

2021 Sound Acoustics

December 2020

The 2020 Giving Tuesday Event resulted in donations of \$97,166.48 toward the improvement of the church acoustics.

Deacon Chris discussed the original Jack Buttermore Acoustical Study with two parishioners: Perry Yaney, Professor Emeritus of Physics and Electro-Optics, IEEE Life Member, APS Fellow and John Nehrbass, Senior research scientist at the Wright State Research Institute, an expert in computational electromagnetics, signal processing and high-performance computers.

It was decided to have the original study evaluated by another acoustical engineering firm since the study is over 7 years old and Jack Buttermore had passed away.

John Nehrbass recommended that we contact Harvey Marshall Berling Associates to see if they would review the Buttermore Study.

Deacon Chris reached out to Todd Berling, Principal Consultant at HMB-A and Mr. Berling agreed to review the study and asked for the original study, architectural blueprints and photographs of the sanctuary. These were provided and Mr. Berling reviewed the study over the Christmas season. Mr. Berling replied as follows:

"I finished reviewing the Acoustic Report and Treatment Recommendations prepared by Jack Buttermore. It is my opinion that his Scenario F is the best solution for treatment application. Per his attached report (Acoustic Study Section 1) and his drawing markups (Plate 6 Acoustic Study Section 2) this would ADD: 74 Panels 4'x4' x 2" Thick + 16 Panels 4'x8' x 2" Thick. His analysis shows the reverberation time being reduced to approximately 1.5 seconds. This is on the slightly long side for speech intelligibility however it offers a nice balance for a church where both speech intelligibility and music performance are both important elements."

January, 2021

Mr. Berling provided his recommendations to John Kuprionis of Ketchum & Walton Company for an estimate for the Absorption Panels as he recommended. Mr. Kuprionis supplied the following:

"To provide material and installation in your sanctuary per the recommendation of Todd Berling, (74) 4' x 4' x 2" panels on the "upper" wall and (16) 4' x 8' x 2" panels on the lower wall, all with impaling clips and adhesive with scaffold to work around and over the pews and general clean up as necessary, Budget Price is \$34,000.00, and this includes shipping, but not tax. I make every attempt to be able to reduce this price after everything has been looked at! A deposit of \$5,000.00 is necessary to move forward and check field dimensions, make sure everything fits and there are no surprises. Typical lead time for the panels is currently 5-7 weeks after all dimensions and fabric colors have been approved."

At this point an additional concern arose in regard to the fact that when the study was completed by Jack Buttermore several years ago, we did not have the array speaker in place, but several other speakers suspended from the ceiling. We also did not have the stations of the

cross or walls repaired and repainted; which was accomplished a few years ago. There is also concern with the 3 level adjustable sound setting located where the system is turned on, as it is adjusted based on the number of people in the sanctuary; we do not know which level was used when Mr. Buttermore did the original study.

With these issues in mind, Deacon Chris shared this information with our current sound vendor, Mike Staffan of Lighthouse Sound. After a bit of discussion it seemed prudent to ask

Todd Berling the following:

- In light of the changes to the sound equipment, should a new study be considered?*
- If such a study was conducted, what is the approximate budget for such a study today?*
- In order to regulate the absorption level of the sanctuary, should pew cushions be considered?*

Mr. Berling said another study could be considered but they are not in a position to conduct one; and that pew cushions would help regulate the absorption as opposed to changing the amplifier level on the wall via the pushbuttons. The fee charged by Mr. Berling from HMB-A for their services was \$0.00

February 2021

Deacon Chris and Mike Staffan of Lighthouse Sound contacted three acoustical engineering firms/suppliers for guidance as to the cost for an additional study:

- David Wright (acoustical engineer) Indianapolis \$3,000.00+
- Gavin Havestick (acoustical engineer) Indianapolis \$3,000.00+
- Acoustics First (manufacturer) with acoustical engineers on staff (T&M NTE \$3k)

To verify that the proposed solution provided by Todd Berling via the Jack Buttermore Acoustical Study is still the correct solution today, Deacon Chris will work with Mike Staffan and Acoustics First by providing Acoustics First with Architectural plans, photos, and reverberation test results. The total cost for this is \$1,500.00. The reverberation tests will be conducted pre- and post-treatment to document the sound improvement.

March 2021

Mike Staffan from Lighthouse Sound, met with Fr. Brian and Deacon Chris to present the study results obtained from Acoustics First.

After further review of the original Buttermore study it was found that ceiling panels were not considered. This is curious as the ceiling is the first surface for panel consideration when analyzing the worship space configuration. Deacon Chris hypothesized that Fr. Tom Schmidt may have explained to Jack Buttermore that he wanted a wood ceiling installed within the church so the ceiling may have been "off limits" for panels...regardless...

The study conducted by Acoustics First shows that more panels will be needed than anticipated in the Buttermore study. To reduce the reverb time down from 3+ seconds. To reduce the reverb to:

- 2.0 seconds will require 91 panels (47 ceiling and 44 wall panels) @ \$34,905
- 1.5 seconds will require 119 panels (73 ceiling and 46 wall panels) @ \$46,646

These prices reflect material cost only.

Fr. Brian and Deacon Chris listened to "listening examples" of both the spoken word and singing voice. They both agree with Mike Staffan that a 2.0 second reverb is preferable and that 1.5 second will detract from the singing voice and music too much.

With this in mind, Deacon Chris is proposing:

That we purchase the sound panels from [Acoustics First](#) as they are a very reputable company and have worked with many houses of worship. [Click here for more information](#)

A bid spec will be created and we will go out to bid for the installation.

The panels are very large and heavy, and so volunteer labor will not be considered.

April 2021

Awaiting delivery of sample panels and fabrics from Acoustics First before we go out for bid as the installers will need to know panel installation details...

We are expecting to receive the following samples by mid April:

- 1 each, 2" thick Ceiling Panel with z-track hardware in Pearl 481
- 1 each - 2" thick Wall panel with impaling clip in Eggshell 144 with scrim
- a handful of other "lighter" fabric swatches for their reference

Reached out to Wenco Construction on April 20 and 23rd. We have used Wenco in the past when our church remodel was completed and for other projects. Other vendors will also be invited to bid.

On April 23 we were notified that the sample panels are being delayed as panel fabrics are 12 weeks behind in delivery due to Covid-19. This in turn will delay the delivery of the panels when ordered by up to 12 weeks!

As of April 22, no sound panels have been received...delivery is now scheduled for Friday, April 23rd, 2021.