

# DISPLAY THIS CARD ON PRINCIPAL FRONTAGE OF WORK CITY OF PORTLAND

Please Read  
Application And  
Notes, If Any,  
Attached

ENGINEERING SECTION

## PERMIT

Permit Number: 031236

This is to certify that Delta Air Lines Inc/City of Portland  
has permission to Install a prefabricated walkway from southeast corner of existing terminal; ramping down to apron grade.  
AT 1001 Westbrook St 208 A001002

provided that the person or persons, firm or corporation accepting this permit shall comply with all of the provisions of the Statutes of Oregon 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.

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 altered or closed-in.  
**48 HOUR NOTICE IS REQUIRED.**

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

### 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: 03-1236	Issue Date:	CBL: 208 A001002
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Location of Construction: 1001 Westbrook St	Owner Name: Delta Air Lines Inc	Owner Address: Po Box 45852	Phone:
Business Name: n/a	Contractor Name: City of Portland	Contractor Address: 389 Congress Street Portland	Phone: 2078748300
Lessee/Buyer's Name n/a	Phone: n/a	Permit Type: Additions - Commercial	Zone: AB

Past Use: Portland Jetport	Proposed Use: Portland JetPort / Install prefabricated walkway from south east corner of existing terminal; ramping down to apron grade.	Permit Fee: \$6,078.00	Cost of Work: \$672,395.00	CEO District: 3
Proposed Project Description: Install a prefabricated walkway from south east corner of existing terminal; ramping down to apron grade.		FIRE DEPT: <input checked="" type="checkbox"/> Approved <input type="checkbox"/> Denied	INSPECTION: Use Group: U Type: NA WALKWAY	
		Signature: <i>[Signature]</i>	Signature: <i>[Signature]</i>	

PEDESTRIAN ACTIVITIES DISTRICT (P.A.D.)	
Action: <input type="checkbox"/> Approved <input type="checkbox"/> Approved w/Conditions <input type="checkbox"/> Denied	Signature: _____ Date: _____

Permit Taken By: gg	Date Applied For: 10/08/2003	<b>Zoning Approval</b>
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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..	<b>Special Zone or Reviews</b> <input type="checkbox"/> Shoreland <i>NA</i> <input type="checkbox"/> Wetland <input type="checkbox"/> Flood Zone <input type="checkbox"/> Subdivision <input type="checkbox"/> Site Plan <i>Requires plan</i> Major <input type="checkbox"/> Minor <input type="checkbox"/> MM <input type="checkbox"/> Date: <i>10/14/03</i>	<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: _____
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**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



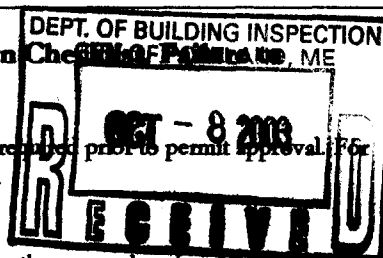
# Commercial Building Permit Application

If you or the property owner owes real estate or personal property taxes or user charges on any property within the City, payment arrangements must be made before permits of any kind are accepted.

Location/Address of Construction: <u>PORTLAND JETPORT 1001 WESTBROOK ST. 04102</u>		
Total Square Footage of Proposed Structure <u>3,500 SQ FT.</u>	Square Footage of Lot <u>N/A.</u>	
Tax Assessor's Chart, Block & Lot Chart# <u>208</u> Block# <u>A</u> Lot# <u>001</u>	Owner: <u>CITY OF PORTLAND</u>	Telephone: <u>756-8314</u>
Lessee/Buyer's Name (If Applicable) <u>N/A</u>	Applicant name, address & telephone: <u>CITY OF PORTLAND 1001 WESTBROOK ST PORTLAND ME. 04102</u>	Cost Of Work: \$ <u>672,395</u> Fee: \$ <u>6087</u> <u>6,078.00</u>
Current Specific use: <u>NONE</u>		
Proposed Specific use: <u>TO GAIN ACCESS TO EAST RAMP AREA</u>		
Project description: <u>TO INSTALL A PREFABRICATED WALKWAY FROM S.E. CORNER OF EXIST. TERMINAL RAMPING DOWN TO APRON GRADE. WALKWAY TO BE SUPPORTED BY STEEL COL. ON CONC. FOOTINGS</u>		
Contractor's name, address & telephone: <u>NO CITY OF PORTLAND 1001 WESTBROOK ST. 04102</u>		
Who should we contact when the permit is ready: <u>ROY WILLIAMS - 756 8314</u>		
Mailing address: <u>AS ABOVE</u>		
Phone: <u>756 8314</u>		

Please submit all of the information outlined in the Residential Application. Check ~~OFF~~ OFF Portland, ME. do so will result in the automatic denial of your permit.

At the discretion of the Planning and Development Department, additional information may be requested prior to permit approval. For further information stop by the Building Inspections office, room 315 City Hall or call 874-8703.



I hereby certify that I am the Owner of record of the named property, or that the owner of record authorizes the proposed work and that I have been authorized by the owner to make this application as his/her authorized agent. I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in this application is issued, I certify that the Code Official's authorized representative shall have the authority to enter all areas covered by this permit at any reasonable hour to enforce the provisions of the codes applicable to this permit.

Signature of applicant: <u>R Williams</u>	Date: <u>10-8-03</u>
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Permit Fee: \$30.00 for the first \$1000.00 Construction Cost, \$90 per additional \$1000.00 cost

This is not a Permit; you may not commence any work until the Permit is issued.

T-T D - 12

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

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

<b>Permit No:</b> 03-1236	<b>Date Applied For:</b> 10/08/2003	<b>CBL:</b> 208 A001002
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<b>Location of Construction:</b> 1001 Westbrook St	<b>Owner Name:</b> Delta Air Lines Inc	<b>Owner Address:</b> Po Box 45852	<b>Phone:</b>
<b>Business Name:</b> n/a	<b>Contractor Name:</b> City of Portland	<b>Contractor Address:</b> 389 Congress Street Portland	<b>Phone</b> (207) 874-8300
<b>Lessee/Buyer's Name</b> n/a	<b>Phone:</b> n/a	<b>Permit Type:</b> Additions - Commercial	

<b>Proposed Use:</b> Portland JetPort / Install prefabricated walkway from south east corner of existing terminal; ramping down to apron grade.	<b>Proposed Project Description:</b> Install a prefabricated walkway from south east corner of existing terminal; ramping down to apron grade.
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**Dept:** Zoning      **Status:** Approved      **Reviewer:** Marge Schmuckal      **Approval Date:** 10/14/2003  
**Note:** 10/14/03 This requires site plan review - I don't see that they have applied yet - I will call contractor - Roy Williams      **Ok to Issue:**

**Dept:** Building      **Status:** Approved with Conditions      **Reviewer:** Mike Nugent      **Approval Date:** 11/14/2003  
**Note:** **Ok to Issue:**   
1) Use is limited to actual capability of structure to perform. Because the structure is designed to resist less snow and wind than the 1999 BOCA code requires , the structure cannot be used during snow and wind events that exceed the capabililty of the structure. Human Occupancy is limited in numbers as to not exceed the 40 lbs. Per sq. Ft. Design.  
Paul Bradbury, Jeff Munroe agreed to thes consitions on 11/7/03 as a condition of permit issuance in the presence of Lee Urban and Mark Adelson. MJN

**Dept:** Fire      **Status:** Approved with Conditions      **Reviewer:** Lt. MacDougal      **Approval Date:** 10/15/2003  
**Note:** **Ok to Issue:**   
1) the hydrant shall be accessible to Air Rescue units  
2) the fire alarm system shall be tested in accordance with NFPA 72 and the results submitted to the Portland Fire Department  
3) the fire alarm system shall be maintained to NFPA 72 standards  
4) state fire marshall approval required for this project

**Comments:**  
10/14/2003-gg: This permit is a money transfer. /gg  
10/15/2003-kwd: money transfer voucher received from D.Marquis. Kwd  
11/03/2003-gg: Reieved additional requests for walkway package. /gg  
11/07/2003-mjn: Working W/ Paul Bradbury regarding loading etc.



<b>Passenger Boarding Walkway Project Current Drawing List</b>				
	<b>Sheet No.</b>	<b>Was</b>	<b>Now</b>	<b>Description</b>
<b>A-001</b>	1	2	3	Plan and side elevation of terminal area work
<b>A-002</b>	2	-	-	Connection Details to Terminal
<b>A-003</b>	3	-	-	Sections of Connection
<b>A-004</b>	4	-	-	Exterior View of Connection
<b>C-001</b>	5	7	8	Site layout plan of passenger boarding walkway gates 2A, 2B, 2C, 2D
<b>C-002</b>	6	4	5	Site details of passenger boarding walkway gates 2A, 2B, 2C, 2D
<b>C-003</b>	7	-	2	Site plan of compactor pad relocation
<b>E-001</b>	8	3	4	Electrical project requirements baggage reclaim area
<b>E-002</b>	9	3	4	Electrical riser diagrams
<b>MISC-001</b>	10	2	3	Existing details of terminal
<b>MISC-002</b>	11	2	3	Walkway attachment of terminal details
<b>MISC-003</b>	12	4	5	Passenger boarding walkway assembly drawings
<b>P-001</b>	13	3	4	Interior piping plan for fire suppression system
<b>S-001</b>	14	2	3	Structural details and door schedule

Portland International Jetport  
Airport Manager's Office  
1001 Westbrook St  
Portland, ME 04102  
Phone: (207)772-0690  
Fax: (207)774-7740



# Fax

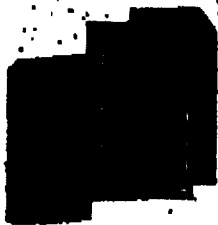
<b>To:</b> Michael Nugent	<b>From:</b> Paul H. Bradbury, P.E.
<b>Fax:</b> (207)874-8716	<b>Pages:</b> 5 including cover
<b>Phone:</b> (207)	<b>Date:</b> October 28, 2003
<b>Re:</b> Boarding Walkway Project	<b>CC:</b>

Urgent     For Review     Please Comment     Please Reply     Please Recycle

• **Comments:**

Michael:

Attached for your review are the completed building code certificates for the Boarding Walkway Project at the Portland International Jetport. Please review and let me know if you require any additional information.



**CITY OF PORTLAND  
BUILDING CODE CERTIFICATE**  
389 Congress St., Rm 315  
Portland, ME 04101

**TO:** Inspector of Buildings City of Portland, Maine  
Department of Planning & Urban Development  
Division of Housing & Community Service

**FROM:** PAUL BRADBURY, P.E.

**RE:** Certificate of Design

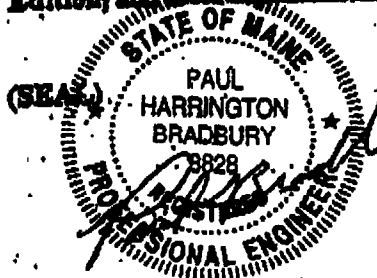
**DATE:** 10-28-03

These plans and/or specifications covering construction work on:

PASSENGER BOARDING WALKWAY

PORTLAND INT'L AIRPORT

Have been designed and drawn up by the undersigned, a Maine registered architect/engineer according to the BOCA National Building Code/1999 Fourteenth Edition, and local amendments.



Signature Paul Bradbury P.E.

Title FACILITIES & ENGINEERING MANAGER

Firm CITY OF PORTLAND - PORTLAND INT'L AIRPORT

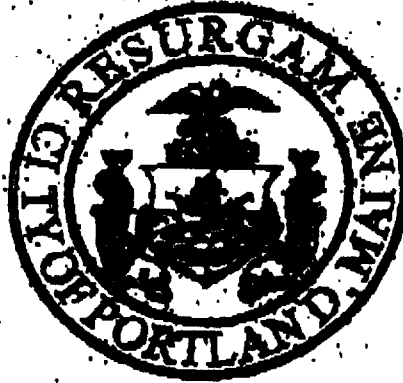
Address 1001 WESTERSIDE ST  
PORTLAND, ME 04102

As per Maine State Law:

\$50,000.00 or more in new construction; repair, expansion, addition, or modification for Building or Structures, shall be prepared by a registered design

74260000





**CITY OF PORTLAND  
ACCESSIBILITY CERTIFICATE**

Designer: Paul Bradbury P.E.

Address of Project: PORTLAND JETPORT, 1001 WESTBROOK ST PORTLAND, ME

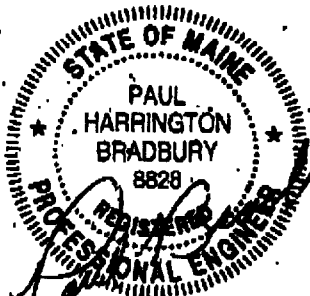
Nature of Project: COMMUTER

BOARDING WALKWAY TO AIRCRAFT

Date: 10-28-03

The technical submissions covering the proposed construction work as described above have been designed in compliance with applicable referenced standards found in the Maine Human Rights Law and Federal Americans with Disability Act.

(SEAL)



Signature: Paul Bradbury P.E.  
Title: FACILITIES & ENGINEERING MGR.  
Firm: CITY OF PORTLAND - PORTLAND INT'L JETPORT  
Address: 1001 WESTBROOK ST.  
PORTLAND ME 04102  
Telephone: 207-756-8029

18/27/2003 17:16

COMMUNICATION No: 26 PAGE 4

OCT 28 03 (WED) 16:05

SEBAGO TECHNICS - 97747740

NO. 067 002

FOR FOUNDATIONS  
ONLY - DESIGN

15 PER BULKHEAD  
LOADS PROVIDED  
BY DEW ENGINEERING  
(See Attachment)



**CITY OF PORTLAND MAINE**

389 Congress St., Rm 315  
Portland, ME 04101  
Tel. - 207-874-8704  
Fax - 207-874-8716



TO: Inspector of Buildings City of Portland, Maine  
Planning & Urban Development  
Division of Housing & Community Services

FROM DESIGNER: SEBAGO TECHNICS

Chris A. McLaughlin, P.E.

DATE: 27th October 2003

Job Name: PASSENGER BOARDING WALKWAY PROJECT

Address of Construction: PORTLAND INT. AIRPORT WESTSIDE

THE BOCA NATIONAL BUILDING CODE/1999 Fourteenth EDITION  
Construction project was designed according to the building code which listed below:

Building Code and Year: 1999 Use Group Classification: \_\_\_\_\_

Type of Construction: MODULAR Rise Height: 8 ft Rise Sq. Footage: APROX. 2000 ft<sup>2</sup>

Seismic Zone: ASCE 7-02 Group Class: \_\_\_\_\_

Roof Snow Load Per Sq. Ft.: 25 Dead Load Per Sq. Ft.: \_\_\_\_\_

Basic Wind Speed (mph): 90 Effective Velocity Pressure Per Sq. Ft.: 25

Floor Live Load Per Sq. Ft.: 40

Structure has full sprinkler system? Yes  No  Alarm System? Yes  No   
Sprinkler & Alarm systems must be installed according to BOCA and NFPA Standards with approval from the Portland Fire Department.

Is structure being considered limited area building? Yes  No

If mixed use, what subsection of 313 is being considered: N/A

Net Occupant loading for each room or space, designed into this Project: 210 OCCUPANTS

(Designer Stamp & Signature)

PORTLAND MAINE INSPECTION DIVISION

Paul H. Bradbury, P.E.

OCT 28 03 03:07P

207-828-4648

BASE PLATE LOCATION DETAIL

DRAWING  
ENGINTEERING  
FOUNDATION  
LOADS

3 3

FOUNDATION DESIGNATION	+/- FX	+/- FY	FZ max	FZ min	+/- MY
A	0.5	7.0	-45.0	4.0	10.0
B	12.0	7.0	-45.0	-7.0	6.0
C	2.0	4.0	-25.0	-7.0	2.0

- ALL FORCES IN KIPS (1KIP=1000lbf)
- ALL MOMENTS IN FT-KIPS.
- LOADS SHOWN ARE WORST CASE COMBINATIONS PER ASCE 7-02
- WIND, LIVE AND SNOW LOADS CALCULATED PER DEWBIDGE SPEC.
- SEISMIC LOADS CALCULATED PER ASCE 7-02.
- NEGATIVE Z LOAD ACTS DOWN
- POSITIVE Z LOAD IS UPLIFT

3

**CITY OF PORTLAND, MAINE  
DEVELOPMENT REVIEW APPLICATION  
PLANNING DEPARTMENT PROCESSING FORM  
DRC Copy**

2003-0222  
Application I. D. Number  
10/19/2003  
Application Date  
Passenger Boarding Walkway  
Project Name/Description

Portland International Jetport  
Applicant  
1001 Westbrook Street, Portland, ME 04101  
Applicant's Mailing Address

Consultant/Agent  
Applicant Ph: (207) 772-0466      Agent Fax:  
Applicant or Agent Daytime Telephone, Fax

1001 - 1001 Westbrook St, Portland, Maine  
Address of Proposed Site  
~~100 A004001~~ 199A001002  
Assessor's Reference: Chart-Block-Lot

Proposed Development (check all that apply):  New Building  Building Addition  Change Of Use  Residential  Office  Retail  
 Manufacturing  Warehouse/Distribution  Parking Lot  Other (specify) \_\_\_\_\_

4,000 s.f. Proposed Building square Feet or # of Units      \_\_\_\_\_ Acreage of Site      AB Zoning

**Check Review Required:**

- |   |  |  |  |
|---|--|--|--|
| <input checked="" type="checkbox"/> Site Plan (major/minor) | <input type="checkbox"/> Subdivision # of lots _____ | <input type="checkbox"/> PAD Review            | <input type="checkbox"/> 14-403 Streets Review   |
| <input type="checkbox"/> Flood Hazard                       | <input type="checkbox"/> Shoreland                   | <input type="checkbox"/> Historic Preservation | <input type="checkbox"/> DEP Local Certification |
| <input type="checkbox"/> Zoning Conditional Use (ZBA/PB)    | <input type="checkbox"/> Zoning Variance             | <input type="checkbox"/> Other _____           |  |

Fees Paid:    Site Plan \$400.00    Subdivision \_\_\_\_\_    Engineer Review \_\_\_\_\_    Date 10/22/2003

**DRC Approval Status:**

Reviewer Kandi Talbot

- Approved       Approved w/Conditions See Attached       Denied

Approval Date 10/29/2003      Approval Expiration 10/29/2004      Extension to \_\_\_\_\_       Additional Sheets Attached

Condition Compliance      Kandi Talbot signature      10/29/2003 date

Performance Guarantee       Required\*       Not Required

\* No building permit may be issued until a performance guarantee has been submitted as indicated below

- |   |                      |  |                       |
|---|----------------------|--|-----------------------|
| <input type="checkbox"/> Performance Guarantee Accepted     | _____ date           | _____ amount                                       | _____ expiration date |
| <input type="checkbox"/> Inspection Fee Paid                | _____ date           | _____ amount                                       |                       |
| <input type="checkbox"/> Building Permit Issue              | _____ date           |  |                       |
| <input type="checkbox"/> Performance Guarantee Reduced      | _____ date           | _____ remaining balance                            | _____ signature       |
| <input type="checkbox"/> Temporary Certificate of Occupancy | _____ date           | <input type="checkbox"/> Conditions (See Attached) | _____ expiration date |
| <input type="checkbox"/> Final Inspection                   | _____ date           | _____ signature                                    |                       |
| <input type="checkbox"/> Certificate Of Occupancy           | _____ date           |  |                       |
| <input type="checkbox"/> Performance Guarantee Released     | _____ date           | _____ signature                                    |                       |
| <input type="checkbox"/> Defect Guarantee Submitted         | _____ submitted date | _____ amount                                       | _____ expiration date |
| <input type="checkbox"/> Defect Guarantee Released          | _____ date           | _____ signature                                    |                       |

**CITY OF PORTLAND, MAINE  
DEVELOPMENT REVIEW APPLICATION  
PLANNING DEPARTMENT PROCESSING FORM  
Planning Copy**

2003-0222

Application I. D. Number

10/19/2003

Application Date

Passenger Boarding Walkway

Project Name/Description

Portland International Jetport

Applicant

1001 Westbrook Street, Portland, ME 04101

Applicant's Mailing Address

1001 - 1001 Westbrook St, Portland, Maine

Address of Proposed Site

199 A001001

Assessor's Reference: Chart-Block-Lot

Consultant/Agent

Applicant Ph: (207) 772-0466 Agent Fax:

Applicant or Agent Daytime Telephone, Fax

Proposed Development (check all that apply):  New Building  Building Addition  Change Of Use  Residential  Office  Retail  
 Manufacturing  Warehouse/Distribution  Parking Lot  Other (specify) \_\_\_\_\_

4,000 s.f.

Proposed Building square Feet or # of Units

Acreage of Site

AB

Zoning

**Check Review Required:**

- |   |  |  |  |
|---|--|--|--|
| <input checked="" type="checkbox"/> Site Plan (major/minor) | <input type="checkbox"/> Subdivision # of lots _____ | <input type="checkbox"/> PAD Review            | <input type="checkbox"/> 14-403 Streets Review   |
| <input type="checkbox"/> Flood Hazard                       | <input type="checkbox"/> Shoreland                   | <input type="checkbox"/> Historic Preservation | <input type="checkbox"/> DEP Local Certification |
| <input type="checkbox"/> Zoning Conditional Use (ZBA/PB)    | <input type="checkbox"/> Zoning Variance             |  | <input type="checkbox"/> Other _____             |

Fees Paid: Site Plan \$400.00 Subdivision \_\_\_\_\_ Engineer Review \_\_\_\_\_ Date 10/22/2003

**Planning Approval Status:**

Reviewer Kandi Talbot

- Approved  Approved w/Conditions See Attached  Denied

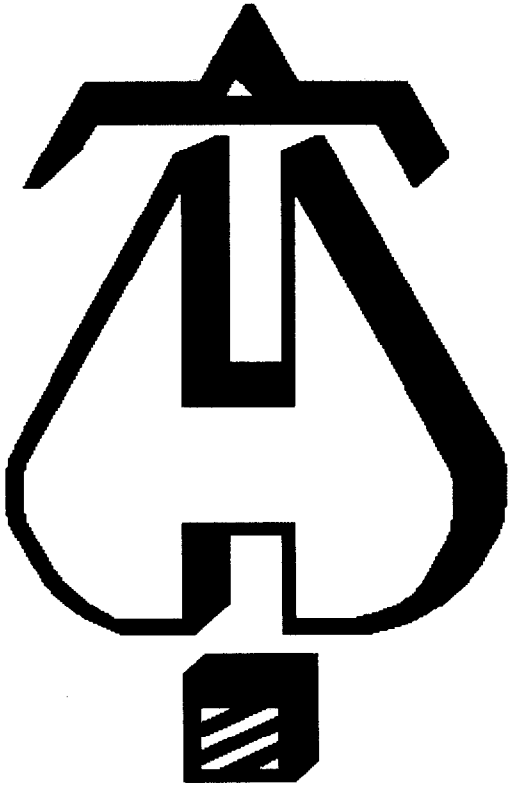
Approval Date 10/29/2003 Approval Expiration 10/29/2004 Extension to \_\_\_\_\_  Additional Sheets Attached

OK to Issue Building Permit Kandi Talbot 10/29/2003  
signature date

Performance Guarantee  Required\*  Not Required

\* No building permit may be issued until a performance guarantee has been submitted as indicated below

<input type="checkbox"/> Performance Guarantee Accepted	_____	_____	_____
	date	amount	expiration date
<input type="checkbox"/> Inspection Fee Paid	_____	_____	
	date	amount	
<input type="checkbox"/> Building Permit Issue	_____		
	date		
<input type="checkbox"/> Performance Guarantee Reduced	_____	_____	_____
	date	remaining balance	signature
<input type="checkbox"/> Temporary Certificate of Occupancy	_____	<input type="checkbox"/> Conditions (See Attached)	_____
	date		expiration date
<input type="checkbox"/> Final Inspection	_____	_____	
	date	signature	
<input type="checkbox"/> Certificate Of Occupancy	_____		
	date		
<input type="checkbox"/> Performance Guarantee Released	_____	_____	
	date	signature	
<input type="checkbox"/> Defect Guarantee Submitted	_____	_____	_____
	submitted date	amount	expiration date
<input type="checkbox"/> Defect Guarantee Released	_____	_____	
	date	signature	



**Fire Protection by Computer Design**

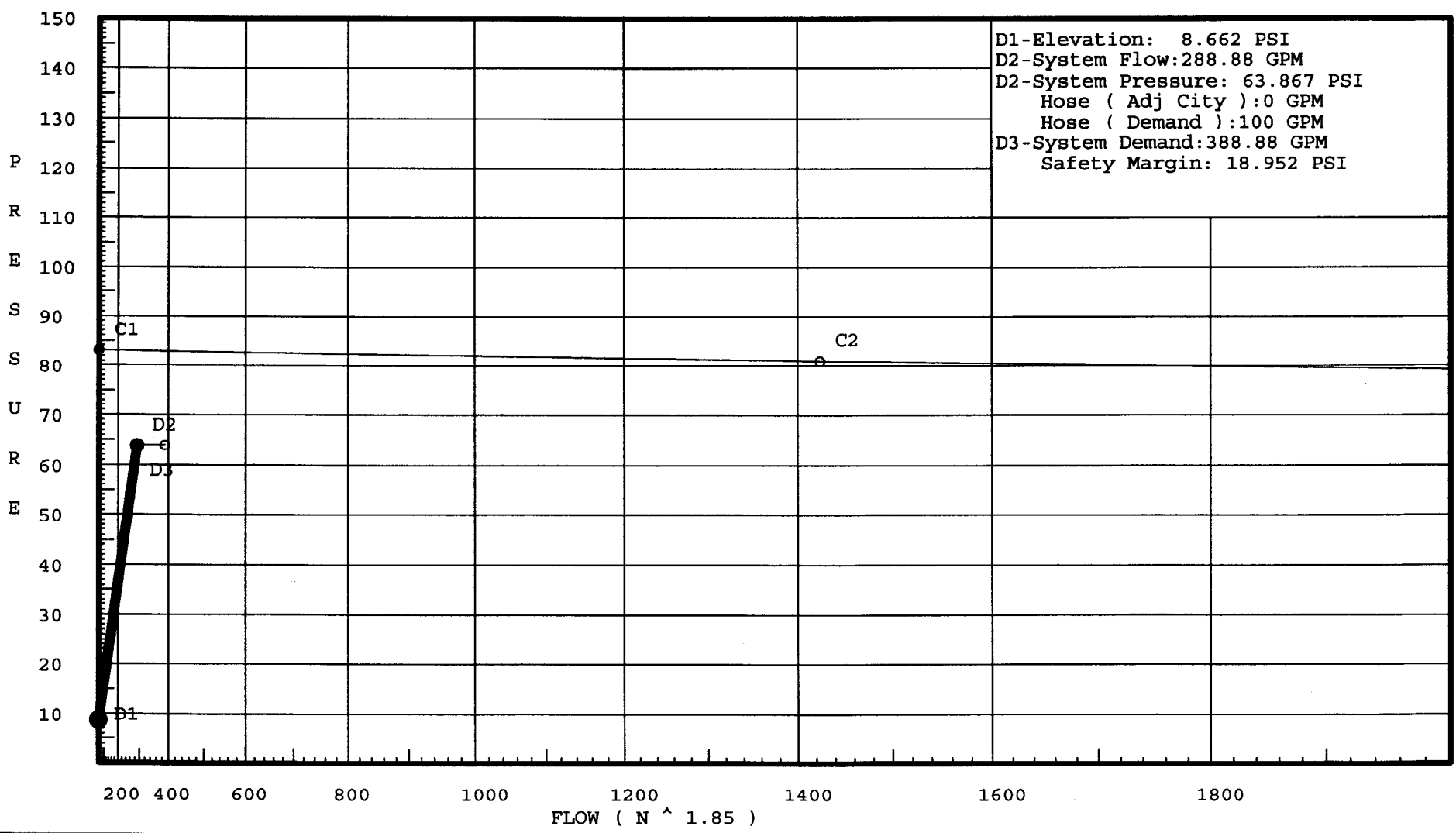
High Tech Fire Protetion  
PO Box 1511  
Auburn ME. 04210  
998-2551

Job Name : JETPORT WALKWAY  
Building :  
Location :  
System :  
Contract :  
Data File : WALKWAY.WX1

City Water Supply:  
C1-Static Pressure: 83 PSI  
C2-Residual Pressure: 81 PSI  
C2-Residual Flow: 1424 GPM

Pump Data:

D1-Elevation: 8.662 PSI  
D2-System Flow:288.88 GPM  
D2-System Pressure: 63.867 PSI  
Hose ( Adj City ):0 GPM  
Hose ( Demand ):100 GPM  
D3-System Demand:388.88 GPM  
Safety Margin: 18.952 PSI



Fitting Legend  
Abbrev.

Name

---

A	Generic Alarm Va
B	Generic Butterfly Valve
C	Roll Groove Coupling
D	Dry Pipe Valve
E	90' Standard Elbow
F	45' Elbow
G	Gate Valve
H	45' Grvd-Vic Elbow
I	90' Grvd-Vic Elbow
J	90' Grvd-Vic Tee
K	Detector Check Valve
L	Long Turn Elbow
M	Medium Turn Elbow
N	PVC Standard Elbow
O	PVC Tee Branch
P	PVC 45' Elbow
Q	Flow Control Valve
R	PVC Coupling/Run Tee
S	Swing Check Valve
T	90' Flow thru Tee
U	45' Firelock Elbow
V	90' Firelock Elbow
W	Wafer Check Valve
X	90' Firelock Tee
Y	Mechanical Tee
Z	Flow Switch



Unadjusted Fittings Table

	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4
A							7.7	21.5		17.0
B							7	10		12
C	1	1	1	1	1	1	1	1	1	1
D							9.5	17		28
E	2	2	2	3	4	5	6	7	8	10
F	1	1	1	1	2	2	3	3	3	4
G						1	1	1	1	2
H			1	1.5	2	2	3	3	3.5	3.5
I			2	3	4	3.5	6	5.0	8	7
J			4.5	6	8	8.5	10.8	13	17	16
K								14		14
L	1	1	2	2	2	3	4	5	5	6
M		2	2	3	3	4	5	6	6	8
N	7	7	7	8	9	11	12	13		
O	3	3	5	6	8	10	12	15		
P	1	1	1	2	2	2	3	4		
Q						18		29		35
R	1	1	1	1	1	1	2	2		
S	4	5	5	7	9	11	14	16	19	22
T	3	4	5	6	8	10	12	15	17	20
U						1.8	2.2	2.6		3.4
V						3.5	4.3	5		6.8
W										10.3
X						8.5	10.8	13		16
Y	2.0	4.0	5.0	6.0	8.0	10.5	12.5	15.5		22
Z	2	2	2	3	4	5	6	7	8	10
	5	6	8	10	12	14	16	18	20	24

A	17	27	29							
B	9	10	12	19	21					
C	1	1	1	1	1	1	1	1	1	1
D		47								
E	12	14	18	22	27	35	40	45	50	61
F	5	7	9	11	13	17	19	21	24	28
G	2	3	4	5	6	7	8	10	11	13
H	4.5	5	6.5	8.5	10	18	20	23	25	30
I	8.5	10	13	17	20	23	25	33	36	40
J	21	25	33	41	50	65	78	88	98	120
K		36	55	45						
L	8	9	13	16	18	24	27	30	34	40
M	10	12	16	19	22					
N										
O										
P										
Q		33								
R										
S	27	32	45	55	65	76	87	98	109	130
T	25	30	35	50	60	71	81	91	101	121
U	4.2	5.0	5.0							
V	8.5	10	13							
W		13.1	31.8	35.8	27.4					
X	21	25	33							
Y										
Z	12	14	18	22	27	35	40	45	50	61

Node No.	Elevation	K-Fact	Pt Actual	Pn Actual	Flow Added	Density Req.	Area	Press Req.
100	20	5.6	9	na	16.8	.1	168	7
101	20	5.6	9.03	na	16.83	.1	168	7
102	20	5.6	9.12	na	16.92	.1	168	7
103	20	5.6	9.33	na	17.11	.1	168	7
104	20	5.6	9.69	na	17.43	.1	168	7
105	20	5.6	10.23	na	17.91	.1	168	7
106	20	5.6	11	na	18.57	.1	168	7
107	20	5.6	12.05	na	19.44	.1	168	7
108	20	5.6	13.43	na	20.52	.1	168	7
109	20	5.6	15.21	na	21.84	.1	168	7
110	20	5.6	17.45	na	23.4	.1	168	7
111	20	5.6	20.26	na	25.21	.1	168	7
112	20	5.6	23.74	na	27.28	.1	168	7
113	20	5.6	28.01	na	29.64	.1	168	7
A	20		9.6	na				
B	20		9.63	na				
C	20		9.74	na				
D	20		9.95	na				
E	20		10.33	na				
F	20		10.91	na				
G	20		11.73	na				
H	20		12.84	na				
I	20		14.3	na				
J	20		16.19	na				
K	20		18.57	na				
L	20		21.54	na				
M	20		25.22	na				
N	20		29.74	na				
O	20		38.47	na				
DRY	20		45.75	na				
P	20		48.35	na				
TOR	10		52.95	na				
BOR	0		63.46	na	100			
HOSE	0		63.69	na				
TEST	0		63.87	na				

The maximum velocity is 19.36 and it occurs in the pipe between nodes N and O

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/UL	Fitting or Eqv. Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	***** Notes *****
100 to A	16.80 16.80	1.049 100 0.1322	1T	3.568	1.000 3.570 4.570	9.000	K Factor = 5.6 Vel = 6.237
	16.80					9.604	K Factor = 5.42
101 to B	16.83 16.83	1.049 100 0.1326	1T	3.568	1.000 3.570 4.570	9.027	K Factor = 5.6 Vel = 6.248
	16.83					9.633	K Factor = 5.42
102 to C	16.92 16.92	1.049 100 0.1339	1T	3.568	1.000 3.570 4.570	9.124	K Factor = 5.6 Vel = 6.281
	16.92					9.736	K Factor = 5.42
103 to D	17.11 17.11	1.049 100 0.1365	1T	3.568	1.000 3.570 4.570	9.331	K Factor = 5.6 Vel = 6.352
	17.11					9.955	K Factor = 5.42
104 to E	17.43 17.43	1.049 100 0.1414	1T	3.568	1.000 3.570 4.570	9.685	K Factor = 5.6 Vel = 6.470
	17.43					10.331	K Factor = 5.42
105 to F	17.91 17.91	1.049 100 0.1486	1T	3.568	1.000 3.570 4.570	10.227	K Factor = 5.6 Vel = 6.649
	17.91					10.906	K Factor = 5.42
106 to G	18.57 18.57	1.049 100 0.1589	1T	3.568	1.000 3.570 4.570	10.999	K Factor = 5.6 Vel = 6.894
	18.57					11.725	K Factor = 5.42
107 to H	19.44 19.44	1.049 100 0.1731	1T	3.568	1.000 3.570 4.570	12.048	K Factor = 5.6 Vel = 7.217
	19.44					12.839	K Factor = 5.43
108 to I	20.52 20.52	1.049 100 0.1912	1T	3.568	1.000 3.570 4.570	13.429	K Factor = 5.6 Vel = 7.618
	20.52					14.303	K Factor = 5.43

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/UL	Fitting or Eqv. Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	***** Notes *****
109 to J	21.84 21.84	1.049 100 0.2147	1T	3.568	1.000 3.570 4.570	15.206 0.981	K Factor = 5.6 Vel = 8.108
	21.84					16.187	K Factor = 5.43
110 to K	23.40 23.40	1.049 100 0.2438	1T	3.568	1.000 3.570 4.570	17.454 1.114	K Factor = 5.6 Vel = 8.687
	23.40					18.568	K Factor = 5.43
111 to L	25.21 25.21	1.049 100 0.2799	1T	3.568	1.000 3.570 4.570	20.262 1.279	K Factor = 5.6 Vel = 9.359
	25.21					21.541	K Factor = 5.43
112 to M	27.28 27.28	1.049 100 0.3239	1T	3.568	1.000 3.570 4.570	23.739 1.480	K Factor = 5.6 Vel = 10.127
	27.28					25.219	K Factor = 5.43
113 to N	29.64 29.64	1.049 100 0.3775	1T	3.568	1.000 3.570 4.570	28.013 1.725	K Factor = 5.6 Vel = 11.003
	29.64					29.738	K Factor = 5.44
A to B	16.80 16.80	2.469 100 0.0021			14.000	9.604 0.029	Vel = 1.126
B to C	16.83 33.63	2.469 100 0.0074			14.000	9.632 0.103	Vel = 2.254
C to D	16.91 50.54	2.469 100 0.0156			14.000	9.735 0.219	Vel = 3.387
D to E	17.11 67.65	2.469 100 0.0269			14.000	9.955 0.376	Vel = 4.533
E to F	17.42 85.07	2.469 100 0.0411			14.000	10.331 0.575	Vel = 5.701
F to G	17.91 102.98	2.469 100 0.0585			14.000	10.907 0.819	Vel = 6.901
G to H	18.58 121.56	2.469 100 0.0795			14.000	11.726 1.113	Vel = 8.146

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/UL	Fitting or Eqv. Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	***** Notes *****
H to I	19.43 140.99	2.469 100 0.1046		14.000	12.839 1.464		Vel = 9.448
I to J	20.53 161.52	2.469 100 0.1345		14.000	14.303 1.883		Vel = 10.824
J to K	21.83 183.35	2.469 100 0.1701		14.000	16.186 2.381		Vel = 12.287
K to L	23.40 206.75	2.469 100 0.2124		14.000	18.567 2.973		Vel = 13.855
L to M	25.20 231.95	2.469 100 0.2627		14.000	21.541 3.678		Vel = 15.543
M to N	27.29 259.24	2.469 100 0.3228		14.000	25.219 4.519		Vel = 17.372
N to O	29.64 288.88	2.469 100 0.3944	1F 2.141	20.000 2.142 22.142	29.738 8.732		Vel = 19.358
O to DRY	288.88	4.026 100 0.0365	3E 7.137 1T 14.274	164.000 35.700 199.700	38.470 7.280		Vel = 7.280
DRY to P	288.88	4.26 100 0.0277	2E 9.397	75.000 18.803 93.803	45.750 2.597		Vel = 6.503
P to TOR	288.88	6.357 120 0.0028	1T 37.720 2E 17.603	25.000 72.925 97.925	48.346 4.331 0.275		Vel = 2.920
TOR to BOR	288.88	6.357 120 0.0028	1A 33.948 1Z 17.603	10.000 51.551 61.551	52.953 10.331 0.173		Fixed loss = 6 Vel = 2.920
BOR to HOSE	100.00 388.88	8.27 140 0.0010	1G 5.990 1E 26.955	200.000 32.945 232.945	63.457 0.237		Qa = 100 Vel = 2.323
HOSE to TEST	388.88	12.34 140 0.0001	1T 93.767 1F 20.316	1075.000 114.083 1189.083	63.694 0.172		Vel = 1.043
	388.88				63.866		K Factor = 48.66