BCC03 Civil Construction Industry Training Package

Version Number:  3
Review Date: 31/12/2006
BCCO3 Civil Construction Industry Training Package
Endorsed Components

Civil Construction Industry Units of Competency (136 units)
Qualifications:
BCC20107 Certificate II in Civil Construction
BCC20207 Certificate II in Civil Construction (Bituminous Surfacing)
BCC30107 Certificate III in Civil Construction
BCC30207 Certificate III in Civil Construction (Bituminous Surfacing)
BCC30307 Certificate III in Civil Construction (Bridge Construction and Maintenance)
BCC30407 Certificate III in Civil Construction (Foundation Work)
BCC30507 Certificate III in Civil Construction (Pipe Laying)
BCC30607 Certificate III in Civil Construction (Plant Operations)
BCC30707 Certificate III in Civil Construction (Road Construction and Maintenance)
BCC30807 Certificate III in Civil Construction (Road Marking)
BCC30907 Certificate III in Civil Construction (Trenchless Technology)
BCC31007 Certificate III in Civil Construction (Tunnel Construction)
BCC31107 Certificate III in Civil Construction (Timber Bridge Construction and Maintenance)

Volume Three of Three

The Civil Construction Industry Training Package (BCCO3) is comprised of three volumes. This division is necessitated by the size of the contents. Because of the extent of use of cross-sectoral competency units within the Civil Construction Package, most users will require all Volumes. The structure of the volumes is shown on page iv.

This volume contains part of the endorsed component of the Civil Construction Training Package BCC03. It is one of three volumes and should not be used in isolation of those other volumes.

This Training Package was endorsed by NTQC in 31/12/2003.
This Training Package is to be reviewed by 31/12/2006.
Structure of the Volumes

**Volume 1**
- Preliminary Information
- Summary of Units of Competency for BCC03
- Overview of Training Packages
- Introduction
- Qualifications Framework
- Packaging Rules for BCC03 Qualifications
- Assessment Guidelines
- Competency Standards
- Appendix 1: Mapping of BCC98 Qualifications to BCC03 Qualifications
- Appendix 2: Mapping of Old Units of Competency to the New Units of Competency
- Appendix 3: Units of Competency Index

Units of Competency:
- Bridge Construction and Maintenance (BM)
- Bituminous Surfacing (BS)
- Common (CM)
- Foundation Work (FW)
- Pipe Laying (PL)
- Plant Operations (PO)
- Cross-Sectoral

**Volume 2**

Units of Competency:
- Road Construction and Maintenance (RC)
- Road Marking (RM)
- Tunnel Construction (TC)
- Trenchless Technology (TT)
- Cross-Sectoral

**Volume 3**

Units of Competency:
- Timber Bridge Construction and Maintenance (TB)
- Cross-Sectoral
Preliminary Information

Important Note to Users
Training Packages are not static documents; they are amended periodically to reflect the latest industry practices and are version controlled. It is essential that the latest version is always used.

Check the version number before commencing training or assessment
This Training Package is Version 3 - check whether this is the latest version by going to the National Training Information Service (www.ntis.gov.au) and locating information about the Training Package. Alternatively, contact SkillsDMC or website: www.skillsdmc.com.au to confirm the latest version number.

Explanation of version number conventions
The primary release Training Package is Version 1. When changes are made to a Training Package, sometimes the version number is changed and sometimes it is not, depending on the extent of the change. When a Training Package is reviewed it is considered to be a new Training Package for the purposes of version control, and is Version 1. Do not confuse the version number with the Training Package's national code (which remains the same during its period of endorsement).
## Version modification history

The version details of this endorsed Training Package are in the table below. The latest information is at the top of the table.

<table>
<thead>
<tr>
<th>Version</th>
<th>Release Date</th>
<th>Comments</th>
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</table>
| 3       | 07/09/07     | - Inclusion of mandatory texts  
- Inclusion of Employability Skills in all BCC units of competency  
- Deletion of Key Competencies in all BCC units of competency  
- The following units have been amended and recoded:  
  - BCCCM1001B to BCCCM1001C Follow OH&S policies and procedures (Vol I/Common units/page 111). Changes made to the following: Unit Descriptor; Unit Scope; Critical Aspects of Evidence; Pre-requisite; Specific Knowledge; Specific resources required for this unit; deletion of Elements 4 & 5 and its associated PCs.  
  - BCCPO3001B to BCCPO3001C Conduct backhoe/loader operations (Vol I/Plant Operations units/page 621). Changes made to the following: Range Statement under Unit Scope, changed the word ‘evacuation’ to ‘excavation’.  
  - BCCRM3003B to BCCRM3003C Conduct thermo plastic road marking operations (Vol II/Road Marking units/page 1149) Changes made to the following: Changed Critical aspects of Evidence for bullet points 4, 5 and 6 – to:  
    - Placement of new or replacement of existing thermo-plastic lines, using a ride on line marking machine, for a minimum of five kilometres of each of the following, to the specified tolerance:  
      - Centre line (to include separation line, barrier line one direction and barrier line both directions)  
      - Edge line  
      - OR  
    - Placement of new or replacement of existing thermo-plastic lines, using a pedestrian line marking machine, for a minimum of 100 metres of each of the following, to the specified tolerance:  
      - Centre line (to include separation line, barrier line one direction and barrier lines both directions)  
      - Edge line  
      - OR  
    - Placement of a minimum of 20m² thermo-plastic markings to the specified tolerance using a pedestrian line marking machine. This is to include any four of the following markings types; arrows, shapes, stop lines, holding lines, stop and give way line, pedestrian crosswalk lines, words, numerals and parking areas.  
  - BCCCM2013B to BCCCM2013C Control traffic with a stop-slow bat (Vol/Common units/page 241). Changes made to Relationships with other Units – removed pre-requisite unit BCGCM1001B and amend statement to read: “Competency in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role”; amended Safety (OH&S).  
  - BCCCM3003B to BCCCM3003C Implement traffic management plan (Vol 1/Common units/page 271). Changes made to Relationships with other units - removed pre-requisite unit BCGCM1001B and amend statement to read: “Competency in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role”; amended Safety (OH&S).  
  - BCCCM2002B to BCCCM2002C Use small plant and equipment (Vol 1/Common ...
- The following units was changed from Core to Elective:
  - BCCCM2009B in Qualifications BCC30303, 30403, 30503, 30703, 30903, 31003;
  - BCCCM2013B in Qualifications BCC20103 & 20203;
  - BCCCM2012B in Qualifications BCC20103, 30303, 30403, 30903.

- Deleted BSBFLM302A Support leadership in the workplace and BSBFLM304A Participate in work teams replaced with BSBFLM312A Contribute to team effectiveness (Vol 1/Introduction document/pages 38 & 40)

- Corrected unit code BCGCM2003B (Cut and bend material using oxy-LPG equipment) (Vol 1/Cross Sectoral units/page 847) to BCGSF2003B (title of unit is correct only code is wrong).

- Corrected codes for the following units (no change to contents):
  - BCCWF3002B Install temporary and permanent rock anchors to BCCFW3002B (Vol II/Cross Sectoral units/page 1307)
  - BCCWF3003B Install primary ground support to BCCFW3003B (Vol II/Cross Sectoral units/page 1315)

- Added new unit BCCPO3021B Conduct telescopic materials handler operations (Vol 1/Plant Operations units/page 795) (This unit was in the original BCC98 Training Package and was accidentally left out in the review of the Training Package. The unit has been redrafted in the new format and recoded in line with BCC03) and put as Elective in qualifications BCC30103 Cert III in Civil Construction and BCC30603 Cert III in Civil Construction (Plant Operations)
  - Recoded above qualifications from BCC30103 to BCC30107 and BCC30603 to BCC30607 to reflect the above addition of unit

- Imported new unit BCGDO3001B Perform dogging (Vol 1/Cross Sectoral units/page 933) and added as Elective in all Cert III qualifications. Qualifications recoded ie:
  - BCC30103 to BCC30107
  - BCC30203 to BCC30207
  - BCC30303 to BCC30307
  - BCC30403 to BCC30407
  - BCC30503 to BCC30507
  - BCC30603 to BCC30607
  - BCC30703 to BCC30707
  - BCC30803 to BCC30807
  - BCC30903 to BCC30907
  - BCC31003 to BCC31007
  - BCC31105 to BCC31107

- Unit BCCCM2009B Work in confined spaces (Vol 1/Common units/page 207). Changed from Core to Elective in the following Certificate III qualifications ie BCC30303, 30403, 30503, 30703, 30903, 31003. Revised above qualification codes to reflect the year of endorsement.

- Unit BCCCM2013B- Control traffic with a stop-slow bat (Vol 1/Common units/page 241). Changed from Core to Elective in the following Certificate III qualifications ie BCC30203, 30303, 20103, 20203, 30503, 30603, 30803. Revised above qualification codes to reflect the year of endorsement.

- Unit BCCCM2012B – Carry out concrete work (Vol 1/Common units/page 231). Changed from Core to Elective in the following Certificate III qualifications ie BCC30303, 20103, 30403, 30903. Revised above qualification codes to reflect the year of endorsement.

- Revised unit code BCCRM2001B Escort mobile road marking operations to BCCRM2001C Escort mobile road marking operations (Vol II/Road Marking units/page 1075). Changes made to Relationships with other units - removed pre-requisite unit BCGCM1001B and amend statement to read: “Competency in this unit may be assessed in
conjunction with other functional units which together form part of the holistic work role”; amended Safety (OH&S).

- Qualifications Framework – Suggested Pathways (Vol 1/Introduction document/pages 34, 40 & 53)). Perception among RTOs that all the units have to be completed for a particular pathway, rather than follow the packaging rules of the qualification. Changed “C” and “E” to ‘√’ in all suggested pathways.

- Changes to Qualification Packaging Rules:

<table>
<thead>
<tr>
<th>Training Package</th>
<th>Core competency units changed</th>
<th>Elective units changed</th>
</tr>
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<tbody>
<tr>
<td>BCC20107 Certificate II in Civil Construction</td>
<td>from 15 units to 13 units</td>
<td>from 4 units to 6 units</td>
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<tr>
<td>BCC20207 Certificate II in Civil Construction (Bituminous Surfacing)</td>
<td>from 12 units to 11 units</td>
<td>from 4 units to 5 units</td>
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<tr>
<td>BCC30207 Certificate III in Civil Construction (Bituminous Surfacing)</td>
<td>from 15 units to 14 units</td>
<td>from 10 units to 11 units</td>
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<td>BCC30307 Certificate III in Civil Construction (Bridge Construction and Maintenance)</td>
<td>from 18 units to 15 units</td>
<td>from 7 units to 10 units</td>
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<tr>
<td>BCC30407 Certificate III in Civil Construction (Foundation Work)</td>
<td>from 16 units to 14</td>
<td>from 9 units to 11 units</td>
</tr>
<tr>
<td>BCC30507 Certificate III in Civil Construction (Pipe Laying)</td>
<td>from 19 units to 17 units</td>
<td>from 6 units to 8 units</td>
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<tr>
<td>BCC30607 Certificate III in Civil Construction (Plant Operations)</td>
<td>from 15 units to 14 units</td>
<td>from 7-6 units to 7-8 units</td>
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<tr>
<td>BCC30707 Certificate III in Civil Construction (Road Construction and Maintenance)</td>
<td>from 17 units to 16 units</td>
<td>from 8 units to 9 units</td>
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<tr>
<td>BCC30807 Certificate III in Civil Construction (Road Marking)</td>
<td>from 12 units to 11 units</td>
<td>from 10 units to 11 units</td>
</tr>
<tr>
<td>BCC30907 Certificate III in Civil Construction (Trenchless Technology)</td>
<td>from 20 units to 18 units</td>
<td>from six units to 8 units</td>
</tr>
<tr>
<td>BCC31007 Certificate III in Civil Construction (Tunnel Construction)</td>
<td>from 16 units to 15 units</td>
<td>from 9 units to 10 units</td>
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<td>BSZ units replaced with TAA units (Standard 7.3 in Assessment Guidelines)</td>
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- History

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<tr>
<td>2</td>
<td>10/05/2005</td>
<td>Additional Volume containing Timber Bridge Construction and Maintenance</td>
</tr>
<tr>
<td>1</td>
<td>23/01/2004</td>
<td>Fully revised package replacing BCC98</td>
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BCCTB2001B Maintain timber bridges

Unit Descriptor

This unit specifies the competency required to carry out the required routine maintenance and to prolong the service life of timber bridges. The unit does not include the replacement of structural members.

This unit includes tightening up, bolt replacement, replacement of traffic control devices and signs, painting, cleaning, weed control, fire control and basic repairs.

Employability Skills

The required outcomes described in this Unit of Competency contain applicable facets of employability skills. The Employability Skills Qualification Summary for the qualification in which this Unit of Competency is packaged will assist in identifying employability skill requirements.

Element Performance Criteria

Elements define the essential outcomes of a unit of competency.

Performance criteria specify the level of performance required to demonstrate achievement of the element.

1 Plan and prepare

1.1 Work instructions, including plans, specifications, quality requirements and operational details relevant to the tasks are obtained, confirmed and applied

1.2 Safety requirements are obtained from the site safety plan, other regulatory specifications or legal obligations and applied

1.3 Signage requirements are identified and obtained from the project traffic management plan and implemented

1.4 Plant, tools and equipment selected to carry out tasks that are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported

1.5 Material appropriate to the work application are identified, safely handled and located ready for use

1.6 Environmental protection requirements are identified from the project environmental management plan or appropriate regulatory specifications and applied
0 Maintain bridge

2.1 Schedule of maintenance repairs/work order or instructions are obtained and applied to organisational requirements

2.2 Access devices are located in reach of areas to be maintained/repaired and checked for safe operation

2.3 Defect or fault is located and area prepared for rectification

2.4 Resources are selected in accordance with the task

2.5 Other defects or faults further identified during maintenance are reported in accordance with organisational requirements

2.6 Bridge maintenance work is completed to specifications or instructions

1 Clean up

Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation

Machinery, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers’ recommendations and standard work practices
Range Statement

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

**Unit scope**

- Traffic control signage may include but not be limited to highway traffic signs, site safety signage, temporary signage for the benefit of motorists and pedestrians, barricades, and traffic conditions signage
- Planning and preparation is to include but not be limited to worksite inspection, equipment defect identification, assessment of conditions and hazards and determination of work requirements
- Traffic conditions may include but not be limited to congested urban environments, low traffic rural areas, off-road un-trafficked areas and pedestrian areas
- Site locations are to include but not be limited to any ground conditions in urban and rural areas
- Maintenance and repair are to include timber bridges and may include timber wharves, piers and jetties
- Work orders or instructions may include checklists, emails, written instructions, drawings/sketches or verbal instructions
- Maintenance activities are to include but not be limited to touch up painting, bolt tightening, replacement of sheeting/decking, replacement/repair of fences/barriers, cleaning, weed control, hazard reduction, flashing repair and replacement and may include but not be limited to waterway cleaning, bolt replacement, replacement of traffic control devices and signs, replace kerbing, replace whacking planks/ballast boards and upgrading of applied preservatives
- Identification and reporting on defects and faults may include verbal reporting on additional defects or faults which may have been uncovered or observed during the maintenance process
Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances.

- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices.

- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with safe loading procedures, trip hazards, working over water, water safety, working at heights, other machines, traffic control, personnel, working in proximity to others, worksite visitors and the public.

- Safe parking practices are to include but not be limited to ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement.

- Hazards and risks may include but not be limited to uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials.

- Emergency procedures related to equipment operation are to include but may not be limited to emergency shutdown and stopping, extinguishing equipment fires, organisational first aid requirements and evacuation.

Environmental Requirements

- Environmental requirements are to include but not be limited to waste management, stormwater protection, noise, dust, vibration, safe use of preservatives, waterway protection and clean-up management.

Quality Assurance

- Quality assurance requirements may include but not be limited to dimensions, tolerances, timber grading, standards of work and material as detailed in the project drawings, specifications and project documentation to meet client satisfaction.

Statutory/Regulatory Authorities

- Statutory/Regulatory Authorities may include Federal, State and Local Authorities.
Tools and equipment • Tools and equipment are to include but not be limited to generators, power leads, electric drills, drills, augers, impact wrenches, oxy-acetylene equipment, chainsaws, power saws, paint brushes, brooms, crow bars, hammers, podger hammers and may include bolt extraction equipment, chisels, reaming bits and drifts

Materials • Materials are to include but not be limited to bolts, nuts, washers, paint, nails, waterproof sealants, petroleum jelly, post straps, sheet materials and fence posts

Communications • Communications are to include but not be limited to verbal instructions and fault reporting and may include two way radio, hand signals, mobile phone, site specific instructions, written instructions or instructions related to job/task

Information • Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, maps, material safety data sheets (MSDS), diagrams or sketches

• Safe work procedures or equivalent related to the maintenance of timber bridges
• Regulatory/legislative requirements pertaining to the maintenance of timber bridges
• Manufacturers’ specifications and instructions
• Organisation work specifications and requirements
• Instructions issued by authorised organisational or external personnel
• Relevant Australian Standards
Evidence Guide

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Location, interpretation and application of relevant information, standards and specifications
- Compliance with OH&S regulations and State/Territory legislation applicable to workplace operations
- Compliance with organisational policies and procedures including quality requirements
- Replacement of at least one length of sheeting/decking, a minimum of two metres in length and all associated activities, to specifications
- Replacement and painting of at least one fence/barrier post and at least six metres of railing to specification
- Safe and effective operational use of tools, plant and equipment
- Communication and working effectively and safely with others

Relationship to other units

- Pre-requisite units are:
  BCCCM1001C Follow OH&S policies and procedures

  Competency in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role
Specific knowledge required to achieve the performance criteria

- A knowledge of
  - Site and equipment safety requirements
  - Timber bridge maintenance procedures and techniques
  - Scaffolding
  - Preservatives and paints
  - Timber grading
  - Bridge foundations
  - Bridge heritage
  - Equipment types, characteristics, technical capabilities and limitations
  - Processes for the calculation of material requirements
  - Operational, maintenance and basic diagnostic procedures
  - Site isolation and traffic control responsibilities and authorities
  - Materials Safety Data Sheets and materials handling methods
  - Quality assurance systems and standards
  - JSA’s/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements
**Methods of assessment**

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry’s Civil Construction Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

**Specific resource requirements for this unit**

- The following resources should be made available:
  - workplace location or simulated workplace
  - materials relevant to maintaining timber bridges
  - hand and power tools, plant and equipment appropriate to maintaining timber bridges
  - specifications and work instructions
### BCCTB2002B  Apply bridge durability treatments

#### Unit Descriptor
This unit specifies the competency required to apply a range of measures to increase the life of timber members on bridges.

This unit includes protective coatings, preservative treatments, termite barriers, waterproofing and drainage.

#### Employability Skills
The required outcomes described in this Unit of Competency contain applicable facets of employability skills. The Employability Skills Qualification Summary for the qualification in which this Unit of Competency is packaged will assist in identifying employability skill requirements.

#### Element Performance Criteria

<table>
<thead>
<tr>
<th>Element</th>
<th>Performance Criteria</th>
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</table>
| 1 Plan and prepare | 6.1 Work instructions, including plans, specifications, quality requirements and operational details relevant to the tasks are obtained, confirmed and applied  
6.2 Safety requirements are obtained from the site safety plan, other regulatory specifications or legal obligations and applied  
6.3 Signage requirements are identified and obtained from the project traffic management plan and implemented  
6.4 Plant, tools and equipment selected to carry out tasks that are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported  
6.5 Material appropriate to the work application are identified, safely handled and located ready for use  
6.6 Environmental protection requirements are identified from the project environmental management plan or appropriate regulatory specifications and applied |
| 2 Apply protective coatings and preservatives | 2.1 Access devices are located in reach of areas to be coated and checked for safe operation  
2.2 Resources are selected in accordance with the task  
2.3 Surface preparation technique is selected and applied  
2.4 Protective coating/preservative is applied to the prepared area |
<table>
<thead>
<tr>
<th></th>
<th>Task Description</th>
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<tbody>
<tr>
<td>3</td>
<td>Install flashing/capping&lt;br&gt;Access devices are located in reach of areas to be flashed/capped and checked for safe operation</td>
</tr>
<tr>
<td></td>
<td>Resources, materials and equipment are selected in accordance with the task</td>
</tr>
<tr>
<td></td>
<td>Flashing/capping materials are prepared for installation</td>
</tr>
<tr>
<td></td>
<td>Protective coating is applied to the surfaces to be flashed/capped</td>
</tr>
<tr>
<td></td>
<td>Flashing/capping is fixed to all specified timber members</td>
</tr>
<tr>
<td>4</td>
<td>Clean up&lt;br&gt;Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation</td>
</tr>
<tr>
<td></td>
<td>Machinery, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers’ recommendations and standard work practices</td>
</tr>
</tbody>
</table>
Range Statement

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- Traffic control signage may include but not be limited to highway traffic signs, site safety signage, temporary signage for the benefit of motorists and pedestrians, barricades, and traffic conditions signage.
- Planning and preparation is to include but not be limited to worksite inspection, equipment defect identification, assessment of conditions and hazards and determination of work requirements.
- Maintenance and repair are to include timber bridges and may include timber wharves, piers and jetties.
- Work orders or instructions may include checklists, emails, written instructions, drawings/sketches or verbal instructions.
- Types of protective coatings may include but not be limited to conventional, external acrylic and water based paints, zinc primers and galvanising.
- Types of preservatives may include but not be limited to copper naphthenes, liquid preservatives and diffusing rods.
- Surface preparation may include but not be limited to abrasive blasting, wire brushing, manual or electric sanding and grinding.
- Paint and abrasive material removal (including lead paint) must be confined through encapsulation.
- Application methods for protective coatings and preservatives may include but not be limited to paint brushes, rollers, trowelling and spraying.
- Treatment of protective coatings and preservatives can occur to any timber component of the bridge.
- Access methods may include but not be limited to scaffolding, cranes, elevated work platforms, backhoes and underbridge inspection units.
- Fixing of flashing and/or capping is to include measuring, cutting to length, air circulation spacing, shaping, grinding, filing, sealing, drilling and installation of fixings and fall to drainage point.
Safety (OH&S) • OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances

• Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices

• Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with safe loading procedures, trip hazards, working over water, water safety, working at heights, other machines, traffic control, personnel, working in proximity to others, worksite visitors and the public

• Safe parking practices are to include but not be limited to ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement

• Hazards and risks may include but not be limited to uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials

• Emergency procedures related to equipment operation are to include but may not be limited to emergency shutdown and stopping, extinguishing equipment fires, organisational first aid requirements and evacuation

Environmental Requirements • Environmental requirements are to include but not be limited to waste management, stormwater protection, noise, dust, vibration, safe use of preservatives, waterway protection and clean-up management

Quality Assurance • Quality assurance requirements may include but not be limited to dimensions, tolerances, timber grading, standards of work and material as detailed in the project drawings, specifications and project documentation to meet client satisfaction

Statutory/Regulatory Authorities • Statutory/Regulatory Authorities may include Federal, State and Local Authorities
Tools and equipment
- Tools and equipment are to include but not be limited to generators, power leads, compressors, electric drills, drills, augers, paint brushes, rollers, abrasive blasting equipment, angle grinders, hammers, wire brushes, spatulas and may include ladders, scaffolding, elevated work platforms, cranes, boats or water platforms, spray equipment and trowels

Materials
- Materials are to include but not be limited to protective coatings, preservatives, flashing/capping and proprietary termite barriers

Communications
- Communications are to include but not be limited to verbal instructions and fault reporting and may include two way radio, hand signals, mobile phone, site specific instructions, written instructions or instructions related to job/task

Information
- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, maps, material safety data sheets (MSDS), diagrams or sketches

- Safe work procedures or equivalent related to the application of bridge durability treatments
- Regulatory/legislative requirements pertaining to the application of bridge durability treatments
- Manufacturers’ specifications and instructions
- Organisation work specifications and requirements
- Instructions issued by authorised organisational or external personnel
- Relevant Australian Standards
Evidence Guide

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Location, interpretation and application of relevant information, standards and specifications
- Compliance with OH&S regulations and State/Territory legislation applicable to workplace operations
- Compliance with organisational policies and procedures including quality requirements
- Application of protective coating to all surfaces of a bridge member of at least three metres in length
- Application of preservatives to the end of three cut timber members and the top surface of a timber member
- Preparation, making and installation of a capping on the end of a timber member
- Safe and effective operational use of tools, plant and equipment
- Communication and working effectively and safely with others

Relationship to other units

- Pre-requisite units are:
  BCCCM1001C Follow OH&S policies and procedures

Competency in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.
### Specific knowledge required to achieve the performance criteria

- A knowledge of
  - Site and equipment safety requirements
  - Timber bridge durability treatment procedures and techniques
  - Scaffolding
  - Preservatives and protective coatings
  - Termite barriers
  - Waterproofing
  - Timber deterioration
  - Bridge foundations
  - Bridge heritage
  - Equipment types, characteristics, technical capabilities and limitations
  - Processes for the calculation of material requirements
  - Operational, maintenance and basic diagnostic procedures
  - Site isolation and traffic control responsibilities and authorities
  - Materials Safety Data Sheets and materials handling methods
  - Quality assurance systems and standards
  - JSA’s/Safe work method statements

### The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements
Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry’s Civil Construction Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
  - workplace location or simulated workplace
  - materials relevant to applying bridge durability treatments
  - hand and power tools, plant and equipment appropriate to applying bridge durability treatments
  - specifications and work instructions

… End …
BCCTB2003B  Produce drawings and sketches

Unit Descriptor

This unit specifies the competency required to prepare drawings and sketches for the purpose of communicating and reporting bridge features and defects.

The unit includes the preparation of sketches and scale drawings in readiness for the construction of trusses, bridge components, splicing and connection points.

Employability Skills

The required outcomes described in this Unit of Competency contain applicable facets of employability skills. The Employability Skills Qualification Summary for the qualification in which this Unit of Competency is packaged will assist in identifying employability skill requirements.

Element Performance Criteria

Elements define the essential outcomes of a unit of competency.

Performance criteria specify the level of performance required to demonstrate achievement of the element.

1 Collate information for drawings

1.1 OH&S requirements associated with preparing basic drawings and documentation tasks and the workplace environment are adhered to

1.2 Quality requirements of the organisation operations are recognised and adhered to

1.3 Tools and equipment selected are consistent with preparing drawings and documentation, checked for serviceability and any faults reported to supervisor

1.4 Drawing type is selected from a range of drawings to suit job requirements

1.5 Key features, site dimensions and orientation, structures, services and features are identified for inclusion in drawings
2 Create simple sketches, orthographic drawings and sectional views

2.1 Drawing medium is selected to suit job requirements

2.2 Simple two dimensional drawings and sketches are prepared using standard drawing conventions

2.3 Simple three dimensional drawings and sketches are prepared using standard drawing conventions

2.4 Sectional details of simple structural elements and elevations are prepared using standard drawing conventions

2.5 Common symbols and abbreviations are included using correct format and conventions

2.6 Title panels are prepared to enable verification that drawing used is the latest version

3 Develop specifications

6.7 3.1 Purpose of specifications are identified as they relate to bridge drawings

6.8 3.2 Elements are identified as suitable for use in specifications

6.9 3.3 Specification for a bridge project is drafted using correct format and conventions

Range Statement

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:
Unit scope

- Drawings are to include sketches, orthographic drawings and sectional view drawings and may include but not be limited to site plans, bridge plans, cross sectional plans/elevations, plan views, perspective views, isometric views, longitudinal plans, structural detail and specification providing illustrations and dimensions and project plans, drawings, specifications, illustrations, dimensions and notes

- Specifications may include detail relating to materials and quality of work, quality assurance, nominated subcontractors, provision of site access/facilities, details relating to performance including:
  - Standards of work
  - Tolerances
  - Material types
  - Characteristics
  - Treatments and finishes

- Key features of drawings may include but not be limited to shape of site, proposed structure(s), roads, easements, existing structures, services, dimensions, types of structure, shape of structure, type of construction, layout, service requirements, location of plant and machinery, vertical and horizontal measurements

- Orientation of site is to include relationship to the north compass point, location of roads and relationship to neighbouring properties

- Services may include but not be limited to drainage, sewerage, gas, telephone and cable, water and electricity
Unit scope continued

- Drawing mediums may include pencil, pen and ink, computer aided drafting, graph paper, cartridge paper or tracing paper

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances

- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices

Environmental Requirements

- Environmental requirements are to include but not be limited to waste management, stormwater protection, noise, dust, vibration, safe use of preservatives, waterway protection and clean-up management

Quality Requirements

- Quality assurance requirements may include but not be limited to dimensions, tolerances, standards of work and material as detailed in the project drawings, specifications and project documentation to meet client satisfaction

Statutory/Regulatory Authorities

- Statutory/Regulatory Authorities may include Federal, State and Local Authorities

Communications

- Communications are to include but not be limited to verbal instructions and fault reporting and may include two way radio, hand signals, mobile phone, site specific instructions, written instructions or instructions related to job/task
Information

- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, maps, material safety data sheets (MSDS), diagrams or sketches
- Safe work procedures or equivalent related to producing drawings and sketches
- Regulatory/legislative requirements pertaining to producing drawings and sketches
- Manufacturers’ specifications and instructions
- Organisation work specifications and requirements
- Instructions issued by authorised organisational or external personnel
- Relevant Australian Standards

Evidence Guide

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Location, interpretation and application of relevant information, standards and specifications
- Compliance with OH&S regulations and State/Territory legislation applicable to workplace operations
- Compliance with organisational policies and procedures including quality requirements
- Production of at least two sketches, one orthographic drawing and one sectional view drawing, one elevation, plan and end view for a minimum of three projects in compliance with standard drawing conventions
- Communication and working effectively and safely with others

Relationship to other units

- Competency in this unit may be assessed in conjunction with other functional units which together form part of the holistic work
Specific knowledge required to achieve the performance criteria

• A knowledge of
  - Features of plans and elevations including direction, scale, key, contours, symbols and abbreviations
  - Commonly used Civil Construction symbols and abbreviations
  - The processes for application of scales in plan preparation/interpretation
  - Techniques for orienting/confirming the orientation of a plan
  - Key features of formal job specifications
  - Site and equipment safety requirements
  - Project quality requirements
  - Civil Construction terminology
  - Basic calculations of heights, areas, volumes and grades
  - Drawing techniques and conventions
  - Bridge heritage

The context of assessment

• The application of competency is to be assessed in the workplace or realistically simulated workplace

• Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints

• Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context

• Assessment is to comply with relevant regulatory or Australian Standards requirements
Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry’s Civil Construction Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
  - workplace location or simulated workplace
  - materials relevant to producing drawings and sketches
  - equipment appropriate to producing drawings and sketches
  - specifications and work instructions

... End ...
**Unit Descriptor**

This unit specifies the competency required to carry out general visual inspection of the bridge and approaches to ensure its integrity.

This unit includes the identification and reporting of defects and deterioration in existing members and confirming quality of replacement members.

**Employability Skills**

The required outcomes described in this Unit of Competency contain applicable facets of employability skills. The Employability Skills Qualification Summary for the qualification in which this Unit of Competency is packaged will assist in identifying employability skill requirements.

**Element Performance Criteria**

Performance criteria specify the level of performance required to demonstrate achievement of the element.

<table>
<thead>
<tr>
<th>Element</th>
<th>Performance Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Plan and prepare</td>
<td>1.1 Work instructions, including plans, specifications, quality requirements and operational details relevant to the tasks are obtained, confirmed and applied</td>
</tr>
<tr>
<td></td>
<td>1.2 Safety requirements are obtained from the site safety plan, other regulatory specifications or legal obligations and applied</td>
</tr>
<tr>
<td></td>
<td>1.3 Signage requirements are identified and obtained from the project traffic management plan and implemented</td>
</tr>
<tr>
<td></td>
<td>1.4 Plant, tools and equipment selected to carry out tasks that are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported</td>
</tr>
<tr>
<td></td>
<td>1.5 Material appropriate to the work application are identified, safely handled and located ready for use</td>
</tr>
<tr>
<td></td>
<td>1.6 Environmental protection requirements are identified from the project environmental management plan or appropriate regulatory specifications and applied</td>
</tr>
<tr>
<td></td>
<td>Inspect bridge</td>
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</tr>
</tbody>
</table>
3. Clean up

3.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation.

3.2 Machinery, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers’ recommendations and standard work practices.

Range Statement

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- Traffic control signage may include but not be limited to highway traffic signs, site safety signage, temporary signage for the benefit of motorists and pedestrians, barricades, and traffic conditions signage.

- Planning and preparation is to include but not be limited to worksite inspection, equipment defect identification, assessment of conditions and hazards and determination of work requirements.

- Traffic conditions may include but not be limited to congested urban environments, low traffic rural areas, off-road un-trafficked areas and pedestrian areas.

- Site locations are to include but not be limited to any ground conditions in urban and rural areas.

- Visual bridge inspection is to include timber bridges and may include timber wharves, piers and jetties.

- Types of visual inspection are to include but not be limited to walk over, walk under, walk around, under heavy traffic and may include drive over inspections.

- Types of defects, faults, damage and deterioration may include settlement, rotation of abutments and wing-walls, excessive deflection, misfitted members, dislodged members, rot, cracked metal fittings, corrosion, crushing, shakes, splitting, check, wane, pest attack, damage caused by accidents, missing delineators, flaking paint, missing components, loose components, scour or fire damage.

- Reporting on conditions may include identification and location of the defect, fault, damage or deterioration and photographing of the defective area.
Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances

- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices

- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with safe loading procedures, trip hazards, working over water, water safety, working at heights, other machines, traffic control, personnel, working in proximity to others, worksite visitors and the public

- Safe parking practices are to include but not be limited to ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement

- Hazards and risks may include but not be limited to uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials

- Emergency procedures related to equipment operation are to include but may not be limited to emergency shutdown and stopping, extinguishing equipment fires, organisational first aid requirements and evacuation

Environmental Requirements

- Environmental requirements are to include but not be limited to waste management, stormwater protection, noise, dust, vibration, safe use of preservatives, waterway protection and clean-up management

Quality Assurance

- Quality assurance requirements may include but not be limited to dimensions, tolerances, timber grading, standards of work and material as detailed in the project drawings, specifications and project documentation to meet client satisfaction

Statutory/Regulatory Authorities

- Statutory/Regulatory Authorities may include Federal, State and Local Authorities

Tools and equipment

- Tools and equipment may include elevated work platforms, ladders, binoculars, digital cameras and hammers
Communications

- Communications are to include but not be limited to verbal instructions and fault reporting and may include two way radio, hand signals, mobile phone, site specific instructions, written instructions or instructions related to job/task

Information

- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, maps, material safety data sheets (MSDS), diagrams or sketches
- Safe work procedures or equivalent related to the visual inspection of timber bridges
- Regulatory/legislative requirements pertaining to the visual inspection of timber bridges
- Manufacturers’ specifications and instructions
- Organisation work specifications and requirements
- Instructions issued by authorised organisational or external personnel
- Relevant Australian Standards
Evidence Guide

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Location, interpretation and application of relevant information, standards and specifications
- Compliance with OH&S regulations and State/Territory legislation applicable to workplace operations
- Compliance with organisational policies and procedures including quality requirements
- Inspection of one pre-inspected bridge, including walk over, under, around and under heavy load, providing a written report on findings and proposed rectification methods
- Safe and effective operational use of tools, plant and equipment
- Communication and working effectively and safely with others

Relationship to other units

- Pre-requisite units are:
  BCCCM1001C Follow OH&S policies and procedures

  Competency in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role
Specific knowledge required to achieve the performance criteria

- A knowledge of
  - Site and equipment safety requirements
  - Timber bridge visual inspection procedures and techniques
  - Defects, faults, damage and deterioration types, causes and rectification methods
  - Structural principles of timber bridges
  - Bridge foundations
  - Bridge heritage
  - Equipment types, characteristics, technical capabilities and limitations
  - Processes for the calculation of material requirements
  - Operational, maintenance and basic diagnostic procedures
  - Site isolation and traffic control responsibilities and authorities
  - Materials Safety Data Sheets and materials handling methods
  - Quality assurance systems and standards
  - JSA’s/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements
Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry’s Civil Construction Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
  - workplace location or simulated workplace
  - tools, plant and equipment appropriate to inspecting timber bridges
  - specifications and work instructions

… End …
BCCTB3002B  Install temporary support members

Unit Descriptor

This unit specifies the competency required to carry out the installation and maintenance of temporary support members to restore the load carrying capacity of the bridge until permanent repairs are conducted.

This unit includes custom application of proprietary support systems including toms, braces, props, bed logs, and additional beams.

Employability Skills

The required outcomes described in this Unit of Competency contain applicable facets of employability skills. The Employability Skills Qualification Summary for the qualification in which this Unit of Competency is packaged will assist in identifying employability skill requirements.

Element Performance Criteria

Elements define the essential outcomes of a unit of competency.

1 Plan and prepare

1.1 Work instructions, including plans, specifications, quality requirements and operational details relevant to the tasks are obtained, confirmed and applied

1.2 Safety requirements are obtained from the site safety plan, other regulatory specifications or legal obligations and applied

1.3 Signage requirements are identified and obtained from the project traffic management plan and implemented

1.4 Plant, tools and equipment selected to carry out tasks that are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported

1.5 Material appropriate to the work application are identified, safely handled and located ready for use

1.6 Environmental protection requirements are identified from the project environmental management plan or appropriate regulatory specifications and applied
<table>
<thead>
<tr>
<th></th>
<th>Install temporary foundations, bedlogs and shoring systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>2.1 Foundation installation site is excavated</td>
</tr>
<tr>
<td></td>
<td>2.2 Bed-log or concrete footing is installed</td>
</tr>
<tr>
<td></td>
<td>2.3 Shoring system is installed or timbers prepared</td>
</tr>
<tr>
<td></td>
<td>2.4 Jacks or proprietary shoring systems are installed to restore the bridge/deck level</td>
</tr>
<tr>
<td></td>
<td>2.5 Braces are installed for stability during corrective work</td>
</tr>
<tr>
<td></td>
<td>2.6 Custom designed support brackets or piles are installed</td>
</tr>
</tbody>
</table>
Install temporary support members

3 Install temporary members

3.1 Fasteners are installed to specification
3.2 Girders/stringers are installed to specification
3.3 Supplementary members are installed to specification

4 Clean up

4.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation
4.2 Machinery, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers’ recommendations and standard work practices

Range Statement

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- Traffic control signage may include but not be limited to highway traffic signs, site safety signage, temporary signage for the benefit of motorists and pedestrians, barricades, and traffic conditions signage
- Planning and preparation is to include but not be limited to worksite inspection, equipment defect identification, assessment of conditions and hazards and determination of work requirements
- Traffic conditions may include but not be limited to congested urban environments, low traffic rural areas, off-road un-trafficked areas and pedestrian areas
- Site locations are to include but not be limited to any ground conditions in urban and rural areas
- Excavation for foundations includes assessing ground for load bearing capacity and shoring capability
- Concrete footings are to be in accordance with specifications and form part of the foundation
- Shoring systems are to include toms, props and piers
- Restoration of bridge level/deck occurs to retain the load during replacement of temporary members
- Braces are custom designed to rectify a specific fault
- Supplementary members are to include proprietary shoring systems, girders and beams
**Safety (OH&S)**

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances

- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices

- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with safe loading procedures, trip hazards, working over water, water safety, working at heights, other machines, traffic control, personnel, working in proximity to others, worksite visitors and the public

- Safe parking practices are to include but not be limited to ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement

- Hazards and risks may include but not be limited to uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials

- Emergency procedures related to equipment operation are to include but may not be limited to emergency shutdown and stopping, extinguishing equipment fires, organisational first aid requirements and evacuation

**Environmental Requirements**

- Environmental requirements are to include but not be limited to waste management, stormwater protection, noise, dust, vibration, safe use of preservatives, waterway protection and clean-up management

**Quality Assurance**

- Quality assurance requirements may include but not be limited to dimensions, tolerances, timber grading, standards of work and material as detailed in the project drawings, specifications and project documentation to meet client satisfaction

**Statutory/Regulatory Authorities**

- Statutory/Regulatory Authorities may include Federal, State and Local Authorities
### Tools and equipment
- Tools and equipment are to include but not be limited to generators/compressors, power leads, drills, impact wrenches, shifting spanners, jacks, proprietary tools, pinch bars, crow bars, mattocks, shovels, sledgehammers, chainsaws, wedges and may include cranes, back hoes and rollers.

### Materials
- Materials are to include but not be limited to bolts, nuts and washers and may include steel plate.

### Communications
- Communications are to include but not be limited to verbal instructions and fault reporting and may include two way radio, hand signals, mobile phone, site specific instructions, written instructions or instructions related to job/task.

### Information
- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, maps, material safety data sheets (MSDS), diagrams or sketches.
- Safe work procedures or equivalent related to the installation of temporary support members.
- Regulatory/legislative requirements pertaining to the installation of temporary support members.
- Manufacturers’ specifications and instructions.
- Organisation work specifications and requirements.
- Instructions issued by authorised organisational or external personnel.
- Relevant Australian Standards.
Evidence Guide

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Location, interpretation and application of relevant information, standards and specifications
- Compliance with OH&S regulations and State/Territory legislation applicable to workplace operations
- Compliance with organisational policies and procedures including quality requirements
- Installation of one temporary pier at least three metres high, including a bed-log and a jacking system
- Installation of at least one temporary girder and fastening to one timber member
- Safe and effective operational use of tools, plant and equipment
- Communication and working effectively and safely with others

Relationship to other units

- Pre-requisite units are:
  BCCCM1001C Follow OH&S policies and procedures

Competency in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.
Specific knowledge required to achieve the performance criteria

- A knowledge of
  - Site and equipment safety requirements
  - Temporary support member installation procedures and techniques
  - Pier stability and foundations
  - Connection behaviour
  - Shoring and jacking systems
  - Bridge foundations
  - Bridge heritage
  - Equipment types, characteristics, technical capabilities and limitations
  - Processes for the calculation of material requirements
  - Operational, maintenance and basic diagnostic procedures
  - Site isolation and traffic control responsibilities and authorities
  - Materials Safety Data Sheets and materials handling methods
  - Quality assurance systems and standards
  - JSA’s/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace

- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints

- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context

- Assessment is to comply with relevant regulatory or Australian Standards requirements
Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry’s Civil Construction Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
  - workplace location or simulated workplace
  - materials relevant to installing temporary support members
  - hand and power tools, plant and equipment appropriate to installing temporary support members
  - specifications and work instructions

... End ...
Erect a temporary modular support system (Bailey) on an existing bridge

BCCTB3003B

Unit Descriptor
This unit specifies the competency required to erect a temporary modular support system to sustain the timber truss while the damaged or deteriorated members are replaced.

This unit includes modification of the existing bridge to support the modular system, assembly and installation of the support system.

Employability Skills
The required outcomes described in this Unit of Competency contain applicable facets of employability skills. The Employability Skills Qualification Summary for the qualification in which this Unit of Competency is packaged will assist in identifying employability skill requirements.

Element
Elements define the essential outcomes of a unit of competency.

1. Plan and prepare

1.1 Work instructions, including plans, specifications, quality requirements and operational details relevant to the tasks are obtained, confirmed and applied

1.2 Safety requirements are obtained from the site safety plan, other regulatory specifications or legal obligations and applied

1.3 Signage requirements are identified and obtained from the project traffic management plan and implemented

1.4 Plant, tools and equipment selected to carry out tasks that are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported

1.5 Material appropriate to the work application are identified, safely handled and located ready for use

1.6 Environmental protection requirements are identified from the project environmental management plan or appropriate regulatory specifications and applied
<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>2</td>
<td>Set out and establish support system</td>
<td>2.1 Load bearing capacity of the ground and/or timber directly under the support system are assessed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.2 Bearing locations are set out according to design specifications</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.3 Supplementary supports are installed according to design specifications</td>
</tr>
<tr>
<td></td>
<td>Assemble temporary modular bridge</td>
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<td>---</td>
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</tr>
<tr>
<td></td>
<td>3.1 Condition of components are assessed for acceptable use and faulty parts replaced</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.2 Components are compiled and inventory checked</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.3 Location points for high capacity panelling are marked</td>
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<td></td>
<td>3.4 Resources, materials and equipment are selected in accordance with the task</td>
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<td></td>
<td>3.5 Assembly process is sequenced prior to commencement</td>
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<td></td>
<td>3.6 Interlocking components are assembled using connections and fittings</td>
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<td>3.7 Completed assembly is re-checked</td>
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<td></td>
<td>4.1 Disassembly process is sequenced prior to commencement</td>
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<td></td>
<td>4.2 Resources, materials and equipment are selected in accordance with the task</td>
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<tr>
<td></td>
<td>4.3 Interlocking components are disassembled including connections and fittings</td>
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<td></td>
<td>4.4 Components are compiled and inventory checked</td>
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<td>4.5 Condition of components are assessed for acceptable reuse</td>
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<td>4.6 Components are stored according to organisational requirements</td>
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<td></td>
<td>Clean up</td>
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<tr>
<td></td>
<td>5.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation</td>
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<td></td>
<td>5.2 Machinery, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers’ recommendations and standard work practices</td>
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</table>
Range Statement

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- Traffic control signage may include but not be limited to highway traffic signs, site safety signage, temporary signage for the benefit of motorists and pedestrians, barricades, and traffic conditions signage

- Planning and preparation is to include but not be limited to worksite inspection, equipment defect identification, assessment of conditions and hazards and determination of work requirements

- Traffic conditions may include but not be limited to congested urban environments, low traffic rural areas, off-road un-trafficked areas and pedestrian areas

- Site locations are to include but not be limited to any ground conditions in urban and rural areas

- Site preparation may include foundation levelling, set up of bed logs, storage and security of components

- Assessment of components includes discarding items due to rust, damage or deterioration

- Positioning of high capacity panelling correctly is essential for temporary bridge safety and use

- Interlocking parts, connections and fittings are to include panels, end posts, reinforcing cords, bracing frames, yolks, hanger bars or rods, distribution beams, locking pins, split pins, bracing nuts and bolts

- Sequencing is completed efficiently and in a cyclical methodology of the parts

- Re-checking the completed work is a visual inspection to ensure work has occurred in the correct sequence and to specifications

- Temporary modular bridge support system erection is a team situation and may include working in conjunction with a dogman

- Temporary modular bridge support systems are also referred to as Bailey bridging
Erect a temporary modular support system (Bailey) on an existing bridge BCCTB3003B

Safety (OH&S)
- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with safe loading procedures, trip hazards, working over water, water safety, working at heights, other machines, traffic control, personnel, working in proximity to others, worksite visitors and the public
- Safe parking practices are to include but not be limited to ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement
- Hazards and risks may include but not be limited to uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials
- Emergency procedures related to equipment operation are to include but may not be limited to emergency shutdown and stopping, extinguishing equipment fires, organisational first aid requirements and evacuation

Environmental Requirements
- Environmental requirements are to include but not be limited to waste management, stormwater protection, noise, dust, vibration, safe use of preservatives, waterway protection and clean-up management

Quality Assurance
- Quality assurance requirements may include but not be limited to dimensions, tolerances, timber grading, standards of work and material as detailed in the project drawings, specifications and project documentation to meet client satisfaction

Statutory/Regulatory Authorities
- Statutory/Regulatory Authorities may include Federal, State and Local Authorities
Tools and equipment

- Tools and equipment are to include but not be limited to sledge hammers, shifting spanners, ratchet sockets, bailey tools, jacks, proprietary tools, pinch bars, crow bars, claw hammers and may include cranes and trucks.

Communications

- Communications are to include but not be limited to verbal instructions and fault reporting and may include two way radio, hand signals, mobile phone, site specific instructions, written instructions or instructions related to job/task.

Information

- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, maps, material safety data sheets (MSDS), diagrams or sketches.
- Safe work procedures or equivalent related to the erection of temporary modular bridge support systems.
- Regulatory/legislative requirements pertaining to the erection of temporary modular bridge support systems.
- Manufacturers’ specifications and instructions.
- Organisation work specifications and requirements.
- Instructions issued by authorised organisational or external personnel.
- Relevant Australian Standards.
Evidence Guide

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Location, interpretation and application of relevant information, standards and specifications
- Compliance with OH&S regulations and State/Territory legislation applicable to workplace operations
- Compliance with organisational policies and procedures including quality requirements
- Construct one temporary modular support system (Bailey) on an existing bridge to design specifications
- Safe and effective operational use of tools, plant and equipment
- Communication and working effectively and safely with others

Relationship to other units

- Pre-requisite units are:
  BCCCCM1001C Follow OH&S policies and procedures

  Competency in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role
Specific knowledge required to achieve the performance criteria

- A knowledge of
  - Site and equipment safety requirements
  - Temporary modular bridge support system erection procedures and techniques
  - Construction efficiencies and sequencing
  - Defective components and parts
  - Traffic conditions, control and temporary kerbs
  - Load bearing capacity of temporary modular bridge support systems
  - Load transfer from truss to Bailey
  - Bridge foundations
  - Bridge heritage
  - Equipment types, characteristics, technical capabilities and limitations
  - Processes for the calculation of material requirements
  - Operational, maintenance and basic diagnostic procedures
  - Site isolation and traffic control responsibilities and authorities
  - Materials Safety Data Sheets and materials handling methods
  - Quality assurance systems and standards
  - JSA’s/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace

- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints

- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context

- Assessment is to comply with relevant regulatory or Australian Standards requirements
Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry’s Civil Construction Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
  - workplace location or simulated workplace
  - materials relevant to erection of temporary modular support systems
  - hand and power tools, plant and equipment appropriate to erection of temporary modular support systems
  - specifications and work instructions

... End ...
Erect a temporary modular support system (Bailey) on an existing bridge
## BCCTB3004B Install or replace sub-structure members

### Unit Descriptor
This unit specifies the competency required to install or replace sub-structure members to restore the bridges designed load capacity and support the super-structure.

This unit includes planning, preparation and erection of timber members. This unit does not include piles.

### Employability Skills
The required outcomes described in this Unit of Competency contain applicable facets of employability skills. The Employability Skills Qualification Summary for the qualification in which this Unit of Competency is packaged will assist in identifying employability skill requirements.

### Element Performance Criteria
Performance criteria specify the level of performance required to demonstrate achievement of the element.

<table>
<thead>
<tr>
<th>Element</th>
<th>Performance Criteria</th>
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</thead>
</table>
| 1 Plan and prepare | 1.1 Work instructions, including plans, specifications, quality requirements and operational details relevant to the tasks are obtained, confirmed and applied  
1.2 Safety requirements are obtained from the site safety plan, other regulatory specifications or legal obligations and applied  
1.3 Signage requirements are identified and obtained from the project traffic management plan and implemented  
1.4 Plant, tools and equipment selected to carry out tasks that are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported  
1.5 Material appropriate to the work application are identified, safely handled and located ready for use  
1.6 Environmental protection requirements are identified from the project environmental management plan or appropriate regulatory specifications and applied |
| 2 Prepare for installation or replacement | 2.1 Implications of project on bridge load capacity are assessed  
2.2 Dimensions of original components are measured  
2.3 Resources are selected in accordance with the task  
2.4 Follow up inspection of work is conducted |
3 Erect major sub-structure members
3.1 Members are measured and prepared for installation or replacement
3.2 New members are fitted in accordance with the specifications
3.3 Durability treatments are applied to the new members
3.4 Connectors are installed to the new sub-structure members
3.5 Temporary supports are removed after new members are secured in place

4 Erect minor sub-structure members
4.1 Members are measured and prepared for installation or replacement
4.2 New members are fitted in accordance with the specifications
4.3 Durability treatments are applied to the new members
4.4 Connectors are installed to the new sub-structure members

5 Clean up
5.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation
5.2 Machinery, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers’ recommendations and standard work practices
Range Statement

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- Traffic control signage may include but not be limited to escort vehicle, highway traffic signs, site safety signage, temporary signage for the benefit of motorists and pedestrians, barricades, and traffic conditions signage
- Planning and preparation is to include but not be limited to worksite inspection, equipment defect identification, assessment of conditions and hazards and determination of work requirements
- Traffic conditions may include but not be limited to congested urban environments, low traffic rural areas, off-road un-trafficked areas, pedestrian areas, load limits and temporary closures
- Site locations are to include but not be limited to any ground conditions in urban and rural areas
- Major sub-structure members are to include headstocks, sills and abutments
- Minor sub-structure members are to include braces, wales and wing walls
- Connections are to include but not be limited to bolts, brackets, tang bolts and may include splicing plates
- Removal of temporary supports includes removing jacks or support systems to transfer weight back to bridge members and assess the bedding in procedure
- Types of durability treatments may include but not be limited to conventional, external acrylic and water based paints, zinc primers, galvanising, copper naphthenes, liquid preservatives and diffusing rods
Safety (OH&S) • OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
• Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
• Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with safe loading procedures, trip hazards, working over water, water safety, working at heights, other machines, traffic control, personnel, working in proximity to others, worksite visitors and the public
• Safe parking practices are to include but not be limited to ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement
• Hazards and risks may include but not be limited to uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials
• Emergency procedures related to equipment operation are to include but may not be limited to emergency shutdown and stopping, extinguishing equipment fires, organisational first aid requirements and evacuation

Environmental Requirements • Environmental requirements are to include but not be limited to waste management, stormwater protection, noise, dust, vibration, safe use of preservatives, waterway protection and clean-up management

Quality Assurance • Quality assurance requirements may include but not be limited to dimensions, tolerances, timber grading, standards of work and material as detailed in the project drawings, specifications and project documentation to meet client satisfaction

Statutory/Regulatory Authorities • Statutory/Regulatory Authorities may include Federal, State and Local Authorities
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<tr>
<td><strong>Tools and equipment</strong></td>
<td>Tools and equipment are to include but not be limited to generators, power leads,</td>
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<td>drills, impact wrenches, shifting spanners, jacks, proprietary tools, pinch bars,</td>
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<td>crow bars, mattocks, shovels, sledge hammers, claw hammers, power saws, axes,</td>
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<td>block and tackle equipment, chain pulleys, chainsaws, wedges and may include</td>
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<td>cranes, back hoes and rollers</td>
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<td><strong>Materials</strong></td>
<td>Materials are to include but not be limited to bolts, nuts, washers, timber toms,</td>
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<td>steel tri-shores and may include steel plate</td>
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<td><strong>Communications</strong></td>
<td>Communications are to include but not be limited to verbal instructions and</td>
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<td>fault reporting and may include two way radio, hand signals, mobile phone, site</td>
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<td>specific instructions, written instructions or instructions related to job/task</td>
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<tr>
<td><strong>Information</strong></td>
<td>Information sources may include but not be limited to verbal or written and</td>
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<td>graphical instructions, signage, work schedules/plans/specifications, work</td>
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<td>bulletins, charts and hand drawings, memos, maps, material safety data sheets</td>
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<td>(MSDS), diagrams or sketches</td>
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<td>Safe work procedures or equivalent related to the installation or replacement of</td>
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<td>sub-structure members</td>
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<td>Regulatory/legislative requirements pertaining to the installation or replacement</td>
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<td>of sub-structure members</td>
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<td>Manufacturers’ specifications and instructions</td>
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<td>Organisation work specifications and requirements</td>
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<td>Instructions issued by authorised organisational or external personnel</td>
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<td></td>
<td>Relevant Australian Standards</td>
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Evidence Guide

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Location, interpretation and application of relevant information, standards and specifications
- Compliance with OH&S regulations and State/Territory legislation applicable to workplace operations
- Compliance with organisational policies and procedures including quality requirements
- Completion of the planning, preparation and erection of at least one major sub-structure member and one minor sub-structure member to design specifications
- Safe and effective operational use of tools, plant and equipment
- Communication and working effectively and safely with others

Relationship to other units

- Pre-requisite units are:
  BCCCMM1001C Follow OH&S policies and procedures
  BCCTB3002B Install temporary support members

Competency in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.
Specific knowledge required to achieve the performance criteria

- A knowledge of
  - Site and equipment safety requirements
  - Temporary support member installation procedures and techniques
  - Pier stability and foundations
  - Connection behaviour
  - Shoring and jacking systems
  - Test boring
  - Bridge foundations
  - Bridge heritage
  - Equipment types, characteristics, technical capabilities and limitations
  - Processes for the calculation of material requirements
  - Operational, maintenance and basic diagnostic procedures
  - Site isolation and traffic control responsibilities and authorities
  - Materials Safety Data Sheets and materials handling methods
  - Quality assurance systems and standards
  - JSA’s/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements
Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry’s Civil Construction Training Package

- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge

- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge

- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge

- Assessment may be applied under project related conditions (real or simulated) and require evidence of process

- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances

- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
  - workplace location or simulated workplace
  - materials relevant to installing or replacing sub-structure members
  - hand and power tools, plant and equipment appropriate to installing or replacing sub-structure members
  - specifications and work instructions

... End ...
**BCCTB3005B Install or replace super-structure members**

**Unit Descriptor**

This unit specifies the competency required to install or replace super-structure members to restore the bridges designed load capacity and rest upon the sub-structure.

This unit includes planning, preparation and erection of the timber members.

**Employability Skills**

The required outcomes described in this Unit of Competency contain applicable facets of employability skills. The Employability Skills Qualification Summary for the qualification in which this Unit of Competency is packaged will assist in identifying employability skill requirements.

**Element Performance Criteria**

Elements define the essential outcomes of a unit of competency.

1. **Plan and prepare**
   1.1 Work instructions, including plans, specifications, quality requirements and operational details relevant to the tasks are obtained, confirmed and applied
   1.2 Safety requirements are obtained from the site safety plan, other regulatory specifications or legal obligations and applied
   1.3 Signage requirements are identified and obtained from the project traffic management plan and implemented
   1.4 Plant, tools and equipment selected to carry out tasks that are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported
   1.5 Material appropriate to the work application are identified, safely handled and located ready for use
   1.6 Environmental protection requirements are identified from the project environmental management plan or appropriate regulatory specifications and applied
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</table>
| 2 | Install temporary supports | 2.1 Bed logs are located in place and levelled  
|   |   | 2.2 Temporary headers are bolted to the girders  
|   |   | 2.3 Toms and jacks are positioned on the bed logs  
|   |   | 2.4 Temporary bracing is installed  
|   |   | 2.5 Existing bolts are loosened or cut to allow movement and access  
|   |   | 2.6 Structure is jacked to allow removal of defective part  
| 3 | Install or replace members | 3.1 Defective part is removed avoiding damage to surrounding members and other workers  
|   |   | 3.2 Members are measured and prepared for installation or replacement  
|   |   | 3.3 New members are fitted in accordance with the specifications  
|   |   | 3.4 Durability treatments are applied to the new members  
|   |   | 3.5 Connectors are installed to the new super-structure members  
|   |   | 3.6 Temporary supports are removed after new members are secured in place  
|   |   | 3.7 Temporary headers and bed logs are removed and bridge returned to its normal settle point  
| 4 | Clean up | 4.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation  
|   |   | 4.2 Machinery, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers’ recommendations and standard work practices  

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BCC03 Civil Construction Training Package to be reviewed by 31/12/2006 Version 3
Range Statement

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- Traffic control signage may include but not be limited to highway traffic signs, site safety signage, temporary signage for the benefit of motorists and pedestrians, barricades, and traffic conditions signage
- Planning and preparation is to include but not be limited to worksite inspection, equipment defect identification, assessment of conditions and hazards and determination of work requirements
- Traffic conditions may include but not be limited to congested urban environments, low traffic rural areas, off-road un-trafficked areas, pedestrian areas, load limits and temporary closures
- Site locations are to include but not be limited to any ground conditions in urban and rural areas
- Super-structure members are to include but not be limited to corbels, transverse, cross-girders, stringers, girders, barriers, decking/sheeting, kerbing, whacking planks and handrails
- Installation or replacement of super-structure members is to include the dressing and cutting of timber
- Connections are to include but not be limited to bolts, brackets, tang bolts and may include splicing plates
- Temporary supports are to include but not be limited to bed logs, headers, toms and jacks, bracing and may include jacks and chains
- Removal of temporary supports includes removing jacks or support systems to transfer weight back to bridge members and assess the bedding in procedure
- Types of durability treatments may include but not be limited to conventional, external acrylic and water based paints, zinc primers, galvanising, copper naphthenes, liquid preservatives and diffusing rods
Safety (OH&S)  
- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with safe loading procedures, trip hazards, working over water, water safety, working at heights, other machines, traffic control, personnel, working in proximity to others, worksite visitors and the public
- Safe parking practices are to include but not be limited to ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement
- Hazards and risks may include but not be limited to uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials
- Emergency procedures related to equipment operation are to include but may not be limited to emergency shutdown and stopping, extinguishing equipment fires, organisational first aid requirements and evacuation

Environmental Requirements  
- Environmental requirements are to include but not be limited to waste management, stormwater protection, noise, dust, vibration, safe use of preservatives, waterway protection and clean-up management

Quality Assurance  
- Quality assurance requirements may include but not be limited to dimensions, tolerances, timber grading, standards of work and material as detailed in the project drawings, specifications and project documentation to meet client satisfaction

Statutory/Regulatory Authorities  
- Statutory/Regulatory Authorities may include Federal, State and Local Authorities
Tools and equipment • Tools and equipment are to include but not be limited to generators/compressors, power leads, drills, impact wrenches, electric planes, sledge hammers, claw hammers, shifting spanners, jacks, proprietary tools, pinch bars, crow bars, mattocks, shovels, chainsaws, wedges, oxy-acetylene equipment and may include cranes, back hoes and rollers

Materials • Materials are to include but not be limited to bolts, nuts and washers and may include steel plate

Communications • Communications are to include but not be limited to verbal instructions and fault reporting and may include two way radio, hand signals, mobile phone, site specific instructions, written instructions or instructions related to job/task

Information • Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, maps, material safety data sheets (MSDS), diagrams or sketches

• Safe work procedures or equivalent related to the installation or replacement of super-structure members

• Regulatory/legislative requirements pertaining to the installation or replacement of super-structure members

• Manufacturers’ specifications and instructions

• Organisation work specifications and requirements

• Instructions issued by authorised organisational or external personnel

• Relevant Australian Standards
Evidence Guide

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Location, interpretation and application of relevant information, standards and specifications
- Compliance with OH&S regulations and State/Territory legislation applicable to workplace operations
- Compliance with organisational policies and procedures including quality requirements
- Selection and preparation of the timber, application of preservatives, marking out and cutting to size of at least one corbel or girder for a super-structure in accordance with specifications
- Safe and effective operational use of tools, plant and equipment
- Communication and working effectively and safely with others

Relationship to other units

- Pre-requisite units are:
  
  BCCCM1001C Follow OH&S policies and procedures
  
  BCCTB3002B Install temporary support members

Competency in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role
Specific knowledge required to achieve the performance criteria

- A knowledge of
  - Site and equipment safety requirements
  - Temporary support member installation procedures and techniques
  - Connection behaviour
  - Shoring and jacking systems
  - Timber grading
  - Test boring
  - Bridge foundations
  - Bridge heritage
  - Equipment types, characteristics, technical capabilities and limitations
  - Processes for the calculation of material requirements
  - Operational, maintenance and basic diagnostic procedures
  - Site isolation and traffic control responsibilities and authorities
  - Materials Safety Data Sheets and materials handling methods
  - Quality assurance systems and standards
  - JSA’s/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements
Methods of assessment

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- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
  - workplace location or simulated workplace
  - materials relevant to installing or replacing super-structure members
  - hand and power tools, plant and equipment appropriate to installing or replacing super-structure members
  - specifications and work instructions

... End ...
Unit Descriptor

This unit specifies the competency required to splice and connect timber members for the purpose of extending replacement members or replacing defective sections.

This unit includes measuring, setting out, cutting of the splice joint and the installation of bolts and other connectors.

Employability Skills

The required outcomes described in this Unit of Competency contain applicable facets of employability skills. The Employability Skills Qualification Summary for the qualification in which this Unit of Competency is packaged will assist in identifying employability skill requirements.

Element

Elements define the essential outcomes of a unit of competency.

Performance Criteria

Performance criteria specify the level of performance required to demonstrate achievement of the element.

1 Plan and prepare

1.1 Work instructions, including plans, specifications, quality requirements and operational details relevant to the tasks are obtained, confirmed and applied

1.2 Safety requirements are obtained from the site safety plan, other regulatory specifications or legal obligations and applied

1.3 Signage requirements are identified and obtained from the project traffic management plan and implemented

1.4 Plant, tools and equipment selected to carry out tasks that are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported

1.5 Material appropriate to the work application are identified, safely handled and located ready for use

1.6 Environmental protection requirements are identified from the project environmental management plan or appropriate regulatory specifications and applied
### Splice and connect timber members

<table>
<thead>
<tr>
<th>Task</th>
<th>Subtasks</th>
</tr>
</thead>
</table>
| 2 Install temporary supports | 2.1 Bed logs are located in place and levelled  
| | 2.2 Temporary header is installed  
| | 2.3 Toms and jacks are positioned on the bed logs  
| | 2.4 Temporary bracing is installed  
| | 2.5 Connectors to piles are loosened or cut to allow movement and access  
| | 2.6 Bridge structure is jacked clear of pile  
| 3 Splice and connect | 3.1 Timber components are selected and measured  
| | 3.2 Timber members are faced in readiness for joining  
| | 3.3 Durability treatments are applied to the members  
| | 3.4 Preservatives are applied to the faced sections  
| | 3.5 Splicing plate is fitted according to specifications  
| | 3.6 Connectors are installed to the members  
| | 3.7 Temporary supports are removed after members are secured in place  
| 4 Clean up | 4.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation  
| | 4.2 Machinery, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers’ recommendations and standard work practices  

Range Statement

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

**Unit scope**

- Traffic control signage may include but not be limited to highway traffic signs, site safety signage, temporary signage for the benefit of motorists and pedestrians, barricades, and traffic conditions signage
- Planning and preparation is to include but not be limited to worksite inspection, equipment defect identification, assessment of conditions and hazards and determination of work requirements
- Traffic conditions may include but not be limited to congested urban environments, low traffic rural areas, off-road un-trafficked areas, pedestrian areas, load limits and temporary closures
- Site locations are to include but not be limited to any ground conditions in urban and rural areas
- Timber selection is to include but not be limited to grading, strength, species and durability
- Facing or scarfing of timber members is to include removal of a section of timber (notching it out), changing the round to a flat, using an axe, adze or chainsaw, for acceptance of the splicing plate
- Splicing is to include but not be limited to piles and may include top cords, bottom cords, truss members and bracing
- Connectors are to include shear keys, splice plates and bolts
- Bridge structures may include headstocks and capwales
- Removal of temporary supports includes removing jacks or support systems to transfer weight back to bridge members and assess the bedding in procedure
- Types of durability treatments may include but not be limited to conventional, external acrylic and water based paints, zinc primers, galvanising, copper naphthenes, liquid preservatives and diffusing rods
Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with safe loading procedures, trip hazards, working over water, water safety, working at heights, other machines, traffic control, personnel, working in proximity to others, worksite visitors and the public
- Safe parking practices are to include but not be limited to ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement
- Hazards and risks may include but not be limited to uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials
- Emergency procedures related to equipment operation are to include but may not be limited to emergency shutdown and stopping, extinguishing equipment fires, organisational first aid requirements and evacuation

Environmental Requirements

- Environmental requirements are to include but not be limited to waste management, stormwater protection, noise, dust, vibration, safe use of preservatives, waterway protection and clean-up management

Quality Assurance

- Quality assurance requirements may include but not be limited to dimensions, tolerances, timber grading, standards of work and material as detailed in the project drawings, specifications and project documentation to meet client satisfaction

Statutory/Regulatory Authorities

- Statutory/Regulatory Authorities may include Federal, State and Local Authorities
| **Tools and equipment** | Tools and equipment are to include but not be limited to generators/compressors, power leads, drills, impact wrenches, shifting spanners, chainsaws, axes, adzes, rattle guns, power/air tools, chisels and may include electric planes |
| **Materials** | Materials are to include but not be limited to bolts, nuts, washers, splice plates, shear keys, timber members and preservatives |
| **Communications** | Communications are to include but not be limited to verbal instructions and fault reporting and may include two way radio, hand signals, mobile phone, site specific instructions, written instructions or instructions related to job/task |
| **Information** | Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, maps, material safety data sheets (MSDS), diagrams or sketches |

- Safe work procedures or equivalent related to the splicing and connecting of timber members
- Regulatory/legislative requirements pertaining to the splicing and connecting of timber members
- Manufacturers’ specifications and instructions
- Organisation work specifications and requirements
- Instructions issued by authorised organisational or external personnel
- Relevant Australian Standards
Evidence Guide

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

• Location, interpretation and application of relevant information, standards and specifications
• Compliance with OH&S regulations and State/Territory legislation applicable to workplace operations
• Compliance with organisational policies and procedures including quality requirements
• Completion of the cutting and splicing of at least one pile or splicing of two top or bottom chords to specification using a chainsaw and splicing plates
• Safe and effective operational use of tools, plant and equipment
• Communication and working effectively and safely with others

Relationship to other units

• Pre-requisite units are:
  BCCCM1001C Follow OH&S policies and procedures

  Competency in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role
Specific knowledge required to achieve the performance criteria

- A knowledge of
  - Site and equipment safety requirements
  - Temporary support member installation procedures and techniques
  - Load limits for timber members
  - Splicing and joining
  - Connection behaviour
  - Shoring and jacking systems
  - Timber grading
  - Test boring
  - Bridge foundations
  - Bridge heritage
  - Equipment types, characteristics, technical capabilities and limitations
  - Processes for the calculation of material requirements
  - Operational, maintenance and basic diagnostic procedures
  - Site isolation and traffic control responsibilities and authorities
  - Materials Safety Data Sheets and materials handling methods
  - Quality assurance systems and standards
  - JSA’s/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements
Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry’s Civil Construction Training Package

- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge

- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge

- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge

- Assessment may be applied under project related conditions (real or simulated) and require evidence of process

- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances

- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
  - workplace location or simulated workplace
  - materials relevant to the splicing and connecting of timber members
  - hand and power tools, plant and equipment appropriate to the splicing and connecting of timber members
  - specifications and work instructions

… End …
Assemble a temporary modular bridge

Unit Descriptor
This unit specifies the competency required to carry out assembly of steel temporary bridging to provide a stand alone temporary bridge to divert traffic from a bridge which is deficient or under repair.

This unit includes site preparation, assembly and disassembly sequencing for sub-structure and super-structure components.

Employability Skills
The required outcomes described in this Unit of Competency contain applicable facets of employability skills. The Employability Skills Qualification Summary for the qualification in which this Unit of Competency is packaged will assist in identifying employability skill requirements.

Element Performance Criteria
Performance criteria specify the level of performance required to demonstrate achievement of the element.

1 Plan and prepare

1.1 Work instructions, including plans, specifications, quality requirements and operational details relevant to the tasks are obtained, confirmed and applied.

1.2 Safety requirements are obtained from the site safety plan, other regulatory specifications or legal obligations and applied.

1.3 Signage requirements are identified and obtained from the project traffic management plan and implemented.

1.4 Plant, tools and equipment selected to carry out tasks that are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported.

1.5 Material appropriate to the work application are identified, safely handled and located ready for use.

1.6 Environmental protection requirements are identified from the project environmental management plan or appropriate regulatory specifications and applied.
| 2 | Assemble temporary bridge components | 2.1 | Condition of components are assessed for acceptable use and faulty parts discarded |
|   |                                      | 2.2 | Components are compiled and inventory checked |
|   |                                      | 2.3 | Location points for high capacity panelling are marked |
|   |                                      | 2.4 | Resources, materials and equipment are selected in accordance with the task |
|   |                                      | 2.5 | Assembly process is sequenced prior to commencement |
|   |                                      | 2.6 | Interlocking components are assembled using connections and fittings |
|   |                                      | 2.7 | Completed assembly is re-checked |
| 3 | Launch temporary bridge              | 3.1 | Starting approach site is set out |
|   |                                      | 3.2 | Arrival approach site is set out with the receiving bearing |
|   |                                      | 3.3 | Temporary bridge is positioned on the starting approach |
|   |                                      | 3.4 | Launching nose, inclined upwards, is fitted to the first module |
|   |                                      | 3.5 | Launching pad is set up on the starting approach |
|   |                                      | 3.6 | Temporary bridge is rolled out by winching or pushing |
|   |                                      | 3.7 | Temporary bridge modules are cantilevered, calculated at an angle to achieve reaching the arrival approach and launched |
|   |                                      | 3.8 | Launching nose and end module are fitted to the receiving bearings at the arrival approach |
| 4 | Disassemble temporary bridge components | 4.1 | Disassembly process is sequenced prior to commencement |
|   |                                      | 4.2 | Resources, materials and equipment are selected in accordance with the task |
|   |                                      | 4.3 | Interlocking components are disassembled including connections and fittings |
|   |                                      | 4.4 | Components are compiled and inventory checked |
|   |                                      | 4.5 | Condition of components are assessed for acceptable use and faulty parts discarded |
|   |                                      | 4.6 | Components are stored according to organisational requirements |
5 Clean up

5.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation

5.2 Machinery, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers’ recommendations and standard work practices

Range Statement

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- Traffic control signage may include but not be limited to highway traffic signs, site safety signage, temporary signage for the benefit of motorists and pedestrians, barricades, and traffic conditions signage
- Planning and preparation is to include but not be limited to worksite inspection, equipment defect identification, assessment of conditions and hazards and determination of work requirements
- Traffic conditions may include but not be limited to congested urban environments, low traffic rural areas, off-road un-trafficked areas and pedestrian areas
- Site locations are to include but not be limited to any ground conditions in urban and rural areas
- Site preparation may include foundation levelling, set up of bed logs, storage and security of components
- Assessment of components includes discarding items due to rust, damage or deterioration
- Positioning of high capacity panelling correctly is essential for temporary bridge safety and use
- Interlocking parts, connections and fittings are to include bearings, end posts, reinforcing cords, bracing frames, transoms, transom clips, wind braces, rakers, stringers, cord bolts, chesses, approach ramps, receiving bearings, launching nose, rollers, jacks and distribution beams
- Sequencing is completed efficiently and in a cyclical methodology of the parts
- Re-checking the completed work is a visual inspection to ensure work has occurred in the correct sequence and to specifications
Unit Scope (continued)

- Temporary modular bridging is a team situation and may include working in conjunction with a dogman
- Launching is the installation process which places the temporary modular bridge in position
- Launch pad is to include rollers and sway braces enabling the temporary modular bridge to be launched
- Launching nose allows for easy connection on to the receiving bearings
- Approaches include the temporary road access leading to and from the temporary modular bridge location
- Cantilevering includes launching the temporary modular bridge from one end at an angle which will prevent tip deflection and achieve reaching the arrival approach

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with safe loading procedures, trip hazards, working over water, water safety, working at heights, other machines, traffic control, personnel, working in proximity to others, worksite visitors and the public
- Safe parking practices are to include but not be limited to ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement
- Hazards and risks may include but not be limited to uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials
<table>
<thead>
<tr>
<th>Section</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety (OH&amp;S) (continued)</td>
<td>• Emergency procedures related to equipment operation are to include but may not be limited to emergency shutdown and stopping, extinguishing equipment fires, organisational first aid requirements and evacuation</td>
</tr>
<tr>
<td>Environmental Requirements</td>
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</tr>
<tr>
<td>Tools and equipment</td>
<td>• Tools and equipment are to include but not be limited to sledge hammers, shifting spanners, ratchet sockets, bailey tools, winches, jacks, proprietary tools, pinch bars, crow bars, claw hammers and may include cranes, boats and trucks</td>
</tr>
<tr>
<td>Communications</td>
<td>• Communications are to include but not be limited to verbal instructions and fault reporting and may include two way radio, hand signals, mobile phone, site specific instructions, written instructions or instructions related to job/task</td>
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</tr>
<tr>
<td></td>
<td>• Safe work procedures or equivalent related to the assembly of temporary modular bridges</td>
</tr>
<tr>
<td></td>
<td>• Regulatory/legislative requirements pertaining to the assembly of temporary modular bridges</td>
</tr>
<tr>
<td></td>
<td>• Manufacturers’ specifications and instructions</td>
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<td></td>
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<td>• Relevant Australian Standards</td>
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</tbody>
</table>
Evidence Guide

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Location, interpretation and application of relevant information, standards and specifications
- Compliance with OH&S regulations and State/Territory legislation applicable to workplace operations
- Compliance with organisational policies and procedures including quality requirements
- Completion of the assembly and launching of a full temporary modular bridge including all components, connections and fittings, to specifications
- Safe and effective operational use of tools, plant and equipment
- Communication and working effectively and safely with others

Relationship to other units

- Pre-requisite units are:
  BCCCM1001C Follow OH&S policies and procedures

  Competency in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role
Specific knowledge required to achieve the performance criteria

- A knowledge of
  - Site and equipment safety requirements
  - Temporary modular bridge assembly procedures and techniques
  - Launching procedures and techniques
  - Construction efficiencies and sequencing
  - Defective components and parts
  - Bridge foundations
  - Bridge heritage
  - Equipment types, characteristics, technical capabilities and limitations
  - Processes for the calculation of material requirements
  - Operational, maintenance and basic diagnostic procedures
  - Site isolation and traffic control responsibilities and authorities
  - Materials Safety Data Sheets and materials handling methods
  - Quality assurance systems and standards
  - JSA’s/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements
Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry’s Civil Construction Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
  - workplace location or simulated workplace
  - materials relevant to assembling temporary modular bridges
  - hand and power tools, plant and equipment appropriate to assembling temporary modular bridges
  - specifications and work instructions

... End ...
Install or replace truss members

Unit Descriptor
This unit specifies the competency required to remove, install or replace timber truss members to restore the bridges designed load capacity.

This unit includes planning, preparation, fabrication and erection of timber truss members while the bridge is still under use.

Employability Skills
The required outcomes described in this Unit of Competency contain applicable facets of employability skills. The Employability Skills Qualification Summary for the qualification in which this Unit of Competency is packaged will assist in identifying employability skill requirements.

Element Performance Criteria
Performance criteria specify the level of performance required to demonstrate achievement of the element.

1 Plan and prepare

1.1 Work instructions, including plans, specifications, quality requirements and operational details relevant to the tasks are obtained, confirmed and applied

1.2 Safety requirements are obtained from the site safety plan, other regulatory specifications or legal obligations and applied

1.3 Signage requirements are identified and obtained from the project traffic management plan and implemented

1.4 Plant, tools and equipment selected to carry out tasks that are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported

1.5 Material appropriate to the work application are identified, safely handled and located ready for use

1.6 Environmental protection requirements are identified from the project environmental management plan or appropriate regulatory specifications and applied
2 Produce and install truss members

2.1 Defective truss members are removed in accordance with engineering drawings

2.2 Truss members are measured and prepared for installation or replacement

2.3 New truss members are fabricated to replicate old members or improve them

2.4 New truss members are fitted in accordance with the specifications

2.5 Durability treatments are applied to the new truss members

2.6 Connectors and flashing are installed to the new truss members

2.7 King bolts are adjusted and truss re-cambered to achieve specified camber

2.8 Bailey supports are removed after new truss members are secured in place

3 Clean up

3.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation

3.2 Machinery, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers’ recommendations and standard work practices
Range Statement

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- Traffic control signage may include but not be limited to highway traffic signs, site safety signage, temporary signage for the benefit of motorists and pedestrians, barricades, and traffic conditions signage

- Planning and preparation is to include but not be limited to worksite inspection, equipment defect identification, assessment of conditions and hazards and determination of work requirements

- Traffic conditions may include but not be limited to congested urban environments, low traffic rural areas, off-road un-trafficked areas, pedestrian areas, load limits and temporary closures

- Site locations are to include but not be limited to any ground conditions in urban and rural areas

- Timber truss members are to include top cords, bottom cords, principals, compression members and butting blocks

- Steel truss members are to include shoes, king bolts/tie rods and may include steel bottom cords

- Top and bottom cords of trusses are connected using splicing methods and splicing plates

- Old truss members can be used as a template for production of new members where it was the correct size, alternatively they are resized to accomplish the correct tension and camber

- Types of durability treatments may include but not be limited to conventional, external acrylic and water based paints, zinc primers, galvanising, copper naphthenes, liquid preservatives and diffusing rods
| **Safety (OH&S)** | • OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances  
  | • Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices  
  | • Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with safe loading procedures, trip hazards, working over water, water safety, working at heights, other machines, traffic control, personnel, working in proximity to others, worksite visitors and the public  
  | • Safe parking practices are to include but not be limited to ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement  
  | • Hazards and risks may include but not be limited to uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials  
  | • Emergency procedures related to equipment operation are to include but may not be limited to emergency shutdown and stopping, extinguishing equipment fires, organisational first aid requirements and evacuation |
| **Tools and equipment** | Tools and equipment are to include but not be limited to generators/compressors, power leads, drills, impact wrenches, shifting spanners, power saws, chisels, stillsons and may include cranes, trucks and chainsaws |
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| **Materials** | Materials are to include but not be limited to king bolts/tie rods, nuts, washers, truss members, bailey system, shear connectors, steel shoes, flashing and preservatives |
| **Communications** | Communications are to include but not be limited to verbal instructions and fault reporting and may include two way radio, hand signals, mobile phone, site specific instructions, written instructions or instructions related to job/task |
| **Information** | Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, maps, material safety data sheets (MSDS), diagrams or sketches |
|  | Safe work procedures or equivalent related to the installation or replacement of truss members |
|  | Regulatory/legislative requirements pertaining to the installation or replacement of truss members |
|  | Manufacturers’ specifications and instructions |
|  | Organisation work specifications and requirements |
|  | Instructions issued by authorised organisational or external personnel |
|  | Relevant Australian Standards |
Evidence Guide

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Location, interpretation and application of relevant information, standards and specifications
- Compliance with OH&S regulations and State/Territory legislation applicable to workplace operations
- Compliance with organisational policies and procedures including quality requirements
- Completion of the removal of at least one old defective truss member, replace and install at least one new truss member and re-camber the truss
- Safe and effective operational use of tools, plant and equipment
- Communication and working effectively and safely with others

Relationship to other units

- Pre-requisite units are:
  BCCCM1001C Follow OH&S policies and procedures

  Competency in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role
Specific knowledge required to achieve the performance criteria

- A knowledge of
  - Site and equipment safety requirements
  - Bailey bridges and bailey support system installation procedures and techniques
  - Trusses and truss members
  - Timber grading and characteristics
  - Connection behaviour
  - Bridge foundations
  - Bridge heritage
  - Equipment types, characteristics, technical capabilities and limitations
  - Processes for the calculation of material requirements
  - Operational, maintenance and basic diagnostic procedures
  - Site isolation and traffic control responsibilities and authorities
  - Materials Safety Data Sheets and materials handling methods
  - Quality assurance systems and standards
  - JSA’s/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements
Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry’s Civil Construction Training Package

- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge

- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge

- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge

- Assessment may be applied under project related conditions (real or simulated) and require evidence of process

- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances

- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
  - workplace location or simulated workplace
  - materials relevant to installing or replacing truss members
  - hand and power tools, plant and equipment appropriate to installing or replacing truss members
  - specifications and work instructions

… End …
**BCCTB3009B Construct, maintain and remove coffer dams**

**Unit Descriptor**

This unit specifies the competency required to carry out construction of a coffer dam to provide a safe and dry environment for work in waterways.

This unit includes the use of coffer dams for the construction and maintenance of bridge foundations.

**Employability Skills**

The required outcomes described in this Unit of Competency contain applicable facets of employability skills. The Employability Skills Qualification Summary for the qualification in which this Unit of Competency is packaged will assist in identifying employability skill requirements.

**Element**

Elements define the essential outcomes of a unit of competency.

**Performance Criteria**

Performance criteria specify the level of performance required to demonstrate achievement of the element.

1. **Plan and prepare**

   1.1 Work instructions, including plans, specifications, quality requirements and operational details relevant to the tasks are obtained, confirmed and applied

   1.2 Safety requirements are obtained from the site safety plan, other regulatory specifications or legal obligations and applied

   1.3 Signage requirements are identified and obtained from the project traffic management plan and implemented

   1.4 Plant, tools and equipment selected to carry out tasks that are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported

   1.5 Material appropriate to the work application are identified, safely handled and located ready for use

   1.6 Environmental protection requirements are identified from the project environmental management plan or appropriate regulatory specifications and applied
2 Construct and maintain a dam

2.1 Utilities are contacted to check placement of marine cables

2.2 Sheet piles are driven into location in accordance with specifications

2.3 Sheet piles are braced

2.4 Dammed area is dewatered and caulked

2.5 Sump and/or pump is installed to remove excess water seepage

2.6 Mud is removed from dammed area manually

2.7 Dammed area is levelled ready for bridge work to commence

3 Remove coffer dam

3.1 Dammed area is cleared of any refuse or construction waste

3.2 Temporary concrete slab, where used, is removed

3.3 Coffer dam is flooded

3.4 Sheet pile bracing is removed

3.5 Sheet piling is extracted and dismantled allowing waterway to restore its original flow

4 Clean up

4.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation

4.2 Machinery, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers’ recommendations and standard work practices
Range Statement

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- Traffic control signage may include but not be limited to boat navigation devices (including night navigation), site safety signage, temporary signage for the benefit of boat operators and other waterway users.

- Planning and preparation is to include but not be limited to worksite inspection, equipment defect identification, assessment of conditions and hazards and determination of work requirements.

- Traffic conditions may include but not be limited to rivers, streams and trafficked waterways.

- Site locations are to include but not be limited to any water or ground conditions in urban and rural areas where damming is to occur for the purposes of bridge construction or repair.

- Coffer dam construction and removal is conducted in conjunction with plant operators and doggers.

- Levelling of the dammed area may include laying of a temporary concrete slab.

- Bracing may include pipes, timber, jacks or adjustable props.

- Dewatering is the process of removing water and sludge from the sheeted off or dammed area using pumps and sumps (a pit excavated at the lowest point to collect excess water seepage).

- Sheet piling joints are caulked using sealants which may include bitumen, concrete expansion strips, impregnated fibre board and rubber strips.

- Coffer dams are to include but not be limited to sheet pile construction and may include sandbags, timber or proprietary systems.
Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances

- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices

- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with safe loading procedures, trip hazards, working over water, water safety, working at heights, other machines, traffic control, personnel, working in proximity to others, worksite visitors and the public

- Safe parking practices are to include but not be limited to ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement

- Hazards and risks may include but not be limited to uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials

- Emergency procedures related to equipment operation are to include but may not be limited to emergency shutdown and stopping, extinguishing equipment fires, organisational first aid requirements and evacuation

Environmental Requirements

- Environmental requirements are to include but not be limited to waste management, stormwater protection, noise, dust, vibration, safe use of preservatives, waterway protection and clean-up management

Quality Assurance

- Quality assurance requirements may include but not be limited to dimensions, tolerances, timber grading, standards of work and material as detailed in the project drawings, specifications and project documentation to meet client satisfaction

Statutory/Regulatory Authorities

- Statutory/Regulatory Authorities may include Federal, State and Local Authorities
| **Tools and equipment** | - Tools and equipment are to include but not be limited to sheet piling, boats, pneumatic hammers, pile drivers, sheet lifters, excavators/backhoes, shovels, sludge pumps, bracing, slings, chains, shackles and may include a crane |
| **Materials** | - Materials are to include but not be limited to caulking material and may include concrete |
| **Communications** | - Communications are to include but not be limited to verbal instructions and fault reporting and may include two way radio, hand signals, mobile phone, site specific instructions, written instructions or instructions related to job/task |
| **Information** | - Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, maps, material safety data sheets (MSDS), diagrams or sketches |
|  | - Safe work procedures or equivalent related to the construction, maintenance and removal of coffer dams |
|  | - Regulatory/legislative requirements pertaining to the construction, maintenance and removal of coffer dams |
|  | - Manufacturers’ specifications and instructions |
|  | - Organisation work specifications and requirements |
|  | - Instructions issued by authorised organisational or external personnel |
|  | - Relevant Australian Standards |
Evidence Guide

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Location, interpretation and application of relevant information, standards and specifications
- Compliance with OH&S regulations and State/Territory legislation applicable to workplace operations
- Compliance with organisational policies and procedures including quality requirements
- Construction, maintenance and removal of at least one coffer dam, with at least four sheet piles, large enough to require bracing
- Safe and effective operational use of tools, plant and equipment
- Communication and working effectively and safely with others

Relationship to other units

- Pre-requisite units are:
  
  BCCCCM1001C Follow OH&S policies and procedures

  Competency in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role
Specific knowledge required to achieve the performance criteria

- A knowledge of
  - Site and equipment safety requirements
  - Boat and water safety
  - Sheet piling
  - Environmental Protection Act
  - Dewatering
  - Caulking
  - Dial before you dig
  - Bridge foundations
  - Bridge heritage
  - Equipment types, characteristics, technical capabilities and limitations
  - Processes for the calculation of material requirements
  - Operational, maintenance and basic diagnostic procedures
  - Site isolation and traffic control responsibilities and authorities
  - Materials Safety Data Sheets and materials handling methods
  - Quality assurance systems and standards
  - JSA’s/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements
Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry’s Civil Construction Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
  - workplace location or simulated workplace
  - materials relevant to constructing, maintaining and removal of coffer dams
  - hand and power tools, plant and equipment appropriate to constructing, maintaining and removal of coffer dams
  - specifications and work instructions

... End ...
**BCCTB3010B Construct specialised timber bridge deck systems**

**Unit Descriptor**

This unit specifies the competency required to carry out the construction and installation of specialised timber bridge deck systems to improve the integrity, capacity and life of the bridge deck.

This unit includes the use of stress laminated timber, timber concrete composite modules, concrete overlays, fibre reinforced polymers (FRP’s) and other proprietary systems.

**Employability Skills**

The required outcomes described in this Unit of Competency contain applicable facets of employability skills. The Employability Skills Qualification Summary for the qualification in which this Unit of Competency is packaged will assist in identifying employability skill requirements.

**Element**

Elements define the essential outcomes of a unit of competency.

**Performance Criteria**

Performance criteria specify the level of performance required to demonstrate achievement of the element.

1. **Plan and prepare**
   1.1 Work instructions, including plans, specifications, quality requirements and operational details relevant to the tasks are obtained, confirmed and applied
   1.2 Safety requirements are obtained from the site safety plan, other regulatory specifications or legal obligations and applied
   1.3 Signage requirements are identified and obtained from the project traffic management plan and implemented
   1.4 Plant, tools and equipment selected to carry out tasks that are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported
   1.5 Material appropriate to the work application are identified, safely handled and located ready for use
   1.6 Environmental protection requirements are identified from the project environmental management plan or appropriate regulatory specifications and applied
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<tr>
<td>2</td>
<td>Construct bridge deck</td>
<td>2.1 Bridge deck is constructed in accordance with the production plans</td>
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<td></td>
<td></td>
<td>2.2 Deck materials are selected in accordance with specifications</td>
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<td>2.3 Connection points are pre-drilled</td>
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<tr>
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<td>2.4 Deck is temporary fixed with nails</td>
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<td></td>
<td></td>
<td>2.5 Stressing cables are connected to the bridge deck in accordance with specifications</td>
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<td>2.6 Bridge deck is stressed and rested for the specified timeframe</td>
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</table>
3 Install bridge deck

3.1 Bridge deck is re-stressed prior to removal to location
3.2 Bridge deck is trimmed prior to securing in location
3.3 Bridge deck is installed at location
3.4 Bridge deck is bolted to the cross girders
3.5 Bridge deck is re-stressed
3.6 Stressing cable location holes are packed with grease
3.7 Protection angles, kerbs and handrails are fitted
3.8 Waterproofing is applied to the deck and fittings

4 Clean up

4.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation
4.2 Machinery, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers’ recommendations and standard work practices
Range Statement

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- Traffic control signage may include but not be limited to highway traffic signs, site safety signage, temporary signage for the benefit of motorists and pedestrians, barricades, and traffic conditions signage
- Planning and preparation is to include but not be limited to worksite inspection, equipment defect identification, assessment of conditions and hazards and determination of work requirements
- Traffic conditions may include but not be limited to congested urban environments, low traffic rural areas, off-road un-trafficked areas and pedestrian areas
- Site locations are to include but not be limited to any ground conditions in urban and rural areas
- Timber bridge deck systems may be built off-site (may be near to the bridge) or in-situ and may include removal of the old deck
- Bridge deck installation may include lifting in position with a crane and crane operator or rolling into position
- Bridge deck installation is conducted in conjunction with a dogman
- Timber bridge decks are to include stress laminated timber bridge decks and may include timber concrete composite module decks, concrete overlay decks, fibre reinforced polymer decks and proprietary system decks
- Waterproofing may include a bitumen membrane, metal seal, rubber and caps on end of stressing points
- Stressing cables are to include steel strands
- Kerbing is to include the use of a rubberised sealer, fitted beneath the kerbing
Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances

- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices

- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with safe loading procedures, trip hazards, working over water, water safety, working at heights, other machines, traffic control, personnel, working in proximity to others, worksite visitors and the public

- Safe parking practices are to include but not be limited to ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement

- Hazards and risks may include but not be limited to uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials

- Emergency procedures related to equipment operation are to include but may not be limited to emergency shutdown and stopping, extinguishing equipment fires, organisational first aid requirements and evacuation

Environmental Requirements

- Environmental requirements are to include but not be limited to waste management, stormwater protection, noise, dust, vibration, safe use of preservatives, waterway protection and clean-up management

Quality Assurance

- Quality assurance requirements may include but not be limited to dimensions, tolerances, standards of work and material as detailed in the project drawings, specifications and project documentation to meet client satisfaction

Statutory/Regulatory Authorities

- Statutory/Regulatory Authorities may include Federal, State and Local Authorities
Tools and equipment

- Tools and equipment are to include but not be limited to generators/compressors, rattle guns, routers, drills, power saws, grease guns, impact wrenches, shifting spanners, chisels, slings, chains, shackles and may include cranes, stressing jacks and chainsaws

Materials

- Materials are to include but not be limited to block washers, bolts, grease, bridge deck timbers, angle iron, stressing cable, rubberised sealer, sealants and waterproofing agents

Communications

- Communications are to include but not be limited to verbal instructions and fault reporting and may include two way radio, hand signals, mobile phone, site specific instructions, written instructions or instructions related to job/task

Information

- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, maps, material safety data sheets (MSDS), diagrams or sketches
  - Safe work procedures or equivalent related to the construction of specialised timber bridge deck systems
  - Regulatory/legislative requirements pertaining to the construction of specialised timber bridge deck systems
  - Manufacturers’ specifications and instructions
  - Organisation work specifications and requirements
  - Instructions issued by authorised organisational or external personnel
  - Relevant Australian Standards
Evidence Guide

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Location, interpretation and application of relevant information, standards and specifications
- Compliance with OH&S regulations and State/Territory legislation applicable to workplace operations
- Compliance with organisational policies and procedures including quality requirements
- Construction and installation of at least one span of a specialised timber deck system, constructed of stressed laminated timber
- Safe and effective operational use of tools, plant and equipment
- Communication and working effectively and safely with others

Relationship to other units

- Pre-requisite units are:
  BCCCM1001C Follow OH&S policies and procedures

Competency in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role
Specific knowledge required to achieve the performance criteria

- A knowledge of
  - Site and equipment safety requirements
  - Specialised timber bridge deck systems
  - Stressing
  - Bridge sub and super structures
  - Bridge load capacities
  - Plans and specifications
  - Bridge foundations
  - Bridge heritage
  - Equipment types, characteristics, technical capabilities and limitations
  - Processes for the calculation of material requirements
  - Operational, maintenance and basic diagnostic procedures
  - Site isolation and traffic control responsibilities and authorities
  - Materials Safety Data Sheets and materials handling methods
  - Quality assurance systems and standards
  - JSA’s/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry’s Civil Construction Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge
- Assessment methods must confirm the ability to access
and correctly interpret and apply the essential underpinning knowledge

- Assessment may be applied under project related conditions (real or simulated) and require evidence of process

- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances

- Assessment may be in conjunction with assessment of other units of competency, including those listed above

### Specific resource requirements for this unit

- The following resources should be made available:
  - workplace location or simulated workplace
  - materials relevant to constructing specialised timber bridge deck systems
  - hand and power tools, plant and equipment appropriate to constructing specialised timber bridge deck systems
  - specifications and work instructions

... End ...
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BCCBM3004B  Operate a bridge inspection unit

Unit Descriptor

This unit specifies the competency required to operate a bridge inspection unit to gain access to the outer sides and underside of bridges. It includes the minimum criteria for competency assessment.

This unit includes truck mounted or self propelled bridge inspection units.

Employability Skills

The required outcomes described in this Unit of Competency contain applicable facets of employability skills. The Employability Skills Qualification Summary for the qualification in which this Unit of Competency is packaged will assist in identifying employability skill requirements.

Element

Elements define the essential outcomes of a unit of competency.

1  Plan and prepare

1.1  Work instructions, including plans, specifications, quality requirements and operational details relevant to the tasks are obtained, confirmed and applied to the allotted task

6.10  Safety requirements are obtained from the site safety plan and organisational policies and procedures, confirmed and applied to the allotted task

6.11  Signage requirements are identified and obtained from the project traffic management plan and implemented

6.12  Plant, tools and equipment selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported

6.13  Environmental protection requirements are identified from the project environmental management plan, confirmed and applied to the allotted task
2 Check bridge inspection unit

2.1 Tyres and rollers are checked in accordance with operators manual

2.2 Start up, park and shut down procedures are carried out in accordance with manufacturers’ and/or site specific requirements

2.3 Equipment controls and functions, including implements or other attachments, brakes and maneuverability are checked for serviceability and faults reported

2.4 Emergency safety devices are checked to conform with instructions in operators’ manual

3 Set up bridge inspection unit

3.1 Work activity is evaluated and the most productive operating technique is identified

3.2 Bucket/platform is unfolded and prepared for use

3.3 Bridge inspection unit is positioned for work application and stabilisers are engaged to set equipment base level into place

3.4 Tools, equipment and materials are placed into the bucket/platform to job application requirements

3.5 Bucket/platform is entered using the approved procedure

3.6 Fall arrest device is correctly attached

4 Operate bridge inspection unit

4.1 Bridge inspection unit is manoeuvred to work location as per manufacturers’ recommendation and platform is safely and effectively manoeuvred into position

4.2 Performance of bridge inspection unit is carried out to instructions under varied site conditions in accordance with standard work practices

4.3 Obstacles are safely avoided

4.4 Location adjustment requirements are clearly communicated to driver

4.5 Controls are operated to return bridge inspection unit to travel position and proceed with shut down sequence in accordance with operator’s manual

5 Carry out operator maintenance

5.1 Inspection and fault finding are conducted in accordance with manufacturers’ specifications and/or organisational requirements

5.2 Regular programmed maintenance tasks are carried out and recorded in accordance with manufacturers’ and/or organisational requirements
<table>
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<th>Clean up</th>
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<tr>
<td></td>
<td>Work area is cleared and materials disposed of or recycled in accordance with project environmental management plan. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers’ recommendations and standard work practices.</td>
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</table>

**Range Statement**

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:
Unit scope

- Bridge inspection units include truck mounted and self-propelled
- Bridge inspection units may be used on bridges, wharves, piers and jetties
- Bridge inspection units may be operated on concrete or timber structures
- Traffic control signage may include but not be limited to site safety signage, temporary signage for the benefit of motorists and pedestrians, barricades, and traffic conditions signage
- Planning and preparation is to include but not be limited to worksite inspection, equipment defect identification, assessment of conditions and hazards and determination of work requirements
- Traffic conditions may include but not be limited to congested urban environments, low traffic rural areas, off-road un-trafficked areas, buildings, parking sites and pedestrian areas

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations, organisational safety policies and procedures, and project safety plan. This may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with overhead services, other machines, personnel, traffic control, working at heights, working in proximity to others, worksite visitors and the public
Operate a bridge inspection unit

Safety (OH&S) (continued)

- Safe parking practices are to include but not be limited to ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement

- Hazards and risks may include but not be limited to uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials

- Emergency procedures related to equipment operation are to include but may not be limited to emergency shutdown and stopping, extinguishing equipment fires, organisational first aid requirements and evacuation

Environmental Requirements

- Environmental procedures are to include but may not be limited to organisational/project environmental management plans, waste management, water quality protection, noise, vibration, dust and clean up management

Quality Requirements

- Quality requirements may include but not limited to dimensions, tolerances, standards of work and material standards as detailed in the project drawings, specifications and project documentation to meet client satisfaction

Statutory/Regulatory Authorities

- Statutory/Regulatory Authorities may include Federal, State and Local Authorities

Tools and equipment

- Tools and equipment may include but not be limited to fall arrestors, signage, under bridge inspection units, buckets or platforms and maintenance tools and equipment

Communications

- Communications are to include but not be limited to verbal instructions and fault reporting and may include two way radio, hand signals, mobile phone, site specific instructions, written instructions or instructions related to job/task
Information

- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, maps, material safety data sheets (MSDS) and diagrams or sketches and graphics.
- Safe work procedures or equivalent related to conducting under bridge inspection unit operations.
- Manufacturers’ specifications and instructions.
- Organisation work specifications and requirements.
- Instructions issued by authorised organisational or external personnel.
- Relevant Australian Standards.
Evidence Guide

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Location, interpretation and application of relevant information, standards and specifications
- Compliance with site safety plan, OH&S regulations and State/Territory legislation applicable to workplace operations
- Compliance with organisational policies and procedures including quality requirements
- Operation of a self propelled or truck mounted under bridge inspection unit to inspect the underside and the outer sides of a whole bridge of at least twenty metres in length, for two bridges, wharves or jetties to specifications
- Safe and effective operational use of tools, plant and equipment
- Communication and working effectively and safely with others

Relationship to other units

- Pre-requisite units are:
  BCCCM1001C Follow OH&S policies and procedures

  Competency in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role
Specific knowledge required to achieve the performance criteria

- A knowledge of
  - Site and equipment safety requirements
  - Bridge construction
  - Bridge components
  - Under bridge inspection units and operation
  - Safe working procedures for working at heights and over water
  - Processes for interpreting engineering drawings
  - Equipment types, characteristics, technical capabilities and limitations
  - Operational, maintenance and basic diagnostic procedures
  - Site isolation and traffic control responsibilities and authorities
  - Materials Safety Data Sheets and materials handling methods
  - Project quality requirements
  - Civil construction terminology
  - JSA’s/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry’s Civil Construction Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
• Assessment may be applied under project related conditions (real or simulated) and require evidence of process

• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances

• Assessment may be in conjunction with assessment of other units of competency, including those listed above

**Specific resource requirements for this unit**

• The following resources should be made available:
  - workplace location or simulated workplace
  - under bridge inspection unit
  - materials relevant to conducting under bridge inspection unit maintenance
  - hand and power tools, plant and equipment appropriate to conducting under bridge inspection unit maintenance
  - specifications and work instructions

... End ...
BCCBM3007B Construct formwork and falsework on concrete bridges

Unit Descriptor
This unit specifies the competency required to erect and remove formwork and falsework for the preparation and placing of concrete components on bridge constructions. It includes the minimum criteria for competency assessment.

This unit includes erecting formwork and falsework for concrete decks, piers/headstocks, footings/piles/caps/abutments and cast in situ girders.

Employability Skills
The required outcomes described in this Unit of Competency contain applicable facets of employability skills. The Employability Skills Qualification Summary for the qualification in which this Unit of Competency is packaged will assist in identifying employability skill requirements.

Element Performance Criteria
Elements define the essential outcomes of a unit of competency.

1. Plan and prepare
   1.1 Work instructions, including plans, specifications, quality requirements and operational details relevant to the tasks are obtained, confirmed and applied to the allotted task
   1.2 Safety requirements are obtained from the site safety plan and organisational policies and procedures, confirmed and applied to the allotted task
   1.3 Signage requirements are identified and obtained from the project traffic management plan and implemented
   1.4 Plant, tools and equipment selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported
   1.5 Environmental protection requirements are identified from the project environmental management plan, confirmed and applied to the allotted task

2. Prepare for formwork erection
   2.1 Location and design of formwork/falsework is identified from site drawings, engineer's design and specifications
   2.2 Key set out locations are placed accurately to requirements of job drawings
   2.3 Work area and materials are prepared for the erection of formwork/falsework
2.4 Formwork shutters are assembled to design form requirements and specified dimensions

2.5 Formwork support system (falsework) is sequentially erected according to initial set out and standards

2.6 Scaffolding and/or hand railing is checked where required in accordance with job specification and standards

2.7 Bracing of formwork support is placed to job requirements and design specifications to maintain rigidity and stability

2.8 Support system is set to correct height level and line and to specified tolerance

3.1 Formwork for beams, drop panels and cantilevers is fabricated, positioned and fixed into place, to specifications

3.2 Formwork for walls is assembled, erected and fixed into place, plumbed and to specified tolerance

3.3 Soffit formwork is fabricated, positioned and fixed into place to specifications

3.4 Edge boxing to formwork is fixed in correct position and plumbed to alignment.

3.5 Formwork is braced

3.6 Cast-ins, inserts and penetration blocks are installed to locations to specified requirements

4.1 Erected formwork and the formwork support system is inspected for safety and quality of work in accordance with standards

4.2 Loose dirt, sawdust and other waste material is removed safely with due care to welfare of site personnel and public

4.3 Release agent is applied to formwork in accordance with specifications

4.4 Formwork and support system is monitored during concrete pour

5.1 Approval to remove formwork support system is obtained from appropriate site authority

5.2 Edge boxing and braces are carefully removed, denailed, cleaned and stored/stacked

5.3 Support system is backed off to appropriate height to loosen soffit decking
5. Stripping of formwork (continued)  
5.4 Formwork is safely and sequentially removed, denailed and relocated or stored
5.5 Appropriate back propping system, where applicable, is selected and installed according to standards and engineer's requirements

6. Clean up  
6.1 Work area is cleared and materials disposed of or recycled in accordance with project environmental management plan
6.2 Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers’ recommendations and standard work practices

Range Statement

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- Formwork is erected to provide a moulded shape, structure and finish to dimension including but not limited to cast in situ concrete decks, piers/headstocks, footings/pile caps/abutments and may include cast in situ girders
- Falsework is a temporary support structure designed to carry the various loads imposed on the formwork during construction of bridge components
- Bracing includes adjustable props and timber
- Key set out locations include points, lines, profiles and grids
- Cast ins, inserts and penetration blocks include services, anchor bolts and other fixtures
- Soffits include flooring, decking or base work making up the underside of formwork
- Traffic control signage may include but not be limited to escort vehicle, highway traffic signs, site safety signage, temporary signage for the benefit of motorists and pedestrians, barricades, and traffic conditions signage
- Planning and preparation is to include but not be limited to worksite inspection, equipment defect identification, assessment of conditions and hazards and determination of work requirements
Unit scope (continued)

- Traffic conditions may include but not be limited to congested urban environments, low traffic rural areas, off-road un-trafficked areas, buildings, parking sites and pedestrian areas.

- Site locations are to include but not be limited to any rural or urban bridge construction project.

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations, organisational safety policies and procedures, and project safety plan. This may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances.

- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices.

- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with overhead services, other machines, personnel, traffic control, working at heights, working in proximity to others, worksite visitors and the public.

- Hazards and risks may include but not be limited to uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials.

- Emergency procedures are to include but may not be limited to extinguishing fires, organisational first aid requirements and evacuation.

Environmental Requirements

- Environmental procedures are to include but may not be limited to organisational/project environmental management plans, waste management, water quality protection, noise, vibration, dust and clean up management.

Quality Requirements

- Quality requirements may include but not limited to dimensions, tolerances, standards of work and material standards as detailed in the project drawings, specifications and project documentation to meet client satisfaction.
| Statutory/Regulatory Authorities | • Statutory/Regulatory Authorities may include Federal, State and Local Authorities |
| Tools and equipment | • Tools and equipment are to include but not be limited to spanners, saws, power saws, nail guns, drills, string lines, levelling equipment, spirit levels, chisels, hammers, compressors, hoses, tape measures, rulers, marking equipment, crow bars, pinch bars and may include scaffolding and ladders |
| Materials | • Materials are to include but not be limited to screws, nails, plywood, structural timber, proprietary shutters, walers, soldiers, soldier sets, release agent, adjustable props, brackets, base plates, she bolts and clips |
| Communications | • Communications are to include but not be limited to verbal instructions and fault reporting and may include two way radio, hand signals, mobile phone, site specific instructions, written instructions or instructions related to job/task |
| Information | • Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, maps, material safety data sheets (MSDS) and diagrams or sketches |
| | • Safe work procedures or equivalent related to constructing formwork and falsework on concrete bridges |
| | • Regulatory/legislative requirements pertaining to constructing formwork and falsework |
| | • Manufacturers’ specifications and instructions |
| | • Organisation work specifications and requirements. |
| | • Instructions issued by authorised organisational or external personnel |
| | • Relevant Australian Standards |
Evidence Guide

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Location, interpretation and application of relevant information, standards and specifications
- Compliance with site safety plan, OH&S regulations and State/Territory legislation applicable to workplace operations
- Compliance with organisational policies and procedures including quality requirements
- Erection and dismantling of the formwork and falsework for cast in situ decks, concrete footings/pile caps/abutments, piers and headstocks on a concrete multi-span bridge with a minimum length of twenty metres, to design specifications
- Safe and effective operational use of tools, plant and equipment
- Communication and working effectively and safely with others

Relationship to other units

- Pre-requisite units are:
  BCCCM1001C Follow OH&S policies and procedures

  Competency in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role
Specific knowledge required to achieve the performance criteria

- A knowledge of
  - Site and equipment safety requirements
  - Bridge construction and sequencing
  - Formwork and falsework
  - Steel reinforcement
  - Concrete
  - Bracing and loading
  - Structural characteristics of reinforced concrete
  - Working in confined spaces
  - Working at heights and over water
  - Processes for interpreting engineering drawings
  - Equipment types, characteristics, technical capabilities and limitations
  - Operational, maintenance and basic diagnostic procedures
  - Site isolation and traffic control responsibilities and authorities
  - Materials Safety Data Sheets and materials handling methods
  - Project quality requirements
  - Civil construction terminology
  - JSA’s/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace

- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints

- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context

- Assessment is to comply with relevant regulatory or Australian Standards requirements
Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry’s Civil Construction Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
  - workplace location or simulated workplace
  - materials relevant to the construction of formwork and falsework for concrete bridges
  - hand and power tools, plant and equipment appropriate to the construction of formwork and falsework for concrete bridges
  - specifications and work instructions

… End …
**Unit Descriptor**

This unit specifies the competency required to prepare and drive piles for foundations to bridges, structures and ground support situations. It includes the minimum criteria for competency assessment.

This unit includes the diesel hammer and static weight piling operations.

**Employability Skills**

The required outcomes described in this Unit of Competency contain applicable facets of employability skills. The Employability Skills Qualification Summary for the qualification in which this Unit of Competency is packaged will assist in identifying employability skill requirements.

**Element**

Elements define the essential outcomes of a unit of competency.

**Performance Criteria**

Performance criteria specify the level of performance required to demonstrate achievement of the element.

1. **Plan and prepare**

   1.1 Work instructions, including plans, specifications, quality requirements and operational details are obtained, confirmed and applied to the allotted task

   1.2 Safety requirements are obtained from the site safety plan and organisational policies and procedures, confirmed and applied to the allotted task

   1.3 Signage requirements are identified and obtained from the project traffic management plan and implemented

   1.4 Plant, tools and equipment selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported

   1.5 Environmental protection requirements are identified from the project environmental management plan, confirmed and applied to the allotted task
2 Locate pile positions and establish piling rig plant

2.1 Location for piles established from reference points and set out to requirements

2.2 Plant and related equipment is established in position and checked for operation in accordance with standard operating procedures

2.3 Pile is prepared and checked for conformity in accordance with job specifications

2.4 Area for pile driving and surrounding working space is identified and protected in accordance with safety requirements

3 Drive pile

3.1 Pile is lifted and maneuvered into position using the piling rig in accordance with standard operating procedures

3.2 Piling rig is set up and pile driven into place in accordance with specifications and standards

3.3 Splicing or jointing is carried out in accordance with engineer’s specifications

4 Remove piling rig

4.1 Plant and related equipment is dismantled in accordance with manufacturers’ manual and standard operating procedures

4.2 Piling rig is relocated in preparation for next piling installation procedure

5 Clean up

5.6 Work area is cleared and materials disposed of or recycled in accordance with project environmental management plan

5.7 Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers’ recommendations and standard work practices

Range Statement

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:
<table>
<thead>
<tr>
<th>Unit scope</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Types of driven piles are to include but not be limited to timber, pre-cast concrete and may include steel, mechanically jointed pre-cast concrete, temporary timber piles and temporary metal sheeting piles</td>
</tr>
<tr>
<td>• Pile hammer types may include but not be limited to static weight, diesel injection and hydraulic</td>
</tr>
<tr>
<td>• Soil types may include but not be limited to sand, rock, clay, shale, gravel and silt</td>
</tr>
<tr>
<td>• Traffic control signage may include but not be limited to escort vehicle, highway traffic signs, site safety signage, temporary signage for the benefit of motorists and pedestrians, barricades, and traffic conditions signage</td>
</tr>
</tbody>
</table>
Unit scope (continued)

- Planning and preparation is to include but not be limited to worksite inspection, equipment defect identification, assessment of conditions and hazards and determination of work requirements

- Traffic conditions may include but not be limited to congested urban environments, low traffic rural areas, off-road un-trafficked areas, buildings, parking sites and pedestrian areas

- Site locations may include but not be limited to new construction sites, existing structures being renovated or extended, existing structure subject to service restoration or maintenance, road works, earthworks, wharves, marine, bridges and foundation

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances

- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices

- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with overhead and underground services, other machines, personnel, traffic control, working at heights, working proximity to others, worksite visitors and the public

- Hazards and risks may include but not be limited to uneven/unstable terrain, trees, fires, overhead and underground services, excavations, traffic, embankments, cuttings, structures and hazardous materials

- Emergency procedures related to equipment operation are to include but may not be limited to emergency shutdown and stopping, extinguishing equipment fires, organisational first aid requirements and evacuation

- Safe parking practices are to include but not be limited to ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement
Environmental Requirements

- Environmental requirements are to include but not be limited to organisational/project environmental management plan, waste management, water quality protection, noise, vibration, dust and clean-up management.

Quality Requirements

- Quality requirements may include but not limited to dimensions, tolerances, standards of work and material standards as detailed in the project drawings, specifications and project documentation to meet client satisfaction.

Statutory/Regulatory Authorities

- Statutory/Regulatory Authorities may include Federal, State and Local Authorities.

Tools and equipment

- Tools and equipment are to include but not limited to pile hammers, shovels, crow bars, measuring tapes, spirit levels and plumb bob and may include scaffolding.

Materials

- Materials are to include but not limited to piles (timber, concrete or steel).

Communications

- Communications are to include but not limited to verbal instructions and fault reporting and may include two way radio, hand signals, mobile phone, site specific instructions, written instructions or instructions related to job/task.

Information

- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, maps, material safety data sheets (MSDS) and diagrams or sketches.
  - Safe work procedures or equivalent related to the pile driving operations.
  - Regulatory/legislative requirements pertaining to the pile driving operations.
  - Manufacturers’ specifications and instructions.
  - Organisation work specifications and requirements.
  - Instructions issued by authorised organisational or external personnel.
  - Relevant Australian Standards.
Evidence Guide

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Location, interpretation and application of relevant information, standards and specifications
- Compliance with site safety plan, OH&S regulations and State/Territory legislation applicable to workplace operations
- Compliance with organisational policies and procedures including quality requirements
- A minimum of two timber piles or two pre-cast concrete piles are to be driven using at least one of the three pile hammering methods
- Safe and effective operational use of plant, tools and equipment
- Communication and working effectively and safely with others

Relationship to other units

- Pre-requisite units are:
  BCCCM1001C Follow OH&S policies and procedures

  Competency in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

Specific knowledge required to achieve the performance criteria

- A knowledge of
  - Site and equipment safety requirements
  - Foundation work
  - Piles and their installation techniques
  - Scaffolding and work platform installation
  - Construction principles
  - Processes for interpreting engineering drawings
  - Soil, sand, rock, clay, shale, gravel and silt types and characteristics
  - Water erosion
  - Processes for installing piles in water
  - Equipment types, characteristics, technical capabilities and limitations
### Specific knowledge (continued)
- Operational, maintenance and basic diagnostic procedures
- Site isolation and traffic control responsibilities and authorities
- Materials Safety Data Sheets and materials handling methods
- Project quality requirements
- Civil construction terminology
- JSA’s/Safe work method statements

### The context of assessment
- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

### Methods of assessment
- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry’s Civil Construction Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
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- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

### Specific resource requirements for this unit
- The following resources should be made available:
  - workplace location or simulated workplace
- materials relevant to pile driving
- hand and power tools, plant and equipment appropriate to pile driving
- specifications and work instructions

... End ...