

CONNECTING HOUSTON

With Shuriken™ Better Bolted Connections

How Shuriken played a vital role in the North Post Oak Road Pedestrian Bridge.

A [recent study by Forbes Home](#) ranked Houston as the city with the fourth worst commute in America. With a large workforce and poor accessibility to public transit (scoring 36.2 out of 100, per Forbes), the study details the nightmare commute that many Houston workers endure, spending nearly an hour a day going back and forth to work.

Fortunately, relief is here for Houstonians. In October 2023, the city cut the ribbon on the [North Post Oak Road Pedestrian Bridge project](#), a 600-foot-long structure that allows pedestrians and cyclists to cross over an astounding 17 lanes of Katy Freeway traffic. More importantly, the new bridge creates a critical link from residential neighborhoods to the METRO Northwest Transit Center, providing better access to public transit for thousands of Houstonians.

And yet, this entire project would look significantly different without the use of [Shuriken Better Bolted Connections](#) from Atlas Tube. Well, 1,216 Shuriken to be exact.

HSS vs. Wide-Flange Design

Erik Saenz is Project Manager for King Fabrication in Houston. In 2020, the Texas Department of Transportation (TxDOT) engaged King Fabrication to design and fabricate the new bridge. This is where

steel hollow structural sections (HSS) and Shuriken from Atlas Tube really shined.

“This was a full design-build project, and aesthetics were very important to the city,” Saenz said. “Being able to use thicker-walled Jumbo HSS gave the designer the ability to keep the stringer size at 16x16, giving the bridge a slimmer and sleeker look.”

The bridge supports were also skewed, creating torsional forces in the structure. Those torsional forces would have required larger, heavier chords if wide flanges or other open shapes were used, but they were easy to handle thanks to the HSS chord members’ closed profile.

“The alternative to thicker-walled HSS would have been a W-shaped beam, but that would have been really clunky-looking compared to what we have now,” Saenz said. “The beam would have been a cookie-cutter design that just about every single other bridge has, so we were able to set this bridge apart by using HSS.”

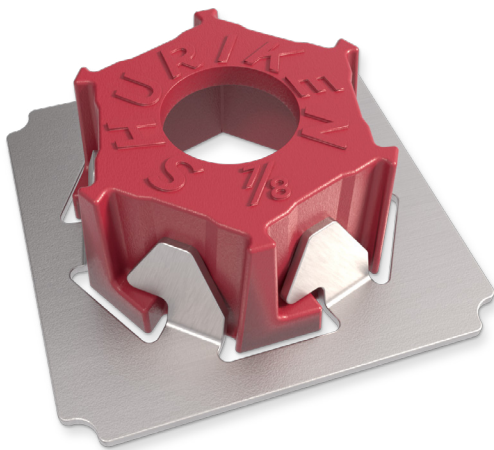
The availability of HSS with thicker walls also simplified connections by allowing the truss web members to be directly fillet welded to the face of the chord, eliminating the need for gussets, stiffeners or flare-bevel welds.



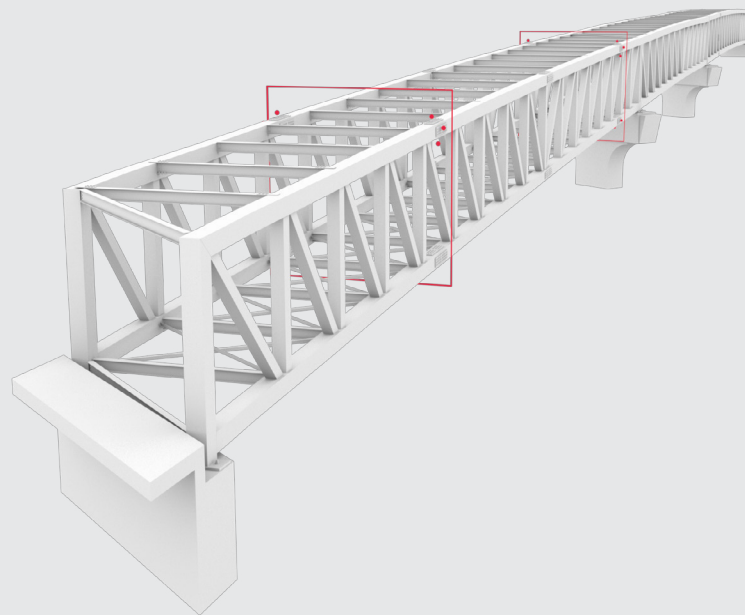
Shuriken Was the Solution

King Fabrication has been working with Atlas Tube for years and was introduced to Shuriken when the 7/8" size was launched in 2022. Saenz recognized the benefits immediately on a project like the North Post Oak Road Pedestrian Bridge.

"The Shuriken product helped our team meet project requirements, cut down fabrication time, reduce the overall costs of bolted connections and provide a tidier profile for the connections," Saenz said. "Without it, we would have had to run large bolts completely through the HSS, which could have been very costly."



Simplifying the process from design to completion





Additionally, without the Shuriken, the fabricators would have been required by TxDOT to weld crush sleeves on the interior of the HSS, which Saenz describes as “a giant pain in the neck.” Welders would not have been able to reach all of the crush sleeves from the open end of the HSS, and welding from the outside would have required beveling and other steps that add both dollars and hours to the project. Instead, the Shuriken were installed on the interior of the HSS in the shop, holding the nuts in place so that the bolts could be torqued quickly from the exterior on-site. Unlike through bolts, no staggering was required for bolts on adjacent faces of the HSS, allowing the connections to be more compact.

Saenz found Shuriken to offer an aesthetic benefit, too.

“With Shuriken, you only see the head side of the bolt, so everything looks uniform,” Saenz said. “You do not see the threaded ends that are often difficult to line up perfectly. The Shuriken really added another sleek dimension to the bridge.”

The Little Part With Big Results

“In a project that cost \$7 million and required 322 tons of steel, it’s remarkable to see the difference that something as small as Shuriken has on the final fabrication,” said Ted Goldstein, inventor of Shuriken and Structural Engineer with Atlas Tube. “Across the country, we’re seeing Shuriken used to simplify many types of complex connections. In the case of the Houston bridge project, it made simple field-bolted HSS splices a reality.”

For Saenz, Shuriken helped him reduce the major commute challenges in his hometown.

“Doing anything for the city that helps people get to work or have time on their weekend for extracurriculars always feels good,” Saenz said. “I really love driving under this bridge on the way to other projects and knowing what an impact it has had on the people in the Houston community.”

For more information, call 800.733.5683 or visit atlastube.com

Introducing the HSS Connections Hub™
Fabrication-friendly, fully code referenced, and reliable HSS connections.

About Atlas Tube

Atlas Tube, a Zekelman company, produces a wide range of steel tubular products and is the leading provider of hollow structural sections (HSS) in North America. Other offerings include HSS Design Tools and straight-seam electric resistance weld (ERW) pipe piling.



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