Wilson
SURVEY/ENGINEERING

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Participants and mentors alike were all smiles during the event.

SHAPING THE FUTURE: Wilson Supports Girls in Science and Math with "Tiny Trusses" Contest and GEMS Fair

In February, Wilson engineers Danielle Johnston, PE, and Melanie Mankamyer, PE, donated their time and talent to a Girl Scouts' project called "Tiny Trusses", held in Burlington, Washington. Danielle and Melanie guided the girls during the process of design, completion and load testing of model bridges.

The project included weekly mentoring by Danielle and culminated in a one-day event where each team's bridge design was tested to its load limits. The strongest bridges received top honors. However, all the teams had a great time and experienced some of the "real-life" design and construction processes required of an engineer.

Tiny Trusses

Girl Scouts designing their prototype bridge.

Two Girl Scouts stopped by the Wilson booth to visit with Melanie and Danielle.

GEMS Fair at WWU

Another event that Wilson staff members supported was The GEMS (Girls in Engineering, Math, and Science) Fair, held at Western Washington University in May. It showcased groups from around campus and Bellingham that have ties to the science and

technology community and provided many activities to engage young women and raise awareness of careers in science, technology, engineering and math (STEM).

GEMS Fair: (left) - Wilson team members guiding water filtration activity; (right) - participant trying out Wilson's Trimble S6 Robotic Total Station

The completed bridge featuring steel support truss work, new deck and railings.

FEATURED PROJECT: Clubhouse Bridge Rehabilitation

Glenhaven Lakes Club, Sedro-Woolley, WA

The Glenhaven Lakes Club is a small homeowners association that has a clubhouse and swimming pool located on an island in a small lake near Alger, Washington. The only access is across a 50' long bridge built in approximately 1963. Unfortunately, the bridge was not originally designed to carry a fire truck and water tanker. Further, the bridge deck and railing had deteriorated to the point that pieces of it had fallen into the water below. Altogether, the bridge had only 1/3 the needed capacity for the fire equipment, so the fire department could not serve the island.

Wilson studied the bridge under the direction of Structural Engineer Charles Waugh, PE, SE, including sampling the wood from the large glue-laminated beams that support the span. We found they were sound, though in need of strengthening to support the fire equipment. The decision was made to strengthen the existing wood beams and use the existing abutments, also still in sound condition.

Our team returned to survey the bridge with a laser scanner that allowed a 3D computer model to ¼" accuracy to be made. Using this virtual template, a plan was devised allowing the existing beams to be used to support steel truss work as well as a lightweight deck. The new deck also supports a separate pedestrian lane for increased safety. The accuracy of the 3D scanner allowed steel fabrication to occur off-site, thus facilitating delivery of steel parts to the project site where everything fit together with minimal adjustments. Using the 3D scanner proved vital to the success of the project, as there were no original as-built drawings of the bridge available for reference and the scanner is more accurate than any manual methods. The efficiency of the scanner significantly shortened the project duration, thereby saving the client money.

The result is a cost effective replacement of the bridge deck which will serve the community for decades to come while ensuring emergency vehicle access to valuable facilities, all with minimal impact on the adjacent natural environment.

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