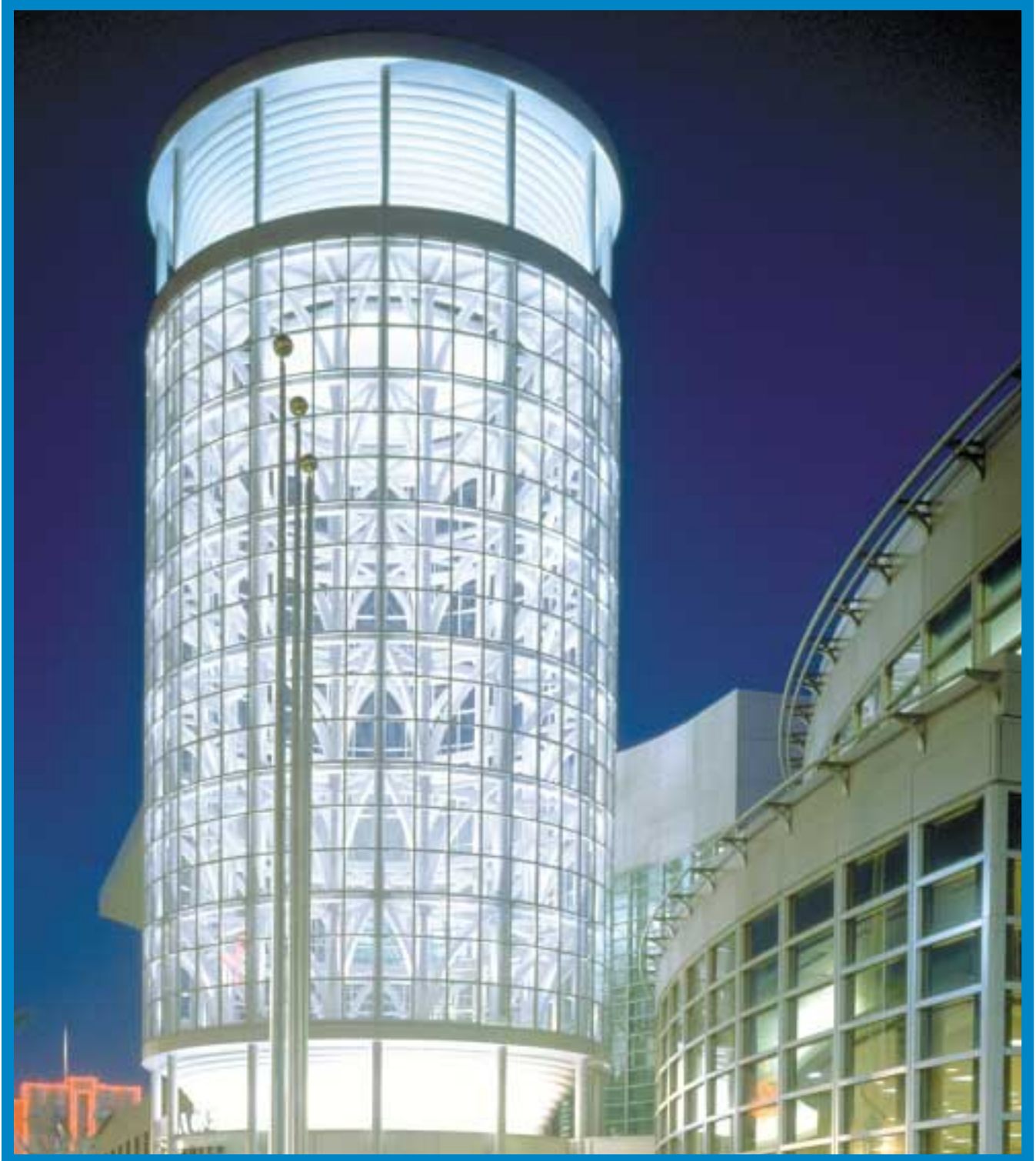


HSS: DESIGNS FOR THE 21st CENTURY



'GULL TOWER' BECKONS CONVENTION VISITORS

ELEGANT APPEARANCE OF HSS GIVES SALT PALACE A 'LANDMARK' DESIGN

The Salt Palace Convention Center provides an intriguing counterpoint to its downtown neighbor in Salt Lake City—the historic Mormon Tabernacle. Much of the contrast is provided by the simple elegance of exposed steel hollow structural sections (HSS), used prominently in the convention center's design

The Salt Palace needed only half of its 256,000 square feet of exhibit space for its opening attraction in February, 1996—a four-month tournament of the American Bowling Congress. In all, it booked more than \$104 million in business, including 35 national conventions, during the remainder of its first year.

The new facility will get worldwide exposure during the 2002 Winter Olympics; the entire structure has been leased to house the Games' International Broadcast Center.

The Salt Palace replaced an existing, smaller, multi-purpose facility when its major tenant, the Utah Jazz basketball team, decided to build its own arena,



Convention Center Big in Every Respect

The new convention center is big in every respect, allowing Salt Lake City to attract national conventions it formerly was unable to handle. It occupies three city blocks, features more than a quarter of a million square feet of continuous exhibit space that can be divided into six smaller

halls, and also contains 54,000 square feet of meeting rooms and a 36,000-square-foot ballroom.

Many of the convention center's most striking visual features were obtained through the creative use of HSS in exposed applications by its architect, Atlanta-



based Thompson Ventulett Stainback Associates working with a local firm, Gillies Stransky Brems Smith Architects.

TVS responded to fears by Salt Lake City residents the convention center might be a boring, monolithic addition to the downtown skyline by using dramatically contrasting shapes, sizes and materials for the principal components of the complex—its entry tower, the visitors' center, the arts center and the ballroom.



'Gull Tower' Recalls Area's Mormon Heritage

The most striking visual element on the facade is a 48-foot-diameter circular, glass-walled entrance tower framed by HSS.

TVS nicknamed the entrance the "Gull Tower," since its arching HSS members strongly suggest seagulls in flight, an image that honors an important event in the journey to the area of the early Mormon settlers.

The 110-foot-tall tower is illuminated at night and visible for miles. It's supported by a tubular steel space frame whose vertical elements are two concentric circles of round HSS columns 12" in diameter and offset from one another. The twelve columns in each circle are connected by a



series of horizontal rings of 12" square HSS bent to a circular shape. The outer and inner columns, in turn, are linked to one another by a network of curved, diagonal braces of 12" x 6" rectangular HSS—the "gull wings."

The use of exposed HSS structural elements continues in the public areas inside the Salt Palace.

HSS 'Trees' Emphasize Lobby's Soaring Height

The entrance lobby is dominated by five tree-shaped columns formed by groupings of round HSS columns 16" in diameter at the base. Each grouping consists of seven columns which rise vertically more than 40 feet into the air and then angle out, creating the appearance of tree branches.



The tree columns emphasize the soaring height of the lobby area, and skylights let outdoor light flood down through the branches of the trees, creating a very dramatic effect in the lobby below.

Perhaps the most spectacular architectural element in the Salt Palace's exposed structure is provided by the use of 20 large, curved, three-dimensional trusses—dubbed “banana trusses” because of their

shape—to support the arched ceiling above the 600-foot-long main concourse on the center's upper level.

Each is 70' long, weighs 13 tons and is formed of round HSS elements. The bottom chord, which is bent in a gradual “S” curve, and the two arched top chords are formed by 12” diameter round

HSS. The web of connecting members is formed by 8” diameter HSS.

Trusses Create Dramatic Patterns of Sunlight

As they do with the tree columns in the entrance lobby, skylights flood the concourse with natural light, creating a dramatic effect through the interplay of light on the banana trusses.

The strength and torsion resistance qualities of HSS were instrumental in its use to support large windows at the north and south ends of the concourse.

Triangulated three-dimensional trusses of extra-strength HSS extend nearly 80 feet into the air, supporting the windows against wind loads. The two outer chords of each truss rest against the windows and are formed by 4” diameter round HSS, as is the inner chord. The chords are connected by webs of 2-1/2” diameter round HSS.

Reaveley Engineers & Associates, Inc., the project's structural engineer, used complex 3D structural computer analyses to design the curved HSS frames and trusses, which had to be strong enough to support UBC Seismic Zone 3 lateral loads, as well as the snow and wind loads required in the Salt Lake City area.

The Salt Palace was built for \$85 million and was completed on time and on budget. Its general contractor was the Hughes Hunt joint venture of Phoenix, Arizona. The building is owned and operated by the Salt Lake County Commission.



2516 Waukegan Road, Suite 172, Glenview, IL 60025 • Tel: 847.461.1701 • Fax: 847.660.7981
E-mail: STINA@steeltubeinstitute.org • Website: <http://www.steeltubeinstitute.org>

