



ACT
Government

STABILISATION 02C

MUNICIPAL
INFRASTRUCTURE
TECHNICAL
SPECIFICATION
02 - EARTHWORKS

Transport Canberra and
City Services

July 2019



Publication Number:	MITS 02C Edition 1 Revision 0
---------------------	-------------------------------

Date of Effect:	July 2019
-----------------	-----------

Supersedes:

Endorsed By:	Karl Cloos	Director, Infrastructure Planning
--------------	------------	-----------------------------------

Approved By: Ken Marshall Executive Branch Manager, Roads ACT

Document Information

Document	Key Information
----------	-----------------

Document Title MITS 02C Stabilisation

Next review date	
------------------	--

Key words

AUS-SPEC Base Document	1113 Stabilisation
------------------------	--------------------

Revision Register

Edition/ Revision Number	Clause Number	Description of Revision	Authorised By	Date
--------------------------	---------------	-------------------------	---------------	------

1/0

--	--	--	--	--

CONTENTS

- 1 STABILISATION 5**
 - 1.1 General 5
 - 1.1.1 Responsibilities..... 5
 - 1.1.2 Cross references..... 5
 - 1.1.3 Standard 7
 - 1.1.4 Interpretation..... 7
 - 1.1.5 Submissions..... 7
 - 1.1.6 Hold points and witness points 8
 - 1.2 Pre-construction planning 10
 - 1.2.1 Stabilisation processes 10
 - 1.3 Materials..... 11
 - 1.3.1 General..... 11
 - 1.3.2 Cement..... 11
 - 1.3.3 Quicklime..... 12
 - 1.3.4 Hydrated lime..... 12
 - 1.3.5 Ground granulated blast furnace slag..... 13
 - 1.3.6 Flyash..... 13
 - 1.3.7 Blended stabilising agents..... 13
 - 1.3.8 Water..... 14
 - 1.4 Execution 14
 - 1.4.1 Site establishment..... 14
 - 1.4.2 Provision for traffic..... 14
 - 1.4.3 Quality requirements 14
 - 1.4.4 Application of stabilising agent 15
 - 1.4.5 Mixing..... 16
 - 1.4.6 Trimming and compaction 17
 - 1.4.7 Joints 18
 - 1.4.8 Dimensions..... 18
 - 1.4.9 Trial section of stabilised earthworks 19
 - 1.5 Completion 19
 - 1.5.1 Submissions..... 19
- 2 MEASUREMENT AND PAYMENT20**
 - 2.1 Measurement 20
 - 2.2 Pay items 20
- ANNEXURE A.....22**
 - Stabilisation mix design 22

LIST OF TABLES

Table 2C-1 Hold point table..... 8
Table 2C-2 Witness point table 9
Table 2C-3 Types of subgrade zones or layers and stabilising binder table..... 11
Table 2C-4 Particle size distribution of quicklime table 12
Table 2C-5 Pay items table 20

1 STABILISATION

1.1 General

1.1.1 Responsibilities

1.1.1.1 Objectives

Requirement:

- > Provide for the stabilisation of subgrade using the specified materials and processes, as documented.

1.1.2 Cross references

General: The following documents are related to this Specification:

1.1.2.1 ACT Legislation

Public Roads Act

Public Unleased Land Act

Road Transport (General) Act

Road Transport (Safety and Traffic Management) Act

Road Transport (Mass, Dimensions and Loading) Act

Road Transport (Safety and Traffic Management) Regulation

Tree Protection Act

Work Health and Safety Act

1.1.2.2 Specifications

Requirement: Conform to the following:

MITS 00 Preliminaries

MITS 01 Traffic Management

MITS 00C Control of erosion and sedimentation

MITS 02A Clearing and grubbing

MITS 02B Bulk earthworks

MITS 03 Underground services

MITS 04 Flexible pavement construction

1.1.2.3 Design Standards

General: The following Design Standards are related to this Specification:

MIS 02 Earthworks and site grading

1.1.2.4 TCCS reference documents

General: The following TCCS reference documents are related to this Specification:

Reference Document 4	Protection of public landscape assets
Reference Document 6	Design Acceptance submissions
Reference Document 7	Operational acceptance submissions
Reference Document 8	Works as executed quality records
Reference Document 9	Final Acceptance submissions
Reference Document 10	Landscape consolidation
Reference Document 11	Drafting Standard for Civil and Landscape works

Referenced documents

1.1.2.5 Standards

General: The following documents are incorporated into this Specification by reference:

Australian standards

AS 1141	Methods for sampling and testing aggregates
AS 1141.11.1	Particle size distribution – sieving method
AS 1289	Methods of testing soils for engineering purposes
AS 1289.4.2.1	Soil chemical tests - Determination of the sulphate content of a natural soil and the sulphate content of the groundwater - Normal method
AS 1289.5.7.1	Soil compaction and density tests - Compaction control test - Hilf density ratio and Hilf moisture variation (rapid method)
AS 1289.5.8.1	Soil compaction and density tests - Determination of field density and field moisture content of a soil using a nuclear surface moisture-density gauge - Direct transmission mode
AS 1289.6.1.1	Soil strength and consolidation tests - Determination of the California Bearing Ratio of a soil - Standard laboratory method for a remoulded specimen
AS/NZS 2350	Methods of testing Portland and blended cements
AS/NZS 2350.4	Setting time of Portland and blended cements
AS 2350.9	Determination of residue on the 45 μ m sieve
AS 3582	Supplementary cementitious materials for use with portland and blended cement
AS 3582.1	Fly ash
AS 3582.2	Slag - Ground granulated iron blast-furnace
AS 3583	Methods of test for supplementary cementitious materials for use with portland cement
AS 3583.3	Determination of loss on ignition
AS 3583.6	Determination of relative water requirement and relative strength
AS 3583.12	Determination of available alkali
AS 3583.13	Determination of chloride ion content
AS 3583.14	Determination of insoluble residue content
AS 3972	General purpose and blended cements

1.1.2.6 Other publications

Austrroads

AGPT Austrroads Guide to Pavement Technology

AGPT04D Part 4D: Stabilised materials

NSW RMS Test Methods

T432 Rate of slaking of quicklime

1.1.3 Standard

1.1.3.1 General

Standard: To *AGPT04D*.

Proprietary products: To *TCCS Products previously considered for use list*

1.1.4 Interpretation

1.1.4.1 Abbreviations

General: For the purposes of this Specification the following abbreviations apply:

EPA: ACT Environment Protection Authority, ACT Government and its successors.

NATA: National Association of Testing Authorities.

TCCS: Transport Canberra and City Services, ACT Government and its successors

1.1.4.2 Definitions

General: For the purpose of this Specification, the definitions of terms used to define the components of the road reserve are in conformance with *AS 1348, Glossary of Austrroads Terms* and *AGRD03*, the definitions given below also apply:

Authorised Person: The Authorised Person as defined by the contract.

Field working period: Time period from addition of mixing water until completion of compaction.

Selected material zone: The top part of the Upper zone of formation in which material of a specified higher quality is required.

Stabilising agent: Quicklime, hydrated lime, slag/lime blend, cement.

Subgrade: The subgrade or upper zone of formation includes the selected material zone.

Upper zone of formation: The upper zone of formation includes the selected material zone and is at the top of the formation.

1.1.5 Submissions

1.1.5.1 Approvals

Submissions: Conform to **Hold points and witness points**.

1.1.5.2 Documents

Prepare the following:

- > Stabilisation: details of stabilisation mix design, subcontractor and methodology.

1.1.6 Hold points and witness points

1.1.6.1 Notice

General: Give written notice to the Authorised person so that the documented inspection and submissions may be made to the **Hold point table** and the **Witness point table**.

Table 2C-1 Hold point table

Item	Clause title	Requirement	Notice for inspection	Release by
Pre-construction planning				
2C.1	Stabilisation processes - Stabilisation Work Plan (SWP)	Submit SWP	Within 14 days of possession of site being granted and at least 3 working days prior to commencement of earthworks in any given area	Authorised Person
2C.2	Stabilisation processes - Materials proposed for use in the work	Submit NATA certificate of compliance	5 working days prior to commencement of works	Authorised Person
2C.3	Stabilisation processes – Field Working Period	Nominate the specific field working period in Annexure A .	5 working days prior to commencement of works	Authorised Person
Materials				
2C.4	Cement - Storage	Re-test cement stored in excess of 3 months	2 working days prior to usage	Authorised Person
Execution				
2C.5	Application of stabilising agent - In situ application	Proposals for special processes of supply of stabilising agent into the mixing bowl	5 working days prior to mixing	Authorised Person
2C.6	Mixing - In situ mixing process	Demonstration of equipment mixing efficiency in trial section	Same day as production but before production is approved to commence.	Authorised Person
2C.7	Trimming and compaction - Trimming	Work methods to exclude laminations and slurring	3 working days prior to production stabilisation	Authorised Person
2C.8	Trimming and compaction - Survey control methods	Use of trimmed material as fill or spoil	3 working days prior to disposition	Authorised Person
2C.9	Trial section of stabilised earthworks - General	Submit details of the proposed trial section of stabilised earthworks	3 working days prior to commencement of works	Authorised Person

Item	Clause title	Requirement	Notice for inspection	Release by
2C.10	Trial section of stabilised earthworks - General	Any deficient sections will require to be investigated and may be directed to be removed	Progressive	Authorised Person

Table 2C-2 Witness point table

Item	Clause title	Requirement	Notice for inspection
------	--------------	-------------	-----------------------

Materials

2C.1	Blended stabilising agent - Handling and storage	Comply with supplier's handling and storage requirements and arrange sampling of agent	Progressive
------	--	--	-------------

Execution

2C.2	Quality requirements - Compaction	Adjustment of Field Working Period for site conditions.	Progressive
2C.3	Application of stabilising agent - Stationary mixing plant	Monitoring application of stabilising agent at the plant	Progressive
2C.4	Application of stabilising agent - Stationary mixing plant	Removal of spilled stabilising agent	Immediately upon spillage event
2C.5	Application of stabilising agent - Spreading out	Actual spread to be recorded and checked	Progressive
2C.6	Application of stabilising agent - Spreading out	Record average spreading rate using load cells or alternative approved method	Progressive
2C.7	Mixing - Stationary mixing plant	Test unconfined compressive strength	Progressive
2C.8	Mixing - In situ mixing process	Visual inspection to make sure uniform mixing and record	Progressive
2C.9	Mixing - In situ mixing process	Additional passes of mixing equipment to improve uniformity	Progressive
2C.10	Trimming and compaction - Survey control methods	Survey to confirm pavement layer thickness remains within tolerances after trimming	Progressive
2C.11	Dimensions - Width	Random measurement of stabilised layer width	As directed by Authorised Person

1.2 Pre-construction planning

1.2.1 Stabilisation processes

1.2.1.1 Stabilisation Work Plan

Stabilisation Work Plan: Submit details of the proposed equipment (including the mixing plant) and stabilisation procedures to be used in the work, in addition to the Project Quality Plan. This submission will be known as the Stabilisation Work Plan (SWP) and is to include the following:

- > Widths of stabilisation passes.
- > Curing methods.

This is a **HOLD POINT**.

1.2.1.2 Materials proposed for use in the work

Certificates of compliance: Provide a certificate from a NATA registered laboratory showing the stabilisation mix(es) submitted and the mix constituents comply with the mix specified in **Annexure A**.

This is a **HOLD POINT**.

1.2.1.3 Works generally

Protection: Take all necessary precautions to protect the work from damage until such time as the new work has developed sufficient strength to carry normal traffic without damage.

Delays: Take all necessary steps to avoid or minimise delays and inconvenience to road users during the course of the work. Where adequate detours or side tracks are included in the contract or are otherwise available, traffic to be temporarily diverted while the work is in progress.

1.2.1.4 Field working period

Submit: Provide the nominated Field Working Period in **Annexure A** for the stabilising agent approved for the works.

This is a **HOLD POINT**.

Method: The nominated Field Working Period to be based on laboratory tests determining the time from mixing until such time as the calculated Wet Density for standard compaction procedures decreases by more than 2% points.

Samples: This testing to be undertaken utilising *AS 1289.5.7.1* and samples of the materials representative of those to be utilised in the works.

Type: The field working period may vary significantly with variations in the type of stabilising agent.

1.3 Materials

1.3.1 General

Stabilisation types: The requirements for stabilisation of the types of subgrade zones or layers are shown in the **Types of subgrade zones or layers and stabilising binder table**. The pavement course is as specified in MITS 04 Flexible pavement construction.

Table 2C-3 Types of subgrade zones or layers and stabilising binder table

Subgrade zone or layer	Stabilising binder
Selected Material Zone	Cement Blended Stabilising Agent Quicklime (in situ) Hydrated Lime (pug mill and in situ)
Other Subgrade Layers	Cement Blended Stabilising Agent Quicklime (in situ) Hydrated Lime (pugmill and in situ)
Selected Backfill Zone	Cement Hydrated Lime (pugmill and in situ)

1.3.2 Cement

1.3.2.1 Standard

General: To AS 3972.

Testing: To AS 2350 (*Various*).

Proof of quality: Provide documentary evidence of the quality and source of the cement upon request at any stage of the work.

1.3.2.2 Storage

Storage period: Prior to use re-test and submit test results for cement that has been stored for a period in excess of three months from the time of manufacture to make sure the cement still complies with AS 3972.

This is a **HOLD POINT**.

Transport: Transport cement in water tight packaging and protect from moisture until used. Do not use caked or lumpy cement.

1.3.3 Quicklime

1.3.3.1 Standard

Available lime: To AS 3583.12.

Temperature rise: To test method RMS T432.

Particle size: To AS 1141.11.1.

Quality: Provide NATA laboratory test results to confirm that the quicklime supplied conforms to that specified.

1.3.3.2 Properties

Calcium oxide: Quicklime to consist of essentially calcium oxide in a highly reactive form. At the point of spread the content of calcium oxide shall be > 85 %.

Slaking rate: The active slaking time shall be ≤ 20 minutes. The temperature rise on slaking > 40°C in 6 minutes (determined from the average of four samples tested in accordance with Test Method RMS T432).

Particle size: The particle size distribution of the quick lime to comply with the following requirements in the **Particle size distribution of quicklime table**.

Table 2C-4 Particle size distribution of quicklime table

AS Sieve	Per cent passing
13.2mm	100
9.5mm	96–100
4.75mm	70–100
2.36mm	0–90

1.3.4 Hydrated lime

1.3.4.1 Standard

Available lime: To AS 3583.12.

Fineness: To AS 2350.9.

Particle size: To AS 3583.14.

Quality: Provide NATA laboratory test results to confirm that the hydrated lime supplied conforms to that specified. Details shall include percentage of calcium hydroxide, fineness expressed by percentage by mass passing the 45µm sieve and source.

1.3.4.2 Properties

Calcium hydroxide: Hydrated lime shall consist essentially of calcium hydroxide > 80 %. Both when used as the sole stabilising agent or blended with other additives.

Form: The material to be in powder form and must be dry.

Residue on sieving (Particle Size): The residue on a 300µm sieve < 2 %.

1.3.5 Ground granulated blast furnace slag

1.3.5.1 Standard

Type: To AS 3582.2.

Fineness: To AS 2350.9.

Relative strength: To AS 3583.6.

Quality: Provide NATA laboratory test results to confirm that the slag supplied conforms to that specified. Details to include fineness expressed by percentage by mass passing the 45µm sieve, relative strength (28 days) and source.

1.3.6 Flyash

1.3.6.1 Standard

Type: To AS 3582.1.

Fineness: To AS 2350.9.

Loss on ignition: To AS 3583.3.

Quality: Provide NATA laboratory test results to confirm that the fly ash supplied conforms to that specified. Details shall include fineness expressed by percentage by mass passing the 45µm sieve, loss on ignition and source.

1.3.7 Blended stabilising agents

1.3.7.1 Standard

Fineness: To AS 2350.9 Setting time: To AS/NZS 2350.4.

Quality: Provide NATA laboratory test results to confirm that the blended agent supplied is in accordance with that specified. Details shall include fineness expressed by percentage by mass passing the 45µm sieve, setting time and source of each component.

1.3.7.2 Batch information

Requirements: A blended stabilising agent may be used.

Blending mass: The mass of components of the nominated blended stabilising agent are not to vary by more than ± 3 % from the blend percentages nominated in the mix design described in **Annexure A**.

1.3.7.3 Handling and storage

Requirements: Comply with the supplier's handling and storage requirements. Also arrange for sampling of the agent as required.

1.3.8 Water

1.3.8.1 Standard

Chloride ion: To AS 3583.13.

Sulphate ion: To AS 1289.4.2.1.

1.3.8.2 Quality

Water shall be free from harmful amounts of materials such as oils, salts, acids, alkalis and vegetable substances. Water accepted as potable and fit for human consumption will not require testing to confirm suitability.

Tolerances: Water not to contain more than:

- > 600 parts per million of chloride ion.
- > 400 parts per million of sulphate ion.
- > 1 % by mass of undissolved solids.

1.4 Execution

1.4.1 Site establishment

1.4.1.1 Survey

Requirement: Confirm site surface and benchmarks. Conform to *MITA 00A General Requirements*.

1.4.1.2 Erosion and Sediment Control

Requirement: Provide appropriate erosion and sediment control measures prior to commencing work. Conform to *MITA 00C Control of erosion and sedimentation*.

1.4.2 Provision for traffic

1.4.2.1 General

Requirement: Conform to *MITA 01 Traffic management*.

1.4.3 Quality requirements

1.4.3.1 Compaction

Compaction within Field Working Period: Complete the compaction process within the nominated Field Working Period unless specific approval is provided by the Authorised Person to an adjustment for site and seasonal conditions.

This is a **WITNESS POINT**.

1.4.3.2 Weather conditions

Moisture Content: Do not proceed with the stabilisation of pavement materials during wet weather or if rain is imminent and likely to occur during any stage of the stabilisation process so as to significantly influence the resultant moisture content and uniformity of moisture content in the mix.

Wind: Do not proceed with spreading during windy conditions if open spreading which may cause loss of stabilising agent or cause nuisance or danger to people or property.

1.4.4 Application of stabilising agent

1.4.4.1 Stationary mixing plant

Application rate: Monitor the application rate of stabilising agent at the pug mill or equivalent approved plant. Record for every 100 tonnes of production in kg/tonne.

This is a **WITNESS POINT**.

Accuracy: The achieved accuracy of application rate $\pm 10\%$ of the rate nominated in **Annexure A**.

Spillage: Remove any spillage of the stabilising agent on site or at any loading location related to the site as soon as possible and within the same work shift of such spillage.

This is a **WITNESS POINT**.

Excessive application: Prevent excessive application so as not to exceed the nominated rate by more than 10%.

1.4.4.2 In situ application

Application process: The incorporation of stabilising agent is to be approved by the Authorised person. A demonstration of the process at the Contractor's expense may be requested.

This is a **HOLD POINT**.

1.4.4.3 Spreading out

Mechanical spreader: Carry out spreading using the approved mechanical spreader nominated in the Work Plan.

Spread rate: Nominated in **Annexure A**.

Tolerances: The actual spread rate to be within $\pm 10\%$ of the nominated rate.

This is a **WITNESS POINT**.

Testing: Spread rate testing to be performed by weighing the contents of a suitable 4 sided tray placed on the surface and between the wheels of the mechanical spreader. Calculate the rate of stabilising agent spread by dividing the mass collected (kg) by the area of the tray (m^2).

Average spread rate: Where spreading vehicles are fitted with load cells, ascertain the average spreading rate of the stabilising agent by dividing the mass of the stabilising agent spread per run by the area of the run.

Record: Submit data for each run, however such action will not cancel the Contractor's obligation to undertake the prescribed testing of spread rate.

This is a **WITNESS POINT**.

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

1.4.5 Mixing

1.4.5.1 Stationary mixing plant

Type: Purpose built stationary mixing plant for the process of mixing road making materials.

Maintain equipment: Maintain and calibrate all equipment so as to provide a uniformly mixed product without segregation of the aggregate material.

Water addition: Control and meter the inclusion of water into the mix.

Stationary mixing equipment: Incorporate a delivery system for mix materials capable of producing a uniform mixture to design requirements.

Strength test: Confirm performance by monitoring the unconfined compressive strength or CBR percentage of production, to conform to *AS 1289.6.1.1*. Test a pair of specimens for each 100 tonnes of production.

This is a **WITNESS POINT**.

1.4.5.2 In situ mixing process

Equipment: Mixing equipment and procedure to comply with the following:

- > Purpose built for the process of in situ mixing of earth or gravel materials.
- > Capable of mixing to the depth specified for the layer to be stabilised.

Distribute the stabilising agent uniformly through the full depth and over the whole area of the layer to be stabilised.

A minimum of 2 passes of the mixing equipment is required.

As mixing blades or tynes wear, replace to maintain mixing efficiency consistent with that demonstrated during the trial section.

Mixing equipment capable of supplying a calibrated amount of water to the mixing bowl in such a manner as to provide a uniformly moist mix to a target moisture content.

Approval: Demonstrate the mixing efficiency.

This is a **HOLD POINT**.

Uniform mixture: The resultant mix must be uniform over the full depth so that there are no lenses, pockets, lumps or granules of stabilising agent present in the layer or adjacent to it.

Work plan: The procedure nominated in the Work Plan is to minimise disturbance of the distribution of stabilising agent spread in advance of the mixing process.

Inspections: Carry out visual inspections during mixing to make sure uniform mixing is being achieved in the layer. Record inspection results to conform to *MIT S 00B Quality Construction*.

This is a **WITNESS POINT**.

Additional mixing: The Authorised Person may direct that additional passes by the mixing equipment be carried out to improve the visual uniformity of the mix and/or the moisture content.

This is a **WITNESS POINT**.

1.4.6 Trimming and compaction

1.4.6.1 Tolerances

Level tolerance: After mixing, trim and compact the layer to conform to *MIT5 04 Flexible pavement construction* to produce a tight dense surface parallel with the finished wearing surface so that the levels do not vary from the design levels beyond the tolerance for primary trimming.

1.4.6.2 Trimming

Secondary trimming: Subsequent secondary trimming may be undertaken on one or more occasions with the objective of meeting shape and level requirements. Secondary trimming to involve cutting to waste. Work methods that lead to the development of laminations in the pavement will not be allowed and surface slurring will not be accepted.

This is a **HOLD POINT**.

1.4.6.3 Survey control methods

General: Provide adequate survey control methods as stated in the Work Plan to make sure that the layer thickness is not reduced during secondary trimming to an extent that it fails to comply with the requirement for layer thickness in accordance with the tolerance specified.

Layer thickness after trimming: When required by the Authorised Person, provide survey results to confirm that the pavement layer thickness remains within tolerance after secondary trimming. This survey will be at no cost to the Principal.

This is a **WITNESS POINT**.

Trimmed material: All trimmed material having been cut to waste is to be used as fill or spoil as directed. The material will be owned by the Contractor

This is a **HOLD POINT**.

1.4.6.4 Compaction

General: Compact the stabilised layer over the entire area and depth so that the relative compaction determined by *AS 1289.5.7.1* is not less than as detailed in this Specification or *MIT5 03 Underground services* as appropriate.

Test method: To provide true relative compaction assessments the lots will be sampled and tested within the nominated Field Working Period to conform to *AS 1289.5.7.1*.

Wet Density: The maximum wet density (standard compaction) will be determined by sampling immediately after the determination of field density and testing to be undertaken within 2 hours of sampling. A determination of maximum wet density (standard compaction) representing the full layer depth is required for each sampling location when calculation of relative compaction is undertaken.

In situ dry density: The field density may be determined by in situ sand replacement testing or by single probe Nuclear Density Meter in direct transmission mode to conform to *AS 1289.5.8.1*.

1.4.7 Joints

1.4.7.1 Joint type

General: Joints comprise interfaces between work episodes that are separated in time by more than the nominal Field Working Period for the nominated stabilisation mix design.

A longitudinal joint is considered to be a joint generally parallel to the road centreline.

A transverse joint occurs when a length of work is terminated and extended at a later time after a period which exceeds the nominated Field Working Period.

1.4.7.2 Cutting back

General: Conform to the following:

- > All longitudinal and transverse joints to be formed by cutting back into the previously stabilised and fully compacted sections.
- > A minimum longitudinal overlap of mixing runs to be 75mm.
- > Transverse joints to be overlapped by a minimum of 2m.
- > Remix the material disturbed during cutting back at full depth and incorporate into the new work.
- > No longitudinal joints to be allowed within 0.5m of the centreline of a typical wheel path.

Finish: The level and shape of the joints to be within the limits specified.

1.4.8 Dimensions

1.4.8.1 Levels and surface trim

Surface levels: Conform to the following:

- > The surface level after primary trimming + 30mm and + 10mm of the levels shown on the Drawings.
- > The surface level after secondary trimming + 15mm and - 15mm of the levels shown on the Drawings.
- > Make sure the final surface level is within ± 15 mm of the design levels in the event only a single trim is carried out.

1.4.8.2 Layer thickness

Layer thickness: Conform to the following:

- > The final thickness of the stabilised layer at any point tolerance of + 20mm and - 10mm of the nominated layer thickness.
- > The average thickness of the layer in a lot is determined from measurements of six randomly selected locations over any 200m length of a lot and not less than that required to meet the specified final thickness tolerances after trimming.
- > The layer thickness is measured at the edges of the stabilising run before compaction commences and measured relative to the finished design level.

1.4.8.3 Width

General: Conform to the following:

- > The minimum width measured at any point of the stabilised layer must not be less than the specified width as shown in the drawings by more than 50mm.
- > Average width of the layer determined from measurements at 3 sites selected at random by the Authorised Person over any 200m length of a lot and not less than the specified width.

This is a **WITNESS POINT**.

1.4.9 Trial section of stabilised earthworks

1.4.9.1 General

Submit: Where required by **Annexure A** and prior to the commencement of works submit a trial section of Stabilised earthworks to demonstrate the methods proposed to conform to this Specification.

This is a **HOLD POINT**.

Trial section: This section is constructed so that it may be incorporated in the finished work. The length shall be approximately 100m.

Materials and methods: Construct the trial stabilisation using the materials, equipment and methods for placing and finishing the same as would be used for the entire base works. Demonstrate the methods proposed to be used for the construction of joints.

Deficient trial section: In the event of deficiencies in the stabilisation the trial section may not be approved. The method, equipment, materials and personnel will require to be reviewed and an explanation submitted. A further length of stabilisation may be requested.

This is a **HOLD POINT**.

Requirement: Remove rejected works and make good any damage.

Removal: Remove the non conforming trial stabilised earthworks ensuring to prevent damage to the remaining stabilised earthworks and underlying materials.

Dispose: Unless the material can be incorporated into the works generally, dispose of the removed materials off-site. The cost of disposal shall be included in the rate for the trial section.

Payment: Payment made for the stabilisation at the rates for appropriate pay items, if it has been constructed without deficiencies and is incorporated into the work.

1.5 Completion

1.5.1 Submissions

Work as Executed Records: To *MITS 00B Quality Requirements*.

2 MEASUREMENT AND PAYMENT

2.1 Measurement

2.1.1.1 General

Payments made to the Bill of Quantities: To MITS 00A General Requirements, this Specification, the Drawings and **Pay items**.

2.1.1.2 Methodology

The following methodology will be applied for measurement and payment:

- > Allow for all work, materials, testing and quality assurance requirements in each Pay Item.
- > Except that where stabilisation is provided by use of stationary plant the supply of the material including the stabilisation service and stabilising agent is measured and paid to conform to MITS 04 *Flexible pavement construction* or MITS 02B *Bulk earthworks*, as appropriate, for supply of the material. Supply in these circumstances includes all testing.
- > Supply, spread and compact select material is measured and paid to conform to MITS 02B *Bulk earthworks*.

2.2 Pay items

Table 2C-5 Pay items table

Item No	Pay items	Unit of measurement	Schedule of rates scope
2C.1	Supply stabilising agent (in situ mixing only)	Tonnes	This pay item shall include all activities associated with the supply and delivery of the stabilising agent, including conformance testing. A separate pay item shall be included in the contract for each stabilising agent type. 2C.1.1 Cement 2C.1.2 Quick lime 2C.1.3 Hydrated lime 2C.1.4 Blended stabilising agent
2C.2	Trial Section	m ² as specified on the Drawings	All activities associated with the preparation of a trial section of stabilised earthworks to the nominated depth including removal and disposal of materials from site and undertaking a new trial if the initial result is rejected.
2C.3	Additional Trial Sections	m ² as specified by the Authorised Person	The pay item shall be for additional Trial Sections as determined / instructed by the Authorised Person

Item No	Pay items	Unit of measurement	Schedule of rates scope
2C.4	Spread and mixing of stabilising agent	m ² as specified on the Drawings or as directed by the Authorised Person.	All activities associated with the spreading and mixing of the stabilising agent with the designated materials in-situ and to the nominated depth.

ANNEXURE A

Stabilisation mix design

Type of stabilising agent

.....

.....

.....

Nominal percentage of stabilising agent by mass %

Spread rate of stabilising agent for contractual purposes (kg/m²)

Depth of compacted layer to be stabilised (mm)

Nominated Field Working Period (hrs)

Nominated target unconfined compressive strength (UCS)
(7 day accelerated curing) MPa

Nominated target CBR value (4 day soaked) for stabilised modified subgrade %

Source of nominated in-situ material

Trial section



Transport Canberra and
City Services

July 2019