



First Parish in Lexington *Unitarian Universalist*

7 Harrington Road, Lexington, MA 02421-4897

phone (781) 862 - 8200

Fax (781) 674 - 1181

e-mail: admin.fplex@verizon.net

First Parish
Lexington, MA
October 29, 2015

Ms. Marilyn Fenollosa, Chairman
Lexington Community Preservation Committee
c/o Lexington Town Office Building
1625 Massachusetts Ave.
Lexington, MA 02120

RE: First Parish in Lexington: Historic Structures Assessment

Dear Ms. Fenollosa and Members of the Committee:

Please find attached a proposal to the Community Preservation Committee to fund a fund selective preservation work on the First Parish meetinghouse building on the Lexington Green. The requested funds are to address specific priority work identified by the Historic Structures Report prepared by Spencer and Vogt Group funded in part by the Community Preservation Committee. We are seeking a total of \$250,000 from the Community Preservation Committee, to be combined with \$130,000 in funds from First Parish and other sources.

In particular, we are requesting funding to repair and restore the main meetinghouse windows, strip and repair the cladding and trim on the meetinghouse and repaint to its historic color, and to perform specific structural repairs on the meetinghouse roof. This work is described further in the project information narrative and selected portions of the report prepared by Spencer and Vogt Group included as Exhibit A.

The congregation at First Parish is strongly committed to preserving the building in a responsible manner, and we are very pleased to have the work of Spencer and

Vogt as a guide to prioritize our efforts. As you know, we have invested over \$350,000 in historic preservation work on the building in the last ten years. With assistance from the CPC, we expect to continue to make vital preservation repairs to this important building.

We look forward to discussing this further with the Committee at your earliest convenience.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Bill McKenney". The signature is fluid and cursive, with a large, sweeping flourish at the end.

Bill McKenney

Chairman, Building & Grounds Committee

First Parish Unitarian Universalist Lexington

**TOWN OF LEXINGTON
COMMUNITY PRESERVATION COMMITTEE**

PROJECT APPLICATION SUMMARY FORM

Project Title: First Parish Lexington, Exterior Preservation and Structural Priorities

APPLICANT INFORMATION

Name of Applicant/Contact Person: First Parish in Lexington, Bill McKenney

Title/Position: Building and Grounds Committee Chairman

Group or Committee Affiliation (if any): N/A

Applicant/Contact Person's address, contact phone number, and email:

Bill McKenney, 617-312-8030, BillMcKenney@yahoo.com.
Russell Tanner, 781-424-0596, rptanner@outlook.com

PROJECT INFORMATION

Project Site Address:
7 Harrington Road, Lexington, MA 02421

Project Site Assessors Map/Parcel: _____

Project Site Deed Book/Page: _____

Current Owner: __ First Parish Unitarian Church in Lexington

Purpose (please check all that apply) <input type="checkbox"/> Open Space <input checked="" type="checkbox"/> Historic <input type="checkbox"/> Recreation <input type="checkbox"/> Housing
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Brief Project Description:

Exterior preservation work and specific structural repairs based on priorities identified in the Historic Structures Report prepared by Spencer & Vogt, as follows: Repair and restoration of main sanctuary windows; strip and repair of meetinghouse trim and cladding, and repainting to historic color; and structural reinforcing of truss purlins in meetinghouse roof. Please refer to project information and supporting materials for further description of these priorities and budget.

COSTS

Fiscal Year	Total Project Cost	CPC Funds Requested	Other Funding Sources (amount and source)
2016	\$380,000	\$250,000	\$80,000 (First Parish in Lexington) \$50,000 (Mass. Historical Comm.)
2017			
2018			
2019			

2020			
2021			
TOTAL	\$380,000	\$250,000	\$130,000

Signature of Applicant:  Date: 10/28/15

For Community Preservation Committee Use Only:	
Application Received On: _____	Project Presented to CPC on: _____
Reviewed by: _____	Determination: _____

TOWN OF LEXINGTON COMMUNITY PRESERVATION COMMITTEE

PROJECT INFORMATION

Project Title: First Parish in Lexington Meetinghouse, Exterior Preservation & Structural Repairs

Please attach a narrative on all applicable subjects.

1. Scope or concept of project:

Exterior preservation work and specific structural repairs to the 1847 meetinghouse based on priorities identified in the CPC-funded 2015 Historic Structures Report prepared by Spencer & Vogt Group, Inc. To include repair and restoration of main meetinghouse windows, repair of cladding and trim and repainting to historic color, and structural reinforcement of truss purlins in roof.

2. Project goal and objectives: (Indicate how the Category Specific Criteria for the CPA are met.)

The overarching goals are to:

1) Preserve and restore elements of an historically and architecturally significant building located prominently on the Lexington Green. The 1847 meetinghouse on Harrington Road is an important contributor to the Battle Green Historic District, is appreciated by large numbers of Lexington residents and visitors each day, and is closely associated with the Battle Green itself.

2) Preserve a historic resource that is otherwise threatened or underutilized. The meetinghouse is threatened by structural inadequacies and compromised envelope integrity. The performance of the proposed work, along with capital budgeting and planned cyclical maintenance, will ensure the building's viability for years to come.

The work will preserve the building elements determined to be in the most urgent need of repair, including:

1. Repair and restore the meetinghouse windows. The original window design features staggered muntins, an arrangement that provides inadequate overall structural support. This will be mitigated by the introduction of grid braces and the installation of storm windows once the wood repairs are complete.

2. Accumulated paint layers at the meetinghouse have led to the rapid failure of subsequent coatings. Strip, prime and repaint exterior with historic color informed by paint analysis. Perform selected repairs to historic wood trim, details of which are expected to be revealed by the paint removal. Persistent peeling paint at the spire will be addressed by pre-etching the lead coated copper and proper priming to achieve paint adhesion.

3. Make structural repairs to the meetinghouse roof by sistering LVLs to the sides of the uppermost, overstressed purlins.

3. Projected action plan and timeline: (List steps needed to complete project. These steps will be critical to completing Project Status Reports that will be due in time to report back to Town Meeting each year until the project is complete.)

Initial Application to C.P.C:	Nov. 1, 2015
Revised proposal to C.P.C.:	Dec. 15, 2015
Final budget and recommendation to Town Meeting:	Dec. 31, 2015
Town Meeting approval:	April, 2016
Commence contract:	May, 2016
Initiate bidding and construction	August 1, 2016
Construction start:	September 15, 2016
Completion of work:	June 30, 2017

4. Anticipated project cost: (Provide a budget, with line itemization.)

The following budget is based on the plans and specifications prepared by Spencer & Vogt Group (attached at Exhibit A).

Window repair, restoration & storm protection	\$100,000
Exterior stripping, repair & repainting	190,000
Structural repair of truss purlins	40,000
Professional fees & contingency	<u>50,000</u>
Total Project Cost	\$380,000

5. Other funding sources, including private/public/in-kind:

First Parish in Lexington, capital funds:	\$80,000
Massachusetts Historical Commission (anticipated):	\$50,000

6. CPA funding request: \$250,000

7. Budget justification: (provide an explanation for why each type of expense is needed.)

The budget is based on annotated plans and estimates prepared by Spencer & Vogt Group for architectural services and MacCleod Consulting (structural engineers) for structural stabilization. These were initially developed during the preparation of the Historic Structure Report and refined as the current scope of work was finalized. The preliminary structural report and annotated plans are included as support documents with this application.

8. List and describe any comparable projects:

First Parish Lexington has completed several important capital improvements to the meetinghouse and steeple in the last 10 years at its own expense:

- Steeple replacement in 2004: \$320,000
- Steeple lighting in 2012: \$10,000
- Clock face restoration and mechanism repairs: \$15,000

9. Relevance to community: (indicate how project is relevant to the current and/or future needs of Lexington.)

First Parish in Lexington has been a center for community gatherings, events, and services for three centuries. We currently host the following groups and activities which provide important services to the community:

- Foundations for Understanding Social Engagement (FUSE) school for children and adolescents who are experiencing challenges in social problem solving skills at home, at school or in the community. This program uses the church basement for daily programs.
- Lexington Family and Youth Services (LYFS) provides walk-in counseling for at-risk youth. This program also uses church common spaces for its programs.
- Local dance classes, scrabble club, social organizations and other community-focused services. The hall and parish lounge are used frequently each week by these various groups. Please refer to the cover letter for a listing of current organizations using the property.
- First Parish hosts music performances, civic and community events, weddings, memorial services and other family events on a regular basis.
- In addition, the First Parish Board has as a primary goal over the coming years to improve the connection with Lexington through deliberate outreach programs that will increase the visibility of First Parish in the community.

10. Supporting documents: (Provide supporting letters, references, studies, maps, and statistics.)

Exhibit A: Annotated plans for repair, Spencer & Vogt Group

Exhibit B: Preliminary structural report and recommendations, MacCleod Consulting

Exhibit C: Historic window assessment, MacCleod Consulting

Exhibit C: Photographs of existing conditions

Exhibit D: Notes on paint analysis, Finch & Rose

EX-XX

FIRST PARISH IN LEXINGTON
EXISTING CONDITIONS

7 HARRINGTON ROAD,
LEXINGTON, MA 02421

EXISTING CONDITIONS - ELEVATION

Date: 2014, XXX, XX
Drawn by: XX
Checked by: XX
Project Number: 1507.00

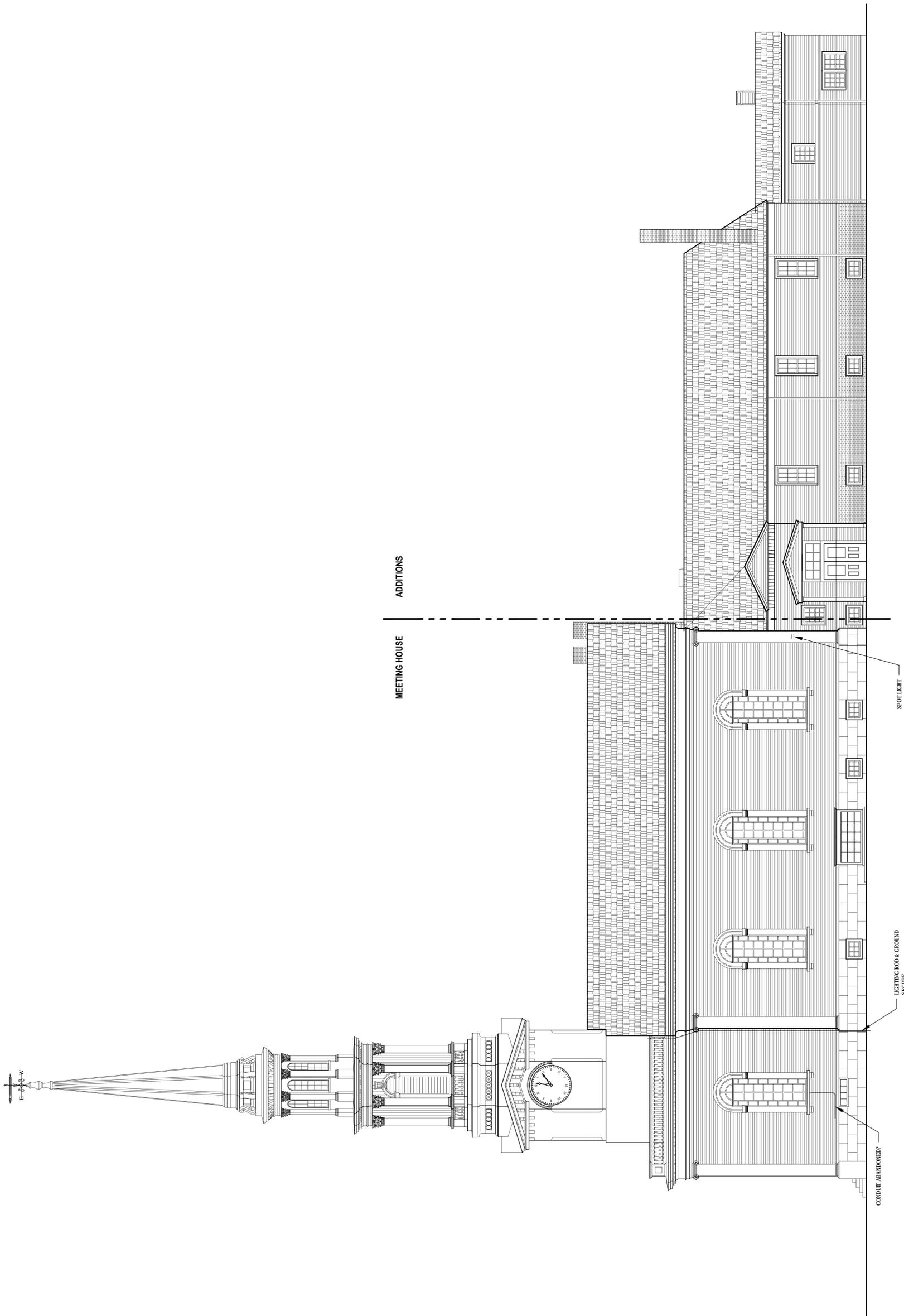
ISSUE / REVISIONS:

Consultant:

Seal:

Architect:

SPENCER & VOGT GROUP
architecture preservation
1 Thompson Square, Suite 504
Charlestown, MA 02129
617.227.2675
www.spencervogt.com



1 EAST ELEVATION
Scale: 1/8" = 1'-0" @ 24 X 36 PRINT

EX-XX

FIRST PARISH IN LEXINGTON
EXISTING CONDITIONS
7 HARRINGTON ROAD,
LEXINGTON, MA 02421

EXISTING CONDITIONS - ELEVATION

Date:

Drawn by:

Checked by:

Project Number:

2014, XXX, XX

XX

XX

1507.00

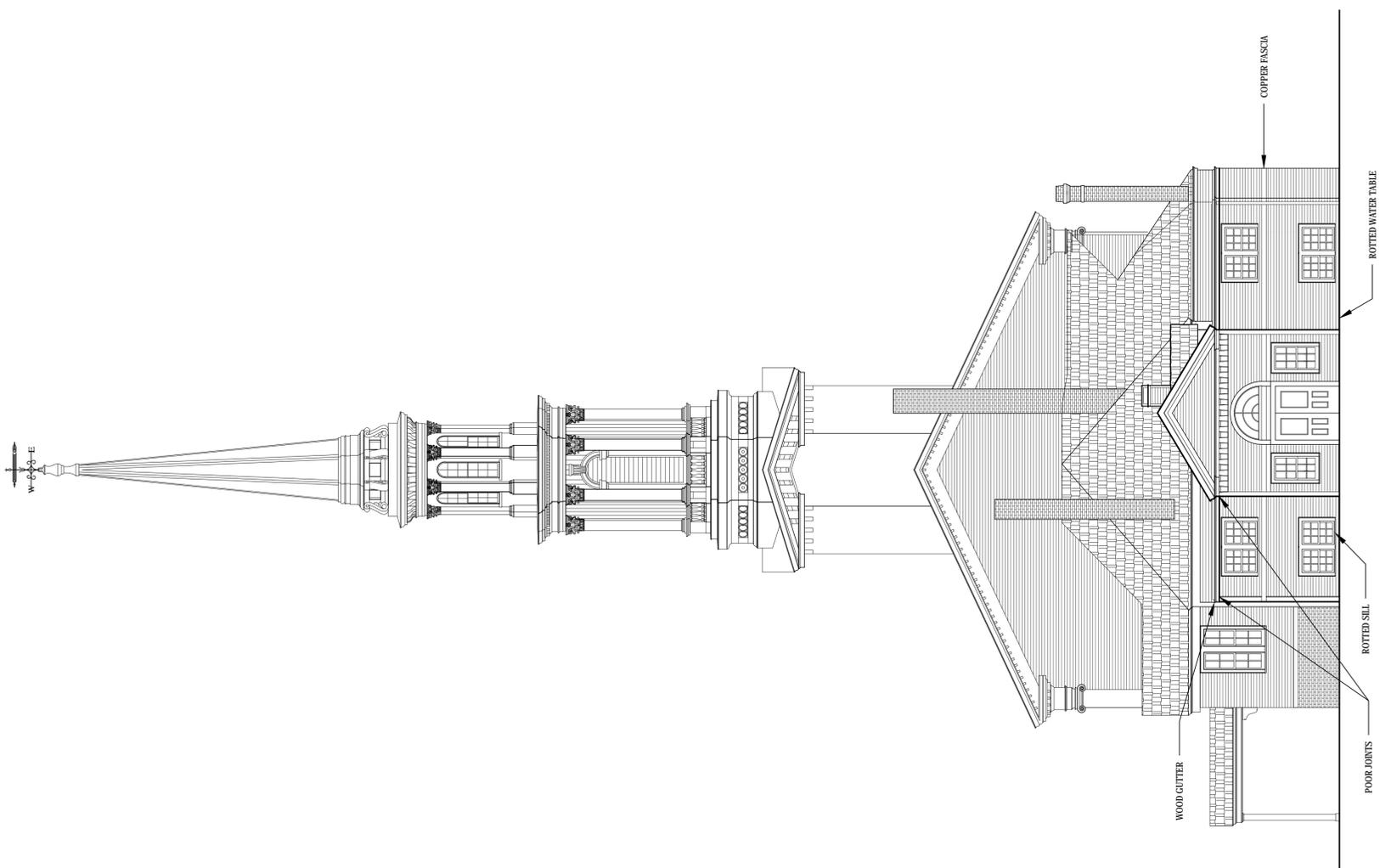
ISSUE / REVISIONS:

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architecture preservation
1 Thompson Square, Suite 504
Charlestown, MA 02129
617.227.2675
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1 NORTH ELEVATION
Scale: 1/8"=1'-0" @ 24 X 36 PRINT

MacLeod Consulting, Inc.

29 Woods Road

Belmont, MA 02478

(617) 484-4733

fax (617) 484-9708

www.macleod-consulting.com

October 19, 2015

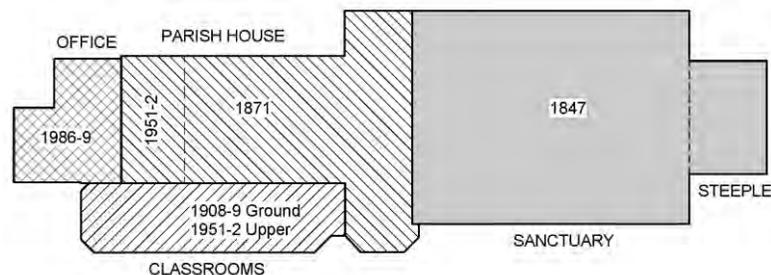
Lynne M. Spencer
Spencer & Vogt Group
1 Thompson Square
Charlestown, MA 02129

Re: First Parish in Lexington
Structural Engineering Services

Dear Lynne:

At your request, I am providing a progress report on the structural assessment of the First Parish Church Lexington Unitarian. At this time, I have completed much of my field survey including the sanctuary basement, Parish Hall, classrooms, and office. I have made a cursory pass through the sanctuary balcony, second floor vestibule, steeple, and sanctuary attic. I need to take measurements in these areas.

The building complex is a collection of original construction and additions spanning about 140 years. For loading I am using the Massachusetts State Building Code as a reference. This Code



provides required floor, roof, and wall loadings but allows for occupancy management as a means to mitigate loads on components that do not meet Code requirements. For public assembly areas, the floor loading is 100 pounds per square foot (psf). For snow, the Code is calling for 46.5 psf. I am providing a preliminary assessment of the foregoing areas as follows:

SANCTUARY

This 1847 construction is supported on granite foundation walls and brick piers. The first floor is framed with timber beams and wood joists. The floor joists slightly undersized but should not need strengthening. The timber beams highly overstressed. These can be mitigated by inserting mid-span posts within walls.

The roof is supported with timber trusses supporting timber purlins which in turn support wood rafters. The rafters are adequate. The trusses which were reinforced with steel about 90 years ago should be adequate. The two uppermost out of six lines of purlins support more than half the roof. My preliminary evaluation is that these are overstressed but can be strengthened by sistering LVLs to their sides.

STEEPLE

From my preliminary tour of the steeple, I see that rotted timbers were replaced with built-up lumber equivalent to the replaced timber sections. I see that some rod sway bracing was added. I have yet to check that the steeple repairs corrected all the deficiencies I listed in my May 26, 2002 report.

PARISH HOUSE

The parish house was constructed in 1871. The steel/iron posts would likely have replaced original masonry posts. These metal posts support 6x8 timber beams and wood joists. At the north end of the parish house, steel beams are present. The paint coating and size of the beam flange indicate these were placed after original construction. These steel sections were not available until the early 1930's. Most likely, this section of the parish house was built along with the upper section of the classrooms in 1951-2. The joists are adequate. The 6x8 wood beams are undersized. These could be sistered with LVL or steel side plates.

The vaulted parish house roof is framed with 2x9 rafters spaced at 24 inches on center tied together with ceiling 2x9 joists. These vaulted frames have considerable bending forces in the rafters and joint forces where the joists overlap the rafters. In addition to the vaulted rafter frames, the builders included two trusses made from 4x9 rafters and ceiling joists. There is no provision to carry loads to the trusses other than the same roof and ceiling loads to the vaulted rafter frames. At a minimum, I recommend adding metal ties between the ceiling joists and rafters to strengthen joints.

WEST CLASSROOMS/OFFICES

The west classrooms were constructed in two stages, the ground level in 1908-9 and the upper level in 1951-2. The upper level roof appears supported on a ledger attached to the parish house wall. The first floor appears supported on an independent wood stud wall next to the parish house. At the exterior wall, the upper level appears supported on a series of wood posts and beams inboard of the exterior lower level wall. At the lower level, the exterior wall thickens to conceal a foundation retaining wall. Its thickness suggests the foundation is perhaps stone masonry. I did not see any evidence that this structure in this area is deficient.

OFFICE

The office appears to be conventional platform framing. I saw no cause for concern in this area.

WINDOWS

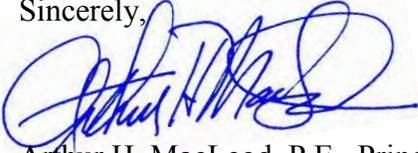
The large Romanesque windows in the original building have an unusual arrangement of muntins. The vertical muntins span about 12 feet. The horizontal muntins across the 4.5-foot width are not continuous, but stagger in alignment. The 12-foot span is simply too long to provide adequate support. The support should have been designed for the shorter horizontal span. This can be mitigated with a storm window with glass thick enough to

Ms. Lynne M. Spencer
First Parish in Lexington

October 19, 2015
Page 3

span the 4.5-foot width. Alternatively, a metal muntin grid at the third points of height that fits the staggered pattern could strengthen the existing muntins.

Sincerely,



Arthur H. MacLeod, P.E., Principal
MacLeod Consulting, Inc.

Historic Window Assessment

MacCleod Consulting

A structural analysis of the historic window confirms that the distinct off-set grid of the muntins lacks the structural rigidity of a conventionally arranged grid of window muntins. As a result the twelve and a half foot tall by four and a half foot wide windows are subject to high stresses and may be susceptible to failure caused by wind loads. While no failures have been recorded, one hundred seventy years of aging have increased the potential for pressure and weather to adversely affect the sash.

These are key historic character defining features and the historic wood windows are original to the meeting house so preservation is a foregone conclusion. But life safety and protection of Meeting house occupants is also crucial.

Preliminary analysis of the muntin profiles and behavior (see attached sketch from MacCleod Consulting labelled FPLEX MP-1) suggests that an interior pair of braces for each window would mitigate the inherent design weaknesses without altering the visual character of the sash from the exterior. The braces would follow the line of the muntins, but provide the extra stiffening the windows require (see MacCleod Consulting sketch labelled FPLEX WB-1).

In the same spirit of preserving the visual character of the windows, proposed thermal panes will be installed on the interior of the meeting house so the unique muntin profiles of the historic sash are unobscured.

Dimensions	
Depth	1.875 in
Width	1.75 in
Perimeter	6.553 in

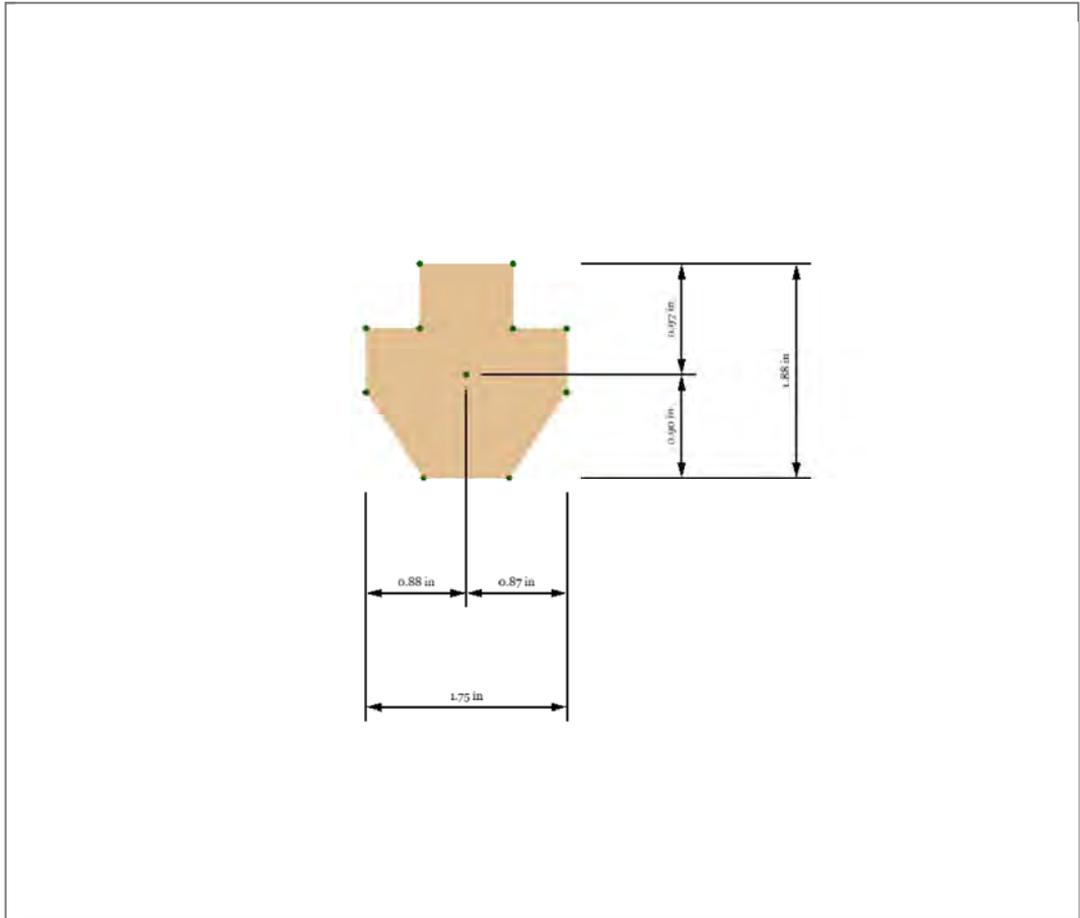
Geometric	
Area	2.379 in ²
Ix	0.5281 in ⁴
Iy	0.418 in ⁴
Ixy	0 in ⁴
rx	0.4711 in
ry	0.4192 in
Sx+	0.5418 in ³
Sx-	0.5865 in ³
Sy+	0.4777 in ³
Sy-	0.4777 in ³
Xc	-6.303 in
Yc	4.789 in

Principal	
I1	0.5281 in ⁴
I2	0.418 in ⁴
α	0 deg
r1	0.4711 in
r2	0.4192 in
S1+	0.5418 in ³
S1-	0.5865 in ³
S2+	0.4777 in ³
S2-	0.4777 in ³

Polar	
I _p	0.946 in ⁴
r _p	0.6306 in

Plastic	
Z _x	Not Defined
Z _y	Not Defined
PNA X	Not Defined
PNA Y	Not Defined

Part Materials	
Part 1	Eastern White Pine-Select Structural



FEA Mesh	
Nodes	127
Elements	111
Largest Element	0.0952 in ²

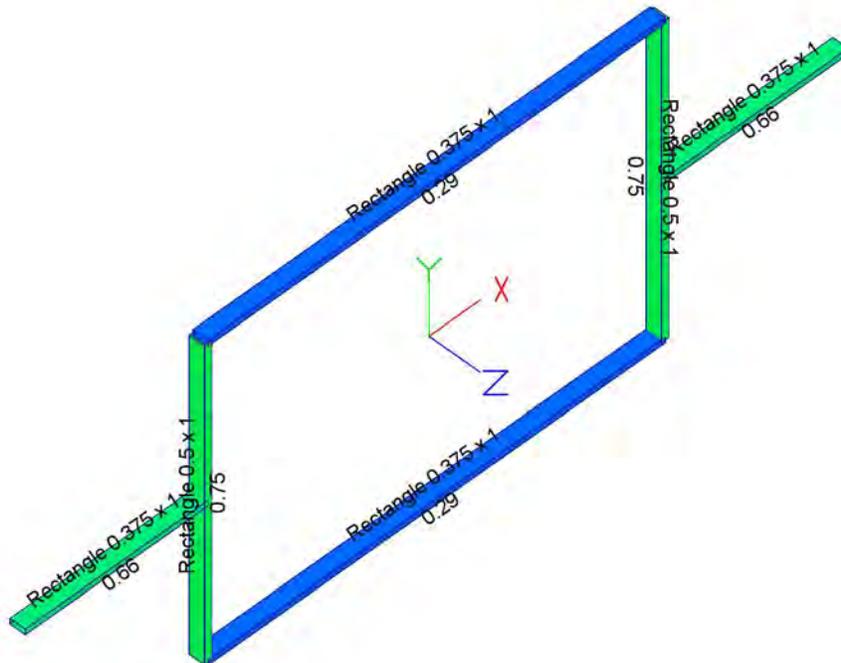
Torsion	
r ₀	0.6347 in
H	0.9872
X _{sc}	-6.301 in
Y _{sc}	4.718 in
C _w	0.0058 in ⁶
J	0.7478 in ⁴
B ₁	0.1854 in

Minimum Results	
Warping Function	-0.2417 in ²

Maximum Results	
Warping Function	0.2285 in ²

FPL Window Brace
MACLEOD CONSULTING, INC., Arthur H. MacLeod
Oct 27, 2015; 01:35 PM
Design View, Unity Checks
IES VisualAnalysis 12.00.0010

FPLEX-WB-1



First Parish Lexington Meetinghouse

Existing Conditions



Facade (south elevation).

First Parish Lexington Meetinghouse



South and east elevations at portico junction with sanctuary. Note failed paint at flushboard siding and birdsnest at capital ornament.



Facade (south elevation). Failed paint at tower base.

First Parish Lexington Meetinghouse



Historic window. Note layered paint and failed glazing at muntins and cracked, peeling paint at surround.



Square column base at portico. Note failed paint and wood rot at trim and worn finish at porch floor.

First Parish Lexington Meetinghouse



Column base at portico. Note rotted wood and failed paint.



Square column at portico. Not failed paint.

First Parish Lexington Meetinghouse



Failed paint coating over leaded copper at spire.



Attic framing. Stressed purlin seen behind red electrical wire.

Approximate Paint Chronology

Draft from Finch and Rose October 21, 2015

Approximate paint chronology based on preliminary samples:

1. Translucent yellowish fragments on wood substrate - probably linseed oil applied as a primer.
2. Yellowish white - probably prime coat with high oil content causing it to turn yellow
3. White - first finish - verified in 1850s-60 stereo view of church. Paint is somewhat weathered suggesting it was not repainted for a number of years. There could be a second layer of white finish, but I can't tell until I do cross section samples.
4. Light grey (thin) - probably primer for # 5.
5. Brownish medium grey - finish - perhaps ca. 1860. - no records of painting during this period.
6. Greenish medium tan - finish - this is the first layer on the projecting bay of the vestry addition, but whether this dates to 1871 is not certain.
7. Very light putty grey - almost off-white.
8. Similar to #7.
- 9 - present: Whites and off-whites, one layer in the middle is distinctly light yellowish. Current finish is clearly a latex paint.

The window sash have not been sampled yet, but based on photos were probably dark in the later 19th century.

No evidence of a different color on the trim in the historic photos, but samples of trim (window frames) have not been taken yet.

There are no historic photos between the ca. 1850s-60 stereo view and the 1890s.

Lynne's chronology of changes notes the following records of exterior painting through 1935.

- 1874 Paint two sides
- 1884 Painting completed
- 1890s Church described as "dark color"
- 1909-10 Ext. painting
- 1926 Ext. painting
- 1934-5 Ext. painting

Bill

Paint sample from Lexington Church prepared from the backside of the sample (i.e, working from the oldest layer down rather than from the current finish back. #s refer to #s in my email. Needless to say the appearance of the colors in the photo is very approximate.

