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**Revision Register and Descriptions**

**Type**

**Description**

- **F1**: FULL DEPTH ASPHALT
- **F2**: THICK ASPHALT OVER HEAVILY BOUND MATERIAL SUBBASE
- **F3**: THICK ASPHALT OVER LEAN-MIX CONCRETE SUBBASE
- **F4**: OPEN GRADED ASPHALT WEARING COURSE OVER FULL DEPTH ASPHALT
- **F5**: OPEN GRADED ASPHALT WEARING COURSE OVER THICK ASPHALT OVER HEAVILY BOUND MATERIAL SUBBASE
- **F6**: OPEN GRADED ASPHALT WEARING COURSE OVER THICK ASPHALT OVER LEAN-MIX CONCRETE SUBBASE
- **F7**: STONE MASTIC ASPHALT WEARING COURSE OVER FULL DEPTH ASPHALT
- **F8**: STONE MASTIC ASPHALT WEARING COURSE OVER THICK ASPHALT OVER HEAVILY BOUND MATERIAL SUBBASE
- **F9**: STONE MASTIC ASPHALT WEARING COURSE OVER THICK ASPHALT OVER LEAN-MIX CONCRETE SUBBASE
- **F10**: ASPHALT OVER HEAVILY BOUND MATERIAL SUBBASE (TEMPORARY)
- **F11**: ASPHALT OVER LEAN-MIX CONCRETE SUBBASE (TEMPORARY)
- **F12**: ASPHALT (GREATER THAN 50 mm) OVER UNBOUND GRANULAR MATERIAL
- **F13**: ASPHALT (LESS THAN OR EQUAL TO 50 mm) OVER UNBOUND GRANULAR MATERIAL
- **F14**: SPRAYED SEAL OVER UNBOUND GRANULAR MATERIAL
- **R1**: PLAIN CONCRETE OVER LEAN-MIX CONCRETE SUBBASE
- **R2**: CONTINUOUSLY REINFORCED CONCRETE OVER LEAN-MIX CONCRETE SUBBASE
- **R3**: OPEN GRADED ASPHALT WEARING COURSE OVER CONTINUOUSLY REINFORCED CONCRETE OVER LEAN-MIX CONCRETE SUBBASE
- **R4**: STONE MASTIC ASPHALT WEARING COURSE OVER CONTINUOUSLY REINFORCED CONCRETE OVER LEAN-MIX CONCRETE SUBBASE
- **R5**: JOINTED REINFORCED CONCRETE OVER LEAN-MIX CONCRETE SUBBASE
- **R6**: STEEL FIBRE REINFORCED CONCRETE OVER LEAN-MIX CONCRETE SUBBASE
- **R1**: ASPHALT WEARING COURSE OVER BRIDGE DECK OR APPROACH SLAB
- **R2**: STONE MASTIC ASPHALT WEARING COURSE OVER BRIDGE DECK OR APPROACH SLAB
- **R3**: OPEN GRADED ASPHALT WEARING COURSE OVER BRIDGE DECK OR APPROACH SLAB

---

**Press, No: COLOUR Node**

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**Principal Engineer, Pavements, Materials and Geotechnical:**

**Principal Engineer, Pavements and Geotechnical:**

---

**Registration No of Plans:**

**DS2013/000067**

---

**Issue:**

**Date:**

**Reference No:**

**No of Sheets:**

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### CONSTRUCTION NOTES

#### GENERAL
1. Not all bituminous and curing compounds are shown on these drawings.
2. Drawings to be read in conjunction with Technical Guide P-G-002.

#### ASPHALT
3. As per R116, each asphalt course depth must allow for individual asphalt layer thicknesses. The range of allowable asphalt layer thickness during paving is listed in Table 3.1.
4. Only Dense Graded Asphalt and Stone Mastic Asphalt layers are included in the 175 mm minimum asphalt thickness over lean mix concrete or heavily bound material. Sprayed seals and Open Graded Asphalt wearing course layers are not to be considered as contributing to the 175 mm minimum thickness.

#### GRANULAR
5. As per R71, each course thickness is to comprise compacted layers that are not more than 150 mm or less than 100 mm thick (4 specified course thickness of 150 - 200 mm does not comply).

#### PAVEMENT SEAL, SPRAYED SEAL AND LOW CUTTER SEAL
6. For ASPHALT OVER UNBOUND GRANULAR MATERIAL, refer to Technical Guide P-G-002.
7. Use the Average Least Dimension (ALD) of sealing aggregate to determine the contribution of a sprayed seal thickness to the total pavement thickness.
8. A low cutter seal is to be provided at all locations where a sprayed seal is to be placed directly under an asphalt layer.
9. The application of a low cutter seal is as follows:
   - Aggregate spread rate for 10 mm aggregates as per RMS Form 395K, aggregate design. Aggregate spread rate for 7 mm aggregate is between 200 - 230 m²/m³.
   - A maximum of 2% cutter oil may be used.
   - Use 1% adhesion agent.
   - Double the amount of rolling for a sprayed seal.
   - To be placed in accordance with R106.
10. A 7 mm sprayed seal is to be provided over the SMZ layer, except at the following locations:
   - Directly under an asphalt layer, where a low cutter seal is to be provided.
   - Directly under a granular layer (as approved by the Principal).
11. Final sprayed seal is to be applied 12 months after application of primerseal. Pavement designer to nominate final sprayed seal type.

#### BITUMINOUS CURING COMPOUND OVER CONCRETE PAVEMENT
12. If a non-bituminous curing compound is used as per R83, it is to be removed immediately prior to the application of a bituminous Quick Drying Prime, followed by a sprayed seal or asphalt layer.

#### BITUMINOUS WATERPROOFING MEMBRANE
13. Apply bituminous waterproofing membrane in accordance with B344.

#### DEBONDING TREATMENT
14. Apply debonding treatment for concrete in accordance with R82.

#### BITUMINOUS PRIMER OVER BRIDGE DECK OR APPROACH SLAB
15. Apply bituminous primer in accordance with B344.

---

### REFERENCES
- RMS 3051: Granular Base and Subbase Materials for Surfaced Road Paveements
- RMS B80: Concrete Work for Bridges
- RMS B344: Sprayed Bituminous Waterproofing Membrane for Concrete Bridge Decks
- RMS R44: Earthworks
- RMS R71: Construction of Unbound and Modified Pavement Course
- RMS R73: Construction of Plant Mixed Hewdly Bound Pavement Course
- RMS R82: Lean-Mix Concrete Subbase
- RMS R83: Concrete Pavement Base
- RMS R106: Sprayed Bituminous Surfacing (with Cutback Bitumen)
- RMS R116: Heavy Duty Denser Graded Asphalt
- RMS R119: Open Graded Asphalt
- RMS R121: Stone Mastic Asphalt
- RMS Form 395K: Seal or Reseal Design Calculation Sheet
- RMS Technical Guide P-G-002: Typical Pavement Profiles

---

### TABLE 3.1: ALLOWABLE ASPHALT LAYER THICKNESS (mm)

<table>
<thead>
<tr>
<th>ASPHALT TYPE</th>
<th>ALLOWABLE ASPHALT LAYER THICKNESS FOR DIFFERENT NOMINAL ASPHALT SIZE (mm)</th>
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<tbody>
<tr>
<td></td>
<td>5 mm</td>
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<tr>
<td>Dense Graded Asphalt</td>
<td>15 - 25</td>
</tr>
<tr>
<td>Stone Mastic Asphalt</td>
<td>-</td>
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<tr>
<td>Open Graded Asphalt</td>
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### ABBREVIATIONS

<table>
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<th>ABBREVIATION</th>
<th>DESCRIPTION</th>
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<tr>
<td>AC14</td>
<td>Dense Graded Asphalt (nominal size 14 mm)</td>
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<tr>
<td>AC20</td>
<td>Dense Graded Asphalt (nominal size 20 mm)</td>
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<tr>
<td>B</td>
<td>Bridge deck or approaches</td>
</tr>
<tr>
<td>CRCP</td>
<td>Continuously Reinforced Concrete Pavement</td>
</tr>
<tr>
<td>DESA</td>
<td>Design Equivalent Standard Axles</td>
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<tr>
<td>DSAR5</td>
<td>Design Standard Axle Repetition for Fatigue of Asphalt</td>
</tr>
<tr>
<td>DSAR7</td>
<td>Design Standard Axle Repetition for Rutting and Loss of Surface Shape</td>
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<tr>
<td>DSAR12</td>
<td>Design Standard Axle Repetition for Fatigue of Cemented Materials</td>
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<td>DGA</td>
<td>Dense Graded Asphalt</td>
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<tr>
<td>F</td>
<td>Flexible pavement</td>
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<tr>
<td>HBM</td>
<td>Heavy Bound Material</td>
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<tr>
<td>JRCP</td>
<td>Jointed Reinforced Concrete Pavement</td>
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<td>LCS</td>
<td>Lean-Mix Concrete Subbase</td>
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<td>OGA</td>
<td>Open Graded Asphalt</td>
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<tr>
<td>PCP</td>
<td>Plain Concrete Pavement</td>
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<tr>
<td>QDP</td>
<td>Quick Drying Prime</td>
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<tr>
<td>R</td>
<td>Rigid pavement</td>
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<td>SBEW</td>
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<td>SG</td>
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<td>Stone Mastic Asphalt</td>
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<td>UZF</td>
<td>Upper Zone of Formation</td>
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### NOTES, ABBREVIATIONS AND REFERENCES
## Flexible Pavement Types F1 to F4

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<tr>
<td>F4</td>
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### Design Parameter

- DESA (GSA)
- DSBG (SBS)
- DSBT (SBT)
- DSBW12 (SBSW12)

### Subgrade Design CBR (%)

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<th>Material Name</th>
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**Diagram:**

- Full Depth Asphalt
- Thick Asphalt
- Thick Asphalt
- Open Graded Asphalt Wearing Course

---

**Design Notes:**

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## Flexible Pavement Types F13 and F14

### PAVEMENT TYPE / TAG

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### PAVEMENT STANDARD DRAWINGS

**TYPICAL PAVEMENT PROFILES**

**FLEXIBLE PAVEMENT TYPES F13 AND F14**

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### DIAGRAM

**ASPHALT (LESS THAN OR EQUAL TO 50 mm)
OVER UNBOUND GRANULAR MATERIAL**

**SPRAYED SEAL OVER UNBOUND GRANULAR MATERIAL**

**SMZ**

**LOWER UZF (IF REQUIRED)**

**SUBGRADE (INCLUDING TREATMENTS)**

**DGA WEARING COURSE**

**GRANULAR BASE**

**PRIMERSEAL**

**FINAL SPRAYED SEAL (SEE CONSTRUCTION NOTES)**

---

**NOTES:**

- Designated layers are not inclusive of the subgrade, subbase, or other treatments typically found in a pavement structure.
- The diagrams illustrate typical cross-sections for F13 and F14 pavement types, indicating the general sequence of materials and designations.
- Materials and layers are designated by their respective characteristics and are intended to be used in conjunction with the table provided to ensure a comprehensive understanding of the pavement design.

---

**REFERENCES:**

- PAVEMENTS AND GEOTECHNICAL ENGINEERING SERVICES BRANCH
- G. Vorobieff
- NSW Roads & Maritime Services

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**ISSUE DATE:**

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**REFERENCES:**

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**REGISTRATION NO.**

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**SCALE:**

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**STAGE:**

- ORIGINAL

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- PAVEMENTS UNIT

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**PRINCIPAL ENGINEER:**

- G. Vorobieff

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**G. Vorobieff:**

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JOINTED REINFORCED CONCRETE OVER LEAN-MIX CONCRETE SUBBASE

STEEL FIBRE REINFORCED CONCRETE OVER LEAN-MIX CONCRETE SUBBASE
### PAVEMENT TYPES B1 TO B3

#### BRIDGE DECK OR APPROACH SLAB

**Design Parameter Table**

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</tr>
<tr>
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<td>DGA WEARING COURSE</td>
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**Notes:**
- **B1** represents ASPHALT WEARING COURSE over BRIDGE DECK OR APPROACH SLAB.
- **B2** represents STONE MASTIC ASPHALT WEARING COURSE over BRIDGE DECK OR APPROACH SLAB.
- **B3** represents OPEN GRADED ASPHALT WEARING COURSE over BRIDGE DECK OR APPROACH SLAB.

---

**Scales:** Not to scale, as noted.

**Prepared by:** Pavements Unit

**Prepared for Use:** 13/05/2016

**Principal Engineer:** G. Vorobjeff

**Approvals:**

**Engineer-in-charge:** N. E. Smith

**Pavement Standards:**

**Typical Pavement Profiles**

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