



**Australian Government**

**Department of Education, Employment and Workplace Relations**

# **TLIS3039A Measure and mark track for resurfacing**

**Release: 1**

## **TLIS3039A Measure and mark track for resurfacing**

### **Modification History**

Not Applicable

### **Unit Descriptor**

#### **Unit Descriptor**

This unit involves the skills and knowledge required to undertake measurement and marking of track for resurfacing operations in accordance with safe working and regulatory requirements and workplace procedures. It includes identifying and marking track obstructions, using appropriate measurement tools to measure the range of geometry elements, calculating recording and marking data for resurfacing operations, and recording and reporting of results. Licensing or certification requirements are not applicable to this unit.

### **Application of the Unit**

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Persons achieving competence in this unit will need to fulfil the applicable legislated rail safety requirements including acts and regulations from each state and territory together with any nationally approved compliance codes and/or guidelines. Work is performed under minimal supervision, generally within a team environment. It involves the application of routine operational principles and procedures to measure and mark track for resurfacing across a variety of operational contexts.

### **Licensing/Regulatory Information**

Refer to Unit Descriptor

### **Pre-Requisites**

Not Applicable

## **Employability Skills Information**

**Employability Skills**            This unit contains employability skills.

## **Elements and Performance Criteria Pre-Content**

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.

## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<b>1 Plan for resurfacing</b>	1.1 Scope of resurfacing work, including ramp-in and ramp-out points, mode of machine application and requirements for measurements are determined 1.2 Appropriate survey documentation is selected 1.3 Survey plaques and monuments are located and accurately interpreted as required
<b>2 Mark/protect obstructions</b>	2.1 Track obstructions are identified 2.2 Track obstructions are marked or protected as required in accordance with workplace procedures
<b>3 Measure geometry and record results</b>	3.1 Equipment appropriate to task is selected and checked for correct operation in accordance with manufacturers instructions and workplace procedures 3.2 Equipment is operated in accordance with manufacturers or work instructions to provide appropriate data for analysis 3.3 Track geometry is measured in accordance with workplace procedures 3.4 Measurements are recorded in accordance with workplace procedures
<b>4 Mark track</b>	4.1 Required offsets and machine adjustment values are calculated and recorded in accordance with workplace procedures 4.2 Track data is marked on track where required in accordance with workplace procedures
<b>5 Use/report data</b>	5.1 Data is compared to maintenance/construction tolerances in accordance with workplace procedures 5.2 Results are reported in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED KNOWLEDGE AND SKILLS

This describes the essential knowledge and skills and their level required for this unit.

#### Required knowledge:

- Relevant safety, OH&S and environmental procedures and regulations
- Track geometry parameters e.g. alignment, top, line, twist, superelevation associated with maintenance and/or construction
- Workplace procedures for the recording and analysis of track parameters

## REQUIRED KNOWLEDGE AND SKILLS

- Obstructions to resurfacing operations, including operation of tampers, ballast regulators and stabilisers
- Methods of marking and protecting obstructions
- Track data requirements for resurfacing
- Problems that may occur during the measurement and marking of track for resurfacing operations, and action that can be taken to report or resolve the problems
- Hazards that may exist when measuring and marking track for resurfacing, and ways of controlling the risks involved
- Relevant records procedures
- Details of local authority procedures

### Required skills:

- Communicate effectively with others when measuring and marking track for resurfacing
- Read and interpret instructions, procedures, information, plans, drawings and specifications relevant to the measurement and marking of track for resurfacing operations
- Read recorded track geometry data
- Interpret and follow operational instructions
- Complete documentation related to the measurement and marking of track for resurfacing operations
- Work collaboratively with others
- Promptly report and/or rectify any identified problems when measuring and marking track for resurfacing in accordance with regulatory requirements and workplace procedures
- Implement contingency plans for unexpected events
- Apply precautions and required action to minimise, control or eliminate hazards that may exist during work activities
- Monitor work activities in terms of planned schedule
- Modify activities depending on differing operational contingencies, risk situations and environments
- Work systematically with required attention to detail without injury to self or others, or damage to goods or equipment
- Adapt to differences in equipment in accordance with workplace procedures
- Identify, select and use tools and equipment
- Select and use required personal protective equipment conforming to industry and OH&S standard

## Evidence Guide

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills, the range statement and the assessment guidelines for this Training Package.

### **Critical aspects for assessment and evidence required to demonstrate competency in this unit**

- The evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria of this unit and include demonstration of applying:
  - the underpinning knowledge and skills
  - relevant legislation and workplace procedures
  - other relevant aspects of the range statement
- Assessment must include exercises which demonstrate competent performance of the following in a range of situations:
  - identifying and marking track obstructions
  - using appropriate measurement tools to measure the range of geometry elements
  - calculating recording and marking data for resurfacing operations from information sources such as survey sheets, survey marks and curve compensation charts
  - recording and reporting of results

### **Context of and specific resources for assessment**

- Performance is demonstrated consistently over a period of time and in a suitable range of contexts
- Resources for assessment include:
  - a range of relevant exercises, case studies and/or other simulated practical and knowledge assessment, and/or
  - access to an appropriate range of relevant situations in the workplace
- In both real and simulated environments, access is required to:
  - relevant and appropriate materials and equipment, and
  - applicable documentation including workplace procedures, regulations, codes of practice and operation manuals

### **Method of assessment**

- Assessment of this unit must be undertaken by a registered training organisation
- As a minimum, assessment of knowledge must be conducted through appropriate written/oral tests
- Practical assessment must occur:

## EVIDENCE GUIDE

- through activities in an appropriately simulated environment, and/or
- in an appropriate range of situations in the workplace

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

Operations may be conducted:

- by day or night
- in all weather conditions

Resurfacing work may be related to:

- maintenance surfacing
- track restoration (associated with ballast cleaning, track reconditioning or reconstruction)
- track construction

On-track machines may include:

- production tampers/liners
- turnout tampers/liners
- ballast regulators
- ballast stabilisers

Track measurement may include:

- location of tangent and transition points
- superelevation increments
- track alignment and machine adjustment values
- machine offsets for lining transitions
- rail levels and machine adjustment values
- track lateral and vertical clearances
- superelevation and rates of change
- rail level
- track alignment
- ballast profile
- gauge

Equipment used for measuring and calculating track data may include:

- combination boards
- tapes and plumb bobs
- curve compensation charts
- laser guidance control systems
- computerised systems for inputting field data and calculating resurfacing ramps and offsets
- GPS guidance control systems

## RANGE STATEMENT

- Recording equipment may include:

  - measurement of track levels and alignment using purpose designed optical reference devices
  - paper forms, notes
  - electronic data entry devices
  - paper data capture devices
  - electronic data capture devices
- Liaison may include:

  - internal or external personnel from other work areas, such as train controllers, electricians
- Communication equipment systems may include:

  - two-way radios
  - telephones/mobile phones
  - agreed audible or hand signal
- Safety and protective equipment may include:

  - high visibility clothing
  - hearing protection
  - gloves
  - sunscreen
  - sunglasses
  - safety glasses
  - insect repellent
  - safety headwear
  - safety footwear
  - portable radios/mobile phones
  - hand lamps
  - flags
  - safety devices
- Depending on the type of organisation concerned and the local terminology used, workplace procedures may include:

  - company procedures
  - enterprise procedures
  - organisational procedures
  - established procedures
- Information/documents may include

  - maintenance notices, records and requests
  - local instructions
  - manufacturers or workplace equipment operation manuals
  - operational instructions, policies and workplace procedures
  - emergency procedure manuals
  - two-way radio/mobile phone operation procedures
  - conditions of service, legislation and industrial agreements including workplace agreements and awards
- Applicable regulations and legislation may include:

  - legislated rail safety requirements including acts and regulations from each applicable state and territory together with any nationally approved compliance codes



**RANGE STATEMENT**

and/or guidelines

- relevant Australian Standards and related requirements, including AS 4292
- relevant state/territory OH&S legislation
- relevant state/territory environmental protection legislation

**Unit Sector(s)**

Not Applicable

**Competency Field**

**Competency Field**                      S - Construction and Installation