

structurally
sound

OLYMPIC-CALIBER STEEL



THE 2014 WINTER OLYMPICS in Sochi, Russia, summoned the world's best cold-weather sport athletes to compete against one another at one of several newly built venues.

At the opening ceremony, however, they all marched together in the Games' main venue, Fisht Olympic Stadium. The open-air stadium—with a seating capacity of 40,000 for the Olympics and more than 47,000 for future FIFA events (including the 2018 World Cup)—boasts one of the largest indoor stages ever built.

Composed primarily of wide-flange beams and HSS, the framing for the stage weighs 1,350 tons and supports the entire 120,000-sq.-ft floor of the stadium. Quebec-based Show Canada was selected to design, manufacture and install the main stage and scenic elements for the Games' opening and closing ceremonies.

The structural system was composed of floor panels (nearly all identical), simply supported beams (of only eight different profiles) and columns (of only three different profiles). Teams from all 88 participating countries emerged from beneath the floor via a ramp lift in the center of the stadium. The ramp, which weighed 11 tons, was designed with plywood and standard structural shapes and has a live load of 120 psf.

“Knowing that frame construction and final assembly of the stage would have to take place in a very short period of time, as well as in a very constraining environment, we took great care in keeping the structure as simple as possible,” said Jean-Philippe Major, engineering director with Show Canada. “Each piece had to be built and made ready for assembly at our facility in Canada, meaning that the maximum dimensions for floor panels, beams and columns were ruled by the shipping container size.” ■