

# Brighten up! Paint study could save states millions

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A new study from North Carolina State University shows that painted road markings, such as the lines separating traffic lanes, are significantly better at reflecting headlights in the direction that the paint was applied. This finding will help determine how states comply with new federal safety regulations and save money on painting their roadways.

The NC State researchers found that "retroreflectivity values" are higher in the direction of paint striping. "In other words," study co-author Dr. Joe Hummer says, "the paint reflects more light if you are following the painting truck than if you are driving from the other direction." This is a big deal, in part, because approximately 60 percent of the nation's roads are marked with paint, rather than thermoplastics or other materials. Hummer notes that paint "is expensive - two to three thousand dollars per mile of road." Hummer is a professor of civil engineering at NC State. His co-authors are fellow professor Dr. William Rasdorf and Ph.D. student Guanghua Zhang.

Hummer says the research could help state transportation departments better predict how long the painted markings will perform properly - and when they'll need to be replaced. If a state can re-paint [road markings](#) every three years instead of every two, it will save a lot of money, Hummer says.

In addition, the new research could play an important role in helping state and federal [transportation authorities](#) determine how to measure compliance with upcoming standards on pavement marking brightness.

The [Federal Highway Administration](#) is expected to release the standards soon, but this new research raises the possibility that a painted line in the road could pass a new brightness standard going in one direction, but fail it if tested from the other direction. This is a question that will have to be resolved in order to ensure uniform compliance with the new standards.

The difference in retroreflectivity, depending on the direction one is driving, is equivalent to about a year of wear and tear. In other words, a painted line in the road will look one year newer if you are driving in the same direction that the paint was applied.

Hummer explains that this happens because glass beads are scattered onto freshly painted traffic markings in order to make them reflective. Because the painting truck is moving, those beads tend to bounce and roll before coming to rest. "The beads skid and build up paint on one side," Hummer says. "Therefore, they are less reflective in that direction."

More information: The research was published in the journal *Public Works Management & Policy*.

Source: North Carolina State University

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