

Project Title: First Baptist Church - Facade Restoration

Location: 501 W. 5th Street Winston-Salem, NC

Entry Classification: (Select One)

Restoration Category

Project Cost (US \$) \$500K - \$1M

Duration (Calendar Days): 301

Completion Date: 3/2019 - 12/2019

Work Scope (500 words max) (Attach if necessary):

This was a historic high-profile Church in Winston-Salem. The repairs were significant, and a thorough investigation/survey was very difficult to achieve due to limited access to the bell tower. The Church hired a prominent local historic preservationist to identify and develop and repair scope. The scope was developed from the ground using binoculars to identify specific repair types and locations. There were also many types of allowances which were included and would have to be tracked. The accuracy of the repair scope could not be determined until the scaffolding was in place. The scaffolding of the bell tower was a major issue as the scaffolding bearing legs could not be placed on the Church roof, so it had to span the entire front of the Church. Very large girders had to be erected and set with a crane in order for the scaffolding to be set up. See photos. Once the scaffolding was in place, the repair scope was checked and each piece of terra cotta which needed to be replicated was identified. The repairs quantities changed significantly. The pointing increased to almost 100%, yet the patching reduced by about 50%. The terra cotta replication was almost perfect. The pieces of terra cotta needed to be replicated were removed, so we could send to the manufacturer for replication. The local historic preservationist did not want us to send the pieces removed to manufacturer. She wanted the pieces drawn up in AutoCAD and to be fabricated from detailed drawings. After discussing with the manufacturer, it was determined that this would be possible. We had to precisely measure and draw up each piece. After everyone agreed upon the "shop drawings", they were sent to manufacturer to begin the process. Fortunately, all the pieces fit perfectly!

Abstract (100 words max) (what makes project worthy): Major façade restoration to a historic church building comprised of bell tower, sanctuary dome area and attached administration wing. Work included selective pointing, significant terra-cotta unit (TCU) patching, TCU extraction, TCU Replication, new TCU installation, TCU glaze erosion repairs, sealing skyward facing joints using lead tees, spot chemical cleaning and finally hand cleaning all affected wall surfaces. Scope also included subgrade waterproofing on boiler room walls and concrete repairs to Bell Tower ceiling slabs exhibiting significant spall defects from carbonation and inadequate bar coverage. Multiple mock-ups, color matches, cleaning samples, pointing samples, patching samples, pinning samples, lead tee samples, had to be approved. All personnel performing said repairs had to be approved by the local historic preservationist.

Unforeseen Conditions:

The repairs were significant, and a thorough investigation/survey was very difficult to achieve due to limited access to the bell tower. The Church hired a prominent local historic preservationist to identify and develop a repair scope. The scope was developed from the ground using binoculars to identify specific repair types and locations. There were also many types of allowances which were included and would have to be tracked. The accuracy of the repair scope could not be determined until the scaffolding was in place.

Problems/Challenges/Solutions:

Due to the great variances in repair quantities, it was agreed that the most fair approach for all parties was to move some of the allowances to a daily crew rate derived from the Contract schedule of values. The hours of the crews were tracked, verified, and ultimately billed against the allowance quantities. Another challenge had to do with design of the fixed scaffolding. The scaffolding was erected using structural steel framing to clear span the bell tower backside eliminating the need of interior shoring.

Safety Considerations:

Due to the height of getting to the work area, all materials were lifted into place with a electric hoist. Personnel were trained on the specific piece of equipment prior to being allowed to use. Proper material handling was very significant considering the need to lift large pieces of terra cotta.

Community/Environmental Impact: Stabilizing the bell tower was monumental in order to mitigate against falling debris which was a public safety concern. Repairs were in such a manner to maintain egress to this iconic community structure.

Site Constraints:

All work was to the upper façade walls, roof, and bell tower. Getting to the work area required climbing a stair tower about 4 stories high. Also, the project was located in the downtown of a fairly large city.

Technology/Innovation:

Due to the age and construction of the Church a structural roof analysis was obtained from a 3rd party engineering firm. It was determined that the existing roof would not support the massive amount of scaffolding required for the tower. Interior shoring was not an option, so the scaffolding was designed by clear spanning the roof.

Rigging Approach:

The scaffolding of the bell tower was a major issue as the load bearing legs could not be placed on the Church roof, so it had to span the entire front of the Church. Very large girders had to be erected and set with a crane in order for the scaffolding to be set up. In some areas it was more economical to use large boom-lifts rather than fixed scaffolding.

Sustainment:

The terra cotta showed signs of significant deterioration and mortar was falling out of the terra cotta and brick joints. This only compounded by allowing water to enter the façade through the deterioration. These items were all repaired and protected. Severely damaged pieces were replaced and all upward facing joints were addressed as well. These repairs should provide another 50 plus years of wear