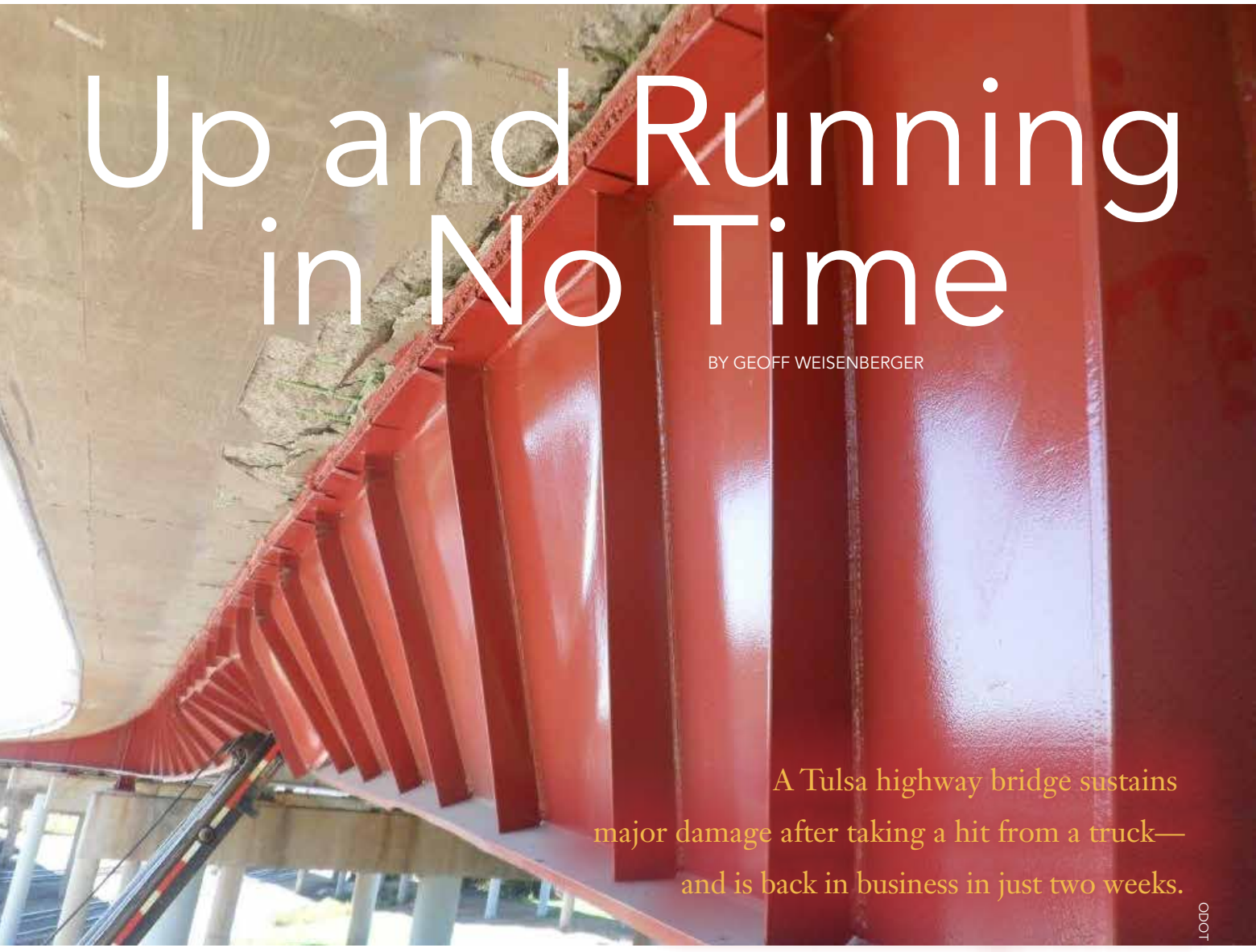
Up and Running in No Time

BY GEOFF WEISENBERGER



A Tulsa highway bridge sustains major damage after taking a hit from a truck—and is back in business in just two weeks.

ODOT

THE OKLAHOMA Department of Transportation (ODOT) knew that the eastbound Interstate 244 bridge over Charles Page Boulevard in Tulsa, Okla., would require some attention on October 15, 2012.

It just didn't realize how much.

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That morning, the bridge went through a final inspection for a bridge painting project. A few hours later, a truck, whose bed was raised, slammed into it, damaging one of the girders. While the bridge absorbed a massive impact, it did not collapse. Still, bridge and the road beneath needed to be closed immediately.

This section of I-244 is part of the Inner Dispersal Loop, a vital transportation link for business, commuting and travel around downtown, and Charles Page Boulevard is a major east-west connection in and out of downtown. Additionally, the 948-ft-long continuous-span plate-girder bridge also crosses two other city streets and two rail lines. Further complicating matters was that at the time of the accident, this portion of I-244 was itself serving as a detour for two nearby highway construction projects. As such, more than 80,000 vehicles were left scrambling for an alternate route.

With the truck still wedged under the bridge, engineers were able to get their first look at the damage. Not only was a

The damage to the girder section just after the vehicle hit.

The contractor field spliced the replacement girder to the existing girder, which only needed a finish coat to restore the structure to pristine condition.

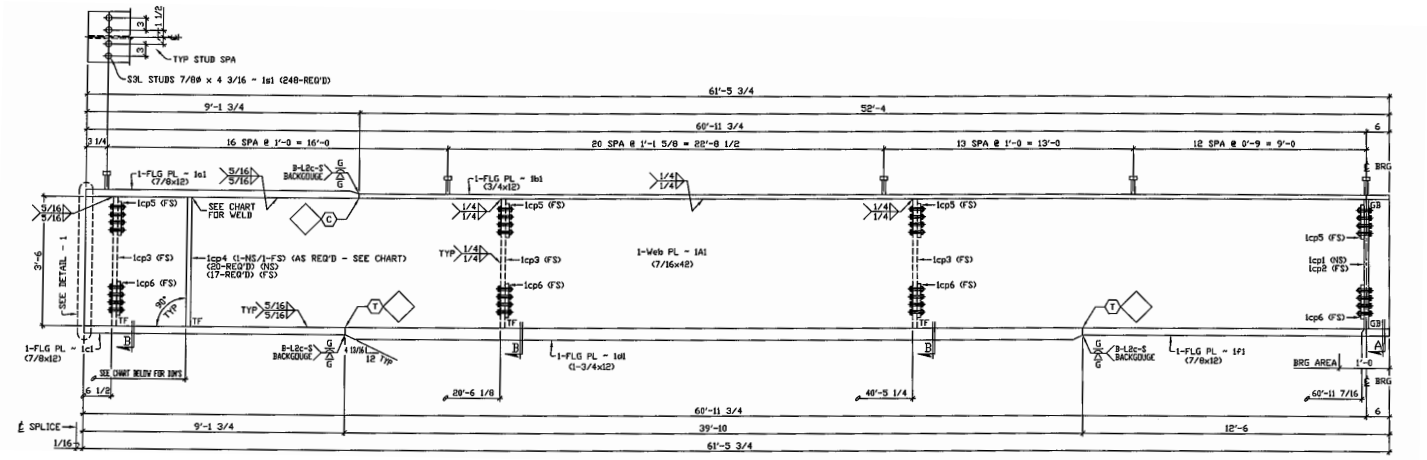
plate girder rolled up and the web stiffeners crumpled, but the impact also caused the concrete deck to separate from the plate girder by several inches over a length of 80 ft. Their evaluation also involved checking the structural integrity of the bridge to see if it could continue to support itself once the vehicle was removed.

While it was determined the vehicle could be cleared from the scene without the bridge collapsing, the eastbound I-244 lanes above and Charles Page Boulevard would need to be closed until repairs could be made, and temporary steel shoring was put in place under the bridge for safety purposes. This meant traffic on already narrowed detour routes on the loop would have to reroute and squeeze together even more, resulting in significant delays.

ODOT quickly began developing plans to replace the damaged girder and concrete deck. Repairs of this magnitude typically take months to design and for materials to be acquired and fabricated. But realizing the tremendous impact on traffic, all work was expedited and engineering plans and agreements with the contractor, Manhattan Road and Bridge, were underway within the week. Communication played a key role in making the project happen as quickly as possible, and major emphasis was placed on the need for quick responses to and reviews of the recommendations, shop drawings and contract language as well as determining concise deadlines to begin and complete the work. An aggressive schedule was developed to have the repairs complete before the Thanksgiving holiday, with a $20,000 incentive/disincentive in place.

W&W/AFCO Steel fabricated, prime painted and delivered a 61-ft replacement girder within 10 days.

Repairs were completed within 15 days of the crash and 20 days ahead of schedule.



A shop drawing of the replacement girder.

Manhattan Road Bridge worked with fabricator W&W/AFCO Steel to fabricate and ship a new section within ten days of the bridge hit. Repairs were completed by October 30th, only two weeks after the crash, and the roadway was able to open to traffic more than 20 days ahead of schedule. MSC

Owner and Structural Engineer
Oklahoma Department of Transportation

General Contractor
Manhattan Road and Bridge, Tulsa, Okla.

Steel Fabricator
W&W/AFCO Steel, Little Rock, Ark. (AISC Member/NSBA Member/AISC Certified Fabricator)