

THE ARIZONA CIVIL ENGINEER

Volume 96 Issue 3 - January

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A Message from the President

“Unprecedented!” How many times have you heard that word in the last couple of weeks? Whether you're watching TV, listening to the radio, or just talking with friends and family I am sure you have heard it several times. While the use of this word may be the most appropriate description of the last year, I can't help but feel that this word now has a very depressing association that only makes us dwell on the negative aspects of the past year. While it is important to remember the events of our past and not forget, we certainly do not need to dwell on the negatives.

As we look forward to the new year with hope, I would also like to remember some of the positive aspects of last year. Over the next couple of months I would like to take this opportunity to share some of the accomplishments of the Civil Engineering profession in Arizona through some of the great projects that were completed. I will be highlighting these projects through short articles written by some of those involved in the project. My thanks to Jeremy DeGeyter, Northern Arizona Branch President, for this article.

Thank you,
Gary Miller
P.E., M.ASCE
ASCE Section President

This past summer the Arizona Department of Transportation (ADOT) and the City of Flagstaff replaced the existing Fourth St. bridges over Interstate 40 (I-40) using the bridge slide method. For those of you who have visited Flagstaff, it is quickly apparent that the city and vehicle traffic is significantly impacted by the railroad and interstate system that split the city with limited separated grade crossings. For this reason, and emergency vehicle and adjacent school considerations, a primary focus from the beginning of the design process was to minimize impacts to the public, both on Fourth St. and the interstate below. The bridge slide method was selected to reduce closure impacts on Fourth St. from 3-4 months to 17 days, with the resulting reduction in overall delays to the public calculated to be valued at over \$6 million, according to ADOT formulas. The project, designed by

AECOM and constructed by FNF Construction, began in early 2020 and was completed in Fall 2020.

The bridge slide was accomplished using hydraulic jacks, 2- ½” threaded rod, steel plates and Teflon coated bearing pads. The threaded rods were installed through the bridge abutments and anchored to jacking blocks on each end of the bridge. The rods were pre-tensioned to remove excess strain and then the process began. The jacks had a throw (total ram extension) of 9-inches before they needed to be retracted and reset. Once the jack reached maximum extension, the jack was retracted and the steel plates at the front and back of the jack were advanced and reset, with the jacking force being transmitted to the threaded rod by use of a nut installed behind the jacking assembly. The bridges slid on the interface of polished stainless-steel plates (slide shoes) cast into the bottom of the abutment and the Teflon coated bearing pads, which had also been coated by the contractor with dish soap to further reduce friction.



Photo Courtesy of ADOT

Over the course of 21-24 hours, each bridge was slid approximately 50ft and the resulting finished bridge is roughly twice the width as the old bridge and now provides safe and efficient facilities across the interstate for vehicles, pedestrians, and bikes.

The project, which shared costs between ADOT and the City of Flagstaff, allowed opportunities for both parties to upgrade existing facilities, reduce future maintenance costs, and provide additional capacity, now and in the future.

Here is a link to a time lapse video of the southern half of the bridge slide that was posted on the City's [Facebook page](#).

Southern Arizona Branch News



2021 E-Week Save the Date

The Annual Engineer's Week (Virtual) Banquet will be held on Tuesday, February 23rd. ASCE's Southern Arizona Branch will recognize the winners for the 2021 Engineer of the Year, Young Engineer of the Year, and the Educators of the Year awards. Please be sure to download and fill out the award nomination forms below. Responses are due back Tuesday, February 2nd. Thank you!

[Engineer of the Year](#)

[Young Engineer of the Year](#)

2021 E-Week Save the Date Arizona CADD Workshop & Invitational

The members of Arizona's ASCE Student Chapters are hosting a month-long event intended to develop and showcase the CADD talents of our student-members. The student's are in need of judges, prize sponsors, mentors, and hosts of mini-workshops. Please see the flyer below and reach out to each University's President for more information. We hope you can help make this a successful event!

[Click Here for Info](#)

[Educator of the Year](#)



COMMUNITY
FOOD BANK
OF SOUTHERN ARIZONA



**January Virtual
Luncheon**

Please join us online for a
Virtual Luncheon presentation
by:



Mindy Blake
RTA Outreach Coordinator at
Pima Association of Governments

Providing a virtual Regional Transportation
Authority update

Wednesday, January 13th @ Noon

January Community Service

ASCE is continuing to support The Community Food Bank of Southern Arizona as part of our January Community Service. Please consider making a donation via the ASCE fundraising page below. Thank you!

[Donate Here](#)

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