

2021 NOV 29 P 1:01

# Community Preservation Committee Town of Belmont

## CPA Funding – Final Application

Ten copies of the completed Final Application must be submitted to the following address by no later than 7:00 pm on Monday, November 29, 2021:

Community Preservation Committee  
Matthew Haskell, CPA Administrator  
Office of the Select Board  
Belmont Town Hall  
455 Concord Avenue  
Belmont, MA 02478

Unless an applicant can demonstrate that a significant opportunity would otherwise be lost, final applications will not be accepted after the submission deadline. In order for the CPC to consider a project proposal that cannot adhere to the deadlines as outlined in the Standard Application Process, the project must meet the additional selection criteria as outlined in the Special Application Process.

**Project Title** Restoration of Belmont's Historic Tower Clock

**Project Location** 404 Concord Avenue, Belmont, Massachusetts 02478

**Applicant/Contact Person** John Dieckmann, Vice Pres, Radha Iyengar, Treasurer, BCF, Sam R. James, Pres, First Church Board

**Organization** Belmont Citizen's Forum and The First Church in Belmont Unitarian Universalist

**Mailing Address** PO Box 609, Belmont, MA 02478

**Telephone** 617-489-1423 **E-mail** bcfprogramdirector@gmail.com

**Signature** [Handwritten Signature] **Date** Nov. 28, 2021

**Signature** [Handwritten Signature] **Date** Nov 28, 2021

**Signature** [Handwritten Signature] **Date** 11/28/2021

- CPA Category (check only one, in consultation with the CPC):
- Community Housing
  - Historic Preservation
  - Open Space
  - Recreation

**Amount Requested** \$26,100

**Total Project Cost** \$29,000

**Town of Belmont CPA Funding- Final Application  
Restoration of Belmont's Historic Tower Clock  
November 29, 2021**

**PROJECT DESCRIPTION**

(The headings below are in the order in which they are listed in the CPC Final Application Form.)

Goals.

Restore the historic clock in the tower of the First Church in Belmont Unitarian Universalist (FCBUU) so that it will be tell the correct time and the bell will ring on the hour.

Community Need.

The clock tower of the First Church in Belmont is a central feature in Belmont center (Fig 1). It stands adjacent to the town green with its magnificent copper beach tree and its welcoming Wellington train station structure.

The tower is a gorgeous example of the European provincial architecture that was increasing in popularity in our country in the late 1800's.

The clock recalls a time before the availability of personal timepieces when town leaders installed a clock in the most prominent building in the town center so everyone would know the time.

Visitors and residents of Belmont should see the correct time on this tower clock when they drive into the center. It is an important statement of the sense of stewardship that we feel toward the town history.

The Community Preservation Act in the Commonwealth of Massachusetts was created so that municipalities would have a consistent source of revenue from the Commonwealth and from its own assets to fund special projects not typically taken on by the local government alone. One category of projects in the CPA is historic resources. In that category, the Town of Belmont Community Preservation Plan would benefit from a highly visible project of significant aesthetic value.

Towns and cities in the Commonwealth have used CPA funds for improvements to religious buildings of historic importance. Several of these projects are listed in Table 1.

Community Support.

The Board of the Belmont Citizen's Forum (BCF) supports this project and has agreed to work with the FCBUU to seek funds and to oversee the clock repair. It views the clock on the Town green as a treasured historic asset that should be working.

The Board of the FCBUU supports the project. It has consistently made decisions as stewards of the clock and the bell housed in the tower of its building. It intends to continue to steward the clock and the bell. Repairs needed at this time exceed the ability of the church to finance.

Community outreach by the applicants has been informal by word-of-mouth. Support for the project has been consistently positive.

A letter of support from the Belmont Historical Society is attached to this application (Att 1).

Additional letters of support are now being actively solicited. Letters will be addressed to the Community Preservation Committee for incorporation into this filing.

#### Project Documentation.

The First Church in Belmont Unitarian Universalist is located at 404 Concord Avenue, Belmont. At its inception in 1857 the church was called the Belmont Congregational Society.

The church was the first meetinghouse for the Town of Belmont. It was on the north side of the Concord Turnpike near the location of today's post office. An image of that church is part of the seal of the Town of Belmont.

The bell in the tower of that church (Fig 2) rang out to proclaim the incorporation of the Town of Belmont on March 18, 1859. Decades later, in the process of constructing a new church building, the bell was moved to the tower of the new building.

In 1889, town meeting voted "that the selectmen be authorized to place a clock in the new Unitarian Church to be erected this year and the sum of \$500 be appropriated for the same."

In 1890, the new church building was dedicated and the new clock was placed in the tower. The clock (Fig 3) was manufactured by the E. Howard Watch and Clock Company of Boston. It rang for decades giving town residents an audible time check in an era in which personal clocks were not widespread.

The E. Howard movement that turns the hands of the clock in the tower is a beautiful example of 19<sup>th</sup> century timekeeping technology but it is not operating.

The estimated cost of this project has been determined with written proposals received from qualified clock crafts people. One proposal is attached to this application for information (Att 2). If approved, procurement will comply strictly with the Massachusetts procurement regulations and policies of the Town.

#### Powering the Clock.

Tower clocks need a source of power to turn the gears of the movement and a source of power to ring the bell on the hour. That power source is gravity acting on weights through cables and pulleys. The weights are raised with human or electric power and they slowly drop to do the work. To raise the weights, the "clock keeper" must climb a ladder inside the tower to the floor where the clock movement is located.

Over the decades, the sextons of the church and other town residents have performed the weekly task of winding the weights up. The town has compensated the sexton for this effort. The stipend started at \$36 per year and was raised to \$150 by 2016. In 2016, the church administrator stopped requesting the stipend because the clock had stopped running.

#### The Clock Restoration.

Until recently, access to the clock movement at the top level of the tower was by way of a straight 19-foot ladder installed at the time of church construction. In a 2019 grant application to the CPC, the church requested funds to replace the ladder. In December 2020, FCB replaced the ladder with a two-section ladder and a new platform. (Fig 4). This work was done with Church funds. That initiative by the Church has reduced the amount of money needed to complete the clock restoration by approximately \$40,000. This grant request reflects these savings.

The clock ran dependably for decades, receiving volunteer care when needed. Town resident Martin Cohen furnished highly skilled volunteer labor in the early 1990's when he completely disassembled, cleaned and reassembled the clock to working order.

Since then, ambient dust has settled into the gears of the movement, causing the gears to seize. To restore the clock's function, the movement must again be completely disassembled, cleaned and reassembled.

While town volunteers and one paid clock keeper were able to keep this clock running for more than a century, the current requirement to bring the clock back to operating condition are beyond the reach of church funding capability.

Since the clock was first installed, our world now has electric and electronic clocks. The church property committee considered the option of replacing the entire time keeping movement with an electric movement. That solution would eliminate a piece of history. The solution that the church prefers would be to preserve that piece of history, functioning as it was intended for many more decades.

Intermediate technology is available to wind the weights with electric motors. This technology is considered appropriate. These devices eliminate the weekly need to climb the tower to wind the clock. Human attention is still needed to change the clocks for daylight savings time. This restoration project would include the installation of an automatic winding system.

#### Timeline and Work Plan.

Upon award of this grant, the Belmont Citizen's Forum in conjunction with the First Church will prepare a Request for Proposals for Clock Restoration Services. Three months would be scheduled for selection of the most qualified vendor and the signing of a contract. It will be the responsibility of vendor to determine how to accomplish the work.

A likely sequence of tasks to accomplish the renovation of the historic clock follows.

- Disassemble the clock movement and transport it to the clock subcontractor's shop
- Clean and reassemble the clock movement
- Install the automatic winding system if selected
- Start the restored clock and new winding system. Start the bell striker. Inspect and monitor the operating clock

The project may include new winding technology, which could replace the weekly weight winding effort of the clock keeper. The annual stipend that the town was paying to the clock's human attendant can be eliminated. The clock and bell will operate for years to come with very little behind the scenes action.

Including time for mobilization and moving the clock parts, the clock repair portion of the project will take approximately four weeks. The installation of powered winding equipment will take approximately one additional week. The delivery time for the special equipment is unknown. All the work described by this application should be done within one year.

Credentials.

As required by the CPA, this application is submitted jointly by the Belmont Citizen's Forum and FCBUU. The governing boards of both organizations have entered into an agreement defining roles and responsibilities for the project.

Authority to sign contracts related to this project, for the Forum, has been given to John Dieckmann, Vice President and Radha Iyengar, Treasurer, jointly. For the FCBUU, that authority is given to the Board President Samuel James.

Michael Flamang, the co-chair of the Church's property care committee, will administer the contract and inspect the work. He is a registered professional engineer in the Commonwealth of Pennsylvania. Before his retirement in 2016, he was employed in the Engineering Division of the Town of Lexington, Massachusetts. In that position, he was a Massachusetts certified public purchasing official (MCPPO). He will manage this project for the church.

Mr. Flamang's resume is attached (Att 3).

Success Factors.

Measurement of the success of the project this project will be observable if everyone can learn the correct time by looking at the clock on the tower of the church on the Town green and can hear its bell strike on the hour.

Budget

Work by selected vendors

Clock specialist	\$20,000
Crane access to clock faces	5,000
Clock face repairs	<u>4,000</u>
Total	\$29,000

Note: Clock specialist cost is based in part on a preliminary quote from David Graf of Kittery, Maine (Att 2).

Private Entity as Project Sponsor. The Belmont Citizen's Forum is an independent, non-profit organization that has a part of its mission the preservation of objects in the Town that have historical, architectural or general cultural significance. It is a 501(c)(3) organization. A copy of the IRS determination is (attached?)

The First Church in Belmont Unitarian Universalist (FCBUU) is a religious institution. Its status as a tax-exempt religious institution is derived from its membership in the Unitarian Universalist Association of Churches, Boston, Massachusetts. Supporting documents are on file in the church. Copies will be furnished on request.

The grantees will assure the Town Treasurer and any interested party that the funds will be used strictly to execute this project and that none of the requested grant will go to the support the religious mission of the church.

**Fundraising.**

If this project is approved and funded by Town Meeting, private fundraising by friends of the historic tower clock will contribute 10% of the project cost.

The Forum will establish an account for holding separately donations directed to the "Historic Tower Clock in Belmont." A mail campaign is planned to solicit contributions to this fund.

**Maintenance.**

The church will maintain the clock. It will provide power, lubrication and all recommended service. Church building funds will pay for minor expenses. Future major maintenance costs, should they occur, will be addressed by friends of the Historic Clock.

Table 1

**Use of CPA Funds in Religious Structures by Other Cities and Towns**

<b>Municipality</b>	<b>Project</b>	<b>Amount</b>	<b>Status</b>
Barnstable	Replacement of church cupola	\$ 134,281	In progress
Billerica	Church steeple repair, weathervane and clock	\$ 52,977	In progress
Concord	Church belfry that holds the Town clock	\$ 75,000	Complete
Hingham	Repairs to three tower clocks in churches	\$ 21,000 plus	Complete
Newton	Grace Episcopal Church	CPA funds are a portion of match of a grant from National fund for Sacred Spaces, total grant amount estimate \$250,000	In progress
Cambridge	From 2005 to 2020, religious institutions have received 82 of 142 grants awarded through a grant program using CPA funds		Varied

**FIGURES**

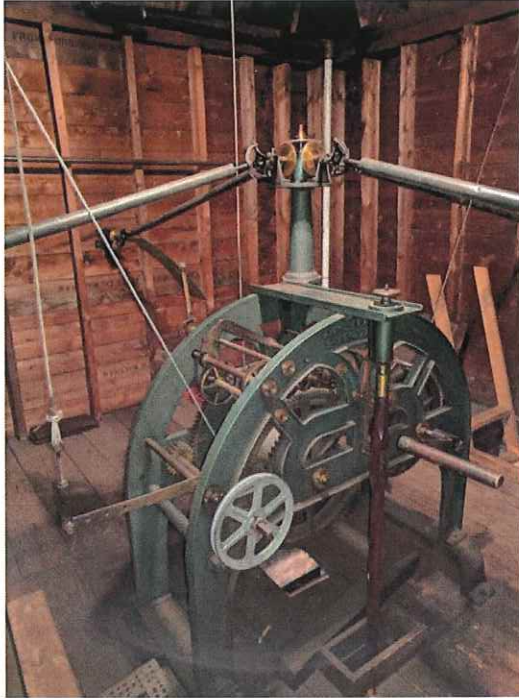


**Figure 1- The Tower of the First Church**



**Figure 2- The First Church Bell**





**Figure 3- The clock movement**



**Figure 4- New ladder to clock movement**



## **ATTACHMENTS**

1. Letter, Viktoria Haase, President, Belmont Historical Society to Belmont Select Board, dated September 27, 2021, with attachment, a letter to Elizabeth Dionne, Chair, Community Preservation Committee.
2. Preliminary Proposal for Clock Repair, David Graf, Oct 2, 2021
3. Resume of Project Manager, Michael Flamang

Attachment 1  
pg 1 of 2

Sept dated ember 27, 2021

To Belmont Select Board  
Town of Belmont  
455 Concord Avenue  
Belmont MA 02478

RE: Belmont Town Clock/404 Concord Avenue

Dear Sirs,

The Historical Society was previously asked if we would write a letter of support in favor of the restoration of the Town Clock and our initial letter is included for your review.

As you can see the records clearly indicate that the clock is owned by the Town of Belmont. Therefore, we hope that the Select Board will take a leadership role in ensuring that this historic timepiece will be restored to working order and support the release of preservation funds for the work.

Thank you for your consideration,

Viktoria Haase  
Belmont Historical Society-President

Attachment 1.  
pg 2 of 2

Elizabeth Dionne, Chair  
Community Preservation Committee  
Town of Belmont  
455 Concord Avenue  
Belmont, MA 02478

RE:Belmont Town Clock, 404 Concord Avenue, Belmont, MA

Dear Ms. Dionne,

I write, enthusiastically, in support of the application by the First Church in Belmont to the Community Preservation Committee for funds to refurbish and modernize the existing clock located in the church's tower. Richard Betts, the late town historian, in his Belmont Historical Society's newsletter dated December 1997, writes the following:

"In 1889, upon motion by J. Henry Fletcher, the town meeting voted that the Selectmen be authorized to place a clock in the new Unitarian Church to be erected this year and the sum of \$500 be appropriated for the same.

The clock, housed at the top of the tower with a face on all four sides, was initially installed by the E. Howard Watch and Clock Company in 1890 at a cost of \$500. It had two sets of weights totaling 1150 pounds. One set controlled the striking mechanism and the other the time piece. These weights, up until 1971, were hand cranked with 150 revolutions of a ratcheted gear wheel consuming one hour and ten minutes every week."

Although some improvements were made in 1971 for the striking mechanism by using pulleys and a motor, the timing mechanism still had to be hand wound. Interesting to note that the clock winding in 1890 paid the princely sum of \$36 per year for a man brave enough to ascend and then descend the tower's ladder. With its rich history the Belmont Clock surely deserves a timely update.

Sincerely,

Philip J. Hughes-Past President, Belmont Historical Society

previously to M Velie  
12/2/2018

Attachment 2  
4 pages

DAVID W. GRAF  
TOWER CLOCK REPAIR & RESTORATION  
P.O. Box 73  
Kittery Point, Maine 03905  
(207) 439-5401

October 2, 2021  
(original-November 21, 2019)

Mr. Mike Flamang  
First Church-Belmont, MA  
781-666-8446

**REVISED PROPOSAL:**

**First Church, Belmont, MA- E. Howard 'Round Top' Tower Clock  
Repairs/Functional Restoration**

*Notes on current proposal:*

*-In this updated proposal, the scope of work has not changed. I am assuming that the condition of the clock has not appreciatively deteriorated over the past 2 years. If I determine that the clock has suffered some significant change for the worse since I last examined it, the cost for the work will require adjustment-to be determined*

*-The cost for the work has been adjusted to reflect the increased costs of doing work and running a business that have occurred over the past 2 years.*

*-The cost for the automatic weight winding system for the striking weights is higher, but still an estimate, as supply chain problems continue to affect costs and availabilities of industrial products.*

*-My insurance agent has reviewed the 'Contract Provisions Appendix #1' and informs me that my coverage is in compliance/sufficient and that-as I am a sole proprietor with no employees- I am exempt from some of MA. requirements. I can provide a statement of coverage for the First Church when/if I am awarded the contract.*

*-This proposal reflects all the costs/work necessary to return the clock to reliable mechanical function as originally installed. The final finishes on the components/frames/will not be as fine as those I achieve in a 'like new/museum quality' restoration. Please see new section of proposal for cost for this additional level of restoration-also see recent photo I sent of Readfield ME tower clock restoration.*

*-No part of my proposal may be reprinted or used as a bidding document for other contractors for this work unless I expressly agree in writing.*

*Thank you.  
David W. Graf*

For the past 30 years I have specialized in the historically accurate restoration of antique mechanical tower clocks. I have the utmost respect and admiration for the quality/design/skill/and makers of these remarkable movements and strive to be faithful to those qualities in my work. In addition to the many different tower clocks I have restored over the years, to date, I have completely restored six E. Howard 'Round Top' tower clocks, as well as having performed repairs- of all types - on many, many more of these beautiful mechanisms.

*Please note:* Below I have provided a short summary of your clock's condition at this time, as well an outline of the steps and work I recommend for a functional restoration. If you have any questions regarding the details of this proposal/report, I will be glad to answer them.

**Current Condition of Clock:**

- 1) E. Howard 'Round Top' Tower Clock is entirely original with all components of time and strike trains present. Clock is still weight driven and pendulum regulated. The time train will only run a short time before stopping. Owing to the short vertical drop available in the tower the striking train weight cable is 4x compounded and the stack of weights is likewise extremely large. Clock is driving 3 exterior dials without dial access doors. The clock actuated bell hammer is present, on the level below .
- 2) Clock has not run for many years and the old oil applied to gears, pinions, bushings, etc. has dried and thickened- adding excessive friction- and no doubt making it very difficult for the clock to run. This dark oil is visible, in particular, on all bushings, some of which may be worn (contributing additional friction) that will only be discovered when the clock is disassembled and cleaned. All gear teeth appear to be functioning/meshing well although their actual condition can not be completely determined owing to the coating of old oil.
- 3) Examination reveals that the exterior hands are extremely out of balance. This is undoubtedly contributing to the clock being unable to run reliably. Exterior hands are also chipped/broken and missing some pieces. Dial gears are dirty and dry.
- 4) Weight cables are old and worn. Weight pulleys are likely completely without oil, dried and difficult to revolve.
- 5) Bell hammer is resting on bell shoulder owing to worn components. This is not good for 'tone' produced, or for ringing the bell with the rope-as the hammer drags across the surface of the bell .

**Work recommended to achieve fully functional reliably running mechanism- (Disassemble/gently remove all old oil/ repair, as follows:)**

***(A) Disassembly***

- 1) Disassemble all clock movement arbors/bushings/components of both time and striking trains, and remove all from the 2 heavy cast iron frame plates. Large cast iron frame components/bridge to be left in tower. All arbors/gears/bushings/rack/screws/etc of both time and striking trains to be removed and taken to my shop. Pendulum/ to remain in tower. I may decide to clean the large barrel arbors in the tower and therefore leave them in the frame-though their bushings will be removed/cleaned.
- 2) Disassemble both sets of weights/cables/pulleys. Remove all pulleys to my shop.
- 3) Disassemble worn bell hammer components. Remove from tower.
- 4) Motion works drive rods/tubes ( to dials) will be inspected for any slipping/looseness.
- 5) With aid of exterior hydraulic lift vehicle (provided by church) all exterior hands will be removed. This will then permit the removal of the dial gears located in the center of each dial.

***(B) Thorough Cleaning***

- 1) All movement components will be thoroughly cleaned. Most will be ultrasonically cleaned-gently and without abrasion. This will preserve gear tooth profiles and (usually) any original gold tinted finish remaining on bushings/gears. All old, thickened oil and grease will be removed from all gears/pinions/pivots/bushings/screws/etc. Frame components and pendulum will be cleaned in place- old dried oil removed as possible. Both time and strike train barrels may be cleaned in place in tower.
- 2) All weight pulleys will be disassembled and cleaned.
- 3) Dial gears will be disassembled and cleaned.

***(C) Repairs***

- 1) Any worn bushings/pivots of movement will be rebuilt as required (re-bushed/re-pivotted) to restore original tolerances. Pivots and bushings to be lightly polished to ensure minimal friction. Anchor pallets polished as required for proper function.

- 2) Worn bell hammer components re-built/repared to ensure smooth reliable function and free resonance of bell.
- 3) Any worn weight cable pulleys will be rebuilt as required. Weight pulley eye bolts mounting points will be inspected and improved as necessary. .
- 4) Any looseness in motion works rods/tubes/drive train will be repaired, dial gears to be cleaned and lubricated.

**(D) Exterior hands**

1) Three new sets of exterior hands will be constructed. New hands to perfectly match originals in shape/thickness/taper, and to be of Western Cedar for rot resistance/lightness/stiffness. Hands to be primed all surfaces/painted all surfaces with oil based marine enamel-semi gloss black. Hands to be accurately counter-balanced and attached to brass hubs with solid copper rivets.

**(E) Re-finishing**

- 1) Following cleaning and repairs, all frame mounted movement components will be lightly polished –if necessary-to remove any rust while attempting to preserve original finish on brass components. All will be sprayed with clear gloss lacquer to seal and protect. *Please note, this will not be a 'complete museum quality visual restoration' -as imperfections/scratches/etc. will not be polished out/nor completely removed. Wheel spokes will not be re-painted. Gold painted components will not be re-painted-though I will attempt to preserve original paint. Heavy cast iron frame components will be cleaned- only- not refinished.*
- 2) Pendulum shaft and bob will be lightly top coated (clear) to seal,protect and preserve.
- 3) Time and strike weight cables will be replaced.

**(E) Re-assembly**

- 1) All components of movement will be returned to and re-assembled in the tower. All pulleys of both weight systems will be re-installed. All components of bell hammer/linkage re-installed. All components adjusted/lubricated appropriately. Wall mounted dial gearing lubricated and re-installed. New exterior hands installed with use of lift vehicle-provided by church.
- 2) Movement re-started. Exterior hands synchronized with movement and inner setting dial. Bell tolling synchronized. Proper function of all movement components monitored, adjusted as required, and ensured.

*Please note: Work outlined above does **not** include any replacement of gears/pinions/ gear teeth that may be found to be required after total cleaning. If such work is found to be necessary, a scope of work and additional cost will be discussed with you and a fair price decided upon.*

*Additionally, with safety in mind, I request that the wooden ladder be replaced with the shorter ladder/landing/ladder design that was described to me-before any work begins in the tower. Thank you.*

**-Estimated cost for work outlined above: \$13,000.00**

**- Estimated cost for complete 'like new/museum quality' restoration-\$19,000.00**

**Note-**

The extensive additional work required would include: removal of all clock components from the tower /complete refinishing of all cast iron components ( heavy frame parts cleaned and clear coated, gold cast iron gears totally repainted in a multi-step procedure), high polish achieved on all brass and steel gears and arbors and screws/sides of gear spokes repainted gloss black/careful transportation of totally restored components back to church and tower without damage. Please see the recent photo I sent of the fully restored tower clock we recently delivered to Readfield, ME for an example of this level of restoration.

**-Please also note: You may consider the following automatic weight-winding option for the striking train weights-**



In order to decrease the amount of weight required to power the striking train-without having to manually wind the striking weights more frequently, an automatic weight winding system may be installed. In summary, this system would fit on the floor beneath the clock and be comprised of: a gearmotor/an electronic clutch/sprockets and chains to connect the drive to the strike barrel shaft/timer relays/an upper safety switch to prevent any over-winding of the weights/wiring to connect the components/etc. The weights could be easily reduced to much less than half what they currently are and the system would be set to wind the weights approx. 1x per day.

Though I could wire the individual components, you would require a certified electrician to provide power to the space/certify that the wiring is up to code.

Installation of this system (which I have provided in several other restorations) does not eliminate the need for maintenance/inspections/lubrication. This why I recommend that the time train remain manually wound- as this will ensure that a clock winder will observe the clock every week and can help in preserving and protecting this historic and vintage mechanism.

**Additional cost for this weight winding system: \$6,500.00**

Thank you for considering this proposal.

*\*Please see my web site for photos of many successfully completed tower clock restorations and a list of some of my previous work ( not up to date )\**

*Sincerely,*

*David W. Graf*

Michael A. Flamang, PE  
Belmont, Massachusetts  
flamangm@gmail.com

### Employment

*Retired in 2016*

*Senior Civil Engineer, Town of Lexington, Massachusetts*

Engineering design and management of water and sewer systems, drainage systems and other infrastructure. Prepared and managed town construction contracts. Massachusetts Certified Public Purchasing Official.

*Senior Operations Engineer, AECOM, Wakefield, Massachusetts*

Construction management and startup of the Deer Island wastewater treatment plant, Boston and other plants. Coordinator at disaster locations for FEMA. Worked with local officials to repair damaged infrastructure.

*Chief Engineer and Plant Superintendent, Allegheny County Sanitary Authority, Pennsylvania*

*Platoon Leader and Construction Officer, US Army Corps of Engineers*

Construction engineering in Vietnam and Thailand on highway, bridge and building projects

### Education

*Bachelor of Science in Civil Engineering, Purdue University*

*Master of Public Works, University of Pittsburgh*

*Registered Professional Engineer in Massachusetts*

### Other Experience

*The First Church in Belmont and First Church in Roxbury, Massachusetts*

Owner's representative and volunteer manager to maintain and preserve historic buildings

*Town of Belmont, Massachusetts*

Member and Chair, Conservation Commission