When is it ideal to have carpet on the floor of a Christian House of Worship?

The answer to such a question is complicated and yet easy at the same time.

Here is the short answer.

Our studies show that the ideal sounding worship space is a room that sounds like it is 50%[1] full when it is empty, with a signal to noise ratio of 20 to 25dB and a flat response from 80 to 8000 Hertz. Over 95% of worship spaces fail this simple standard that has been here forever. While it is different for churches, it is similar to the criteria for concert halls, live theatre, motion picture theatres, entertainment facilities and recital halls. The features to achieve such a standard was first outlined in the detailed description of King Solomon's Temple.

There are two basic requirements for quality live sound in a large room. One part is managing sound above 1500 Hertz, and the other is managing sound below 1500 Hertz.

Here is a simple rule for those who want a rule, as to whether you should have carpet on the floor. Regardless of the type of worship your church practices, a sanctuary needs a minimum of 28% of the total surface area of the room to have absorptive materials to manage sound above 1500 Hertz. That includes the floor, the entire ceiling and all of the walls.

Often, 28% of absorptive materials is the sum of a totally carpeted floor and 50% of the floor area with padded seating on top of the carpet. The rest of the room can use hard surfaces.

On the other hand, if you choose not to have carpeting on the floor, you will have to apply absorptive materials to the walls and ceiling that equals at least 28% of the total surface area.

The second most crucial element to complement absorption is diffusion. Diffusion is the best way to manage sounds below 1500 Hertz. With Tube Radiators, you generally need between 15 to 20% of the total wall surfaces of a room to be treated. Using other diffusers, you may have to add up to 50% of wall coverage.

If you choose not to have carpet, the walls will have to share absorption and diffusion. The ceiling is also a good place to add absorption if you run out of wall space.

Here is an example of a 500 seat worship space, the dimensions, are 95L x 63W x 35H. Flat ceiling. Total surface area is 23,030 square feet. Absorption needed on walls is 6,448 square feet. Cost of carpeted floor, padded seating, and Tube Radiator diffusers, $83,000.00 installed. Cost of absorption panels, Tube radiator diffusers, hard seating and finished floor, installed $178,000.00.

[1] This is based on testing over 1000 Churches and upgrading over 400 Worship spaces between 1983-2019.

There is one other question that has to be asked which requires an honest answer. Is the purpose of your worship space being used to preach the Gospel at the highest quality possible, or is music and worship entertainment given the highest quality first? If the Gospel message is first, then carpet and padded seating along with a good diffusion system will result in the best performance for preaching and congregational singing. If music is given priority, the carpet issue doesn't matter. Worship spaces where music programs are highly elevated, are Churches that are never satisfied with their music program, and where those in the music program, are constantly competing with the secular community to be better and at the same time, congregational singing gets pushed further back and out of the way, the very thing Christians crave the most - second only to the preaching of the full Gospel.

The Full Answer

Here are the details of how those values came to be.

The standard for a worship space to have a signal to noise ratio of 20 to 25dB and a flat response from 80 to 8000 Hertz comes from studying worship styles and working on hundreds of Churches. First, you have to look at all of the various elements of worship. They include:

- Main Elements (Based on Scriptures and by Jesus Example)
  1. Reading of Scripture
  2. Preaching and Sermons
  3. Questions and Answers
  4. Prayer
  5. Celebration of communion
  6. Congregational singing
  7. Offerings
- Secondary Elements (items that churches have added to worship after the reformation period.)
  1. Choir or choral music
  2. Music to support congregational singing
  3. Music lead by a worship team
  4. Announcements
  5. Sharing of testimonies
  6. Sharing of prayer requests
  7. Singing performances
  8. Music performances
  9. Music Rehearsals
  10. Child participation
  11. Congregational meetings
- Event Elements (non-worship uses of a sanctuary.)
  1. Weddings
  2. Funerals
  3. Teaching Events
  4. Conferences
  5. Concerts
  6. Fundraising events
  7. Music Lessons

These are all of the elements of how the church sanctuary is used over its lifetime. Not all churches will practice these elements, but the first seven elements in the main portion are universal. Now here is an aspect that is least understood. If you have the ideal acoustic conditions for the first seven elements, the worship space can support all of the other elements that all churches will practice at one time or another.

Another important detail about church worship is that it is the only large room where people gather where the room has to perform equally in both directions. For Christian worship, the room has to perform properly from the stage and the audience seating area. No secular facility has the same requirement—the requirement for a worship space to work in both directions is unique to churches. Secular experts, textbooks and acoustical experts will not include this vital difference between concert halls, entertainment facilities, live theatre, and churches. Failure to include this detail is the single most common cause for the majority of worship space, failing to meet the needs of the congregations who own such spaces.

Getting the balance right incudes three elements, flat surfaces, diffusion, and absorption. Get the balance right in any worship space, and the first seven elements will be supported almost 100% (room shape does have a deciding factor in restraining the end results.) Get this balance wrong, and the church will find that their worship space will be restricted in what it can do. This often leads to a worship space, on average, being underused, limited 2 to 5 hours per week and the rest of the time, the space remains empty. Experience has taught us that when these elements are properly balanced, a worship space can be used 10 to 20+ hours per week, depending on the denomination or type of church.

In determining how a church should sound, the only time you can properly test a worship space is when it is empty. As an empty space, we have learned that a good-sounding room must have a flat frequency response from 80 to 8000 Hertz (+/-5dB), and the signal-to-noise ratio should be 20dB for a church under 400 seating and 25dB for larger seating capacity churches. This is regardless of room volume. These two acoustical requirements can be easily corrected in the majority of existing churches. There is an exception in churches with ceilings less than 20 Feet of average height. For these spaces, it is possible to get approximately 15dB of signal to noise from the common 6 to 9dB most rooms with low ceilings have. At this level, it does pass for speech but is short on music.

In our research, we discovered that if the worship space has these two basic elements in balance, the length of the reverberation doesn't matter. Here is why.

If you make a recording in a studio of a dry mix with no room effects added, when people add reverberation to the recording, whether it be vocal, choral, instrumental and pipe organ recording, the amount of reverberation added is never more than 1.2 to 1.5 seconds, that is all you need, even for a concert hall or cathedral organ sound recording. Yet, in some churches, they demand reverberation times to be 1.8 seconds or longer. The demand for this is because the signal-to-noise ratios of many of these large churches are often less than 12dB. Of the cathedrals I have tested, the signal-to-noise ratio from 80 to 8000 Hertz has all been less than 9dB in all of them. This, in part, is because the frequency responses are often +/-10-15dB.

In these churches, the longer reverberation becomes more about experimenting and exploiting a sound effect rather than being concerned about hearing speech and good congregational singing. In a lot of churches and cathedrals with excessive reverberation, they are forced to limit the kinds of music and performances that they can include in the worship. Instead, they boast about how great their church sounds to perform specific compositions of classical music. What is often overlooked is that the great composers of the past, often wrote music specifically for worship spaces that sounded bad for speech and congregational singing. They were simply doing their best to create music for spaces that should have been fixed or destroyed and rebuilt properly. In a way, they were saying that if a church isn't able to be supported with tithes and offerings from the congregation and members, at least they can have concerts to raise the money to keep the doors open. The idea of churches being funded through entertainment has been happening for centuries.

The good thing is, when classical music is performed in a space with a proper signal-to-noise ratio and frequency response, those classical compositions sound better. With a sanctuary meeting the needs for Christian Worship, the details of the music the classical composers were so gifted with can be heard clearly. With excessive reverberation, a composer will often pen a string of notes together to build up the music to create a sound effect. In a bad room, you only get to hear the sound effect. In a good room, you can hear every step to create that sound effect. This exposes the true talent

many of the classical composers left behind for us to enjoy.

When the signal to noise ratio is increased in an existing cathedral to 20dB or greater, the length of the reverberation becomes secondary. This is because the dynamic range of music the pipe organ can perform increases 3 to 4 times. This is mostly because the Organist and the congregation/audience can hear the wider dynamic range of the performance of the organ. What used to limit the dynamic range of the organ was excessive bass and standing waves that masked much of the highs and upper mid frequencies.

With a reasonable room volume and having a good signal to noise ratio, and a flat frequency response from 80 to 8000 Hertz, for all music, especially for congregational singing, a reverb time between 1.4 to 1.6 seconds is all you need. At the same time, with a signal to noise ratio of 20 to 25dB, any amplified worship team, choral as well as performance music will sound excellent too.

The low signal-to-noise ratio is also what has killed a lot of choral music programs and replaced them with entertainment worship led music. The same acoustical problems that limit congregational singing also limit choral music and promote amplified music. After the dust settles, the average congregation is still not singing, and many people are standing like statues, occasionally swaying to the music and clapping hands and contribute nothing with their mouths.

If you break down the first seven elements, here are the acoustical conditions that need to be as perfect as they can be.

1. Reading of Scripture (signal to noise of 20 to 25dB, flat response from 80 to 8000 Hertz.)
2. Preaching and Sermons (signal to noise of 20 to 25dB, flat response from 80 to 8000 Hertz.)
3. Questions and Answers (signal to noise of 20 to 25dB, flat response from 80 to 8000 Hertz.)
4. Prayer (signal to noise of 20 to 25dB, flat response from 80 to 8000 Hertz.)
5. Celebration of communion (Often carried out in silence or music as background or congregation sings near the end of it.)
6. Congregational singing (signal to noise of 20 to 25dB, flat response from 80 to 8000 Hertz. Reverberation of 1.3 seconds or longer.)
7. Offerings (Often carried out in silence or music as background or congregation sings near the end of it.)

As you can see, the elements of the room performance don't change. Every part of the main portions of worship require the same acoustical elements. We know this from studying over 1000 sanctuaries from both independent and denominational churches. These are also the same elements needed for the best forms of hearing and singing. These are all of the essentials the human body requires at all ages. This includes those who have limited hearing abilities. Even then, the better the room, the easier it is for hearing aids to do their job for people who benefit from them.

This learning is also from the hundreds of existing churches we have fixed and have been brought up to these levels of room performance.

When the sound system was invented and then introduced into churches, it was hailed as a "magical system". People who were in the business of selling and installing church sound systems, were made promises of the sound system performance as it there were super natural powers at work that could compensate for whatever acoustical conditions were in any given church. Architects were told that they no longer had to include any acoustical elements. They were told that room shapes and height don't matter anymore. Architects were free to design any shape as a worship space with whatever superstitions or new age spiritualism they wanted and get the church members to focus on, as such, becoming a distraction from preaching the Gospel. As a result, any acoustical knowledge that any Architect knew of, often in secret, was lost within a generation.

The church sound system was supposed to be a cure-all. With the rapid decline and absences of any acoustical support for the sanctuary performance of worship spaces, and the performance of the sound system consistently failing to deliver on the promise they were supposed to bring, within 2 generations, it helped to accelerate and push church leaders to turn to marketing-type programs to draw people into churches. Poor church sound has helped usher in the seeker-sensitive

programs, the prosperity gospel, the word of faith movement and the new apostolic reformation churches. This approach with secular style worship works because the acoustics of many churches are no better than most secular entertainment facilities. When a worship space cannot support proper congregational singing, the least they can do is entertain those who still come.

All of this thinking and experience has become so chaotic that many churches have become satisfied with worshiping in compromised worship spaces. There is now a generation of people who worship in converted commercial buildings, never knowing what real congregational singing is really like, because of the low flat ceiling these spaces have. The invention of the sound system and the false promise it was supposed to deliver, is a contributing factor in fracturing the Christian church community.

You could say that because of poor acoustical practices and the failure of the sound system to solve all of the sound problems, churches have been in this messy plague for years. Many churches have replaced teaching and preaching of the Gospel, with feel-good messages, feeding the sinful nature of elevating self as a man-centered message for those with itchy ears, which includes most people who don't know the Christ, Jesus.

2 Timothy 4:3-4 "For the time will come when they will not tolerate sound doctrine; but wanting to have their ears tickled, they will accumulate for themselves teachers in accordance with their own desires, and they will turn their ears away from the truth and will turn aside to myths."

So what has this to do with carpet on the floors? Nothing, everything. Acoustics affects every part of worship, whether you recognize it or not. The other fact is, most churches can't afford acoustical panels on the walls and ceilings that have the same acoustical performance as carpet and padded seating.

Carpet on the floor and padded seating is the least expensive way to have the first part of having good acoustics, by taking care of the high frequencies.

Sure, carpeting does have to be replaced every 25 to 35 years and padded seating can last as long. However, sound absorbers also have a limited lifetime, and eventually, they will have to be replaced as well, at a much higher cost.

In place of carpet, most churches will have a hard surface floor covering. Most coverings cost more than carpet with the promise of lasting many years longer- which is all true. However, when you compare cleaning and maintenance costs, the carpeted floor and padded seating require less cost. Carpets can be vacuumed once a week with typical mid-week activities for most churches, while hard-surfaced worship spaces need to be swept more often after mid-week activities. Churches in large cities will have visible dust on the floors within several days, which is another reason for frequent sweeping. Most church carpets need steam cleaning every two or three years, while hard surfaces must be treated annually with a protective coating.

There is another myth that is going around, and many people who have already removed carpets[2] from their homes have learned the hard way. For people who have allergies, carpet is safer because it traps and holds allergy-carrying dust when the carpet is vacuumed on a weekly schedule. Whereas dry sweeping kicks up the dust, causing allergies for those who are sensitive to air-borne allergens. In a rush to remove carpets, people have found having normal conversations at home and in restaurants have become so bad that many restaurants and homeowners have put down higher costing area rugs to quiet the room down just to have normal conversations. In a way, in spite of the pursuit for good health, the ability to have a conversation without yelling, even at home, becomes an issue strong enough to put carpeting back in again. While area rugs cost more than wall-to-wall broadloom, adding absorbing panels that are allergy resistant costs ten times more.

Sound affects us in many ways, both consciously and subconsciously. Here is an observation. People who don't have decent stereo systems at home tend to buy high-quality and more expensive headsets, whereas people who do have a decent home stereo system tend to buy the cheapest headsets around. People will always spend extra for better sound when they can afford it.

2 Carpet, Asthma and Allergies – Myth or Reality, International E-Journal of Flooring Sciences, Mitchell W. Sauerhoff, May 19, 2008

In the pursuit of quality church sound, carpets play a key role in making good church acoustics affordable. Unfortunately, many churches do not realize how important carpeted floors and padded seating is. Often, if church members notice a flutter, an echo, or the reverberation is too long, instead of trying to understand the acoustical anomaly, they just add brute force absorption to walls with a "looks about right" level of wishful science, without fully understanding the consequences of cause and effect.

Figure 1 Graph 1 Frequency response with carpeted floor and padded seating

The following graphs are two examples of what happens when there is too much absorption in a worship space. In both graphs, from the average lows to the average highs, there is a 15 to 20dB difference. Graph 1 is typical of carpet and padded seating. Graph 2 is typical when a church has added more absorption.

For graph 3, the frequency response is +/- 4dB from 80 to 8000 Hertz. This is how a worship space should look like after adding the proper kind of diffusion system.

For all things church related, graph 3 is ideal for everything about worship. There is no function between worship, secondary, and event uses of the worship space where the sound would become a problem or limit the events. If anything, a room like this becomes a calling card. There have been people who have said that a worship space that sounds good is much more attractive looking. While at the same time, in churches that have poor acoustics, no matter how much the sanctuary is adorned with art and architecture, it will never look good enough.

In our research, we have discovered that there is a ratio of absorption versus hard surfaces needed in a worship

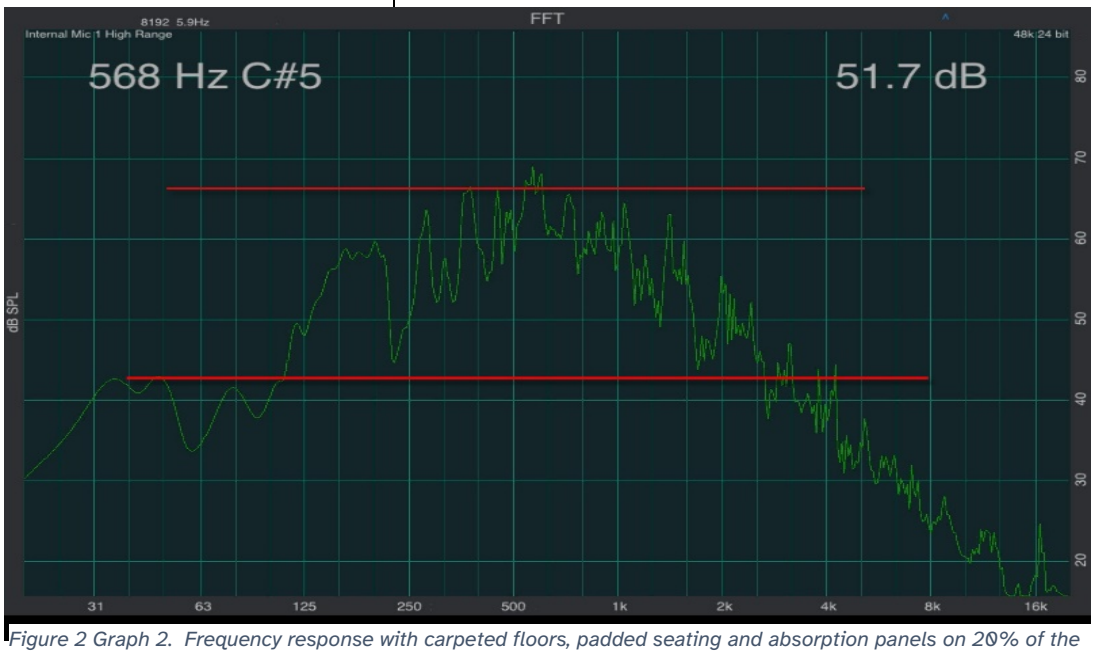

Figure 2 Graph 2. Frequency response with carpeted floors, padded seating and absorption panels on 20% of the walls.

space. This is a number that includes walls, the floor and all of the ceiling. As a single number, a worship space required 28% of the total surface area covered in absorption to avoid any acoustical issues that can get in the way of preaching the Gospel.

To break it down further the 28% quantity is broken down into two parts. 17% of the absorption is generally the carpeted floor and 11% being the padded seating. Seating usually covers 50% of the floor space in most churches. When there is no carpet on the floor, then the walls and ceiling need to be covered in absorptive panels. The thickness of the panel doesn't matter. If anything, the thicker the panel, the more likely you are going to add too much absorption. Don't think for a moment that if you have thick panels, you can use less of them. It doesn't work that way.

In churches with carpeted floors and hard seating, and no absorption on the walls to make up the difference, the room begins to sound better when the seating capacity reaches 50%. The sound continues to improve as the room becomes fuller, which is no different than a church with padded seating. However, for church events such a funeral, weddings and other non-worship gatherings, the worship space will not perform adequately. Simply adding padding on the seats of wooden pews can make a huge improvement. If these paddings are going to be permanent, you should reduce the height of the pew by half the width of the padding. i.e. if you add 2 inches of padding, cut the pews down 1 inch.

Figure 1 Frequency response with carpeted floors, padded seating, and tube radiator diffusers.

As mentioned at the beginning with the short answer, a worship space also needs diffusion. That diffusion can be anything that scatters the sound in many directions. One form of diffusion is the most efficient in the world. For that reason, you need to cover only 15 to 20% of the total wall space of the whole sanctuary. For all other forms of diffusion, you may have to cover up to 50% of the available wall space to get the desired signal-to-noise ratio and frequency response.

The highly efficient tube radiator system comes from humble beginnings. The first recorded use of them in history was in Solomon's Temple. In Solomon's Temple, tube radiators were described in a more organic term as carvings of palm trees. It is believed that these carvings, combined with the veil on the temple sanctuary wall in front of the Holy of Holies, are what allowed people to understand each other in a room surfaced in nothing else but gold. In the books of Kings and Chronicles in the Bible, many functions happened in the sanctuary or Holy Place where good sound quality would have been an absolute necessity. These functions included the reading of scriptures, teaching, praying, singing and music. These are all of the same elements included in Christian worship from the book of Acts to today's modern styles of worship. It has only been in recent times where we have begun to understand the connection to Solomon's Temple and Christian worship.

The reason the tube radiators are so important is that they control the balance of two main elements in church acoustics. The first is in smoothing out the frequency response of the room by absorbing bass. Bass and mid-range frequency absorption is achieved by using a well-

known principle known as phase cancellation. By randomizing reflections off flat surfaces in a specific pattern, you can cancel bass energy by interrupting the reflections off the surfaces of curved half-round tubes or palm trees. This cancelling effect also stops standing waves and bass sounds from building up in corners.

In one scripture verse from 1 Kings, 6:29, it also says that the carvings were done on all of the walls, within and without. These carvings were not limited to the Holy of Holies, it was to be added to all of the ways of the Holy Place or Sanctuary and on all of the doors. What is being described is an acoustical system. All of the walls need treatment. This is not an option. In our research, not only is this all true, but we have discovered how to use different sizes, different spacing's and different groupings to make the best corrections possible to any design errors of existing worship spaces.

The second critical function that diffusion does is that it also part is of the formula in creating the highest signal to noise ratio rate. This is done by scattering all frequencies, both high and low and making the sound to take a longer journey around the room before it returns to the origin of where the sound was made. Since sound decays at the rate of 6dB per doubling of distance outdoors, this rate of decay can be reduced to 1dB indoors because of standing waves and stored energy coming out of all room corners regardless of the corner angles. By forcing the sound to take a longer journey around the room and by absorbing mid-bass and bass sounds through phase cancellation, the reflected sound energy in the 0 to -15dB ranges, which is all noise, is properly managed to give the best experience for hearing speech and for congregational singing.

All other diffusion schemes or systems are far less efficient. They are good at scattering, and their control of bass energy is limited. That is why you need so much diffusion with less efficient diffusers. In controlling bass sounds, at best, all other diffusion products can only control up to -15dB in limited frequency ranges. Tube radiators can be laid out to control a broader range of frequencies up to -40dB. This form of managing sound is no different than taking the equalizer on a sound system and cutting 18dB of any frequencies that are always feeding back. The difference is that the frequencies that are feeding back all the time are also the same frequencies that are getting in the way to limit congregational singing. Fix the room, and you improve the quality of worship at every level. Upgrade the sound system, and all you have done is make the church more appealing as an entertainment facility, while displacing Christian believers with people who like the false luke warm sugar-coated Christian lifestyle that is becoming more popular these days.

Today, there are thousands of Christian believers that crave fundamental teaching of the gospel. For many of them, they are finding short-term solutions in home churches, micro churches, cell groups, as well as getting solid Bible teaching from hard to find trusted Gospel websites.

This knowledge or the idea that Solomon's Temple offers a solution for modern churches is recent. Over the years, there have been many churches that have come so close to the ideal worship space, and in every example, you could say that they didn't finish what they had started because they didn't understand the Bible's teaching in these things. Instead, the church community on mass has left the design of their worship spaces to the secular community, who often masked pagan ideas, wrapped in superstitions, a splash of new age thinking, with a dash of poorly paraphrased Bible verses of how a worship space should be designed.

Church sound cannot and never will fix the problems in the church community. The kind of Church sound described in the Bible that God intended for us to preach the message of Jesus Christ in, does make the Gospel more accessible to everyone. Church sound then becomes part of what can be used to fulfill the great commission. Church sound, according to the Bible, makes the sanctuary and sound system together, an important tool in preaching the Gospel.

Does carpeting the floor of a church matter? To answer that, you need to understand that to have proper church acoustics, the acoustical system you choose will determine how your church will look. Carpeted floors, padded seating, and diffusers are all part of an acoustical system. With no carpets, then you are adding panels and diffusers to the walls to get the same level of performance. You have to decide which acoustical plan you are going to use and that will decide the aesthetics your church will have. Carpet with diffusers works best. Sadly, most churches are making no effort in fixing the

sanctuary, but there is always more money to waste on sound equipment that consistently fails to deliver.

Another issue that should be pointed out for churches without carpets. Regardless of the wall treatments you apply to make to the room so it will perform well, when attendance is more that 50% of the seating, the empty room performance will always have early reflections of the higher frequencies bouncing off of the wall. If you have movable seating, as you make the floor more open, hearing across the room starts to become difficult when trying to hear another person 20 to 30 feet away. Fixed pew seating with padding helps.

If your church is undecided about carpeting the floors, consider this. Go back to 1 Kings 6:29 "And he carved all the walls of the house round about with carved figures of cherubim's and palm trees and open flowers, within and without." When Solomon's Temple was built, do you think that anyone objected to the carvings of the palm trees? As of the time of this article, I have not been able to find any scripture verses that points to palm trees as having any spiritual significance at the time the temple was being built. A palm offers nothing spiritually in Judeo-Christian teachings that is founded on scriptures.

The cherub or cherubim (plural for cherub) were winged creatures often described in rolls of protection as in the angel who guarded to the entrance to the Garden of Eden. Genesis 3:24 "So he drove out the man; and he placed at the east of the garden of Eden Cherubim's, and a flaming sword which turned every way, to keep them away from the tree of life."

Only flower shapes were also added to the walls. The only flower mentioned before the temple was built was the Almond flower. The flower was used in the lampstands as detailed in Exodus 25 and 37. In these descriptions, it would seem that the shape of almond blossom forms an ideal bowl to contain the oil for the temple lamps. The only other mention of flowers was about the almond flowers that bloomed on Aaron's rod. The rod was used to quiet the people's murmurings, to calm the children of Israel. Beyond this, there is no other description of flowers until we get to Solomon's Temple. The scripture leaves no clue as to why or what type of open flowers were added to the walls and doors. The only scripture references are of almond flowers.

When it comes to the Palm tree carvings, it seems to shows up out of nowhere. You can't build with it. It doesn't burn, and when you chop it down, it starts to turn into powder. The only thing that a palm tree provides is shade and food, but anything about that in the Bible is mentioned long after the temple was built. The only reason for the Palm tree carvings to be placed on the walls, was from the design King David gave to his son, Solomon, with the understanding that the design came from God, who helped to guide his hands. 1 Chronicles 28:19, "All this," said David (to his son Solomon,) "the LORD made me understand in writing by His hand upon me, all the details of this pattern." God decided what would be carved on the walls of the temple, not man. Why was so important for God to step in?

Without the carvings on the walls and the veil, the temple would have been unusable in every way. In the Holy of Holies, the only requirement for that space when it came to acoustics was the need to be able to hear spoken words coming from the Ark of the Covenant as what had happened to Moses in Numbers 7:29 "Now when Moses entered the tent of meeting to speak with Him, he heard the voice speaking to him from above the atoning cover that was on the ark of the testimony, from between the two cherubim; so He spoke to him." One could say that this was a spiritual voice or telepathic voice, but if that was true, how did Moses know where the voice was coming from if it wasn't audible. This detail that the voice came from between the two cherubim is too specific to be anything but an audible voice. Likewise, this ability to hear at that level would have been required in the Holy of Holies. After all, wasn't the reason a priest entered the Holy of Holies once a year was to hear a message from God? With the carvings on the walls and the two Cherubs that stood 2/3rds the height of the room, it was possible to hear clear speech from the middle of the room to the outside wall. Without those two elements, the Holy of Holies would have had a reverberation time so long that hearing speech would have been impossible.

The details that have been persevered in the Bible are too specific to be just ornamental. Which leads to the question, why are these details in the Bible, seeing that the written Scriptures as we know them were first properly documented while the Israelites were slaves in Babylon? The earliest recording of written scriptures

were started years after Solomon's Temple was destroyed. When you start adding up all of the evidence in scriptures and apply our modern knowledge about sound and acoustics, it clearly points to the best design for a worship space for Christian worship.

As mentioned in the introduction, making a worship space to perform acoustically to meet the standard as outlined in the Bible with carpeted floors and diffusers is 57% cheaper than not installing carpet. Furthermore, for a church that does meet the Biblical standard for acoustics, the cost of a high performance sound system is often 30 to 60% cheaper as there is less hardware needed when compared to worship spaces that don't have the right frequency response and signal to noise ratio.

What is more important than deciding to have carpet on the floor of a church or not is, are you prepared to do what it takes to fulfill the great commission in every way possible by making your house of worship as good as it can be? In the end, you have to decide how important is the preaching of the Gospel and if following God's plan in church design, acoustics, and sound is an act of obedience to God. Carpets on the floor of a Church with padded seating is good. Finishing the acoustics plan is the next step. Nothing changes people more than the clearest Gospel message possible. The rest is up to those standing in front of church congregations, preaching the message, testifying Christ, through the Holy Spirit. Amen.

By Joseph De Buglio – Acoustician