



SPIRIT AND STRUCTURE

A MODERN APPROACH TO CONSTRUCTING HOUSES OF WORSHIP

INTRODUCTION

Some of the most celebrated structures in history are houses of worship. From the flying buttresses of the Gothic period to medieval abbeys, from sprawling mosques to ancient temples, houses of worship have anchored and unified communities as many have made their way into history books and travel guides. While contemporary houses of worship continue the tradition of facilitating communal spiritual introspection, their uses have expanded to incorporate both secular and nonsecular functions, including religious study, prayer groups, charter and private schools, modern performances, indoor gymnasiums, multipurpose rooms, gathering spaces, and more.

The following paper looks at the unique construction considerations of modern houses of worship.

MAKING SENSE OF CONSTRUCTION MANAGEMENT AT-RISK

Due to the unique and evolving characteristics of constructing modern houses of worship, many ownership groups now opt for the Construction Management At-Risk delivery method of construction services. This delivery method, as defined by the International Risk Management Institute, sees the construction firm

assume a comprehensive role as a preconstruction consultant during the “development and design phases, but as the equivalent of a general contractor during the construction phase.”¹

During the development and design phase, also called the preconstruction phase, the construction firm offers expert advice to the ownership group on how best to execute their vision. That includes coordinating with architects and designers, applying the principles of value engineering to reduce costs, conducting constructability reviews, and scheduling/sequencing the work of trade subcontractors.

“Constructing large-scale buildings is a really complex process, and even something as foundational as interpreting floorplans for owners can be really helpful for them,” says Willis Smith Construction Vice President, Nathan Carr.

This early phase is also an opportunity for a construction management firm to counsel the owners based on previous experience and best practices. “For one thing, most houses of worship are always trying to grow their congregation,” says Carr, “so it’s important to plan for that future growth.” With a larger congregation comes a growing need for amenities, many of which go beyond the religious elements in the design. Music rooms, piano storage, equipment lifts, meeting rooms, gymnasiums, and private rooms for nursing mothers are just a few of the ancillary support spaces that are often overlooked when designing a modern house of worship. Assessing the needs of the project requires deep research and workshopping, including roundtable discussions with the congregation’s leaders, elders, management personnel, and even focus groups comprised of congregation members themselves.



Project Spotlight: Faith Presbyterian Church

This 12,000-sq-ft church included a new sanctuary, offices, and classrooms. The project was constructed with monolithic slab, masonry walls, cement plaster, wood trusses, and the Butler Genesis 360 Roof System in a custom color.

Like many modern houses of worship, the sanctuary was designed as a multi-use facility that can accommodate secular and religious functions. Notably, the project was used by Butler Manufacturing Company as part of a national advertising campaign.

One of the most salient characteristics of the At-Risk delivery method is that it puts a cap on the total project cost. The “At-Risk” designation means that the construction firm is committed to a Guaranteed Maximum Price. This method offers ownership groups a high degree of transparency when navigating the construction phase, negating any conflicts of interest, and creating a more synergistic relationship. It also lends the project a degree of flexibility.

“There are a lot of things that an ownership group just doesn’t know until the space starts to take shape,” says Carr. One example he cites is Harvest United Methodist Church. This project saw the construction of a new facility called the West Wing, which includes a new four-room nursery suite for infant and preschool-aged children to go along with a new lobby area featuring 24-foot-tall ceilings. A second story provides additional meeting space for adult Bible studies as well as a lounge area, space for music ministry rehearsals, and an office for Samaritan Counseling. The church also needed dedicated spaces for its Alcoholics Anonymous

1. Construction Management At-Risk, International Risk Management Institute, Inc., <https://www.irmi.com/term/insurance-definitions/construction-management-at-risk>

support group meetings and fully outfitted short-term living accommodations for homeless families seeking shelter through the Interfaith Hospitality Network.

With so many amenities planned for this project, there was still room and cause to add a few more. During construction, Carr and his team were conducting a tour for select members of the congregation when one of the members commented on the church's annual potluck. That seemingly innocuous comment led to an actionable modification to the plan without incurring additional costs.



"It turns out that most people just bring their slow cookers with them to these potlucks," says Carr, "so rather than have the congregation revert to their inefficient and dangerous use of extension cords, we were able to install a whole row of outlets along one wall of the church's multi-use meeting room so each person could get their own—no more tripping hazard."

Additionally, changes on this scale are easier to navigate in the At-Risk delivery method because the ownership group only has to go through a single point of contact to initiate the change. "You assume a role as a client advocate that can move quickly to make changes," says Carr, "which can be really complicated and slow if the ownership group has to contact the architect, engineer, or general contractor separately, for example."



Project Spotlight: St. Mary Magdalene Church

This project consisted of a multi-purpose room/sanctuary. This room included a 14-foot diameter chandelier, false beams, and provisions for the addition of stained-glass windows to be installed at a later date.

The project also included a warming kitchen with roll down shutters, a mechanical mezzanine, church offices, nursery, classrooms with folding partition walls, and full wrap-around porches. Notably, Willis Smith Construction's commitment to value engineering resulted in a \$59,000 savings to the ownership group.

In summary, the Construction Management At-Risk delivery method fosters an open, transparent, synergistic working relationship between the ownership group and the construction firm. For houses of worship and their ownership groups, it means they can focus on administering their spiritual and religious aims rather than tackling complex construction challenges

A FEATURE FOR EVERY FUNCTION

Typically, the most visible part of a house of worship is the sanctuary. The large room where sermons are conducted historically includes the most architecturally and structurally significant features such as vaulted ceilings, large window openings, stylized columns, and religious artwork. Additionally, commonly occurring spaces within a house of worship vary from denomination to denomination, with various versions of preparation and textual study rooms, housing for religious leaders, or ancillary storage areas for significant ritual items. Modern houses of worship, however, go well beyond these religious considerations and include many secular functions.

Today, they can include any number of functions focused on daytime, weekday usage such as childcare facilities, preschools, K-12 private schools, and secular community gathering spaces. “In cases where the house of worship has a school attached to it, you’re looking at a whole campus of buildings almost like a college or university,” says Willis Smith’s President, John LaCivita.



Project Spotlight: Peace Presbyterian Church

Willis Smith’s Peace Presbyterian Church project featured a 7,360-sq-ft addition to an existing campus in need of a larger sanctuary. This new, stand-alone building was constructed using Insulating Concrete Forms (ICF) walls that have very high insulation ratings and reduce energy consumption associated with commercial air conditioners. In addition, the pre-engineered Butler Manufacturing Company structure allowed for an expansive sanctuary free of columns.



The new sanctuary has a raised platform for services, an audio-visual booth, and a choir area. With seating capacity for 300 congregants, the main narthex gathering area also has restrooms and a coffee room. Surrounding the sanctuary structure are classrooms, offices, a nursery, an elevated sound booth, and a large baptistry.

Accessibility was bolstered by the construction of a large foyer with a drive-through porte-cochere drop-off area, while parking and drainage was augmented with paved and grassed parking areas as well as retention ponds and a lift station, respectively.

Constructing these sprawling campuses requires a broader approach, one that leans on experience in building education facilities. Things like information technology infrastructure, outdoor and indoor playgrounds, equipment lifts and loading docks, the flow of foot traffic between buildings, and gymnasiums must each incorporate their own unique considerations. “When a construction firm is figuring this stuff out from scratch, it’s a big challenge knowing how to track down vendors and subcontractors for everything from basketball hoops and playground equipment to media specialists that can put together the infrastructure for the latest IT specs,” continues LaCivita.

Returning to the large sanctuaries of houses of worship, many today are outfitted for sermons that appeal to modern expectations.

“There’s been a really big trend in the last decade or two towards sanctuaries that look more like performance spaces,” says Carr, “so what you’re seeing now are houses of worship with high-tech sound systems, stadium-style seating, projector screens, and other devices you usually see in music venues or playhouses.”

One such example from the Willis Smith portfolio is Bayside Community Church. The flagship location for this church is centered around a 73,000-square-foot addition built in Lakewood Ranch, Florida. The sanctuary accommodates 2,500 parishioners in tiered auditorium seating. Suspended above the seating is a catwalk/tension grid system that supports audio-visual and production personnel such as lighting specialists, audio engineers, and videographers. “This is arguably the most advanced set-up in the area for a house of worship,” says Carr.



Notably, the construction of this ambitious sanctuary coincided with other aforementioned amenities such as new classrooms, indoor play areas for children, and a large foyer with a café.

Returning to secular functions in the modern-day house of worship, many also serve as voting centers for local, state, and federal elections. Their centralized locations in residential areas, sizable parking lots, and vast interior spaces make them logistically suited to the task.² This often necessitates the incorporation of flexibility into a space’s features, such as retractable seating in a gymnasium, storage facilities for folding chairs and tables, and considerations of entrances and exits to promote a logical flow of voters in and out of the building. “When you think about the fact that most weekday services are held in the evening, houses of worship are obvious places for polling places,” says Carr.

PEACE AND QUIET

Though religious texts are found in the pew of every house of worship, the spoken word remains the primary vehicle for communicating their meaning. Careful consideration of acoustic properties remains a vital component of a successful house of worship.

For smaller sanctuaries, some religious leaders opt for a traditional, unamplified spoken word. In these cases, silence is golden. “This can be the most technical aspect of construction,” says Dave Sessions, CEO of Willis Smith Construction. Assessing the acoustical properties of a space requires a high degree of expertise to incorporate all the nuances of a space that can affect the way a house of worship is experienced, such as materials, the size of the space, and the shape of the sanctuary.

“It’s a very specialized knowledge that most often requires an outside acoustic engineer that can generate models of the space,” says Sessions.

2. Why Churches are Such Popular Polling Places, Jake Rossen, Mental Floss, August 25, 2022, <https://www.mentalfloss.com/posts/why-churches-are-popular-voting-places>



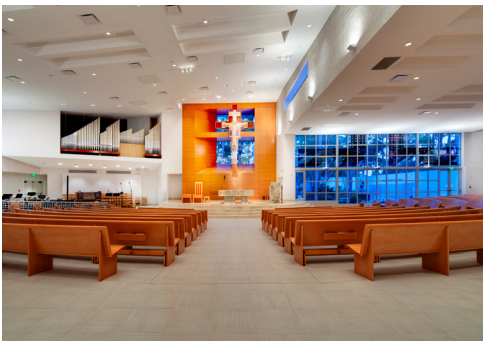
Project Spotlight: St. Thomas More Catholic Church

This project blended new construction while retaining the existing architecturally significant structures. The sanctuary was expanded to 27,000 square feet (from 17,000) and the nave now seats 1,435 parishioners. Parts of this new worship area were enclosed with floor-to-ceiling glass and stained-glass work, while the existing church organ was relocated to accommodate the new layout. A stage, stadium-style seating, pews, new flooring, new audio-visual and multimedia equipment, and acoustic/sound improvements were also added. The church's chapel was also expanded to seat 100 parishioners and includes an apse and tabernacle.

Demolition was a complex and vital part of the project. Preserving the existing sanctuary roof was important for the ownership group, since it was designed in the mid-century modern style by famous architect, Carl Abbot.

Another unique component of the project was the new bell tower. Following the same mid-century modern architecture, the 70-foot-tall tower has four bells and is located at the entrance of the building. Attached to the bell tower is a newly renovated, canopied car drop-off area, in addition to a renovated canopy walkway that connects to the new Spirit Center building.

Other notable project features include the construction of a new road for easier drop-offs, full electrical scope, new HVAC units, LED lighting, a reroof, and new security and fire alarm systems to go along with 1,450 square feet of mechanical space.



One of the challenges in ensuring a quiet sanctuary is the mitigation of reverberations when most surfaces are hard and flat. Large, vaulted ceilings can also generate latent echoes that, when compounded over long speaking passages, can muddle the acoustic experience for the audience. "That's definitely an area where an acoustic engineer will suggest solutions like baffles," says Sessions, which are textured foam pieces designed to disturb soundwaves rather than refract them. Conversely, the construction of the pulpit area is an opportunity to strategically leverage hard surfaces so that a voice is projected clearly into the far rows of the sanctuary. It's the same analog technology that has been used since antiquity, with Greek or Roman amphitheaters the most notable buildings to utilize acoustic properties.

Another challenge for ensuring a quiet interior space is the mitigation of mechanical noise. Air conditioners are a particularly intensive consideration. "Not only do you have the noise and vibration of the actual air handler, compressor, and condenser," says Sessions, "but you also have a high volume of air flow coming through the vents."

In some cases. It can call for solutions as far-reaching as incorporating sound dampening features into the seams between the building's shell. "It's a different industry, but our music recital hall project at State College of Florida actually incorporated a lot of advanced solutions for sound dampening and sound proofing," says David Otterness, Vice President at Willis Smith. "But the needs of a recital hall are similar to a house of worship in that regard," Otterness continues, "in that we used sound baffles, sound dampening in the shell of the building, and special duct and vent work for the A/C system to reduce mechanical noise and the sound of forced air."

POST-CONSTRUCTION LEGACY

For many houses of worship, facility maintenance is often done by a single, general-purpose technician, sometimes even relying on a volunteer to make minor repairs like simple drywall, plumbing, or electrical repairs. It's important for a construction firm to understand the house of worship's existing facility management system to ensure it is able to conduct as much of its own maintenance as possible.

"A lot of commercial mechanical systems are really complex," says Brett Raymaker, Vice President of Willis Smith, "so, something we've done with house of worship projects is install simpler equipment like air conditioners."

These simpler systems look more like what the average homeowner might see in their own home, with air filter slots that are clearly labeled and easily accessible, parts that are cheaper to replace, and internal features that are less expensive to repair when a professional is called in for more technical repairs.



Project Spotlight: Cornerstone Church

This expansion project included the addition of a new building that serves as a Fellowship Hall and Classroom Building. All told, the structure is 28,545 square feet under roof, consisting of a shell space for a future worship area, a kitchen, and additional classrooms. The complete build-out included eleven classrooms, an indoor playground, gathering area, and receptionist's lobby.

For larger houses of worship that cannot make do with simpler, smaller equipment, incorporating a post-construction maintenance plan into the contract is a sensible solution. With many licensed specialists either working for a construction firm or serving as a trusted subcontractor, this option has lots of upside. First, it holds a construction firm more accountable. "The last thing you want as an ownership group is to have a construction firm or contractor disappear once the job is done," says Raymaker, "so a maintenance plan keeps that line of communication open and sends the message that you trust your work was done correctly." Another benefit of a maintenance plan is that the construction firm already knows the project intimately, reducing the lead time on assessing the repair.



Equally as important as the maintenance of the physical structure upon completion is reinforcing the strong sense of community throughout the project so that an ownership group and its congregation feel connected to the space.

"One of the things we love doing with our house of worship projects is cleaning up the job site for a walkthrough with members," says Carr. "It's a great opportunity for them to form a strong, personal connection to the space, and really adds meaning to it."

In some cases, these groups are given markers with which they can write their names and messages of affirmation on roof beams, concrete slabs, or other surfaces where the marks will remain in perpetuity.

CONCLUSION

Though the construction of houses of worship has trended towards pragmatism rather than the highly ornate masterpieces of centuries past, their uses and capabilities have gone beyond the need to inspire spiritual introspection. Today, these buildings serve many functions, including education, daycare, public gathering spaces, and more. To build a successful house of worship, a construction company must be prepared to navigate key questions with an ownership group such as projected growth, amenities, acoustics, storage space, and maintenance, to name a few.

To view the portfolio of Willis Smith Construction's houses of worship projects or to contact them for a project, please visit WillisSmith.com.

ABOUT WILLIS SMITH CONSTRUCTION

Willis A. Smith Construction, Inc. is a privately held construction management firm based in Sarasota, Florida. Since 1972, we have provided expert commercial builder services in the state's Southwest region. Our full-service construction and construction management capabilities are customized to address each project's specific requirements at every stage of work, creatively overcoming barriers and always meeting deadlines. Every day, area locals and visitors likely pass a Willis A. Smith project, and we are proud of the many iconic buildings we have had the opportunity to bring to the community. The growth of the area has matched our own, and today we are the region's largest commercial construction company.