

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

Please Read  
Application And  
Notes, If Any,  
Attached

BUILDING DEPARTMENT

PERMIT

PERMIT ISSUED

Permit Number: 100990

This is to certify that BAXTER LIBRARY LP / Favre Electric AUG 17 1990

has permission to install Fire Alarm

AT 619 CONGRESS ST CR 046 D029001 City of Portland

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 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 lathed or otherwise worked-in. 24 HOURS 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. CAPT. K. [Signature]

Health Dept. \_\_\_\_\_

Appeal Board \_\_\_\_\_

Other \_\_\_\_\_

Department Name

Director - Building & Inspection Services

**PENALTY FOR REMOVING THIS CARD**

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

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

Permit No: 10-0930	Issue Date:	CBL: 046 D029001
-----------------------	-------------	---------------------

Location of Construction: 619 CONGRESS ST	Owner Name: BAXTER LIBRARY LP	Owner Address: ONE CITY CETNER 4TH FLOOR	Phone:
Business Name:	Contractor Name: Favreau Electric Inc	Contractor Address: 37 Jordan Ave Brunswick	Phone:
Lessee/Buyer's Name	Phone:	Permit Type: Fire Alarm System	Zone: B-3

Past Use: Commercial Office	Proposed Use: Commercial Office - install Fire Alarm	Permit Fee: \$280.00	Cost of Work: \$26,000.00	CEO District: 2
Proposed Project Description: install Fire Alarm		FIRE DEPT: <input checked="" type="checkbox"/> Approved <input type="checkbox"/> Denied *See Conditions	INSPECTION: Use Group: <u>V</u> Type: <u>Alarm</u> NPPA / IBC Signature: <i>[Signature]</i>	
		Signature: <i>(KG)</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: ldobson	Date Applied For: 07/30/2010	<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 information may invalidate a building permit and stop all work..</p>	<p>Special Zone or Reviews</p> <p><input type="checkbox"/> Shoreland</p> <p><input type="checkbox"/> Wetland</p> <p><input type="checkbox"/> Flood Zone</p> <p><input type="checkbox"/> Subdivision</p> <p><input type="checkbox"/> Site Plan</p> <p>Maj <input type="checkbox"/> Minor <input type="checkbox"/> M/M <input type="checkbox"/></p> <p>Date: <i>8/9/10</i></p>	<p>Zoning Appeal</p> <p><input type="checkbox"/> Variance</p> <p><input type="checkbox"/> Miscellaneous</p> <p><input type="checkbox"/> Conditional Use</p> <p><input type="checkbox"/> Interpretation</p> <p><input type="checkbox"/> Approved</p> <p><input type="checkbox"/> Denied</p> <p>Date: _____</p>	<p>Historic Preservation</p> <p><input type="checkbox"/> Not in District or Landmark</p> <p><input type="checkbox"/> Does Not Require Review</p> <p><input type="checkbox"/> Requires Review</p> <p><input type="checkbox"/> Approved</p> <p><input type="checkbox"/> Approved w/Conditions</p> <p><input type="checkbox"/> Denied</p> <p>Date: _____</p>
	<p><i>any exterior work requires a separate review &amp; approval</i></p>		

**PERMIT ISSUED**

AUG 17 2010

City of Portland

**CERTIFICATION**

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

SIGNATURE OF APPLICANT	ADDRESS	DATE	PHONE
RESPONSIBLE PERSON IN CHARGE OF WORK, TITLE		DATE	PHONE

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

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

<b>Permit No:</b> 10-0930	<b>Date Applied For:</b> 07/30/2010	<b>CBL:</b> 046 D029001
------------------------------	--	----------------------------

<b>Location of Construction:</b> 619 CONGRESS ST	<b>Owner Name:</b> BAXTER LIBRARY LP	<b>Owner Address:</b> ONE CITY CETNER 4TH FLOOR	<b>Phone:</b>
<b>Business Name:</b>	<b>Contractor Name:</b> Favreau Electric Inc	<b>Contractor Address:</b> 37 Jordan Ave Brunswick	<b>Phone:</b>
<b>Lessee/Buyer's Name</b>	<b>Phone:</b>	<b>Permit Type:</b> Fire Alarm System	

<b>Proposed Use:</b> Commercial Office - install Fire Alarm	<b>Proposed Project Description:</b> install Fire Alarm
--	--

<b>Dept:</b> Zoning	<b>Status:</b> Approved with Conditions	<b>Reviewer:</b> Marge Schmuckal	<b>Approval Date:</b> 08/09/2010
<b>Note:</b>			<b>Ok to Issue:</b> ✓
1) All conditions on the original permit are still in force.			
2) ANY exterior work requires a separate review and approval thru Historic Preservation. This property is located within an Historic District.			
<b>Dept:</b> Building	<b>Status:</b> Approved with Conditions	<b>Reviewer:</b> Tammy Munson	<b>Approval Date:</b> 08/17/2010
<b>Note:</b>			<b>Ok to Issue:</b> ✓
1) Fire Alarm systems shall be installed per Sec. 907 of the IBC 2003			
<b>Dept:</b> Fire	<b>Status:</b> Approved with Conditions	<b>Reviewer:</b> Capt Keith Gautreau	<b>Approval Date:</b> 08/11/2010
<b>Note:</b>			<b>Ok to Issue:</b> ✓
1) Fire Alarm system shall be maintained. If system is to be off line over 4 hours a fire watch shall be in place. Dispatch notification required 874-8576.			
2) Fire alarm system requires a wireless master box connection per city ordinance. Masterbox design and installation shall be as approved be City Electrical Division.			
3) The Fire alarm and Sprinkler systems shall be reviewed by a licensed contractor[s] for code compliance. Compliance letters are required.			
4) The fire alarm system shall comply with the City of Portland Standard for Signaling Systems for the Protection of Life and Property. All fire alarm installation and servicing companies shall have a Certificate of Fitness from the Fire Department.			
5) Installation of a Fire Alarm system requires a Knox Box to be installed per city crdinance			
6) Central Station monitoring for addressable fire alarm systems shall be by point.			
7) As-built documents shall be submitted in pdf to the Building Inspections Office upon completion of job.			
8) All smoke detectors and smoke alarms shall be photoelectric. Carbon Monoxide detectors are required in the dwelling units by State law.			
9) System acceptance and commissioning must be co-ordinated with alarm and suppression system contractors and the Fire Department. Call 874-8703 to schedule.			
10 All fire alarm records required by NFPA 72 should be stored in an approved cabinet located at the FACP labeled "FIRE ALARM RECORDS". Records cabinate, FACP, annunciator(s), and pull stations shall be keyed alike.			

**PERMIT ISSUED**

AUG 17 2010

## **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 Inspection 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 with construction.**

  **X**   **Final inspection required at completion of work performed by the Fire Department.**

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

**PERMIT ISSUED**

**AUG 17 2010**

RECEIVED JUL 29 2010



# Fire Alarm Permit

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

Installation address: 619 Congress Street CBL: 046 D029001

Exact location: (within structure) Entire Building

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

Building owner: Northland Enterprises, LLC One City Center Portland, ME

System Designer (point of contact): Must be Lawrence E. Bartlett, PE Bartlett Design, Bath, ME

Designer phone: 207-443-5447 E-mail: bartdes@blazenetme.net

Installing contractor: Favreau Electric Certificate of Fitness No: 1008

Contractor phone: 207-725-2005 E-mail: favelec@favreau-electric.com

This is a new application: YES  NO

This is an amendment to an existing permit: YES  NO  Permit no: \_\_\_\_\_

**The following documents shall be provided with this application:**

- Floor plans
- Wiring diagram
- Annunciator details
- Equipment data sheets
- Battery & voltage drop calculations
- Input/ Output Matrix
- Designer qualifications
- Electrical Permit Pulled (check alarm/com)

COST OF WORK: 26,000.00

PERMIT FEE: \$280.  
(\$10 PER \$1,000 + \$30 FOR THE FIRST \$1,000)

## RECEIVED

JUL 30 2010

Dept. of Building Inspections  
City of Portland Maine

The designer shall be the responsible party for this application. Download a new copy of this application at [www.portlandmaine.gov/fire](http://www.portlandmaine.gov/fire) for every submittal. Submit all plans in electronic PDF in addition to full sized plans to the **Building Inspections Department, 389 Congress Street, Room 315, Portland, Maine 04101.**

Prior to acceptance of any fire alarm 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 the *City of Portland Technical Standard for Signaling Systems for the Protection of Life and Property*, available at [www.portlandmaine.gov/fire](http://www.portlandmaine.gov/fire).

Applicant signature: Lawrence E. Bartlett Date: July 29, 2010



**CITY OF PORTLAND, MAINE**  
 Department of Building Inspections

**Original Receipt**

July 30 2010

Received from FAVREAU Electric

Location of Work Col 9 Congress

Cost of Construction \$ 26,000 <sup>Fire Alarm</sup> Building Fee: \_\_\_\_\_

Permit Fee \$ \_\_\_\_\_ Site Fee: \_\_\_\_\_

Certificate of Occupancy Fee: \_\_\_\_\_

Totals: \$280.

Building (IL) \_\_\_\_\_ Plumbing (IS) \_\_\_\_\_ Electrical (I2) \_\_\_\_\_ Sho Plan (U2) \_\_\_\_\_

Other Fire Alarm

CBL: 046 D029

Check #: 4928 Total Collected \$ 280.00

**No work is to be started until permit issued.  
 Please keep original receipt for your records.**

Taken by: S.M.H.

WHITE - Applicant's Copy  
 YELLOW - Office Copy  
 PINK - Permit Copy



RECEIVED JUL 29 2010

**Bartlett Design**  
**LIGHTING & ELECTRICAL ENGINEERING**  
942 WASHINGTON STREET BATH, MAINE 04530  
TEL (207) 443-5447 FAX (207) 443-5560  
e-mail: bartdes@blazenetme.net

## DESIGNER QUALIFICATIONS

### LAWRENCE E. BARTLETT, PE

**Registrations:** Professional Engineer Maine, New Hampshire  
Licensed Architect Maine

**Memberships:** Illuminating Engineering Society of North America  
Section President 1996-98  
International Association of Lighting Designers  
Corporate Member  
National Fire Protection Association  
National Trust for Historic Preservation  
Northeast Sustainable Energy Association

### Work

<b>Experience:</b>	1996-	<b><i>Bartlett Design, Inc.</i></b> Lighting and Electrical Engineering Bath, ME
	1986-1996	<b><i>Enterprise Engineering, Inc.</i></b> Yarmouth, ME
	1984-1986	<b><i>Wright-Pierce</i></b> Architects and Engineers Topsham, ME
	1979-1984	<b><i>Ewing Cole Cherry Parsky</i></b> Architects and Engineers Philadelphia, PA
	1976-1979	<b><i>Gulf South Engineers</i></b> New Orleans, LA

Lawrence E. Bartlett established the firm of *Bartlett Design, Inc.* in 1996 and serves as principal owner. He has over 30 years of experience in the design of electrical systems for a wide range of building types, including commercial, institutional, governmental and industrial project applications. *Bartlett Design, Inc.* offers electrical design for service/metering, power distribution, branch circuit wiring, communications systems, fire alarm systems, security systems, and data network systems.



**Bartlett Design**  
**LIGHTING & ELECTRICAL ENGINEERING**  
942 WASHINGTON STREET BATH, MAINE 04530  
TEL (207) 443-5447 FAX (207) 443-5560  
e-mail: bartdes@blazenetme.net

## **FIRE ALARM DESIGN PROJECTS**

Lawrence Bartlett has provided fire alarm systems engineering designs for the following projects since the year 2000:

**Maine State House**  
Augusta, Maine

**East End School**  
Portland, Maine

**University of Maine Oak Hall**  
Orono, Maine

**Community School**  
North Haven, Maine

**EnvisionNet Office Building**  
Orono, Maine

**Municipal Building**  
Damariscotta, Maine

**Bayside Housing**  
Portland, Maine

**Elementary School**  
Paris, Maine

**MSAD #48 Middle Schools**  
Penobscot and Somerset, Maine

**Maine State Housing Authority offices**  
Augusta, Maine

**Piper Shores Retirement Community**  
Scarborough, Maine

**Lake Street School**  
Auburn, Maine

**Home for Aged Women**  
Auburn, Maine

**Youth Alternatives Headquarters**  
South Portland, Maine

**Messalonskee Middle School**  
Oakland, Maine

**Elementary School**  
Dover-Foxcroft, Maine

**Elementary School**  
Cushing, Maine

**Brick Hill Multi-Family Housing**  
South Portland, Maine

**Middle School**  
Bucksport, Maine

**Saco Biddeford Savings Operations center**  
Saco, Maine

**Lincoln Academy Dining Facility**  
Newcastle, Maine

**Ocean Gateway Marine Terminal**  
Portland, Maine

**Auburn Public Library**  
Auburn, Maine

**Pearl Place Multi-Family Housing**  
Portland, Maine

**River Valley Technical Center**  
Rumford, Maine

**Saco Biddeford Savings Branch Bank**  
Westbrook, Maine

**Casco Terrace**  
Portland, Maine

**College of the Atlantic Student Housing**  
Bar Harbor, Maine

**Bartlett Design**  
**LIGHTING & ELECTRICAL ENGINEERING**  
942 WASHINGTON STREET BATH, MAINE 04530  
TEL (207) 443-5447 FAX (207) 443-5560  
e-mail: bartdes@blazenetme.net

## **FIRE ALARM DESIGN PROJECTS**

**Stop'n Shop Store**  
Kennebunk, Maine

**Pre-K to 8 School**  
Dexter, Maine

**Woolwich Community School**  
Woolwich, Maine

**Bangor Museum and Center for History**  
Bangor, Maine

**State Cultural Building**  
Augusta, Maine

**Saco Biddeford Savings Branch Bank**  
Scarborough, Maine

**Foxcroft Academy Residence Hall**  
Dover-Foxcroft, Maine

**Train Station**  
Saco, Maine

**53 Danforth Multi-Family Housing**  
Portland, Maine

**Mill at Saco Falls Multi-Family Housing**  
Biddeford, Maine

**Bates College Hedge and Roger Williams Halls**  
Lewiston, Maine

**Birch Hill Apartments**  
Lewiston, Maine

**Kents Hill Academy Alford Hall**  
Kents Hill, Maine

**Carrabassett Valley Library**  
Carrabassett, Maine

**Medical Office Building**  
Unity, Maine

**Power Pay offices**  
Portland, Maine

**St. Patrick's Multi-Family Housing**  
Portland, Maine

**Mallett Elementary School**  
Farmington, Maine

**Gilman Place Multi-Family Housing**  
Waterville, Maine

**Mercy South Clinic**  
Gorham, Maine

**Augusta Armory**  
Augusta, Maine

**Norway Savings Branch Bank**  
Saco, Maine

**Ski Lodge**  
Camden, Maine

**81 Ash Street Multi-Family Housing**  
Lewiston, Maine

# THE BAXTER LIBRARY – PORTLAND, MAINE

## SECTION 16721 - FIRE ALARM AND SMOKE DETECTION SYSTEM

### PART 1 GENERAL

#### 1.1 SECTION INCLUDES

- A. This section of the specification includes the furnishing, installation, connection and testing of the microprocessor controlled, intelligent reporting fire alarm equipment required to form a complete, operative, coordinated system. It shall include, but not be limited to, alarm initiating devices, alarm notification appliances, Fire Alarm Control Panel (FACP), auxiliary control devices, and wiring as shown on the drawings and specified herein.

#### 1.2 REFERENCES

- A. Underwriters Laboratories Inc. (UL) - USA:
  - 1. No. 38 Manually Actuated Signaling Boxes
  - 2. No. 50 Cabinets and Boxes
  - 3. No. 864 Control Units for Fire Protective Signaling Systems
  - 4. No. 268 Smoke Detectors for Fire Protective Signaling Systems
  - 5. No. 268A Smoke Detectors for Duct Applications
  - 6. No. 346 Waterflow Indicators for Fire Protective Signaling Systems
  - 7. No. 464 Audible Signaling Appliances
  - 8. No. 521 Heat Detectors for Fire Protective Signaling Systems
  - 9. No. 1971 Visual Notification Appliances
- B. National Fire Protection Association (NFPA) - USA:
  - 1. No. 13 Sprinkler Systems
  - 2. No. 70 National Electric Code (NEC)
  - 3. No. 72 National Fire Alarm Code
  - 4. No. 101 Life Safety Code

#### 1.3 REGULATORY REQUIREMENTS

- A. The fire alarm system shall comply with requirements of NFPA Standard No. 72 for Local Protected Premises Signaling Systems except as modified and supplemented by this specification. The system field wiring shall be supervised either electrically or by software-directed polling of field devices.
- B. The fire alarm system shall comply with requirements of NFPA Standard No. 72 for Auxiliary Protected Premises Signaling Systems except as modified and supplemented by this specification. The system field wiring shall be supervised either electrically or by software-directed polling of field devices.
- C. The fire alarm system shall be manufactured by an ISO 9001 certified company and meet the requirements of BS EN9001: ANSI/ASQC Q9001-1994.

**THE BAXTER LIBRARY – PORTLAND, MAINE**

- D. The system shall have proper listing and/or approval from the following nationally recognized agencies:
  - 1. UL Underwriters Laboratories Inc
  - 2. ULC Underwriters Laboratories Canada
  - 3. FM Factory Mutual
  - 4. MEA Material Equipment Acceptance (NYC)
  - 5. CSFM California State Fire Marshal
  
- E. The FACP and peripheral devices shall be manufactured 100% by a single U.S. manufacturer (or division thereof).
  
- F. The system shall conform to all applicable building codes.
  - 1. Local and State Building Codes.
  - 2. State Elevator Code

**1.4 SYSTEM DESCRIPTION**

- A. Basic Performance:
  - 1. Alarm, trouble and supervisory signals from all intelligent reporting devices shall be encoded on NFPA Style 4 (Class B), Style 6 (Class A) or Style 7 (Class A) Signaling Line Circuits (SLC).
  - 2. Initiation Device Circuits (IDC) shall be wired Class B (NFPA Style B) or Class A (NFPA Style D) as part of an addressable device connected by the SLC Circuit.
  - 3. Notification Appliance Circuits (NAC) shall be wired Class B (NFPA Style Y) or Class A (NFPA Style Z) as part of an addressable device connected by the SLC Circuit.
  - 4. All circuits shall be power-limited, per UL864 9<sup>th</sup> edition requirements.
  - 5. A single ground fault or open circuit on the system Signaling Line Circuit shall not cause system malfunction, loss of operating power or the ability to report an alarm when wire NFPA Style 6/7.
  - 6. Alarm signals arriving at the main FACP shall not be lost following a primary power failure or outage of any kind until the alarm signal is processed and recorded.

**1.5 BASIC SYSTEM FUNCTIONAL OPERATION**

- A. The Secondary Power Source of the fire alarm control panel will be capable of providing at least 24 hours of backup power with the ability to sustain 5 minutes in alarm at the end of the backup period.
  
- B. When a fire alarm condition is detected and reported by one of the system initiating devices, the following functions shall immediately occur:
  - 1. The system Alarm LED on the FACP shall flash.
  - 2. A local sounder with the control panel shall sound.
  - 3. A backlit 80-character LCD display on the FACP shall indicate all information associated with the fire alarm condition, including the type of alarm point and its location within the protected premises.

## THE BAXTER LIBRARY – PORTLAND, MAINE

4. In response to a fire alarm condition, the system will process all control programming and activate all system outputs (alarm notification appliances and/or relays) associated with the point(s) in alarm.

### C. Elevator Interface:

1. Interlock alarm system heat detectors at the top and bottom of elevator shaft, and in the Elevator Machine Room with the elevator power service shunt trips such that an alarm condition at any of these detectors shall automatically disable the associated elevator electrical service feeder. Provide an interlock between the fire alarm system smoke detectors at the Elevator Lobbies on each floor, and the smoke detector in the Elevator Machine Room, such that:
  - a. An alarm activation by either the detector at the second or third floor Lobbies, or at the detector in the Elevator Machine Room, shall automatically send the elevator to the first floor Lobby.
  - b. An alarm condition activated by the first floor Lobby smoke detector shall automatically send the elevator car to the second floor.

## 1.6 SUBMITTALS

### A. General:

1. Submit shop drawings under provisions of Division 1 and Section 16010.
2. All references to manufacturer's model numbers and other pertinent information herein is intended to establish minimum standards of performance, function and quality. Equivalent compatible UL-listed equipment from other manufacturers may be substituted for the specified equipment as long as the minimum standards are met.
3. For equipment other than that specified, the contractor shall supply proof that such substitute equipment equals or exceeds the features, functions, performance, and quality of the specified equipment.

### B. Shop Drawings:

1. Sufficient information, clearly presented, shall be included to determine compliance with drawings and specifications.
2. Include manufacturer's name(s), model numbers, ratings, power requirements, equipment layout, device arrangement, complete wiring point-to-point diagrams, and conduit layouts.
3. Show annunciator layout, configurations, and terminations.

### C. Manuals:

1. Submit simultaneously with the shop drawings, complete operating and maintenance manuals listing the manufacturer's name(s), including technical data sheets.
2. Wiring diagrams shall indicate internal wiring for each device and the interconnections between the items of equipment.
3. Provide a clear and concise description of operation that gives, in detail, the information required to properly operate the equipment and system.

### D. Software Modifications

## THE BAXTER LIBRARY – PORTLAND, MAINE

1. Provide the services of a qualified technician to perform all system software modifications, upgrades or changes. Response time of the technician to the site shall not exceed 4 hours.
2. Provide all hardware, software, programming tools and documentation necessary to modify the fire alarm system on site. Modification includes addition and deletion of devices, circuits, zones and changes to system operation and custom label changes for devices or zones. The system structure and software shall place no limit on the type or extent of software modifications on-site. Modification of software shall not require power-down of the system or loss of system fire protection while modifications are being made.

### 1.7 GUARANTY

- A. All work performed and all material and equipment furnished under this contract shall be free from defects and shall remain so for a period of at least one (1) year from the date of acceptance. The full cost of maintenance, labor and materials required to correct any defect during this one year period shall be included in the submittal bid.

### 1.8 MAINTENANCE

- A. Maintenance and testing shall be on a semi-annual schedule or as required by the local AHJ. A preventive maintenance schedule shall be provided by the contractor describing the protocol for preventive maintenance. The schedule shall include:
  1. Systematic examination, adjustment and cleaning of all detectors, manual fire alarm stations, control panels, power supplies, relays, waterflow switches and all accessories of the fire alarm system.
  2. Each circuit in the fire alarm system shall be tested semiannually.
  3. Each smoke detector shall be tested in accordance with the requirements of NFPA 72 (2002 Edition) Chapter 10.
- B. As part of the bid/proposal, include a quote for a maintenance contract to provide all maintenance, tests, and repairs described below. Include also a quote for unscheduled maintenance/repairs, including hourly rates for technicians trained on this equipment, and response travel costs for each year of the maintenance period. Submittals that do not identify all post contract maintenance costs will not be accepted. Rates and costs shall be valid for the period of five (5) years after expiration of the guaranty.

### 1.9 POST CONTRACT EXPANSIONS

- A. The contractor shall have the ability to provide parts and labor to expand the system specified, if so requested, for a period of five (5) years from the date of acceptance.
- B. As part of the submittal, include a quotation for all parts and material, and all installation and test labor as needed to increase the number of intelligent or addressable devices by ten percent (10%). This quotation shall include intelligent smoke detectors, intelligent heat detectors, addressable manual stations, addressable monitor modules, and addressable control modules

## THE BAXTER LIBRARY – PORTLAND, MAINE

equal in number to one tenth of the number required to meet this specification (list actual quantity of each type).

- C. The quotation shall include installation, test labor, and labor to reprogram the system for this 10% expansion. If additional FACP hardware is required, include the material and labor necessary to install this hardware.
- D. Do not include cost of conduit or wire or the cost to install conduit or wire except for labor to make final connections at the FACP and at each intelligent addressable device. Do not include the cost of conventional peripherals or the cost of initiating devices or notification appliances connected to the addressable monitor/control modules.
- E. Submittals that do not include this estimate of post contract expansion cost will not be accepted.

## PART 2 PRODUCTS

### 2.3 EQUIPMENT AND MATERIAL, GENERAL

- D. All equipment and components shall be new, and the manufacturer's current model. The materials, appliances, equipment and devices shall be tested and listed by a nationally recognized approvals agency for use as part of a fire protective signaling system, meeting the National Fire Alarm Code.
- E. All equipment and components shall be installed in strict compliance with manufacturers' recommendations. Consult the manufacturer's installation manuals for all wiring diagrams, schematics, physical equipment sizes, etc., before beginning system installation.
- F. All equipment shall be attached to walls and ceiling/floor assemblies and shall be held firmly in place (e.g., detectors shall not be supported solely by suspended ceilings). Fasteners and supports shall be adequate to support the required load.

### 2.4 WIRE

- D. Wire:
  - 1. All fire alarm system wiring shall be new.
  - 2. Wiring shall be in accordance with local, state and national codes (e.g., NEC Article 760) and as recommended by the manufacturer of the fire alarm system. Number and size of conductors shall be as recommended by the fire alarm system manufacturer, but not less than 18 AWG (1.02 mm) for Initiating Device Circuits and Signaling Line Circuits, and 14 AWG (1.63 mm) for Notification Appliance Circuits.
  - 3. All wire and cable shall be listed and/or approved by a recognized testing agency for use with a protective signaling system.
  - 4. Wire and cable shall have a fire resistance rating suitable for the installation as indicated in NEC 760 (e.g., FPLR).

## THE BAXTER LIBRARY – PORTLAND, MAINE

5. Wiring used for the multiplex communication circuit (SLC) shall be twisted and support a minimum wiring distance of 10,000 feet. The design of the system shall permit use of IDC and NAC wiring in the same conduit with the SLC communication circuit. Shielded wire shall not be required.
6. All field wiring shall be electrically supervised for open circuit and ground fault.
7. The fire alarm control panel shall be capable of T-tapping Class B (NFPA Style 4) Signaling Line Circuits (SLCs). Systems which do not allow or have restrictions in, for example, the amount of T-taps, length of T-taps etc., are not acceptable.

### E. Terminal Boxes, Junction Boxes and Cabinets:

1. All boxes and cabinets shall be UL listed for their use and purpose.
2. The fire alarm control panel shall be connected to a separate dedicated branch circuit, maximum 20 amperes. This circuit shall be labeled at the main power distribution panel as FIRE ALARM. Fire alarm control panel primary power wiring shall be 12 AWG. The control panel cabinet shall be grounded securely to either a cold water pipe or grounding rod. The control panel enclosure shall feature a quick removal chassis to facilitate rapid replacement of the FACP electronics.
3. The FACP shall be capable of coding Notification Appliance Circuits in March Time Code (120 PPM), Temporal (NFPA 72 A-2-2.2.2), and California Code. Main panel notification circuits (NACs 1 & 2) shall also automatically synchronize any of the following manufacturer's notification appliances connected to them: System Sensor, Wheelock, or Gentex with no need for additional synchronization modules.

## 2.5 MAIN FIRE ALARM CONTROL PANEL

### D. Manufacturers:

1. *Notifier* NFW-S0 (Fire Warden-S0)
2. Substitutions: Or Approved Equal.

### E. The FACP shall contain a microprocessor-based Central Processing Unit (CPU). The CPU shall communicate with and control the following types of equipment used to make up the system: intelligent addressable smoke and thermal (heat) detectors, addressable modules, printer, annunciators, and other system controlled devices.

### F. Operator Control

1. Acknowledge Switch:
  - a. Activation of the control panel Acknowledge switch in response to new alarms and/or troubles shall silence the local panel piezo electric signal and change the alarm and trouble LEDs from flashing mode to steady-ON mode. If multiple alarm or trouble conditions exist, depression of this switch shall advance the 80-character LCD display to the next alarm or trouble condition.
  - b. Depression of the Acknowledge switch shall also silence all remote annunciator piezo sounders.
2. Alarm Silence Switch:
  - a. Activation of the alarm silence switch shall cause all programmed alarm notification appliances and relays to return to the normal condition after an alarm condition.



The selection of notification circuits and relays that are silenceable by this switch shall be fully field programmable within the confines of all applicable standards. The FACP software shall include silence inhibit and auto-silence timers.

3. Alarm Activate (Drill) Switch:
    - a. The Alarm Activate switch shall activate all notification appliance circuits. The drill function shall latch until the panel is silenced or reset.
  4. System Reset Switch:
    - a. Activation of the System Reset switch shall cause all electronically-latched initiating devices, appliances or software zones, as well as all associated output devices and circuits, to return to their normal condition.
  5. Lamp Test:
    - a. The Lamp Test switch shall activate all system LEDs and light each segment of the liquid crystal display.
- G. System Capacity and General Operation
1. The control panel shall provide, or be capable of, expansion to 50 intelligent/addressable devices.
  2. The control panel shall include two Form-C programmable relays which can be used for Alarm, Supervisory, and a fixed Trouble relay rated at a minimum of 2.0 amps @ 30 VDC and 0.5 amps @ 30 VAC . It shall also include two programmable Notification Appliance Circuits (NACs) capable of being wired as Class B (NFPA Style Y) or Class A (NFPA Style Z).
  3. The fire alarm control panel shall include an operator interface control and annunciation panel that shall include a backlit Liquid Crystal Display (LCD), individual color-coded system status LEDs, and an alphanumeric keypad for the field programming and control of the fire alarm system.
  4. All programming or editing of the existing program in the system shall be achieved without special equipment and without interrupting the alarm monitoring functions of the fire alarm control panel. The system shall be fully programmable, configurable, and expandable in the field without the need for special tools, PROM programmers or PC based programmers. It shall not require replacement of memory ICs to facilitate programming changes. The control unit will support the ability to upgrade its operating program using FLASH memory technology. The unit shall provide the user with the ability to program from either the included keypad, a standard PS2-style PC keyboard or from a computer running upload/download software.
  5. The system shall allow the programming of any input to activate any output or group of outputs. Systems which have limited programming (such as general alarm), have complicated programming (such as a diode matrix), or REQUIRE a laptop personal computer are not considered suitable substitutes.
  6. The FACP shall provide the following features:
    - a. Drift compensation to extend detector accuracy over life. Drift compensation shall also include a smoothing feature, allowing transient noise signals to be filtered out.
    - b. Detector sensitivity test, meeting requirements of NFPA 72, Maintenance alert, with two levels (maintenance alert/maintenance urgent), to warn of excessive smoke detector dirt or dust accumulation.
    - c. The ability to display or print system reports.
    - d. Alarm Verification.

## THE BAXTER LIBRARY – PORTLAND, MAINE

- e. Positive Alarm Sequence (PAS pre-signal), meeting NFPA 72 (2002 Edition) 6.8.1.3 requirements.
  - f. Rapid manual station reporting.
  - g. Non-alarm points for general (non-fire) control.
  - h. Periodic detector test, conducted automatically by the software.
  - i. Walk test, with a check for two detectors set to same address.
7. The FACP shall be capable of coding Notification Appliance Circuits in March Time Code (120 PPM), Temporal (NFPA 72 A-2-2.2.2), and California Code. Main panel notification circuits (NACs 1 & 2) shall also automatically synchronize and be programmable for any of the following manufacturer's notification appliances connected to them: System Sensor, Wheelock or Gentex with no need for additional synchronization modules.
- H. Central Microprocessor
1. The microprocessor shall be a state-of-the-art, high speed, 16-bit RISC device and it shall communicate with, monitor and control all external interfaces. It shall include an EPROM for system program storage, non-volatile memory for building-specific program storage, and a "watch dog" timer circuit to detect and report microprocessor failure.
  2. The microprocessor shall contain and execute all specific actions to be taken in the condition of an alarm. Control programming shall be held in non-volatile programmable memory, and shall not be lost even if system primary and secondary power failure occurs.
  3. The microprocessor shall also provide a real-time clock for time annotation of system displays, printer, and history file.
  4. A special program check function shall be provided to detect common operator errors.
  5. An auto-programming capability (self-learn) shall be provided to quickly identify devices connected on the SLC and make the system operational.
  6. For flexibility and to ensure program validity, an optional Windows(TM) based program utility shall be available. This program shall be used to off-line program the system with batch upload/download. This program shall also have a verification utility which scans the program files, identifying possible errors. It shall also have the ability to compare old program files to new ones, identifying differences in the two files to allow complete testing of any system operating changes. This shall be in compliance with the NFPA 72 requirements for testing after system modification.
- I. Local Keyboard Interface
1. In addition to an integral keypad, the fire alarm control panel will accept a standard PS2-style keyboard for programming, testing, and control of the system. The keyboard will be able to execute the system functions ACKNOWLEDGE, SIGNALS SILENCED, DRILL and RESET.
- J. Display
1. The display shall provide all the controls and indicators used by the system operator and may also be used to program all system operational parameters.
  2. The display shall include status information and custom alphanumeric labels for all intelligent detectors, addressable modules, internal panel circuits, and software zones.
  3. The display shall contain an alphanumeric, text-type display and dedicated LEDs for the annunciation of AC POWER, FIRE ALARM, SUPERVISORY, TROUBLE, and ALARM SILENCED conditions.

## THE BAXTER LIBRARY – PORTLAND, MAINE

4. The display keypad shall be part of the standard system and have the capability to command all system functions, entry of any alphabetic or numeric information, and field programming. Two different password levels shall be provided to prevent unauthorized system control or programming.
  5. The display shall include the following operator control switches: ACKNOWLEDGE/STEP, ALARM SILENCE, DRILL (alarm activate), and SYSTEM RESET.
- K. Signaling Line Circuit (SLC)
1. The SLC interface shall provide power to and communicate with up to 50 devices of any type including: intelligent detectors (ionization, photoelectric or thermal), addressable pull stations, intelligent modules (monitor or control). Each SLC shall be capable of NFPA 72 Style 4, Style 6, or Style 7 (Class A or B) wiring.
  2. The CPU shall receive information from all intelligent detectors to be processed to determine whether normal, alarm or trouble conditions exist for each detector. The software shall automatically compensate for the accumulation of dust in each detector up to allowable limits. The information shall also be used for automatic detector testing and for the determination of detector maintenance conditions.
  3. The detector software shall meet NFPA 72 (2002 Edition), Chapter 10 requirements and be certified by UL as a calibrated sensitivity test instrument.
- L. Serial Interfaces
1. The system shall provide a means of interfacing to UL Listed Electronic Data Processing (EDP) peripherals using the EIA-232 communications standard.
  2. An annunciator RS-485 (ANN-Bus) bus shall be used to connect an UL-Listed 80-column printer anywhere within the 6,000 range of the serial bus connection. The printer shall communicate with the control panel using an RS-485 converter/interface complying with Electrical Industries Association standard EIA-232D. Power to the printer shall be 120 VAC @ 60 Hz. The interface shall contain both a 9-pin serial and standard centronics parallel connector. Either shall be capable of connection to a serial or parallel printer.
  3. The annunciator RS-485 (ANN-Bus) bus shall also provide connection to additional addressable modules supporting remote 80 character LCD text annunciators that mimic the standard panel display and controls. Said annunciators shall support remote acknowledge, silence, drill and reset functions and shall be enabled via a keyswitch. The bus shall also provide connection to addressable modules supporting up to 40 LEDs for use with a graphic annunciator.
- M. The control panel will have the capability of to a Municipal Box for compliance with applicable NFPA standards.
- N. Digital Alarm Communicator Transmitter (DACT). The DACT is an interface for communicating digital information between a fire alarm control panel and a UL-Listed central station.
1. The DACT shall be an integral component of the fire alarm control panel requiring no interconnecting wiring or supervisory circuitry.
  2. The DACT shall include connections for dual telephone lines (with voltage detect), per UL/NFPA/FCC requirements. It shall include the ability for split reporting of panel events up to two different telephone numbers.

## THE BAXTER LIBRARY – PORTLAND, MAINE

3. The DACT shall be completely field programmable locally from the control panel keypad or remotely over a phone line using upload/download PC software.
4. The DACT shall be capable of transmitting events in at least 15 different formats. This ensures compatibility with existing and future transmission formats.
5. Communication shall include vital system status such as:
  - a. Independent Zone (Alarm, trouble, non-alarm, supervisory)
  - b. Independent Addressable Device Status
  - c. AC (Mains) Power Loss
  - d. Low Battery and Earth Fault
  - e. System Off Normal
  - f. 12 and 24-Hour Test Signal
  - g. Abnormal Test Signal (per UL requirements)
  - h. EIA-485 Communications Failure
  - i. Phone Line Failure
6. The DACT shall support independent zone/point reporting when used in the Contact ID format. In this format, the DACT shall support the transmission of up to 50 addressable points with the system. This enables the central station to have exact details concerning the location of the fire for emergency response.

### O. Enclosures:

1. The control panel shall be housed in a UL-listed cabinet suitable for surface or semi-flush mounting. The cabinet and front shall be corrosion protected, given a rust-resistant prime coat, and manufacturer's standard finish.
2. The back box and door shall be constructed of steel with provisions for electrical conduit connections into the sides and top.
3. The door shall provide a key lock and shall provide for the viewing of all indicators.
4. The cabinet shall accept a chassis containing the PCB and to assist in quick replacement of all the electronics including power supply shall require no more than two bolts to secure the panel to the enclosure back box.
5. The cabinet shall also support a mechanical secured optional dress panel limiting access to the internals of the panel.
6. One EIA-232 interface shall be used to connect an UL-Listed 80-column printer. The printer shall communicate with the control panel using an interface complying with Electrical Industries Association standard EIA-232D. Power to the printer shall be 120 VAC @ 60 Hz.

### P. Field Charging Power Supply: The FCPS is a device designed for use as either a remote 24-volt power supply or as a booster for powering Notification Appliances.

1. The FCPS shall offer up to 8.0 amps (6.0 amps continuous) of regulated 24-volt power. It shall include an integral charger designed to charge 18.0 amp hour batteries.
2. The Field Charging Power Supply shall have two input triggers. The input trigger shall be a Notification Appliance Circuit (from the fire alarm control panel) or a control relay. Four NAC outputs, wired NFPA Style Y or Z, shall be available for connection to the Notification devices.
3. The FCPS shall optionally provide synchronization of all connected strobes or horn strobe combinations when System Sensor, Wheelock, or Gentex devices are installed.
4. The FCPS shall function as a sync follower as well as a sync generator.

5. The FCPS shall include a surface mount backbox.
6. The Field Charging Power Supply shall include the ability to delay the reporting of an AC fail condition per NFPA requirements.
7. The FCPS shall provide 24 VDC regulated and power-limited circuitry per UL 864 9<sup>th</sup> edition standards.

**Q. Power Supply:**

1. The main power supply for the fire alarm control panel shall provide 3.7 amps of available power for the control panel and peripheral devices.
2. Provisions will be made to allow the audio-visual power to be increased as required by adding modular expansion audio-visual power supplies.
3. Positive-Temperature-Coefficient (PTC) thermistors, circuit breakers, or other over-current protection shall be provided on all power outputs. The power supply shall provide an integral battery charger or may be used with an external battery and charger systems. Battery arrangement may be configured in the field.
4. The main power supply shall continuously monitor all field wires for earth ground conditions.
5. The main power supply shall operate on 120 VAC, 60 Hz, and shall provide all necessary power for the FACP.

**R. Wall Combination Speaker/Strobes:**

1. Operating voltage: 24 VDC.
2. Strobe Intensity: Selectable 15, 17/75, 30, 70, 110 candela.
3. Speakers:
  - a. 25 or 70.7 volt with four selectable power taps.
  - b. Frequency Range: 400-4000 Hz.
  - c. The back of each speaker shall be sealed to protect the speaker cone from damage and dust.
4. Mounting: Flush.

**S. Wall Visual Only Devices:** Shall meet the requirements of Section B listed above for visibility.

**T. Waterflow Indicator:**

1. Waterflow Switches shall be an integral, mechanical, non-coded, non-accumulative retard type.
2. Waterflow Switches shall have an alarm transmission delay time which is conveniently adjustable from 0 to 60 seconds. Initial settings shall be 30-45 seconds.
3. All waterflow switches shall come from a single manufacturer and series.
4. Waterflow switches shall be provided and connected under this section but installed by the mechanical contractor.
5. Where possible, locate waterflow switches a minimum of one (1) foot from a fitting which changes the direction of the flow and a minimum of three (3) feet from a valve.

**U. Sprinkler and Standpipe Valve Supervisory Switches:**

1. Each sprinkler system water supply control valve riser, zone control valve, and standpipe system riser control valve shall be equipped with a supervisory switch. Standpipe hose valves, and test and drain valves shall not be equipped with supervisory switches.

## THE BAXTER LIBRARY – PORTLAND, MAINE

2. PIV (post indicator valve) or main gate valves shall be equipped with a supervisory switch.
3. The switch shall be mounted so as not to interfere with the normal operation of the valve and adjusted to operate within two revolutions toward the closed position of the valve control, or when the stem has moved no more than one-fifth of the distance from its normal position.
4. The supervisory switch shall be contained in a weatherproof aluminum housing, which shall provide a 3/4-inch (19 mm) conduit entrance and incorporate the necessary facilities for attachment to the valves.
5. The switch housing shall be finished in red baked enamel.
6. The entire installed assembly shall be tamper proof and arranged to cause a switch operation if the housing cover is removed, or if the unit is removed from its mounting.
7. Valve supervisory switches shall be provided and connected under this section and installed by mechanical contractor.

### V. Specific System Operations

1. Alarm Verification: Each of the intelligent addressable smoke detectors in the system may be independently programmed for verification of alarm signals. The alarm verification time period shall not exceed 2 minutes.
2. Point Disable: Any addressable device or conventional circuit in the system may be enabled or disabled through the system keypad.
3. Point Read: The system shall be able to display the following point status diagnostic functions:
  - a. Device status
  - b. Device type
  - c. Custom device label
  - d. Device zone assignments
4. System Status Reports: Upon command from an operator of the system, a status report will be generated and printed, listing all system status.
5. System History Recording and Reporting: The fire alarm control panel shall contain a history buffer that will be capable of storing up to 500 events. Each of these activations will be stored and time and date stamped with the actual time of the activation. The contents of the history buffer may be manually reviewed, one event at a time, or printed in its entirety.
  - a. The history buffer shall use non-volatile memory. Systems that use volatile memory for history storage are not acceptable substitutes.
6. Automatic Detector Maintenance Alert: The fire alarm control panel shall automatically interrogate each intelligent detector and shall analyze the detector responses over a period of time. If any intelligent detector in the system responds with a reading that is above or below normal limits, then the system will enter the trouble mode, and the particular detector will be annunciated on the system display. This feature shall in no way inhibit the receipt of alarm conditions in the system, nor shall it require any special hardware, special tools or computer expertise to perform.
7. The fire alarm control panel shall include Silent and Audible Walk Test functions - Silent and Audible. It shall include the ability to test initiating device circuits and Notification Appliance Circuits from the field without returning to the panel to reset the system. The operation shall be as follows:

## THE BAXTER LIBRARY – PORTLAND, MAINE

- a. The Silent Walk Test will not sound NACs but will store the Walk Test information in History for later viewing.
  - b. Alarming an initiating device shall activate programmed outputs, which are selected to participate in Walk Test.
  - c. Introducing a trouble into the initiating device shall activate the programmed outputs.
  - d. Walk Test shall be selectable on a per device/circuit basis. All devices and circuits which are not selected for Walk Test shall continue to provide fire protection and if an alarm is detected, will exit Walk Test and activate all programmed alarm functions.
  - e. All devices tested in walk test shall be recorded in the history buffer.
8. Waterflow Operation
- a. An alarm from a waterflow detection device shall activate the appropriate alarm message on the control panel display; turn on all programmed Notification Appliance Circuits and shall not be affected by the Signal Silence switch.
9. Supervisory Operation
- a. An alarm from a supervisory device shall cause the appropriate indication on the control panel display, light a common supervisory LED, but will not cause the system to enter the trouble mode.
10. Signal Silence Operation
- a. The FACP shall have the ability to program each output circuit (notification circuit or relay) to deactivate upon depression of the Signal Silence switch.
11. Non-Alarm Input Operation
- a. Any addressable initiating device in the system may be used as a non-alarm input to monitor normally open contact type devices. Non-alarm functions are a lower priority than fire alarm initiating devices.

### 2.6 SYSTEM COMPONENTS:

#### D. Addressable Pull Box (manual station)

1. Addressable pull boxes shall, on command from the control panel, send data to the panel representing the state of the manual switch and the addressable communication module status. They shall use a key operated test-reset lock, and shall be designed so that after actual emergency operation, they cannot be restored to normal use except by the use of a key.
2. All operated stations shall have a positive, visual indication of operation and utilize a key type reset.
3. Manual stations shall be constructed of Lexan with clearly visible operating instructions provided on the cover. The word FIRE shall appear on the front of the stations in raised letters, 1.75 inches (44 mm) or larger.

#### E. Intelligent Photoelectric Smoke Detector

1. The detectors shall use the photoelectric (light-scattering) principal to measure smoke density and shall, on command from the control panel, send data to the panel representing the analog level of smoke density.
2. The detectors shall be ceiling-mounted and available in an alternate model with an integral fixed 135-degree heat-sensing element.

## THE BAXTER LIBRARY – PORTLAND, MAINE

3. Each detector shall contain a remote LED output and a built-in test switch.
  4. Detector shall be provided on a twist-lock base.
  5. It shall be possible to perform a calibrated sensitivity and performance test on the detector without the need for the generation of smoke. The test method shall test all detector circuits.
  6. A visual indication of an alarm shall be provided by dual latching Light Emitting Diodes (LEDs), on the detector, which may be seen from ground level over 360 degrees. These LEDs shall periodically flash to indicate that the detector is in communication with the control panel.
  7. The detector shall not go into alarm when exposed to air velocities of up to 1500 feet per minute (fpm).
  8. The detector screen and cover assembly shall be easily removable for field cleaning of the detector chamber.
  9. All field wire connections shall be made to the base through the use of a clamping plate and screw.
- F. Intelligent Thermal Detectors
1. Thermal detectors shall be intelligent addressable devices rated at 135 degrees Fahrenheit (58 degrees Celsius) and have a rate-of-rise element rated at 15 degrees F (9.4 degrees C) per minute. It shall connect via two wires to the fire alarm control panel signaling line circuit.
- G. Addressable Dry Contact Monitor Module
1. Addressable monitor modules shall be provided to connect one supervised IDC zone of conventional alarm initiating devices (any normally open dry contact device) to one of the fire alarm control panel SLCs.
  2. The monitor module shall mount in a 4-inch square (101.6 mm square), 2-1/8 inch (54 mm) deep electrical box.
  3. The IDC zone shall be suitable for Style D or Style B operation. An LED shall be provided that shall flash under normal conditions, indicating that the monitor module is operational and in regular communication with the control panel.
  4. For difficult to reach areas, the monitor module shall be available in a miniature package and shall be no larger than 2-3/4 inch (70 mm) x 1-1/4 inch (31.7 mm) x 1/2 inch (12.7 mm). This version need not include Style D or an LED.
- H. Two-Wire Detector Monitoring
1. Means shall be provided for the monitoring of conventional Initiating Device Circuits populated with 2-wire smoke detectors as well as normally open contact alarm initiating devices (pull stations, heat detectors, etc).
  2. Each IDC of conventional devices will be monitored as a distinct address on the polling circuit by an addressable module. The module will supervise the IDC for alarms and circuit integrity (opens).
  3. The monitoring module will be compatible, and listed as such, with all devices on the supervised circuit.
  4. The IDC zone may be wired for Class A or B (Style D or Style B) operation. An LED shall be provided that shall flash under normal conditions, indicating that the monitor module is operational and in regular communication with the control panel.



## THE BAXTER LIBRARY – PORTLAND, MAINE

5. The monitoring module shall be capable of mounting in a 4-inch square (101.6 mm square), 2-1/8 inch (54 mm) deep electrical box or in a surface mount backbox.

### I. Addressable Control Relay Module

1. Addressable control relay modules shall be provided to control the operation of fan shutdown and other auxiliary control functions.
2. The control module shall mount in a standard 4-inch square, 2-1/8 inch deep electrical box, or to a surface mounted backbox.
3. The control relay module will provide two dry contact, Form-C relays. The relay coil shall be magnetically latched to reduce wiring connection requirements, and to insure that 100% of all auxiliary relays may be energized at the same time on the same pair of wires.
4. The control relay module shall be suitable for pilot duty applications and rated for a minimum of 0.6 amps at 30 VDC.

### J. Isolator Module

1. Isolator modules shall be provided to automatically isolate wire-to-wire short circuits on an SLC Style 6 (Class A) or Style 4 (Class B branch). The isolator module shall limit the number of modules or detectors that may be rendered inoperative by a short circuit fault on the SLC loop segment or branch. At least one isolator module shall be provided for each floor or protected zone of the building.
2. If a wire-to-wire short occurs, the isolator module shall automatically open-circuit (disconnect) the SLC. When the short circuit condition is corrected, the isolator module shall automatically reconnect the isolated section.
3. The isolator module shall not require any address setting, and its operations shall be totally automatic. It shall not be necessary to replace or reset an isolator module after its normal operation.
4. The isolator module shall mount in a standard 4-inch (101.6 mm) deep electrical box or in a surface mounted backbox. It shall provide a single LED that shall flash to indicate that the isolator is operational and shall illuminate steadily to indicate that a short circuit condition has been detected and isolated.

## 2.7 SYSTEM COMPONENTS - ADDRESSABLE DEVICES

### D. Addressable Devices - General

1. Addressable devices shall employ the simple-to-set decade addressing scheme. Addressable devices which use a binary-coded address setting method, such as a DIP switch, are not an allowable substitute.
2. Detectors shall be addressable and intelligent, and shall connect with two wires to the fire alarm control panel signaling line circuits.
3. Addressable smoke and thermal (heat) detectors shall provide dual alarm and power/polling LEDs. Both LEDs shall flash under normal conditions, indicating that the detector is operational and in regular communication with the control panel, and both LEDs shall be placed into steady illumination by the control panel, indicating that an alarm condition has been detected. An output connection shall also be provided in the base to connect an external remote alarm LED.
4. Using software in the FACP, detectors shall automatically compensate for dust accumulation and other slow environmental changes that may affect their performance.

## THE BAXTER LIBRARY – PORTLAND, MAINE

The detectors shall be listed by UL as meeting the calibrated sensitivity test requirements of NFPA Standard 72, Chapter 10.

5. Detectors shall be ceiling-mount and shall include a separate twist-lock base with tamper proof feature. Base options shall include a base with a built-in (local) sounder rated for a minimum of 85 DBA, a relay base and an isolator base designed for Style 7 applications.
6. Detectors shall provide a test means whereby they will simulate an alarm condition and report that condition to the control panel.
7. Detectors shall also store an internal identifying type code that the control panel shall use to identify the type of device (ION, PHOTO, THERMAL).
8. Detectors shall provide address-setting means using decimal switches.

### 2.8 BATTERIES

- D. Upon loss of Primary (AC) power to the control panel, the batteries shall have sufficient capacity to power the fire alarm system for required standby time (24 or 60 hours) followed by 5 minutes of alarm.
- E. The batteries are to be completely maintenance free. No liquids are required. Fluid level checks for refilling, spills, and leakage shall not be required.
- F. If necessary to meet standby requirements, external battery/charger systems may be used.

### 2.9 MUNICIPAL FIRE ALARM MASTER BOX

- A. Provide municipal fire alarm master transmittal box as directed by the City Fire Department to match the City's standard.
- B. Provide communications cable for fire alarm master box to be connected to the municipal fire alarm circuit at Deering Street.
  1. Description: IMSA Spec 20-2 shielded, 3-twisted-pair, 600 volt, #16 AWG conductor with black polyethylene jacket. Obtain approval from City Fire Department for cable prior to purchasing.

### 2.10 REMOTE ANNUNCIATOR

- A. Provide an LCD flush-mounted remote annunciator *Notifier LCD-80* or equal. Annunciator shall include an 80-character back-lit liquid Crystal Display (20 characters times 4 lines). Annunciator shall include control switches for system acknowledge, signal silence, and system re-set.

## PART 3 EXECUTION

### 3.1 INSTALLATION

- A. Installation shall be in accordance with the NEC, NFPA 72, local and state codes, as shown on the drawings, and as recommended by the major equipment manufacturer.

## THE BAXTER LIBRARY – PORTLAND, MAINE

- B. All wiring shall be run in conduit or surface raceway as specified under Section 16111 and Section 16112.
- C. Smoke detectors shall not be installed prior to the system programming and test period. If construction is ongoing during this period, measures shall be taken to protect smoke detectors from contamination and physical damage.
- D. All fire detection and alarm system devices, control panels and remote annunciators shall be flush mounted when located in finished areas and may be surface mounted when located in unfinished areas.
- E. Manual pull stations shall be suitable for surface mounting or semi flush mounting as shown on the plans, and shall be installed 48 inches (122 mm) above the finished floor.
- F. Indicating stations shall be installed 80 inches (315 mm) above finished floor.
- G. Provide a municipal alarm box and connect to the closest municipal alarm wiring.

### 3.2 TEST

- A. The service of a competent, factory-trained engineer or technician authorized by the manufacturer of the fire alarm equipment shall be provided to technically supervise and participate during all of the adjustments and tests for the system. All testing shall be in accordance with NFPA 72, Chapter 7.
- B. Before energizing the cables and wires, check for correct connections and test for short circuits, ground faults, continuity, and insulation.
- C. Close each sprinkler system flow valve and verify proper supervisory alarm at the FACP.
- D. Verify activation of all waterflow switches.
- E. Open initiating device circuits and verify that the trouble signal actuates.
- F. Open and short signaling line circuits and verify that the trouble signal actuates.
- G. Open and short notification appliance circuits and verify that trouble signal actuates.
- H. Ground all circuits and verify response of trouble signals.
- I. Check presence and audibility of tone at all alarm notification devices.
- J. Check installation, supervision, and operation of all intelligent smoke detectors using the walk test.

## THE BAXTER LIBRARY – PORTLAND, MAINE

- K. Each of the alarm conditions that the system is required to detect should be introduced on the system. Verify the proper receipt and the proper processing of the signal at the FACP and the correct activation of the control points.
- L. When the system is equipped with optional features, the manufacturer's manual shall be consulted to determine the proper testing procedures. This is intended to address such items as verifying controls performed by individually addressed or grouped devices, sensitivity monitoring, verification functionality and similar.

### 3.3 FINAL INSPECTION

- A. At the final inspection, a minimum NICET Level II technician shall demonstrate that the system functions properly in every respect.

### 3.4 INSTRUCTION

- A. Instruction shall be provided as required for operating the system. Hands-on demonstrations of the operation of all system components and the entire system including program changes and functions shall be provided.
- B. The contractor or installing dealer shall provide a user manual indicating "Sequence of Operation."

END OF SECTION 16721

## Bartlett Design

LIGHTING & ELECTRICAL ENGINEERING  
942 WASHINGTON STREET BATH, MAINE 04530  
TEL (207) 443-5447 FAX (207) 443-5560

PROJECT: Baxter Library  
PROJ. NO.: 08-0036  
SUBMISSION DATE: 2/9/2010  
ITEM: Fire Alarm

### SHOP DRAWING REVIEW

Review is only for conformance with the design concept of the project and compliance with the information given in the Contract Documents. Contractor is responsible for dimensions to be confirmed and correlated at the job site; for information that pertains solely to the fabrication processes or to techniques of construction; for coordination of the work of all trades; and for all sizes and quantities.

DATE: 2/16/2010 BY: L. Bartlett

NO EXCEPTIONS TAKEN  REVISE & RESUBMIT  
 REJECTED  CONDITIONAL TO NOTATIONS

---

COMMENTS:

Received

FEB 24 2010

Favreau Electric

RECEIVED

FEB 23 2010

by: BENCHMARK

# BENCHMARK

34 Thomas Drive  
Westbrook, ME 04092  
Ph: (207)591-7600  
Fax: (207)591-7604

## BE Submittal Cover Sheet

Job: 10-09-1387  
Baxter Library  
619 Congress Street  
Portland, ME

Spec Section No: 16721-1.6

Submittal No: B

Revision No: 0

Sent Date: ~~1/12/2010~~ 2/9/10

Submittal Title: Fire Alarm shop drawings, manuals

Contractor:  
BENCHMARK  
Sue Bent

### Contractor's Stamp

- A. Reviewed-No Exceptions Taken    B. Revise and Resubmit  
 C. Note Markings    D. Rejected

Reviewed for general conformance with the design concept and contract documents. Markings or comments shall not be construed as relieving the Subcontractor from compliance with the Project plans and specifications, nor departure therefrom. The Subcontractor remains responsible for details and accuracy, for conforming and correlating all quantities and dimensions, for selecting fabrication processes, for techniques of assembly, and for performing the work in a safe manner.

BY: S. Bent BENCHMARK Dated: 2/7/10

Scott Simons Architects  
William Gatchell, AIA  
01

*Kevin Gough*

### Architect's Stamp

Engineer

### Engineer's Stamp

Received

FEB 24 2010

Favreau Electric

RECEIVED

FEB 23 2010

by: BENCHMARK

**PROJECT:**  
**The Baxter Library**  
**Portland, Maine**

**DATA:**  
**Fire Alarm**  
**REVISED RE-SUBMITTAL**

**FAVREAU ELECTRIC**  
**37 JORDAN AVENUE**  
**BRUNSWICK, MAINE 04011**  
**VOICE (207) 725-2005**  
**FAX (207) 725-2920**

**RECEIVED**  
**FEB 03 2010**  
**by: BENCHMARK**

**DATE:** 1/25/10

**SUBMITTED BY:** *Tobie A. Kay*  
Tobie A. Kay

**RECEIVED**  
**FEB 23 2010**  
**by: BENCHMARK**



Prepared For Tomorrow; Delivered Today

*LOSS PREVENTION*

*BUILDING AUTOMATION*

*COMMUNICATIONS*

# ***SUBMITTAL PACKAGE***

**Project:** **Baxter Library Portland**

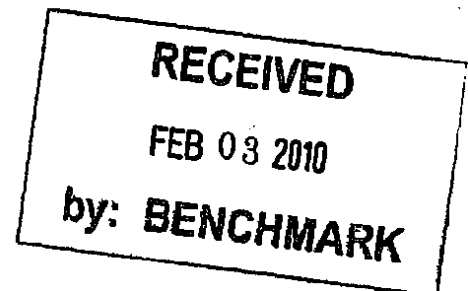
**System:** **Fire Alarm**

**Submitted  
By:** **Norris Inc.  
2257 West Broadway  
South Portland, Maine 04106  
Telephone: (800) 370-3473**

**Project  
Manager:** **Zach Davis**

**Electrical  
Contractor:** **Favreaus Electric  
P.O. Box 598  
Brunswick, ME. 04011**

**Date:** **January 21, 2010**



[www.norrisinc.com](http://www.norrisinc.com)

**S. Portland Maine Office**  
PO Box 2551  
2257 West Broadway  
South Portland, ME 04106  
Toll Free 1-800-370-3473  
Fax 207-879-0540

**Bangor Maine Office**  
54 Perry Rd  
Bangor, ME 04401  
Toll Free 1-888-312-3473  
Fax 207-947-1219

**New Hampshire Office**  
1 Beyeide Rd  
Greenland, NH 03840  
Toll Free 1-877-577-3473  
Fax 603-431-2397

**Vermont Office**  
PO Box 633  
Middlebury, VT 05763  
Phone 1-802-388-3473  
Fax 802-388-3472





Norris Inc  
 2257 West Broadway  
 South Portland, ME 04106  
 1-800-370-3473

**\*\* SUBMITTAL \*\***

1/21/2010

**Project Number: 305931SP**

For:
Favreau Elec Baxter Library Portland Customer P.O.: D

<b>** SUBMITTAL ** to:</b>
FAVREAU ELECTRIC PO BOX 598 BRUNSWICK, ME 04011-
Tel: 207-725-2005      Fax: 207-725-2920

Project Site:
Favreau Elec Tobie Kay  37 Jordan Ave. Brunswick, ME 04011

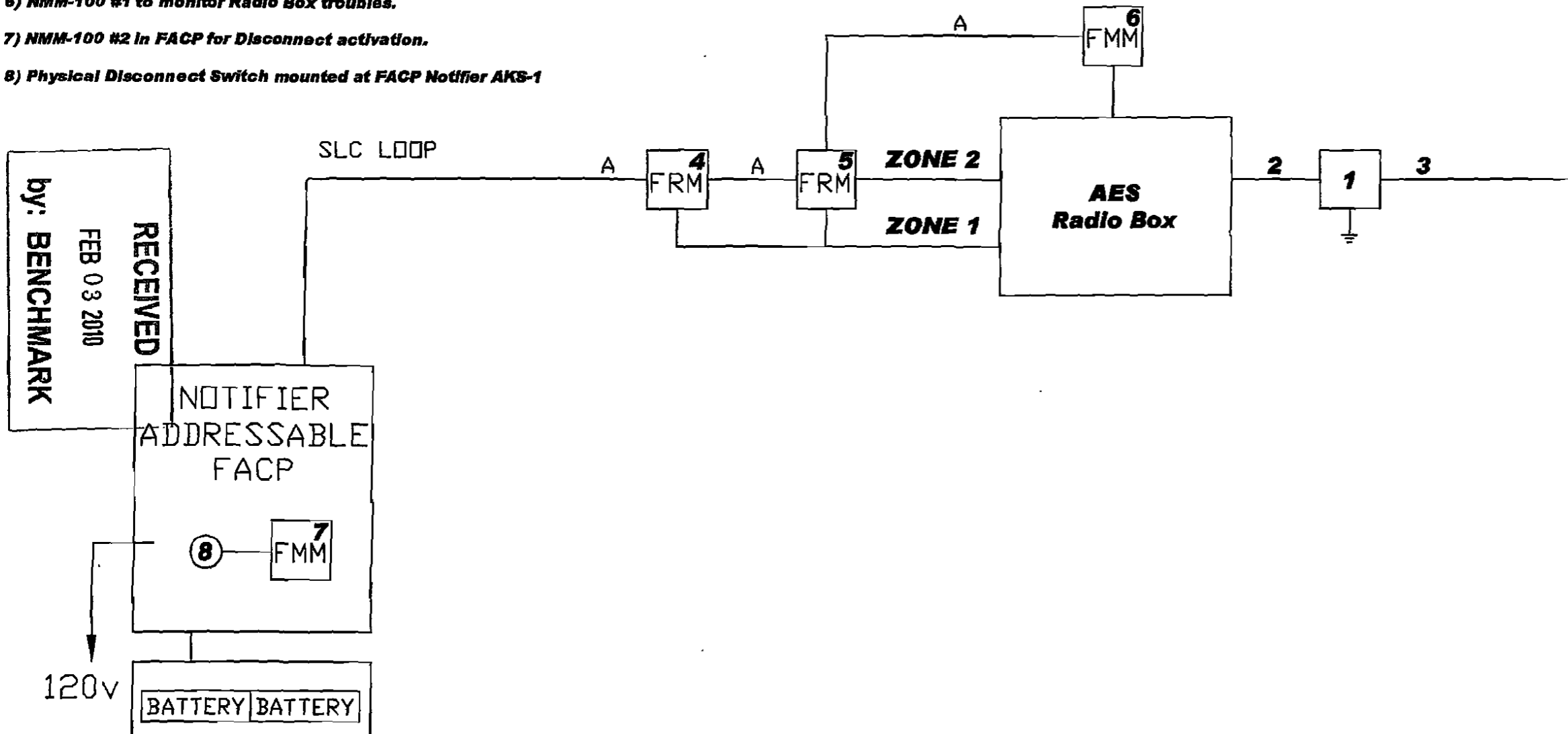
Mfr-Part No.	Qty	Description	Unit Price	Extended
		Fire Alarm System--		
		Building Shell-- (fire alarm panel and devices in stair #1 and stair #2 per addendum)		
	1	FireWarden-50 addressable FACP, Black		
	2	12 VOLT 12 AMP HOUR BATTERY		
	6	Pull Station Dual Action Addressable		
	2	Intelligent Addressable Photo detector, with base.		
	2	HORN/STRB,S2,24VDC,SEL,W/R		
	2	HORN/STRB,S2,24VDC,SEL,W/R		
	1	Contractor Discount		
		Technical Services		
		Tenant Space--		
	1	Plug-in Transmitter module (masterbox)		
	1	ACES Radio Masterbox (City of Portland)		
	1	8 Zone Fire Subscriber, 8 Supervised Zones,		
	1	TRANSFORMER 18VAC 40VA		
	1	12V 7AMP BATTERY		
	1	5dB Omni directional UHF Antenna		
	1	Cable Assembly; 10 Ft. RG-58 BNC male?N male		
	1	Standard Coaxial Surge Protector, N female N female		
	1	Relay, SPDT, Multivolt, Track mount		
	1	Remote LCD annunciator, Black		
	9	Pull Station Dual Action Addressable		
	11	Intelligent Addressable Photo detector, with base.		
	3	Intelligent Addressable Thermal detector w/ base.		
	1	Intelligent Addressable Thermal detector w/ base.		
	7	Intel. Addressable ROR Thermal detector w/ base.		
	4	Addressable Relay Module (elevator)		
	2	Addressable Mini Module (sprinkler)		
	1	8.0 amps, 120 VAC remote charger power supply		
	2	12V 7AMP BATTERY		
	8	STRB 24V,15/30/75/110 CNDL RED		
	5	STRB 24V,15/30/75/110 CNDL RED		
	43	HORN/STRB,S2,24VDC,SEL,W/R		
	1	Contractor Discount		

**RECEIVED**  
 FEB 03 2010  
 by: **BENCHMARK**

# NOTES:

- 1) 4" Square deep grounded box for antenna line surge suppresser. Mount within 6' of the Radio Box enclosure.
- 2) AES part #13-0345-6 6' RG-8 cable assembly with N male connectors both ends to connect surge suppresser to the Radio Box enclosure. AES part #13-0346 18" RG-58 cable assembly to connect transceiver to enclosure.
- 3) Coaxial cable run from surge suppresser to roof mounted Antenna. Keep length of run as short as possible. RG-58 up to 25' -omit part #13-0346 and mount surge suppresser within 6' of antenna  
 RG-8 up to 75'  
 LMR-400 up to 125'  
 2+3 above must be run in rigid or non-metallic conduit.
- 4) NC-100R number 1 -trip relay which triggers an alarm on zone 1 of the radio box.
- 5) NC-100R number 2 -Disconnect relay which bypasses zone 1 on the Radio box. Use 2nd set of contacts on NC-100R to trigger Zone 2 into alarm to indicate box in disconnect
- 6) NMM-100 #1 to monitor Radio Box troubles.
- 7) NMM-100 #2 in FACP for Disconnect activation.
- 8) Physical Disconnect Switch mounted at FACP Notifier AKS-1

Important! Wiring connections must have correct polarity.



**ROOF MOUNTED ANTENNA**

## LEGEND

MOUNTING HEIGHT	Symbol	Description
48 INCHES	PS	PULL STATION
	S	SMOKE DETECTOR
	R	HEAT DETECTOR RATE OF RISE
	F	HEAT DETECTOR FIXED TEMP
	120v RT	REMOTE TEST/INDICATOR
	DS	DUCT SMOKE DETECTOR <small>Note: Remove J1 Jumper</small>
80 INCHES	VD	VISUAL ONLY
80 INCHES	AV	AUDIO / VISUAL
	DSM	DUAL SYNC MODULE
	ISM	ISOLATION MODULE
	FMM	MONITOR MODULE
	FRM	RELAY MODULE
	STS	SPRINKLER TAMPER
	SFS	SPRINKLER FLOW

This drawing is a typical device layout, wiring is shown diagrammatically only. This drawing has been provided as an example ONLY. Riser does not necessarily indicate all devices and appliances. See floor plans and specification for location and quantities. The purchaser must accurately layout the initiating and notification devices in their proper zones/circuit. Note: Signal devices in their proper zones/circuit. Note: Signal Circuits 1 has a 2.5 amp load limitation, Circuits 2-3-4 have a combined load limitation of 2.5 amps. REMOTE power supply has a 3.0 amps limitation per circuit and an 8.0 amp combined limitation for all 4 circuits. (See chart below for current vs. candle rating)

Room Size	Candela Rating	Load (amps)
20' x 20'	15 cd	0.08 amps
28' x 28'	30 cd	0.10 amps
45' x 45'	75 cd	0.15 amps
54' x 54'	110 cd	0.20 amps

4.7k END OF LINE RESISTOR (Panel Circuits)	
A	1 PR #12 AVG TWISTED PAIR CABLE(Up to 10,000 ft)
A	1 PR #14 AVG TWISTED PAIR CABLE(Up to 8,000 ft)
A	1 PR #16 AVG TWISTED PAIR CABLE(Up to 4,500 ft)
B	1 PR #12 AVG FPL CABLE
D	1 PR #14 AVG FPL CABLE
E	1 PR #16 AVG FPL CABLE
F	2c #12 AVG CABLE
G	2c #14 AVG CABLE
H	2c #16 AVG CABLE
K	1 CAT5 CABLE
L	1 PR #16 AVG TWISTED SHIELDED CABLE

REVISION 2	DATE:
REVISION 1	DATE:
REVISION 0 SUBMITTAL	DATE: 1/21/10

SYSTEM WIRING RISER	
PROJECT NAME <b>Baxter Library Masterbox</b> Portland, MAINE	SCALE NTS BY: <b>ESD</b> CK BY:
 <b>NORRIS</b> <small>Prepared For Tomorrow Delivered Today</small> 2257 BROADWAY, So PORTLAND, MAINE	
SAVED AS:	

Important! Duplicate Addresses on devices of different style is NOT an error in design or printing. All electronic devices MUST be placed in a heated room with temperature above 32 degrees

Important! Wiring connections must have correct polarity.

LEGEND


- MOUNTING HEIGHT
- 48 INCHES
  - PS PULL STATION
  - S SMOKE DETECTOR
  - R HEAT DETECTOR RATE OF RISE
  - F HEAT DETECTOR FIXED TEMP
  - RT 120V REMOTE TEST/INDICATOR
  - DS DUCT SMOKE DETECTOR *Note: Remove J1 Jumper*
- 80 INCHES
  - VO VISUAL ONLY
  - AV AUDI / VISUAL
- 80 INCHES
  - NZM ZONE MODULE
  - NC-100 CONTROL MODULE
  - NMH MONITOR MODULE 100=4 SQUARE, 100p=pinhead
  - NC-100p RELAY MODULE
  - STS SPRINKLER TAMPER
  - SFS SPRINKLER FLOW
  - DH DOOR HOLDER 120V AC

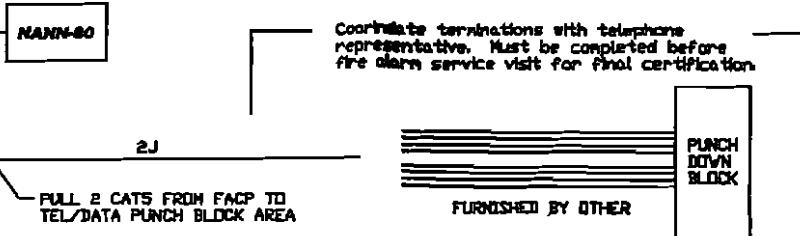
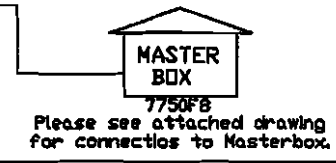
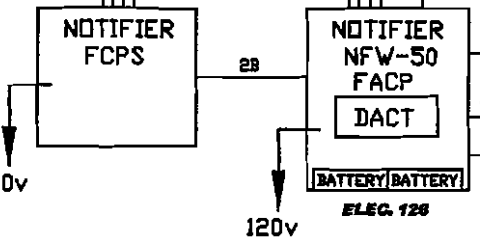
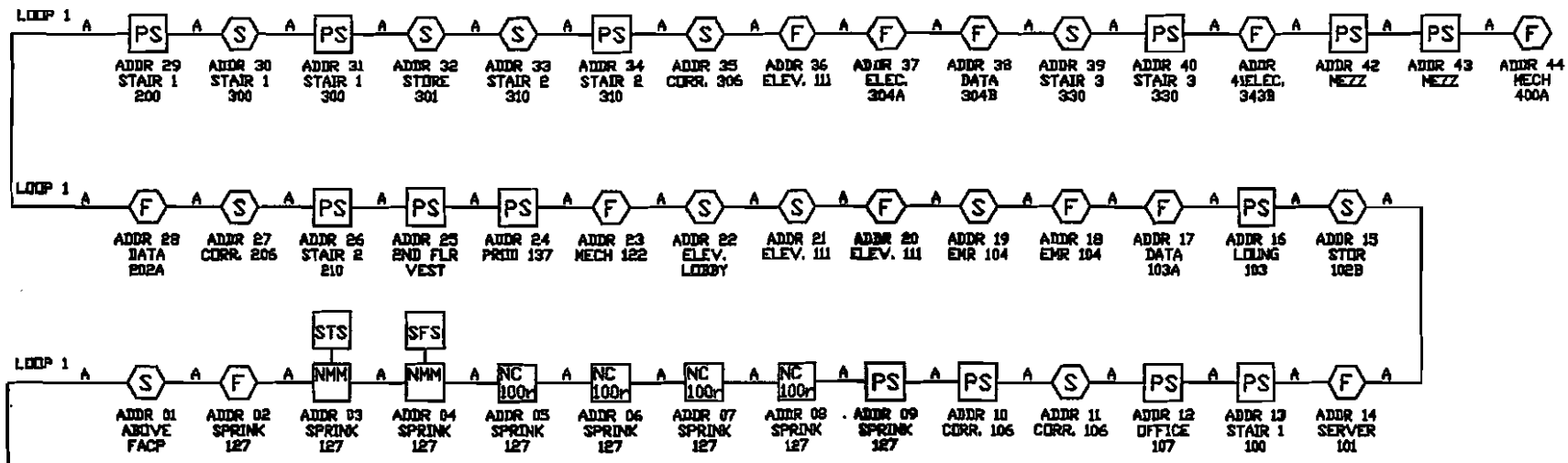
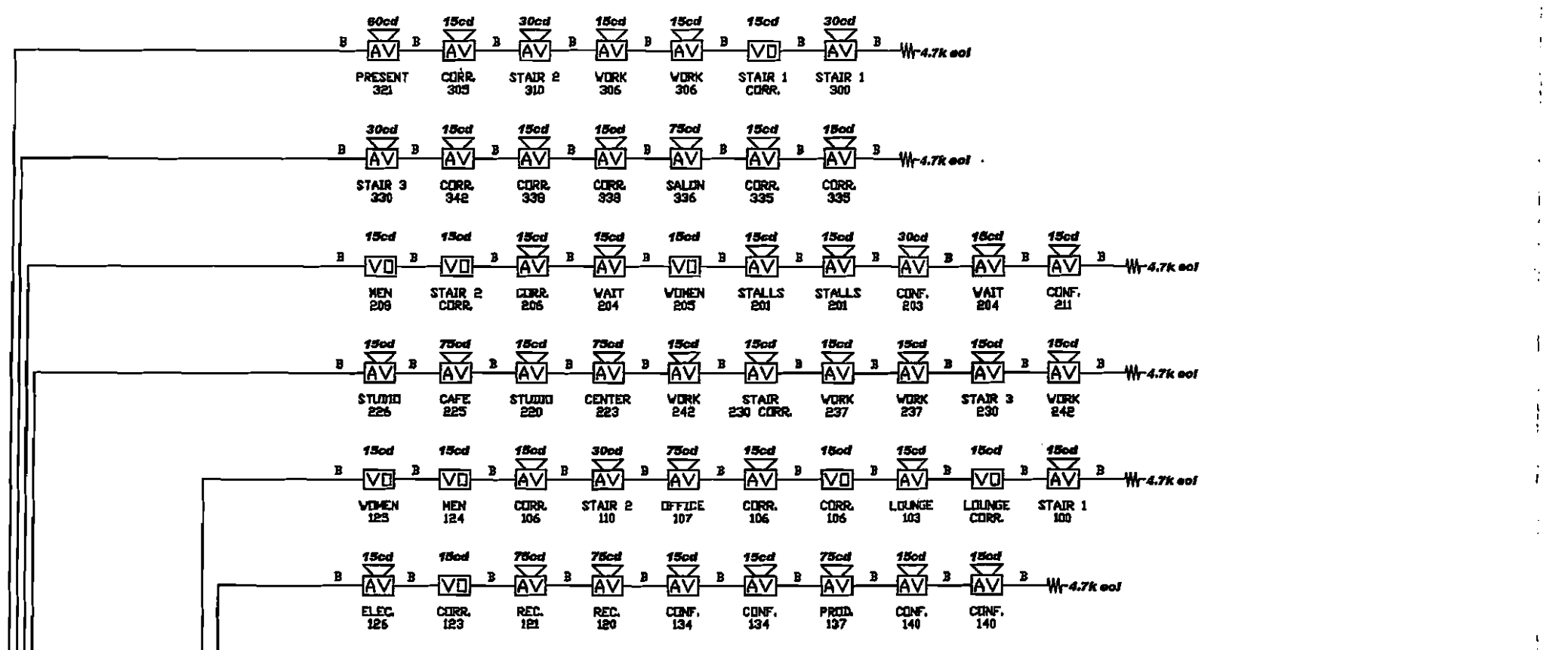
This drawing is an accurate layout from provided floor plans and information available at time of design. Circuiting has been designed for maximum use of resources available with supplied equipment. Deviations from this design must be noted and approved prior to final acceptance. *Note:* There are 2 signal circuits have a combined load limitation of 2.5 amps. REMOTE power supply has a 3.0 amp limitation per circuit and an 8.0 amp combined limitation for all 4 circuits. Changes in circuiting must incorporate equipment specifications/limitations (see chart below for current vs. candle rating, distances and ratings shown are for wall applications ONLY, call Norris, Inc. for ceiling devices when applicable.) Twisted-Unshielded Cable is NOT recommended for SLC wiring for this panel. Untwisted-Unshielded cable has a 2500' maximum distance either inside or outside conduit sizes 12-18AWG

Room Size	Candle Rating	Load (amps)
20' x 20'	15 cd	0.08 amps
28' x 28'	30 cd	0.10 amps
45' x 45'	75 cd	0.15 amps
54' x 54'	110 cd	0.20 amps

4.7k END OF LINE RESISTOR (Panel Circuits)	
A	1 PR #12 AVG TWISTED-PAIR CABLE FPL GENESIS WG-4315 & WG-4515 BELDEN S020UL & S020UL (Up to 10,000 ft)
A	1 PR #14 AVG TWISTED-PAIR CABLE FPL GENESIS WG-4313 & WG-4513 BELDEN S120UL & S120UL (Up to 8,000 ft)
A	1 PR #16 AVG TWISTED-PAIR CABLE FPL GENESIS WG-4311 & WG-4511 BELDEN S220UL & S220UL (Up to 4,500 ft)
B	1 PR #12 AVG FPL CABLE
D	1 PR #14 AVG FPL CABLE
E	1 PR #16 AVG FPL CABLE
F	2c #12 AVG CABLE
G	2c #14 AVG CABLE
H	2c #16 AVG TWISTED SHIELDED CABLE
J	1 CAT5 CABLE

REVISION #	DATE
REVISION 2	DATE:
REVISION 1	SUBMITTAL DATE: 01/21/10
REVISION 0	SUBMITTAL DATE: 12/29/09

SYSTEM WIRING RISER	
PROJECT NAME	SCALE NTS
<b>Baxter Library</b> Portland, MAINE	BY: <b>EAD</b>
	CK BY:
	SAVED AS:
 Prepared For Tomorrow, Delivered Today 2257 BROADWAY, SO. PORTLAND, MAINE	



Important! Duplicate Addresses on devices of different style is NOT allowed on this panel. All electronic devices MUST be placed in a heated room with temperature above 32 degrees. Never run wires parallel to any other wiring. Make sure to always run cables in separate raceways. Fire alarm wiring can emit noise that may affect other devices. Shielded cable can be used if cable is run near sensitive equipment.

RECEIVED  
 FEB 03 2010  
 by: BENCHMARK