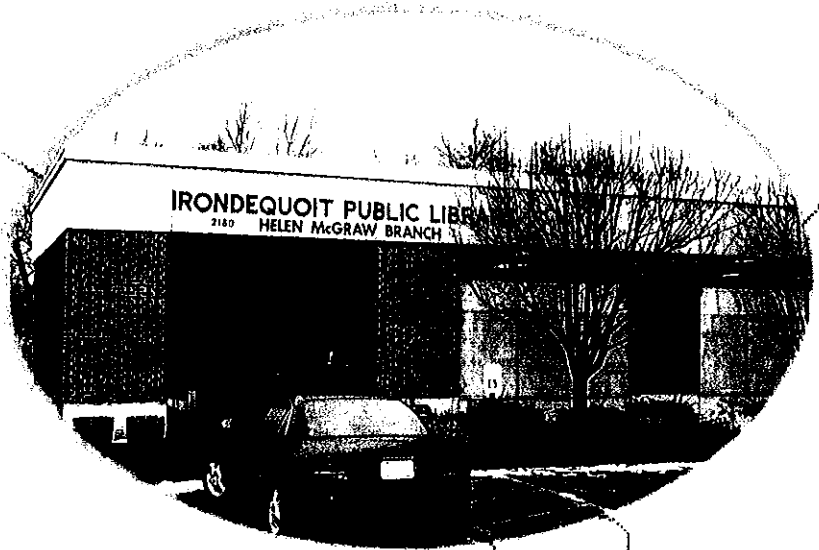
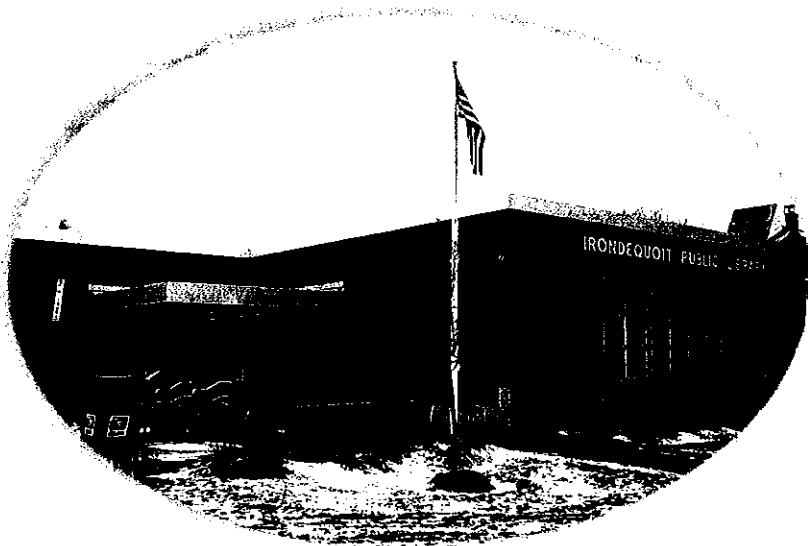


# Irondequoit Public Library System



## Building Conditions Survey January 2005



the  
**Thomas**  
A TETRA TECH COMPANY group

<b>SITE WORK</b>
------------------

**I. EXISTING CONDITIONS**

- A. Acreage : 0.72 Acres.
- B. Contiguous Sites : Mixed commercial establishments and residential housing sit contiguously to the Library.
- C. Topography : Flat and predominantly paved.
- D. Access:
  - 1. Road : Cooper Road.
  - 2. Sidewalks : Along Cooper Road as well as at perimeter areas of the building to facilitate access into the library’s main entry.
- E. Parking Lots:
  - 1. Location : The main parking lot for the building is located on the south side of the library and is directly accessible from Cooper Road.
  - 2. Handicapped Access : Four parking spaces are designated for handicapped use the building is presently wheelchair accessible.
- F. Storm Water Drainage : Stormwater presently sheet drains to existing catch basins and leaves the site through municipal storm infrastructure.

**II. CODE REQUIREMENTS**

\_\_\_\_\_ \$                    0 None  
\_\_\_\_\_

                  \$                    0        **TOTAL - CODE REQUIREMENTS WORK**

**III. ARCHITECT'S AND ENGINEER'S RECOMMENDATIONS**

**III.A. HEALTH AND SAFETY IMPROVEMENTS**

\_\_\_\_\_ \$                    0 None  
\_\_\_\_\_

                  \$                    0        **TOTAL - HEALTH AND SAFETY IMPROVEMENTS**

**III.B. FACILITY IMPROVEMENTS**

_____ \$	1,800	<b>Seal Parking Lot:</b> Clean all asphalt pavement, rout and fill cracks and relinestripe parking lot.
_____ \$	5,600	1. <b>Parking Lot Repairs:</b> Remove and replace approximate 10' X 100' section of existing parking lot that is presently depressed in elevation and as a result is ponding storm runoff.
	<u>                    </u>	
\$	<b>7,400</b>	<b>TOTAL - FACILITY IMPROVEMENTS</b>

**III.C. ENERGY CONSERVATION**

_____ \$	<u>          0</u>	None
\$	<b>0</b>	<b>TOTAL - ENERGY CONSERVATION MEASURES</b>

**III.D. HANDICAPPED ACCESSIBILITY**

_____ \$	500	1. <b>Parking:</b> The existing parking lot has four lined striped handicapped parking spaces, however only two are required in a parking lot of its size. NYS Building Code requires that each space have a minimum eight foot wide side aisle. Reline the parking spaces to include the proper sized access aisles, relocate metal signage and install a "No Parking" sign at the head of the access aisle.
	<u>                    </u>	
\$	<b>500</b>	<b>TOTAL - HANDICAPPED ACCESSIBILITY</b>

**III.E. RECOMMENDED STUDIES AND TESTING**

_____ \$	<u>          0</u>	None
\$	<b>0</b>	<b>TOTAL - RECOMMENDED STUDIES AND TESTING</b>
	<u>                    </u>	
\$	<b>7,900</b>	<b>TOTAL - SITE SYSTEMS</b>

## GENERAL CONSTRUCTION SYSTEMS

### I. EXISTING CONDITIONS

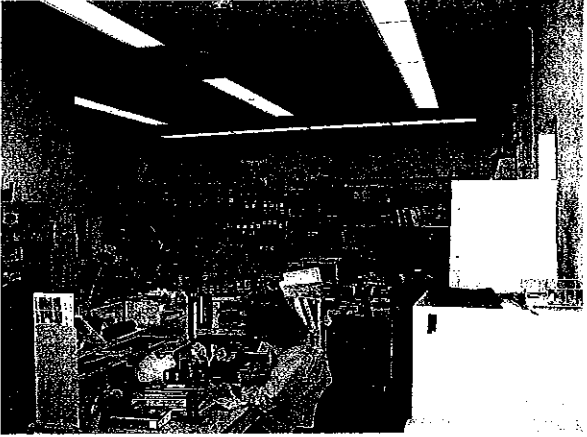
#### A. ORIGINAL BUILDING

Date of Construction	: 1963
Construction Classification	: IIB
Total Floor Area	: Total: 6,100 sf.: 1,600 sf Basement; 4,500 sf First Floor.
Number of Floors	: Ground floor with Basement.
Structural System	: Masonry bearing wall.
Floor Construction	: Concrete slab on grade (basement); concrete slab on protected steel framing (first floor).
Roof Construction	: Built-up tar and gravel roofing over insulation (1995) over 2" poured gypsum deck over 1" fiberboard over protected steel joists.
Exterior Wall Construction	: Brick veneer and limestone water table with 8" cmu back-up (no cavity); interior finish is metal lath and plaster over 1" rigid polyurethane insulation.
Interior Wall Construction	: 6" cmu with metal lath and plaster; painted.
Windows	: Aluminum sash and frame; single pane.
Exterior Doors	: Aluminum doors and frames; thermal pane.

#### B. ADDITION

Date of Construction	: 1985
Construction Classification	: IIB
Total Floor Area	: Total: 6,000 sf.: 3,000 sf Basement; 3,000 sf First Floor.
Number of Floors	: Ground floor with Basement.
Structural System	: Masonry bearing wall.
Floor Construction	: Concrete slab on grade (basement); concrete slab on unprotected steel deck and beam framing (first floor).
Roof Construction	: Adhered single-ply EPDM membrane over 3" insulation (1985) over unprotected 1 1/2" metal deck and steel bar joists.
Exterior Wall Construction	: Brick veneer with 8" cmu back-up (no cavity); interior finish is 5/8" Type "X" gypsum board over 2" rigid insulation over vapor barrier.
Interior Wall Construction	: 5/8" gypsum board over 3 5/8" metal studs; painted.
Windows	: Aluminum sash and frame; thermal pane.
Exterior Doors	: Aluminum door and frame; thermal pane. Hollow metal door and frame; painted.

**II. CODE REQUIREMENTS**

_____ \$	0	1. <b>Stairway Storage:</b> The open design of the stairs encourages storage beneath. Remove stored materials beneath stairs and maintain a no storage policy within the stair tower to comply with code.	
_____ \$	900	2. <b>Safety Glazing:</b> Glazing of panels and doors that extend within 18" of the floor must be of a safety glazing material to reduce the chance of injury due to accidental contact. Reglaze the doors and sidelites at Lower Level Meeting Room with safety glazing.	
_____ \$	0	3. <b>Path of Egress:</b> Remove carts, furniture, displays, etc. to maintain a 5' clear path of egress in vestibules and main aisles and 3'-8" in secondary aisles.	
_____ \$	300	4. <b>Door Hardware:</b> Replace closer unit on door to Lower Level Mechanical Room. Fire rated doors must be self-closing to maintain rating of the enclosure.	
_____ \$	300	5. <b>Lavatory Guards:</b> Provide premolded lavatory guards on piping beneath wall-mounted lavatory in (2) accessible toilet rooms.	
_____ \$	<b>1,500</b>	<b>TOTAL - CODE REQUIREMENTS WORK</b>	

**III. ARCHITECT'S AND ENGINEER'S RECOMMENDATIONS**

**III.A. HEALTH AND SAFETY IMPROVEMENTS**

_____	\$	2,300	1. <b>Roof Access:</b> Currently, access to roof is only by way of portable ladder. Provide new roof hatch with steel ladder within secure area on first floor to improve safety/access to roof.
_____	\$	100	2. <b>Glazing Replacement:</b> Replace broken window glazing in Staff Toilet Room.
_____	\$	900	3. <b>Exterior Door:</b> replace weatherstripping and paint hollow metal door at stair exit; adjust hardware to latch properly. Provide concrete stoop flush with exit; regrade to eliminate drop off.
_____	\$	700	4. <b>Wall Shelving Anchorage:</b> Cost includes an allowance to re-anchor current shelving that is not attached to embedded grounds provided in the construction of the original building.
_____	\$	2,300	5. <b>Water Infiltration:</b> East wall and ceiling in Director's Office is damaged due to water infiltration from Main Entrance directly above. Cost includes an allowance to investigate source/path, mediate infiltration, replace damaged acoustical ceiling tiles and repair damaged plaster wall.
_____	\$	1,300	6. <b>Changing Station:</b> provide a diaper changing station in the Men's and Women's accessible toilet stall (total of 2). Cost includes providing unit, properly installed with blocking in the wall and patching ceramic wall tile.
_____	\$	7,600	<b>TOTAL - HEALTH AND SAFETY IMPROVEMENTS</b>

**III.B. FACILITY IMPROVEMENTS**

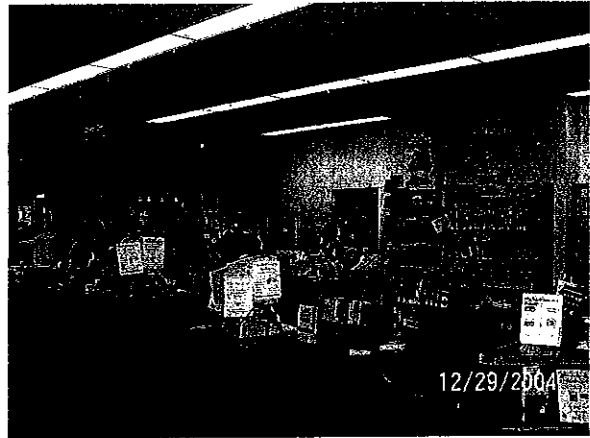
**INTERIOR**

_____	\$	600	1. <b>Door Hardware:</b> Replace damaged door closers on Lower Level Playroom and Storage Rooms.
_____	\$	200	2. <b>Elevator:</b> Existing 2500# hydraulic elevator is in serviceable condition. Controls are accessible for physically and visually impaired. Carpet should be replaced.
_____	\$	2,000	3. <b>Computers:</b> replace (2) inoperable computer stations.

\_\_\_\_\_ \$

- 22,000 4. **Casework/Furnishings:** The circulation desk and many office work stations are damaged and worn. Cost includes an allowance to replace existing circulation desk and selected workstations and provide additional storage in Workroom.

- a. Size constraints at Circulation Desk and Workroom may require displacement of staff to lower level in order to maintain path of egress noted in Section II above.



\_\_\_\_\_ \$

- 21,200 5. **Furnishings:** Much of the furnishing used by the public are damaged and worn. Cost includes an allowance to replace and/or reupholster furnishings.

- a. Replace tables to improve uniformity and appearance. Includes adjustable tables to accommodate accessibility; plastic laminate tabletops with a pvc/rubber edge to improve durability.

\_\_\_\_\_ \$

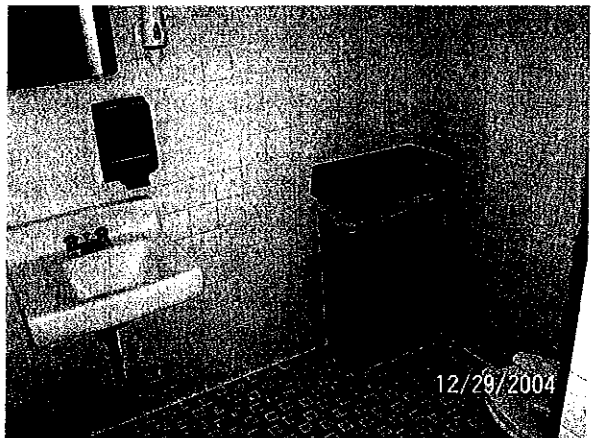
- 31,500 6. **Bookshelves:** Cost includes an allowance to replace selected worn bookshelves in the Reading Areas.



\_\_\_\_\_ \$ 1,800 7. **Kitchenette:**  
 Replace worn base and wall cabinets in Workroom with approx. 6 lf of plastic laminate cabinets / accessible sink.



\_\_\_\_\_ \$ 2,200 8. **Ceramic Tile:**  
 Regrout ceramic tile floor and walls in Men's, Women's and Staff Toilet Rooms and Custodial Closet of original building; miscellaneous patching required.



\_\_\_\_\_ \$ 33,900 9. **Floor - Carpet:** Replace carpet in all areas. Replace with higher quality/weight carpet with multiple colors to help conceal dirt. In the original building, the carpet has been installed over vinyl asbestos floor tile that may also be inadvertently removed with the carpet. Also see Section III.E below.

\_\_\_\_\_ \$ 1,600 10. **Floor - Concrete:** Provide resilient stair treads and risers in South Stair; provide vinyl composition tile on landings.

\_\_\_\_\_ \$ 3,600 11. **Floor - Concrete:** Prepare and reseal concrete floors in Lower Level Mechanical Room.

\_\_\_\_\_ \$ 15,300 12. **Wall Finishes:** Interior wall finishes are fairly modest. Consider a program of repainting walls to enhance appearance and upgrade the visual environment. Includes repair of incidental plaster damage, and sealing of cracks where needed.

\_\_\_\_\_ \$ 18,000 13. **Natural Light:** Improve level of natural lighting by providing new skylights in existing roof. Cost includes and allowance for (3) sets of skylights approximately 8'x8' (no structural modifications).

- \_\_\_\_\_ \$ 900 14. **Acoustical Ceiling Tile:** Provide ceiling and lighting upgrades in the South Stair tower of the addition. Cost includes an allowance to provide new lay-in acoustical tile and suspension grid. See Section IIIB in Electrical Systems section of this report for lighting upgrades.
- \_\_\_\_\_ \$ 14,000 15. **Acoustical Ceiling Tile:** Provide ceiling and lighting upgrades on the First Floor of the original building. Cost includes an allowance to abandon existing spline ceiling and provide new lay-in acoustical. See Section IIIB in Electrical Systems section of this report for lighting upgrades. Also see Section III.E below.
- \_\_\_\_\_ \$ 18,000 16. **Children's Area:** provide separate enclosed area. Cost includes an allowance for glazed aluminum framing enclosure and modest mechanical and electrical modifications.

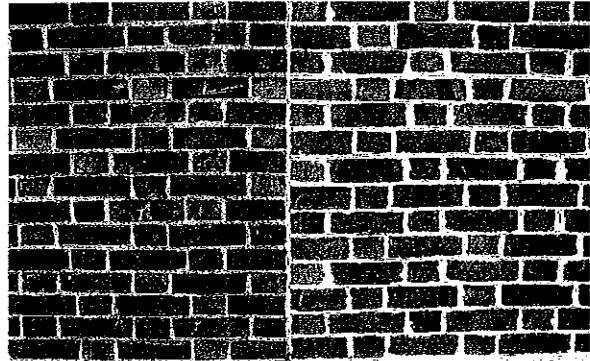
### EXTERIOR

- \_\_\_\_\_ \$ 15,000 17. **Brick/Stonework:**  
Minor brick and stone restoration is required. Repoint brick and joints in stone where necessary. Minor stone / precast patching and brick cleaning required.



- \_\_\_\_\_ \$ 60,000 18. **Roof:** The lack of a roof hatch and inclement weather precluded visual inspection of the roof. The roof on the original building was replaced in 1995 and is under warranty until 5/3/2015. One active roof leak was noted in the addition (Children's area) on the first floor. The EPDM roof on the addition is at or near it's expected serviceable life and should be replaced. New roof based on Carlisle Design A fully adhered system:
- Tapered polyisocyanurate insulation attached to deck
  - 0.060 non-reinforced EPDM membrane attached with bonding adhesive to insulation.
  - Walkway mats to and around mechanical equipment.
  - New Roof drain bodies.
  - New metal edge around perimeter.

\_\_\_\_\_ \$ 900 19. **Sealant - Joints:** Sealant in building expansion joints have dried and become brittle or split. Replace sealant.



\_\_\_\_\_ \$ <sup>300</sup>~~6000~~ 20. **Sealant – Thermal pane Aluminum Entrances and Windows:** Sealant around existing thermal pane aluminum entrances and windows have dried and become brittle or split. Replace sealant to maintain weathertight condition.

\_\_\_\_\_ \$ 0 21. **Sealant - Windows:** Much of the exterior window sealant has weathered, become brittle, cracked or split. Replace sealant to maintain weathertight condition. *\$1,500 Cost allowance to implement this recommendation is NOT included in total. See III.C. Windows for a preferred recommendation.*

\$ 263,300 ✓ **TOTAL – FACILITY IMPROVEMENTS**

**III.C. ENERGY CONSERVATION**

\_\_\_\_\_ \$ 0 1. **Roof Insulation:** Install insulation as part of the new roof system for a minimum roof system value of R-23.

\_\_\_\_\_ \$ 26,500 2. **Windows:** Existing windows provide poor thermal and air resistance. Exterior window sealant has weathered and cracked or split. Replace all single glazed windows (including bay window in front of building) with new thermally broken dual glazed aluminum framed system to improve energy efficiency and appearance. Cost also includes allowance for new blinds or shades of type to be determined.



\$ 26,500 **TOTAL - ENERGY CONSERVATION MEASURES**

**III.D. HANDICAPPED ACCESSIBILITY**

Our evaluation and recommendations are based on the design and site criteria established by the American National Standards Institute – ANSI A117.1 “Accessible and Useable Buildings and Facilities”, and the Rehabilitation Act of 1973, Public Law 93-112, Section 504. Our proposal will benefit, in our opinion, most disabled individuals requiring building and program accessibility. We believe that in addition to general accessibility, the Library may need to further implement building and programmatic modifications in response to an individual's specific and unique needs as provided under the legislative intent of aforementioned law as well as the ADA. The Americans with Disabilities Act (ADA), signed into law on July 26, 1990 mandates that all public and private accommodations be accessible to people with disabilities, and that employers make reasonable accommodations to facilitate the employment of people with disabilities.

**BUILDING ENTRY**

\_\_\_\_\_ \$            0    1. **Building Access:** The building is presently accessible; the accessible route at the main doors has automatic operators and the south exit has a ramp with railings on each side.

**INTERIOR ELEMENTS**

\_\_\_\_\_ \$            2800    2. **Door Hardware:** Many doors have orbit-style (door knobs) cylindrical locksets that do not comply with accessibility guidelines. Cost includes providing levers for doors on the accessible route, and all doors to unique programs: offices, playroom, work room, etc. Lever handles are available knurled or with abrasive coatings for entrances to hazardous spaces.

\_\_\_\_\_ \$            800    3. **Other Modifications:**  
a. Provide knurling on door hardware to hazardous areas that currently have leversets.  
b. Provide tactile surface at tops of all staircases.  
c. Install signage that provides emergency information and room identification.

\_\_\_\_\_ \$            3,600    **TOTAL - HANDICAPPED ACCESSIBILITY**

**III.E. RECOMMENDED STUDIES AND TESTING**

\_\_\_\_\_ \$            1. **Asbestos Containing Building Materials:** We recommend further investigation of the suspected materials noted below. The cost allowances are intended to provide an allowance for remediation of disturbed asbestos containing materials during renovation work. Items noted are based entirely on our past experience of similar materials that have a high likelihood of containing asbestos. In order to be in compliance with state and federal regulations, all materials that might contain asbestos and that will be disturbed by the renovations must be tested to confirm or refute the presence of asbestos. Testing has not been performed for this report.

19,000    a. **Flooring – carpet removal** sometimes leads to the unintentional removal of vinyl asbestos floor tile (VAT) beneath. Cost assumes abatement of all existing VAT and mastic in original building.

_____	\$	19,200	b. Spline Ceiling – the mastic used to install 12”x12” spline ceilings of this era may contain asbestos. Removal of the existing ceiling would allow for mechanical modifications, an accessible ceiling plenum and potential for increased ceiling height in some areas. Cost assumes abatement of all existing ceiling tile and mastic in original building.
_____	\$	12,000	c. Pipe fitting insulation – some observed fittings are suspected of asbestos and could affect modifications of the piping in those areas.
	\$	<b>50,200</b>	<b>TOTAL - RECOMMENDED STUDIES AND TESTING</b>
	\$	<b>352,700</b>	<b>TOTAL - GENERAL CONSTRUCTION SYSTEMS</b>

**ELECTRICAL SYSTEMS**

**I. EXISTING CONDITIONS**

**A. ORIGINAL BUILDING & ADDITION:**

- 1. Service and Distribution:
  - a. Service Entrance : Overhead, Primary; Underground, Secondary
  - b. Metering : Secondary.
  - c. Voltages : 120/240V, delta, 3PH.
  - d. Size : 600 amperes.
  - e. Main Dist. Panel : Circuit breaker.
  - f. Local Panels : Circuit breaker.
  
- 2. General Wiring:
  - a. Majority of wiring does meet the National Electrical Code.
  - b. Location and quantity of convenience receptacles is adequate, per code.
  - c. Majority of convenience receptacles are of the grounded type.
  - d. Location and quantity of light switches is adequate.
  
- 3. Lighting:
  - a. The majority of the lighting throughout the facility is fluorescent lighting fixtures, utilizing T12 fluorescent lamps and electro-magnetic ballasts. Some storage and mechanical rooms have incandescent lamp sockets, with retrofitted fluorescent bulbs. Exterior lighting is mainly HID lighting, with building mounted floodlights and some parking lot lighting poles.
  
- 4. Fire Alarm System:
  - a. Make : Westec
  - b. Equipment : smoke detectors, thermal detectors, drill switch, remote annunciator, trouble light.
  
- 5. Clock and Program System : None.
  
- 6. Sound System : None.
  
- 7. Intercom System : None.
  
- 8. Emergency Lighting/Power:
  - a. Lighting : Local emergency lighting battery units located throughout the facility, including stairwells, corridors and public spaces. Location and spacing are adequate.
  
  - b. Power : None.

**II. CODE REQUIREMENTS**

* _____ \$	0	1. <b>Emergency Lighting:</b> None See III.A. Emergency Generator (below) for a preferred recommendation.
* _____ \$	500	2. <b>Exit Lights:</b> Install exit lights, to replace some unlit exit signs, to more clearly define the path of egress.
* _____ \$	24,500	3. <b>Fire Alarm System:</b> Replace the entire fire alarm system including all devices and wiring with a new 24 volt DC supervised fire alarm system with fire alarm pull stations, heat detectors, smoke detectors battery backup and municipal connection. New system will be zoned with associated graphic and annunciator panels. Also system to be microprocessor based with remote monitoring of system capable from an assigned PC.
_____ \$	<b>25,000</b>	<b>TOTAL - CODE REQUIREMENTS WORK</b>

**III. ARCHITECT'S AND ENGINEER'S RECOMMENDATIONS**

**III.A. HEALTH AND SAFETY IMPROVEMENTS**

_____ \$	30,000	1. <b>Emergency Generator:</b> Install a new 75KW emergency generator in the building and install new emergency lighting in all areas of assembly, all corridors, and all stairwells in the building. Also generator shall be connected to elevator, HVAC system and all exit lights in the building.
_____ \$	<b>30,000</b>	<b>TOTAL - HEALTH AND SAFETY IMPROVEMENTS</b>

**III.B. FACILITY IMPROVEMENTS**

_____ \$	20,000	1. <b>Computer Network Cabling System:</b> Expand the Ethernet based computer networking system throughout the building, including a new enclosed data distribution rack(s) with additional space for all network hardware. Reuse existing network hardware where possible and upgrade where necessary. Additional computer network outlets will be installed in all staff and public occupied spaces and office areas.
_____ \$	5,400	2. <b>Convenience Receptacles:</b> Provide additional convenience receptacles in most offices and public spaces to discourage the use of adapters and extension cords.
_____ \$	60,500	3. <b>Lighting System:</b> Install new light fixtures in all public spaces and offices. Existing light fixture are nearing the end of life expectancy and are in fair condition. New lights would be fluorescent high-efficiency with T-8 lamps and electronic ballast. Circuit wiring and switches to be replaced and switching patterns revised to facilitate operational use of the facility.
_____ \$	1,500	4. <b>Exterior Lighting:</b> Provide additional vandal resistant high-pressure sodium exterior lighting north side of the building to increase building security.

_____	\$	12,000		5. <b>Power Panels &amp; Circuit Wiring:</b> Upgrade existing power panels and provide with TVSS (transient voltage surge suppression), to enhance protection to the circuits associated with computers, televisions and similar electrical devices. Increase new panel circuit capacity. Provide two additional branch circuits per classroom and one per office.
_____	\$	19,500		6. <b>Security System:</b> Install a new microprocessor based security system with municipal connection, graphic panel, and office annunciator. The system will consist of passive infrared sensors in the corridors and sensitive office areas, magnetic door contacts for all exterior doors and security horns for local annunciation. The system will have the capability for silent alarm, with reporting to the local law enforcement agencies.
_____	\$	17,750		7. <b>Telecommunications/Sound System:</b> Provide a new telecommunications and public address sound system that shall provide for telephones with touch pads will be installed in each room to allow communication between rooms without disturbing the main desk. Provide public address speakers and wiring to all occupied rooms.
_____	\$	6,000		8. <b>CATV Television System:</b> Install a new broadband television distribution system throughout the building. The new system will include amplifiers, modulators, combiners and RG-6 & RG-11 coaxial cable with new television outlets in all public spaces.
	\$	<b>142,650</b>		<b>TOTAL - FACILITY IMPROVEMENTS</b>

**III.C. ENERGY CONSERVATION**

_____		None.		
	\$	0		<b>TOTAL - ENERGY CONSERVATION MEASURES</b>

**III.D. HANDICAPPED ACCESSIBILITY**

_____	\$	3,200		1. <b>Assistive Listening:</b> Provide an enhanced assistive listening system for public spaces, particularly presentation areas. (Expand existing portable system.)
	\$	<b>3,200</b>		<b>TOTAL - HANDICAPPED ACCESSIBILITY</b>

**III.E. RECOMMENDED STUDIES AND TESTING**

_____		None.		
	\$	<b>0</b>		<b>TOTAL - RECOMMENDED STUDIES AND TESTING</b>
	\$	<b>200,850</b>		<b>TOTAL - ELECTRICAL SYSTEMS</b>

**MECHANICAL SYSTEMS**

**I. EXISTING CONDITIONS**

A. Primary Systems:

- 1. Water Systems : Municipal system  
Water is not softened.
- 2. Sewage Disposal : Municipal system
- 3. Storm Water Disposal : Municipal system
- 4. Fuel : Low Pressure Natural Gas
- 5. Heating Plant : 1 Burnham Boiler  
Sectional Cast Iron  
Natural gas - 594mbh input / 475 out  
Atmospheric burner  
Single inline circulator pump  
Hot Water  
1 Carrier roof top furnace  
Natural Gas fired – 203mbh input / 160 out
- 6. Domestic Hot Water : Directly Heated  
40 gallon tank  
Natural Gas Heat  
General Building Use  
Directly Heated  
30 gallon tank  
Electric Heat  
General Building Use (addition)
- 7. Air Conditioning : Roof top AHU  
Two Stage Reciprocating (~5T ea.)  
Rooftop Condensing Unit serves basement AHU.  
Electric Steam Humidifier serves main AHU only.
- 8. Fire Protection : Fire Hydrant  
Off-Site  
Sprinklers  
None  
Standpipes  
None  
Fire Extinguishers  
Appropriate Types  
Suitably Located, surface mounted  
Recently Inspected

- 9. Distribution System:
  - a. Heating Hot Water : Water to serve the heating requirements is pumped through the boiler, adjacent duct coils, and incidental radiation by a single pipe mounted in line pump. The piping appears original, is a mix of black steel and copper, and is partially insulated with mud packed fittings that may contain asbestos.
  - b. Domestic Water : Domestic water piping is copper.
  - c. Air : Plenum and ducted return, partially un-insulated galvanized steel supply duct. Main AHU in basement serves original building. RTU serves addition.
- 4. Controls : The building has an early vintage Direct Digital Control (DDC) system without reasonable user interface.

**B. Secondary Systems**

- 1. Main Library Room (original Construction):
  - a. Heating : Heating coils in ducted system.
  - b. Cooling : Dx in AHU.
  - c. Ventilation : Through AHU.
  - d. Relief Air : No apparent dedicated path.
- 2. Main Library Room (addition):
  - a. Heating : Furnace in RTU.
  - b. Cooling : Dx in RTU.
  - c. Ventilation : Through RTU.
  - d. Relief Air : Through RTU.
- 3. Staff Room (upstairs):
  - a. Heating : Heating coil in ducted system.
  - b. Cooling : Dx in AHU.
  - c. Ventilation : Through AHU.
  - d. Relief Air : No apparent dedicated path.
- 4. Admin Office Area (downstairs):
  - a. Heating : Heating coil in ducted system.
  - b. Cooling : Dx in AHU.
  - c. Ventilation : Through AHU.
  - c. Relief Air : No apparent dedicated path.
- 5. Various Meeting Rooms (downstairs):
  - a. Heating : Furnace in RTU.
  - b. Cooling : DX in RTU.
  - c. Ventilation : Through RTU.
  - c. Relief Air : Through RTU.
- 6. Corridors and Vestibules (construction year varies):

- a. Heating : Fin tube radiation and convectors / minimal.
  - b. Cooling : None.
  - c. Ventilation : None.
  - d. Relief Air : None.
2. Toilets (construction year varies):
- a. Heating : Typically transfer air from corridors or convectors.
  - b. Cooling : None.
  - c. Ventilation : Exhaust air drawn from corridor under door.
  - d. Exhaust Air : Exhaust air exits the building through ceiling fan.
15. Custodial closets / storage spaces / mech spaces (construction year varies):
- a. Heating : Typically transfer air from corridors and un-insulated heating piping.
  - b. Cooling : None.
  - c. Ventilation : Transfer air from corridors.
  - d. Mechanical exhaust : Some have power exhaust fans, others have no exhaust.

**II. CODE REQUIREMENTS**

_____ \$	0	1. <b>Flame Safeguard:</b> Provide electronic flame safeguard controls for the gas fired water heater to close the main fuel valve within 4 seconds of flame failure. (Included in main boiler replacement recommendation)
_____ \$	0	<b>TOTAL - CODE REQUIREMENTS WORK</b>

**III. ARCHITECT'S AND ENGINEER'S RECOMMENDATIONS**

**III.A. HEALTH AND SAFETY IMPROVEMENTS**

_____ \$	3,000	1. <b>Combustion Air Intake / Boiler Room Ventilation:</b> Provide dedicated combustion air intake separate from ventilation air inlet to AHU. Install power exhaust system in Boiler Room to prevent heat buildup.
_____ \$	4,000	2. <b>Fire Dampers:</b> Install fire dampers and access doors on all ductwork penetrations of Boiler Room walls.
_____ \$	5,000	3. <b>Janitor's Closet Exhaust:</b> Install power exhaust system to provide proper ventilation in janitors closets and toilet rooms.
_____ \$	4,000	4. <b>Elevator Machine Room Exhaust:</b> Install power exhaust system to provide required ventilation in elevator machine room.
_____ \$	1,000	5. <b>Domestic Hot Water:</b> Reduce domestic hot water temperature for general use to a nominal 105E F to improve safety. Provide a new gas fired water heater to maintain 140E F storage temperature.
_____ \$	25,000	6. <b>Duct Cleaning and Insulation:</b> Original HVAC ductwork serving building should be thoroughly cleaned and sanitized. Ductwork should be insulated to minimize energy use and eliminate condensation and subsequent moisture damage. Recommendation includes minor duct re-configuration as required to better match original duct system to current space uses, but complete replacement is not required or included. Includes re-balancing and associated ceiling work as required.
_____ \$	2,500	7. <b>Added Heat:</b> Work Room was cold and in need of additional radiation or other form of heat. Provide with additional hydronic heat and associated temperature control.
_____ \$	500	8. <b>Backflow Preventers:</b> Provide reduced pressure zone backflow preventers on boiler feed lines to protect the potable water supply from boiler chemicals.
_____ \$	500	9. <b>Wrist Blades:</b> Provide a "hands-free" hospital type faucets for the sinks in the toilet and staff rooms to improve handwashing sanitation and accessibility.
_____ \$	8,000	10. <b>Humidity Control:</b> Repair/ upgrade humidifier to maintain building humidity at recommended levels
_____ \$	<b>53,500</b>	<b>TOTAL - HEALTH AND SAFETY IMPROVEMENTS</b>

**III.B. FACILITY IMPROVEMENTS**

_____ \$	5,000	1. <b>Testing and Balancing:</b> Test, adjust and balance air distribution of heating and ventilating units and hot water heating system to insure system is operating as required to maintain required ventilation levels and comfort at lowest energy use levels.
_____ \$	20,000	2. <b>New Controls:</b> Install new energy management and control system to allow more individualized zone by zone control of temperature and humidity in various spaces. Includes graphical computerized interface for ease of monitoring, scheduling, and adjustments.
_____ \$	26,000	3. <b>Boilers:</b> Replace existing boiler which has reached the end of it's useful life. Replacement recommended includes two smaller boilers of higher (condensing ) efficiency for reduced energy cost and redundancy, and associated pumps and controls.
_____ \$	55,000	4. <b>Roof Top HAC Unit and Condensing Unit:</b> Replace old RTU and condensing unit which have reached the end of their useful life. Replacement recommended before failure removes AC and associated humidity control. Replacement units will be of higher energy efficiency. Cost listed includes controls to allow full capacity cooling without over-cooling certain spaces.
_____ \$	2,000	5. <b>Filters:</b> Install new filter rack in AHU return plenum designed to minimize pressure drop while allowing higher efficiency filters – thereby minimizing maintenance time as well as the accumulation of lint, dust, dirt, etc., on equipment and in air.
_____ \$	<b>108,000</b>	<b>TOTAL - FACILITY IMPROVEMENTS</b>

**III.C. ENERGY CONSERVATION**

_____ \$	0	6. <b>Energy Conservation Measures Included:</b> Many of the upgrades listed above assume premium efficiency equipment, however they may also include increased ventilation rates or adding heat else where, so savings are not predicted at this point.
_____ \$	<b>0</b>	<b>TOTAL - ENERGY CONSERVATION MEASURES</b>

**III.D. HANDICAPPED ACCESSIBILITY**

_____ \$	None.	
_____ \$	<b>0</b>	<b>TOTAL - HANDICAPPED ACCESSIBILITY</b>

**III.E. RECOMMENDED STUDIES AND TESTING**

Note: Costs presented for each item listed below include the cost of the study and/or test only.

* _____	\$	1,000	1. <b>Asbestos survey and removals:</b> many of the heating and plumbing pipes are insulated with "mud" packing, installed at a time when asbestos was used for this purpose, and they appear to be asbestos. This should be tested and if found positive, abated. Cost listed is for testing only.
		_____	
	\$	1,000	<b>TOTAL - RECOMMENDED STUDIES AND TESTING</b>
		_____	
	\$	162,500	<b>TOTAL - MECHANICAL SYSTEMS</b>