

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  
157 HIGH ST  
EASTLAND PARK HOTEL

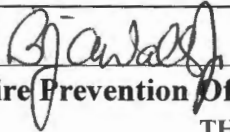
Job ID: 2012-08-4767-FAFS

CBL: 037- E-007-001

has permission to install NFPA 13 sprinkler & NFPA 14 standpipes throughout 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

 58  
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](mailto:buildinginspections@portlandmaine.gov)

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

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

### **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](http://www.portlandmaine.gov)*

Director of Planning and Urban Development  
Jeff Levine

**Job ID: 2012-08-4767-FAFS**  
**install NFPA 13 sprinkler & NFPA 14**  
**standpipes throughout**

**For installation at:**  
**157 HIGH ST**  
**EASTLAND PARK HOTEL**

**CBL: 037- E-007-001**

## **Conditions of Approval:**

### **Fire**

**Gauges for Class I and III standpipe hose connections.** The installer shall provide two Kochek 2 1/2" NH 45 Degree Line Gauge [LG25-45] to the Fire Department for Class I and III standpipes.

**Pressure control valves are required** on each fire department hose connection preset to 65 psi.

The fire pump shall be installed in accordance with NFPA 20, *Standard for Installation of Stationary Fire Pumps for Fire Protection*. A signed compliance letter will be required.

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 and fire pump supervision shall be provided in accordance with NFPA 20, *Standard for Installation of Stationary Fire Pumps for Fire Protection*, 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 type shall be four 2 1/2" connections. The Fire Department will require Knox locking caps on all Fire Department Connections on the exterior of the building. The FDC Connection sign shall indicate Auto Sprinkler & Standpipe.

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.

The Standpipe system shall be installed in accordance with NFPA 14. A signed compliance letter will be required.

Additional fire department hose connections shall be installed for portions of the building where the travel distance to a hose connection exceeds 200 feet.

These systems shall be maintained in accordance with NFPA 25, *Standard for Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems*.

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

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

Job No: 2012-08-4767-FAFS	Date Applied: 8/21/2012	CBL: 037- E-007-001	
Location of Construction: 157 HIGH ST	Owner Name: RB PORTLAND LLC	Owner Address: 4100 REGENT STREET, STE G COLUMBUS, OH 43219	Phone:
Business Name: Eastland Hotel	Contractor Name: Eastern Fire Protection	Contractor Address: PO BOX 1390 AUBURN MAINE 04211	Phone: (207) -784-1507
Lessee/Buyer's Name:	Phone:	Permit Type: FIRE SUPPRESSION	Zone: B-3
Past Use: Hotel and restaurant(s) and accessory uses	Proposed Use: Same: Hotel and restaurant(s) and accessory uses – to install fire suppression system in the Top of the East restaurant	Cost of Work: \$300,000.00	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>Bjorn Wolf</i> (58)	Signature:
Proposed Project Description: fire suppression		Pedestrian Activities District (P.A.D.)	

Permit Taken By: Gayle	<b>Zoning Approval</b>		
<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>	<b>Special Zone or Reviews</b> <input type="checkbox"/> Shoreland <input type="checkbox"/> Wetlands <input type="checkbox"/> Flood Zone <input type="checkbox"/> Subdivision <input type="checkbox"/> Site Plan  <input type="checkbox"/> Maj <input type="checkbox"/> Min <input type="checkbox"/> MM Date: <i>8/23/12</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 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  Date:
	<b>CERTIFICATION</b>		

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



... Fire Protection by Computer Design

EASTERN FIRE PROTECTION  
170 KITTYHAWK AVE.  
P.O. BOX 1390  
AUBURN, MAINE 04211-1390  
800-274-1507

Job Name : EASTLAND PARK STANDPIPE  
Drawing : EXISTING STEEL FRAME, CONCRETE FLOOR  
Location : PORTLAND, MAINE  
Remote Area : STANDPIPE  
Contract : 11009  
Data File : HFP-1LPREV1.WXF

HYDRAULIC DESIGN INFORMATION SHEET

Name - EASTLAND HOTEL STANDPIPE Date - 05/22/12  
Location - PORTLAND, MAINE  
Building - EXISTING STEEL FRAME, CONCRETE FLOOR System No. - STANDPIPE  
Contractor - EASTERN FIRE PROTECTION Contract No. - 11009  
Calculated By - WAF Drawing No. - FP-1-FP-9  
Occupancy - CLASS I WET AUTOMATIC STANDPIPE

S (X)NFPA 14 Number of Standpipes ( )1 ( )2 (X)3 ( )4 ( )  
Y ( )Other  
S ( )Specific Ruling Made by Date

T  
E Flow at Top Most Outlet - 250 Gpm System Type  
M Pres. at Top Most Outlet - 65 Psi (X) Wet ( ) Dry  
Flow For Ea. Additional Standpipe - 250 Gpm  
D Total Additional Flow - 500 Gpm  
E Elevation at Highest Outlet - 225 Feet  
S Hose Valve Connection ( )1 1/2" (X)2 1/2"  
I Class Service (X)I ( )II ( )III  
G Note:  
N

Calculation Gpm Required 1000 Psi Required 142 At Pump  
Summary C-Factor Used: Overhead 120 Underground 140

W Water Flow Test: Pump Data: Tank or Reservoir:  
A Date of Test - 09/23/11 Cap.  
T Time of Test - 2:00 Rated Cap. 750 Elev.  
E Static (Psi) - 67 @ Psi 85  
R Residual (Psi) - 63 Elev. 0 Well  
Flow (Gpm) - 1209 Proof Flow Gpm  
S Elevation - 100

U  
P Location: TEST HYDRANT LOCATED ON DEERING STREET  
P  
L Source of Information: PORTLAND WATER DISTRICT  
Y

# Water Supply Curve (C)

EASTERN FIRE PROTECTION  
EASTLAND PARK STANDPIPE

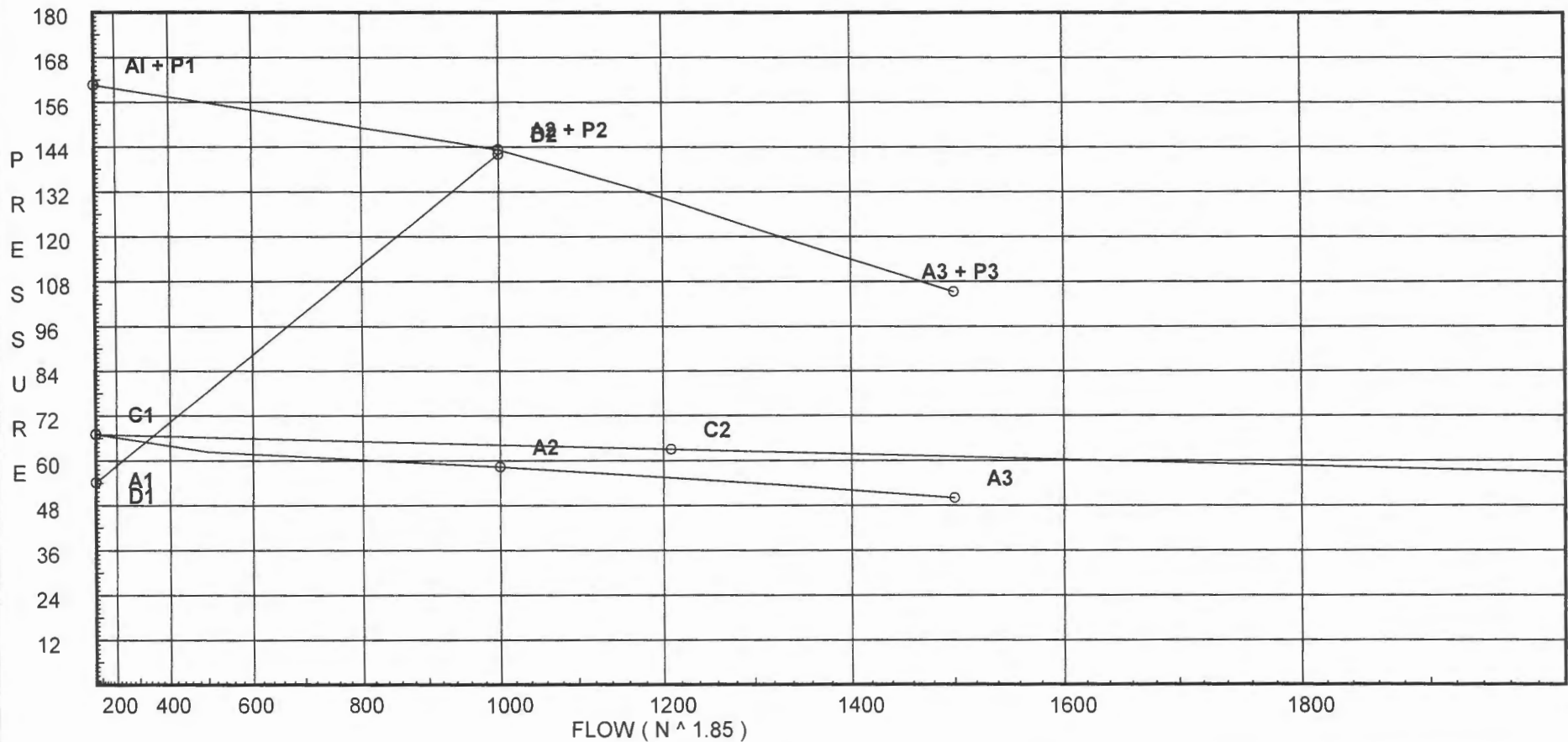
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Date 102411

City Water Supply:  
C1 - Static Pressure : 67  
C2 - Residual Pressure: 63  
C2 - Residual Flow : 1209

City Water Adjusted to Pump Inlet  
for Pf - Elev - Hose Flow  
A1 - Adjusted Static: 67.099  
A2 - Adj Resid : 58.279 @ 1000  
A3 - Adj Resid : 50.021 @ 1500

Pump Data:  
P1 - Pump Churn Pressure : 93.5  
P2 - Pump Rated Pressure : 85  
P2 - Pump Rated Flow : 1000  
P3 - Pump Pressure @ Max Flow : 55.25  
P3 - Pump Max Flow : 1500  
City Residual Flow @ 0 = 5546.97  
City Residual Flow @ 20 = 4579.57  
City Water @ 150% of Pump = 61.04

Demand:  
D1 - Elevation : 54.137  
D2 - System Flow : 1000  
D2 - System Pressure : 142.009  
Hose ( Demand ) : \_\_\_\_\_  
D3 - System Demand : 1000  
Safety Margin : 1.270



# Fittings Used Summary

EASTERN FIRE PROTECTION  
EASTLAND PARK STANDPIPE

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Date 102411

Fitting Legend		½	¾	1	1¼	1½	2	2½	3	3½	4	5	6	8	10	12	14	16	18	20	24
Abbrev.	Name																				
B	NFPA 13 Butterfly Valve	0	0	0	0	0	6	7	10	0	12	9	10	12	19	21	0	0	0	0	0
F	NFPA 13 45' Elbow	1	1	1	1	2	2	3	3	3	4	5	7	9	11	13	17	19	21	24	28
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
L	NFPA 13 Long Turn Elbow	0.5	1	2	2	2	3	4	5	5	6	8	9	13	16	18	24	27	30	34	40
S	NFPA 13 Swing Check Valve	4	5	5	7	9	11	14	16	19	22	27	32	45	55	65	76	87	98	109	130
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
Zac	Ames 2000SS	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  
EASTLAND PARK STANDPIPE

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Date 102411

**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>
PMPO	See Information on Pump Curve				1000.0	142.009
TEST	67.0	63	1209.0	64.184	1000.0	64.184

**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>
L1	96.0		135.97		
H3	96.0		136.55	250.0	
H1	225.0		65.0	250.0	
H2	219.0		67.79	250.0	
BORS	110.0		124.11		
L2	96.0		137.84		
H4	96.0		137.84	250.0	
PMPO	94.0		142.01		
PMPI	94.0		58.28		
FLG	94.0		62.57		
TEST	100.0		64.18		



... Fire Protection by Computer Design

EASTERN FIRE PROTECTION  
170 KITTYHAWK AVE.  
P.O. BOX 1390  
AUBURN, MAINE 04211-1390  
800-274-1507

Job Name : EASTLAND PARK TOP OF EAST  
Drawing : FP-9  
Location : PORTLAND, MAINE  
Remote Area : TOP OF THE EAST  
Contract : 4818  
Data File : HFP-9.2REV1.wx2

**HYDRAULIC CALCULATIONS**  
*for*

**Project name:** EASTLAND PARK EAST TOP OF THE EAST  
**Location:** PORTLAND, MAINE  
**Drawing no:** FP-9  
**Date:** 05/22/12

**Design**

**Remote area number:** TOP OF THE EAST  
**Remote area location:** TOP OF THE EAST RESTUARANT  
**Occupancy classification:** LIGHT  
**Density:** .10 - Gpm/SqFt  
**Area of application:** 946 - SqFt  
**Coverage per sprinkler:** 168 - SqFt  
**Type of sprinklers calculated:** TYCO TY-FRB  
**No. of sprinklers calculated:** 9  
**In-rack demand:** - GPM  
**Hose streams:** 100 - GPM  
**Total water required (including hose streams):** 190.68 - GPM @ 130.6 - Psi  
**Type of system:** WET  
**Volume of dry or preaction system:** - Gal

**Water supply information**

**Date:** 09/23/11  
**Location:** DEERING STREET  
**Source:** PORTLAND WATER DISTRICT

**Name of contractor:** EASTERN FIRE PROTECTION  
**Address:** 170 KITTYHAWK AVE. / P.O. BOX 1390 / AUBURN, MAINE 04211-139  
**Phone number:** 800-274-1507  
**Name of designer:** WAF  
**Authority having jurisdiction:** STATE FIRE MARSHAL  
**Notes:** (Include peaking information or gridded systems here.) REMOTE AREA MODIFIED PER NFPA 13 (2010) SECTION 11.2.3.2.3.1. TOTAL WATER REQUIRED INDICATED AT DISCHARGE FLANGE OF FIRE PUMP

# Water Supply Curve (C)

EASTERN FIRE PROTECTION  
EASTLAND PARK TOP OF EAST

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Date 100411

### City Water Supply:

C1 - Static Pressure : 67  
C2 - Residual Pressure: 63  
C2 - Residual Flow : 1209

### City Water Adjusted to Pump Inlet for Pf - Elev - Hose Flow

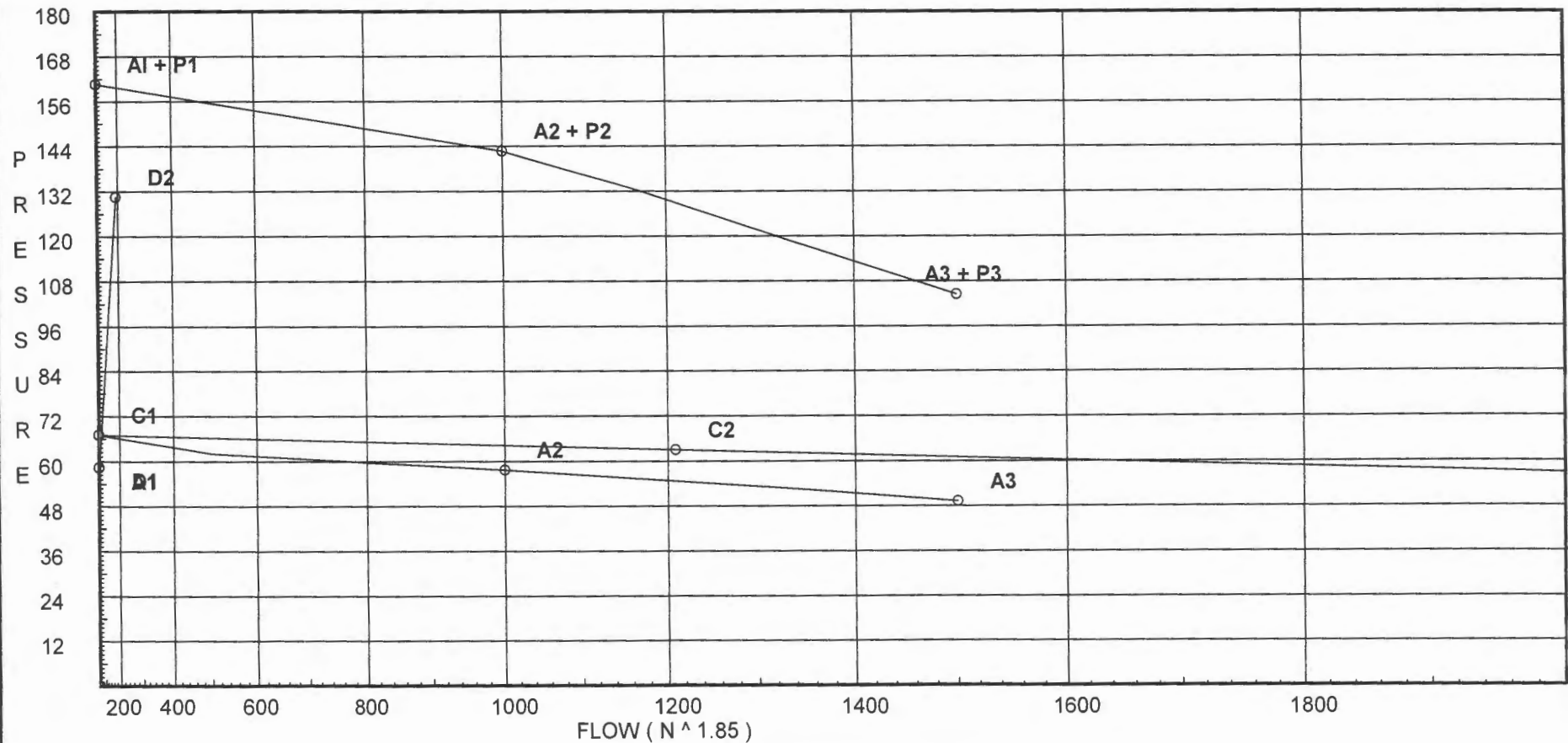
A1 - Adjusted Static: 67.059  
A2 - Adj Resid : 57.736 @ 1000  
A3 - Adj Resid : 49.265 @ 1500

### Pump Data:

P1 - Pump Churn Pressure : 93.5  
P2 - Pump Rated Pressure : 85  
P2 - Pump Rated Flow : 1000  
P3 - Pump Pressure @ Max Flow : 55.25  
P3 - Pump Max Flow : 1500  
City Residual Flow @ 0 = 5546.97  
City Residual Flow @ 20 = 4579.57  
City Water @ 150% of Pump = 61.04

### Demand:

D1 - Elevation : 58.395  
D2 - System Flow : 190.679  
D2 - System Pressure : 130.559  
Hose ( Demand ) :  
D3 - System Demand : 190.679  
Hose ( Adj City ) : 100  
Safety Margin : 26.696



# Fittings Used Summary

EASTERN FIRE PROTECTION  
EASTLAND PARK TOP OF EAST

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Date 100411

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																				
B	NFPA 13 Butterfly Valve	0	0	0	0	0	6	7	10	0	12	9	10	12	19	21	0	0	0	0	0
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
F	NFPA 13 45' Elbow	1	1	1	1	2	2	3	3	3	4	5	7	9	11	13	17	19	21	24	28
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
L	NFPA 13 Long Turn Elbow	0.5	1	2	2	3	4	5	5	6	8	9	13	16	18	24	27	30	34	40	40
S	NFPA 13 Swing Check Valve	4	5	5	7	9	11	14	16	19	22	27	32	45	55	65	76	87	98	109	130
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
Zac	Ames 2000SS	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  
EASTLAND PARK TOP OF EAST

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Date 100411

## 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>
PMPO	See Information on Pump Curve				190.68	130.559
TEST	67.0	63	1209.0	66.714	290.68	66.714

## 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>
D101	225.0	5.6	9.0	16.8	
D102	225.0	5.6	9.0	16.8	
33	234.83	5.51	23.96	26.99	K=K @ EQ01
30	234.83	5.51	9.46	16.96	K=K @ EQ01
31	234.83	5.43	10.59	17.68	K=K @ EQ02
32	234.83	5.43	13.56	20.0	K=K @ EQ02
29	234.83	5.51	24.39	27.23	K=K @ EQ01
27	234.83	5.43	25.98	27.69	K=K @ EQ02
21	234.83	5.51	9.28	16.8	K=K @ EQ01
22	234.83	5.43	10.4	17.52	K=K @ EQ02
23	234.83	5.43	13.31	19.82	K=K @ EQ02
24	234.83		25.66		
25	234.83		26.12		
26	234.83		27.76		
16	234.83		47.57		
17	218.0		63.6		
SPK1	218.0		71.2		
H4	96.0		129.54		
PMPO	94.0		130.56		
PMPI	94.0		63.76		
FLG	94.0		69.12		
TEST	100.0		66.71	100.0	

# Final Calculations - Hazen-Williams - 2007

EASTERN FIRE PROTECTION  
EASTLAND PARK TOP OF EAST

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Date 100411

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	*****
D101 to EQ01	225.00 225.00	5.60	16.80 16.8	1	1E	2.0 0.0 0.0	1.000 2.000 3.000	120 0.0943	9.000 0.0 0.283		Vel = 6.24	
EQ01			0.0 16.80						9.283		K Factor = 5.51	
D102 to EQ02	225.00 225.00	5.60	16.80 16.8	1	1T	5.0 0.0 0.0	1.000 5.000 6.000	120 0.0943	9.000 0.0 0.566		Vel = 6.24	
EQ02			0.0 16.80						9.566		K Factor = 5.43	
33 to 24	234.830 234.830	5.51	26.99 26.99	1	1T	5.0 0.0 0.0	2.500 5.000 7.500	120 0.2265	23.963 0.0 1.699		K = K @ EQ01 Vel = 10.02	
24			0.0 26.99						25.662		K Factor = 5.33	
30 to 31	234.830 234.830	5.51	16.96 16.96	1		0.0 0.0 0.0	11.830 0.0 11.830	120 0.0959	9.456 0.0 1.134		K = K @ EQ01 Vel = 6.30	
31 to 32	234.830 234.830	5.43	17.67 34.63	1		0.0 0.0 0.0	8.250 0.0 8.250	120 0.3594	10.590 0.0 2.965		K = K @ EQ02 Vel = 12.86	
32 to 25	234.830 234.830	5.43	20.00 54.63	1	1T	5.0 0.0 0.0	10.040 5.000 15.040	120 0.8352	13.555 0.0 12.561		K = K @ EQ02 Vel = 20.28	
25			0.0 54.63						26.116		K Factor = 10.69	
29 to 25	234.830 234.830	5.51	27.23 27.23	1	1T	5.0 0.0 0.0	2.500 5.000 7.500	120 0.2304	24.388 0.0 1.728		K = K @ EQ01 Vel = 10.11	
25			0.0 27.23						26.116		K Factor = 5.33	
27 to 26	234.830 234.830	5.43	27.69 27.69	1	1T	5.0 0.0 0.0	2.500 5.000 7.500	120 0.2375	25.984 0.0 1.781		K = K @ EQ02 Vel = 10.28	
26			0.0 27.69						27.765		K Factor = 5.26	
21 to 22	234.830 234.830	5.51	16.80 16.8	1		0.0 0.0 0.0	11.830 0.0 11.830	120 0.0943	9.283 0.0 1.115		K = K @ EQ01 Vel = 6.24	
22 to 23	234.830 234.830	5.43	17.52 34.32	1		0.0 0.0 0.0	8.250 0.0 8.250	120 0.3532	10.398 0.0 2.914		K = K @ EQ02 Vel = 12.74	
23 to 24	234.830 234.830	5.43	19.82 54.14	1	1T	5.0 0.0 0.0	10.040 5.000 15.040	120 0.8211	13.312 0.0 12.350		K = K @ EQ02 Vel = 20.10	
24 to 25	234.830 234.830		26.99 81.13	2		0.0 0.0 0.0	8.750 0.0 8.750	120 0.0519	25.662 0.0 0.454		Vel = 7.12	

Final Calculations - Hazen-Williams - 2007

EASTERN FIRE PROTECTION  
EASTLAND PARK TOP OF EAST

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Date 100411

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	*****
25 to 26	234.830 234.830		81.86 162.99	2 2.157		0.0 0.0	8.750 0.0	120 0.1885	26.116 0.0			
						0.0	8.750		1.649	Vel = 14.31		
26 to 16	234.830 234.830		27.69 190.68	2 2.157	2T	24.613 0.0	54.000 24.613	120 0.2520	27.765 0.0			
						0.0	78.613		19.809	Vel = 16.74		
16 to 17	234.830 218		0.0 190.68	2 2.157	2L 1T	7.384 12.307	15.000 19.691	120 0.2520	47.574 7.289			
						0.0	34.691		8.741	Vel = 16.74		
17 to SPK1	218 218		0.0 190.68	2.5 2.635	1Fsp 1S 1B 1T	0.0 19.22 9.61 16.474	3.000 45.304 48.304	120 0.0951	63.604 3.000 4.592		* Fixed loss = 3	Vel = 11.22
SPK1 to H4	218 96		0.0 190.68	4 4.026	20L 1B 2T 3F	120.0 12.0 40.0 12.0	272.000 184.000 456.000	120 0.0121	71.196 52.838 5.502			Vel = 4.81
H4 to PMPO	96 94		0.0 190.68	6 6.065	2L 1T 2G 1S	18.0 30.0 6.0 32.0	10.000 86.000 96.000	120 0.0016	129.536 0.866 0.157			Vel = 2.12
PMPO			0.0 190.68						130.559		K Factor = 16.69	
System Demand Pressure									130.559			
Safety Margin									26.696			
Continuation Pressure									157.255			
Pressure @ Pump Outlet									157.255			
Pressure From Pump Curve									-93.498			
Pressure @ Pump Inlet									63.757			
PMPI to FLG	94 94		0.0 190.68	8 7.981	2L 1T 1G 1Zac	26.0 35.0 4.0 0.0	10.000 65.000 75.000	120 0.0004	63.757 5.327 0.032		* Fixed loss = 5.327	Vel = 1.22
FLG to TEST	94 100		0.0 190.68	6 5.89	1G 1T	3.46 34.598	100.000 38.058	140 0.0014	69.116 -2.599 0.197			Vel = 2.25
TEST			100.00 290.68						66.714		Qa = 100.00 K Factor = 35.59	





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

EASTERN FIRE PROTECTION  
170 KITTYHAWK AVE.  
P.O. BOX 1390  
AUBURN, MAINE 04211-1390  
800-274-1507

Job Name : EASTLAND PARK EAST ELEV TOWER  
Drawing : FP-9  
Location : PORTLAND, MAINE  
Remote Area : ONE  
Contract : 4818  
Data File : HFP-9.1REV1.wx1

**HYDRAULIC CALCULATIONS**  
*for*

**Project name:** EASTLAND PARK EAST ELEV MACHINE ROOM  
**Location:** PORTLAND, MAINE  
**Drawing no:** FP-9  
**Date:** 05/22/12

**Design**

**Remote area number:** ONE  
**Remote area location:** UPPER ELEVATOR MACHINE ROOM  
**Occupancy classification:** OH I  
**Density:** .15 - Gpm/SqFt  
**Area of application:** 802 - SqFt  
**Coverage per sprinkler:** 130.00 - SqFt  
**Type of sprinklers calculated:** TYCO TY-FRB  
**No. of sprinklers calculated:** 11  
**In-rack demand:** - GPM  
**Hose streams:** 250 - GPM  
**Total water required (including hose streams):** 229 - GPM @ 140.5 - Psi  
**Type of system:** WET  
**Volume of dry or preaction system:** - Gal

**Water supply information**

**Date:** 09/23/11  
**Location:** DEERING STREET  
**Source:** PORTLAND WATER DISTRICT

**Name of contractor:** EASTERN FIRE PROTECTION  
**Address:** 170 KITTYHAWK AVE. / P.O. BOX 1390 / AUBURN, MAINE 04211-139  
**Phone number:** 800-274-1507  
**Name of designer:** WAF  
**Authority having jurisdiction:** STATE FIRE MARSHAL  
**Notes:** (Include peaking information or gridded systems here.) REMOTE AREA MODIFIED PER NFPA 13 (2010) SECTION 11.2.3.2.3.1. TOTAL WATER REQUIRED INDICATED AT DISCHARGE FLANGE OF FIRE PUMP

City Water Supply:

C1 - Static Pressure : 67  
C2 - Residual Pressure: 63  
C2 - Residual Flow : 1209

City Water Adjusted to Pump Inlet  
for Pf - Elev - Hose Flow

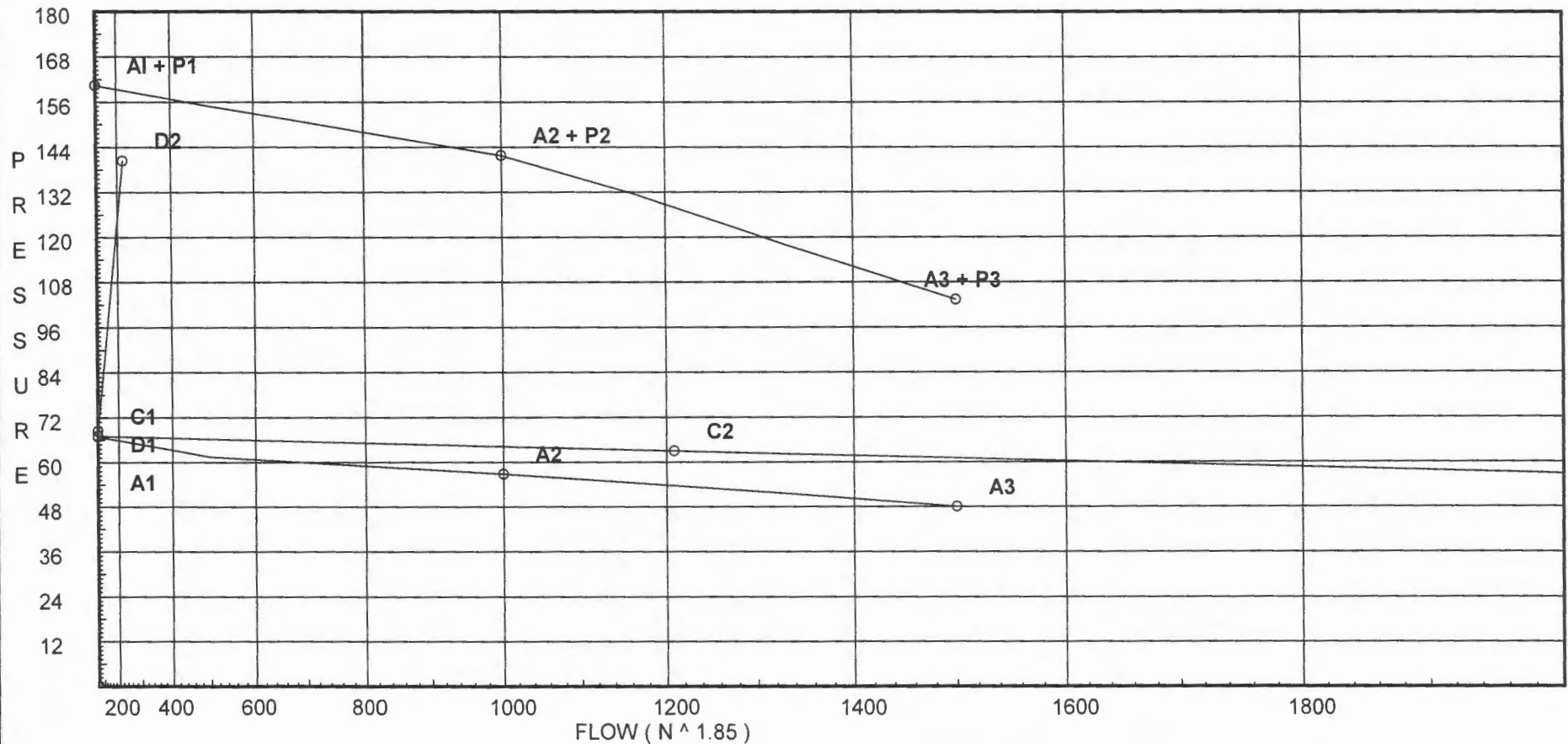
A1 - Adjusted Static: 66.882  
A2 - Adj Resid : 56.84 @ 1000  
A3 - Adj Resid : 48.054 @ 1500

Pump Data:

P1 - Pump Churn Pressure : 93.5  
P2 - Pump Rated Pressure : 85  
P2 - Pump Rated Flow : 1000  
P3 - Pump Pressure @ Max Flow : 55.25  
P3 - Pump Max Flow : 1500  
City Residual Flow @ 0 = 5546.97  
City Residual Flow @ 20 = 4579.57  
City Water @ 150% of Pump = 61.04

Demand:

D1 - Elevation : 68.356  
D2 - System Flow : 229.296  
D2 - System Pressure : 140.462  
Hose ( Demand ) :  
D3 - System Demand : 229.296  
Hose ( Adj City ) : 250  
Safety Margin : 15.702



# Fittings Used Summary

EASTERN FIRE PROTECTION  
EASTLAND PARK EAST ELEV TOWER

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Fitting Legend		½	¾	1	1¼	1½	2	2½	3	3½	4	5	6	8	10	12	14	16	18	20	24	
Abbrev.	Name																					
B	NFPA 13 Butterfly Valve	0	0	0	0	0	6	7	10	0	12	9	10	12	19	21	0	0	0	0	0	
F	NFPA 13 45' Elbow	1	1	1	1	2	2	3	3	3	4	5	7	9	11	13	17	19	21	24	28	
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	
L	NFPA 13 Long Turn Elbow	0.5	1	2	2	2	3	4	5	5	6	8	9	13	16	18	24	27	30	34	40	
S	NFPA 13 Swing Check Valve	4	5	5	7	9	11	14	16	19	22	27	32	45	55	65	76	87	98	109	130	
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	
Zac	Ames 2000SS	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 - NFA 2007

EASTERN FIRE PROTECTION  
EASTLAND PARK EAST ELEV TOWER

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**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>
PMPO	See Information on Pump Curve				229.3	140.462
TEST	67.0	63	1209.0	66.278	479.3	66.278

**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>
15	257.83	5.6	14.06	21.0	
13	257.83	5.6	12.21	19.57	
14	257.83	5.6	13.15	20.31	
12	257.83	5.6	14.8	21.54	
10	257.83	5.6	12.82	20.05	
11	257.83	5.6	13.8	20.8	
8	257.83	5.6	14.48	21.31	
9	257.83	5.6	15.58	22.1	
7	257.83	5.6	16.69	22.88	
1	257.83	5.6	12.12	19.5	
2	257.83	5.6	13.06	20.24	
3	257.83		15.68		
4	257.83		15.79		
5	257.83		16.56		
6	257.83		18.66		
16	250.0		43.18		
17	218.0		69.34		
SPK1	218.0		78.8		
H4	96.0		139.37		
PMPO	94.0		140.46		
PMPI	94.0		62.67		
FLG	94.0		68.6		
TEST	100.0		66.28	250.0	

# Final Calculations - Hazen-Williams - 2007

EASTERN FIRE PROTECTION  
EASTLAND PARK EAST ELEV TOWER

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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	*****
15 to 4	257.830 257.830	5.60	21.00 21.0	1	1T	5.0 0.0 0.0	7.120 5.000 12.120	120 0.1424	14.064 0.0 1.726			Vel = 7.80
4			0.0 21.00						15.790			K Factor = 5.28
13 to 14	257.830 257.830	5.60	19.57 19.57	1		0.0 0.0 0.0	7.500 0.0 7.500	120 0.1251	12.212 0.0 0.938			Vel = 7.26
14 to 4	257.830 257.830	5.60	20.31 39.88	1	1T	5.0 0.0 0.0	0.660 5.000 5.660	120 0.4664	13.150 0.0 2.640			Vel = 14.80
4			0.0 39.88						15.790			K Factor = 10.04
12 to 5	257.830 257.830	5.60	21.54 21.54	1	1T	5.0 0.0 0.0	6.830 5.000 11.830	120 0.1493	14.797 0.0 1.766			Vel = 8.00
5			0.0 21.54						16.563			K Factor = 5.29
10 to 11	257.830 257.830	5.60	20.05 20.05	1		0.0 0.0 0.0	7.500 0.0 7.500	120 0.1308	12.821 0.0 0.981			Vel = 7.44
11 to 5	257.830 257.830	5.60	20.81 40.86	1	1T	5.0 0.0 0.0	0.660 5.000 5.660	120 0.4878	13.802 0.0 2.761			Vel = 15.17
5			0.0 40.86						16.563			K Factor = 10.04
8 to 9	257.830 257.830	5.60	21.31 21.31	1		0.0 0.0 0.0	7.500 0.0 7.500	120 0.1464	14.477 0.0 1.098			Vel = 7.91
9 to 6	257.830 257.830	5.60	22.10 43.41	1	1T	5.0 0.0 0.0	0.660 5.000 5.660	120 0.5458	15.575 0.0 3.089			Vel = 16.11
6			0.0 43.41						18.664			K Factor = 10.05
7 to 6	257.830 257.830	5.60	22.88 22.88	1	1T	5.0 0.0 0.0	6.830 5.000 11.830	120 0.1669	16.689 0.0 1.975			Vel = 8.49
6			0.0 22.88						18.664			K Factor = 5.30
1 to 2	257.830 257.830	5.60	19.50 19.5	1		0.0 0.0 0.0	7.500 0.0 7.500	120 0.1243	12.125 0.0 0.932			Vel = 7.24
2 to 3	257.830 257.830	5.60	20.24 39.74	1	1T	5.0 0.0 0.0	0.660 5.000 5.660	120 0.4633	13.057 0.0 2.622			Vel = 14.75
3 to 4	257.830 257.830		0.0 39.74	2		0.0 0.0 0.0	8.000 0.0 8.000	120 0.0139	15.679 0.0 0.111			Vel = 3.49

Final Calculations - Hazen-Williams - 2007

EASTERN FIRE PROTECTION  
EASTLAND PARK EAST ELEV TOWER

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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	*****
4 to 5	257.830 257.830		60.87 100.61	2 2.157		0.0 0.0	10.010 0.0	120 0.0772	15.790 0.0 0.773			Vel = 8.83
5 to 6	257.830 257.830		62.40 163.01	2 2.157		0.0 0.0	11.140 0.0	120 0.1886	16.563 0.0 2.101			Vel = 14.31
6 to 16	257.830 250.00		66.29 229.3	2 2.157	3L 1G 1T	11.076 1.231 12.307	35.000 24.614 59.614	120 0.3544	18.664 3.391 21.129			Vel = 20.13
16 to 17	250.00 218		0.0 229.3	2 2.157	2L 1T	7.384 12.307	15.000 19.691	120 0.3544	43.184 13.859 12.296			Vel = 20.13
17 to SPK1	218 218		0.0 229.3	2.5 2.635	1Fsp 1S 1B 1T	0.0 19.22 9.61 16.474	3.000 45.304 48.304	120 0.1337	69.339 3.000 6.459			* Fixed loss = 3 Vel = 13.49
SPK1 to H4	218 96		0.0 229.3	4 4.026	20L 1B 2T 3F	120.0 12.0 40.0 12.0	272.000 184.000 456.000	120 0.0170	78.798 52.838 7.738			Vel = 5.78
H4 to PMPO	96 94		0.0 229.3	6 6.065	2L 1T 2G 1S	18.0 30.0 6.0 32.0	10.000 86.000 96.000	120 0.0023	139.374 0.866 0.222			Vel = 2.55
PMPO			0.0 229.30						140.462			K Factor = 19.35
System Demand Pressure									140.462			
Safety Margin									15.702			
Continuation Pressure									156.164			
Pressure @ Pump Outlet									156.164			
Pressure From Pump Curve									-93.498			
Pressure @ Pump Inlet									62.666			
PMPI to FLG	94 94		0.0 229.3	8 7.981	2L 1T 1G 1Zac	26.0 35.0 4.0 0.0	10.000 65.000 75.000	120 0.0006	62.666 5.889 0.045			* Fixed loss = 5.889 Vel = 1.47
FLG to TEST	94 100		0.0 229.3	6 5.89	1G 1T	3.46 34.598	100.000 38.058	140 0.0020	68.600 -2.599 0.277			Vel = 2.70
TEST			250.00 479.30						66.278			Qa = 250.00 K Factor = 58.87



... Fire Protection by Computer Design

EASTERN FIRE PROTECTION  
170 KITTYHAWK AVE.  
P.O. BOX 1390  
AUBURN, MAINE 04211-1390  
800-274-1507

Job Name : EASTLAND PARK 13TH FLOOR DWELLING 2  
Drawing : EXISTING STEEL STRUCTURE CONCRETE FLOOR  
Location : PORTLAND, MAINE  
Remote Area : 13TH FLOOR  
Contract : 4818  
Data File : HFP-8.2REV1.wx2



HYDRAULIC DESIGN INFORMATION SHEET

Name - EASTLAND PARK 13TH FLOOR UNIT #2 Date - 05/22/12  
Location - PORTLAND, MAINE  
Building - EXISTING STEEL STRUCTURE CONCRETE FLOOR System No. - 13TH FLOOR  
Contractor - EASTERN FIRE PROTECTION Contract No. - 4818  
Calculated By - WAF Drawing No. - FP-8  
Construction: ( ) Combustible (X) Non-Combustible Ceiling Height VARIES  
OCCUPANCY - RESIDENTIAL LIGHT HAZARD

S Type of Calculation: (X)NFPA 13 Residential ( )NFPA 13R ( )NFPA 13D  
Y Number of Sprinklers Flowing: ( )1 ( )2 (X)4 ( )  
S ( )Other  
T ( )Specific Ruling Made by Date  
E  
M Listed Flow at Start Point - 23 Gpm System Type  
Listed Pres. at Start Point - 27.3 Psi (X) Wet ( ) Dry  
D MAXIMUM LISTED SPACING 16 x 20 ( ) Deluge ( ) PreAction  
E Domestic Flow Added - 0 Gpm Sprinkler or Nozzle  
S Additional Flow Added - 0 Gpm Make TYCO Model LFII  
I Elevation at Highest Outlet - 221' Feet Size 1/2" K-Factor 4.4  
G Note: Temperature Rating 155  
N REMOTE AREA PER NFPA 13 (2010) SECTION 11.3.1.1

Calculation Gpm Required 121 Psi Required 131 At Pump  
Summary C-Factor Used: Overhead 150 Underground 150

W Water Flow Test: Pump Data: Tank or Reservoir:  
A Date of Test - 09/23/11 Rated Cap. 1000 Cap.  
T Time of Test - 2:00 @ Psi 85 Elev.  
E Static (Psi) - 67 Elev. 94  
R Residual (Psi) - 63 Other Well  
Flow (Gpm) - 1209 Proof Flow Gpm  
S Elevation - 100

P Location: TEST HYDRANT LOCATED ON DEERING ST.

P  
L Source of Information: PORTLAND WATER DISTRICT  
Y

City Water Supply:

C1 - Static Pressure : 67  
C2 - Residual Pressure: 63  
C2 - Residual Flow : 1209

City Water Adjusted to Pump Inlet  
for Pf - Elev - Hose Flow

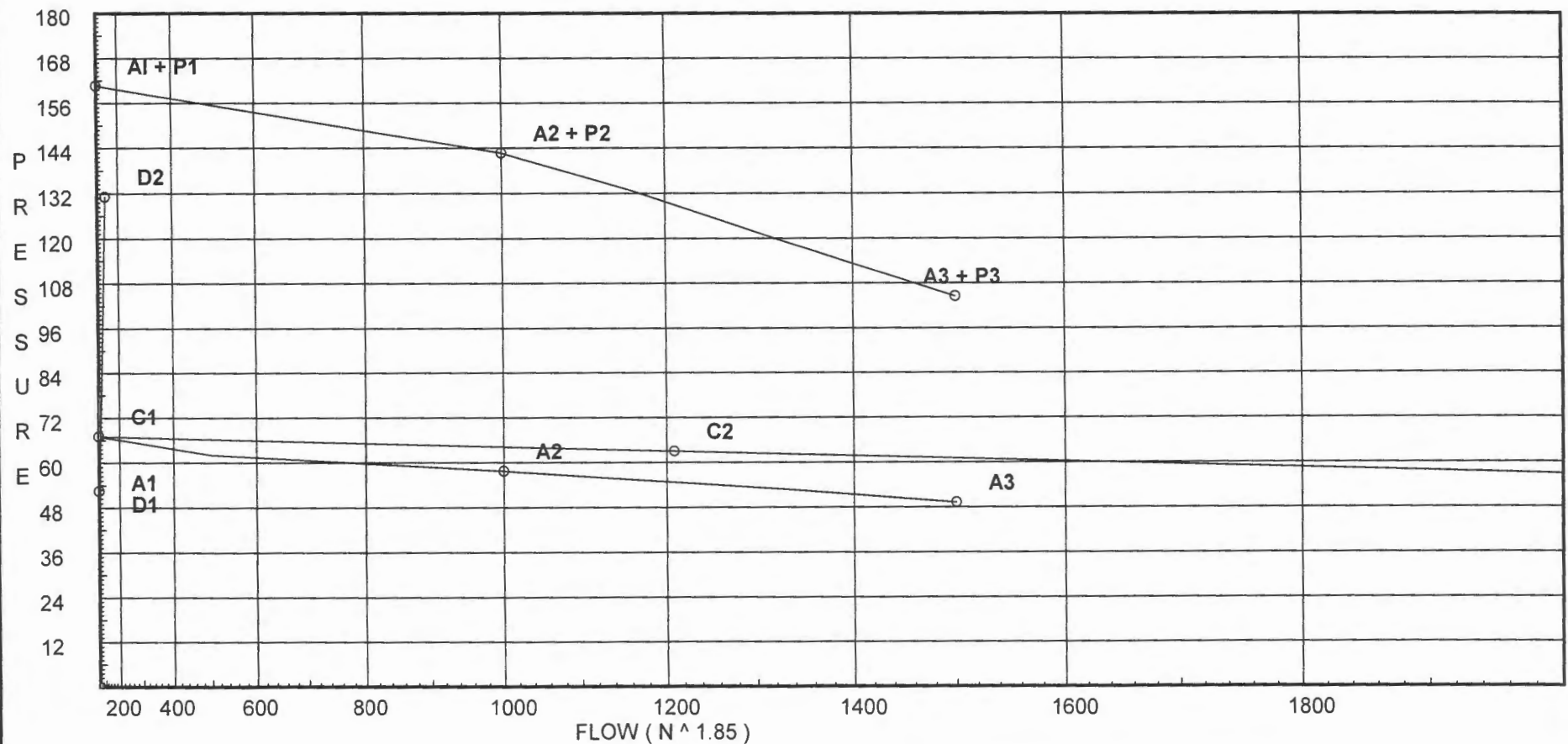
A1 - Adjusted Static: 67.059  
A2 - Adj Resid : 57.736 @ 1000  
A3 - Adj Resid : 49.265 @ 1500

Pump Data:

P1 - Pump Churn Pressure : 93.5  
P2 - Pump Rated Pressure : 85  
P2 - Pump Rated Flow : 1000  
P3 - Pump Pressure @ Max Flow : 55.25  
P3 - Pump Max Flow : 1500  
City Residual Flow @ 0 = 5546.97  
City Residual Flow @ 20 = 4579.57  
City Water @ 150% of Pump = 61.04

Demand:

D1 - Elevation : 52.405  
D2 - System Flow : 121.022  
D2 - System Pressure : 131.105  
Hose ( Demand ) :  
D3 - System Demand : 121.022  
Hose ( Adj City ) : 100  
Safety Margin : 27.431



# Fittings Used Summary

EASTERN FIRE PROTECTION  
EASTLAND PARK 13TH FLOOR DWELLING 2

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Date 102411

## 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	NFPA 13 Butterfly Valve	0	0	0	0	0	6	7	10	0	12	9	10	12	19	21	0	0	0	0	0
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
L	NFPA 13 Long Turn Elbow	0.5	1	2	2	2	3	4	5	5	6	8	9	13	16	18	24	27	30	34	40
S	NFPA 13 Swing Check Valve	4	5	5	7	9	11	14	16	19	22	27	32	45	55	65	76	87	98	109	130
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
Zac	Ames 2000SS	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  
EASTLAND PARK 13TH FLOOR DWELLING 2

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Date 102411

## 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>
PMPO	See Information on Pump Curve				121.02	131.105
TEST	67.0	63	1209.0	66.828	221.02	66.828

## 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>
D101	221.0	4.9	20.2	22.02	
D102	221.0	4.9	20.2	22.02	
57	221.0	4.85	40.33	30.82	K=K @ EQ02
55	221.0	4.4	45.83	29.79	
56	221.0	4.8	47.62	33.12	K=K @ EQ01
51	221.0	4.4	38.5	27.3	
52	221.0		40.57		
53	221.0		51.04		
46	221.0		70.77		
SPK2	221.0		75.8		
BOR	96.0		130.07		
PMPO	94.0		131.1		
PMPI	94.0		65.04		
FLG	94.0		69.34		
TEST	100.0		66.83	100.0	

Final Calculations - Hazen-Williams - 2007

EASTERN FIRE PROTECTION  
EASTLAND PARK 13TH FLOOR DWELLING 2

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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	*****
D101 to EQ01	221.00 221.00	4.90	22.02 22.02	1 1.101	1T 0.0	9.563 0.0	150	20.200 0.0			
			0.0			10.562	0.0813	0.859		Vel = 7.42	
EQ01			22.02					21.059		K Factor = 4.80	
D102 to EQ02	221.00 221.00	4.90	22.02 22.02	1 1.101	1E 0.0	3.825 0.0	150	20.200 0.0			
			0.0			4.825	0.0812	0.392		Vel = 7.42	
EQ02			22.02					20.592		K Factor = 4.85	
57 to 52	221.00 221.00	4.85	30.82 30.82	1 1.101	0.0 0.0	1.620 0.0	150	40.325 0.0		K = K @ EQ02	
			0.0			1.620	0.1512	0.245		Vel = 10.39	
52			30.82					40.570		K Factor = 4.84	
55 to 56	221.00 221.00	4.40	29.79 29.79	1 1.101	2E 0.0	7.65 0.0	150	45.829 0.0			
			0.0			12.600	0.1422	1.792		Vel = 10.04	
56 to 53	221.00 221.00	4.8	33.11 62.9	1 1.101	0.0 0.0	6.040 0.0	150	47.621 0.0		K = K @ EQ01	
			0.0			6.040	0.5667	3.423		Vel = 21.20	
53			62.90					51.044		K Factor = 8.80	
51 to 52	221.00 221.00	4.40	27.30 27.3	1 1.101	1T 0.0	9.563 0.0	150	38.496 0.0			
			0.0			17.142	0.1210	2.074		Vel = 9.20	
52 to 53	221.00 221.00		30.82 58.12	1 1.101	1T 0.0	9.563 0.0	150	40.570 0.0			
			0.0			21.392	0.4896	10.474		Vel = 19.59	
53 to 46	221.00 221		62.90 121.02	2 2.003	7T 7E	90.753 45.376	150	51.044 0.0			
			0.0			191.209	0.1032	19.724		Vel = 12.32	
46 to SPK2	221 221		0.0 121.02	2.5 2.635	1Fsp 1S 1G 1T 1L	0.0 19.22 1.373 16.474 5.491	120	70.768 3.000 2.032		* Fixed loss = 3 Vel = 7.12	
SPK2 to BOR	221 96		0.0 121.02	6 6.065	6L	54.0 0.0	120	75.800 54.138			
			0.0			194.000	0.0007	0.136		Vel = 1.34	
BOR to PMPO	96 94		0.0 121.02	6 6.065	1B 8L 1T 2G 1S	10.0 72.0 30.0 6.0 32.0	120	130.074 0.866 0.165		Vel = 1.34	
PMPO			0.0 121.02					131.105		K Factor = 10.57	
System Demand Pressure								131.105			
Safety Margin								27.431			
Continuation Pressure								158.536			

# Final Calculations - Hazen-Williams - 2007

EASTERN FIRE PROTECTION  
EASTLAND PARK 13TH FLOOR DWELLING 2

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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	*****
Pressure @ Pump Outlet									158.536			
Pressure From Pump Curve									-93.499			
Pressure @ Pump Inlet									65.037			
PMPI to FLG	94 94		0.0 121.02	8 7.981	2L 1T 1Zac	26.0 35.0 4.0 0.0	10.000 65.000 75.000	120 0.0002	65.037 4.291 0.014		* Fixed loss = 4.291 Vel = 0.78	
FLG to TEST	94 100		0.0 121.02	6 5.89	1G 1T	3.46 34.598 0.0	100.000 38.058 138.058	140 0.0006	69.342 -2.599 0.085		Vel = 1.43	
TEST			100.00 221.02						66.828		Qa = 100.00 K Factor = 27.04	



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

EASTERN FIRE PROTECTION  
170 KITTYHAWK AVE.  
P.O. BOX 1390  
AUBURN, MAINE 04211-1390  
800-274-1507

Job Name : EASTLAND PARK GRD FLR HAWTHORNE RM  
Drawing : FP-3  
Location : PORTLAND, MAINE  
Remote Area : GROUND  
Contract : 4818  
Data File : HFP-3.1rev2.wx1

**HYDRAULIC CALCULATIONS**  
*for*

**Project name:** EASTLAND PARK EAST GROUND FLOOR HAWTHORNE ROOM  
**Location:** PORTLAND, MAINE  
**Drawing no:** FP-3  
**Date:** 05/22/12

**Design**

**Remote area number:** GROUND  
**Remote area location:** GROUND FLOOR HAWTHORNE ROOM  
**Occupancy classification:** LIGHT  
**Density:** .10 - Gpm/SqFt  
**Area of application:** 1002 - SqFt  
**Coverage per sprinkler:** 180 - SqFt  
**Type of sprinklers calculated:** TYCO TY-FRB  
**No. of sprinklers calculated:** 11  
**In-rack demand:** - GPM  
**Hose streams:** 100 - GPM  
**Total water required (including hose streams):** 243 - GPM @ 83 - Psi  
**Type of system:** WET  
**Volume of dry or preaction system:** - Gal

**Water supply information**

**Date:** 09/23/11  
**Location:** DEERING STREET  
**Source:** PORTLAND WATER DISTRICT

**Name of contractor:** EASTERN FIRE PROTECTION  
**Address:** 170 KITTYHAWK AVE. / P.O. BOX 1390 / AUBURN, MAINE 04211-139  
**Phone number:** 800-274-1507  
**Name of designer:** WAF

**Authority having jurisdiction:** STATE FIRE MARSHAL

**Notes: (Include peaking information or gridded systems here.)** REMOTE AREA MODIFIED PER NFPA 13 (2010) SECTION 11.2.3.2.3.1. TOTAL WATER REQUIRED INDICATED AT DISCHARGE FLANGE OF FIRE PUMP



# Water Supply Curve (C)

EASTERN FIRE PROTECTION  
EASTLAND PARK GRD FLR HAWTHORNE RM

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### City Water Supply:

C1 - Static Pressure : 67  
C2 - Residual Pressure: 63  
C2 - Residual Flow : 1209

### City Water Adjusted to Pump Inlet for Pf - Elev - Hose Flow

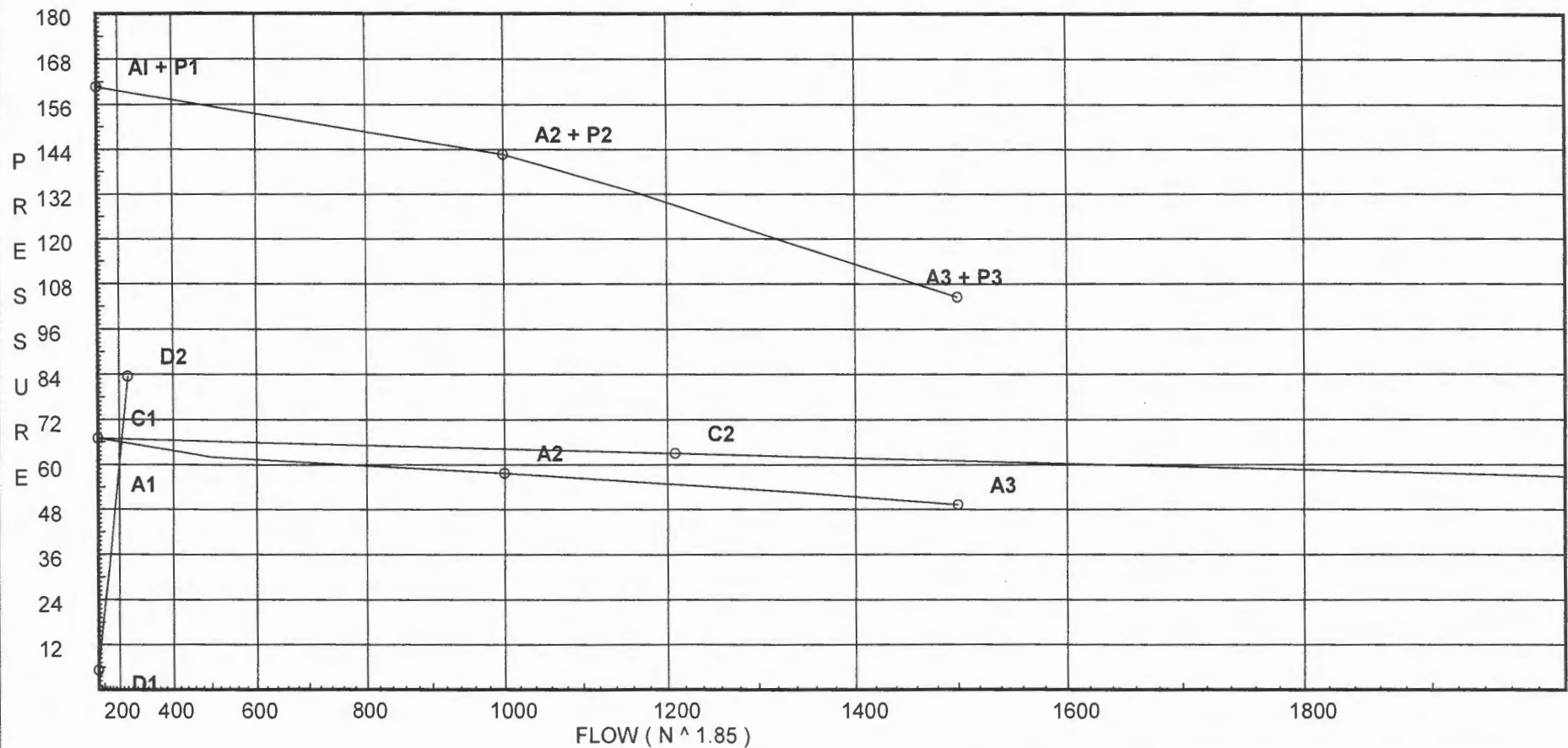
A1 - Adjusted Static: 67.059  
A2 - Adj Resid : 57.736 @ 1000  
A3 - Adj Resid : 49.265 @ 1500

### Pump Data:

P1 - Pump Churn Pressure : 93.5  
P2 - Pump Rated Pressure : 85  
P2 - Pump Rated Flow : 1000  
P3 - Pump Pressure @ Max Flow : 55.25  
P3 - Pump Max Flow : 1500  
City Residual Flow @ 0 = 5546.97  
City Residual Flow @ 20 = 4579.57  
City Water @ 150% of Pump = 61.04

### Demand:

D1 - Elevation : 5.197  
D2 - System Flow : 243.201  
D2 - System Pressure : 83.474  
Hose ( Demand ) :  
D3 - System Demand : 243.201  
Hose ( Adj City ) : 100  
Safety Margin : 72.778



# Fittings Used Summary

EASTERN FIRE PROTECTION  
EASTLAND PARK GRD FLR HAWTHORNE RM

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Fitting Legend		½	¾	1	1¼	1½	2	2½	3	3½	4	5	6	8	10	12	14	16	18	20	24
Abbrev.	Name																				
B	NFPA 13 Butterfly Valve	0	0	0	0	0	6	7	10	0	12	9	10	12	19	21	0	0	0	0	0
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
L	NFPA 13 Long Turn Elbow	0.5	1	2	2	3	4	5	6	8	9	13	16	18	24	27	30	34	40	40	40
S	NFPA 13 Swing Check Valve	4	5	5	7	9	11	14	16	19	22	27	32	45	55	65	76	87	98	109	130
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
Zac	Ames 2000SS	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  
 EASTLAND PARK GRD FLR HAWTHORNE RM

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**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>
PMPO	See Information on Pump Curve				243.2	83.474
TEST	67.0	63	1209.0	66.611	343.2	66.611

**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>
D001	112.0	5.6	10.33	18.0	
104	112.0	5.51	17.66	23.18	K=K @ EQ01
103	112.0	5.51	25.86	28.05	K=K @ EQ01
102	112.0	5.51	11.55	18.75	K=K @ EQ01
101	112.0	5.51	15.19	21.5	K=K @ EQ01
100	112.0	5.51	23.71	26.85	K=K @ EQ01
99	112.0	5.51	11.31	18.55	K=K @ EQ01
98	112.0	5.51	14.88	21.27	K=K @ EQ01
97	112.0	5.51	23.24	26.58	K=K @ EQ01
94	112.0	5.51	16.33	22.28	K=K @ EQ01
95	112.0		19.08		
96	112.0		27.4		
90	112.0	5.51	10.88	18.19	K=K @ EQ01
91	112.0		12.26		
92	112.0		16.11		
93	112.0		25.1		
81	112.0	5.51	10.65	18.0	K=K @ EQ01
82	112.0		12.01		
83	112.0		15.78		
84	112.0		24.59		
85	112.0		37.66		
86	112.0		37.89		
87	112.0		38.42		
88	112.0		47.44		
89	112.0		67.71		
SPK3	112.0		75.02		
BOR	96.0		82.01		
PMPO	94.0		83.47		
PMPI	94.0		62.75		
FLG	94.0		68.9		
TEST	100.0		66.61	100.0	

# Final Calculations - Hazen-Williams - 2007

EASTERN FIRE PROTECTION  
EASTLAND PARK GRD FLR HAWTHORNE RM

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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	*****
95 to 96	112.00 112.00		23.18 45.46	1 1.049		0.0 0.0	14.000 14.000	120 0.5944	19.083 0.0 8.321			Vel = 16.88
96 to 86	112.00 112.00		28.05 73.51	1 1.049	1T	5.0 0.0	2.250 5.000 7.250	120 1.4461	27.404 0.0 10.484			Vel = 27.29
86			0.0 73.51						37.888			K Factor = 11.94
90 to 91	112.00 112.00	5.51	18.19 18.19	1 1.049	1E	2.0 0.0	10.660 2.000 12.660	120 0.1092	10.881 0.0 1.383			K = K @ EQ01 Vel = 6.75
91 to 92	112.00 112.00		18.75 36.94	1 1.049		0.0 0.0	9.500 0.0 9.500	120 0.4048	12.264 0.0 3.846			Vel = 13.71
92 to 93	112.00 112.00		21.49 58.43	1 1.049		0.0 0.0	9.500 0.0 9.500	120 0.9458	16.110 0.0 8.985			Vel = 21.69
93 to 87	112.00 112.00		26.86 85.29	1 1.049	1T	5.0 0.0	2.000 5.000 7.000	120 1.9037	25.095 0.0 13.326			Vel = 31.66
87			0.0 85.29						38.421			K Factor = 13.76
81 to 82	112.00 112.00	5.51	18.00 18.0	1 1.049	1E	2.0 0.0	10.660 2.000 12.660	120 0.1071	10.653 0.0 1.356			K = K @ EQ01 Vel = 6.68
82 to 83	112.00 112.00		18.55 36.55	1 1.049		0.0 0.0	9.500 0.0 9.500	120 0.3969	12.009 0.0 3.771			Vel = 13.57
83 to 84	112.00 112.00		21.27 57.82	1 1.049		0.0 0.0	9.500 0.0 9.500	120 0.9276	15.780 0.0 8.812			Vel = 21.46
84 to 85	112.00 112.00		26.59 84.41	1 1.049	1T	5.0 0.0	2.000 5.000 7.000	120 1.8676	24.592 0.0 13.073			Vel = 31.34
85 to 86	112.00 112.00		0.0 84.41	2.5 2.635		0.0 0.0	10.620 0.0 10.620	120 0.0210	37.665 0.0 0.223			Vel = 4.97
86 to 87	112.00 112.00		73.50 157.91	2.5 2.635		0.0 0.0	7.950 0.0 7.950	120 0.0670	37.888 0.0 0.533			Vel = 9.29
87 to 88	112.00 112.00		85.29 243.2	2.5 2.635	2L 1T	10.983 16.474	33.000 27.457 60.457	120 0.1491	38.421 0.0 9.015			Vel = 14.31
88 to 89	112.00 112		0.0 243.2	2.5 2.635	3L 1T	16.474 16.474	103.000 32.948 135.948	120 0.1491	47.436 0.0 20.270			Vel = 14.31
89 to SPK3	112 112		0.0 243.2	4 4.26	10L 1Fsp 1S	79.002 0.0 28.968	150.000 150.104 300.104	120 0.0144	67.706 3.000 4.313			* Fixed loss = 3 Vel = 5.47

# Final Calculations - Hazen-Williams - 2007

EASTERN FIRE PROTECTION  
EASTLAND PARK GRD FLR HAWTHORNE RM

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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	*****
					1B 1T	15.8 26.334						
SPK3 to BOR	112 96		0.0 243.2	6 6.065	1L	9.0 0.0 0.0	14.370 9.000 23.370	120 0.0025	75.019 6.930 0.059		Vel = 2.70	
BOR to PMPO	96 94		0.0 243.2	6 6.065	1B 8L 1T 2G 1S	10.0 72.0 30.0 6.0 32.0	83.000 150.000 233.000	120 0.0026	82.008 0.866 0.600		Vel = 2.70	
PMPO			0.0 243.20						83.474		K Factor = 26.62	
System Demand Pressure									83.474			
Safety Margin									72.778			
Continuation Pressure									156.252			
Pressure @ Pump Outlet									156.252			
Pressure From Pump Curve									-93.498			
Pressure @ Pump Inlet									62.754			
PMPI to FLG	94 94		0.0 243.2	8 7.981	2L 1T 1G 1Zac	26.0 35.0 4.0 0.0	10.000 65.000 75.000	120 0.0007	62.754 6.096 0.051		* Fixed loss = 6.096 Vel = 1.56	
FLG to TEST	94 100		0.0 243.2	6 5.89	1G 1T	3.46 34.598 0.0	100.000 38.058 138.058	140 0.0022	68.901 -2.599 0.309		Vel = 2.86	
TEST			100.00 343.20						66.611		Qa = 100.00 K Factor = 42.05	



... Fire Protection by Computer Design

EASTERN FIRE PROTECTION  
170 KITTYHAWK AVE.  
P.O. BOX 1390  
AUBURN, MAINE 04211-1390  
800-274-1507

Job Name : EASTLAND PARK GRD FLR KITCHEN  
Drawing : FP-3  
Location : PORTLAND, MAINE  
Remote Area : GROUND  
Contract : 4818  
Data File : HFP-3.2REV1.wx2

**HYDRAULIC CALCULATIONS**  
*for*

**Project name:** EASTLAND PARK EAST GROUND FLOOR KITCHEN  
**Location:** PORTLAND, MAINE  
**Drawing no:** FP-3  
**Date:** 05/22/12

**Design**

**Remote area number:** GROUND  
**Remote area location:** GROUND FLOOR KITCHEN  
**Occupancy classification:** ORDINARY HAZARD I  
**Density:** .15 - Gpm/SqFt  
**Area of application:** 1142 - SqFt  
**Coverage per sprinkler:** 130 - SqFt  
**Type of sprinklers calculated:** TYCO TY-FRB  
**No. of sprinklers calculated:** 11  
**In-rack demand:** - GPM  
**Hose streams:** 250 - GPM  
**Total water required (including hose streams):** 314 - GPM @ 89.5 - Psi  
**Type of system:** WET  
**Volume of dry or preaction system:** - Gal

**Water supply information**

**Date:** 09/23/11  
**Location:** DEERING STREET  
**Source:** PORTLAND WATER DISTRICT

**Name of contractor:** EASTERN FIRE PROTECTION  
**Address:** 170 KITTYHAWK AVE. / P.O. BOX 1390 / AUBURN, MAINE 04211-139  
**Phone number:** 800-274-1507  
**Name of designer:** WAF  
**Authority having jurisdiction:** STATE FIRE MARSHAL  
**Notes:** (Include peaking information or gridded systems here.) REMOTE AREA MODIFIED PER NFPA 13 (2010) SECTION 11.2.3.2.3.1. TOTAL WATER REQUIRED INDICATED AT DISCHARGE FLANGE OF FIRE PUMP

# Water Supply Curve (C)

EASTERN FIRE PROTECTION  
EASTLAND PARK GRD FLR KITCHEN

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### City Water Supply:

C1 - Static Pressure : 67  
C2 - Residual Pressure: 63  
C2 - Residual Flow : 1209

### City Water Adjusted to Pump Inlet for Pf - Elev - Hose Flow

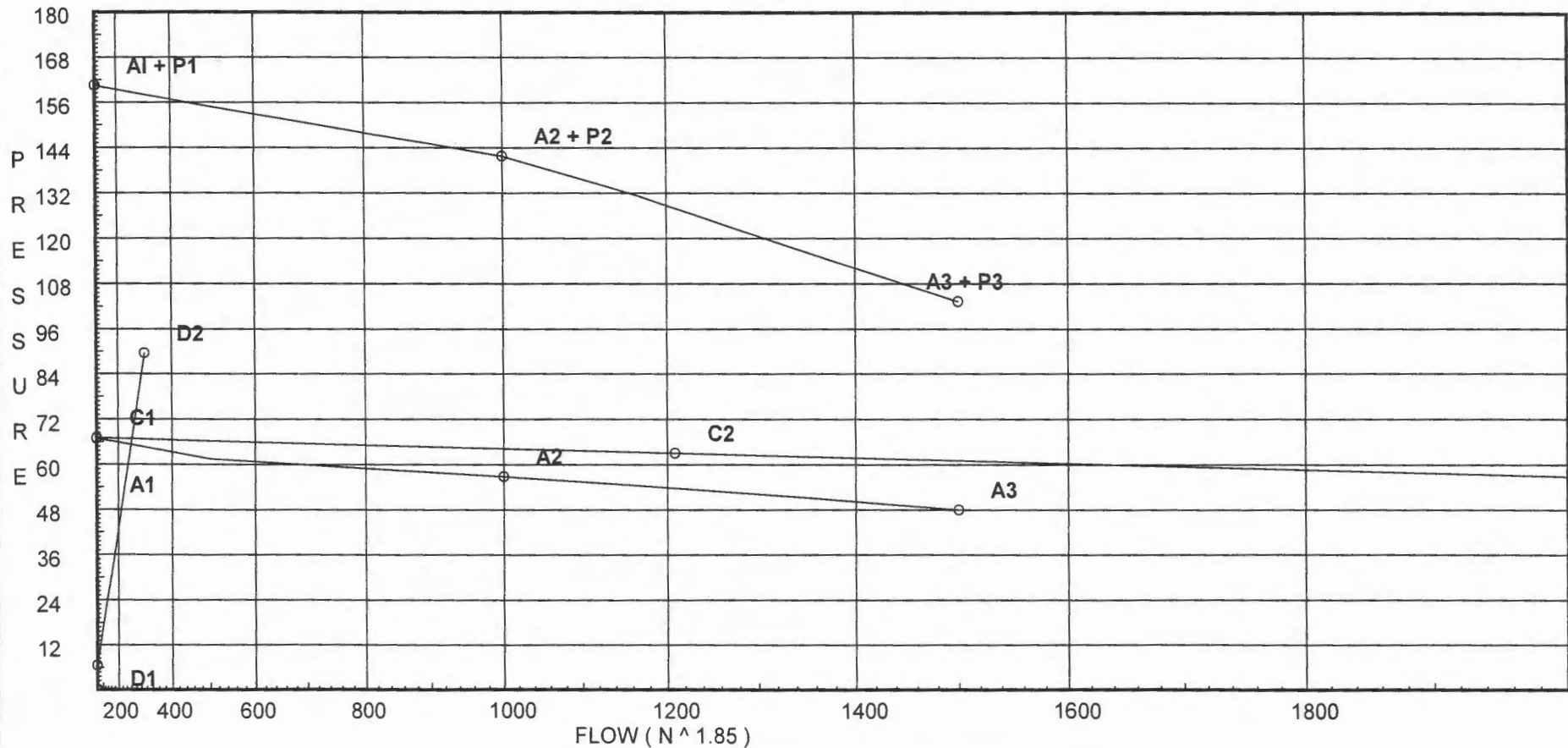
A1 - Adjusted Static: 66.882  
A2 - Adj Resid : 56.84 @ 1000  
A3 - Adj Resid : 48.054 @ 1500

### Pump Data:

P1 - Pump Churn Pressure : 93.5  
P2 - Pump Rated Pressure : 85  
P2 - Pump Rated Flow : 1000  
P3 - Pump Pressure @ Max Flow : 55.25  
P3 - Pump Max Flow : 1500  
City Residual Flow @ 0 = 5546.97  
City Residual Flow @ 20 = 4579.57  
City Water @ 150% of Pump = 61.04

### Demand:

D1 - Elevation : 6.496  
D2 - System Flow : 313.905  
D2 - System Pressure : 89.506  
Hose ( Demand ) :  
D3 - System Demand : 313.905  
Hose ( Adj City ) : 250  
Safety Margin : 66.119





# Fittings Used Summary

EASTERN FIRE PROTECTION  
EASTLAND PARK GRD FLR KITCHEN

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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																				
B	NFPA 13 Butterfly Valve	0	0	0	0	0	6	7	10	0	12	9	10	12	19	21	0	0	0	0	0
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
L	NFPA 13 Long Turn Elbow	0.5	1	2	2	2	3	4	5	5	6	8	9	13	16	18	24	27	30	34	40
S	NFPA 13 Swing Check Valve	4	5	5	7	9	11	14	16	19	22	27	32	45	55	65	76	87	98	109	130
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
Zac	Ames 2000SS	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.

**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>
PMPO	See Information on Pump Curve				313.9	89.506
TEST	67.0	63	1209.0	66.024	563.9	66.024

**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>
D101	115.0	5.6	12.12	19.5	
D102	115.0	5.6	12.12	19.5	
D103	115.0	5.6	12.12	19.5	
122	115.0	5.38	13.12	19.5	K=K @ EQ02
123	115.0	5.38	14.0	20.15	K=K @ EQ02
124	115.0	5.38	18.16	22.94	K=K @ EQ02
125	115.0	5.44	29.02	29.28	K=K @ EQ01
126	115.0	5.44	50.87	38.77	K=K @ EQ01
120	115.0	5.44	54.69	40.2	K=K @ EQ01
121	115.0	5.44	58.48	41.56	K=K @ EQ01
111	115.0	5.52	14.63	21.1	K=K @ EQ03
112	115.0	5.44	16.35	21.98	K=K @ EQ01
113	115.0	5.44	22.81	25.96	K=K @ EQ01
114	115.0	5.44	35.68	32.47	K=K @ EQ01
115	115.0		63.69		
116	115.0		63.72		
117	115.0		63.88		
89	115.0		69.44		
SPK3	115.0		79.35		
BOR	96.0		87.68		
PMPO	94.0		89.51		
PMPI	94.0		62.13		
FLG	94.0		68.13		
TEST	100.0		66.02	250.0	

Final Calculations - Hazen-Williams - 2007

EASTERN FIRE PROTECTION  
EASTLAND PARK GRD FLR KITCHEN

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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	*****
114 to 115	115.00 115.00	5.44	32.46 101.5	1 1.049	1T	5.0 0.0	5.660 5.000	120 2.6271	35.684 0.0		K = K @ EQ01	
115 to 116	115.00 115.00		0.0 101.5	4 4.26		0.0 0.0	10.000 0.0	120 0.0029	63.689 0.029		Vel = 37.68	
116 to 117	115.00 115.00		130.64 232.14	4 4.26		0.0 0.0	12.000 0.0	120 0.0132	63.718 0.158		Vel = 2.28	
117 to 89	115.00 115		81.76 313.9	4 4.26	9L 1T	71.102 26.334	144.000 97.436	120 0.0230	63.876 0.0		Vel = 5.23	
89 to SPK3	115 115		0.0 313.9	4 4.26	10L 1Fsp 1S	79.002 0.0 28.968	150.000 150.104 300.104	120 0.0230	69.439 3.000 6.915		* Fixed loss = 3 Vel = 7.07	
SPK3 to BOR	115 96		0.0 313.9	6 6.065	1L	9.0 0.0	14.370 9.000	120 0.0041	79.354 8.229		Vel = 3.49	
BOR to PMPO	96 94		0.0 313.9	6 6.065	1B 8L 1T 2G 1S	10.0 72.0 30.0 6.0 32.0	83.000 150.000 233.000	120 0.0041	87.679 0.866 0.961		Vel = 3.49	
PMPO			0.0 313.90						89.506		K Factor = 33.18	
System Demand Pressure									89.506			
Safety Margin									66.119			
Continuation Pressure									155.625			
Pressure @ Pump Outlet									155.625			
Pressure From Pump Curve									-93.496			
Pressure @ Pump Inlet									62.129			
PMPI to FLG	94 94		0.0 313.9	8 7.981	2L 1T 1G 1Zac	26.0 35.0 4.0 0.0	10.000 65.000 75.000	120 0.0011	62.129 5.918 0.082		* Fixed loss = 5.918 Vel = 2.01	
FLG to TEST	94 100.00		0.0 313.9	6 5.89	1G 1T	3.46 34.598	100.000 38.058	140 0.0036	68.129 -2.599 0.494		Vel = 3.70	
TEST			250.00 563.90						66.024		Qa = 250.00 K Factor = 69.40	



... Fire Protection by Computer Design

EASTERN FIRE PROTECTION  
170 KITTYHAWK AVE.  
P.O. BOX 1390  
AUBURN, MAINE 04211-1390  
800-274-1507

Job Name : EASTLAND PARK LOWER LEVEL  
Drawing : FP-2  
Location : PORTLAND, MAINE  
Remote Area : LOWER LEVEL  
Contract : 4818  
Data File : HFP-L1.1REV1.wx2

Final Calculations - Hazen-Williams - 2007

EASTERN FIRE PROTECTION  
EASTLAND PARK LOWER LEVEL

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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	*****
L13 to L14	100 100	5.38	30.59 30.59	1 1.049	1T	5.0 0.0	4.290 5.000	120	32.340 0.0		K = K @ LINE	
L14 to LC	100 100		103.50 134.09	1.25 1.38	1T	6.0 0.0	12.500 6.000	120	34.993 0.0		Vel = 11.36	
LC			0.0 134.09						56.387		K Factor = 17.86	
LA to LB	100 100		37.55 37.55	2.5 2.635		0.0 0.0	4.580 0.0	120	56.006 0.0		Vel = 2.21	
LB to LC	100 100		64.52 102.07	2.5 2.635		0.0 0.0	12.000 0.0	120	56.028 0.0		Vel = 6.01	
LC to LD	100 100		134.09 236.16	2.5 2.635	6I 1T	49.423 16.474	189.160 65.897	120	56.387 0.0		Vel = 13.89	
LD to ALV	100 96		0.0 236.16	6 6.065	1E 1Fsp	14.0 0.0	4.170 14.000	120	92.405 2.732		* Fixed loss = 1	
ALV to PMPO	96 94		0.0 236.16	6 6.065	3I 1T 2G 1Aty	30.0 30.0 32.0 24.0	20.000 122.000 142.000	120	95.181 0.866 0.347		Vel = 2.62	
PMPO			0.0 236.16						96.394		K Factor = 24.05	
System Demand Pressure									96.394			
Safety Margin									59.995			
Continuation Pressure									156.389			
Pressure @ Pump Outlet									156.389			
Pressure From Pump Curve									-93.498			
Pressure @ Pump Inlet									62.891			
PMPI to FLG	94 94		0.0 236.16	8 7.981	2L 1T 1G 1Zac	26.0 35.0 4.0 0.0	10.000 65.000 75.000	120	62.891 5.993 0.048		* Fixed loss = 5.993	
FLG to TEST	94 100.00		0.0 236.16	6 5.89	1G 1T	3.46 34.598	100.000 38.058	140	68.932 -2.599		Vel = 1.51	
TEST			100.00 336.16			0.0	138.058	0.0021	0.292		Vel = 2.78	
TEST									66.625		Qa = 100.00	K Factor = 41.18



# PORTLAND MAINE

*Strengthening a Remarkable City, Building a Community for Life • [www.portlandmaine.gov](http://www.portlandmaine.gov)*

Receipts Details:

**Tender Information:** Check , BusinessName: Eastern Fire pProtection Co., Inc, Check Number: 107133

**Tender Amount:** 3020.00

Receipt Header:

**Cashier Id:** gguertin

**Receipt Date:** 8/21/2012

**Receipt Number:** 47336

Receipt Details:

Referance ID:	7733	Fee Type:	BP-Constr
Receipt Number:	0	Payment Date:	
Transaction Amount:	3020.00	Charge Amount:	3020.00
Job ID: Job ID: 2012-08-4767-FAFS - fire suppression			
Additional Comments: 157 High St., Eastern fire protection			

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	8/13/12	JOB NO.	4918
ATTENTION	CODE ENFORCEMENT		
RE:	PORTLAND PARK HOTEL		

TO PORTLAND BUILDING INSPECTORS  
289 CONGRESS ST. RM. 315  
PORTLAND, MAINE 04101

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

- Shop drawings       Descriptive data       Hydraulic calculations  
 Copy of letter       Literature       \_\_\_\_\_

QUANTITY	DRAWING NO.	DATE	DESCRIPTION	STATUS
1	1 OF 9 - 9 OF 9	7/9/12	SPRINKLER SHOP DRAWINGS	G/S
1	SGT		HYDRAULIC CALCULATIONS	
1			PERMET APPLICATION	
1			PERMET CHECK	

- Status code      A. Approved      D. Corrected & resubmitted  
B. Approved as noted      E. For your files  
C. Submitted for approval      F. Refer to remarks

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

REMARKS \_\_\_\_\_  
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COPY TO \_\_\_\_\_

SIGNED [Signature] [Signature]

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