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# Under pressure: Student engineers test bridges built from balsa wood

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From left, Roland Park K-8 Magnet School's 8th graders Deana Gallegos, 13, Isabella Martinez, 14, and Samantha Champion, 13, celebrate after their balsa bridge was stress tested for how much weight it could carry Saturday at the 45th Annual USF Engineering Expo-Balsa Wood Bridge Building Competition. The three participated in the event at USF College of Engineering competing against middle and high-schoolers primarily from Hillsborough and Pinellas schools. ANDY JONES/STAFF

TAMPA — A bridge made out of balsa wood designed by Mariella Overdraft and her two teammates was more sturdy than the 14-year-old girl's knees during an engineering contest at the University of South Florida on Saturday.

The bridge designed by the all-female team from Terrence Community Middle School withstood 217 pounds of pressure, better than any other in the middle or high school divisions at the Balsa Wood Bridge-Building Competition.

"We didn't know our bridge could hold that much," Mariella, 14 said. "My legs are shaking."

Mariella and her teammates Fariah Ansari, 13, and Farah Elsadi, 13 took first place in middle school division. Teams from Cambridge Christian School finished second and third.

Middle and high school students primarily from Hillsborough and Pinellas Counties built bridges to withstand the maximum amount of weight and pressure using only the light-weight wood and glue.

The day started with an inspection of all the bridges to see if they fit the requirements, and if they did, they were put through a stress test.

Odelkys Marquez, a USF senior in civil engineering who ran the competition, which is in its 24th year,

said the event gives students the chance to explore their passion for science, technology, engineering and mathematics (STEM) fields.

“It allows them to get a taste of what we do,” she said. “It’s not exactly what we do, but its a taste at least to their level.”

Students were notified of the competition in August, and many began coming up with design plans in the fall, Marquez said.

“It takes a lot of time,” she said. “The glue has to dry, you have to design it. It takes time.”

In the high school division, a team from Lennard High School in Ruskin claimed the top spot after their bridge withstood 144 pounds of pressure. Another team from Lennard finished second and student’s from East Bay High School in Gibsonton finished third.

Riccelo Guidorizzi, a 15-year-old student at Tampa’s Middleton High School, said his group worked on their design for 22 weeks.

During their creative process, his team designed four bridges to experiment with and used bridge-simulating software to design their products.

“Our favorite part of building was designing it on the computer,” he said.

When put to the test, their final design withstood 40 pounds of pressure, slightly less than the 50 pounds he was hoping for.

The competition was part of a larger engineering expo at USF on Saturday.

Thirty-nine teams qualified for the competition, but several were disqualified before it began for rule violations. All the bridges were required to weigh less than 110 grams and be no taller than 300 millimeters.

One of the key lessons budding engineers can take away from the competition is the importance of following directions, Marquez said.

“They have to be precise, they have to actually read the regulations,” she said. “You have to make sure you’re meeting your client’s needs.”

After the competition portion was done, however, teams that were disqualified could test their bridges to see if they would hold up or crumble under the pressure.

“That’s all the fun of it,” Marquez said. “At least you get to see it.”

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