

BASE Line

The quarterly newsletter of BASE



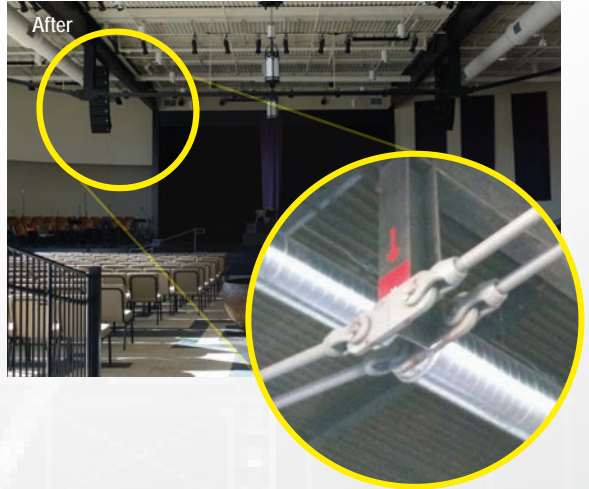
Fall 2016

Sky Hooks, Structural Paint, Load-Bearing Windows...

HOW WE SOLVE UNIQUE STRUCTURAL CHALLENGES ON RENOVATION WORK.

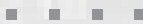
WHEATON CHURCH OF THE RESURRECTION, WHEATON, IL

Client: Skiffington Architects



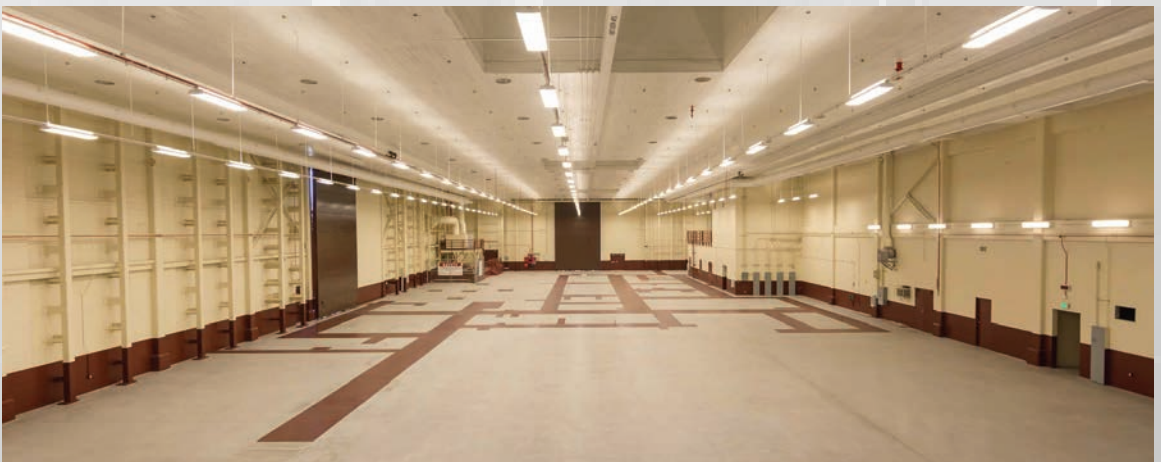
Challenge: Transforming an existing 70,000 SF warehouse into a church with a column-free sanctuary space clear spanning 114 ft. Unfortunately, the existing warehouse had a 38 ft column grid.

Solution: BASE designed a 114 ft long truss that used two existing interior columns as king posts after they were cut. The truss consists of (2) – 3 ½" diameter A36 rods connected at the king posts and supports by clevises for the bottom chord and (2) – W10x112 wide flange beams for the top chord. After all members were installed, the columns were jacked up and cut just below the bottom chord. Column removal was completed in one day and the cut portions of column were used in another part of the renovation. This elegant solution not only met the owner's vision, but did so at a cost savings to other considered options.



REPAIR BUILDING 26A, JOINT BASE PEARL HARBOR HICKAM

Client: RMA Architects, Inc. / Hensel Phelps



Challenge: Upgrading an 80-year old airplane hangar to resist current earthquake, wind, and blast loads.

Solution: Building 26A was originally constructed in 1934 as an airplane hangar. In order to change the use of the current Building 26A to a training facility, the structure needed to be upgraded to resist current earthquake, wind, and blast loads. But the existing unreinforced masonry exterior walls presented a significant challenge to achieving this goal. The original Request for Proposal indicated fiber-reinforced polymer (FRP) strips to be provided on every exterior wall, on both interior and exterior faces. BASE instead proposed and designed a steel bracing system that could be installed only on the interior and not only avoid the removal of historic exterior finishes that would have been required for FRP installation, but could also be provided at a significantly lower cost to the Owner due to much lower material costs and labor requirements.



HYATT CENTRIC WAIKIKI BEACH, HONOLULU, HI

Client: Group 70 International



Challenge: Transforming an existing 8th floor roof space into an amenity deck. However, the load bearing capacity of the existing roof structure was inadequate to support the new loads.

Solution: This project was the conversion of Waikiki Trade Center into a Hyatt Centric-branded hotel. BASE worked closely with the owner, architect, and contractor to develop an amenity deck layout that met both the hotel's requirements and allowed for a cost-effective and structurally suitable strengthening system. The existing 8th floor roof structure was originally designed for a lower live load than required for an amenity deck. The new deck also needed to resist added dead loads from the new pool, cabanas, landscaping, fire pit, raised decking, etc. Since the biggest impact to the existing structure was the weight of the new pool, BASE analyzed multiple combinations of pool locations, geometries and construction types for the team to determine the best pool option for the project. The existing roof consisting of pre-cast concrete planks with concrete topping supported by post-tensioned concrete beams was ultimately strengthened for the new loads by a combination of structural steel beams and fiber reinforcing polymers (FRP). The steel beams were strategically located under highly loaded precast plank areas and the FRP was used to strengthen other plank areas as well as the post-tensioned concrete beams. The new state-of-the-art building code for repairs and rehabilitation of concrete buildings (ACI 562-13) was used to design the FRP which resulted in cost savings for the owner.

GALLERY ON WELLS, CHICAGO, IL

Client: Adjustable Forms Inc.



Challenge: Putting an amenity deck on the roof of an existing building.

Solution: The Gallery on Wells development consists of a 39-story mixed-use tower. BASE was retained to develop formwork solutions to help build the new amenity deck atop an adjacent existing eight-story office building. The soffit of the amenity deck is only five feet above the existing roof, resulting in a shallow interstitial space to support conventional formwork. Additionally, the existing roof did not have reserve capacity to support the construction loads of the new amenity deck. In order to avoid reshoring through the existing building, the project's concrete contractor, Adjustable Forms, used rolling truss table-forms that spanned to screw jacks located next to existing columns. BASE developed a thin concrete pad to cantilever ("float") off the new building columns to support the truss formwork.