Brief History of the MUTCD

1920s

Early 1950s

1940s

Today

Gene Hawkins
Texas Transportation Institute

1960s

1930s

© Gene Hawkins
The MUTCD

There have been 8 editions of the MUTCD

# MUTCD Comparisons

<table>
<thead>
<tr>
<th>Edition</th>
<th>Pages</th>
<th>Parts</th>
</tr>
</thead>
<tbody>
<tr>
<td>1935</td>
<td>166</td>
<td>4</td>
</tr>
<tr>
<td>1942</td>
<td>208</td>
<td>4</td>
</tr>
<tr>
<td>1948</td>
<td>223</td>
<td>4</td>
</tr>
<tr>
<td>1971</td>
<td>377</td>
<td>8</td>
</tr>
<tr>
<td>1978</td>
<td>425</td>
<td>9</td>
</tr>
<tr>
<td>1988</td>
<td>473</td>
<td>9</td>
</tr>
<tr>
<td>2000</td>
<td>982</td>
<td>10</td>
</tr>
</tbody>
</table>

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

© Gene Hawkins
1930 Signs

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

Problems of two manuals led to creation of the MUTCD

Joint Committee

1927 Rural Manual

1930 Urban Manual

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*
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
Early Stop & Yield Signs
1954 Revision

Short document

Significant sign changes

Became

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
INTERSTATE 75
BUSINESS SPUR

56
Metropolis Utopia

EXIT 30 M.P.H.

REST AREA 2 MILES
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
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

© Gene Hawkins
1971 Signs
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
1978 Devices

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

Transportation Operations Group

© Gene Hawkins
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

© Gene Hawkins
Signs Not in the 2000 MUTCD
Evolution of Selected Devices

How today’s common devices have evolved
Route Markers

Sixty-eighters start to appear in 1920s national or state affiliation.
Route Markers

U.S. route marker proposed in 1925

Has evolved over time to current appearance
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 6-12 and 6-16 for the meaning of the symbols used on the diagrams used in this figure.

1961 7-47
1971 9-53
1978 9 TA 60 p
1993 44 TA 195 p
2000 46 TA 213 p

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

Note:
1. Flare lights should be used to mark flagger's location as needed.
2. If entire work area requires work at one station, a single flare is used.
3. Warning lights at each end of work zone (optional) are needed.
4. Channelizing devices extended to a point where they are visible to travelers.
Work Zone Devices

1927
ROAD REPAIRS AHEAD

1948
MEN WORKING

1961
ROAD CONSTRUCTION AHEAD

1935
MEN WORKING

1971
ROAD WORK AHEAD

1961
FLAGMAN AHEAD

1978

© Texas Transportation Institute

Transportation Operations Group

© Gene Hawkins
Sign Retro Evolution

1920 1940 1960 1980 2000

Cat’s eyes

Cat’s Eyes
Sign Retro Evolution


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

© Gene Hawkins
State MUTCD Use

- State MUTCD: 11 states
- National MUTCD: 23 states
- State Supplement: 16 states

© Gene Hawkins
National Committee

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

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

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
Questions