Back to the MUTCD Future

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Part 1: MUTCD Past

There have been 10 National MUTCDs.


7 TxMUTCD editions
Traffic Control Devices History

Early markers were used in the Roman Empire
Also used on pioneer trails in America
Automobile age created new demands

Roman Empire
Colonial America

Early 20th Century
Early Intersection Control

Hand signals, police, and semaphores
Traffic Signal Towers
Early Traffic Signals

Many different signal designs
Early Traffic Signs

Need for devices increased with more automobile travel

Little coordination between agencies
Early Grade Crossings
Early Traffic Control Devices

The wide variety of devices created the need for uniformity.

1911 - 1st centerline, Michigan
1914 - 1st electric signal, Cleveland
1920 - 1st 3-color signal, Detroit
1923 Sign Shape Recommendations

Mississippi Valley Assoc of St Hwy Dept
Number of sides represents hazard level

- RR Grade Crossing
- Stop Intersection
- Warning (speed reduction)

Caution
Directions or Regulations
1924 Sign Color Recommendations

National Conference on Street and Highway Safety

For signs and signals

- Red - stop
- Green - proceed
- Yellow - caution
- White - directions or distance
- Purple - intersection
1925 Joint Board Report

Report of Joint Board on Interstate Highways
AASHO led
Developed U.S. Highway system
Included recommendations for standard signs
1927 AASHO Manual

Evolved from Joint Board
First national manual
Rural signs only
Title:

Manual and Specifications for the Manufacture, Display, and Erection of U.S. Standard Road Markers and Signs

Revised 1929 and 1931
1927 Signs

Block letter font
1930 NCHS Manual

Prepared by American Engineering Council

Signs, markings, and signals for urban areas

Title:

Manual on Street Traffic Signs, Signal and Markings

Not Revised
1930 Signs

- Speed Limit 20 Miles
- Through Traffic
- Caution School Zone
- RR
- Curves
Birth of the MUTCD

Problems of two manuals led to creation of the MUTCD

1927 Rural Manual

Joint Committee

1930 Urban Manual

1935 MUTCD
1935 MUTCD

**First MUTCD**
- 1935 mimeograph
- 1937 typeset

**Signs**
- White or yellow
- Diamond, square, circle, octagon, rectangle

**Markings**
- White, yellow, or black

**Signals**
- 3-color signal as standard

1937 Typeset
Revised 1939
1942 MUTCD

Few major changes
Addressed wartime conditions
Conservation of materials
Blackout traffic control

Not Revised
Blackout Devices
1948 MUTCD

Significant rewrite

Signs
- Simplified messages
- Eliminated square signs
- Added advisory plate
- Rounded alphabet

Pavement markings
- Yellow - Double center & barrier line
- White - all other applications
- Edge lines not recommended

Simplified signal warrants

Revised 1954
1948 Signs

- Stop
- S Curve Ahead
- Speed Limit 50
- Bryan 8
- Hearne 25
- Keep Right

Texas A&M University - Zachry Department of Civil Engineering
1954 Revision

Significant sign changes

Secondary messages eliminated

Became

New Sign
Traffic Signal Legacies

Non-standard traffic signals continued in use through the 1950s and 1960s in some locations

Darley 2 bulb signal

Wiley signal

NYC Olives
Freeway Guide Sign Tests

New Interstate Highway system created signing and marking challenges

BPR research in mid-1950s

Evaluated freeway guide sign design
- Black, blue, and green backgrounds
- Lower case letters

Other new signs

Results lead to new signing guidelines
1958 AASHO Interstate Manual

Created for the new Interstate Highway system

New features
- White on green guide signs
- Lower case letters
- Green on white service signs
- Utilized larger sign sizes
- Blue service signs added in 1961 revision

New Interstate Signs

INTERSTATE 10
TEXAS

BUSINESS SPUR 75

Metropolis Utopia

EXIT 30 M.P.H.

REST AREA 2 MILES
1961 MUTCD

Federal compliance required

New material:
- Construction traffic control
- Civil defense signing
- Freeway guide signing

Not Revised
1961 Signs

- Yield
- Metropolis Utopia
- Only
- Texas US 81
- Evacuation Route

Zachry Department of Civil Engineering, Texas A&M University
1971 MUTCD

Significant rewrite
DOT ownership
New features:
  Content: school areas
  Color: orange
  Shapes: pennant, pentagon
International sign influence
  Many new symbols
Yellow markings for opposing traffic

Revised 8 times
1971 Signs
1978 MUTCD

Update of 1971 edition
Loose leaf (binder) format
   Individual page revisions
New content
   RR-hwy grade crossings
   Bicycle facilities
Yellow markings on left side

Revised 4 times
1978 Signs

- Center lane only
- Buses and 4 rider car pools only (6AM-9AM Mon-Fri)
- Bike route
- Road construction
- Stop sign
- Pedestrian crossing
- Road narrowing

[Image: Diagram of various traffic signs from 1978]
1988 MUTCD

Update of 1978 edition
  Included new revision (#5)

New content
  Recreational/cultural signs
  Logo signs
  TODS

Planned to be revised only for safety reasons

Rev 3: Part VI
1988 Signs

YELLOWSTONE NATIONAL PARK 2 MILES

TOURIST ACTIVITIES
MYRTLEWOOD GIFT SHOP
GREENFOREST ORCHARD

GAS FOOD LODGING
EXON McDonald's COURTNEY
DIESEL

NEAR A M P UNIVERSITY
MUTCD During the 1990s

Blue ribbon panel (1989)
- Recognize shortcomings of 1988 MUTCD
- Recommended reformat and rewrite of 1988 MUTCD

Need to clarify intent of language

Examples of language challenges
- “shall be permitted”  “may be justified”
- “shall preferably be”  “it is desirable that”
- “normally should”  “it is necessary that”
- “may be required”  “is intended for use”

Two step process: reformat then rewrite

Started in early 1990s
Rewrite/Reformat Effort

First step
Evaluate current language
Reformat language using shall, should, & may
   Classify as standard, guidance, option, support (with headings)

Second step
Rewrite reformatted language
Update content
Fix inconsistencies

Multiple proposed rules in mid- to late-1990s
Resulted in 2000 MUTCD
2000 MUTCD

Millennium edition
Reformatted/rewritten
Significantly different from 1988 MUTCD
First with 8½×11 pages
First to be on the internet
Many errors & shortcomings
Editorial and technical errors
Errata did not correct all problems

1 Errata
1 Revision
Significant Changes

New structure
Standard, Guidance, Option, Support

New parts added to MUTCD
Low Volume Roads
Highway-Light Rail Transit Grade Crossings

Islands part deleted
Definitions added
Primary units: metric
2000: Selected Key Changes

- Legibility index = 40 ft/in
- Sign graphics not accurate
- Lane ending symbol (W4-2) dropped
- Crosswalk lines dropped from crossing signs
- New Yield Line
- In-road lights

Courtesy of S. Wainwright
2003 MUTCD

Primarily an update of the 2000 MUTCD

Changes

- Editorial improvements
- Graphics corrected
- Technical corrections
- Some new material

Compressed text

982 to 754 pages

2 Revisions
2003: Selected Key Changes

Some new/revised signs
New sign color
  Pink for incident mgmt
Countdown ped signals
Metric sign changes
Accessibility in work zones

Revisions:
  1: Pharmacy signing
  2: Min sign retro
Part 2: MUTCD Present

2009 MUTCD - current edition
Final rule: Dec 16, 2009
NPA received more comments than any other
1,840 individual letters
15,000+ comments
Many changes
611 significant changes listed in Federal Register final rule
2009: Philosophical Changes

FWHA focus for 2009 MUTCD
- Uniformity
- Complete street concept: all road users
- Aging population
- Innovation

More specific detail, reduced ability to deviate
- Fine tuning of TCD use
- More devices addressed

Compliance dates restructured
- Compliance as part of systematic upgrade

Combine RR and LRT parts

MUTCD applies to private property

New content
- Toll road & managed lanes traffic control
- Purple for toll roads
- Changeable message signs
2009 MUTCD Revisions

Rev 1: engineering judgment & definition of a standard

Added: the MUTCD is not a substitute for engineering judgment

Deleted: standard statements shall not be modified or compromised based on engineering judgment

Rev 2: compliance dates

12 of the previous 58 compliance dates retained

Several of the remaining 12 have been modified
Hotlinks 2009 MUTCD

FHWA posted hotlinks version of the 2009 MUTCD

Cross-referenced chapters, sections, figures, and tables

Pop-up definitions

Links to external documents and web sites

Links to official interpretations

Indications of material affected by known errors

31 MB file – download instead of using on-line version

Section 4D.07 Size of Vehicular Signal Indications

Standard:

01 There shall be two nominal diameter sizes for vehicular signal indications: 8 inches and 12 inches. Except as provided in Paragraph 3 below, 12-inch signal indications shall be used for all signal sections in all new signal faces.

Option:

03 Eight-inch circular signal indications may be used in new signal faces only for:

A. The green or flashing yellow signal indications in an emergency-vehicle traffic control signal (see Section 4G.02);

B. The circular indications in signal faces controlling the approach to the downstream location where two adjacent signalized locations are close to each other in approach speeds, horizontal or vertical curves, or other faces for the downstream approach;

Emergency-Vehicle Traffic Control Signal—a special traffic control signal that assigns the right-of-way to an authorized emergency vehicle.
Part 3: Future of the MUTCD

Two areas of interest:

Recent and upcoming FHWA action
- Request for comments on splitting MUTCD
- Expected 2017 MUTCD edition and related rulemaking activities

Long-range vision and strategic plan
- NCUTCD effort to identify questions and identify needs for the MUTCD of the 2030s
Splitting the MUTCD

January 2013

FHWA Federal Register notice requesting comments on splitting MUTCD into 2 documents

1) Standards document (MUTCD) subject to rulemaking

2) Supplemental document that can be changed without rulemaking

June 2013

FHWA announces that comments were against splitting and FHWA agrees with comments

MUTCD to remain as single document
Rulemaking for Next MUTCD

FHWA has indicated a plan to publish a new edition of the MUTCD in or after 2017

Expect proposed rulemaking

- Originally in May 2015
- Indefinitely postponed - NPA date unknown

Potential proposed changes

- Critical technical changes
- Reduce number of shall statements
- Improvements in organization and language
Potential Enhancements for Next Edition

Incorporate routine updates
  NCUTCD recommended changes
  Correcting errors or inaccuracies in 2009 Edition

Improve with new content
  Adding content to address new technologies or treatments
  Adding content necessitated by new legislation
  Adding content related to an urgent or critical need

Reassess each standard statement:
  Retain, delete, or downgrade

Eliminate redundant or unnecessary text

Reorganize content where opportunities for improving flow are identified

Reorganize/reconfigure existing figures to better correlate with text
TCDs for Private Property

NCUTCD working on MUTCD content to address traffic control devices on private property open to public travel.

2009 MUTCD and CFR changes apply MUTCD to private roads open to public travel.

NCUTCD sending proposal to sponsors for review in Spring 2015.

Recommended MUTCD changes for off-ROW roads open to public travel.
MUTCD 20-Year Vision

January 2014: NCUTCD passes an MUTCD 20-year vision and strategic plan (VSP)

VSP document:
79 pages: MUTCD issues, vision, strategic plan

Key questions:
What is the purpose of the MUTCD (why does it exist)?
Who is the MUTCD target user (who is it written for)?
What should be in the MUTCD (what are the basic content concepts)?
Is there a difference between uniformity and consistency?
How should the MUTCD be revised?
Vision and Strategic Plan

The 20-Year Vision and Strategic Plan for the MUTCD was approved by the NCUTCD Council on January 9, 2014.

Previous versions of the MUTCD vision and strategic plan, along with markups of changes between versions, are located on this page.
This chapter recommends what MUTCD should be in 20 years

Chapter structure:

525. **Section 1A.XX Purpose of the MUTCD:** The purpose of the MUTCD is to establish national criteria for the use of traffic control devices that meet the needs and expectations of road users on all streets, highways, bikeways, and private roads open to public travel. This purpose is achieved through the following objectives:

   a. Promote national uniformity in the meaning and appearance of traffic control devices.

   b. Promote national consistency in the use, installation, and operation of traffic control devices.

   c. Provide principles for traffic engineers to use in making decisions regarding the use, installation, operation, maintenance, and removal of traffic control devices.

   d. Promote safety and efficiency through appropriate use of traffic control devices.

   ▪ **Basis for recommendation:** The purpose of the MUTCD has never been defined but a clear statement of its purpose is critical in defining what content should be in the MUTCD and how that content should be used.
Highlights: Vision (Ch 3)

Keep as one document
   Proposed alternative structure concept
Define TCD activities
More levels of mandate
   Distinguish uniform and consistent standards
   4 levels of mandate:
      Standard, requirement, recommendation, option
Distinguish user content
   Engineer (decision)
   Non-engineer (instruction)
Better coordinate content
   Needs more than hyperlinks
   Concept of “smart tags”
Limits on size of rulemaking
Signs Not in the Next MUTCD
Evolution of the MUTCD: Early Standards for Traffic Control Devices

BY H. GENE HAWKINS, JR.

Seventy years ago, traffic control devices were a concern of relatively few individuals in the United States. Signs and markings were placed and maintained by auto clubs, local agencies, or state highway departments, with little Devices (MUTCD), which sets forth the basic principles that govern the design and use of traffic control devices. The MUTCD, first published in 1935, has always been one of the “bibles” of the profession and continues in that capacity.

MUTCD History Resources

Search “Gene Hawkins MUTCD” - goes to CE Profs website

Select MUTCD History link

MUTCD history PPT presentation

ITE Journal articles

Scans of old MUTCDs

MUTCD History

Last Updated: July 9, 2008

One day in the late 1980s, I was rummaging through my parent’s garage and came across a 1946 MUTCD that my father used when he was with Highway Traffic in the mid-1950s. While perusing that document, I found that stop signs were yellow, highway centerlines could be white, and one-way signs were blue. It was an eye-opening experience that led me to begin collecting old traffic engineering books. In 1998, I was fortunate enough to acquire the national MUTCD from the Eno Foundation for Traffic Safety. These documents provided great insight into how our current system of traffic control devices evolved over several generations, insight which I felt was largely lost to our current generation of traffic engineers. Armed with these documents, I set out to create a presentation on the history of the MUTCD, the paper appearing in the Compendium of Technical Papers for the 1991 ITE Annual Meeting

response to this paper and presentation were so positive, I prepared a series of papers on MUTCD history for ITE Journal. These papers are available at:

- New Developments with the MUTCD, © Institute of Transportation Engineers, February 1994. Used by permission.

Links to Previous Editions of the MUTCD

- 2003 and 2000 MUTCDs (link to previous editions on the FHWA website)
- 1988 MUTCD
- 1978 MUTCD (Richard Moeur Manual of Traffic Signs site)
- 1971 MUTCD (Richard Moeur Manual of Traffic Signs site)
- 1968 MUTCD (scan provided by FHWA)
- 1948 MUTCD (scan provided by FHWA)
- 1939 revision to the 1935 MUTCD (scan provided by FHWA)
- 1982 MUTCD (scan provided by FHWA)
- 1935 MUTCD (scan provided by FHWA)
- 1930 National Conference on Street and Highway Safety urban TCD manual
- AASHO Manual and Specifications for the Manufacture, Display, and Erection of External Luminous Traffic Control Devices