

PART R23**INSITU STABILISATION****CONTENTS**

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1. GENERAL

- .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.
- .2 The pavement must be placed in the configuration specified in **Contract Specific Requirements**.
- .3 Any additional information regarding the existing materials or pavement or any additional requirements for design or construction of the pavement are included the **Contract Specific Requirements**.
- .4 Documents referenced in this Part are listed below:
AS 1289 Methods of Testing Soils for Engineering Purposes

2. QUALITY REQUIREMENTS

- .1 The Contractor must prepare and implement a Quality Plan that includes detailed procedures for:
 - (a) Method of MDD determination, vide Clause 6.2. "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 If not provided previously the procedures must be submitted at least 28 days prior to the commencement of site work.
- .3 Provision of the procedures listed in this Clause shall constitute a **HOLD POINT**.

3. TRIAL SECTION

- .1 The Contractor must 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 must be 1 000 square metres and to an agreed depth and width.
- .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

- .1 The binder must be spread uniformly over the area to be stabilised, using a mechanical spreader specifically designed for such work.
- .2 The spreading machine must be capable of accurately controlling the spread rate of the binder at the specified rate with a tolerance of -0, +10%. The spreading machine must 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 must be determined by weight.

- .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 must be considered to be a new run.
- .4 The Contractor must 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 must traffic the prepared pavement until mixed into the underlying material.

5. STABILISATION

- .1 The stabilisation process must 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.
- .2 The stabilising machine must be specifically designed to carry out the above operation and must 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.
- .3 Cutting, pulverising and mixing must 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.
- .4 Where stabilisation exceeds 250 mm depth, a minimum of two mixing passes must be undertaken.
- .5 During cutting, pulverising and mixing, any stone or portions of seal greater than a nominal 100 mm in size must be removed from the pavement and discarded.
- .6 The stabilisation machine must 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 must have a tolerance of -0, +10%.
- .7 Overlapping of runs by the stabilising machine must be a minimum of 100 mm parallel to the direction of travel and a minimum of 300 mm transverse to the direction of travel.
- .8 Unless otherwise specified in the **Contract Specific Requirements**, work undertaken each day must be completed across the full pavement width in order to open the road to traffic at the completion of each days work.
- .9 The surface of compacted stabilised layers must be kept continuously moist for a minimum period of 7 days or until covered by a subsequent pavement layer.

6. SURFACE FINISH

- .1 The surface of the stabilised layers must be uniformly tight and free of loose uncompacted material, segregated or 'bony' material or soft, over wet areas and free of roller indentations.
- .2 Where a spray seal is to be applied, pavement layers must be compacted with a minimum of 6 passes of a Class PR22 multi-wheel roller to achieve a uniformly tight surface.
- .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

- .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.
- .2 The Contractor must determine the proportion of the works which will constitute a single lot in accordance with Part G20. Compliance will apply to the whole of the lot of the works from which the set of tests is taken.

- .3 Any area which is deemed unsuitable must be excluded from the lot before testing commences. Excluded areas must 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 must be rectified prior to testing.
- .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

- .5 Unless otherwise stated in **Contract Specific Requirements** "Pavement Work", the stabilised layer must be compacted uniformly to the full depth and over the full width to the following:

Base and subbase:	96%.
Subgrade:	93%
- .6 The Contractor must determine the dry density ratio of a test sample in accordance with TP 320. The Contractor must perform "one for one" MDD testing for each test site.

Number and Location of Sites

- .7 Unless otherwise stated in **Contract Specific Requirements** "Pavement Work", the minimum frequency of testing of the stabilised layer must be one test per 400 square metres with a minimum of 3 tests per lot.
- .8 The location of tests must 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 must be equal to the number of tests required for a given lot.

8. THICKNESS, WIDTH, LEVELS AND TOLERANCES

- .1 The allowable tolerances on the finished levels of each pavement course must be as stated in **Contract Specific Requirements**.
- .2 If no tolerance on finished pavement levels has been specified, the tolerance on the compacted layer thickness must be ± 15 mm.
- .3 In addition to the tolerances specified, the surface must not deviate by more than 10 mm from a 3 m straight edge laid on the surface.
- .4 The tolerance on overall width must be ± 50 mm.

9. CONSTRUCTION JOINTS AND CURING

- .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 must provide construction joints at each discontinuity in the operation.
- .2 Longitudinal joints must be formed by cutting back into the compacted stabilised material by 100 mm.
- .3 Transverse construction joints must be formed by cutting back 1 m into the compacted stabilised material.
- .4 Unless otherwise stated in the **Contract Specific Requirements** "Pavement Work", the surface of compacted stabilised layers must be kept continuously moist by watering with suitable spraying equipment for a minimum period of 7 days.

10. 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
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

- (1) The three point method may be used to provide MDD value in stabilised material.
- (2) For granular pavement materials only

11. HOLD POINTS

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

CLAUSE REF.	HOLD POINT	RESPONSE TIME
2	Submission of Procedures (if not in Post Tender Submission)	7 days
3.2	Completion of trial section	6 working hours
6.3	Completion of stabilised layer	6 working hours