



ARORA and ASSOCIATES, P.C.
Consulting Engineers

Project Data

Owner:

Shadyrest Bible
Church
Chesterfield, NJ

Designer:

ARORA and
ASSOCIATES, P.C.

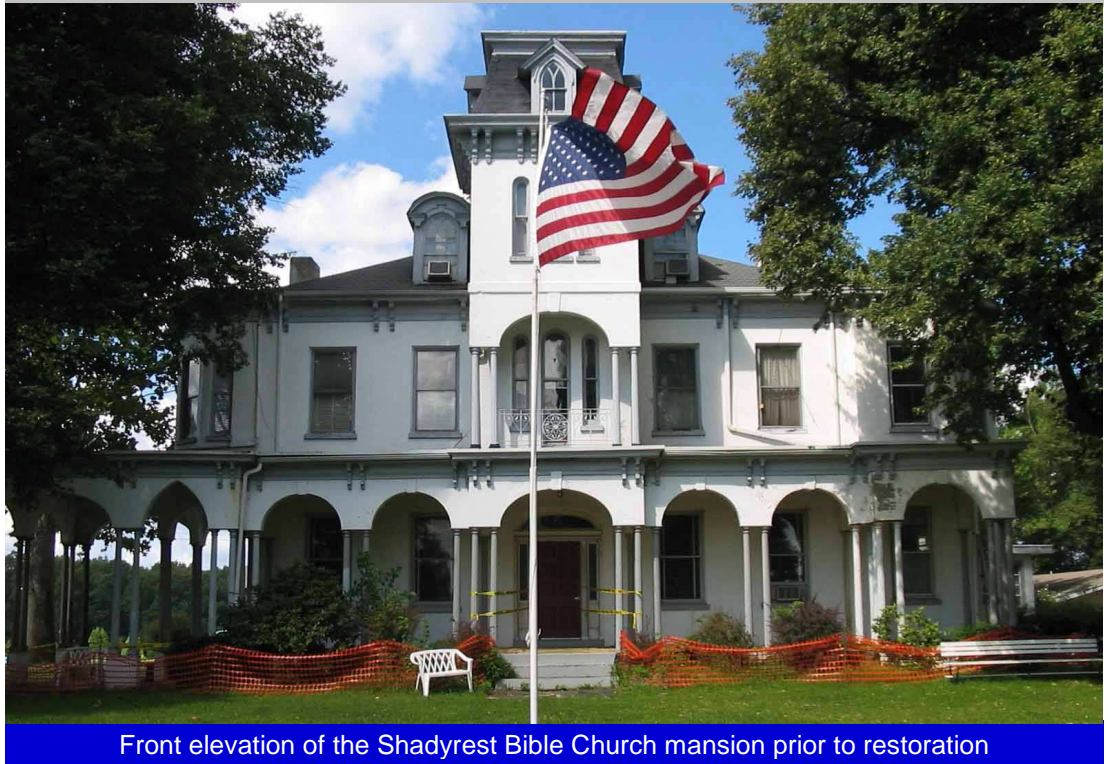
Construction Cost:

\$500,000

*Arora provided on
site construction
support to design
structural solutions
for an important
historical
restoration.*

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SHADYREST BIBLE CHURCH



Front elevation of the Shadyrest Bible Church mansion prior to restoration

In 2003, ARORA and ASSOCIATES, P.C. was asked by Consolidated Restoration and Construction, Inc. (CRC) to develop methods of rehabilitation and provide structural engineering services for the restoration of the Shadyrest Bible Church structure. The structure dates back to the 1880s, when it was constructed in the Georgian architectural style, as a private residence for a New Jersey State Senator. The mansion is located in the historic district of Chesterfield, New Jersey. It has served the community since 1947 as a meeting place for Sunday worship and many other ministries.

The original building had a front and side portico, which covered a wooden floor on the front porch and a carriageway. The portico consisted of a series of brick arches supported on 45 independent cast iron columns with masonry foundations. In the 1950s the wooden floor was removed and replaced with a concrete slab founded on brick masonry walls and fill. By the end of the century, most of the columns were out of plumb due to settlement, heavy corrosion of the column base plates and deterioration of the masonry foundations. The portico had been damaged by water leaking through the roof, and the arches had begun to exhibit cracks. Two corner arches had several wide cracks with excessive displacements. The extensive damage to the column foundations, brick arches, masonry walls and roof required immediate structural repairs. To preserve the structure, the Chesterfield Historical Society contracted CRC to perform the historical restoration work. CRC in turn sought Arora's advice to address the structural issues.

Arora utilized the New Jersey Editions of the International Building and Residential Design Codes to design the structural repairs. The existing column foundations had to be either replaced or reinforced. Four types of foundations were designed to accommodate the different load demands and column configurations. Hand excavation was specified to expose the existing foundations and the masonry walls, which needed to be reinforced and repointed. The columns were blast cleaned, painted and provided with new stainless steel base plates. Several of the brick arches were repaired and six were reconstructed. Repair schemes were developed to reinforce the column foundations, jack the existing brick arches and provide methods of temporary support and shoring for the structure during construction. Arora also designed the structural framing for the new front deck and roof, which were reconstructed as each section of the portico was completed. Arora worked with the local municipality to secure the building permit and performed construction inspections to certify compliance with the contract plans and the building permit.



Temporary support of the arches, roof and central tower was provided during restoration.

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