US 181 HARBOR BRIDGE PROJECT

Monthly Status Report

Texas Department of Transportation

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Repurposing the 1959 US 181 Harbor Bridge for Research and Sustainability

The deconstruction of the 1959 US 181 Harbor Bridge created a unique opportunity to give historic infrastructure a second life through research and education. The Harbor Bridge Project contributed a 35,000-pound intact bearing and a 22,000-pound gusset joint to the Steel Bridge Research, Inspection, Training, and Engineering (S BRITE) Center at Purdue University, demonstrating how major transportation projects can advance research and sustainability by repurposing critical structural components for practical reuse applications.

According to Purdue University, the S BRITE Center is dedicated to addressing the challenges of America's aging steel bridge infrastructure through hands on research, inspection, training, and engineering innovation. A key feature of this mission is the Bridge Component Gallery, a multi acre outdoor laboratory that houses full scale bridge structures, bridge sections, and components removed from service. These donated elements provide researchers, engineers, inspectors, and students with rare access to real-world materials that would otherwise be unavailable for study.

The truss bridge's bearing and joint align directly with this approach. Large, intact components of this scale allow researchers to evaluate long term performance, wear mechanisms, fatigue, corrosion, inspection techniques, and future retrofit strategies using authentic materials with known service histories. Repurposing these elements also eliminates the safety and logistical challenges associated with studying components still in active service, transforming former infrastructure into a controlled yet realistic research environment.

Beyond Purdue, the Harbor Bridge Project extended its educational impact by donating a smaller, approximately 1,000-pound bracing joint to the Texas A&M University Kingsville Department of Civil & Architectural Engineering. Recently placed on display, the joint now serves as a hands on learning tool and a source of inspiration for students, connecting classroom instruction to tangible examples of real infrastructure.

To date, all concrete from the former bridge deck has been processed for reuse as recycled concrete aggregate for roadway base material and other construction applications, reducing the need for new raw materials. Likewise, all steel elements not retained for educational research are recycled and repurposed for new structural and fabrication applications, allowing valuable material from the original bridge to remain in circulation and support future infrastructure projects.

Together, these contributions illustrate how thoughtful reuse can turn bridge replacement into a lasting investment in education, research, and sustainability, ensuring that elements of the old Harbor Bridge continue to advance public infrastructure knowledge long after the structure itself is gone.

HARBOR BRIDGE
Corpus Christi, Texas