



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

1200 New Jersey Avenue, SE
Washington, D.C. 20590

APR 5 2017

In Reply Refer to:
HOTO-1

Adam S. Weiser, P.E., PTOE
Safety Programs Manager
Division of Transportation Solutions
Delaware Department of Transportation
800 Bay Road
P.O. Box 778
Dover, DE 19903

Dear Mr. Weiser:

Thank you for your letter of March 8 requesting approval on behalf of the Delaware DOT and all jurisdictions in Delaware to use the alternative Signal Warrant 7, Crash Experience statewide in Delaware when conducting signal needs studies on State highways and all local jurisdictions' roadways. Your request is made under the provisions of Section 1A.10 of the 2009 edition of the Manual on Uniform Traffic Control Devices (MUTCD) and our Interim Approval Memorandum IA-19 dated February 24, 2017.

Your request is approved. Please maintain and periodically update a list of all locations where traffic control signals are installed in Delaware using the new Signal Warrant 7 as justification.

Your specific approval has been numbered "IA-19.3 – Alternative Signal Warrant 7, Crash Experience – Delaware DOT Statewide." Please reference this number in any future correspondence.

Thank you for your interest in improving highway safety. If we can be of further assistance on this matter, please contact Mr. Bruce Friedman at bruce.friedman@dot.gov.

Sincerely yours,

Mark R. Kehrli
Director, Office of Transportation
Operations



STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
800 BAY ROAD
P.O. Box 778
DOVER, DELAWARE 19903

JENNIFER COHAN
SECRETARY

March 8, 2017

VIA EMAIL

Federal Highway Administration
Office of Transportation Operations
HOTO-1
1200 New Jersey Avenue, SE
Washington, D.C. 20590

Dear Sir/Madam:

The Delaware Department of Transportation (DelDOT) is requesting Interim Approval for the optional use of an alternative Warrant 7, Crash Experience, when performing a traffic control signal needs study. This request for Interim Approval is in regards to the FHWA Interim Approval, IA-19, that was released on February 24, 2017.

DelDOT is requesting interim approval for the use of an alternative Warrant 7, Crash Experience, when performing a traffic control signal needs study. This Interim Approval is being requested on a statewide level to be utilized by DelDOT and our local partners. DelDOT agrees to abide by the specific conditions contained in the FHWA's Interim Approval, IA-19. DelDOT agrees to maintain and continually update a list of locations where the alternative Warrant 7 has been used to justify the installation of a traffic control signal. DelDOT also agrees to restore the site(s) of the interim approval to a condition that complies with the provisions of the MUTCD within three (3) months following the issuance of a final rule on this traffic control device. Finally, DelDOT agrees to terminate use of this application under the interim approval at any time that DelDOT determines significant safety concerns are directly or indirectly attributable to the application. We understand that FHWA's Office of Transportation Operations has the right to terminate the interim approval at any time if there is an indication of safety concerns.

Thank you for your consideration in this matter. Should you have any questions, please contact me at (302) 659-4073.



Federal Highway Administration

March 8, 2017

Page 2 of 2

Sincerely,

/* SIGNATURE ON FILE */

Adam S. Weiser, P.E., PTOE
Safety Programs Manager
Division of Transportation Solutions

Cc: Mark Luszcz, Chief Traffic Engineer
Peter Haag, Traffic Studies Manager
Patrick Kennedy, Federal Highway Administration



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

Memorandum

Subject: **INFORMATION:** MUTCD – Interim
Approval for Optional Use of an
Alternative Signal Warrant 7 – Crash
Experience (IA-19)

Date: FEB 24 2017

From: Martin C. Knopp *Mart. CK*
Associate Administrator for Operations

In Reply Refer To:
HOTO-1

To: Federal Lands Highway Division Engineers
Division Administrators

Purpose: The purpose of this memorandum is to issue an Interim Approval for the optional use of an alternative Warrant 7, Crash Experience, when performing a traffic control signal needs study. Interim Approval allows interim use, pending official rulemaking, of a new traffic control device, a revision to the application or manner of use of an existing traffic control device, or a provision not specifically described in the *Manual on Uniform Traffic Control Devices for Streets and Highways* (MUTCD).

Background: Section 4C.08 of the 2009 edition of the MUTCD contains the provisions for a traffic control signal Warrant 7 based on past crash experience at the location being studied. At the current time in order to satisfy the criteria for Warrant 7, Item B of Paragraph 2 in Section 4C.08 requires the engineer performing the traffic control signal needs study to document that “five or more reported crashes, of types susceptible to correction by a traffic control signal, have occurred within a 12-month period, each crash involving personal injury or property damage apparently exceeding the applicable requirements for a reportable crash.”

This threshold of five or more crashes has been in use for a long time. It can be found in Section 307 of the earliest (1935) edition of the MUTCD. Because the basis of this threshold of five or more crashes is not known¹, a National Cooperative Highway Research Program (NCHRP) research project, which is described in the next section of this memorandum, was developed and performed with its purpose being either to validate the accuracy and relevance of the “five or more crashes” threshold or to recommend an improved crash experience traffic signal warrant.

¹ Crash Experience Warrant for Traffic Signals; NCHRP Web-Only Document 204; Page 1; July 5, 2014; which can be accessed at <http://www.trb.org/Main/Blurbs/171359.aspx>.

Research on Warrant 7: A research project was performed under NCHRP Project 07-18, “Crash Experience Warrant for Traffic Signals”. The research resulted in updated criteria, which is based on either one year or three years of recent crash experience, for the number of crashes portion of Warrant 7.

The National Committee on Uniform Traffic Control Devices (NCUTCD) has requested that the FHWA revise the crash warrant in the next edition of the MUTCD based on research documented in the Final Report² for NCHRP Project No. 07-18. This change request has been designated by the FHWA as Official Ruling 4(09)-42 (C).

FHWA Evaluation of Results: The Office of Transportation Operations has reviewed the research findings and the NCUTCD’s change request and concurs with the conclusions of the research and the request from the NCUTCD.

The primary advantage of allowing the optional use of an alternative Item B in Paragraph 2 of Section 4C.08 of the 2009 edition of the MUTCD is that practitioners will be able to use a research-based method of analyzing reported crashes that takes into consideration (1) the number of crashes occurring over a three-year period in addition to a one-year period and (2) the number of legs at the location.

Conditions of Interim Approval: This Interim Approval does not create a new mandate compelling the alternative Item B in Paragraph 2 of Section 4C.08, but will allow agencies to use the alternative Item B, pending official MUTCD rulemaking, when performing a traffic control signal needs study.

The FHWA will grant permission for the optional use of an alternative Item B in Paragraph 2 of Section 4C.08 of the 2009 edition of the MUTCD under this Interim Approval to any jurisdiction that submits a written request to the Office of Transportation Operations. A State may request Interim Approval for all jurisdictions in that State. Jurisdictions seeking permission to use an alternative Item B in Paragraph 2 of Section 4C.08 under this Interim Approval must agree to:

- Comply with the technical conditions detailed below, and
- Maintain an inventory list of all locations where the alternative Item B in Paragraph 2 of Section 4C.08 was used to justify the installation of a traffic control signal, and
- Comply with Item D in Paragraph 18 of Section 1A.10.

Technical Conditions:

The use of an alternative Item B in Paragraph 2 of Section 4C.08 is optional. However, if an agency opts to use the alternative Item B, such use shall be in accordance with the same provisions that currently exist in the 2009 edition of the MUTCD for Warrant 7, Crash Experience, except that the existing Item B in Paragraph 2 may be replaced by the following provisions:

² Crash Experience Warrant for Traffic Signals; NCHRP Web-Only Document 204; July 5, 2014; which can be accessed at <http://www.trb.org/Main/Blurbs/171359.aspx>.

- B. At least one of the following conditions applies to the reported crash history (where each reported crash considered is related to the intersection and apparently exceeds the applicable requirements for a reportable crash):
1. The number of reported angle crashes and pedestrian crashes within a one-year period equals or exceeds the threshold number in Table IA-19-1 for total angle crashes and pedestrian crashes (all severities); or
 2. The number of reported fatal-and-injury angle crashes and pedestrian crashes within a one-year period equals or exceeds the threshold number in Table IA-19-1 for total fatal-and-injury angle crashes and pedestrian crashes ; or
 3. The number of reported angle crashes and pedestrian crashes within a three-year period equals or exceeds the threshold number in Table IA-19-2 for total angle crashes and pedestrian crashes (all severities); or
 4. The number of reported fatal-and-injury angle crashes and pedestrian crashes within a three-year period equals or exceeds the threshold number in Table IA-19-2 for total fatal-and-injury angle crashes and pedestrian crashes; and

Table IA-19-1. Minimum Number of Reported Crashes in a One-Year Period

Urban Area

| Number of through lanes on each approach | | Total of Angle and Pedestrian Crashes (all severities) ^a | | Total of Fatal-and-Injury Angle and Pedestrian Crashes ^a | |
|--|--------------|---|------------|---|------------|
| Major Street | Minor Street | Four Legs | Three Legs | Four Legs | Three Legs |
| 1 | 1 | 5 | 4 | 3 | 3 |
| 2 or more | 1 | 5 | 4 | 3 | 3 |
| 2 or more | 2 or more | 5 | 4 | 3 | 3 |
| 1 | 2 or more | 5 | 4 | 3 | 3 |

Rural Area^b

| Number of through lanes on each approach | | Total of Angle and Pedestrian Crashes (all severities) ^a | | Total of Fatal-and-Injury Angle and Pedestrian Crashes ^a | |
|--|--------------|---|------------|---|------------|
| Major Street | Minor Street | Four Legs | Three Legs | Four Legs | Three Legs |
| 1 | 1 | 4 | 3 | 3 | 3 |
| 2 or more | 1 | 10 | 9 | 6 | 6 |
| 2 or more | 2 or more | 10 | 9 | 6 | 6 |
| 1 | 2 or more | 4 | 3 | 3 | 3 |

^a Angle crashes include all crashes that occur at an angle and involve one or more vehicles on the major street and one or more vehicles on the minor street

^b "Rural Area" values apply to intersections where the major-street speed exceeds 40 mph or intersections located in an isolated community with a population of less than 10,000

Table IA-19-2. Minimum Number of Reported Crashes in a Three-Year Period

Urban Area

| Number of through lanes on each approach | | Total of Angle and Pedestrian Crashes (all severities) ^a | | Total of Fatal-and-Injury Angle and Pedestrian Crashes ^a | |
|--|--------------|---|------------|---|------------|
| Major Street | Minor Street | Four Legs | Three Legs | Four Legs | Three Legs |
| 1 | 1 | 6 | 5 | 4 | 4 |
| 2 or more | 1 | 6 | 5 | 4 | 4 |
| 2 or more | 2 or more | 6 | 5 | 4 | 4 |
| 1 | 2 or more | 6 | 5 | 4 | 4 |

Rural Area^b

| Number of through lanes on each approach | | Total of Angle and Pedestrian Crashes (all severities) ^a | | Total of Fatal-and-Injury Angle and Pedestrian Crashes ^a | |
|--|--------------|---|------------|---|------------|
| Major Street | Minor Street | Four Legs | Three Legs | Four Legs | Three Legs |
| 1 | 1 | 6 | 5 | 4 | 4 |
| 2 or more | 1 | 16 | 13 | 9 | 9 |
| 2 or more | 2 or more | 16 | 13 | 9 | 9 |
| 1 | 2 or more | 6 | 5 | 4 | 4 |

^a Angle crashes include all crashes that occur at an angle and involve one or more vehicles on the major street and one or more vehicles on the minor street

^b "Rural Area" values apply to intersections where the major-street speed exceeds 40 mph or intersections located in an isolated community with a population of less than 10,000

Any questions concerning this Interim Approval should be directed to Mr. Bruce Friedman at bruce.friedman@dot.gov.

cc:

Associate Administrators
 Acting Chief Counsel
 Chief Financial Officer
 Directors of Field Services
 Director of Technical Services