

Roads

Master Specification

RD-PV-C3 Insitu Pavement Stabilisation

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RD-PV-C3 Insitu Pavement Stabilisation

1 General

- 1.1 This Part specifies the requirements for the construction of insitu stabilised pavement and subgrade. For the purpose of this Part only, stabilised subgrade is deemed to be pavement.
- 1.2 The pavement must be placed in the configuration specified in Contract Documents. Any additional information regarding the existing materials or pavement or any additional requirements for design or construction of the pavement are included the Contract Documents.
- 1.3 Documents referenced in this Part are listed below:
 - a) AS 1289 Methods of Testing Soils for Engineering Purposes.

2 Quality Requirements

- 2.1 The Contractor shall prepare and implement a Quality Plan that includes detailed procedures for:
 - a) method of MDD determination, Clause 7 under "Dry Density Ratio";
 - b) binder spread rate determination; and
 - c) method of pavement construction, including the method to achieve the specified surface finish, vide Clause 6 "Surface Finish".
- 2.2 If not provided previously the procedures and details shall be submitted at least 28 days prior to the commencement of site work.
- 2.3 Provision of the procedures listed in this Clause shall constitute a **Hold Point**.

3 Trial Section

- 3.1 The Contractor shall demonstrate the suitability of the equipment and method of stabilisation proposed by carrying out the process on a trial section of road. The trial section shall be 1,000 square metres and to an agreed depth and width.
- 3.2 The completion of the trial section will constitute a **Hold Point**. This is to assess the uniformity of the mix and to verify the binder spread rate.

4 Spreading Of Binder

- 4.1 The binder shall be spread uniformly over the area to be stabilised, using a mechanical spreader specifically designed for such work.
- 4.2 The spreading machine shall be capable of accurately controlling the spread rate of the binder at the specified rate with a tolerance of -0, +10%. The spreading machine shall also be equipped with calibrated "on-board" measuring devices that allow the spread rate to be calculated for each 50 m linear interval. Here this specification refers to a percentage of binder, the percentage shall be determined by weight.
- 4.3 The use of trays over which the spread rate is measured will only be accepted as compliance where they are placed at a frequency not less than four in every 100 m continuous run. Where, for any reason, the spreader stops it shall be considered to be a new run.
- 4.4 The Contractor shall ensure that spreading of binder is not affected by adverse weather and that there are no gaps between spreader runs. Once the binder has been spread, no plant other than that engaged in the stabilisation operation shall traffic the prepared pavement until mixed into the underlying material.

5 Stabilisation

- 5.1 The stabilisation process shall incorporate the following steps in a single operation:
 - a) cutting and pulverising any existing pavement (including bituminous seal if applicable);
 - b) mixing of any additional material placed;
 - c) concurrent mixing of binder and addition of water (with or without additives); and
 - d) screeding.
- 5.2 The stabilising machine shall be specifically designed to carry out the above operation and shall have provision for automatically adding water at a variable controlled rate whilst mixing to bring the material to the moisture content necessary for compaction and to prevent excessively wet areas.
- 5.3 Cutting, pulverising and mixing shall continue until all material (other than rock) passes a 37.5 mm AS sieve and the binder(s) and water (with or without additives) are evenly distributed through the mass to produce a uniform mixture.
- 5.4 Where stabilisation exceeds 250 mm depth, a minimum of two mixing passes shall be undertaken.
- 5.5 During cutting, pulverising and mixing, any stone or portions of seal greater than a nominal 100 mm in size shall be removed from the pavement and discarded.
- 5.6 The stabilisation machine shall be equipped with a variable depth of cut control with an accurate gauge of depth of cut readily visible to the operator. The depth of cut shall have a tolerance of -0, +10%.
- 5.7 Overlapping of runs by the stabilising machine shall be a minimum of 100 mm parallel to the direction of travel and a minimum of 300 mm transverse to the direction of travel.
- 5.8 Unless otherwise specified in the Contract Documents, work undertaken each day shall be completed across the full pavement width in order to open the road to traffic at the completion of each days' work.
- 5.9 The surface of compacted stabilised layers shall be kept continuously moist for a minimum period of 7 days or until covered by a subsequent pavement layer.

6 Surface Finish

- 6.1 The surface of the stabilised layers shall be uniformly tight and free of loose uncompacted material, segregated or "bony" material or soft, over wet areas and free of roller indentations.
- 6.2 Where a spray seal is to be applied, pavement layers shall be compacted with a minimum of 6 passes of a Class PR22 multi-wheel roller to achieve a uniformly tight surface.
- 6.3 At the completion of stabilisation and prior to the placement of subsequent pavement layers, including sprayed bituminous surfacing or asphalt treatment, a **Hold Point** shall apply.

7 Testing Requirements and Frequency

Quality Standards

- 7.1 Acceptance of the compaction of the stabilised layer will be based on an analysis of a set of random sited tests taken from each lot of the works.
- 7.2 The Contractor shall determine the proportion of the works which will constitute a single lot in accordance with PC-QA1 "Quality Management Requirements". Compliance will apply to the whole of the lot of the works from which the set of tests is taken.
- 7.3 Any area which is deemed unsuitable shall be excluded from the lot before testing commences. Excluded areas shall be rectified prior to testing. If the total of the excluded areas in a lot exceeds 10% of the lot the whole of the lot shall be rectified prior to testing.

- 7.4 This includes:
- a) segregated or "bony" areas;
 - b) soft and over-wet areas;
 - c) ravelling and loose material;
 - d) compaction planes; and
 - e) surface cracking, shoving and ruts.

Dry Density Ratio

- 7.5 The stabilised layer shall be compacted uniformly to the full depth and over the full width to the following minimum Dry Density Ratios:
- a) Base and subbase: 96% Modified Compaction.
 - b) Subgrade: 93% Modified Compaction.
- 7.6 The Contractor shall determine the dry density ratio of a test sample in accordance with TP 320. The Contractor shall perform "one for one" MDD testing for each test site.

Number and Location of Sites

- 7.7 The minimum frequency of testing of the stabilised layer shall be one test per 400 square metres with a minimum of 3 tests per lot.
- 7.8 The location of tests shall be selected by the Contractor for each lot on a stratified random basis in accordance with AS 1289.1.4.2. The number of strata shall be equal to the number of tests required for a given lot.

8 Thickness, Width, Levels and Tolerances

- 8.1 The allowable tolerances on the finished levels of each pavement course shall be as stated:
- a) If no tolerance on finished subgrade levels has been specified, the tolerance on the compacted surface shall be ± 15 mm.
 - b) If no tolerance on finished pavement levels has been specified, the tolerance on the compacted layer thickness shall be ± 15 mm.
 - c) In addition to the tolerances specified, the surface shall not deviate by more than 10 mm from a 3 m straight edge laid on the surface.
 - d) The tolerance on overall width shall be ± 50 mm.

9 Construction Joints and Curing

- 9.1 Prior to commencing the next day's work and where the stabilising operation has been halted for any reason for a period exceeding two hours, the Contractor shall provide construction joints at each discontinuity in the operation.
- 9.2 Longitudinal joints shall be formed by cutting back into the compacted stabilised material by 100 mm.
- 9.3 Transverse construction joints shall be formed by cutting back 1 m into the compacted stabilised material.
- 9.4 Unless otherwise stated, the surface of compacted stabilised layers shall be kept continuously moist by watering with suitable spraying equipment for a minimum period of 7 days.

10 Test Procedures

10.1 The Contractor shall use the following test procedures (refer https://www.dit.sa.gov.au/contractor_documents) to verify conformance with the Specification:

Table RD-PV-C3 10-1 Test Procedures

Test		Test Procedure
Site Selection by Stratified Random Technique		AS 1289.1.4.2
Sampling of Soil, Aggregates and Rocks		TP 226
Preparation of Samples		AS 1289.1
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⁾
Dry Density Ratio		TP 320

Notes:

(1) The three point method may be used to provide MDD value in stabilised material.

11 Hold Points

11.1 The following is a summary of Hold Points referenced in this Part:

Document Ref.	Hold Point	Response Time
2.3	Submission of Procedures (if not in Post Tender Submission)	7 working days
3.2	Completion of trial section	6 working hours
6.3	Completion of stabilised layer	6 working hours

12 Verification Requirements and Records

Test Records

12.1 The Contractor shall undertake the testing specified in this Clause and supply written evidence of compliance with the lot package.

Table RD-PV-C3 12-1 Verification Requirements

Document Ref.	Subject	Property	Test Procedure	Test Frequency	Acceptance Limits
4.2	Mixed Material Properties	Binder Content	Refer Quality Plan	Refer Clause 4.2, per 50 metre linear interval	Refer Clause 4.2, within -0% and +10% of that specified
5.2		Moisture Content	AS 1289.2.1.1 or AS 1289.2.1.4.	One test per calibration curve	AS 1289.2.1.1 or AS 1289.2.1.4.
7.5	Pavement Compaction	Dry Density Ratio	TP 320	Refer Clause 7.7, one test per 400 square metres with a minimum of 3 tests per Lot.	Refer Clause 7.5, not less than; Base and subbase: 96% Modified Compaction Subgrade: 93% Modified Compaction
8	Thickness, widths, levels and tolerances	Thickness, widths, levels and tolerances	As specified in PC-S11 Site Surveys.	No more than 10 m apart longitudinally. As specified in PC-S11 Site Surveys.	Refer Clause 8

Other Records

12.2 The Contractor shall supply the following records:

Table RD-PV-C3 12-2 Other Records

Document Ref.	Subject	Record to be provided
5.3	Process Control	Daily production records of binder consumed, material mixed and placed
4.2	Process Control	Daily calculation of average binder content