



## Florida Department of Transportation Research Best Practices in the Use of Hybrid Static-Dynamic Signs BDK80 977-15

There could be no more standard feature of roadways than the road signs which inform drivers about speed limits, road hazards, destinations, and many other aspects of travel. These static signs have been joined in recent years by dynamic message signs (DMS), often seen on roadside trailers or as over-the-road installations. DMS can be updated to warn drivers about changing road conditions, such as weather-related delays, congestion, or detours. On DMS, Intelligent Traffic Systems (ITS) data can be displayed to travelers in real time.

The roadside DMS that informs drivers about their speed is a simple example of a hybrid sign, combining a dynamic message about driver speed with a static display of the speed limit. In this project, hybrid signs and their potential uses in Florida were studied by Florida International University researchers. Hybrid signs offer several advantages, including better legibility, smaller size, and lower installation and maintenance costs. The researchers identified current applications of hybrid signs. Three acceptance criteria were assessed through focus group studies: usefulness of hybrid sign applications; how understandable the signs were; and which hybrid sign designs were preferred by road users.

Hybrid signs are new to the U.S., but elsewhere, they are used extensively and in greater variety. The researchers reviewed the state-of-practice for use and design of hybrid signs, covering the U.S., Europe, Australia, and Asia. Applications included speed control, parking guidance, travel time/distance, dynamic rerouting, and graphical route information.

The researchers found that placement and sequencing of hybrid signs were the major design

considerations in attracting driver attention. Importance and amount of information were critical to whether drivers found signs useful. A helpful new type of hybrid sign was the graphical route information panel (GRIP), which displays a roadway network and dynamically highlights slow-downs and blockages, allowing drivers to choose a different route. Because of driver familiarity with maps, GRIPs can give drivers more information in a more condensed format.



*Focus groups assessed hybrid signs, for example, comparing the impact of showing a fine to showing driver speed.*

The background study suggested possible uses of hybrid signs in Florida and was the basis of focus groups evaluating hybrid sign applications in terms of the three acceptance criteria. Ten applications were selected and ten focus groups, involving different ages, genders, and ethnic groups, were conducted.

Most participants rated all applications as very useful, especially parking availability in garages, arrival time at bus/train stops, parking availability for levels/floors of parking garages, and comparative travel times for express lane facilities.

Participants had many useful suggestions regarding the wording of signs and what to display when no information was currently available. As to signs that inform drivers about their speed, participants felt that the variant of this sign that displays the potential fine for their speed was more likely to cause them to slow down.

Altogether, the researchers found that there were many applications for hybrid signs that could facilitate use of the transportation system and which would be readily accepted by its users. This project opens the door to a new and helpful feature for Florida's roads.