

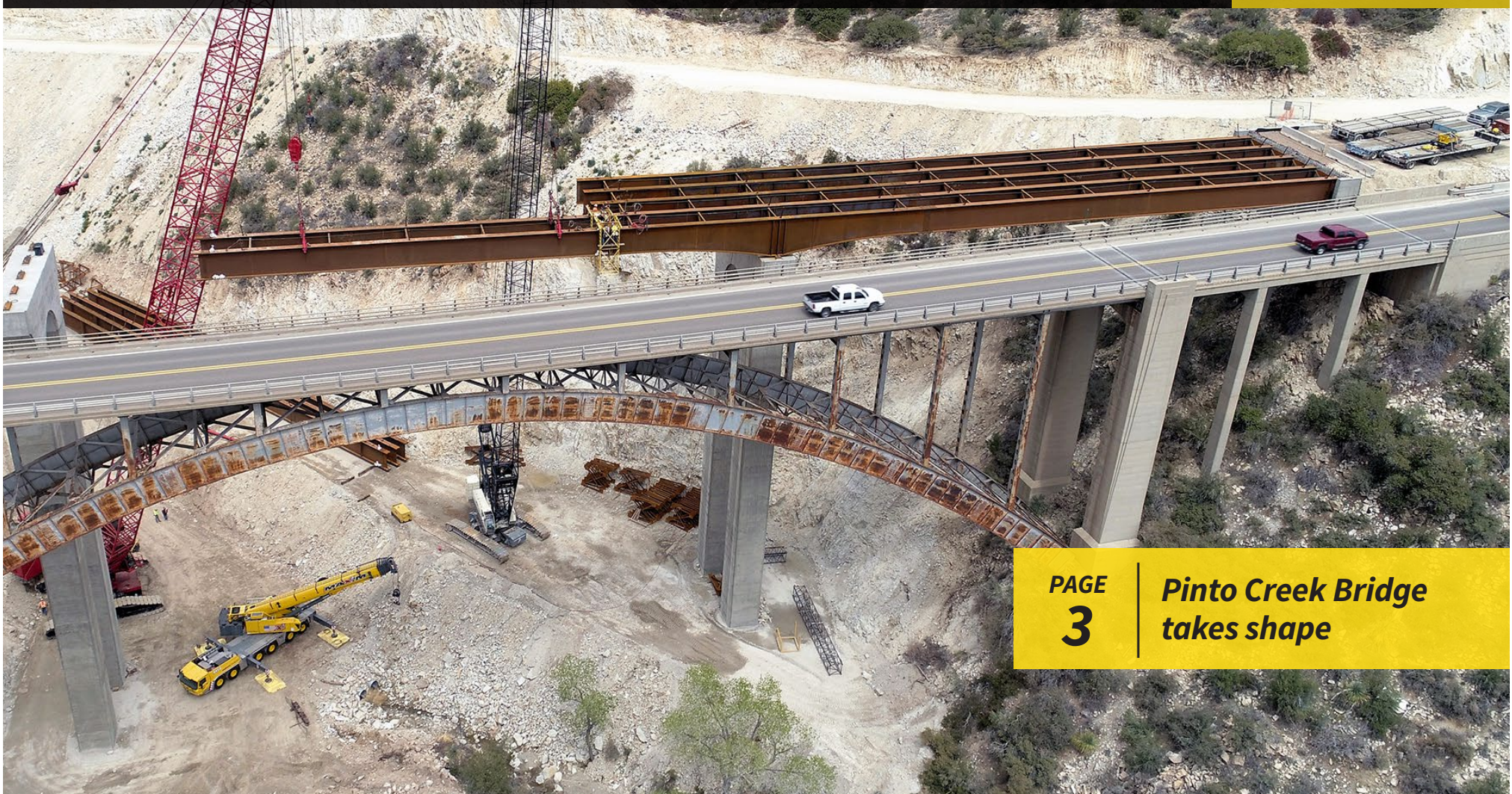
The INSIDE

LANE

A newsletter for employees of the Arizona Department of Transportation

JUNE 2021

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takes shape**



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ADOT

HAVE BEEN WITH the ADOT Bridge Group in the Infrastructure Delivery and Operations Division for 22 years. I serve as the bridge design service manager, overseeing teams of bridge engineers and designers who are responsible for the design and development of construction plans, specifications and standards for major transportation structures on the Arizona state highway system.

How do you use the huddle process to reflect on performance or prioritize problem solving?

When we huddle and issues or problems arise, we immediately document the issue on our problem solving register. The virtual environment of performing our huddles in Google Meet allows us to still conduct our huddle as if we are standing in front of our actual huddle board and problem register, but quickly add items to our Google Sheets problem registers. Before the Arizona Management System, we didn't have a formal process to keep track of the issues at hand and how we followed through to solve them. We prioritize the problems in which we tackle by building consensus amongst the huddle team and asking the questions: Which is an immediate need? Which will improve our work now? Does this impact our customers or technical partners with the output they need from us? The huddle is a great way to bring up and document problems and issues, follow up on the status of solving them and ultimately develop a solution that often leads to the development of standard work.

How do you take time to reflect on how your actions may impact other groups?

I think of this constantly in terms of total systems thinking. The service our design staff or I provide has an impact on multiple groups within the agency and consultant engineering community. Whether it is updating guidelines, standards or assisting the construction districts with a construction issue, how and what we disseminate as assistance and guidance has an impact. Being consistent with our work and support is aided by standard work that our bridge engineers and designers can use as a direct result of tackling an issue that perhaps someone may not have had to deal with before. Decisions we make in design and construction have an impact down the line with our customers. We take a total systems approach in how we develop or modify existing guidelines, specifications and standards, or how we design a structure. This helps ensure the work or changes in processes we make do not negatively impact others. If it does, we discuss it with those it may impact and we revise our process or work together to revise theirs to better align.



David Benton
Bridge Design Manager

The INSIDE LANE

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A WEB VERSION OF THIS NEWSLETTER CAN BE FOUND ON ADOTNET OR AT AZDOT.GOV/INSIDELANE.

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Share your best cover shot

Do you snap shots that show off the scenic side of transportation in Arizona? Share them with us and we might put your photograph on the next cover of The Inside Lane.

It can be a great picture of an MVD office, a beautiful highway shot or even an artsy photo of construction materials. Whatever the subject, the photo should highlight some aspect of the work happening here at ADOT.

Submit your original, digital photographs to InsideLane@azdot.gov in JPEG format (no larger than 10MB). Along with the photo, please provide a brief description and your name/title.



On the cover

Transportation Engineering Specialist **Wayne Grimsley** of the Bridge Management Section used a drone to take this cover photo, showing girders being lifted for the new Pinto Creek Bridge. In all, 35 girders ranging in length from 91 feet to 127 feet, and weighing about 50,000 to 70,000 pounds were installed. See more coverage, **Page 3**.

PINTO CREEK BRIDGE

A NEW CHAPTER IN SOUTHERN ARIZONA HISTORY

AERICAN ENGINEER and educator James Kip Finch said “The engineer has been, and is, a maker of history.”

That can definitely be said of the engineers and team members working on the Pinto Creek Bridge project as they are creating a replacement for a 72-year-old bridge, located on US 60 about six miles west of Miami, to keep a southern Arizona community moving.

When the project began in 2012, many factors came into play, including addressing historic preservation with the Federal Highway Administration and bridge aesthetics with the U.S. Forest Service. Another consideration was environmental impact, which led to the mitigation and conservation of the Arizona Hedgehog Cactus in the canyon (see sidebar story).

An interesting development was the discovery of a mine adit, which is basically a prospector’s tunnel, a consideration during the original construction in the 1940s. The team did 3D modeling of the foundation excavation limits to determine the type of foundation that would reduce any risk due to the mine adit.

ADOT used value engineering to develop improvements to the construction feasibility review and efficiency of the bridge, saving about \$1.5 million.

“Adjustments were made to the foundations and column reinforcing for efficiency and constructibility,” Bridge Designer **Rafe Davis** explained. “A bid alternate was developed in the plans and specifications which provided the contractor flexibility.”

The bridge is now about 73% complete. The [girder lift](#) took place in April, but it was an involved process spanning several months.

“The girders took more than three months to fabricate, not including the time for required submittals and to prepare the structural steel shop drawings,” Project Supervisor **Kim Vanvolkinburg** said. “Once girder delivery to the project began, it took them about six weeks to set and splice all the girders and cross frames. The contractor brought in multiple cranes, and had to move them several times due to the logistics of working adjacent to the existing highway and within the canyon below.”

The projected completion date is January 2022.

“This will likely adjust some as there is a lot of work yet to be completed,” Vanvolkinburg said. “Hopefully, the weather will cooperate.”

Read more about the bridge project and progress in the [ADOT Blog](#). Discover photos of the project and the girder lift on [Flickr](#). ■

~ Kim Larson, Senior Communications Specialist

A view of the girder placement from the bottom of the canyon, 158 feet down, which is equivalent to roughly 11 stories.

During the six-week process, 35 girders were lifted, some paired and bolted together on the ground, others being lifted first.

Russell Chase, ADOT Communications



PRESERVING THE ENDANGERED HEDGEHOG CACTUS

WITH THE PINTO Creek Bridge project, one important consideration was conserving the canyon’s Arizona hedgehog cacti, which only grow in small parts of Gila and Pinal counties.

The process had two big challenges.



Josh Fife, Environmental Planning

Dozens of Arizona hedgehog cacti plants and seeds were taken from the site, and are now being housed at the Desert Botanical Garden to be replanted once construction is complete, with a current 94% survival rate.

ADOT Biologist **Josh Fife** said “This is a sensitive plant; we worked with the design team to establish a footprint with the least impact on the habitat.”

The second challenge was figuring out what to do with the cacti. Partnering with the Desert Botanical Garden was critical, as their experts’ knowledge with rare succulents,

plus the facilities to care for them during the project, were just what the doctor ordered.

“This partnership is invaluable for this project,” Fife said. “While they are housing the plants, they will hand pollinate and add an estimated 50 more cacti back to the area, also creating a seed bank for the species to hopefully thrive well into the future.”

Find more information in this [ADOT blog post](#) or this recent [12News story](#).

~ Kim Larson, Senior Communications Specialist

KAIZEN KORNER

KAIZEN 2021 CHALLENGE

The Office of Continuous Improvement announces the Kaizen 2021 Challenge goal of 7,200 kaizens. Every employee is being asked to complete one kaizen on their own. A kaizen can be big or small, eliminates waste in our processes and is documented through standard work. Team or collaborative kaizens are also encouraged. Last year, only 61% of employees individually documented a completed kaizen.

KAIZEN COUNT

The number of kaizens submitted by ADOT employees so far this fiscal year is

4,851

For a complete breakdown by division, visit the [Office of Continuous Improvement page on ADOTNet](#).

ADOT photogrammetry reels moved for historic preservation to state library

IN THE 65-DEGREE climate-controlled room, about 1,400 large reels of film dating back 24 years filled the Photogrammetry office in Phoenix.

The film was developed and scanned to provide photogrammetry to document — via a topographic map with aerial images — the conditions in and around areas where ADOT was improving, building or repairing freeways from 1997 to 2015. Photogrammetry is the science of making precise measurements utilizing aerial photographs to make accurate maps and surveys.

Today, these film reels along with storage cabinetry and scanning equipment have a new home. They were moved from the 28th Street building to the Arizona State Library, Archives and Public Records for historic preservation.

Coordinating with the State Archives, the environmental cleanup of chemicals, facilities and moving companies was needed during the process. A new moving company was retained at the last minute and this ended up saving ADOT's Roadway and Survey Section about \$8,000.

Director **John Halikowski** sent a [Shout Out](#) in April praising Survey Manager **Virgil Coxon**, Administrative Services Officer **Anna Widener** and

the ADOT Survey Crew for their great work with the move.

"Well done on the move and saving \$\$. ADOT is now almost ready to put 28th Street into our scrapbook with other fond memories that we will leave in the rear view mirror," he wrote.

For many years, ADOT surveyors and engineers used photogrammetry to understand an area's features and terrain before they began to plan freeway improvements.

An [ADOT Blog article from 2012](#) explains how photogrammetry using aerial photos worked:

"The photos are taken with a 60-65 % overlap so photogrammetrists (with the help of computer software and special 3D glasses) can see a three-dimensional view of the ground. From there, they use a specially designed computer mouse (also known as a stealth mouse) to collect all features and draw breaklines (three-dimensional lines used to collect points) that indicate where there's a change in terrain elevation."

When aerial photogrammetry was requested through the ADOT public record process, the photogrammetry unit provided a black and white print of a particular route and milepost. The Office of Attorney General and Arizona Department of

Virgil Coxon, IDO



More than 1,400 film reels used for photogrammetry were moved from an ADOT office to the Arizona State Library, Archives and Public Records for historic preservation. There were 17 metal shelves with six rows in each, holding about 14 reels of film. Unused film and chemicals were disposed of through a Hazmat contract and ADOT's environmental cleanup process.

Administration Risk Management staff regularly requested aerial photos for large liability claims. But records requests stopped about nine years ago because experts were using color satellite imagery.

"Because the ADOT aerial photogrammetry had historical value to the State of Arizona, transfer of the reels allows for greater access to the general public and preservation for future generations," said ADOT Records Manager **Susan Olson**.

"I was contacted by Roadway Design to facilitate what ADOT should do with retiring the aerials and handled the transfer paperwork for the reels and details with the Arizona Library and Archives. Roadway Design Group facilitated the transfer logistics," she added.

Since new technology emerged, ADOT no longer supports photogrammetry projects.

"Planes, pilots, digital cameras and aerial photographers are now supplied by consultants," said Coxon, who works in the Infrastructure Delivery and Operations Division's Roadway Engineer Survey Section. "Drones also are used by consultants and offer many benefits including less operating expenses." ■

~ Lori Baker, Senior Communications Specialist



These photos taken in 2014 show the reels of film, scanner and aerial photographs used to plan freeways.



ADOT Communications

The Inside Lane is featuring a series of articles about teams of employees working on [ADOT's 2021 Strategic Initiatives](#), which are excellent examples of doing things [AKA - The ADOT Way](#). Employees are adapting to new concepts, using a total systems effort and highlighting a process in action.

Business unit mapping makes the invisible visible

EVERYONE, EVERYWHERE, solving problems every day! Embracing this Arizona Management System philosophy, all ADOT employees are encouraged to be problem solvers and to kaizen — continuously improve — their core work processes.

While thousands of employees excel in the agency's annual Kaizen Challenge, more needs to be done to raise the visibility of ADOT business processes that create results.

That's why a PDCA (Plan-Do-Check-Act) team of employees, representing various ADOT divisions and groups, is developing resources to implement ADOT's 2021 Strategic Goal of Core Business Process Mapping.

"We seek to increase the visibility of core processes in order to spur the establishment of standard work, improve results and help drive continuous improvement," said Senior Lean Coach **Vincent LaBella**, who is leading the Core Business Process Mapping PDCA. "The experience of mapping a process with teammates exposes employees to AMS, and kaizen practices and principles."

LaBella shared the team's guidance and responses below.

What is a core process?

Core processes represent the essential activities an organization performs to achieve its goals and objectives, fulfill its mission and attain its vision. These processes enable you to create the most value-added and essential transformations for the customer. For example: providing driver licenses at MVD or paving highways by our Infrastructure Delivery and Operations Division maintenance teams.

What is Process Mapping?

Process mapping creates a visual representation of steps, information, input and outputs, and who is responsible for delivering a product or service. The map shows a series of tasks that lead to a desired outcome. In essence, process mapping makes the invisible visible.

Why do we do Process Mapping?

Mapping makes problems visible and develops team members' critical-thinking ability so that they can solve those problems and improve work processes, which leads to standard work.

What problems and gaps were identified by the PDCA team?

ADOT had no agreed-upon list of business units, no standard work for mapping processes nor capturing completed maps. We realize we have many opportunities to establish new metrics and improve existing metrics for core processes.

What is the current status of the team's work?

We are developing standard work, which includes guides for how to map, how to share and track progress and a Google Data Studio capture tool.

What has been learned from the process so far?

Doing it virtually, PDCA team members have tested our standard work guidance and have multiple experiences of completing a process map in 45 to 75 minutes, without a lean coach. ■

~ Lori Baker, Senior Communications Specialist

Policy Assessment and Management reviewed

Problem: There is no agency-wide line of sight or review to determine if ADOT policies are necessary or current. Policy review varies from group to group.

Inventory: ADOT has 474 individual policies influencing many, and sometimes all, aspects of the agency.

Goal: Develop a strong policy review process by having policy administrators from across the agency collaborate on standard work.

Challenge: The PDCA team is quantifying the amount of time that policy administrators spend obtaining information from ADOT employees across the agency. Regulatory compliance is important, and timely feedback is critical to meeting deadlines. It ties to ADOT's values of Accountability, Integrity and Respect.

Process owners: Director of Government Relations and Rules **Katy Proctor** and Rules and Policy Administrator **Jennifer Thomsen**.

PDCA team divisions/groups represented: Enforcement and Compliance Division, Executive Hearing Office, Financial Management Services, Infrastructure Delivery and Operations Division, Information Technology Group, Motor Vehicle Division, Multimodal Planning Division, Legal, Office of Inspector General, Risk Management, State Engineer's Office and Transportation Systems Management and Operations. ■

~ Lori Baker, Senior Communications Specialist

Why Process Map?

□ Creates a common understanding of the process

What you THINK it is:

What it ACTUALLY is:

What it SHOULD be:

What we strive for...

Makes the invisible visible

Award Winner has a safety mindset that ‘never quits’

WITH MORE THAN five years under his belt at ADOT, 2020 Annual Safety Award winner, Transportation Engineering Specialist **Josh Hale** has experience in different units in both the Infrastructure Delivery and Operations Division and Transportation Systems and Management Operations Division.



Josh Hale

Once those elements were complete, Northern Region teams began to mark 7,500 bridge expansion joints, starting with priority one, or higher occupancy routes, like State Routes 87 and 89. That work did not include the many other potential obstacles that needed to be updated — like guard rails, cattle guards, medians and curbs.

An additional safety component with new markers located at interchanges was added to deter wrong way drivers, a red reflector on the back side.

“Josh has a mind that never quits thinking about improving highway safety,” said LaJeunesse. “We will never know how many dollars he has saved us or crashes he has helped prevent, but travelers in northern Arizona can thank Josh when they arrive safely home.”

~ Kim Larson, Senior Communications Specialist

“His past experience in highway construction and maintenance planted seeds in his mind and now that he works in the Operational Traffic and Safety group, his ideas are blossoming,” Northern Region Traffic Engineer **Bob LaJeunesse** said of Hale.

That diverse experience, including operating snow plows, gave Hale the perspective to tackle the standard for snow plow markers. At the time, the region averaged about a dozen bridge strikes every season, amounting to more than \$63,800 in repairs just in 2019. So he set out on a mission to change that.

“By having the surface conditions properly marked, the snow plow operators would be able to quickly identify the hazard and maintain situational awareness,” Hale said.

Overall, the process took about a year and a half and involved a great deal of research, working through how much to increase the height and color of the markers and the design specifications.



Before and after: Previously, bridge expansion joints had no snow plow markers, resulting in accidents, repair costs and delays in service.

WINNER,

WINNER

WE RECEIVED MANY entries in response to last month’s AKA - The ADOT Way word search contest, but there could only be one winner. Congratulations to Motor Vehicle Division Customer Service Unit Supervisor **Christine Gorman** of the Tucson Call Center (pictured below), who was randomly selected as the winner. Assistant Communications Director for Internal Communications **Kathy Boyle** presented Gorman with a special gift bag, including an Arizona Highways Magazine, Arizona Highways Magazine hummingbird note block, Inside Lane stress ball, a large candy bar and more goodies.



ADOT JUMBLE

Directions: Unscramble each of the clue words, then arrange the circled letters to form the answer. Email your answers to InsideLane@azdot.gov by **June 11**. Everyone who solves the puzzle will be entered into a drawing for a prize. We’ll reveal the answers in next month’s newsletter. Good luck!

- 1) EINKZA _ ○ _ _ _ ○ _
- 2) RSEEPTC _ _ _ _ _ _ ○
- 3) AEPESIHLRD _ _ ○ ○ _ _ _ _ _ ○
- 4) KOWR ○ ○ _ _ _
- 5) TTGEIYNRI _ _ _ _ _ _ ○ ○



When putting an emphasis on AIR values, Kaizen principles and AMS elements, ADOT employees always go
