



**Structural Engineer:**  
Klepper, Hahn & Hyatt

**Architect:**  
King + King

**Owner:**  
Vernon-Verona-Sherrill  
Central School District

**Location:**  
Verona, NY

**Completed:**  
2020



## Vernon-Verona-Sherrill CSD STEAM Addition Castellated Girders with Thermal Breaks

Klepper, Hahn & Hyatt was the Structural Engineer of Record as well as the Special Inspector for this multi-phase school project. The structural highlight of the project was the Middle School STEAM Academy addition that involved a partial-reuse of an old classroom wing - but only the foundations and floor slab. The interior bearing wall layout interfered with the desired open floor plan, so the roof and walls were demolished. The new structure spanned completely across the footprint of the original wing using 80-foot long castellated steel girders, cut from W36 steel beams in a zig-zag pattern. The top sections are then offset from the bottoms and re-welded to increase their depth and maximize the steel efficiency. This is a relatively rare structural system, but even more rare is that the girder is "cranked," that is, the girders' top and bottom flanges slope away from a center ridge. In addition, the ends of the girders have Manufactured Structural Thermal Break Assemblies (MSTBAs) at the exterior walls where the girders pass from being inside the thermal envelope of the new building to the outside. The MSTBAs transfer the girders' shear and bending moments but minimize the thermal losses. The products, manufactured by Schock at their plant in Baden-Baden, Germany, have been used for decades throughout the world, but seldom in the U.S. until recently, and their 54-inch depth makes them possibly the deepest assemblies ever used in the country.

