1

1.1 RESPONSIBILITIES

Objectives
General: Provide bituminous slurry surfacing, as documented.

Performance
Requirements: Conform with the Drawings and the work specified or directed by the Superintendent. Conform with worksection 0161 Quality (Construction).

1.2 CROSS REFERENCES

General
Requirement: Conform to the following:
- 0136 General requirements (Construction).
- 0152 Schedule of rates – supply projects.
- 0161 Quality (Construction).
- 0167 Integrated management.
- 1101 Control of traffic.
- 1143 Sprayed bituminous surfacing.

1.3 REFERENCED DOCUMENTS

Standards
General: The following documents are incorporated into this worksection by reference:

AS 1141 Methods for sampling and testing aggregates
AS 1141.11.1-2009 Particle size distribution by sieving
AS 1141.12-1996 Materials finer than 75 µm in aggregates (by washing)
AS 1141.22-2008 Wet/dry strength variation
AS 1141.23-2009 Los Angeles value
AS 1141.25.1-2003 Degradation factor—Source rock
AS 1141.42-1999 Pendulum friction test
AS 1160-1996 Bituminous emulsions for the construction and maintenance of pavements
AS 1289 Methods of testing soils for engineering purposes
AS 1289.3.7.1-2002 Soil classification tests—Determination of the sand equivalent of a soil using a power-operated shaker
AS 1348-2002 Glossary of terms—Roads and traffic engineering
AS 2008-1997 Residual bitumen for pavements
AS 2150 – 2005 Hot mix asphalt – A guide to good practice
AS 2350 various Methods of testing Portland and blended cements
AS 2758 Aggregates and rock for engineering purposes
AS 2758.1 - 1998 Concrete aggregates
AS 2758.5 – 2009 Asphalt aggregates
AS/NZS 2891 Methods of sampling and testing asphalt
AS/NZS 2891.3.1: 2011 Bitumen content and aggregate grading—Reflux method
AS 4283 – 1995 Cold mix asphalt for maintenance patching

Other publications

AUSTROADS
AGPT03 – 2009 Guide to Pavement Technology Part 3 - Pavement surfacings
AGPT05 – 2011 Guide to Pavement Technology Part 5: Pavement Evaluation and Treatment Design
1.4 STANDARD

General
Standard: To AP-T26 and AGPT03.

1.5 INTERPRETATION

Definitions
General: For the purposes of this worksection the definitions given below apply.
- Default terms: Where terms are not specifically defined in this worksection, AS 1348 is the default Standard.
- Microsurfacing: A bituminous slurry surfacing, usually containing polymer, that is capable of being spread in layers up to 30 mm thick for rut-filling and correction courses, and for wearing course applications where good surface texture is required to be maintained throughout the service life. The curing process is chemically controlled, whereas slurry seals use a thermal process.
- Polymer modified binder: A binder consisting of polymeric materials dispersed in bitumen with enhanced binder performance for particular applications. It is used in microsurfacing.
- Proprietary names: Bituminous mix is also commonly known under various proprietary names such as 'cold overlay', 'microsealing', 'pavesal', 'microasphalt', etc.
- Size: The size of the bituminous slurry sealing is based on the nominal largest stone size in the mix. For the purpose of this worksection, the size is either Size 5 or Size 7.

1.6 SUBMISSIONS

Approval
Submissions: To the Superintendent’s approval.

Documents
Submit the following for approval:
- Technical data: Refer to mix design.
- Calculations:
  - Target application rate and thickness for bituminous slurry.
- Materials:
  - Compliance certificates.
- Execution details:
  - Proposal for plant and equipment.
- Type test results:
  - Stockpiled aggregates.
  - Supplied binder.
  - Production mix.
  - Surface texture depth and average skid resistance.

Design
Prototypes: Surface texture test run.
1.7 HOLD POINTS AND WITNESS POINTS

Notice
General: Give notice so that the documented inspection and submissions may be made to the HOLD POINT table and the WITNESS POINT table.

**HOLD POINTS table**

<table>
<thead>
<tr>
<th>Clause title/Item</th>
<th>Requirement</th>
<th>Notice for inspection</th>
<th>Release by</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PRE-CONSTRUCTION PLANNING</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design and control of bituminous mixes – Nominated mixes</td>
<td>Submit details of nominated mix with NATA Certification</td>
<td>7 days before commencing</td>
<td>Superintendent</td>
</tr>
<tr>
<td><strong>EXECUTION</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production mix</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Bituminous slurry</td>
<td>Target application rate and nominal layer thickness for approval</td>
<td>7 days before commencing</td>
<td>Superintendent</td>
</tr>
<tr>
<td>- Sampling and testing of production mix</td>
<td>Compliance with maximum permitted variations from approved mix</td>
<td>During mixing</td>
<td>Superintendent</td>
</tr>
<tr>
<td>Plant</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Provision of plant</td>
<td>Nominate plant and equipment</td>
<td>14 days prior to commencing works</td>
<td>Superintendent</td>
</tr>
<tr>
<td>- Paving unit calibration</td>
<td>Documentation for detailed calibration</td>
<td>7 days before using paving unit</td>
<td>Superintendent</td>
</tr>
<tr>
<td>Operations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Setout</td>
<td>Extent of works to be confirmed by inspection</td>
<td>7 days before site preparation</td>
<td>Superintendent</td>
</tr>
<tr>
<td>- Cleaning</td>
<td>Provide cleaned surface for inspection</td>
<td>1 working day prior to spreading works</td>
<td>Superintendent</td>
</tr>
<tr>
<td>- Surface defects</td>
<td>Repair any surface defects</td>
<td>1 working day prior to spreading works</td>
<td>Superintendent</td>
</tr>
<tr>
<td>- Tack coat</td>
<td>Confirm requirement for tack coat</td>
<td>14 days prior to commencing on site</td>
<td>Superintendent</td>
</tr>
<tr>
<td>- Weather limitations</td>
<td>Cease works if weather conditions are not appropriate</td>
<td>Progressive</td>
<td>Superintendent</td>
</tr>
<tr>
<td>Spreading</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Rolling</td>
<td>Confirm on inspection roller requirement</td>
<td>14 days prior to commencing on site</td>
<td>Superintendent</td>
</tr>
<tr>
<td>- Traffic</td>
<td>Capable to carry traffic in short period after slurry surfacing to approval of Superintendent</td>
<td>One hour after spreading</td>
<td>Superintendent</td>
</tr>
<tr>
<td>- Surface texture</td>
<td>Demonstrate surface texture</td>
<td>1 working day before commencing</td>
<td>Superintendent</td>
</tr>
<tr>
<td>- Surface texture</td>
<td>Confirm texture depth and average skid resistance by testing</td>
<td>One month after works complete and opened to traffic</td>
<td>Superintendent</td>
</tr>
<tr>
<td>Non-conformance - Materials and finished surfacing</td>
<td>Approval for correction or replacement</td>
<td>1 working day before corrective action</td>
<td>Superintendent</td>
</tr>
<tr>
<td>Control of traffic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clause title/Item</td>
<td>Requirement</td>
<td>Notice for inspection</td>
<td>Release by</td>
</tr>
<tr>
<td>-------------------</td>
<td>-------------------------------------------------------</td>
<td>--------------------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>- Provisions</td>
<td>Implement control procedures</td>
<td>Prior to starting works</td>
<td>Superintendent</td>
</tr>
<tr>
<td>- Completion</td>
<td>Final check of works complete</td>
<td>Prior to removal of traffic controls</td>
<td>Superintendent</td>
</tr>
</tbody>
</table>

**WITNESS POINTS table – Off-site activities**

<table>
<thead>
<tr>
<th>Clause title/Item</th>
<th>Requirement</th>
<th>Notice for inspection</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATERIALS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aggregate - Compliance</td>
<td>Submit NATA test results for the nominated aggregate</td>
<td>7 days prior to commencing works</td>
</tr>
<tr>
<td>Mineral filler - General</td>
<td>Submit NATA test results for the nominated mineral filler</td>
<td>7 days prior to commencing works</td>
</tr>
<tr>
<td>Binders - General</td>
<td>Submit NATA test results for the nominated binder</td>
<td>7 days prior to commencing works</td>
</tr>
<tr>
<td>Water and additives - Additives</td>
<td>Submit NATA test results for the nominated Additives</td>
<td>7 days prior to commencing works</td>
</tr>
</tbody>
</table>

**WITNESS POINTS table – On-site activities**

<table>
<thead>
<tr>
<th>Clause title/Item</th>
<th>Requirement</th>
<th>Notice for inspection</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATERIALS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aggregates - Compliance</td>
<td>Test results for on site stockpiles of aggregate</td>
<td>Minimum 7 days prior to incorporation in works</td>
</tr>
<tr>
<td>Binders - General</td>
<td>Verify blinder supplied is as was nominated</td>
<td>1 working day prior to incorporation in works</td>
</tr>
</tbody>
</table>

**EXECUTION**

<table>
<thead>
<tr>
<th>Operations</th>
<th>Requirement</th>
<th>Notice for inspection</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Tack coat</td>
<td>Test certificates for batches</td>
<td>2 working days prior to using in works</td>
</tr>
<tr>
<td>- Water fog coat</td>
<td>Confirm if pre wetting is required</td>
<td>Before commencing spreading</td>
</tr>
<tr>
<td>Spreading – Clean up</td>
<td>Leave road fixtures in clean and satisfactory condition</td>
<td>Progressive</td>
</tr>
</tbody>
</table>

## 2 PRE-CONSTRUCTION PLANNING

### 2.1 DESIGN AND CONTROL OF BITUMINOUS MIXES

**Mix design**

Design mix: The contractor is to design a mix that satisfies the properties given in the **Mix properties table**. The mix must be easy to lay and provide a finish that is stable and durable and satisfies all the requirements in this worksection including skid resistance and texture depth.

#### Mix properties table

<table>
<thead>
<tr>
<th>Property</th>
<th>Test method</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Microsurfacing</td>
</tr>
<tr>
<td>Wear Loss</td>
<td>ISSA TB 100</td>
<td>540 g/m² maximum (3)</td>
</tr>
<tr>
<td></td>
<td>1 hour 6 day</td>
<td>800 g/m² maximum (1)</td>
</tr>
<tr>
<td>Traffic Time</td>
<td>ISSA TB 139</td>
<td>12 kN.m minimum</td>
</tr>
<tr>
<td></td>
<td>30 minutes 60 minutes</td>
<td>20 kN.m minimum</td>
</tr>
<tr>
<td>Adhesion</td>
<td>ISSA TB 114</td>
<td>≥ 90%</td>
</tr>
<tr>
<td>Property</td>
<td>Test method</td>
<td>Value</td>
</tr>
<tr>
<td>------------------------------</td>
<td>-------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Microsurfacing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>or 11 grade points minimum (AAA, BAA)</td>
</tr>
<tr>
<td>Excess Binder Content &gt; 3000 v/l/d</td>
<td>ISSA TB 109</td>
<td>Not applicable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>or 540 g/m² maximum</td>
</tr>
</tbody>
</table>

**Notes:**
v/l/d: vehicles/lane/day.
(1) Microsurfacing > 3,000 v/l/d.
(2) As for microsurfacing if applicable is for traffic volume > 3,000 v/l/d. otherwise not applicable.
(3) Microsurfacing ≤ 3,000 v/l/d.

### Nominated mixes

Approval: Submit details of each proposed bituminous slurry surfacing mix design including details the constituent materials. Approval of the nominated mix will be in consideration of AS 4283. The Contractor must produce the mix to conform with all specifications. This is a **HOLD POINT**.

Details for submission: Details include:
- Nominal size of the design mix.
- Aggregate source and type.
- Combined aggregate grading/mineral filler particle size distribution as a single grading (not in a range).
- Bituminous emulsion content.
- Residual binder content of the emulsion.
- Proportions of constituent materials used (including binders, adhesion agent and additives).
- Type and sources of filler, binder and adhesion agent.
- All relevant compliance certificates.

Approved mix: When a nominated mix has been approved it is to be known as the ‘Approved Mix’.

Approved grading and approved binder content: The combined aggregate/filler grading and the binder content of the approved mix is termed the ‘approved grading’ and the ‘approved binder content’ respectively.

Non-conformance: Revise and re-test nominated mixes that do not conform with specified requirements.

### Prior approval

Conditions: A mix may be approved due to ‘prior approval’ in the following conditions:
- If the mix was used in a separate contract within 12 months of proposed works date.
- If full approved details have been previously used.
- If the constituent materials and quality remain unchanged from that previously approved.
- If the in-service performance of the bituminous slurry surfacing incorporating the nominated mix is acceptable.

### Variations to approved mixes

Written approval required: Any changes to the approved mix, its method of production or source of supply of constituents require written approval 21 days prior to proposed implementation.

### Certificates of compliance

Submission: Submit for approval NATA Certificates of compliance for each constituent and nominated mix.

Requirements: All phases of any particular test to be performed at one laboratory. All relevant test results to accompany the Certificate and be within twelve months of the submission date.

### 2.2 SCHEDULING

#### Program the works
- Provide planning resources to allocate plant and personnel for the contract period.
- Program the work to meet the constraints of **HOLD POINTS, WITNESS POINTS**.
3 MATERIALS

3.1 AGGREGATES

Material
Standard: To AS 2758.1, AS 2758.5 and AS 1141, Austroads AGPT04J.
Components: Crushed rock or crushed gravel, or a mixture of crushed rock or crushed gravel and natural sand.
Properties: Clean, hard, angular, durable particles, free from clay, dirt, organic material or other deleterious matter.

Aggregate properties
Requirement: For each source conform with the following table.

<table>
<thead>
<tr>
<th>Property</th>
<th>Test method</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degradation factor</td>
<td>AS 1141.25.1</td>
<td>50 minimum</td>
</tr>
<tr>
<td>Los Angeles value</td>
<td>AS 1141.23</td>
<td>35 maximum</td>
</tr>
<tr>
<td>Aggregate wet strength</td>
<td>AS 1141.22</td>
<td>150 kN minimum</td>
</tr>
<tr>
<td>Wet/dry strength variation</td>
<td>AS 1141.22</td>
<td>30% maximum</td>
</tr>
<tr>
<td>Polished aggregate friction value</td>
<td>AS 1141.42</td>
<td>45 minimum</td>
</tr>
<tr>
<td>Sand equivalent</td>
<td>AS 1289.3.7.1</td>
<td>45 minimum</td>
</tr>
</tbody>
</table>

Grading limits
Standard: Test to AS 1141.11.1 and AS 1141.12.
Requirement: The aggregate (including mineral filler) to conform with the following table.

<table>
<thead>
<tr>
<th>Sieve size</th>
<th>13.2 mm</th>
<th>9.50 mm</th>
<th>6.70 mm</th>
<th>4.75 mm</th>
<th>2.36 mm</th>
<th>1.18 mm</th>
<th>600 µm</th>
<th>300 µm</th>
<th>150 µm</th>
<th>75 µm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>90–100</td>
<td>50–70</td>
<td>30–50</td>
<td>20–35</td>
<td>12–25</td>
<td>7–18</td>
<td>4–10</td>
</tr>
<tr>
<td>Percent passing by mass</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Size 5</td>
<td>100</td>
<td>100</td>
<td>85–100</td>
<td>70–90</td>
<td>45–70</td>
<td>28–50</td>
<td>19–34</td>
<td>12–25</td>
<td>7–18</td>
<td>5–15</td>
</tr>
<tr>
<td>Size 7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Compliance
Compliance certificates: When submitting details of the nominated mix submit test report on the quality and grading of the fine aggregate proposed to be used. For blended aggregates submit results for each constituent coarse aggregate and the proportions of the various sizes proposed.
This is a WITNESS POINT.
Currency: Such test results to be less than 12 months old and representative of current aggregate supply.
Production mix: Test results for each lot/stockpile of aggregate a minimum of seven days prior to incorporation in the works. This is a WITNESS POINT.

3.2 MINERAL FILLER

General
Standard: To AS 2150 and AS 2350.
Components: Hydrated lime, flyash, portland cement, or other material approved by the Superintendent.
Size: Mineral matter with minimum of 85 % passing a 75 µm sieve.
Composition: Consistent in mineral composition and dry compacted air voids.
Quality: Dry and free from lumps, clay, organic matter or other material deleterious to asphalt.
Materials: Added mineral filler to comply with table 3 of AS 2150. May consist of hydrated lime, fly ash, portland cement, flue dust from the manufacture of portland cement, asphalt plant baghouse fines or other approved material.
Submit: Submit compliance certificates for added mineral fillers for approval at time of nominated mix submission. This is a WITNESS POINT.
Proportion: The quantity of filler added to the bituminous microsurfacing during placement not to vary by more than 1% of the total aggregate (by mass) from the filler content nominated in the mix design.

3.3 BINDERS

Compliance
Submit: Submit compliance certificates for binders at time of nominated mix submission. This is a WITNESS POINT.
Verification: Provide information to verify that the binder supplied is the same as that nominated in the mix design. This is a WITNESS POINT.

Slurry binder
Standard: To AS 2008, AS 1160 and Austroads AP-T41/06, AGPT04F.
Type: Polymer modified bitumen emulsion.
Grade: The contractor is to select an appropriate grade of binder for bitumen emulsion to conform with that required for slurry surfacing.
Microsurfacing: Binder polymer modified to reach the properties in the Mix properties table.

Tack coat binder
Standard: To AS 1160.
Type: Bitumen emulsion.

3.4 WATER AND ADDITIVES

Added water
Properties: Potable and compatible with the component materials so that the performance requirements specified are met.

Additives
Submit: Submit compliance certificates for additives at time of nominated mix submission. Include the type, source and nominal proportions of additives. Supportive test data must show that the wear loss and excess binder content is within the limits. This is a WITNESS POINT.

4 EXECUTION

4.1 PROVISION FOR TRAFFIC

General
Requirement: Conform to 1101 Control of traffic.

4.2 PRODUCTION MIX

Bituminous slurry
Characteristics: Able to be placed and spread evenly on the road surface. Capable of being spread in layers of variable thickness for surface correction and for wearing surface applications.
Definition: Bituminous slurry produced in the paving unit at the site is termed the production mix.
Submit: The target application rate (m$^3$ of mix/m$^2$ of road surface) and the corresponding nominal layer thickness. This is a HOLD POINT.
Manufacture the bituminous slurry to the approved production mix design within the tolerances in the Maximum permitted variations from approved mix table.
### Maximum permitted variations from approved mix table

<table>
<thead>
<tr>
<th>Production mix properties</th>
<th>Size 5</th>
<th>Size 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grading*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Passing 9.50 mm AS sieve and larger</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>Passing 6.70 mm</td>
<td>Nil</td>
<td>±7%</td>
</tr>
<tr>
<td>Passing 4.75 mm</td>
<td>±6%</td>
<td>±6%</td>
</tr>
<tr>
<td>Passing 2.36 mm and 1.18 mm</td>
<td>±5%</td>
<td>±5%</td>
</tr>
<tr>
<td>Passing 0.600 mm</td>
<td>±4%</td>
<td>±4%</td>
</tr>
<tr>
<td>Passing 0.300 mm</td>
<td>±3%</td>
<td>±3%</td>
</tr>
<tr>
<td>Passing 0.150 mm</td>
<td>±2%</td>
<td>±2%</td>
</tr>
<tr>
<td>Passing 0.075 mm</td>
<td>±1.5%</td>
<td>±1.5%</td>
</tr>
<tr>
<td>Residual binder content</td>
<td>–0.5%</td>
<td>–0.5%</td>
</tr>
<tr>
<td></td>
<td>+1.0%</td>
<td>+1.0%</td>
</tr>
</tbody>
</table>

*Notwithstanding, these allowable variations not to fall outside the limits for design of nominated mix as given in the Grading limits for combined aggregate/filler table.

### Sampling and testing of production mix

Testing samples: The Contractor is responsible for taking samples and to supply all facilities, equipment and labour for that purpose.

Frequency: Take two 1.5 kg representative samples of bituminous slurry from each lot at random intervals from the discharge of the paving unit and immediately seal the sample containers.

Costs: Borne by the Contractor.

Lot: 50 m³ or one day’s production (whichever is the lesser), or such smaller quantity which is considered as representative of consistent production of the paving unit.

Drying: Prior to testing for residual binder content and aggregate gradation, as determined by AS 2891.3.1, for slurry surfacing, dry the samples to constant weight in an oven at 60 °C for a minimum of 15 hours.

Submit: Treat and test the samples of bituminous slurry at a NATA registered laboratory to confirm compliance with Maximum permitted variations from approved mix table. This is a HOLD POINT.

### 4.3 PLANT

#### Provision of plant

Condition: All plant to be maintained in good working condition.

Paving unit: Self propelled paver able to accurately proportion and deliver the mineral aggregate, filler, bitumen emulsion, water and additives to a mixer and discharge the thoroughly mixed slurry on a continuous basis.

Storage: the machine must have sufficient storage capacity to provide for the works extent.

Calibration: Individual calibration controls required for proportioning each component.

Spreader box: The slurry must be spread uniformly by means of a mechanical type spreader box attached to or forming part of the mixing unit.

Ancillary equipment: All required ancillary equipment to be provided by the contractor and in accordance with all statutory requirements. Such as rotary road brooms, rollers, signs, lamps, barricades, hand squeegees, shovels, hand brooms.

Submit: Submit the plant and equipment nominated for use in the works 14 days before works commence. This is a HOLD POINT.

#### Paving unit calibration

Timing: Each paving unit must be calibrated with the component materials of the approved mix design prior to the commencement of application of the slurry.

Previous calibration: Documentation covering the same materials and approved mix is acceptable provided that calibration has been carried out within the previous twelve months.

Documentation: Include an individual calibration for each component material at various settings which can be related to the paving unit’s metering devices.
Submit: No paving unit is allowed on the work until the calibration has been verified and approved. This is a **HOLD POINT**.

### 4.4 OPERATIONS

#### Setout

Scope: The size, nominal thickness, and extent of bituminous slurry surfacing as shown on the Drawings or as directed. This is a **HOLD POINT**.

Marks: Place marks at intervals not exceeding 10 m on the line to be followed by the paving unit. Marking not necessary where line is defined by a kerb or edge.

Edges and joints: parallel to kerbs and shoulders and run off of the slurry to be prevented from occurring. Lines at intersections will be kept straight to provide a good appearance, use masking as necessary.

#### Cleaning

Sweep: Prior to any application of slurry sweep to ensure the surface is free from loose material, stones, dirt, dust and foreign matter. Sweep the surface beyond the edge of the area to be surfaced by at least 300 mm. Remove adhered foreign matter by other means.

Oil: Clean areas significantly affected by oil contamination.

Inspection: Provide the cleaned surface for approval prior to any spreading of the slurry. This is a **HOLD POINT**.

#### Protection of services and road fixtures

Precaution: Prevent slurry or other materials used from entering or adhering to gratings, hydrants, valve boxes, manhole covers, bridge or culvert decks or other road fixtures.

#### Surface defects

Repairs: Prior to spreading any slurry the contractor must repair any surface defects as directed in the schedule of works or by inspection with the Superintendent. This is a **HOLD POINT**.

Surface defects: Include crack patching, pothole repairs and repairs to failed pavement.

#### Tack coat

Required: Only required when the surface to be covered is extremely oxidised and ravelled or comprises concrete or brick. Tack coat as specified or as directed on inspection. This is a **HOLD POINT**.

Application rate: 0.2 - 0.24 L/m² of residual binder at 15°C.

Certificates: Test each delivery of emulsion for residual binder content to AS 1160 Appendix A and provide a certificate of compliance traceable to the relevant batch at the suppliers storage tank. This is a **WITNESS POINT**.

Samples and testing: Take two 2 L samples of bitumen emulsion from each bulk delivery, to AS 1160. New works on road and carpark pavements: Provide the sprayed bituminous seal to **1143 Sprayed bituminous surfacing** two weeks prior to the application of the bituminous slurry surfacing wearing course.

#### Water fog coat

Surface: If necessary the surface may be pre-wet by fogging ahead of the spreader box. This is a **WITNESS POINT**.

Water: Entire surface is damp with no apparent flowing water ahead of the spreader box.

Application rate: Adjust to suit the temperature, surface texture, humidity and dryness of the surface being covered.

#### Weather limitations

Temperature: Do not commence spreading if either the pavement or air temperature is below 10°C and falling.

Bituminous slurry: May be applied when both pavement and air temperatures are above 7°C and rising, or above 10°C.

Rain: Do not proceed during rain or when rain appears imminent.

Cease works: If weather conditions are not appropriate. This is a **HOLD POINT**.
4.5 SPREADING

Water addition
Mix consistency: To be the desired consistency when deposited in the spreader box. Make no additions other than minor amounts of water for the purpose of overcoming temporary build-up of slurry in the corners of the spreader box.

Mixing slurry time and rate
Mixture properties: Adjust the mixing time to produce a complete and uniform coating of the aggregate and to produce a mixture that is conveyed into the moving spreader box at a sufficient rate to always maintain an ample supply across the full width of the strike-off.

Application rate
Extent: Adjust the strike-off to provide an application rate which will completely fill the surface voids and provide the nominal application rate as scheduled.

Rolling
Required: Rolling to be specified on drawings, schedules or as directed on inspection. This is a HOLD POINT.
Timing: Carry out rolling after the emulsion has broken and the mix is sufficiently stable. When the mix has cured sufficiently to prevent pick-up on the roller tyres.
Method: Use pneumatic tyred rollers to produce a dense, even, homogeneous compacted surface where there is insufficient local traffic to achieve satisfactory compaction.

Cleanup
Road fixtures: After the bituminous slurry has been spread, clean off any such material and leave such gratings, access chamber covers and other road fixtures, in a clean and satisfactory condition. This is a WITNESS POINT.

Traffic
Traffic time: Bituminous slurry surfacing to be capable of carrying slow moving traffic (<40 km/h) within one hour of application without permanent damage occurring, such as rutting or ravelling.
Cease work: When the time before the microsurfacing is capable of carrying traffic exceeds one hour, cease work unless specifically approved by the Superintendent. This is a HOLD POINT.

Surface texture
Characteristics: Uniform in appearance, and free of areas exhibiting segregation or excessive or insufficient binder.
Test run: Demonstrate the surface texture on a short test run for approval. If the surface texture is acceptable then all subsequent work to be finished to an equivalent surface texture. This is a HOLD POINT.
Increased texture: If increased surface texture is required, trail a fabric skirt behind the spreader box.
Testing for texture depth: One month after slurry is opened to traffic test for texture depth and average skid resistance to Austroads AGPT05. Based on the average of a minimum of 4 tests per lot. Submit test results within 5 days of testing. This is a HOLD POINT.

Joints
Longitudinal joints in the wearing course: Straight and placed at either the edge or the centre of a traffic lane. If necessary, lightly screed the edges and joints with a hand squeegee to achieve a smooth uniform appearance and to remove excess build-up of material.

Level and shape Tolerance
Level of wearing course: Finished surface level not to vary from the design level at any point by more than ±10 mm.
Adjacent gutters: Any kerb and/or gutter finished surface level not to be more than ± 10 mm above the level of the lip of the adjacent gutter.
Shape: The deviation from a 3 m long straightedge placed anywhere on the top of the finished surface not to exceed 10 mm when assessed within 24 hours of work completion.

4.6 NON-CONFORMANCE

Materials and finished surfacing
Nonconformance: Due to the following;
- any materials supplied fail to conform to the requirements in this worksection.
- any section of bituminous slurry surfacing fails to conform to the requirements of this worksection.
- bad workmanship.
- defective materials supplied by the Contractor.
- materials made defective by the method of operation adopted.
- texture depth. This is a HOLD POINT.

Rectification: Replace or correct nonconforming sections, and restore any underlying or adjacent surface or structure.

4.7 CONTROL OF TRAFFIC

Provisions
Precautions: Provide for traffic to 1101 Control of traffic while undertaking the work and take all necessary precautions to protect the work from damage until such time as the new work has developed sufficient strength to carry normal traffic without damage. This is a HOLD POINT.

Delays: Take all necessary steps to avoid or minimise delays and inconvenience to road users during the course of the work. Where adequate detours or side tracks are included in the Contract or are otherwise available, temporarily divert traffic while the work is in progress.

Completion
Traffic: No traffic allowed on the new work until the surfacing is stable and able to withstand traffic without damage or pick up and if applicable sufficient rolling has taken place to prevent damaging the freshly applied bituminous mat.

Signs: Roadwork signs to remain in position until after the surfacing is complete and stable. This is a HOLD POINT.

4.8 LIMITS AND TOLERANCES

Application
Summary: The limits and tolerances applicable to this worksection are summarised in Summary of limits and tolerances table.

Summary of limits and tolerances table

<table>
<thead>
<tr>
<th>Activity</th>
<th>Limits/Tolerances</th>
<th>Worksection reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mineral aggregate</td>
<td>As per Aggregate properties Table</td>
<td>Aggregates</td>
</tr>
<tr>
<td>Combined aggregate/filler</td>
<td>Grading limits as per Aggregate properties Table</td>
<td>Aggregates</td>
</tr>
<tr>
<td>Mineral filler</td>
<td>&gt; 85% passing a 75 µm sieve</td>
<td>Mineral filler</td>
</tr>
<tr>
<td>Mix properties</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Design properties</td>
<td>As per Mix properties Table</td>
<td>Design and control of bituminous mixes</td>
</tr>
<tr>
<td>- Permitted variations</td>
<td>As per Maximum permitted variations from approved mix Table</td>
<td>Production mix</td>
</tr>
<tr>
<td>Surface preparation</td>
<td>Sweeping to extend at least 300 mm beyond edge of area to be surfaced</td>
<td>Operations</td>
</tr>
<tr>
<td>Weather limitations</td>
<td>Slurry surfacing not to commence if either air or pavement temperature is below 10°C and falling, only commence if both air and surface temperature is above 7°C and rising or above 10°C</td>
<td>Operations</td>
</tr>
<tr>
<td>Shape and levels</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Finished levels</td>
<td>Not to vary at any point by more than ± 10 mm from design levels. Immediately adjacent to kerb</td>
<td>Spreading</td>
</tr>
<tr>
<td>Activity</td>
<td>Limits/Tolerances</td>
<td>Worksection reference</td>
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<td>----------------</td>
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<tr>
<td></td>
<td>and/or gutters, levels ± 10 mm above design level</td>
<td></td>
</tr>
<tr>
<td>- Finished shape</td>
<td>Deviation from the bottom of a 3 m straightedge within ± 10 mm</td>
<td>Spreading</td>
</tr>
</tbody>
</table>