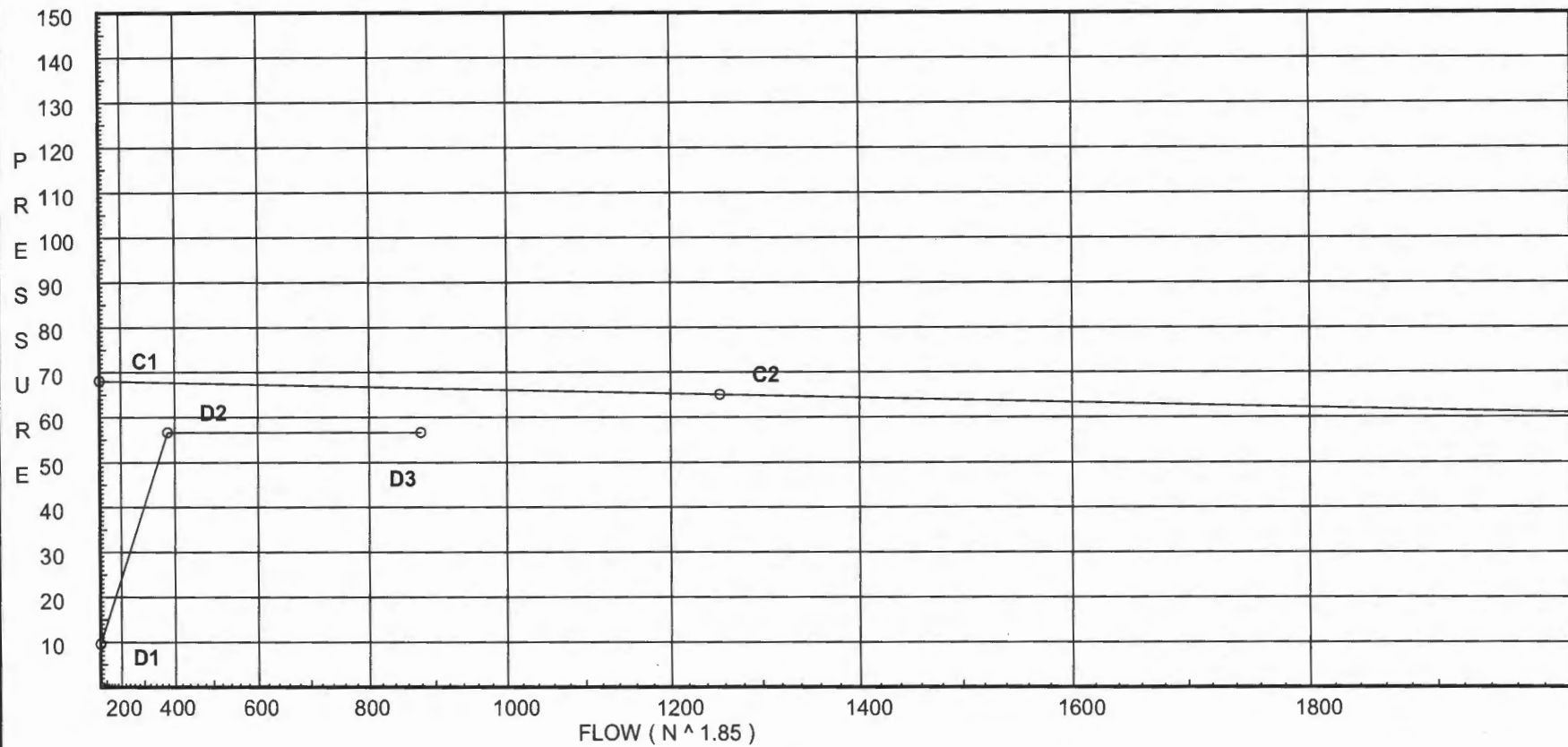
Name of contractor: EASTERN FIRE PROTECTION
Address: 170 KITTY HAWK AVE / / AUBURN, ME 04210
Phone number: 207-784-1507
Name of designer: Robert Peters
Authority having jurisdiction: State Fire Marshall
Notes: (Include peaking information or gridded systems here.)

Water Supply Curve (C)

EASTERN FIRE PROTECTION
Plasmine Technologies

City Water Supply:
 C1 - Static Pressure : 68
 C2 - Residual Pressure: 65
 C2 - Residual Flow : 1255

Demand:
 D1 - Elevation : 9.528
 D2 - System Flow : 379.322
 D2 - System Pressure : 56.576
 Hose (Demand) : 500
 D3 - System Demand : 879.322
 Safety Margin : 9.871



Fittings Used Summary

EASTERN FIRE PROTECTION
Plasmine Technologies

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Date 07/31/12

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
E	NFPA 13 90' Standard Elbow	1	2	2	3	4	5	6	7	8	10	12	14	18	22	27	35	40	45	50	61
Fsp	Flow Switch Potter VSR	Fitting generates a Fixed Loss Based on Flow																			
G	NFPA 13 Gate Valve	0	0	0	0	0	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13
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
Zmb	Maxim M200 Vert Butt	Fitting generates a Fixed Loss Based on Flow																			

Units Summary

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

Note: Fitting Legend provides equivalent pipe lengths for fittings types of various diameters. Equivalent lengths shown are standard for actual diameters of Sched 40 pipe and CFactors of 120 except as noted with *. The fittings marked with a * show equivalent lengths values supplied by manufacturers based on specific pipe diameters and CFactors and they require no adjustment. All values for fittings not marked with a * will be adjusted in the calculation for CFactors of other than 120 and diameters other than Sched 40 per NFPA.

Flow Summary - NFPA 2007

EASTERN FIRE PROTECTION
Plasmine Technologies

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Date 07/31/12

SUPPLY ANALYSIS

<i>Node at Source</i>	<i>Static Pressure</i>	<i>Residual Pressure</i>	<i>Flow</i>	<i>Available Pressure</i>	<i>Total Demand</i>	<i>Required Pressure</i>
TEST	68.0	65	1255.0	66.447	879.32	56.576

NODE ANALYSIS

<i>Node Tag</i>	<i>Elevation</i>	<i>Node Type</i>	<i>Pressure at Node</i>	<i>Discharge at Node</i>	<i>Notes</i>
D1	0.0	5.6	9.65	17.4	
14	122.0	8	9.0	24.0	
15	122.0	8	9.04	24.06	
16	122.0	8	9.2	24.26	
17	122.0	8	9.53	24.69	
18	122.0	8	10.58	26.02	
19	122.0	8	9.14	24.18	
20	122.0	8	9.18	24.24	
21	122.0	8	9.34	24.45	
22	122.0	8	9.67	24.88	
23	122.0	8	10.74	26.22	
24	122.0	8	9.64	24.84	
26	122.0	8	9.69	24.9	
27	122.0	8	9.85	25.11	
28	122.0	8	10.2	25.55	
29	122.0	8	11.32	26.92	
GG	122.0		10.68		
G	120.0		13.12		
HH	120.0		11.71		
H	120.0		13.3		
II	120.0		12.3		
I	122.0		13.11		
J	122.0		16.8		
F	122.0		16.8		
K	120.0		23.67		
E	117.92		25.97		
TOR	117.92		33.78		
BFP	101.0		44.62		
BASE	101.0		48.99	5.0	
TEST	100.0		56.58	500.0	

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Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqv.	Ln.	Pipe Ftng's Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
D1 to L1	0 0	5.60	17.40 17.4	1 1.049	1T	5.0 0.0 0.0	2.000 5.000 7.000	120 0.1006	9.654 0.0 0.704			Vel = 6.46
L1			0.0 17.40						10.358		K Factor = 5.41	
14 to 15	122 122	8.00	24.00 24.0	2 2.157		0.0 0.0 0.0	7.833 0.0 7.833	120 0.0055	9.000 0.0 0.043			Vel = 2.11
15 to 16	122 122	8.00	24.06 48.06	2 2.157		0.0 0.0 0.0	7.833 0.0 7.833	120 0.0197	9.043 0.0 0.154			Vel = 4.22
16 to 17	122 122	8.00	24.26 72.32	2 2.157		0.0 0.0 0.0	7.833 0.0 7.833	120 0.0419	9.197 0.0 0.328			Vel = 6.35
17 to GG	122 122	8.00	24.69 97.01	2 2.157	1T	12.307 0.0 0.0	3.667 12.307 15.974	120 0.0722	9.525 0.0 1.153			Vel = 8.52
GG			0.0 97.01						10.678		K Factor = 29.69	
18 to GG	122 122	8.00	26.02 26.02	2 2.157	1T	12.307 0.0 0.0	3.500 12.307 15.807	120 0.0063	10.578 0.0 0.100			Vel = 2.28
GG			0.0 26.02						10.678		K Factor = 7.96	
19 to 20	122 122	8.00	24.18 24.18	2 2.157		0.0 0.0 0.0	7.833 0.0 7.833	120 0.0055	9.139 0.0 0.043			Vel = 2.12
20 to 21	122 122	8.00	24.25 48.43	2 2.157		0.0 0.0 0.0	7.833 0.0 7.833	120 0.0199	9.182 0.0 0.156			Vel = 4.25
21 to 22	122 122	8.00	24.44 72.87	2 2.157		0.0 0.0 0.0	7.833 0.0 7.833	120 0.0425	9.338 0.0 0.333			Vel = 6.40
22 to HH	122 120	8.00	24.88 97.75	2 2.157	1T	12.307 0.0 0.0	3.667 12.307 15.974	120 0.0732	9.671 0.866 1.170			Vel = 8.58
HH			0.0 97.75						11.707		K Factor = 28.57	
23 to HH	122 120	8.00	26.22 26.22	2 2.157	1T	12.307 0.0 0.0	3.500 12.307 15.807	120 0.0065	10.739 0.866 0.102			Vel = 2.30
HH			0.0 26.22						11.707		K Factor = 7.66	
24 to 26	122 122	8.00	24.84 24.84	2 2.157		0.0 0.0 0.0	7.833 0.0 7.833	120 0.0059	9.642 0.0 0.046			Vel = 2.18
26 to 27	122 122	8.00	24.90 49.74	2 2.157		0.0 0.0 0.0	7.833 0.0 7.833	120 0.0209	9.688 0.0 0.164			Vel = 4.37

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Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqv.	Ln.	Pipe Ftng's Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
27 to 28	122 122	8.00	25.11	2		0.0	7.833	120	9.852			
						0.0	0.0		0.0			
			74.85	2.157		0.0	7.833	0.0447	0.350	Vel =	6.57	
28 to II	122 120	8.00	25.55	2	1T	12.307	3.667	120	10.202			
						0.0	12.307		0.866			
			100.4	2.157		0.0	15.974	0.0769	1.229	Vel =	8.82	
			0.0									
II			100.40						12.297	K Factor =	28.63	
29 to II	122 120	8.00	26.92	2	1T	12.307	3.500	120	11.324			
						0.0	12.307		0.866			
			26.92	2.157		0.0	15.807	0.0068	0.107	Vel =	2.36	
			0.0									
II			26.92						12.297	K Factor =	7.68	
GG to G	122 120		123.03	2	1T	12.307	1.750	120	10.678			
						0.0	12.307		0.866			
			123.03	2.157		0.0	14.057	0.1120	1.575	Vel =	10.80	
G to H	120 120		0.0	3		0.0	12.333	120	13.119			
						0.0	0.0		0.0			
			123.03	3.26		0.0	12.333	0.0150	0.185	Vel =	4.73	
			0.0									
H			123.03						13.304	K Factor =	33.73	
HH to H	120 120		123.97	2	1T	12.307	1.750	120	11.707			
						0.0	12.307		0.0			
			123.97	2.157		0.0	14.057	0.1136	1.597	Vel =	10.88	
H to I	120 122		123.03	3		0.0	12.333	120	13.304			
						0.0	0.0		-0.866			
			247.0	3.26		0.0	12.333	0.0544	0.671	Vel =	9.49	
			0.0									
I			247.00						13.109	K Factor =	68.22	
II to I	120 122		127.33	2	1T	12.307	1.750	120	12.297			
						0.0	12.307		-0.866			
			127.33	2.157		0.0	14.057	0.1194	1.678	Vel =	11.18	
I to F	122 122		246.99	3	1T	20.159	11.250	120	13.109			
						0.0	20.159		0.0			
			374.32	3.26		0.0	31.409	0.1174	3.688	Vel =	14.39	
			0.0									
F			374.32						16.797	K Factor =	91.33	
J to F	122 122		0.0	3	1T	20.159	1.000	120	16.797			
						0.0	20.159		0.0			
			0.0	3.26		0.0	21.159	0	0.0	Vel =	0	
F to K	122 120		374.32	3	1T	20.159	31.000	120	16.797			
						0.0	20.159		0.866			
			374.32	3.26		0.0	51.159	0.1174	6.008	Vel =	14.39	
K to E	120 117.920		0.0	4	1T	26.334	17.500	120	23.671			
						0.0	26.334		0.901			
			374.32	4.26		0.0	43.834	0.0319	1.399	Vel =	8.43	
E to TOR	117.920 117.920		0.0	4	1T 6E	26.334 79.002	139.420 105.336	120	25.971 0.0			
			374.32	4.26		0.0	244.756	0.0319	7.810	Vel =	8.43	

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Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqv.	Ln.	Pipe Ftng's Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
TOR to BFP	117.920 101		0.0 374.32	4 4.26	1Fsp	0.0	16.000 0.0	120 0.0319	33.781 10.328		* Fixed loss = 3 Vel = 8.43	
BFP to BASE	101 101		0.0 374.32	4 4.26	1Zmb 1T	0.0 26.334	1.000 26.334	120 0.0319	44.620 3.502		* Fixed loss = 3.502 Vel = 8.43	
BASE to TEST	101 100	+ 5.00	5.00 379.32	4 4.1	2T 2G 3E	58.134 5.813 43.601	100.000 107.548 207.548	140 0.0296	48.994 1.433 6.149		* Fixed loss = 1 Vel = 9.22	
TEST			500.00 879.32						56.576		Qa = 500.00 K Factor = 116.90	