

The Future of Transit New Zealand Roadmarking Specifications

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Abstract

The Engineering Policy Section (EPS) is the repository of considerable technical expertise to enable leadership in research for the development or revision of standards, guidelines and specifications to meet safety, sustainability, economic, social and environmental objectives.

Projects identified by EPS for implementation in the near future, to improve safety and help prevent road run-off crashes, include:

- Investigating the use of higher visibility road marking systems for use on asphalt surfaces in wet conditions;
- Development of a specification for profiled line markings.
- Roadmarking on-road testing and monitoring;
- On-going administration of specifications for
 - Roadmarking applicators and
 - Approved roadmarking products (paint, long-life products and raised pavement markers).

Introduction

The Engineering Policy Section (EPS) is the repository of considerable technical expertise to enable leadership in research for the development or revision of standards, guidelines and specifications to meet Transit's safety, sustainability, economic, social and environmental objectives. The EPS aims to:

Provide assurance to Transit that an integrated, safe, responsive and sustainable national network will be maintained, by undertaking research to ensure Transit's standards and specifications deliver best practice in maintenance and construction practices meeting and/or balancing safety, efficiency, environmental and social needs.

Projects are managed by EPS in the areas of: Structures; Pavements; Asphalt; Chipseals; Delineation (Road Marking, Signs, Edge Marker Posts) and Maintenance.

Project criteria are developed based on three themes used as performance measures in Transit's Statement of Intent namely:

1. Environmental (*Noise & Reduction of Waste and Energy*);
2. Social (*Safety/Skid resistance*);
3. Economic (*Increasing life, reducing whole of life costs (including road user costs), ensuring best practice and reducing the risk of early failure*).

Safety is of prime importance to Transit, reflected by a range of initiatives to improve the safety of the road network. EPS's part in these initiatives is in the area of skid resistance of surfaces and improvement to on-road delineation through specifications for the construction of road markings; profiled line marking; and raised pavement markers.

Projects

Specific projects identified by EPS to improve safety and help prevent road run-off crashes include:

- Investigating the use of higher visibility road paints for use on asphalt surfaces in wet conditions;
- Development of a specification for profiled line markings.

Additional projects identified for progress in the near future or on-going progress include:

- Roadmarking on-road testing and monitoring;
- On-going administration of specifications for
 - Roadmarking applicators and
 - Approved roadmarking products (paint, long-life products and raised pavement markers).

These projects will be carried out in the near future, many in the next 12 months but some will be completed on a longer timescale.

Wet Night Retroreflectivity

Studies have indicated that where there are no roadmarkings, the introduction of roadmarkings dramatically reduces crashes. Further, in wet-night conditions on flat road surfaces (e.g. dense asphaltic concrete) the roadmarkings have significantly reduced visibility.

If wet-night retroreflectivity of roadmarkings is provided or improved, crash rates in these conditions may decrease.

Part of this project will involve a review of the Paper presented by Bob Carnaby of Potters Industries at the RIAA and NZRF Conference in September 2004 and its references. A case will be prepared and presented to Transit Management and the

Transit Board to explain the expected costs and benefits in terms of reduced crashes of improved wet night retroreflectivity. If agreed to by the Board, updated specifications will be prepared, followed by consultation with the industry.

Profiled Line Marking Specification

The aim of this project is to develop criteria for specification of profiled linemarkings. Further development is required from the Traffic and Design Section of Transit on this topic. Following the development of guidelines stating criteria for the appropriate application of profiled linemarkings, to be completed by the Traffic and Design Section, EPS will then review the appropriate specifications to achieve the agreed requirements.

Recommendations from recently completed reports will be considered. Audiotactile sound, spacing and dimensions of the profiled marking and method of installation are to be specified. Issues to be considered also relate to cyclists and water ponding.

Tasks include reviewing available reports and research and developing draft specifications, followed by consultation with the industry.

Roadmarking On-Road Testing and Monitoring

This is a reasonably large-scale project that aims to unify Transit's roadmarking specifications to emphasise on-road monitoring and testing. The project includes updating existing retroreflectivity requirements in specifications to reference new international Retroreflectivity Standards.

This project will begin by reviewing currently available information relating to:

- TNZ M/7 Specification for Roadmarking Paint;
- TNZ P/22 Specification for Reflectorised Roadmarking;
- TNZ P/20 Performance Based Specification for Roadmarking;
- In situ testing and monitoring results available from TNZ P/20 contracts;
- Contract specifications used in the Transit Napier region, where a modified P/22 including performance criteria has been used for 3 years;
- In situ testing and monitoring results available from Transit Napier region's roadmarking contracts;
- Draft roadmarking in situ specifications developed under an earlier scheme 'TIPES' (Transportation Innovation Product Evaluation Scheme, which was never implemented).

Firstly, a new draft will be developed for TNZ M/7, including in situ on-road monitoring and testing, including criteria developed under the TIPES regime. Work done by Scott Thompson of Damar and Vince Dravitzki of Opus Central Laboratories will be used extensively in this first part of the project.

In the second half of the project, the existing P/22 and P/20 will be merged, using inspiration from the Transit Napier region's roadmarking contract documents. The

aim is to keep the benefits of the original specifications but dispense with some of the more onerous requirements of P/20 that made the specification so expensive, e.g. the extensive monitoring regime. In the new specification, on-road testing of chosen, representative test sites will replace P/20's full-scale testing of a percentage of the entire network.

In the new, unified P/22 and P/20 specification there will possibly be a reduced roadmarking retroreflectivity requirement for high wear areas, with the agreement of the engineer. The idea being that it is acceptable to allow reduced delineation through marking loss in high-wear areas, if one takes into consideration the whole road environment and all the delineation devices available to the driver, i.e. taking into account guardrails and sightrails, raised pavement markers and other delineation devices in high wear areas, even such things as hedges and tress which help guide the driver around corners. The engineer should also take into account the speed environment, crash rate, etc.

A testing regime will be required for the skid resistance of long-life markings, and other properties.

The development of both the updated M/7 and the unified P/22 and P/20 specifications will include liaison with Transit staff and industry to produce a unified approach. Retroreflectivity requirements in current specifications will be updated to match new international Retroreflectivity Standards. Development will include industry consultation and meetings. The new specifications and an implementation plan will be prepared for trial or issue. An on-going monitoring regime will be established to monitor trials.

Road Marking Applicators

This topic includes time required for administration of Roadmarking Specifications e.g. T/8 and T/12 Specifications for Roadmarking Applicators and providing industry support for T/8 and T/12 e.g. attending workshops. The aim is to ensure documentation is in place to support the ongoing use of compliant roadmarking applicators on New Zealand's state highways.

Administration of Approved Products

This topic includes time for administration of Roadmarking Specifications, namely

- M/20 Specification for Long Life Roadmarking;
- M/7 Specification for Roadmarking Paint;
- M/12 Specification for Raised Pavement Markers.

Tasks include reviewing various approvals received and recommending compliant products for approval by Transit management. Also included are regular updates to TNZ M/20 Specification for Long Life Roadmarking, TNZ M/7 Specification for Roadmarking Paint, TNZ M/12 Specification for Raised Pavement Markers and TNZ

M/14 Edgemarker Posts. Outputs include approval letters, issued specifications and ensuring the lists of Transit approved delineation products are up to date.

Conclusion

Safety is of prime importance to Transit, reflected by a range of initiatives to improve the safety of the road network. EPS's part in these initiatives is in the area of skid resistance of surfaces and improvement to on-road delineation through specifications for the construction of road markings; profiled line marking; and raised pavement markers. In this paper, specific projects identified by EPS to improve safety and help prevent road run-off crashes have been outlined. These projects will be carried out in the near future, many in the next 12 months but some will be completed on a longer timescale of 2 to 3 years, and may include trials.