

MUTCD OVERVIEW

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What is the MUTCD?

- **M**anual *on*
- **U**niform
- **T**raffic
- **C**ontrol
- **D**eveloped

What is the MUTCD?

Manual

895 pages



What is the MUTCD?

Uniform

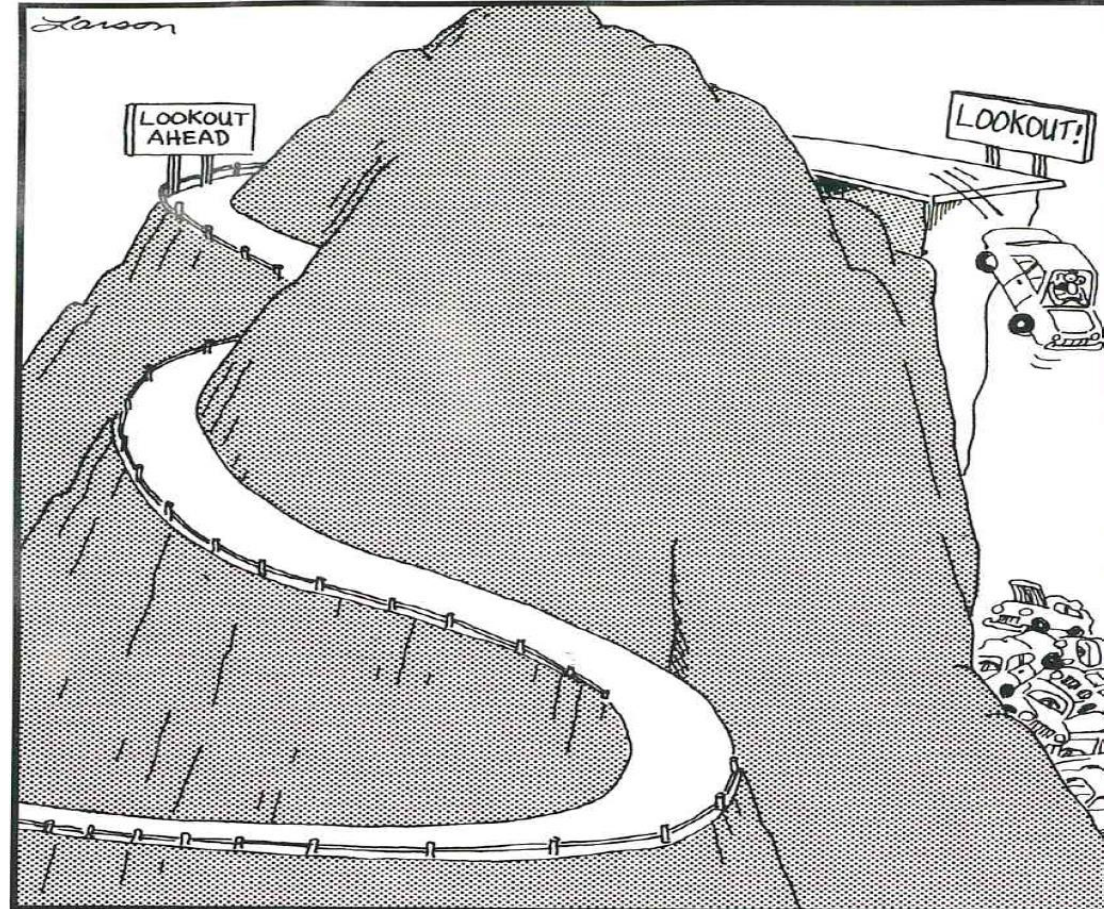
No:



Ok:



Why Sign Uniformity is Useful



The Indiana Manual on Uniform Traffic Control Devices

PART 1
GENERAL

PART 2
SIGNS

PART 3
MARKINGS

PART 4
HIGHWAY TRAFFIC SIGNALS

PART 5
TRAFFIC CONTROL DEVICES FOR LOW-VOLUME ROADS

PART 6
TEMPORARY TRAFFIC CONTROL

PART 7
TRAFFIC CONTROL FOR SCHOOL AREAS

PART 8
TRAFFIC CONTROL FOR RAILROAD AND LIGHT RAIL TRANSIT GRADE CROSSINGS

PART 9
TRAFFIC CONTROL FOR BICYCLE FACILITIES

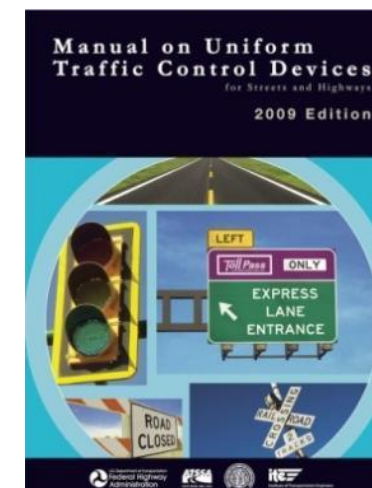
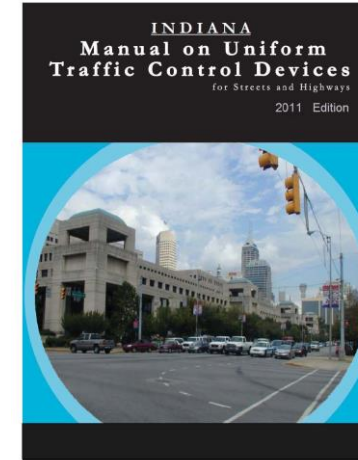
- 1. General Information**
- 2. Signs**
- 3. Markings**
- 4. Signals**
- 5. Low Volume Roads**
- 6. Temporary Traffic Control**
- 7. School Areas**
- 8. Railroad**
- 9. Bicycle Facilities**

Which MUTCD Should I Use?

- **Use the Indiana MUTCD**

- Published on INDOT website
- 2011 IMUTCD, Revision #3
- Can download sections or entire PDF
- <https://www.in.gov/dot/div/contracts/design/mutcd/mutcd.html>

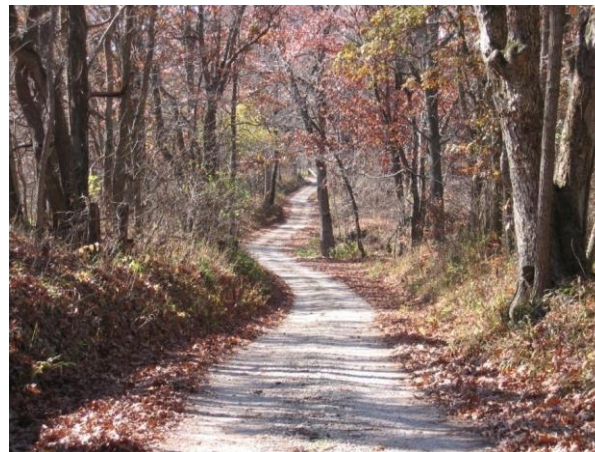
- **Not the National MUTCD**



Does the MUTCD Apply to My Road?

Yes!

The MUTCD governs the design and use of traffic control devices for all streets, highways, bikeways, and private roads open to public travel regardless of type or class or the public agency, official, or owner having jurisdiction.



Liabilities and Risk

- **You cannot eliminate risk – but you can manage it**
- **MUTCD use puts agency in legally-defensible position**
- **Liabilities**
 - No “MUTCD Police”
 - Constituents: your residents and family expect safe roads
 - Insurance companies: likely require it for coverage
 - OSHA & workers: require a safe workplace
 - Tort liability: low-hanging fruit for plaintiffs’ attorneys
 - End up in my workshop slides!

How to Read the MUTCD

Section 1A.13 Definitions

Heading	Font Style	Verb	Level	
Standard	Bold Text	Shall	Required/Mandatory	
Guidance	Italic Text	Should	Recommended	Need an Engineering Study or Judgment to Deviate
Option	Normal Text	May	Permissive Condition	Allowable modification to a Standard or Guidance
Support	Normal Text	(None)	Informational	Additional Information

How to Read the MUTCD

Section 2B.05 STOP Sign (R1-1) and ALL WAY Plaque (R1-3P)

Standard:

01 When it is determined that a full stop is always required on an approach to an intersection, a STOP (R1-1) sign (see Figure 2B-1) shall be used.

02 The STOP sign shall be an octagon with a white legend and border on a red background.

03 Secondary legends shall not be used on STOP sign faces.

04 At intersections where all approaches are controlled by STOP signs (see Section 2B.07), an ALL WAY supplemental plaque (R1-3P) shall be mounted below each STOP sign. The ALL WAY plaque (see Figure 2B-1) shall have a white legend and border on a red background.

05 The ALL WAY plaque shall only be used if all intersection approaches are controlled by STOP signs.

06 Supplemental plaques with legends such as 2-WAY, 3-WAY, 4-WAY, or other numbers of ways shall not be used with STOP signs.

Support:

07 The use of the CROSS TRAFFIC DOES NOT STOP (W4-4P) plaque (and other plaques with variations of this word message) is described in Section 2C.59.

Guidance:

08 *Plaques with the appropriate alternative messages of TRAFFIC FROM LEFT (RIGHT) DOES NOT STOP (W4-4aP) or ONCOMING TRAFFIC DOES NOT STOP (W4-4bP) should be used at intersections where STOP signs control all but one approach to the intersection, unless the only non-stopped approach is from a one-way street.*

Option:

09 An EXCEPT RIGHT TURN (R1-10P) plaque (see Figure 2B-1) may be mounted below the STOP sign if an engineering study determines that a special combination of geometry and traffic volumes is present that makes it possible for right-turning traffic on the approach to be permitted to enter the intersection without stopping.

PART 1

GENERAL INFORMATION

Section 1A.08

Gives local agencies the authority to place traffic control devices.

All regulatory traffic control devices shall be supported by laws, ordinances, or regulations.

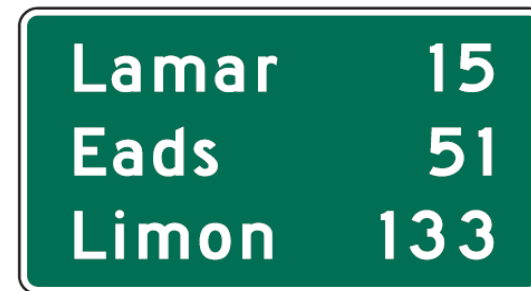
- Need a local ordinance for speed limits (non-statutory)
- Indiana Code
 - Stop & Yield Signs 9-21-8
 - Statutory Speed Limits 9-21-5

PART 2

SIGNS

Section 2A.05 Classification of Signs

- **Regulatory** signs give notice of traffic laws or regulations.
- **Warning** signs give notice of a situation that might not be readily apparent.
- **Guide** signs show route designations, destinations, directions, distances, services, points of interest, and other geographical, recreational, or cultural information.



PART 2

SIGNS

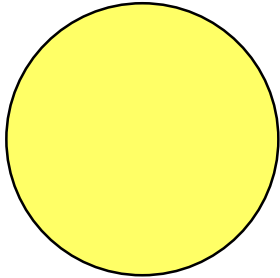
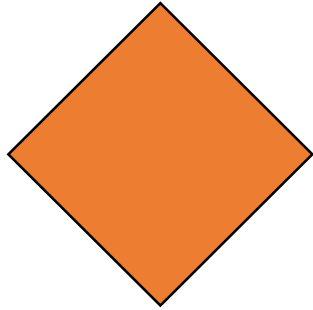
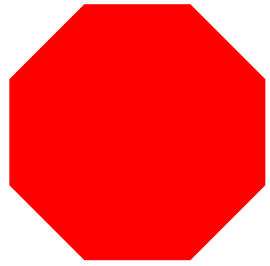
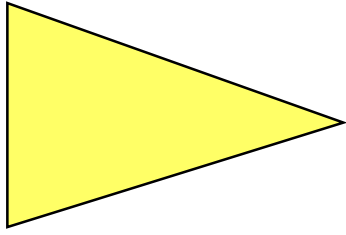
Section 2A.06 Design of Signs

Uniformity in design shall include shape, color, dimensions, legends, borders, and illumination or retroreflectivity.

We have limited time to get the message across.

Standard designs aid in recognition.





PART 2

SIGNS



PART 2

SIGNS

Section 2A.07 Retroreflectivity & Illumination

Regulatory, warning, and guide signs shall be retroreflective or illuminated to show the same shape and similar color by both day and night.

The requirements for sign illumination shall not be considered to be satisfied by street or highway lighting.

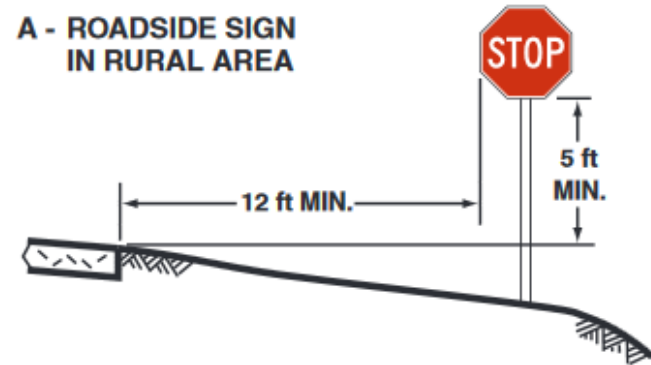
PART 2

SIGNS

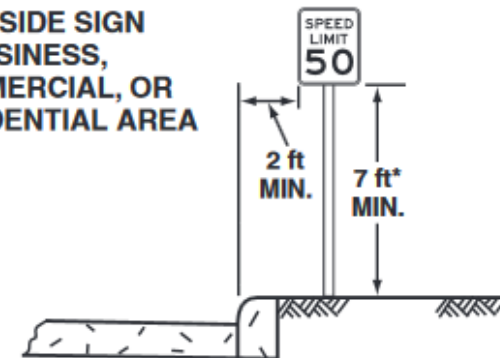
Section 2A.16 Standardization of Location

Section 2A.19 Lateral Offset

A - ROADSIDE SIGN
IN RURAL AREA



C - ROADSIDE SIGN
IN BUSINESS,
COMMERCIAL, OR
RESIDENTIAL AREA

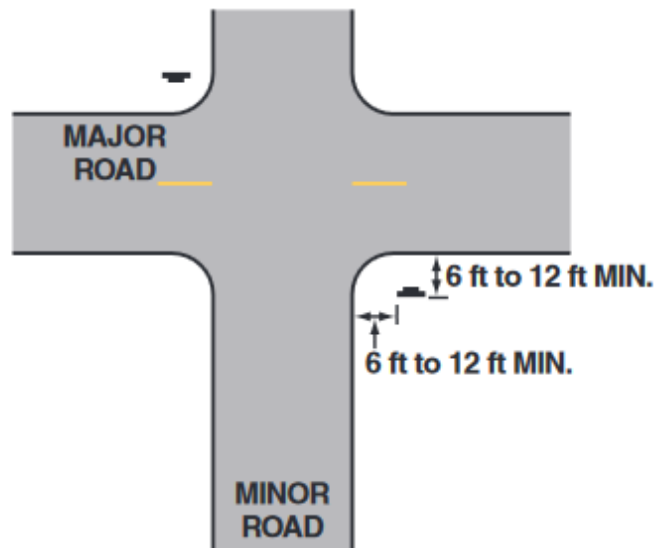


*Where parking or pedestrian movements are likely to occur

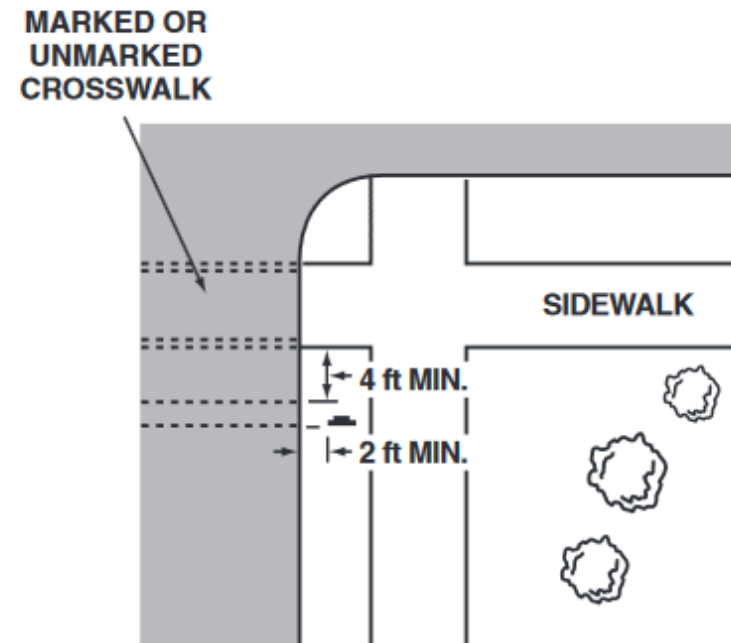
PART 2

SIGNS

Section 2A.16 Sign Location



C - MINOR CROSSROAD



D - URBAN INTERSECTION

PART 2 SIGNS

Section 1A.05 Maintenance of TCDs

Physical maintenance of traffic control devices should be performed to retain the legibility and visibility of the device



PART 2

SIGNS

Chapter 2B. Regulatory Signs

- Inform road users of traffic laws and regulations – ***must have ordinance!***
- Stop and Speed Limit signs require studies



PART 2

SIGNS

Section 2B.03 Size of Regulatory Signs

For quick reference of sign size, check table near the beginning of every sign chapter.

Table 2B-1. Regulatory Sign and Plaque Sizes (Sheet 1 of 4)

Sign or Plaque	Sign Designation	Section	Conventional Road		Expressway	Freeway	Minimum	Oversized
			Single Lane	Multi-Lane				
Stop	R1-1	2B.05	30 x 30*	36 x 36	36 x 36	—	30 x 30*	48 x 48
Yield	R1-2	2B.08	36 x 36 x 36*	48 x 48 x 48	48 x 48 x 48	60 x 60 x 60	30 x 30 x 30*	—
To Oncoming Traffic (plaque)	R1-2aP	2B.10	24 x 18	24 x 18	36 x 30	48 x 36	24 x 18	—
All Way (plaque)	R1-3P	2B.05	18 x 6	18 x 6	—	—	—	30 x 12
Yield Here to Peds	R1-5	2B.11	—	36 x 36	—	—	—	36 x 36
Yield Here to Pedestrians	R1-5a	2B.11	—	36 x 48	—	—	—	36 x 48
Stop Here for Peds	R1-5b	2B.11	—	36 x 36	—	—	—	36 x 36
Stop Here for Pedestrians	R1-5c	2B.11	—	36 x 48	—	—	—	36 x 48
In-Street Ped Crossing	R1-6,6a	2B.12	12 x 36	12 x 36	—	—	—	—
Overhead Ped Crossing	R1-9,9a	2B.12	90 x 24	90 x 24	—	—	—	—
Except Right Turn (plaque)	R1-10P	2B.05	24 x 18	24 x 18	—	—	—	—
Speed Limit	R2-1	2B.13	24 x 30*	30 x 36	36 x 48	48 x 60	18 x 24*	30 x 36

PART 2

SIGNS

Sections 2A-11 Dimensions

The sizes shown in the Minimum columns shall only be used on low-speed roadways, alleys, and private roads open to public travel where the reduced legend size would be adequate for the regulation or warning or where physical conditions preclude the use of larger sizes.

Table 2B-1. Regulatory Sign and Plaque Sizes (Sheet 1 of 4)

Sign or Plaque	Sign Designation	Section	Conventional Road		Expressway	Freeway	Minimum	Oversized
			Single Lane	Multi-Lane				
Stop	R1-1	2B.05	30 x 30*	36 x 36	36 x 36	—	30 x 30*	48 x 48
Yield	R1-2	2B.08	36 x 36 x 36*	48 x 48 x 48	48 x 48 x 48	60 x 60 x 60	30 x 30 x 30*	—
To Oncoming Traffic (plaque)	R1-2aP	2B.10	24 x 18	24 x 18	36 x 30	48 x 36	24 x 18	—
All Way (plaque)	R1-3P	2B.05	18 x 6	18 x 6	—	—	—	30 x 12
Yield Here to Peds	R1-5	2B.11	—	36 x 36	—	—	—	36 x 36
Yield Here to Pedestrians	R1-5a	2B.11	—	36 x 48	—	—	—	36 x 48
Stop Here for Peds	R1-5b	2B.11	—	36 x 36	—	—	—	36 x 36
Stop Here for Pedestrians	R1-5c	2B.11	—	36 x 48	—	—	—	36 x 48
In-Street Ped Crossing	R1-6,6a	2B.12	12 x 36	12 x 36	—	—	—	—
Overhead Ped Crossing	R1-9,9a	2B.12	90 x 24	90 x 24	—	—	—	—
Except Right Turn (plaque)	R1-10P	2B.05	24 x 18	24 x 18	—	—	—	—
Speed Limit	R2-1	2B.13	24 x 30*	30 x 36	36 x 48	48 x 60	18 x 24*	30 x 36

PART 2 SIGNS

- Shall be installed on right-hand side
- At intersections where all approaches are controlled by STOP signs, an ALL WAY supplemental plaque shall be mounted below each STOP sign.



D1-1



R1-3P

PART 2 SIGNS

All Way Stops

- **Requires engineering study**
 - Equal Volumes?
 - Correctable Crash History?
 - Pedestrian Conflicts?
 - Sight Distance Issues?
 - Left-Turn Conflicts?
- **NOT for speed control**



R1-1



R1-3P

PART 2

SIGNS

Section 2B.13 Speed Limit Sign

- Local authorities may determine and declare a reasonable and safe maximum limit on their roadways. (IC 9-21-5-6)
- Default Speed Limits
 - Rural (2-lane): 55mph (min. 30)
 - Urban: 30mph (min. 20, 15 within parks)
 - Alley: 15mph (min. 5)
- Local Agency may establish school speed zone on state highway



R2-1

PART 2

SIGNS

Chapter 2C. Warning Signs & Object Markers

- Roadway alignment
- Road conditions
- Weather conditions
- Traffic-related
- Supplemental plaques



W12-2



W1-2



S3-1



W5-3



W8-7



W3-3

Speed Limit

Stop and yield conditions

Slowing to XX MPH: Speed reduction in advance of hazard (e.g. curve)

Table 2C-4. Guidelines for Advance Placement of Warning Signs

Posted or 85th-Percentile Speed	Advance Placement Distance								
	Condition A: Speed reduction and lane changing in heavy traffic ²	Condition B: Deceleration to the listed advisory speed (mph) for the condition							
		0 ³	10 ⁴	20 ⁴	30 ⁴	40 ⁴	50 ⁴	60 ⁴	70 ⁴
20 mph	275 ft	100 ft ⁶	N/A ⁵	—	—	—	—	—	—
25 mph	375 ft	100 ft ⁶	N/A ⁵	N/A ⁵	—	—	—	—	—
30 mph	475 ft	100 ft ⁶	N/A ⁵	N/A ⁵	—	—	—	—	—
35 mph	575 ft	100 ft ⁶	N/A ⁵	N/A ⁵	N/A ⁵	—	—	—	—
40 mph	675 ft	125 ft	100 ft ⁶	100 ft ⁶	N/A ⁵	—	—	—	—
45 mph	775 ft	175 ft	125 ft	100 ft ⁶	100 ft ⁶	N/A ⁵	—	—	—
50 mph	875 ft	250 ft	200 ft	175 ft	125 ft	100 ft ⁶	—	—	—
55 mph	975 ft	325 ft	275 ft	225 ft	200 ft	125 ft	N/A ⁵	—	—
60 mph	1,100 ft	400 ft	350 ft	325 ft	275 ft	200 ft	100 ft ⁶	—	—
65 mph	1,200 ft	475 ft	450 ft	400 ft	350 ft	275 ft	200 ft	100 ft ⁶	—
70 mph			525 ft	500 ft	450 ft	375 ft	275 ft	150 ft	—
75 mph			625 ft	600 ft	550 ft	475 ft	375 ft	250 ft	100 ft ⁶

DO NOT USE THIS COLUMN
(Speed reduction and lane changing in heavy traffic)

For example, a curve warning sign with an advisory speed of 20 mph on a road with a speed limit of 50 mph should be placed a minimum of 175 feet before the curve.

Table 2C-4. Guidelines for Advance Placement of Warning Signs

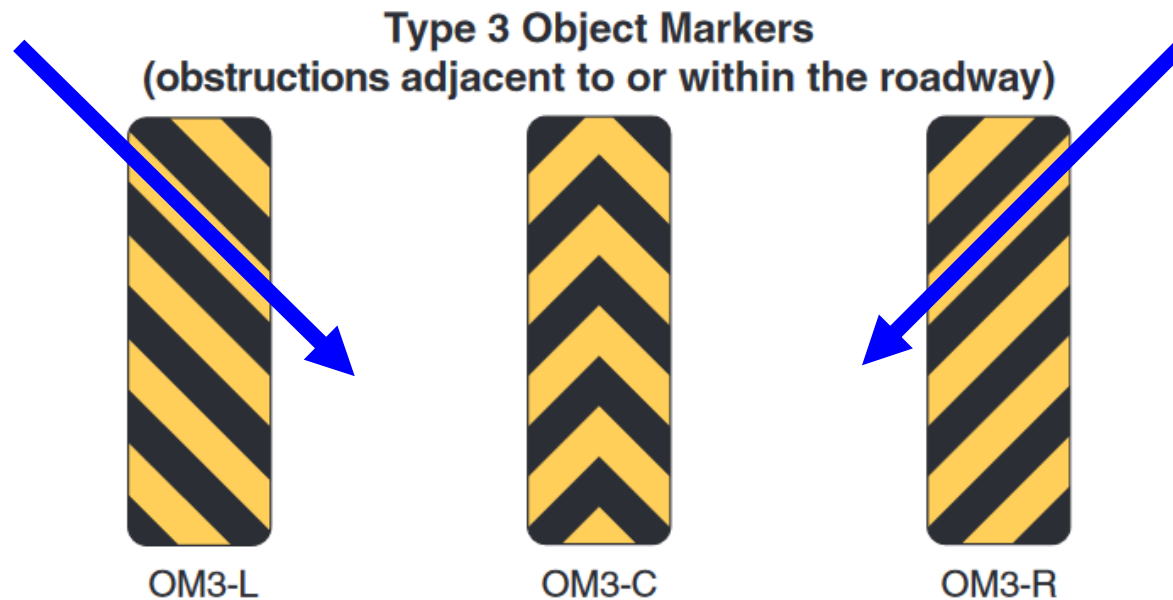
Posted or 85th-Percentile Speed	Advance Placement Distance ¹								
	Condition A: Speed reduction and lane changing in heavy traffic ²	Condition B: Deceleration to the listed advisory speed (mph) for the condition							
		0 ³	10 ⁴	20 ⁴	30 ⁴	40 ⁴	50 ⁴	60 ⁴	70 ⁴
20 mph	225 ft	100 ft ⁶	N/A ⁵	—	—	—	—	—	—
25 mph	325 ft	100 ft ⁶	N/A ⁵	N/A ⁵	—	—	—	—	—
30 mph	460 ft	100 ft ⁶	N/A ⁵	N/A ⁵	—	—	—	—	—
35 mph	565 ft	100 ft ⁶	N/A ⁵	N/A ⁵	N/A ⁵	—	—	—	—
40 mph	670 ft	125 ft	100 ft ⁶	100 ft ⁶	N/A ⁵	—	—	—	—
45 mph	775 ft	175 ft	125 ft	100 ft ⁶	100 ft ⁶	N/A ⁵	—	—	—
50 mph	885 ft	250 ft	200 ft	175 ft	125 ft	100 ft ⁶	—	—	—
55 mph	990 ft	325 ft	275 ft	225 ft	200 ft	125 ft	N/A ⁵	—	—
60 mph	1,100 ft	400 ft	350 ft	325 ft	275 ft	200 ft	100 ft ⁶	—	—
65 mph	1,200 ft	475 ft	450 ft	400 ft	350 ft	275 ft	200 ft	100 ft ⁶	—
70 mph	1,250 ft	550 ft	525 ft	500 ft	450 ft	375 ft	275 ft	150 ft	—
75 mph	1,350 ft	650 ft	625 ft	600 ft	550 ft	475 ft	375 ft	250 ft	100 ft ⁶

PART 2

SIGNS

Section 2C.43 Object Markers

- 4' height
- Always slanted toward travel lane(s)



PART 2

SIGNS

Section 2C.43 Object Markers



PART 2

SIGNS

Chapter 2D. Guide Signs

Acceptable colors:

- White on green
- White on blue
- White on brown
- Black on white



PART 2

SIGNS

Section 2D.43 Street Name Signs

- **Combination of uppercase and lowercase letters**
- *6"/4.5" uppercase/lowercase (min.) on two-lane roads with posted speed > 25 MPH*
- *4"/3" uppercase/lowercase (min.) on two-lane roads with posted speed ≤ 25 MPH*
- **Border may be omitted**



PART 3

PAVEMENT MARKINGS

Broken Yellow	
Double Solid Yellow	
Solid Yellow	
Broken White	
Double Solid White	
Solid White	
Dotted White	

PART 3

PAVEMENT MARKINGS

Section 3B.01 – 3B.03 Yellow Pavement Markings

Section 3B.04 - 3B.09 White Pavement Markings

Warrants based on:

- Roadway Width
- Traffic Volumes
- Road Classification
- Number of Lanes

PART 4

SIGNALS

- Signals
- Pedestrian Signals & Hybrid Beacons
- Lane Control Signals
- Ramp Meters
- Flashing Beacons
- In-Roadway Lights



PART 4

SIGNALS

Section 4C.01 Signal Warrants

Nine warrants

- Volumes
- Delay
- Pedestrians
- School Crossings
- Traffic Signal Systems
- Crash History
- Railroad Crossings

PART 5

TRAFFIC CONTROL DEVICES FOR LOW-VOLUME ROADS

A low-volume road shall be a facility lying outside of built-up areas of cities, towns, and communities, and it shall have a traffic volume of less than 400 AADT.

A low-volume road shall not be a freeway, an expressway, an interchange ramp, a freeway service road, a road on a designated state highway system, or a residential street in a neighborhood.

The needs of unfamiliar road users for occasional, recreational, and commercial transportation purposes should be considered.

PART 6

TEMPORARY TRAFFIC CONTROL

- Improperly marked work zones can lead to crashes, liability issues
- LTAP Temp. Traffic Control Workshop
- Applies to everyone working in/near the roadway
 - Law Enforcement
 - First Responders
 - Utility Companies
 - Tree Services

INDIANA Local Technical Assistance Program

**CONCISE HANDBOOK FOR
TEMPORARY TRAFFIC CONTROL**

Construction, Maintenance,
and Utility Operations
2016
SP-3



PURDUE
ENGINEERING

Indiana Local Technical Assistant Program
3000 Kent Avenue., Suite C2-118, West Lafayette, Indiana 47906-1075
765.494.2164 or 800.428.7639 toll free in Indiana
initap@ecn.purdue.edu
www.purdue.edu/initap

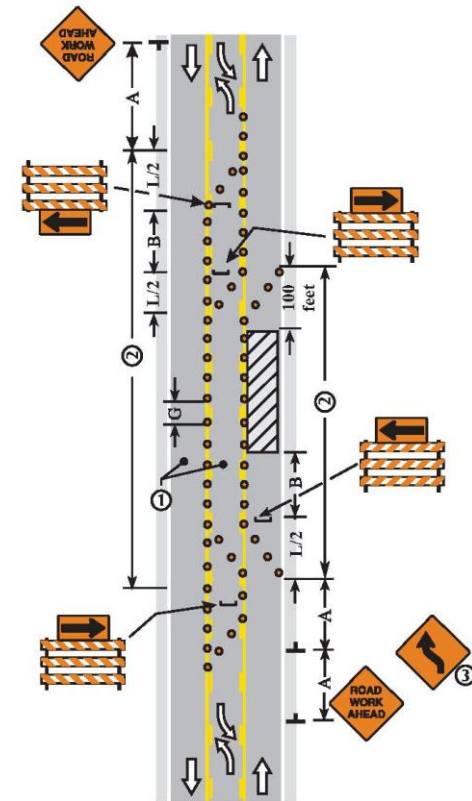
Visibility is a critical issue!



PART 6

TEMPORARY TRAFFIC CONTROL

- Always follow guidelines:
 - Short, Medium, Long-term
- Remove/cover temporary traffic control when no longer needed
 - (e.g. lunch, weekends)



LANE CLOSURE
TWO LANE TWO WAY ROAD
WITH TWO WAY LEFT TURN LANE

PART 8

RAILROADS

Responsibilities:

Roadway Owner

- Approaches

Railroad

- Within ROW



PART 8 RAILROADS

Chapter 8B. Warning Signs & Pavement Markings

Required on most roads,
with a few exceptions.



MUTCD CONTACTS

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