

SPIRE CENTER FOR PERFORMING ARTS

Plymouth, MA

It is not uncommon for historical structures to create an opportunity for creative engineering, and the Spire Center is no exception. Located about a block away from Plymouth Bay, the Spire has seen its fair share of the infamous Nor'easters that New England has to offer. Built in 1886 as a Methodist Church, the Spire has withstood seasonal beatings for about 130 years. The age can be seen within the traditional post-and-beam construction, and so can the damage. From out-of-plumb walls to popping off of trim, the character of the building started to become a significant structural problem.

The initial work performed on the structure was to temporarily stabilize the window walls against further buckling. The damage was caused by a combination of thrust forces from the rafter eaves in significant snow load scenarios and the dynamic suction and positive pressure from the wind acting on the wall.

Once the temporary braces were installed, the attic framing was augmented to increase the capacity of the structure and redirect the load path to minimize the thrust loads that had been crippling the window walls below. The augmentation was performed by creating field built trusses in the attic and resolving the thrust loads into new steel tension rods that are hardly noticeable in the auditorium below.

Along with stabilizing the structure, a new limited use-limited application elevator shaft was installed to abide by ADA (American Disabilities Act) standards and create a more accessible structure. The next phase of the project will be to remove the temporary window wall bracing and install a more permanent solution.

SERVICES

- Augmentation of historical roof framing and trusses in the attic to enhance the performance of the structure
- Framing a proposed elevator shaft and pit for a more accessible performance hall
- Stabilizing the stained-glass window wall against further buckling and water damage



Photo <http://www.spirecenter.org/>