WHAT'S NEW IN THE TRAFFIC SIGNAL DESIGN MANUAL

PUBLISHED MAY 2009

Supersedes: NIL

This guide has been developed to outline what's new in the *Traffic Signal Design* manual compared to the previous *Traffic Signal Practice Design* manual, in order to assist practitioners involved with traffic signal design easily identify the updates in the new manual.

Note: This document does not cover amendments made to the *Traffic Signal Design* manual.

General

Traffic signal design was originally the responsibility of the Department of Motor Transport (DMT). In 1976, the Department of Main Roads took over this responsibility and largely adopted the DMT's practices and procedures.

The previous *Traffic Signal Practice Design* manual was first published in 1992 and largely reflected changes that had been made since 1976. A revision of that manual commenced in 2003 and in 2006 a workshop was held to capture outstanding issues and allow peer review amongst expert practitioners.

The details of all Technical Instructions, related to traffic signal design, issued between 1992 and 2006, are now included in the revised manual, *Traffic Signal Design.*

The *Traffic Signal Design* manual has been developed to assist in designing traffic control signals. The manual comprises 16 sections and 5 appendices, which have been released individually, so each section can be updated as the situation arises, rather than waiting years to update the full manual. Any updates to each section of the *Traffic Signal Design* manual, may be obtained from the RTA website using the Traffic & Transport Policies & Guidelines Register which can be found at:

www.rta.nsw.gov.au/doingbusinesswithus/guidelines/documentregister/index.html

If additional guidance is required email:

technical_directions_publication@rta.nsw.gov.au

Traffic Signal Design Sections

The *Traffic Signal Design* sections and appendices which are to be released are as follows:

Part	Title
Section 1	Investigation
Section 2	Warrants
Section 3	Design Process
Section 4	Plan Requirements
Section 5	Geometry
Section 6	Pavement Marking
Section 7	Phasing and Signal Group Display Sequence
Section 8	Lanterns
Section 9	Posts
Section 10	Signs
Section 11	Detectors
Section 12	Controller
Section 13	Provision for Future Facilities
Section 14	Signalised Mid-block Marked Footcrossings
Section 15	Special Situations
Section 16	References
Appendix A	Design Plan Checklist
Appendix B	Traffic Signal Symbols
Appendix C	Location and Function of Lanterns
Appendix D	Location and Dimensions of Components
Appendix E	Left Turn on Red

What's new in the Traffic Signal Design Manual?

Title

- The title has been changed to be more representative of the user's needs. The word "Practice" has been omitted.

Section 2 Warrants

- The section on Warrants has been moved forward in the manual.
- The warrants are matched to the same warrants that appear in the old Austroads *Guide to Traffic Engineering Practice Part 7 - Traffic Signals*, and the new *Guide to Traffic Management*.
- Throughout the manual a greater emphasis has been placed on pedestrian needs, especially people with disabilities.
- Signalised marked foot crossings must be provided on each leg of an intersection, including T-junctions.
- The use of flashing yellow arrows at signalised marked foot crossings has been included following favourable research from the Monash University Accident Research Centre.
- Scramble crossings have been included for areas of high pedestrian activity.
- Pelican crossings can only be used at one crossing of 4 lanes or less.
- The terminology for marked foot crossings and pedestrian crossings (zebra) match the terminology used in the Australian Road Rules and NSW *Road Rules 2008*.

Section 3 Design Process

- A new section placed more logically in the manual.
- More detail regarding power supply and communication systems.
- A comprehensive narrative covering the approval process for RTA prepared designs as well as for consultant prepared designs.
- Reference is made for the need to contact the Manager, Network Operations TMC for advice and concurrence on unusual circumstances or exemptions.

Section 4 Plan Requirements

- Brief information about other drawings that are required to make up a completed set of traffic signal plans has been added.

Section 5 Geometry

- The requirements for kerb ramps have been expanded.
- If a raised median is used to mount a traffic signal post, the preferable width of the median is 2.4 m. The minimum widths for a median have been changed from between 1.2 and 2.4m as shown in figure 5.1, and the absolute minimum widths deleted.

Section 6 Pavement Marking

- Pedestrians Crossings are now called marked foot crossings in accordance with NSW *Road Rules 2008*.
- Details about the changed location of the stop line and the configuration of the marked foot crossing lines have been added.
- The standard width of a marked foot crossing is 3.6m. The pedestrian crossing lines are dashed lines 1.0m long and 0.15m wide with a 0.3m gap.
- The crossing lines intersect at the lip line or 0.5m from the kerb (not 1.0m from the kerb). This assists in keeping the kerb ramps apart.
- There is a 1.2m wide space between the stop line and the crossing line. This assists in preventing vehicle intrusion into the pedestrian walk area.
- All dimensions are measured between lines and not to the centre of lines.
- The setting out details for the location of pavement arrows has been altered.
- Information about Bus Only Lanes and Transitways has been added.

Section 7 Phasing and Signal Group Display Sequence

- Automatic introduction of the pedestrian phase has been added.
- Details about scramble crossings have been added.
- More details about pedestrian protection have been added including full, timed and no pedestrian protection, and flashing yellow arrows.

Section 8 Lanterns

- The introduction of LED lanterns has been included.
- 4 aspect lanterns are now only available as a single column assembly using 200mm diameter aspects. 300mm lanterns are no longer available as a 4 aspect display.
- Type C (cut-away) visor no longer used.
- All LED secondary and tertiary lanterns should be 300mm diameter.
- The lantern mounting height is now from ground level to the bottom of the pedestrian and bicycle lanterns and target boards on vehicle lanterns should be a minimum of 2.4m.
- Lantern labelling has been changed to only Signal Group Labelling. Phase Labelling no longer used.
- Details of lanterns for buses in Bus Only Lanes, bicycles, pedestrians and light rail have been added.
- Details about pedestrians at scramble crossings have been added.
- More stringent requirements regarding the provision of median posts and lanterns have been introduced including:
    - Medians 3.0m wide or wider must have a median post, including lanterns
    - If the width of a marked foot crossing is greater than 25m, a median post and lantern must be provided
    - All median posts must include a pedestrian push button.
- Lantern Aspect Size has been updated including aspect sizes used on the outreach of all mast arms.

Section 9 Posts

- The issue Frangibility of posts has been added.
- Details on median posts have been added. Median posts must be used on medians to avoid the use of non-frangible mast arms.
- Requirements about providing mast arms have been added.
- More detailed description and purpose of posts and mast arms has been added. Post types now up to Type 15 and includes multi-function pole/mast arm.
- Details about restrictions in Regions A and B have been included.
- More detail about the need for lateral clearances and caution about use.

Section 10 Signs

- New section included to cover the most used signs at signalised intersections.
- List of other signs that may be used at signalised intersections when necessary, has been included.
- A new section on scramble crossing signs has been included.
- References to Australian Road Rules replaced by NSW *Road Rules 2008.*

Section 11 Detectors

- Updated to include advances in technology.
- Greater detail included about using audio-tactile and tactile only pedestrian detectors.

Section 12 Controller

- Special features about controllers removed.

Section 13 -Provision for Future Facilities

- Inset method removed and only note form included.

Section 14 Signalised Mid-Block Marked Foot Crossings

- Dimensions are now shown between lines and not to the centre of stop lines.
- Additional information about PELICAN crossings has been included.

Section 15 Special Situations

- Information about use of advance warning flashing lights has been added.
- Provision of traffic signals on private property has been included.
- Signalised entries to private developments moved to this Section and example of installation improved.
- Details about U Turns and Hook Turns moved to this Section.
- Installation of Ramp-Metering traffic signals included.
- Details on bicycle storage areas and advanced stop lines, rail level crossing shared infrastructure and roundabout metering traffic signals has been added.

Section 16 -References

- References have been updated and listing revised to only include relevant details.

Appendix A Design Plan Checklist

- Listing updated to include additional checks, mainly with bicycles and buses.

Appendix B Traffic Signal Symbols

- 300mm, 4 aspect lantern information removed.
- Bicycle, Bus and Tram information included.
- Cut-away visor information removed.
- Controller, post and detector information updated to include 15 types of post/mast arms.
- Pedestrian detector information updated to include tactile only. Signs and symbols improved to include more relevant signage.

Appendix C Location and Function of Lanterns

- Typical location of Lanterns for T Junctions now relevant to more likely usage.

Appendix D Location and Dimensions of Components

New drawings included showing combined elements at a marked foot crossing on the one drawing. The important features are:

- Stop line is 300mm wide
- Distance between stop line and marked foot crossing line increased to 1.2m.
- Marked foot crossing lines are dashed lines, 1.0m long x 150mm wide with 300mm gaps.
- Standard width of marked foot crossing increased to 3.6m, measured between outer edges
- Set back of stop line from kerb extension is 5.4m.
- Marked foot crossing lines intersect at lip, or 0.5m from kerb, to improve separation of kerb ramps.
- Position of primary post is 0.5m beyond front edge of stop line, to improve accessibility of the pedestrian push button and to keep post footing clear of ramp splay.
- Kerb ramps line up with outside edge of one marked foot crossing line, not in the centre of the crossing.
- All drawings updated to include new provisions and locations, mainly to illustrate dashed marked foot crossing lines, new primary post position, new location of stop line, new location of kerb ramps.
- Controllers now 1.0m from kerb to match minimum set back of posts.
- Details on posts updated to include the location of less rigid and non-frangible type posts.

Appendix E Left Turn on Red

- Tests increased to 4.
- Drawings updated.