

13 Depressions

13.1 Scope

This Section sets out the requirements for repairing **depressions**. This applies to the correction of settlement deformation, including **depressions** and wheel path rutting and settlement due to surface openings in surfaced roads.

13.2 Definitions

Terms defined in Table 3.2, Definitions appear in **bold**.

13.3 Response Times

The Contractor must complete all **depression** repairs, including all surfacing and reinstating **pavement** marking and raised **pavement** markers, by the date shown on the agreed **Programme**. In addition:

- Table 13.1 states the response times for the completion of seal coats following commencement of the repair
- Table 13.2 states the response time for reinstatement of all **pavement** markings, raised **pavement** markers and removal of all loose chip from site.

Class	Response Time	
	First Coat	Second Coat (where required)
M and U	1 Days	1 Month
R1	1 Days	1 Month
R2	2** Days	1 Month
R3	2** Days	1 Month
R4	2** Days	1 Month

Class	Response Time		
	Pavement Markings*	Raised Pavement Markers	Removal of Loose Chip*
All Highways	Within 48 hours of completing first coat and, where required, second coat seals	Within 72 hours of completing the second coat seal , or as specified for pre-reseal repairs	Within 48 hours

* Note: All loose chip must be removed prior to reinstatement of **pavement** markings. All **pavement** markings must be reinstated and loose chip must be completely removed from site prior to the removal of temporary traffic control.

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****Note:** That the finished **pre-reseal** repair, including asphaltic joints, is **flush** with existing **pavement** surfaces and utility covers so as not to create adverse noise and vibration effects.

Where the repair is a **pre-reseal** repair, a **second coat seal** is not required.

13.4 Specific Requirements

13.4.1. Methods of Repair

One of the following methods shall be used for repairs:

- a) **Premix** Reshaping
- b) Rip and Remake
- c) **Cold Mill** and Inlay
- d) Other, provided the method is approved by the engineer.

13.4.2. Premix Reshaping Method

Reinstatement of acceptable shape with **premix** placed and compacted on the existing surface. Where required by the Engineer, and following an agreed curing period, the **premix** shall be surfaced as specified in Section 11.

13.4.2.1. Design of Premix

Standard **premix** is to be used for **depression** repairs. **Other premixed materials** e.g. OGEM **premix** *must not* be used for **depression** repairs unless approved by the Engineer. Approval will be subject to the Contractor demonstrating that the **other premixed materials** will not deform or result in subsequent **flushing** of the **pavement** surfacing.

13.4.2.2. Extent of Repair

The perimeter of the area within which re-shaping is required shall be determined by the Contractor. The basic area shall be the minimum required with such additional area necessary to establish straight lines to the edge of the repair and shall be clearly marked on the road surface.

13.4.2.3. Preparation of Surface

Areas to be treated shall be free from excess moisture and prepared by removing any **grit**, **debris** or other deleterious matter prior to the application of a tack coat.

13.4.2.4. Tack Coat

A tack coat of quick breaking emulsion shall be applied prior to placing any **premix** material. Tack coat shall be applied to a dry surface and shall have "broken" just before **premix** is placed.

13.4.2.5. Construction

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Areas where tack coat has not been covered with **premix** material shall also be treated with sand or **grit** to prevent pick up.

To ensure satisfactory jointing of the new **premix** layer with the adjacent layer, it will be necessary to remove some of the old surfacing material from around the perimeter of the area to be reshaped. Joints shall be prepared to provide a true line and vertical face by saw cutting the perimeter. Straight line final **treatment** boundaries shall be established by the Contractor in accordance with clause 13.4.4.1 prior to cutting. The depth of material to be removed shall be such that a finishing layer of the required thickness can be constructed over the entire area of reshaping.

A waterproof sealcoat using a grade 5 chip shall be applied before the **premix** is laid.

The **premix** shall not be less than 15 mm thick and will generally correspond with the thickness of adjacent surfacing.

13.4.3. Rip and Remake Method

The perimeter of repairs shall be cut with suitable cutting equipment before executing the remainder of the work so that the sealed surface outside the perimeter of the repair area is not disturbed to the extent that the bond between the sealed surface and the basecourse is destroyed. Ragged edges will not be permitted.

Removal of existing surfacing materials, followed by placement and compaction of unbound basecourse to an acceptable shape, and first coat sealing or **premix** surfacing where the surrounding road is surfaced with **premix**.

The rip and remake of existing **pavements** must include:

- a) cutting the perimeter of the repair
- b) ripping the existing **pavement**
- c) supplying and completely constructing up to 100 mm depth of unbound basecourse so the reshaped surface conforms to the shape and nature of the surrounding **pavement**
- d) surfacing constructed as specified in Section 11.

13.4.3.1. Thickness of Surfacing to be Removed

Generally the thickness of surfacing material to be removed will not exceed 100 mm and in many cases will be less than that, except that when repairing surface openings, material shall be removed to the full depth of the basecourse layer.

When removing the existing seal, care shall be taken to remove the minimum practical amount of underlying **pavement** material.

13.4.3.2. Makeup Material

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Basecourse material may need to be imported to replace surfacing and other material removed. All basecourse aggregate must comply with either TNZ M/4, TNZ M/22 or other materials proven suitable for use as a basecourse subject to the Engineer's agreement.

13.4.3.3. Construction

Material shall be constructed so that upon completion of the work a uniformly dense and stable layer which does not weave or creep under the action of compaction equipment or road traffic is produced. Segregation and resultant hungry and fatty patches will not be acceptable.

Compaction equipment employed shall be appropriate for the shape of the surface being corrected. Drum and plate dimensions shall be so chosen that edge compaction is attained without bridging.

A temporary holding coat shall be applied if the contractor cannot complete a first coat seal within two days.

13.4.4. Cold Mill and Inlay Method

Inlay material shall be **Asphaltic Concrete** to TNZ M/10 or any other mix approved by Transit's Engineering Policy Manager.

The **cold milling** and inlaying of existing **pavements** must include:

- a) **cold milling** the existing **pavement**
- b) supplying and completely constructing up to 65mm depth of **asphaltic concrete** infill so the reshaped surface conforms to the shape of the surrounding **pavement**.
- c) surfacing, constructed as specified in Section 11.

13.4.4.1. Extent of Repair

The perimeter of the area within which re-shaping is required shall be established by the Contractor. The basic area shall be the minimum required with such additional area necessary to establish straight lines to the edge of the repair and shall be clearly marked on the road surface.

13.4.4.2. Thickness of Surfacing to be Removed

Generally the thickness of surfacing material to be removed will not exceed 100 mm and in many cases will be less than that, except that when repairing surface openings, material shall be removed to the full depth of the basecourse layer.

When removing the existing seal, care shall be taken to remove the minimum practical amount of underlying **pavement** material.

13.4.5. Other Treatments

Alternative **treatments** such as granular reshaping, may be agreed. These **treatments** include, but are not limited to, **depressions**, wheel track rutting and settlement in surfaced **pavements**.

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The Operational Requirements details the technical requirements and applications of the other treatments.

13.4.6. Surfacing

Surfacings shall be constructed as specified in Section 11.

13.4.7. Removal of Surplus Material and Clean Up

All material surplus to requirements shall be removed and disposed off site.

13.5 Performance Criteria

The performance of the Contractor during the contract period will be measured by the following criteria:

- a) that all work is carried out in accordance with this Specification by the date shown on the agreed **programme**, and within the response times stated.
- b) inspections are completed on time and inspection records are available when requested by the engineer.
- c) no **flushing, bleeding, cracking** or **scabbing** of the sealed surface of the repair.
- d) there shall be no **depressions** in the finished surface that will allow water to pond.
- e) the surface shape of repairs shall be such that the existing road crossfall is maintained.
- f) repairs shall be constructed to the tolerances in Appendix 2.3.

