

TRANSPORT FOR NSW (TfNSW)

QA SPECIFICATION TfNSW M290

PAVEMENT REBUILDING (BOUND AND UNBOUND MATERIAL)

NOTICE

This document is a Transport for NSW QA Specification. It has been developed for use with roadworks and bridgeworks contracts let by Transport for NSW or by local councils in NSW. It is not suitable for any other purpose and must not be used for any other purpose or in any other context.

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REVISION REGISTER

Ed/Rev Number	Clause Number	Description of Revision	Authorised By	Date
Ed 1/Rev 0		First edition.	GM, RNIC	09.07.04
Ed 1/Rev 1	Various Foreword 2.3, 2.4 and 4.2 to 4.6 4.7 and 4.8 Annexure M	Minor editorial changes New clause after the Table of Contents Clauses renumbered. New clauses. Annexure reformatted and some new references to RTA specifications added.	GM, RNIC	28.01.05
Ed 1/Rev 2	4.4.5 Annexure B.3	Removed comment and substituted a new Technical Reference Note 'In-situ Incorporation of Binder'. Removed comment from header of Table B.5 and incorporated its intent in Note (i) and new Note (ii) to that table.	GM, RNIC	10.08.06
Ed 1/Rev 3	1.1 4.4.10 Annexure A.2.3	New clause re Intended Use Overlap increased to 100mm Corrected cross reference from Clause 2.3.2.1 to Clause 2.4	GM, IC	31.08.07
Ed 1/Rev 4	Most	Format corrected	GM, IC	24.10.07
Ed 2/Rev 0	All	Changed Pay Items to match new Maintenance Activities Changed references to other similarly changed specifications Renamed ("Reconstruction" replaced by "Rebuilding") Removed Incentive mechanisms Changed internal referencing format	GM, IC	04.08.08
Ed 2/Rev 0 (cont'd)	New 1.3	New clause re Earthworks, bituminous, asphaltic & concrete pavement layers not being within this specification's scope.		

Ed/Rev Number	Clause Number	Description of Revision	Authorised By	Date
	New 5.2 New 5.3 New Annexure A.3	Introduced Warranty Added clause re Accomplishment reporting. Introduced warranty obligations and period		
Ed 3/Rev 0	All	General technical review, and revision of some technical requirements. Requirements added for mix design, stockpiling, and construction for modified/bound granular materials which were previously included in RMS 3061. RMS 3061 has been replaced by RMS 3051. Format revised.	GM, IAM	19.02.13
Ed 3/Rev 1	4.9.3.4 Annex M	Clause reference to spec SI/TCS/8 (withdrawn) replaced with spec TS101. Referenced Documents updated.	MCQ	14.10.19
Ed 3/Rev 2	Global	References to “Roads and Maritime Services” or “RMS” changed to “Transport for NSW” or “TfNSW” respectively.	DCS	22.06.20

GUIDE NOTES

(Not Part of Contract Document)

THESE NOTES ARE NOT PART OF THE SPECIFICATION, CONTRACT OR AGREEMENT.

The following notes are intended to provide guidance to TfNSW personnel on the application of the Specification. They do not form part of the Specification, Contract or Agreement.

USING TfNSW M290

TfNSW M290 has been specifically developed for TfNSW maintenance works. It must not be used without a review of its suitability for the application and in the contractual environment.

It is a QA specification. The use of QA specifications requires the implementation of a quality system by the service provider which meets the quality system requirements specified in TfNSW Q.

OUTLINE

TfNSW M290 Pavement Rebuilding (Bound and Unbound Material) has been written for pavement reconstruction works. The specification is based on TfNSW Specifications R71, R73 and R75. It contains revised and updated clauses.

TfNSW M290 combines base and subbase pavement reconstruction using granular, modified or bound pavement materials into one specification. Materials may be supplied as unbound granular, plant mixed or mixed insitu.

The accompanying material specification is TfNSW 3051 Granular Pavement Base and Subbase Materials.

If formation widening is part of the works TfNSW R44 Earthworks should be used as TfNSW M290 does not cover this work. However, TfNSW M290 does allow for treatment of unsuitable areas of the existing pavement before reconstruction.

Other than providing maintenance Activity Codes and Pay Items for Prime, Primerseal and Final Seal, TfNSW M290 does not address bituminous, asphalt, or concrete PAVEMENT LAYERS. These must be separately requested in the Works Order which calls up the appropriate R series bituminous, asphalt, or concrete specification(s).

Note, however, that the roughness testing required by Clause 5 and Annexure A.2 of this Specification necessitates a seal be placed over the base as part of work to be executed under this Specification.

INSITU INCORPORATION OF BINDER

Clause 4.4.5 requires that equipment applying binder be fitted with a weighing system capable of providing a continuous record of the rate at which the binder is applied (eg using load cells) The TfNSW Contract Manager may choose to permit other equipment. However, if this is done the application rate must be more closely monitored so that acceptable uniformity is achieved.

TERMINOLOGY

The definitions are summarised in Annexure M. This annexure is at the back of the specification so that it can be easily located.

Care should be taken to correctly use the defined terms and Not to invent others with similar meaning.

The following clarify some changes to terminology used in current construction specifications:

A single term “Binder” is used in TfNSW M290 to encompass all types of stabilising binders.

“Unbound” material is a term that describes a general type of PAVEMENT COURSE, which does not act as a bound course. In TfNSW M290 “unbound” includes both granular and modified pavement materials.

DETAILS OF WORK (ANNEXURE A)

The annexure must be completed to clearly identify and locate each site and the specific combinations of PAVEMENT COURSES. Where alternatives are offered, one must be struck through leaving the other, eg ~~Yes~~ / No.

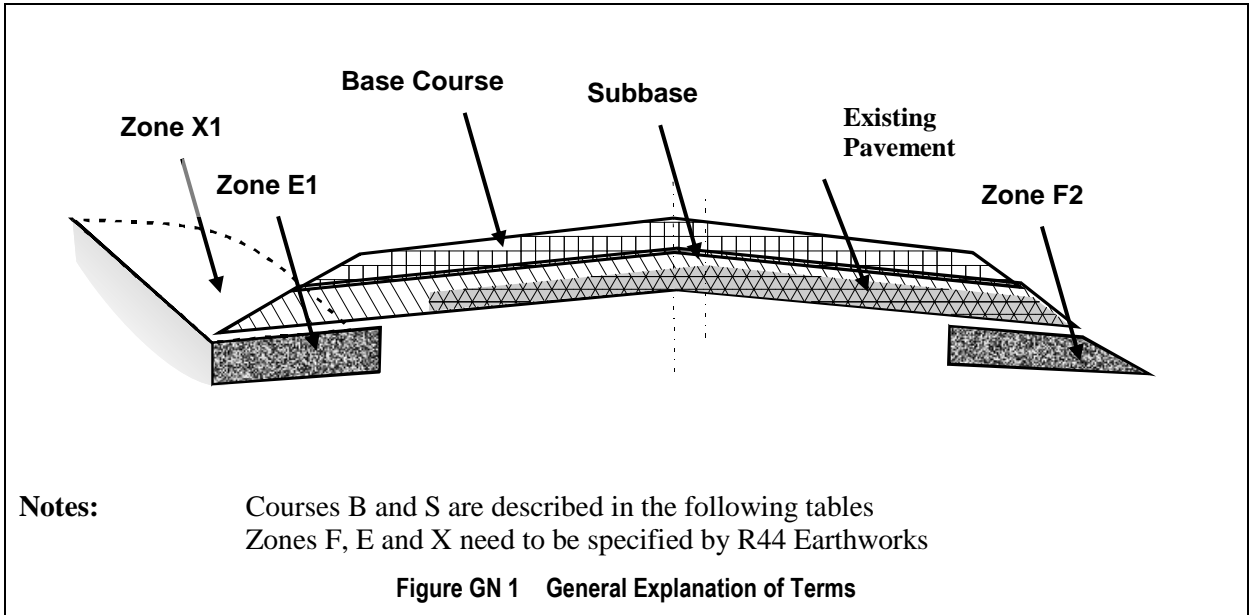
The abbreviations for areas are described in Figure GN 1.

A new site should be identified and referenced wherever the PAVEMENT COURSES are different. Sites may be adjoining or separate.

The tables within Annexure A.2 are to be repeated for each Site Reference.

The Material Reference is a reference system to uniquely link the pavement material specified in TfNSW 3051 and any corresponding Nominated Mix Design with the site and PAVEMENT COURSE.

The Pavement Diagram for the Site (Annexure A.2) can be manipulated to suite most general arrangements. It is purely diagrammatic and not intended to replace drawings. The palette on the following page has component parts which can be copied and pasted into the diagram.



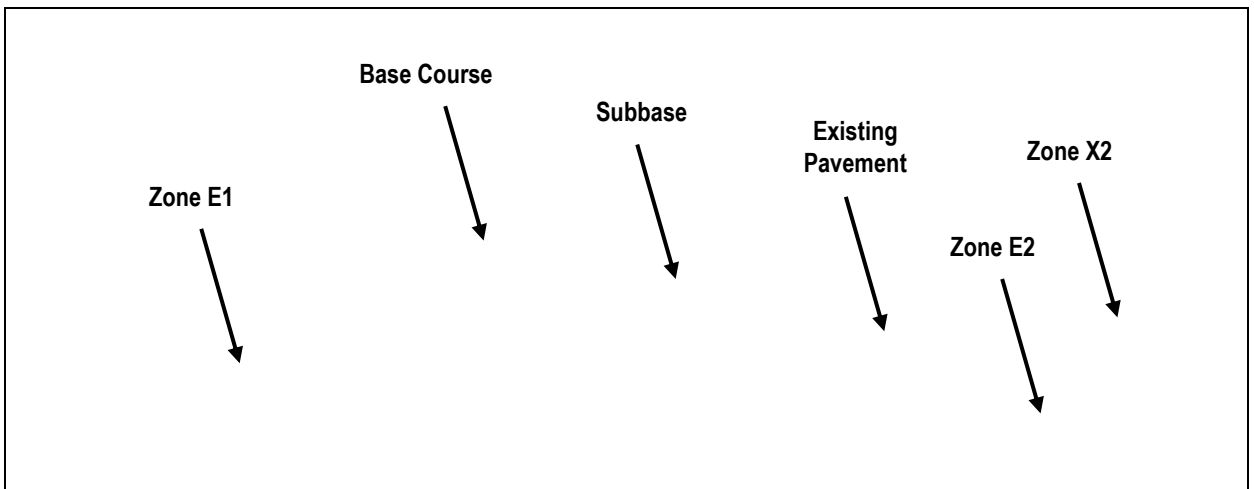
THE PALETTE

Clips to develop other cross sections - use Draw Toolbar to Order the clips as being back or front.

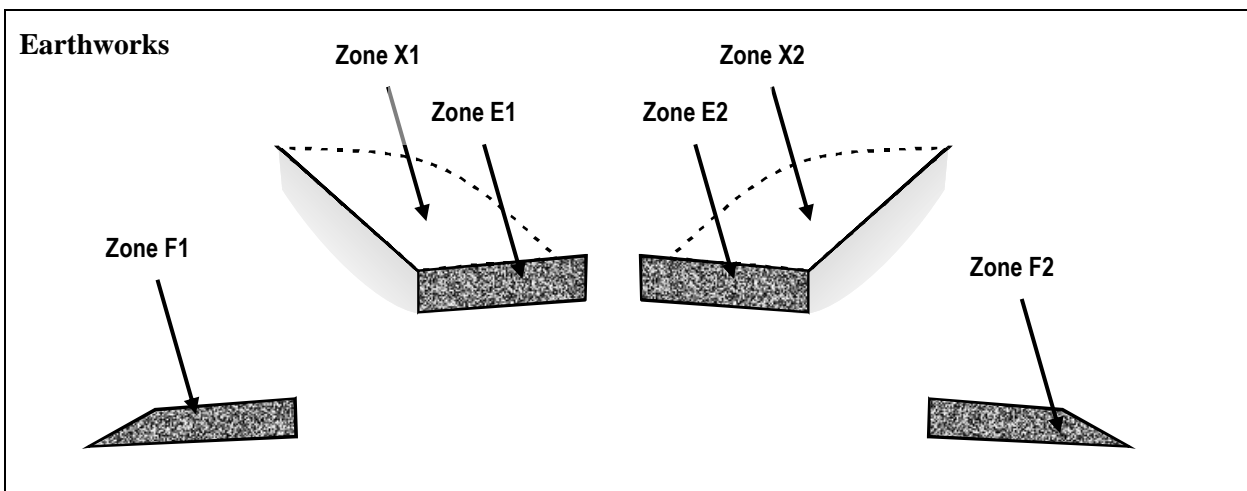
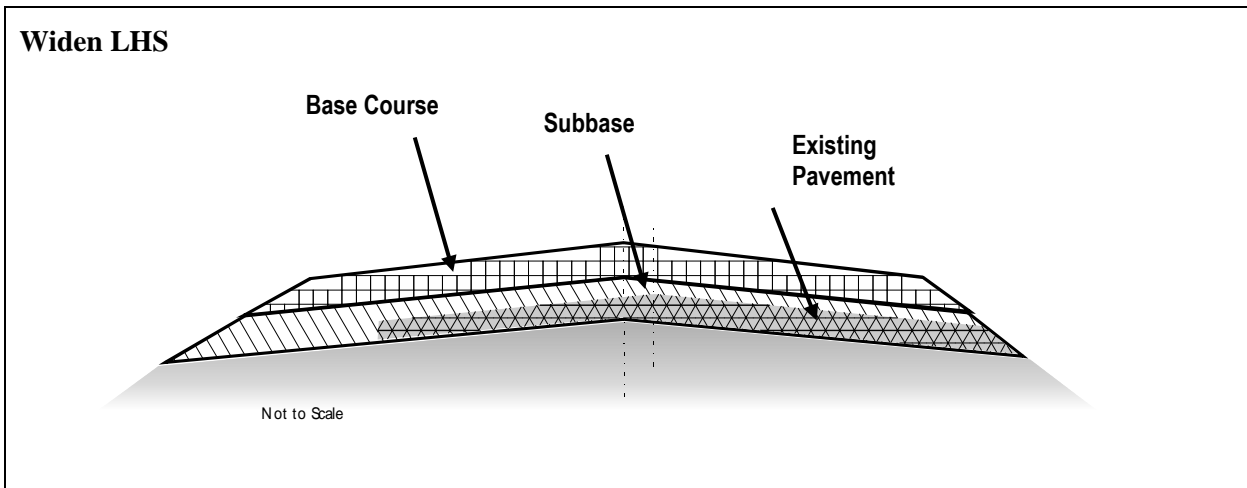
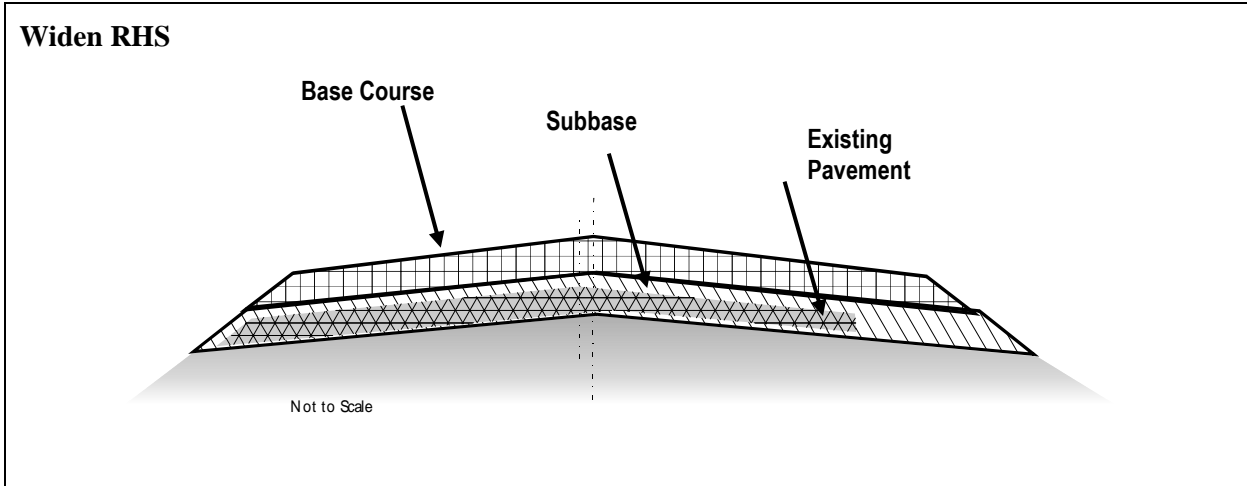
Labels are Word Text Boxes that may be edited and are separate from cross sections.

The Table is a convenient way to copy and paste the results - just highlight what's in the box.

Labels



PAVEMENT COURSES - may be stretched to suite configuration





Transport
for NSW

QA SPECIFICATION M290

PAVEMENT REBUILDING (BOUND AND UNBOUND MATERIAL)

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IC-QA-M290

VERSION FOR: DATE:

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FOREWORD

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REVISIONS TO PREVIOUS VERSION

This document has been revised from TfNSW Specification M290 Edition 3 Revision 1.

All revisions to the previous version (other than minor editorial and project specific changes) are indicated by a vertical line in the margin as shown here, except when it is a new edition and the text has been extensively rewritten.

PROJECT SPECIFIC CHANGES

Any project specific changes have been indicated in the following manner:

- (a) Text which is additional to the base document and which is included in the Specification is shown in bold italics e.g. ***Additional Text***.
- (b) Text which has been deleted from the base document and which is not included in the Specification is shown struck out e.g. ~~Deleted Text~~.

TfNSW QA SPECIFICATION TfNSW M290

PAVEMENT REBUILDING (BOUND AND UNBOUND MATERIAL)

1 GENERAL

- 1.1 This Specification has been developed specifically for TfNSW maintenance works. It must not be used in any type of contract without consideration of its suitability in the prevailing circumstances. **Intended use**
- 1.2 The work to be executed under this Specification is the construction of unbound, modified or bound PAVEMENT COURSES including the following processes, as applicable: **Scope**
- .1 Supply of new granular pavement material.
 - .2 Supply plant mixed modified or plant mixed bound material.
 - .3 Place, spread, shape, compact and trim pavement material.
 - .4 Supply and apply BINDER and insitu mix materials.
 - .5 Mix design.
- 1.3 Other than providing maintenance Pay Items and Activity Codes for Prime, Primerseal and Final Seal, TfNSW M290 does not address bituminous, asphalt, or concrete PAVEMENT LAYERS. These must: **Not within Scope**
- be separately requested in the Works Order which
 - call up the appropriate R series bituminous, asphalt, or concrete specification(s).
- Note, however, that the roughness testing required by Clause 5 and Annexure A.2 of this Specification necessitates a seal be placed over the base as part of work to be executed under this Specification.
- This Specification does not cover formation widening. If this is part of the works Specification TfNSW R44 Earthworks must be used in conjunction with TfNSW M290.
- Note, however, that TfNSW M290 does allow for treatment of unsuitable areas within the existing pavement prior to reconstruction.
- 1.4 Some words or abbreviations have a special meaning in this Specification and they are explained in Annexure M. These words are highlighted in capitals eg DEFINED TEXT. **Definitions**

M290 Pavement Rebuilding (Bound and Unbound Material)

- | | | |
|-----|---|--------------------------------|
| 1.5 | The standards, specifications and test methods referred to by this Specification are referenced using an abbreviated form (eg AS 1478). The titles are given in Annexure M. | Referenced documents |
| 1.6 | Unless otherwise specified, the issue of an Australian Standard or TfNSW Test Method to be used is the issue current one week before closing date for tenders. The TfNSW specification to be used is the issue contained in the contract documentation. | Applicable issue |
| 1.7 | Details of work are described in Annexure A. | Details of work |
| 1.8 | Payment for the activities associated with completing the work detailed under this Specification must be made using the Pay Item(s) listed in Annexure B. | Measurement and payment |
| 1.9 | Provide the identified records set down in the TfNSW Quality System Specification included in the Contract Documents (TfNSW Q) and summarised in Annexure C.2. | Records |

2 PLANNING

2.1 PROJECT QUALITY PLAN

- | | | |
|-------|---|--------------------------------|
| 2.1.1 | The requirements of the PROJECT QUALITY PLAN are defined in TfNSW Q. In addition, the PROJECT QUALITY PLAN must: | |
| .1 | Address the HOLD and WITNESS POINTS required by this Specification and summarised in Annexure C.1. The PRINCIPAL will consider the submitted documents prior to the release of any HOLD POINT. | Hold and Witness Points |
| .2 | Address each of the construction process requirements listed in this Specification and summarised in Annexure D.1. | Construction process |
| .3 | Include a requirement for the routine submission of data, which will certify conformity of all work and materials to the requirements of this Specification and include supporting documentation. | Conformity data |
| .4 | Be submitted to the PRINCIPAL at least 5 BUSINESS DAYS prior to commencement of work. | Submission |

- | | | |
|-------|---|-------------------|
| 2.1.2 | Process Held: Commencement of work | HOLD POINT |
| | Submission: PROJECT QUALITY PLAN conforming to requirements in Clause 2.1. | |
| | Release of Hold Point: The PRINCIPAL will consider the submitted documents before authorising the release of the HOLD POINT. | |

2.2 WORK DETAILS

- 2.2.1 FINISHED SURFACE LEVELS are specified in Annexure A.2 as either: **Finished surface levels**
- .1 Longitudinal centreline levels and transverse crossfalls, or
 - .2 An increase in thickness above the level of existing pavement and required transverse crossfalls.
- 2.2.2 The width of pavement is detailed in Annexure A.2. **Pavement width**
- 2.2.3 The thickness of PAVEMENT COURSES is detailed in Annexure A.2. **Pavement thickness**

2.3 MIX DESIGN (MODIFIED AND BOUND GRANULAR MATERIALS)

- 2.3.1 The mix design must be approved prior to the use of any mix. **Mix Design (modified and bound granular materials)**
- The mix design may be:
- 1. Nominated by the Principal or
 - 2. Proposed by You.
- 2.3.2 The PRINCIPAL’S Nominated Mix Design is specified in Annexure A.4. **Principal's mix design**
- 2.3.3 Submit a proposed mix design whenever: **Mix Design nominated by You**
- .1 A Nominated Mix Design is not specified by the PRINCIPAL, or
 - .2 YOU propose to change any aspect of a Nominated Mix Design such as:
 - .1 Type of BINDER and/or chemical additive.
 - .2 Proportions of blended BINDER.
 - .3 Percentage of BINDER and/or chemical additive.
 - .4 Source of supply of any material.
- 2.3.4 The proposed mix design must meet the requirements of Annexure A.4.

2.3.5 **Process Held:** Use of proposed mix design. **HOLD POINT**

Submission: Submit documentation including:

- .1 Details listed in Annexure E.2.
- .2 Test results for new pavement material.
- .3 For insitu mixing, test results that verify the proposed BINDER and/or chemical additive is compatible with both existing pavement and new pavement materials.

Release of Hold Point: The PRINCIPAL will consider the submitted documents before authorising the release of the HOLD POINT.

2.3.6 Once the HOLD POINT for the proposed mix design is released, the proposed mix is referred to as the Nominated Mix Design. The procedure for the manufacture of the mix using the Nominated Mix Design must be included in the PROJECT QUALITY PLAN. **Nominated Mix Design**

2.4 CONSTRUCTION METHOD

2.4.1 YOU must propose and document detailed process descriptions and inspection and test plans to be used for the work. Where a different method is proposed for a work location it must be separately proposed and documented as a construction method. **Proposed method(s)**

2.4.2 **Process Held:** Use of a new, additional or changed construction method whenever. **HOLD POINT**

- .1 A new construction method is proposed.
- .2 An additional construction method is proposed.
- .3 Any aspect of the NOMINATED CONSTRUCTION METHOD is changed.

Submission: The PROJECT QUALITY PLAN containing the detailed process descriptions and inspection and test plans for the work. The minimum details are outlined in Annexure D.

Release of Hold Point: The PRINCIPAL will consider the submitted documents before authorising the release of the HOLD POINT.

2.4.3 Once the HOLD POINT is released, the proposed construction method becomes a NOMINATED CONSTRUCTION METHOD. **Nominated method**

2.5 TRIAL PAVEMENT

- 2.5.1 Where specified in Annexure A, one trial pavement must be constructed to demonstrate that each NOMINATED CONSTRUCTION METHOD achieves the requirements of this Specification. **Purpose of trial pavement and when required**

In addition, the PRINCIPAL may require a trial pavement where:

- .1 Nonconformities occur in a trial pavement.
- .2 YOU change a NOMINATED CONSTRUCTION METHOD.
- .3 Work does not comply with this Specification.

- 2.5.2 The length of trial pavement must be between 100 m and 200 m long and have a width the same as the proposed width of the LOT. **Size of trial pavement**

2.5.3	<p>Process Witnessed: Construction of trial pavement.</p> <p>Submission: Notification of the trial at least 3 BUSINESS DAYS prior to the trial starting.</p>	WITNESS POINT
2.5.4	<p>Process Held: Construction of pavement.</p> <p>Submission: Documentation demonstrating conformity of the trial pavement detailed in Clause 5 and Annexure D.</p> <p>Release of Hold Point: The PRINCIPAL will consider the submitted documents and may inspect the trial pavement before authorising the release of the HOLD POINT.</p>	HOLD POINT

3 RESOURCES**3.1 GENERAL**

- 3.1.1 Pavement materials may include: **Source**
- .1 Existing base or subbase pavement material.
 - .2 Existing bituminous or asphalt wearing surface.
 - .3 Material supplied by the PRINCIPAL.
 - .4 Material excavated on site.
 - .5 Material supplied by YOU.
- 3.1.2 Pavement materials for the different PAVEMENT COURSES are described in Annexure A.2. **Requirements**
- 3.1.3 Pavement materials supplied by YOU must comply with Specifications TfNSW 3051 and TfNSW 3211 unless otherwise specified in Annexure A. **Compliance**

3.1.4	A TARGET MOISTURE CONTENT ENVELOPE must be determined for the pavement material for each PAVEMENT LAYER to: .1 Enable the specified compaction for the layer to be achieved. .2 Enable any overlying layers to be constructed without deformation. .3 Allow the pavement to be trafficked without rutting, shoving, or delamination. .4 Allow full hydration of any cementitious BINDER mixed into the pavement material.	Target moisture content envelope
3.1.5	Pavement materials modified or bound must use the Nominated Mix Design referenced in Annexure A.4.	Nominated mix design
3.1.6	The proportions of blended granular material must be specified in the Nominated Mix Design and the properties must comply with this Specification.	Granular stabilisation
3.1.7	Where new material is added to existing pavement material and stabilised, the new pavement material must be compatible with the BINDER in the Nominated Mix Design.	In-situ stabilisation with addition of new material
3.1.8	Pavement material which is self-cementing and conforms to this Specification may be proposed for Base or Subbase.	Self-cementing pavement material
3.2	WATER	
3.2.1	Water must be free from amounts of materials harmful to the production or construction processes or the environment (e.g. oils, salts, acids, alkalis, vegetable residue, etc) and must conform to the requirements of Clause 5 Table 5.	Water quality
3.2.2	Water from a town water supply does not require testing.	Town water source
3.3	BINDER	
3.3.1	Any BINDER more than three months older than its date of manufacture must not be used unless it has been retested and certified to comply with this Specification.	Age of binder
3.3.2	BINDERS must be: .1 Transported in watertight containers. .2 Protected from moisture until used. .3 Free of any caked or lumpy materials.	Binder requirements

3.3.3 Blended BINDERS must be uniformly mixed prior to delivery. **Blended binders**

3.4 CHEMICAL ADDITIVE

3.4.1 Use the chemical additive and application rate as specified in Annexure A.4. **Verification**

3.4.2 The chemical additive must be certified as conforming to the manufacturer's specification. **Certified**

3.4.3 Chemical additives must be: **Chemical additives requirements**

- .1 Uniformly blended prior to delivery.
- .2 Transported and stored in watertight containers.
- .3 Free of any caked or lumpy materials.
- .4 Where supplied as a powder, protected from moisture until used.
- .5 Where supplied as a liquid, thoroughly agitated prior to use.

3.5 NOMINATED MATERIALS

3.5.1 Every material to be used in the supply of pavement material must be nominated. **Materials nominated**

3.5.2 Documentation for each nominated material must be submitted to the PRINCIPAL and include: **Documentation to be submitted**

- .1 Details listed in Annexure E.1.
- .2 Evidence that the quantity of material proposed is sufficient for the work.
- .3 Where a Nominated Mix Design is specified by the PRINCIPAL, the details listed in Annexure E.2.
- .4 Testing certifying that the nominated materials comply with this Specification.

4 EXECUTION**4.1 GENERAL****4.1.1 Relevant Clauses**

Clauses in this Specification include requirements that are either: **Relevant clauses**

- .1 Common to all types of pavement construction, or
- .2 Relate to specific types of pavement construction.

Table 1 is a guide to the relevant clauses that deal with the construction of different types of PAVEMENT COURSE.

Table 1 – Clauses relevant for different types of pavement construction

PAVEMENT COURSE	Pavement Material	Production	Construction	Clauses	
				Common	Specific
Unbound PAVEMENT COURSE	GRANULAR MATERIAL		Construct	4.1, 4.2, 4.3, 4.8 and 4.9	4.5
	MODIFIED MATERIAL	Insitu	Construct using insitu mixing	As above	4.4, 4.5
		Plant Mix	Construct using Plant Mix	As above	4.4, 4.5
Bound PAVEMENT COURSE	BOUND MATERIAL	Insitu	Construct using insitu mixing	As above	4.4, 4.6
		Plant Mix	Construct using Plant Mix	As above	4.6, 4.7

4.1.2 Contractor's Supply or Supply and Delivery Method (Granular Material)

4.1.2.1 The delivery of pavement material must be regular and at the rate specified in Annexure A.1. **Rate of delivery**

4.1.2.2 Delivery vehicles must: **Delivery vehicles**

- .1 Have the load covered to stop loss of material or moisture.
- .2 Drive only where directed.
- .3 Have special features where specified in Annexure A.1.

4.1.2.3 Delivery vehicles used to deliver pavement materials to a spreader must be capable of direct discharge into the hopper without spillage or segregation of material. **Delivery to spreader**

4.1.2.4 When delivering pavement materials, include on the identification certificate the information required in Annexure A.5. **Identification certificate**

4.1.2.5 The Project Quality Plan must document the procedures and inspection and test plans to be used for supply of, or, supply and delivery of, pavement material. **Proposed method**

4.1.2.6	<p>Process Held: Supply of, or where specified, supply and delivery of, pavement material, whenever:</p> <ul style="list-style-type: none">.1 A new method is proposed, or.2 Any aspect of a Nominated Method is changed. <p>Submission: The amended PROJECT QUALITY PLAN containing the detailed procedures, and inspection and test plans for:</p> <ul style="list-style-type: none">.1 Supply of pavement material (details outlined in Annexure D.2)..2 Plant mixing of pavement material (details outlined in Annexure D.3)..3 Delivery of pavement material (details outlined in Annexure D.4). <p>Release of Hold Point: The PRINCIPAL will consider the submitted documents before authorising the release of the HOLD POINT.</p>	HOLD POINT
4.1.2.7	Once the HOLD POINT is released, the proposed method becomes the Nominated Method.	Nominated Method
4.1.2.8	Material delivered for use on the site must be: <ul style="list-style-type: none">.1 From a CERTIFIED STOCKPILE, or.2 Tested to meet requirements of Clause 3 and Clause 5. The PRINCIPAL is entitled to stop delivery whenever the material does not conform to this Specification, including segregated, non-uniform, contaminated, or outside the TARGET MOISTURE CONTENT ENVELOPE.	Delivery for immediate use
4.1.2.9	Supplied pavement material must have a moisture content within the TARGET MOISTURE CONTENT ENVELOPE specified in Clause 3.1.4. Moisture must be uniformly distributed through the pavement material.	Moisture content
4.1.2.10	All materials supplied must be sampled and tested. Nonconforming material must be promptly removed.	Sampled and tested

4.1.3 Stockpiling (Granular Material)

4.1.3.1 Pavement materials must be stockpiled at the location nominated by the PRINCIPAL or proposed by YOU. **Location**

4.1.3.2 **Process Held:** Construction of stockpile sites. **HOLD POINT**

Submission: Submit documentation including:

- .1 Proposed location of stockpile.
- .2 Environmental assessment and necessary approvals.

Release of Hold Point: The PRINCIPAL will consider the submitted documents before authorising the release of the HOLD POINT.

4.1.3.3 The stockpile site must be prepared by YOU unless otherwise specified in Annexure A.4. **Preparation**

Where the PRINCIPAL is responsible for preparing the stockpile site, YOU must give the PRINCIPAL at least five Business Days notice of commencing delivery.

4.1.3.4 Stockpile sites must be: **Construction**

- .1 Clear of all vegetation.
- .2 Shaped to be free draining.
- .3 Compacted to provide a base that does not heave or shove under construction vehicles.

4.1.3.5 Install and maintain appropriate environmental controls at all stockpile sites for the duration of the contract. **Environmental controls**

4.1.3.6 **Process Held:** Delivery of material to a stockpile site constructed by YOU. **HOLD POINT**

Submission: Documentation verifying that the stockpile site conforms to this Specification.

Release of Hold Point: The PRINCIPAL will consider the submitted documents before authorising the release of the HOLD POINT.

4.1.3.7 Clearly signpost all stockpiles to identify: **Signpost stockpile**

- .1 The unique stockpile identification code.
- .2 The amount and type of material.
- .3 Status of testing or conformity of the material.

4.1.3.8	The pavement material must be managed so that a stockpile:	Stockpile management
.1	Is constructed in horizontal layers with additional layers being fully contained on the underlying layer.	
.2	Contains one type of material with a maximum LOT size of 4,000 tonnes.	
.3	Is not contaminated by material from other stockpiles.	
.4	Remains sufficiently damp to avoid loss of fines.	
.5	Is uniform in shape,	
.1	Less than 4 m high.	
.2	With side slopes between 3H:2V and 3H:1V.	
.3	Not cone shaped.	
.6	Meets any additional requirements specified in Annexure A.1.	
4.1.3.9	Material handling at stockpiles must ensure uniformity and avoid segregation or contamination.	Material handling
4.1.3.10	Where pavement material is delivered to a site stockpile, the material must be sampled within three days of completing the stockpile.	Sampling site stockpile
4.1.4	Certified Stockpile	
4.1.4.1	All stockpiles used for storing pavement material to be used in the work must be CERTIFIED STOCKPILES unless otherwise specified in Annexure A.1.	Certified Stockpiles
4.1.4.2	A CERTIFIED STOCKPILE must meet all the requirements specified for stockpiles in Clause 4.1.3.	Certified Stockpile requirements
4.1.4.3	Only add new material to a CERTIFIED STOCKPILE when the new material is:	Additional material
.1	Tested and conforms to the Specification prior to delivery.	
.2	Of the same type as the CERTIFIED STOCKPILE.	
	Submit test results to the PRINCIPAL verifying the conformity of all additional material added to a CERTIFIED STOCKPILE.	

4.1.4.4	Process Held: Supply of material from stockpile. Submission: Submit the following documents to verify that the material in the identified stockpile meets the requirements of this Specification: .1 Unique identification code and location of stockpile. .2 Quantity of material represented. .3 Test results conform to Clause 3 and Clause 5. .4 A checklist confirming that each item for the material listed in Annexure E.1 and, where applicable, Annexure E.2, conforms to this Specification. Release of Hold Point: The PRINCIPAL will consider the submitted documents before authorising the release of the HOLD POINT.	HOLD POINT
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4.1.4.5	Where the Nominated Method includes supply of pavement material from a source that is not a CERTIFIED STOCKPILE, sampling at the point of delivery must be according to the procedures included in the PROJECT QUALITY PLAN.	Sampling at the point of delivery
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4.2 TREATMENT OF UNSUITABLE AREAS WITHIN EXISTING PAVEMENT

4.2.1	Nominated areas of unsuitable material within the existing pavement are specified in Annexure A.2.6.2	Nominated areas
4.2.2	The PRINCIPAL may nominate additional areas of unsuitable material and the required type of treatment.	Principal nominates additional areas
4.2.3	Nominated areas of unsuitable material are to be treated before the pavement is constructed. The required type of treatment is specified in Annexure A.2.6.3.	Treatment before pavement construction
4.2.4	The existing wearing surface must be dealt with as specified in Annexure A.2.6.5	Existing wearing surface
4.2.5	YOU must assess the suitability of the existing underlying pavement material. A reasonable approach for doing this must be documented in the PROJECT QUALITY PLAN. YOU must consider such things as deflection, plasticity, moisture content, and density of the material. The results of the assessment and a proposed action must be forwarded to the PRINCIPAL.	Underlying areas

4.3 PLACE, SPREAD, SHAPE, COMPACT AND TRIM

4.3.1	All the construction processes must prevent: .1 Segregation or loss of material. .2 Weakness at joints and edges. .3 Lamination in the pavement.	Construction processes
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4.3.2	The work must be conducted to mitigate risks, particularly those caused by weather conditions and traffic.	Conduct work to mitigate risks
4.3.3	In the following weather conditions the NOMINATED CONSTRUCTION METHOD must not commence: .1 During rain or when rain appears imminent. .2 During conditions that may cause nuisance or danger to people, property, or the environment.	Weather constraints
4.3.4	Where specified in Annexure A.2, a layer of new pavement material must be spread to correct the existing surface profile. Where the required correction layer is less than 100 mm and is not intended to be mixed with BINDER insitu, the existing surface layer and the new pavement material must be mixed, shaped and compacted to produce a layer thickness of at least 100 mm.	Thin layer to correct surface profile
4.3.5	Material must be spread and shaped so that only a minimal amount is removed by trimming to achieve the required surface finish.	Avoid overspreading
4.3.6	Moisture must be adjusted by adding water or drying out material to achieve the TARGET MOISTURE CONTENT ENVELOPE within the layer during compaction. The moisture content must be uniform within each LOT.	Moisture control of pavement layer
4.3.7	When required, surface application of water to the pavement surface must be light so that water does not run off.	Surface application of water
4.3.8	The full thickness of a PAVEMENT LAYER must be compacted over the entire LOT to achieve uniform density with no delamination.	Compaction
4.3.9	The rolling pattern must not cause lateral displacement of material and rounding of pavement edges. Compaction must commence at the low side, or sides, of the work and progress towards the high point.	Rolling pattern
4.3.10	Trimming must produce an even surface parallel to the finished wearing surface levels.	Surface produced
4.3.11	Holes caused by sampling or testing the pavement must be repaired using the same type of material used in the adjacent PAVEMENT LAYER. The material used for the repair must be compacted to conform to the surrounding PAVEMENT LAYER. The repair must be completed within the same day.	Repair of sampling or testing holes
4.3.12	No indentations from activities, such as padfoot marks, are to remain on the pavement surface after FINAL TRIMMING.	No indentations
4.3.13	FINAL TRIMMING may be undertaken on one or more occasions to achieve the required surface finish prior to sealing.	Final trimming

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| 4.3.14 | To provide integrity of the PAVEMENT COURSE and interlock between PAVEMENT LAYERS, the surface of a PAVEMENT LAYER must be lightly scarified to a depth not exceeding 25mm before it is covered by an overlying base or subbase PAVEMENT LAYER. | Granular interlock between pavement layers |
| 4.3.15 | Any crust of fine particles on the surface of a PAVEMENT LAYER must be removed before being covered by the wearing surface. | Remove crust |
| 4.3.16 | The finished surface of the base must be constructed to meet both the roughness and straightedge requirements. | Finished surface of the base |
| 4.3.17 | Tie-in of the pavement surface with fixed surfaces must not pond water or create a potential hazard for vehicles or pedestrians. Fixed surfaces are surfaces that have a surface level that is unaltered by the work. Fixed surfaces include most structures and the existing pavement adjacent to the work. | Tie-in with fixed surfaces |
| 4.3.18 | Notify the PRINCIPAL where finished surface levels potentially conflict with fixed surfaces. | Level conflict |

4.4 INSITU INCORPORATION OF BINDER FOR MODIFIED AND BOUND MATERIAL

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| 4.4.1 | The following clauses relate to applying and mixing BINDER insitu to construct either:

.1 An unbound PAVEMENT COURSE using modified materials, or

.2 A bound PAVEMENT COURSE. | Requirement |
| 4.4.2 | Where a pavement material is to be added to an existing PAVEMENT COURSE, it must be fully incorporated with the existing pavement material and BINDER to form the required PAVEMENT COURSE. | Added pavement material |
| 4.4.3 | BINDER APPLICATION must not commence:

.1 When the temperature measured at a depth 50 mm below the surface of the pavement is below 10°C or the air temperature measured in the shade is above 40°C.

.2 During periods when the wind is sufficiently strong to cause particles of BINDER to become air-borne. | Weather constraints |
| 4.4.4 | The Nominated Mix Design nominates the percentage content of BINDER to be incorporated insitu. The nominated percentage of BINDER must be used to determine the NOMINATED APPLICATION RATE.

The TARGET APPLICATION RATE of BINDER is the NOMINATED APPLICATION RATE plus an allowance to ensure that the nominated BINDER content is achieved. | Target application rate of binder |
| 4.4.5 | Equipment must accurately apply the BINDER over the pavement area. Equipment must be fitted with a weighing system capable of providing a continuous record of the rate at which the BINDER is applied (eg using load cells). | Equipment applying binder |

- 4.4.6 The application of BINDER must be closely monitored to ensure that the TARGET APPLICATION RATE for BINDER is achieved. **Report actual application rate**
- The following must be calculated and reported:
- .1 Width, length, and area of RUN.
 - .2 Tonnage of BINDER applied.
 - .3 Actual application rate for each RUN.
 - .4 TARGET APPLICATION RATE.
 - .5 NOMINATED APPLICATION RATE.
- 4.4.7 BINDER applied to the material must not be disturbed until incorporated by the mixing equipment. **Minimise disturbance of binder**
- Traffic or equipment not involved in applying or mixing of the BINDER must not pass over the BINDER prior to the completion of mixing.
- 4.4.8 Additional BINDER must be incorporated into the pavement material to correct an under application of BINDER. **Rework for under application of binder**
- An under application of BINDER occurs when the actual application rate is less than the NOMINATED APPLICATION RATE.
- 4.4.9 Mixing equipment must be purpose built for insitu mixing of road making materials. Profilers or milling machines must not be used for mixing. The equipment used must: **Mixing equipment**
- .1 Mix to the thickness specified for the PAVEMENT COURSE.
 - .2 Mix the pavement material, BINDER, and moisture uniformly throughout the PAVEMENT LAYER.
- 4.4.10 BINDER must be mixed using at least two RUNS of the mixing equipment: **Minimum runs for mixing**
- .1 The full thickness must be mixed and take account for any bulking of materials.
 - .2 Each RUN of the mixing equipment must overlap the adjacent RUN by at least 75 mm and no more than 150 mm.
 - .3 Where the TARGET APPLICATION RATE exceeds 20 kg/m², spread and mix the BINDER in a minimum of two passes. Divide the BINDER equally between the two passes.
 - .4 Where the total amount of BINDER is spread in a single pass, carry out all mixing passes to the required depth.
 - .5 Where the BINDER is spread in two or more passes, the BINDER spread in the first pass must be mixed to 85 +/- 5% of the required depth. The remaining BINDER must be mixed to the required depth in the second and any successive mixing pass(es).

- 4.4.11 Additional RUNS by the mixing equipment must be used over the whole LOT when material is not uniformly mixed. Include the procedure for assessing uniformity of mixing in your PROJECT QUALITY PLAN. **Non-uniformly mixed material**

4.5 ADDITIONAL REQUIREMENTS FOR UNBOUND PAVEMENT

- 4.5.1 The following clauses are additional requirements for the construction of unbound pavement using granular and modified materials. **Requirement**
- 4.5.2 Each PAVEMENT LAYER must be placed, spread, and shaped to achieve a compacted thickness of at least 100 mm and no more than 150 mm. **Layer thickness**
- 4.5.3 Where specified in Annexure A.2, new pavement material must be added to other material and mixed insitu to improve the material properties. Mixing must: **Granular stabilisation**
- .1 Be in the specified proportions.
 - .2 Produce a uniform pavement material and moisture content throughout the PAVEMENT LAYER.
- 4.5.4 Where specified in Annexure A.2 to prevent a stiffened PAVEMENT LAYER, the unbound PAVEMENT LAYER must be ripped to the full thickness and re-compacted after: **Prevent stiffening of unbound pavement material**
- .1 At least 2 days use of the pavement by vehicular traffic.
 - .2 At least 2 days where the maximum daily temperature in the shade has been at least 20°C.
- 4.5.5 An unbound PAVEMENT LAYER that exhibits any indication of setting up (such as cracking) must be cored and the UCS tested. The PAVEMENT COURSE must not be covered unless the results of the tests comply with this Specification. **Cracking of unbound pavement**
- 4.5.6 An unbound PAVEMENT COURSE with a UCS that does not comply must be reworked over the full depth of the LOT. **Stiff unbound pavement**
- 4.5.7 The base PAVEMENT COURSE must be dried back before: **Dry back**
- .1 It is used by construction vehicles.
 - .2 Opening to traffic.
 - .3 Application of a prime or primerseal.
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4.5.8	<p>Process Held: Construction of prime or primerseal.</p> <p>Submission: Test results showing conforming moisture content and Ball Penetration Test (TfNSW T271) for the base PAVEMENT COURSE.</p> <p>Release of Hold Point: The PRINCIPAL will consider the submitted documents before authorising the release of the HOLD POINT.</p>	HOLD POINT
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4.6 ADDITIONAL REQUIREMENTS FOR BOUND PAVEMENT LAYERS

4.6.1	The following clauses are additional requirements for the construction of bound PAVEMENT LAYERS using insitu mixing or plant mix pavement material.	Requirement
4.6.2	A bound PAVEMENT COURSE must be constructed as a single layer.	Single layer
4.6.3	The NOMINATED WORKING TIME determined in accordance with Test Method TfNSW T147 must not be less than 8 hours.	Nominated working time
4.6.4	PRIMARY TRIMMING of a bound PAVEMENT COURSE must be completed on the same day as mixing of the BINDER and within the ALLOWABLE WORKING TIME. FINAL TRIMMING must be completed within the NOMINATED WORKING TIME.	Time to construct bound pavement
4.6.5	To avoid a reduced working time, a bound pavement must not be constructed when the air temperature measured in the shade is, or is forecast to be, above 40°C.	Weather constraint
4.6.6	BINDER must be uniformly applied and mixed using at least two RUNS of the equipment.	Number of application runs
4.6.7	The application rate of BINDER for each RUN must be: <ul style="list-style-type: none"> .1 Approximately equal. .2 No more than 20 kg/m² per RUN. 	Application of binder
4.6.8	The location of FRESH JOINTS must not be regarded as a LOT boundary.	Fresh joints
4.6.9	Where a longitudinal FRESH JOINT is to be created, 300 mm of material from the first RUN must remain uncompacted until the material in the adjacent RUN is mixed. Compaction must be minimised until the full LOT can be compacted altogether.	Longitudinal fresh joints
4.6.10	To avoid unplanned longitudinal cracking, the maximum width of a LOT must not exceed 5.0 m.	Maximum width of lot
	Where the required width is more than the maximum width a longitudinal construction joint must be suitably located.	

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| 4.6.11 | Pavement material must be spread to minimise the number of construction joints. Where required, construction joints must be constructed to meet the following requirements:

.1 Transverse construction joints must be formed at right angles to the road centreline.

.2 Longitudinal construction joints must be formed outside the planned vehicular wheel paths. Suitable locations include:

a. Along the separation lines of traffic lanes or traffic centre line, or

b. At least 300 mm outside the edge line in the shoulder area. | Construction joint layout |
| 4.6.12 | Previously formed construction joints must be cut back to fully compacted pavement material without rollover.

.1 Transverse construction joints must be cut back at least 0.5 m.

.2 Longitudinal construction joints must be cut back at least 75 mm. | Forming construction joint |
| 4.6.13 | Bound material that has been trimmed or cut back must not be incorporated into a base PAVEMENT LAYER. | Trimming |
| 4.6.14 | The bound pavement LOT must be cured immediately after compaction is completed. | Curing |
| 4.6.15 | Curing must keep the pavement continuously moist and prevent the surface from drying out for up to 6 days immediately after compaction is completed.

Moist curing must not cause slurring of the surface, pavement instability, erosion, or leaching of the BINDER. Moist curing must be frequent, uniform, with light applications of water, and without significant run off. | Moist curing |
| 4.6.16 | Within 6 days of compaction being completed, the bound pavement must be covered by either:

.1 An overlying PAVEMENT LAYER, or

.2 A prime or primerseal when specified. | Covering |

4.7 PLANT MIXING

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| 4.7.1 | Clause 4.7 applies to any pavement material mixed in a dedicated stationary plant including: | Dedicated stationary plant |
| | .1 Granular stabilisation. | |
| | .2 Modification or stabilisation. | |
| | .3 Bound material by mixing a BINDER and/or chemical additive. | |
| 4.7.2 | The plant must mix pavement material and, where required, BINDER and/or chemical additives and water, in the required proportions to produce the specified pavement material. Operate the plant according to the manufacturer's recommendations. | Mixing plant |
| 4.7.3 | The plant used to incorporate BINDER must be capable of measuring the materials incorporated in the mix to an accuracy $\pm 0.3\%$ of the dry mass of the granular material. | Measurements |
| 4.7.4 | Pavement material must be discharged from the plant to a timed discharge hopper or to a storage bin. This material must not be dropped from a height exceeding 4 m. | Discharge |

4.8 RELATED WORKS

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| 4.8.1 | The use of geotextiles must conform to the requirements of Specification TfNSW R63. | Geotextiles |
| 4.8.2 | Install subsurface drains in accordance with the requirements of Specifications TfNSW R33, R37, and/or R38 (as applicable to the work specified). | Subsurface drains |
| 4.8.3 | The use of primes, primerseals and seals must conform to the requirements of Specifications TfNSW R106 or R111 (as applicable to the work specified). | Primes, primerseals and seals |

4.9 PROTECTION AND REINSTATEMENT OF SERVICES, ROAD FIXTURES, AND DELINEATION

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| 4.9.1 | Take all necessary precautions to prevent construction materials including tackcoat used on the work from entering or adhering to surrounding pavement, drainage structures, and other road fixtures. | Prevent disturbance of materials |
| 4.9.2 | Immediately after the work is complete, clean off or remove any such material and leave the services and road fixtures in a satisfactory condition. | Clean off and remove unwanted materials |
| 4.9.3 | Road fixtures and delineation must be reinstated in accordance with the following requirements: | Road fixtures |
| | .1 Guide posts in accordance with Specification TfNSW M600 Clause 4.610. | Guide posts |

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| .2 | Signposting in accordance with Specifications TfNSW R143 and TfNSW 3400. | Signposting |
| .3 | Pavement marking and raised reflective pavement markers in accordance with Specifications TfNSW R145 and TfNSW R142. Provide temporary delineation using a removable paint system that does not damage the pavement, temporary tapes, or stick and stomps, which must be maintained until permanent pavement marking is completed. | Pavement marking |
| .4 | Traffic signal detector loops and other traffic facilities in accordance with Specification TfNSW TS101 within a timeframe as agreed with the PRINCIPAL. | Traffic signal detector loops |
| .5 | Private entrances in accordance with M1 Clause 4.5.5. | Private entrances |

5 CONFORMITY

5.1 GENERAL

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| 5.1.1 | Material supplied by the PRINCIPAL only needs to be tested by YOU once it is incorporated into the work.

Where requested by YOU, the PRINCIPAL will provide a copy of test results required in Specification TfNSW 3051 for pavement material supplied by the PRINCIPAL.

Materials supplied by YOU must be tested to show conformity with this Specification. | Materials supplied by the Principal |
| 5.1.2 | Construction of pavement must comply with the following process controls and conformity criteria:

.1 Unbound using granular material listed in Table 2.

.2 Unbound using modified material listed in Table 3.

.3 Bound listed in Table 4. | Construction process control and conformity |
| 5.1.3 | The minimum testing frequency requires that any residual part of a LOT be tested.

Where a testing interval is in metres it must be measured along the LOT unless otherwise stated. | Minimum testing frequency |

Table 2 – Unbound pavement construction - granular material

Item	Reference	Property	Test Method	Criteria	Minimum Testing Frequency	
Process control criteria						
.1	Moisture content	Clauses 3 and 4.3	Moisture content at time of compaction.	T120, T121 or AS 1289.2.1.4 (i) (ii)	Within the TARGET MOISTURE CONTENT ENVELOPE	1 every 200 t of LOT
.2	Stiff unbound pavement	Clause 4.5.5	UCS of unbound pavement material.	T116 or T131	≤ 1 MPa	LOTS where stiffening is exhibited
.3	Assessment of existing pavement	Clause 4.2.5	Strength of underlying pavement material.	Proof Test, T160 or T166	Nominate in PQP	Nominate in PQP
Conformity criteria						
.4	Finished Surface Levels	Clauses 2.2 and 4.3	Finished surface level after FINAL TRIMMING <ul style="list-style-type: none"> ♦ Centreline levels and cross falls, or ♦ Increase above the level of existing pavement. 	Survey Annexure L.5	-0 to +30 mm	Full area of Lot 2 sample locations per Lot
.5	Width	Clause 2.2	Pavement width	Survey	Clause 2.2	1 every 50 m of LOT
.6	Compaction	Clause 4.3	Maximum laboratory density: <ul style="list-style-type: none"> ♦ Maximum dry density, or ♦ Maximum wet density 	T111 (iii) or T162 (i)		TfNSW Q
			Insitu Density	T119 or T173 (i)		TfNSW Q
			Relative compaction	T166		TfNSW Q
			Characteristic value of relative compaction <ul style="list-style-type: none"> ♦ Unbound pavement - granular material 	TfNSW Q	≥ 102.0%	TfNSW Q
.7	Tie-in	Clause 4.3	Tie-in of pavement with fixed surfaces	Inspection	No abrupt change of levels	Each fixed surface
			Deviation from a 3 m straightedge with one end supported on the fixed surface and the other end on the pavement surface.	3 m straightedge	≤ 7 mm	Each fixed surface

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Item	Reference	Property	Test Method	Criteria	Minimum Testing Frequency
.8 Surface evenness of Base	Clause 4.3	Deviation from a 3 m straightedge laid in any direction on the pavement surface.	3 m straightedge	≤ 7 mm	1 every 20 m ² of LOT surface
	Clause 4.3	Roughness	T182 or T188 (i) (iv)	< 50 NAASRA counts per 100 m length or <1.96 IRI per 100 m length	Continuous reading per Lot summarised every 100 m of traffic lane
		Water ponding on pavement surface.	Inspection	No potential for water to pond	All LOTS
.9 PAVEMENT COURSE thickness	Clauses 2.2, 4.3 and 4.5	PAVEMENT COURSE thickness after FINAL TRIMMING	Annexure L.4	-0 to +30 mm	1 every 100 m of LOT
.10 Dry back	Clause 4.5.7	Dry back of base PAVEMENT COURSE	Annexure L.6	≤ 70% optimum moisture content	Annexure L.6
		Suitability of base PAVEMENT COURSE for a bituminous seal	T271 and TfNSW Q Annexure L	< 3 mm at any point < 2.5 mm characteristic value for the Lot	As per compaction assessment (100 mm from any disturbed area)
Notes on Table 2					
(i) All tests of the same property within a particular LOT must be conducted using the same test method.					
(ii) Before using T121 or AS 1289.2.1.4, they must be calibrated against results from T120 for the range of materials being compacted.					
(iii) A value may be assigned according to Annexure L.2 if the material is uniform.					
(iv) Where required in Annexure A.2. To be measured within 14 days of FINAL TRIMMING and after prime or primerseal.					

Table 3 – Unbound pavement - modified material

Item	Reference	Property	Test Method	Criteria	Minimum Testing Frequency
Process control criteria					
.1 Moisture content	Clauses 3 and 4.3	Moisture content at time of compaction.	T120, T121 or AS 1289.2.1.4 (i) (ii)	within the TARGET MOISTURE CONTENT ENVELOPE	Plant mix: 1 every 200 t of LOT Insitu mix: 1 every 200 m of equipment RUN

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Item	Reference	Property	Test Method	Criteria	Minimum Testing Frequency
.2 Stiff unbound pavement	Clause 4.5.5	UCS of unbound pavement material.	T116 or T131	≤ 1 MPa	1 pair every 400 m of LOTS where stiffening is exhibited
.3 Assessment of existing pavement	Clause 4.2.5	Strength of underlying pavement material.	Proof Test, T160 or T166	Nominate in PQP	Nominate in PQP
.4 Uniform mixing	Clause 4.4	Uniformity of mixed pavement material.	Nominate in PQP	Nominate in PQP	All LOTS
.5 Application Rate of BINDER	Clause 4.4	Actual application rate of BINDER for each RUN.	Annexure L.1	≥ NOMINATED APPLICATION RATE %	1 every 100 m of application RUN in LOT
.6 Uniformity	Clause 4.4	UCS of in-situ modified material.	Annexure L.3 (v)	UCS consistent top and bottom at each test location	1 pair every 400 m of LOT insitu modified
Conformity criteria					
.7 Finished Surface Levels	Clauses 2.2 and 4.3	Finished surface level after FINAL TRIMMING <ul style="list-style-type: none"> ♦ Centreline levels and cross falls, or ♦ Increase above the level of existing pavement. 	Annexure L.5	-0 to +30 mm	2 Each Lot
.8 Width	Clause 2.2	Pavement width.	Survey	Clause 2.2	1 every 50 m of LOT
.9 Tie-in	Clause 4.3	Tie-in of pavement with fixed surfaces.	Inspection	No abrupt change of levels	Each fixed surface
		Deviation from a 3 m straightedge with one end supported on the fixed surface and the other end on the pavement surface.	3 m straightedge	≤ 7 mm	Each fixed surface
.10 Compaction	Clause 4.3 and Annexure L.8	Maximum laboratory density: <ul style="list-style-type: none"> ♦ Maximum dry density, or ♦ Maximum wet density. 	T111 (iii) or T162 (i)		TfNSW Q
		Density Insitu.	T119 or T173 (i)		TfNSW Q
		Relative compaction.	T166		TfNSW Q
		Characteristic value of relative compaction <ul style="list-style-type: none"> ♦ Unbound pavement - modified material. 	TfNSW Q	≥ 102.0%	TfNSW Q
.11 Surface evenness of Base	Clause 4.3	Deviation from a 3 m straightedge laid in any direction on the pavement surface.	3 m straightedge	≤ 7 mm	1 every 20 m ² of LOT surface

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Item	Reference	Property	Test Method	Criteria	Minimum Testing Frequency
	Clause 4.3	Roughness.	T182 or T188 (i) (iv)	< 50 NAASRA counts per 100 m length or <1.96 IRI per 100 m length	Continuous reading per Lot summarised every 100 m of traffic lane
		Water ponding on pavement surface.	Inspection	No potential for water to pond	All LOTS
.12 PAVEMENT COURSE thickness	Clause 2.2, 4.3 and 4.5	PAVEMENT COURSE thickness after FINAL TRIMMING.	Annexure L.4	-0 to +30 mm	1 every 75 m of LOT
.13 Dry back	Clause 4.5.7	Dry back of base PAVEMENT COURSE. Suitability of base PAVEMENT COURSE for a bituminous seal	Annexure L.6 T271 and TfNSW Q Annexure L	≤ 70% optimum moisture content < 3 mm at any point < 2.5 mm characteristic value for the Lot	Annexure L.6 As per compaction assessment (100 mm from any disturbed area)
<p>Notes on Table 3</p> <p>(i) All tests of the same property within a particular LOT must be conducted using the same test method.</p> <p>(ii) Before using T121 or AS 1289.2.1.4, they must be calibrated against results from T120 for the range of materials being compacted.</p> <p>(iii) A value may be assigned according to Annexure L.2 if the material is uniform.</p> <p>(iv) Where required in Annexure A.2. To be measured within 14 days of FINAL TRIMMING and after prime or primerseal.</p>					

Table 4 – Bound pavement

Item	Reference	Property	Test Method	Criteria	Minimum Testing Frequency
Process control criteria					
.1 Moisture content	Clause 3 and 4.3	Moisture content at time of compaction.	T120, T121 or AS 1289.2.1.4 (i) (ii)	within the TARGET MOISTURE CONTENT ENVELOPE	Plant mix: 1 every 200 t of LOT Insitu mix: 1 every 200 m of equipment RUN

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Item	Reference	Property	Test Method	Criteria	Minimum Testing Frequency
.2 Assessment of existing pavement	Clause 4.2	Strength of underlying pavement material.	Proof Test, T160 or T166	Nominate in PQP	Nominate in PQP
.3 Application Rate of BINDER	Clause 4.4 and 4.6	Actual application rate of BINDER for each RUN (applies to insitu construction only).	Annexure L.1	≥ NOMINATED APPLICATION RATE %	1 every 100 m of application RUN in LOT
.4 Uniform mixing	Clause 4.4	Uniformity of mixed pavement material.	Nominate in PQP	Nominate in PQP	All LOTS
.5 Uniformity of insitu mixing	Clause 4.4 and 4.6	UCS of insitu bound pavement.	Annexure L.3 (iv)	Consistent top and bottom at each test location	1 every 200 m of LOT insitu mixed
.6 PRIMARY TRIMMING	Clause 4.6	PAVEMENT COURSE thickness after PRIMARY TRIMMING.	Annexure L.4	-0 to +50 mm	1 every 250 m of equipment RUN
.7 Curing	Clause 4.6	Pavement is kept moist.	Inspection	Clause 4.6.15	All LOTS at least daily
Conformity criteria					
.8 Width	Clause 2.2	Pavement width.	Survey	Clause 2.2	1 every 50 m of LOT
.9 PAVEMENT COURSE thickness	Clauses 2.2, 4.3 and 4.6	PAVEMENT COURSE thickness after FINAL TRIMMING.	Annexure L.4	-0 to +30 mm	1 every 75 m of LOT
.10 Compaction	Clause 4.3 and Annexure L.8	Maximum laboratory density:	T162 (iv)		TfNSW Q
		♦ Wet density.			
		Density Insitu.			
		Relative compaction: The lower 150 mm to 300 mm of the PAVEMENT LAYER:			
		♦ Insitu mixed PAVEMENT LAYER,	T166	≥ 95.0%	Every test location
		♦ Plant mixed PAVEMENT LAYER.	T166	≥ 95.0%	Every test location
		Characteristic value of relative compaction: full pavement thickness:			
		♦ Insitu mixed PAVEMENT LAYER,	TfNSW Q	≥ 100.0%	TfNSW Q
		♦ Plant mixed PAVEMENT LAYER.	TfNSW Q	≥ 102.0%	TfNSW Q
.11 Finished Surface Levels	Clauses 2.2 and 4.3	Finished surface level after FINAL TRIMMING	Annexure L.5	-0 to +30 mm	Each lot
		♦ Centreline levels and cross falls, or			
		♦ Increase above the level of existing pavement.			

M290**Pavement Rebuilding (Bound and Unbound Material)**

Item	Reference	Property	Test Method	Criteria	Minimum Testing Frequency
.12 Tie-in	Clause 4.3	Tie-in of pavement with fixed surfaces.	Inspection	No abrupt change of levels	Each fixed surface
		Deviation from a 3 m straightedge with one end supported on the fixed surface and the other end on the pavement surface.	3 m straightedge	≤ 7 mm	Each fixed surface
.13 Surface evenness of Base	Clause 4.3	Deviation from a 3 m straightedge laid in any direction on the pavement surface.	3 m straightedge	≤ 7 mm	1 every 20 m ² of LOT surface
	Clause 4.3	Roughness.	T182 or T188 (i) (iii)	< 50 NAASRA counts per 100 m length or <1.96 IRI per 100 m length	Continuous reading per Lot summarised every 100 m of traffic lane
		Water ponding on pavement surface.	Inspection	No potential for water to pond	All LOTS
.14 UCS	Clause 4.6	UCS of plant mixed bound pavement material.	T116	>3MPa	One pair per 400T
<p>Notes on Table 4</p> <ul style="list-style-type: none"> (i) All tests of the same property within a particular LOT must be conducted using the same test method. (ii) Before using T121 or AS 1289.2.1.4, they must be calibrated against results from T120 for the range of materials being compacted. (iii) Where required in Annexure A.2. To be measured within 14 days of FINAL TRIMMING and after prime or primerseal has been applied. (iv) Where the PAVEMENT COURSE thickness is > 250 mm, results must be determined over two equal depth intervals: one to represent the upper half and one the lower half of the PAVEMENT COURSE. 					

Table 5 – Water requirements

Item	Clause	Requirements	Test Method/ Procedure	Criteria	Minimum Testing Frequency
1. Water	3.2.1	Water delivered conforms:			
		Water quality	Inspection	Not discoloured, salty, brackish or oily	Daily
		Chloride ion content	T1004	≤ 600 ppm	1 per source
		Sulfate ion in content	T1014	≤ 400 ppm	
		Undissolved solids content	AS 3550.4	≤ 1% by mass	

5.2 WARRANTY

Work which becomes defective during the warranty period must be rectified by you to the satisfaction of, and at no additional cost to, the TfNSW.

Your obligations

The warranty period begins at the time of the Work’s acceptance.
The warranty period re-commences from the time any warranty rectification is undertaken, but only with respect to the items rectified.

Warranty Period

The length of the warranty period is stipulated in Annexure A.3.

Record Rework against Maintenance Activity 994 Rework Pavement Rebuilding. Ensure its reporting does not cause duplication – see Note in Table 6.

Accomplishment in warranty work**5.3 ACCOMPLISHMENT REPORTING**

The accomplishment of conforming work must be reported as specified in Table 6.

Table 6 – Accomplishment reporting

Code	Description	TfNSW Specification	Unit of Measure	Accomplishment Reporting
291	Report surface area of existing sprayed seal to be rebuilt ^A	R series	m ²	Report area of existing sprayed seal surface treated.
292	Report surface area of existing A/C wearing surface to be rebuilt ^A	M290	m ²	Report area of existing asphalt surface treated.
293	Pavement rebuilding – Natural gravel layer ^B	M290	m ³	Report volume of pavement layer.
294	Pavement rebuilding – Manufactured material layer ^B	M290	m ³	Report volume of pavement layer.
295	Pavement rebuilding – Insitu-stabilised layer ^B	M290	m ³	Report volume of pavement layer.
296	Pavement rebuilding – Bound material layer ^B	M290	m ³	Report volume of pavement layer.
297	Pavement rebuilding – Asphalt layer ^B	R series	m ³	Report volume of pavement layer.
298	Report surface area of existing concrete wearing surface to be rebuilt ^A	R82, R83, R84, R90	m ²	Report area of existing concrete pavement treated.
299	Pavement rebuilding – Concrete layer ^B	R82, R83, R84, R90	m ³	Report volume of pavement layer.
994	Rework - Pavement rebuilding	R82, R83, R116	m ²	Report area of rework generated from Nonconformity.
Note	Items with postscripts “A” must be used in conjunction with any one of the items with postscript “B”. However each of these items is to be reported separately.			

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Pavement Rebuilding (Bound and Unbound Material)

	If recording accomplishment against re-work do not report it against any other activity, because to do so will be doubling up.
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ANNEXURE M290/A – DETAILS OF WORK**A.1 WORK SUMMARY**

Contract Reference:			
Site Reference	Description	Location	
		From:	To:

		Delivery Location			
Material Reference⁽ⁱ⁾	Pavement Material Description	Road No	Road name & description	Distance (km)	Rate of Delivery (t/hr)
Special features required for delivery vehicles		Refer Clause 4.1.2.2			
Additional stockpile requirements		Refer Clause 4.1.3.8		Stockpile is covered to avoid entry of water or contamination(*)	
Material supply from		Refer Clause 4.1.4		CERTIFIED STOCKPILE / _____ (*)	
Notes:					
(i) The Material Reference must uniquely link the Nominated Mix Design with each pavement material specified in TfNSW M290.					
(*) Strikeout options that do not apply					

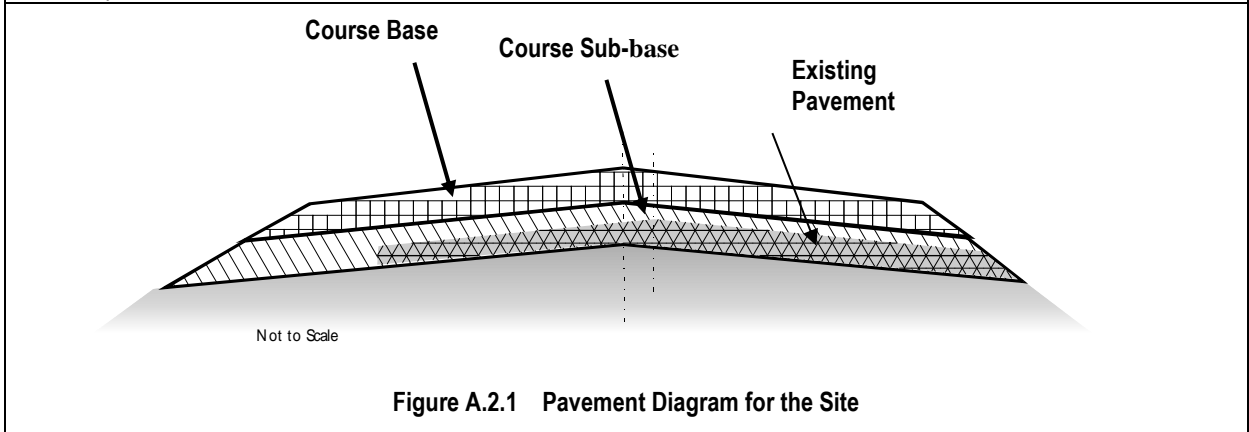
A.2 SITE REFERENCE DETAILS**Site Reference:**

A.2.1 FINISHED SURFACE LEVEL [Clause 2.2]: .1 Centreline levels and crossfalls .2 An increase above level of existing pavement	[Strike through the alternative that does not apply below]	
	Drawing Number:	
	Increase:	
	Crossfall:	
	Other:	
A.2.2 Roughness testing on pavement at FINISHED SURFACE LEVEL [Clause 4.3]	Yes / No	
A.2.3 Trial pavement required [Clause 2.5]	Yes / No	
A.2.4 .1 Subbase PAVEMENT COURSE .2 Material Reference ⁽ⁱ⁾ .3 Thickness of course (mm) [Clause 2.2.3] .4 Rip and recompact PAVEMENT LAYER [Clause 4.5.4]	[Unbound granular, Unbound modified or bound]	
	Yes / No	
.5 Additional requirements:	[May need to specify reworking time for modified - min & max]	
A.2.5 .1 Base PAVEMENT COURSE .2 Material Reference ⁽ⁱ⁾ .3 Width of course (mm) [Clause 2.2.2] .4 Thickness of course (mm) [Clause 2.2.3] .5 Rip and recompact PAVEMENT LAYER [Clause 4.5.4] .6 Apply bituminous seal .7 Additional requirements	Pay Item:	
	Yes / No	
	Yes / No	
	[May need to specify reworking time for modified - min & max]	

Site Reference:

A.2.6 .1 PAVEMENT COURSE existing .2 Nominated areas of unsuitable material within existing pavement [Clause 4.2] .3 Treatment [Clause 4.2]: .4 Total area to be treated: .5 Existing wearing surface: .6 Additional requirements:	[Unbound granular, Unbound modified or bound]	
	Yes / No	
	Location:	[Specify the patches etc that must be replaced or treated. Refer to Drawing Number or indicate whether locations are marked on site].
	[Indicate the actions required to treat or replace unsuitable material]	
	Nil	m ²
	[Treatment may include none (keep in place), tyning, removal, etc.]	

Note:
 (i) The Material Reference must uniquely define each pavement material and any corresponding Nominated Mix Design specified in TfNSW 3051.



A.3 WARRANTY PERIOD

Warranty Period:	("1 year" unless otherwise specified)
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A.4 MATERIAL DETAILS

1. MATERIAL REFERENCE ⁽ⁱ⁾:									
Stockpile Location	Location								
Refer Clause 4.1.3	Prepared by Contractor	Yes / No							(*)
2. PAVEMENT MATERIAL		Base / Subbase							(*)
Relevant tables	Refer to 3051								(*)
Material Designation	Refer to 3051								
Asphalt Thickness	Required for Base only	≤ 50 mm			> 50 mm				(*)
Traffic Category (TC)	Refer to 3051	A	B	C	D				(*)
3. ADDITIONAL REQUIREMENTS									
Nominated Working Time	T147	≥ 8						hours	
Modified material									
T131 Unconfined Compressive Strength		<1						MPa	
Bound material									
T131 Unconfined Compressive Strength		>3						MPa	
UCS Strength Gain		>1						MPa	
Pretreatment required before testing using the following test methods:									
	T102	Refer to 3051							
	T103	Refer to 3051							
4. PRINCIPAL'S Nominated Mix Design (Refer Clause 2.3)									
Modified (*)	Bound (*)	Type & Source (Refer Clause 3)							
BINDER (*) / Chemical Additive (*) Proportions:									%
									%
									%
Additional requirements:									
Nominated Percentage of BINDER (*) / Chemical Additive (*)									% rate
Notes:									
(i)	The Material Reference must uniquely link the Nominated Mix Design with each pavement material specified in TfNSW M290.								
(*)	Strikeout options that do not apply								

A.5 INFORMATION FOR IDENTIFICATION CERTIFICATE

Information to be Included

- (a) Name of supplier and place of manufacture
- (b) Serial number of certificate (sequential & pre-numbered)
- (c) Date of supply
- (d) Name of customer, Project name and location
- (e) Mix identification (Nominated Mix Design)
- (f) Quantity of pavement material covered by certificate
- (g) TARGET MOISTURE CONTENT ENVELOPE
- (h) Time dispatched
- (i) Delivery vehicle identification (When delivered direct to site for use)
- (j) Batch identification (When delivered direct to site for use)
- (k) Unique identification code for the CERTIFIED STOCKPILE (When delivered from CERTIFIED STOCKPILE)

ANNEXURE M290/B – MEASUREMENT AND PAYMENT

B.1 GENERAL

B.1.1 Pay items are identified in Annexure B.2. **Pay items to be used**

B.1.2 The price(s) of pay items with a quantity of work in the schedule must be costed and make due allowance for the cost of the activity. **Prices**

Any pay item with a quantity of work that is not priced is understood to be included in other priced pay items.

B.1.3 Any overheads must be distributed between pay items. **Overheads**

B.1.4 Pay items with a quantity of work specified must not be tendered as a lump sum price. **No lump sum**

B.1.5 Payment shall be made for a Trial Pavement [Clause 2.5], which forms part of the work detailed in Annexure A.2 and conforms to this Specification. **Trial pavement**

B.1.6 YOU are not paid for events that include: **No payment**

- .1 Tolerances allowed for in the layer thickness, or for overspread of the stabilising agent or for areas spread outside the area specified for treatment
- .2 Removing and replacing rejected material with conforming material.
- .3 Rework required to achieve conformity.
- .4 Retesting.

B.1.7 The 'end area method' is used to calculate volume based on the widths and thickness of pavement and the length. **End area method**

The lesser of the dimensions specified in Annexure A and the actual dimension must be used.

Additional sections (eg parking areas, slip lanes etc) included in the work must be added to the total volume reconstructed.

$$Q = \left(\sum_{n=1}^{n=x} \left(\frac{Area_{n-1} + Area_n}{2} \right) \times L_n \right) + Additional\ Volumes \quad (m^3)$$

Where x = The number of sections represented

$Area_n$ = The n^{th} end area based on the cross-section shape (m^2)

L_n = Centreline length of the n^{th} section between cross-sections (m)

- B.1.8 Where the unit of measurement is ‘tonnes’ of material delivered, the quantity must be confirmed by haulage records that indicate: **Tonnes**
- .1 Truck details (driver, owner, registration, tare mass, capacity in m³).
 - .2 The date of loading and delivery.
 - .3 The time of loading and delivery.
 - .4 The signature of the person who prepared the haulage records.

M290**Pavement Rebuilding (Bound and Unbound Material)****B.2 SCHEDULE OF PAY ITEMS**

Pay Item *	Item Name and Description	What to claim and Units
M290P1	Treat or replace unsuitable material Payment includes costs associated with treating or removing unsuitable material according to the requirements of this Specification.	m³ Volume in place
M290P2	Subbase Payment includes costs associated with subbase pavement courses using granular, modified or bound materials according to the requirements of this Specification. It includes supply and haulage of pavement materials, placing, spreading, compacting and shaping materials, or trimming and partial compaction immediately in advance of stabilisation operations. When provided on the WORK ORDER, a separate unit rate is to be given for each type of subbase material as follows:	m³ Volume in place
M290P2.1	Unbound material DGS20	m ³
M290P2.2	Unbound material DGS40	m ³
M290P2.3	Unbound material GMS40	m ³
M290P2.4	Unbound material GMS60	m ³
M290P2.5	Unbound material MS50	m ³
M290P2.6	Unbound material MS75	m ³
M290P2.7	Unbound subbase	m ³
M290P2.8	Local materials used as subbase material	m ³
M290P2.9	Heavily bound subbase	m ³
M290P2.10	Lightly bound subbase	m ³
M290P2.11	Grave laitier subbase	m ³
M290P3	Base Payment includes costs associated with base pavement courses using granular, modified or bound materials according to the requirements of this Specification. It includes supply and haulage of pavement materials, placing, spreading, compacting and shaping materials, or trimming and partial compaction immediately in advance of stabilisation operations. When provided on the work Order, a separate unit rate is to be given for each type of base material as follows:	m³ Volume in place
M290P3.1	Unbound material Class 2 DGB	m ³
M290P3.2	Unbound material GMB20	m ³
M290P3.3	Unbound base	m ³
M290P3.4	Modified base	m ³
M290P3.5	Local materials used as base material	m ³
M290P3.6	Heavily bound base	m ³
M290P3.7	Lightly bound base	m ³
M290P3.8	Grave laitier base	m ³

Continued overleaf

Pavement Rebuilding (Bound and Unbound Material)**M290**

Pay Item *	Item Name and Description	What to claim and Units
M290P4	Stabilisation Payment includes costs associated with the following construction processes according to this Specification: 1. Applying BINDER and admixture. 2. Insitu mixing. 3. Control of moisture content. 4. Spread, shape, compact and trim pavement. When provided on the WORK ORDER, a separate unit rate is to be given for each type of method of mixing as follows:	m³ Volume in place
M290P4.1	Stabilisation with insitu mixing	m ³
M290P4.2	Stabilisation plant mixed	m ³
M290P5	Supply of BINDER Payment includes costs associated with supply of BINDER and admixture according to this Specification. When provided on the WORK ORDER, a separate unit rate is to be given for each type of stabilising agent as follows:	Tonnes of BINDER applied on the pavement surface
M290P5.1	Supply of Quicklime	tonne
M290P5.2	Supply of Hydrated lime	tonne
M290P5.3	Supply of Slag/lime blend	tonne
M290P5.4	Supply of Cement	tonne
M290P5.5	Supply of Other BINDER	tonne
M290P5.6	Supply of Chemical Additive	tonne
M290P6	Prime or Primerseal Payment includes the supply and spraying binder and the supply and incorporation of aggregate.	m² Area treated
M290P6.1	Prime	m ²
M290P6.2	Primerseal 7 mm aggregate	m ²
M290P6.3	Primerseal 10 mm aggregate	m ²
M290P7	Final Seal	Area treated
M290P7.1	Final seal 7 mm aggregate	m ²
M290P7.2	Final seal 10 mm aggregate	m ²
M290P7.3	Final seal 14 mm aggregate	m ²
M290P9	Deductions for Non-Conforming Service PRINCIPAL determined deduction for non-conforming work in accordance with Annexure B.3.	Item

Continued overleaf

M290**Pavement Rebuilding (Bound and Unbound Material)**

Pay Item *	Item Name and Description	What to claim and Units
M290P10	<p>Establishment</p> <p>Note: It is taken that you have included all the following in tendering your establishment rate - no further payment will be made for them:</p> <ul style="list-style-type: none"> • Plant float to/from the site or project; • Set up and removal of site facilities (eg: office, sheds, toilets); Principal's facilities (if required, • Initial travel to site or project; • Daily travel to/from site or project; • Accommodation (eg: on site or motel/hotel) . 	<p>Item</p> <p>Establishment is paid once per Work Order</p>
<p>* Pay Items are primarily for guidance in preparing Work Orders (which can be Lump Sum or Schedule of Rates).</p> <p>When preparing a Work Order, any or all of the Pay Items may be incorporated: the aim is to improve the accuracy of the Service Provider's estimation and pricing by:</p> <ul style="list-style-type: none"> • selecting those Pay Items which denote the activities that are to be undertaken and • requiring the Service Provider to estimate and price each Pay Item individually. <p>When Establishment is a significant cost, the Pay Item specific to it must be incorporated in the Work Order – the cost must not be amortised / absorbed across the other Pay Items.</p> <p>Similarly, when Traffic Control is a significant cost, its Pay Item(s) must be incorporated. See Specification TfNSW G10 for a list of these.</p>		

B.3 DEDUCTIONS**Table B.1 - Deduction for BINDER content in plant mixed modified pavement material**

BINDER content	Deduction applied as per cent of Pay Item
$(B_N - 0.05\%) \geq B_L > (B_N - 0.30\%)$	5%
$(B_N - 0.30\%) \geq B_L > (B_N - 0.50\%)$	15%
$B_L \leq (B_N - 0.50\%)$	LOT to be rejected
Where: BN is the BINDER content nominated in the Nominated Mix Design BL average BINDER content for a LOT according to TfNSW 3051 The deduction is applied to the Pay Item for the LOT	

Table B.2 - Deduction for BINDER content in plant mixed bound pavement material

BINDER content	Deduction applied as per cent of Pay Item
$(B_N - 0.05\%) \geq B_L > (B_N - 0.30\%)$	2%
$(B_N - 0.30\%) \geq B_L > (B_N - 0.50\%)$	5%
$(B_N - 0.50\%) \geq B_L > (B_N - 1.00\%)$	15%
$B_L \leq (B_N - 1.00\%)$	LOT to be rejected
Where: BN is the BINDER content nominated in the Nominated Mix Design BL average BINDER content for a LOT according to TfNSW 3051 The deduction is applied to the Pay Item for the LOT	

Table B.3 - Deductions for characteristic value of relative compaction Insitu mixed bound PAVEMENT COURSE

Characteristic Value of Relative Compaction (%)	Deduction applied as per cent of Pay Item
98.0 - 99.9 (i)	10%
95.0 - 97.9 (i)	30%
< 95	LOT to be rejected
Note: (i) Where one (or more) reading of relative compaction is $\leq 94.9\%$ and represents the depth interval 150 mm to 300 mm, the Lot shall be accepted subject to an additional deduction of 20% for the Lot. This deduction is in addition to the deductions specified in Table B.3.	

**Table B.4 - Deductions for characteristic value of relative compaction
unbound granular, unbound modified and other Bound PAVEMENT LAYERS**

Characteristic Value of Relative Compaction (%)	Deduction applied as per cent of Pay Item
101.0 - 101.9	10%
100.0 - 100.9	30%
< 100.0	LOT to be rejected

Table B.5 - Deductions for roughness

NAASRA Roughness Counts per kilometre over 100 m length	Equivalent IRI (m/km) per 100 metre length	Deductions applied as per cent of Pay Item for Base
< 40	< 1.56	Nil
40 - 49	1.56 – 1.95	2%
50 – 54	1.96 – 2.10	4%
55 – 59	2.11 – 2.30	8%
60 - 64	2.31 – 2.50	16%
≥ 65	> 2.50	Rework or remove and replace

ANNEXURE M290/C – SCHEDULE OF HOLD AND WITNESS POINTS AND IDENTIFIED RECORDS

C.1 SCHEDULE OF HOLD AND WITNESS POINTS

Reference	Type	Construction process Held	Submission Details
Clause 2.1.2	HOLD POINT	Commencement of work.	PROJECT QUALITY PLAN conforming to requirements in Clause 2.1.
Clause 2.3.5	HOLD POINT	Use of proposed mix design.	Submit documentation including: - Details listed in Annexure E.2. - Test results for new pavement material. For insitu mixing, test results that verify the proposed BINDER or chemical additive is compatible with both existing pavement and new pavement material.
Clause 2.4.2	HOLD POINT	Use of a new, additional or changed construction method whenever: .1 A new construction method is proposed. .2 An additional construction method is proposed. .3 Any aspect of the NOMINATED CONSTRUCTION METHOD is changed.	The PROJECT QUALITY PLAN containing the detailed process descriptions, and inspection and test plans for the work. The minimum details are outlined in Annexure D.
Clause 2.5.3	WITNESS POINT	Construction of trial pavement.	Notification of the trial at least 3 BUSINESS DAYS prior to trial starting.
Clause 2.5.4	HOLD POINT	Construction of pavement.	Documentation demonstrating conformity of the trial pavement detailed in Clause 5 and Annexure D.
Clause 4.1.2.6	HOLD POINT	Supply, or where specified, supply and delivery of pavement material, whenever: A new method is proposed, or Any aspect of a Nominated Method is changed.	The amended PROJECT QUALITY PLAN containing the detailed procedures, inspection and test plans for: Supply of PAVEMENT MATERIAL (minimum details outlined in Annexure D.2). Plant mixing of PAVEMENT MATERIAL (minimum additional details outlined in Annexure D.3). Delivery of PAVEMENT MATERIALS (minimum details outlined Annexure D.4). When PAVEMENT MATERIAL is not supplied from a CERTIFIED STOCKPILE, random sampling of in-situ pavement material consistent with the requirements of TfNSW Q and at the testing frequency specified in Clause 5.

M290**Pavement Rebuilding (Bound and Unbound Material)**

Clause 4.1.3.2	HOLD POINT	Construction of stockpile sites.	Submit documentation including: Proposed location of stockpile. Environmental assessment and necessary approvals.
Clause 4.1.3.6	HOLD POINT	Delivery of material to a stockpile site constructed by YOU.	Documentation verifying that the stockpile site conforms to this Specification.
Clause 4.1.4.4	HOLD POINT	Supply of material from stockpile.	Submit documentation including: Unique identification code and location of stockpile. Quantity of material represented. Test results conform to Clause 3 and Clause 5. A checklist confirming that each item for the material listed in Annexure E.1 and, where applicable, Annexure E.2, conforms to this Specification.
Clause 4.5.8	HOLD POINT	Construction of prime or primerseal.	Test results showing conforming moisture content and Ball Penetration Test (T271) for base PAVEMENT COURSE.

C.2 SCHEDULE OF IDENTIFIED RECORDS

Reference	Description of the Identified Record
Clause 2.1	PROJECT QUALITY PLAN.
Clause 2.3	Details of Nominated Mix Design listed in Annexure E.2.
Clause 2.4	Details of NOMINATED CONSTRUCTION METHOD(S).
Clause 2.5	Verification that Trial Pavement conforms.
Clause 3	Details of Nominated Material(s).
Clause 3	Details of TARGET MOISTURE CONTENT ENVELOPE(S).
Clause 3	Results from the retesting of any BINDER, which is more than three months older than its date of manufacture.
Clause 3	Documentation for alternative BINDER.
Clause 3	Manufacturer's specification to be used for chemical additive.
Clause 4.1	Environmental assessment and necessary approvals for stockpile constructed by the Contractor.
Clause 4.1	Certification of stockpile.
Clause 4.2	Assessment of existing pavement and actions.
Clause 4.3	Verification that compaction and trimming conforms.
Clause 4.3	Moisture content for material(s).
Clause 4.4	Application rate monitoring data and associated calibration data for each RUN.
Clause 4.4	Daily tonnages of BINDER used and volume of pavement mixed.
Clause 5	Conformity and Nonconformity reports as required by TfNSW Q.

ANNEXURE M290/D – PLANNING DOCUMENTS**D.1 CONSTRUCTION PROCESSES**

Clause Reference	Process	Details
Clause 4.2 Repair of Unsuitable Areas	Unsuitable material	<ul style="list-style-type: none"> ♦ Treatment or removal of unsuitable material. ♦ Replacement and compaction of the pavement material(s). ♦ Treatment of existing wearing surface.
	Assessment of existing pavement	<ul style="list-style-type: none"> ♦ Test, document, photograph and take samples to represent unsuitable material.
Clause 4.3 Place, spread, shape, compact, and trim	Plant and equipment	<ul style="list-style-type: none"> ♦ Type of plant, equipment and output capacity. ♦ Vehicles to deliver pavement material.
	Conduct work to mitigate risk	<ul style="list-style-type: none"> ♦ Length of work open at any one time. ♦ Sequence of work to minimise exposure to weather conditions. ♦ Sealing of pavement surface each day.
	Procedures	<ul style="list-style-type: none"> ♦ Place, spread and shape pavement material. ♦ Achieve minimum layer depth. ♦ Compaction including rolling pattern and compaction along edges or joints. ♦ Primary and FINAL TRIMMING.
	Correction layer	<ul style="list-style-type: none"> ♦ Rip, shape and compact correction layer to ensure at least 100 mm thickness.
	Materials handling	<ul style="list-style-type: none"> ♦ Stockpile management.
	Working up to fixed surfaces	<ul style="list-style-type: none"> ♦ Place, spread and shape, compact and trim.
	Survey control	<ul style="list-style-type: none"> ♦ Recovery of centreline. ♦ Measuring data to determine PAVEMENT COURSE depth.
	Evenness of the work	<ul style="list-style-type: none"> ♦ Details of the roughness equipment and its calibration data to be used.
	Moisture Content	<ul style="list-style-type: none"> ♦ Incorporate and achieve uniform distribution of water to achieve TARGET MOISTURE CONTENT ENVELOPE.
	Repair of sampling or testing holes	<ul style="list-style-type: none"> ♦ Method to repair sampling or testing holes including timing, material and compaction.

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Clause Reference	Process	Details
Clause 4.4 Insitu Incorporation of BINDER	Plant and equipment	<ul style="list-style-type: none"> Type of plant and equipment. Type of equipment for applying BINDER. Manufacturer's recommendations.
	Spreading	<ul style="list-style-type: none"> Adding new pavement material. Incorporation of new material to allow for bulking. Prepare surface for construction plant and equipment.
	Applying BINDER	<ul style="list-style-type: none"> To continuously monitor the TARGET APPLICATION RATE. Documents verifying the calibration method proposed. Inspection and test plan for incorporation of the BINDER. Visually assess the uniformity of mixed pavement material.
	Incorporation process	<ul style="list-style-type: none"> The nominated width and depth of mixing. Number of RUNS of the mixing equipment. Maintaining mixing efficiency (eg replacement of worn mixing blades or tines). Incorporate and achieve uniform distribution of water during mixing to enable the specified compaction.
	Constraints	<ul style="list-style-type: none"> Measure and deal with the weather constraints in Clauses 4.3, and 4.4.
Clause 4.5 Additional Requirements for Unbound Pavement	Plant and equipment	<ul style="list-style-type: none"> Mechanical modification of granular pavement material. Order of mixing materials.
	Layer	<ul style="list-style-type: none"> Achieving PAVEMENT LAYER depths.
	Treat stiffening in modified PAVEMENT LAYER	<ul style="list-style-type: none"> Assess stiffening of modified material. Reworking modified PAVEMENT LAYER.
	Dry back	<ul style="list-style-type: none"> Dry back of pavement material.
Clause 4.6 Additional Requirements for Bound PAVEMENT LAYERS	Timing	<ul style="list-style-type: none"> Sequence to complete PRIMARY TRIMMING within the nominated time.
	Constraint	<ul style="list-style-type: none"> Low temperature assessment.
	Joints	<ul style="list-style-type: none"> Procedures for constructing FRESH JOINTS and construction joints. Cutting back joints. Disposal of trimmed material.
	Layer	<ul style="list-style-type: none"> Achieving PAVEMENT LAYER depths.
	Curing	<ul style="list-style-type: none"> Type and duration of curing.

D.2 SUPPLY METHOD FOR PAVEMENT MATERIAL

Process	Details
Work Health and Safety requirements	<ul style="list-style-type: none"> • Materials safety data sheets and safe work method statements.
Extraction	<ul style="list-style-type: none"> • Location of quarry or pit. • Method of extraction.
Process	<ul style="list-style-type: none"> • Crushing. • Screening.
Stockpiling	<ul style="list-style-type: none"> • Construction of stockpile site. • Management of stockpile. • Signposting. • Maintenance of stockpile site including details of measures for: <ul style="list-style-type: none"> - Prevent loss of fines, segregation and contamination at stockpile site. - Erosion and sedimentation control. • Clean-up or restoration of stockpile site.
Certification	<ul style="list-style-type: none"> • Inspection and test plan.

D.3 PRODUCTION USING STATIONARY PLANT

Process	Details
Plant	<ul style="list-style-type: none"> • Type of plant. • Hopper capacity. • Output capacity. • Manufacturers' recommendations.
Mixing	<ul style="list-style-type: none"> • Mixing time. • Control of material content and moisture content (including methods to ensure uniformity). • Maintaining mixing efficiency (e.g. replacement of worn mixing blades or tines). • Calibration method(s) and frequency. • Daily calculations to ensure compliance with the mix requirements. • Calculation of percentage BINDER or chemical additive - refer to Annexure L.1 • Inspection and test plan.
Materials handling	<ul style="list-style-type: none"> • Charge/discharge of plant. • Control of uniformity during loading, mixing, and discharge.

D.4 DELIVERY OF PAVEMENT MATERIAL

Process	Details
Vehicles	<ul style="list-style-type: none">• The number, type and capacity of transport vehicles.• Suitability for direct discharge into paver hopper where required.• Measures to prevent loss of material or moisture during transit.• Methods to be used to prevent segregation and/or loss of fines.• Measurement of quantity.
Materials handling	<ul style="list-style-type: none">• Control of uniformity during loading, transport and discharge.• Identification certificates.
Delivery to spreading equipment	<ul style="list-style-type: none">• The time between completion of mixing and discharge into the spreading equipment.• The proposed method of discharge into the spreading equipment.
In-situ testing (where required)	<ul style="list-style-type: none">• Inspection and test plan.

ANNEXURE M290/E – DESIGN DETAILS**E.1 INFORMATION TO BE SUBMITTED FOR NOMINATED MATERIALS**

Item	Information
1. Project Information	<ul style="list-style-type: none"> • Unique Material Reference. • Pavement Type (Unbound, Modified, or Bound). • Stockpile Site and unique identification.
2. Pavement Materials	<ul style="list-style-type: none"> • Description (Product Type). • Geological classification of parent rock. • Average particle size distribution of the material expressed as percentages passing each of the relevant sieves. This is the nominated particle size distribution. • Maximum Dry Density (t/m^3) as per T111 or T162 without the addition of any BINDER or chemical additive. • Test results to verify that the material complies with the requirements in TfNSW 3051. • For recycled building material: <ul style="list-style-type: none"> - Test results for a sample of the nominated recycled building material to verify that the foreign material content complies with TfNSW 3051.
3. Water	<ul style="list-style-type: none"> • Source. • Test results confirming the water complies with this Specification.
4. PROJECT QUALITY PLAN	<ul style="list-style-type: none"> • The Quality Procedure for the supply of the Nominated Material.

E.2 INFORMATION TO BE SUBMITTED FOR EACH MIX DESIGN

Item	Information
1. Project Information	<ul style="list-style-type: none"> • Unique Material Reference. • Pavement Type (Unbound, Modified, or Bound). • Stockpile Site and unique identification.
2. PROJECT QUALITY PLAN	<ul style="list-style-type: none"> • The additional Quality Procedure for the supply and delivery of the Nominated Mix Design.
3. Mix Design	<ul style="list-style-type: none"> • Mass of constituent quantities per yielded cubic metre of Pavement Material. • Proportion of BINDER by dry mass to be added to Pavement Materials: <ul style="list-style-type: none"> - Nominated percentage of BINDER. - Target percentage of BINDER. • Moisture condition on which mix design is based (i.e. oven dry, saturated surface dry, or nominated moisture content). • NOMINATED WORKING TIME. • ALLOWABLE WORKING TIME. • UCS and strength gain. • TARGET MOISTURE CONTENT ENVELOPE.

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Item	Information
4. BINDERS	<ul style="list-style-type: none">• Type, brand and source of each constituent source (e.g. location of powerhouse, location of mill).• Proportion of each constituent in a blended BINDER.• Test results on the BINDER or each constituent in a blend to the relevant TfNSW specifications.• Where an alternative BINDER is supplied, test results and a certificate of compliance.
5. Chemical additives	<ul style="list-style-type: none">• Proprietary source, type, name.• Manufacturer's specification and recommendation for dosage.• Manufacturer's compliance.

ANNEXURE M290/F TO K – (NOT USED)

ANNEXURE M290/L – ADDITIONAL TEST METHODS

L.1 APPLICATION RATE FOR BINDER

- L.1.1 This method sets out the procedure for determining the Application rate for BINDER for insitu modification or stabilisation using equipment fitted with a weigh system. **Scope**
- If mechanical spreaders are used, Test Method TfNSW T136 must be used instead of the following clauses.
- L.1.2 Each continuous RUN must be divided into reporting lengths of 100 m. **Reporting length**
- However, if the last length is less than 100 m, it must be combined with the previous length of the same RUN (ie the last length will be from 100 m and 200 m long).
- L.1.3 Data must be measured and reported to enable the necessary calculations. **Data**
- L.1.4 The following must be calculated for each reporting length: **Calculation**
- .1 The average application rate in tonnes/m² and rounded to the nearest whole number.
 - .2 Average application rate as a percentage of the target Application Rate.
- L.1.5 The report on Application Rate monitoring data for each RUN must include: **Reporting**
- .1 Associated calibration data.
 - .2 Location of each reporting length by site chainage or distance and offset from centreline.
 - .3 Length, width, and area of pavement treated.
 - .4 Tonnes of BINDER used in each equipment RUN and each reporting length.
 - .5 All average application rate for each reporting length.
 - .6 All average to target application rate with values less than 100% highlighted.

L.2 REDUCED TESTING WITH TEST METHOD TfNSW T111

- L.2.1 A maximum dry density may be assigned to a pavement material that is demonstrated to be uniform. **Reduced testing with T111**

L.2.2	Uniformity is established when:	Uniformity
	.1 The maximum dry density for each of at least six consecutive field density samples does not vary by more than 2% of the mean of those samples.	
	.2 The materials remain consistent in plasticity and grading.	
L.2.3	An assigned value for maximum dry density may be used as the mean figure from the consecutive field density samples.	Assigned value
L.2.4	The maximum dry density must subsequently be determined at least once in every four field density tests.	No longer uniform
	However, if the maximum dry density so determined varies by more than 2% of the assigned value, then the material is no longer uniform and an assigned value must not be used.	
L.2.5	A new assigned value may be used when uniformity is again established.	New assigned value
L.3	TESTING OF UNCONFINED COMPRESSIVE STRENGTH	
L.3.1	Sampling, curing, measurement and testing Unconfined Compressive Strength (UCS) must be according to Test Methods TfNSW T116 or T131.	Scope
	Additional requirements are described in the following clauses.	
L.3.2	In TfNSW T116 samples are plant mixed materials or insitu stabilised in the field.	Material
L.3.3	The samples must be:	Sampling
	.1 Taken from the pavement prior to compaction.	
	.2 Taken from the same sampling location as for insitu density testing.	
L.3.4	A sample consists of at least one pair of UCS cylinders.	Sample
L.3.5	The samples must be:	Preparation
	.1 Stored in a loose state in sealed containers immediately after sampling, and before moulding.	
	.2 Prepared and compacted within three hours of final mixing of BINDER or within the mix's ALLOWABLE WORKING TIME, whichever is the lesser. Moisture content may be adjusted to below optimum moisture content for laboratory compaction.	
L.3.6	One pair of UCS cylinders must be tested after 7 days accelerated curing at 65°±5°C.	Curing

- L.3.7 The following must be recorded and reported: **Recording and reporting**
- .1 The reporting requirements of TfNSW T116 or T131.
 - .2 Time of commencement of mixing of the LOT.
 - .3 Time of completion of mixing of the LOT.
 - .4 Time of taking each sample.
 - .5 Time of commencement of laboratory compaction of each UCS sample.
 - .6 Location of each sample (chainage or distance and offset).

L.4 DETERMINATION OF PAVEMENT COURSE THICKNESS

- L.4.1 The test method sets out the procedure for determining the PAVEMENT COURSE thickness. **Scope**
- L.4.2 Levels for calculating thickness must be accurate to ± 5 mm and measured using: **Method**
- .1 Survey,
 - .2 String lines run from recovery stakes located outside the works, or
 - .3 Another proven method that will produce the required accuracy.
- L.4.3 Test sites must be selected on a random basis and at the testing frequency specified. **Test sites**
- L.4.4 Site locations must be recoverable in the horizontal plane to an accuracy of ± 100 mm. **Recovery of test site**
- L.4.5 Levels must be recorded at the same locations on the bottom and top of the PAVEMENT COURSE **Levels**
- .1 At the bottom of the underlying course.
 - .2 At the top of the course after completion of FINAL TRIMMING.
- L.4.6 PAVEMENT COURSE thickness is the difference in level between the top and bottom recorded at the same location. **PAVEMENT COURSE Thickness**

L.5 DETERMINATION OF INCREASE IN FINISHED SURFACE LEVEL

- L.5.1 This method sets out the procedure for determining the Increase in Finished Surface Level. **Scope**

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- L.5.2 Where an increase in the level of existing pavement is nominated: **Method**
- .1 The increase must be verified by levels taken at agreed sampling locations.
 - .2 The sampling location comprises a 100 m line located within the central 9 m of the road cross-section.
 - .3 Each line has a constant offset from the road centreline.
 - .4 The end of each line must be recoverable to ± 100 mm.
 - .5 Levels must be recorded at 10 equidistant locations both before placing new material and after compaction of the new material.
- L.5.3 The increase in surface level is the average increase from 20 determinations (ie 1st to 20th inclusive) for two adjoining sampling locations. **Increase in surface level**

L.6 TESTING OF MOISTURE CONTENT TO DETERMINE DRY BACK

- L.6.1 This method sets out the procedure for determining the dry back moisture content. **Scope**
- L.6.2 The test method for determining moisture content must be the same as that previously used for the process control for the LOT (refer to Table 2 or Table 3). **Test method**
- L.6.3 Samples at each test location must be at least 500 grams and represent the full depth of the PAVEMENT LAYER. **Quantity**
- L.6.4 The test location for the LOT must be identified which was previously used for compaction control and was the highest field moisture content in the LOT. **Test location for LOT with highest moisture content**

The sample from this location is deemed to represent the LOT where the moisture content is tested to be less than or equal to 65% of the optimum moisture content.

However, where the moisture content is greater than 65% of the optimum moisture content, samples must be taken from the remainder of the LOT. The sample from the location with the highest moisture ratio (MC/OMC) at the time of assessing dry back is deemed to represent the LOT.

L.7 DETERMINING PERCENTAGE OF BINDER ADDED TO PLANT MIXED PAVEMENT MATERIAL

- L.7.1 This procedure is for determining the percentage of each type of BINDER added to plant mixed pavement material for modification or stabilisation. **Sampling**

- | | | |
|-------|---|--------------------|
| L.7.2 | Data on the mass of each type of BINDER and pavement material is to be measured during batching and reported at the frequency specified to enable the necessary calculations. | Data |
| L.7.3 | The following are to be calculated for the material being produced: <ol style="list-style-type: none"> 1. The actual percentage of BINDER added to the MIX and rounded to the nearest whole percentage. 2. The actual percentage of BINDER as a percentage of the target percentage of BINDER. | Calculation |
| L.7.4 | The report on proportion of each type of BINDER for each LOT must include: <ol style="list-style-type: none"> 1. Associated calibration data. 2. Tonnes of BINDER and PAVEMENT MATERIAL used. 3. The actual percentage of BINDER added to the MIX. 4. Actual percentage of BINDER divided by the target percentage of BINDER. Values less than 1.0 must be highlighted. | Reporting |

L.8 DETERMINING RELATIVE COMPACTION OF STABILISED MATERIALS

- | | | |
|-------|---|----------------------------------|
| L.8.1 | This method sets out the procedure for determining the reference density for stabilised materials to be used in the calculation of relative compaction. | Scope |
| L.8.2 | The location of the sample for the determination of maximum wet density must be the same as that for the determination of insitu density. | Location of sampling |
| L.8.3 | Determine the maximum wet density in accordance with Test Method TfNSW T162 on a sample taken prior to compaction. Compact the sample within three hours of final mixing of BINDER or within the mix's ALLOWABLE WORKING TIME, whichever is the lesser. | Time limit for compaction |
| L.8.4 | Record and report the time of commencement of mixing of the material at the sampling location and the time of sampling. | Recording and reporting |

ANNEXURE M290/M – REFERENCED DOCUMENTS AND DEFINITIONS

M.1 REFERENCED DOCUMENTS

M.1.1 TfNSW Specifications

TfNSW G10	Traffic Management
TfNSW R33	Trench Drains
TfNSW R37	Intra-Pavement Drains
TfNSW R38	Edge Drains
TfNSW R63	Geotextiles (Separation and Filtration)
TfNSW R106	Sprayed Bituminous Surfacing (With Cutback Bitumen)
TfNSW R111	Sprayed Bituminous Surfacing (With Bitumen Emulsion)
TfNSW R131	Guide posts
TfNSW R142	Retroreflective Raised Pavement Markers
TfNSW R143	Signposting
TfNSW R145	Pavement Marking (Performance Based)
TfNSW Q	Quality Management System
TfNSW 3051	Granular Pavement Base and Subbase Materials
TfNSW 3211	Cements, Binders and Fillers
TfNSW TS101	Traffic Control Signals – New Installation and Reconstruction

M.1.2 TfNSW Test Methods

TfNSW T102	Pretreatment of Road Materials by Compaction
TfNSW T103	Pretreatment of Road Materials by Artificial Weathering
TfNSW T106	Coarse Particle Distribution in Road Materials
TfNSW T107	Fine Particle Distribution in Road Materials
TfNSW T108	Liquid Limit of Road Materials
TfNSW T109	Plastic Limit and Plasticity Index of Road Materials
TfNSW T111	Dry Density/Moisture Relations of Road Materials (Standard Compaction)
TfNSW T114	Maximum Dry Compressive Strength of Road Materials

TfNSW T116	Determination of Unconfined Compressive Strength of Remoulded Road Materials which are Self Cementing
TfNSW T117	Determination of the California Bearing Ratio of Remoulded Specimens of Road Materials (Standard Method)
TfNSW T120	Determination of Moisture Content of Road Materials (Standard Method)
TfNSW T121	Determination of Moisture Content of Road Materials (Sand Bath or Hot Plate Method)
TfNSW T130	Dry Density - Moisture Relations for Mixtures of Road Materials Stabilised or Modified with Proportions of Cement, Lime or Other Cementitious Materials
TfNSW T131	Determination of Unconfined Compressive Strength of Road Materials Stabilised or Modified with Proportions of Cement, Lime or Other Cementitious Materials
TfNSW T136	Rate of Spread of Lime or Cement
TfNSW T147	Working Time for Road Construction Materials (Blended in the Laboratory with Slow Setting Binders)
TfNSW T160	Benkelman Beam Deflection Test
TfNSW T162	Compaction Control Test (Rapid Method)
TfNSW T166	Determination of Relative Compaction
TfNSW T171	Modified Texas Triaxial Compression Test for Disturbed Soils, Soil Aggregates and Crushed Rock
TfNSW T173	Determination of Field Wet Density of Pavement Material using a Nuclear Gauge in Direct Transmission
TfNSW T182	Pavement Surface Roughness
TfNSW T187	Measurement of Ride Quality of Road Pavements by Laser Profiler - Pavement Construction - Audit Surveys
TfNSW T213	Particle Shape of Coarse Aggregates by Proportional Calliper
TfNSW T215	Wet/Dry Strength Variation
TfNSW T219	Acid Soluble Sulfate Content in Metallurgical Slag, Crushed Rock or other Pavement Material
TfNSW T276	Foreign Materials Content of Recycled Crushed Concrete
TfNSW T1004	Quantitative Determination of Chloride Ion in Water
TfNSW T1014	Quantitative Determination of Sulfate Ion in Water

M.1.3 Australian Standards

AS 1289.2.1.4	Soil Moisture Content Tests - Determination of Moisture Content of a Soil - Microwave Oven drying method (subsidiary method)
AS 3550.4	Waters - Determination of solids - Gravimetric method

M.2 ABBREVIATIONS AND DEFINED TERMS

AS	Australian Standard.
ALLOWABLE WORKING TIME	Lesser of the Nominated Working Time or one shift.

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Pavement Rebuilding (Bound and Unbound Material)

BINDER	A collective term for hydraulic agents or additives, such as cement, fly ash, lime, ground granulated iron blast furnace slag, used singly or blended and which sets when mixed with a pavement material and water.
BOUND MATERIAL	A pavement material with appreciable tensile strength created by mixing granular material binder(s). Bound material is also known as stabilised material or cemented material.
CERTIFIED STOCKPILE	A stockpile that has been previously tested and demonstrated to comply with this Specification.
COUNTS	The measure of roughness in NAASRA Roughness Counts
FRESH JOINT	A joint in a stabilised pavement is FRESH when the pavement material on both sides of a joint between adjacent RUNS has been placed and compacted within the NOMINATED WORKING TIME.
FINAL TRIMMING	Trimming following PRIMARY TRIMMING to achieve the finished surface level and surface evenness, must be within the Nominated Working Time of a modified or bound material .
FINISHED SURFACE LEVEL	The level of the wearing surface of the pavement.
GRAVE LAITIER	A material containing at least 20% by mass of granulated blast furnace slag combined with a minimum of 2% by mass of hydrated lime as an activator. For the purposes of this Specification grave laitier is not regarded as a self-cementing material.
MATERIALS TO BE BOUND (MTBB)	A road pavement material prior to incorporation of a BINDER(S) that meets Specification TfNSW 3051. MTBB is either manufactured or derived from natural deposits. For grave laitier, MTBB refers to the material after the addition of granulated slag, but prior to the addition of a stabilising BINDER(S).
MATERIALS TO BE MODIFIED (MTBM)	A road pavement material prior to incorporation of a BINDER(S) that meets TfNSW 3051. MTBM is either manufactured or derived from natural deposits.
MODIFIED MATERIAL	Pavement material mixed with small amounts of BINDER to improve its properties (eg plasticity) without significantly increasing its tensile strength.
NOMINATED APPLICATION RATE	The BINDER content nominated in the Nominated Mix DESIGN converted to an application rate (units are t/m ²)
NOMINATED WORKING TIME	The amount of time before the material becomes difficult to place, shape, compact and trim. The time is calculated by laboratory testing (Test Method TfNSW T147) and must be a minimum of 8 hours.
PAVEMENT COURSE	A structural course of the pavement with consistent structural properties. May be applied to subbase, base and wearing courses.
LAYER	The horizontal portion of a PAVEMENT COURSE placed and compacted as an entity.
PRIMARY TRIMMING	Trimming of bound pavement that is begun after compaction is complete to achieve a surface level close to that specified within the ALLOWABLE WORKING TIME.
RUN	A continuous area of pavement within a LOT that is treated using specialist equipment. The dimensions of a RUN are: <ul style="list-style-type: none">♦ Length is the continuous longitudinal length, and♦ Width is the width output from the equipment.
TARGET APPLICATION RATE	The mass of BINDER applied per square metre of pavement material to achieve the Nominated Mix DESIGN (units are t/m ²). It is the NOMINATED APPLICATION RATE plus a tolerance.
TARGET MOISTURE CONTENT ENVELOPE	Determined for each PAVEMENT LAYER as a range from a minimum to a maximum percentage of the optimum moisture content.
UCS	Unconfined compressive strength.

LAST PAGE