PART 3. MARKINGS

FIGURES

Markings Technical Committee Recommendations
Approved by NCUTCD Council January 10 & 12, 2008
Additional Changes Approved by NCUTCD Council June 21, 2008

Red text and notes indicates recommended changes to the NPA.
Figure 3B-1. Examples of Two-Lane, Two-Way Marking Applications

A - Typical two-lane, two-way marking with passing permitted in both directions

B - Typical two-lane, two-way marking with no-passing zones

Legend
→ Direction of travel
↓ No-passing zone
Figure 3B-2. Examples of Four-or-More Lane, Two-Way Marking Applications

A - Typical multi-lane, two-way marking

B - Typical multi-lane, two-way marking with single lane left turn channelization

Legend
- Optional
- Direction of travel

Optional dotted line

Optional diagonal markings

upstream arrow is guidance

Optional dotted line
Figure 3B-3. Examples of Three-Lane, Two-Way Marking Applications

A - Typical three-lane, two-way marking with passing permitted in single-lane direction

B - Typical three-lane, two-way marking with passing prohibited in single-lane direction

Legend

Direction of travel
Figure 3B-4. Method of Locating and Determining the Limits of No-Passing Zones at Curves

A - No-passing zone at VERTICAL CURVE

Profile View

1.07 m (3.5 ft)

No-passing zone, a to b
(in direction indicated)

a, a' Begin no-passing zone

Sight distance becomes less than minimum measured between points 1.07 m (3.5 ft) above pavement

b, b' End no-passing zone

Sight distance again exceeds minimum

Legend

Direction of travel

1.07 m (3.5 ft)

No-passing zone, a' to b'
(in direction indicated)

B - No-passing zone at HORIZONTAL CURVE

Plan View

Note: No-passing zones in opposite directions may or may not overlap, depending on alignment
Figure 3B-5. Example of Application of Three-Lane, Two-Way Marking for Changing Direction of the Center Lane

Note: See Section 3B.02 for determining the minimum length of the buffer zone.
Figure 3B-6. Example of Reversible Lane Marking Application

Legend

→ Direction of travel

← or →
Figure 3B-7. Example of Two-Way Left-Turn Lane Marking Applications

Legend

→ Direction of travel

opposing left turn arrows should be moved closer together to make scale look proportional

MINOR CROSS STREET

MAJOR CROSS STREET

2.4 to 4.9 m (8 to 16 ft)
Figure 3B-8. Examples of Dotted Line and Channelizing Line Applications for Exit Ramp Markings (Sheet 1 of 2)

A - Parallel deceleration lane

- Optional chevron markings in neutral area
- Channelizing lines
- Solid white lane line (optional, variable length) or dotted white lane line
- Dotted lane line markings from upstream end of full width deceleration lane to theoretical gore or to upstream end of optional solid white lane line
- Dotted lane line or dotted extension of right-hand edge line is optional in deceleration lane taper

B - Tapered deceleration lane

- Optional chevron markings in neutral area
- Channelizing lines
- Theoretical gore
- Optional dotted extension of right-hand edge line
- Full width deceleration lane

Legend
- Direction of travel

- Add yellow edge line
- Physical gore
- Delete dash line at theoretical gore
- Delete dash line at theoretical gore
Figure 3B-8. Examples of Dotted Line and Channelizing Line Applications for Exit Ramp Markings (Sheet 2 of 2)

C - Auxiliary lane, such as at cloverleaf interchange

Legend

→ Direction of travel

Optional chevron markings in neutral area

Wide dotted lane line markings for full length of auxiliary lane between the theoretical gores of the entrance and exit ramps or between the upstream and downstream ends of the optional solid white lane lines

Solid white lane line (optional, variable length) or wide dotted white lane line

Solid white lane line (optional, variable length) or wide dotted white lane line

Channelizing lines

Theoretical gore

Delete dash line at theoretical gore
Figure 3B-9. Examples of Dotted Line and Channelizing Line Applications for Entrance Ramp Markings

- **A - Parallel acceleration lane**
  - Solid white lane line (optional, variable length) or dotted white lane line
  - Channelizing lines
  - Optional dotted lane line or dotted extension of right-hand edge line downstream beyond the “0.5 A MIN.” point
  - Dotted lane line markings for at least half the length of the full-width acceleration lane plus taper
  - Full lane width
  - Optional dotted extension of right-hand edge line
  
- **B - Tapered acceleration lane**
  - Solid white lane line (optional, variable length) or dotted white lane line
  - Channelizing lines
  - Theoretical gore point
  - Optional channelizing line from 0.5B to theoretical gore

- **C - Tapered lane**
  - Optional dotted extension of right-hand edge line
  - Full lane width
  - Desired gore point

Legend:
- ➡️ Direction of travel
- A = Length of acceleration lane plus taper

0.5 A MIN.
Figure 3B-10. Examples of Applications of Lane Drop Markings (Sheet 1 of 4)

A – Lane drop at a single lane exit ramp

- Optional chevron markings in neutral area
- Theoretical gore point
- Varies 200 to 300 mm (8 to 12 in) Optional solid white line wide
  (see detail at right)

- 2.7 m (9 ft) 0.9 m (3 ft) 2.7 m (9 ft)

- 800 m (0.5 mi) MIN. 200 to 300 mm (8 to 12 in) Lane drop marking
  (see detail at right)

- Optional speed measurement marking

Legend

Direction of travel
Figure 3B-10. Examples of Applications of Lane Drop Markings
(Sheet 2 of 4)

B – Lane drop at a multi-lane exit ramp having an optional exit lane that also carries the through route

Legend

\[\rightarrow\] Direction of travel

Optional chevron markings in neutral area

Wide solid white line

Varies 200 to 300 mm (8 to 12 in) Wide solid white line

800 m (0.5 mi) MIN. 200 to 300 mm (8 to 12 in) Lane drop marking

\[\star\] If the right-most exit lane is a parallel deceleration lane (instead of a lane drop), the lane drop marking should extend to the upstream end of the full-width deceleration lane.
Figure 3B-10. Examples of Applications of Lane Drop Markings
(Sheet 3 of 4)

C – Lane Drop at a Signalized intersection

Optional dotted line

Normal or wide dotted white line

*Optional

Varies

Varies

Varies

wide
Figure 3B-10. Examples of Applications of Lane Drop Markings
(Sheet 4 of 4)

D – Auxiliary lane between intersections

Optional dotted line

Normal or wide dotted white line

Varies

*Optional
Figure 3B-11. Example of Double White Solid Lines Used to Prohibit Lane Changing
Figure 3B-12. Examples of Line Extensions through Intersections (Sheet 1 of 2)

A - Typical pavement markings with offset lane lines continued through the intersection and optional crosswalk lines and stop lines.

B - Typical pavement markings with double-turn lanes, lane-use turn arrows, and optional crosswalk lines, stop lines, and line extensions into intersection for double turns.

Legend:
- Direction of travel

Note: Lane line extensions may be dotted or solid lines.
Figure 3B-12. Examples of Line Extensions through Intersections (Sheet 2 of 2)

C - Typical dotted line markings to extend longitudinal lane line markings

D - Typical dotted line markings to extend longitudinal center line markings

Legend

→ Direction of travel

Optional dotted line

Note: Lane line extensions may be dotted or solid lines

*Optional
For speeds 70 km/h (45 mph) or more:

\[ L = 0.62 WS \]

For speeds less than 70 km/h (45 mph):

\[ L = WS \]

\[ L = WS^2 \]

See Section 3D.04 for delineator spacing.

- \( L \): Length in meters (feet)
- \( S \): Posted, 85th-percentile, or statutory speed in km/h (mph)
- \( W \): Offset in meters (feet)
- \( d \): Advance warning distance (see Section 2C.05)

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**Figure 3B-13. Examples of Applications of Lane-Reduction Transition Markings**

A – Lane reduction

B – Lane reduction with lateral shift to the left

a - From 3 lanes to 2 lanes

Dotted line of length \( d \) to be used as an option up to the \( d/4 \) point.

See 2003 MUTCD. 

Dotted line 3/4\( d \) before sign, 1/4\( d \) after sign.
Figure 3B-14. Examples of Applications of Markings for Obstructions in the Roadway
(Sheet 1 of 2)

Legend

- Direction of travel
- Obstruction

For speeds 70 km/h (45 mph) or more \( L = 0.62 \ WS \) (\( L = WS \))
For speeds less than 70 km/h (45 mph) \( L = WS^2/155 \) (\( L = WS^2/60 \))
S = Posted, 85th-percentile, or statutory speed in km/h (mph)
W = Offset distance in meters (ft)

Minimum length of: \( L = 30 \text{ m} \) (100 ft) in urban areas
\( L = 60 \text{ m} \) (200 ft) in rural areas

Length “L” should be extended as required by sight distance conditions
**Figure 3B-14. Examples of Applications of Markings for Obstructions in the Roadway**

(Sheet 2 of 2)

**C - Traffic passing both sides of obstruction**

Legend

- **Direction of travel**
- **Solid wide lane line marking or solid double normal lane line markings**
- **Obstruction**

For speeds 70 km/h (45 mph) or more: \( L = 0.62 \times WS \) (\( L = WS \))

For speeds less than 70 km/h (45 mph): \( L = \frac{WS^2}{155} \) (\( L = WS^2/60 \))

\( S = \) Posted, 85th-percentile, or statutory speed in km/h (mph)

\( W = \) Offset distance in meters (ft)

Minimum length of: \( L = 30 \text{ m} \) (100 ft) in urban areas

\( L = 60 \text{ m} \) (200 ft) in rural areas

Length “\( L \)” should be extended as required by sight distance conditions.
Notes:
Triangle height is equal to 1.5 times the base dimension.

Yield lines may be smaller than suggested when installed on much narrower, slow-speed facilities such as shared-use paths.
Figure 3B-16. Examples of Yield Lines at Unsignalized Midblock Crosswalks

A - Two-way roadway

B - One-way roadway

Note: If Stop Here for Pedestrians signs are used instead of Yield Here to Pedestrians signs, stop lines shall be used instead of yield lines.

Legend

→ Direction of travel

Note: add figures for Stop condition as developed by RW technical committee.
**Figure 3B-17. Do Not Block Intersection Markings**

**Option A:**
Box only
200 to 300 mm (8 to 12 in)
Solid white lines

**Option C:**
Box with crosshatch
100 to 150 mm (4 to 6 in)
Solid white crosshatch lines

**Option B:**
Box with "DO NOT BLOCK" text (or similar message)

**Option D:**
"DO NOT BLOCK" text only or similar message

*Add KEEP CLEAR as an alternative since it is mentioned in the text

Note: Align the edges of the box to define the specific area that is not to be blocked. The box does not have to be rectangular in shape.

Add upstream arrow

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**Legend**

- **Direction of travel**
- **Direction of congested traffic**
- **Optional dotted line**
- **Adjacent signalized intersection**

*Optional dotted lines*

**R10-7**
(the R10-7 sign may also be mounted over the roadway)
Figure 3B-18. Examples of Crosswalk Markings

Spacing of lines selected to avoid wheel path
Figure 3B-19. Example of Crosswalk Markings for Exclusive Pedestrian Phase That Permits Diagonal Crossing

*Inside Markings Optional
Figure 3B-20. Examples of Detectable Warning Installations at Curb Ramps

A - Perpendicular Ramps

B - Parallel Ramps

C - Blended Corner

Legend

⇒ Downward slope

600 mm (24 in) from back of curb

Detectable warning surfaces

level landing

Detectable warning surface

600 mm (24 in) from back of curb
Figure 3B-21. Examples of Parking Space Markings

Change MIN to TYPICAL for parking space dimensions only
Figure 3B-22. International Symbol of Accessibility Parking Space Marking with Blue Background and White Border Options

* Stroke width:
  Minimum = 75 mm (3 in)
  Special = 100 mm (4 in)

Height of symbol:
Minimum = 700 mm (28 in)
Special = 1025 mm (41 in)

Width of symbol:
Minimum = 600 mm (24 in)
Special = 900 mm (36 in)
Figure 3B-23. Example of Elongated Letters for Word Pavement Markings

ONLY

2.4 m (8 ft)

1.8 m (5.9 ft)
Figure 3B-24. Examples of Standard Arrows for Pavement Markings

A - Through Lane-Use Arrow

2.9 m (9.5 ft)

B - Turn Lane-Use Arrow

2.4 m (8.0 ft)

C - Turn and Through Lane-Use Arrow

3.9 m (12.75 ft)

D - Wrong-Way Arrow

7.2 m (23.5 ft)

E - Wrong-Way Arrow Using Retroreflective Raised Pavement Markers

(4.75 ft)
1.45 m
675 mm
(27.0 in)

F - Lane-Reduction Arrow

1.7 m
(5.67 ft)
5.5 m
(18.0 ft)

**add drawing for narrow arrow**

Typical sizes for normal installation; sizes may be reduced approximately one-third for low-speed urban conditions; larger sizes may be needed for freeways, above average speeds, and other critical locations. A narrow elongated arrow design is optional. For proper proportion, see the Pavement Markings chapter of the “Standard Highway Signs” book (see Section 1A.11).
Figure 3B-25. Examples of Elongated Route Shields for Pavement Markings

A - Interstate Shield
B - U.S. Route Shield
C - State Route Shield

Note: See Chapter 10 of the Standard Highway Signs and Markings book for other sizes and details.
Figure 3B-26. Yield Ahead Triangle Symbols

A - Posted or Statutory Speed Limit 70 km/h (45 mph) or greater

B - Posted or Statutory Speed Limit less than 70 km/h (45 mph)
**Legend**

- **→** Direction of travel
- **★** Optional
- **★★** Line extensions may be dotted or solid lines
- **★★★** Required where through lane becomes mandatory turn lane

**Figure 3B-27. Examples of Lane Use Control Word and Symbol Markings**

- Optional dotted line
- Add SB LT arrow
- *Optional
- Move arrow
- Optional dotted line
- Optional diagonal markings
Figure 3B-28. Examples of Arrow Markings at Exit Ramp Terminals

Legend
- Direction of Travel
- Wrong-Way Arrows
- Lane Use Arrows
- Optional

Notes: Modify as appropriate for multi-lane crossroads
See Chapter 2B for regulatory signing
Figure 3B-29. Examples of Arrow Markings at Entrance Ramp Terminals

Legend

- Direction of travel
- Wrong-Way Arrows
- Optional

Note: See Chapter 2B for regulatory signing

Optional speed measurement marking
Figure 3B-30. Example of the Application of Speed Reduction Markings

Legend

→ Direction of travel

A – Recommended dimensions

B – Example of placement

450 mm (18 in) MAX.

300 mm (12 in) MAX.

change to double yellow line to prevent scaling of speed reduction markings
Figure 3B-31. Markings for Barrier-Separated Preferential Lanes

A – Nonreversible

Legend

→ Direction of travel

Barrier or median

Barrier or physical separation from general purpose lanes

Example of electronic toll collection only lane word markings

B – Reversible

Barrier or median

Barrier or median

← OR ←

← OR ←
**Figure 3B-32. Markings for Buffer-Separated Preferential Lanes** (Sheet 1 of 2)

A – Full-time preferential lane(s) where enter/exit movements are PROHIBITED

- **Barrier or median**
- **Double solid wide white**
- **Buffer space**
- **Chevrons if buffer space is wider than 1.2 m (4 ft)**

Space at 400 m (0.25 mi) intervals or as determined by engineering judgment (see Section 3B.24)

B – Preferential lane(s) where enter/exit movements are DISCOURAGED

- **Barrier or median**
- **Single solid wide white**
- **Buffer space**

Legend

- **Example of HOV only lane symbol markings**

★ If no barrier or median is present and the left-hand side of the lane is the center line of a two-way roadway, use a double yellow center line

★★ Example of HOV only lane symbol markings

Need to address required separation between two normal or double lines
Figure 3B-32. Markings for Buffer-Separated Preferential Lanes (Sheet 2 of 2)

C – Preferential lane(s) where enter/exit movements are PERMITTED

OR

D – Right-hand side preferential lane(s)

Legend

Direction of travel

★ If no barrier or median is present and the left-hand side of the lane is the center line of a two-way roadway, use a double yellow center line

★★ Example of bus lane word markings
**Figure 3B-33. Markings for Contiguous Preferential Lanes**

A – Full-time preferential lane(s) where enter/exit movements are PROHIBITED

B – Preferential lane(s) where enter/exit movements are DISCOURAGED

C – Preferential lane(s) where enter/exit movements are PERMITTED

D – Right-hand side preferential lane(s)

Legend

- Direction of travel

- If no barrier or median is present and the left-hand side of the lane is the center line of a two-way roadway, use a double yellow center line

- Example of HOV only lane symbol markings

- Example of bus lane word markings
Figure 3B-34. Markings for Counter-Flow Preferential Lanes on Divided Highways

A – Part-time contiguous

B – Part-time buffer-separated

C – Full-time contiguous

D – Full-time buffer-separated

Legend

- Direction of travel
Figure 3B-35. Pavement Markings for Speed Humps Without Crosswalks

OPTION A
- 1.8 m (6 ft)
- 3.7 m (12 ft)
- Typical
- Center of Travel Lane
- Center of Speed Hump
- 0.3 m (1 ft)
- 300 mm (12 in) White Markings

OPTION B
- 1.8 m (6 ft)
- 3.7 m (12 ft)
- Typical
- Center of Travel Lane
- Center of Speed Hump
- 0.3 m (1 ft)
- 300 mm (12 in) White Markings

OPTION C
- 375 mm (15 in)
- 2.9 m (9.5 ft)
- Typical
- Center of Travel Lane
- Center of Speed Hump
- 0.3 m (1 ft)
- 300 mm (12 in) White Markings

Legend
- Direction of travel
Figure 3B-36. Pavement Markings for Speed Tables or Speed Humps with Crosswalks

OPTION A

- Center of Roadway
- Typical 3.7 m (12 ft)
- Typical 1.8 m (6 ft)

- Crosswalk or Speed Table Area
- 300 mm (12 in) White Markings
- 0.3 m (1 ft)

OPTION B

- Center of Roadway
- Typical 3.7 m (12 ft)
- Typical 1.8 m (6 ft)

- Crosswalk or Speed Table Area
- 300 mm (12 in) White Markings
- 0.3 m (1 ft)

Legend

Direction of travel

- 1.8 m (6 ft)
- 3.7 m (12 ft)
- 3 m (10 ft)
- 1.8 m (6 ft)
- 0.3 m (1 ft)
- 300 mm (12 in)
Figure 3B-37. Advance Warning Markings for Speed Humps

Legend
→ Direction of travel

Center of Speed Hump

300 mm (12 in) White Pavement Markings
(see detail on this sheet)

Width Varies
(see detail on this sheet)

Leading Edge of Speed Hump

DETAIL—SPEED HUMP ADVANCE WARNING MARKINGS
2007 NOTICE OF PROPOSED AMENDMENTS
for the
MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

MUTCD FIGURES

NCUTCD approved - 1/12/08

DECEMBER 2007
Figure 3C-1. Example of Markings for Approach and Circulatory Roadway Markings at a Roundabout

- Optional
- Landscape Buffer
- Wide white dotted line 0.6 to 0.9 m (2 to 3 ft)
- Optional

6.1 m (20 ft) MIN.
Figure 3C-2. Examples of Markings for Pedestrian Crosswalks at Roundabouts

A – Crosswalks perpendicular to travel lanes

B – Crosswalks perpendicular to center line of roadway

C – Offset crosswalks

*Optional
Figure 3C-3. Lane-Use Arrow Pavement Marking Options for Roundabout Approaches

A - Normal arrows
Match arrow(s) with desired lane use configuration

Optional for left-most lane

B - Fish-hook arrows
Match arrow(s) with desired lane use configuration

Optional for left-most lane
Figure 3C-17. Example of Markings for a Diamond Interchange with Two Circular-Shaped Roundabout Ramp Terminals
Figure 3C-18. Example of Markings for a Diamond Interchange with Two Raindrop-Shaped Roundabout Ramp Terminals

Optional chevrons

Note: Design assumes rural conditions with no pedestrian activity.

Modify figure so trailblazing is on approach lanes before they divide.
Figure 3C-18 (revised)

Enlarged to show detail of optional pavement marking

Optional chevrons

Note:
Design assumes rural conditions with no pedestrian activity.
NOTE:
Delineators should be placed at a constant distance from the roadway edge, except that when an obstruction exists near the pavement edge, the line of delineators should make a smooth transition to the inside of the obstruction.

NOTE:
All delineators shown on this figure are white, including the delineators on the outside of the curve facing northbound drivers.

Legend
- Direction of travel
- Delineator
Figure 3G-1. Examples of Detectable Warnings at an Island Cut-Through

- Direction of pedestrian traffic
- Detectable warning surfaces
- 600 mm (24 in) from back of curb
Figure 3H-1. Examples of Longitudinal Rumble Strip Markings

Note: Rumble Strip may be located outside of edge line (Option A), on the edge line (Option B) and/or on the center line (Option C).

A. Rumble Strip outside of edge line

B. Rumble Stripe - Edge Line on Rumble Strip

C. Rumble Stripe - Center Line on Rumble Strip

Legend

Direction of Travel

Note: from a technical standpoint, figure A is not a TCD and is not addressed in the text. It is shown to distinguish a rumble strip from a rumble stripe.

Revise B and C so that rumble strips are not extending beyond the line into the lane.