



**Australian Government**

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

# **TLIB2082A Repair steel structures**

**Release: 1**

## **TLIB2082A Repair steel structures**

### **Modification History**

Not Applicable

### **Unit Descriptor**

#### **Unit Descriptor**

This unit involves the skills and knowledge required to repair steel structures and their components in accordance with safeworking and regulatory requirements and workplace procedures. It includes determining job requirements, preparing and maintaining components, performing repairs, cleaning up the site after maintenance activities, and completing documentation. 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 the repair of structures and their components as part of workplace activities across a variety of operational contexts within the Australian rail system.

### **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

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b>
<b>1 Determine job requirements</b>	1.1 Structures are inspected as necessary to locate defects 1.2 Job requirements are determined in accordance with workplace procedures, including identification of scope of work and resources required
<b>2 Prepare component for repair</b>	2.1 Components requiring repair are prepared according to requirements 2.2 Materials required for job are identified and organised as required to enable appropriate repair of components 2.3 Surfaces of components are treated using appropriate methods and materials as required 2.4 Components are assembled using appropriate lifting methods to ensure safety 2.5 Connection locations are checked for clearances and tolerances to allow smooth fitting of components 2.6 Fastening of components is performed to specification as required
<b>3 Perform repairs</b>	3.1 Steel members are accurately marked, drilled and cut in accordance with workplace procedures 3.2 Component is replaced or repaired to required standard in accordance with workplace procedures 3.3 Replaced or repaired components are connected to the structure by approved methods in accordance with workplace procedures 3.4 Connections between steel members are tightened, repaired or replaced using approved material and techniques 3.5 External steel deficiencies in components are treated with suitable materials as required to minimise degradation of components
<b>4 Clean up site</b>	4.1 Site is cleaned up to ensure it is restored and environmentally sound and safe in accordance with workplace procedures and environmental regulations and standards
<b>5 Complete documentation</b>	5.1 Work as executed documentation is completed as required 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 AND SKILLS

### Required knowledge:

- Relevant safety, OH&S and environmental procedures and regulations
- Workplace procedures for the repair of steel structures
- Problems that may occur during the repair of steel structures, and action that can be taken to report or resolve the problems
- Hazards that may exist when repairing structures and/or components, and ways of controlling the risks involved
- Functions of different types of steel structures
- Steel structures repair methods and techniques
- Information on the use of epoxy and grouts for mortar pads
- Basic steel components assembly techniques
- Relevant recording and documentation procedures

### Required skills:

- Communicate effectively with others when repairing steel structures
- Read and interpret plans and specifications relevant to the repair of steel structures
- Follow operational instructions and work sequences when undertaking steel structures repair
- Complete documentation related to the repair of steel structures
- Operate communication equipment to required protocol
- Work collaboratively with others when repairing steel structures
- Promptly report and/or rectify any identified problems, faults or malfunctions that may occur when repairing steel structures in accordance with regulatory requirements and workplace procedures
- Implement contingency plans for unexpected events that may arise during the repair of steel structures
- Apply precautions and required action to minimise, control or eliminate hazards that may exist during work activities
- Modify activities depending on differing operational contingencies, risk situations and environments
- Select and use relevant tools and equipment
- Adapt to differences in tools and equipment and work requirements in accordance with standard operating procedures
- Select and use required personal protective equipment
- Identify defects

# 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:
  - replacing steel components
  - repairing existing steel structures using a range of repair techniques
  - repairing a range of defect types

### **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 operational 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:
  - 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
- Work may be conducted in:
- restricted spaces
  - exposed conditions
  - controlled or open environments
- Work may involve:
- exposure to chemicals, and dangerous or hazardous substances
  - movements of equipment, goods and vehicles
- Structures and components may include:
- underbridges, overbridges, footbridges
  - culverts
  - tunnels
  - retaining walls
  - platforms
  - overhead wiring structures
  - signal gantries
- Equipment may include:
- welding, oxy and cutting equipment
  - temporary supports
  - manual tools
  - small power tools
  - air tools and compressor
  - scaffolding
  - ladders
  - elevated work platform (EWP)
  - boat/barge
- Materials may include:
- structural steel
  - epoxy grouts
  - cement grouts
  - paint (protective treatment)
  - bolts and fasteners
  - carbon fibre
- Structures maintenance methods may include:
- replacing
  - repairing
  - bolting
  - bonding

## RANGE STATEMENT

- welding
  - painting (protective treatment)
  -
- Liaison may include:
- internal/external personnel from other work areas (e.g. train controllers)
  - road authorities
  - local councils
  - landowners
- Communication equipment may include:
- two-way radios
  - telephones/mobile phones
  - agreed audible or hand signals
- Information may be provided:
- electronically
  - in writing, via forms/documents/plans
  - orally, via face-to-face communications
  - trackside signals
- Depending on the type of organisation concerned and the local terminology used, workplace procedures may include:
- company procedures
  - enterprise procedures
  - organisational procedures
  - established procedures
- Depending on work context, safety and personal protective equipment may include:
- high visibility clothing
  - hearing protection
  - gloves
  - sunscreen
  - sunglasses
  - safety glasses
  - insect repellent
  - safety headwear
  - safety footwear
  - portable radios/mobile phone
  - safety harness and ropes
  - torch
  - safety devices
  - respirator
- Information/documents may include:
- operational instructions, policies and workplace procedures
  - local authority regulations and procedures
  - work orders
  - technical instructions
  - manufacturers or workplace equipment instructions and operation manuals



## RANGE STATEMENT

Applicable procedures and codes may include:

- emergency procedure manuals
- two-way radio/mobile phone operation procedures
- QA plans, data and document control
- conditions of service, legislation and industrial agreements including workplace agreements and awards
- legislated rail safety requirements including acts and regulations from each applicable state and territory together with any nationally approved compliance codes and/or guidelines
- relevant state/territory regulations, codes of practice and safeworking system requirements
- 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**

B - Equipment Checking and Maintenance