

Federal Highway Administration
400 Seventh Street SW
Washington, DC 20590

March 12, 2002

Refer to: HOTO-1

Mr. Raymond J. Peters
16 Nicholas Avenue
Groton, CT 06340

Dear Mr. Peters:

Thank you for your February 9, 2002, letter (received February 27, 2002) addressed to Mr. Scott Wainwright of this office. With your letter, you forwarded a copy of your correspondence with the Connecticut State Department of Transportation. That correspondence is in regard to the traffic signal displays and operation at an intersection in Groton that is part of a State project. You had asked the State to modify their proposed signal display and operation and, as a part of their response, the State indicated that your proposal is “not consistent with Federal guidelines for traffic signal phasing and operation.” As requested, we have reviewed the information you provided and we can offer the following comments.

It might be helpful to begin with a brief explanation of the Federal/State relationship. The Federal government does not own, maintain, nor operate the streets and highways. All of the roads (even Interstate highways) are owned, maintained, and operated by State and local governments. The responsibility for the planning, design, construction, operation, maintenance, and traffic management belongs to the State or local government that owns the applicable road. The Manual on Uniform Traffic Control Devices (MUTCD) is the national standard for the design and application of all traffic control devices, including traffic signals. While the Federal Highway Administration (FHWA) is responsible for developing the standards contained in the Manual, the responsibility for the selection, design, installation, operation, and timing of these devices belongs to State or local highway agencies. Additionally, the State and local authorities have full responsibility for selecting and designing road projects in concert with community and regional planning goals and strategies.

The State’s proposed traffic signal face identified as number “1” on your sketches meets the national standards in that it is comprised of a total of five “sections” or individual signal indications (circular red, circular yellow, circular green, yellow arrow, and green arrow). Your proposed modification of that signal face number “1” does not meet the national standards because, by adding a second circular red or a red arrow, it would be comprised of a total of six sections. The MUTCD, in Section 4D.16, prescribes a maximum of five sections in any one signal face. However, this could be overcome by making what you call “side I” of your modified signal face number “1” a separate signal face, laterally separated from signal “1” by at least eight feet. That separate signal face, controlling only left turns from westbound Route 349 to southbound Benham Road, would meet the requirements of the MUTCD if it were either a) red arrow, yellow, arrow, and green arrow or b) circular red, yellow arrow, and green arrow with a supplemental sign R10-10L “Left Turn Signal” to identify it as controlling only left turns.

The sequence of operation of the signals that you describe does not in itself appear to violate the standards of the MUTCD. However, it would be highly unusual in that you would have the “protected” (green arrow) signal phase for the westbound to southbound left turn movement occur twice in each “cycle” and the eastbound and westbound green phase would occur twice in each cycle. That is, your sequence would have the left turn green arrow come on both preceding and following the circular green for the through movements in the east-west directions, and the east-west road approaches would get green signals for every one time that the north-south traffic flows were provided a green light. Also, it appears you would have westbound through traffic stopped at all times that the green arrow is on for the westbound to southbound left turn, rather than the normal sequence of “overlapping” the parallel non-conflicting through movement during the left turn phase. As the State referenced in their reply, this highly unusual sequence of signal displays and movements of traffic flows would not be expected by drivers and could lead to considerable confusion. Some drivers would possibly conclude that the signal is malfunctioning and erratic movements could cause significant safety problems.

Section 4D.01 of the MUTCD states that “Engineering judgment should be used to determine the proper phasing and timing for a traffic control signal.” The State’s plan to prohibit westbound left turns in the a.m. peak period results in westbound through traffic being able to use both lanes. This plan, in conjunction with the signal phasing developed by the State’s traffic engineers, would not only significantly reduce the rear-end crash potential on that approach to the intersection, but it also appears to be most conducive to the stated objectives of the State and the Town to encourage more traffic to use the State Highway, Eastern Point Road, and reduce the volume of traffic on the local residential town road, Benham Road.

In conclusion, while the MUTCD standards do not present irreconcilable barriers to your proposal, we do not endorse your idea because of the traffic safety issues associated with it. We do appreciate your interest and the opportunity to review your proposal. For record-keeping purposes, we have numbered and titled your request as follows: “4-247(I)—Six-section signal face.” Please refer to this number in any further correspondence. If there are any questions, please contact Mr. Scott Wainwright at 202-366-0857.

Sincerely yours,

Shelley J. Row, P.E.
Director, Office of Transportation
Operations