Comparison of Indiana and Federal MUTCD

Tom Martin
Program Manager
Indiana LTAP
June 23, 1981

IN REPLY REFER TO:

HSS-IN

Mr. Gene K. Hallock
Executive Director
Indiana State Highway Commission
Indianapolis, Indiana

Attention: Mr. D. W. Lucas

Dear Mr. Hallock:

Subject: Proposed 1981 Indiana Manual on Uniform Traffic Control Devices

Your April 27, 1981 letter transmitted Indiana’s proposed 1981 Manual on Uniform Traffic Control Devices (IMUTCD) for our review and comments. We have completed our review and concluded that the proposed IMUTCD is not in substantial conformance with the 1978 National Manual on Uniform Traffic Control Devices (NMUTCD).

This determination is based on the large number of areas in the proposed IMUTCD that do not conform with the requirements of the NMUTCD. An item in the proposed IMUTCD was considered not to be in substantial conformance with the NMUTCD if it was less restrictive than the requirements in the NMUTCD. Enclosed is a list of comments on 156 sections of the IMUTCD that will require changes to bring the proposed Manual into conformance with the NMUTCD. We are also enclosing a list of 53 recommended changes. The latter list contains comments that should be considered but are not mandatory.

The NMUTCD is the national standard for traffic control devices in accordance with Title 23 U.S. Code Sections 109(b), 109(d) and 402(a). The requirements of the NMUTCD are mandatory. Our office will approve the 1981 proposed IMUTCD only if it is revised to reflect the enclosed list of required changes. Your submission of the revised Manual must include a discussion on the action taken on each of the required changes. If you decide not to make a required change, please identify the change and include your reasons for your decision. Where a variation from the NMUTCD is required by State law, an attempt should be made to change the law. Documentation of such attempts should be provided with your submission.

In our May 7, 1979 letter on the 1978 NMUTCD, we encouraged your adoption of the NMUTCD with a supplement as the Indiana MUTCD. The supplement would contain revisions from the NMUTCD to satisfy Indiana law and provide
guidance on areas where the N MUTCD is silent. We still believe that this is a viable alternate and should be strongly considered. Currently, 42 States have adopted the NM UTCD with a supplement.

In summary, the proposed 1981 IMUTCD, as written, is not acceptable for application on Federal-aid projects. These projects must be designed and constructed with traffic control devices that conform to the NMUTCD.

Sincerely yours,

G. D. Gibson, Jr.
Division Administrator

cc:
Region w/attachments
File- 510.27
R/F
EKRatulowski:bes/bas

NOTE TO FILE:
Parts I and II of the proposed 1981 Indiana MUTCD were reviewed and commented upon by E. K. Ratulowski, Safety Program Engineer. Bill Fung, Assistant Area Engineer reviewed Parts II through IX.
REQUIRED CHANGES

June 1981

1A-1, Introduction and General Provisions

This section stipulates that the principal purpose of the Manual is to give the size, shape, color, etc. of traffic control devices which may be used under varying circumstances and to promote uniformity throughout the State. However, the following has been included:

"This Manual shall not be construed as an instrument to mandate the use of any of the control devices or procedures at a particular location. It is not intended to specify as a legal requirement any maximum or minimum standards as to size, number, locations, or type of traffic control devices."

In our opinion this wording negates the entire purpose of the Manual and may even be in conflict with Indiana law (Indiana Code 9-4-2-1) which requires adherence to the Manual. Therefore, the wording should be eliminated.

1A-4, Requirements for All Traffic Control Devices

In the first sentence it is indicated that the intent of the Manual is "to set forth, as a guide, the recommended design and suggested usage of traffic control devices." We suggest that the words "recommended" and "suggested" be eliminated since they provide a conflict when the word "shall" is used. For example, in some sections the word "shall" is used to denote mandatory design or usage. Using the phrases recommended design and suggested usage in this section is contradictory. The words "shall," "should," and "may" must be used in the individual sections of the Manual to indicate design or usage that is mandatory, advisory, or permissive.

1A-5, Meanings of "Shall," "Should," and May"

The definition of the words, "shall" and "should" must be revised to conform to those given in the National MUTCD. The wording in your definitions is less restrictive than that given in the National MUTCD and is not acceptable.

2A-9 Design

The sentence "All symbols are to be similar to those shown, and where a word message is applicable, the recommended wording is authorized for use as herein provided." is not acceptable. This sentence must be revised.
to include the two shall conditions given in Section 2A-9 of the NMUTCD. The sentence must be "All symbols shall be unmistakably similar to those shown, and where a word message is applicable, the wording shall be as herein provided." Revising this sentence would make this section more consistent with Section 2A-13 of the Manual which requires symbol designs to be like those shown in the Manual.

The word "normally" in the following sentence must be eliminated: "All shapes and colors shall normally be as indicated . . .."

2A-13 Symbols

In the last paragraph the two sentences which are as follows: "It may be advisable to use an educational plaque with new warning or regulatory symbol signs not readily recognizable by the public. It is suggested that the plaque be used for at least three years after initial installation." must be revised to conform to the shall condition in Section 2A-13 of the NMUTCD. The sentence in the NMUTCD is "New warning or regulatory symbol signs not readily recognizable by the public, shall be accompanied by an educational plaque which is to remain in place for at least three years after initial installation."

2A-19 Sign Borders

The word "normally" in the first sentence must be eliminated.

2A-20 Supplemental Beacons

In the second sentence it is indicated that "The beacon should normally be used within the border of the sign." This is inconsistent with Section 4E-1 of the Manual and Section 4E-1 of the NMUTCD which indicates that "The beacon shall not be included within the border of the sign except for School Speed Limit signs . . .." The second sentence must be revised accordingly.

2A-23, Mounting Height, Conventional Facilities

The phrase "is approximately five feet" in the first sentence must be revised to "shall be five feet."

The phrase "is approximately seven feet in the third paragraph must be revised to "shall be seven feet."

The first part of the second sentence of the last paragraph which indicates that "The recommended mounting height for overhead signs is approximately seventeen feet . . .." must be revised to "The mounting height for overhead signs shall be not less than 17 feet . . .."

The above revisions are necessary to achieve compliance with Section 2A-23 of the NMUTCD.
2A-23.11, Mounting Height, Expressways and Freeway Facilities

The part of the first sentence which reads "are recommended to be erected approximately seven feet" must be revised to "shall be erected with a minimum height of 7 feet."

The first sentence in the second paragraph must be revised to "If, however, a secondary sign is mounted below another sign, the major sign shall be at least 8 feet and the secondary sign at least 5 feet above the level of the pavement edge."

The first sentence in the last paragraph must be revised to "Overhead signs shall provide a vertical clearance of not less than 17 feet to the sign, light fixture, or sign bridge, over the entire width of the pavement and shoulders except where a lesser vertical clearance is used for the design of other structures in the adjacent area."

2A-24.11, Lateral Clearance, Expressway and Freeway Facilities

The first and second sentences of the first paragraph must be revised to require (shall condition) a minimum clearance of 6 feet instead of two feet as shown.

The first sentence in the second paragraph must be revised to change the "may" condition to a "should" condition.

2A-25, Position of Signs

We do not agree with the last paragraph of this section. In many cases the dimensions stated for lateral clearance, vertical height, etc. of signs are more than just guides as you have indicated. They are "shall" conditions in the NMUTCD and every effort should always be made to conform with these dimensions. In general, the dimensions can be achieved. However, there will be a few situations where it will not be possible to attain them. In these few instances, the signs should be installed as close to the required dimensions as possible and the reason for not achieving full conformance documented. This paragraph as written is not acceptable and should be rewritten to reflect the above.

2B-4 STOP Sign (R1-1)

The word "normally" must be eliminated from the last sentence of the third paragraph.

2B-5, Warrants for STOP sign

The first sentence of the third paragraph which now states that "STOP signs should not be used on the through roadways of expressways" must be revised. It should indicate that "STOP signs should never be used on the through roadways of expressways."
The word "normally" in the first sentence of the fourth paragraph must be eliminated.

The penultimate paragraph of this section must be revised to "For other than emergency purposes, portable or part-time STOP signs should not be used.

2B-5, Warrants for STOP Signs

The first sentence in the third from the last paragraph should be revised to change the "shall" condition to a "may" condition. This sentence requires installation of a STOP sign at a railroad crossing if found to be warranted by a traffic engineering study. Section 2B-5 of the NMUTCD stipulates that STOP signs may be installed if warranted but only on an interim basis until lights, gates, or other means of control are being prepared. The intent is that traffic control devices as indicated in Section VIII of the NMUTCD be used rather than STOP signs.

This section should also be revised to include the following sentences which appear in Section 2B-5 of the NMUTCD: "STOP signs should not be installed indiscriminately at all unprotected railroad crossings. The allowance of STOP signs at such crossings would eventually breed contempt for both law enforcement, and obedience to the sign's command to stop."

A YIELD sign should not be allowed to be used in lieu of a STOP sign as indicated in the last sentence of the third from the last paragraph. There are sufficient devices in the NMUTCD to cover traffic control at railroad crossings. Standard crossbucks and flashing light signals assign the right-of-way to train traffic and we see no need to allow use of a YIELD sign. If you have data that shows that YIELD signs are effective at railroad crossings, we suggest that you submit this information to the National Committee on Uniform Traffic Control Devices with a request that they consider allowing the YIELD sign to be used at railroad crossings. Until such approval is obtained the use of the YIELD sign as stipulated must be eliminated from the Manual.

2B-9, Location of STOP Signs and YIELD Signs

The word "normally" must be eliminated from the first sentence of the second paragraph.

The first two sentences in the last paragraph must be revised to the following: "In the event the visibility of a STOP sign or a YIELD sign at any location is restricted, the sign shall be located as specified, and a STOP AHEAD sign (Sec. 2C-15) or a YIELD AHEAD sign (Sec. 2C-16) shall be erected in advance of the STOP or YIELD sign."

2B-10.12, Procedures for Altering Maximum and Absolute Speed Limits on All Streets and Highways Within This State

The first sentence of Section 2B-10 of the NMUTCD stipulates that "The Speed Limit sign shall display the limit established by law, or by regulations,
after an engineering and traffic investigation has been made in accordance with established traffic engineering practices." The first sentence of Section 2B-10.I2 stipulates that "All speed limits other than maximum (sic) speeds established by statute must be determined by a proper engineering and traffic investigation." This implies that a 55 mph (maximum legal limit) speed limit could be posted on any rural road without a proper traffic engineering study.

This, of course, is contrary to the requirement in Section 2B-10 of the NMUTCD that all posted speeds be supported by an engineering and traffic investigation study. Therefore, the wording in the first sentence of 2B-10.I2 is not acceptable.

2B-10.I3, Speed Limit Signs (R2-1)

The following paragraph must be added:

"The speed limit sign shall display the limit established by law, or by regulation, after an engineering and traffic investigation has been made in accordance with established traffic engineering practices. The speed limits shown shall be in multiples of five miles per hour."

The following sentence should be added:

"On expressways the sign should be at least 36 X 46 inches, with 48 X 60 inches prescribed for freeways."

The first two sentences in the third paragraph must be revised as follows:

"Speed limit signs, indicating speed limits for which posting is required by law, shall be located at the points of change from one speed limit to another. These signs shall not be erected until speed limits are approved and officially authorized."

The fourth paragraph must be revised as follows:

"At the end of a section to which a speed limit applies, a speed limit sign showing the next speed limit shall be erected. Additional signs shall be installed beyond major intersections and at other locations where it is necessary to remind motorists of the limit that is applicable."

The fifth paragraph must be revised as follows:

"In rural districts on U.S. and other State-numbered routes, speed limit signs indicating the statutory speed limits shall be erected at entrances to the State and at boundaries of metropolitan areas."

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A paragraph should be added to indicate that:

"No more than three speed limits should be displayed on any one speed limit sign or assembly."

2B-10.I4, Truck Speed Limit Signs (R2-2)

The word "normally" in the first sentence of the first paragraph must be eliminated.

The third sentence in the first paragraph must be revised as follows:

"This assembly shall be posted at the beginning of, and throughout the zone in accordance with the requirements set forth for the standard Speed Limit Sign."

2B-11, Night Speed Limit Sign (R2-3)

The third word in the third paragraph must be changed from "should" to "shall" to achieve compliance with Section 2B-13 of the NMUTCD.

2B-12 Minimum Speed Sign (R2-4)

The words "is_to" in the last sentence of the first paragraph must be replaced with the word "shall."

The word "should" in the second paragraph must be replaced with the word "shall."

The following sentence must be added: "The Minimum Speed sign shall have a standard and minimum size of 24 X 30 inches."

2B-14, Reduced Speed - M.P.H. Sign (R2-5b)

The sentence "When special emphasis or clarity of a speed zone is needed, a supplemental plaque may be used upon occasion denoting the message BEGIN, AHEAD, or END of the zone." The use of these signs was the subject of National Advisory Committee (NAC) official ruling Sn-58 (Chng.) in which the NAC denied your use of these signs. Therefore, this sentence must be eliminated.

2B-15, NO RIGHT (LEFT) TURN Signs (R3-1, R3-1a, R3-2, R3-2a)

The following two paragraphs must be added:

"The standard and minimum size of the NO RIGHT TURN sign (R3-1) and the NO LEFT TURN sign (R3-2) shall be 24 X 24 inches. The standard and minimum size of the NO RIGHT TURN sign (R3-1a) and the NO LEFT TURN sign (R3-2a) shall be 24 X 30 inches."
"If advance signs are used, care should be taken that no alley or public driveway exists between them and the intersection where the turning movement is prohibited. At an intersection with a one-way street, whether signalized or not, the ONE WAY sign (Section 2B-29 and 2B-29I) shall be used, and may be supplemented by the turn prohibition sign."

In addition, the word "normally" must be eliminated from the second paragraph. Also, the phrase "two are suggested" in the second paragraph must be changed to "two should be used."

2B-16, NO U TURN Sign (R3-4, R3-4a, R3-4b)

The following sentence must be added:

"The NO U TURN sign (R3-4) must have a standardized size of 24 X 24 inches and the R3-4a NO U TURN sign must have a standardized size of 24 X 30 inches."

2B-11, NO TURNS Sign (R3-3)

The following sentence must be added: "The standard and minimum size of the NO TURNS sign shall be 24 X 24 inches."

2B-17, Lane Use Control Signs (R3-5, R3-5a, R3-6, R3-7, and R3-8)

The first sentence of the first paragraph must be replaced by the following:

"Lane-use control signs shall be used where turning movements are required or where unconventional turning movements are permitted from specific lanes at an intersection. The standard size of these shall be 30 X 36 inches when mounted overhead and 30 X 30 inches when post mounted. Signs for overhead mounting shall be mounted over the lanes to which they apply."

The following sentence which appears in the first paragraph is not acceptable: "These signs may be considered as an optional supplement to pavement markings." Section 3B-17 of the NMUTCD allows symbol arrows to convey either guidance or mandatory messages. However, where a movement that would otherwise be legal is to be prohibited, the arrow marking must be accompanied by standard signs and the word marking "ONLY." Therefore, signs covered by this section are not always supplemental to pavement markings. This sentence must be revised accordingly.
The following sentence must be added:

"The mandatory turn sign (R3-7) designed for post mounting shall carry the message RIGHT (or LEFT) LANE MUST TURN RIGHT (or LEFT)."

2B-18, Deleted (Covered in 2B-17)

This same section in the N MUTCD covers application of lane-use control signs at intersections. All of the information in Section 2B-18 of the MUTCD must be included in your Manual. Section 2B-17 does not adequately cover the proper application of lane-use control signs.

2B-19, Two-Way LEFT TURN ONLY Signs (R3-9a, R3-9b, R3-9c, R3-9d, R3-9e, and R3-9f)

The phrase "is for use" in the first sentence of the first paragraph must be revised to "shall be used."

The END LEFT TURN LANE sign (R3-9e and R3-9e-A) and the CENTER LANE/LEFT TURN ONLY sign (R3-9f and R3-9f-A) must not be included in your Manual. Section 2B-19 of the MUTCD requires that only signs R3-9a and R3-9b be used for a two-way left-turn lane.

The first four paragraphs on page 2B-22 which cover the Mandatory Turn signs and the Double Turn signs would more appropriately be located in Section 2B-17.

2B-23, SLOWER TRAFFIC KEEP RIGHT Sign (R4-3)

The following paragraph must be added:

"This sign shall have a standard, and minimum, size of 24 X 30 inches. Because it is not used on secondary roads, no small design is provided. On expressways the sign should be at least 36 X 48 inches, with 48 X 60 inches prescribed for freeways."

2B-25, KEEP RIGHT with Arrow Signs (R4-7, R4-7a, and R4-7b)

The phrase "is for use" in the first sentence of the first paragraph must be changed to "should be used."

The following paragraph must be added:

"The KEEP RIGHT sign shall have a standard size of 24 X 30 inches. On expressways the sign should be at least 36 X 48 inches, with 48 X 60 inches prescribed for use on freeways."
2B-26, DO NOT ENTER sign (R5-1)

The phrase "is for use" in the first sentence of the first paragraph must be changed to "should be conspicuously placed."

The following paragraph must be added:

"The DO NOT ENTER sign shall be a 30-inch white square on which is inscribed a 29-inch diameter red circle, with a white band 5 inches in width placed horizontally across the center of the circle. The legend DO NOT ENTER shall appear in white letters with the words DO NOT above the band and ENTER below the band. Larger sizes are prescribed for use on major streets or on expressways with one-way ramp or roadway conditions."

2B-27 WRONG WAY Sign (R5-1a)

The following sentence must be added:

"The sign should be placed at a location along the exit ramp on the divided roadway farther from the crossroad than the DO NOT ENTER sign."

2B-28, Selective Exclusions Signs (R5-2 through R5-10C)

The phrase "is suggested for use" in the first sentence of the last paragraph must be changed to "should be used."

2B-29 ONE WAY Sign (Rural Application)

2B-29, la ONE WAY Sign (Urban Application)

Neither of these sections are acceptable because the basic requirements for design and use of these signs have not been included. Therefore, these sections must be replaced by Section 2B-29 of the NMUTCD.

2B-34, Emergency Parking and Stopping Signs (R8-4 and R8-7)

Your Manual does not provide any information on the design usage or placement of these signs. Therefore, Section 2B-34 of the NMUTCD must be used.

2B-35, Pedestrian Signs (R9-1, R9-4 and R9-4a)

The following sentence must be added to the first paragraph:

"This sign shall be in only one standard size of 18 X 24 inches, and need not be reflectorized."
The following sentence which appears in the first paragraph is not acceptable:

"It should be located at the outside edge of the usable shoulder of the road." All signs should be placed with the lateral clearance required by Section 2A-24 of the NMUTCD.

2B-37.II, Traffic Signal Signs for Vehicles

The word "may in the last sentence of this section must be revised to "should."

2B-37.I3, NO TURN ON RED SIGN

The phrase "is for use" in the first paragraph must be changed to "shall be used." In addition, the following sentence must be added:

"The NO TURN ON RED sign should have standard dimensions of 24 X 30 inches. The word "normally" in the last paragraph must be eliminated."

2B-38, KEEP OFF MEDIAN Sign (R11-1)

The following paragraph must be added:

"The KEEP OFF MEDIAN sign shall have a standard, and minimum size of 24 X 30 inches. On expressways it should be at least 36 X 48 inches, with 48 X 60 inches prescribed for freeways."

2B-41, WEIGHT LIMIT (______) TONS Sign (R12-1)

The following sentence must be added:

"The standard, and minimum size shall be 24 X 30 inches but a larger size is desirable on major roads and streets."

2B-43, Truck Route Sign (R14-1)

The phrase "is for use" in the first sentence of the first paragraph must be changed to "should be used."

2C-1, Application of Warning Signs

The word "should" in the last sentence of the last paragraph must be changed to "shall."
The third from the last paragraph must be revised to indicate that the
determination of the sign or signs to be erected shall be on the basis
of an engineering study using the criteria or guidelines in the following
pages.

2C-2 Design of Warning Signs

The words, "are suggested" in the second sentence of the third paragraph
must be revised to "should be used."

2C-3, Placement of Warning Signs

The wording, "It is desirous that warning signs" which is in the first
sentence of this section must be replaced by the wording, "Warning signs
shall."

The following sentence should be included in the second paragraph: "In
rural areas, warning signs should normally be placed about 750 feet in
advance of the hazard or condition."

2C-8 WINDING ROAD Sign (W1-5)

The words "is to" in the second paragraph must be changed to "shall."

The word "may" in the last sentence of the last paragraph must be changed
to "should."

2C-9, Large Arrow Sign (W1-6 and W1-7)

The words "is to" in the first sentence of the last paragraph must be
changed to "shall."

2C-15 STOP AHEAD Sign (W3-1 and W3-1a)

The following sentence must be added: "The STOP AHEAD sign shall be a
minimum of 30 X 30 inches."

2C-16, YIELD AHEAD Sign (W3-2 and W3-2a)

The following sentence must be added: "The YIELD AHEAD sign shall be a
minimum of 30 X 30 inches."

2C-19, Pavement Width Transition Sign (W4-2)

The word "normally" in the last sentence of this section must be eliminated.

2C-19.11, RIGHT (or LEFT) LANE ENDS Sign (W9-1)

The following must be added at the end of the first sentence: "or the LANE
ENDS MERGE LEFT (RIGHT) sign (W9-2) if it is used."
2C-19.12, LANE ENDS MERGE LEFT (or RIGHT) Sign (W9-2)

The following sentence must be added: "When used, this sign shall be placed in advance of the W4-2."

2C-27, BUMP and DIP Signs (W8-1 and W8-2)

The following paragraph must be added:

"The DIP sign shall not be used at a short stretch of depressed alignment that may momentarily hide a vehicle. Such a condition should be treated as a no-passing zone."

2C-29, SOFT SHOULDER Sign (W8-4)

The following sentence must replace the last sentence in this section:

"One sign shall be placed near the beginning of the soft-shoulder condition, and other signs shall be placed at intervals throughout the length of the road where the condition exists."

2C-30, SLIPPERY WHEN WET Sign (W8-5)

The following sentence must replace the last sentence in this section:

"It should be located in advance of the beginning of the slippery section and at appropriate intervals on long sections of such pavement."

2C-31, Advance Crossing Signs (W-11 Series)

The word "may" in the last sentence in this section must be changed to "shall."

2C-32, Crossing Signs (W11A Series)

The following sentence must be added: "When used the Crossing sign should be located immediately adjacent to the crossing."

The word "may" in the penultimate paragraph must be changed to "shall."

2C-33, Double Arrow Sign (W12-1)

The following sentence which appears at the end of the first paragraph must be eliminated: "It may also be used to emphasize gore delineation on expressways and freeways if other devices are not effective.

The following sentence must be added: "It shall have a standard and minimum size of 24 X 24 inches."
2C-35, Advisory Speed Plate (W13-1)

The phrase "is normally" which appears in the first and second sentence of the second paragraph must be changed to "shall be."

The following must be added to this section:

"The plate shall carry the message (35) MPH in black on yellow background except for construction and maintenance signs (Sec. 6B-34). The plate shall not be used in conjunction with any sign other than a warning sign, nor shall it be used alone. When used, it shall be mounted on the same assembly and normally below the standard warning sign.

"Except in emergencies; or at construction or maintenance sites, where the situation calling for an advisory speed is temporary, an Advisory Speed Plate shall not be erected until the recommended speed has been determined by accepted traffic engineering practices. Because changes in surface characteristics, sight distance, etc., may alter the recommended speed, each location should be periodically checked and the speed plate corrected if necessary."

2C-36, Advisory Exit—MPH Sign (W13-2 and W13-3)

The following sentence appears in this section:

"The use of special rectangular yellow warning sign panels is permitted in conjunction with ground mounted or overhead regulatory information or guide signs."

Inclusion of this sentence will be acceptable only if it is stipulated that the special rectangular warning sign panel can only be used to supplement the standard W13-2 or W13-3 signs or where it is not possible to erect the standard signs.

2C-41.14, High Water Sign

The word "should" in the last sentence must be changed to "shall."

2D-5, Lettering Style

The phrase "are normally" in the third sentence must be changed to "shall be approximately."

2D-7, Amount of Legend

The word "normally" in the second sentence must be eliminated.

2D-28, Route Marker Assemblies

The phrase "should normally" in the first line of the second paragraph must be changed to "shall be."
2D-29, Junction Assembly

The phrase "is normally" in the second sentence of the first paragraph must be changed to "shall be."

The phrase "is normally" in the first sentence of the second paragraph must be changed to "shall be."

The phrase "is normally" in the first and second sentences of the third paragraph must be changed to "shall be."

2D-30, Advance Route Turn Assembly

The word "normally" in the first paragraph must be changed to "shall."

2D-31, Directional Assembly

The phrase "are normally" in the paragraph numbered 2 must be changed to "shall be."

2D-32, Confirming or Reassurance Assemblies

The word "normally" in the first paragraph must be changed to "shall."

The phrase "is for use" in the first sentence of the second paragraph must be changed to "shall be erected."

The word "normally" in the second and third sentences of the second paragraph must be eliminated.

2D-33, Trailblazers

The word "normally" in the first sentence of the first paragraph must be changed to "shall."

2D-35, Destination Signs

The phrase "is normally" in the first sentence of the first paragraph must be changed to "shall be."

The wording the the first half of the last paragraph of Section 23-35 of the NMUTCD as revised December 1979 must be added to the last paragraph of this section.

2D-36, Location of Destination Signs

The word "normally" in the first sentence must be eliminated.

2D-38, Location of Distance Signs

The phrase "should normally" in the first sentence of the second paragraph must be changed to "shall."
It should be noted that the proper number for this section is 2D-38.

2D-49, General Information Signs

The following must be added:

"All General Information signs shall conform to the general standards for guide signs, and shall be reflectorized where required to provide nighttime visibility.

"These signs shall be erected in accordance with the general specifications (Sections 2A-23,24)."

2D-50, Signing of Named Highway

The following sentence must be placed after the first sentence in the first paragraph:

"Such memorial names shall not appear on or along a highway bridge or other component." N. C.

2E-8, Number of Signs at an Overhead Installation

The word "Normally" in the last sentence of the second paragraph must be eliminated.

Table 11-1, Recommended Letter and Numeral Sizes for Expressway Guide Signs

The word "Recommended" in the title of this table must be eliminated. N. C.

2E-15, Arrows for Interchange Guide Signs

The word "should" in the first sentence and the word "may" in the second sentence of the first paragraph must both be changed to "shall."

2E-30, Gore Signs (Figure 2-14)

The word "is" in the first sentence of the second paragraph must be changed to "shall be."

2E-41, Wrong-Way Traffic Control (Figures 2-22a and 2-22b)

This entire section, except for Figures 2-22a and 2-22b, is unacceptable. There are many mandatory items in the NMUTCD which have not been included. N. C. This section must be replaced by Section 2E-41 of the NMUTCD.

2E-42, Miscellaneous Guide Signs

A special sign reading EXIT ONLY is mentioned in the second half of the first paragraph. The description of the design, placement, usage, etc., is very
incomplete. These factors must be further described or a reference made to Section 2F-25, Signing for Interchange Lane Drops.

Inclusion of the second paragraph will be acceptable only if it is expanded to stipulate that the special supplemental signs discussed therein can only be used to supplement the standard warning signs or where an engineering study reveals that it is not possible to erect the standards signs because of geometric design limitations, etc.

2F-1, Scope of Freeway Sign Standards

The word "should" in the first sentence of the second paragraph must be changed to "are required to."

2F-2, Freeway Signing Principles

The word "normally" in the first sentence of the fifth paragraph must be eliminated.

2F-8, Limit on Destination Legends

The word "applies" in the second sentence must be changed to "shall apply."

2F-9, Routing to a Given Destination

The wording "is normally" in the last sentence must be changed to "shall be."

Table II-2, Recommended Letter and Numeral Size for Freeway Guide Signs

The word "Recommended" must be eliminated from the title of this table.

2F-16, Vertical Clearance

The entire first paragraph in this section is unacceptable. It must be replaced with the first two paragraphs from Section 2F-16 of the NMTCD.

2F-23, Interchange Between Freeways (Fig. 2-27)

The third paragraph must be revised to indicate that diagrammatic advance guide signs should be used at bifurcations where the off-movement is to the left or where there is an optional lane split.

2F-24, Diagrammatic Signs (Figs. 2-28, 2-29, 2-31, 2-32)

The phrase "are not recommended for use" must be changed to "shall not be used."

2F-25 Signing for Interchange Lane Drops (Figs. 2-33 through 2-35)

The word "are" in the second sentence of the first paragraph must be changed to "shall be."
2F-26, Cloverleaf (Fig. 2-36)

The word "should" in the fourth sentence of the first paragraph must be changed to "shall."

2F-35, Rest and Scenic Area Signs (Fig. 2-44)

The word "should" in the first sentence of the first and second paragraphs must be changed to "shall."

2G-3, Evacuation Route Marker (CD-1)

The phrase "is normally" in the first sentence of the third paragraph must be changed to "shall be."

The word "are" in the first sentence of the fourth paragraph must be changed to "shall."

2G-4, AREA CLOSED Sign (CD-2)

The phrase "is normally" in the first sentence must be changed to "shall be."

The word "will" in the second sentence must be changed to "shall."

2G-5, Traffic Regulation Post Sign (CD-3)

The wording "is normally" in the first sentence of the first paragraph must be changed to "shall be."

The wording "is to" in the last sentence of the first paragraph must be changed to "shall."

2G-7, ROAD USE PERMIT REQUIRED Sign (CD-5)

The word "will" in the last sentence must be changed to "shall."

2G-8, EMERGENCY AID CENTER Sign (CD-6)

The phrase "will normally" in the third sentence must be changed to "shall."

The wording "are to" in the fourth sentence must be changed to "shall."

2G-9, FALLOUT SHELTER Directional Sign (CD-7)

The wording "is normally" in the first sentence of the first paragraph must be changed to "shall be."

3A.2, Standardization of Application

The sentence "All markings on Interstate highways shall be reflectorized." must be added to this section.
3A-4, Colors

"The colors for pavement marking are to conform to the standard highway colors." must be changed to "shall" condition.

3A-6, Widths and Patterns of Longitudinal Lines

"6. Slight reduction in line width are permissible as an economy measure." is not acceptable and must be eliminated.

3A-7 Type of Longitudinal Lines

3. "A wider solid white line may be used . . ." must be changed to "is used."

3B-1 Center Lines

"On three-lane rural highways . . in figures 3-1a and Figures 3-2b . . ." Figure 3-1a shall be changed to "figure 3-2a."

3B-3 No Passing Zone Markings

"Where center lines are installed . . . no passing zones are normally established . . ." must be changed to "shall" condition.

3B-4 Application of No Passing Zone Markings

"On a three lane highway . . . in one direction may be moved to a single lane . . . across the center lane. This may be done in conjunction . . ." must be changed to "shall" conditions.

The formula for the taper length is shown as \( L=W S^2/60 \). The correct formula is \( L=W S^2/60 \).

3B-6 Pavement Edge Lines

"Edge lines are normally not continued . . ." must be changed to "shall" condition.

"Edgeline shall be provided on all Interstate highways . . ." Add "on rural multilane divided highways" after "Interstate highways."

3B-8 Lane Reduction Transition

"Where pavement . . . markings are used to guide traffic . . ." must be changed to "shall" condition.

3B-12 Combination Lane and Center Lane Markings for Unique Applications

"For reversible lane markings, each edge of the lane is marked by . . ." must be changed to "shall" condition.
"Signs and/or signals are used to supplement . . ." must be changed to "shall" condition.

The following three sentences must be changed to "shall" conditions:
"A two-way left turn lane . . . is not for use for passing . . . ."  
"A two-way left turn lane is marked . . . ." "Signs are used with the pavement markings. (sec 2B-17)."
Sec. 2B-17 should be changed to sec. 2B-19.

3B-13 Approach to an Obstruction

"Pavement marking are used to guide traffic . . ." must be changed to "shall" condition.

Insert the word "shall" between the words islands and consist in the sentence " . . . median islands and channelization islands consist of a diagonal line, . . . ."

Insert the word "shall" between the words markings and consist in the sentence, "If traffic is required . . . the markings consist of a no passing . . . ."

Insert the word "shall" between the words markings and consist in the sentence, "If traffic may pass either . . . the markings consist of two channelizing lines . . . ."

The phrase "is normally" in the second sentence of the last paragraph must be changed to "shall be."

3B-14 Stop lines

The word "normally" in the sentence, "in the absence . . . stopping point, normally not more than the 30 feet or less than 4 feet . . . ." must be changed to "in no case."

3B-15 Crosswalks and Crosswalk Lines

The wording in the sentences "Crosswalk lines are solid white lines marking both edges for (sic) the crosswalk. . . ." and "They are normally not . . . ." must be changed to "shall conditions."

3B-17 Pavement Word and Symbol Markings

In the sentence "Symbol arrows may be . . . arrow marking must be accompanied by the word marking "ONLY."
insert the phrase "standard size and" between accompanied by and the word. Also, eliminate the sentence, "Signs should be . . . by field engineering investigation."

"Signs or markings may be repeated in advance of mandatory turn lane . . . ." must be changed to "should" condition.
3A-6 Widths and Patterns of Longitudinal Lines

The phrase "except that edgelines may be a minimum of 2½ inches wide" in paragraph No. 1 must be eliminated. "Slight reductions in line widths are permissible as an economy measure, if still unacceptable.

3B-18 Curb Markings for Parking Restrictions

"Signs should be used with curb markings . . . by accumulations of snow and ice." must be changed to "shall" condition.

3C-2 Objects in the Roadway

"In addition to markings . . . to the obstruction is to be given by appropriate pavement markings." must be changed to "shall" condition.

3C-4 End of Roadway

The wording in the sentence "The minimum mounting height of the marker is approximately four feet." must be changed to a "shall" condition.

4B-12 Number and Location of Signal Faces

The wording in the sentence "The visibility, location . . . is recommended as follows . . ." must be changed to a "shall" condition.

The word "Recommend" in the title of the second column of the table on page 4B-15 must be changed to "Minimum."

"3. Where physical condition . . . a suitable sign is recommended to be erected . . ." must be changed to a "shall" condition.

"4. A single signal face is permissible . . . a sign LEFT (or RIGHT) TURN signal may be needed to clarify signal controls and when used, they should be located . . ." must be changed to "shall" conditions.

The sentence "It is desirable to have at least one signal . . ." which is in paragraph No. 5 must be changed to a "shall" condition.

Paragraph No. 6 must be revised to address the 20° to the right and to the left requirement.

The phrase "is recommended" in paragraph No. 6 must be changed to "shall be provided."

4B-20 Signal Operation Must Relate to Traffic Flow

The sentences "Traffic control signals should be operated . . ." and "Field studies should be used to determine . . ." must be changed to "shall" conditions.
21.

4B-24 Painting

The word "should" must be changed to "shall."  

4C-10.I1 Warrant 9. Traffic Signal on New Facilities

This warrant is not acceptable. It is our understanding that it has been submitted to the National Committee (NC) on Uniform Traffic Control Devices for consideration. Until action has been taken by NC, it should not be included in the proposed manual. In the interim, we do not have any objection to using it as a design tool.

4C-10.I2 Warrant 10. Special Access Signalization

This warrant is not acceptable because it is not one of the standard warrants in the NMUTCD. We also took exception to this warrant when we approved your 1975 IMUTCD.

4C-12 Pedestrian - Actuated Control

This paragraph failed to address the "shall" condition for pedestrian signals. It must be revised accordingly.

4E-4 Stop Sign Beacon

"When a single lens is used, . . . Beacon should normally be located . . . " must be changed to a "shall" condition.

4E-6 Hazard Identification Beacon Location

The sentence "If suspended over the roadway, the clearance above the pavement is normally not . . . " must be changed to a "shall" condition.

4E-7 Intersection Control Beacon Location

The phrase "is normally" in the second and third sentences must be changed to "shall be."

4E-11 Location of Lane-Use Control Signals

The sentence "The bottom of any lane-use control signal unit is normally not less than 15 feet . . . above the pavement grade." must be changed to a "shall" condition.

4E-21 Operation of Emergency Traffic Signal

Paragraph No. 3 must be revised to address the maximum allowable time for a steady red signal indication.

The sentence, "Emergency traffic signal . . . may be operated either . . . " must be changed to a "should" condition.
4E-22 Traffic Signals at Freeway Entrance Ramps

"1. The standard display for . . . signals may be either . . ." must be changed to a "shall" condition.

"2. There should normally be a minimum . . ." must be changed to a "shall" condition.

"4. The required signal faces may be mounted such . . ." must be changed to a "should" condition.

4E-26 Design of Bridge and Tunnel Signals

This paragraph failed to address the minimum visibility distance requirement and must be revised.

4E-28 Operation of Narrow Bridge on Tunnel Signals

"When required for flashing operations, the signals should normally be flashed red." must be changed to a "shall" condition.

5F-5 Delineators

"Where delineators are used with island installations, they shall be white . . ." must be revised to "Where delineators are used with island installations, they shall be the same color as the respective edgelines . . .".

6A-3 Application of Standards

The word substantial in the first sentence of the penultimate paragraph must be eliminated.

6B-8 Road (Street) Closed Sign

"The ROAD (STREET) CLOSED sign is for use . . ." Must be changed to a "shall" condition.

The ROAD (STREET) CLOSED sign is not for use . . ." must be changed to a "shall" condition.

6B-10 Weight Limit Signs

This section failed to address detour routes for vehicles exceeding the weight limit and must be revised accordingly.

6B-18 Advance One Lane Road Sign

The phrase "should be" in the second paragraph shall be changed to "must."

6B-36 Length of Construction Signs

"The Length of Construction sign is for use . . ." must be changed to a "shall" condition.
6C-10 Portable Barrier - Design and Application

The phrase "are normally" in the last sentence of the third paragraph must be changed to "shall be."

6D-1 Pavement Markings Applications

The word "normally" must be removed from the second sentence of the first paragraph.

"Temporary pavement markings are to be used where possible in combination . . . ." must be changed to a "shall" condition and also eliminate where possible from the sentence.

6E-5 Warning Lights

"Warning lights should normally have a minimum mounting height of approximately . . . ." must be changed to a "shall" condition.

6E-7 Advance Warning Flashing or Sequencing Arrow Panels

Table VI-3 must be revised to include the requirements for Type C Arrow Panels.

The last paragraph must be revised to specify that "arrow panels" shall be capable of minimum 50 percent dimming from rated lamp voltage."

7A-5 Application of Standards

"All traffic control devices . . . should conform to the applicable . . . ." must be changed to a "shall" condition.

7A-7 Maintenance of Traffic Control Devices

"Devices which are used on a part-time basis should be in operation . . . ." must be changed to a "shall" condition.

7B-1 Design of Signs

The phrase "are normally" in the second sentence of the third paragraph must be changed to "shall be."

7B-3 Lettering - DELETED

Sec. 7B-3 of the NMUTCD must be included in this section of your Manual.

7B-4 Sign Borders

Sec. 7B-4 of the NMUTCD must be included in this section of your Manual.
7B-6 Position of Signs

"Portable schools signs are not normally placed . . ." must be changed to a "shall" condition.

7B-7 Height of Signs

The phrase "are normally" in the first sentence and the phrase "is normally" in the second sentence must both be revised to "shall be."

7B-9 School Advance Sign

"The School Advance sign should be used in advance of . . ." must be changed to a "shall" condition.

"Where used, the sign generally is erected not less than 150 feet . . ." must be changed to a "shall" condition.

7B-10 School Crossing Sign

The phrase "are normally" in the second sentence and the word "is" in the third sentence of the first paragraph must both be changed to "shall be."

7B-12 School Speed Limit Signs

The sentences: "The School Speed Limit sign is for use to indicate . . ." and "The sign is to be either a fixed-message sign . . ." must both be changed to "shall" conditions.

7C-3 Crosswalk Lines

The phrase "are normally" in both the first and second sentences of the first paragraph must be changed to "shall be."

Eliminate the word "normally" from the first sentence of the second paragraph.

7C-5 Curb Markings for Parking Restrictions

"Signs are normally used with curb markings . . ." must be changed to a "shall" condition.

7C-6 Word and Symbol Markings

"Word and symbol markings are not normally used for mandatory . . ." must be changed to a "shall" condition.

The word "approximately" must be eliminated from the second sentence of the third paragraph.
7D-4 Warrants

"3. At non-intersection crossings, the signal should normally be pedestrian . . . should be prohibited for approximately 100 feet . . ." must be revised. The word "normally" must be eliminated and "approximately" must be changed to "at least."

7D-26 Signal Indications

The word "normally" in the first sentence must be eliminated.

9B-2 Location and Position

Eliminate the word "normally" in the third sentence.

9B-11 No Parking Signs

The sentence, "Where it is necessary to restrict parking . . . sections 2B-32 through 2B-33, or signs R7-9 or R7-9a may be used." must be revised by adding "may be used" behind 2B-32 through 2B-33 and changing "may be used" to "shall be used" behind R7-9 or R7-9a.

9D-2 Visibility Requirements

The word "normally" in the last sentence must be eliminated.
Proposed 1981 Indiana Manual on Uniform Traffic Control Devices

Federal Highway Administration Review Comments

RECOMMENDED CHANGES

June 1981

1A-4, Requirements for All Traffic Control Devices

This section should be revised to encourage all highway agencies to adopt the necessary ordinances and resolutions to legally support regulatory devices as indicated in Section 1A-2 of the National MUTCD.*

2A-2, Scope of Sign Standards

The sentence, "Signing for Civil Defense emergencies...." at the beginning of the fourth paragraph of this section should be made a separate paragraph since it is not on the same subject as the remainder of the fourth paragraph.

2A-24, Lateral Clearance, Conventional Facilities

It is suggested that the last sentence of the first paragraph be revised to indicate that signs should not be closer than six feet from the edge of the shoulder. The six-foot clearance is recommended in Section 2A-24 of the NMUTCD.

The first sentence of the second paragraph should be revised to recommend a two-foot clearance behind curbs as a minimum in urban areas. This minimum is recommended in Section 2A-24 of the NMUTCD.

2B-9, Location of STOP Signs and YIELD Signs

The second to the last sentence in the first paragraph should be revised to indicate that the STOP sign should be erected approximately four feet in advance of the crosswalk line nearest the approaching traffic as recommended in Section 2B-9 of the NMUTCD. This provides better guidance to users of the Manual.

2B-21, DO NOT PASS Sign (R4-1)

It is recommended that the following sentence be added at the end of the first paragraph: "The No Passing Zone sign should be considered as a supplement to the enforceable no-passing zone control which is the regulatory marking."

2B-22, Deleted

This same section in the NMUTCD covers the PASS WITH CARE sign which is used at the end of a no-passing zone (NPZ). It is recommended that Section 2B-22 of the NMUTCD be included in your Manual since it is desirable to mark the end of the NPZ.

2B-24, KEEP RIGHT EXCEPT TO PASS Sign (R4-9)

It is recommended that this section be expanded to include the following paragraph:

"In advance of the end of the climbing lane, a Pavement Width Transition warning sign should be erected. This is particularly important, as the end of the climbing lane will normally be concealed beyond the crest of the grade. A duplicate sign on the left of the roadway is also desirable to warn the faster traffic, as the sign on the right may be obscured by the slower moving trucks. Pavement markings should clearly indicate how the climbing lane is designed to operate."

2C-17, SIGNAL AHEAD Sign (W3-3 and W3-3a)

It is recommended that this entire section be rewritten to indicate that the SIGNAL AHEAD sign is intended to be used where drivers do not have a continuous view of at least two signal heads for the distance specified in Section 4B-12 of the NMUTCD.

2C-20, ROAD NARROWS Sign (W5-1)

The word "if" should be "is."

2C-26, HILL Sign (W7-1, W7-1a and W7-2)

It is very strongly recommended that the advisory conditions for posting the HILL sign which are given in the second and third paragraphs of Sec. 2C-26 of the NMUTCD be included in your Manual.

2D-11, Design of Route Markers (M1-1 to 7)

It is recommended that the last three sentences in the paragraph numbered 6 on page 2D-9 be made a separate paragraph. The items in these three sentences apply to all markers, not just those discussed in paragraph number 6.

2D-22, END (BEGIN) Marker (M4-6, M4-6a)

It is suggested that the BEGIN marker be eliminated. In our opinion, the BEGIN marker is not needed since a standard route marker assembly without a BEGIN plate is adequate to designate the beginning of a route.

2D-24, DETOUR Marker (M4-8)

It is suggested that the following be added at the end of the first paragraph: "and rejoins the regularly numbered route beyond that section."

2D-28, Route Marker Assemblies

The word "and" should be inserted between the words, "arrangements" and "at" in the first sentence in the fourth paragraph.
2D-31, Directional Assembly

The word "used" in the second sentence should be "uses."

With regard to the paragraph numbered 3, there is no need for a BEGIN marker as indicated in our comment under 2D-22.

It is suggested that the following be added at the end of paragraph b on page 2D-21: "on left hand corner to confirm the near side assemblies."

2D-39, Street Name and County Road Name on Number Signs

We recommend that this section be expanded to cover the use of supplemental advance Street Name signs for use on the approaches to important intersections.

We suggest that only white on green street name signs be provided for in this section. This will help to achieve greater uniformity throughout the State.

2D-48, Traffic Signal Speed Sign

The word "lower" in the first sentence of the second paragraph should be "longer."

2E-6, Reflectorization or Illumination

It is recommended that the following sentence be added at the end of the first paragraph: "However, the mixing of signs with reflectorized and non-reflectorized backgrounds in the same general area should be avoided."

2E-8, Number of Signs at an Overhead Installation

It is very strongly recommended that the phrase "is authorized but should be kept to a minimum" in the last sentence of this section be changed to "is not recommended."

2E-11, Size of Lettering

The following heading which appears on Table 11-1 on pages 2E-7 and 2E-8 should be eliminated:

<table>
<thead>
<tr>
<th>Major*</th>
<th>Category (a)*</th>
<th>Category (b)*</th>
<th>Intermediate</th>
<th>Minor</th>
<th>Overhead</th>
</tr>
</thead>
</table>

2E-26, Advance Guide Signs (Figure 2-9)

It is strongly recommended that this section be expanded to provide for the use of diagrammatic advance guide signs for a left exit. Research has shown that these signs are more effective than standard advance guide signs.
2F-17, Horizontal Clearance

It is recommended that the sentence, "Normally signs need not be placed more than 30 feet from the edge of pavement." should be eliminated. Every effort should always be made to locate signs as far from the edge of pavement as possible and still maintain effective viewing.

2F-24, Diagrammatic Signs (Figures 2-28, 2-29, 2-31 and 2-32)

It is strongly recommended that the entire second paragraph of Section 2F-24 of the NMUTCD be added to this section.

2F-37.1 (NMUTCD) Carpool Information Signing

It is recommended that Section 2F-37.1 of the NMUTCD, Carpool Information Signing, be added to your Manual. Use of these signs is considered to be in the public interest.

3A-7, Type of Longitudinal Lines

"4. A wide solid white line...but crossing the line is discouraged." The word "discouraged" should be changed to "prohibited."

Page 3B-10, Figure 3-7

The top drawing should have a title.

Page 3B-11

The dashed white lane line and dashed yellow centerline drawing is not consistent with the write up on page 3A-3 which recommends 10-foot segments and 30-foot gaps.

Page 3B-12

Figure 3-8 is misplaced ahead of the narrative.

Page 3B-15

Figure 3-24 is misplaced.

Page 3B-17

Figure 3-9 is misplaced.

Page 3B-18

Figure 3-22 is misplaced

Page 3B-19

Figure 3-23 is misplaced. It should be referenced in the write up.
Page 3B-20, Figure 3-23a, Pavement Width Transition

The large arrow sign only applies to locations with sharp horizontal curves. Therefore, it would be more applicable to use a reverse wide angle sign and/or chevron signs at most Indiana locations.

3B-14, Stop Lines

The word "approach" is misspelled in the first sentence.

3B-16

No title for this Section.

Page 3B-39, Figure 3-17
Page 3B-40, Figure 3.18
Page 3B-41, Figure 3-19

These Figures are misplaced with respect to the narrative.

3B-19, Preferential Lane Markings

"Word markings may be used to supplement but not substitute (sic) ... "
The word "substitute" is spelled incorrectly.

3C-3, Objects Adjacent to the Roadway

The following paragraph should be added"

"Standard warning signs (Part II-C) should also be used where applicable. Typical applications of markers for roadside obstructions are shown in Figure 3-20."

Page 3D-2, Figure 3-25

This figure should be referenced in the section on object markings.

Page 3D-3, Figure 3-26

This figure should be referenced in the section on delineators.

Page 3D-5, Delineator Placement and Spacing

The misspelled word, "oter" in the first paragraph should be "outer."

Table III-1

Suggest that a definition of "S" and the formula to calculate S be included below this table.

4B-8, Size and Design of Signal Lenses

An asterisk should be added after "Standard for Adjustable Face Vehicle Traffic Signal Heads."
4B-11, Visibility and Shielding of Signal Faces

The word "lense" in the second paragraph is not spelled correctly.

The word "approach" in the first sentence of the third paragraph should be changed to "approaching driver."

4B-14, Transverse Location of Traffic Signal Supports and Controller cabinets

The phrase "economically feasible" in the second sentence of the first paragraph should be changed to "practical."

4D-4, Design Requirements

An asterisk should be placed after "Standard for Adjustable Face Pedestrian Signal Heads, 1975" in paragraph number 3.

4E-5, General Design and Operation of Beacons

A paragraph should be added to discuss the need for a dimmer if a 150-Watt lamp is used in a 12-inch lens flashing yellow beacon which is so bright as to cause glare during night operations.

4E-15, Design of Movable Bridge Signals and Gates

The meaning of the sentence, "The beacon is not required except as noted in the above paragraph" is not clear.

4E-19, Application of Emergency-Traffic Signals

A definition of stopping sight distance material in the first paragraph should be added to this section.

5E-2, Application

WRONG WAY signs could be added to the list of signs in the last paragraph.

6A-3, Application of Standards

The word "White" in the last sentence of the fifth paragraph should be "While."