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First Parish Congregational Church
United Church of Christ
P.O. Box 114, 47 East Derry Road
East Derry, New Hampshire 03041
Attn: Rebecca Fleury

Dear Rebecca,

Thank you for your patience regarding this cost estimate for the repair of your historic church. I have visited the site on two extended visits; the most recent with Victor Wright of the Heritage Company who is a specialist in slate and copper roofing. The following cost estimate encompasses the structural repair of the belfry tower, the bolstering and strengthening of the main roof structure and the repair/replacement of the slate roof. It also includes the creation of copper flashings and roof coverings to protect the belfry and create a watertight connection between the tower and sanctuary structure.

As we discussed at our last visit, I discovered significant damage in the belfry framing especially where the main roof joins with it. The two structural posts that abut the main roof principal rafters have rotted significantly due to water penetration; the result of poor and failing flashing at this location. On my second visit with Victor, I reviewed these areas and it is clear that a lot of patchwork has been done over the years to try and curb the damage from a chronic flashing and roofing problem.

A good deal of steel and modern dimensional lumber has been introduced into your historic framework. Most of the belfry components from the bell level up are replacements and have been bolstered with steel plating. While it appears to be holding and stable, I know from experience that eventually this work will need to be re-done. In the interest of prioritizing work however, this estimate concentrates on the major structural issues yet unaddressed in your church tower and the issue of roof repairs because the culprit of all of the damage present in the church is the result of roof leaks and deferred maintenance.

My approach to repairing your church is based in tradition. I am a strong advocate for taking the time to understand the intention and methods employed by the original joiner of the church to learn from and emulate his expertise. Your church frame is incredibly well built. The king post trusses created to support your roof are exquisitely constructed and continue to work despite the tremendous weight of the slate and they have survived the test of time. In fact, very little is wrong with the roof trusses where they have been kept dry.

I do share a concern for the roof system with regards to the weight of the slate roof in relation ship to the span between trusses. Common purlins support vertical roof sheathing upon which the slate is directly nailed. Many of these purlins are white oak and show no signs of decay. They do however, show signs of significant deflection and it is possible that the original joiner designed this roof for white cedar shingles. Credit must be given to the roof system for supporting the weight of the slate, but it is advisable that we bolster the roof system when we repair the slate work.

To bolster the existing roof structure, I propose adding dimensional lumber purlins hung with conventional joist hangers between the existing sapling tree purlins. The added purlins should be no less than a 2 x 10 kiln dried piece of lumber spaced equally up the length of each roof bay to better support the roof sheathing and slate. Loads currently in place will not be significantly altered except for the weight of the new purlins and hangers. The truss will be able to support this small addition of weight and the new purlins will help to spread the loads to the truss chords and subsequently out to the perimeter walls where they can transfer to the foundation. Each new purlin will be placed into the roof system upon removal of the existing slate. This is very important because in this manner, we can remove most of the sag that now exists between trusses.

It is time for the slate roof to be repaired. The fasteners that hold the slate to the roof are failing and the sag between trusses leave the slates loose and distorted allowing water and bats to easily find their way to the building interior. Victor Wright proposes carefully removing the existing slate and recycling most of it back into the roof with new copper nails and matching slate to replace poor quality, broken or missing slate. Again, years of patchwork in the slate roof are clearly evident from the ground and the roof can be patched only so many times before a comprehensive repair is undertaken.

Victor and I also looked very carefully at the copper roof on the bell tower. This roof leaks and needs to be replaced due to age and due to the repairs that will be necessary to repair the structural problems facing the tower. It will be necessary to sever portions of the belfry roof to gain access to two structural posts that create the back of the tower frame. When facing the tower from the front both the left and right rear posts are very rotten. The right rear post is likely to be replaced in kind in its entirety due to the extent of damage currently visible from the interior of the roof system. Horizontal connecting girts that span between the two rear posts will also need to be replaced and original joinery recreated. The left rear post will have to be spliced in section to remove rotten wood from the structure and replace it with structurally sound new wood to make the tower stiff and secure.

Staging will be needed along the two-eave walls of the main body of the church and around the belfry tower up to the base of the belfry roof. Cribbing and rigging will be needed to support the upper belfry roof and the various floor levels in the belfry tower during the repair process. Preservation Timber Framing will provide and erect this staging to allow work done by PTF and The Heritage Company concurrently. In this way we keep costs low and efficiency high throughout the project.

It will also be necessary to repair the front gable end rafter chords, which adjoin the belfry tower posts. Water has penetrated through the siding and flashing and completely rotted significant portions of the roof system. All work completed to preserve the frame will be done with local graded timbers to meet engineering specifications. It is our intention to use the best materials and craftsmanship to execute the work so that it will last for generations.

It is important to recognize that the damage that has occurred in your church has happened over time and that the repair process is extensive. By no means does this condemn the original structure. So much of the roof system and tower framing remains intact. The history wrapped up in the internal framework of your church and the slate roof that has protected it for years can and must be preserved. By doing so you are making long lasting repairs that will serve the congregation for many years to come.

With regular long-term maintenance this investment will outlast any roofing alternative. Preservation Timber Framing along with The Heritage Company has the capacity and knowledge to ensure you of the best job available that will last the longest for the money you have to spend on this building. It is a long-term investment with significant return.

Attached is an excel spreadsheet outlining the various tasks associated with this project. I have also included some sill work that needs to be done along the back gable end of the building where most people enter the church sanctuary. I separate this as a line item in the spreadsheet. Please be advised that this is not a comprehensive list but rather a prioritized approach to building maintenance designed to address key structural issues. A full conditions report outlining the maintenance priorities of your church building is best developed during this major work. In this way you can understand and plan for continued maintenance for your historic structure. Please review the attached documents and I look forward to answering any questions you may have.

Respectfully Submitted,

Arron J. Sturgis
Preservation Timber Framing Inc.

TOTAL ESTIMATED PROJECT COST: $310,472.00

FIRST PARISH CONGREGATIONAL CHURCH, EAST DERRY NH 12 15 08		
STRUCTURAL AND ROOF REPAIRS		
TASK: BY PRESERVATION TIMBER FRAMING	DAYS:	COST:
SET UP STAGING ALONG EAVE WALLS	10	6000
SETUP STAGING AROUND TOWER TO BELL LEVEL	10	6000
REMOVE SIDING FROM TOWER AT ROOF LEVEL	3	1800
REMOVE SHEATHING FROM TOWER AT ROOF LEVEL	4	2400
CREATE CONDITIONS DRAWINGS AND JOINERY	8	4800
INSTALL PAPER TO KEEP BUILDING WATER TIGHT	4	2400
REMOVE ROOF COVERING AT BELFRY DECK	6	3600
SUPPORT BELL ON CRIBBING	3	1800
SUPPORT 8 SIDED BELFRY FRAME ON CRIBBING	10	6000
SUPPORT CLOCK LEVEL ON CRIBBING	4	2400
SUPPORT GIRT LEVELS ON CRIBBING	12	7800
EXTRACT RIGHT REAR POST	8	4800
CREATE NEW STRUCTURAL CORNER POST	4	2400
INSTALL NEW RIGHT REAR POST	8	4800
SPLICE RAFTER CHORDS 2 X	12	7200
SPLICE LEFT REAR POST	5	3000
CREATE HORIZONTAL GIRTS IN BACK BELFRY WALL	6	3600
INSTALL GIRTS IN BELFRY	10	6000
RESHEATH THE BELFRY	6	3600
RE-SIDE THE BELFRY OVER NEW FLASHING	6	3600
PRIME AND PAINT ALL SIDING	2	1200
PURCHASE, DELIVER AND UNLOAD NEW PURLINS	2	1200
CUT AND INSTALL PURLINS WITH JOIST HANGARS	32	19200
LIFT AND FLATTEN ROOF PLANE IN EACH BAY	15	9000
RE-NAIL ALL ROOF SHEATHING	4	2400
REPLACE 30% OF EXISTING SHEATHING (1100 FT.)	8	4800
REPAIR SECTIONS OF CORNICE TRIM	6	3600
ASSESS ALL TENSION CONNECTIONS IN TRUSSES	2	1200
INSTALL TENSION CONNECTIONS AS NEEDED*	16	9600
INSPECT AND REPLACE 10 PURLINS*	10	6000
INSPECT AND REPAIR 3 RAFTER HEELS*	9	5400
REMOVE SIDING AT BACK LEFT CORNER OF SANCT.	3	1800
LIFT AND JACK TO REPLACE SILL SECTION	8	4800
RELACE SILL SECTION	6	3600
REPLACE SIDING AND SHEATHING	4	2400
REMOVE STAGING UPON COMPLETION OF PROJECT	12	7200
CLEAN UP	4	2400
	282	**169800**

EAST DERRY CHURCH ROOF REPAIRS:		
TASK: BY THE HERITAGE COMPANY	DAYS:	COST:
REMOVE AND REPAIR SLATE ROOF:	60	**89536**
REPLACE COPPER ROOF ON BELFRY IN KIND	20	**21536**
MATERIALS:		
2 X 10 KD AND HANGARS*		3000
SHEATHING: 2000		2000
12 X 12 X 80 FT OF POST		3800
8 X 8 X 12 GIRTS 6 X		1400
ROOF PAPER		500
ICE AND WATER SHEILD		1200
SIDING: 1000 FT.		3000
FASTENERS		2200
CRANE TO REMOVE AND INSTALL BELFRY FRAMING		6000
STAGING RENTAL FOR 3 MONTHS		6500
		29600
SUMMARY:		
LABOR FOR FRAME REPAIRS AND ROOF BOLSTERING	282	169800
LABOR AND MATERIALS FOR MAIN ROOF SLATE	60	89536
LABOR AND MATERIALS FOR COPPER BELFRY ROOF	20	21536
MATERIALS		29600
		310472
*NOTE: ASTERISK IS AN ALLOWANCE NUMBER,		
ENGINEERING STUDY MAY REQUIRE ADDITIONAL		
WORK. EXISTIING CONDITIONS MAY BE REVEALED		
THAT REQUIRE REPAIR ONCE SLATE IS REMOVED.		
ALL NECESSARY WORK OUTSIDE THIS SCOPE WILL		
REQUIRE A WRITTEN DESCRIPTION, ESTIMATE AND		
PERMISSION OF CONGREGATION.		
ALL PLANS TO BE DRAWN BY PTF AND CONFIRMED		
BY ENGINEER OF CHOICE. ENGINEERING COST IS		
OUTSIDE THE SCOPE OF THIS ESTIMATE.		
TOTAL ESTIMATED PROJECT COST: $310,472.00		