

## Historic Roof Replacement Questions

What is the roof's age?

- The age of the roof is 135 years old.

What type/grade of historic shingle is present? What are the dimensions of the shingles?

- The existing slate shingles are approximately 12" wide x 18" long and 1/8" to 3/16" in thickness with an 8" exposure. The grade is considered to be "standard grade/rough texture".

What type/material of underlayment, hangers, flashing, and valleys is present?

- The existing underlayment is 30 # felt, however, upon inspection of previously repaired areas, over 50% of the underlayment is either completely missing or severely deteriorated and rotted (photos attached). The remaining existing felt is severely decomposed and is no longer water repellent. The underlayment literally falls apart when trying to be handled. A sample of the existing underlayment will be brought to the hearing should the commission choose to inspect.

With respect to the hangers for the slate tiles, they are non-galvanized steel nails. Due to the age of the nails, the heads are over 75 % worn off due to corrosion over the past 135 years

leaving only a small pin head that allows the slate tiles to lift up and over the nails during high winds thus allowing the tiles to blow off the roof. Additionally, as the slate tiles lift upwards and downwards with the wind, the nail hole in the slate tiles becomes increasingly larger and weaker.

The existing valleys and flashing are made out of 16oz. copper and are corroded in many areas and are at the end of their life expectancy. Many valleys have been patched due to holes caused by corrosion. The proposed new valleys and flashing will also be fabricated out of new 16oz. copper to the exact same size and profile as the original (photos attached).

What type/material of gutters and downspouts is present?

- The existing gutters and downspouts are made out of 16oz. copper. Their condition is poor and at the end of their life expectancy. Repairs to the existing downspouts have been made over the years using other materials and painted over to try and match the original copper color. The proposed new gutters and downspouts will be made out of 16oz. Copper, same as the existing original gutters and downspouts, and fabricated to the same dimensions and profile as the original.

What is the typical life expectancy of this type of material?

Does it appear that this historic roof has been well maintained over time?

- Per industry standards, the typical life expectancy of the existing slate tile is approximately 75 to 100 years depending on the climate and environment. Please note that due to the age and delamination, the existing tiles are no longer 3/16" in

thickness and in many areas is only 1/8" thick. Yes, the roof has been well maintained. The parish has performed routine inspections, particularly after any severe storms. At such time, repairs are performed on an as-needed basis.

What elements of the roof appear to be failing (slates themselves delaminating/breaking, underlayment, hangers, flashing, valleys, etc – be specific and describe how these elements are failing and the location of the failing elements)?

- The slate tiles are severely delaminating and breaking in many areas throughout the entire roofing area. Due to the delamination, the slate is absorbing water as opposed to repelling it. The water ingress into the slate causes it to be soft inside and results in weakening the strength of the tiles. The slate is no longer as thick as it once was due to the delamination. As mentioned above, the underlayment is severely deteriorated and is missing in many areas due to rot. Underlayment is meant to act as a secondary barrier of protection to prevent water infiltration. However, the existing underlayment is absorbent as opposed to being waterproof and is not repelling water (photos attached).

How is the roof failure manifesting itself (i.e. leaking at the building's interior, rotted roof framing, corroded flashings, broken slates, slates sliding off the roof, etc – be specific)

- The frequency of repairs to the roofing system has become more and more numerous. In addition to slate tiles being blown off, the bare roof framing is being exposed and subjected to rain, ice and snow to the extent of causing

possible future damage to the wood under structure. The slate tiles that have blown off are broken, weak in strength, and are non-useable for re-attachment. Previous attempts to re-install any unbroken slate tiles have been unsuccessful due to delamination and other reasons here mentioned. The slate, as well as the nail hole areas, are soft and the nail holes are over enlarged due to constant upward and downward pressure by wind against the nail heads thus preventing secure re-attachment of the tile.

What percentage of slates/# of squares need to be removed in order to address/fix the roof failure? Note the location(s) of the slates which need to be removed

Is it possible to reinstall the slates that are removed? If not, explain why?

- Due to the age (135 years) and the wear throughout the entire roofing system, 100% of the roof is in dire need of replacement. The number of squares is 320 squares. It is just a matter of time before water will infiltrate the roof and leak into the church's interior ceiling and floor structure. Should that occur, the church's interior ceiling would not be able to be repaired to the same condition due to the elaborate hand plastered domed ceiling with hand painted Fresco paintings, mouldings, and gold leaf detail. As mentioned above, the existing slate is severely compromised primarily due to its age and the damage caused by the elements over the past 135 years. Samples of the deteriorated slate will be brought to the hearing should the commission choose to inspect.

Provide cost of an in-kind repair of the roof (2 estimates as required). Note the percentage of new tile that would need to be added in order to repair. Also, note the outcome of installing new tiles with the existing tiles ....

- As requested, a revised quote is attached for the additional cost of installing in-kind natural slate tiles as opposed to the DaVinci Roofscape synthetic tiles. This quote includes replacement of 100% of the existing tiles. The DaVinci tiles very closely resemble the original stone tiles in all aspects including size, profile and color and are the same tiles that were approved by the commission and used on the restoration of the church's spires in 2018. Pictures of original existing roof slate next to color samples of the DaVinci tiles are here attached. The DaVinci tiles have a lifetime warranty with no exclusions from the manufacturer.

\*\*\*\*Also, submit detailed pictures (please label) of ALL damaged areas and provide additional pictures to show any interior damage?

\* Damage could occur to the interior ceiling of the church at any time. There has already been water infiltration to the church's attic areas over the years. Attached are several pictures to help evidence and illustrate what is stated in our replies to the questions being presented.