

Bell Tower Masonry Inspection Report

March 22,2018

I have been requested to prepare a report after a visual inspection of the church bell tower and the soundness of it's masonry. Our company, Personal Touch Service Solutions had prepared a proposal for the complete repointing of the church in 2016. At the time we did a visual inspection and probe of a random sampling of joints and found that over 75% of the masonry joints of the church required replacement. Although there was calcification of the outside of many of the joints, much of the inside had been reduced to mostly compact sand and aggregate.

In the inspection of the church last week, it was found that the condition has continued to deteriorate with more holes forming on the exterior where you can see that the water is eroding the joint behind the calcified crust. The outside intrusion of water presents the greatest risk to the building, both in the possibility that water would create damage on the inside of the structure and that the continual intrusion of water would further weaken the joints and create some structural damage.

The condition of the interior joints of the bell tower are of particular concern. Being surrounded by weather on all four sides, the bell tower takes on water, freezes, and thaws more readily than anywhere else. The continual freezing and thawing of water in the joints causes the weakening of the mortar until there is nothing binding the aggregate together. Chunks of mortar and abundant sand laying on the wood decking were the first signs that the joints were in bad shape. However, the powdery appearance of all of the joints on the inside show that the strength of the mortar joint is gone, continual wetting has created excessive efflorescence, and that work needs to be done as soon as possible.

It is impossible to tell without destructive testing, but it is presumed that the degradation of the joint reaches deep within the wall and probably most, if not all of the way to the exterior wall. Therefore it is my professional opinion that the first step of restoring structural soundness to the bell tower is to repoint the inside to a depth of at least three inches immediately. After that is done, it is my strong recommendation that the outside of the tower is pointed and sealed. Allowing rain to seep in on the new joints from the outside will recreate the same condition of freezing and thawing that weakened them to begin with. Therefore, I believe that the outside should also be done before the winter comes in 2018.

Due to the age of the building, it is recommended that a compatible lime mortar be used for repointing, so that during the freeze/thaw cycles damage to the stone units themselves will be minimized. It is also of importance that the historic mortar be installed in lifts so that wet/dry curing cycles can properly cure the mortar.

Please let me know if there are any other immediate issues or concerns that you would like for me to address.

Sincerely,