Engineering Road Note 12

Laterite (Red Coloured) Asphalt

July 2016

D16#452485
July 2016

Document Control

Owner	Manager Materials Engineering
Custodian	Bituminous Products Consultant
Document Number	D16#452485
Issue Date	July 2016
Review Frequency	As required

Amendments

Revision Number	Revision Date	Description of Key Changes	Section / Page No.
0	July 2016	New document	

1 INTRODUCTION

This Engineering Road Note provides guidance on the use of red coloured asphalt used by Main Roads Western Australia for pavement wearing courses to delineate areas of a road surface from that of the general traffic lanes and also for shared paths. To achieve and maintain the red colour during the lifetime of the asphalt laterite aggregates, as explained in Section 2, are the dominant aggregate to achieve colour consistency. Red colouring using oxides without the use of laterite aggregates will not achieve a strong colour initially or maintain colour consistency throughout the lifetime of the asphalt. Therefore red coloured asphalt must be manufactured with laterite aggregates. The properties and placement of laterite asphalt is specified in Specification 504.

2 WHAT IS LATERITE ASPHALT

Normal asphalt is a mixture of quarried aggregates (crushed hard rock), a bituminous binder and filler such as hydrated lime. When newly laid it is black in colour which comes from the binder and with time the binder is worn from the surface at which stage the asphalt becomes, for asphalt manufactured in Perth, grey in colour which is the colour of the granite rock quarried near Perth. Where a different rock is used such as basalt in Bunbury the colour of the asphalt will be dark in colour.

To provide the delineation of the laterite asphalt from normal asphalt laterite aggregates are added. These are reddish-brown in colour essentially the same as gravel roads in regional areas. In addition red oxide is added to change the colour of the binder from black to red. When newly laid, laterite asphalt is red in colour and with time the binder is worn from the surface at which stage the asphalt becomes reddish-brown in colour which comes from the laterite gravel in the asphalt.

Laterite asphalt used as pavement wearing course includes a proportion of granite aggregates as required in Specification 504. The granite aggregates are added to develop a higher surface texture at the time of construction which continues to increase as the sand sized granite aggregates wear away from the road surface. Granite aggregate is not required for 7mm dense graded laterite asphalt used on shared paths.

3 SPECIFIED PROPERTIES OF LATERITE ASPHALT

Specification 504 includes the use of two sizes of dense graded laterite asphalt as shown in the table.

Type and Sizes of Dense Graded Laterite Asphalt

Type of Dense Graded Laterite Asphalt and Binder	Application
10mm Dense Graded Laterite A15E polymer modified binder	Bus lanes
10mm Dense Graded Laterite C320 bitumen	Cycle lanes or medians (untrafficked). Where trafficked for any portion use an A15E polymer modified binder
7mm Dense Graded Laterite C320 bitumen	Shared paths including use by service vehicles. Not to be used for any traffic applications.

Specification 504 does not include open graded laterite asphalt that was used in the past to delineate breakdown lanes on freeways and some highways using the red colour of laterite aggregate. Main Roads position is to have the full width of a wearing course available for traffic as required so the use of open graded laterite asphalt has ceased. Open graded asphalt shall only be manufactured with granite aggregates and be black in colour when new.

Red oxide used to alter the colour of the binder used in asphalt shall not be added to any asphalt that does not contain laterite gravel aggregates, for example 14mm Intersection Mix. This will not achieve a satisfactory colour when new and when the binder wears off the surface the exposed granite aggregate for Perth mixes will result in the dominant colour being that of the aggregate which is grey. Two examples showing the use of red oxide with granite aggregate mix is shown in Figures 2 and 5 in Section 4.

4 EXAMPLES OF RED ASPHALT

Examples of the applications are shown in the following images.

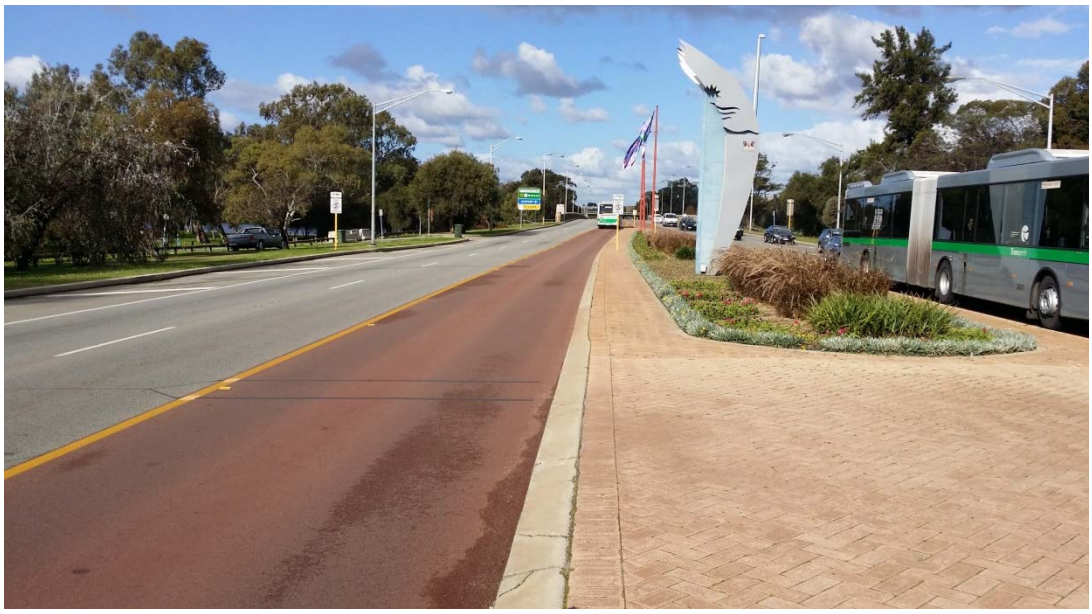

Figure 1 – Bus Lane with Dense Graded Laterite Asphalt

Figure 2 – Dense Graded Granite Mix with Red Oxide

Figure 3 – Cycle Lane with Dense Graded Laterite Asphalt

Figure 4 – Median and Parking Bays with Dense Graded Laterite Asphalt

Figure 5 – Median and Shoulders Using Dense Graded Granite Mix with Red Oxide

Figure 6 – Shared Path with Dense Graded Laterite Asphalt

5 REFERENCED DOCUMENTS

Document Number	Description
Specification 504	*Asphalt Wearing Course*, Main Roads Western Australia