

Addressing the Challenges of Expanding and Renovating a 142-Year-Old Church

BY HORST CONSTRUCTION

The beautiful Trinity Evangelical Congregational Church in Lititz, PA, built in 1874, is a historic gem. Since that time, two additions have been made to the church to accommodate growth—one in 1936 and the second in 1970.

As the congregation grew and the church's needs continued to expand, it again became time to address some necessary improvements. When approaching a potentially complex project in an older building, identifying hidden conditions is crucial.

The relationship between Trinity EC Church and Horst Construction is not new. Back in 2010 Horst made improvements to the exterior of the building: evaluated the masonry and pre-cast stone; installed, repointed, cleaned and sealed the selected pre-cast stone; placed faux slate on the roof and pre-cast stone on the exterior; restored—cleaned, re-leaded, and repaired—the stained glass windows; and installed new insulated storm windows with proper venting.



Building Exceptional Environments



In September 2016, Horst Construction was proud to complete Phase 1 of the Trinity Evangelical Congregational Church's Master Plan. Much of the conversation for this phase involved addressing the needs of both an aging membership and new families with more diverse interests. The new elevator enables access to classrooms, the fellowship hall, sanctuary, handicap bathrooms, and other bathrooms on all three floors. Major renovations to the kitchen, fellowship hall, and narthex, as well as relocation of the existing HVAC condensers to the roof of the new addition were also included in this phase.

While there are more improvements and additional capacity to come during the next phases, we'd like to share our experiences with others who may be considering renovations to their own historic structure.

Addressing Major Changes

When approaching a potentially complex project in an older building, identifying hidden conditions is crucial. The process was more complicated than usual for Horst and its partners, since drawings for Trinity were only available for the 1970's addition, not the earlier structures.

One of the major challenges of this project was developing a strategy to accommodate current and future project needs while keeping costs under control. The original elevator expansion plan required working around the

parsonage house on the adjacent lot, which would have required significant shoring costs of approximately \$70,000. Since that house would need to be demolished for future phases of work anyway, the Horst team suggested demolishing the house as part of Phase 1. By addressing this challenge immediately the church saved \$40,000, which also helped everyone more easily envision the future addition.

Connecting the addition to the existing basement required complex and creative solutions. The 1874 basement walls were adjacent to the footprint of the new addition and could be compromised by the weight of the new structure. The Horst team had to excavate 8 feet below the bottom of the stone foundation and pour an underpin support wall. In antiquity, the church property was a brickyard, and as a result there were unsuitable soils to manage.

Another significant challenge was evaluating the structural integrity of the foundations for each of the previous additions and providing recommendations for the new plan that would provide more stability based on current technology.

The soil bearing was only 2,000 pounds per square foot, which further tested the design team; therefore, Horst had to install extra wide footers—5-7 feet wide—to spread out the load. These challenges required a specialty contractor in foundation work, as well as the efforts of a structural engineer, geotechnical engineer, and specialty engineer.

One area of expansion involved breaking through some of the masonry walls of the original 1874 structure. Since the structural requirements of that time were not nearly as stringent as those today, the team used mini-excavator equipment inside the dirt crawlspace to provide access to the wall that required stabilization. Horst also had to add underpinning to create elevator access to the fellowship hall, a problem many older churches share.

According to Roger Josephian, Project Manager on the project, “When undergoing a renovation, most churches are interested in a more updated, low maintenance kitchen. Warming kitchens are less challenging, but Trinity needed to update its commercial kitchen. As we often see, the range hood was very old, undersized, and not code compliant. We installed a new, larger hood with heat



Stegman Engineering has collaborated with Horst on a number of projects and is often called in for their geotechnical and foundation expertise. “I designed the underpinning for the old foundation, as well as the load bearing beams for the new addition.

While incredibly challenging, this type of work doesn’t intimidate me—I have a lot of experience with projects that are considered out of the ordinary.”

— Bruce Stegman, Principal, Stegman Engineering, P.C.

sensing on/off controls, heated make-up air, and a fire suppression system. Kitchens also need to be easily maintained. We installed a sheet vinyl flooring with welded seams, a great budget friendly alternative to a new tile floor that’s easy to clean. In addition, the utilities are likely maxed out and unable to support the renovation, or may not be code compliant to begin with. Often you need to add an entirely new electrical service to support the kitchen, air conditioning, and other improvements—and in this case an elevator.”

Incorporating ADA Requirements

“We also had quite a few additions regarding fire code compliance,” added Roger, “Since there was no egress from the basement to the exterior, we had to build a fire-rated stair tower, as well as an ‘area of rescue’ to accommodate a wheelchair, along with an intercom system to call for help in the event of an emergency. Originally, we called for push/pull hardware on the doors; however, we had to use latching hardware because the hallway was now an exit path in case of fire. The bathrooms are all ADA-compliant too. Previously there were no handicap bathrooms—and now there are five within the building.”



The Horst Advantage

While there are additional improvements yet to come, the team at Horst has been energized by this collaborative process. In developing a stellar team for this extremely complex project and working to reach an understanding of the church's needs, Horst was able to provide Trinity with proactive solutions that will serve their congregation for many years to come.

Participants included: Horst Construction; Beers & Hoffman Ltd.; Diehm & Son; Geo-Technology Assoc. Inc.; Baker, Ingram & Associates; Protech Mechanical; R.S. Reidenbaugh; and Stegman Engineering, P.C.

About Horst: Comprehensive Design and Construction

At Horst Construction, we are here to listen first—then build what matters to you. We work as a team to ensure your goals are achieved—beyond your expectations. With over a century of church design and construction experience, church projects are very special to Horst Construction.

We recognize that your project is an integral part of achieving God's vision for your congregation, and we support that vision by helping you cultivate plans, church designs and cost-conscious construction that will result in a new, beautiful, functional space.