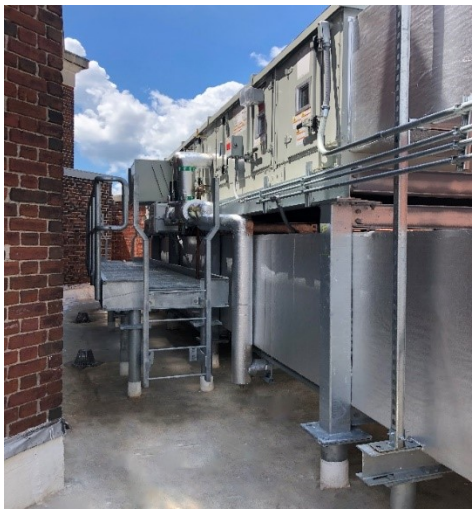
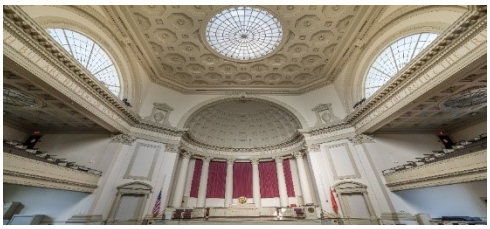
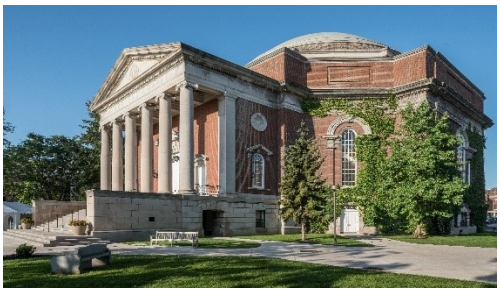
SYRACUSE UNIVERSITY – HENDRICKS CHAPEL







CONSTRUCTION: $3.4 Million

COMPLETED: 2019

DESIGN SERVICES PROVIDED (PRIME CONSULTANT):
- Mechanical
- Electrical
- Plumbing

REFERENCE

Jason Plumpton, PE
Assistant Director, Engineering and Utilities
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BACKGROUND

IBC Engineering P.C. was commissioned by Syracuse University to provide engineering services to provide a design that would provide mechanical cooling at their Hendricks interfaith chapel located as a center piece of the University campus. The Chapel's original building construction completion was on June 8, 1930, and was added to the National Register of Historic Places in 1980. Pope and Baum, a New York architectural firm, originally designed the brick and limestone structure in a style that can be traced to the work of 16th century Italian architect Palladio, and to the Roman Pantheon. The scope of the project was to provide a mechanical cooling system that could not be heard, nor compromise the 16th century style architecture

APPROACH

The project commenced with completing system sizing and a vertical building study of the main chapel to determine applicable ways to provide air conditioning throughout. Several challenges needed to be overcome such as, the center core having a significate cooling load requirement with a ceiling height of nearly 61 feet above the finished floor, the Chancel being land locked with no way to get cool air to this area, three balconies that required conditioning above and below, and no allowable mechanical room space available on the ground or 1st floor levels. Additional project restraints were that the main air handing systems could only be installed on an exterior roof location, behind an 11'-4" high parapet wall with a 20 ft wide roof perimeter around the dome.
The vertical space study illustrated that supply air was required to be in the center core, above each of the three balconies, below each of the three balconies and the chancel. This study also identified that returning air low in the space would be advantageous for overall system thermal comfort and distribution efficiency.
The center core would need some type of air supply that would blend into the building's dome ceiling and its 16th century ornate terracotta design. The approach was to install linear diffusers that could be strategically located that would accent numerous medallions located throughout the ceiling area. The upper balcony had existing steel egg crate grilles that needed an approach to be re-used in some fashion maintaining the original aesthetics. The lower balcony would have air supply high and low. High air would be by the addition of a single slot diffuser with no frame but directly plastered for a single relatively transparent line from one end to the other. The low supply and return air would be incorporated by modifying radiator housing casework to include hot water heat, supply and return air without altering the exterior appearance.

RESULTS

Extensive collaboration and coordination efforts between the Building Staff, Building Owner, Construction Team and M/E/P Engineering teams resulted in a successful implementation of the design with the desired results. At the completion of the project, the Dean of Hendricks wrote "It was great to visit together the other day, for not only is the new HVAC a delight, it has been a joy and pleasure to learn from you and witness such passion and enthusiasm. Please know that you have made a tremendous difference in our midst, and I am left inspired!"