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SECTION 3 : PAVEMENT CONSTRUCTION

3.1 GENERAL

This section covers areas of new or completely reconstructed road pavement and includes all pavement layers between the finished natural subgrade level up to and including the finished basecourse.

3.2 IMPORTED SUBGRADE LAYER

The imported subgrade material for the pavement shall be "run of pit" sand, unless otherwise specified or approved by the Engineer. The suitability of alternatives will need to be demonstrated.

3.2.1 The material shall be placed in layers not exceeding 150mm (compacted thickness) and at optimum moisture content.

3.2.2 The material shall be compacted to the specified California Bearing Ratio (CBR) as measured with a standard scala penetrometer. Except that the standard of compaction shall not be less than 95% of the optimum dry density of the material as specified in Test 4.1.1 of NZS 4402:1986 "New Zealand Standard Compaction Test", or Test 4.1.3 "New Zealand Vibrating Hammer Compaction Test".

Scala Penetrometer tests shall be carried out as detailed in Section 2 : "Testing".

3.2.3 The entire surface of the completed subgrade shall be made smooth, firm and uniform, by blading, grading and rolling, approximating the crossfall required on the final surface.

The surface shall be finished so that all points are within 15mm from a 3m straight edge laid at any point on the surface.

The reduced level of any point shall be within the limits 0mm above to 30mm below the designed or nominated level.

3.2.4 Compaction shall not continue if the material shows signs of excessive weaving or heaving, until the problem has been resolved.

3.2.5 The completed subgrade shall be tested to ensure the required CBR has been achieved. If the compaction of the imported subgrade layer does not meet the required criteria then the following options are available for consideration:

- i) The Contractor may choose to carry out further compactive effort to achieve the required level of compaction.
- ii) The Contractor may choose to place not more than 100mm compacted depth of the sub-base layer on the condition that the imported subgrade compaction criteria can be met following the subsequent compaction of the sub-base. If the compaction specified for the imported subgrade layer cannot be achieved by this method then the

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Contractor at their expense shall re-work both pavement layers until the problem has been resolved.

3.3 LOWER SUB-BASE LAYER

3.3.1 The material in this layer shall be "run of pit" sand unless otherwise specified or approved by the Engineer. The suitability of alternatives will need to be demonstrated.

3.3.2 No lower sub-base layer shall be placed until the subgrade has been approved by the Engineer.

3.3.3 The material shall be placed in layers not exceeding 150mm (compacted thickness) and at optimum moisture content.

3.3.4 The material shall be compacted to the specified CBR as tested by a standard scala penetrometer. Except that the standard of compaction shall not be less than 95% of the optimum dry density of the material as specified in Test 4.1.1 of NZS 4402:1986.

Scala penetrometer tests shall be carried out as detailed in Section 2 : Testing.

3.3.5 The entire surface of the completed lower sub-base shall be made smooth, firm and uniform, by blading, grading and rolling.

The surface shall be finished so that all points are within 15mm from a 3m straight edge laid at any point on the surface.

The reduced level of any point shall be within the limits 0mm above to 30mm below the designed or nominated level.

3.3.6 Compaction shall not continue if the material shows signs of excessive weaving or heaving, until the problem has been resolved.

3.3.7 The completed lower sub-base shall be tested for compaction to ensure the required CBR has been achieved. If the compaction of the imported lower sub-base layer does not meet the required criteria then the following options are available for consideration:

- i) The Contractor may choose to carry out further compactive effort to achieve the required level of compaction.
- ii) The Contractor may choose to place half the sub-base layer (100mm compacted depth GAP40) on the condition that the imported subgrade compaction criteria can be met following the subsequent compaction of the sub-base. If the compaction specified for the imported subgrade layer cannot be achieved by this method then the Contractor at their expense shall re-work both pavement layers until the problem has been resolved.

3.4 RECOVERED MATERIAL

Recovered material may be specified for use in either the lower sub-base layer or as the sub-base layer in the construction of the new pavement.

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Where recovered material is to be used and there is a shortfall, this material shall be placed first and the imported material specified to make up the shortfall, placed on top, subject to suitable layer depths of each being achievable for effective compaction.

Recovered road pavement for reuse shall not contain any transition material, finer than sand-silt in particle size.

The amount of transition material included in the total recovered road pavement material, shall be limited to minor overcutting in recovery, where the particle size of the transition material is greater than sand-silt.

The least dimension shall not exceed 75mm and the maximum dimension shall not exceed 200mm for any surfacing recovered along with the road pavement for reuse, and before placing in the pavement layer.

Other than the recovered materials consequential characteristics, the pavement layer shall be prepared as specified.

3.5 SUB-BASE LAYER (GAP 40 or GAP 65)

Material contained in this layer shall be GAP 40 or GAP 65 unless otherwise specified.

No sub-base layer material shall be placed until the subgrade has been satisfactorily completed and approved by the Engineer.

The NZTA Specification B/2 shall be deemed to be part of this specification except as modified hereafter.

Compaction of the sub-base shall be tested according to the Section 2 - Testing and shall comply with the specified criteria.

NAASRA roughness measurements will not be required.

3.6 BASECOURSE LAYER

Material contained in this layer will typically consist of crushed metal for GAP40, or NZTA M/4 AP40 or AP20.

No basecourse layer material shall be placed until all previous pavement layers have been satisfactorily completed and approved by the Engineer.

The NZTA Specification B/2 shall be deemed to be part of this specification except Clause 14.0 and as modified hereafter.

If required, the degree of compaction in the basecourse shall be tested according to Section 2 - Testing and shall comply with the requirements of the Project Specification. No NAASRA roughness measurements on the unsealed surface will be required.

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In addition to the requirements of NZTA B/2 and any preceding requirements of this specification, approval of the basecourse and pavement as a whole shall be subject to testing with a Benkelman beam apparatus. The required deflection criteria shall be as noted in Part 3 of Volume 2 : Design Guide, unless specified otherwise.

3.7 CONSTRUCTION LAYER PROFILES

Each layer required to be constructed shall relate to the final shape as shown on the Drawings TS300 and TS304 or on the construction drawings.

In all cases the crown shall be confined to a quarter width of the lip to lip dimension, with a uniform grade to the channel lip or to other point as shown on the drawings.

Where the crown is required to be off-centre or the crossfall is not to be 3%, then the crown above the lip of channel, if not specified, shall be calculated from:

$$\text{Crown} = 10 Z \times \text{CF}\% - \frac{2}{3} X \times \text{CF}\%$$

- Crown = actual crown height above lip of channel (in mm)
- Z = distance from lip of channel to crown (in metres)
- CF% = specified crossfall in percent
- X = lip to lip of channel dimension (in metres)

The crossfall on the travelling lanes shall be between 2% and 6%. The desirable crossfall is 3%.