PORTABLE BRIDGE SAFETY-WORK PLATFORM

El Paso County Department of Public Works

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Problem Statement:
Our problem was providing alternative fall protection when working on bridge deck replacements that are high enough to require fall protection but are not high enough to utilize fall nets; in addition, access to set up scaffolding is limited and multiple safety lines to support multiple tasks present trip hazards. The impetus for this concept was the challenges presented by the height, waterway conditions and the nature of the work required for bridge deck replacement. The height challenge consisted of bridges that were not high enough for installation of traditional worker catch systems, but still exceeded heights that require some protection. The heights compounded by the unstable soil conditions under most of our rural bridges also made the installation of scaffolding very cumbersome and or costly. Lastly, the multi task nature of deck replacement (blasting, grinding, painting and welding) made safety lines more of a hazard than a benefit.

Discussion of Solution:
Finding a concept that could improve safety and not impede the work flow required close coordination between the Bridge Foreman, the crew and Zach Knight, a Welder III with the DPW Fleet Department. The team’s plan was to create a light weight, adaptable and sectionalized platform that could be placed on the structural I-beams, thus reducing the fall zone down to just the height of the I-beams plus decking, which for the majority of our bridges is well under the heights requiring additional fall protection. Zach then took the concept and researched materials that would meet the load requirements and ordered materials to construct a prototype. To keep the weight of each component down to make placement easier, Zach utilized standardized scaffolding sections and adapted his support sections accordingly. The fabrication was all done by Zach and he found ways to incorporate safety features such as support locks and rollers to ensure that the platform could be locked in place or easily moved as a unit down the beam as work on the deck progressed.

Once Zach completed the prototype a testing demonstration was conducted with the Bridge foreman and the Safety supervisor for the Department. Both were impressed by the capacity, functionality, ease of placement and the improved safety it would provide. Once safety approval was obtained, Zach commenced fabricating enough components for a five-bay bridge.
The Bridge Crew had already completed the 2018 bridge deck project, so another demonstration was constructed to test the final product and provide pictures for this submission. The completion of the Portable Bridge Safety/Work Platform will provide a higher level of safety for our bridge deck replacement crew by providing a usable working platform that also reduces fall potential.

**Labor, Equipment and Materials:**
The labor involved in this project was all in-house and consisted of:
- Approximately 110 hours of labor that included everything from team discussions to determine issue, discussion of solutions and prototype evaluation, to the fabrication and construction.
- The equipment included all the welding shop’s resources to include mills, grinders, welders and numerous hand/power tools.
- The materials primarily consisted of steel products such as the DOM tubing, guide wheels, modified clamps and scaffold decking.

**Savings and Benefits:**
The savings to El Paso County are multi-faceted. To have this same system created by outside sources, we estimate that it would cost at least twice our final cost. To purchase other systems (harnesses, lines, scaffolding, etc.) would be equal or higher, but we would have had to adapt them to our work site. Safety – this project provides a system that mitigates the risk of injury by being designed specifically for our bridge deck replacement work site.

**Summary:**
Zach Knight’s innovative and expert application of his fabrication and welding skills have provided this department’s bridge deck replacement crew with a portable work platform that greatly enhances fall protection on the job site. Zach’s willingness to work with the Bridge Deck Team to find solutions coupled with his skills and steadfast determination positively contribute to this Department’s ability to safely complete valuable infrastructure projects. Zach Knight’s toolbox of experience and his commitment to the El Paso County Public Works Department team make him an outstanding candidate for this Build a Better Mousetrap award.

*VIDEO INCLUDED*  Access Safety Work Platform Video here: [https://www.dropbox.com/sh/ochm9gr3kyjvo/AAAh7X5l6vpc9-kSWoFUu9Vsa?dl=0](https://www.dropbox.com/sh/ochm9gr3kyjvo/AAAh7X5l6vpc9-kSWoFUu9Vsa?dl=0)

**Closeup of the deck platform to bridge beam attachment.**  Source: El Paso County DPW