Photo courtesy Hodgetts & Fung Design Associates.

Big Bowl

By Beth S. Pollak

A carefully orchestrated steel construction project recreated the legendary Hollywood Bowl's vintage style with modern performing arts technology.

Almost as famous as its tinsel town counterparts, the Hollywood Bowl has become a celebrated landmark in California. Each year it hosts hundreds of thousands of visitors— many who come to see performances and to admire the Bowl and its beautiful outdoor scenery. The original Hollywood Bowl, built in 1922, was constructed out of wood and canvas over a steel shell. Over the next seven years, the Bowl was torn down and rebuilt three times, with final construction concluding in 1929.

Even with numerous rebuilds, the Hollywood Bowl remained plagued with acoustical problems. Many temporary fixes were attempted, but short of a major remodel, there seemed to be no solution. In addition, the Bowl's size could not accommodate the expanding Los Angeles Philharmonic Orchestra. When the full orchestra played, nearly a third of the musicians had to sit outside of the shell.

Variation on a Theme

Badly in need of an extreme makeover, the decision was made in 2000 to build a new, state-of-the-art amphitheater that would be 30% bigger but still retain the Hollywood Bowl's famous look. After three years of design and preparation, ground broke in October 2003, and the project was completed in time for the summer 2004 concert series.

The new Bowl is designed as an impressive work of art, containing more than 350 tons of structural steel. The roof expansion increased the proscenium height to 60′, and the stage can be configured in a variety of formats. Structural highlights include 10 large trusses, which make up the Bowl's spine. The largest truss is 60′ tall by 130′ wide and weighs 25,000 lb. The trusses were pre-fabricated into three or four sections in Utah, making their shipment to Hollywood much easier. Once the pieces arrived on site, they were unloaded, fitted and welded together.

Ensemble Members

The shell itself was designed as a load-bearing member. So, to help support the weight of the sound and lighting equipment, a large amount of bracing was added to the design. A custom-designed acoustical ring was also included in the design to enable sound engineers to fine-tune the sound and prevent acoustical problems. The ring is mounted on a pul-

Above: Much of the structural steel is exposed on the underside of the shell. Note the many attachment points for performance-related rigging and equipment. (Photo courtesy Milco Constructors.)

Below: Ten large trusses make up the Bowl's spine. The largest truss is 60' tall by 130' wide and weighs 25,000 lb. (Photo courtesy Milco Constructors.)

ley system, which makes raising and lowering it a simple task. Because of its irregular shape and complex angles, all of its mounting surfaces were aligned to a three-dimensional point in space. Three towers stand above the exterior shell to support linear arrays of vertically suspended speakers. Lighting and sound equipment are also stored above the acoustic canopy and are customized for each performance

"A lot of the interior steel is exposed and serves as the attachment point for touring road shows," said architect Craig Hodgetts. "So, the basic steel of the building is outfitted with hang points and accessories to help with the installations of road shows."

Orchestrating Change

In order to avoid disrupting concerts at the Bowl, construction occurred between the 2003 and 2004 concert seasons. New shell foundations were constructed prior to the 2003 concert season, while structural steel was fabricated off-site during that season to help meet the tight schedule. "The day after the last performance, the existing shell was demolished, and the steel was trucked right onto the site," said Hodgetts. "It was pretty incredible, since the foundations had already been set for the new Bowl. When the old shell was demolished, a clear platform was already in place!"

Nearly two months passed before all the steel was erected. Due to large truss sizes and the length of the picks, a 360-ton Demag Crawler crane was used for all of the crane picks. A major construction challenge included engineering and designing a rigging system to lift the trusses—in one piece—from a flat position to a vertical position without collapsing the truss.

Some of the truss members were increased in size to maintain structural integrity while lifting. The original design specified setting the trusses in three sections, but this approach eliminated the need for temporary shoring towers. Careful fabrication and planning made erection flawless—all of the trusses landed within ½" of center.

A Sound Finish

"Steel gave the project an opportunity to be built within an extremely compressed time frame," Hodgetts said. "There wouldn't have been a chance to use any other building material to do this project in such a short time. It went up very quickly—the contractors and the steel fabricators did an incredible job in erecting that structure."

Careful coordination with all project team members facilitated the steel fabrication and erection process, especially on the project's tight schedule. "We became involved early on in finalizing critical connection locations," said Mike Staples, of S&S Steel Fabrication. "The unique shape of the structure required a tremendous amount of geometry. For approximately 12 weeks, meetings were held with the engineer, architect, general contractor, detailer, erector and ourselves. This made the design and construction process more efficient." ★

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