Parts of Millennium MUTCD

- Part 1 – Introduction, General Provisions and Definitions
- Part 2 – Signs
- Part 3 – Markings
- Part 4 – Signals
- Part 5 – Low-Volume Rural Roads (New Part)
- Parts 6 – Temporary Traffic Control

Traffic Control Devices Defined

Traffic control devices shall be defined as all signals, markings, and other devices used to regulate, warn, or guide traffic, placed on, over, or adjacent to a street, highway, or bikeway by authority of a public agency having jurisdiction.
Effective, Adoption and Compliance Dates

- There is a difference:
  - Effective Date: the date the final rule goes into effect. For the 2000 MUTCD, the effective date is JANUARY 17, 2001

Adoption Date

- Provides a two year period from the effective date for States to adopt either:
  - The National MUTCD
  - A State MUTCD
  - State supplement to the MUTCD

Compliance Dates

- Compliance periods are generally longer than the two-year adoption period

Available Mediums of the Millennium MUTCD

- Printed and CD ROM versions from professional organizations in Spring 2001
  - AASHTO, ITE, ATSSA, GPO, and others
**Definition of Category Headings**

- **Standards**: “Shall” Conditions
- **Guidance**: “Should” Conditions
- **Options**: “May” Conditions
- **Support**: Descriptive and/or General Information

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**Changes in Location of Definitions**

Much of the language that previously repeated throughout the MUTCD is now contained as definitions Part 1.

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**Copyright & Patent Info**

- Copyrighted or patented devices not allowed.
- Exception is the AASHTO Interstate Shield.
- Devices considered public domain.
Metric/English Units

1988 MUTCD
- English Units
- Both Metric and English Used

Basic Principles

- “Vehicle Speed” added as consideration in the design, placement, operation and location of TCDs.

Authority for Placement

- All Traffic Control Devices SHALL be placed as authorized by public authority that has jurisdiction.
- Unauthorized devices SHOULD be removed.

Engineering Study & Engineering Judgment

- Difference between “engineering study” and “engineering Judgment” are discussed.
All signs are retroreflective or illuminated
- Improves safety
- Improves visibility

Section 2A.8
Letter Heights on Signs

Millennium Edition

- Add 25mm (1in) Letter Height per 12m (40ft) of Legibility Distance

Section 2A.14

Sign Lettering

- Street Name Signs May Also Use Upper and Lower Case Letters

Section 2A.18

Sign Lettering

Millennium Edition

- Non-restricted use of Series B Alphabet

Section 2A.15

Mounting Height

Millennium Edition

- No change to mounting height
- 5 feet in rural districts
- 7 feet in urban districts

Section 2A.18
Breakaway/Shielded Sign Supports

Millennium Edition

- Sign supports within the clear zone SHALL be breakaway, yielding, or shielded
- Overhead sign supports shall have a barrier or crash cushion

Section 2A.19

Day and Night Sign Inspections

Millennium Edition

- Day and Night Inspection Schedule
- Reiterated as guidance in the MUTCD

Section 2A.23

Part 2B: Regulatory Signs

Millennium Edition

Regulatory Sign Sizes Table 2B-1

Millennium Edition MUTCD

- Table 2B.1 added which shows sign codes, road classification, and applicable MUTCD sections.

Section 2B.03
4-WAY Supplemental Plaque

- Millennium Edition MUTCD
  - Requires the use of the 4-WAY supplemental plaque (R1-3) at intersections controlled by STOP signs.

Section 2B.04

Minimum Vehicle Volume Criteria

- Millennium Edition MUTCD
  - Total vehicle volume from the major street approach (total of both approaches) averages at least 300 vehicles per hour.

Section 2B.07

Combined Volume Criteria

- Millennium Edition MUTCD
  - Add bicycle volumes to combination volume studies of vehicles and pedestrians from the minor approach (total of both approaches).

Section 2B.07

Multi-Way Stop Signs

- Millennium Edition MUTCD
  - Provide means to combine criteria for accident experience and volume counts. (80% of min. values)

Section 2B.07
Truck Speed Limit Sign

- Millennium Edition MUTCD
  - Clarify this sign is a supplemental plaque required for use below Speed Limit sign or included within R2-1 sign.
  - Added as separate section

  - Section 2B.12

Turn Prohibition Signs

- Millennium Edition MUTCD
  - Where turns are prohibited, Turn Prohibition signs shall be installed.
  - Except as noted in Option

  - Section 2B.17

One Way Sign

- Millennium Edition MUTCD
  - This sign shall be placed parallel to the one-way street at all alleys and roadways that intersect one-way roadways.

  - Section 2B.32

High Occupancy Vehicle Lanes

- Millennium Edition MUTCD
  - The diamond symbol is for exclusive HOV lane use.

  - Section 2B.48
Part 2C: Warning Signs

Increase Minimum Size of Signs (cont.)

1988 MUTCD
- W6.3 24" x 24"
- W12.1 24" x 34"

2000 MUTCD
- W6.3 30" x 30"
- W12.1 30" x 30"

Table 2C.2

Add a new discussion and sign for Combination Horizontal Alignment/Advisory Speeds.
Low Clearance Sign

The use of the Low Clearance Sign to warn road users of overhead clearances less than the statutory maximum vehicle height is a STANDARD.

Section 2C.20

Shoulder Signs

Include text explaining the “SOFT SHOULDER,” “LOW SHOULDER,” & “SHOULDER DROP-OFF” signs.

Use only word messages for these signs

Section 2C.24

Combined Intersection Warning Signs

Millennium Edition MUTCD

New sign and new section which allows the Turn & Curve signs to be combined with the Cross Road & Side Road signs.

Section 2C.8, par. 1

“Pavement Ends” Sign

Millennium Edition MUTCD

The Advisory Speed plaque may be used to supplement the “Pavement Ends” word message sign when road conditions require change in speed.

Delete the use of the “Pavement Ends” symbol sign (W8-3a).

Section 2C.23
LANE ENDS SIGN

W4-2 symbol sign is misunderstood.

Word message helps improve understanding.

Cross Traffic Does Not Stop

2000 MUTCD

Include an OPTION to install a new CROSS TRAFFIC DOES NOT STOP sign (W4-4P).

New Curve Speed Sign

Millennium Edition MUTCD

The Curve Speed sign may be used to provide the advisory speed on roads and highways at the beginning of horizontal alignment changes.

Circular Intersection Sign

Millennium Edition MUTCD

Include a new Circular Intersection (W2-6) sign.
Crossing Signs

**1988 MUTCD**
- Advance Crossing
- Crosswalk Sign (with lines)

**2000 MUTCD**
- W11A-2
- Deletion of crosswalk lines on the Crossing Sign.

Section 2C.37

Supplemental Warning Plaques

**Millennium Edition MUTCD**
- Add a new discussion on the use of supplemental warning plaques.

Section 2C.39

Supplemental Warning Plaques (cont.)
- “Share the Road” Sign (W16-1)
- Distance Plaques (W16-2 thru W16-4 & W7-3a)
- Supplemental Arrow (W16-5 thru W16-7)
- “Advisory Speed” Plaque (W13-1)

Supplemental Warning Plaques (cont.)
- “Hill Grade-Related” Plaques (W7-2 & W7-3 series)
- “Advance Street Name” Plaque (W16-9)
- “Dead End,” “No Outlet” Plaques (W14-1, W14-2)
Part 2D: Guide Signs
Conventional Roads

Guide Sign Brightness

- All messages, borders, and legends shall be retroreflective and all backgrounds shall be retroreflective or illuminated.

Cardinal Direction Signs

- Increased first letter
- Compliance date December 31, 1994

Section 2D.15

Street Name Signs

- Option - May be installed on overhead mast arms.

Section 2D.38
Street Name Signs

Millennium Edition

- Option to install 2 different street names on one sign panel with arrows.

Section 2D.38

Part 2E: Freeways and Expressways

Retroreflective Signs

Millennium Edition

- Sign backgrounds that are not independently illuminated shall be retroreflective

Section 2E.5

Legends and Borders on Overhead Signs

Millennium Edition

- Shall be retroreflective unless internally illuminated

Section 2E.5
General Service Signs

Millennium Edition

- 6 or 7 days a week
- Seasonal application

Section 2E.51

Part: 3

Markings

Changes to Existing Sections

Colors:
- Markings SHALL be yellow, white, red, or blue
- Blue markings delineate parking spaces for persons with disabilities

Changes to Existing Sections

Centerline Warrants:
- Centerline markings SHALL be placed on the following:
  - Urban arterials or collectors with
    - 6,000 ADT
    - ≥ 20ft. Width
  - Roadways with 3 or more lanes

Colors:
- Markings SHALL be yellow, white, red, or blue
- Blue markings delineate parking spaces for persons with disabilities
Major Changes to Existing Sections

Centerline Warrants:

- Centerline markings SHOULD be placed on the following:
  - Urban arterials or collectors with:
    - $\geq 4,000$ ADT
    - $> 20$ ft. Width

- Centerline markings MAY be placed on the following:
  - Paved two-way roadways that are 16 ft. or more in width

Edge Line Warrants:

- Edge line markings SHALL be placed on the following:
  - Freeways and Expressways
  - Rural arterials with $\geq 6,000$ ADT, 20ft. Width

- Edge line markings SHOULD be placed on the following:
  - Rural arterials with $\geq 3,000$ ADT, 20ft. Width

Edge Line Marking Warrants:

- Edge line markings should not be placed where an engineering study or engineering judgment indicates that providing them would decrease safety.
**No-passing Zone Markings**

- **Standard:** No-passing zone markings shall be used on approaches to highway-rail grade crossings (see Section 8B.16) and at other locations where the prohibition of passing is appropriate.

**Stop and Yield Lines**

- **Section 3B.16** OPTION: Yield lines may be used where it is important to indicate the point behind which vehicles are required to yield in compliance with a YIELD sign.
- **Section 3B.16** Yield lines consist of a row of isosceles triangles extending across approach lanes, and pointing toward approaching vehicles.

**Pavement Word and Symbol Markings**

- **Section 3B.19** Added two optional warning pavement markings: Yield Ahead & Yield Ahead triangle symbol Figure 3B-24.

**Wrong Way Movements**

- **Where channelization or ramp geometrics do not make wrong-way movements difficult, a lane-use arrow should be placed clearly visible to road user.**
Preferential Lane Word and Symbol Markings

The preferential lane symbol shall be used for HOV lanes only.

Section 3B.22 Preferential lane marking shall consist of white lines formed in a diamond shape. The Diamond shall be at least 750 mm x 3.6 m (2.5 ft x 12 ft).

Standard: Where a preferential lane use is established, the preferential lane shall be marked with one of the following symbol or word markings for the preferential lane use specified:

- HOV lane - the preferential lane use marking for high-occupancy vehicle lanes shall consist of white lines formed in a diamond shape…
- Bicycle lane - the preferential lane use marking for a bicycle lane shall consist of a bicycle symbol or the word marking BIKE LANE…
- Bus Only Lane - the preferential lane use marking for a bus only lane shall consist of the word marking BUS ONLY.
- Taxi Only Lane - the preferential lane use marking for a taxi only lane shall consist of the word marking TAXI ONLY.
- Other preferential lane use markings shall be identified in accordance with Section 3B.23.
Markings for Roundabouts

- SUPPORT: Roundabouts are distinctive circular roadways that have the following three critical characteristics:
  - A requirement to yield at entry which gives a vehicle on the circular roadway the right-of-way; and
  - B. A deflection of the approaching vehicle around the central island; and
  - C. A flare or widening of the approach to match the width of the circular roadway.

Compliance Considerations

- 3 years after the effective Final Rule date, or
- When lane markings are replaced, or when the highway is resurfaced or reconstructed

Part 4: Traffic Signals

- Section 4B.02 Title: Basis of Installation or Removal of Traffic Control Signals
  - Section also provides Guidance on signal removal and steps that may be considered in removing a traffic control signal.
New Guidance

- Alternatives to Traffic Control Signals (4B.04)
  - Added Guidance that provides alternatives to installing a traffic control signal
  - Even if one or more of the signal warrants has been satisfied
  - Added Options to describe alternatives

Important Notes

- 11 Warrants consolidated into 8 Warrants (Chapter 4C)
  - Warrants 1, 2, & 8 combined into Warrant 1
  - Eight-hour Vehicular Volume
  - Warrant 10 (Peak Hour Delay) and Warrant 11 (Peak Hour Volume) now Warrant 3: Peak Hour

Important Notes

- Traffic Control Signal Needs Studies: Warrant 1, Eight-Hour Vehicular Volume (Chapter 4C)
  - Elimination of the “56% rule”
  - Values for 80% and 70% are now listed separately
  - Table 4C-1

Table 4C-1

[Table Image]
**Traffic Control Signal Features**

- **STOP signs shall not be used with traffic signals except:**
  - when the signal flashes red at all times
  - driveway located within or near area controlled by signal but doesn't require signal control

**New Guidance**

- **Provisions for Pedestrians (4D.03)**
  - Added Guidance for safety considerations to include the installation of accessible pedestrian signals, where appropriate.
  - Reflects the intent in TEA-21.

**Red Arrows**

- RED ARROWS are allowed in the 2000 MUTCD.

**New Option**

- **Application of Steady Signal Indications for Left Turns (4D.06)**
  - OPTION added on the design of left-turn phasing
  - To promote consideration of elderly drivers
  - Protected-only mode left-turn phasing
**Change in Standard**

- **Size, Number, and Location of Signal Faces by Approach (4D.15)**
  - Changed from the 1988 manual.
  - Changed the maximum height of a signal head to fall in line with a 20 degree maximum vertical viewing angle.
  - Mounting of top of signal housing no higher than 7.8 m (25.6 ft) above pavement.
  - Figure 4D.1

**New Guidance**

- **Size, Number, and Location of Signal Faces by Approach (4D.15)**
  - Added new Guidance to recommend using 300 mm (12 inches) signal lenses under four conditions, specifically, where there is a significant percentage of elderly drivers.

**Visibility, Shielding and Positioning of Signal Faces**

- Added a Support paragraph on the use of backplates on signal heads to help elderly drivers see the contrast between traffic signals and their surroundings.
- Added Guidance recommending the use of signal visors be considered as an alternative to signal louvers because visors do not diminish light output.

**Change in Standard**

- **Size, Design, and Illumination of Pedestrian Signal Indications (4E.04)**
  - **STANDARD:** New pedestrian signals shall consist of symbolized messages.
  - **STANDARD:** Symbols shall be at least 150 mm (6 inches) high.
  - **GUIDANCE:** For crosswalks more than 30 m (100 ft) long, symbols should be at least 225 mm (9 inches) high.
Changes in Guidance

Pedestrian Intervals and Signal Phases (4E.09)
- Guidance changed from 4 to 7 seconds to at least 7 seconds, but wording as to how to calculate the pedestrian clearance time remained the same.
- Option added to keep the 4 second timing if pedestrian volumes and characteristics do not require a 7 second walk interval.

New Option

Pedestrian Intervals and Signal Phases (4E.09)
- OPTION added to use passive pedestrian detection equipment in crosswalks to extend the length of the pedestrian clearance time for a particular cycle when a pedestrian needs more time to cross the street.

Change in Standard

Design of Lane-Use Control Signals (4J.03)
- STANDARD: Changes the 1988 specifications for nominal height and width
  - 150 mm (6 inches) from 300 mm (12 inches)
- OPTION: allows for use of 300 mm (12 inches) signal faces in areas with minimal visual clutter and speeds equal to or less than 70 km/h (45 mph)

Millennium Edition

Part 5: Traffic Control Devices for Low-Volume Roads
Part 5

Objectives

- Dedicate a portion of the MUTCD to low-volume roads
- Focus on TCDs that are unique or most applicable to low-volume roads
- Cross reference devices that are appropriate for low-volume as well as higher class facilities team

5A.01 Working definition of low-volume roads

- Located outside the built-up areas of cities, towns and communities
- Traffic volumes < 400 AADT
- Paved vs. unpaved

5A.02 Application of devices on low-volume roads

- Focus on devices that:
  - Warn of conditions not normally encountered
  - Prohibit unsafe movements
  - Provide minimal destination guidance

- Part 5 does not prohibit the installation nor the full application of TCDs on low-volume roads

5A.03 Design of devices for low-volume roads

- Typical signs for low-volume roads are shown in table 5A-1
- Minimum sign sizes are also posted in table 5A-1
- The use of other signs and signs with larger dimensions should be dictated by engineering judgement and studies
5A.04 Placement of devices on low-volume roads

- TCDs shall be placed and positioned, where necessary, in accordance with the criteria in Part 2.
- Sign offsets of not less than 0.6m (2ft) from roadway edge to roadside edge of a sign may be used when necessary.
- If located within a clear zone, roadside signs shall be yielding, breakaway or shielded.

5B. Regulatory signs for low-volume roads

- Use of STOP/YIELD signs on low-volume roads should be considered when:
  - a less important road intersects but the normal right-of-way rule may not be readily apparent
  - there is restricted sight distance for prevailing speeds
- Other regulatory signs shall comply with criteria in other Parts of the MUTCD.

5C. Warning Signs for low-volume roads

- Motorized Traffic and Crossing signs should be removed or covered when not in use.
- NO TRAFFIC SIGNS sign may be used on unpaved, low-volume roads.
- Other warning signs shall comply with criteria in other Parts of the MUTCD.

5E. Markings for low-volume roads

- Center line markings should be placed on paved low-volume roads subject to engineering judgement or study.
- Edge line markings may be placed on paved facilities with or without centerlines.
- A Type III barricade may be used where engineering study indicates a need for a more visible end-of-roadway treatment.
- Other markings shall conform with the criteria contained in the Manual.
5F. Highway-rail grade crossings

- Crossbuck and advanced warning signs shall be used at all crossings.
- Pavement markings should be used on paved low-volume facilities.
- Other devices that could be used shall conform with the criteria in Part 8.

5G. Temporary traffic control zones

- A traffic control plan should be used for temporary control zones on low-volume roads.
- Devices used for channelization at night shall have the same retroreflectivity as for higher volume roads.
- Pavement markings should be considered for temporary control.
- Material in Part 5 is closely aligned with that in Part 6.

Millennium Edition

Part 6: Temporary Traffic Control

Changes in General

New Title:
Temporary Traffic Control replaces:
- Standards and Guides for Street and Highway Construction, Maintenance, Utility, and Incident Management Operations
New to MUTCD

New Section: 6C.02 Temporary Traffic Control Zones
- Definition of temporary traffic control zones CHANGED to include a work area or an incident area
- Change does not add any new requirements for State or local jurisdictions

Traffic Control Devices

New Standard: Section 6B.01, 2nd Standard para.,
- “All temporary traffic control devices shall be removed... when they are no longer needed.”

Temporary Traffic Control Plans

New Guidance: Section 6C.01, 6th and 7th Guidance Para.
- Provides GUIDANCE statement to provide additional information on minimizing the need to reduce speed limits in temporary traffic control zones.
- No economic impact on State and local highway agencies

Worker Safety Considerations

New Option: Section 6D.02A
- Shadow Vehicle - in the case of mobile and constantly moving operations, such as pothole patching and striping operations, a shadow vehicle, equipped with appropriate lights, warning signs, and/or a rear-mounted impact attenuator MAY be used to protect the workers from impacts by errant vehicles
- Increased emphasis on safety of workers
- “Shadow vehicle” replace “protection vehicle”
Sign Placement

New Guidance: Section 6F.03, 2nd Guidance Para.

- New considerations added for sign placement on sidewalks, bicycle lanes, or areas designated for pedestrian or bicycle traffic.

Warning Signs Mounting Height

New Standard: Section 6F.03, paras. 4, 7, 8 and 11.

- Post-mounted signs...height at...rural area shall be mounted – 1.5m (5ft), business, commercial – 2.1 m (7ft.).

Amount of Days Signs are Erected

New Guidance: In Section 6F.03, 3rd Guidance para.

- “Except as noted in the signs mounted on portable supports should not be used...3 days...4th Option para. The R9-8 – RR-11a series...3 days.”

Portable Changeable Message Signs

New Guidance: Section 6F.52, 9th Guidance Para., subpara. B.

- Guidance on the design of message displays
  - Top line...Problem
  - Center line...Location or distance ahead
  - Bottom line...Driver action
**Arrow Panels**

**New Standard:** In Section 6F.53 1st paragraph changed from SUPPORT to STANDARD
- Definition of “arrow panel” is a STANDARD

**New Guidance:** In Section 6F.53, 2nd paragraph
- Guidance for location and providing protection for portable changeable message signs

**DRUMS**

**New Standard:** Section 6F.59, 1st paragraph
- Each drum …”SHALL have a minimum of top two orange and white stripes with the top stripe being orange.”
- New standard will provide better uniformity on the top color of all drums

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**Temporary Traffic Barriers**

**New Standard:** section 6F.75, 2nd Standard para.
- “In order to mitigate the effect of striking the end of a temporary barrier, the end shall be…”

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**Work Within the Traveled Way of Urban Streets**

**New Standard:** Section 6G.10, 2nd Standard para.
- If temporary zones affects the movement of bicycles, adequate access to the roadway, bicycle paths, or shared-used paths SHALL be provided
- Ensures bicyclists are accommodated during temporary traffic control zone
Multiple Lanes Closed

**New Standard:** Section 6G.11, 4th Standard para
- When roadway is closed ... signs and markings, and traffic control devices ... shall be covered, removed, or obliterated.

Work Within the Vicinity of Highway-Rail Grade Crossings

**New Guidance:** Section 6G.18
- Early coordination with the railroad company SHOULD occur before work starts
- Will improve safety, while having no economic impact on States and local highways agencies

Figs. 6H-10, 6H-30, 6H-32, 6H-46

- New notes accompany TAs -10, -30, -32
- New TA-46 added to provide additional information on work zone treatments near highway-rail crossings

Fig. 6H-17 (TA-17), Mobile Operation on Two-Lane Road

**New Standard:**
- Note 2 added to 6H-17 (TA-17): “Shadow and work vehicles SHALL display rotating lights or strobe lights.”
Fig. 6H-28 (TA-28) & 6H-29 (TA-29) Sidewalk & Crosswalk Closures

New Standard:
- Note 1 for 6H-28 (TA-28) and 6H-29 (TA-29)—“Where sidewalks exist, provisions SHALL be made for disabled pedestrians.”
- Note 2 for 6H-29 (TA-29)—“Curb parking SHALL be prohibited for at least 15 m (50 ft) in advance of the mid-block crosswalk.”

Millennium Edition

Part 7: Traffic Control for School Areas

New to the MUTCD

Option:
- Use of the color fluorescent yellow-green for school warning signs \( \text{Section} \)
  - With guidance statement that addresses systematic approach for use of FYG

New to the MUTCD

Section:
- School Reduced Speed Ahead Assembly \( \text{Section} \)
  - Optional installation when engineering judgment indicates advance notice would be appropriate
Other Significant Changes

School Advance Warning Signs  Section 7B.08, Fig. 7B-1

- New application will consist of crossing sign supplemented by "Ahead" (W-16-9p) or "XXX Feet" plaque (W16-2 or W16-2a) to provide notice to road users of crossing activity
- Assembly SHALL be used in advance of the first installation of the School Speed Limit Sign Assembly
- Phased-in compliance period—10 years after effective date of rule; new installations effective immediately

School Crosswalk Warning Assembly (S1-1 w/Diagonal Arrow)  Section 7B.09, Fig. 7B-1

- Eliminates crosswalk lines on crossing signs
- New assembly consists of crossing sign (S1-1) with supplemental downward pointing arrow plaque
- Phased-in compliance—10 years after effective date of rule; new installations effective immediately

Millennium Edition
Part 8: Traffic Control for Highway-Rail Grade Crossings

Part 8 applies to all highway-rail grade crossings  (8A.02)
New Definitions
- Minimum Truck Clearance Distance
- Clear Storage Distance
- Preemption
- Interconnection
- Monitored Interconnected Operation
- Minimum Warning Time – Through Train Movements
- Right-of-Way Transfer Time
- Queue Clearance Time
- Separation Time
- Maximum Preemption Time
- Advance Preemption and Advance Preemption Time
- Simultaneous Preemption
- Pre-Signal
- Cantilevered Signal Structure
- Design Vehicle
- Dynamic Envelope Delineation

New Standards
- Temporary Traffic Control Zone operations
  (8A.05/10A.05)
  Discusses vehicles stopping on railroad tracks
  Standard: shall not allow, unless a law enforcement officer or flagger is provided
  Need to minimize possibility of stopping
  This section expanded in Millennium Edition

New Standards
- Highway-Rail Grade Crossing (Crossbuck) Sign R15-1, R15-2 (8B.02)
  Use of retroreflective material on back of crossbuck and on supports
  Equal to or greater than 50 mm (2 inches) in width
  Exception:
  Crossbuck signs have been installed back-to-back
  Compliance period – January 17, 2011
  10 years for existing installations
  Immediately for all new installations

New Options
- STOP or YIELD Signs at Highway-Rail Grade Crossings (8B.07)
  State or local highway discretion for sign use
  Crossings that have two or more trains per day and are without automatic traffic control devices
  1988 manual limited use based on engineering study
  If signs are used, their installation shall be in accordance with Chapter 2C, Section 2C.26.
**New Guidance**

- **Emergency Notification Signs (I-13 or I-13a) (8B.09)**
  - New guidance on posting emergency notification signs at all highway-rail grade crossings.
  - Location and placement to be decided cooperatively by railroad company and highway agencies; however, typically located on the railroad right-of-way.
  - White message on blue background.

**New Guidance**

- **Low Ground Clearance Highway-Rail Crossing Sign (W10-5) (8B.14)**
  - To be used in advance of crossings when the highway profile conditions are sufficiently abrupt to create a hang-up situation for vehicles with low clearance.
  - Since it is a new sign, an accompanying STANDARD requires an education plaque — LOW GROUND CLEARANCE — to remain for at least 3 years after its initial installation.

**New Guidance**

- **Storage Space Signs (8 B.15)**
  - Should be mounted in advance of the crossing to advise drivers of the space available for vehicle storage between the intersection and crossing.
  - Signs W10-11 and W10-11a.
  - New Sign W10-11b; use is optional.
  - Similar use to remind motorists of the storage space.

**New Guidance**

- **Flashing-Light Signals, Gates, & Traffic Control Signals (8D.01)**
  - New guidance to address pedestrians: “If a pedestrian route is provided, sufficient clearance from supports, posts, and gate mechanisms should be maintained for pedestrian travel.”
  - Complies with ADA.
**New Standards**

- Flashing-Light Signals, Post-Mounted (8D.02)
  - Shall include a standard Crossbuck sign
  - Shall include a supplemental Number of Tracks sign where there is more than one track
  - Shall display two red lights mounted in a horizontal line flashing alternately
  - Shall be placed to the right of approaching traffic on all highway approaches
    - In conformance with Figure 8D-2

**Continued:**
  - Shall include back-to-back pairs of lights when highway traffic approaches in both directions
    - On one-way and divided highways, shall be placed on the approach side, on both sides of the roadway, or above the highway
  - Alternately flashing lights shall flash a number of 35 minimum and 65 maximum per minute

**Four-Quadrant Gate System**

- New section and new technology
- Eliminate gate running
- STANDARD: describes placement and operation
  - Figure 8D-2 shows placement
  - Signal specifications, location, and clearance distances in accordance with Standards in 8D.01 through 8D.03
  - Gate arm design, colors, and lighting requirements in accordance with Standards in 8D.04

**Compliance Considerations**

- 8B.02: Highway-Rail Grade Crossing (Crossbuck) Sign R15-1, R15-2
  - 10 year phase in, January 17, 2011
Millennium Edition

Part 9: Traffic Controls for Bicycle Facilities

Major Changes: Additions to MUTCD

- Three new terms:
  - Shared use path
  - Bicycle lane
  - Designated bicycle route
- New guidance to engineers on assignment of priority at path/roadway intersections

Major Changes: Pavement Markings

- **Deletion**: Elimination of the use of “diamond” for bicycle preferential lane signs and markings. 9B.04
  - Applies to both pavement and signs
  - Phase-in compliance period of 5 years after effective date of rule
  - Effective immediately for new signing installations

Bicycle Crossing Warning Signs

- **Addition**: when used at location of crossing, SHALL be supplemented with a diagonal downward arrow (W16-7) plaque. 9B.15
  - Optional supplemental plaque with “AHEAD” or “XX FEET” may be used with W11-1 sign
  - Also applies to schools signs (7B.09) and other crossing signs (2C.37)
Use of Fluorescent Yellow-Green

- **Addition:** Optional Use of fluorescent yellow-green for Bicycle Crossing Warning signs 96.15
  - If used, guidance statement added that addresses systematic approach to FYG use

Major Changes: Signs

- **Addition:** Signs SHALL be used with preferential bicycle lane symbols 9C.04
- **Addition:** Bicycle lane symbol SHALL be placed immediately after but not closer than 20m (65 ft.) from crossroad. 9C.04

Major Changes: Signal Operations

- **Addition:** On bikeways, the needs of bikers SHALL be considered when setting signal timing 9D.02

The MUTCD as a Living Document — Moving the Process into the 21st Century
The Revision Process

- Needs to be streamlined
- Expect a more consistent NPA process every:
  - 1 yr
  - 2 yr
  - TBD based on resources
- Reduce NPA docket time
  - Based on NCUTCD schedule
  - More consistent with other FHWA processes
  - Closer to 60 days
- Public Notice: process will be more visible and accessible

Interpretations

- Current procedure is for user to request by letter or email
- An interpretation is official only:
  - When FHWA responds by letter
  - Signed
  - Numbered
- The interpretation will then go into the Interpretations Database
  - Plan to be on the web within 2001

Experimentations

- Similar to Interpretations procedure
  - STANDARD: must follow 1A.11 procedure
- Experiments have generally led to changes
- Once requested and approved, Experiments will go into the Experimentation Database
  - Plan to be on web site in 2001