IOWA STATE UNIVERSITY
Extension and Outreach
**College of Engineering**

CIRAS

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# Iowa Companies Use Iowa State Structures Lab to Test Products

*After enhancing product design, American Athletic in Jefferson, Iowa, and XL Specialized Trailers in Manchester, Iowa, needed to test their products' performance. Both companies turned to CIRAS for help. For more than a decade, CIRAS and Iowa State University's Structural Engineering Laboratory have assisted companies by conducting preliminary structural engineering tests for internal company use.*

CIRAS works with the company to develop appropriate test methodologies. The company fabricates any fixtures or specimens to be tested.

"The tests are not standardized and are noncertified. They are for internal use to help companies make decisions about their products based on their goals and the test results," says John Roberts, CIRAS project manager.

## Ensuring sports equipment safety

Brian Holladay, senior operations manager at American Athletic, says, "I like to use CIRAS for third-party destructive testing analysis of critical components. The depth and detail of the report gives me credible and presentable data, and it allows my design engineers time to design."

Using the structures lab's testing equipment, CIRAS and structures lab scientists performed maximum load testing on American Athletic's new brackets for its overhead, structurally mounted equipment for institutional play. Holladay says the test results showed a performance increase over the brackets' previous design and an increase in strength.

"The design will be a great addition to a family of products for a quickly developing national service market that will allow us to retain or hire 10 or more employees and increase product sales," Holladay says.

Because the company manufactures most of its products in Iowa and sources its raw material locally, the increased sales will support other Iowa businesses. Athletes will benefit, too—the enhanced bracket increases equipment safety in gymnasiums.


## Improving products, increasing revenue

Matt Schattgen, engineer at XL Specialized Trailers, says the company changed multiple critical components of its low-profile hydraulic detachable gooseneck trailer to improve the assembly process. Testing the stress and strain in a dynamic situation was essential before delivering the product to customers.

"We were looking to more than double the production of the trailer, and we did not want to have any failure possibilities in the field because of changes we made to improve manufacturing," says Jeff Ingels, vice president of engineering.

The trailer was outfitted in Ames with strain gauges and data collection equipment. In Manchester, it underwent static and dynamic tests. XL Specialized Trailers developed a road course and loaded the trailer with boxes of concrete to simulate normal loads. Data was collected during braking, accelerating, hitting bumps, and driving around curves.

Tests confirmed the company's performance expectations. "We produce about three or four of these trailers a week. We have doubled our volume in this model," Ingels says.

XL Specialized Trailers also tested its redesigned full-width mechanical gooseneck trailer. Since then, output of the trailer has doubled.

"CIRAS provided expertise to our company by recommending better data collection processes during the dynamic load simulations," Schattgen adds.

Ingels says CIRAS is easily accessible, easy to work with, and provides results in a reasonable turnaround time.

**For information on product testing, contact John Roberts at 515-294-0932 or jarobert@iastate.edu.**