Brief History of the MUTCD

1920s

1930s

Early 1950s

1960s

1940s

1920s

Today

Gene Hawkins
Texas Transportation Institute
The MUTCD

There have been 8 editions of the MUTCD

How did we end up with a ~1,000 page document on traffic control devices?

<table>
<thead>
<tr>
<th>Edition</th>
<th>Pages</th>
<th>Parts</th>
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</thead>
<tbody>
<tr>
<td>1935</td>
<td>166</td>
<td>4</td>
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<tr>
<td>1942</td>
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<td>1948</td>
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<td>1971</td>
<td>377</td>
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<td>1978</td>
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<td>1988</td>
<td>473</td>
<td>9</td>
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<tr>
<td>2000</td>
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<td>10</td>
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</tbody>
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Traffic Control Devices

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

Roman empire  Colonial America  Early 20th Century
Early Traffic Control Devices

Need for devices increased with more automobile travel

Little coordination between agencies
Early Traffic Control Devices

The wide variety of devices created the need for uniformity

1911 - 1st centerline
Michigan

1920 - 1st 3-color signal
Detroit

1914 - 1st electric signal
Cleveland
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

STOP

KANSAS
US
56

MEN WORKING

RR

CURVE

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1930 NCHS Manual

Prepared by American Engineering Council

Signs, markings, signals, and islands 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

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1935 MUTCD

First MUTCD (35 & 37 versions)

Signs

  Regulatory - white rectangle
  Warning - yellow: diamond, square, circle, octagon
  Guide - white rectangle

Markings

  Used at hazardous locations
  White, yellow, or black

Signals

  3-color signal as standard

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1935 Signs

- Thru Stop Traffic
- One Way
- Lexington 10
- Huntington 148
- Railroad Crossing 3 Tracks

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1942 MUTCD

Few changes in content
Addressed wartime conditions
Revised standards addressed:

Conservation of materials
Blackout traffic control

Not Revised
Blackout Devices
1948 MUTCD

Standards used bold text

Signs
- *Simplified sign messages*
- *Eliminated square signs*
- *Added advisory plate*
- *Used rounded alphabet*

Pavement markings
- *Yellow - Double center and barrier line*
- *White - all other applications*
- *Stripe/gap ratio: 15-25*
- *Edge lines not recommended*

Simplified signal warrants

Revised 1954

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1948 Signs

SPEED LIMIT 50

BRYAN HEARNE 8 25

KEEP RIGHT

35 M.P.H.
Early Stop & Yield Signs
1954 Revision

Short document

Significant sign changes

THRU STOP HWY

Became

STOP

YIELD RIGHT OF WAY

Secondary messages eliminated

New Sign
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 75
SPUR

EXIT

30 M.P.H.

56 Metropolis Utopia

REST AREA
2 MILES

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1961 MUTCD

Federal compliance required
Eliminated alternatives
New material:

- Construction traffic control
- Civil defense signing
- Freeway guide signing

Some symbol signs
Edge lines allowed

Not Revised
1961 Signs

YIELD

Metropolis Utopia

ONLY

TEXAS US 81

81

EVACUATION ROUTE

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1971 MUTCD

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

Revised 8 times
1978 MUTCD

Update of 1971 edition
Loose leaf (binder) format
Individual page revisions

New material:
RR-hwy grade crossings
Bicycle facilities

New signs and symbolic alternatives
Yellow markings for left side
Stripe/gap ratio: 10-30

Revised 4 times

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1978 Devices

- Center Lane Only
- Buses and 4 Rider Car Pools Only (6AM-9AM Mon-Fri)
- Bike Route
- Construction
- Slow Moving Traffic

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1988 MUTCD

Update of 1978 edition

*Included new revision (#5)*

Planned to be revised only for safety reasons

**New material:**

- Recreational/cultural signs
- Logo signs
- TODS

Revised 7 times
2000 MUTCD

Current edition
Ten years to develop
Loose-leaf, paper size
New parts
  Low-volume roads
  Light-rail

Errata #1
Revision #1

Transportation Operations Group
Signs Not in the 2000 MUTCD

- Do Not Enter
- Only
- Rail Crossing
- Do Not Enter
- Stop on Red
- Slow School Zone
- East
- Drive Carefully Substandard Roadway
Evolution of Selected Devices

How today’s common devices have evolved
Route Markers

Early highways had no national or state affiliation. State route markers appeared in the 1920s.
Route Markers

U.S. route marker proposed in 1925

Has evolved over time to current appearance
Route Markers

Interstate marker created in 1950s
Other markers added in 1971
Pavement Markings

1910s - early use of markings

1930 - urban manual

   Centerline, short radius curve, sight distance

1935 - MUTCD

   White, yellow, or black

   Centerline used only for specific applications
1948 & 1961 MUTCDs

**Double stripe design**

**Triple stripe design**

1948 & 1961: White centerline

1948: *Edge lines not recommended, 4-6 inches if used*

1961: *Use on right depended on shoulder*

*Use on left helpful, 2-4 inches wide*
1971 & Later MUTCDs

1971: Yellow for all centerlines
White for all edgelines except for divided hwy with narrow median or obstructions

1978: Yellow for left side of travel direction
White for lane lines and right edge
Work Zone Devices
Work Zone Manuals

1955: 1st draft of national guidelines
Mid-1950s: state manuals
1955: PA  1956: NC, GA
1961: new part in MUTCD (Part V)
1971: changed to Part VI, orange signs
1993: published as stand-alone
... shall be used for the protection of men working on the road, ... or for the protection of traffic ...

... shall be mounted on substantial portable supports, not easily knocked over or blown down, and placed in the center of the road ...

... shall not be left up during the lunch period or at night, or on holidays if the road is free from hazard
Typical Applications

Note: See Tables 34-2 and 34-6 for the meaning of the symbols and letter codes used in this figure.

2000
46 TA
213 p

1993
44 TA
60 195 p

Figure TA-16 Lane closure on two-lane road using flaggers.

Note:
1. Flood lights should be used to mark flaggers as needed.
2. If entire work is at one station, a single spot could be used.
3. Warning lights should be used to mark channelizers as necessary.
4. Channelizing devices, when extended to a point, are visible to passersby.

Key:
- Flagger
- Channelizing

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Work Zone Devices

- 1927: ROAD REPAIRS AHEAD
- 1948: MEN WORKING
- 1961: MEN WORKING
- 1961: FLAGMAN AHEAD
- 1971: ROAD CONSTRUCTION AHEAD
- 1971: ROAD WORK AHEAD
- 1993: "AHEAD"

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Sign Retro Evolution

- Cat’s eyes
- Button reflectors

Button Reflectors

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Sign Retro Evolution


Cat’s eyes
Button reflectors
Beads on paint
Exposed lens
Enclosed lens
Encapsulated lens
Microprismatic
National Committee

Private organization
Provides input to FHWA on the MUTCD
Developed draft language for 2000 MUTCD
Seven committees

R/W signs  Temp Traffic Ctrl
G/MI signs  Grade Crossings
Markings  Bicycles
Signals

Over 200 professionals

Meet twice a year
NUTCD Evolution

Joint Committee, 1932, 2 organizations

National Joint Committee, 1948, 5 organizations

National Advisory Committee, 1972, 10 organizations

National Committee, 1980, 17 organizations
Additional Resources

MUTCD web site
http://mutcd.fhwa.dot.gov

MUTCD History
ITE Journal articles
July, August, November 1992
This presentation
http://tcd.tamu.edu ⇒ MUTCD History