



SANCTUARY FLOOR REINFORCING

First Baptist Church

Rome, New York

structural engineer
IESolutions

Features

- 3200 square-foot
- Steel retrofit of historic wood structure
- Improved load capacity
- Enhanced vibration response of church sanctuary floor system

Originally constructed in the 1800's, Rome, New York's First Baptist Church is a place of worship located in Rome's historical district. Current members of the congregation had concerns about considerable settlement of the sanctuary floor. They hired Interactive Engineering Solutions, PC (IESolutions) to survey the conditions of the original wood floor and framing system and evaluate the load carrying capacity of the floor.

A complete site inspection of the existing floor framing system revealed damaged, cracked and under-sized members. The existing floor system was also found to exhibit an uncomfortable vibration or "bounce".

IESolutions designed a structural steel retrofit to reinforce the existing floor. This also permitted removal of existing columns in the fellowship hall in the space below the sanctuary. The retrofit allowed the sanctuary to be safely filled to capacity.

Throughout the design and construction process, IESolutions worked together with the owner and contractor, made multiple site visits and carefully reviewed shop drawings to ensure that construction went according to plan.





NEW CHURCH AND FACILITIES

Eastern Hills Bible Church

Manlius, New York

architect

RSA

structural engineer

IESolutions

Features

- Estimated construction cost: \$4 million
- Vaulted sanctuary
- Fellowship area
- Classroom wing
- Sloped sanctuary floor
- “Recessed” baptismal

Eastern Hills Bible Church in Manlius, New York required a new building to accommodate their growing congregation. Not only did they need a new sanctuary, but also a versatile classroom wing to provide adequate space for the classes and activities offered to adults and children of all ages.

Interactive Engineering Solutions, PC (IESolutions) designed the structural steel frame and reinforced concrete footings and provided construction phase services. Construction of the church was completed in 2006.

The unique geometry of the building required careful structural consideration. From the exterior, the sanctuary wing and the classroom wing look practically the same, however the classroom wing actually has a second story while the sanctuary is only one story with a vaulted ceiling. Since no columns could be brought down in the middle of the sanctuary, large steel trusses were designed for the roof hips to span from the corners and frame into a compression ring at the center cupola.

Lateral design of the structure required many different options to be explored. Unlike many buildings where perpendicular walls clearly delineate the two main directions of seismic and wind forces, the geometry of the church complicated the lateral analysis. RAM Structural System was used to try several different variations of bracing, column orientation and beam sizes to narrow in to the most effective and economical design.

