Increased Attendance

BY JUSTIN COOK, SE, PE

Peter Hassel Photography

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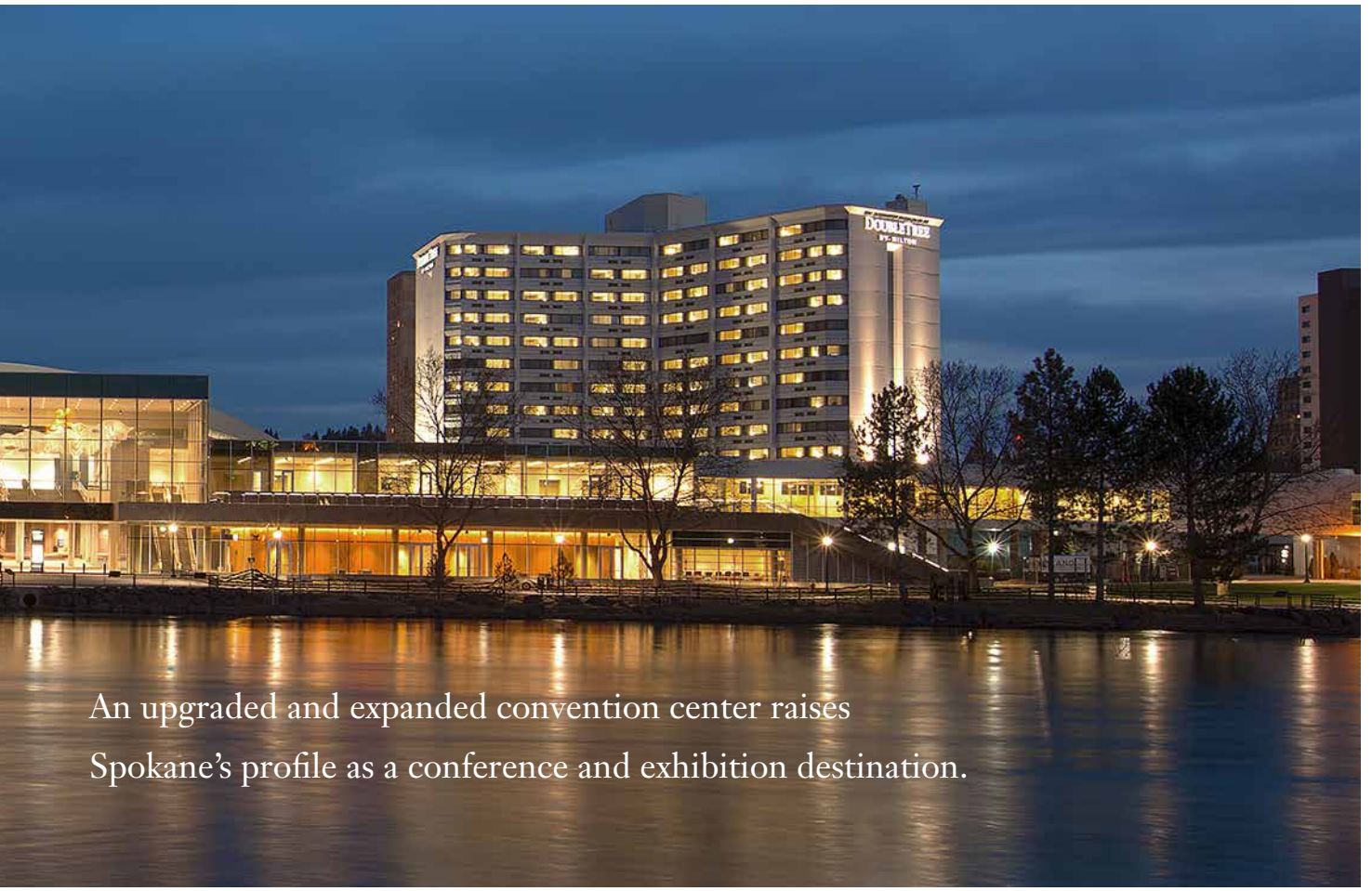
Garco Construction



An upgraded and expanded convention center raises Spokane's profile as a conference and exhibition destination.

COMPETING FOR CONVENTIONS is always tough, especially when going up against larger, well-known markets in a region.

But Spokane, Wash., aimed for the big leagues with a $55 million expansion to the Spokane Convention Center (SCC). The project, which added 90,000 sq. ft of space to the existing facility along the Spokane River, provided the opportunity to transform the SSC into a regional economic driver and an event destination that could compete with larger cities in the west like Seattle, Portland, Boise and Salt Lake City.

The steel-framed expansion melded new building design with existing building structure, increasing usable space for several areas. The second-floor exhibit hall, which was expanded toward the river, gained 20,000 sq. ft, growing to nearly 103,000 sq. ft in all, and is expandable to 120,000 sq. ft when including the new pre-function space. The expansion also added 13,000 sq. ft of ballroom and meeting room space at the ground level as well as new exterior space, including a terrace area and a pedestrian walkway that connects visitors to the nearby Centennial Trail and the river.

The new 30-ft-tall, 225-ft-long exhibit hall on the second floor is surrounded by glass on three sides and delivers expansive views of the river. To add a second floor, the project team demolished and removed part of the existing roof and built new expansion roof and floor systems. The structural engineer for the project, DCI Engineers, achieved a column-free floor plan and more adaptable exhibit space by designing a roof framing system of long-span trusses to fluidly connect the new and old spaces. The trusses varied in length and used wide-flange sections for the top and bottom flanges and HSS section for the web members. Each truss had to be capable of supporting rigging loads of 2,500 lb located at 15 ft on center in each direction.

The new structure was built alongside the older building structure, and new transfer trusses were incorporated so that existing columns, reaching from the floor of the exhibit hall to the roof, could safely be removed to create a column-free space in the expanded exhibition space, while salvaging almost all of the existing roof structure. One new transfer

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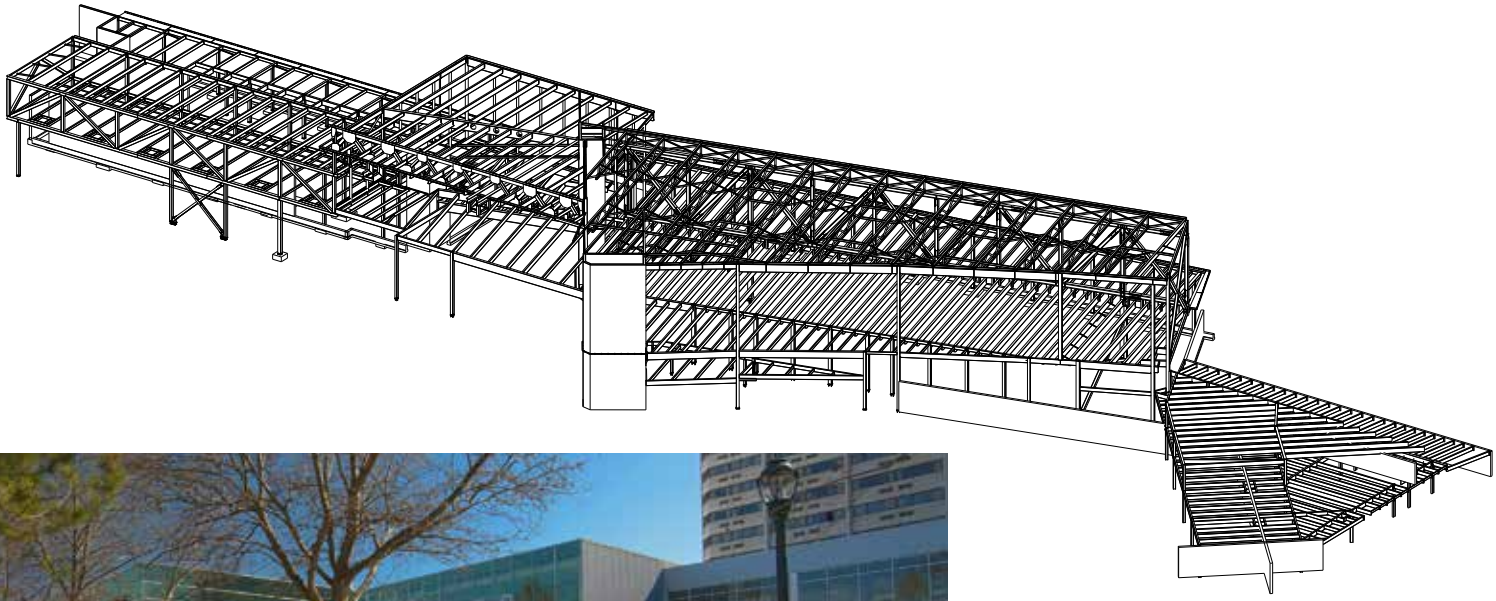

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The project team devised construction sequences for staging steel because of the large member sizes and weight; 1,257 tons of steel was used on the project. The main girder truss was designed to be installed in place, and the long-span roof trusses were assembled off-site then fully installed upon delivery.

truss spans 220 ft and cantilevers 40 ft off each end support. The truss is exposed to the exhibit space, painted with intumescent paint and also supports a glazing wall. In order to support the existing roof in the columns' absence, another transfer truss, this one 110 ft long, was also installed. The exhibit floor systems are supported by wide-flange beams and a composite floor system that was designed to support a 300-psf live load for maximum flexibility of use.

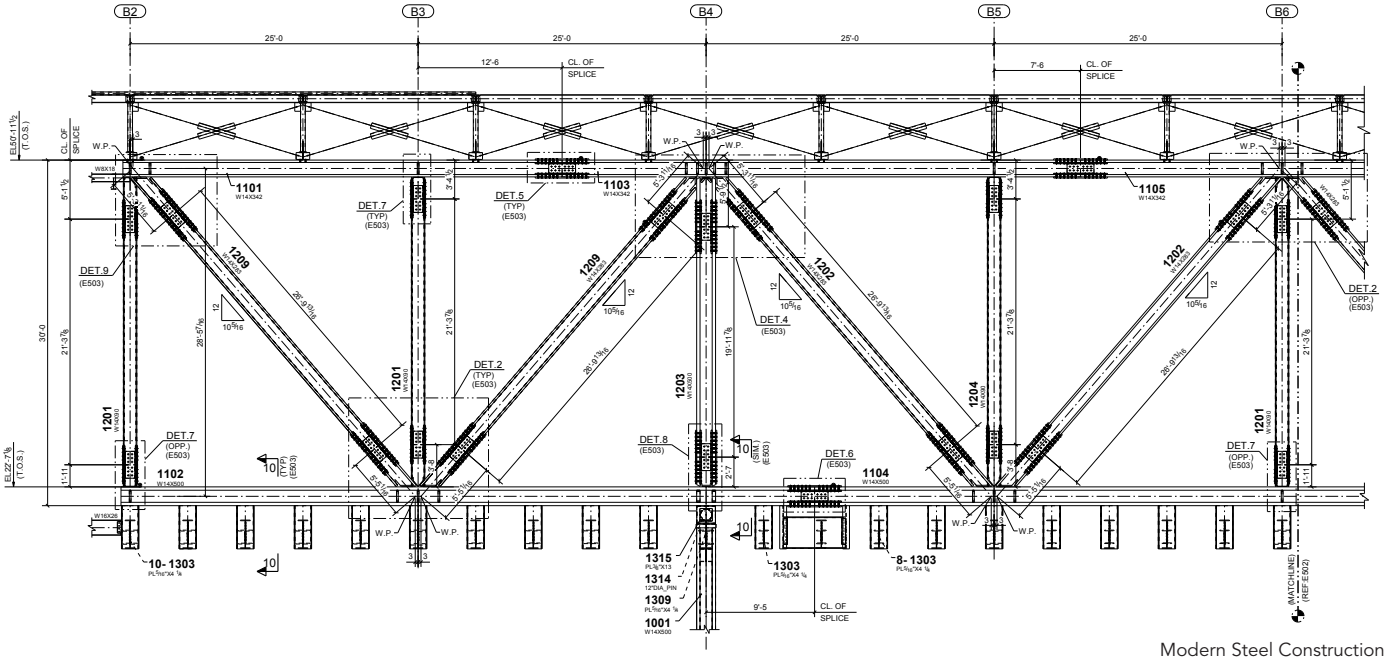
To integrate the two building structural systems, DCI analyzed the performance of a combined lateral force-resisting system (LFRS) of existing and new structural components, and ultimately decided upon a seismic system that isolated and separated the new building roof structure from the old. The seismic system required some complicated isolation detailing but avoided a retrofit of the existing building's seismic elements. The isolation system involves a seismic gap between the two buildings as well new supports, incorporating slide bearings, to replace the removed columns. This allowed the new and existing vertical framing systems to be integrated while also allowing the existing roof and new roof to move laterally independent from one another on the low-friction slide bearings. The shorter, 110-ft-long transfer truss carries the slide bearings along with the new and existing roof structure and was also used to provide a column-free space in the new pre-function space.

The LFRS consists of a combination of cantilever steel, concrete columns and steel braced frames. The exhibit hall was laterally supported by steel braced frames, and the expansion tied the two systems together and used additional braced frames to prevent additional loading on the existing LFRS. The roof was supported by cantilevered columns, so the addition and the existing roofs were isolated at the roof level.

The project team also devised construction sequences for staging steel because of the member sizes and weight; 1,257 tons of steel was used on the project. The main girder truss was designed to be

The transfer truss, with a white intumescent paint finish coat partially applied at the far right.

The columns were removed from the floor of the exhibit hall to the roof, so a new 110-ft transfer truss was installed to support the existing roof.



installed in place and the long-span roof trusses were assembled off-site, then fully installed upon delivery. The main girder truss was too large to ship, so it had to be assembled on-site. The visual aspects of the truss didn't accommodate large plated joints blocking the river view, so the chord members were connected to 3-ft stubs of the web members together using complete penetration welds. The remaining middle web sections were installed on-site with smaller plates aligned with the flanges. The construction sequencing also minimized impact on the existing facility and allowed the convention center to operate while the new spaces were under construction, and the shoring of the top and bottom chords had to be very precise to fit the middle web sections in place and then bolted into the permanent configuration.

The SCC can now accommodate more than 10,000 conference attendees, and center officials say that the facility is now gaining interest from groups that previously overlooked Spokane as a major event location. ■

Owner
Spokane Public Facilities District

General Contractor
Garco Construction

Architects
ALSC Architects
LMN Architects

Structural Engineer
DCI Engineers

Steel Team

Fabricator
Metals Fabrication Company, Inc., Spokane, Wash.

Detailer
Tru-Line Drafting Services Inc., Surrey, B.C., Canada

The SCC can now accommodate more than 10,000 conference attendees.

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