structurally sound

FULL HOUSE

Courtesy of Weidlinger Associates

EVER-EVOLVING LAS VEGAS continues to pack 'em in.

Its McCarran International Airport is now the sixth busiest in the U.S. and 15th busiest in the world. In order to keep up with the airport's rapid increase in traffic—it currently serves nearly 40 million passengers annually—a new 350-ft air traffic control tower has been added.

While the main shaft of the tower (designed by structural engineer Weidlinger Associates) was built with reinforced concrete, the upper third of the tower consists of a structural steel "bell" that houses sensitive equipment and critical support spaces, including the control cab for air traffic controllers. Site line requirements meant that only three strategically placed steel columns were permitted at the cab level. Steel beams cantilever from steel moment frames to satisfy the complex geometric requirements, support the cab roof and resist Vegas' large earthquake and wind design loads. The moment frames transfer loads to braced frames, which are intricately placed to avoid conflicts with the extremely dense layout of cables, shafts, ducts and other specialized equipment in the floors below. Steel beams also support a tuned mass damper that minimizes wind-induce vibrations and ensures that air traffic controllers are able to perform tasks comfortably. Since welds were not permitted in major structural elements, all critical connections are bolted and designed to extremely tight tolerances. ■