

DEPARTMENT *of* INFRASTRUCTURE, ENERGY *and* RESOURCES
TASMANIA
ROADWORKS SPECIFICATION
R43 – Pavement and Shoulder Maintenance
November 2010

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R43.1 SCOPE

This Specification sets out the maintenance requirements for:

- a) Sealed road pavements - grading and resheeting of unsealed shoulders, verges and roadside amenities to manage:
 - Shoulder wear and edge drop-off
 - Corrugations, scouring and channels
 - Potholes
 - Loose material

- b) Unsealed road pavements - grading and resheeting of unsealed road pavements and roadside amenities to manage:
 - Corrugations, scouring, rutting, minor potholing
 - Potholes
 - Loose material
 - Deformations, including shoving

- c) Reconstruction patches in sealed and unsealed pavements to manage localised pavement defects.

- d) Pothole Repairs on unsealed surfaces.

R43.2 REFERENCES

This Specification shall be read in conjunction with the following specifications

- G1 – General Provisions/MG1 Maintenance General Provisions
- G2 - Contract Management Plan/MG2 Maintenance Contract Management Plan
- G3 - Traffic Management
- G4 – Compaction Assessment
- R24 – Geotextiles
- R33 – Subsoil Drains
- R40 – Pavement Base and Subbase
- R59 – Sealed Pavement Maintenance

R43.3 DEFINITIONS

Table R43.1 Definitions

NAME	DESCRIPTION
Channel	Steep, irregularly sided, relatively linear feature, commonly found in the direction of maximum slope or along a wheelpath.
Coarse Texture	Protrusion of very coarse aggregate or rock (particle size usually greater than 75 mm) from the pavement surface, some loose on surface.
Corrugations	Transverse undulation closely and regularly spaced with wavelengths typically in the range of 0.3m – 2.0m
Deformation	A depression or bulge in the road surface, outside of the constructed (intended) profile.
Drainage Grip	A channel to disperse water from the road and table drain that assists with the prevention of scouring of shoulders by reducing longitudinal flow lengths.
Edge Drop Off	The vertical distance from the surface of the seal at the edge to the surface of the shoulder.

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NAME	DESCRIPTION
False Drains	Shallow drains created at the back of the shoulder or verge during maintenance operations that restrict the flow of water to the true drain structure.
Loose Materials	Unbound fine or coarse gravel materials on the pavement surface. Can occur as a variable thickness layer (sheet) over the whole surface, or in narrow continuous mounds between wheelpaths or lanes, or between the outer wheel path and table drains.
Pothole	A bowl shaped depression in the pavement. Potholes can have steep or gently sloping sides and be of irregular shape.
Reconstruction Patches	The term reconstruction patch is used where the existing pavement material has been removed and the resulting excavation is to be reconstructed. The repair may be confined to the surfacing course or extend to the full depth of the pavement. Reconstruction patches will usually be straight sided. Terms such as millout and digout are also commonly used in reference to this form of pavement repair.
Rutting	Longitudinal and relatively smoothly shaped deformation at the wheelpaths. Wet weather ruts tend to be steep sided and reflect the impression of the tyre into the road surfaces.
Shoving	Plastic bulging of pavement surface commonly occurring in association with localised pavement depressions or rutting.
Unsealed Shoulders	Are defined as the area of shoulder from the edge of the seal to the verge.

R43.4 REQUIREMENTS

R43.4.1 Grading, Resheeting and Maintenance of Unsealed Shoulders, Verges and Roadside Amenities

New unsealed shoulder and verge material shall meet the requirements of *Standard Specification R40 Pavement Base and Subbase* unless otherwise specified.

Shoulder and verge material shall not encroach onto the sealed pavement at any time except during the maintenance operations. The surface shall be compacted to form a dense, tight and uniform surface free of defects or soft spots.

Shoulder crossfalls shall not be increased as a result of undertaking this activity. There will also be no "false drains" created on the outer edge of the shoulder or verge as a result of maintenance grading operations.

The use of drainage grips in areas where transverse water flow from sealed pavements is restricted by materials that are higher than the sealed surface will only be accepted as a temporary solution. All offending materials shall be removed within the required response times. The shape of shoulders at road junctions and access points to adjoining properties shall be maintained.

Excess material shall not be windrowed into any adjacent vegetation.

Grading shall include the removal of grassed areas for the full shoulder width, generally to the guidepost line, together with the maintenance of drainage grips to aid in the flow of water from the pavement. The invert level in table drains shall provide adequate drainage from the pavement directly after grading.

Culvert inlets and outlets shall be cleared of windrowed material.

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The formation width shall not be excessively widened and adjacent vegetation shall not be subject to excessive damage.

The above activities shall not contribute to the spread of pest plants or other weeds.

R43.4.2 Grading, Resheeting and the Repair of Pavement Defects on Unsealed Roads

New material shall meet the requirements of *Standard Specification R40 Pavement Base and Subbase*, unless otherwise specified.

Where additional pavement material is required on the road surface due to deficiencies in shape, roughness or remaining material characteristics the Contractor shall notify the Superintendent. The Superintendent shall nominate the thickness of resheeting material if he deems the additional material is required.

The graded surface shall be compacted to ensure a dense, tight and uniform surface sufficient to prevent unravelling, rutting by traffic and excessive moisture penetration from the surface.

The existing surface shall be reshaped to a profile with cross fall of between 4% and 6% with superelevation, or to match the existing profile.

The length of road where the running surface is being disturbed by grading or other means, and which produces a windrow of loose material, shall not exceed 1 km. The height of the windrow of loose material shall not exceed 200mm.

No windrows shall be left within the main carriageway overnight. Existing drainage grips are to be reopened within 24 hours. The existing surface shall be tined or scarified to a depth of 25mm prior to the placement of additional material.

Where the unsealed carriageway changes to a sealed carriageway a smooth transition shall be maintained between the two surfaces over a 20m section within the unsealed carriageway. The sealed carriageway shall be kept free of all maintenance aggregate except during surface and shape restoration.

The invert level in table drains shall provide adequate drainage from the pavement directly after grading.

The formation width shall not be excessively widened and adjacent vegetation shall not be subject to excessive damage.

R43.4.3 Reconstruction Patches

The Contractor shall mark on the road the location and extent of the proposed patch. The area shall be approximately rectangular and shall extend into sound pavement on all sides. Where shoving of the pavement is occurring the Contractor shall remove the bulge of material and manage the defect until authorised to undertake the reconstruction patch.

The Contractor shall detail the proposed design for the patching and submit it for approval with the monthly program. The design shall include subsoil drainage and geotextile where necessary. The design shall be consistent with the extent of work involved and shall provide assurance to the Superintendent that both the structural aspect and drainage component of the patching has been considered.

Where subsoil drainage and a geotextile layer have not been allowed for in the design of the patch and during construction is subsequently deemed necessary, the Superintendent is to be advised before the works proceed further.

For sealed pavements, the surface shall be maintained in a trafficable condition with a smooth transition to the surrounding pavement until sealed. Granular patches on sealed pavements shall be sealed within 5 working days after opening of the pavement unless otherwise directed by the Superintendent.

Edges shall be saw cut or planed, to 150mm outside the limits of the defect, both parallel and transverse to the direction of traffic. Where asphalt is being used to complete the repair, the base and sides of the patch shall have a tack coat of bitumen emulsion (0.25 - 0.5 L/m²) applied. The finished repair shall be "blinded" with a light covering of sand.

All requirements of Standard Specification R59 Sealed Pavement Maintenance shall apply to these repairs.

The Contractor shall be responsible for reporting/rectifying any threats to the pavement stability in the proximity of the patch.

Subsoil drains shall be in accordance with Standard Specification R33 Subsoil Drains.

Geotextile shall be in accordance with Standard Specification R24 Geotextiles.

Excavated pavement material shall not be left on or adjacent to the roadside or placed where it can impede surface drainage.

R43.4.4 Potholes in Unsealed Surfaces

New material shall meet the requirements of Standard Specification R40 Pavement base and Subbase unless otherwise directed. In addition to this requirement, where practical, materials with similar properties to the existing pavement material should be used.

The repaired surface shall be compacted to ensure a dense, tight and uniform surface sufficient to prevent unravelling by traffic and excessive moisture penetration from the surface.

R43.4.5 Disposal of Material

All material to be disposed of shall become the property of the Contractor unless otherwise stated in the Specification. The Contractor shall arrange suitable off-site disposal areas for all such material. All such material including detritus and debris shall be removed and disposed in accordance with all relevant legislation and Standard Specifications G1 General Provisions/MG1 Maintenance General Provisions and G2 Contract Management Plan/MG2 Maintenance Contract Management Plan.

R43.5 PERFORMANCE CRITERIA

R43.4.1 Maintenance in Construction Contracts

The Intervention Level and the condition following treatment are set out in ***Table R43.2 Intervention Levels Construction Contracts***.

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Table R43.2 Intervention Levels Construction Contracts

ROUTINE MAINTENANCE TREATMENT	INTERVENTION LEVEL	MINIMUM CONDITION AFTER TREATMENT
Grading and resheeting of Shoulders, Verges, Roadside Amenities, Unsealed Roads and the Repair of Pavement Defects in Unsealed Surfaces.	Unsealed Pavements Rutting, shoving, potholing, channelling or corrugations that individually or collectively are > 30mm in depth, as measured under a 1.2m straight edge, over a combined length of more than 250m for any 1km section of road.	The full length of the defect shall be reinstated to an appropriate service level.
	Shoulder wear and edge dropoff > 30mm depth for lengths exceeding: 10% of the project length for HPCS and Class 1 roads. 20% of the project length for Class 2 roads. 30% of the project length for Class 3 roads.	The full length of the project shall be reinstated to a condition such that no dropoff is greater than 10mm. e) Defects such as channels, corrugations, rutting, shoving and soft spots shall be limited to less than 2% of the total area directly after grading.
	Edge of seal drop off > 50 mm for any length.	Localised reinstatement is acceptable to prevent this condition being reached however the repair shall provide smooth transitions to the existing profile at each end of the repair.
	Shoulder or verge rough and scoured with rutting or corrugations of 50 mm depth.	Localised reinstatement is acceptable to prevent this condition being reached however the repair shall provide smooth transitions to the existing profile at each end of the repair.
	Water ponding over lengths of 5m.	Defect repaired.
	Shoulder or verge material or vegetation on the shoulder or verge is higher than edge of seal or impedes the free flow of water to the drainage system.	All material that restricts the flow of water is removed.
	Potholes >50mm in depth and or >300mm in any orientation in the plane of the road surface.	The repair shall be flush with the surrounding surface.
	Shoving with a depth of 75mm measured under a 1.2m straight edge.	Repaired in accordance with the requirements of Reconstruction Patches.
	Shoulder or verge material encroached onto the sealed pavement > 200mm from seal edge.	All shoulder and verge material removed from the sealed pavement.

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ROUTINE MAINTENANCE TREATMENT	INTERVENTION LEVEL	MINIMUM CONDITION AFTER TREATMENT
Maintenance Grading of Unsealed Pavements	As required by the Principal.	Defects such as channels, corrugations, rutting, shoving and soft spots shall be limited to less than 2% of the total area directly after grading.
Loose Material on Unsealed Roads	Loose Material >100mm in depth at any location on the pavement	All loose materials shall be removed from the pavement at the identified location.
	Loose material > 50mm in depth, over an area >10m ² , within the trafficable area of the road.	
	Loose material > 50mm depth outside of the trafficable area over a continuous length of 100m within any 1km section of road and/or any loose material >50mm in depth that may restrict drainage.	
Reconstruction Patches	Sprayed Seal, Asphalt and Unsealed Pavements Any individual areas of pavement ≤ 20 m ² with structural deficiencies.	The repaired pavement shall have a maximum vertical deviation under a 3 m straight edge of 10 mm in any direction. The perimeter of the repair shall be flush with the existing surface. Sealed surfaces only The surfacing shall provide a uniform water-resistant bituminous layer to protect the pavement layers from surface infiltration of moisture. The type and quality of the surface finish is to be textured so that there is uniform skid resistance across the road.

R43.4.2 Network Maintenance Contracts

The Intervention Level and the condition following treatment or reinstatement are set out in **Table R43.3 Intervention Levels Network Maintenance Contracts**.

Table R43.3 Intervention Levels Network Maintenance Contracts

ROUTINE MAINTENANCE TREATMENT	INTERVENTION LEVEL	MINIMUM CONDITION AFTER REINSTATEMENT
Repair of Pavement Defects on Unsealed Roads.	As specified in the Contract	The final repair shall have a maximum vertical deviation, under a 3m straight edge, of 10 mm in any direction. The repair shall be flush with the existing surface.
Loose Material on Unsealed Roads	As specified in the Contract	All loose materials shall be removed from the pavement at the identified location.
Pothole	As specified in the Contract.	The final repair shall have a

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ROUTINE MAINTENANCE TREATMENT	INTERVENTION LEVEL	MINIMUM CONDITION AFTER REINSTATEMENT
Maintenance on Unsealed Surfaces.		maximum vertical deviation, under a 3m straight edge, of 10mm in any direction. The repair shall be flush with the existing surface.
Shoving Repair on Unsealed Roads	As specified in the Contract	The final repair shall have a maximum vertical deviation, under a 3m straight edge, of 10mm in any direction. The repair shall be flush with the existing surface.
Maintenance Grading on Unsealed Roads	As specified in the Contract	Defects such as channels, corrugations, rutting, shoving and soft spots shall be limited to less than 2% of the total area directly after grading.
Maintenance of Unsealed Shoulders, Verges and Roadside Amenities	As specified in the Contract	Defects such as channels, corrugations, rutting, shoving and soft spots shall be limited to less than 2% of the total area directly after grading.
Edge Dropoff Maintenance	As specified in the Contract	The crossfall of the shoulders shall be reinstated to a consistent profile.
Reconstruction Patches on Sealed and Unsealed Pavements	As specified in the Contract	The final repair shall have a maximum vertical deviation, under a 3m straight edge, of 10mm in any direction. The repair shall be flush with the existing surface. Sealed surfaces only The surfacing shall provide a uniform water-resistant bituminous layer to protect the pavement layers from surface infiltration of moisture. The type and quality of the surface finish is to be textured so that there is uniform skid resistance across the road.
Maintenance Grading on Unsealed Shoulders	As specified in the Contract	Defects such as channels, corrugations, rutting, shoving and soft spots shall be limited to less than 2% of the total area directly after grading.

R43.5 MEASUREMENT AND PAYMENT

R43.5.1 Maintenance in Construction Contracts

Payment for the maintenance management of pavement and shoulders shall include:

- the provision of all plant, labour, materials and disposal of waste materials
- grading and resheeting of shoulders, verges, roadside amenities, unsealed roads, repair of pavements on unsealed roads.

Payment shall be on pro-rata basis over the contract period (ref schedule of rates: 4.07 to 4.11).

R43.5.2 Network Maintenance Contracts

Payment shall be in accordance with the relevant clauses and attachments in the Basis of Payment section of the Contract and shall include the supply of all plant, labour, materials and disposal of waste materials.