POROUS ASPHALT BASE

1. INTRODUCTION

The purpose of this Technical Note is to describe the uses, construction and mix design requirements of porous asphalt bases.

It should be noted that porous asphalt bases are still in the experimental stages where asphalt properties have not been identified but successful results have been achieved in field trials. Until more information is available, the use of this material should be restricted to patches less than 150 m^2.

2. USES

Porous asphalt base can be used to repair pavements where the surrounding pavement layers are more porous than dense graded asphalt. The porous asphalt allows water to drain through it. If an impermeable asphalt patch were used, instead of porous asphalt, subsurface drainage would need to be installed at the interface of the different material types to prevent a build up of water.

Porous asphalt is ideally suited as a patching material in porous macadam pavements.

3. CONSTRUCTION REQUIREMENTS

Porous asphalt base requires a minimum 40 mm cover of dense graded asphalt to prevent ingress of water from the surface.

Generally a deep lift porous asphalt base should be constructed on a cement stabilised crushed rock layer to ensure pavement stiffness and to reduce moisture effects on the subgrade due to water passing through the porous asphalt layer. Edges of the patch should not be tack coated as it may prevent drainage flows.

4. MIX DESIGN REQUIREMENTS

The mix design requirements are as follows:

- The aggregate grading and production tolerances should be as specified in Table 1,
- The mix should contain 1% by mass of hydrated lime added filler,
- The minimum binder content of the mix should be 4% with a production tolerance of ±0.3%.

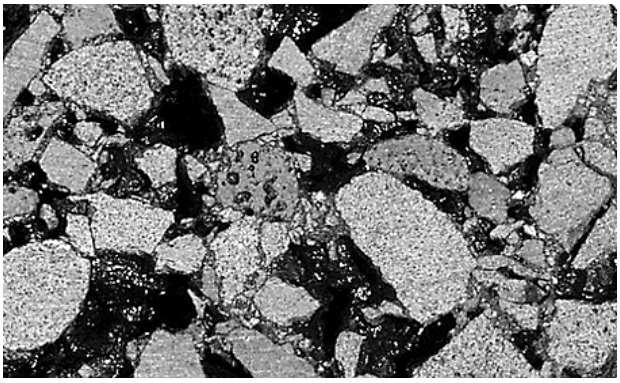
5. HANDLING REQUIREMENTS

If unmodified Class 320 bitumen is used, the asphalt temperature must be between 135°C and 145°C at discharge from the mixing plant to minimise drainage of bitumen out of the mix during handling and transport.

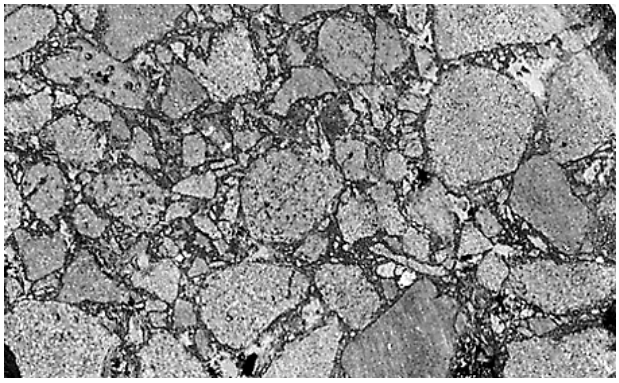
Polymer modified binder or alternatively cellulose fibres (0.3% by mass) may be specified to eliminate the problem of drainage of binder from the mix and to enhance mix properties. For polymer modified mixes, the asphalt temperature at discharge from the mixing plant should be higher than mentioned above to give the required workability during placement.

Table 1: Aggregate Grading

Sieve Size AS (mm)	Grading Aim Percent Passing (by Mass)	Production Tolerances from Grading Aim Percent Passing (by Mass)
26.5	100	Nil
19.0	85	±6
13.2	65	±6
9.50	45	±6
6.70	25	±6
4.75	20	±5
2.36	12	±5
1.18	10	±5
0.600	8	±5
0.300	6	±3
0.150	4	±3
0.075	4	±1



Porous Asphalt



Dense Graded Asphalt

A series of Asphalt Binder Drain Off tests over the range of likely mix temperatures should be performed to determine the maximum allowable mixing temperature. The mass of binder paste drain off should not exceed 0.3% of the total mass of the sample of mix tested at the proposed mixing temperature.

For small quantities of polymer modified asphalt, it may be more convenient to use EVA Polymer concentrate rather than purchasing and storing blended binder. The EVA Polymer should be added directly to the pugmill of a batch type asphalt mixing plant at the rate of 5% by weight of binder.

5. FURTHER READING

APRG Report No.18 'Selection and Design of Asphalt Mixes - Australian Provisional Guide', May 1997.

6. CONTACTS

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