



U.S. Department
of Transportation
**Federal Highway
Administration**

400 Seventh St., S.W.
Washington, D.C. 20590

January 26, 2007

In Reply Refer To: HOTO-1

Mr. John Heffernan
C.E.O.
Machinery Verification & Documentation Service, Inc.
P.O. Box 12003
Hauppauge, NY 11788

Dear Mr. Heffernan:

Thank you for your December 4 and January 5 letters to the Federal Highway Administration (FHWA) regarding your proposed "Traffic Light Safety Zone" pavement markings and signs. Your letters were forwarded to this office for reply.

Your letters propose the use of alternating red and yellow transverse pavement marking stripes to designate a "safety zone" on the approach to a traffic signal. When in this zone, you indicate that a driver seeing a green signal would be assured of being able to clear the intersection if the yellow signal subsequently appears, but a driver seeing a yellow signal should stop because of being too far from the intersection to clear it before the signal turns red. You also proposed an oval-shaped sign to notify drivers of the "safety zone." You asked for an interpretation on whether such markings and signs are compliant with the requirements of the Manual on Uniform Traffic Control Devices (MUTCD).

The MUTCD is the national standard for all traffic control devices on all roads open to public travel in the U.S. You can view the MUTCD at <http://mutcd.fhwa.dot.gov>. Section 3B.15 of the MUTCD requires all transverse markings (within or across a lane) to be white, so the red and yellow transverse markings you propose are not in compliance with the MUTCD. Further, oval is not an MUTCD approved shape for warning signs. Please note that markings and signs that are not compliant with the MUTCD can only be used on a road open to public travel if the public highway agency that owns the road requests and receives approval from the FHWA for experimentation, in accordance with Section 1A.10 of the MUTCD.

As your letters and other materials acknowledge, on each approach to a traffic signal there exists an area in which, at the onset of the yellow signal indication, it may be difficult for a driver to decide whether to stop or proceed through the intersection. In prior research this is



described as the dilemma zone. It begins at a point where an approaching driver who sees the yellow appear will make a decision to decelerate to a stop, and it ends at a point where a driver who sees the yellow appear will decide to proceed and will enter the intersection before the red signal appears. Within the dilemma zone between those two points, some drivers will decide to stop and some will decide to proceed. This has implications not only in the intersection but also for the driver immediately behind the driver making this decision.

Thorough studies have found that the dilemma zone's actual location is quite variable, depending on several factors, including:

- The operating speed of the vehicle (at, above, or below the speed limit)
- The size, weight, and type of the vehicle
- The braking characteristics of the vehicle (condition of brakes, tires, etc.)
- The perception/reaction time and passive/aggressive tendencies of the driver (elderly vs. young, night vs. day, complexity of environment, etc.)
- The pavement surface condition (wet, dry, rough, smooth, etc.)

Even if the posted speed limit is assumed to be the operating speed of all vehicles, the start and end points of the dilemma zone for any given approaching vehicle will still vary considerably depending on the individual driver, the vehicle, and the road surface condition at the time. This variability makes it infeasible to mark any specific location as the "go/no-go" demarcation point or to mark a specific segment of the approach as a "safety zone" as you have proposed. Such markings could increase the potential for crashes and could create liability for the road authorities who placed such markings.

We very much appreciate your interest in improving traffic safety. However, based on prior research into this issue, we find that your proposal would not result in improved safety. Therefore, we would not approve requests from highway agencies to experiment with them nor would we consider including such markings in a future edition of the MUTCD. If you have any questions, please feel free to contact Mr. Scott Wainwright of our staff by e-mail at scott.wainwright@dot.gov or by telephone at 202-366-0857. Please note that we have assigned your request the following official interpretation number and title: "3-200(I)—Dilemma Zone Pavement Markings."

Sincerely yours,

/s/ ***Anthony T. Furst***

Anthony T. Furst
Acting Director, Office of Transportation
Operations

FHWA:HOTO-1:SWainwright:ds:60857:12-21-06

Revised:ATFurst:12-22-06:SWainwright 1-25-07

cc: HOTO-1 HOTO-1(HKalla/SWainwright)

Mr. Ed Rice, HSA-10 HDA-NY(2)

Mr. Martin Knopp, HRC-MW Mr. Pat Hasson, HRC-MW

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