PROJECT PROFILE

St. Mary, Mother of the Redeemer

Plaster Distress Investigation and Design of Wood Ceiling Reinforcement | Norwalk, OH

CLIENT

Janotta & Herner, Inc. /
St. Mary, Mother of the Redeemer Catholic Church

BACKGROUND

St. Mary, Mother of the Redeemer Church was constructed in the early 1890s. The church is cruciform-shaped in plan. The roof structure of the church consists of rough sawn lumber decking and purlins, heavy timber sub-purlins, and wood scissor trusses that are comprised of multiple rough sawn lumber laminations. The trusses bear on mass brick and sandstone masonry walls. A decorative plaster finished ceiling supported by light wood framing is suspended below the roof trusses.

Cracking and displacement of the plaster ceiling was observed by the parish. The Church retained a general contractor, Janotta & Herner, Inc. (JHI), to investigate and repair the plaster distress. JHI retained WJE to perform an investigation to determine the cause of the plaster failure. After completion of the investigation phase, JHI then retained WJE to design reinforcements for the plaster ceiling framing.

SOLUTION

WJE's site investigation included review of plaster and framing conditions, documentation of the as-built geometry, and deflection measurements. Limited structural analysis was also performed. Based upon the findings of the investigation, the plaster failure was determined to be a result of displacement of ceiling framing components. WJE recommended intermediate temporary support and provided conceptual plans for long-term repairs.

In the development of the ceiling framing reinforcement, WJE reviewed repair detail options with JHI to determine an economical, long-term solution, utilizing framing and connection materials that could be readily obtained with minimal prefabrication requirements and maximum adaptability to unforeseen conditions. WJE also worked with the Church to balance the cost of the repairs while minimizing aesthetic changes. Preconstruction and in-progress site visits were also provided.

The WJE monitoring services include development of monitoring protocol, defining benchmark measurements, and performing periodic monitoring.

WJE ENGINEERS ARCHITECTS MATERIALS SCIENTISTS