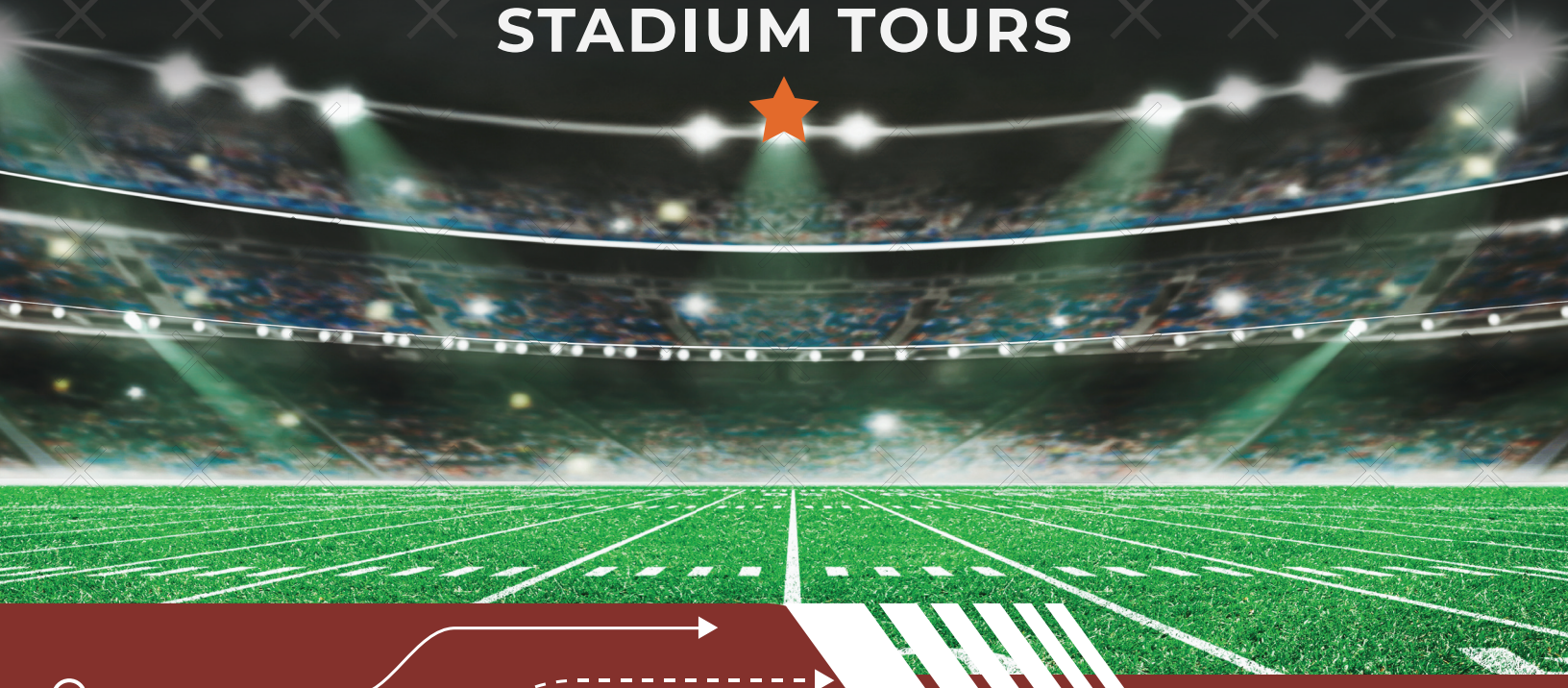
STEM

GAME DAY

STADIUM TOURS



DIBBLE

STEM GAME DAY INSPIRES THE NEXT GENERATION OF ENGINEERS

In a collaborative effort to introduce more students to engineering, ACEC Arizona pioneered an engaging educational event—STEM Game Day. Held at the Arizona State University (ASU), University of Arizona (U of A), and Northern Arizona University (NAU) stadiums, STEM Game Day transforms stadium visits into hands-on experiences where middle school students can gain firsthand insights into what it takes to "engineer a football game" and the engineering careers that make game day possible.

Interactive Tour and Engineering Challenges

During each tour, volunteers pointed out innovative and interdisciplinary engineering design, as seen throughout the stadium:

- **Traffic and transportation engineering:** Provide smooth ingress and egress for over 50,000 fans
- **Utilities engineering:** Ensure water, sewer, and power connections throughout the stadium for services such as concessions, restrooms, lighting, and sound
- **Mechanical engineering:** Regulate air quality and temperature for a comfortable experience
- **Electrical engineering:** Power the lighting, scoreboards, audio/visual, and electronic devices essential for operations
- **Communications engineering:** Provide connectivity across different parts of the stadium and to the outside world
- **Structural engineering:** Support safety and aesthetics in the design of the stadium

During the tour, students stopped at four interactive stations on transportation, structural, and utilities engineering and engineering careers.

THE TOUR

Interactive Challenge Stations

STRUCTURES STATION: Using toothpicks and gumdrops, students unofficially competed to build the highest structure with the fewest materials. Engineers spoke with students about the importance of using different materials to construct durable, resilient, and safe structures.

TRANSPORTATION STATION:

Students built a Hot Wheels track off a platform, using curves and other strategies to stop the car from hitting an action figure at the end of the track. Engineers shared about stopping sight distance, curves, vehicle speeds, and other concepts related to transportation engineering.

UTILITIES STATION:

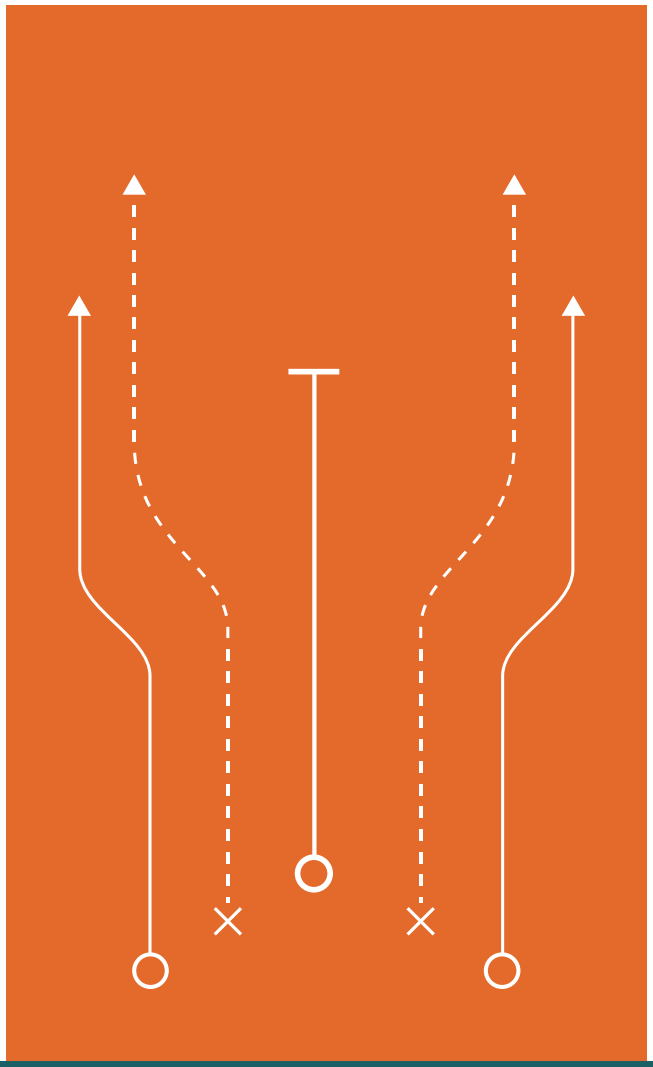
Students constructed boats out of aluminum foil and tested how many beans each boat could hold before sinking. This activity led to a discussion about buoyancy, the strength of water, and water management systems.

CAREERS STATION:

Students completed a "blueprint relay" where they had to replicate an image using verbal instructions alone. This activity showed students the importance of communication in engineering. Many problems can arise if consultants do not know what their clients are picturing, and it is the engineer's job to obtain this information so everyone is on the same page. A full set of plans at the careers station highlighted the final product of these back-and-forth conversations.

Each of these immersive experiences promoted movement and hands-on participation from students while introducing basic engineering concepts. The planning team—which includes Zach Lambros (Dibble), Mike Olson (Dibble), Nicolai Oliden (Jacobs) and Jordan Kurlin (ADOT)—devoted significant time and energy to making engineering concepts fun and relatable. During the stadium tours, some students asked how they could get a job in engineering, and volunteers gladly shared about the career path to becoming an engineer. Showcasing real-world applications of engineering paves the way for future engineers to realize their potential and make a difference in the world in tangible, life-altering ways.

> **"I enjoy how hands-on it is, and I enjoy learning from someone who knows what they're talking about. I wanna be either an electrical or software engineer when I grow up. So, I wanna do all the lights and stuff."**
>
> **– 8th grade student**

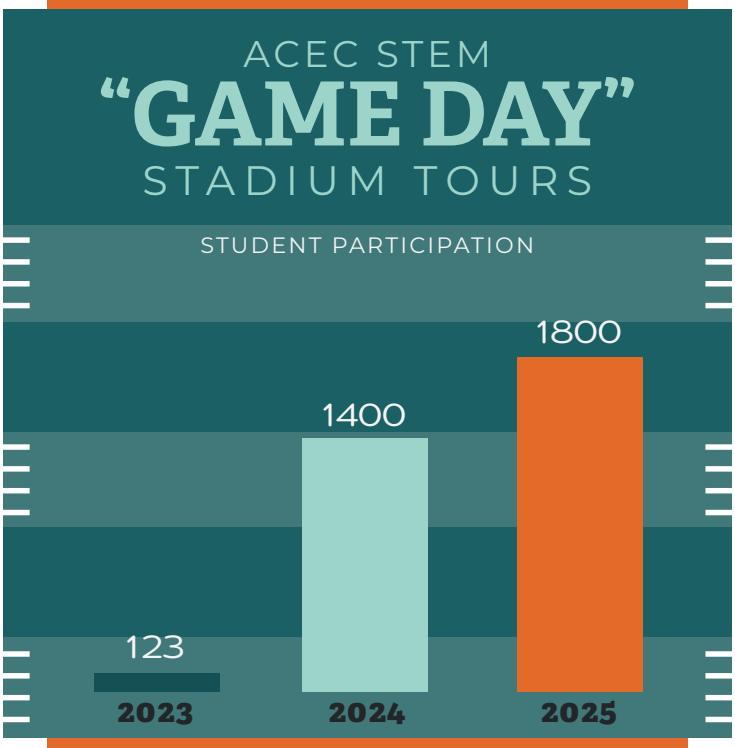


The Importance

With the huge workforce shortages in the engineering industry, engaging students in STEM at an early age is more critical than ever. Research has shown that it is most effective to reach students while they are still in middle school so they can take the requisite math and sciences courses in high school and begin college as an engineering major. After identifying these workforce challenges from discussions with university engineering leaders and national contacts, ACEC Arizona and Dibble formed the Education Committee to bring awareness of engineering to the forefront. Each committee member is passionate about making STEM accessible to inspire the next generation of engineers.

The Inspiration

Mike Olson, who is one of the Education Committee members and spearheaded the U of A stadium tour, shared how he wishes he knew about civil engineering at a younger age. He was not exposed to civil engineering until college, and while he eventually switched majors to civil engineering, his entry into the civil engineering workforce was delayed longer than he would have liked. Olson said he would have loved attending an event like STEM Game Day as a student, and it would have made a world of difference to him.



> **"Science, technology, math, and engineering all work together to really open up a lot of avenues for these kids. STEM can affect their lives and help them solve problems."**
> **—Mike Olson, Dibble**

Gregory Haggerty, who is the CEO of Dibble and was the initial chairman of the ACEC Arizona Education Committee, recounts his inspiration for STEM education. He recalls looking at water and sewer pipelines with his father, who served as the superintendent at his hometown's local utility company. Although he had early exposure to engineering and even toured a wastewater treatment facility in 6th grade, he did not decide to become an engineer until a conversation with the town's professional engineer as a high school senior. Haggerty believes that engineering is "a way to spend your life's energy doing tremendously important work that has huge impacts on every citizen," and he is determined to impart this passion to the next generation.

Zach Lambros, who spearheaded the ASU Game Day, shared his excitement over the industry taking an interest in such a crucial event. The committee dreams of increasing the reach of STEM Game Days to a collective 12,000 students annually across the nation, but Lambros says the biggest limiting factor is engaging volunteers who see the importance of connecting the industry to the classroom.

The Impact

What began in 2023 as a pilot event at ASU with 120 students from two schools has turned into a full event at each of the three state universities. In 2024, the three universities hosted a total of 1,400 students from approximately 30 schools, and in 2025, nearly 1,450 students participated from around 50 schools. The first event had 20 volunteers from eight AEC firms, with the 2024 events drawing around 150 volunteers from 30 firms and the 2025 events engaging over 200 volunteers from more than 30 firms.

This significant increase in participation and promising success of the initiative is due to the tireless efforts of the ACEC Arizona Education Committee. Since many committee members are from Dibble, the firm naturally provided many volunteers at each event. However, the Game Day team actively recruited large numbers of volunteers from other AEC firms, including ACEC's LEAP classes, by asking them to show leadership and influence in the industry.

Any lessons learned or best practices?

After hosting three years of stadium tours, the team has developed a scalable model for these inspirational STEM Game Day events that can be easily adapted for other locations. Dibble is proud to have been part of the stadium tours since their inception and is grateful to our partners at ACEC Arizona, ASU, U of A, NAU, local school districts, national leaders, and our AEC colleagues for their time and dedication to this worthwhile venture. Given the nationwide need for more engineers, it is our hope that these STEM Game Days become a national initiative to encourage students to pursue engineering. STEM Game Day is an amazing opportunity for our industry to lead with passion, investing in the next generation of civil engineers who will shape the future.