



mainroads
WESTERN AUSTRALIA

SPECIFICATION 508

COLD PLANING

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REVISION REGISTER			
Clause Number	Description of Revision	Authorised By	Issue Date
508.02	Inclusion of reference to Specification 203	BPC	06/01/2026
508.25.01(1)	Updated to include compliance with Specification		
508.25.01(1)	Updated to include additional detail for maintenance of Profiling Machines		
Table 508.1	Inclusion of tie-in machines and clarity on uses		
508.25.01(3)	New clause on dust suppression requirements		
508.25.01(4)	New clause on water requirements		
508.25.02(1)	New clause on Road Broom matching other Specifications		
508.25.01(2)	Updated to include dust suppression to be used as per manufactures requirements and guidelines		
508.25.03	New clause on Vacuum Street Sweeper		
508.26(1)	New Hold Point on dust suppression and Specification 203, including Silica Risk Control Plan.		
508.26(2)	Reference to surface finish outcome		
508.26(3)	Update to clause on Wet Surface		
508.26(4)	New clause on checking all equipment in good working order		
508.26(5)	New clause on managing dust		
508.27(1)	Update to clause on verifying surface finish requirements		
508.27(1)	Update to clause to not expose basecourse		
Guidance Note	Updated Custodian to Director Materials Engineering		

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SPECIFICATION 508

COLD PLANING

GENERAL

508.01 SCOPE

1. The work under this specification consists of the removal of bituminous surfacing (typically asphalt) by cold planing. Details of the work are as shown on the Drawings.

508.02 REFERENCES

1. Australian Standards, Main Roads Western Australia Test Methods, Main Roads Western Australia Standards and Main Roads Western Australia Specifications are referred to in abbreviated form (e.g. AS 1234, MRS 67-08-43 or WA 123). For convenience, the full titles are given below:

MAIN ROADS Test Methods

WA 311.1 Texture Depth

MAIN ROADS Specifications

Specification 203	Health and Safety Management
Specification 503	Bituminous Surfacing
Specification 504	Asphalt Wearing Course
Specification 604	Pavement Marking

508.03 – 508.07 NOT USED

PRODUCTS AND MATERIALS

508.08 RAISED PAVEMENT MARKERS

1. The temporary raised pavement markers shall be either “Swarovski Mini – star art .3091/22/001” or Road Marking Supplies Standup Temporary Raised Pavement Marker, Stimsonite Temporary Chip-seal, or their equivalent, in accordance with Specification 604 PAVEMENT MARKING.

508.09 BITUMINOUS REPAIR MATERIALS

1. Where required under the provisions of Clause 508.32, bituminous and associated materials used in repair work shall comply with Specification 503 BITUMINOUS SURFACING and Specification 504 ASPHALT WEARING COURSE.

508.10 – 508.23 NOT USED

COLD PLANING OPERATIONS

508.24 GENERAL

1. Cold planing shall be to the dimensions as specified, in accordance with the details included at Annexure 508A, the Drawings, or as otherwise may be directed or varied by the Superintendent.
2. The longitudinal grade shall follow the general grade of existing kerbs or gutters and/or other specified controlling factors at the location. Profile control shall preferably be performed automatically.
3. Transverse levels will generally be established by the specification of depth of cut carried out whilst advancing at the prevailing longitudinal grade. The depth of cut and transverse crossfall shall be adjusted as required during planing.
4. Each day's planing shall be completed transversely across the full pavement width. Each day's section of work shall be completed prior to commencement of work in another section.
5. Profiling machines shall not be turned on the existing road surface if this process encroaches onto lanes carrying traffic.

508.25 PLANT AND EQUIPMENT

508.25.01 PROFILING MACHINE

1. The work shall be carried out by a pavement profiling machine which has been specifically designed for such work. The profiler(s) shall be equipped with automatic profile control including the ability to vary the depth of cut and transverse crossfall during cold planing operations. Water shall be sprayed during the profiling operation to reduce dust and must comply with all requirements of this Specification.
2. The profiler(s) shall be fitted with a milling drum for the type of work specified in Table 508.1. The drum shall be maintained in good working condition to produce a consistent surface finish. Maintenance must occur after each work shift. Such maintenance must meet or exceed the requirements and frequency specified by the original equipment manufacturer of the profiler.

**Profiling
Machine**

Drum

TABLE 508.1 TYPE OF DRUM

Type of Drum	Tool Spacing on Drum	Type of Work
Fine	Maximum 8 mm	TYPE 1 <ul style="list-style-type: none">• Where a SAMI or GRS seal is to be applied to the cold planed surface• Bridge deck• All resurfacing

Type of Drum	Tool Spacing on Drum	Type of Work
Fine	Maximum 8 mm	TYPE 2 <ul style="list-style-type: none"> Milling to retexture a road surface Removal of surface defects such as shoving
Standard	15 mm	TYPE 3 <ul style="list-style-type: none"> Asphalt when pavement will be removed Pavement removal Other applications not requiring a fine drum
	Maximum 15 mm	TYPE 4 <ul style="list-style-type: none"> Tie-in works utilising small mobile machinery Works less than 10m²

3. The profiler(s) shall be fitted with dust suppression devices and be operating, including the following devices and at the following locations:

**Dust
Suppression**

- (a) water sprinkler system within the drum area;
- (b) water sprinkler system on the conveyor;
- (c) water sprinkler system on the output of the conveyor; and
- (d) vacuum system within the drum area (excluding TYPE 4).

4. Water used for cold planing shall comply with the requirements of Main Roads Western Australia publication 6706-02-133 "Water to be used in Pavement Construction", available on the Main Roads website, and shall be clean and substantially free from detrimental impurities such as oils, salts, acids, alkalis and vegetable substances. Water sources classified by the relevant Water Authority as potable water shall be exempt from this requirement.

Water

508.25.02 ROAD BROOM

- The units shall be a mechanically or power driven roller broom, capable of removing excess cover material and/or other loose material from the pavement surface without damage to the existing pavement, prime or seal surface.
- Mechanical road brooms used for sweeping operations shall be fitted with an operational and efficient method of dust suppression by the use of water. Such dust suppression must be used in accordance with the road broom's original equipment manufacturer requirement and guidelines at all times during sweeping operations are being carried out by road brooms.

508.25.03 VACUUM STREET SWEEPER

1. Vacuum street sweeper truck shall be a mounted self-contained sweeper device with water for dust suppression and suction ability. The vacuum street sweeper shall be used in built-up high traffic volume areas and where kerbing or barrier exist where brooming will not be sufficient.
2. Vacuum street sweeper truck used for sweeping operations shall be fitted with an operational and efficient method of dust suppression by the use of water. Such dust suppression must be used in accordance with the road broom's original equipment manufacturer requirement and guidelines at all times during sweeping operations are being carried out by road brooms.
3. The vacuum street sweeper shall be maintained in good working condition and all water or vacuum systems shall be fully operational. Maintenance must occur prior to each work shift including emptying the tank and cleaning or replacing the filters daily. Such maintenance must meet or exceed the requirements and frequency specified by the original equipment manufacturer of the broom.

508.26 COLD PLANING OPERATIONS

1. **Prior to mobilisation, the Contractor shall submit evidence of compliance to the requirements of Clause 508.25 including that all dust suppression systems are in good working order to meet all aspects of Specification 203 HEALTH AND SAFETY MANAGEMENT including the Silica Risk Control Plan.**

HOLD POINT

2. The profiling machine shall be operated at a controlled forward speed appropriate for the works under the contract to achieve the required surface finish in Clause 508.27.
3. Without in any way altering the remaining requirements of this Specification, the use of water during profiling and brooming of the surface shall be limited to the suppression of dust and the use of excess water shall be minimised. In particular, consideration must be given to water output when a profiling machine or broom is moving slowly such as the start and end of runs. Excess water shall not be applied to the surface.
4. Prior to each shift all plant and equipment are to be checked and confirmed to be in good working order and that maintenance and cleaning is in accordance with the requirements with Clause 508.25.
5. If dust is visually escaping the dust suppression systems, work shall stop immediately and the Contractor shall implement actions to meet all aspects of Specification 203 HEALTH AND SAFETY MANAGEMENT and the Silica Risk Control Plan. Delays to works due to not meeting the requirements are at the cost of the Contractor.

Wet Surface

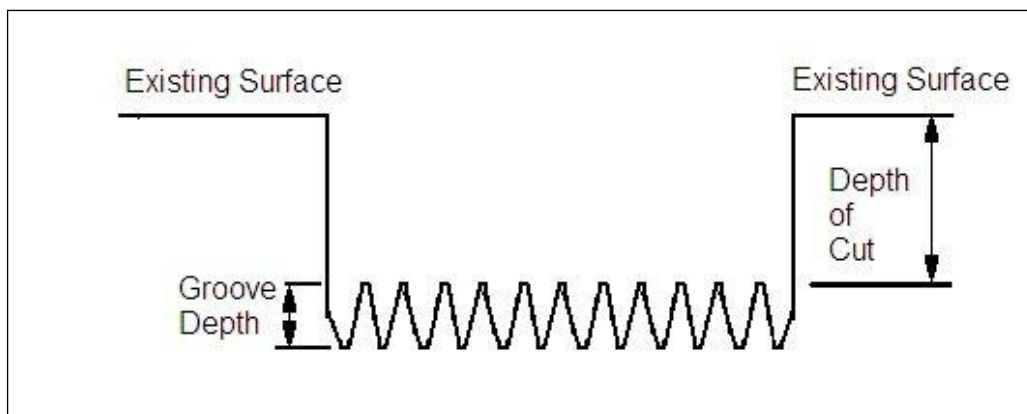
508.27 SURFACE FINISH

1. The planed surface shall be uniform in texture, appearance and general finish including perimeter areas. For Type 1 works:
 - (a) The surface texture after sweeping, determined in accordance with WA 311.1, shall meet the requirements of Table 508.2.

- (b) The depth of grooves at any point on the planed surface after sweeping shall be no more than 5 mm, as defined in Figure 508.1.
 - (c) The surface texture requirements are to be verified within the first 20 m of cold planing of asphalt and the machine speed is to be adjusted if non-complaint.
 - (d) Where the cold planing work relates to the removal of asphalt surfacing only, the profiling depth must be adjusted to not expose underlying granular pavement material.
2. Where the surface finish is non-conforming, the cold planing process shall be reviewed by the Contractor, including adjustment of equipment, before further work continues.

TABLE 508.2 SURFACE TEXTURE – TYPE 1 WORKS

Location within Cold Planed Surface	Texture Depth	Sand Patch Diameter (where 50cc of sand is used)
Average	< 2.0 mm	> 180 mm
Any location	≤ 2.3 mm	> 170 mm

FIGURE 508.1 GROOVE DEPTH – TYPE 1 WORKS

- 3. The Contractor shall ensure that the perimeters of the planed areas are suitable for asphalt resurfacing. Generally, the final cut edge of the existing pavement surface shall be straight and free of all loose material.
- 4. Stopping and starting of the cold planing machine shall not damage the surface.
- 5. Irregularities not securely bonded to the underlying layer remaining after cold planing shall be removed by mechanical means or by handwork. The planed surface shall be swept free of all dust, loose material and foreign matter whether or not resulting from planing operations.
- 6. The average depth of cut shall be within ± 3 mm of the depth specified.

**Depth
Tolerance**

7. Where the depth of cut penetrates consecutive asphalt layers the final cut edge of each layer shall be stepped back to allow for a construction overlap of 150 mm on wearing courses. Where the depth of cut is deeper the final cut edge of each layer shall be stepped back to allow for a construction overlap of 500 mm.

508.28 SURFACE FEATURES

508.28.01 BRIDGE DECKS AND APPROACH SLABS

1. Profiling of asphalt surfacing on bridge decks and approach slabs shall be carried out with extreme caution. Damage to the underlying waterproof membrane, or to the concrete deck itself, shall be repaired in accordance with Clause 508.32.
2. Where applicable, special requirements regarding the profiling of bridge decks and approach slabs are given in Annexure 508A. Such provisions may include a reduced depth of profiling.
3. **Prior to the commencement of profiling on bridge decks or approach slabs the Contractor shall confirm the depth of profiling with the Superintendent and shall seek confirmation of any other special precautions to be taken.**

HOLD POINT

508.28.02 BRIDGE EXPANSION JOINTS

1. The pavement profiler shall not profile closer than 300 mm to the nearest edge of any bridge expansion joints. Removal of the 300 mm section immediately adjacent to the expansion joint shall be by handwork.
2. Bridge expansion joints shall be covered or protected such that planed material does not enter the expansion joints.

508.28.03 GULLIES AND MANHOLES

1. The depth of cut adjacent to and around road furniture items such as gully pits and manhole covers and similar shall be as detailed in Annexure 508A, or as otherwise specified by the Superintendent. Some of this work may require to be carried out as handwork.
2. Gully grates shall be covered or protected such that planed material does not enter the gully pits.

508.28.04 KERBING

1. Planing shall be to the edge of the concrete kerbing or edge of the trafficked lanes if no kerbing exists.

508.29 RAISED PAVEMENT MARKERS

1. The Contractor shall be responsible for the removal and disposal of raised pavement markers, both permanent and temporary, prior to surface treatment. The pavement markers shall only be removed at the commencement of works for each day and shall be removed only from the section to be cold planed that day.

2. The Contractor shall also be responsible for the supply and installation of temporary raised pavement markers on all areas cold planed prior to the area being opened to traffic. The temporary raised pavement markers shall be:

- (a) single-sided white
- (b) placed on all lane and edge lines at 12 m intervals

508.30 RAIN

1. The Superintendent may direct that work not be commenced on a section if significant rain is forecast to fall prior to applying the next surface treatment.

508.31 DISPOSAL OF PLANED MATERIAL

1. All planed material removed from the existing road surface shall be disposed of to the Contractor's spoil sites.

508.32 SURFACE REPAIRS

508.32.01 GENERAL

1. The Contractor shall be responsible for repairing and sealing the surface of any road pavement or bridge deck exposed by planing operations. Damaged areas shall be corrected prior to bituminous surfacing and/or asphalt surfacing or opening to traffic.
2. Damage caused by disregard or ignorance of the specified planing depth or width, or to any other specified requirements, or to any directions given by the Superintendent, shall be repaired at no cost to the Principal.

***Damage by
Contractor***

508.32.02 BRIDGE DECKS AND APPROACH SLABS

1. Waterproof Membrane

***Waterproof
Membrane***

Where damage to the bridge deck or approach slab is confined to the waterproof membrane immediately above the concrete surface, the membrane shall be replaced. Repairs shall generally comprise:

- (a) removal of all loose material;
- (b) application of a suitable bituminous tack coat over the damaged area;
- (c) laying of a suitable waterproof membrane such as "Bituthene 5000", or an equivalent product approved by the Superintendent. If the damage is extensive in area, alternative waterproofing methods such as the application of a rubberised seal in accordance with Specification 503 BITUMINOUS SURFACING may be appropriate.

2. Concrete Decking

***Concrete
Decking***

If damage to the bridge deck or approach slab extends into the concrete surface, the concrete damage shall be repaired prior to any other repairs being attempted. Repairs to concrete decking shall generally comprise:

- (a) removal of debris and loose material;
- (b) dampen the exposed repair area and fill with an approved concrete mix, and thoroughly compact using a hand tamper. The surface level of the repair shall be within ± 5 mm of the surrounding cold planed surface;
- (c) allow the concrete to cure and achieve sufficient strength before proceeding with repair of the waterproof membrane.

3. **Prior to commencing any repairs to the concrete bridge decking or approach slabs, the Contractor shall immediately notify the Superintendent if damage has occurred to the steel reinforcement of the bridge deck or approach slab, and shall provide details of the method of disposition to the Superintendent.**

HOLD POINT

508.32.03 PAVEMENT DAMAGE DEPTH LESS THAN 20 MM

- 1. Any area of road pavement exposed by cold planing operations shall be sealed, and if necessary corrected, prior to subsequent work, or opening to traffic.
- 2. Pavement surface damage up to a depth of 20 mm shall be repaired as follows:
 - (a) Remove all loose material by hand or mechanical brooming.
 - (b) Spray cationic rapid setting emulsion evenly at a rate of approximately 0.8 to 0.9 litres per square metre.
 - (c) Apply cover aggregate (nominal 5 mm size) evenly over the sprayed area.
 - (d) Following the break of the emulsion, sweep and remove any excess cover aggregate.

508.32.04 PAVEMENT DAMAGE DEPTH EXCEEDING 20 MM

- 1. Pavement surface damaged to a depth of 20 mm or greater shall be repaired as follows:
 - (a) Remove all loose material by hand or mechanical brooming to ensure a solid base and sides.
 - (b) Lightly tack coat the base and sides of the hole with bitumen emulsion.
 - (c) Fill the repair area with approved asphalt, and thoroughly compact using a hand tamper or vibrating plant compactor. The surface level of the repair shall be within ± 5 mm of the surrounding cold planed surface.
 - (d) Where necessary, blind with nominal 5 mm aggregate to avoid pick up by traffic.

508.33 TEMPORARY RAMPS

1. Temporary ramps shall be constructed in trafficked lanes at all gullies, manholes, valves, bridge expansion joints and transverse differences in level, prior to the section being opened to traffic. Ramps will not be required when these features are within a designated shoulder or breakdown area.
2. The temporary ramps shall be constructed using approved asphalt or cold mix at a slope of 1:10 from the edge of the structure to the planed surface, and adequately compacted.

508.34 DAILY WORKS RECORDS

1. The Contractor shall supply daily docket for all planing work showing the following details:
 - (a) Contract number
 - (b) Job location
 - (c) Date of work
 - (d) Area planed

508.35 CONFORMANCE

1. The Contractor shall rectify all non-conforming work by appropriate methods acceptable to the Superintendent, at no cost to the Principal.

508.36 – 508.80 NOT USED

AS-BUILT AND HANDOVER REQUIREMENTS

508.81 – 508.90 NOT USED

CONTRACT SPECIFIC REQUIREMENTS

508.91 – 508.99 NOT USED

ANNEXURE 508A

SCHEDULE OF WORKS

Road	Type of Works	Section and Lane(s) Description	Nominal Depth of Planing (mm)			Comments, Special Precautions, etc.
			Road Pavement	Adjacent to Road Furniture	Bridge Deck & Approach Slabs	

GUIDANCE NOTES

FOR REFERENCE ONLY – DELETE GUIDANCE NOTES FROM FINAL DOCUMENT

1. All edits to this specification are to be made using track changes, to clearly show added/ deleted text.
2. If **all** information relating to a clause is deleted, the clause number should be retained and the words **“NOT USED”** should be inserted.
3. The proposed document with tracked changes must be submitted to the Project Manager for review, prior to finalising the document.
4. Once the Project Manager’s review is complete, accept all changes in the document, turn off track changes and refresh the Table of Contents.
5. The Custodian of this specification is Director Materials Engineering.

1. SCOPE (Clause 508.01)

- 1.1 Substitute the following for the last sentence if required:

“Details of the work are provided in Annexure 508A.”

If the Contract is a Minor Works contract (see Item 2 below), the Works details are usually provided in a Schedule of Works (Annexure 508A). If the work is part of a Major Works contract, the Works details may be more conveniently shown on the Drawings, or Annexure 508A, but should NOT be shown on both.

2. MINOR WORKS CONTRACTS

- 2.1 If the Contract Works are stand-alone **MINOR WORKS** (i.e. **NOT** part of a Major Works Contract), add the following clauses in the **GENERAL** Section: *{remove border}*

508.03 GENERAL REQUIREMENTS

1. All general requirements concerning setting out, protection of services, entry to land, accommodation, etc shall be in accordance with SPECIFICATION 100 GENERAL REQUIREMENTS.

508.04 TRAFFIC CONTROL

1. Traffic control for the work shall be in accordance with SPECIFICATION 202 TRAFFIC MANAGEMENT.

- 2.2 Also add the following documents to the Cross reference list: *{remove border}*

SPECIFICATION 100	GENERAL REQUIREMENTS
SPECIFICATION 202	TRAFFIC MANAGEMENT

- 2.3 Ensure that the tender documentation includes suitably edited versions of SPECIFICATION 100 and SPECIFICATION 202.

3. DAILY WORKS RECORDS (Clause 508.34)

- 3.1 The completion of Daily Works Records may be more suited to a Minor Works contract. If not required for Major Works contracts, delete text and mark clause as “NOT USED”.

4. ANNEXURE 508A SCHEDULE OF WORKS

- 4.1 Delete if not required, that is, where Works details are shown on Drawings.
- 4.2 Note any special requirements where profiling on bridge decks and approach slabs (eg reduced depth or width of profiling).
- 4.3 In Minor Works, the “Comments” column can be used to indicate any provisions required with respect to programming or planning the Works.

(NOTE: Particular special requirements can always be emphasised by inclusion in the section **CONTRACT SPECIFIC REQUIREMENTS.**)

CONTRACT SPECIFIC REQUIREMENTS

The following clauses are to be placed under the CONTRACT SPECIFIC REQUIREMENTS, as required. After inserting the clause, change the clause number and heading to style “H2 SP” so it appears in the Table of Contents.

XXX.XX SUB-HEADING (H2 SP)

1. Insert text (Main Table SP) **XXXX**
2. Insert text (Main Table SP)

XXX.XX SUB-HEADING (H2 SP)

1. Insert text (Main Table SP)
2. Insert text (Main Table SP)

AMENDMENT CHECKLIST

Specification No. **508** Title: **COLD PLANING** Revision No: _____

Project Manager: _____ Signature: _____ Date: _____

Checked by: _____ Signature: _____ Date: _____

Contract No: _____ Contract Name: _____

ITEM	DESCRIPTION	SIGN OFF
<i>Note: All changes/amendments must be shown in tracked changes until approved.</i>		
1.	Project Manager has reviewed the specification and identified additions and amendments.	
2.	Standard clauses amended? MUST SEEK approval from the Specification Custodian.	
3.	Any unlisted materials/products proposed and approved by the Project Manager? If "Yes" provide details at 16.	
4.	Deleted clauses shown as " NOT USED ".	
5.	Ensure appropriate INSPECTION AND TESTING parameters are included in Specification 201 (test methods, minimum testing frequencies verified).	
6.	AS-BUILT AND HANDOVER requirements addressed.	
7.	CONTRACT SPECIFIC REQUIREMENTS addressed? Contract specific materials, products, clauses added? (refer Specification Guidance Notes).	
8.	ANNEXURES completed (refer Specification Guidance Notes).	
9.	Estimates Manager has approved changes to SMM .	
10.	Project Manager certifies completed specification reflects intent of the design.	
11.	Independent verification of completed specification arranged by Project Manager.	
12.	Project Manager's review completed.	
13.	SPECIFICATION GUIDANCE NOTES deleted.	
14.	TABLE OF CONTENTS updated.	
15.	FOOTER updated with Document No., Contract No. and Contract Name.	
16.	Supporting information prepared and submitted to Project Manager.	
Additional information or further action:		

Signed: _____ (Project Manager) Date: _____