

# NOTES TO THE SPECIFICATION FOR HIGH PERFORMANCE ROADMARKING

## 1. SCOPE

This specification envisions a high performance roadmarking system that may be achieved by using either a single marking, or a combination of marking types which collectively contribute the necessary properties, and these markings are used in close proximity to form the system.

The improved delineation through use of the NZTA P/30 specification is to be achieved through standard roadmarkings with specific retroreflective properties, with or without the addition of audio tactile profiled roadmarkings.

High performance roadmarkings should only be programmed under the supervision and advice of a traffic engineer as part of a road traffic safety strategy. This is to avoid inadvertently making the road environments more dangerous through “surprises” for the road user such as suddenly entering an area with relatively poor delineation immediately after travelling through an area with good delineation delivered through high performance roadmarkings.

It should be noted that retroreflectivity has little impact on marking visibility where street lighting is provided, but will be important for marking visibility in wet conditions even when street lighting is provided.

## 2. SEPARATION OF NETWORK INTO NORMAL AND HIGH WEAR AREAS

The P/30 specification requires that areas of the network subjected to high wear be clearly identified by the Engineer and that the Contractor warrant such areas for a shorter period. The identification of such areas needs to include the location points at which the normal and high wear areas merge, the sources of damage (e.g. gritting, tracking of debris from quarries, etc) and all relevant history.

Variations to such identified areas are dealt with in accordance with NZS 3910.

### 3. INCLUSION OF CONDITION OF RAINING REQUIREMENTS

It is foreseen that in particular regions motorists may regularly encounter sections of the network at night under rain conditions.

Where a traffic safety strategy has identified the need for improved delineation under such conditions markings having a specified performance under “condition of rain” may be specified in the contract.

For such areas the conditions specified under Section 7 shall apply in addition to those specified in Section 6.

Currently, there are two international specifications for assessment under condition of rain:

1. EN1436 Road Marking Materials – Road marking performance for road users B7 Condition of Rain (20mm/hr), or
2. ASTM 2176– Test Method for Measuring Retroreflectivity of Pavement Markings in a Standard Condition of Continuous Wetting (1 inch/hr).

Either of these two measurement methods is acceptable.

### 4. DESIGN PRINCIPLES

#### Lane Width

Where there is a lane width of 3.5 m or greater, the high performance marking should consist of a single component marking system, i.e. a single profiled or un-profiled line.

For lane widths of less than 3.5 m, the permission of NZTA’s National Safety Manager is required to use a system of standard high performance roadmarkings in combination with a profiled “lumps only” marking on the road shoulder. A 3.35m minimum clear traffic lane between any centreline and edge-line ATPs is required.

#### Shoulder Width

A 1m wide clear shoulder outside of ATP should be provided wherever possible. This shoulder width needs to be clean, clear and well maintained.

Where a 1 m shoulder width cannot be achieved then clear reasons for installing any ATP needs to be well documented. This includes consideration of cycle use and the crash history.

Research shows that cyclists use the motor vehicle carriageway edge marking to position themselves on the road. Where the marked shoulder is approximately 0.8 m or wider and clear of obstructions and debris, cyclists will ride to the left of the edge-line, where the marked shoulder is narrower than approximately 0.8m or debris is present, cyclists will ride to the right of the edge-line. Variable marked shoulder widths which force cyclists to frequently reposition themselves on the carriageway are to be avoided.

#### **Pitch for Profiled (ATP) Lines**

Pitch of ATP blocks should be 250mm.

Pitch may be increased to 500mm centres on high speed roads where experience has shown this to be effective.

#### **Formats to be Used**

The pitch of the ATP markings and position in relation to other markings must be consistent over long lengths of corridors.

ATP is to be 150 mm wide.

200mm wide ribs can be laid along white intermittent centrelines on high volume roads and where there is a significant head-on crash problem subject to approval by the National Safety Manager

ATP can be laid on edge-line, centreline and double or single yellow centrelines.

#### **ATP Exclusion Zones**

In some locations careful consideration needs to be taken in the use of the ATP component on the markings close to residences.

Edge-line ATP is to be interrupted at least:

1. 30 m of any shoulder narrowing, bridge structures, intersections etc.
2. 100 m of schools, maraes, halls or residential properties which are located close (within 200m) of the highway, particularly where the edge-lines or centrelines are prone to be tracked over such as the inside of bends.

**Note:** The 200m distance could be reduced if there is evidence that the lines are less likely to be tracked over. Consultation with adjacent landowners is however recommended for these locations.

The use of ATP edge-lines should also be excluded from curvilinear highways, particularly on the inside of left hand bends and on high volume truck routes, where the profiled markings are most prone to being tracked over. In these locations, consideration could be given to selecting a product that you are most confident and comfortable with to withstand the traffic loadings.

### **Warning Signs**

Orange temporary hazard warning signs (TW2A) with a supplementary plate "Rumble Edge Line" should be installed at the start of new installations in each direction, at midway points and/or immediately downstream of major junctions of long lengths, particularly in areas where drivers will be unfamiliar with ATP. These signs should be removed after approx 3–6 months.