

CAPITAL EXPENDITURE DESCRIPTION – DETAIL

DEPARTMENT/BOARD – LINCOLN PUBLIC LIBRARY

Project/Expenditure: Expand fire protection system Fiscal Year: 2008 Cost: \$119,850
 Department Head: Barbara Myles, Director Priority: # 1 of 2

(1) Description (Please include any brochures on product): Expand the fire suppression system at the library – phase one.

(2) Useful Life: 20 years

(3) Purpose:

Scheduled Replacement *
 New/Expanded Service
 Other (Please Explain)

Increased Personnel Efficiency
 Replace Obsolete/Unsafe Equipment*
 *Please explain how old equipment will be disposed of.

Finish the design of the fire suppression system and begin construction. Improvements in this construction phase include replacing the conventional heat and smoke detectors with addressable detectors, replacing the fire alarm control panel and master box with equipment that can send information to the fire department about the room location of the fire, install additional sprinklers in the sub-basement, install sprinklers in the basement, and install stand pipes inside the library.

(4) Justification: The current fire suppression system at the library only has sprinklers in the sub-basement. The smoke and heat detectors can identify the floor where the fire is located but not the room location. With so much combustible material stored in the library, according to Chief Cotoni, it would be very difficult to fight a fire at the library.

(5) How did you determine this project's priority? Safety concerns and preservation of the library's mission.

(6) Estimated Cost: \$119,850 (Please remember to attach the written estimate.)

(7) Additional Cost Data (Equipment Only)

Purchase Price:	\$ _____
Less Trade-In:	\$ _____
Net Cost:	\$ _____

(8) Are non-Town revenues available to reduce cost:
This project is eligible for CPA funding.

(9) What will be the effect on your department if this project is delayed?
There is the chance that the Town's fire department will not be notified quickly enough to save the library from a fire located in an area that is not adequately monitored by fire detection and suppression equipment.

(10) Please describe the effect if this project on your Operating Budget.

Personnel Budget:

increase
 decrease
 no change
 _____ amount of change

Expense Budget:

increase
 decrease
 no change
 _____ amount of change

Detail: Additional electricity costs.

Attachments (if any):

2008-2

Lincoln Library Condition Survey Report

Survey Date: January 2004



Condition Assessment Report

8.2 Mechanical - Fire Suppression: Lincoln Library
 Lincoln, MA
 Facility 001, Building Number 01

Survey Date: 1/14/2004

A. Description of Fire Suppression System

Fire Suppression Type: Wet sprinkler system

Main Size: 6 inch

Backflow Preventer on Fire Main: Yes

Standpipe Size: Unknown

Fire Department Connection: Yes

Fire Pump: None

Backup Power Source: No

Fire Extinguishers: Yes

B. Evidence of Fire Suppression System Performance

<u>FIRE SUPPRESSION SYSTEM</u>	<u>CONDITION RATING 1-10</u>	<u>COMMENTS</u>
Exterior Fire Department Connection:	8	Good, annual maintenance
Fire Pump:		Not applicable
Sprinkler System Controls:	8	Good, annual maintenance
Sprinkler Piping, Fittings, Heads, etc.:	8	Good, annual maintenance
Fire Extinguishers:	8	Good, annual maintenance
OVERALL FIRE SUPPRESSION RATING:	8	

C. Fire Suppression Repair Needs

Fire Suppression

26550 sf Area	Current Unit Cost: \$7.16	Current Total Cost: \$190,098		
REPAIR NEEDS	DEGREE WORK NEEDED	% OF TOTAL	REPAIR COST	COMMENT
Immediate (0-18 mo):	None	0	\$0	
Short-Term (1.5-6 yr):	None	0	\$0	
Long-Term (7-12 yr):	Major Repair	75	\$200,000	Expand fire protection system to other areas of the building. Especially attic areas and other exposed wood frame areas.

Note: For Fire Detection See 9. Electrical.

Condition Assessment Report

9. Electrical: Lincoln Library
Lincoln, MA
Facility 001, Building Number 01

Survey Date: 1/14/2004

A. Description of Electrical System

SERVICE

Utility Company: NSTAR / Boston Edison
Service Type: 3 phase, 4 wire, 120 / 208 volts, 800 amp
Service Grounded: Yes
Emergency Power: 6 kilowatt generator with a 40 amp transfer switch.

Meter Number: DMS760509, DS760049
Number of Services: 1 Main Service Disconnect: Yes
Emergency Power: Other

DISTRIBUTION

Type: Panels and feeders, 800 amp system (primary and secondary panels)
Number of Main Distribution Panels: 1
Distribution Manufacturer: Federal Pacific, Challenger
Transformer Manufacturer: None
Feeder Wiring: RGS (Rigid conduit and wire)
Distribution Type: 1 primary and 3 secondary panels. Branch Wiring Type: RGS (Rigid conduit and wire), MC (Metal conduit, BX), and liquid tight.

Circuit Protection: Circuit breakers
Transformer Size (kVA): Not applicable
Branch Wiring Type: Combination - see description

POWER RECEPTACLES AND SWITCHES

Receptacle and Wall Switch Density: Medium, 10 per 1000 sf
Outlets with Ground: Yes
GFI Circuits: No
GFI Outlets: Yes

LIGHTING

Interior Lighting Type: Both fluorescent and incandescent
Interior Lighting Control Type: Combination - see description
Exterior Lighting Type: Combination - see description
Interior Lighting Control Type: Local and time clock. Exterior Lighting Type: High pressure sodium and incandescent.

Interior Lighting Density: Medium, 15 fixtures per 1000 sf
Exit Signs: Yes
Emergency Lighting: Battery-powered
Exterior Lighting Control Type: Time clock

FIRE DETECTION

Fire Detection System: Yes
Fire Alarm System Type: Zoned
Detection Type: Combination - see description
External Fire Notification System Type: Central station
Internal Fire Alarm Notification System Type: Horn strobes
Detection Type: Pull stations, duct detectors, tamper switches, flow switches, smoke detectors, and heat detectors.

Number of Detectors (12 Detectors = 1 System): 36

SPECIAL ELECTRICAL

Telephone: Yes
Data Connection: Yes
Security System: Motion sensors and contacts
Access Control System: Keypad
Number of Sound Outlets (6 Outlets = 1 System): 0
Number of Intercom / Paging Stations (25 Stations = 1 System): 0

LINCOLN LIBRARY SPRINKLER SYSTEM UPGRADE 2006

Composed by:
 Rand J. Refrigeri P.E.; RDK Engineers
 Michael Sullivan; Beacon Architects, Inc.

978-775-0298

Submission Date: September 18, 2006

RDK Engineers is pleased to present a schematic design level study to the Lincoln Public Library Building Committee (LPLC). The Library Public Library Building Committee has asked RDK Engineers to arrange the following report into a priorities/ phasing listing for purpose of review, therefore the study is designed to provide the LPLC with necessary parameters that outline scope of work as well as cost to install life safety sprinkler systems in a phased construction approach. This strategy allows the committee to analyze best fit and budget vehicles necessary to accomplish the sprinkler installation.

The following is designed to examine strategies, phasing and cash flow when suppression systems are installed.

1. Base Building Improvements

- The Library can take advantage of and thus mitigate risk due to fire or fire control situations. These costs should be considered away for the sprinkler improvements.
- Note: The costs of item #1 are not included in the totals for sprinkler installation.

Item #1 Base Building Improvements	Qty	Cost Each	Total
Replace Trash Chutes	1	\$500	\$500
Upgrade Book Drop to Outdoor	1	\$5,500	\$5,500
Reduce Attic Combustible Load	1	\$0	\$0
		Subtotal	\$6,000
		Bond/Permit/Mobilize	\$300
		5% Escalation Factor	\$315
		15% Design Contingency	\$331
		10% Construction Contingency	\$347
		TOTAL:	\$7,300

2
 7300
 22700
 58300
 9724

 99024

LINCOLN LIBRARY SPRINKLER SYSTEM UPGRADE 2006

Composed by:
 Rand J. Refrigeri P.E.; RDK Engineers
 Michael Sullivan; Beacon Architects, Inc.

Submission Date: September 18, 2006

2. Enhance Sub-Basement sprinkler coverage and Attic Detection system coverage. Upgrade Fire Alarm Control Panel.

- Scope of Work

Sprinkler protection – add sprinklers to the existing piping in the basement. Presently coverage is not adequate. Add fireproof materials at boilers/ oil tanks. Add new detectors and wiring to Historic building attic. Run new wiring back to FACP and upgrade the existing fire alarm control panel to accept the addressable system. Change the Fire Department Masterbox to comply with latest Lincoln Fire Department standard (i.e. radio control Masterbox)

fire alarm control panel

Item #2 Sub-basement and FACP	Qty	Cost Each	Total
Upgrade Sub-basement Sprinklers	1	\$3,500	\$3,500
Upgrade Building FACP	1	\$3,500	\$3,500
Upgrade/Enhance Attic Fire Alarm system	1	\$5,000	\$5,000
Upgrade Masterbox - a Telephone Pbx Architectural	1	\$6,000	\$6,000
		\$1,500	\$1,500
		Subtotal	\$19,500
		Bond/Permit/Mobilize	\$975
		5% Escalation Factor	\$1,024
		15% Design Contingency	\$1,075
		10% Construction Contingency	\$1,129
		TOTAL:	\$23,700

3. Standpipes and Water Supply Entrance

- Scope of Work

Revise service entrance; install main pipe runs to standpipe locations. Add fire department hose valves at designated areas. Upgrade Fire Department pumper connection. Piping will be concealed in ceilings the entry level and will be concealed by window treatment details in the main (upper) level stair. Fire Department hose valves will be housed in boxes and recessed in renovated chases created to conceal valves and piping.

Item #3 Standpipe System Installation	Qty	Cost Each	Total
New Water Room Upgrades	1	\$2,500	\$2,500
Main Piping and Standpipes	1	\$30,000	\$30,000
Fire Department Interior Hose Valves	4	\$250	\$1,000
Architectural Casement at 3rd floor window	1	\$7,000	\$7,000
Architectural Ceilings and Painting	1	\$6,000	\$6,000
Fire Alarm	1	\$1,500	\$1,500
		Subtotal	\$48,000
		Bond/Permit/Mobilize	\$2,400
		5% Escalation Factor	\$2,520
		15% Design Contingency	\$2,646
		10% Construction Contingency	\$2,778
		TOTAL:	\$58,300

LINCOLN LIBRARY SPRINKLER SYSTEM UPGRADE 2006

Composed by:
 Rand J. Refrigeri P.E.; RDK Engineers
 Michael Sullivan; Beacon Architects, Inc.

Submission Date: September 18, 2006

4. Basement Level Sprinklers

- Scope of Work

Extend a feeder to coverage systems for the existing addition basement stack areas and reading room. Note: piping will be exposed, painted in stack areas. Valances in reading areas/ stairs will hide piping.

Item #4 Basement Level Sprinklers	Qty	Cost Each	Total
New Installation Sprinklers	1	\$4,500	\$4,500
Electrical Fire Alarm	1	\$1,000	\$1,000
Painting	1	\$1,000	\$1,000
Architectural Components	1	\$1,500	\$1,500
		Subtotal	\$8,000
		Bond/Permit/Mobilize	\$400
		5% Escalation Factor	\$420
		15% Design Contingency	\$441
		10% Construction Contingency	\$463
		TOTAL:	\$9,724

5. Fire Pumps

- Scope of Work

Install new fire pump, fire pump controller and electric service in the basement level of the library 1985 addition. The room adjacent to the water supply entrance will be converted to house the new pump.

Note: the above is a base price. To house the pump in the basement level will be an added cost to the project. we would propose to change the maintenance room to a pump room. The upcharge is projected to be approximately \$20,000.

Item #5 Fire Pump	Qty	Cost Each	Total
New Fire Pump	1	\$25,000	\$25,000
New Electric service to Pump	1	\$10,000	\$10,000
Plumbing drainage at water service	1	\$3,000	\$3,000
Architectural	1	\$5,000	\$5,000
Revise piping systems	1	\$1,200	\$1,200
		Subtotal	\$44,200
		Bond/Permit/Mobilize	\$2,210
		5% Escalation Factor	\$2,321
		15% Design Contingency	\$2,437
		10% Construction Contingency	\$2,558
		TOTAL:	\$53,700

Necessary Appeals

- Fire Pump Room - do not make two hour room with access to grade, instead use adjacent room next to water supply room (computer room)

LINCOLN LIBRARY SPRINKLER SYSTEM UPGRADE 2006

Composed by:
 Rand J. Refrigeri P.E.; RDK Engineers
 Michael Sullivan; Beacon Architects, Inc.

Submission Date: September 18, 2006

6. Attic Dry System

- Scope of Work

In the historic building attic, extend feeder from the standpipes system to new dry pipe sprinkler valves. Route dry pipe sprinkler system to the attic. Install dry valve in the work room/Friends room area.

Item #6 Historic Attic Dry System	Qty	Cost Each	Total
Piping from Standpipe location	1	\$1,500	\$1,500
Add Dry Valve	1	\$3,500	\$3,500
Attic Dry pipe System	1	\$18,000	\$18,000
Electrical and Fire Alarm	1	\$1,500	\$1,500
Ceilings	1	\$3,500	\$3,500
Painting	1	\$3,500	\$3,500
Architectural Other	1	\$2,500	\$2,500
		Subtotal	\$34,000
		Bond/Permit/Mobilize	\$1,700
		5% Escalation Factor	\$1,785
		15% Design Contingency	\$1,874
		10% Construction Contingency	\$1,968
		TOTAL:	\$41,300

7. Install Sprinklers in the Historic Building – Entry Level

- Scope of Work

Connect to mains and tees left at standpipe locations. Extend sprinkler coverage to the entry and main level of the historic building. The first floor gallery ceiling will be removed to accommodate piping extensions. Wet pipe sprinkler systems will be added to the entry level, concealed in the gallery room and exposed/painted in the stack rooms as well as the Historical and Friends rooms.

Item #7 Historic Entry Level Sprinklers	Qty	Cost Each	Total
Piping from Standpipe location	1	\$500	\$500
Wet Pipe sprinkler coverage	1	\$10,000	\$10,000
Electrical First Floor	1	\$2,000	\$2,000
HVAC First Floor	1	\$1,000	\$1,000
Painting	1	\$750	\$750
Architectural Components/Ceiling	1	\$5,000	\$5,000
		Subtotal	\$19,250
		Bond/Permit/Mobilize	\$963
		5% Escalation Factor	\$1,011
		15% Design Contingency	\$1,061
		10% Construction Contingency	\$1,114
		TOTAL:	\$23,400

LINCOLN LIBRARY SPRINKLER SYSTEM UPGRADE 2006

Composed by:
 Rand J. Refrigeri P.E.; RDK Engineers
 Michael Sullivan; Beacon Architects, Inc.

Submission Date: September 18, 2006

8. Install Sprinklers in the Historic Building – Main (upper) Level

- Scope of Work

Connect to mains and tees left at standpipe locations. Extend sprinkler coverage to the main (upper) level. The area will be protected with concealed type sprinkler heads extended from the attic and fed from a dry pipe sprinkler system. All ceilings in the main level of the historic building will be patched and painted after the sprinklers are installed.

Item #8 Historic Main Level Sprinklers	Qty	Cost Each	Total
Piping from Standpipe location	1	\$500	\$500
Dry Valve	1	\$3,500	\$3,500
Dry Pipe sprinkler coverage	1	\$11,000	\$11,000
New Skim Coat in upper ceilings	1	\$12,000	\$12,000
Painting	1	\$1,500	\$1,500
Lighting level 2	1	\$1,500	\$1,500
HVAV level 2	1	\$1,500	\$1,500
Architectural Components/Ceiling	1	\$2,000	\$2,000
Subtotal			\$33,500
Bond/Permit/Mobilize			\$1,675
5% Escalation Factor			\$1,759
15% Design Contingency			\$1,847
10% Construction Contingency			\$1,939
TOTAL:			\$40,700

9. Sprinkler Entry Level – 1985 Addition

- Scope of Work

Install fire protection in the addition entry-level circulation area and common area spaces. This scenario includes removal of all spline type ceilings. Replace with new accessible ceiling system. Re-move and re-use lighting system and existing switching. Remove duct diffusers and re-use after ceiling is installed.

Item #9 1985 Bldg Entry Level Sprinklers	Qty	Cost Each	Total
Take down ceilings	1	\$3,000	\$3,000
Piping from Standpipe location	1	\$500	\$500
Wet Pipe sprinkler coverage	1	\$10,000	\$10,000
Electrical First Floor	1	\$2,000	\$2,000
HVAC First Floor	1	\$1,000	\$1,000
Painting	1	\$2,500	\$2,500
Architectural Components/Ceiling	1	\$12,000	\$12,000
Subtotal			\$31,000
Bond/Permit/Mobilize			\$1,550
5% Escalation Factor			\$1,628
15% Design Contingency			\$1,709
10% Construction Contingency			\$1,794
TOTAL:			\$37,700

LINCOLN LIBRARY SPRINKLER SYSTEM UPGRADE 2006

Composed by:
 Rand J. Refrigeri P.E.; RDK Engineers
 Michael Sullivan; Beacon Architects, Inc.

Submission Date: September 18, 2006

10. Sprinkler Main Level – 1985 Addition

- Scope of Work

The main level will be sprinkled with a dry sprinkler system serving both above ceiling and below ceiling locations. Note: the ceiling plenum spaces are combustible construction and expose large void spaces. A workable solution involves cutting gyp-board ceilings and installing piping within the plenum above the main level architectural ceilings is imminent.

Item #10 1985 Bldg Main Level Sprinklers	Qty	Cost Each	Total
Piping from Basement location	1	\$1,500	\$1,500
Dry Valve	1	\$3,500	\$3,500
Dry Pipe sprinkler heads up and down	1	\$26,500	\$26,500
Arch remove and replace ceiling to accom	1	\$20,000	\$20,000
Painting	1	\$3,000	\$3,000
Lighting level 2	1	\$2,500	\$2,500
HVAV level 2	1	\$1,500	\$1,500
Architectural Components Valances	1	\$5,500	\$5,500
		Subtotal	\$64,000
		Bond/Permit/Mobilize	\$3,200
		5% Escalation Factor	\$3,360
		15% Design Contingency	\$3,528
		10% Construction Contingency	\$3,704
		TOTAL:	\$77,800

Totals:	Item	Qty	Cost
	Item	1	\$7,300
	Item	2	\$23,700
	Item	3	\$58,300
	Item	4	\$9,724
	Item	5	\$53,700
	Item	6	\$41,300
	Item	7	\$23,400
	Item	8	\$35,900
	Item	9	\$37,700
	Item	10	\$77,800
Project Total			\$366,500
	Does not include		
		item #1	

RDK Engineers Fire Suppression Upgrade Plan for the Lincoln Public Library

September 18, 2006

	FY 2008	FY 2010	FY 2011	FY 2012
	RDK Upgrade Plan Steps 1-4: Building improvements, enhance sub-basement sprinkler coverage and detection coverage, upgrade FACP, standpipes, basement sprinklers	RDK Upgrade Plan Steps 5-6: Fire pump, Preston building attic sprinklers	RDK Upgrade Plan Steps 7-9: Preston building sprinklers for first and second floors, Gund building first floor sprinklers	RDK Upgrade Plan Step 10: Gund building sprinklers for second floor and attic
FY08 Cost	\$99,024	\$95,000	\$101,800	\$77,800
FY09 5% cost increase		\$99,750	\$106,890	\$81,690
FY10 5% cost increase		\$104,738	\$112,235	\$85,775
FY11 5% cost increase			\$117,846	\$90,063
FY12 5% cost increase				\$94,566
Total Project Cost	\$416,174			

RDK Engineers Fire Suppression Upgrade Plan for the Lincoln Public Library

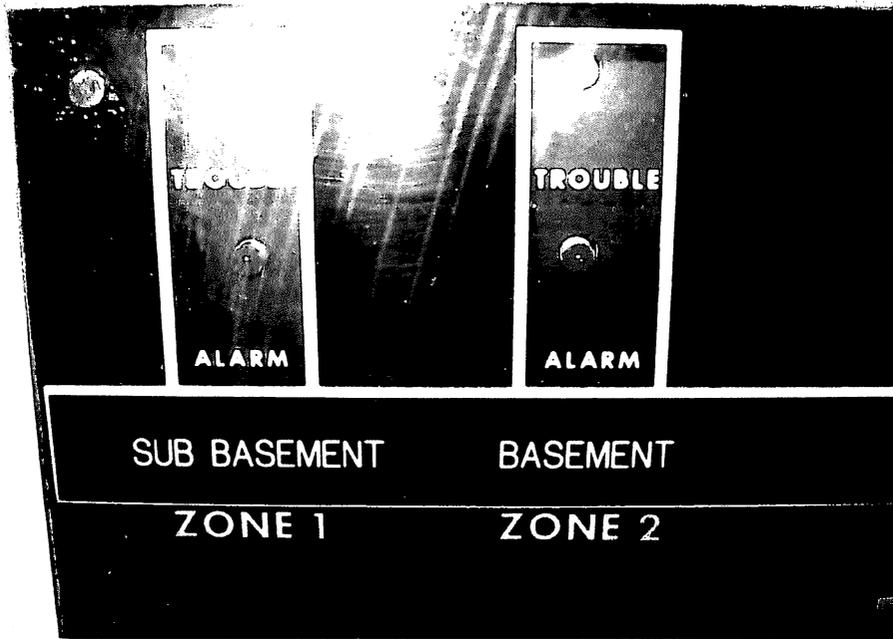
October 30, 2006

	FY 2008	FY 2010	FY 2011	FY 2012
	RDK Upgrade Plan Steps 1-4:	RDK Upgrade Plan Steps 5-6:	RDK Upgrade Plan Steps 7-9:	RDK Upgrade Plan Step 10:
Finish Design Phase	<i>construction doc</i> \$20,830			
Step 1: Base Building Improvements	<i>-book drop</i> \$7,300			
Step 2: Enhance Sub-Basement, Attic, FACP & Masterbox	\$23,700			
Step 3: Standpipe System Installation	\$58,300			
Step 4: Basement Level Sprinklers	\$9,724			
Step 5: Fire Pump Installation		\$53,700		
Step 6: Attic-Install Dry Pipe Sprinklers		\$41,300		
Step 7: Preston Building 1st Floor-Install Sprinklers			\$23,400	
Step 8: Preston Building 2nd Floor-Install Sprinklers			\$40,700	
Step 9: Gund Building 1st Floor-Install Sprinklers			\$37,700	

October 30, 2006

	FY 2008	FY 2010	FY 2011	FY 2012
	RDK Upgrade Plan Steps 1-4:	RDK Upgrade Plan Steps 5-6:	RDK Upgrade Plan Steps 7-9:	RDK Upgrade Plan Step 10:
Step 10: Gund Building 2nd Floor & "Attic"- Install Sprinklers				\$77,800
FY08 Cost	\$119,854	\$95,000	\$101,800	\$77,800
FY09 5% cost increase		\$99,750	\$106,890	\$81,690
FY10 5% cost increase		\$104,738	\$112,235	\$85,775
FY11 5% cost increase			\$117,846	\$90,063
FY12 5% cost increase				\$94,566
Total Project Cost	\$437,004			

Fire Alarm Control Panel
Lincoln Public Library



The Library's fire detection system is limited to twelve zones (two are not used):

1. Sub-Basement
2. Basement
3. Entry Level
4. Upper Level
5. Attic
6. Elevator Shaft*
7. Sprinkler
8. Duct Smoke Detector
9. Elevator Recall - Primary
10. Elevator Recall – Secondary
11. Blank
12. Blank

*Smoke Detector was removed some time ago due to false alarms caused by cold weather.