



AUSTRALIAN RAIL TRACK CORPORATION LTD

Discipline: Engineering (Track & Civil)

Category: Standard

# Timber Sleeper and Turnout Specification

## ETA-02-01

### Applicability

ARTC Network Wide	✓	Western Jurisdiction	
New South Wales		Victoria	

### Primary Source

RIC Standard C 3108 Version 3.1/ARTC NSW Standard TPS 03 Version 1.4

### Document Status

Version	Date Reviewed	Prepared by	Reviewed by	Endorsed	Approved
1.6	31 Oct 11	National Bridges & Structures Engineer	Stakeholders	Operational Safety & Environmental Review Group	Safety & Environment Committee 21/11/2011

### Amendment Record

Version	Date Reviewed	Clause	Description of Amendment
1.0	28 Feb 05		NSW Standard TPS 03 reissued as ARTC Common Standard MAT-02-01
1.1	25 May 05	Disclaimer	Deleted copyright section
1.2	04 Aug 05	Various	Jarrah and Wandoo added to approved species; Sleeper length amended; 'Timber Squareness' and 'Bundling of Timbers' sections added
1.3	12 Sep 05	3.2, 5, 5.1-5.4 added	Modified following representations from ARTC Procurement and Suppliers and discussions with NSW State Forest. Title changed and number changed to reflect new standard numbering system.
1.4	11 Aug 06	4.2 3.1 & 4.1	Explanatory note added regarding supply length of turnout timbers. Red Bloodwood and Mountain Grey Gum added to approved species.
1.5	27 Feb 07	2.3	Requirement to identify the top of boxed heart turnout timbers and bridge transoms deleted.

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1.6	31 Oct 11		Re-named from "Timber Sleeper, Turnout and Bridge Transom Specification". Removed references to Bridge Transoms which are now covered in T&C CoP Section 9: Structures.
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# 1 Introduction

## 1.1 Scope

This specification sets out the requirements for railway timber sleepers, turnout switch & crossing timbers and timber bridge transoms sawn from hardwood timber, for use by ARTC. This specification does not apply to bridge members other than transoms.

# 2 General Requirements

## 2.1 Australian Standards

Where an Australian Standard is referred to in this Specification, it shall be understood that reference is made to the latest edition of such Australian Standard with any amendments thereto, or to any superseding Australian Standard.

If there is any discrepancy in dimensions or tolerances between this standard and AS 3818 Part 1 & 2, then the values in this standard take precedence.

## 2.2 Inspection and Approval of Sleepers and Timbers

All timbers shall be inspected for compliance prior to acceptance for use on the ARTC network.

Further sampling inspection will be carried out in accordance with AS 1199.1, the procedure and quantity to be determined prior to awarding contract.

Approved timbers shall be branded with the Inspector's and Sawmill's personal identification. The brand must be clearly legible and stamped on the nail plate.

## 2.3 Sealing, Nail Plates and Marking of Sleepers and Timbers

Immediately following inspection, a clear coat of an approved undiluted timber sealant shall be applied to the ends of all approved timbers to prevent quick drying and splitting of timber ends.

*Note: Suppliers shall nominate the sealants proposed for use, as part of information required, in the tender documentation.*

All timber sleepers, turnout switch & crossing timbers shall be effectively end nail plated by having nail plates that cover at least two thirds (2/3) of the timber cross section fitted, to prevent end splitting prior to the timber being seasoned. Gang nail plates shall have a maximum of two rows of nails deleted near the top of the plate to identify the top of sleeper and assist with installation. Refer Drg. No. MS-02/1 for minimum gang nail plate requirements.

For identification purposes, the initials, ARTC, are to be stamped on the gang nail plates together with the Sawmill's personal brand. Year of cutting and species ID number shall also be branded on the nail plate as per details on Drg. No. MS-02\_1.

## 2.4 Preservative Treatment of the sapwood of Sleepers & Timbers

Where any sapwood of timbers is preservative treated, the level of treatment and type of preservatives shall comply with AS 1604.1 Specification for preservative treatment – Sawn and round timber.

Any use of treated timber in sleepers and turnout timbers shall be the subject of specific risk assessments, which shall be supplied to ARTC for approval, prior to any deliveries being received.

## 2.5 Life of Timbers

Group 1 timber is generally superior to Group 2 timbers and is expected to achieve an average life of 25 years and Group 2 approximately 20 years.

## 2.6 Timber Squareness

Shall comply with Table 1 in AS 3818.2 i.e.  $\pm 2$  degrees. End stock to be square.

## 2.7 Bundling of Timbers

To ensure all OH&S requirements are met, all timbers must be securely strapped in accordance with AS 2400, Part 13.

Sleepers should normally be in bundles of no more than 25, unless agreed to in writing prior to delivery.

### 3 Timber Sleeper Specification

Timber sleepers shall be produced from the approved species as shown in *Table 1* and in accordance with the following specifications:

All sleepers shall comply with the requirements of:

- 3818.1 Timber / Heavy Structural / Visually Graded, Part 1 – General Requirements.
- Hardwood sleepers other than River Red Gum shall comply with AS 3818.2 – Railway Track Timbers, Grade 2 (Clause 9).
- River Red Gum sleepers shall comply with AS 3818.2 – Railway Track Timbers, Grade 3 (Clause 10).
- Round Back Sleepers AS 3818.2 (Clause 11) will not be accepted.

#### 3.1 Approved Timber Species

Table 1

GROUP 1	Grey Ironbark	E. siderophloia
		E. drepanophylla
		E. paniculata
	Red Ironbark	E. fibrosa
		E. crebra
		E. sideroxylon
	Grey Gum	E. punctata
		E. propinqua
	Grey Box	E. microcarpa
		E. molucana
	Coast Grey Box	E. bosistoana
	Tallow wood	E. microcorys
	White Mahogany	E. acmeniodies
	Steel Box	E. rummeryi
	Yellow Box	E. melliodora
Woollybutt	E. longifolia	
Forest Red Gum	E. tereticornis	
Jarra	E. marginata	
Wandoo	E. wandoo	
Red Bloodwood	C. gummifera	
	E. intermedia	
	E. polycarpa	
GROUP 2	Blackbutt	E. pilularis
	River Red Gum	E. camaldulensis
		C. maculata
	Spotted Gum	C. citriodora
		C. henryi
	New England Blackbutt	E. andrewsii
		E. campanulata
	White Topped Box	E. quadrangulata
	Sydney Blue Gum	E. saligna
	Red Mahogany	E. resinifera
	Silvertop Stringybark	E. laevopinea
	White Stringybark	E. eugenioides
	Yellow Stringybark	E. muelleriana
Blue leaved Stringybark	E. agglomerata	
Red Stringybark	E. macrorhyncha	
Mountain Grey Gum/Monkey Gum	E. cypellocarpa	

*Note: Refer to Clause 2.5*

### 3.2 Sleeper Size

Minimum dimensions and tolerances shall be in accordance with *Table 2*.

Table 2

	Dimension (mm)	Tolerance (mm)
Length - Standard gauge	2440	+ 75 - 0
Length - Broad gauge - Mixed gauge (Broad / Standard)	2600	+ 50 - 0
Width	230	+ 25 - 0
Depth	130	+ 10 - 0

*Note: For sealing, treatment and inspection of Sleepers, refer to Section 2, General Requirements of this specification.*

## 4 Turnout Switch and Crossing Timber Specification

Turnout switch and crossing timbers shall be produced from the approved species as shown in *Table 3* and in accordance with the following specifications.

- All turnout switch and crossing timbers shall comply with the requirements of AS 3818.1 Timber / Heavy Structural / Visually Graded, Part 1 – General Requirements
- Hardwood turnout switch and crossing timbers other than River Red Gum shall comply with AS 3818.2 – Railway Track Timbers, Grade 2 (Clause 9 ) except that sub clause 9(f) AS 3818.2 does not apply to sound boxed heart pieces.
- River Red Gum turnout switch and crossing timbers shall comply with AS 3818.2 – Railway Track Timbers, Grade 3 (Clause 10) except that sub clause 10(f) AS 3818.2 does not apply to sound boxed heart pieces.
- Round Back turnout switch and crossing timbers AS 3818.2 (Clause 11) will not be accepted.
- Unless otherwise specified the rail seat area of turnout switch and crossing timbers shall be the whole length except the last 300mm from each end.

### 4.1 Approved Timber Species - Turnout Switch and Crossing Timbers

Table 3

GROUP 1	Grey Ironbark	E. siderophloia
		E. drepanophylla
		E. paniculata
	Red Ironbark	E. fibrosa
		E. crebra
		E. sideroxylon
	Grey Gum	E. punctata
		E. propinqua
	Grey Box	E. microcarpa
		E. molucanna
	Coast Grey Box	E. bosistoana
	Tallowwood	E. microcorys
	White Mahogany	E. acmenoides
	Steel Box	E. rummeryi
	Yellow Box	E. melliodora
	Woollybutt	E. longifolia
Forest Red Gum	E. tereticornis	
Jarrah	E. marginata	
Wandoo	E. wandoo	
Red Bloodwood	C. gummifera	
	E. intermedia	
	E. polycarpa	
GROUP 2	Blackbutt*	E. pilularis
	Spotted Gum	C. maculata
		C. citriodora
		C. henryi
River Red Gum	E. camaldulensis	

\* not suitable for sound boxed heart pieces

### 4.2 Turnout Switch and Crossing Timber Size

Minimum dimensions and tolerances for turnout timbers shall be in accordance with that shown in *Table 4*.



Table 4

	Dimension (mm)	Tolerance (mm)
Length	As nominated	+ 50, - 0 <sup>†</sup>
Width	250	+ 25, - 0
Depth	150 (180*)	+ 10, -0

**\*Sound Boxed Heart**

### 4.3 Boxed Heart Turnout Timbers

Supply of sound boxed heart turnout timbers shall be in accordance with *Section 2, General Requirements* of this specification.

Sound boxed heart timbers are acceptable when produced from the approved species nominated in *Table 3*. Blackbutt is not acceptable for sound boxed heart pieces.

Minimum dimensions for sound boxed heart timbers - 250 mm x 180 mm x designated length.

Sound boxed heart is permitted anywhere in the piece provided it remains within the middle 33 percent of both the width and the thickness of the piece.

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*Note: For sealing, treatment and inspection of Timbers, refer to Section 2, General Requirements of this specification.*

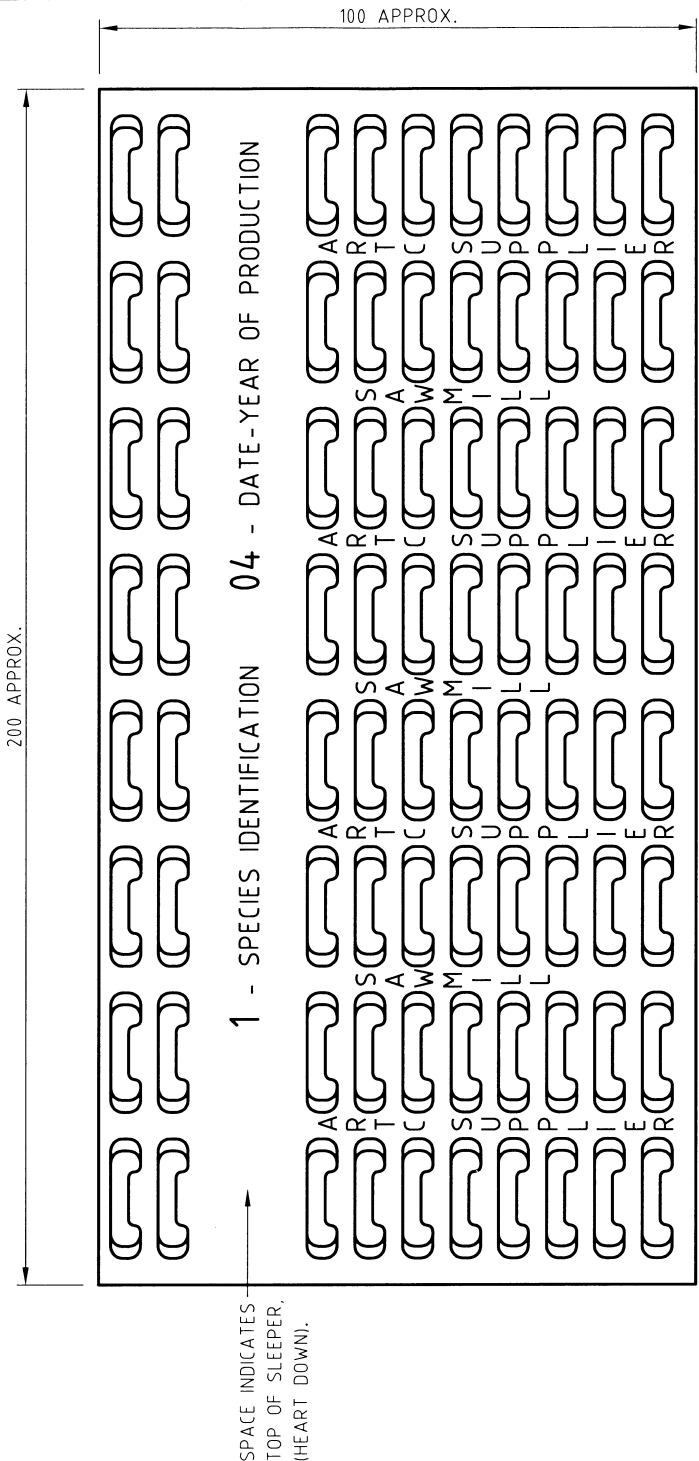
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<sup>†</sup> Due to the standardisation of the sizes of turnout timbers in NSW (main supply source for ARTC network), nominated lengths are now only available in 200mm increments. Lengths of turnout timbers previously supplied will now be replaced with the nearest length increment above that length, i.e. 2650mm is now supplied as 2800mm. An exception to the tolerances set in Table 4 of (+50, -0) is the previous 2850mm long timber, where a tolerance of ± 50 is granted, i.e. the 2800mm may be used instead.

## **5 All Transom Requirements are now in revised Track & Civil Code of Practice Section 9: Structures.**

# 6 Appendix 1: Drawing MS-02\_1

100 APPROX.




200 APPROX.

**1 - SPECIES IDENTIFICATION**    **04 - DATE-YEAR OF PRODUCTION**

SPACE INDICATES TOP OF SLEEPER. (HEART DOWN).

**MATERIAL SPECIFICATION:**  
 COIL STEEL - 1.2 THICKNESS (min).  
 MATERIAL GRADE - GALVANISED 300-330 MPa YIELD.  
 GALV. SPECIFICATION - Z275/275g/m<sup>2</sup> COVERAGE-HOT DIPPED.  
 No. OF TEETH - 8 TEETH/2.5cm<sup>2</sup> (in<sup>2</sup>).

Designed by		 AUSTRALIAN RAIL TRACK CORPORATION LTD		
Scale	1:1		Date	SEPT. 04
Designed			STANDARD DRAWINGS	
Drawn	M. ENGLISH		NAIL PLATE - PLATE AS SHOWN FOR USE WITH RAILWAY SLEEPERS	
Checked	C.HILL		Certified	
			MS-02_1	
			Sheet No 1 of 1	