

PART R36**CONSTRUCTION OF SHOULDERS****CONTENTS**

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ATTACHMENT R36A: SHOULDER WIDENING GEOMETRY

1. GENERAL

- .1 This Part specifies the requirements for the construction of unstabilised shoulders using the existing material and where necessary, "topping up" with imported material.
- .2 This Part does not apply if the shoulder is being constructed of entirely new material and/or is being stabilised.
- .3 Where the shoulder is being constructed entirely of new unstabilised granular material, the work must comply with Part R21 "Construction of Unstabilised Granular Pavements".
- .4 If the shoulder is being stabilised, the work must comply with Part R22 "Construction of Plant Mixed Stabilised Pavement", Part R23 "Insitu Stabilisation" or Part R24 "Foam Bitumen Stabilised Pavement" as appropriate.
- .5 For the purpose of this Part, shoulder is deemed to be pavement and may be sealed or unsealed.
- .6 Documents referenced in this Part are listed below:

AS 1289 :	Methods of Testing Soils for Engineering Purposes
Austrroads:	Guide to Road Design Part 3: Geometric Design
- .7 The **Contract Specific Requirements, Drawings** or **Work Summary** may include requirements which modify or are in addition to those specified in this Part. This may include requirements for imported materials, shoulder geometry, pavement compaction and a description of the extent of the Works.

2. MATERIALS

- .1 If there is insufficient material in the shoulders to achieve the specified crossfall, the Contractor must import additional suitable material and add it to the existing material prior to mixing.

3. GEOMETRIC DESIGN

- .1 The finished surface of the shoulder and batters must comply with Austrroads Guide to Road Design Part 3 and the following:
 - (a) the surface does not impede the free flow of water;
 - (b) pounding of water does not occur;
 - (c) the invert level in table drains is ≥ 300 mm below the surface at the edge of formation;
 - (d) the formation width must not be widened;
 - (e) the shape of shoulders at road junctions and access points to adjoining properties must be maintained; and
 - (f) the geometric details shown in with Attachment R36A.

4. **CONSTRUCTION**

Surface Preparation

- .1 Prior to construction, the area affected by the work must be cleared of vegetation, rubbish and other unsuitable material.
- .2 The edge of the existing seal must be planed or saw cut 50 mm from the nominal edge of seal, within a tolerance of +0/-50 mm from a 3.0 m straightedge, to provide a neat straight finish.

Construction Staging

- .3 Construction work must only be undertaken on one side of the road at any time.
- .4 Prior to the completion of each working day, the existing seal must be swept to remove all loose construction material.
- .5 At the completion of construction, no large stones or windrows of surplus construction material must remain.

Shoulder Construction

- .6 Using a "Bomag" or similar machine, shoulders must be pulverised and wet mixed to the specified depth at the edge of existing seal. The machine must be operated in accordance with the Manufacturer's Instructions.
- .7 Pavement layers must be compacted to a minimum 96% RMC.
- .8 Where the shoulder is an extended base course layer, it must be compacted to a minimum of 98% RMC.

Surface Condition

- .9 The surface of the pavement must be:
 - (a) homogenous and uniformly tight; and
 - (b) free of loose uncompacted material, segregated or 'bony' material, soft spots, over wet areas, roller indentations and defects.
- .10 Batters must be compacted so that the surface is uniformly tight and free of loose uncompacted / surplus material.
- .11 Excess material must not be left on the batter or windrowed into adjacent vegetation. Any excess material against batter-in-cut must be removed and disposed of by the contractor. Debris and spoil must not be left on the roadside or impede surface drainage and/or culvert inlets/outlets.

5. **TEST PROCEDURES**

- .1 The Contractor must use the following test procedures (refer http://www.dpti.sa.gov.au/contractor_documents) to verify conformance with the Specification:

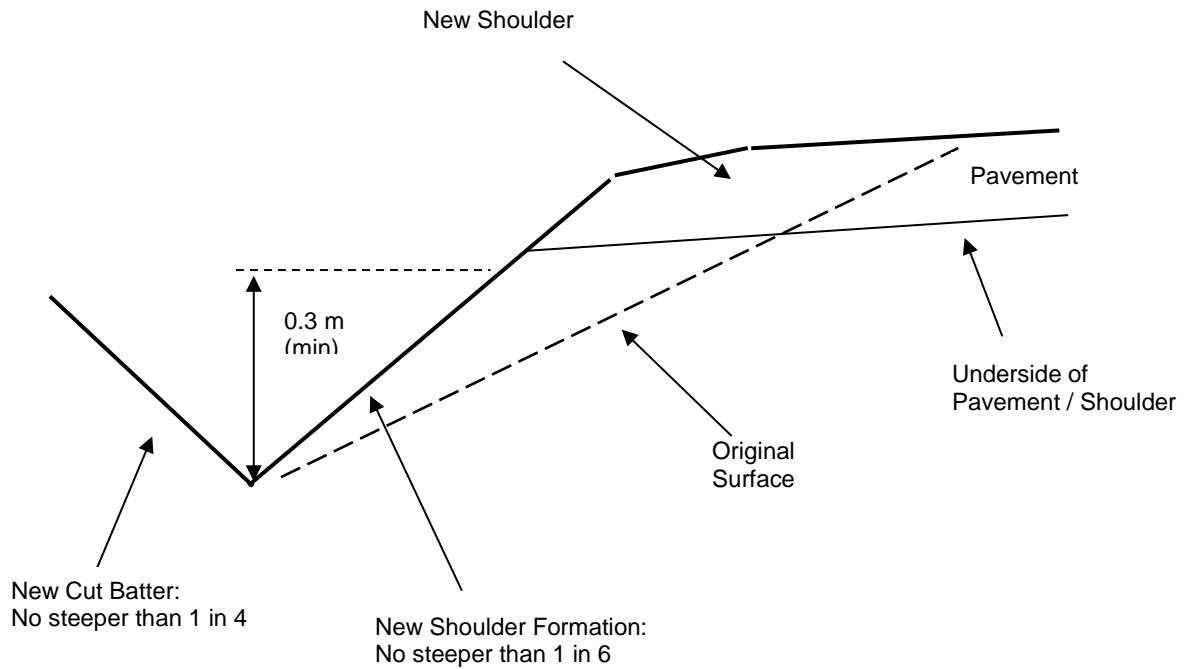
TEST	TEST PROCEDURE
SAMPLING OF SOIL, AGGREGATES AND ROCKS	TP 226
PREPARATION OF SAMPLES	AS 1289.1
SITE SELECTION BY STRATIFIED RANDOM TECHNIQUE	AS 1289.1.4.2
FIELD DENSITY: Nuclear Method	AS 1289.5.8.1
MOISTURE CONTENT: Oven Drying Method	AS 1289.2.1.1
Microwave Method	AS 1289.2.1.4
MAXIMUM DRY DENSITY: Modified Compaction	AS 1289.5.2.1
Three Point Method	TP 164 ⁽¹⁾
SELECTION OF MAXIMUM DRY DENSITY	TP 166 ⁽²⁾
DRY DENSITY RATIO	TP 320

6. VERIFICATION REQUIREMENTS AND RECORDS

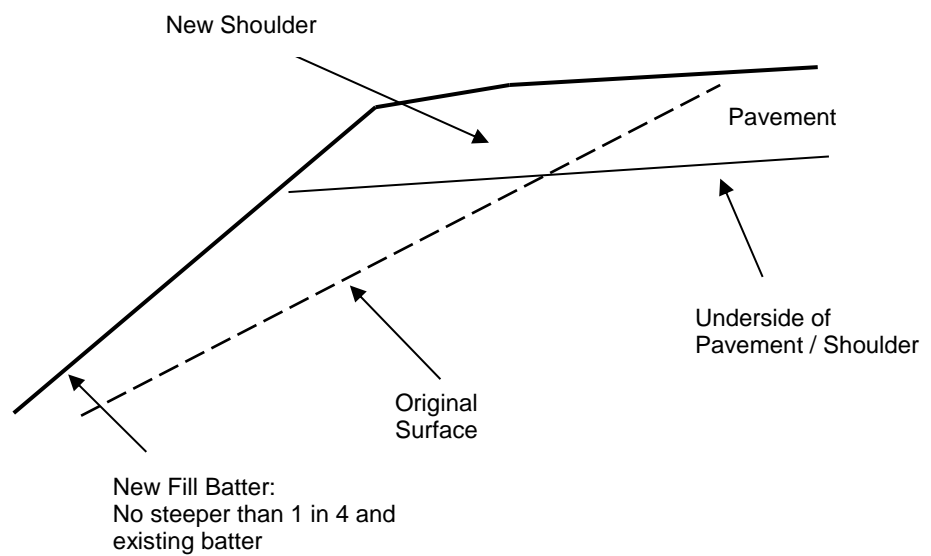
- .1 The Contractor must undertake the testing specified in this Clause and supply written evidence of compliance with the lot package.

CLAUSE REF.	SUBJECT	PROPERTY	TEST PROCEDURE	TEST FREQUENCY	ACCEPTANCE LIMITS
4.7 & 4.8.	Pavement Compaction	Dry Density Ratio	TP 320	1 test per 1000 square metres of shoulder.	Refer Clause 4.

ATTACHMENT R36A
SHOULDER WIDENING GEOMETRY
(Not to Scale)



WIDENING IN CUTS



WIDENING IN FILLS