INDIANA DEPARTMENT OF TRANSPORTATION

Driving Indiana's Economic Growth

Design Memorandum No. 18-18
Technical Advisory

August 6, 2018

TO: **All Design, Operations, and District Personnel, and Consultants**

FROM: ***/s/Elizabeth W. Phillips***
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Bridge Design Division

SUBJECT: **Taper Rates**

REVISES: ***Indiana Design Manual*** **Figures 46-4M, 502-2J, and 502-2L**

EFFECTIVE: **Stage 2 submittal on or after September 1, 2018 and as noted**

The referenced *Indiana Design Manual* (IDM) figures have been revised for clarity and consistency with the *Indiana Manual on Uniform Traffic Control Devices* (IMUTCD) regarding lane shift taper rates.

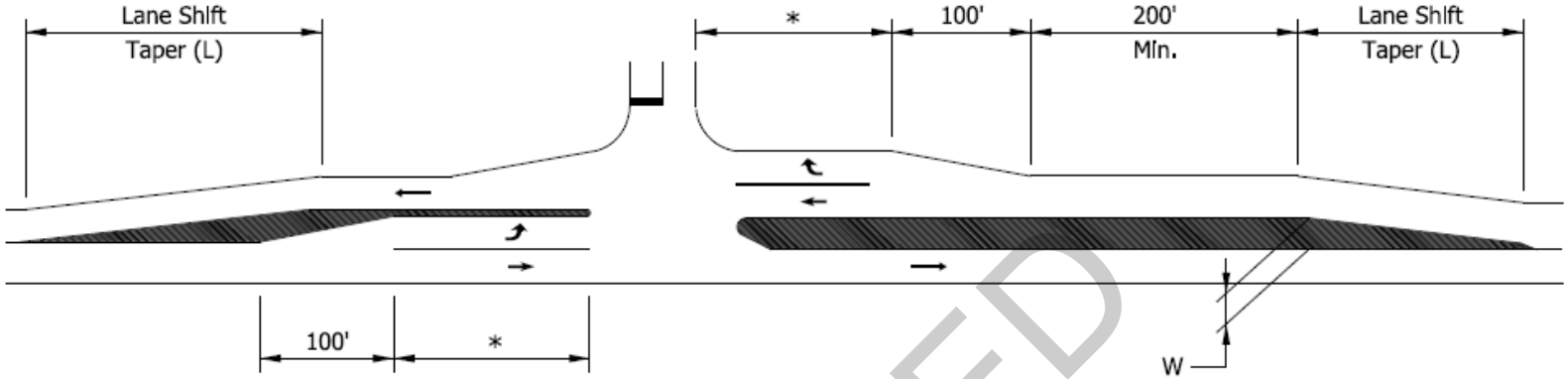
Revised figures have been incorporated into their respective chapters online and are included for reference on the following pages. A summary of revisions is below.

- Figure 46-4M, Channelized Turn Lane for 2-Lane Highway. The taper rates have been revised to reflect the use of L for lane shift tapers.

- Figure 502-2J, Longitudinal Taper Rate and Length. The taper rates have been revised to reflect the use of L for lane shift tapers.

- Figure 502-2L, Transition Markings, 4-Lane Undivided to 2-Lane Undivided. The "Lane Merge" length was inadvertently shown as 1/2 L previously and has been corrected to L. The "Lane Shift" taper has been revised to reflect the use of L for lane shift tapers.

Designers are encouraged to incorporate the change for permanent lane shift tapers as soon as possible, but no later than the effective date noted. The use of L is consistent with the lane transition markings in IMUTCD Figure 3B-14. The lane merge correction in Fig. 502-2L is effective immediately.



Design Speed,S (mph)	Taper Rate
20	10:1
25	10:1
30	15:1
35	20:1
40	30:1
45	45:1
50	50:1
55	55:1
60	60:1

Taper Rate = S for S ≥ 45 mph)

Taper Rate = $\frac{S^2}{60}$ for S < 45mph)

W= Horizontal lane shift, ft

L = W x S (S ≥ 45 mph)

L = W x $\frac{S^2}{60}$ (S < 45mph)

*See Section 46-4.02 for minimum turn-lane length.

CHANNELIZED TURN LANE FOR 2-LANE HIGHWAY

Figure 46-4M

Design Speed (mph)	Merging Taper Rate
20	10:1
25	10:1
30	15:1
35	20:1
40	30:1
45	45:1
50	50:1
55	55:1
60	60:1
65	65:1
70	70:1

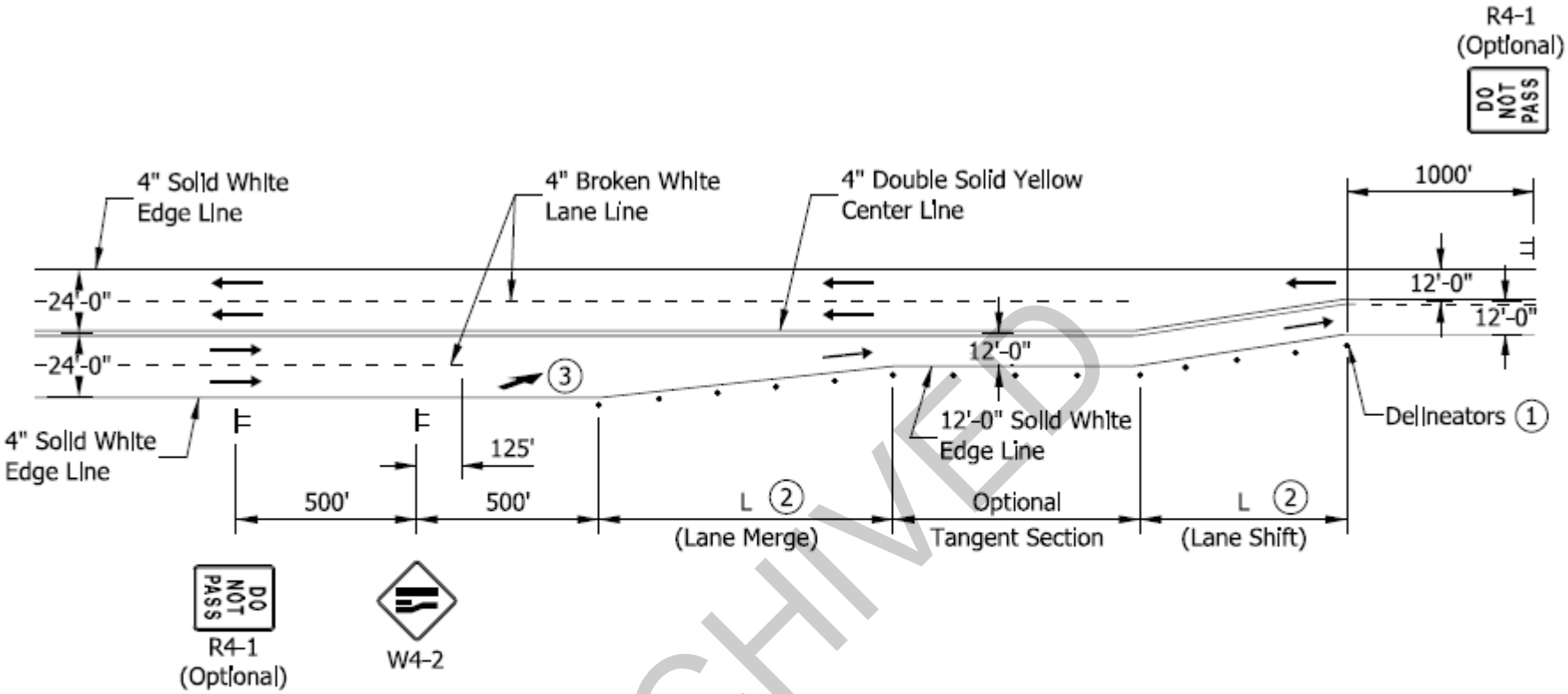
Taper Type	Minimum Taper Length
Merging Taper (Lane Drop)	*L* [1]
Lane Shift Taper	*L* [1]
Recovery Taper	50 ft/lane [2]

[1] Taper Length, L = Merging Taper Rate x Offset Distance

[2] The desirable length is 100 ft/lane.

LONGITUDINAL TAPER RATE AND LENGTH

Figure 502-2J



NOTES:

1. RPM's are desirable along all edge and center lines within the transition area.
2. Adjustments to the signing and pavement marking locations may be required to meet field conditions.

(1) See Section 502-2.06 for delineator spacing.

(2) See Figure 502-2J for taper lengths.

(3) See IMUTCD 3B.20 for lane reduction arrow design and application.

→ Traffic Direction

TRANSITION MARKINGS

4-Lane Undivided to 2-Lane Undivided

Figure 502-2L