

Section 4A.02

Definitions

➤ 5 new definitions:

Dual-Arrow Signal Section

Flashing Mode

Moveable Bridge Signal

Separate Left Turn Signal Face

Shared Left Turn Signal Face



Definitions

➤ 10 revised definitions:

Backplate (change to Signal Backplate)

Crosswalk

Detector

Flashing

Highway Traffic Signal

Louver (change to Signal Louver)

Pedestrian Clearance Time

Signal Face

Signal Head

Visibility-Limited Signal Face or Section



Signal Removal

Time limit for signal poles and cables to remain in place after signal heads removed:



2000: 1 Year

2003: No Time
Limit

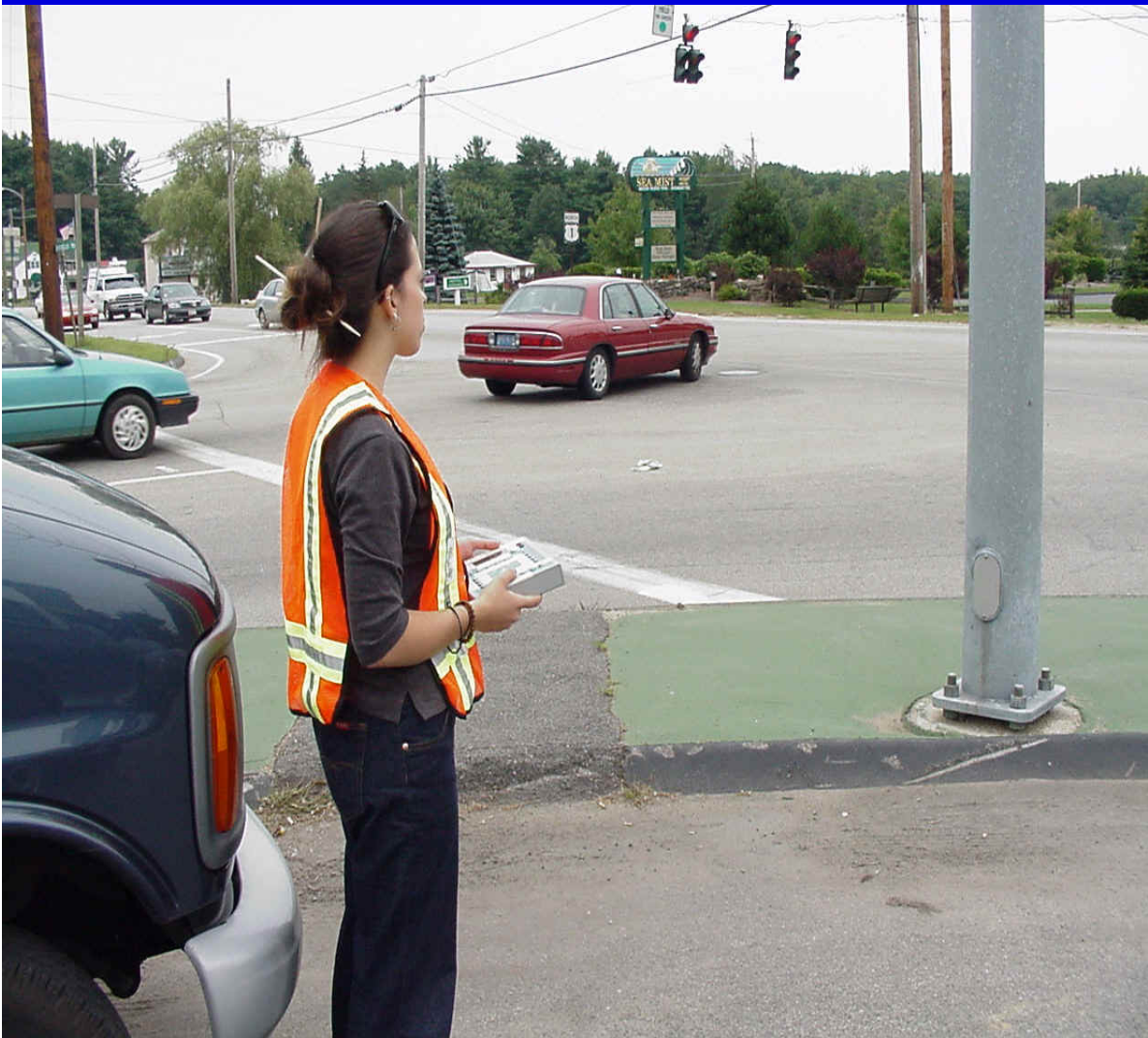


Signal Timing Review/Updating

“... reviewed and updated (if needed) on a regular basis (as engineering judgment determines that significant traffic flow and/or land use changes have occurred) to maximize the ability... to satisfy current traffic demands.”



Signals Justified by Projected Volumes

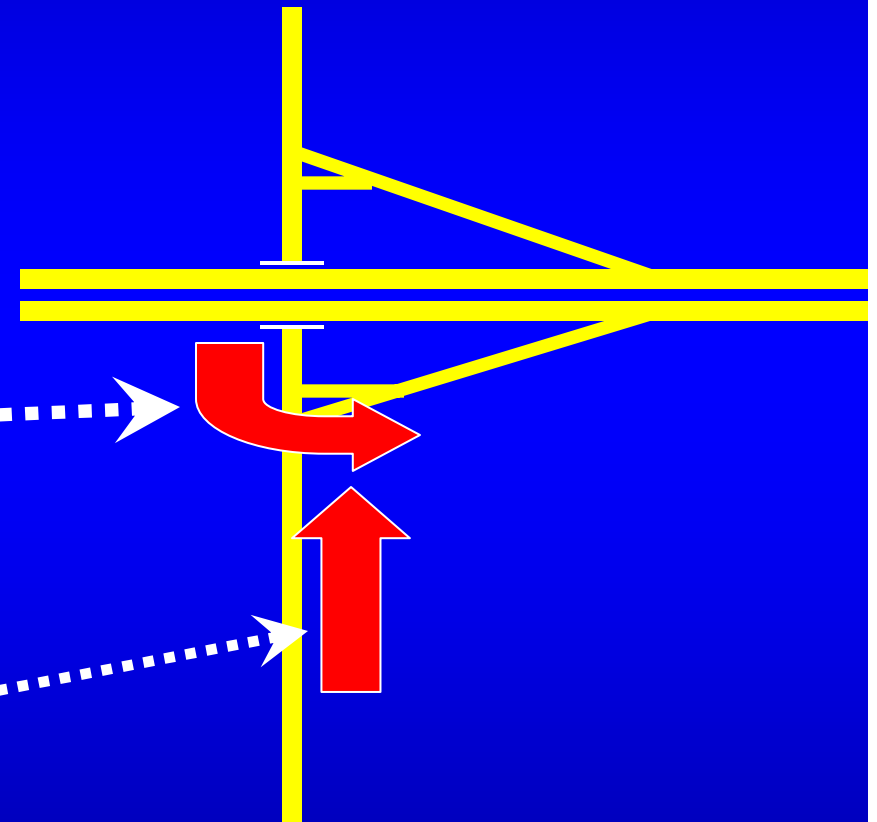


- Study after 1 year
- Remove or discontinue operation if not still justified



Warrants---Left Turn Volumes

- High-volume left turn movement on major street may be used as “minor street volume,” with opposing thru volume as “major street volume”



Warrants---Bicycle Volumes

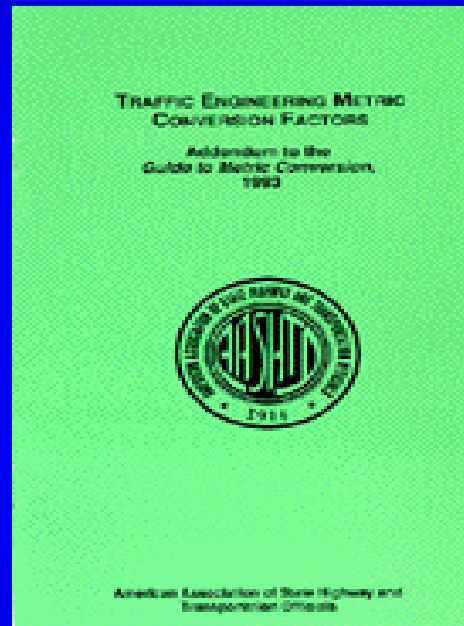


- For purpose of warrant analysis, bikes may be counted as either vehicles or pedestrians



Chapter 4C

Metric and English Speeds for Warrants



2000: “exceeds 70 km/h (40 mph)”

2003: “exceeds 70 km/h or exceeds
40 mph”



Warrant 1 – Conditions A & B

- How to apply Warrant 1 as a whole
- Combination of Conditions A & B –
how to apply



“56 Percent Factor”

Warrant 1 and Warrant 7:

2000: 70% (>40 mph or isolated community) & 80% (combination of conditions A & B) applied separately and cannot be combined into 56% factor.

2003: Added column specifically for 56%--for use when >40 mph & combination of conditions A & B

Table 4C-1. Warrant 1, Eight-Hour Vehicular Volume

Condition A—Minimum Vehicular Volume									
Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor-street approach (one direction)			
		100% ^a	80% ^b	70%	56% ^d	100% ^a	80% ^b	70%	56% ^d
Major Street	Minor Street								
1.....	1.....	500	400	350	280	150	120	105	84
2 or more...	1.....	600	480	420	336	150	120	105	84
2 or more...	2 or more...	600	480	420	336	200	160	140	112
1.....	2 or more....	500	400	350	280	200	160	140	112



Mixing of Flashing and Steady Modes

“A traffic control signal shall be operated in either a steady (stop & go) mode or a flashing mode at all times.”

Mixing of steady and flashing indications in a sequence = OK



Section 4D.01

Signalized Mid-Block Crosswalks Too Close to Adjacent Signals

“Midblock crosswalks shall not be signalized if they are...within 90 m (300 ft) from the nearest traffic control signal, unless the proposed traffic control signal will not restrict the progressive movement of traffic.” (Repeated from 4C)



Section 4D.01

Signalized “Mid-block” Crosswalks



New Guidance: should not be signalized if they are located within 30 m (100 ft) from side streets or driveways that are controlled by STOP signs or YIELD signs. [10-year compliance date]



Meanings of Signal Indications

- **Phrase removed:**
“unless otherwise
determined by law”
- **Pedestrian does not
automatically have
right-of-way when
starting to cross on
green signal**



Photo: www.pedbikeimages.com/danburden



Meaning of Vehicular Signal Indications



Per UVC---right turn on RED ARROW
ONLY when indicated by sign



Application of Steady Signal Indications

- Displays with “Dallas Phasing” (protected-permissive mode with “separate” left turn signal face) clarified



...Circular red not on with green left arrow



Left Turn "Yellow Trap"

What is it ???

S
I
G
N
A
L
#

PHASE 2			PHASE 3			PHASE 4		
GRN	CL	CL	GRN	CL	CL	GRN	CL	CL
0	Y	R	R	R	R	R	R	R
2	Y	R	R	R	R	R	R	R
3	G	G	G ←	Y	R	R	R	R
4	G	G	G	Y	R	R	R	R
5	R	R	R	R	R	G	Y	R
6	R	R	R	R	R	G	Y	R



Left Turn “Yellow Trap” Sequences Discouraged

Steady CIRCULAR YELLOW shall not be displayed to a permissive left turn unless:

- Steady CIRCULAR YELLOW also shown simultaneously to opposing approach, or
- Dallas phasing & display used, or
- W25-1 or W25-2 sign used

[5-Year Compliance Date]



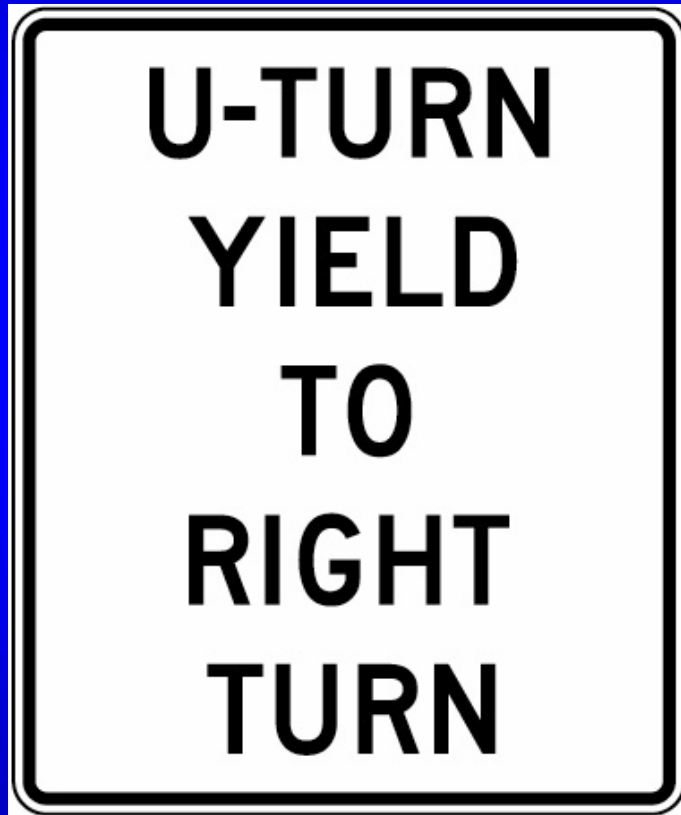
W25-1



W25-2



Conflict of U-Turns & Right Turns

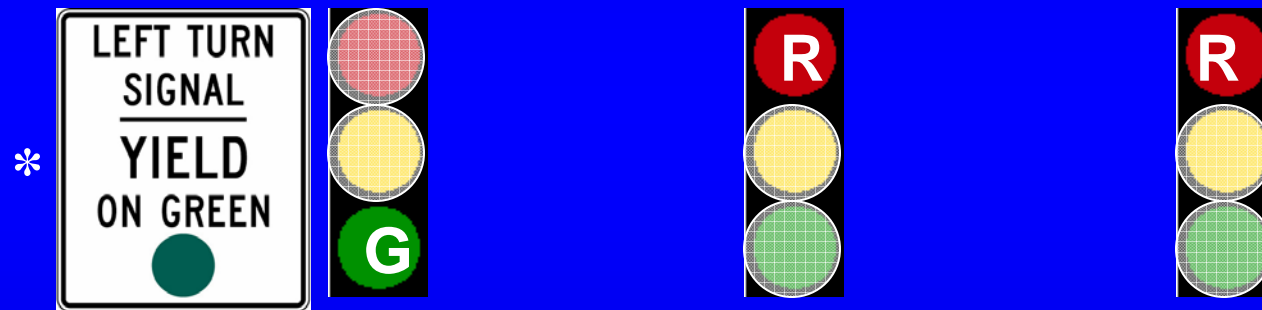


Sign for **OPTIONAL** use



“Dallas” Display for “Permissive Only” Left Turns

- Tool to avoid “yellow trap” when opposing approach has lag left turn phase



* R10-21 or R10-12 or
visibility-limited signal face

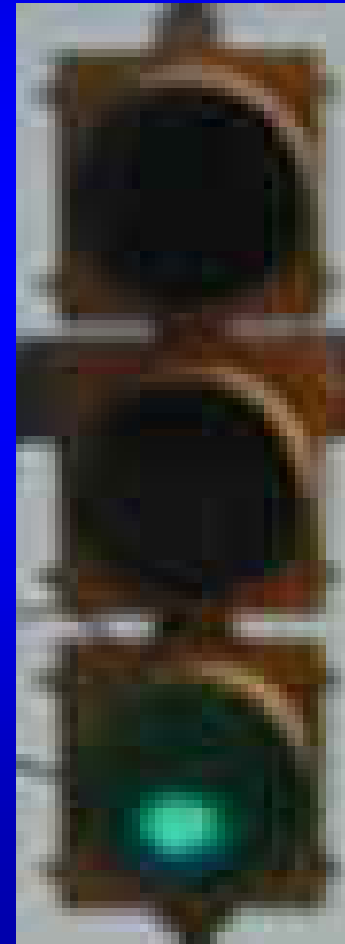
- Separate signal face for “permissive-only” left – displays circular green during opposing lag left



Sections 4D.06 and 4D.07

~~“Cannot be seen”~~

“Not readily visible”



Transition from Red-Red Flashing Mode to Steady Mode

Duration of steady red
clearance interval
between “red-red”
flashing mode and
steady (stop & go)
mode:

- 2000: “should be a
max. of 6 seconds”
- 2003: “should be
6 seconds”

[10 years compliance date]



Section 4D.13

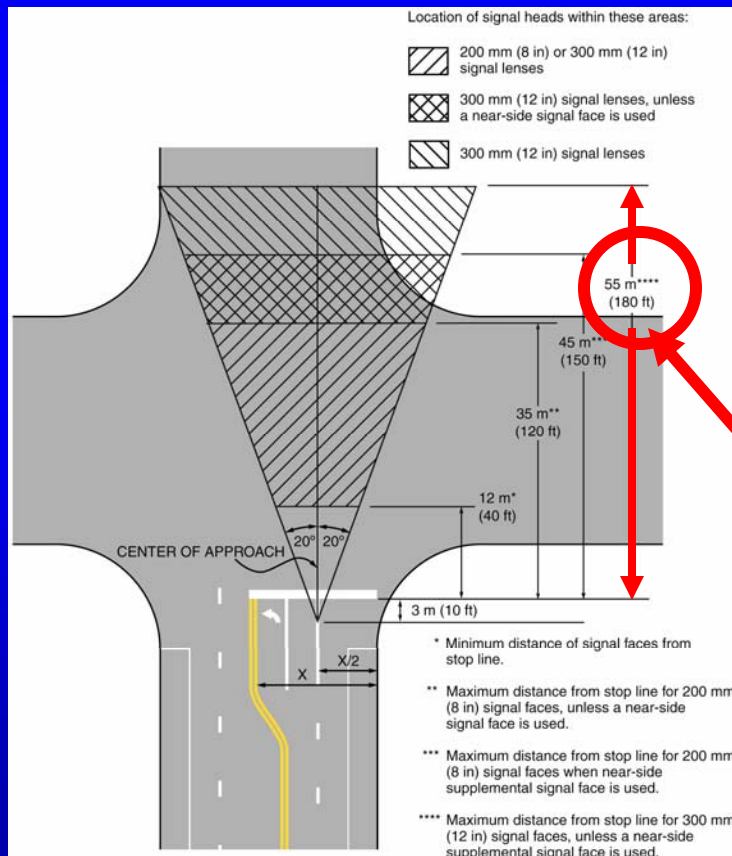
Preemption and Priority Control

- Revised priority order for preemption
 - train before boat
- Light rail transit added to list of modes



Section 4D.15

12" Signal Faces – Max. Distance from Stop Line w/o Suppl. Near- Side Face



2000: 45 m (150 ft.)

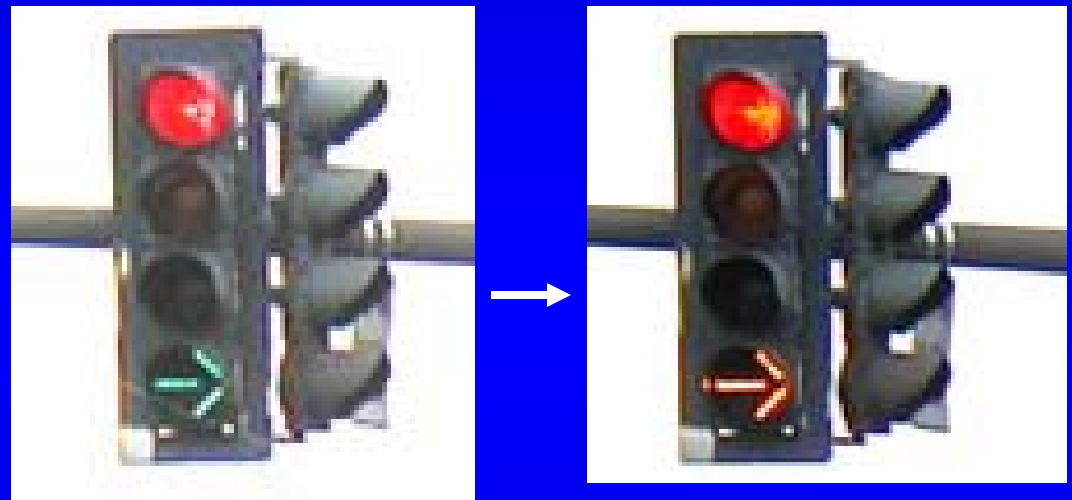
2003: 55 m (180 ft.)



Section 4D.16

~~“Variable Indication”~~
“Dual Arrow”

“Dual Arrow” =
Green Arrow &
Yellow Arrow in
single section.....



OK

[Red, Yellow, & Green indications all
displayed in single section...NOT OK]



Section 4D.18

Color of Signal Head Housings



- 2000: “should be highway yellow”

- 2003:
No guidance



Application of Pedestrian Signal Heads



Text revised re:
“Multiphase
timing (as with
split phase
timing)” as
condition
requiring ped.
signal heads



Section 4E.04

Ped Signal Symbols Disallow “Outline-Style”

YES---



NO---

(for any new
installations)



Section 4E.04

“Animated Eyes”



- Allowed for optional
use in ped signal heads



-If used,
standardized
design &
operation



Section 4E.07 (New)

Countdown Pedestrian Signals



- Allowed for optional use in ped signal heads
- If used, standardized design and operation
- Compliance dates:
10 years for hardware;
3 years for sequence,
display, timing



Pedestrian Detectors



➤ **Extended button press to give extra crossing time to peds with special needs**



➤ **Special purpose push buttons – no instructional sign needed**



Pedestrian Walk Interval Time



- “Desire to favor opposing phase” removed as reason for using Walk interval less than 7 sec.



Pedestrian Clearance Time Calculation



- 2000: “to center of farthest traveled lane...”

- 2003: “to far side of the traveled way...”

[5 years compliance date]



Pedestrian Clearance Time Relationship to Vehicular Intervals

- **Ped Clearance TIME**: calculated time may be contained entirely within GREEN interval or within sum of GREEN + YELLOW intervals
- **DISPLAY of flashing Don't Walk Ped Change INTERVAL**: may be within GREEN interval or within GREEN, YELLOW, and ALL-RED intervals---(EXCEPT when Countdown is used, must be entirely within GREEN.)



Pedestrian Clearance Time Relationship to Vehicular Intervals

← (Parallel Vehicular Phase) → (Confl Phase) →

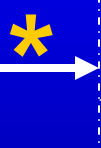
← A → ← B →
Sec. Sec.

Calc. Ped. Clear. TIME
(@4 fps etc.) must fit
in either A or A+B

* Req'd w/ countdown



FL



STDY



FL



Ped. Change
INTERVAL (FL DW)
may be DISPLAYED
in either

sequence, except *



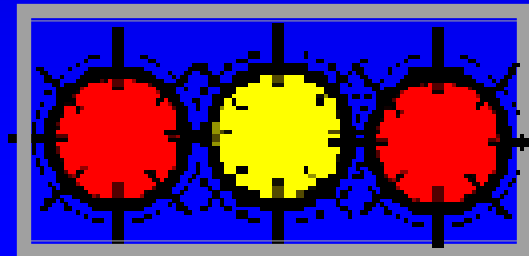
**Manual on Uniform
Traffic Control Devices**
for Streets and Highways

2003 EDITION

Sections 4F.01 & Prop. Section 4F.04

Emergency Beacon

Alternative to Emergency Vehicle Traffic Control Signal in Certain Conditions



DISAPPROVED & WITHDRAWN

Design of Emergency Vehicle Traffic Control Signals



- At least 1 of the 2 required signal faces for each major street approach should be located over the roadway.



Signals for One-Lane Two-Way Facilities

- Change from Guidance to Standard:
Provisions of Chapter 4D shall apply



Movable Bridge Signals and Gates

- “If movable bridge operation is frequent, the use of 3-section signal faces should be considered.”

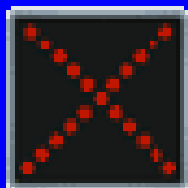
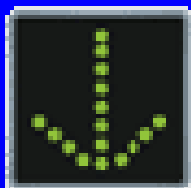


- Phrase “on long bridges or causeways” removed



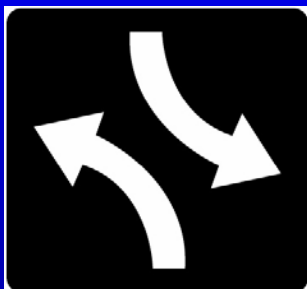
Size of Reversible Lane Control Signals

Smaller sized indications allowed for speeds
under 40 mph with minimal visual clutter:

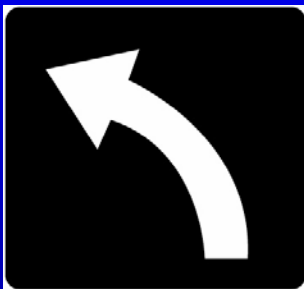


450 mm (18") min.: 70+ km/h or 40+ mph
& when visually complex

300 mm (12") min.: <70 km/h or <40 mph



Two-way left-turn arrow



One-way left-turn arrow

750 mm (30") min.:
70+ km/h or 40+ mph &
when visually complex

450 mm (18") min.:
< 70 km/h or <40 mph



Speed Limit Sign Beacon

- Only to supplement Speed Limit sign



In-Roadway Lights at Crosswalks in Advance of Roundabouts



Proposed Section 4L.03

In-Roadway Lights for Grade Crossings



DISAPPROVED & WITHDRAWN

