Title | Design chipseal surfacings and pretreatments
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Level | 5
Credits | 25

**Purpose**

People credited with this unit standard are able to: evaluate existing pavements and select appropriate pretreatments and treatments; produce designs for chipseal surfacing; determine application rates for chipseals; describe and confirm quality assurance procedures that ensure chipseal construction design criteria are met; and describe corrective actions for faults in new seal.

**Classification**

Pavement Surfacing > Chipseal Surfacing

**Available grade**

Achieved

**Prerequisites**

Unit 20454, Demonstrate knowledge of materials used in chipseal surfacing; and Unit 20455, Demonstrate basic knowledge of safety relating to bituminous materials and associated products; or demonstrate equivalent knowledge and skills.

**Guidance Information**

   - NZTA M1: Specification for Roading Bitumens;
   - NZTA M6: Specification for Sealing Chip;
   - NZTA M6 Notes: Notes on the Specification for Sealing Chip;
   - NZTA P3: Specification for First Coat Sealing;
   - NZTA P3 Notes: Notes for First Coat Sealing;
   - NZTA P4: Specification for Resealing;
   - NZTA P4 Notes: Notes for Resealing;
   - NZTA P5: Specification for Use of Natural Rubber Latex in Reseal Binders;
   - NZTA P5 Notes: Notes for Use of Natural Rubber Latex in Reseal Binders;
   - NZTA P17: Performance Based Specification for Bituminous Reseals;
   - NZTA P17 Notes: Notes for the Specification for Bituminous Reseals;
NZTA P26: Specification for Improvement of Pavement Macrotexture by Use of High Pressure Water and Grooving;
NZTA P26 Notes: Notes to the Specification for Improvement of Pavement Macrotexture by Use of High Pressure Water and Grooving;
NZTA Q1: Specification for Quality Assurance for Chipsealing;
NZTA Q1 Notes & NZTA Q2 Notes: Notes to Specifications for Quality Assurance for Chipsealing and Hot Mix Asphalt;
NZTA T10: Specification for State Highway Skid Resistance Management;
NZTA T10 Notes: Notes to the Specification for State Highway Skid Resistance Management;
Contract specifications.

Any requirements superseding any of the above will apply, pending the review of this unit standard.

2 Assessment against this unit standard must be based on evidence from a workplace context.

3 For competence in this unit standard candidates are to produce designs for at least three of: first coat seal, single coat reseal on asphalt, single coat reseal on chipseal, two coat reseal, reseal using emulsified binder, reseal using modified binder.

4 Definitions
Company procedures refers to all documented policies, procedures and methodologies of the candidate’s employer at the time of training including but not limited to those relating to health, safety, environment, quality, and operations. Maintenance period means the period of time from the removal of temporary speed restrictions until final acceptance by the engineer during which time the contractor may have corrective action obligations specified in the contract specifications. Protection period means the period of time from the completion of rolling until the removal of temporary speed restrictions during which time the contractor may have corrective action obligations specified in the contract specifications. PSV means polished stone value as defined in NZTA M6. RAMM means Transfund New Zealand’s roading asset management method.

Outcomes and performance criteria

Outcome 1
Evaluate existing pavements and select appropriate pretreatments and treatments.

Performance criteria

1.1 Factors influencing treatment selection and choice of surfacing are described in accordance with Chipsealing in New Zealand.

Range include but are not limited to – condition, texture, and variability of existing surface; geometry, number of lanes, gradients, and corners; approaches to intersections; traffic volumes and mix; climatic conditions and shading; management systems such as RAMM.
1.2 Types of surface distress and presealing repairs are described in accordance with *Chipsealing in New Zealand*.

Range distress types include but are not limited to – skid resistance, flushing, chip loss, cracking, ravelling, scabbing, rutting; repairs – drainage, shoulders, edge breaks, surface texture variation, pre-levelling.

1.3 Situations where chipsealing a surface would be inappropriate are identified in accordance with *Chipsealing in New Zealand*.

1.4 Existing surfaces are evaluated for treatment selection in accordance with *Chipsealing in New Zealand*.

Range existing surfaces may include but are not limited to – unbound basecourse, stabilised basecourse, chipseal, dense-graded asphalt, open-graded asphalt, slurry seal, cement concrete; treatment may include – irregular textured surface, cracked surfaces, deformed surfaces.

1.5 Treatments are selected to meet client requirements in accordance with *Chipsealing in New Zealand* and taking account of existing surface and site conditions.

Range treatments may include but are not limited to – single coat, multicoat; requirements may include but are not limited to – skid resistance, traffic stress, noise limitation, cost; conditions may include but are not limited to – cracking, flushing.

**Outcome 2**

Produce designs for chipseal surfacing.

**Performance criteria**

2.1 Design parameters are described in accordance with *Chipsealing in New Zealand*.

2.2 Design processes are implemented in accordance with contract specifications, *Chipsealing in New Zealand*, and company procedures.

2.3 Designs are described in terms of compatibility with site constraints and available construction plant.

Range constraints include but are not limited to – shade, height, width, gradient, geometry.

2.4 Designs are produced to meet safety and environmental requirements for minimising the use of hazardous substances such as fluxes, cutters, modifiers, and adhesion agents.
2.5 Design reports are prepared in accordance with *Chipsealing in New Zealand*. Range may include but are not limited to – texture; pretreatment(s); seal type, chip size and quantity; PSV; binder and chip application rates; areas to be sealed; additives.

2.6 Chipseal designs are reported, audited, and confirmed in accordance with company procedures.

**Outcome 3**

Determine application rates for chipseals.

**Performance criteria**

3.1 Binder application rate is determined in accordance with *Chipsealing in New Zealand* and the manufacturer’s recommendations.

3.2 Chip application rate is determined in accordance with *Chipsealing in New Zealand*.

**Outcome 4**

Describe and confirm quality assurance procedures that ensure chipseal construction design criteria are met.

**Performance criteria**

4.1 Quality assurance procedures are described in terms of preseal repairs. Range repairs include but are not limited to – flushing, bleeding, minor chip loss, major chip loss.

4.2 Field measurements and materials sampling and testing requirements are confirmed in accordance with contract specifications. Range measurements – area, sand circle, temperature, binder application rate, chip application rate; sampling and testing – binder, chip.

4.3 Construction site requirements are confirmed in accordance with contract specifications and *Chipsealing in New Zealand*. Range preparation of surfaces, influence of weather, site conditions.
Outcome 5

Describe corrective actions for faults in new seal.

Range faults – minor and major chip loss, flushing, bleeding; chip loss resulting from – light binder application rate, frost, rain, traffic stress; unsuitable binder, binder absorption.

Performance criteria

5.1 Corrective actions are described in terms of seal repairs required during the protection period.

5.2 Corrective actions are described in terms of seal repairs required during the maintenance period.

Replacement information

This unit standard replaced unit standard 1499.

This unit standard is expiring. Assessment against the standard must take place by the last date for assessment set out below.

Status information and last date for assessment for superseded versions

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<th>Process</th>
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Consent and Moderation Requirements (CMR) reference 0101

This CMR can be accessed at http://www.nzqa.govt.nz/framework/search/index.do.