WARNING DEVICE PRECEDING "NO PASSING" LINES

By

Graeme Hamilton

BE(Civil; DipHTE(UK); MBA(CDA);
CPEng, MIPENZ, IntPE(NZ), MInstD

Abstract

- In the mid 1960's there was confusion as to the "safe" area
- Enforcement became the big debate
- This paper addresses the process and evolution the warning device that preceded the "no passing" barrier lines system
- This is still in National use today and also now known as "No Overtaking Advanced Warning".
- The author was a vital and inspirational part of that process, while serving as Secretary to the National Roads Board's (NRB) Traffic Signs and Pavement Markings Committee circa 1967-1969.

- **Discussion**

- This particular project had its beginnings back in the late 1960's
- This was near the time when 3M had begun to commit to Road Safety and I had just returned from studying highway and traffic engineering in the UK
- To set the scene and period here is the young GH being welcomed at the desk of Hank Barnes Commissioner, NY Dept of Traffic.

G. Hamilton, with Hank Barnes 1967

- Contacts such as these were helpful in a professional career.
- As traffic and highway engineers we applied our skills and knowledge in the style, culture, and political environment prevailing at the time.
- There were no PC’s on desks and letters were handwritten, collected, and typed by a pool of typists

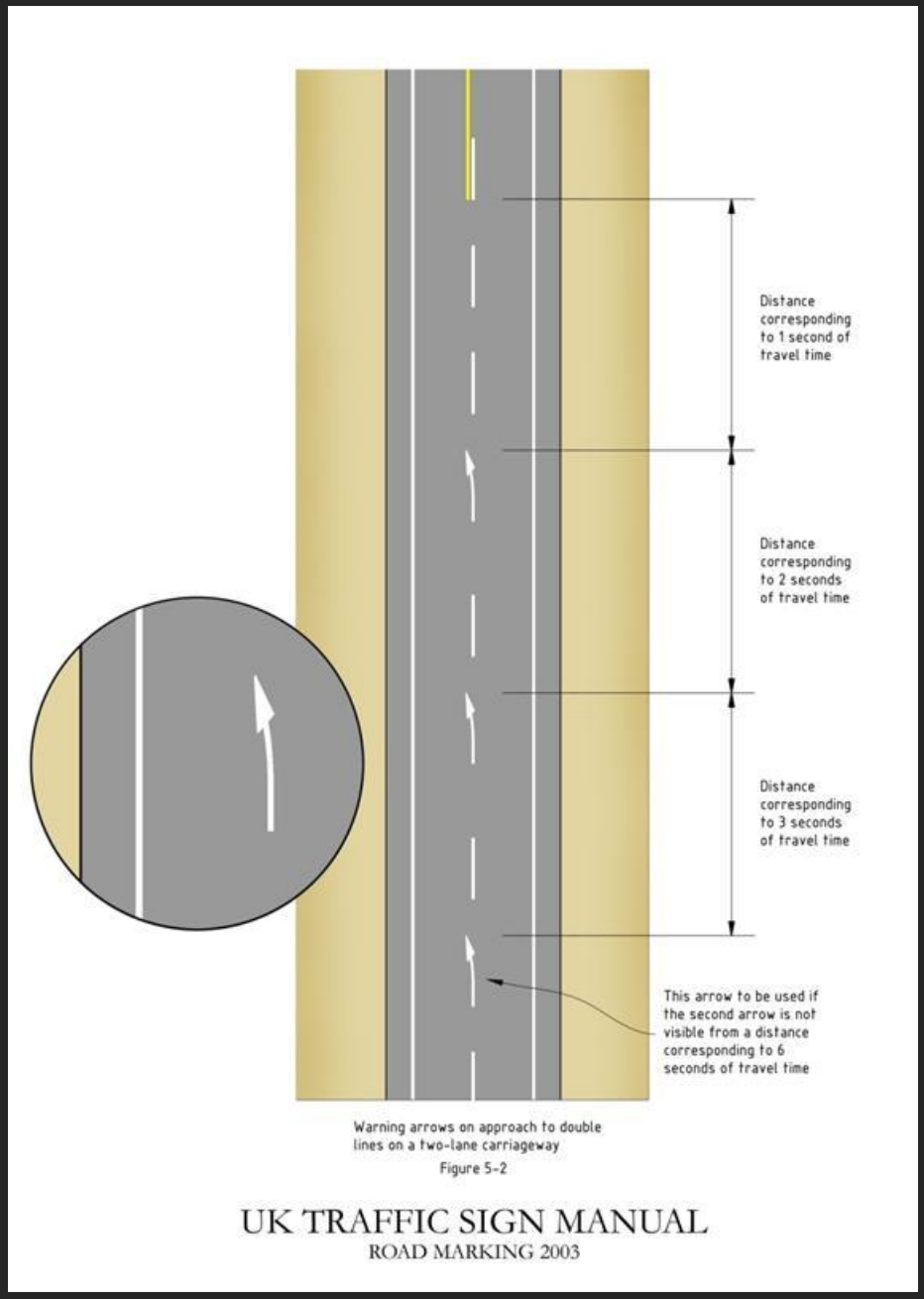
- At the time of my return to NZ a problem surfaced at the NRB Traffic Signs and Pavement Markings Committee, for which I served as secretary.
- Did the solid yellow stripe adjacent the white centreline incl. sufficient reaction and response time to return to the safety of one's LHS lane while overtaking

Solid yellow no passing line

- Police were issuing tickets and the Automobile Association (AA) had joined the fray to challenge.
- There was need for clarity for motorists and traffic officers alike.
- Where did the warning element finished and the true or lethal barrier started.

- The AA representative proposed the then British system of 3 time-sequenced arrows ahead of the “no passing” lines.

- Their representative was adamant, and would give no leeway for other systems.



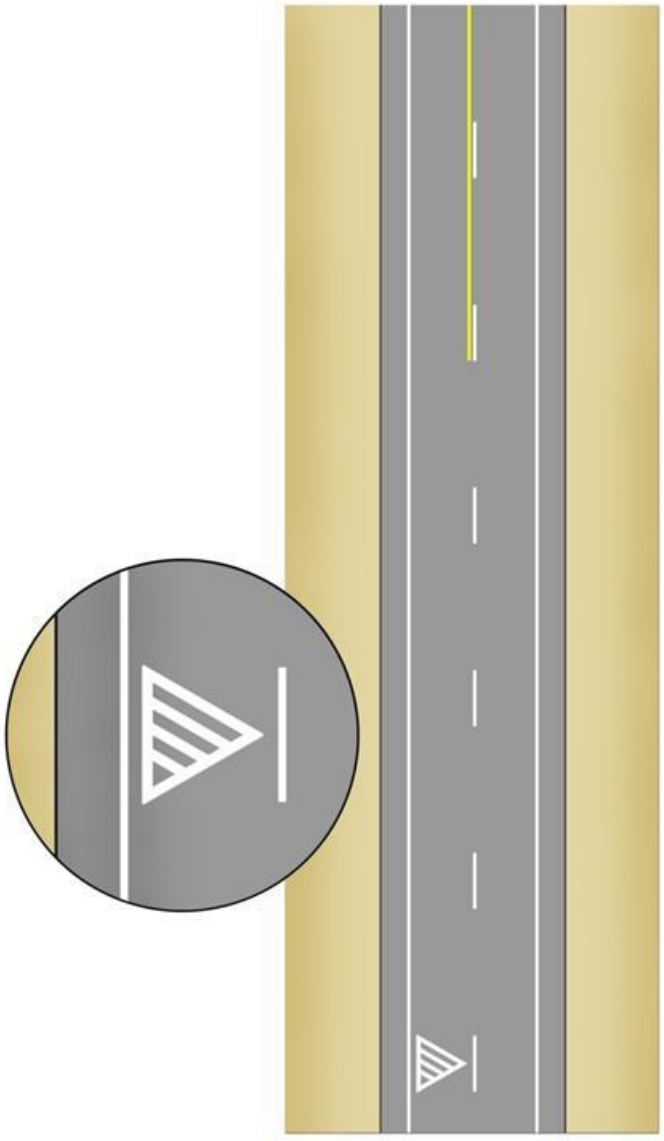
British System of Warning Arrows

- Such arrows were hand painted at that time.
- Director of Roading muttered that the cost of such a proposal “would wipe out the entire budget!”
- In those days the central govt roading budget was 33.3M pounds p.a. Did he mean the paint budget?
- I suggested that they use machine dotted yellow stripes with a spacing different from the white centreline stripes
- At that time yellow paint was not applied for any other marking I was ignored and the debate raged on. Clearly, the debate had to focus on the need for demarcation of the warning element vs the true barrier line.

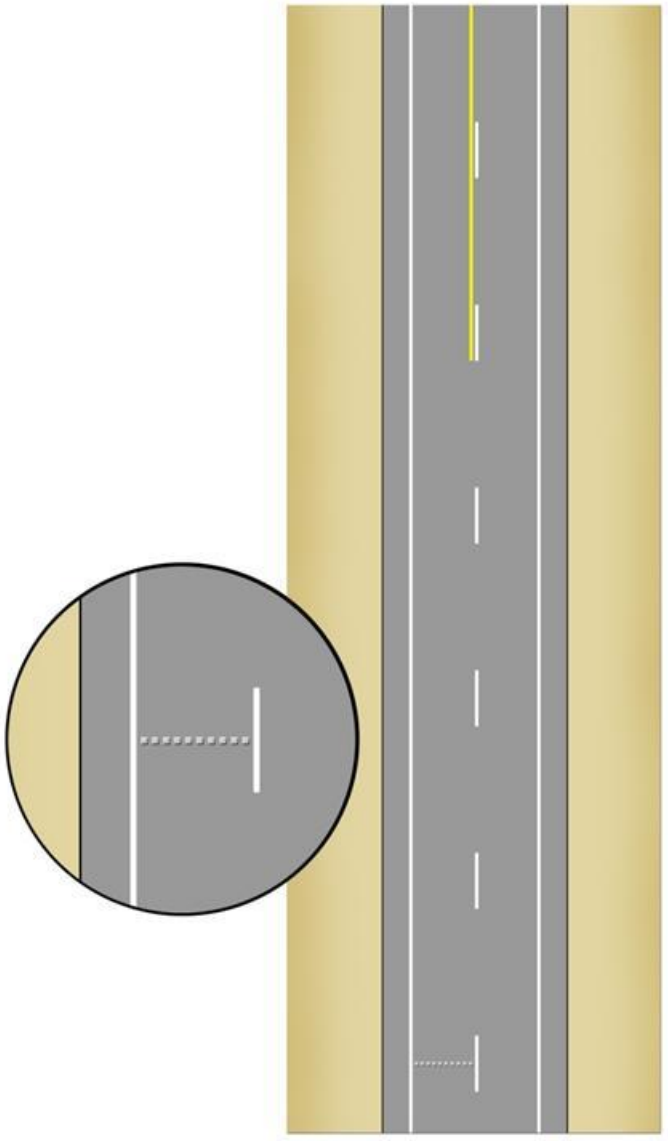
- Two things arose from the committee meeting:-

  - I was advised that I was not a member of the committee and had no right to speak.

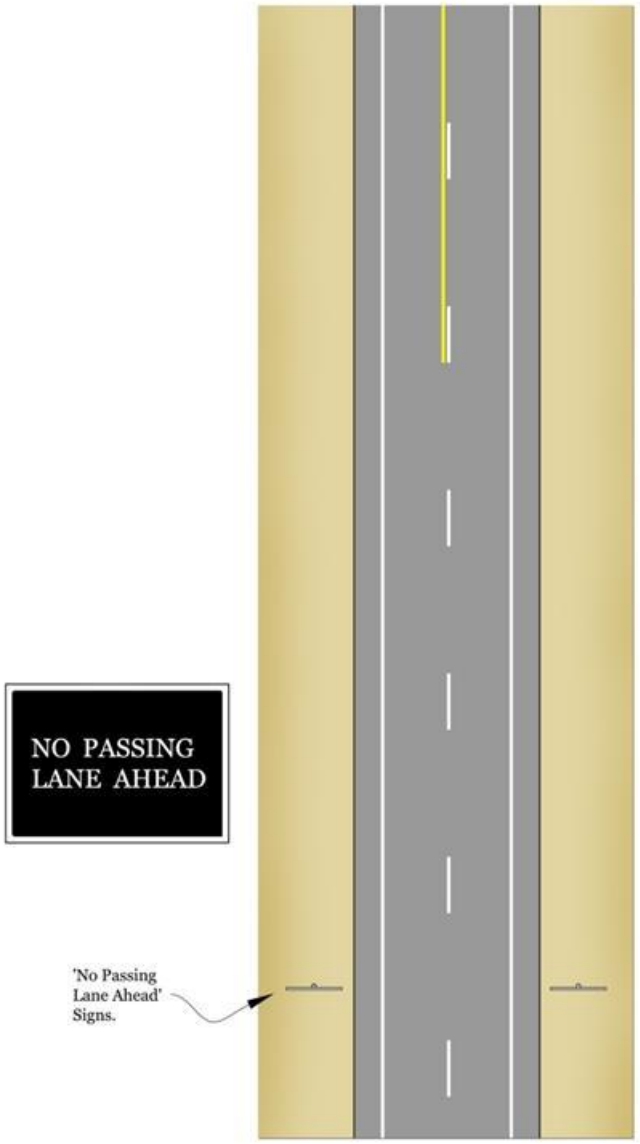
  - I was to install a range of possible warning devices in a site experiment, Some of these examples are included here for illustrative purposes.



DRAGON'S TOOTH OPTION

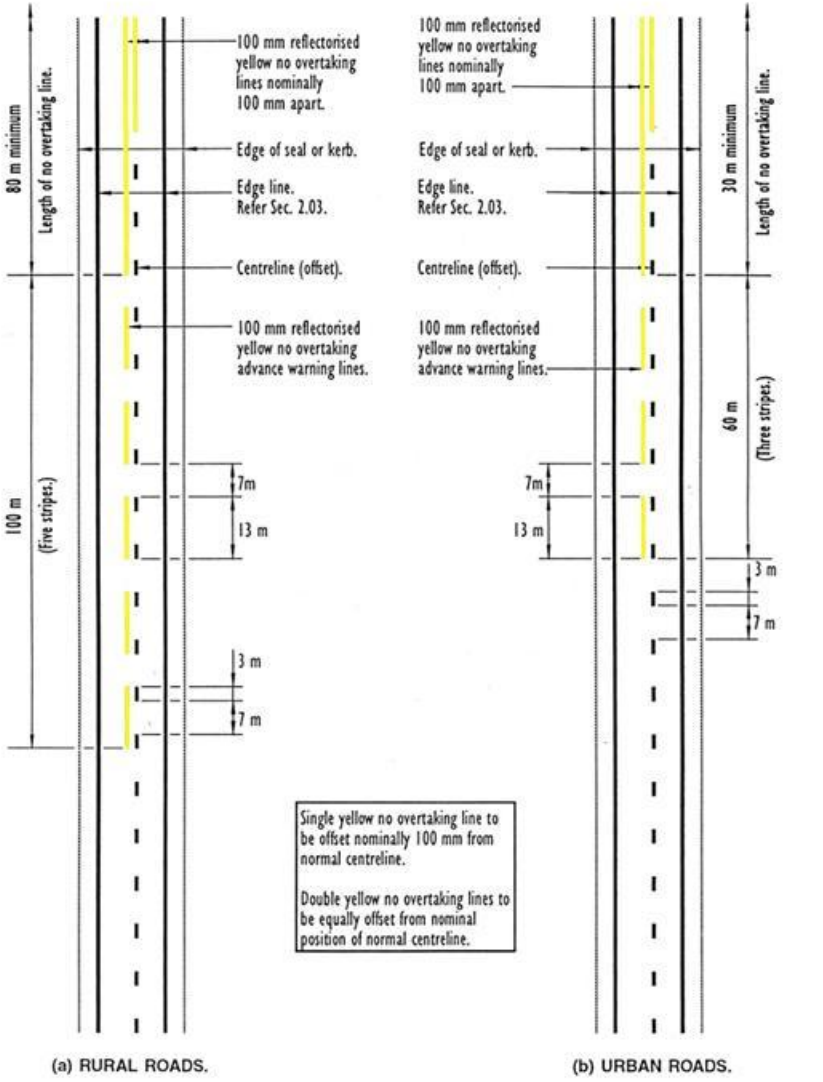


STUD OPTION



TRAFFIC SIGN OPTION

- Some time later I learned that my suggestion had become accepted.
- Today it is in the NZTA Manual of Traffic Signs and Markings.



(a) RURAL ROADS. (b) URBAN ROADS.

MARKINGS FOR NO OVERTAKING LINES. FIG. 2.5

- **Research**

- Significant research done in the 1990's to try and identify standards for locating no passing lanes and their benefits.

- Data was not totally robust and efforts were made to calibrate models such as the ARRB TRARR model for NZ conditions.

- A psychologist evaluated motorist response to such items as the white striped Diversion Line on entry to the passing lane and the deliberate shortening of the white centre lane stripe in the exit merge area.

- Equally, dialogue with Road Policing Unit police on how they observe operational and enforcement issues at these locations was informative.

- Other research shows that no passing lines (NPL) are used extensively for vertical curvature but not as much for horizontal curvature locations.

- Perhaps of fascinating interest was the finding of the LTSA's 1999/2000 Survey i.e.

  * 5% of sites did not have the legally required advance warning lines.

  * 2% of No Passing Lines marked for vertical curvature were accurate.

  * 38% of No passing Lines started late and 7% finished early.

- **Summary**

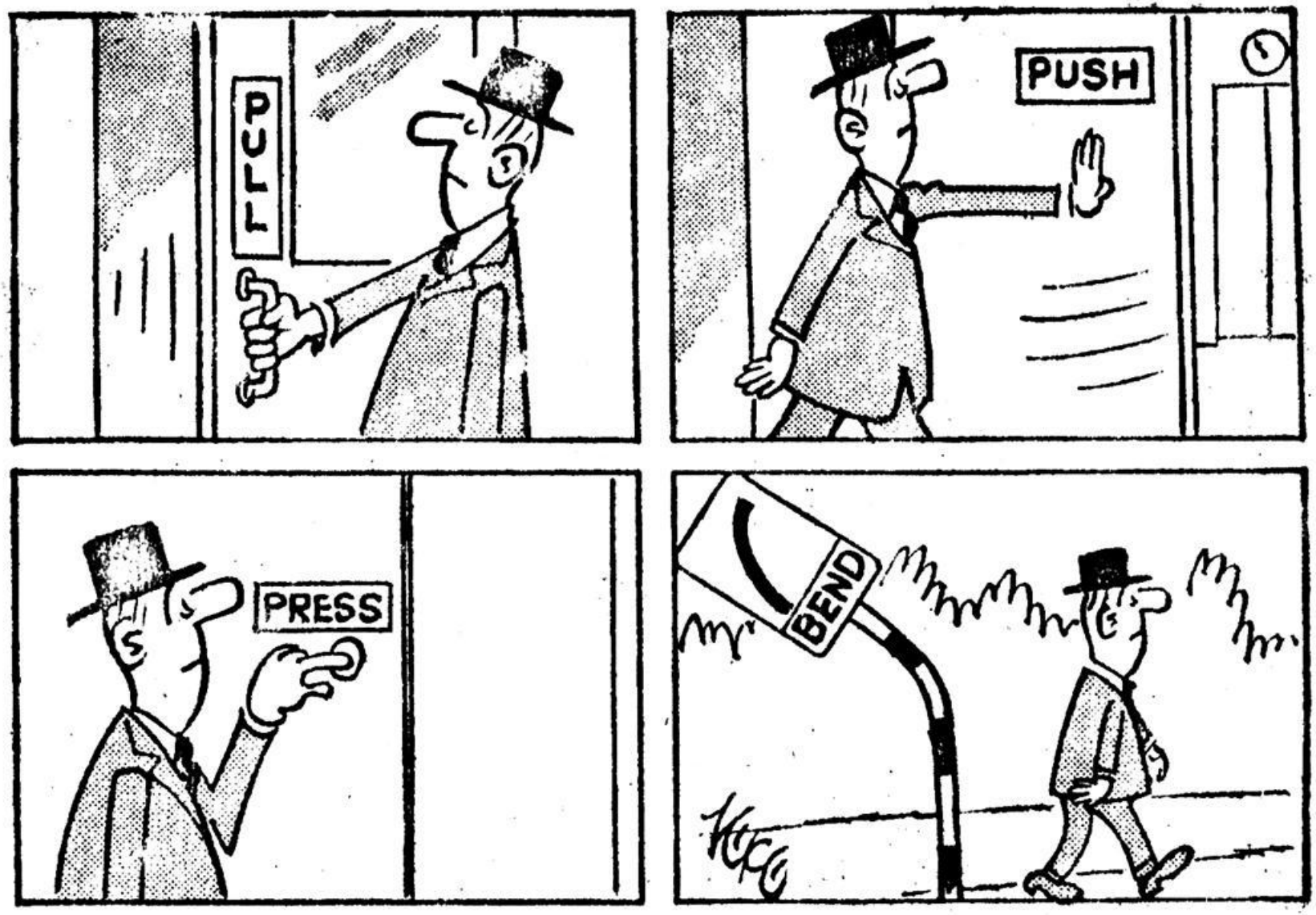
- People like to have input and robust debate in general.

- Experience consulting in France taught me that the French believe that all good solutions are the better by being rigorously debated before a conclusion is reached.

- To be successful the system should be:

  * simple

  * clearly understood


PULL
PUSH
PRESS
BEND

- Concepts must be capable of clear interpretation by the users-others don't always see things as the designer does.
- The system should be:
  - cost-effective
  - enforceable
- This application has stood the test of time-in fact for some 40 years.

❖ I trust that each time you pass a yellow pre-warning stripe you will now doff your hat in honour of the idea of a young engineer, since there are no royalties payable!

References

- Operational and Safety Effectiveness of Passing Lanes on Two-Lane Highways; Douglas W Harwood, Andrew D St John, and Davey L Warren. Transportation Research Record 1026. 1985.
- Management of New Zealand's National Roads Fund; DR Rendall, MF Fletcher. Paper presented Country-Level Workshop Institutional Development for the Maintenance of National Road Networks, Philippines. 30 May 1997.
- Typical Accident Rates for Rural Passing Lanes and Unsealed Roads; MW McLarin, Transfund NZ Research Report No. 89 1997.
- Assessing Passing Opportunities-Stage 2; Koorey, GF, Farrelly, PM, Mitchel, TJ, Nicholson, CS. Transfund NZ Research Report No. 146. 1999.
- Traffic Standards and Guidelines 1999/2000 Survey, RSS 13, No Passing Lanes. LTSA Nov 2000.
- Land transport Research, Issue 1 March 2005.
- Manual of Traffic Signs and Markings Part II: Markings. NZTA. June 2009.

Acknowledgements

- NZTA-
  - Ron Minema, Senior Programme Advisor – Engineering, Dunedin
  - Bob Gibson Principal Engineer, National Office.

- Opus International Consultants-
  - Grant Cox, Civil Manager, Dunedin
  - Vivienne Sutton, Information Centre, Wellington.

- NZ Police-Inspector Leo Tooman, Road Policing Manager, Hamilton

- Waikato University-Samuel Charlton, Associate Professor Psychology, Traffic and Road safety (TARS)

- Projenz, Callum Wood, Director, Dunedin

- Nick White – Graphic Designer