The House God Designed or Solomon's Temple

Joh 1:1-3 In the beginning was the Word, and the Word was with God, and the Word was God. He was in the beginning with God. All things came into being through Him, and apart from Him not even one thing came into being that has come into being.

Jesus is declared as part of the Godhead and has always existed.

All things came into being through Jesus including creation.

Mat 5:17 Think not that I am come to destroy the law, or the prophets: I am not come to destroy, but to fulfil.

Jesus had to say this.
Since all things came through Him, then He could not go against the laws that He and His Father gave us.
God cannot cancel God.

All things were created through Jesus, including the design of the Ark of the Covenant and Solomon's Temple.

David wanted to build a building to house the Ark of the Covenant and told the prophet Nathan about it.
God told Nathan to tell David that he will not build the temple, but his son would.
David accepted what God told him.

Near the end of David's life and when Solomon's was old enough to understand, David said to Solomon - 1Ch 28:19 "All this," said David, "the LORD made me understand in writing by His hand upon me, all the details of this pattern."

This is the only building in the Bible where God touched a person to accomplish a task.

This building was so important to God and Jesus that He moved David's hand to design all of the elements and details. These complex components account for all aspects of worship and teaching that carries forward to modern churches.

It is understood that King David put Solomon on the throne about 4 years before he died.

King Solomon started to build the temple in the fourth year of his reign over all of Israel and Judah.

It is not certain how old Solomon was when he became king or when he started to build the temple. This suggests that Solomon was on the throne for 8 years before starting the temple and 4 years after his father died.

Construction of Solomon's Temple Begins

The temple took seven years to build.

Dimensions 1Ki 6:2 And the house which king Solomon built for the LORD, the length thereof was threescore cubits, and the breadth thereof twenty cubits, and the height thereof thirty cubits.

Additional dimension details

1Ki 6:5-6 And against the wall of the house he built chambers round about, against the walls of the house round about, both of the temple and of the oracle: and he made chambers round about: The nethermost chamber was five cubits broad, and the middle was six cubits broad, and the third was seven cubits broad:

for without in the wall of the house he made narrowed rests round about, that the beams should not be fastened in the walls of the house.

This method of construction with the beams of each floor on a shelf offer some protection for earthquakes

Building a church like this today would be less expensive than how most buildings of this size or larger are built.

History records two earthquakes in the area of Jerusalem before the temple was destroyed.
759BC magnitude 8.2 and in 751-740BC
These two earthquakes toppled many surrounding buildings but not the temple.

The overall dimensions would be 105 feet X 60 feet wide x 46.5 feet high

First floor of storage was 1,804.5 sq. feet
7.5 feet wide

Second floor storage was 2,155 sq. feet
9 feet wide

Third floor storage was 2,497 sq. feet
10.5 feet wide

Total Storage Area 6,456 sq. feet

Storage for food, oil, tools, cooking, cloth, clothing, musical instruments, treasury, Holy Scriptures.

Space for Teaching, cooking, sleeping and living quarters for those who were tasked with cleaning, cooking and maintaining the lamps.

One of the largest complaints heard from most churches is lack of storage, and classroom space. From Solomon's Temple, with the 5 to 1 ratio for supporting area to the sanctuary, we get an economical way to build a complete church that includes all of the storage, classrooms, offices, prayer rooms, and fellowship hall a modern church needs.

With the thick walls and the surrounding chambers, it would have kept the temperature consistent day and night.

This would suggest that the base of the temple wall was 4 cubits or 6 feet wide. The upper wall would have 18 inches wide. The roof could have been 18 inches thick.

It is common to see walls 18 inches thick to go 45 feet high to avoid adding the high cost of steel and the complexities that comes with using steel.

An added bonus is the extra soundproofing in the worship space, in the Holy of Holies and in the chambers. Much of the temple design is about removing distractions.

Length 90 feet
Cubic being about 18 inches and
3 score is 3 x 20 cubits or 3 x 30 feet.

Width 20 cubits or 30 feet.

Height 30 cubits or 45 feet

Holy of Holies 20 x 20 x 20 cubits
or 30 x 30 x 30 feet
House of the Ark of the Covenant

The Holy of Holies area is 900 Sq. feet

The Holy of Holies was of stone with Gold covered Fir Wood on the floor, Gold covered cedar from Lebanon on the walls, and the ceiling was of beams and planks of cedar. There were also carvings of Cherubims, open flowers, and palm trees on all of the walls.

Holy of Holies contained the Ark of the Covenant, the two Cherubs with wings that went end to end touching the walls.

Moses went into the Tabernacle (before it was called that.) and heard God speaking to him from the mercy seat on top of the Ark of the Covenant.
Num 7:89 "Now when Moses went into the tent of meeting to speak with Him, he heard the voice speaking to him from above the mercy seat that was on the ark of the testimony, from between the two cherubim, so he spoke to him."
Moses heard an audible voice. He did not hear a telepathic voice in his head or as a vision as he could tell than the voice he heard came from the mercy seat.

This event established the need to hear clear speech in the holy of holies.

Without some sort of acoustic treatment in the Holy of Holies, there would have been no way to understand any spoken words from the Ark of the Covenant at 10 to 12 feet, which was the closest safe distance the priest would have been able to stand when entering the room once every year.

The items that most likely offered acoustical help would have been the two cherub statues with their massive open wings and the carvings on the walls using diffusion as the principal method of managing sound in a highly reflective room.

In the Holy of Holies, the only concern was for speech as music would never be performed in this room.

The Holy Place or Sanctuary
40 x 20 x 30 cubits
or 60L x 30W x 45H feet
The main place of worship where the Levite, who conducted the rituals and ceremonies for atonement, repentance, and forgiveness of sins.

Total Sanctuary area 1,800 sq. feet

When you add all of the spaces together there is 9,156 sq. feet. You need 7,356 sq. feet to support an 1800 sq. foot sanctuary or a worship space of storage and support area ratio of 5 to 1.

Comfortable seating as a church for 150 people

The dimensions of 60 x 30 x 45 feet
Has a volume of 8,100 cubic feet
and this shape offers many benefits

Best shape for

- Hearing speech
- For amplified speech
- For preaching with the least amount of effort
- Congregational singing
- For amplified music
- Attention span and learning
- Site lines for facial gestures and lip reading

This can only be true if there is some kind of acoustic system that brings a rectangle space to the minimum perform as needed for worshiping God and as Christians.

Some of the best sounding concert and recital halls have a 2 to 1 length to width ratio. How did they figure it out and churches haven't?

Building Materials

Summary of Solomon's Temple Benefits

- The overall design was to create the ultimate learning and worship conditions with the least amount of distractions for people to spend time with God as a community in the past, present, and future.
- These dimension ratio's with wall carvings create the best space for teaching, learning, hearing, and preaching of the gospel.
- These dimensions with wall carvings also create the ideal space for congregational or communal singing.
- These dimensions with wall carvings are ideal for professional quality performances for music and speech.
- These dimensions include additional space needed to support the sanctuary in storage, offices, and other rooms.
- These dimensions of the building included economical heating and cooling, soundproofing, and safety.
- Gold detailed the need for lighting, sanitation, keeping things clean for everyone's health and low maintenance.
- The method of construction was about cost savings, structural stability, and ease of construction.
- Safety measures were used to prevent deaths by keeping onsite noise down.
- The use of olive oil lamps was a statement of being environmentally responsible.

<u>These above things are lacking in todays modern and existing churches.</u>

These are the things that are included in most modern buildings.

Linen and cloth

For the Veil which was
45H x 30W feet and
4 to 6 inches thick

One possible source of the materials used for the veil could have been from the linen that was for the court yard which was made up of 450L x 8W feet. A total of 3600 sq. feet. This could make up 3 layers of the veil.

The finished veil was believed to be 4 inches thick or thicker. The veil provided enough absorptions to hear speech and the type of music performed in the temple 3500 years ago.

If you were to divide the thickness of the veil into two equal parts, it would provide the right amount of absorption for modern church worship. That would be similar to carpeted floors, and padded seating.

Quarry Stone

Stones were cut, shaped, assembled at the quarry, then shipped to the temple site.

1Ki 6:7 And the house, when it was in building, was built of stone made ready before it was brought thither: so that there was neither hammer nor axe nor any tool of iron heard in the house, while it was in building.

This was a prefabricated structure assembled like Lego Block

The idea of not making sound with tools on the site is perhaps the first time safety was part of the construction. With tools making noise, it would make communication difficult for everyone to hear.

Could this idea be also to prevent any on site deaths to avoid spilling blood on the site of the temple? Could this have been a declaration of a Holy Place or Holy Ground?

1Ki 6:4 And for the house he made windows of narrow lights.

These windows were above the chamber levels or about 30 to 35 feet high

The high windows would have provided convection cooling without creating too many wind currents to keep the oil lamps burning without creating soot.

With the windows being so high, this made the two sacred rooms a place where no outside distraction could interfere with whatever was happening.

Wood
Cedar, Fir, and olive

The wood on the floor and walls would have been cut into planks between about 6 inches thick.

Cedar was used on the walls

Cedar is a soft, light weight wood which makes it idea for lining tall 45 high interior walls. Easy to carve. In ancient times, cedar wood was especially desirable for its aromatic qualities as well as its resistance to decay and bugs.

Fir was used on the floors

Fir wood is medium-weight and harder than cedar. It is low in shrinkage and stable. It is strong and elastic. Resistant against fungal and insect infestation. Good natural durability.

Olive Wood

Olive wood was for the two Cherubs in the Holy of Holies and all of the doors in the temple.

Cherubs

The two Cherubs were 15 feet tall and with wing spans of 15 feet. The wing tips touched the inside walls from end to end.

The two cherubs were covered in gold after they were installed in the Holy of Holies

Doors

The doors had carvings of palm trees, open flowers and cherubs on both side and then covered in gold leaf.
1 King 6:32, 35.

Olive wood, in this case being heavy, durable, and dense, is ideally suited for Gold to adhere to in covering both sides of the doors.
The hinges were made of Gold. This does seem out of place, considering the weight of the doors, but it seems that olive oil is a great lubricant for Gold.

1Ki 6:29 And he carved all the walls of the house round about with carved figures of cherubims and palm trees and open flowers, within and without.

Cherubims may refer to guardians of the faith.
Open flowers may refer to new life.
Palm tree has not spiritual significance at the time the temple was built.

Carvings of Cherubims, Open Flowers and Palm Trees then covered in gold.

Cedar covered in gold is very stable to support the gold over time.

These carving were completed after the installation of the two cherubs in the Holy of Holies.

These carvings were applied to all of the walls in the Holy of Holies and the Holy Place or sanctuary. They were also carved on all of the doors on both sides.

Why are there Palm Trees in Solomon's Temple?

It has been suggested that the shape of the palm tree has tremendous acoustical properties that manages the acoustics of the temple along with the Veil. Without these items, the reverberation would have been too long to understand speech beyond 5 feet.

To test the idea, get enough half-round tubes to line this inside of a 300 seat rectangle shape church that already has carpeted floors and padded seating in a room that was 45W x 80L x 30H feet.

Have enough 12 foot long tubes spaced 5-15 inches apart, leaned against all of the walls.

Since the wood walls in Solomon's Temple are about 6 inches thick, the deepest carving without compromising the structure of the wood planks, the depth of the half-round shape can only be 4 inches or an 8 inch half round.

Document the results with and without the tubes
With and without any sound system being used.

The palm tree shape, combined with the veil would have allowed for both speech and music to be performed at the highest level.

The ideal acoustic signature of a church is a room that sounds like it is 50% occupied when empty with a flat frequency response from 50 to 6,000 Hertz.

Church With **NO** Diffusers on the walls

A way to define a church without an acoustical management system for the worship space is as an incomplete or a broken worship space.

Many deadspot and hotspots

The sound system could not eliminate the hotspots and deadspots.

Speech clarity of two people talking was impossible beyond 20 feet

The sound system offered 32 feet of distance for clear speech.

Congregational singing was never good. It was rare to get more than 30% of the congregation singing on any Sunday.

The sound system could do nothing to improve congregational singing.

There were side to side and front to back standing waves and excess bass in the corners which muddies speech intelligibility beyond 20 feet.

The sound system could do nothing to improve sound beyond 32 feet

The piano and organ never sounded good and they always drowned out congregational singing.

People will feel like they are singing alone. You could not hear any of the other people around you if you were singing. You could only hear others if you stopped singing.

The signal to noise ratio of the room was 12dB

The sound system can not change the signal to noise ratio of any room.

People cleared out of the sanctuary with 10 minutes after worship. Conversations in the foyer and parking lot were longer after the service.

The room reverberation interfered with speech at all times regardless if it was amplified or not.

The frequency response of the room had too much energy below 1000 Hertz and it was worse in the 300 to 800 Hertz range.

Any sound system in such a room can do little to improve anything significantly other than making everything louder.
Speech does improve by 6% compared to the sound system being off, but not enough for the average person hearing enough to meet minimum speech intelligibility requirements.

To get that slight sound system improvement, everyone had to have a microphone within 8 inches of their mouth at all times or they were not heard without sound system feedback.

Church With Diffusers on the walls

Speech clarity of two people talking could be done in the full length of the room.

The sound system was able to raise the volume of clear speech to every seat in the church.

No deadspot or hotspots

Congregational singing was the best experience ever over the two Sundays tested. More than 70% of the congregation were singing on the second Sunday.

The congregation was able to drown out the sound system when motivated with a familiar hymn.

Could not find any standing waves or bass building in the room corners.

The diffusers acted like high powered bass traps which allow the main speaker system and subs to perform 15dB louder without distortion or complaint

The piano and organ sounded better and balanced during congregational singing.

The room sounded more musical where you could hear all of the people around you and hear notes of the organ and piano clearly at the same time.

The Bass sounds in both the organ and speaker system could perform an octave lower which were sounds that were not audible before.

The electronic organ had more bass and could play louder without complaints.

The signal to noise ratio of the room increased to 21dB or a 300% improvement.

The sound system was able to do and perform everything it is supposed to do without any feedback issues. You could now amplify a persons voice from 4 feet instead of 8 inches.

An increase of 8 to 12% of people remember what the message was about the week before.

People were more relaxed and stayed in the sanctuary longer for conversation after worship.

The room reverberation complimented and helped with speech regardless if it was amplified or not.

The frequency response of the room changed to being flat

By changing the spacing and grouping of some of the diffusers, the room was passively equalized to allow the sound system to have maximum performance.

Summary Benefits

Since the first experiments, included here are the long term benefits from over 400 churches who are following the Bible's method of sound management.

Higher weekly attendance of 5 to 16%

This type of acoustical system often pays for itself within 8 months or less, even with higher costing custom made diffusers.

Higher weekly tithes and offering

More people willing to assist in other ministries.

Many of these churches have brought back their choirs

Diffusers like this are a permanent solution that is maintenance free, and will last the lifetime of the church building.

Smaller sound systems are able to provide higher quality and bigger sound when compared to sound systems at any price in an untreated room.

People don't mind longer sermons. The average additional time most ministers preach from the pulpit is 11 minutes.

This kind of acoustical fix has been attributed to keeping some churches from closing and being sold in large cities.

Specifically, at 3 churches where the weekly attendance was down to less than 40%, these congregations were expecting their churches to close within 5 years if they did not do something. These churches decided to add value to their property by fixing the acoustics. The churches were transformed into such good sounding sanctuaries that the community started using the worship space for mid week local choral performances and community hymn services. Twenty years later and these churches have attendances over 60% every week and they are still growing.

What if the walls were covered in pillars?
Pillars as decorations can be horizontal or vertical. Palm trees will always be vertical. As it turns out, if you place half round tubes on the walls horizontally, they loose about 90% of their performance ability. The carvings of palm trees was not just about diffusion, but how to use it as well.

Metal
Gold, Bronze, Brass and Silver

Bronze or Brass

Two bronze Pillars at the entrance to the temple.
1 kings 7:15

The two pillars were 27 feet tall with a circumference of 18 feet or a diameter of 6 feet.

If you were to standing in the right place between the two pillars, it would have be easy to broadcast your voice to over 2000 people. For the annual day of atonement, there would have been 1200 people present. This was a basic form of amplification but effective, and it was included in the design of a building.

Gold

Walls and floors are covered in gold. Most likely all in gold leaf. Thicker on the floor than the walls.

There were 10 gold tables for the shewbread

Gold Altar

Gold covered Cherubs over olive wood which is very dense and stable for the Holy of Holies.

Used for lighting as lamp stand holders

There were 10 lamp stands with 7 lamps on each holder.
Total of 70 lamps.

Five Of the Lampstands per side were close to the outside walls along the length of the room.

Each olive oil lamp could put out around 70 to 100 lumen. Therefore with 70 lamps, you could get from 4,900 to 7000 lumen. Add gold flower reflectors and you can increase the illumination 35 to 50%. With the lamp stands close to the gold covered walls, the light is amplified more.

Olive oil does not produce soot if pure. Exodus 27:20 as instructed by God. Burning olive oil is environmentally friendly.

From 1830's to 1920's many churches used natural gas to light up their buildings. A poorly adjusted gas lamp will create soot. There are many older churches in large cities where you can see abandoned gas pipes poking out in remote places in sanctuaries.

It seems that candles as we know them in modern times did not appear in the middle east until after Solomon's Temple was built.
Therefore the translation of the word מְנוֹרָה could not refer to as candles but as lampstands as detailed in Exodus 27:20

Gold Floor

Gold cover the Fir wood.

As part of the temple rituals, blood was sprinkled onto the floor in many places. When in the desert, the sand would have absorbed the blood, and for any blood left visible, all you needed to do was kick sand on it. Organisms such as bacteria and sand creatures would consume the blood and sanitize the sand.

Gold is the only surface at the time of Solomon that would not permanently stain when blood is splattered on it.

The gold covered floor was easy to clean with a wet cloth the daily blood sacrifices sprinkled in the main sanctuary.

The gold was a way to keep the place sanitary to prevent illnesses.

Could this be an early reference to Baptism? The Shedding of blood was the symbol for Removing sin. The water would be to wash or carry the sins away.

Fir was used to support the weight of the lamp stands, the shewbread tables, the altar and the many times the Levite would be walking back and forth every day.

Fir is less likely to warp or cause the gold to flake off when exposed to water or humidity.

Although there is no specific reference for the footwear for the levities serving or working in the temple, they would have needed to wear something to protect the gold-covered floor. Cloth or soft leather soles would have been needed to prevent bare feed from shedding oil and sweat to get at the wood if there were any cracks in the gold covering.

The floors were covered in Gold last.
1 Kings 6:30

Gold Walls

Gold covered cedar

Gold is highly reflective which allowed for lots of light to illuminate the sanctuary down to the floor.

Any soot from the burning olive oil lamps is easy to clean with just a damp cloth.

There is no mention in the Bible of the walls being cleaned in the temple.