

# All Weather Pavement Marking System

Highways for LIFE Technology Partnerships 2008 Award \$499,277



U.S. Department of Transportation  
Federal Highway Administration

**HIGHWAYS FOR LIFE**  
Accelerating Innovation for the American Driving Experience

## Conventional and All-Weather Markings Under Night-Wet Conditions



Conventional Pavement Markings



All-Weather Pavement Markings



## Need for Innovation

Wet road conditions make it difficult for drivers to see conventional pavement markings. This is especially hazardous in work zones, where lane shifts and unusual traffic patterns are common. Retroreflectivity of conventional pavement markings diminishes significantly under wet weather conditions at night, which severely reduces their visibility. There is a growing need for pavement markings that sustain visibility under all weather conditions, customized for work zone applications and requirements.



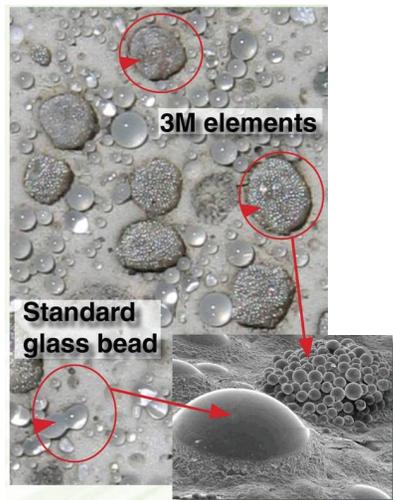
## Project Overview

3M refined and evaluated a paint and drop-on element-based customized for workzone applications. A human factors visibility evaluation was conducted by the Texas Transportation Institute. Thirty participants evaluated five pavement marking systems under dry, rainy, and wet conditions while driving the closed course at night. The three all-weather paint prototypes performed equivalently under all conditions and significantly out-performed the conventional paint markings under wet and rainy conditions.



## Project Status

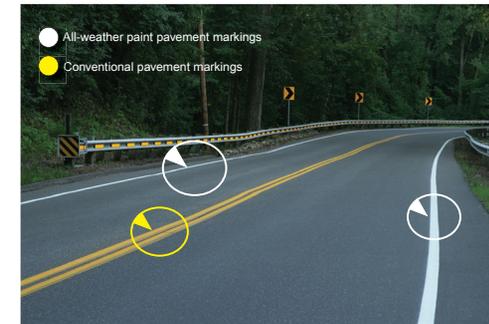
In the spring 2011, pavement markings were tested in work zones by North Carolina State University and Ohio State University and driver performance measures such as lane keeping and vehicle speeds were evaluated. Within these work zones, driver performance measures such as lane keeping and vehicle speeds will be evaluated. The goal is to provide a cost-effective pavement marking system that maintains optimal visibility and enhances driver safety in all types of weather, especially in challenging driving conditions such as construction work zones. The final report will be available in February 2012.



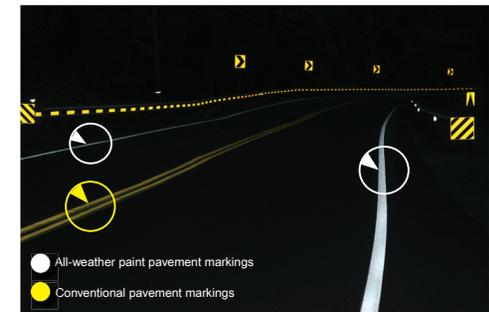
Elements feature yellow microcrystalline beads.

Unique optical elements made of a ceramic core surrounded by very high-refractive index beads that provide retroreflectivity under wet conditions, both during and after rain events. These optical elements are applied together with typical glass beads onto paint using conventional application methods.

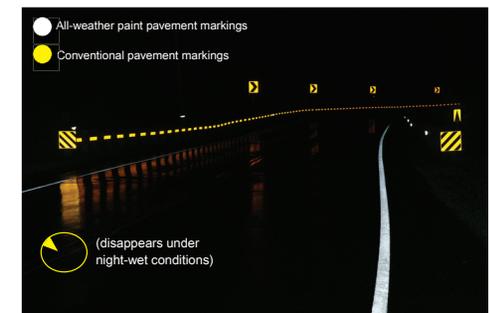
## Conventional and All-Weather Markings Under Different Conditions



Day-Dry



Night-Dry



Night-Wet



## Project Team

3M  
Texas Transportation Institute  
North Carolina State University  
Ohio State University



## Contact Information

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