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## Lane Reduction Warning Signage for Work Zones: Alternatives to the MUTCD W4-2 Lane Ends Symbol

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### Abstract

Many work zones require lane closures, and road users need to be notified of these closures through appropriate upstream signage. A literature review prepared for this study found several previous investigations indicating unacceptably low comprehension of the U.S. standard lane closure sign (designated in the MUTCD as W4-2) and similar signs used internationally. The W4-2 sign is also unsuitable for signing interior lane closures on roadways with three or more lanes. Driver comprehension of several alternative sign faces was tested using the ANSI Z535.3 process and a driving simulator. The testing suggests that an Upward Drop Arrow design is a promising alternative to the existing W4-2 sign for sites where two upstream lanes are reduced to one lane in the work zone. In addition, one-arrow-per-lane signs developed as Americanized versions of the Vienna Convention G12a sign template are a promising option for interior lane closures on multi-lane roadway segments. Field evaluation of the Upward Drop Arrow and Americanized G12 signs is recommended.

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