

A REVIEW OF STONE MASTIC ASPHALT IN WESTERN AUSTRALIA

Identifying opportunities for improvement through consultation, testing and comparison with national and international practice

As technology, capability and knowledge advance, it is wise to occasionally review WA practice, relative to national and international best practice, to ensure local systems are producing optimal outcomes. In this project, WARRIP examined stone mastic asphalt (SMA), as use of the material has increased significantly in recent applications.

Background

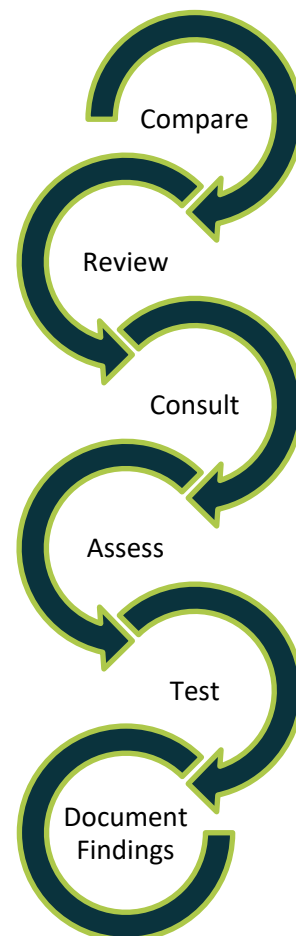
Effectively designed and constructed SMA is durable, textured, strong, crack resistant and water permeable. Therefore, it is often used in intersections, high-speed routes and high-rainfall areas, where roads need to disperse water quickly, offer enhanced tyre grip and provide a smooth comfortable ride. Regular review and revision of technical specifications and practices ensure that industry has the latest knowledge, tools and systems at their disposal to produce high-quality flexible pavements. This project included a review of current SMA practices in WA to investigate whether the technology could be advanced to the benefit of the local community.

Approach

- Compared specifications and practices
- Reviewed SMA production in WA; testing mixes and fillers
- Consulted with industry to identify concerns
- Assessed SMA performance
- Tested and compared methods
- Documented findings and recommended areas of possible improvement

Known areas of concern

- Specification of filler, especially with regard to stiffness of the mastic
- Measurement methods used to determine bulk density
- Consistent production and placement of SMA in accordance with Main Roads specifications



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TONKIN & ROE HIGHWAY VIEWS OF PAVEMENT PERFORMANCE WITH SMA SURFACING



Source: ARRB 2017.

Recommended amendments to Main Roads Specification 502

Based on the findings of the project, recommendations were made that may be considered for future inclusion in Main Roads' SMA specification. These recommendations included:

- Inclusion of a permanent deformation requirement (AG:PT/T231) similar to TMR, RMS and DPTI specifications.
- Adoption of the Australian Standard bulk density test method.
- Introduction of a requirement for minimum voids in the dry compacted filler.
- Collecting fixed binder fraction data on SMA mixes to evaluate if that property correlates with workability.

What next

All the recommendations will be considered and workshopped with key stakeholders prior to potential introduction in Main Roads standard specifications.

References

Main Roads Western Australia 2016, *Stone mastic asphalt*, specification 502, MRWA, Perth, WA.

Austrroads Test Methods

AG:PT/T231-06, Deformation resistance of asphalt mixtures by the wheel tracking test.

