



**mainroads**  
WESTERN AUSTRALIA

# SPECIFICATION 508

---

# COLD PLANING

Copyright MAIN ROADS Western Australia

REVISION REGISTER			
Clause Number	Description of Revision	Authorised By	Issue Date
Whole document	Reformatting	SCO	23/05/2017
Fig 508.1	Figure 508.1 updated to show correct depth of cut	PSM	19/11/2010
508.02	Test method WA 311.1 added	PSM	23/08/2010
508.25	New clause on plant requirements		
508.26	New clause on cold planning operation		
508.27	Requirements for surface finish added		
508.08	Added Stimsonite marker	PSM	28/05/2009
508.32.02(1)	Adjusted type of Bituthene		
508.32.03(2) 508.32.04(1)	Amended aggregate size from 3mm to 5mm		
Whole document	Complete revision of Issue 1.1 to new format	MCP	01/08/2006

## CONTENTS

Clause	Page No
<b>GENERAL .....</b>	<b>4</b>
508.01 Scope.....	4
508.02 References .....	4
508.03 – 508.07 NOT USED .....	4
<b>PRODUCTS AND MATERIALS .....</b>	<b>4</b>
508.08 Raised Pavement Markers .....	4
508.09 Bituminous Repair Materials.....	4
508.10 – 508.23 NOT USED .....	5
<b>COLD PLANING OPERATIONS.....</b>	<b>5</b>
508.24 General .....	5
508.25 Plant and Equipment .....	5
508.26 Cold Planing Operation.....	6
508.27 Surface Finish.....	6
508.28 Surface Features .....	7
508.29 Raised Pavement Markers .....	8
508.30 Rain .....	8
508.31 Disposal of Planed Material .....	9
508.32 Surface Repairs .....	9
508.33 Temporary Ramps .....	10
508.34 Daily Works Records .....	10
508.35 Conformance .....	11
508.36 – 508.80 NOT USED .....	11
<b>AS BUILT AND HANDOVER REQUIREMENTS .....</b>	<b>11</b>
508.81 – 508.90 NOT USED .....	11
<b>CONTRACT SPECIFIC REQUIREMENTS .....</b>	<b>11</b>
508.91 – 508.99 NOT USED .....	11
<b>ANNEXURE 508A .....</b>	<b>12</b>
Schedule of Works .....	12

## **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 Standards and MAIN ROADS Western Australia Test Methods 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 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.
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 should occur after each work shift.

***Profiling  
Machine***

***Drum***

**TABLE 508.1 TYPE OF DRUM**

Type of Drum	Tool Spacing on Drum	Type of Work
Fine	Maximum 8 mm	<b>TYPE 1</b> <ul style="list-style-type: none"> <li>Where a SAMI or GRS seal is to be applied to the cold planed surface</li> <li>Bridge Deck resurfacing</li> </ul>
Fine	Maximum 8 mm	<b>TYPE 2</b> <ul style="list-style-type: none"> <li>Milling to retexture a road surface</li> <li>Removal of surface defects such as shoving</li> </ul>
Standard	15 mm	<b>TYPE 3</b> <ul style="list-style-type: none"> <li>Asphalt without an underlying seal</li> <li>Other applications not requiring a fine drum</li> </ul>

**508.25.02 ROAD BROOM**

- Mechanical and/or suction 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 at all times during sweeping operations carried out by road brooms.

**508.26 COLD PLANING OPERATION**

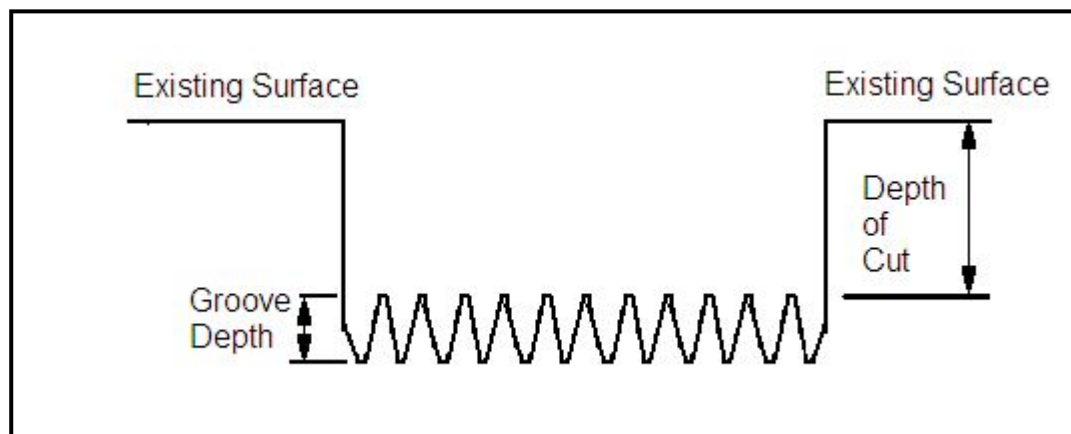
- The profiling machine shall be operated at a controlled forward speed appropriate for the works.
- The use of water during profiling and brooming of the surface shall be limited to the suppression of dust. Where a profiling machine or broom is moving slowly such as the start and end of runs excess water shall not be applied to the surface.

**Wet Surface****508.27 SURFACE FINISH**

- The planed surface shall be uniform in texture, appearance and general finish including perimeter areas. For Type 1 works the surface texture, determined in accordance with WA 311.1, after sweeping shall meet the requirements of Table 508.2. In addition for Type 1 works the depth of grooves at any point on the planed surface after sweeping shall be no more than 5mm, as defined in Figure 508.1. The requirements for Type 1 works are only applicable to cold planning of asphalt. Where the surface finish is non conforming the cold planning 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**

- 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.
- Stopping and starting of the cold planing machine shall not damage the surface.
- 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.
- The average depth of cut shall be within  $\pm 3\text{mm}$  of the depth specified.
- 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.

**Depth Tolerance****508.28 SURFACE FEATURES****508.28.01 BRIDGE DECKS & APPROACH SLABS**

- 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 300mm to the nearest edge of any bridge expansion joints. Removal of the 300mm 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 12m 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 & APPROACH SLABS**

##### **1. 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:

***Waterproof Membrane***

- 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**

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:

***Concrete Decking***

- 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  $\pm 5\text{mm}$  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 20MM**

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 20mm 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 5mm 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 20MM**

1. Pavement surface damaged to a depth of 20mm 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  $\pm 5\text{mm}$  of the surrounding cold planed surface;
  - d. where necessary, blind with nominal 5mm 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 coldmix 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 dockets for all planing work showing the following details:-
  - a. Contract No.
  - 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 & Lane(s) Description	Nominal Depth of Planing (mm)			Comments, Special Precautions, etc.
			Road Pavement	Adjacent to Road Furniture	Bridge. Deck & Appr. Slabs	

## GUIDANCE NOTES

### FOR REFERENCE ONLY – DELETE GUIDANCE NOTES FROM FINAL DOCUMENT

1. All edits to downloaded Specifications shall 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 documents with tracked changes shall be submitted to the Project Manager for review, prior to printing the final batch of documents. When this final printing is carried out, the tracked changes option is to be turned off.
4. Before printing accept all changes in the document, turn off *Track Changes* and refresh the Table of Contents.
5. The Custodian of this specification is Pavements and Surfacing Manager.

#### 1. **SCOPE** (Clause 508.01)

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.

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

SPECIFICATION 100	GENERAL REQUIREMENTS
-------------------	----------------------

SPECIFICATION 202	TRAFFIC
-------------------	---------

- 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.

1. For Minor Works contracts, refer Item 2 in the Guidance Notes.

XXX.XX SUB HEADING (H2 SP)

1. Insert text (Main Table SP)

***Keyword SP***

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 Description: \_\_\_\_\_

ITEM	DESCRIPTION	SIGN OFF
<i>Note: All changes/amendments must be shown in Tracked Changes mode until approved.</i>		
3.	Project Manager has reviewed Specification and identified Additions and Amendments.	
	<b>CONTRACT SPECIFIC REQUIREMENTS</b> addressed? Contract specific materials, products, clauses added? (Refer Specification Guidance Notes for guidance).	
	Any unlisted materials/products proposed and approved by the Project Manager? If "Yes" provide details at 16.	
	Standard clauses amended? <b>MUST SEEK</b> approval from Manager Commercial.	
	Clause deletes shows as " <b>NOT USED</b> ".	
	Appropriate <b>INSPECTION AND TESTING</b> parameters included in Spec 201 (Text Methods, Minimum Testing Frequencies verified).	
	<b>ANNEXURES</b> completed (refer Specification Guidance Notes).	
	<b>HANDOVER</b> and <b>AS BUILT</b> requirements addressed.	
	Main Roads QS has approved changes to <b>SMM</b> .	
	Project Manager certifies completed Specification reflects intent of the design.	
	Completed Specification – independent verification arranged by Project Manager.	
	Project Manager's review completed.	
	<b>SPECIFICATION GUIDANCE NOTES</b> deleted.	
	<b>TABLE OF CONTENTS</b> updated.	
	<b>FOOTER</b> updated with Document No., Contract No. and Contract Name.	
	Supporting information prepared and submitted to Project Manager.	
Further action necessary:		

Signed: \_\_\_\_\_ (Project Manager) Date: \_\_\_\_\_