

Roadside Attraction

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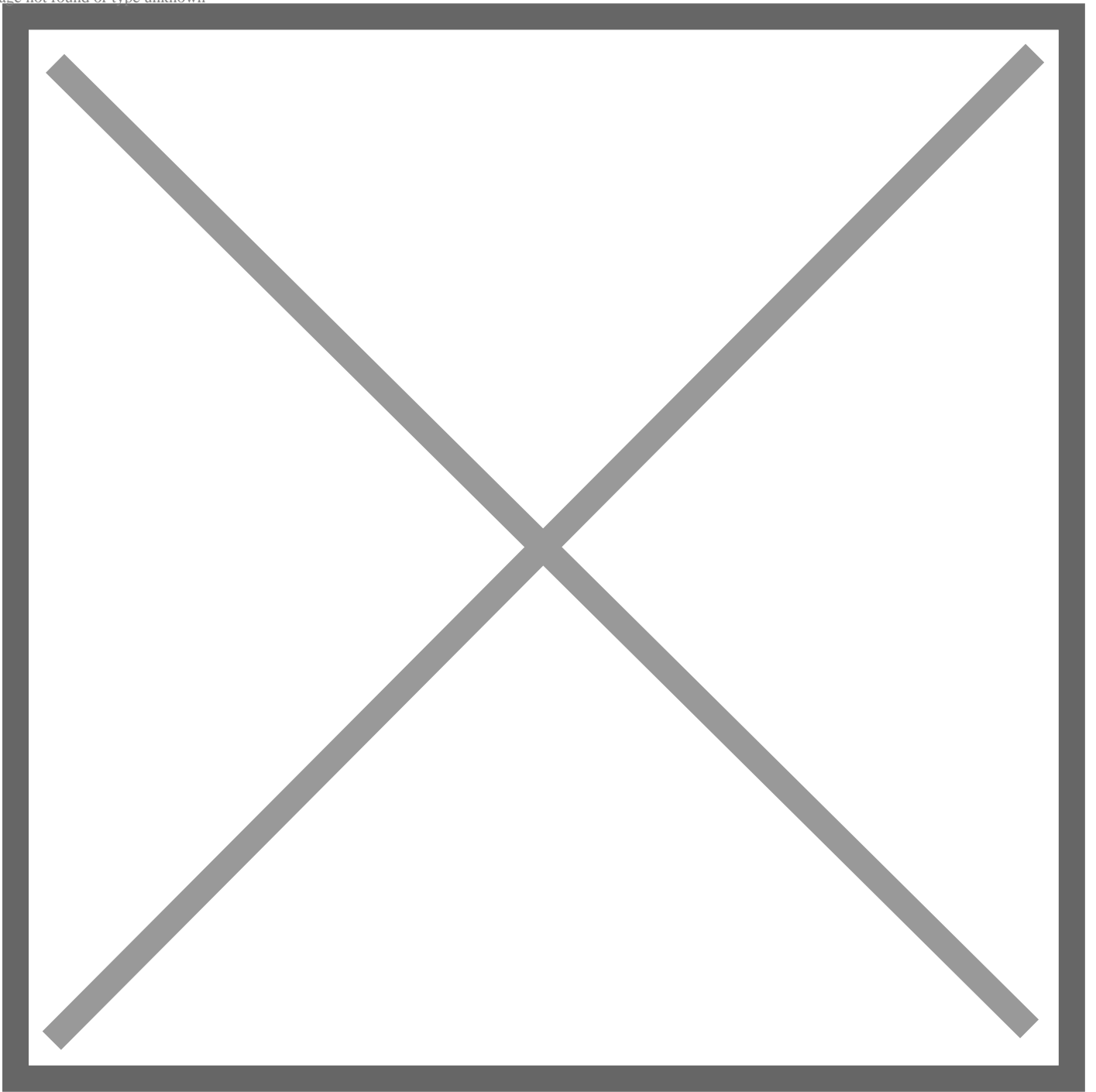
From the iconic Prius to the groundbreaking technology in hydrogen fuel cell electric vehicles like the Toyota Mirai sedan and Project Portal FC semi-truck, Toyota is a leader in green technology. However, the company is focusing on a different kind of green to curb one of the leading causes of fatal vehicle crashes—grass.

Data from the U.S. Department of Transportation reveals that over half of fatal vehicle crashes have been related to road departure. Advanced driver-assistance systems, such as road departure warning and lane keeping assistance, help to reduce crashes by detecting lane markings and/or road edge in absence of lane markings. However, one of the most predominant road edges on U.S roads—55%—is grass.¹

“Concrete dividers and guardrails, which are also commonly seen as a road edge, follow a nationwide standard, for grass there is no standard,” says Rini Sherony, Toyota Collaborative Safety Research Center (CSRC) senior principal engineer. “That’s why we brainstormed so much to figure out how to get the data.”

In collaboration with Indiana University, Purdue University Indianapolis and Ohio State University, the CSRC developed the world’s first successful grass surrogates—an artificial grass barrier that can be used to test vehicle road departure mitigation systems.

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By using over 24,000 high resolution Google Earth images to analyze various grass types, researchers were able to narrow down 16 main grass patterns that were used to develop grass surrogates. These surrogates are not only being used to help create safety technology capable of detecting grass road edges and testing systems in a test track, but they are also being presented to the National Highway Transportation Safety Administration in hopes of creating a standard that will be shared throughout the industry.²

https://toyota-cms-media.s3.amazonaws.com/wp-content/uploads/2019/09/Grass-Surrogate-Testing_1.mp4

In addition to developing the grass surrogates, CSRC researchers have crafted surrogates for metal guardrails and concrete dividers—the second and third most prevalent forms of road edge. Toyota CSRC’s mission is to provide solutions that enhance the safety of mobility, sharing the results to help the entire industry improve safety systems.

For more information on Toyota’s Collaborative Safety Resource Center, [click here](#).