

PART R84
SECONDARY PAVING

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1. GENERAL

- .1 This Part specifies the requirements for the construction of footpaths, verges, property driveways, egress and parking bays, median and traffic island infill and block paving ("**Secondary Paving**").
- .2 Refer to Part R83 Construction of Shared Paths for the requirements for paths used for both cycling and pedestrians ("**Shared Paths**").
- .3 Documents referenced in this Part are listed below:

Austrroads	AGPT04B-14 "Guide to Pavement Technology Part 4B: Asphalt"
AS 2150:	Hot mix asphalt - A guide to good practice

2. SURFACE LEVELS

- .1 If a design Cross-section Report and Geometric Details are included in the Contract, the levels specified therein take precedence over any sketches.
- .2 The finished surface of the Secondary Pavement shall:
 - (a) not vary more than 10 mm over a 3 m straight edge;
 - (b) where a design finished level is specified, be constructed within:
 - ± 10 mm for concrete and block paving; or
 - ± 20 mm for other surfaces.
 - (c) drain to the top of any adjoining kerb;
 - (d) be free draining so that water does not pond on the surface;
 - (e) be free of irregularities that could present tripping hazards to users; and
 - (f) smoothly abut any existing driveways and footpaths adjoining the new surface.

3. COMPACTION

- .1 Rubble, Sand and Bitumen Treated Sand pavement layers (including Base and Subbase) shall be compacted at OMC and comply with Table 3.

TABLE 3 COMPACTION REQUIREMENTS		
PLANT	MIN NO OF PASSES	
	Thickness 50 – 120 mm	Thickness > 120 mm
Small Vibration Plate (approx mass 90 kg - Wacker VPA 90 or equiv.)	6	8
Large Vibration Plate (Approx mass 300 kg - Wacker BPU 3345 or equiv.)	3	4
Small Twin Drum Footpath Roller Minimum 1 t (eg Ingersoll Rand DD12)	2	3
3 tonne vibrating roller class VR10 (eg Ingersoll Rand DD22)	2	3

Note: The Small Vibration Plate may only be used in areas inaccessible to larger plant.

4. **RUBBLE SURFACES**

.1 Rubble Secondary Pavements shall comply with Table 4.

TABLE 4 – RUBBLE SURFACES		
	Footpaths	Driveways
Material	PM2/20 or PM3/20	PM2/20
Minimum Thickness (mm)	125	150

5. **BITUMEN TREATED SURFACES**

.1 Bitumen Treated Secondary Pavements shall comply with Table 5.

TABLE 5 - BITUMEN TREATED SURFACES		
	Footpaths	Median and Traffic Island Infill
Surface Layer:		
Material	Sa-C Type C Sand, with the addition of 3% bitumen (i.e. Sa-C B3)	Sa-C Type C Sand with the addition of 3% bitumen (i.e. Sa-C B3)
Minimum thickness (mm)	100	50
Subbase:		
Material	Not required	Cold Planed Asphalt or PM3/20, Class 3 Pavement Material
Minimum thickness (mm)	-	90 mm

.2 If cold planed asphalt is used, it shall be shaped and compacted to produce a tight dense surface.

6. **ASPHALT**

.1 Asphalt Secondary Pavements shall:

- (a) have be designed in accordance with the requirements of Austroads AGPT04B-14;
- (b) comply with AS2150; and
- (c) comply with Table 6.

TABLE 6 ASPHALT SECONDARY PAVING			
	Footpaths	Residential / Light Duty Driveways	Heavy Duty Driveways
Surface Course			
Material	AC7 (C170)	AC7 (C170)	AC10M (C320)
Minimum Thickness (mm)	25	30	35
Base			
Material	PM2/20 or PM3/20	PM2/20 compacted to 96%	PM2/20 compacted to 96%
Minimum Thickness (mm)	100	150	125
Subbase			
Material	Not required	Not required	PM2/20 compacted to 95%
Minimum Thickness (mm)	-	-	150
Total Minimum Thickness (mm)	125	180	305

- .2 Subgrade shall be trimmed and compacted with at least 1 pass of the compaction plant.
- .3 Base and Subbase shall also comply with Clause 3.
- .4 Asphalt compaction shall be carried out using a minimum 2 passes of a steel double drum, vibrating footpath roller.
- .5 The surface of the finished asphalt shall be free of segregated or "bony" areas, soft and "fatty" areas, ravelling and loose material, surface cracking, shoving and ruts.

7. CONCRETE

- .1 Concrete Secondary Pavements comply with Table 7.

TABLE 7 CONCRETE SECONDARY PAVING				
	Footpaths	Footpaths with significant cycle usages	Light Duty Driveways	Heavy Duty Driveways
Minimum concrete thickness (mm)	75	100	125	180
Minimum concrete Class	25	25	25	32
Reinforcing	-	SL62	SL72	SL82
Subbase Minimum Thickness (mm)	50	75	100	100
Spacing of shrinkage grooves (contraction joints) (m)	1.2	4	3-4	3-4

Notes:

- (a) Concrete Secondary Pavements shall be constructed on a Subbase of PM2/20 or PM3/20.
- (b) The Concrete shall comply with:
 - i) Part CC26 Normal Class Concrete; or
 - ii) Part CC27 Geopolymer Concrete
- (c) Reinforcing shall be placed centrally and on spacers.

- (d) All shrinkage grooves and edges shall be tool finished.
- (e) The surface shall be finished to a non-slip texture and be protected from damage for the first 2 days.
- (f) For un-reinforced footpaths the length to width ratio of the distance between the shrinkage grooves shall not exceed 1.3: 1. Expansion joints 12 mm wide and full depth of the concrete shall be provided at not more than 6 m intervals and filled with bitumen or other flexible material.
- (g) For reinforced footpaths with cycle usage, 3 mm contraction joints shall be sawn to 25mm depth during initial set.

8. BLOCK PAVING

.1 Block Paved Secondary Pavements shall comply with Table 8.

TABLE 8 BLOCK PAVING			
	Footpaths	Residential / Light Duty Driveways	Heavy Duty Driveways
Pavers			
Type and Minimum Thickness (mm)	Concrete 60	Segmented Type A interlocking concrete 60	Segmented Type A interlocking concrete 80
Bedding			
Material and Minimum Thickness (mm)	Sa-C Type C Sand 25	Sa-C Type C Sand 25	Sa-C Type C Sand 25
Base			
Material and Minimum Thickness (mm)	PM2/20 or PM3/20 50	PM2/20 compacted to 95% 100	PM2/20 compacted to 95% 150

Note: Base and Subbase shall also comply with Clause 3 “Compaction”.

Materials

- .2 Jointing sand shall pass a 1.18 mm sieve; a maximum of 10% by mass passing a 75 micron sieve. Bedding and jointing sand shall be free of soluble salts or contaminants likely to cause efflorescence or staining.
- .3 If the Contractor proposes to use a paver other than that specified, a sample of paver shall be supplied and approval obtained 4 weeks prior to placement of the pavers.
- .4 Submission of the sample shall constitute a **HOLD POINT**.

Laying Paving Units

- .5 Paving units shall be placed on the uncompacted screeded sand bed to the laying pattern shown on the Drawings.
- .6 Paving units shall be placed to achieve gaps nominally 2 mm to 4 mm wide between adjacent units such that all joints are correctly aligned.
- .7 Except where it is necessary to correct any minor variations occurring in the laying bond, the paving units shall not be hammered into position. Where adjustment of position is necessary care shall be taken to avoid premature compaction of the sand bedding.
- .8 All unsupported edges shall have a concealed reinforced concrete edging. Cement mortar for concealed edging shall comprising three parts Sa-C Type C Sand and one part cement.
- .9 Footpaths shall have one row of header bricks along each edge. Where shown on the drawings, medians and traffic islands shall have one row of header bricks around the perimeter. Tree openings, where shown on the drawings, shall have one row of header bricks around the perimeter of the opening.

Block Paving Around Service Inspection Pits, etc.

- .10 Where an existing service inspection pit is greater than 10 mm above or below the proposed footpath level, the Contractor shall adjust the service inspection pit so that it is flush with the new footpath levels and comply with any requirement of the Service Authority for adjusting the pit.
- .11 The level of block paving placed around small square steel service inspection pits and steel stormwater channels shall match the pits or channel. The edge of the paving shall not be greater than 4 mm from the pit or channel, either vertically or horizontally. The Contractor shall make allowance to cut, if necessary, the paving units around these pits or channels.
- .12 Unless otherwise shown on the drawings, concrete infill shall be placed around service inspection pits (other than those referred to in Clause 8.10), survey marks, poles and street furniture within the paved area as shown in Attachment A.
- .13 Concrete infill shall be Grade 25 (or a 1:2:3 mix of cement, sand and 10 mm aggregate) and shall be placed to a minimum depth of 75 mm. The concrete shall be coloured to match the surrounding block paving.

Block Paving Abutting Boundary Structures and Kerb

- .14 Block paving shall be placed such that joints between paving units and boundary structures and/or kerb is no greater than 4 mm. Where it is impracticable to cut blocks to the shape required, gaps up to 50 mm shall be infilled using mortar (1 cement : 3 sand) coloured to match the paving units.

Compaction and Joint Filling of Block Paving

- .15 Paving units shall be compacted to achieve consolidation of the sand bedding by 3 passes of a suitable vibrating plate compactor. The compactor shall be a high-frequency, low-amplitude mechanical flat plate vibrator.
- .16 Compaction shall proceed as closely as practicable following laying. Compaction shall not be attempted within 1 m of the laying face and shall continue until lipping has been eliminated between adjoining units.
- .17 Any units which are structurally damaged during compaction shall be immediately replaced.
- .18 As soon as practical after compaction, sand for joint-filling shall be spread over the paving. The jointing sand shall be broomed in a dry condition into the joints and one pass of the plate vibrator shall be made to compact the jointing sand.
- .19 Joints between block paving and concrete edging greater than 4 mm shall be filled with a 1:3 mix of cement and sand and watered in.

9. SYNTHETIC GRASS**Materials**

- .1 The synthetic grass shall have the following properties:
 - (a) standard manufactured green (latex backed);
 - (b) twisted olefin polypropylene pile material;
 - (c) denier/tex rating of 7 600 to a pile height of 19 mm;
 - (d) machine gauge of 7.94 mm;
 - (e) minimum stitch rate of 17.5 per 10 cm; and
 - (f) minimum yarn weight of 819 g/square metre.
- .2 Adhesive for use with the synthetic grass shall be a spirit based, outdoor adhesive (Roberts 6037) or similar approved. Sand infill shall be washed, dried, graded silica sand with sub-angular shaped particles and with a consistent colour which minimises glare.
- .3 A sample of the synthetic grass and sand infill to be used shall be supplied and approved obtained 4 weeks prior to placement of the grass. Submission of the sample shall constitute a **HOLD POINT** to verify that the synthetic grass meets the requirements of this Part.

Base

- .4 The Contractor shall construct a base using Sa-C Type C Sand placed in layers not exceeding 150 mm loose thickness. The base shall be compacted at OMC using 3 passes of a vibrating plate compactor (Wacker Model BPU 3345 or equivalent) and shall have a crown shape (with a 2% crossfall). The

surface of the base on which the synthetic grass is to be laid shall be free from lumps or indentations greater than 5 mm when measured under a 3 m straight edge.

Laying and Jointing

- .5 The synthetic grass shall be laid with the nap of all sections running in the same direction. No longitudinal joints will be permitted. All transverse joints shall be adhered using a backing tape. Heat-seaming tape will not be permitted

Edge Sealing

- .6 All edges of the synthetic grass shall be adhered to the full width (i.e. 250 mm) of the concrete edge restraint using the approved adhesive applied with a 3.2 mm V-notched spreading trowel.

Sand Infill

- .7 The sand infill shall be spread over the synthetic grass as soon as practicable and prior to the termination of work on that day. Prior to spreading of the sand infill, the synthetic grass shall be brushed against the lay to stand the tufts upright. Care shall be taken when spreading the sand to prevent crushing or bending over of the pile.
- .8 The sand infill shall be spread to a nominal depth of 17 mm allowing for settlement to ensure that approximately 2 mm of the synthetic grass remains exposed.

10. HOLD POINTS

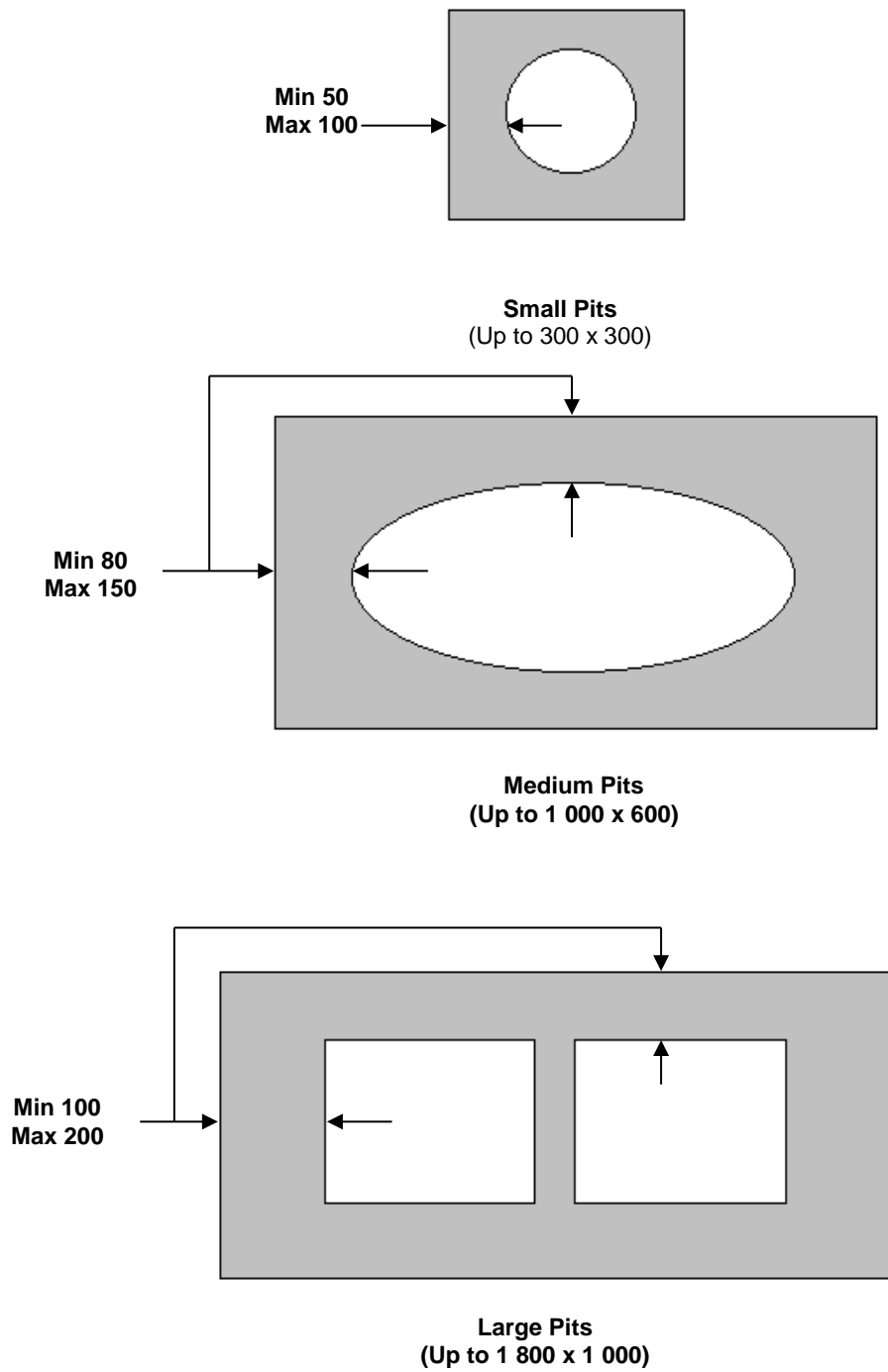
- .1 The following is a summary of Hold Points referenced in this Part:

CLAUSE REF.	HOLD POINT	RESPONSE TIME
8.4	Proposal to use alternative paver	7 working days
9.3	Prior to the use of synthetic grass	2 working days

11. MEASUREMENT

- .1 If measurement of a paved surface is required for the purpose of payment, no deduction for inspection pits and similar structures will be made in the measured area, except where any individual pit or structure equals or exceeds 2 square metres in area.

12. ATTACHMENT R84A CONCRETE SERVICE INSPECTION PITS SURROUNDS



Notes:

1. Sketch not to scale – shapes shown are representative only.
2. All measurements are in millimetres.