**Muskingum County Repurposes Steel for Cost-Effective Upgrades to Aging Bridge Inventory**

In these times of tight budgets and aging infrastructure, Ohio’s Muskingum County has adopted a creative sustainable practice for the replacement of structurally deficient and functionally obsolete short span bridges—recycling steel bridge beams.

In one of its most recent bridge replacement projects, the Muskingum County Engineer’s Office (MCEO) fabricated the Green Valley Road Bridge superstructure with repurposed W33x141 beams salvaged from a previous bridge replacement in the county. The 52-foot Green Valley Road Bridge is 20-feet wide with five beam lines, four-feet on center covered with a nine-inch-thick composite concrete reinforced deck on a 10-degree skew placed on rehabilitated concrete and masonry abutments.

The beams were cut to length, cleaned of previous attachments, and mocked up on skew at a county facility in Zanesville, Ohio. Two rows of bolted diagonal cross-frames were fabricated from angle members that were connected to web stiffeners welded to the beams. Upon completion of fabrication, the structure was disassembled, abrasive-blasted, primed and painted.

The Green Valley Road Bridge is the fifth bridge to be replaced with repurposed steel beams. Muskingum County estimates that $51,000 was saved in superstructure costs for new beams versus repurposed beams for this project.

Douglas R. Davis, P.E., P.S., County Engineer for MCEO, explains why recycling and repurposing steel has become important to the county, saying, “It really comes down to cost. Increasing costs and diminishing revenues from fuel taxes and license plate fees demand that we consider the reuse of steel beams. When the span length, beam size, and hydraulic opening allow, we always consider the use of previously removed beams or beams that are currently in service as part of structures that are scheduled to be replaced.”

Robert Wills, P.E., Vice President of Construction Market Development at the Steel Market Development Institute (SMDI), adds, “Bridge owners know that steel provides superior durability with the least amount of impact to the environment. When they repair or replace their projects with new steel, they make a cost-effective and responsible decision by constructing a strong bridge that will last many years. When it does come time to replace the bridge, the steel will be repurposed or recycled to continue its usefulness elsewhere.”

The MCEO’s best example of bridge beam repurposing was in 2005 with the replacement of a 327-foot, five-span bridge on Pleasant Valley Road over the Licking River. The existing structure was constructed with 15 W33x141 beams, each 60- to 70-feet in length.

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“These beams were in good condition and were easily repurposed for single-span structures,” says Davis. “We have also had success with purchasing excess beams from a local fabricator for reduced costs and rescuing beams from the local iron recycling/scrap yard. Our relationship with these local businesses ensures that we are given the opportunity to purchase beams that are excess stock or are slated for recycling. In our sustainable, fiscally strapped world, we firmly believe that one person’s metal scrap can be repurposed to help modernize our infrastructure.”

About the Short Span Steel Bridge Alliance

The SSSBA provides essential information to bridge owners and designers on the unique benefits, innovative designs, cost-competitiveness and performance related to using steel in short span installations up to 140-feet in length. SSSBA partners comprise bridge industry leaders, including steel manufacturers, fabricators, designers, fasteners, service centers, coaters, researchers and representatives of related associations and government organizations. For news or information, visit www.ShortSpanSteelBridges.org or follow us on Twitter @ShortSpanSteel.

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Bridge owners can typically construct short span steel bridges with on-hand tools and equipment using local work crews, saving significant project costs.

Recycled steel provides superior durability with minimal impact to the environment.