TOWN OF WATERFORD
CAPITAL IMPROVEMENT PLAN
PROJECT CONSOLIDATION FORM-FY 2022-2026

	DEPARTMENT/ AGENCY:	Library						
DEPT PRIORITY	PROJECT NAME	FUNDING SOURCE	FISCAL YEAR 20212022	FISCAL YEAR 2022-2023	FISCAL YEAR 2023-2024	FISCAL YEAR 2024-2025	FISCAL YEAR 2025-2026	TOTAL
1	Library HVAC upgrade	3 & 8	445,600.00	445,600.00				**891,200.00**
								0.00
								0.00
								0.00
								0.00
								0.00
								0.00
								0.00
								0.00
	TOTALS		**445,600.00**	**445,600.00**	**0.00**	**0.00**	**0.00**	**891,200.00**

INDEX TO FUNDING SOURCES,

1 CURRENT YEAR CAPITAL IMPROVEMENTS
3 UTILITY BUDGET/SEWER CAPITAL MAINTENANCE FUND
3 TRANSFER TO CAPITAL & NONRECURRING.
4 SHORT AND LONG TERM DEBT FINANCING
5 LoCIP
6 CNR UNDESIGNATED FUND BALANCE
7 FEDERAL/STATE GRANTS
8 OTHER FUNDING

Library received CT Public Library Construction Grant for $250,000.
Grant deadline to get local funding in place: November 2022/FY 2023

TOWN OF WATERFORD
CAPITAL PROJECT REQUEST FORM

DEPARTMENT/AGENCY Library	**CONTACT PERSON** Roslyn Rubinstein and Abby Piersall
PROJECT NAME Library HVAC Upgrade	**DEPARTMENT PRIORITY** 1

1 DESCRIPTION AND JUSTIFICATION (describe the type, purpose & anticipated accomplishments of the project)

The Waterford Library's HVAC systems are obsolete and in need of replacement. The current systems were installed in multiple phases between 1965 and 1999. They are past their useful operating life and require frequent maintenance. Silver-Petrucelli and Associates completed an engineering study in 2018 (FY'18 CIP) that evaluated the systems and provided recommendations for improvements. The attached report details their assessment of existing conditions and options for replacement. Option 1 was chosen as the most cost effective solution that would best suit the needs of the Library into the future. The cost of Option 1 was quoted at $1,034,000. Silver Petrucelli also provided a quote to assist the Town in preparing specifications, bid documents, and construction oversight. The cost for this service was quoted at $15,200. The request for the project, based on the August 2018 study, was submitted for FY'20 CIP at $1,049,200 and deferred to FY'21. With the deferral, the vendor recommended an additional 3.5% - 4% increase in costs ($42,000) bringing the FY'21 request to $1,091,200. In November 2019 the library was award a CT Public Library Construction Grant and as per the grant guidelines the town has 3 years (November 2022/FY'23) to secure local funding . The first selectman recommends spreading the project over three years with the first appropration of $200,000 approved in FY'21. The $250,000 grant will offset the total CNR appropriation and absorb any additional cost increases.

2 PROJECT STATUS IF IN PROGRESS

Study and recommendations complete.

3 LIST OTHER PROJECTS WITHIN YOUR DEPARTMENT OR ANOTHER DEPARTMENT THAT WILL BE IMPACTED BY THIS REQUEST

Town project (P&Z, DPW) to work with Eversource to extend gas line down Rope Ferry Road.

4 DESCRIBE THE IMPACT ON DEPARTMENT OPERATING BUDGET (include cost estimate if applicable)

Since FY'07 repairs to library's main HVAC equipment, 4 furnaces and 2 A/Cs, and the engineering study/recommendations have cost over $80,000 (see attached). Repairs have been increasing in frequency and cost as the systems age and deteriorate. The upgrade will result in energy efficiency, reduced energy consumption and reduced costs of repairs, parts replacements, etc. The conversion to gas from fuel oil will result in not only monetary savings but also provide a cleaner, greener system. Also, but not quantifiable, is the positive impact on customer service with fewer incidents of no or insufficient heat and/or AC.

5 GRANT FUNDING/OTHER FUNDING, if applicable (detailed explanation of grant/other funding, including the amount, source of funding, status, town match, if any. Attach award letter if available)

This library has received a State Public Library Construction Grant for $250,000 for this project. Copies of the award letter, grant application and supporting documentation are included. As per the grant guidelines the library has until November 2022/FY 2023 to get local funding in place.

6 ATTACH PLAN ESTIMATE, SERVICE AREA MAP AND/OR OTHER SUPPORTING DOCUMENTATION (if none, simply state that in the area below)

Silver Petrucelli report and quotes are included. Also included are the State Library Construction library's state construction grant documents.

7 COST/FUNDING SOURCE

	FUNDING SOURCE	APPROVED FUNDING TO DATE	FY2022	FY2023	FY2024	FY2025	FY2026
1	Current Year Capital						
2	Utility Budget/Sewer Cap Maint Fund						
3	Transfer to CNR	200,000	445,600	445,600			
4	Short/Long-term Bonds						
5	LoCIP (detail in section 5 above)						
6	CNR Undesignated Fund Balance						
7	Federal/State Grants (detail in section 5)						
8	*Other Funding (detail in section 5 above)			250,000			
	TOTALS	**200,000**		**0**	**0**	**0**	**0**

*State Library Construction Grant funds will offset the CNR appropriation.

Waterford Public Library
CIP 2022 – 2026 HVAC Upgrade Submission

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5-YEAR CAPITAL IMPROVEMENT PLAN
FISCAL YEARS 2022 - 2026

REPAIR HISTORY - LIBRARY HVAC SYSTEMS

FY'21 y-t-d		$2,589.25
FY'20		$9,323.34
FY'19		$4,427.00
FY'18		$5,630.00
FY'18	CIP - engineering study	$9,600.00
FY'17		$1,755.00
FY'16		$5,172.00
FY'15		$2,790.00
FY'14		$3,983.00
FY'13		$9,953.00
FY'12		$2,756.00
FY'11		$1,971.00
FY'11	CIP - repairs	$12,060.00
FY'10		$2,000.00
FY'09		$3,673.00
FY'08		$1,908.00
FY'07		$1,202.00
TOTAL		$80,792.59

Roslyn Rubinstein

From: Wayne Fraser
Sent: Wednesday, October 16, 2019 12:17 PM
To: Roslyn Rubinstein; Abby Piersall
Subject: FW: HVAC Project Budget increases

For your backup info

From: Ken Eldridge <keldridge@silverpetrucelli.com>
Sent: Tuesday, October 08, 2019 1:27 PM
To: Wayne Fraser <wfraser@waterfordct.org>
Subject: Re: HVAC Project

Wayne we're seeing 3.5% per year but the labor market is flush right now and I would lean more to 4.5% per year.

Sent from my iPhone

From: Wayne Fraser <wfraser@waterfordct.org>
Sent: Tuesday, October 8, 2019 10:48:15 AM
To: Ken Eldridge <keldridge@silverpetrucelli.com>
Subject: FW: HVAC Project

Ken what percentage increase would you recommend for budget projections? I was thinking 5% to cover increases?

From: Roslyn Rubinstein <rrubinst@waterfordct.org>
Sent: Tuesday, October 08, 2019 10:32 AM
To: Wayne Fraser <wfraser@waterfordct.org>
Cc: Abby Piersall <apiersall@waterfordct.org>
Subject: RE: HVAC Project

Can we get something in writing from the S/P? I'm concerned about documentation for budget hearings.

From: Wayne Fraser <wfraser@waterfordct.org>
Sent: Tuesday, October 08, 2019 10:26 AM
To: Roslyn Rubinstein <rrubinst@waterfordct.org>
Cc: Abby Piersall <apiersall@waterfordct.org>
Subject: RE: HVAC Project

Use 5%

From: Roslyn Rubinstein <rrubinst@waterfordct.org>
Sent: Tuesday, October 08, 2019 9:57 AM
To: Wayne Fraser <wfraser@waterfordct.org>
Cc: Abby Piersall <apiersall@waterfordct.org>
Subject: RE: HVAC Project

At this point I am resubmitting the project that was deferred – just the HVAC. Can we get a number from Silver/Petrucelli on the inflator for that?

SILVER/PETRUCELLI+ASSOCIATES
Architects and Engineers
3190 Whitney Avenue, Hamden, CT 06518-2340
Tel: 203 230 9007 Fax: 203 230 8247
silverpetrucelli.com

August 28, 2018

Mr. Wayne Fraser
Municipal Facility Coordinator
Waterford Town Hall
15 Rope Ferry Road
Waterford, CT 06385

RE: Waterford Public Library
Support of Design/Build Effort
S/P+A #18.024

Dear Wayne:

As you know, we have been working with you and Ms. Roslyn Rubenstein on the evaluation of mechanical systems at the Waterford Public Library, which is now complete. I am pleased to submit this fee proposal for assistance with the Design/Build effort, as it relates to mechanical and electrical system improvements at that building.

DESIGN/BUILD PERFORMANCE SPECIFICATION

We can provide a guideline for Design/Build contractors and our tasks will include:

1. Perform detailed site investigation of existing conditions.
2. Perform detailed heating/cooling load calculations of building HVAC loads to document approximate system capacities.
3. Produce Design/Build Performance Specification defining the design parameters for qualified contractors and their associated Engineer of Record (EoR).

BID PHASE ASSISTANCE

We can provide minimal assistance during the Bid Phase as indicated below:

1. Attend a Pre-bid walk-thru.
2. Evaluate and assist the Town in responding to contractor RFI's.
3. Assist the Town with evaluation of bids and bidders.

CONSTRUCTION ADMINISTRATION

Although the EoR is responsible for development of shop drawings and submittals for their design, we will provide assistance to the Owner in determining whether the design-build team is straying or within the criteria and guidelines set forth in the Performance Specification. Services provided under this phase will consist of the following:

1. Attend pre-construction meeting.
2. Cursory Review of Contractor's Product Data and Shop Drawing submittals for compliance with Performance Spec.
3. Provide site observation visits (4) prior to completion of project.
4. Coordination with contractors to clarify designs.
5. Review EoR Punch List of completed installation.
6. Review Closeout submittals.

COMMISSIONING

Commissioning (Cx) services are now required to be performed on all mechanical systems in this size range in accordance with the upcoming CT State Building Code (2015 International Energy Conservation Code will be in effect), however are excluded from this proposal at this time. Acting as an Owner's Representative on the development of the Performance Spec, it would be suitable and sensible to consider us for the Cx Agent to represent the Town throughout the installation as well. Should these services be required from us at a later date, we can prepare a proposal for an appropriate level of Commissioning/ support that we would be pleased to provide you at that time.

SERVICES NOT INCLUDED

We are capable of providing a wide range of additional services should you require the assistance, or should the project scope be revised. These excluded services include:

1. Architectural services.
2. Environmental inspection, testing, design and monitoring services.
3. Civil engineering services.
4. Structural engineering services.
5. Fire protection engineering.
6. Commissioning and Commissioning Support.
7. Printing of Bid Sets.

8. Preparation/documentation of more than three design alternates.
9. Energy estimating, energy modeling and/or life cycle cost analysis.
10. Development of Contract Documents suitable for obtaining competitive bids and for obtaining required permits.

COMPENSATION

We propose to accomplish any of the tasks identified in this proposal for the lump sum fees outlined below:

Design/Build Outline Specification:	$ 6,560
Bid Phase Assistance:	$ 1,360
Construction Administration:	$ 7,200
Total	$ 15,120

These fees include expenses related to travel but exclude document reproduction costs which will be billed at 1.10 times actual expense. Invoices will be submitted on a regular basis, and payment will be due within thirty (30) days.

Thank you for the opportunity to submit this proposal. If you are in agreement, please issue a Purchase Order.

Very truly yours,

Kenneth J. Eldridge, P.E.
Senior Engineer

Town of Waterford, Connecticut

Evaluation of the Existing HVAC Systems

Waterford Public Library Building

49 Rope Ferry Road
Waterford, CT 06385

Final Report: August 10, 2018

Prepared by:

Silver/Petrucelli + Associates
Architects / Engineers / Interior Designers
3190 Whitney Avenue
Hamden, CT 06518

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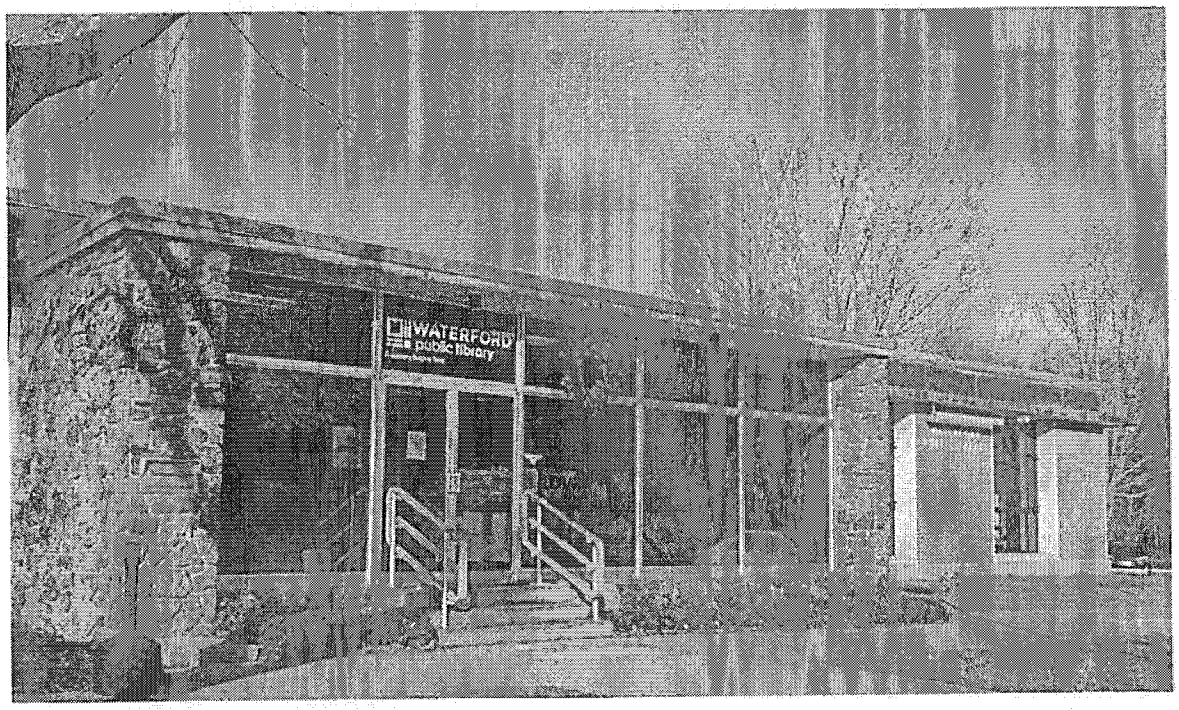
Section I – Executive Summary

The services of Silver / Petrucelli + Associates (S/P+A) have been secured by the Town of Waterford, Connecticut to provide an engineering assessment of the heating, ventilation and air-conditioning (HVAC) systems serving the existing Waterford Public Library, located at 49 Rope Ferry Road.

This report of our investigation and study describes the existing conditions and proposed HVAC system improvements required to provide adequate space comfort, energy efficiency and improved air diffusion Control for the Public Library. The current building HVAC systems serve the Town's library space environment needs; however, comfort issues are now the norm, concerns over indoor air quality (IAQ) and system performance have beset the building, most notably in the addition stacks, almost from the onset of HVAC systems' installations.

This report was prepared by S/P+A of Hamden, Connecticut, an architecture, engineering and interior design collaborative specializing in municipal town planning, historic restoration, master planning and design.

The collected data was organized and appears in sections of this report in the form of existing conditions summary, recommendations, conclusions, an opinion of probable costs for proposed renovations, existing conditions photographs and a list of current applicable codes.



APPLICABLE CODES

The proposed upgrades require that the building be brought up to full current code standards. The codes to which the mechanical systems have been evaluated include:

- Connecticut State Building Code (CSBC) with 2016 Connecticut Supplements
- 2012 International Building Code (IBC)
- 2012 International Mechanical Code (IMC)
- 2012 International Plumbing Code (IPC)
- 2012 International Energy Conservation Code (IECC)
- 2014 NFPA 70 National Electric Code (NEC)

Any work done to the building will need to be performed to the Code cycle that is in force at the time; Connecticut is expected to be updating the Codes effective October 1, 2018, to the 2015 ICC Compilation and is anticipated to enact the next level of Codes every three years, thereafter.

PROJECT OBJECTIVE

The primary objective of this report is to provide the Town with an assessment of the present condition of existing equipment and systems serving the Public Library, address comfort and indoor air quality (IAQ) concerns, analyze equipment capacity and provide a preliminary opinion of probable costs for any related modification options that may be considered. The existing oil-fired equipment serving this building are operating beyond their useful service life expectancies and, in many cases, are incapable of maintaining setpoints related to occupant comfort within these spaces. For these reasons, natural gas-fired rooftop and central station air handling equipment is proposed. The new units are proposed to be gas-fired since natural gas line installation has been proposed by the Town and is nearly underway on Rope Ferry road in front of the library. In addition, because of their ability to move larger quantities of air – an aspect which would alleviate distribution concerns in the stacks and areas with high ceilings – and temper large quantities of ventilation air, these units are the most suitable choice. Other systems, such as the split-ductless, variable refrigerant volume (VRF) type system, most notably recommended for the recent HVAC upgrades at the Town Hall and Youth Services Bureau Building, were not considered due to their inability to overcome the distribution and ventilation quantity issues. When confronted with these exact performance drawbacks at the Town Hall - namely in the Auditorium - gas-fired rooftop equipment was the system of choice there as well.

Lastly, we performed schematic-level, computer block-load heating and cooling calculations to compare present building envelope loads to what could be anticipated upon the replacement of the original windows by incorporating modern, "state-of-the-art" replacement window models. The results are eye-opening and substantiate the rule of thumb stating that window replacements of this type can see payback periods of five (5) years or less.

PROCESS

This report was developed with the input of facility staff, maintenance personnel and visual observations of the existing facilities by our engineering staff and review of available existing conditions drawings and records. Our directive was to develop a report wherein a qualified Design-Build Contractor shall be able to understand the recommended systems being considered and successfully begin the processes of designing and budgetary pricing, leading to commencement and installation, with the understanding that all work to be performed will be done while the building is still both occupied and functioning in its capacity as the Town Public Library.

SP+A would especially like to thank Ms. Roslyn Rubenstein, Director of the Library and Mr. Michael Miceli, Building Operations Manager for their extensive contribution of time, data, input and access, and to the staff that provided their day-to-day experiences with the existing environmental conditions – both positive and negative.

Section II – Existing Conditions

In 1965, the Town built the "New" Public Library at its current location, which utilized oil-fired equipment for heating and ventilation of the building. In 1975, an addition was built to expand the library and its services to the community. The 1975 addition included roof mounted, oil-fired HVAC equipment as well. In 1976 mechanical modifications were done to the addition. New mechanical equipment was added in 1999 to serve the new addition as well as a portion of the existing building spaces.

Public Library Building Systems

Space heating and cooling for the building is provided by oil-fired equipment located in the basement, as well as from one oil-fired, air handling unit on the roof. The other rooftop mounted unit (RTU) is for cooling-only and utilizes direct expansion (DX) refrigeration. Basement oil-fired heating and ventilating (H&V) units were installed in 1999 and are approaching the end of their useful life – close to twenty years. The basement units are manufactured by Jackson and Church and the York Corporation. It appears that the intent of these units was to offset perimeter heat losses, while utilizing the existing RTU's provide the space conditioning for the interior portion of the library. The basement H&V units do not have cooling capability. Ventilation air is supplied to all the units through a wall-mounted louver connected to a common vent which each unit draws from. Fresh air is then distributed throughout the facility by the air handling equipment located in the basement and on the roof via ductwork serving the space.

The RTU's are either mounted on curbs or steel dunnage on the existing roofs. Judging by their current state these units are in poor condition and past their useful service life expectancy. The complaints by occupants indicate that there does not seem to be enough airflow, particularly in the stacks, and maintaining the thermostat setpoint is difficult.

There is an existing 2,000-gallon, underground fuel-oil storage tank located in the front of the library. It was originally scheduled for replacement in 3 years, however with the proposed gas

service installation this could be moved up in schedule.

There are three (3) split air conditioning systems serving the library. One of the systems serves the meeting in room in the basement, while the other (2) two serve the main staff office on the 1st floor and the conference room in the basement level. Each of the indoor units have their own grade-mounted condensing units. These systems, although functional at present, are approximately 19-20 years in age and approaching the end of their useful service life expectancy. Refrigerant for these systems are no longer in production per the Montreal Protocol refrigerant phaseout schedule, and as a result these units will no longer be able to be serviced reliably.

Section III – Recommendations

Due to the age and poor condition of the existing mechanical systems and equipment serving the building, full system replacement is the recommended course of action. With the prospect of equipment replacement comes the opportunity to improve on the conditions within these spaces, targeting existing IAQ concerns, meeting compliance with modern energy code requirements, and improving the control of indoor environmental conditions within these spaces. Namely, it provides the opportunity for the Town to:

- Operate these mechanical systems in a manner which promotes a clean and comfortable environment in the most cost- and energy-efficient manner available
- Extend the building's usefulness and allow for it to be a prime useable space in the community for the benefit of current and future generations
- Alleviate airflow distribution, comfort and IAQ concerns while increasing energy efficiency
- Improved and simplified equipment service and maintainability
- The ability to control and monitor operation, alarms, trend data, building occupancy schedules and all system setpoints remotely from the internet and/or from a single physical location, as desired by the Owner's needs

The existing oil-fired equipment that is presently in place represents the lowest efficiency systems available in terms of heating the library spaces. With operating efficiency in the range of 80% to 86% - that's when burners are new, and combustion is finely tuned – natural gas is the clearer choice with efficiencies in the 92% to 98% range. In addition, the use of oil-fired rooftop and/or central station equipment is easily the least commonplace choice of systems available. This leads to a potential difficulty in finding replacement parts and qualified service personnel as the systems age. And although VRF technology far exceeds the efficiency in even the best gas-fired equipment, its physical limitations in air distribution and throw distance preclude us from considering its use as the primary system of choice – not to say that its use in limited office-like areas couldn't be considered. However, the real benefit of VRF systems, the capability for energy recovery between zones that are simultaneously in heating and cooling mode, would not be as substantial a factor due to the building exposures available here for those types of spaces.

With replacement and modernization of the HVAC systems and the associated electrical and controls infrastructure being the recommendation in this case, the manner in which this is to be

accomplished should best reflect the building's use, needs and current issues of concern. As such, we have proposed three options for the HVAC system upgrade, as follows:

Option #1

Option #1 consists of rooftop-mounted, packaged air handlers with DX cooling and natural gas-fired furnace sections.

- Air Handling Equipment: The facility, will be served primarily by Variable Air Volume (VAV), Air Handling Units (AHUs) located on the roof and in the existing basement mechanical spaces. The AHUs will provide ventilation air as well as conditioned supply air for space heating and cooling. Each AHU will be equipped with Supply Fan, Exhaust Fan, Energy Recovery Heat Exchanger, and Merv 8 Air Filtration. The Supply and Exhaust Fans will be equipped with variable speed drive (VSD), economizer, demand control ventilation.

- Primary air distribution will be supplied via a new ducted system from the AHUs to VAV terminals located in the spaces served. The VAV terminals will be equipped with electric-resistance reheat coils and will supply air to the secondary air distribution system consisting of sheet metal ductwork and ceiling supply air diffusers. Return/Exhaust Air from the spaces to the AHU's will be via a ducted return air system.

- Toilet/Locker Room Exhaust: Each Toilet Room and Custodial closet will be provided with exhaust as required by the Building Code with the possible use of an Energy Recovery Ventilator (ERV).

- Automatic Temperature Controls/Energy Management System: The existing control system should be updated to a modern, state of the art Direct Digital Control (DDC) type Energy Management system. The systems compatibility with existing systems will be determined based on the Owner's requirements. The communication protocol between devices and equipment will be based on BACnet.

- Electrical modifications will consist of connections to the VSD supply and exhaust fans, electrical conduits, wiring and disconnects for two air handling equipment with VAV / electric heat. Includes electrical hookups: toilet / locker room exhaust. BACnet & fire alarm hookups as required by the mechanical / electrical drawings.

- Plumbing modifications will consist of underground gas piping to the side of the building where the gas company will install their meter. The gas piping will then enter the building to be connected to the natural gas-fired boilers. The proposed service entry location for the new gas service is likely to be west of the front (Rope Ferry Road) entrance pending gas utility provider approval.

Option #2

Option #2 consists of a hot-water boiler plant, hot water pumps, and packaged air handlers with

DX cooling and hot water coils.

- Heating Plant: The Central Heating Plant (CHP) will consist of natural gas-fired, high-efficiency condensing boilers. Combustion air may be supplied directly to each boiler with a dedicated duct or it may be supplied to the boiler room by combustion air fans. The boilers will be vented outside either individually or into common venting utilizing polypropylene piping. The boilers will have an automatic chemical water treatment system and condensate drain neutralizing kits.

- Hot water supply to the building will be by either inline primary or floor mounted hot water pumps with variable speed drives (VSD's) serving a reverse-return hot water loop.

- Hot Water will be supplied to hot water coils in the air handling units, throughout the building as well as to the VAV boxes and vestibule cabinet unit heaters.

- Air Handling Equipment: The facility, will be served primarily by variable air volume (VAV), air handling units (AHU's) located on the roof and in the existing basement mechanical spaces. The AHU's will provide ventilation air as well as conditioned supply air for space heating and cooling. Each AHU will be equipped with a supply fan, exhaust fan, ERV, and MERV 8 air filtration. The supply and exhaust Fans will be equipped with VSD's, and the units will be capable of providing 100% outside air economizer and demand control ventilation.

- Primary Air will be supplied via a new ducted system from the AHUs to VAV Terminals located in the spaces served. The VAV Terminals will be equipped with hot water reheat coils and will supply air to the secondary air distribution system consisting of sheet metal ductwork and ceiling supply air diffusers. Return/Exhaust air from the spaces to the AHU's will be via a ducted air system.

- Toilet/Locker Room Exhaust: Each Toilet Room and Custodial closet will be provided with exhaust as required by the Building Code with the possible use of an Energy Recovery Ventilator.

- Automatic Temperature Controls/Energy Management System: The existing control system should be updated to a modern, state of the art Direct Digital Control (DDC) type energy management system. The system's compatibility with existing systems will be determined based on the Owner's requirements. The communication protocol between devices and equipment will be based on BACnet.

- Electrical modifications will consist of connections to central heating plant boilers, VSD's, hot water pumps and AHU's VSD supply and exhaust fans. This includes the electrical conduits, wiring and disconnects for two air handling equipment with VAV / hot water reheat. Includes electrical hookups to toilet / locker room exhaust. BACnet & fire alarm hookups will be provided as required by the mechanical / electrical drawings.

- Plumbing modifications will consist of underground gas piping to the side of the building where the gas company will install their meter. The gas piping will then enter the building to be connected to the natural gas-fired boilers. The proposed service entry

location for the new gas service is likely to be west of the front (Rope Ferry Road) entrance pending gas utility provider approval.

Option #3

Option #3 consists of a hot water boiler plant, hot water pumps, a chiller plant, chilled water pumps and new air handlers.

- Chilled Water Plant: A central chilled water plant will be provided, utilizing a high-efficiency air-cooled chiller. The chilled water plant will have an automatic chemical water treatment system.

- Chilled Water Pumps will be either vertical, split-case type, end-suction type or inline type, and will be equipped with VSD's. Chilled water will be distributed via a chilled water piping distribution loop feeding the cooling coils in all of the proposed air handler units.

- The Central Heating Plant (CHP) will consist of natural gas-fired, high-efficiency condensing boilers. Combustion air may be supplied directly to each boiler with a dedicated duct or it may be supplied to the boiler room by combustion air fans. The boilers will be vented outside either individually or into common venting utilizing polypropylene piping. The boilers will have an automatic chemical water treatment system and condensate drain neutralizing kits.

- Hot water supply to the building will be by either inline primary or floor mounted hot water pumps with variable speed drives (VSD's) serving a reverse-return hot water loop.

- Hot Water will be supplied to hot water coils in the air handling units, throughout the building as well as to the VAV boxes and vestibule cabinet unit heaters.

- Air Handling Equipment: The facility, will be served primarily by VAV, air handling units located on the roof and in the existing basement mechanical spaces. The AHU's will provide ventilation air as well as conditioned supply air for space heating and cooling. Each AHU will be equipped with a supply fan, exhaust fan, ERV, and MERV 8 air filtration. The supply and exhaust Fans will be equipped with VSD's, and the units will be capable of providing 100% outside air economizer and demand control ventilation.

- Primary Air will be supplied via a new ducted system from the AHUs to VAV Terminals located in the spaces served. The VAV Terminals will be equipped with hot water reheat coils and will supply air to the secondary air distribution system consisting of sheet metal ductwork and ceiling supply air diffusers. Return/Exhaust air from the spaces to the AHU's will be via a ducted air system.

- Toilet/Locker Room Exhaust: Each Toilet Room and Custodial closet will be provided with exhaust as required by the Building Code with the possible use of an ERV.

- Automatic Temperature Controls/Energy Management System: The existing control

system should be updated to a modern, state of the art Direct Digital Control (DDC) type energy management system. The system's compatibility with existing systems will be determined based on the Owner's requirements. The communication protocol between devices and equipment will be based on BACnet.

- Electrical modifications will consist of connections to central heating plant boilers, VSD's, hot water pumps and AHU's VSD supply and exhaust fans. This includes the electrical conduits, wiring and disconnects for two air handling equipment with VAV / hot water reheat. Includes electrical hookups to toilet / locker room exhaust. BACnet & fire alarm hookups will be provided as required by the mechanical / electrical drawings.

- Plumbing modifications will consist of underground gas piping to the side of the building where the gas company will install their meter. The gas piping will then enter the building to be connected to the natural gas-fired boilers. The proposed service entry location for the new gas service is likely to be west of the front (Rope Ferry Road) entrance pending gas utility provider approval.

Additional Sustainable Design Considerations

Building Energy Management Systems (EMS)

An EMS provides a building owner with the ability to monitor, control, and adjust all HVAC systems (along with plumbing and electrical systems, if desired) from a central or web-based location. An operator workstation consisting of a personal computer and printer can be located in the building, and this station could have the capability of remote access to the HVAC systems via the internet, if desired. The owner can set occupancy schedules, adjust setpoints, and monitor trouble/alarm conditions in an efficient manner with this tool. Features such as night setback, holiday scheduling and weekend scheduling will be included to allow the system to minimize energy expenditure during unoccupied periods. An alarm feature will be added, which can remotely notify facility staff of any pre-determined alarm conditions needing to be addressed.

Demand Controlled Ventilation (DCV)

DCV is a ventilation scheme used to ensure that adequate ventilation for a building's occupants while reducing excess energy use from unnecessarily over-ventilating the building or space. The ventilation process requires a substantial amount of energy since outside air needs to be heated or cooled to acceptable levels prior to distribution through the building. Energy is conserved by controlling ventilation rates based on the actual number of occupants indirectly, by sensing carbon dioxide (CO_2) levels as an indicator of occupant load. CO_2 concentrations are continuously monitored by a sensor, either located in the space or the return air ductwork, which modulates outside air dampers through their full-open and -closed positions accordingly to maintain CO_2 concentrations below an established comparative baseline. This technique can be applied throughout the building and is especially effective in high occupancy spaces which are not continuously occupied. DCV can be easily implemented by the addition of sensors and required programming when an EMS is utilized.

Window Upgrades

S/P+A has additionally considered the architectural impact of upgrades to the existing Library envelope on its heating and cooling loads, as well as the potential reduction in central system and equipment sizing that could result from these upgrades. By changing the existing, original "storefront" type fenestration, which has been technologically surpassed in recent decades by more state-of-the-art, energy efficient storefront window assemblies having much higher U-values, integral low-e coatings, inert gas infill, lower infiltration potential and improved long-lasting thermal break enhancements. That being said, our current calculated block-load estimate for the building presently results in 969,500 btu/H of heat required during design heating conditions and roughly 55.0 tons of cooling during peak summer design conditions. The installation of the improved fenestration could have the potential to reduce the Library's heating requirements to 513,000 btu/H and its cooling needs down to 40.1 tons – or 47.1% and 19.8% reductions, respectively. Payback on this scale and scope of upgrade typically average around 5-years or less, depending on the quality of the replacements.

Miscellaneous Sustainability Considerations

Refrigerants used in air conditioning systems will be hydrofluorocarbons having low ozone depletion (ODP) and global warming potentials (GWP). Equipment will most likely use HFC-410A or HFC-134a.

Premium Efficiency Motors will be utilized wherever their application is feasible and per the latest enforceable energy codes. Capitol reimbursements and incentives are often available for the incorporation of Premium and High efficiency motors, dependent on the motor size and funding availability.

Use of daylighting and active lighting control through the EMS or a separate controller can substantially reduce lighting energy loads, especially when used in conjunction with high efficiency LED lighting and space occupancy sensors. Reimbursements and incentives are often available for these types of upgrades as well.

Section IV – Conclusions

The Waterford Public Library Complex is a Town landmark which has served the community in many ways, and for many generations. However, it will be important to take the proper steps in preparing this building for its next cycle of use. With the history of IAQ and air distribution concerns in this facility, circumstances indicate that HVAC system upgrade/ replacement and associated electrical power and controls upgrades to support the HVAC, is both overdue and of

the utmost importance for the Town as a part of maintaining the use of the facility into the future. Other than the existing environmental conditions, this building remains useful and viable among the Town's assets. By taking full advantage of modern and state-of-the-art HVAC systems and technology during this potential upcoming and timely upgrade, the Waterford Public Library can support the current space use and any unforeseen space use reconfigurations that may be yet to come. In doing this, the Town of Waterford can fully realize benefits including:

- Reduced energy usage resulting in lower fossil fuel consumption, lower combined energy costs and a considerably reduced "carbon footprint"
- Leading by example in the realm of sustainability and environmental responsibility, providing a successful case study for the Town's students, taxpayers and residents to follow.
- Saving taxpayers money for utility costs and maintenance spending.
- Eliminating the need for expensive, materially wasteful and often disruptive newly-constructed buildings and sites to take the place of existing, viable structures in need of a partial overhaul. In doing so, the Town acts in the most environmentally sound (green) manner by reducing the demolition waste of the existing building and the construction waste of any new building(s).
- Ease of maintenance and accessibility for all future routine preventative maintenance requirements.

The addition of new HVAC equipment, power and control wiring, piping, ductwork and windows, along with the temporary annoyance of staff and Town Library patronage, will be somewhat disruptive in the short term. But in considering the long view, this facility will benefit from these brief overhauls and disruptions for many healthy, energy efficient and productive years to come.

Section V – Opinion of Probable Cost-Option #1

Waterford Public Library - Mechanical Upgrade						Date:	08/10/18
49 Rope Ferry Drive						Job No.:	18.024
Owner: Town of Waterford							
OPINION OF PROBABLE CONSTRUCTION COST							
OPTION #1							
11,485 APPROXIMATE TOTAL NET SQUARE FOOTAGE (Area of Work)							
SECTION NUMBER	WORK CATEGORIES/DESCRIPTIONS	QTY.	UNIT	MATERIAL & LABOR COST UNIT COST	TOTAL		TOTAL $
	OTHER COSTS						
	Permit (0.5% of construction cost)	1	LS				$3,745
	Bonds (1.5% of construction cost)	1	LS				$11,190
	Insurance (0.25% of construction cost)	1	LS				$1,865
				OTHER COSTS SUBTOTAL		$16,799	
	DIVISION 2 - DEMOLITION						
	Dumpsters	3	EA	$1,000.00	$3,000.00		$3,000
				DIVISION 2 SUBTOTAL		$3,000	
	DIVISION 22 - PLUMBING (INCL SITE UTILITIES)						
	Natural Gas Service	1	LS	-	$45,000.00		$45,000
				DIVISION 22 SUBTOTAL		$45,000	
	DIVISION 23 - HVAC/MECHANICAL						
	Roof-top unit with DX, Gas heat, VFD	2	LS	$50,000.00	$100,000.00		$100,000
	Insulated ductwork	11,485	sq.ft	$30.00	$344,550.00		$344,550
	Controls	1	LS	$50,000.00	$50,000.00		$50,000
	VAV Boxes	1	LS	$25,000.00	$25,000.00		$25,000
	Exhaust Fans	1	LS	$15,000.00	$15,000.00		$15,000
	Testing and Balancing	1	LS	$5,000.00	$5,000.00		$5,000
	Controls	1	LS	$24,000.00	$24,000.00		$24,000
	Demolition	1	LS	$30,000.00	$30,000.00		$30,000
	Oil Tank Removal and Testing	1	LS	$10,000.00	$10,000.00		$10,000
	Crane Service	1	LS	$5,000.00	$5,000.00		$5,000
	Demolition	11,485	sq.ft	$5.00	$57,425.00		$57,425
				DIVISION 23 SUBTOTAL		$665,975	
	DIVISION 26 - ELECTRICAL						
	Demolition	1	LS	$8,500.00	$8,500.00		$8,500
	Electrical wiring, conduits, connections, etc	1	LS	$26,500.00	$26,500.00		$26,500
				DIVISION 26 SUBTOTAL		$35,000	
				SUBTOTAL =			$765,774
				CONTINGENCY		10.00%	$76,577
				GEN. CONDITIONS		5.00%	$38,289
				OVERHEAD		10.00%	$76,577
				PROFIT		10.00%	$76,577
				CONSTRUCTION TOTAL =			$1,033,795

SILVER/PETRUCELLI + ASSOCIATES
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3190 Whitney Avenue, Hamden, CT 06518
Tel: 203 230 9007 Fax: 203 230 8247
www.silverpetrucelli.com

Section V – Opinion of Probable Cost-Option #2

Waterford Public Library - Mechanical Upgrade Date: 08/10/18

49 Rope Ferry Drive Job No.: 18.024

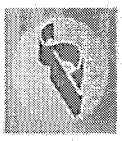
Owner: Town of Waterford

OPINION OF PROBABLE CONSTRUCTION COST

OPTION #2

11,485 APPROXIMATE TOTAL NET SQUARE FOOTAGE (Area of Work)

SECTION NUMBER	WORK CATEGORIES/DESCRIPTIONS	QTY.	UNIT	MATERIAL & LABOR COST UNIT COST	MATERIAL & LABOR COST TOTAL		TOTAL $
	OTHER COSTS						
	Permit (0.5% of construction cost)	1	LS				$4,216
	Bonds (1.5% of construction cost)	1	LS				$12,604
	Insurance (0.25% of construction cost)	1	LS				$2,101
				OTHER COSTS SUBTOTAL		$18,921	
	DIVISION 2 - DEMOLITION						
	Dumpsters	3	EA	$1,000.00	$3,000.00		$3,000
				DIVISION 2 SUBTOTAL		$3,000	
	DIVISION 22 - PLUMBING (INCL SITE UTILITIES)						
	Natural Gas Service	1	LS	-	$45,000.00		$45,000
				DIVISION 22 SUBTOTAL		$45,000	
	DIVISION 23 - HVAC/MECHANICAL						
	Roof-top unit with DX, Hot Water Heat, VFD	2	LS	$50,000.00	$100,000.00		$100,000
	Boilers	2	LS	$30,000.00	$60,000.00		$60,000
	Hw Pumps	2	LS	$20,000.00	$40,000.00		$40,000
	Insulated Ductwork	11,485	Sq.ft	$30.00	$344,550.00		$344,550
	VAV Boxes	1	LS	$25,000.00	$25,000.00		$25,000
	Controls	1	LS	$65,000.00	$65,000.00		$65,000
	Exhaust Fans	1	LS	$15,000.00	$15,000.00		$15,000
	Testing and Balancing	1	LS	$5,000.00	$5,000.00		$5,000
	Demolition	1	LS	$30,000.00	$30,000.00		$30,000
	Oil Tank Removal and Testing	1	LS	$10,000.00	$10,000.00		$10,000
	Crane Service	1	LS	-	$5,000.00		$5,000
	Demolition	11,485	Sq.ft	$5.00	$57,425.00		$57,425
				DIVISION 23 SUBTOTAL		$756,975	
	DIVISION 26 - ELECTRICAL						
	Demolition	1	LS	$8,500.00	$8,500.00		$8,500
	Electrical wiring, conduits, connections, etc	1	LS	$29,800.00	$29,800.00		$29,800
				DIVISION 26 SUBTOTAL		$38,300	
				SUBTOTAL =			$862,196
				CONTINGENCY		10.00%	$86,220
				GEN. CONDITIONS		5.00%	$43,110
				OVERHEAD		10.00%	$86,220
				PROFIT		10.00%	$86,220
				CONSTRUCTION TOTAL =			$1,163,965



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Section V – Opinion of Probable Cost-Option #3

Waterford Public Library - Mechanical Upgrade						Date:	08/10/18
49 Rope Ferry Drive						Job No.:	18.024
Owner: Town of Waterford							
OPINION OF PROBABLE CONSTRUCTION COST							
OPTION #3							
11,485 APPROXIMATE TOTAL NET SQUARE FOOTAGE (Area of Work)							
SECTION NUMBER	WORK CATEGORIES/DESCRIPTIONS	QTY.	UNIT	MATERIAL & LABOR COST UNIT COST	MATERIAL & LABOR COST TOTAL		TOTAL $
	OTHER COSTS						
	Permit (0.5% of construction cost)	1	LS				$5,111
	Bonds (1.5% of construction cost)	1	LS				$15,288
	Insurance (0.25% of construction cost)	1	LS				$2,548
				OTHER COSTS SUBTOTAL		$22,948	
	DIVISION 2 - DEMOLITION						
	Dumpsters	3	EA	$1,000.00	$3,000.00		$3,000
				DIVISION 2 SUBTOTAL		$3,000	
	DIVISION 22 - PLUMBING (INCL SITE UTILITIES)						
	Natural Gas Service	1	LS	-	$45,000.00		$45,000
				DIVISION 22 SUBTOTAL		$45,000	
	DIVISION 23 - HVAC/MECHANICAL						
	Roof-top unit with CW, Hot Water Heat, VFD	2	LS	$36,000.00	$72,000.00		$72,000
	Boilers	2	LS	$30,000.00	$60,000.00		$60,000
	CHW Pumps	2	LS	$20,000.00	$40,000.00		$40,000
	HW Pumps	2	LS	$20,000.00	$40,000.00		$40,000
	Chiller	1	LS	$75,000.00	$75,000.00		$75,000
	Controls	1	LS	$150,000.00	$150,000.00		$150,000
	VAV Boxes	1	LS	$25,000.00	$25,000.00		$25,000
	Exhaust Fans	1	LS	$15,000.00	$15,000.00		$15,000
	Testing and Balancing	1	LS	$5,000.00	$5,000.00		$5,000
	Demolition	1	LS	$30,000.00	$30,000.00		$30,000
	Oil Tank Removal and Testing	1	LS	$10,000.00	$10,000.00		$10,000
	Crane Service	1	LS	$5,000.00	$5,000.00		$5,000
	Insulated ductlwork	11,485	sq.ft	$30.00	$344,550.00		$344,550
	Demolition	11,485	sq.ft	$5.00	$57,425.00		$57,425
				DIVISION 23 SUBTOTAL		$973,975	
	DIVISION 26 - ELECTRICAL						
	Demolition	1	LS	$8,500.00	$8,500.00		$8,500
	Electrical wiring, conduits, connections, etc	1	LS	$36,750.00	$36,750.00		$36,750
				DIVISION 26 SUBTOTAL		$45,250	
				SUBTOTAL =			$1,045,173
				CONTINGENCY		10.00%	$104,517
				GEN. CONDITIONS		5.00%	$52,259
				OVERHEAD		10.00%	$104,517
				PROFIT		10.00%	$104,517
				CONSTRUCTION TOTAL =			$1,410,983

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Section VI – Photos

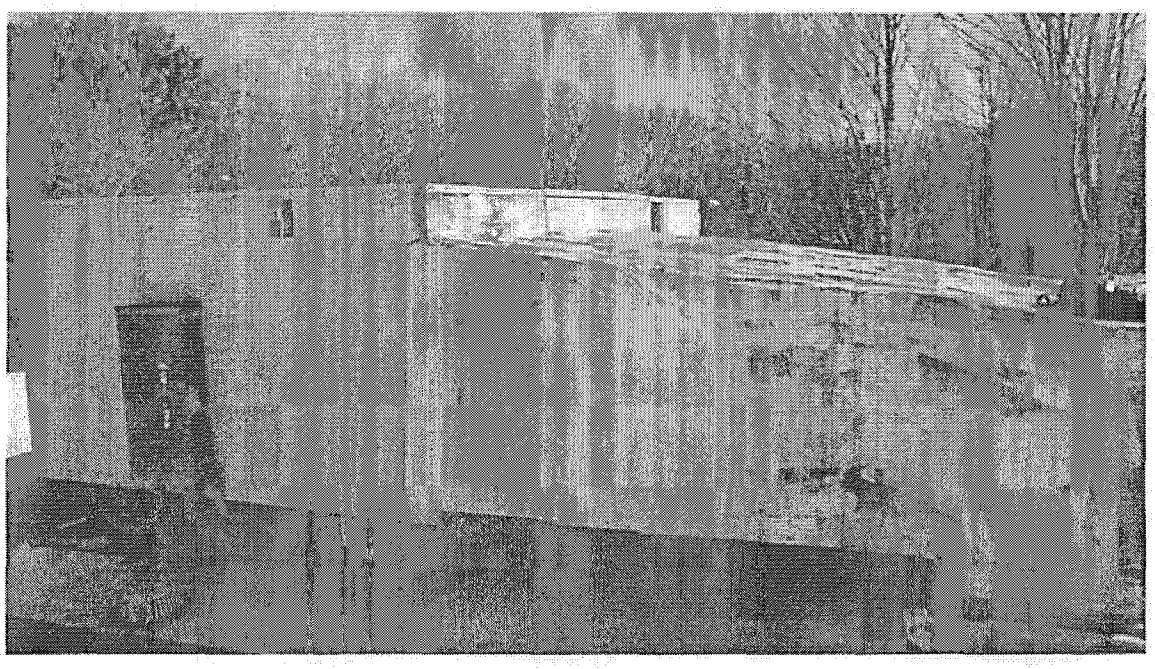


Photo 1:
Rooftop cooling only unit. Exterior insulation on the duct work is no longer attached.

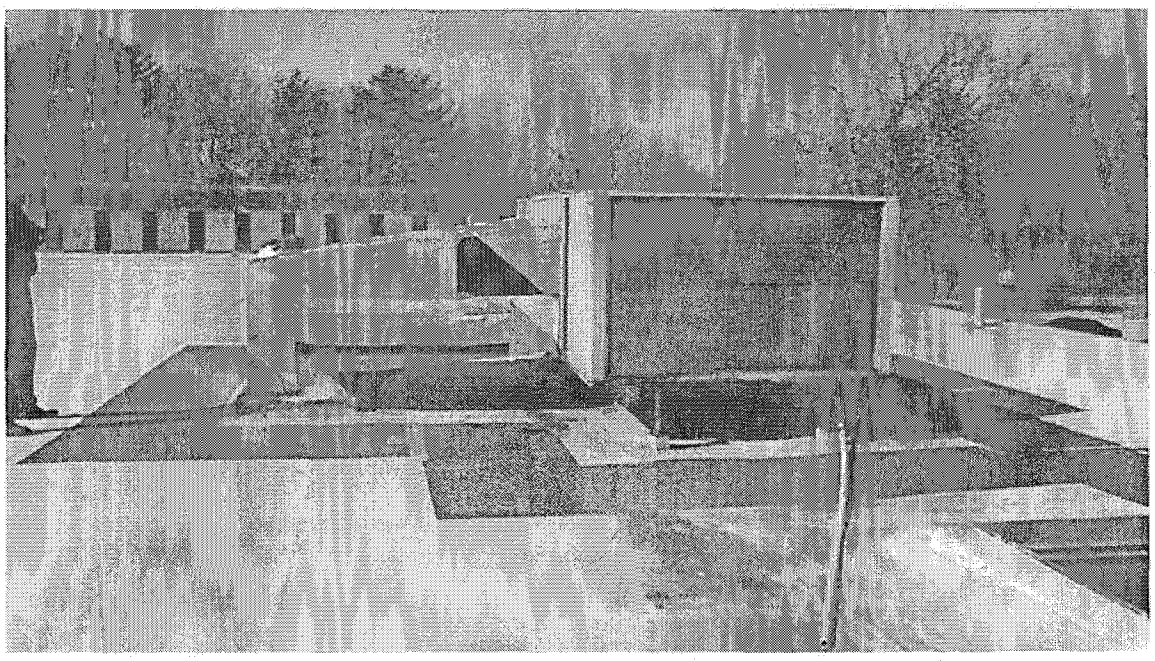


Photo 2:
Rooftop cooling only unit. Exterior insulation on the duct work is no longer attached.

Photo 3:
Rooftop cooling only unit with degraded mastic.

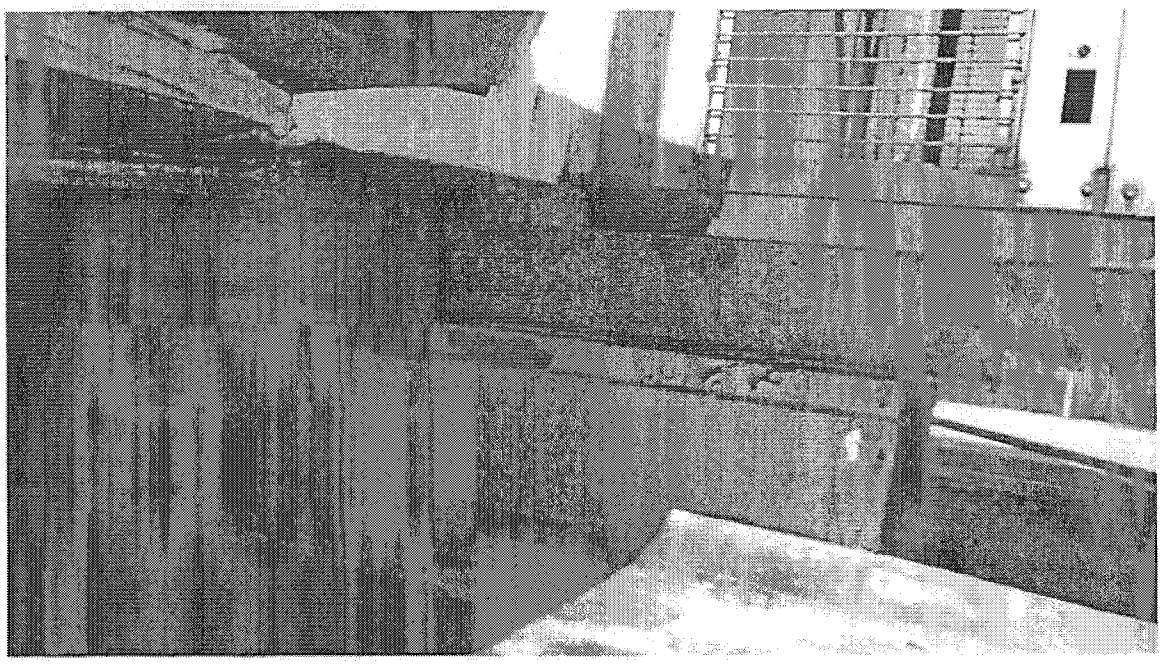


Photo 4:
Public Library oil-fired rooftop unit showing the corrosion on the unit itself.

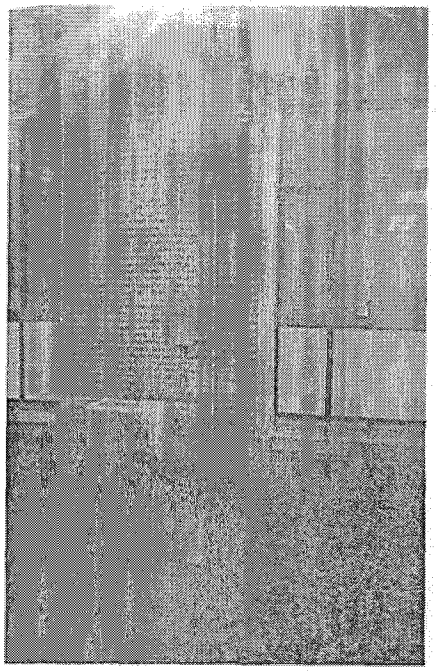


Photo #5:
Condensing unit serving the staff office space.

Photo #6:
Condensing unit serving the conference room space.

Photo #7:
Existing oil-fired unit serving the library addition. Notice the corrosion that is on the unit.

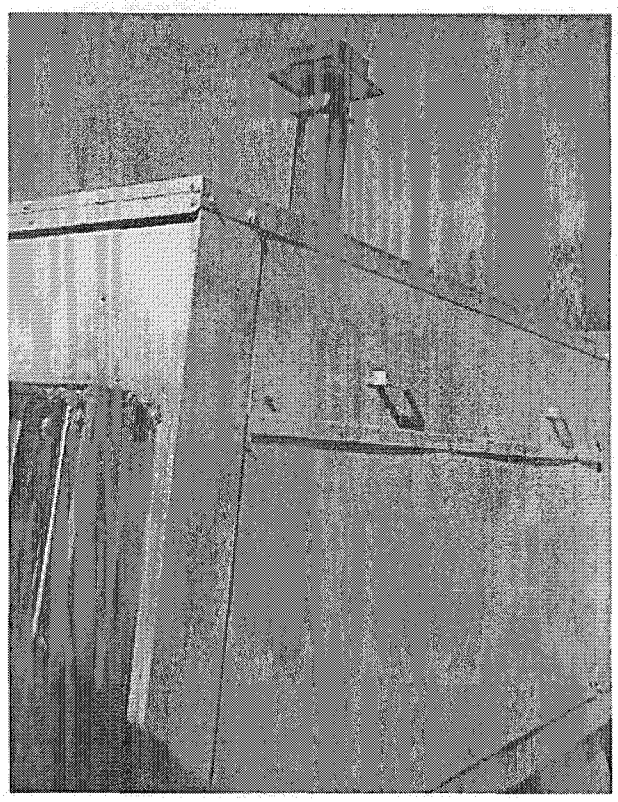


Photo #8:
Existing oil-fired unit serving the library addition. Notice the corrosion that is on the unit.

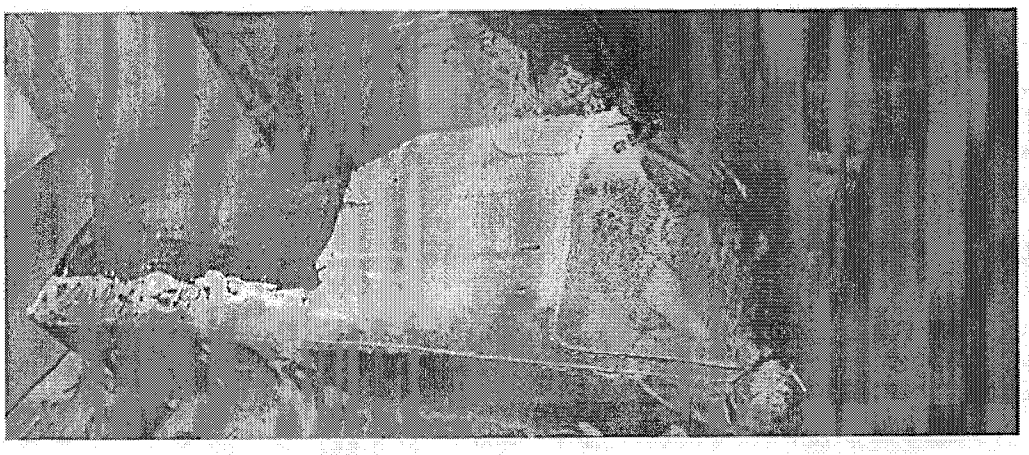


Photo 9: Example of degraded rooftop unit supports.

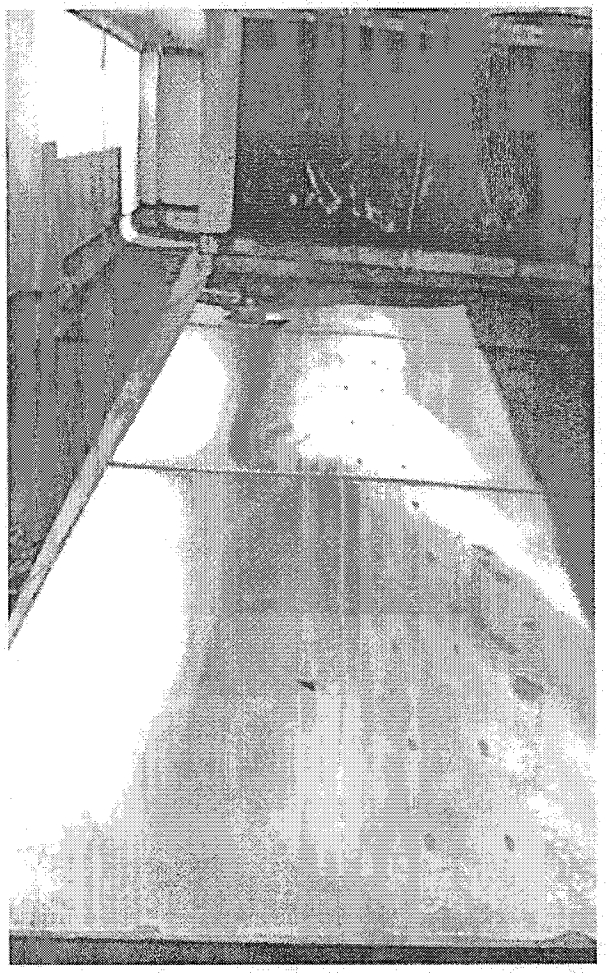


Photo #10:
Existing oil-fired unit serving the library addition showing the corroded curb adapter.

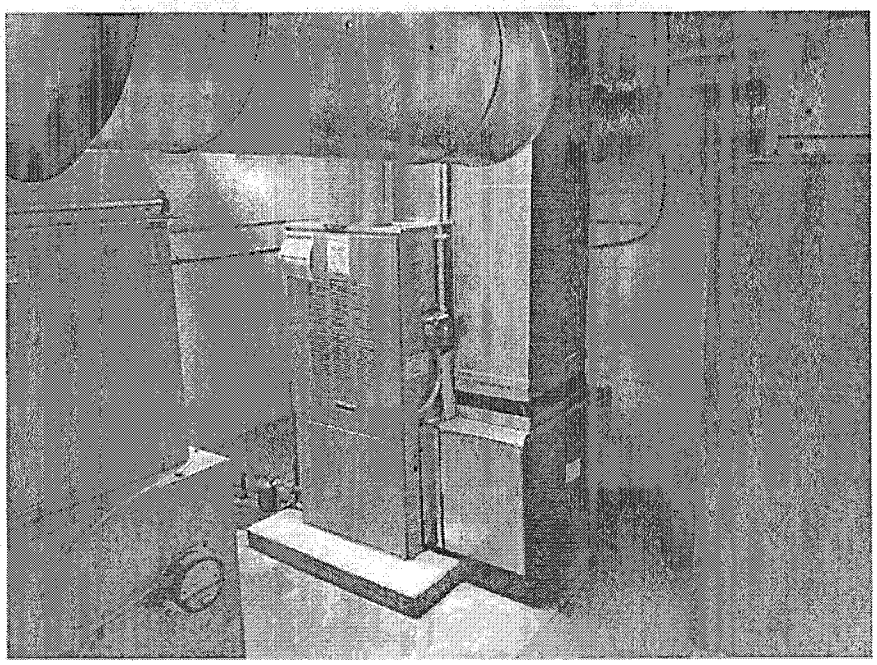


Photo #11:
Existing oil-fired heating, non-cooling air handling units located in the basement MER. The units appear to be in good condition but are closely approaching 20 years of service.

Photo #12:
Existing oil-fired heating, non-cooling air handling unit. The unit appears to be in good condition but is closely approaching 20 years of service.

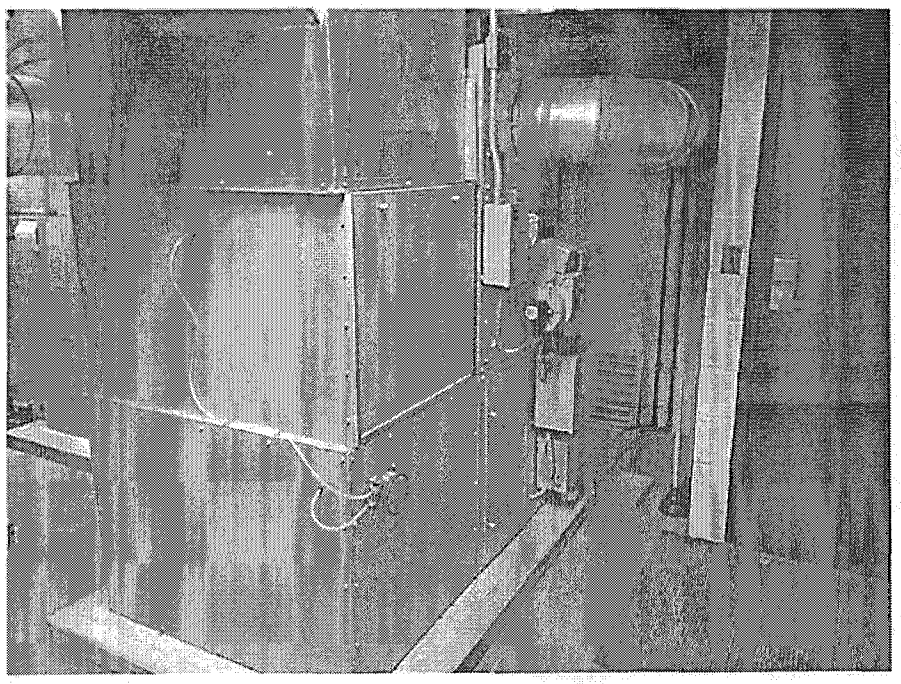


Photo #13:
Existing oil-fired heating, non-cooling air handling unit. The unit appears to be in good condition but is closely approaching 20 years of service.

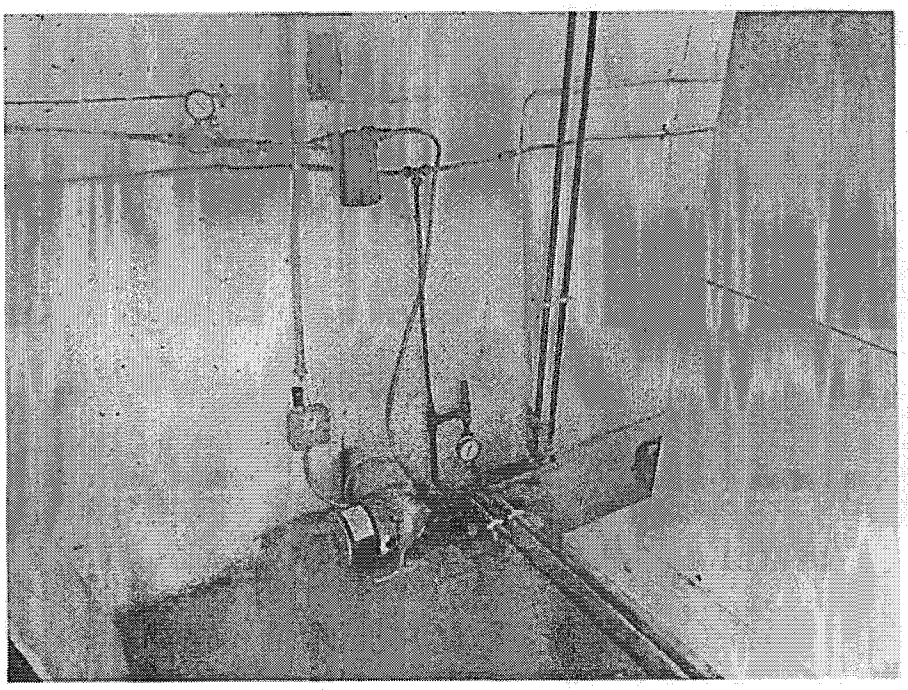


Photo #14:
Fuel oil transfer pump. The unit appears to be in good condition but exhibits signs of leaking.

Roslyn Rubinstein

From: Bernier, Maria <Maria.Bernier@ct.gov>
Sent: Wednesday, November 27, 2019 1:55 PM
To: Robert Brule
Cc: Roslyn Rubinstein
Subject: Construction Grant approved
Attachments: StepbyStepConstGrantProcess-Muni_2020.pdf

Dear Mr. Brule –

Congratulations! The Connecticut State Library Board, at its regularly scheduled meeting of November 25, 2019, voted to approve your public library construction grant for $250,000. Final approval of your award is contingent upon availability of your local funding and favorable action by the State Bond Commission. You have three years, by November 25, 2022, in which to reach your local funding goal.

Once you have secured all the local funding necessary to complete your project, please contact me so that we can submit a request for Bond Commission consideration of your construction grant. After favorable action by the State Bond Commission, we will contact you about signing a construction grant contract.

Please keep in mind that you cannot initiate the project by signing a construction contract between your library's governing body and the general contractor, starting construction, or purchasing furniture or equipment until you have received a copy of your approved grant contract which has been signed by the Town's representative and the State Librarian. Please see the attached Step by Step Guide for additional details.

I'm also sending you a hard copy of this information via US Mail for your files.

Please be in touch if you have any questions.

Best,
Maria

CT State Library
Preserving the Past Informing the Future.

Maria Bernier | Statewide Data Coordinator, Division of Library Development | Maria.Bernier@ct.gov | *Office:* (860) 704-2204
http://libguides.ctstatelibrary.org/dld/home | 786 South Main St., Middletown CT 06457 | Fax: (860) 704-2228

CT State Library
Division of Library Development

November 27, 2019

Daniel Steward, First Selectman
15 Rope Ferry Road
Waterford, CT 06385

Dear Mr. Steward:

Congratulations! The Connecticut State Library Board, at its regularly scheduled meeting of November 25, 2019, voted to approve your public library construction grant for $250,000. Final approval of your award is contingent upon availability of your local funding and favorable action by the State Bond Commission. You have three years in which to reach your local funding goal.

Once you have secured all the local funding necessary to complete your project, please contact me so that we can submit a request for Bond Commission consideration of your construction grant. After favorable action by the State Bond Commission, we will contact you about signing a construction grant contract.

Please keep in mind that you cannot initiate the project by signing a construction contract between your library's governing body and the general contractor, starting construction, or purchasing furniture or equipment until you have received a copy of your approved grant contract which has been signed by the Town's representative and the State Librarian. Please see the enclosed Step by Step Guide for additional details.

We look forward to working with you on your upcoming construction project.

Sincerely,

Maria Bernier
Construction Grant Administrator
Division of Library Development
860-704-2204, Maria.Bernier@ct.gov

cc: Roslyn Rubinstein, Library Director

Congrats, Roz!

Fill in these first: Municipality: Waterford

Library: Waterford Public Library

Application for State Public Library Construction Grant FY 2019-2020

Category 1 Grants

For Distressed and Non-Distressed Municipalities

(Projects creating additional usable library space such as new buildings, additions, and renovations)

CT State Library

Preserving the Past. Informing the Future

Connecticut State Library
Division of Library Development
Hartford, Connecticut
2019

CONNECTICUT STATE LIBRARY

STATE LIBRARIAN
Kendall F. Wiggin

DIRECTOR OF THE DIVISION OF LIBRARY DEVELOPMENT
Dawn La Valle

CONSTRUCTION GRANTS ADMINISTRATION

Hartford, Connecticut
Tel: 860-757-6665
E Mail: Dawn.Lavalle@ct.gov

STATE LIBRARY BOARD
Mary Etter - Chair
Sandy Ruoff - Vice Chair
Dianna Wentzell
John N. Barry
Allen Hoffman
Robert Harris
Alison Clemens
Diane Brown
Hon. Michael R. Sheldon
Hon. Andrew J. McDonald

Issued in accordance with Conn. Gen. Stat. § 11-24(c)

For Questions, Contact:
Dawn La Valle
Phone: 860-757-6665
E mail: Dawn.LaValle@ct.gov

LIBRARY: **Waterford Public Library**

MUNICIPALITY: **Waterford**

OFFICIALLY SUBMITTED: **Sept.1, 2019**

Instructions for Submitting an Application

1. Send one digital copy of this Excel file by email. Scanning and sending the other documents as a PDF is recommended when possible.
2. Submit one original printed copy of this application (the "official" application) (with all required additional documents).
3. Three-hole punch the printed copy so that the entire application can be placed in a notebook. DO NOT PROVIDE THE NOTEBOOK. Architect's plans do not need hole-punching and will not need to fit in notebook.
4. All signatures on the printed copy must be handwritten.
5. You will need the "Timetable and Guidelines" document to complete this application. Find this document on the Construction Grants web page.

Where to send application

Mail or deliver the printed original
copy of the application to
Division of Library Development, Construction Grants
Connecticut State Library
231 Capitol Ave.
Hartford, CT 06106
Dawn.LaValle@ct.gov

We must receive both the the printed copy
and Excel file by 4 p.m. on August 30, 2019.
Excel file must be identical to the printed copy and should be sent by email.

IMPORTANT Instructions for Completing this Excel Form

1. In this Excel file, TYPE INFORMATION ONLY IN THE GRAY AREAS.
2. All other cells cannot be edited.
3. Tab from one gray box to another, except for check boxes.
4. Click on check boxes, when appropriate.

Example: type here

TYPE OF PROJECT:

CATEGORY #1 (check all that apply)

- ☐ new construction
- ☑ major alteration of existing library building
- ☐ addition onto existing library building
- ☐ converting an existing building that is not a library

A. NAMES AND ADDRESSES

1. **Legal name of applicant:** Municipal library must use name of town/city. A Library Association must use the full name of the association unless the municipality owns the building in which case the municipality will be the legal applicant not the Library Association.

Waterford, CT

2. Library name and address:

Library Name:	Waterford Public Library
Address:	49 Rope Ferry Road
City/Town, State:	Waterford, CT
Zip Code:	06385
Telephone:	860-444-5805

3. Person authorized to submit application (Use municipal CEO (mayor, first selectman, or town manager) for municipal library. Use the Library Board Chairperson or Library Director for association library) :

Name:	Daniel Steward
Title:	First Selectman
Address:	15 Rope Ferry Road
City/Town, State:	Waterford, CT
Zip Code:	06385
Telephone:	860-444-5834
Fax:	860-444-0273
E-mail address:	firstselectman@waterfordct.org

4. Person authorized to respond to inquiries (usually library director):

Name:	Roslyn Rubinstein
Title:	Director
Address:	49 Rope Ferry Road
City/Town, State:	Waterford, CT
Zip Code:	06385
Telephone:	860-444-5869
Fax:	860-444-5898
E-mail address:	rrubinstein@waterfordct.org

5. Librarian (if different from #4):

Name:	
Title:	
Address:	
City/Town, State	
Zip Code:	
Telephone:	
Fax:	
E-mail address:	

6. Architect:

Architect:	Kenneth J. Eldridge
Firm:	Silver/Petrucelli + Associates
Address:	3190 Whitney Avenue
City/Town, State	Hamden, CT
Zip Code:	06518
Telephone:	203-230-9007
Fax:	203-230-8247
E-mail address:	Keldridge@silverpetrucelli.com

Connecticut-licensed: ☑ Yes ☐ No

7. Building Consultant (OPTIONAL):

Name:	
Address:	
City/Town, State	
Zip Code:	
Telephone:	
Fax:	
E-mail address:	

8. Agency (municipality, municipal department or library) authorized to receive funds (person responsible for fiscal matters concerning the grant):

Name:	Kevin McNabola, Finance Director
Address:	Town of Waterford
	15 Rope Ferry Road
City/Town, State	Waterford, CT
Zip Code:	06385
Telephone:	860-444-5842
Fax:	860-440-0579
E-mail address:	kmcnabola@waterfordct.org

B. BACKGROUND INFORMATION

9a. To be an eligible applicant you must receive local tax funds and must not charge for a borrower's card. (See CGS Sec.11-24a (2)). Does your public library receive local tax funding and borrowers' cards free?

☑ Yes ☐ No If no, DO NOT proceed with this application.

9b. Type of library organization:

☐ Unit, department or agency of local government (Municipal)

☑ Corporate status under legally established library board (Association)

☑ Principal public library ☐ Non-principal public library (answer question below)

To be an eligible applicant a non-principal public library must meet the following conditions:

- → it must have a separate board of trustees or governing body;
- → it must have its own library director and staff ;
- → it must have a separate library facility;
- → and it must have a separate town appropriation. (See CGS Sec.11-24a (c))

If you are a non-principal library do you meet these conditions?

☐ Yes ☐ No If no, DO NOT preceed with this application

If the library organization is an association, does it have 501(c)(3) federal tax-exempt status?

☑ Yes ☐ No **(INSERT LETTER FROM FEDERAL GOVERNMENT AFTER THIS PAGE.)**

☐ Other (explain)

10. Ownership and use of the library building that is the subject of this grant:

a. The land is owned by

☑ municipality ☐ library assoc. ☐ other

b. The library building is owned by

☑ municipality ☐ library assoc. ☐ other

c. Will any corporate-sponsored or cooperative research be conducted at the facility?

☐ Yes ☑ No

Please Note: If you are an Association library, but the building being built or altered is owned by the municipality, then the municipality must fill out this application form.

11. 2019 AENGLC Rank (Contact Tom Newman, Connecticut State Library, for rank if it is not known): 36

12. For projects under $10 million: Are you going for Leadership Energy and Environomental Design (LEED) certification? ☐ Yes ☑ No LEED

13. Is the construction site listed, or eligible for listing, in the National Register of Historic Places, or is the building over 50 years old? ☑ Yes ☐ No

If yes, your library may need the approval of the State Historic Preservation Office to receive approval for funding should your grant request be approved. Best to contact now: SHPO

14. Is your library in conflict with the *Conservation and Development Policies Plan for Connecticut 2013-2018?* ☐ Yes ☑ No

Conservation and Development Policies Plan for CT

If yes, give reasons why you should be considered for funding:

15. Do you have a strategic/long range plan and a technology plan? Yes ☑ No ☐

All Category #1 applicants **must** have a strategic/long range plan and a technology plan. (Note: you are NOT required to provide a copy of these plans)

16. Number of hours and days that the library is open weekly for at least 9 months a year.

65 hours 6 days

17. Is the existing facility structurally accessible to those in wheel-chairs in all public & staff areas? (Note: areas inaccessible due to arrangement of furniture or stacks are still structurally accessible) ☐ Yes ☑ No

If no, describe areas not yet accessible:

Mezzanine

Lower level (public meeting rooms, staff rooms) - elevator is available but pre-ADA

18. Upon project completion, will the facility be totally accessible to those in wheel-chairs (structurally, except for storage and mechanical)?

☐ Yes ☑ No

If no, give reasons why you should be considered for funding:

Energy conservation project - HVAC upgrade >$500,000

19. Establish Service Population

a. Current local population (most recent Dept. of Public Health Estimate): 19,007

b. Projected local population for 2035 from the Univ. of CT Data Center : 16,785

You may choose to factor in nonresident use in your population projection.

c. Projected nonresident population to be served:

Annual non-resident circulation transactions	
divided by all annual circulation transactions	
equals	
times projected local population	16,785
Total nonresidents served	

Service Population: 16,785

See the "Timetable and Guidelines" document, Section 6, Method of Allocation for an explanation on how to determine a building's square feet, especially if you have branches.

20. Square feet of existing library space: 26,100 square feet

21. Square feet needed, based on "2014 Library Space Planning Guide Worksheet": 26,945 square feet

22. Total square feet of library space available upon project completion: 26,100 square feet

23. Estimated capacities:

	Present Holdings	Called for in the Building Program	Capacity as Shown in the Schematic Plans
Physical Book Volumes - Adult	45,169	45,169	n/a
Physical Volumes - Young Adult	2,557	2,557	n/a
Physical Volumes - Children	22,533	22,533	n/a
Physical Volumes - Other	246	246	n/a
TOTAL VOLUMES	70,505	70,505	
Physical Audio Recordings	5,000	5,000	n/a
Physical Visual Recordings	4,864	4,864	n/a
Other Nonprint Materials	142	142	n/a
TOTAL NONPRINT	10,006	10,006	
Seating - Adult	71	71	n/a
Seating - Young Adult	16	16	n/a
Seating - Children	23	23	n/a
TOTAL SEATING	110	110	
Computer Stations Adult	14	14	n/a
Computer Stations Young Adult		n/a	n/a
Computer Stations Children	5	5	n/a
TOTAL COMPUTER STATIONS	19	19	
Periodical Subscriptions	55	55	n/a
Meeting Room Seats (Main)	209	209	n/a
Other Conf/Mtg Rooms	40	40	n/a
Flexible Use/ All Purpose Areas			n/a
Story Hour/Activity Room	20	20	n/a
Parking spaces - staff			n/a
Parking spaces -patrons	88	88	n/a
TOTAL PARKING SPACES	88	88	

24. NET EFFECTIVE AGE OF THE BUILDING
(USE THE AGE OF THE BUILDING, NOT THE LIBRARY):
Total square feet of library building 26,100 (answer to question 20)

In (A) provide the square feet of floor space for each portion of the existing library building (including additions) which has NOT experienced a major alteration since it was built.

(A)	Square feet a	x	Age in years b		T_1
	16,300	x	53	=	863,900
	7,500	x	43	=	322,500
	2,300	x	33	=	75,900
		x		=	
TOTAL	26,100 sq. ft.			T_1 =	1,262,300

In (B) provide the square feet of floor space for each portion of the existing library building which HAS experienced a major alteration since it was originally built.

(B)	Square feet experienced major alteration c	x	% of the total area of the library building that each portion equals d	x	Age in years from the date of major alteration e	=	T_2
		x		x		=	
		x		x		=	
		x		x		=	
		x		x		=	
		x		x		=	
		x		x		=	
TOTAL	sq. ft.					T_2 =	

For those portions of the building identified in (B) above, provide age since original construction

(C)	Square feet experienced major alteration		1.00-%		Age in years from the date of original construction		
	c	x	(1.00-d)	x	b	=	T_3
		x	100%	x		=	
		x	100%	x		=	
		x	100%	x		=	
		x		x		=	
		x		x		=	
		x		x		=	
TOTAL						$T_{3=}$	

(D)	T_1	+	T_2	+
	1,262,300	+		+
	T_3	=	Total	
		=	1,262,300	

(E) a + c = 26,100

(F) $\frac{T1 + T2 + T3}{a + c}$ = Net Effective Age

$\frac{1,262,300}{26,100}$ = 48.4 years Net Effective Age

C. BUDGET INFORMATION

Important: Local Funding must be in place within 3 years of grant approval and your project must be initiated (signing with contractor) within 18 months of Bond Commission approval, or the grant award will be withdrawn.

25. Sources of Funding

State Funds:	Funds
a. State Bond Funds (This Request)	$ 250,000
b. State Bond Funds (Previous Funds)	$ -
c. Other State Agencies	$ -
Non-State Funds:	
d. Federal Funds	$ -
e. Recipent Funds (total of the three items below)	$ -
Private Investment	
Local Bonding	
Gen.Operat. Budget	
f. Gifts/Contributions	
g. Other Town capital budget (describe)	$ 799,200
h. TOTAL SOURCES	$ 1,049,200

26. Expenses

Capital Costs	
a. New Construction	
b. Renovations/Remodeling	
c. Land/Building Acquisition	
d. Appraisals	
e. Library and Office Equipment & Furniture	
f. Machinery/ Equipment	
g. Engineering/Architect/Clerk of the Works/ Constr. Manager	
h. Environmental remediation	
i. Contingency	
j. Other HVAC upgrade > $500,000 (describe)	$ 1,049,200
k.Total Capital Costs	$ 1,049,200

Working/Other Costs:	
a. Rent	$ -
b. Relocation Costs	$ -
c. Legal/Accounting	$ -
d. Consulting Services	$ -
e. Other (describe)	$ -
f. TOTAL Working/Other Costs	$ -

	This Request
TOTAL PROJECT COST	$ 1,049,200

27. Project cost estimate prepared by (name/title):

    Kenneth J. Eldridge, PE
    Senior Engineer- Silver/Petrucelli + Associates

28. Total floor area directly involved in construction: n/a sq. ft.

29. Estimated project cost per square foot (for additions and new construction): $ #VALUE!

30. a. Anticipated beginning month/year of construction: Oct-20
    b. Anticipated ending month/year of construction: Mar-21

31. Project Statement Narrative. Try to stay under 300 words (use only the space provided). Include:
    a. Necessity for project - compelling extenuating circumstances or community needs, evidence that the proposed project is needed for an area currently underserved.
    b. General nature of the actual construction work to be carried out.
    c. Expected result and explain benefits to the public.
    d. Note here any library services this building project allows that are unique to the library or to libraries in general.
    e. Note here any special architectural features that make your project stand out.
    f. Describe any staff changes needed to operate the completed facility; other projected budgetary requirements to assure effective operation and maintenance of the facility for the purposes constructed.
    g. **REQUIRED:** Describe how the library staff assisted with the planning for the project.

a. The Waterford Library's HVAC system is obsolete and in need of replacement. The engineering study funded by the town in 2018 found the current system components to be in poor condition and past their useful service life expectancy. The system performance produces inadequate fresh airflow, affecting overall indoor air quality. Furthermore, inconsistent heating and cooling plague the public, staff and collections. The furnace, servicing the 1976 building addition, installed in 1999 and rife with breakdowns since installation, is located on the roof with oil pumped up – an inefficient process at best. The plan includes conversion to natural gas. This will not only result in monetary savings but also provide a more energy efficient, cleaner, greener system – a major step in support of the sustainability efforts of the Town of Waterford and the State. Additionally, the new system will comply with current energy code requirements.

b. Replacement and modernization of HVAC systems and conversion to natural gas.

c. Customer service impact is significant – improving air quality, maintaining adequate and consistent heating and cooling throughout the building, and fewer incidents of no heat/AC and/or insufficient heat/AC due to mechanical breakdowns.

d. N/A

e. N/A

f. No necessary staff changes will be needed to operate the new system; initial training will be provided to the building manager. The new system should result in lower energy costs.

g. Interviews by the engineering consultant during the study phase and additional discussion following presentation of the final report engaged the following people:

Library director
Library staff
Board of Trustees Property Committee
Board of Trustees
Town Planning Director
Town Facilities Manager

D. SUPPORTING DOCUMENTS THAT MUST BE INCLUDED IN THIS APPLICATION
(Refer to the Section 7 of the "Timetable and Guidelines" document for details)
Or Click here for details

Certification of Application completed and signed. (See below for form)
Certification confirming resolution authorizing filing of application by the
Tentative plans and time line for securing local funds and listing all major activities.
Title or other evidence of interest in the site, such as a deed.
Certification of structural soundness (not needed for new buildings).
Fire and safety evaluation (not needed for new buildings).
Certification by the architect or fire marshall for fireproof book drop.
Accessibility certification by the architect.
LEED certification optional for projects under $10 million
Reasonable assurance of local funding within 3 years & initiation of project within 18 months of Bond Commission approval.
List of equipment to be purchased.
Preliminary drawings by architect. (may be provided separately)
Site plan (only if project affects the exterior of the building)
Statement on strategic plan and technology plan.
Building program.
Property Appraisal(s) if land or building acquisition is part of project
Letter on the status of municipal POCD, and statement (municipal libraries only)

E. LIEN ANALYSIS FORM - INSTRUCTIONS - Association Libraries Only

An association library that is an official applicant (question #1) and will own both the proposed new building or addition and the land upon which it is situated complete this form. If the city or town is the official applicant do not complete this form.

1. REPLACEMENT VALUE - Estimate the cost of building a new facility of similar construction type area in the current construction environment. Base this estimate on the current estimated construction cost per square foot (including the cost of the land) x the total square footage of the site to be renovated or purchased.

2. PURCHASE PRICE/LEASE COST - If owned by grantee of holding company of grantee, give the amount of purchase price and year in which purchased. If a leased property, give the cost of the lease per month and yearly amount, also cite current real estate market estimates of rent for a building of similar type and size(i.e., commercial, residential, etc.). In the case of leased property, please describe any accommodations/s the land has made or will make if the funded renovation occurs.

3. ADDITIONAL BOND FUNDS - Will additional bond funds be needed to renovate this property? If so, please provide an estimate of the cost.

4. CURRENT LIENS - List all current (existing or proposed) liens on the property (whether leased or owned). This listing is all inclusive, state agency liens, city liens (CDBG), mechanics liens, etc. Cite the date the lien(s) were placed on the property, the total amount of the lien, anticipated termination date of the lien and the current value. If the current value of liens plus the bond fund application amount exceed the current market value, applications will not be considered for funding.

5. CURRENT MORTGAGE BALANCE - For owned or leased sites indicate amount of balance and as of what date.

6. CURRENT MARKET VALUE - Estimate for both owned and leased properties. The intent here is to approximate current market selling price. If there is a recent (within one year) appraisal and/or assessment, you may use those amounts as the estimate.

LIEN ANALYSIS FORM

Applicant Name:

Site Address:

1. Replacement Value: $ X Total sq. footage
(Construction cost)

Cite source of standard:

2. Purchase Price/Lease Cost:

If owned by grantee or holding company of grantee:
Purchase price Year purchased
If leased property: Lease per month $ Lease per year $

Current real estate market estimates for rent: $
Lease Property: Describe accommodation(s) landlord has made or will make:

3. Additional Bond Funds:

Will you be requesting Bond Funds to renovate this property now or in the future?

☐ Yes ☐ No Estimated cost: $

4. Current Lien Value:

List all current (existing or proposed) liens, date liens(s) were places, amount of total liens, anticipated termination and current value:

Name of Lien holder	Date Placed	Total Amount	Anticipat-ed Term Date	Current Value

Lien Analysis Form (cont.)

5. Current Mortgage Balance for Owned or Leased Property:
   Please indicate balance as of application date.

Balance $ _____ Date: _____

6. Current Market Value: $ _____
Insert written appraisal/assessment or letter from Realtor.

If there is more than a $5,000 difference between the purchase price and current market value, please explain (i.e., past renovations increased value, property was purchased 20 years ago, etc.)

Date: _____

Signature: _____

Title: _____

F. CONTRACT ASSURANCES

You must be aware of the contract assurances as provided in Section 9 of the most recent "Timetable and Guidelines" document for construction grants.

G. SIGNATURE OF OFFICIAL REPRESENTATIVE OF THE APPLICANT

As the official representative of the applicant I verify the accuracy of this application and understand that its submission does not guarantee a grant award by the Connecticut State Library Board. I also understand that this application will not be considered for a grant award until the State Library receives the Governing Body's Certification of the Application (see Supporting Document #1 below).

Application forwarded this 21 day of August, 2019

Typed name of official representative of the applicant: Roslyn Rubinstein

Signature (print copy must be signed)

Title: Library Director

Scoring System Used for Category 1 Applications

(see Section 6, Method of Allocation in Timetable and Guidelines document)

POINTS ASSIGNED FOR THE FOLLOWING:

Space Planning Guide Worksheet

Based on "2014 Library Space Planning Guide Worksheet" square feet needed: 26,945

1 POINT if this is exceeded by the square feet available upon project completion: 26,100

Your Points (1 or 0)

Determine score:

Square Feet Per Capita Benchmarks

1.60	Square feet per capita - Library Serving Projected Population under 10,000
1.50	Square feet per capita - Library Serving Projected Population 10,000 to 20,000
1.35	Square feet per capita - Library Serving Projected Population 20,000 to 50,000
1.15	Square feet per capita - Library Serving Projected Population over 50,000

2 POINTS assigned if your CURRENT facility is less than the benchmarks above. Your Points (2 or 0)

Current Square Feet: 26,100 Sq.ft.per capita 1.37

Current Population Served: 19,007 Determine score: 2

2 ADDITIONAL POINTS assigned if your CURRENT facility is less than the benchmarks and your PROJECTED faciity is more than the benchmarks. Your Points (2 or 0)

Projected Square Feet: 26,100 Sq.ft.per capita 1.55

Projected Service Population: 16,785 Determine score: 2

1 or 2 POINTS may be awarded by State Library staff for projects that are less than the benchmarks and you provide a convincing case for why the project should be awarded a grant despite an apparent limit to the project's scope. See Timetable and Guidelines for more detail. Provide explanation in the space provided. Your Points

n/a

AENGLC Rank

127-169	4
85-126	3
43-84	2
1-42	1

Your Library's Rank: 36 (see question 11)

Your Points (1 - 4)

Determine score: 1

Net Effective Age of Building

50 years or more	5
40-49 years	4

Your Building's NEA: 48.4 (see question 28)

Your Points (1 - 5)

Determine score: 4

30-39 years	3
20-29 years	2
10-19 years	1
less than 10 years	-

Library Hours Open

Population	Hours	Points	Your Points (1 or 0)
Under 5,000	5 days/30 hrs.	1 point if you meet the minimum # of days and hours of service.	Determine score: 1
5,000-10,000	5 days/45 hrs.		
10,000-25,000	5 days/56 hrs.		
25,000+	5 days/64 hrs.	Your days: 6 Hours: 65	

Accessibility for People with Disabilities

3 POINTS if you answered no to question #17 and yes to question #18. Your Points (3 or 0)

Determine score:

Service Area

Projects for Main libraries (rather than branch libraries) will receive 2 extra points. Your Points (2,or 0)

Determine score: 2

Environment Design

Projects with total project costs under $10 million that meet LEED silver level or higher will receive 2 POINTS. See "Timetable and Guidelines" document for details. Your Points (2 or 0)

Determine score:

Books Per Square Foot

1 POINT if your projected book volumes 70,505 divided by projected sq. ft. 26,100

is under 4..... 2.70134

Your Points 1

Project Narrative Statement & Library Staff Involvement

Libraries that make especially compelling arguments in the narrative statement and show staff involvement receive up to 4 POINTS. Determined by State Library Staff. Your Points

TOTAL POINTS 13

Please note:

If your "Total Points" score currently is 6 or lower, then your application will not be considered for a grant. If the score is 7 to 11 your application will be considered only if the narratives provide compelling reasons for additional points. Your total points must be at least 12 to be considered for a grant. Even with a score of 12 or more the State Library reserves the right to reject your application if we identify serious problems with your plans. Also, distressed municipalities will have preference when bond funding hasn't been specifically earmarked.

CHECKLIST STATE PUBLIC LIBRARY CONSTRUCTION GRANT 2019

Please check the attachments included with your application.
If an item is being mailed separately, please indicate in the appropriate column. Please note, **if you cannot provide supporting documents by the deadline, you will have until September 30 to provide them.**

Your Checklist Being sent separate cover	Or Item included in packet	
	included	Application completed, all questions answered
	included	501 (c)(3) letter (ONLY FROM ASSOCIATIONS)
		SUPPORTING DOCUMENTS (As described in "Timetable and Guidelines")
		For CATEGORY 1 : **Click here for details**
	included	Certification of Application completed and signed. (See below for form)
	included	Certification confirming resolution authorizing filing of application by governing body.
	see Other	Tentative plans and time line for securing local funds and listing activities.
	n/a	Title or other evidence of interest in the site such as a deed.
	n/a	Certification of structural soundness.
	included	Fire and safety evaluation.
	incl. + other	Certification by the architect or fire marshall for the fireproof book return.
	n/a	Accessibility certification by the architect.
	n/a	LEED certification letter from the architect
	see Other	Reasonable assurance that the project will start within required time
	included	List of equipment to be purchased.
	n/a	Preliminary drawings by architect (does not need to be inside notebook).
	n/a	Site plan (only if affects the exterior of the building).
	see Other	Statement on strategic plan and technology plan
	n/a	Building program (includes library area workforms - see below).
	n/a	Property Appraisal(s) if land or building acquisition is part of project
	included	Letter on the status of municipal POCD, and statement (municipal libraries only)
	included	Other: Library Space Planning Guide Worksheet; Library Director statement

GOVERNING BODY'S CERTIFICATION OF APPLICATION (due Sept. 30)

Name of municipality where library is located: Waterford

Name of the library: Waterford Public Library

The application for State funds submitted to the Connecticut State Library for the 2019 library construction grant program was submitted to the appropriate local governing authority at a legal meeting held on the 20th day of August 2019, when the following people were present:

(Give names not signatures, of the present)

Daniel Steward
Robert Brule
Mark Balestracci

After reading and approving this application, this body voted to approve the official submission to the Connecticut State Library.

Typed name of official representative of the applicant: Daniel Steward

Signature (print copy must be signed)

Title: First Selectman

U. S. TREASURY DEPARTMENT
INTERNAL REVENUE SERVICE
DISTRICT DIRECTOR

Hartford, Connecticut
P. O. Box 2158

IN REPLY REFER TO
Form 2954

AUG 3 1 1962

A:R

The Waterford Public Library, Inc.
Waterford, Connecticut

PURPOSE Educational
FORM 990A REQUIRED ☒ YES ☐ NO
ACCOUNTING PERIOD ENDING August 31st

Gentlemen:

Based upon the evidence submitted, it is held that you are exempt from Federal income tax as an organization described in section 501(c)(3) of the Internal Revenue Code, as it is shown that you are organized and operated exclusively for the purpose shown above. Any questions concerning taxes levied under other subtitles of the Code should be submitted to us.

You are not required to file Federal income tax returns so long as you retain an exempt status, unless you are subject to the tax on unrelated business income imposed by section 511 of the Code and are required to file Form 990-T for the purpose of reporting unrelated business taxable income. Any changes in your character, purposes or method of operation should be reported immediately to this office for consideration of their effect upon your exempt status. You should also report any change in your name or address. Your liability for filing the annual information return, Form 990A, is set forth above. That return, if required, must be filed after the close of your annual accounting period indicated above.

Contributions made to you are deductible by donors as provided in section 170 of the Code. Bequests, legacies, devises, transfers or gifts to or for your use are deductible for Federal estate and gift tax purposes under the provisions of section 2055, 2106 and 2522 of the Code.

You are not liable for the taxes imposed under the Federal Insurance Contributions Act (social security taxes) unless you file a waiver of exemption certificate as provided in such Act. You are not liable for the tax imposed under the Federal Unemployment Tax Act. Inquiries about the waiver of exemption certificate for social security taxes should be addressed to this office.

This is a determination letter.

Very truly yours,

James J. McGarty
Assistant Chief
Audit Division

FIFTEEN ROPE FERRY ROAD
WATERFORD, CT 06385-2886

PHONE: 860-442-0553
www.waterfordct.org

AUTHORIZING RESOLUTION OF THE

Board of Selectmen

CERTIFICATION:

I, David L. Campo, the Town Clerk of the Town of Waterford, do hereby certify that the following is a true and correct copy of a resolution adopted by Board of Selectmen at its duly called and held meeting on July 16, 2019, at which a quorum was present and acting throughout, and that the resolution has not been modified, rescinded, or revoked and is at present in full force and effect:

RESOLVED, that the First Selectman, Daniel Steward, is empowered to apply for a State Public Library Construction Grant.

FURTHER RESOLVED, that Daniel M. Steward, as First Selectman of the Town of Waterford, is authorized and directed to execute and deliver any and all documents on behalf of the Town of Waterford and to do and perform all acts and things which he/she deems to be necessary or appropriate to carry out the terms of such documents, including, but not limited to, executing and delivering all agreements and documents contemplated by such documents.

The undersigned further certifies that Daniel M. Steward now holds the office of First Selectman and that he/she has held that office since November 2005.

IN WITNESS WHEREOF: The undersigned has executed this certificate this 17th day of July, 2019.

David L.Campo - Town Clerk

WATERFORD
public library

Discovery begins here

49 Rope Ferry Road ▪ Waterford, CT 06385
860-444-5805 ▪ waterfordpubliclibrary.org

RE: Waterford Public Library State Public Library Construction Grant 2019-2020

Supporting Documents:

- Time line
  In 2018, the town of Waterford funded an evaluation of the library's existing HVAC systems with recommendations for improvements and replacement.

  In FY'19, $1,049,200 was designated in the Town of Waterford Capital Improvement Plan Fiscal Years 2020-2024 for funding in FY'21 of the study recommendations (plan enclosed).

  The budget timeline for capital funds appropriation for FY'21 is as follows:
  - Board of Selectmen – January 2020
  - Board of Finance – March 2020
  - Representative Town Meeting (RTM) – May 2020

  Once approved, the money is available on July 1, 2020. At that point, working with the town planning director, finance director and purchasing agent, an RFP can be finalized and the project put out to bid. Work on the project can begin c. Fall/Winter 2020/2021.

- The library also has a book return with an exterior location well away from the building.

- By putting the project in its Five Year Capital Improvement Plan, the town has acknowledged its commitment to the project. The library will submit the project for appropriation as per the timetable above. At that time, the status of the state grant will have been announced and with grant funds committed there is reasonable assurance that local matching funds will be in place within three years.

- Strategic Plan – the library has a strategic plan that is current and approved by the library board of trustees. The plan includes the library's vision, mission statement, goals and measurable objectives. The library's technology plan is under review and will be approved by the library board of trustees in CY'19.

- Re: application question #13, State Historic Preservation Office Project Notification Form filed August 7, 2019. Waiting for disposition.

Roslyn Rubinstein
Library Director

TOWN OF W[illegible]RFORD
CAPITAL IMPROVEMENT PROGRAM - PROPOSED
FISCAL YEARS 2020-2024

DEPT PRIORITY		2020-2024 FUNDING SOURCE	FISCAL YEAR 2019-2020	FISCAL YEAR 2020-2021	FISCAL YEAR 2021-2022	FISCAL YEAR 2022-2023	FISCAL YEAR 2023-2024	TOTALS
FLEET MANAGEMENT (SELECTMEN)								
1	FLEET MANAGEMENT PLAN	1	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	5,000,000
TOTAL FLEET MANAGEMENT			1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	5,000,000
ASSESSOR								
1	REVALUATION PROJECT	3	75,000	75,000	75,000	75,000	75,000	375,000
TOTAL ASSESSOR			75,000	75,000	75,000	75,000	75,000	375,000
INFORMATION TECHNOLOGY								
2	SYSLOG SERVER	1	12,880					12,880
3	BACKUP SYSTEM	1	10,427					10,427
1	FIRE DEPT NETWORKED COMPUTER, PHONE	1	120,000					120,000
5	HARDWARE REFRESH (27 NEW COMPUTERS)*2	1	26,348					26,348
6	TOWN WIDE WIFI (FINAL PHASE)	1	25,000					25,000
4	CORE SWITCHES & BLADES - EOC/TOWN HALL	1, 3	21,200					21,200
	SWITCHES	3			18,000			18,000
	PHONE SYSTEM (HARDWARE/SOFTWARE UPGRADES)*3	3		5,250	11,000	17,417		33,667
	VMWARE/VIRTUAL SERVERS (Hosts, Software)							0
	TOWN WIDE CAMERA SYSTEM	3						0
	FIBER UPGRADE (Town Hall to PD/YS/EOC, Community Center, Library) *4	3		7,000	7,000	7,000	7,000	28,000
	MERAKI FIVE YEAR LICENSING (Cisco Wireless Access Points)	3		11,550	5,750	5,750		23,050
	EXTERIOR CAMERA SYSTEM *5	3		97,200	77,000	77,000	77,000	328,200
TOTAL INFORMATION TECHNOLOGY			215,855	121,000	118,750	107,167	84,000	646,772
LIBRARY		3		1,049,200				1,049,200
								0
TOTAL LIBRARY			0	1,049,200	0	0	0	1,049,200
FIRE SERVICES								
1	FIRE SERVICES-PREEMPTION LIGHT REPAIRS	3	50,000	50,000				100,000
	FIRE SERVICES -EQUIP. REPLACEMENT PLAN	3		75,000	75,000	75,000	75,000	300,000
4	PUBLIC SAFETY - CARPET REPLACEMENT	3	30,000					30,000
2	FIRE DEPT - FIRE STATION TELEPHONE SYSTEMS	3						0
3	FIRE DEPT - HYDRAULIC EQUIPMENT UPGRADE	3	50,000	100,000				150,000
	FIRE DEPT-ACCOUNTABILITY SYSTEM	3						0
	JORDAN - WINDOW REPLACEMENT	3		100,000				100,000
	QUAKER HILL - EMERGENCY GENERATOR	3			50,000			50,000
	QUAKER HILL - PARKING LOT PROJECT	1		50,000	50,000			100,000

Connecticut
still revolutionary
Department of Economic and Community Development
State Historic Preservation Office
450 Columbus Boulevard, Suite 5 | Hartford, CT 06103 | 860.500.2300 | cultureandtourism.org

PROJECT REVIEW COVER FORM

This is: ☒ a new submittal ☐ supplemental information ☐ other Date Submitted: August 7, 2019

PROJECT INFORMATION

Project Name: Waterford Public Library - HVAC upgrade/renovation/replacement

Project Proponent: Roslyn Rubinstein, Library Director
The individual or group sponsoring, organizing, or proposing the project.

Project Street Address: 49 Rope Ferry Road
Include street number, street name, and or Route Number. If no street address exists give closest intersection.

City or Town: Waterford County: New London
Please use the municipality name and not the village or hamlet.

PROJECT DESCRIPTION

Describe the overall project in detail. As applicable, provide any information regarding past land use, project area size, renovation plans, demolitions, and/or new construction. Note if this will included in a separate attachment:
Engineering study attached.

List all state and federal agencies involved in the project and indicate the funding, permit, license or approval program pertaining to the proposed project:

Agency Type	Agency Name	Program Name
☒ State ☐ Federal	CT State Library	State Public Library Construction Grant
☐ State ☐ Federal		
☐ State ☐ Federal		
☐ State ☐ Federal		

If there is no state or federal agency involvement, please state the reason for your review request:

FOR SHPO USE ONLY

Based on the information submitted to our office for the above named property and project, it is the opinion of the Connecticut State Historic Preservation Office that no historic properties will be affected by the proposed activities.*

Mary Dunne/Catherine Labadia — 9/4/19
Deputy State Historic Preservation Officer — Date

*All other determinations of effect will result in a formal letter from this office

Connecticut
still revolutionary
Department of Economic and Community Development
State Historic Preservation Office
450 Columbus Boulevard, Suite 5 | Hartford, CT 06103 | 860.500.2300 | cultureandtourism.org

PROJECT REVIEW COVER FORM

CULTURAL RESOURCES IDENTIFICATION

Background research for previously identified historic properties within a project area may be undertaken at the SHPO's office. To schedule an appointment, please contact Catherine Labadia, 860-500-2329 or Catherine.labadia@ct.gov. Some applicants may find it advantageous to hire a qualified historic preservation professional to complete the identification and evaluation of historic properties.

Are there any historic properties listed on the State or National Register of Historic Places within the project area?

☐ Yes ■ No ☐ Do Not Know If yes, please identify: _____

Architecture

Are there any buildings, structures, or objects within the project area (houses, bridges, barns, walls, etc.)?

■ Yes (attach clearly labelled photographs of each resource and applicable property cards from the municipality assessor)

☐ No (proceed to next section)

Are any of the buildings, structures or objects greater than 50 years old? ■ Yes ☐ No ☐ Do Not Know

If the project involves rehabilitation, demolition, or alterations to existing buildings older than 50 years, provide a work plan (If window replacements are proposed, provide representative photographs of existing windows).

Archeology

Does the proposed project involve ground disturbing activities?

■ Yes (provide below or attach a description of current and prior land use and disturbances. Attach an excerpt of the soil survey map for the project area. These can be created for free at: https://websoilsurvey.nrcs.usda.gov
Plan includes conversion from fuel to natural gas. Attached is map of gas line to building.

☐ No

CHECKLIST (Did you attach the following information?)

Required for all Projects	Required for Projects with architectural resources
■ Completed Form	☐ Work plans for rehabilitation or renovation
■ Map clearly labelled depicting project area	☐ Assessor's Property Card
■ Photographs of current site conditions	Required for Projects with ground disturbing activities
☐ Site or project plans for new construction	☐ Soil survey map
Suggested Attachments, as needed	
■ Supporting documents needed to explain project	☐ Supporting documents identifying historic properties
☐ Historic maps or aerials (available at http://magic.lib.uconn.edu or https://www.historicaerials.com/)	

PROJECT CONTACT

Name: Roslyn Rubinstein Firm/Agency: Waterford Public Library

Address: 49 Rope Ferry Road

City: Waterford State: CT Zip: 06385

Phone: 860-444-5869 Email: rrubinstein@waterfordct.org

Federal and state laws exist to ensure that agencies, or their designated applicants, consider the impacts of their projects on historic resources. At a minimum, submission of this completed form with its attachments constitutes a request for review by the Connecticut SHPO. The responsibility for preparing documentation, including the identification of historic properties and the assessment of potential effects resulting from the project, rests with the federal or state agency, or its designated applicant. The role of SHPO is to review, comment, and consult. SHPO's ability to complete a timely project review largely depends on the quality of the materials submitted. Please mail the completed form with all attachments to the attention of Environmental Review at the address above. Electronic submissions are not accepted at this time.

Department of Public Safety
Division of Fire, Emergency & Building Services
Office of State Fire Marshal

STATE OF CONNECTICUT

On **07.18.2019**, the Office of the **Waterford** Fire Marshal conducted an inspection of **Waterford Public Library** located at **49 Rope Ferry Road** in **Waterford** to determine the degree of compliance with the fire safety requirements of Connecticut General Statutes Chapter 541 as authorized by Section 29-305 of the statutes. This facility was evaluated as a **Existing** **Assembly Group A-3** as classified by the *CONNECTICUT FIRE SAFETY CODE*. As a result of this inspection, the following conditions were found:

I. ☐ At the time of inspection, no code violations were identified. **Certificate of approval recommended.**

II. ☒ At the time of inspection, conditions were discovered to be contrary to the minimum requirements of these codes. An acceptable plan of correction was submitted. (*See attached information*) **Certificate of approval recommended.**

III. ☐ At the time of inspection, conditions were discovered to be contrary to the minimum requirements of these codes. No approved plan of correction was submitted. (*See attached information*) **Certificate of approval NOT recommended.**

IV. ☐ Based on the extreme hazard to public safety discovered at the time of this inspection, this office is currently seeking an injunction from the court through our Town/City Attorney for the purpose of closing or restricting usage of this facility by the public. (*See attached information*) **Certificate of approval NOT recommended.**

Fire Marshal _____ Date 7/19/19

City or Town: WATERFORD

FIFTEEN ROPE FERRY ROAD

Town of Waterford

WATERFORD, CT 06385-2886

08/01/19

Waterford Public Library
49 Rope Ferry Road
Waterford, CT 06385

Re: Indoor Book Return Drops

To Whom It May Concern,

The two book return areas, one at the front door and one at the rear door, are both protected by the building's automatic fire sprinkler system, which is connected to the fire alarm system and monitored by the Waterford Emergency Communications Center.

Regards,

Peter M. Schlink
Fire Marshal
Town of Waterford

PMS/jjl/nn

SILVER/PETRUCELLI+ASSOCIATES
Architects and Engineers
3190 Whitney Avenue, Hamden, CT 06518-2340
Tel: 203 230 9007 Fax: 203 230 8247
silverpetrucelli.com

August 28, 2018

Mr. Wayne Fraser
Municipal Facility Coordinator
Waterford Town Hall
15 Rope Ferry Road
Waterford, CT 06385

RE: Waterford Public Library
Support of Design/Build Effort
S/P+A #18.024

Dear Wayne:

As you know, we have been working with you and Ms. Roslyn Rubenstein on the evaluation of mechanical systems at the Waterford Public Library, which is now complete. I am pleased to submit this fee proposal for assistance with the Design/Build effort, as it relates to mechanical and electrical system improvements at that building.

DESIGN/BUILD PERFORMANCE SPECIFICATION

We can provide a guideline for Design/Build contractors and our tasks will include:

1. Perform detailed site investigation of existing conditions.
2. Perform detailed heating/cooling load calculations of building HVAC loads to document approximate system capacities.
3. Produce Design/Build Performance Specification defining the design parameters for qualified contractors and their associated Engineer of Record (EoR).

BID PHASE ASSISTANCE

We can provide minimal assistance during the Bid Phase as indicated below:

1. Attend a Pre-bid walk-thru.
2. Evaluate and assist the Town in responding to contractor RFI's.
3. Assist the Town with evaluation of bids and bidders.

CONSTRUCTION ADMINISTRATION

Although the EoR is responsible for development of shop drawings and submittals for their design, we will provide assistance to the Owner in determining whether the design-build team is straying or within the criteria and guidelines set forth in the Performance Specification. Services provided under this phase will consist of the following:

1. Attend pre-construction meeting.
2. Cursory Review of Contractor's Product Data and Shop Drawing submittals for compliance with Performance Spec.
3. Provide site observation visits (4) prior to completion of project.
4. Coordination with contractors to clarify designs.
5. Review EoR Punch List of completed installation.
6. Review Closeout submittals.

COMMISSIONING

Commissioning (Cx) services are now required to be performed on all mechanical systems in this size range in accordance with the upcoming CT State Building Code (2015 International Energy Conservation Code will be in effect), however are excluded from this proposal at this time. Acting as an Owner's Representative on the development of the Performance Spec, it would be suitable and sensible to consider us for the Cx Agent to represent the Town throughout the installation as well. Should these services be required from us at a later date, we can prepare a proposal for an appropriate level of Commissioning/ support that we would be pleased to provide you at that time.

SERVICES NOT INCLUDED

We are capable of providing a wide range of additional services should you require the assistance, or should the project scope be revised. These excluded services include:

1. Architectural services.
2. Environmental inspection, testing, design and monitoring services.
3. Civil engineering services.
4. Structural engineering services.
5. Fire protection engineering.
6. Commissioning and Commissioning Support.
7. Printing of Bid Sets.

8. Preparation/documentation of more than three design alternates.
9. Energy estimating, energy modeling and/or life cycle cost analysis.
10. Development of Contract Documents suitable for obtaining competitive bids and for obtaining required permits.

COMPENSATION

We propose to accomplish any of the tasks identified in this proposal for the lump sum fees outlined below:

Design/Build Outline Specification:	$ 6,560
Bid Phase Assistance:	$ 1,360
Construction Administration:	$ 7,200
Total	$ 15,120

These fees include expenses related to travel but exclude document reproduction costs which will be billed at 1.10 times actual expense. Invoices will be submitted on a regular basis, and payment will be due within thirty (30) days.

Thank you for the opportunity to submit this proposal. If you are in agreement, please issue a Purchase Order.

Very truly yours,

Kenneth J. Eldridge, P.E.
Senior Engineer

18.024.02.PRO

Town of Waterford, Connecticut

Evaluation of the Existing HVAC Systems

Waterford Public Library Building

49 Rope Ferry Road
Waterford, CT 06385

Final Report: August 10, 2018

Prepared by:

Silver/Petrucelli + Associates
Architects / Engineers / Interior Designers
3190 Whitney Avenue
Hamden, CT 06518

Table of Contents

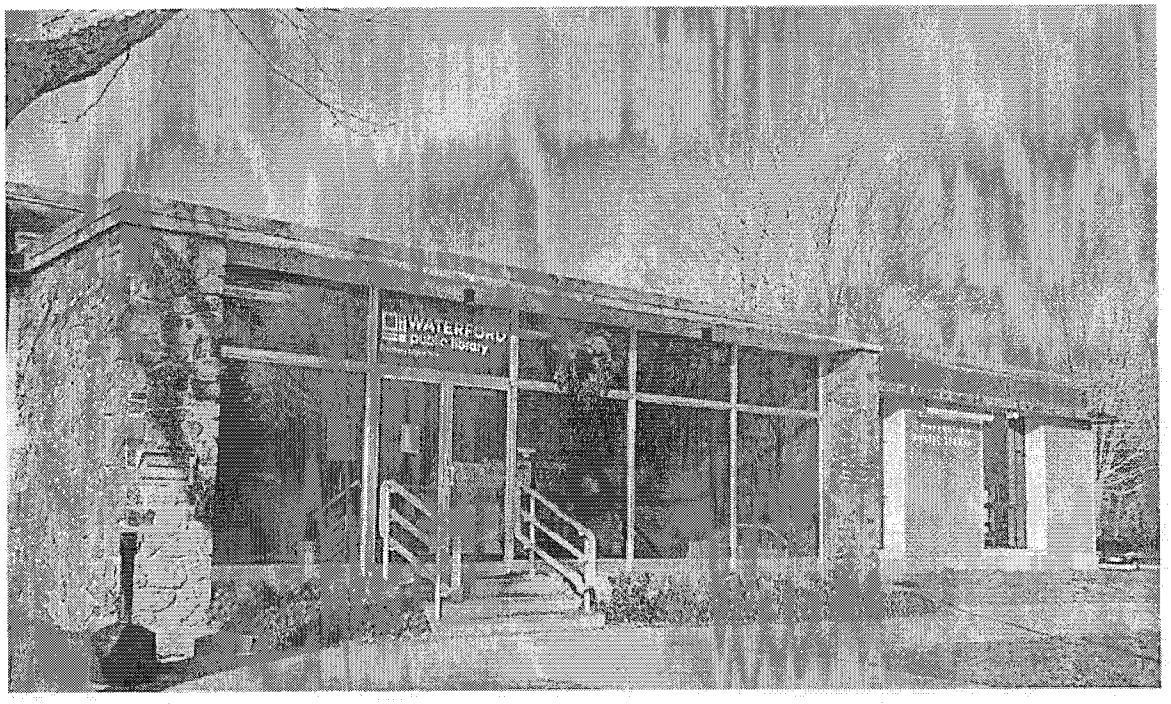
Section I – Executive Summary

The services of Silver / Petrucelli + Associates (S/P+A) have been secured by the Town of Waterford, Connecticut to provide an engineering assessment of the heating, ventilation and air-conditioning (HVAC) systems serving the existing Waterford Public Library, located at 49 Rope Ferry Road.

This report of our investigation and study describes the existing conditions and proposed HVAC system improvements required to provide adequate space comfort, energy efficiency and improved air diffusion Control for the Public Library. The current building HVAC systems serve the Town's library space environment needs; however, comfort issues are now the norm, concerns over indoor air quality (IAQ) and system performance have beset the building, most notably in the addition stacks, almost from the onset of HVAC systems' installations.

This report was prepared by S/P+A of Hamden, Connecticut, an architecture, engineering and interior design collaborative specializing in municipal town planning, historic restoration, master planning and design.

The collected data was organized and appears in sections of this report in the form of existing conditions summary, recommendations, conclusions, an opinion of probable costs for proposed renovations, existing conditions photographs and a list of current applicable codes.



APPLICABLE CODES

The proposed upgrades require that the building be brought up to full current code standards. The codes to which the mechanical systems have been evaluated include:

- Connecticut State Building Code (CSBC) with 2016 Connecticut Supplements
- 2012 International Building Code (IBC)
- 2012 International Mechanical Code (IMC)
- 2012 International Plumbing Code (IPC)
- 2012 International Energy Conservation Code (IECC)
- 2014 NFPA 70 National Electric Code (NEC)

Any work done to the building will need to be performed to the Code cycle that is in force at the time; Connecticut is expected to be updating the Codes effective October 1, 2018, to the 2015 ICC Compilation and is anticipated to enact the next level of Codes every three years, thereafter.

PROJECT OBJECTIVE

The primary objective of this report is to provide the Town with an assessment of the present condition of existing equipment and systems serving the Public Library, address comfort and indoor air quality (IAQ) concerns, analyze equipment capacity and provide a preliminary opinion of probable costs for any related modification options that may be considered. The existing oil-fired equipment serving this building are operating beyond their useful service life expectancies and, in many cases, are incapable of maintaining setpoints related to occupant comfort within these spaces. For these reasons, natural gas-fired rooftop and central station air handling equipment is proposed. The new units are proposed to be gas-fired since natural gas line installation has been proposed by the Town and is nearly underway on Rope Ferry road in front of the library. In addition, because of their ability to move larger quantities of air – an aspect which would alleviate distribution concerns in the stacks and areas with high ceilings – and temper large quantities of ventilation air, these units are the most suitable choice. Other systems, such as the split-ductless, variable refrigerant volume (VRF) type system, most notably recommended for the recent HVAC upgrades at the Town Hall and Youth Services Bureau Building, were not considered due to their inability to overcome the distribution and ventilation quantity issues. When confronted with these exact performance drawbacks at the Town Hall - namely in the Auditorium - gas-fired rooftop equipment was the system of choice there as well.

Lastly, we performed schematic-level, computer block-load heating and cooling calculations to compare present building envelope loads to what could be anticipated upon the replacement of the original windows by incorporating modern, "state-of-the-art" replacement window models. The results are eye-opening and substantiate the rule of thumb stating that window replacements of this type can see payback periods of five (5) years or less.

PROCESS

This report was developed with the input of facility staff, maintenance personnel and visual observations of the existing facilities by our engineering staff and review of available existing conditions drawings and records. Our directive was to develop a report wherein a qualified Design-Build Contractor shall be able to understand the recommended systems being considered and successfully begin the processes of designing and budgetary pricing, leading to commencement and installation, with the understanding that all work to be performed will be done while the building is still both occupied and functioning in its capacity as the Town Public Library.

SP+A would especially like to thank Ms. Roslyn Rubenstein, Director of the Library and Mr. Michael Miceli, Building Operations Manager for their extensive contribution of time, data, input and access, and to the staff that provided their day-to-day experiences with the existing environmental conditions – both positive and negative.

Section II – Existing Conditions

In 1965, the Town built the "New" Public Library at its current location, which utilized oil-fired equipment for heating and ventilation of the building. In 1975, an addition was built to expand the library and its services to the community. The 1975 addition included roof mounted, oil-fired HVAC equipment as well. In 1976 mechanical modifications were done to the addition. New mechanical equipment was added in 1999 to serve the new addition as well as a portion of the existing building spaces.

Public Library Building Systems

Space heating and cooling for the building is provided by oil-fired equipment located in the basement, as well as from one oil-fired, air handling unit on the roof. The other rooftop mounted unit (RTU) is for cooling-only and utilizes direct expansion (DX) refrigeration. Basement oil-fired heating and ventilating (H&V) units were installed in 1999 and are approaching the end of their useful life – close to twenty years. The basement units are manufactured by Jackson and Church and the York Corporation. It appears that the intent of these units was to offset perimeter heat losses, while utilizing the existing RTU's provide the space conditioning for the interior portion of the library. The basement H&V units do not have cooling capability. Ventilation air is supplied to all the units through a wall-mounted louver connected to a common vent which each unit draws from. Fresh air is then distributed throughout the facility by the air handling equipment located in the basement and on the roof via ductwork serving the space.

The RTU's are either mounted on curbs or steel dunnage on the existing roofs. Judging by their current state these units are in poor condition and past their useful service life expectancy. The complaints by occupants indicate that there does not seem to be enough airflow, particularly in the stacks, and maintaining the thermostat setpoint is difficult.

There is an existing 2,000-gallon, underground fuel-oil storage tank located in the front of the library. It was originally scheduled for replacement in 3 years, however with the proposed gas

service installation this could be moved up in schedule.

There are three (3) split air conditioning systems serving the library. One of the systems serves the meeting in room in the basement, while the other (2) two serve the main staff office on the 1st floor and the conference room in the basement level. Each of the indoor units have their own grade-mounted condensing units. These systems, although functional at present, are approximately 19-20 years in age and approaching the end of their useful service life expectancy. Refrigerant for these systems are no longer in production per the Montreal Protocol refrigerant phaseout schedule, and as a result these units will no longer be able to be serviced reliably.

Section III - Recommendations

Due to the age and poor condition of the existing mechanical systems and equipment serving the building, full system replacement is the recommended course of action. With the prospect of equipment replacement comes the opportunity to improve on the conditions within these spaces, targeting existing IAQ concerns, meeting compliance with modern energy code requirements, and improving the control of indoor environmental conditions within these spaces. Namely, it provides the opportunity for the Town to:

- Operate these mechanical systems in a manner which promotes a clean and comfortable environment in the most cost- and energy-efficient manner available
- Extend the building's usefulness and allow for it to be a prime useable space in the community for the benefit of current and future generations
- Alleviate airflow distribution, comfort and IAQ concerns while increasing energy efficiency
- Improved and simplified equipment service and maintainability
- The ability to control and monitor operation, alarms, trend data, building occupancy schedules and all system setpoints remotely from the internet and/or from a single physical location, as desired by the Owner's needs

The existing oil-fired equipment that is presently in place represents the lowest efficiency systems available in terms of heating the library spaces. With operating efficiency in the range of 80% to 86% - that's when burners are new, and combustion is finely tuned – natural gas is the clearer choice with efficiencies in the 92% to 98% range. In addition, the use of oil-fired rooftop and/or central station equipment is easily the least commonplace choice of systems available. This leads to a potential difficulty in finding replacement parts and qualified service personnel as the systems age. And although VRF technology far exceeds the efficiency in even the best gas-fired equipment, its physical limitations in air distribution and throw distance preclude us from considering its use as the primary system of choice – not to say that its use in limited office-like areas couldn't be considered. However, the real benefit of VRF systems, the capability for energy recovery between zones that are simultaneously in heating and cooling mode, would not be as substantial a factor due to the building exposures available here for those types of spaces.

With replacement and modernization of the HVAC systems and the associated electrical and controls infrastructure being the recommendation in this case, the manner in which this is to be

accomplished should best reflect the building's use, needs and current issues of concern. As such, we have proposed three options for the HVAC system upgrade, as follows:

Option #1

Option #1 consists of rooftop-mounted, packaged air handlers with DX cooling and natural gas-fired furnace sections.

- Air Handling Equipment: The facility, will be served primarily by Variable Air Volume (VAV), Air Handling Units (AHUs) located on the roof and in the existing basement mechanical spaces. The AHUs will provide ventilation air as well as conditioned supply air for space heating and cooling. Each AHU will be equipped with Supply Fan, Exhaust Fan, Energy Recovery Heat Exchanger, and Merv 8 Air Filtration. The Supply and Exhaust Fans will be equipped with variable speed drive (VSD), economizer, demand control ventilation.

- Primary air distribution will be supplied via a new ducted system from the AHUs to VAV terminals located in the spaces served. The VAV terminals will be equipped with electric-resistance reheat coils and will supply air to the secondary air distribution system consisting of sheet metal ductwork and ceiling supply air diffusers. Return/Exhaust Air from the spaces to the AHU's will be via a ducted return air system.

- Toilet/Locker Room Exhaust: Each Toilet Room and Custodial closet will be provided with exhaust as required by the Building Code with the possible use of an Energy Recovery Ventilator (ERV).

- Automatic Temperature Controls/Energy Management System: The existing control system should be updated to a modern, state of the art Direct Digital Control (DDC) type Energy Management system. The systems compatibility with existing systems will be determined based on the Owner's requirements. The communication protocol between devices and equipment will be based on BACnet.

- Electrical modifications will consist of connections to the VSD supply and exhaust fans, electrical conduits, wiring and disconnects for two air handling equipment with VAV / electric heat. Includes electrical hookups: toilet / locker room exhaust. BACnet & fire alarm hookups as required by the mechanical / electrical drawings.

- Plumbing modifications will consist of underground gas piping to the side of the building where the gas company will install their meter. The gas piping will then enter the building to be connected to the natural gas-fired boilers. The proposed service entry location for the new gas service is likely to be west of the front (Rope Ferry Road) entrance pending gas utility provider approval.

Option #2

Option #2 consists of a hot-water boiler plant, hot water pumps, and packaged air handlers with

DX cooling and hot water coils.

- Heating Plant: The Central Heating Plant (CHP) will consist of natural gas-fired, high-efficiency condensing boilers. Combustion air may be supplied directly to each boiler with a dedicated duct or it may be supplied to the boiler room by combustion air fans. The boilers will be vented outside either individually or into common venting utilizing polypropylene piping. The boilers will have an automatic chemical water treatment system and condensate drain neutralizing kits.

- Hot water supply to the building will be by either inline primary or floor mounted hot water pumps with variable speed drives (VSD's) serving a reverse-return hot water loop.

- Hot Water will be supplied to hot water coils in the air handling units, throughout the building as well as to the VAV boxes and vestibule cabinet unit heaters.

- Air Handling Equipment: The facility, will be served primarily by variable air volume (VAV), air handling units (AHU's) located on the roof and in the existing basement mechanical spaces. The AHU's will provide ventilation air as well as conditioned supply air for space heating and cooling. Each AHU will be equipped with a supply fan, exhaust fan, ERV, and MERV 8 air filtration. The supply and exhaust Fans will be equipped with VSD's, and the units will be capable of providing 100% outside air economizer and demand control ventilation.

- Primary Air will be supplied via a new ducted system from the AHUs to VAV Terminals located in the spaces served. The VAV Terminals will be equipped with hot water reheat coils and will supply air to the secondary air distribution system consisting of sheet metal ductwork and ceiling supply air diffusers. Return/Exhaust air from the spaces to the AHU's will be via a ducted air system.

- Toilet/Locker Room Exhaust: Each Toilet Room and Custodial closet will be provided with exhaust as required by the Building Code with the possible use of an Energy Recovery Ventilator.

- Automatic Temperature Controls/Energy Management System: The existing control system should be updated to a modern, state of the art Direct Digital Control (DDC) type energy management system. The system's compatibility with existing systems will be determined based on the Owner's requirements. The communication protocol between devices and equipment will be based on BACnet.

- Electrical modifications will consist of connections to central heating plant boilers, VSD's, hot water pumps and AHU's VSD supply and exhaust fans. This includes the electrical conduits, wiring and disconnects for two air handling equipment with VAV / hot water reheat. Includes electrical hookups to toilet / locker room exhaust. BACnet & fire alarm hookups will be provided as required by the mechanical / electrical drawings.

- Plumbing modifications will consist of underground gas piping to the side of the building where the gas company will install their meter. The gas piping will then enter the building to be connected to the natural gas-fired boilers. The proposed service entry

location for the new gas service is likely to be west of the front (Rope Ferry Road) entrance pending gas utility provider approval.

Option #3

Option #3 consists of a hot water boiler plant, hot water pumps, a chiller plant, chilled water pumps and new air handlers.

- Chilled Water Plant: A central chilled water plant will be provided, utilizing a high-efficiency air-cooled chiller. The chilled water plant will have an automatic chemical water treatment system.

- Chilled Water Pumps will be either vertical, split-case type, end-suction type or inline type, and will be equipped with VSD's. Chilled water will be distributed via a chilled water piping distribution loop feeding the cooling coils in all of the proposed air handler units.

- The Central Heating Plant (CHP) will consist of natural gas-fired, high-efficiency condensing boilers. Combustion air may be supplied directly to each boiler with a dedicated duct or it may be supplied to the boiler room by combustion air fans. The boilers will be vented outside either individually or into common venting utilizing polypropylene piping. The boilers will have an automatic chemical water treatment system and condensate drain neutralizing kits.

- Hot water supply to the building will be by either inline primary or floor mounted hot water pumps with variable speed drives (VSD's) serving a reverse-return hot water loop.

- Hot Water will be supplied to hot water coils in the air handling units, throughout the building as well as to the VAV boxes and vestibule cabinet unit heaters.

- Air Handling Equipment: The facility, will be served primarily by VAV, air handling units located on the roof and in the existing basement mechanical spaces. The AHU's will provide ventilation air as well as conditioned supply air for space heating and cooling. Each AHU will be equipped with a supply fan, exhaust fan, ERV, and MERV 8 air filtration. The supply and exhaust Fans will be equipped with VSD's, and the units will be capable of providing 100% outside air economizer and demand control ventilation.

- Primary Air will be supplied via a new ducted system from the AHUs to VAV Terminals located in the spaces served. The VAV Terminals will be equipped with hot water reheat coils and will supply air to the secondary air distribution system consisting of sheet metal ductwork and ceiling supply air diffusers. Return/Exhaust air from the spaces to the AHU's will be via a ducted air system.

- Toilet/Locker Room Exhaust: Each Toilet Room and Custodial closet will be provided with exhaust as required by the Building Code with the possible use of an ERV.

- Automatic Temperature Controls/Energy Management System: The existing control

system should be updated to a modern, state of the art Direct Digital Control (DDC) type energy management system. The system's compatibility with existing systems will be determined based on the Owner's requirements. The communication protocol between devices and equipment will be based on BACnet.

- Electrical modifications will consist of connections to central heating plant boilers, VSD's, hot water pumps and AHU's VSD supply and exhaust fans. This includes the electrical conduits, wiring and disconnects for two air handling equipment with VAV / hot water reheat. Includes electrical hookups to toilet / locker room exhaust. BACnet & fire alarm hookups will be provided as required by the mechanical / electrical drawings.

- Plumbing modifications will consist of underground gas piping to the side of the building where the gas company will install their meter. The gas piping will then enter the building to be connected to the natural gas-fired boilers. The proposed service entry location for the new gas service is likely to be west of the front (Rope Ferry Road) entrance pending gas utility provider approval.

Additional Sustainable Design Considerations

Building Energy Management Systems (EMS)

An EMS provides a building owner with the ability to monitor, control, and adjust all HVAC systems (along with plumbing and electrical systems, if desired) from a central or web-based location. An operator workstation consisting of a personal computer and printer can be located in the building, and this station could have the capability of remote access to the HVAC systems via the internet, if desired. The owner can set occupancy schedules, adjust setpoints, and monitor trouble/alarm conditions in an efficient manner with this tool. Features such as night setback, holiday scheduling and weekend scheduling will be included to allow the system to minimize energy expenditure during unoccupied periods. An alarm feature will be added, which can remotely notify facility staff of any pre-determined alarm conditions needing to be addressed.

Demand Controlled Ventilation (DCV)

DCV is a ventilation scheme used to ensure that adequate ventilation for a building's occupants while reducing excess energy use from unnecessarily over-ventilating the building or space. The ventilation process requires a substantial amount of energy since outside air needs to be heated or cooled to acceptable levels prior to distribution through the building. Energy is conserved by controlling ventilation rates based on the actual number of occupants indirectly, by sensing carbon dioxide (CO_2) levels as an indicator of occupant load. CO_2 concentrations are continuously monitored by a sensor, either located in the space or the return air ductwork, which modulates outside air dampers through their full-open and -closed positions accordingly to maintain CO_2 concentrations below an established comparative baseline. This technique can be applied throughout the building and is especially effective in high occupancy spaces which are not continuously occupied. DCV can be easily implemented by the addition of sensors and required programming when an EMS is utilized.

Window Upgrades

S/P+A has additionally considered the architectural impact of upgrades to the existing Library envelope on its heating and cooling loads, as well as the potential reduction in central system and equipment sizing that could result from these upgrades. By changing the existing, original "storefront" type fenestration, which has been technologically surpassed in recent decades by more state-of-the-art, energy efficient storefront window assemblies having much higher U-values, integral low-e coatings, inert gas infill, lower infiltration potential and improved long-lasting thermal break enhancements. That being said, our current calculated block-load estimate for the building presently results in 969,500 btu/H of heat required during design heating conditions and roughly 55.0 tons of cooling during peak summer design conditions. The installation of the improved fenestration could have the potential to reduce the Library's heating requirements to 513,000 btu/H and its cooling needs down to 40.1 tons – or 47.1% and 19.8% reductions, respectively. Payback on this scale and scope of upgrade typically average around 5-years or less, depending on the quality of the replacements.

Miscellaneous Sustainability Considerations

Refrigerants used in air conditioning systems will be hydrofluorocarbons having low ozone depletion (ODP) and global warming potentials (GWP). Equipment will most likely use HFC-410A or HFC-134a.

Premium Efficiency Motors will be utilized wherever their application is feasible and per the latest enforceable energy codes. Capitol reimbursements and incentives are often available for the incorporation of Premium and High efficiency motors, dependent on the motor size and funding availability.

Use of daylighting and active lighting control through the EMS or a separate controller can substantially reduce lighting energy loads, especially when used in conjunction with high efficiency LED lighting and space occupancy sensors. Reimbursements and incentives are often available for these types of upgrades as well.

Section IV – Conclusions

The Waterford Public Library Complex is a Town landmark which has served the community in many ways, and for many generations. However, it will be important to take the proper steps in preparing this building for its next cycle of use. With the history of IAQ and air distribution concerns in this facility, circumstances indicate that HVAC system upgrade/ replacement and associated electrical power and controls upgrades to support the HVAC, is both overdue and of

the utmost importance for the Town as a part of maintaining the use of the facility into the future. Other than the existing environmental conditions, this building remains useful and viable among the Town's assets. By taking full advantage of modern and state-of-the-art HVAC systems and technology during this potential upcoming and timely upgrade, the Waterford Public Library can support the current space use and any unforeseen space use reconfigurations that may be yet to come. In doing this, the Town of Waterford can fully realize benefits including:

- Reduced energy usage resulting in lower fossil fuel consumption, lower combined energy costs and a considerably reduced "carbon footprint"
- Leading by example in the realm of sustainability and environmental responsibility, providing a successful case study for the Town's students, taxpayers and residents to follow.
- Saving taxpayers money for utility costs and maintenance spending.
- Eliminating the need for expensive, materially wasteful and often disruptive newly-constructed buildings and sites to take the place of existing, viable structures in need of a partial overhaul. In doing so, the Town acts in the most environmentally sound (green) manner by reducing the demolition waste of the existing building and the construction waste of any new building(s).
- Ease of maintenance and accessibility for all future routine preventative maintenance requirements.

The addition of new HVAC equipment, power and control wiring, piping, ductwork and windows, along with the temporary annoyance of staff and Town Library patronage, will be somewhat disruptive in the short term. But in considering the long view, this facility will benefit from these brief overhauls and disruptions for many healthy, energy efficient and productive years to come.

Section V – Opinion of Probable Cost-Option #1

Waterford Public Library - Mechanical Upgrade

49 Rope Ferry Drive
Owner: Town of Waterford

Date: 08/10/18
Job No.: 18.024

OPINION OF PROBABLE CONSTRUCTION COST
OPTION #1

11,485 APPROXIMATE TOTAL NET SQUARE FOOTAGE (Area of Work)

SECTION NUMBER	WORK CATEGORIES/DESCRIPTIONS	QTY.	UNIT	MATERIAL & LABOR COST UNIT COST	MATERIAL & LABOR COST TOTAL		TOTAL $
	OTHER COSTS						
	Permit (0.5% of construction cost)	1	LS				$3,745
	Bonds (1.5% of construction cost)	1	LS				$11,190
	Insurance (0.25% of construction cost)	1	LS				$1,865
				OTHER COSTS SUBTOTAL		$16,799	
	DIVISION 2 - DEMOLITION						
	Dumpsters	3	EA	$1,000.00	$3,000.00		$3,000
				DIVISION 2 SUBTOTAL		$3,000	
	DIVISION 22 - PLUMBING (INCL SITE UTILITIES)						
	Natural Gas Service	1	LS	-	$45,000.00		$45,000
				DIVISION 22 SUBTOTAL		$45,000	
	DIVISION 23 - HVAC/MECHANICAL						
	Roof-top unit with DX, Gas heat, VFD	2	LS	$50,000.00	$100,000.00		$100,000
	Insulated ductwork	11,485	sq.ft	$30.00	$344,550.00		$344,550
	Controls	1	LS	$50,000.00	$50,000.00		$50,000
	VAV Boxes	1	LS	$25,000.00	$25,000.00		$25,000
	Exhaust Fans	1	LS	$15,000.00	$15,000.00		$15,000
	Testing and Balancing	1	LS	$5,000.00	$5,000.00		$5,000
	Controls	1	LS	$24,000.00	$24,000.00		$24,000
	Demolition	1	LS	$30,000.00	$30,000.00		$30,000
	Oil Tank Removal and Testing	1	LS	$10,000.00	$10,000.00		$10,000
	Crane Service	1	LS	$5,000.00	$5,000.00		$5,000
	Demolition	11,485	sq.ft	$5.00	$57,425.00		$57,425
				DIVISION 23 SUBTOTAL		$665,975	
	DIVISION 26 - ELECTRICAL						
	Demolition	1	LS	$8,500.00	$8,500.00		$8,500
	Electrical wiring, conduits, connections, etc	1	LS	$26,500.00	$26,500.00		$26,500
				DIVISION 26 SUBTOTAL		$35,000	
				SUBTOTAL =			$765,774
				CONTINGENCY		10.00%	$76,577
				GEN. CONDITIONS		5.00%	$38,289
				OVERHEAD		10.00%	$76,577
				PROFIT		10.00%	$76,577
				CONSTRUCTION TOTAL =			$1,033,795

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Section V – Opinion of Probable Cost-Option #2

Waterford Public Library - Mechanical Upgrade Date: 08/10/18

49 Rope Ferry Drive Job No.: 18.024

Owner: Town of Waterford

OPINION OF PROBABLE CONSTRUCTION COST

OPTION #2

11,485 APPROXIMATE TOTAL NET SQUARE FOOTAGE (Area of Work)

SECTION NUMBER	WORK CATEGORIES/DESCRIPTIONS	QTY.	UNIT	MATERIAL & LABOR COST UNIT COST	MATERIAL & LABOR COST TOTAL		TOTAL $
	OTHER COSTS						
	Permit (0.5% of construction cost)	1	LS				$4,216
	Bonds (1.5% of construction cost)	1	LS				$12,604
	Insurance (0.25% of construction cost)	1	LS				$2,101
				OTHER COSTS SUBTOTAL		$18,921	
	DIVISION 2 - DEMOLITION						
	Dumpsters	3	EA	$1,000.00	$3,000.00		$3,000
				DIVISION 2 SUBTOTAL		$3,000	
	DIVISION 22 - PLUMBING (INCL SITE UTILITIES)						
	Natural Gas Service	1	LS	-	$45,000.00		$45,000
				DIVISION 22 SUBTOTAL		$45,000	
	DIVISION 23 - HVAC/MECHANICAL						
	Roof-top unit with DX, Hot Water Heat, VFD	2	LS	$50,000.00	$100,000.00		$100,000
	Boilers	2	LS	$30,000.00	$60,000.00		$60,000
	Hw Pumps	2	LS	$20,000.00	$40,000.00		$40,000
	Insulated Ductwork	11,485	Sq.ft	$30.00	$344,550.00		$344,550
	VAV Boxes	1	LS	$25,000.00	$25,000.00		$25,000
	Controls	1	LS	$65,000.00	$65,000.00		$65,000
	Exhaust Fans	1	LS	$15,000.00	$15,000.00		$15,000
	Testing and Balancing	1	LS	$5,000.00	$5,000.00		$5,000
	Demolition	1	LS	$30,000.00	$30,000.00		$30,000
	Oil Tank Removal and Testing	1	LS	$10,000.00	$10,000.00		$10,000
	Crane Service	1	LS	-	$5,000.00		$5,000
	Demolition	11,485	Sq.ft	$5.00	$57,425.00		$57,425
				DIVISION 23 SUBTOTAL		$756,975	
	DIVISION 26 - ELECTRICAL						
	Demolition	1	LS	$8,500.00	$8,500.00		$8,500
	Electrical wiring, conduits, connections, etc	1	LS	$29,800.00	$29,800.00		$29,800
				DIVISION 26 SUBTOTAL		$38,300	
				SUBTOTAL =			$862,196
				CONTINGENCY		10.00%	$86,220
				GEN. CONDITIONS		5.00%	$43,110
				OVERHEAD		10.00%	$86,220
				PROFIT		10.00%	$86,220
				CONSTRUCTION TOTAL =			$1,163,965

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Section V – Opinion of Probable Cost-Option #3

Waterford Public Library - Mechanical Upgrade Date: 08/10/18

49 Rope Ferry Drive Job No.: 18.024

Owner: Town of Waterford

OPINION OF PROBABLE CONSTRUCTION COST

OPTION #3

11,485 APPROXIMATE TOTAL NET SQUARE FOOTAGE (Area of Work)

SECTION NUMBER	WORK CATEGORIES/DESCRIPTIONS	QTY.	UNIT	MATERIAL & LABOR COST UNIT COST	MATERIAL & LABOR COST TOTAL		TOTAL $
	OTHER COSTS						
	Permit (0.5% of construction cost)	1	LS				$5,111
	Bonds (1.5% of construction cost)	1	LS				$15,288
	Insurance (0.25% of construction cost)	1	LS				$2,548
				OTHER COSTS SUBTOTAL		$22,948	
	DIVISION 2 - DEMOLITION						
	Dumpsters	3	EA	$1,000.00	$3,000.00		$3,000
				DIVISION 2 SUBTOTAL		$3,000	
	DIVISION 22 - PLUMBING (INCL SITE UTILITIES)						
	Natural Gas Service	1	LS	-	$45,000.00		$45,000
				DIVISION 22 SUBTOTAL		$45,000	
	DIVISION 23 - HVAC/MECHANICAL						
	Roof-top unit with CW, Hot Water Heat, VFD	2	LS	$36,000.00	$72,000.00		$72,000
	Boilers	2	LS	$30,000.00	$60,000.00		$60,000
	CHW Pumps	2	LS	$20,000.00	$40,000.00		$40,000
	HW Pumps	2	LS	$20,000.00	$40,000.00		$40,000
	Chiller	1	LS	$75,000.00	$75,000.00		$75,000
	Controls	1	LS	$150,000.00	$150,000.00		$150,000
	VAV Boxes	1	LS	$25,000.00	$25,000.00		$25,000
	Exhaust Fans	1	LS	$15,000.00	$15,000.00		$15,000
	Testing and Balancing	1	LS	$5,000.00	$5,000.00		$5,000
	Demolition	1	LS	$30,000.00	$30,000.00		$30,000
	Oil Tank Removal and Testing	1	LS	$10,000.00	$10,000.00		$10,000
	Crane Service	1	LS	$5,000.00	$5,000.00		$5,000
	Insulated ductlwork	11,485	sq.ft	$30.00	$344,550.00		$344,550
	Demolition	11,485	sq.ft	$5.00	$57,425.00		$57,425
				DIVISION 23 SUBTOTAL		$973,975	
	DIVISION 26 - ELECTRICAL						
	Demolition	1	LS	$8,500.00	$8,500.00		$8,500
	Electrical wiring, conduits, connections, etc	1	LS	$36,750.00	$36,750.00		$36,750
				DIVISION 26 SUBTOTAL		$45,250	
				SUBTOTAL =			$1,045,173
				CONTINGENCY		10.00%	$104,517
				GEN. CONDITIONS		5.00%	$52,259
				OVERHEAD		10.00%	$104,517
				PROFIT		10.00%	$104,517
				CONSTRUCTION TOTAL =			$1,410,983

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Section VI – Photos

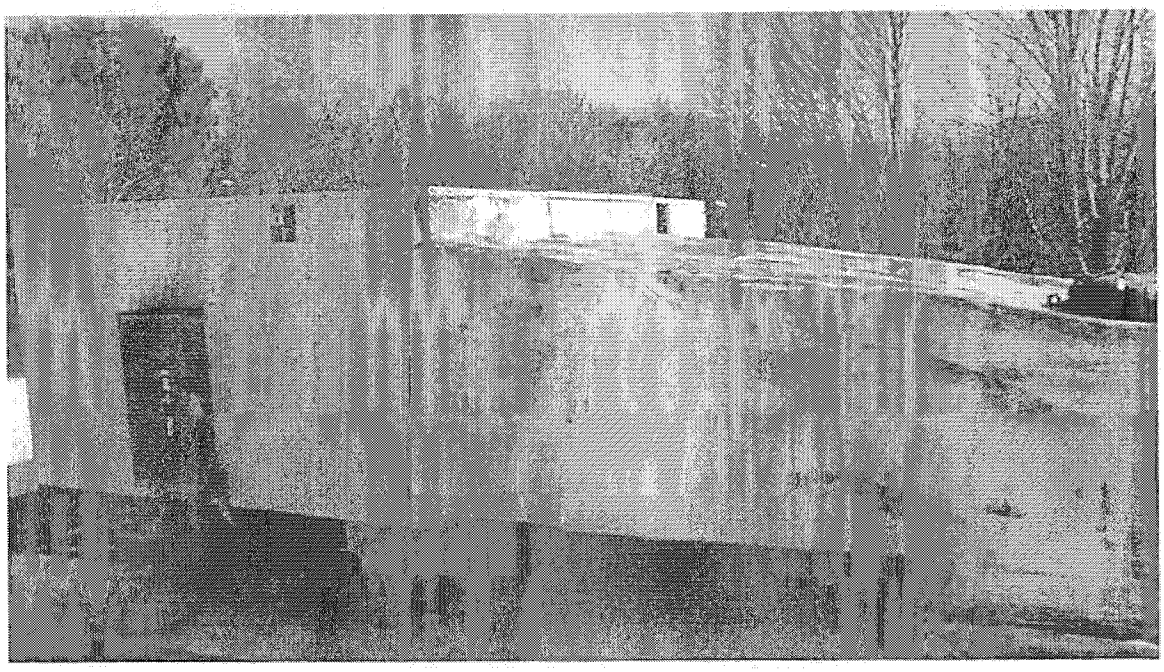

Photo 1:
Rooftop cooling only unit. Exterior insulation on the duct work is no longer attached.

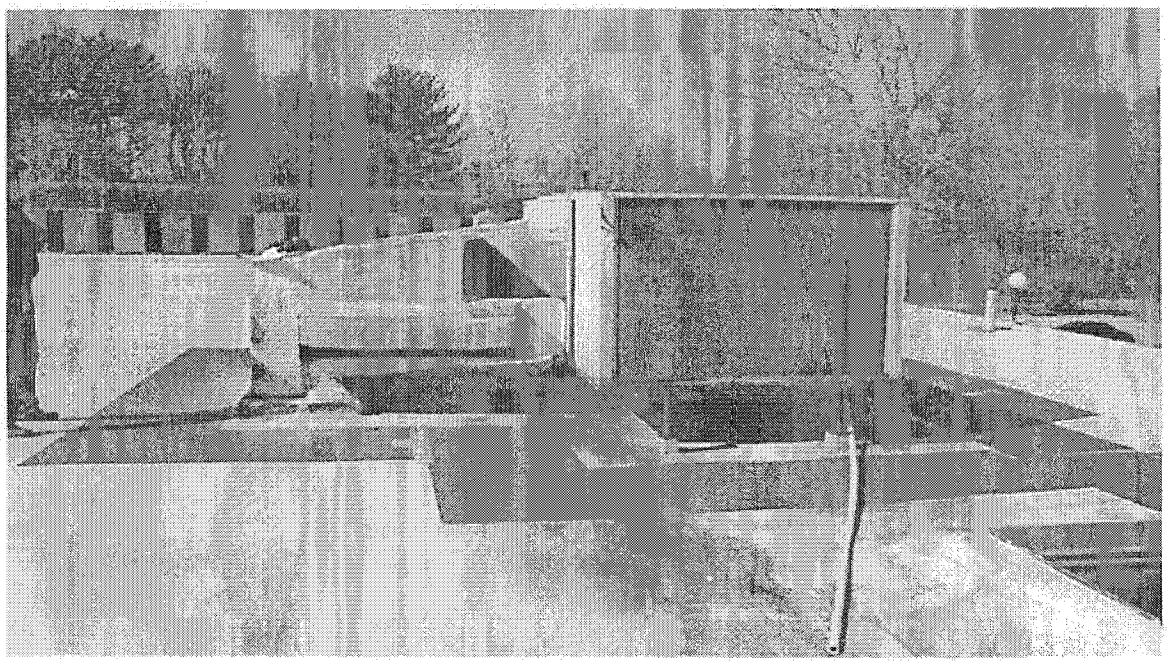

Photo 2:
Rooftop cooling only unit. Exterior insulation on the duct work is no longer attached.

Photo 3:
Rooftop cooling only unit with degraded mastic.

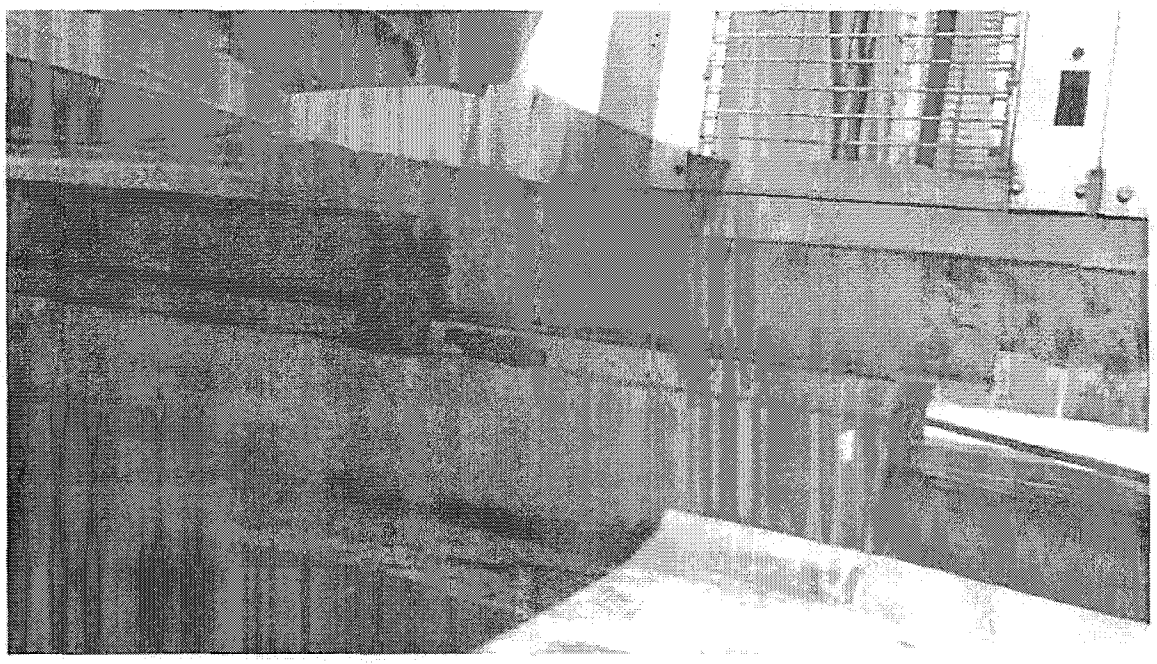

Photo 4:
Public Library oil-fired rooftop unit showing the corrosion on the unit itself.

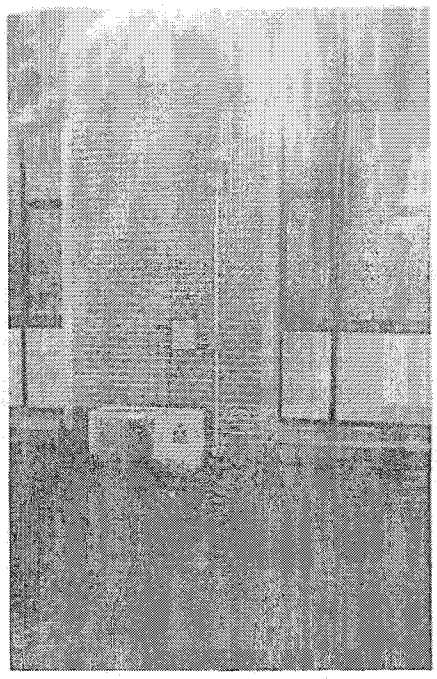

Photo #5:
Condensing unit serving the staff office space.

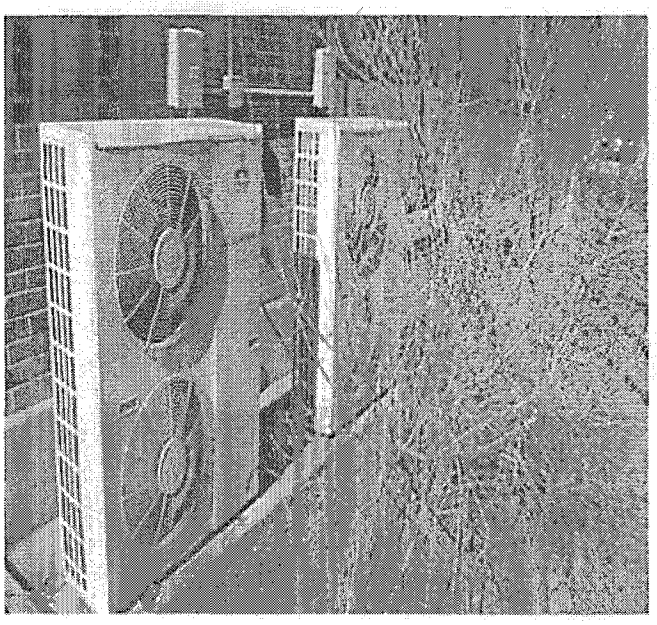

Photo #6:
Condensing unit serving the conference room space.

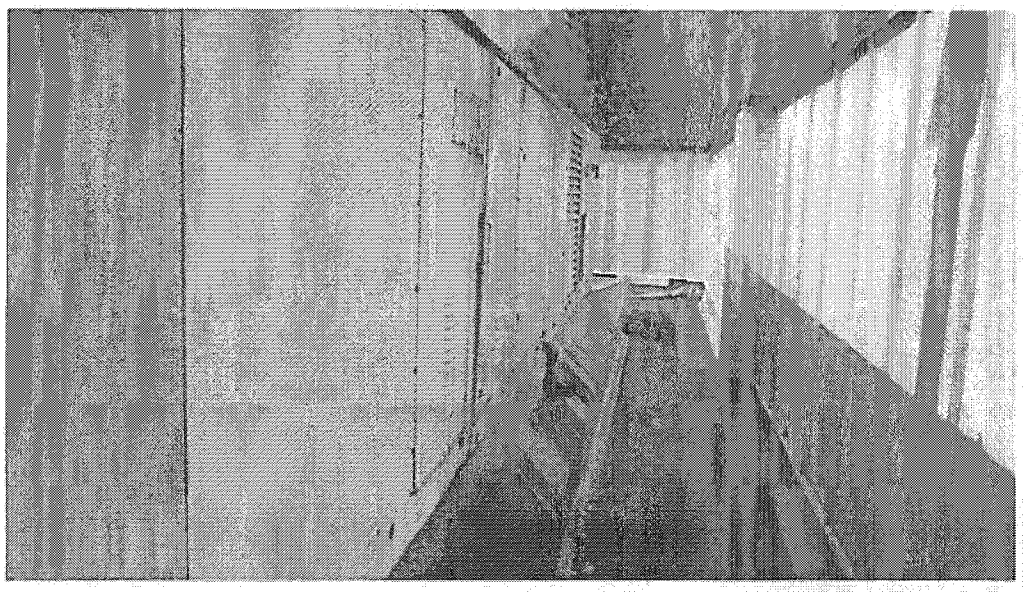

Photo #7:
Existing oil-fired unit serving the library addition. Notice the corrosion that is on the unit.

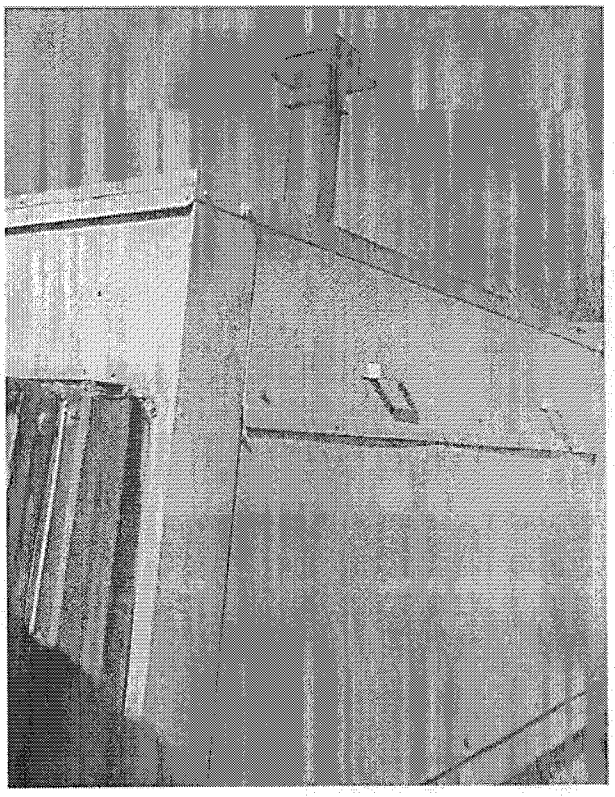

Photo #8:
Existing oil-fired unit serving the library addition. Notice the corrosion that is on the unit.

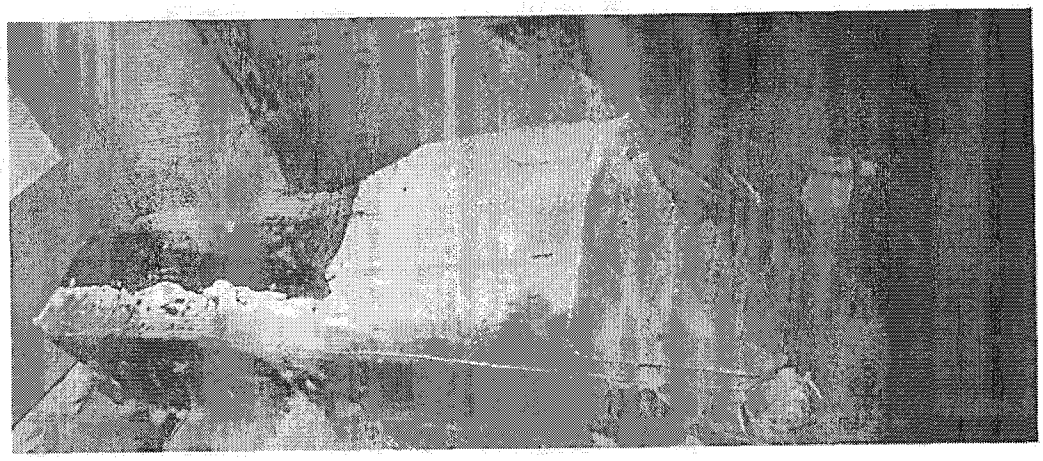

Photo 9: Example of degraded rooftop unit supports.

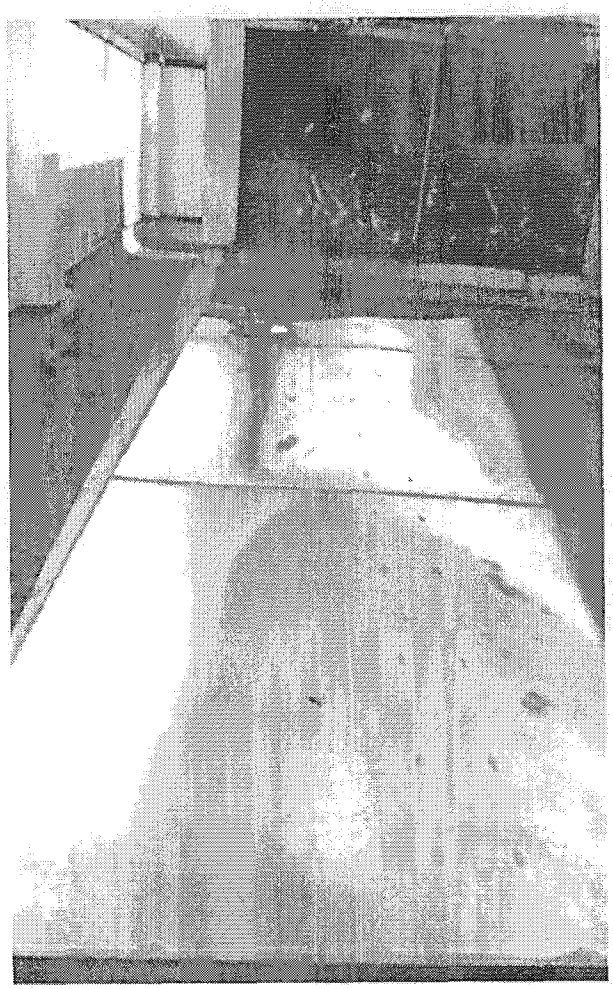

Photo #10:
Existing oil-fired unit serving the library addition showing the corroded curb adapter.

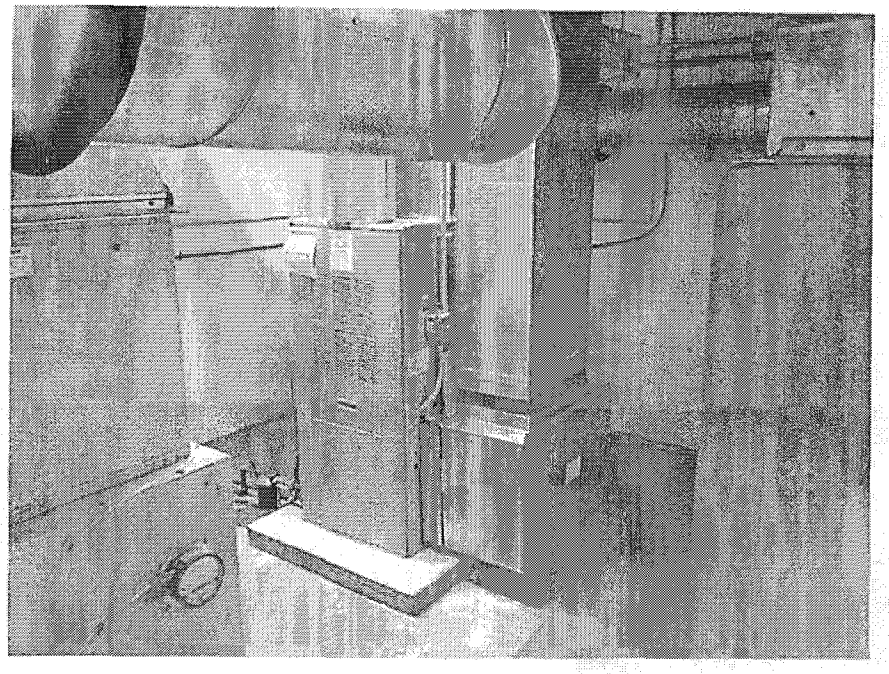

Photo #11:
Existing oil-fired heating, non-cooling air handling units located in the basement MER. The units appear to be in good condition but are closely approaching 20 years of service.

Photo #12:
Existing oil-fired heating, non-cooling air handling unit. The unit appears to be in good condition but is closely approaching 20 years of service.

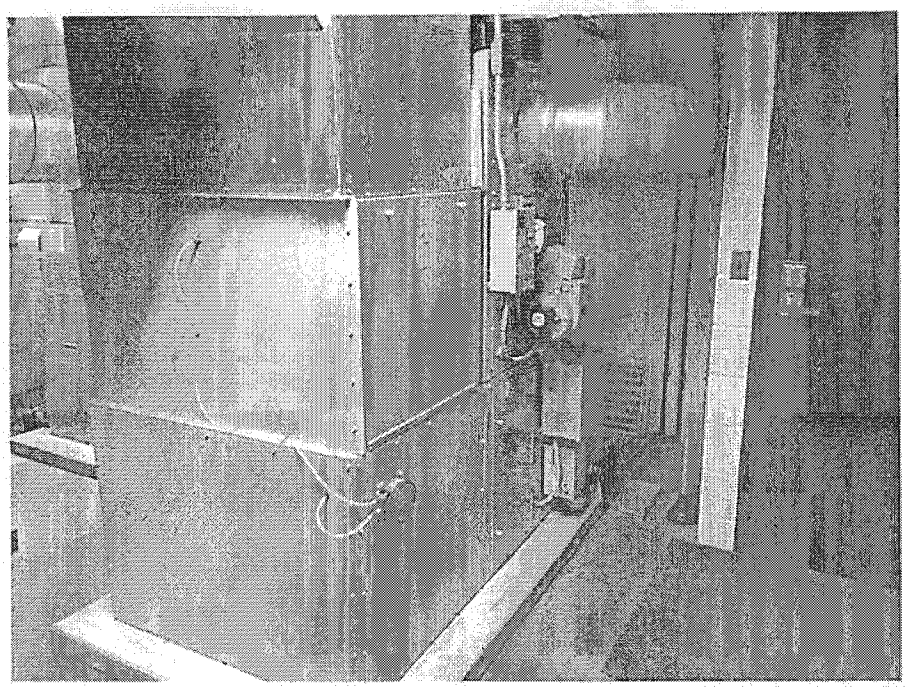

Photo #13:
Existing oil-fired heating, non-cooling air handling unit. The unit appears to be in good condition but is closely approaching 20 years of service.

Photo #14:
Fuel oil transfer pump. The unit appears to be in good condition but exhibits signs of leaking.

FIFTEEN ROPE FERRY ROAD

Town of Waterford

WATERFORD, CT 06385-2886

July 16, 2019

Connecticut State Library
Division of Library Development
231 Capitol Avenue
Hartford, CT 0610 6

RE: Town of Waterford Compliance with CGS § 8-23(a) and PA 15-95.

To Whom it May Concern,

This letter is to confirm that the Town of Waterford is in compliance with CGS § 8-23(a) and will comply with PA 15-95 before execution of a construction grant contract with the State Library. Waterford's Plan of Conservation and Development (POCD) was adopted in 2012. Revisions were adopted in 2015. The Waterford Planning and Zoning Commission is preparing to organize a comprehensive revision to the POCD over the next two years to prepare for adoption of an updated POCD in advance of 2022.

Sincerely,

Abby Y. Piersall, AICP
Planning Director
Town of Waterford

CONNECTICUT STATE LIBRARY

Library Space Planning Guide Worksheet

(use in conjunction with the Library Space Planning Guide)

Step 1. Establish Service Population

a. Current local population: Use Dept of Health Estimates — 19,007

b. Projected local population at least 10 years from now — 16,785

Use CT State Data Center at University of Connecticut Projections

You may choose to factor in nonresident use in your population projection.

c. Projected nonresident population to be served

Annual nonresident circulation (Ccard loans) [1] (type 1 if not known)

Annual circulation (All) [300] (type 300 if not known)

% of total circulation [ ] Projected non-residents [ ]

d. Service population — **16,785**

Step 2A. Collection Size

a. Physical Books:

Existing physical book collections.....	70,505	
Current Net Additions (volumes added minus volumes withdrawn)		
Predicted Net Additions 10 years from now (negative # OK).....		
Estimate of minimum number of books in future library		70,505
Books that will need space now or in the future		**70,505**

b. Physical Nonprint materials:

Existing physical nonprint collections.....	10,006	
Current Net Additions (items added minus items withdrawn).....		
Predicted Net Additions 10 years from now (negative # OK).....		
Estimate of minimum number of non-print in future library		10,006
Non-Print that will need space now or in the future		**10,006**

c. Periodicals:

Existing number of periodical subscriptions.....	55
Back periodicals titles kept in storage.....	55

Step 2B. Collection Space

a. Books:	70,505	volumes		
Regular shelving	70,505	volumes ÷ 10 =	7,051	sq. ft.
Compact shelving		volumes ÷ 25 =		sq. ft.

b. Nonprint materials: 10,006 items ÷ 10 = 1,001 sq. ft.

c. Hard-copy periodicals on display: 55 titles = 55 sq. ft.

d. Periodicals stored: 55 titles x .5 x 1 average years retained = 28 sq. ft.

e. TOTAL (a + b+ c + d) 8,135 sq. ft.

Step 3. Public Electronic Workstations

a. PAC's (stand-up): 3 PACs x 20 = 60 sq. ft.

b. Electronic workstations: 16 electronic workstations x 45 = 720 sq. ft.

b. Electronic workstations: electronic workstations (mutiple users) x 60 = sq. ft.

c. Microfilm reader/printer: 1 microfilm/reader printers x 35 = 35 sq. ft.

d. TOTAL (a + b+ c) 815 sq. ft.

Step 4. User Seating Space

User seating does not include the seats in conference rooms, meeting rooms, and staff work areas, unless the meeting rooms will be used for everyday library activities, such as quiet study or homework center. If a meeting room is available for everyday library activities, excluding meetings, a minimum of fifty percent of the hours that the library is open, ten percent of the meeting room seats could be used to meet the total seating requirement.

Minimum Number of Seats					
a. Number of seats	Projected populations under 10,000			7-10 seats/each 1,000 people	
	Projected populations over 10,000			5 seats/each 1,000 people	
Type in your service projected population (Step1d) below	Population ranges	Number of seats 10 (per 1,000 people)	Number of seats 8 (per 1,000 people)	Number of seats 7 (per 1,000 people)	Number of seats 5 (per 1,000 people)
	Less than 1,000				
	1,001 - 9,999				
16,785	10,000-				84

Population of 2,500 or less should have at least 20 seats.

84	# of seats (chart above),		
minus 17	electronic workstations seats,		
minus 10% of meeting room seating (if available daily for use)			
Totals.....		67	seats
Add..... 26	# extra seats added, if needed	26	seats

b. Space for seats: 93 number seats x 30 = 2,790 sq. ft.

Step 5. Staff Work Space

a. List stationary staff work areas and indicate if you will be using roaming circulation or information/reference stations:

20 work areas = 20 x 150 = 3000 sq. feet.
5 at circ/ref (1 in children's), 5 in office areas, 10 in tech services.

b. 20	stations x 150 =	3,000	sq. ft.
c.	roaming staff work stations X 50=		sq. ft.
d.	Total	3,000	sq. ft.

Step 6. Meeting Room Space

a. General meeting space 209 seats x 10 = 2,390 sq. ft.
Includes 100 sq. ft. speaker's podium/presentation area at the front of the room and 200 sq. ft. for storage for table and chairs.

b. Conference room space 40 seats x 25 = 1,000 sq. ft.
(total of all the conference room seats in all conference rooms)
Include conference rooms for community groups, gov't groups
Seats for audience (optional) _____ sq. ft.

c. Small study rooms _____ seats x 30 = _____ sq. ft.
Total of all the seats in all of the meeting rooms

d Children's programming 20 seats x 10 = 450 sq. ft.
Space for story hours and storytelling
Includes 50 sq. ft. for program leader 200 square feet for kitchen and storage for chairs and tables.

e. Children's programming _____ seats x 25 = _____ sq. ft.
Space for crafts projects

f. Computer training lab _____ seats x 50 = _____ sq. ft.
Includes 80 sq. ft. for the trainer. 50 sq. ft. allows for mulitple users.

g. TOTAL (a + b + c) = 3,840 sq. ft.

Step 7. Special-Use Space

Item	Number	Multiply	sq. ft.	Total
Dynamic digital signage		x	10	
Bulletin board	4	x	9	36
Display case		x	50	
Handouts (free-standing)	1	x	20	20
Map file		x	35	
Microfilm cabinets	1	x	10	10
Newspaper rack	1	x	25	25
Paperback rack	7	x	35	245
Photocopier	2	x	50	100
Staff lockers	4	x	4	16
Staff lounge/break rm. # of seats	13	x	25	375
ADD OTHER------				
SUB-TOTAL (1)				827

Other Special-Use Spaces

These spaces are more difficult to calculate. You may be able to use calculations used previously to help make an estimate for necessary square feet. Examples:

* Book collection space - # of books divided by 10
* Seats require an average of 30 sq. ft. each
* A table and 4 chairs requires 120 sq. ft.
* Electronic workstations 45 sq. ft.

1. Popular Materials Display Areas	Sq. Ft. Required:	174
2. Café	Sq. Ft. Required:	
3. Maker-space / Digital Lab	Sq. Ft. Required:	
4. Gallery (for art displays, etc.)	Sq. Ft. Required:	19
5. Creation studio for audio/video production	Sq. Ft. Required:	
6. Local History and Genealogy Room	Sq. Ft. Required:	69
7. Literacy Volunteers Room	Sq. Ft. Required:	
8. Job or Homework Center	Sq. Ft. Required:	
9. Area for the Friends of the Library	Sq. Ft. Required:	
10. Community Information Center	Sq. Ft. Required:	18
11. Collection Sorting Space for RFID	Sq. Ft. Required:	
12. Centralized Communications Center (data and network)	Sq. Ft. Required:	252

13. Outdoor space (designed for specific uses)	No Sq. Ft. Required!	
14. Other special-use spaces	Sq. Ft. Required:	1,617
	Total	**2976**

Step 8. Flexible-Use Space

Think about whether you have identified spaces above that might be combined into one space. If you have designed space with the necessary layout, infrastructure, technology, and mobile furniture to accommodate more than one library activity then you may be able to reduce the sq. ft. calculations you have made above by combining two or more identified library spaces.

Step 9. Non-Assignable Space

a. Collection space (from Collection Space 2B.e.)	8,135
Public electronic workstations (from 3d.)	815
User seating space (from 4b.)	2,790
Staff work space (from 5b.)	3,000
Meeting room space (from 6d.)	3,840
Special-use space (from 7.)	2,976
b .SUBTOTAL	21,556
c. Divide (SUBTOTAL) by 4	5,389

Step 9. Putting It All Together

a. Collection space (from Collection Space 2B.e.)	8,135
b. Public electronic workstations (from 3d.)	815
c. User seating space (from 4b.)	2,790
d. Staff work space (from 5d)	3,000
e. Meeting room space (from 6d.)	3,840
f. Special-use space (from 7.)	2,976
g. Non-assignable space (from 8c)	5,389
h. GROSS AREA NEEDED (a+b+c+d+e+f+g) in Sq. Ft.	**26,945**

Some Helpful Benchmarks

Square Feet Per Service Population

1.6 Square feet per capita - Library Serving Projected Population under 10,000
1.5 Square feet per capita - Library Serving Projected Population 10,000 to 20,000
1.35 Square feet per capita - Library Serving Projected Population 20,000 to 50,000
1.15 Square feet per capita - Library Serving Projected Population over 50,000

Your Service Population is 16,785

Your Project is | **1.61** | **per square feet**

Book Volumes Per Square Feet

5 book volumes per square feet maximum

Your Project is | **2.62** | **books per square feet**

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