

**DEPARTMENT of INFRASTRUCTURE, ENERGY and RESOURCES, TASMANIA  
ROADWORKS SPECIFICATION**

**R42 - INSITU STABILISATION WITH  
CEMENTITIOUS MATERIALS**

**March 1995**

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**R42.1 SCOPE**

This specification covers the requirements for the insitu stabilisation of pavement layers by addition of cement, lime or other specified pozzolanic material. The requirements relate to preparation of existing pavement materials, quality of additive, construction plant, and spreading, mixing and compaction procedures.

**R42.2 DEFINITION OF TERMS**

The terms used in this specification are defined in:

AS 1348 - Part 1 - Roads and Traffic Engineering - Glossary of Terms

**R42.3 PREPARATION OF EXISTING PAVEMENT**

If the project specification requires the removal of the existing seal the Contractor shall restore the pavement to existing surface level by the addition of base course pavement material complying with Specification R40 Pavement.

Where the seal is not required to be removed it shall be broken up to a maximum size no larger than the nominal size of the specified base course and mixed into the pavement over the full stabilisation depth.

**R42.4 MATERIALS**

R42.4.1 Stabilising Additive

(i) Cement

Cement shall be General Purpose Cement Type GP complying with AS 3972. The time between manufacture and the day of use shall not exceed 3 months.

A copy of the Suppliers Certificate shall be given to the Superintendent upon delivery.

Admixtures, if used, shall comply with AS 1478.

(ii) Quicklime

The equivalent calcium oxide content of quicklime shall be not less than 95%.

At the time of spreading, quicklime shall comply with the grading requirements specified in Table R42.1.

**Table R42.1**

| AS Sieve Size (mm) | Test Value (% passing) |
|--------------------|------------------------|
| 9.5                | 100                    |
| 4.75               | 95 - 100               |
| 2.36               | 85 - 100               |

(iii) Hydrated Lime

The equivalent calcium oxide content of hydrated lime shall not be less than 70%.

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Bulk hydrated lime shall be dry and shall have been produced not more than 14 days before spreading.

### **(iv)            Other Cementitious Material**

Where the Contractor nominates to use cementitious materials other than those defined in (i), (ii) or (iii) above, or nominated in the project Specification, the Contractor shall:

- (a) provide a full description of the proposed cementitious materials including:-
  - the general class of material (slag, flyash etc)
  - the chemical and physical properties of the additive(s) covering the consistency of:-
    - quality of chemical composition and grain size.
    - safety data sheets.
- (b) provide evidence of the efficacy of the additives and compliancy with Table R42.3 for the proposed use including:-
  - the effect of additives on unconfined compressive strength at three (3) additive contents.
  - the gain in unconfined compressive strength at each additive content for at least three (3) time increments.

### **(v)            Storage of Cementitious Materials**

Cementitious Materials shall be stored in waterproof enclosures in a manner that will ensure the material is kept dry and free from contamination by deleterious materials. A storage enclosure which may be used for more than type of constituent shall be capable of being cleaned out thoroughly and inspected internally.

Bulk storage facilities shall be identified and arranged to prevent uncontrolled intermingling or mixing of different types of constituents. Where cement is stored in bags, it shall be used in the same chronological order as it was received into storage.

### **R42.4.2            Water**

Water shall be potable clear and substantially free from impurities such as oils, salts, organic substances acids, alkalis and vegetable substances.

### **R42.4.3            Pavement**

The material to be stabilised shall be the existing pavement material and any additional material placed over the existing pavement for mixing with the layer below. The depth to be stabilised is nominated in Annexure R42.1.

## **R42.5 TRIAL STRIP**

### **R42.5.1            Conduct of Trial Strip**

A trial strip shall be undertaken by the Contractor to demonstrate that the proposed method can achieve the specified requirements as defined in Table R42.2.

The Trial Strip shall be a special section of 400 m<sup>2</sup>

### **R42.5.2            The Trial Strip Hold Point**

The completion of the Trial Strip constitutes a hold point. The Contractor shall submit the results of the trial showing that all requirements of Table R42.2 have been achieved. Further work shall not proceed until the results are accepted by the Superintendent.

## R42.6 , CONTRACT MANAGEMENT PLAN REQUIREMENTS

### R42.6.1 Contract Management Plan and Operating Procedures

The Contractor's Contract Management Plan shall include, but not be limited to:

- (i) Type, brand and source of stabilising additives.
- (ii) Source of imported pavement materials.
- (iii) Evidence of performance of cementitious blends as defined in Clause R42.4.1(iv).
- (iv) Trial strip details.
- (v) Details of all plant to be used (spreading, mixing and compaction).
- (vi) Maximum time from spreading of additives to completion of compaction.
- (vii) The proposed location of longitudinal joints.
- (viii) Trimming and rectification of surface.
- (ix) The proposed method of curing.
- (x) Details of the Contractor's Operating Procedures for stabilisation works.

### R42.6.2 Records

Details to be recorded by the Contractor shall include but not be limited to:

- (i) Specified requirements of Tables R42.2 and R42.3.
- (ii) Date, location and actual spreading rate of all materials
- (iii) Moisture content at time of mixing.
- (iv) Weather Conditions.
- (v) All other records required by all other nominated specifications.

## R42.7 CONSTRUCTION

### R42.7.1 General

Construction shall be in accordance with the Contractor's Operating Procedures and the following.

### R42.7.2 Temporary Pavement Markers

Temporary pavement markers shall be placed at maximum 40 metre intervals along existing linemarking except edgelines prior to resurfacing works. The Contractor may elect closer spacings and edgeline marking to aid setout and traffic control.

### R42.7.3 Spreading

Spreading rate shall be in accordance with Table R42.2 and Annexure R42.1.

Spreading shall not proceed during conditions which may cause loss of stabilising agent or cause nuisance or danger to people or property.

Traffic or equipment not involved in spreading or mixing of the stabilising additives shall not pass over the spread material until it has been mixed into the layer to be stabilised.

### R42.7.4 Mixing

Mixing shall commence immediately after spreading of additive.

All samples for compliance with Table R42.3 shall be taken from the lower half of stabilised layers.

### R42.7.5 Compaction

Compaction shall achieve the requirements of Table R42.2.

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Compaction, other than that required for surface preparation, shall be completed within the time nominated in the Contract Management Plan.

### **R42.7.6        Surface Conditions**

The completed surface shall be in accordance with Table R42.2.

Additionally, the Contractor shall nominate within the Contract Management Plan, the proposed method of trimming the surface, the available time after spreading in which trimming can be carried out and the proposed method of rectifying defects.

The Contractor shall ensure full bonding between any additional correction materials and the underlying/adjacent material.

The material trimmed off shall be cut to waste and shall be removed from the site.

### **R42.7.7        Joints**

The frequency of transverse and longitudinal joints between compacted and freshly mixed material shall be minimised. Transverse joints shall be formed where stabilisation operations have been halted for more than the nominated compaction time.

Joints shall be formed by cutting back into the previously stabilised material to a fully compacted section, over the full depth and width of the layer(s).

Longitudinal joints shall be located at the centreline or lane boundaries. Any other location shall require approval from the Superintendent.

### **R42.7.8        Curing**

The Contractor shall include in the Contract Management Plan the method and program of curing. The program shall extend from completion of compaction to the application of the next specified layer. The program shall be consistent with the required time to develop the specified strength (Table R42.3).

Where water curing is used, the slurring of the surface or leaching of the stabilising agent shall be avoided.

## **R42.8 BITUMINOUS SURFACING**

Bituminous Surfacing shall be in accordance with Annexure R42.1.

## **R42.9 COMPLIANCE TESTING**

The Contractor shall carry out testing in accordance with Table R42.2 and Table R42.3.

## **R42.10 PAYMENT**

Payment shall be based on the rate per square metre of pavement treated as required by the design limits measured at finished surface level.

Payment shall include the Trial Strip.

The rate shall include the cost of the supply, placing, curing and compaction of material as required.

**TABLE R42.2 - PROCESS CHECKS**

| Process Check  | Test Method  | Frequency of Testing                | Specified Requirement   |
|--|--------------|-------------------------------------|---|
| Spread rate  | Clause R42.8 | 3 per 1000 m <sup>2</sup> minimum   | Within ± 10% of specified amount  |
| Compaction   |              |                                     | To a minimum characteristic dry density ratio of: 96% using modified compaction |
| Base and Sub-base  | As per G4    | As per G4                           | 95% using modified compaction   |
| Shaping final surface                                    | As per R40   | As per R40                          | As per R40  |
| Final compact. stabil. layer thickness                   |              | 3 per 1000 m <sup>2</sup> - minimum | As per R40  |
| Construction Joints:<br>a) Longitudinal<br>b) Transverse |              |                                     | Clause R42.7.6  |

**TABLE R42.3 - MIXING EFFICIENCY**

| TEST   | SAMPLES<br>(See Note 1)                           | SAMPLE CURING PERIOD (Days) | ACCEPTANCE CRITERIA   |
|--|---|-----------------------------|-----------------------|
| Unconfined Compressive strength AS 1141.51<br><b>OR</b> (Refer Note 2) | Three(3) per days production<br>Two(2) per sample | Refer Project Details       | Refer Project Details |
| CBR(soaked) AS1289   | Three per days productions                        | Refer Project Details       | Refer Project Details |

- NOTES:** 1/ Each portion compacted by modified compaction effort at field moisture content without further mixing. Compaction shall be completed within two (2) hours of field mixing.  
2/ The project details will define the test procedure to be used.

**ANNEXURE R42.1 - PROJECT DETAILS**

|  |                   |
|--|-------------------|
| (1) Depth to be stabilised                   | mm                |
| (2) Stabilising Agent                        |                   |
| (3) Additive Content %                       | kg/m <sup>2</sup> |
| (4) Existing Seal Treatment                  |                   |
| (5a) Surfacing -Type                         |                   |
| (5b) Surfacing - Time to be completed        |                   |
| (6) Additional Pavement Material to be added |                   |