Australian Government

Department of Education, Science and Training

skills DMC
national industry skills council
DRILLING • MINING • QUARRYING • CIVIL INFRASTRUCTURE

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)
Civil Construction Industry Assessment Guidelines

Volume Two 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.

BCC03 Civil Construction Industry Training Package

This work is the result of wide consultations with Australian industry participants. It is a collaborative view and does not necessarily represent the view of DEEWR or any specific body. For the sake of brevity it may omit factors which could be pertinent in particular cases.
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First published: 23 January 2004
Stock Code Number: atp9114
ISBN: 0 642 80025 1 (set)
Printed by: Mercury Printeam, Melbourne, Australia
AESharenet Code: *P*
Print Version No: 2
10 May 2005

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- Cross-Sectoral

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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.

Version Modification History		
Version	**Release Date**	**Comments**
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 1/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 1/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 20m 2 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

		units/page 151). Changes made to: Range of Variables for small plant and equipment. - The following units was changed from Core to Elective: o BCCCM2009B in Qualifications BCC30303 , 30403, 30503, 30703, 30903, 31003; o BCCCM2013B in Qualifications BCC20103 & 20203; o 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): o BCCWF3002B Install temporary and permanent rock anchors to BCCFW3002B (Vol II/Cross Sectoral units/page 1307) o 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) o 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: o BCC30103 to BCC30107 o BCC30203 to BCC30207 o BCC30303 to BCC30307 o BCC30403 to BCC30407 o BCC30503 to BCC30507 o BCC30603 to BCC30607 o BCC30703 to BCC30707 o BCC30803 to BCC30807 o BCC30903 to BCC30907 o BCC31003 to BCC31007 o 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: BCC20107 Certificate II in Civil Construction Core competency units changed from 15 units to 13 units Elective units changed from 4 units to 6 units BCC20207 Certificate II in Civil Construction (Bituminous Surfacing) Core competency units changed from 12 units to 11 units Elective units changed from 4 units to 5 units BCC30207 Certificate III in Civil Construction (Bituminous Surfacing) Core competency units changed from 15 units to 14 units Elective units changed from 10 units to 11 units BCC30307 Certificate III in Civil Construction (Bridge Construction and Maintenance) Core competency units changed from 18 units to 15 units Elective units changed from 7 units to 10 units BCC30407 Certificate III in Civil Construction (Foundation Work) Core competency units changed from 16 units to 14 Elective units changes from 9 units to 11 units BCC30507 Certificate III in Civil Construction (Pipe Laying) Core competency units changed from 19 units to 17 units Elective units changes from 6 units to 8 units BCC30607 Certificate III in Civil Construction (Plant Operations) Core competency units changed from 15 units to 14 units Elective units changes from 7-6 units to 7-8 units BCC30707 Certificate III in Civil Construction (Road Construction and Maintenance) Core competency units changed from 17 units to 16 units Elective units changed from 8 units to 9 units BCC30807 Certificate III in Civil Construction (Road Marking) Core competency units changed from 12 units to 11 units Elective units changed from 10 units to 11 units BCC30907 Certificate III in Civil Construction (Trenchless Technology) Core competency units changed from 20 units to 18 units Elective units changed from six units to 8 units BCC31007 Certificate III in Civil Construction (Tunnel Construction) Core competency units changed from 16 units to 15 units Elective units changes from 9 units to 10 units - BSZ units replaced with TAA units (Standard 7.3 in Assessment Guidelines)

History		
2	10/05/2005	Additional Volume containing Timber Bridge Construction and Maintenance
1	23/01/2004	Fully revised package replacing BCC98

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BCCRC2001B Repair potholes

Unit Descriptor

This unit covers the competency required to repair potholes using pavement materials, hot mix and cold mix preparations. It includes the minimum criteria for competency assessment.

The unit includes preparation, repair and clean up of the pavement and the wearing surface.

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 for work	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 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 Repair potholes	2.1 Water and loose material are removed from pothole or defective area
	2.2 Pothole/defect is trimmed to ensure mechanical interlock of repair material
	2.3 Binder is applied to provide adequate adhesion of repair material and waterproofing of repaired area to specifications
	2.4 Materials are placed and compacted to specification
	2.5 Repaired area is cleaned, excess loose materials are removed and sand or blinding material applied where specified

3	Clean up	3.1 Work area is cleared and materials disposed of or recycled in accordance with project environmental management plan
		3.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures

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 may be present for this particular unit:

Unit scope

- Types of pavements and wearing surfaces can include road, pedestrian, airfield, hardstand, carparks and bikeway pavements
- Types of pothole repair are to include but not be limited to subgrade, pavement sub-base, base and the wearing surface
- Materials may include but not be limited to granular pavement materials, water, pre-mix preparations, hot mix bituminous preparations, cold mix bituminous preparations sand and binding materials

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 underground, overhead services, other machines, personnel restricted access barriers, traffic control, working at heights, working in proximity to others, worksite visitors and the public

Safety (OH&S) (continued)	• 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 this unit are to include but may not be limited to organisational first aid requirements and evacuation
Environmental Requirements	• Environmental requirements are to include but are not 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 be 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	• State/Regulatory Authorities may include Federal, State and Local Authorities
Tools and equipment	• Tools and equipment are to include but not be limited to spades, shovels, rakes, quick-cut saws, jack hammers, vibrating plates and pedestrian rollers, crow bars, hand tampers, picks, emulsion/binder applicators and rammers
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
	• On site meeting processes may include notification/ scheduling (time, place, purpose), task discussions and local coordination of procedural and operational issues
Fault reporting	• Reporting of faults is to be in accordance with company's workplace procedures and may be written or verbal

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, material safety data sheets (MSDS), diagrams or sketches and maintenance contract documents
- Safe work procedures related to the repair of potholes and the environment
- Regulatory/legislative requirements pertaining to potholes and the environment
- Manufacturers' specifications and instructions
- Organisation work specifications and requirements.
- Instructions issued by authorised organisational or external personnel
- State road authority specifications
- Local government specifications

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
- Preparation, repair and clean up of a minimum of three potholes including at least two to subgrade level, using specified materials. The repairs are to be in accordance with the prescribed job 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
- Holistic assessment should be applied where appropriate to form a complete work function

Specific knowledge required to achieve the performance criteria

- A knowledge of:
  - The types and causes of potholes
  - Type, uses, limitations and safety requirement of pothole repair equipment and materials
  - Pothole repair techniques
  - Site and equipment safety requirements in accordance with organisational policy and procedures and the project safety plan
  - Site isolation and traffic control responsibilities and authorities
  - Work recording techniques including specifications, check-lists and drawings
  - Processes for the calculation of material requirements
  - Materials handling methods
  - Project quality requirements
  - Civil construction terminology
  - Processes for calculating material requirements and usage
  - Road maps and map reading techniques
  - JSA’s/Safe work method statement

The context of assessment

- The application of competency is to be assessed in the workplace or a realistically simulated workplace.
- Assessment is to occur under standard and authorised work practices, job specifications, risks and 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 Australian Standards, State Road Authority and/or local government requirements.

Methods of assessment

- 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 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

Specific resource requirements for this unit

The following resources should be made available:

- A range of potholes requiring repair
- Construction materials relevant to repairing potholes
- Hand and power tools, small plant and equipment appropriate to repairing potholes
- Suitable work area appropriate to the construction activity
- Enterprise work schedules and instructions and job specifications
- Relevant documentation including manufacturers' technical notes and enterprise documentation requirements.

… End …

BCCRC2002B Install signs

Unit Descriptor

This unit specifies the competency required to install signs as part of a civil construction operation or task. It includes the minimum criteria for competency assessment

The unit covers planning and preparation for work, the transporting of signs and materials to the site, the assembly and erection of the signs and the work finalisation activities

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 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 Permits and clearances are obtained in accordance with the requirements of local government and state regulatory authorities
	1.6 Environmental protection requirements are identified from the project environmental management plan, confirmed and applied to the allotted task

2	Transport sign and materials to the site	2.1	Location of the site is identified in accordance with job drawings and specifications
		2.2	Site access is arranged in accordance with approved practices
		2.3	Availability of loading/unloading equipment is determined
		2.4	Transporting of signage is arranged using the most appropriate method
		2.5	Signs are appropriately protected and packed securely for transport
		2.6	Signs and equipment are correctly loaded, transported and off-loaded at the site
3	Assemble sign	3.1	Sign components are laid out and checked prior to assembly
		3.2	Sign is assembled on or off site as appropriate prior to erection
4	Erect sign	4.1	Method of erection is determined in accordance with job requirements
		4.2	Support materials are prepared in accordance with the drawings and job requirements
		4.3	Fastenings are installed to manufacturers' recommendations
		4.4	Support structure is safely braced in accordance with the drawings and specifications
		4.5	Sign is erected efficiently and safely in accordance with the drawings and specifications
5	Clean up	5.1	Work area is cleared and materials disposed of or recycled in accordance with project environmental management plan
		5.2	Plant 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

- This unit applies to signs constructed and assembled either on or of site and erected on site
- Signs are to include permanent free standing and mountable types and may include temporary construction site signage
- Signage materials may include but not be limited to timber, glass, plastic, metal, polystyrene foam, vinyl and masonry

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 underground and overhead services, other machines, personnel, restricted access barriers, traffic control, working at heights, 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

Safety (OH&S) (continued)	• 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 this unit are to include but may not be limited to organisational first aid requirements and evacuation
Environmental Requirements	• Environmental requirements are to include but are not 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 be 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	• State/Regulatory Authorities may include Federal, State and Local Authorities
Materials	• Materials encountered during installation on site may include but are not limited to clays, silts, stone, gravel, mud, rock, sand, topsoil, concrete and bituminous mixes
	• Materials and components may include but not be limited to signage, brackets and fastenings, bolts, bearers and uprights, and footing materials including concrete and framework materials
Tools and equipment	• Tools and equipment are to include but not be limited to crow bars, picks, shovels, spanners, hammers, screwdrivers, saws, concrete mixers and ladders and may include mechanical plant, jack hammers, compaction equipment, explosive power tools, augers, post hole diggers, scaffolding, elevated work platforms and traffic control devices
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
	• On site meeting processes may include notification/ scheduling (time, place, purpose), task discussions and local coordination of procedural and operational issues

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, material safety data sheets (MSDS), diagrams or sketches
- Safe work procedures related to the installation of signs
- Regulatory/legislative requirements pertaining to sign installation and the environment
- 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
- The loading, transportation, unloading and installation of a minimum of three different free standing signs with at least one being a free standing sign requiring the installation of dual supports
- The safe and effective use of 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
  - The types, sizes and materials used for sign construction
  - The effect of air movement and wind on signs
  - Basic principles of soil technology for civil works
  - Techniques for the establishment of footings, bracing and supports for signs
  - Sign fixing and fastening options
  - Site and equipment safety requirements
  - Processes for interpreting engineering drawings
  - Site isolation and traffic control responsibilities and authorities
  - Project quality requirements
  - Civil construction terminology
  - JSA's/Safe work method statement

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated construction site
- 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
  - significant signs to be installed
  - realistic tasks covering the mandatory task requirements
  - materials relevant to undertaking installation of signs
  - hand and power tools, small plant and equipment appropriate to installing signs
  - drawings, specifications and manufacturers' work instructions

… End …

BCCRC2003B Install sub-soil drainage

Unit Descriptor

This unit specifies the competency required to install sub-soil drainage to drain water away from the road pavement. It includes the minimum criteria for competency assessment.

This unit includes the setting out of sub-soil drains, placement of bedding materials, installation of sub-soil drainage components and the monitoring of backfilling and compacting.

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 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	Set out and excavate trenches	2.1	Trench depths and grades are checked to ensure they conform with plans and specifications
		2.2	Trench location is set out and clearly marked
		2.3	Plant operator is communicated with to ensure correct excavation of trenches, placement of shoring and battering
		2.4	Trench depths and grades are checked for conformity to job requirements in accordance with plans and specifications
3	Install bedding materials	3.1	Bedding material type and depth is determined from plans and specifications
		3.2	Bedding materials are laid to specified depths and grades in accordance with job specifications
4	Install sub-soil drainage	4.1	Geo-textile is placed in accordance with specifications
		4.2	Drain sections and fittings are prepared to specifications
		4.3	Subsoil drain is laid to specifications
		4.4	Inspection opening and flush out points are provided in accordance with plans and specifications
		4.5	End structures/outlets/clean outs are fitted to subsoil drain and/or connected to culverts or storm water systems in accordance with plans and specifications
		4.6	Packing is installed and system prepared for backfilling in accordance with plans and specifications
		4.7	Backfill procedure is monitored to ensure work is completed to specification
5	Clean up	5.1	Work area is cleared and materials disposed of or recycled in accordance with project environmental management plan
		5.2	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 may be present for this particular unit:

Unit scope

- Types of sub-soil drainage systems are to include but not be limited to strip filter drains and perforated pipes with or without geo-textile fabric and may include granular materials enclosed in geo-textile fabric
- Bedding materials may include aggregate and sand
- Drain joining methods are to include but not be limited to sleeve joints with or without adhesives

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, restricted access barriers, traffic control, working at heights, 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, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials
- Emergency procedures related to this unit are to include but may not be limited to organisational first aid requirements and evacuation

Environmental Requirements	• Environmental requirements are to include but are not 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 be 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	• State/Regulatory Authorities may include Federal, State and Local Authorities
Tools and equipment	• Tools and equipment are to include but not be limited to levelling equipment, tape measures, shovels, hand saws, cutting knives, crow bars, hammers and may include trowels and formwork
Materials	• Materials are to include but not be limited to marking materials, strip filter drains, perforated pipes, geo-textile fabric, pipe jointing materials, backfill and bedding materials and may include marker posts, concrete and stones
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 • On site meeting processes may include notification/scheduling (time, place, purpose), task discussions and local coordination of procedural and operational issues

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, material safety data sheets (MSDS), diagrams or sketches
- Safe work procedures or equivalent related to the installation of sub-soil drainage 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 site safety plan, OH&S regulations and State/Territory legislation applicable to workplace operations
- Compliance with organisational policies and procedures including quality requirements
- Installation of a minimum of 100 metres of sub-soil drain in two separate locations, including end structures or outlets to design specifications
- Safe and effective operational use of tools, small 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
  - Sub-soil drainage systems and installation procedures
  - Concrete and concreting
  - Processes for interpreting engineering drawings
  - Equipment types, characteristics, technical capabilities and limitations
  - 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 statement

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 installation of sub-soil drainage systems
  - hand and power tools, plant and equipment appropriate to the installation of sub-soil drainage systems
  - specifications and work instructions

… End …

BCCRC2004B Install and maintain roadside fixtures

Unit Descriptor

This unit specifies the competency required to install and maintain roadside fixtures to design specifications. It includes the minimum criteria for competency assessment.

The unit includes planning and preparation of the work, the installation, repair and maintenance of guard rails, road fencing, guide posts and delineators and the maintenance of signs.

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 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 Install guide posts and delineators	2.1 Job is set out to alignment and locations according to job drawings and specifications
	2.2 Holes are excavated to specification requirements for poles
	2.3 Posts are installed to specifications
	2.4 Delineators are installed to specifications

3	Erect guardrails	3.1	Position of guardrails is set out according to job drawings and specifications
		3.2	Guardrails are finished according to specifications
		3.3	Guardrails are erected and/or installed to correct location according to specifications

4	Erect road fencing	4.1	Positions of fence line and post hole are set out and excavated to specifications
		4.2	Fence posts are installed plumb and to alignment and specifications
		4.3	Rails, cladding mesh or panels are fitted and fixed according to specifications
5	Repair roadside fixtures	5.1	Faults are identified and methods of repair are determined
		5.2	Repairs and routine maintenance are carried out to job specifications
6	Maintain signs	6.1	Signs and support structures are maintained to specifications
		6.2	Repairs are carried out to specifications
		6.3	Reflective patches are replaced where specified or in accordance with cyclic maintenance program
7	Clean up	7.1	Work area is cleared and materials disposed of or recycled in accordance with project environmental management plan
		7.2	Unused materials are stored or stacked according to requirements
		7.3	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

- Roadside fixtures are to include guard rails, guide posts, fencing and signs
- Roadside fencing is to include one of the following: chainwire, mesh, plain wire, barbwire or netting
- Guardrails are to include either rigid or flexible
- Guideposts are to include either timber, plastic or steel/ galvanised and include associated installation devices
- Signs may include but not be limited to traffic hazard signs, street signs and lights, speed signs, destination, information signs, tourist signs, supportive framework, poles or posts
- 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 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
- 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

Safety (OH&S) (continued)	• Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with underground and overhead services, other machines, personnel, restricted access barriers, traffic control, working at heights, 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 this unit are to include but may not be limited to organisational first aid requirements and evacuation
Environmental Requirements	• Environmental requirements are to include but are not 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 be 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	• State/Regulatory Authorities may Federal, State and Local Authorities
Materials	• Materials may include but not be limited to aluminium sections, steel sections, timber, concrete, brackets and fastenings, bolts, bearers and uprights, paints, fencing materials, reflective materials and footing materials
Tools and equipment	• Tools and equipment are to include but not be limited to crow bars, shovels, spanners, hammers, screwdrivers and may include mechanical plant, picks, saws, concrete mixers, ladders, restricted height scaffolding and EWPs

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
- On site meeting processes may include notification/ scheduling (time, place, purpose), task discussions and local coordination of procedural and operational issues

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, material safety data sheets (MSDS), diagrams or sketches
- Safe work procedures related to the installation and maintenance of roadside fixtures
- Regulatory/legislative requirements pertaining to installation and maintenance of roadside fixtures
- Manufacturer's 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
- As an individual or as a member of a two-three person team, undertake and complete the following:
  - Installation of 10 metres of guardrail and finish ends
  - Install two guide posts and delineators
  - Replace two signs, and
  - Erection of 10 metres of roadside fencing to specification
- The safe and effective use of 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
  - Roadside signage systems
  - Civil construction terminology
  - Types, characteristics and installation/ maintenance techniques of roadside and kerb fixtures
  - Types, characteristics and installation/ maintenance techniques of roadside fencing
  - Types, characteristics and installation/ maintenance techniques of roadside fixtures
  - Site and equipment safety requirements
  - Processes for interpreting engineering drawings
  - Site isolation and traffic control responsibilities and authorities
  - Project quality requirements
  - JSA's/Safe work method statement

The context of assessment

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

Specific key competencies, underpinning and employability skills required to achieve the performance criteria

- 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
  - roadside fixtures to be installed and maintained
  - realistic tasks covering the mandatory task requirements
  - materials relevant to undertaking installation and maintenance of roadside fixtures
  - tools, plant and equipment appropriate to the installation and maintenance of roadside fixtures
  - specifications and work instructions

… End …

BCCRC2005B Install utility poles

Unit Descriptor

This unit specifies the competency required to install utility poles used predominantly for lights and periodically for other services. It includes the minimum criteria for competency assessment.

The unit covers the planning and preparation of work and the installation of utility poles.

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 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 Erect utility poles	2.1 Job is set out to alignment and locations according to job drawings and specifications
	2.2 Holes are excavated to specification requirements for poles and/or bases
	2.3 Concrete base and holding down bolts are installed to specifications
	2.4 Poles are erected and attached to cast in base plumb to alignment and to specifications
	2.5 Poles are stabilised and/or back filled to specifications

3	Clean up	3.1 Work area is cleared and materials disposed of or recycled in accordance with project environmental management plan
		3.2 Unused materials are stored or stacked according to requirements
		3.3 Plant, tools and equipment 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

- Utility poles are to include but not be limited to roadside/street light poles and may include walkway light poles, traffic camera poles and services information poles
- Installation of utility poles may require working in conjunction with an electrician
- 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 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
- 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 underground and overhead services, other machines, personnel, restricted access barriers, traffic control, working at heights, 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 this unit are to include but may not be limited to organisational first aid requirements and evacuation
Environmental Requirements	• Environmental requirements are to include but are not 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 be 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 statutory/regulatory Government authorities, Local Government statutory authorities

Materials	• Materials may include but not be limited to aluminium sections, steel sections, concrete, brackets and fastenings, bolts, paints, utility poles, reflective materials and footing materials
Tools and equipment	• Tools and equipment are to include but not be limited to crow bars, picks, shovels, spanners, hammers, screwdrivers, concrete mixers and ladders and may include mechanical plant and EWPs
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 • On site meeting processes may include notification/ scheduling (time, place, purpose), task discussions and local coordination of procedural and operational issues
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, material safety data sheets (MSDS), diagrams or sketches • Safe work procedures related to the installation of utility poles • Regulatory/legislative requirements pertaining to installation of utility poles • 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
- As an individual or as a member of a two-three person team, undertake and complete the installation of two utility poles to specification
- The safe and effective use of 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
  - Utility pole types, fittings, materials and erection techniques
  - Civil construction terminology
  - Electrical safety
  - Plant/crane capabilities and limitations
  - Site and equipment safety requirements
  - Processes for interpreting engineering drawings
  - Site isolation and traffic control responsibilities and authorities
  - Project quality requirements
  - JSA’s/Safe work method statement

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated construction site
- 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
  - utility poles to be installed
  - realistic tasks covering the mandatory task requirements
  - materials relevant to undertaking installation of utility poles
  - tools, plant and equipment appropriate to the installation of utility poles
  - specifications and work instructions

… End …

BCCRC2006B Install pre-cast concrete crash barriers

Unit Descriptor

This unit specifies the competency required to install pre-cast concrete crash barriers used for civil construction projects and permanent roadside barriers. It includes the minimum criteria for competency assessment.

The unit includes planning and preparation of work and the installation of pre-cast concrete crash barriers.

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 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 Erect concrete crash barriers	2.1 Position of barriers is set out according to job drawings and specifications
	2.2 Barriers are erected and/or installed to correct location according to specifications
	2.3 Barriers are joined according to manufacturers' specifications
	2.4 Barriers are sealed against weather and finished according to specifications

3	Clean up	3.1 Work area is cleared and materials disposed of or recycled in accordance with project environmental management plan
		3.2 Unused materials are stored or stacked according to requirements
		3.3 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

- Concrete crash barriers are to include the erection of pre-cast concrete crash barrier units
- Concrete crash barriers are to include block outs for the provision of services
- Placement of concrete crash barriers will require the support of a crane and crane operator
- 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 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
- 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 underground and overhead services, other machines, personnel, restricted access barriers, traffic control, working at heights, 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 this unit are to include but may not be limited to emergency shutdown and stopping, organisational first aid requirements and evacuation
Environmental Requirements	• Environmental requirements are to include but are not 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 be 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	• State/Regulatory Authorities may Federal, State and Local Authorities

Materials	• Materials may include but not be limited to concrete, brackets and fastenings, bolts and concrete crash barriers
Tools and equipment	• Tools and equipment are to include but not be limited to crow bars, shovels, spanners, hammers, screwdrivers, concrete mixers, lifting equipment, cranes and may include mechanical plant
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 • On site meeting processes may include notification/ scheduling (time, place, purpose), task discussions and local coordination of procedural and operational issues
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, material safety data sheets (MSDS), diagrams or sketches • Safe work procedures related to the installation of pre-cast concrete crash barriers • Regulatory/legislative requirements pertaining to installation of pre-cast concrete crash barriers • 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
- As an individual or as a member of a two-three person team, undertake and complete the installation of a minimum of 50 metres of pre-cast concrete road barriers to specification
- The safe and effective use of 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
  - Types, characteristics and installation/ maintenance techniques of roadside and kerb fixtures
  - Civil construction terminology
  - Types, characteristics and installation techniques of concrete crash barriers
  - Site and equipment safety requirements
  - Processes for interpreting engineering drawings
  - Site isolation and traffic control responsibilities and authorities
  - Plant/crane capabilities and limitations
  - Safe lifting techniques
  - Project quality requirements
  - JSA's/Safe work method statement

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated construction site
- 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
  - pre-cast concrete crash barriers to be installed
  - realistic tasks covering the mandatory task requirements
  - materials relevant to undertaking installation of pre-cast concrete crash barriers
  - tools, plant and equipment appropriate to the installation of pre-cast concrete crash barriers
  - specifications and work instructions

… End …

BCCRC2007B Install noise barriers

Unit Descriptor

This unit specifies the competency required to install noise barriers for the reduction of road noise caused by traffic. It includes the minimum criteria for competency assessment.

The unit includes planning and preparation of work and the installation of barriers.

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 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 Erect noise barriers	2.1 Position of noise barrier line and post holes are set out and excavated to specifications
	2.2 Base section is installed to specifications where specified
	2.3 Uprights are installed plumb to alignment and specifications
	2.4 Rails, cladding or panels are fitted and fixed according to specifications

3	Clean up	3.1 Work area is cleared and materials disposed of or recycled in accordance with project environmental management plan
		3.2 Unused materials are stored or stacked according to requirements
		3.3 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

- Noise barriers may include steel, timber, pre-cast concrete, fibre cement panels, glass and perspex structures
- Construction of noise barriers may include pre-cast post and panel methods of erection
- 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 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
- 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 underground and overhead services, other machines, personnel, restricted access barriers, traffic control, working at heights, 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 this unit are to include but may not be limited to emergency shutdown and stopping, organisational first aid requirements and evacuation
Environmental Requirements	• Environmental requirements are to include but are not 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 be 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	• State/Regulatory Authorities may Federal, State and Local Authorities

Materials	• Materials may include but not be limited to aluminium sections, steel sections, timber, concrete, glass, perspex, fibre cement panel, masonry, brackets and fastenings, bolts, bearers and uprights, paints and footing materials
Tools and equipment	• Tools and equipment are to include but not be limited to crow bars, picks, shovels, spanners, hammers, screwdrivers, saws, concrete mixers and ladders and may include mechanical plant, EWP, cranes and lifting 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 • On site meeting processes may include notification/ scheduling (time, place, purpose), task discussions and local coordination of procedural and operational issues
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, material safety data sheets (MSDS), diagrams or sketches • Safe work procedures related to the installation of noise barriers • Regulatory/legislative requirements pertaining to installation of noise barriers • 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
- As an individual or as a member of a two-three person team, undertake and complete the installation of 50 metres of noise barriers
- The safe and effective use of 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
  - Civil construction terminology
  - Material/characteristics for noise barriers
  - Plant/crane capabilities and limitations
  - Safe lifting techniques
  - Types, characteristics and installation techniques of noise abatement systems
  - Site and equipment safety requirements
  - Processes for interpreting engineering drawings
  - Site isolation and traffic control responsibilities and authorities
  - Project quality requirements
  - JSA's/Safe work method statement

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated construction site
- 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
  - noise barriers to be installed
  - realistic tasks covering the mandatory task requirements
  - materials relevant to undertaking installation of noise barriers
  - tools, plant and equipment appropriate to the installation of noise barriers
  - specifications and work instructions

… End …

BCCRC2008B Lay pipes

Unit Descriptor

This unit specifies the competency required to install pipes and drainage pipe culverts that form part of the road drainage system. It includes the minimum criteria for competency assessment.

This unit includes the setting out of excavations/trenches, installing of bedding materials, lowering and positioning of pipes/pipe culverts, completion and backfilling.

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 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 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	Set out excavation	2.1	Location and depths of excavation are determined from job drawings
		2.2	Excavation location is set out and clearly marked
		2.3	Plant operator is advised of excavation requirements
		2.4	Excavation depths and grades are checked for conformity to job requirements in accordance with plans and specifications
		2.5	Foundation base is compacted and prepared for testing
3	Install bedding materials	3.1	Bedding material type and specification is determined from plans and drawings
		3.2	Bedding materials are laid and compacted to specified depths and grades in accordance with job specifications
4	Lay pipe	4.1	Lifting apparatus is selected, checked and attached to the pipe in preparation for lifting
		4.2	Pipe ends are prepared as specified
		4.3	Pipe ends are aligned and pushed home
		4.4	Pipe is checked for line and level
		4.5	Plant operator is advised of backfilling requirements and pipe is backfilled and compacted in accordance with specifications and to required finish level
		4.6	Inlets and outlets are finished in accordance with pipe/culvert design specifications
5	Clean up	5.1	Work area is cleared and materials disposed of or recycled in accordance with project environmental management plan
		5.2	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

- Pipes may include but not be limited to pipes used in the construction of road stormwater systems and pipes used in the construction of road culverts
- Pipes are to include one of reinforced concrete (RCP), steel, fibre reinforced concrete (FRC) and ribbed PVC
- Installation procedures are to include but not be limited to selecting size, type and material of pipes, bedding down pipes, positioning pipes, checking alignment, level and grade, fitting inlets and outlets and may include repair work where required
- Bedding materials may include aggregate and sand
- Pipe joining methods are to include one of sand band, rubber ring and mechanical jointed
- 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, buildings, parking sites and pedestrian areas
- Site locations are to include but not be limited to any ground conditions in urban and rural 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 underground and overhead services, other machines, personnel, restricted access barriers, 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 related to this unit are to include but may not be limited to emergency shutdown and stopping, 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 are not 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 be 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	• State/Regulatory Authorities may Federal, State and Local Authorities

Tools and equipment	• Tools and equipment are to include but not be limited to levelling equipment, shovels, lifting equipment, crow bars, hammers, grinders, jointing equipment and may include oxy-acetylene equipment, scaffolding and saws
Materials	• Materials are to include but not be limited to marking materials, pipes, concrete, backfill and bedding materials
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, material safety data sheets (MSDS), diagrams or sketches • Safe work procedures or equivalent related to the installation of pipes • Regulatory/legislative requirements pertaining to the installation of pipes • 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
- Installation of pipe on two different projects to a minimum of ten pipe joints listed in the Unit Scope. The pipes are to have a minimum diameter of DN225 mm
- 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
  - Pipes and installation procedures
  - Confined space entry requirements
  - Dewatering
  - Concrete and concrete fabrication
  - Steel and PVC pipes
  - 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
  - Pipe types and characteristics
  - Basic soil types and characteristics
  - Excavation/trench backfilling techniques
  - Processes for calculation of pipe grades and percentages
  - Sedimentation and erosion control
  - Excavation/trench safety
  - JSA's/Safe work method statement

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 installation of pipes
  - hand and power tools, plant and equipment appropriate to the installation of pipes
  - specifications and work instructions

… End …

BCCRC2009B Lay reinforced concrete box culverts

Unit Descriptor

This unit specifies the competency required to install reinforced concrete box culverts (RCBC) units that form part of the road drainage system. It includes the minimum criteria for competency assessment.

This unit includes the setting out of trenches, installing of bedding materials or constructing supporting slabs, lowering and positioning of culvert units legs down, backfilling and compaction.

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 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 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
	1.6 RCBC units are checked to ensure they conform with the specified requirements

2	Set out and excavation	2.1	Location and depths of excavation are determined from job drawings
		2.2	Excavation location is set out and clearly marked
		2.3	Plant operator is advised of excavation requirements
		2.4	Excavation depths and grades are checked to conform with plans and specifications requirements
		2.5	Foundation base is compacted and prepared for testing
3	Construct concrete base	3.1	Formwork is set out and constructed to required dimensions and specifications
		3.2	Steel reinforcing is placed to specifications
		3.3	Recesses in slab are formed as specified
		3.4	Hold down anchors are connected and tightened to specified requirements
		3.5	Concrete is placed, compacted, finished and cured to specified requirements
4	Lay culvert units	4.1	Continuous mortar bed is placed to support legs as specified
		4.2	RCBC units are lowered and positioned to line and level on supporting slab
		4.3	Hold down anchors are connected to RCBC units to specification
		4.4	Joints between RCBC units are finished to specification
		4.5	Space between legs of multiple culverts is infilled to specification
		4.6	Spanning slabs where specified for multiple culverts are installed to specification
		4.7	Lifting lugs are cut off and treated to specification
		4.8	Inlet and outlet of culvert is finished to specification
		4.9	Plant operator is advised of compaction and backfill requirements and culvert is backfilled to specification and required finish level
5	Clean up	5.1	Work area is cleared and materials disposed of or recycled in accordance with project environmental management plan
		5.2	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

- RCBC culverts (legs down) are to include but not be limited to those units used in the construction of culverts under roads
- Pipe joining methods are to include but not be limited to cement render and jointing tape and may include other jointing materials
- 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, buildings, parking sites and pedestrian areas
- Site locations are to include but not be limited to any ground conditions in urban and rural 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

Safety (OH&S)	• Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with underground and overhead services, other machines, personnel, restricted access barriers, traffic control, working at heights, 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 this unit are to include but may not be limited to emergency shutdown and stopping, organisational first aid requirements and evacuation
Environmental Requirements	• Environmental requirements are to include but are not 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 be 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	• State/Regulatory Authorities may Federal, State and Local Authorities

Tools and equipment	• Tools and equipment are to include but not be limited to levelling equipment, shovels, lifting equipment, crow bars, hammers, grinders, jointing equipment and may include oxy-acetylene equipment, scaffolding and saws
Materials	• Materials are to include but not be limited to marking materials, RCBC units, jointing materials, concrete, backfill and bedding materials
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, material safety data sheets (MSDS) and diagrams or sketches • Safe work procedures or equivalent related to the installation of RCBC culverts • 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
- Installation of thirty RCBC culvert units to design specifications
- Construct a minimum of two RCBC support slabs
- 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
  - RCBC culverts and installation procedures
  - Confined space entry requirements
  - Dewatering
  - Concrete and concrete fabrication
  - Processes for interpreting engineering drawings
  - Equipment types, characteristics, technical capabilities and limitations
  - 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 statement

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 installation of RCBC culverts
  - hand and power tools, plant or crane and equipment appropriate to the installation of RCBC culverts
  - specifications and work instructions

… End …

BCCRC3001B Maintain drainage systems

Unit Descriptor

This unit specifies the competency required to maintain drainage systems. It includes the minimum criteria for competency assessment.

The unit covers planning and preparation for work, the maintenance of draining system components, excavation for drainage repairs, repair of drainage systems, the inspection and repair of culverts, the maintenance of open drains and work finalisation activities.

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 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 Temporary stormwater diversion requirement is determined in accordance with existing drainage outlets, site requirements and planned schedule of construction
	1.6 Environmental protection requirements are identified from the project environmental management plan, confirmed and applied to the allotted task

2	Maintain drainage components	2.1	Drainage components are regularly inspected and maintained as per asset requirements and faults are rectified or reported
		2.2	Drainage components are repaired as per initial design specifications and/or engineer's redesign
		2.3	Drainage system is flushed out to clear blockages and provide clear flow of fluids
3	Excavate and repair drainage systems	3.1	Location of repairs is determined from works order and confirmed on site
		3.2	Excavation is carried out in accordance with task specification and site safety plan
		3.3	Pipes and accessories are prepared in accordance with designed method of repair
		3.4	Pipe sections are replaced, joined and aligned to line and specified fall
		3.5	Packing is installed to maintain alignment of pipeline
		3.6	Joints are made to pipe section junctions in accordance with specification requirements
		3.7	Required section is backfilled in accordance with specifications
		3.8	Inspection and testing of repaired drainage system are conducted to determine effectiveness of repairs in accordance with specifications
4	Maintain open drains	4.1	Open drains are maintained to correct line and fall to specifications
		4.2	Surfaces adjoining open drains are finished allowing ease of run off in accordance with specifications
		4.3	Adequate erosion control methods are undertaken in compliance with specifications
5	Inspect, clear and repair culverts	5.1	Faults in culverts are identified and appropriate repair requirements and specifications are determined
		5.2	Sections are repaired/replaced and correctly jointed to levels and design specifications
		5.3	Inlets and outlets are repaired/maintained in accordance with culvert design and specifications
		5.4	Backfill is compacted to specifications

6	Clean up	6.1 Work area is cleared and materials disposed of or recycled in accordance with project environmental management plan
		6.2 Unused materials are sealed and stored/packed in accordance with standard material handling practices and techniques
		6.3 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

- Pipes for drainage may include but not be limited to reinforced concrete, rigid PVC, flexible PVC, steel box culverts, clay pipes, fibre reinforced cement (FRC)
- Methods of joining pipes may include but not be limited to sleeve joints with adhesives, socket and spigot with adhesives, socket and spigot with rubber ring, butt joint with outside band, butt joint with inside rendering, flanged and bolted, and welded connections
- Culverts may be constructed of reinforced concrete pipe sections, reinforced concrete box sections, steel pipe, FRC and PVC
- Drainage components may include gully/silt traps, inspection openings, manholes, benches, lining, step irons, lids, headstones, backstones, grates, kerbs, gutters, inlets and outlets, gabion baskets, rip rap, wingwalls, endwalls, aprons, reno-mattresses, geofabric, drain blocks, check dams, sediment and silt control

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, restricted access barriers, 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 related to this unit are to include but may not be limited to organisational first aid requirements and evacuation
Environmental Requirements	• Environmental 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
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 levelling equipment, tape measures, shovels, hand saws, cutting knives, crow bars, hammers and may include trowels and formwork

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
- On site meeting processes may include notification/ scheduling (time, place, purpose), task discussions and local coordination of procedural and operational issues

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, material safety data sheets (MSDS) and diagrams or sketches
- Safe work procedures related to drainage systems maintenance
- Regulatory/legislative requirements pertaining to drainage systems maintenance
- 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
- The conduct of drainage systems maintenance is to include a minimum of:
  - One task requiring the preparation for, excavation and replacement of systems components
  - One task requiring the repair of components and the flushing of the system; and
  - One task requiring the inspection, clearance and repair of a culvert
- 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
  - Drainage types, characteristics, advantages and limitations
  - Basic flow theory
  - Basic principles of soil technology for civil works
  - Techniques for locating faults in drainage systems
  - Methods of joining pipes
  - Excavation techniques
  - Site and equipment safety requirements
  - Processes for interpreting engineering drawings and sketches
  - Site isolation and traffic control responsibilities and authorities
  - Materials Safety Data Sheets and materials handling methods
  - Project quality requirements
  - Civil construction terminology
  - Sedimentation and erosion control
  - JSA's/Safe work method statement

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated construction site
- 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
  - drainage system materials and maintenance tools
  - realistic tasks covering the mandatory task requirements
  - specifications and work instructions

… End …

BCCRC3002B Place and form concrete kerb, channel and fixtures

Unit Descriptor

This unit specifies the competency required to place and form concrete kerb, channel and fixtures. It includes the minimum criteria for competency assessment.

The unit covers planning and preparation for work, the set-out, installation of service conduits, hand forming, the operation of form machines, the pouring of concrete, installation of precast concrete units, and the finishing of kerb, channel and fixtures.

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 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 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	Set out and prepare for construction/ installation	2.1	Existing services are identified and protected to prevent damage
		2.2	Location of kerb, channel and/or fixtures is set out to dimensions from drawings and specifications or to pre-set pegs
		2.3	Driveways and other inverts are set out to drawings and specifications
		2.4	Grades are checked to ensure correct fall
		2.5	Formwork is constructed and checked to ensure compliance with specifications
		2.6	Services and conduit preparation are completed in accordance with relevant standards and procedures
3	Form kerb and barrier strips	3.1	Vertical and horizontal alignment is maintained during concrete placement
		3.2	Concrete is placed accurately to string line
		3.3	Concrete is maintained to specified standard
		3.4	Mortar is mixed and applied at quality and quantity to achieve specified finish
4	Pour concrete to installed formwork	4.1	Concrete is placed and compacted into formwork to specifications
		4.2	Surface is finished to alignment specifications
		4.3	Face formwork is removed without damage to concrete following concrete set
5	Finish kerbs, channels and fixtures	5.1	Job is finished to shape in accordance with specifications or to the relevant Australian Standard
		5.2	Concrete is finished to specified quality and texture
		5.3	Expansion, construction and dowel joints are positioned to specification
		5.4	Finished work is cured and protected during this process
6	Install precast concrete units	6.1	Base section is prepared and finished to specifications for precast units installation
		6.2	Precast concrete units are installed and joined in accordance with manufacturers' and job specifications

1	Repair kerb, gutters and median, barrier strips	7.1 Damaged areas are identified, repair requirements assessed and damaged section carefully removed or prepared
		7.2 Formwork or slip form machine is set up and used to replace removed section
		7.3 Concrete is placed accurately to correct alignment using concrete to the specified mix
		7.4 Concrete is finished to the specification matching shapes of kerb or gutter in place
		7.5 The area is cleared, backfilled, and finished to specifications
2	Clean up	8.1 Work area is cleared and materials disposed of or recycled in accordance with project environmental management plan
		8.2 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

- The work will be carried out largely on formed/prepared roads, access roads, pads, car parks, estates
- This unit covers kerbs, channels and fixtures which include gutters, median and barrier strips, driveways and inverts
- Services and conduits may include installation of those for power, gas, water, telecommunications and sub-soil drainage as specified in State/Territory and local government requirements
- Tools are to include shovels, rakes, trowels, forming tools, string lines and levels, concrete mixers, barrows, form machine and may include dumpy and laser levels
- Drawings may include but not be limited to site plans, cross-sectional plans and structural detail for kerbs, channels and fixtures

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, restricted access barriers, 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 related to this unit are to include but may not be limited to organisational first aid requirements and evacuation
Environmental Requirements	• Environmental 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
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
Materials	• Materials may include but are not limited to concrete and concrete reinforcing materials, formwork materials and conduit and tubing
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 • On site meeting processes may include notification/ scheduling (time, place, purpose), task discussions and local coordination of procedural and operational issues
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, material safety data sheets (MSDS) and diagrams or sketches • Safe work procedures related to forming operations • Regulatory/legislative requirements pertaining to forming 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
- The conduct of forming operations which are to include a minimum of the set-out, preparation for, forming and finishing of:
  - not less than 20 m straight line, and
  - a curved structure, and
  - a variable radius structure, and
  - a driveway and drainage structure
- 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
  - Curbing profiles
  - Channelling and fixtures profiles and structural features
  - Concrete properties including the effects of weathering
  - Concreting and related formwork techniques
  - Concrete curing techniques
  - Types, characteristics, uses and limitations of forming machines
  - The types of services and related conduit requirements
  - Site and equipment safety requirements
  - Processes for interpreting engineering drawings and sketches
  - Site isolation and traffic control responsibilities and authorities
  - Materials Safety Data Sheets and materials handling methods
  - Project quality requirements
  - Civil construction terminology
  - Set out techniques
  - JSA's/Safe work method statement

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated construction site
- 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
  - relevant forming equipment, materials and tools
  - realistic tasks covering the mandatory task requirements
  - specifications and work instructions

… End …

BCCRC3003B Lay pavers

Unit Descriptor

This unit specifies the competency required to lay pavers. It includes the minimum criteria for competency assessment.

The unit covers planning and preparation for work, the preparation of the base or substrate, the cutting and laying of pavers, including the finishing and work finalisation activities.

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 for work	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 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
	1.6 Area and location of paving are identified from job drawings
	1.7 Paving requirements are calculated and the material selected to meet required finish of surface and pattern

2	Prepare to lay paving	2.1	Location and shape of paving area is set out to dimensions from job drawings
		2.2	Excavation is carried out to specified depth, allowing for base and thickness of unit
		2.3	Drainage pipes are positioned in sub-soil to local regulations
		2.4	Sub-soil and footing are prepared in accordance with specifications
		2.5	Base material is selected according to manufacturers' specifications for identified substrate
		2.6	Where paving is to be bonded to the substrate, the surface is cleaned free of loose material and dust
3	Lay pavers	3.1	Edge boards are positioned to set out and specifications
		3.2	Sand and aggregate are spread and compacted to specifications
		3.3	Where drainage is necessary, paving surface is graded to fall evenly without ponding to outlets or surface run off system provided
		3.4	Mortar for masonry paving is mixed to specifications
		3.5	Pavers are cut to form edges ensuring fit and the minimum wastage of material
		3.6	Paving units are laid to designed pattern and specifications
		3.7	Edges are completed to specification
		3.8	Work is completed including compaction, mortaring and sweeping to specifications
		3.9	Finished level is maintained across junctions between different finishes
4	Clean up	4.1	Paving is finished clean, on completion, to requirements or specifications
		4.2	Work area is cleared and materials disposed of or recycled in accordance with project environmental management plan
		4.3	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

- Pavers may include but are not limited to brick, stone, ceramic, concrete and quarry
- Pavers may be laid on footpaths, roads, cycle paths, malls, podiums, sports arenas, platforms and recreational areas
- Drawings may include site plans, cross sectional plans and laying patterns

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 underground and overhead services, other machines, personnel, restricted access barriers, traffic control, 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 this unit are to include but may not be limited to organisational first aid requirements and evacuation

Environmental Requirements	• Environmental requirements are to include but are not 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 be 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	• State/Regulatory Authorities may Federal, State and Local Authorities
Materials	• Materials may include but are not limited to pavers, base material, sand, concrete, mortar and formwork materials
Tools	• Tools may include hand tools, spreader bars, spirit/string levels, laser levels, trowels, rubber mallets, hammers, balustrades, brick saws, grinders, plate compactors and concrete mixers
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 • On site meeting processes may include notification/ scheduling (time, place, purpose), task discussions and local coordination of procedural and operational issues
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, material safety data sheets (MSDS) and diagrams or sketches • Safe work procedures related to the laying of pavers • Regulatory/legislative requirements pertaining to the laying of pavers • 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
- The laying of pavers (preparation, laying and finishing) which is to include a minimum of three separate jobs and cover a minimum of:
  - Two different paver shapes
  - Two different laying patterns
  - One with curved edges
  - One being a large area, and
  - One being in a small restrictive space
- 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
  - Basic principles of soil technology for civil works
  - Types, characteristics, uses and limitations of pavers
  - Techniques for preparing foundations and beddings for pavers
  - Foundation formwork techniques
  - Techniques for cutting and forming pavers
  - Techniques and patterns for laying pavers
  - Paver compaction techniques, equipment and tools
  - Finishing and edging techniques and processes
  - Site and equipment safety requirements
  - Processes for interpreting engineering drawings and sketches
  - 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 statement

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated construction site
- 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
  - pavers and paving equipment and tools
  - realistic tasks covering the mandatory task requirements
  - specifications and work instructions

… End …

BCCRC3004B Maintain sealed roads

Unit Descriptor

This unit specifies the competency required to maintain sealed roads.

Maintenance includes the manual functions of a maintenance crew or team and the coordination of plant operator support.

The functions include the preparation and planning of work, coordination of resources and functions to repair and maintain pavement failures, edges and surface cracks. Curb and drainage system maintenance are not included.

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 work	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 Store, prepare and transport materials	2.1 Materials are stored and maintained in quantity and specified condition for requirements of regular maintenance program
	2.2 Materials are prepared in accordance with job requirements and specified mix
	2.3 Materials are loaded, transported and unloaded in a safe manner to minimise spillage and waste

3	Repair damaged or wearing surface and edges	3.1	Faults in roads and pavements are identified and appropriate repair method applied
		3.2	Water and loose material are removed from damaged section
		3.3	Section is trimmed to provide adequate support to repair material
		3.4	Base and sides of sections are prepared to ensure bonding of repair material in accordance with specification
		3.5	Material is placed and compacted to specifications maintaining alignment of surface
4	Repair pavement failures	4.1	Water and loose material is removed
		4.2	Failed area is excavated to create a firm base
		4.3	Edges are trimmed to ensure adequate adhesion of repair material
		4.4	Material is placed and compacted to specification maintaining alignment of surface
5	Repair and seal surface cracks	5.1	Cracks and surface drainage conditions are identified to determine appropriate repair and sealing process
		5.2	Cracks are cleared of foreign materials
		5.3	Sealant is applied to cracks and finished in accordance with road maintenance specifications.
6	Clean up	6.1	Work area is cleared and materials disposed of or recycled in accordance with project environmental management plan
		6.2	Storm water systems are protected by clearing debris and loose material
		6.3	Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures

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

- Types of sealed roads are those sealed by bituminous product
- Sealed road maintenance is to include the repair and maintenance of pavement failures, edges and surface cracks
- The Sealed Road Maintenance Plan for this unit is prepared by other than the learner
- The unit requires the learner to coordinate the activities of plant operations but does not require the operation of plant
- Plant to be coordinated in support of maintenance may include rollers, graders, skid-steer, backhoes, excavators, front-end loaders, tip-trucks, water carts, road maintenance unit and a road patching truck

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 underground and overhead services, other machines, personnel, restricted access barriers, traffic control, 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

Safety (OH&S) (continued)	• 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 this unit are to include but may not be limited to emergency shutdown and stopping, extinguishing fires, organisational first aid requirements and evacuation
Environmental Requirements	• Environmental requirements are to include but are not 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 be 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	• State/Regulatory Authorities may Federal, State and Local Authorities
Materials	• Materials may include but not be limited to pavement materials, water, pre-mix preparations, hot mix preparations, cold mix preparations, emulsion, crack sealants and concreting materials
Tools and equipment	• Tools and equipment are to include but not be limited to spades, shovels, rakes, quick-cut saws, jack hammer, vibrating plates, pedestrian rollers, crowbars and handsprayers
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
	• On site meeting processes may include notification/ scheduling (time, place, purpose), task discussions and local coordination of procedural and operational issues
Fault reporting	• Reporting of faults is to be in accordance with company's workplace procedures and may be written or verbal

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, material safety data sheets (MSDS) and diagrams or sketches
- Safe work procedures related to the maintenance of sealed roads
- Regulatory/legislative requirements pertaining to the maintenance of sealed roads
- Manufacturers' specifications and instructions
- Organisation work specifications and requirements.
- Instructions issued by authorised organisational or external personnel
- Relevant Australian Standards
- State road authority specifications
- Local government specifications

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
- Maintain a sealed road including
  - the dig-out and repair of a failed pavement
  - the repair of damaged or wearing surface and edges, and
  - the repair of seal surface cracks
- Safe and effective operational use of 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 isolation and traffic control responsibilities and authorities
  - Type, uses, limitations and safety requirement of road maintenance repair equipment
  - Road maintenance and repair materials
  - Road maintenance repair techniques
  - Work recording techniques including specifications and check-lists
  - Setting out procedures
  - Processes for the calculation of material requirements
  - Materials handling methods
  - Project quality requirements
  - Site and equipment safety requirements including appropriate state or territory legislation, regulations and codes
  - Civil construction terminology
  - Road maintenance programs
  - JSA's/Safe work method statement

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:
  - realistic tasks covering the mandatory task requirements
  - construction materials relevant to maintaining sealed roads
  - access to support plant and operations
  - traffic management devices
  - enterprise work schedules and instructions and job specifications
  - relevant documentation including manufacturers' technical notes and enterprise documentation requirements

… End …

BCCRC3005B Conduct road construction paver screeding operations

Unit Descriptor

This unit specifies the competency required to operate a paver screed to spread and compact aggregate, gravel or other materials to a specified line and level for surfacing of pavement. It includes the minimum criteria for competency assessment.

This unit includes the operation of the screed, use of electronic levelling equipment and checking of the base for thickness prior to compacting.

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 are obtained, confirmed and applied to the allocated task
	1.2 Safety requirements are obtained from the site safety plan and organisational policies and procedures, confirmed and applied to the allocated 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 Set up paver screed	2.1 Equipment is set to the correct levels to lay material to specifications
	2.2 Electronic levelling equipment is set to check level
	2.3 Screed controls are set for correct operation

3	Operate paver screed	3.1	Site hazards associated with road construction paver screeding operations are identified and safe operating techniques are used to minimise risk
		3.2	Screed is adjusted during operation to ensure work remains within specifications
		3.3	Faults in the mat are identified and correct action is undertaken to rectify faults
		3.4	Work of paver attendants and rollers is monitored to ensure they are keeping up with the paver
		3.5	Communication is maintained with paver operator monitoring the progress of the job
		3.6	Paver operator is notified of problems with the base
		3.7	Operator maintenance is performed in accordance with manufacturers' or company instructions
4	Clean up	4.1	Work area is cleared and materials disposed of or recycled in accordance with the project environmental management plan
		4.2	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

- Setting up the screed is to include but not be limited to use of boards to correct the height for transverse joint construction, setting up string lines and sensors to job specifications, adjusting machine attachments to string line, preparing and setting a screed to achieve a specified level and texture of base
- Paver screed operations are to include but not be limited to uniform flow of material, electronic/manual levelling, augering, width of the screed, adjustment of the crown, transverse and longitudinal joints, manual screed level control and automatic screed level control
- Automatic screed levelling devices may include but not be limited to grade sensors/averaging sensors, matching shoes, levelling beams, sonic and laser
- Surfaces may include but not be limited to formed/prepared roads and pads
- Screeding tasks are to include but not be limited to spreading materials, mixing and spreading granular materials, it may include spreading concrete materials, mixing and spreading stabilised materials and spreading bituminous materials
- 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 roads, highways, freeways, car parks, airport runways, container yards, hard stands, footpaths and bikeways

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 high voltage power lines, uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, restricted access barriers, traffic control, working at heights, 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 hazards associated with hot bitumen products, stabilised materials, uneven/unstable terrain, trees, fires, overhead and underground services, bridges, building, excavations, traffic, embankments, cuttings, structures and hazardous materials • Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping, extinguishing fires and may include organisational first aid requirements and evacuation
Environmental Requirements	• Environmental requirements are to include but are not 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 be 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 shovels, measuring tapes, depth gauges, standard tool kits, string lines, thermometers and straight edges
Materials	• Materials are to include but not limited to granular materials and may include aggregates, gravel, stabilised materials and bituminous materials
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, material safety data sheets (MSDS) and diagrams or sketches • Safe work procedures or equivalent related to paver screeding operations • Regulatory/legislative requirements pertaining to paver screeding 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
- Conduct of road construction screed paving operations are to be performed on a minimum of two different material types/surface types and include the mandatory tasks of:
  - Three longitudinal joints (of at least 100m) to be constructed to required thickness, uniformity, line and level, on both matching and unsupported edge in accordance with project specifications and/or work instructions;
  - Six transverse joints to be constructed to required thickness, uniformity, line and level, on both matching and unsupported edge in accordance with project specifications and/or work instructions;
  - Five sections of straight paving (one of at least 100 linear metres) to required thickness, uniformity, line and level, on both matching and unsupported edge in accordance with project specifications and/or work instructions; and
  - Three intersections to required thickness, uniformity, line and level, on both the matching and unsupported edge in accordance with project specifications and/or work instructions
- One of the above tasks to include at least one mode of automatic screed levelling devices
- 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
  - Paver screed operations
  - Aggregate and gravel types and sizes
  - Longitudinal and transverse joints
  - Equipment types, characteristics, technical capabilities and limitations
  - Operational, maintenance and basic diagnostic procedures
  - Site isolation and traffic control responsibilities and authorities
  - Processes for the calculation of material uniformity and travel speed
  - Materials Safety Data Sheets and materials handling methods
  - Quality requirements
  - Civil Construction terminology
  - Safe operating techniques in all terrain
  - JSA's/Safe work method statement

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 paver screeding operations
  - hand and power tools, plant and equipment appropriate to paver screeding operations
  - specifications and work instructions

… End …

BCCRC3006B Conduct earthworks

Unit Descriptor

This unit specifies the competency required to conduct the construction of the earthworks associated with road projects. It includes the minimum criteria for competency assessment.

This unit includes the planning and preparation, set out of offset/recovery pegs, the support of plant in the formation and compaction of the earthworks and the determination of resources throughout the activity.

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 work	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 Compaction standards and testing requirements are correctly identified for job from specification/briefs
	1.6 Environmental protection requirements are identified from the project environmental management plan, confirmed and applied to the allotted task
2 Set out sub-grade	2.1 Job is set out to plan from survey controls
	2.2 Profiles to line and level are established as specified

3	Form earthworks	3.1	Plant operators are informed of job requirements
		3.2	Earthworks are assessed to ensure that the specified height with allowance for the pavement courses and the overall dimensions are achieved
		3.3	Uniform layer thickness and moisture content are monitored to ensure consistency with specifications
		3.4	Stabilisation of existing material is monitored
		3.5	Surface area protrusions are removed to prevent damage to geo-synthetic material
		3.6	Geo-synthetic, where used, is placed to manufacturers' specifications
4	Place and compact sub-grade replacement materials	4.1	Unsuitable material is identified, removed and stored separately
		4.2	Imported replacement/stabilized material supplied is placed as specified
		4.3	Roller operators are clearly informed of the required number of passes
		4.4	Compaction process is assessed to ensure the nominated number of passes are made to achieve uniform compaction across the subgrade
5	Clean up	5.1	Work area is cleared and materials disposed of or recycled in accordance with project environmental management plan
		5.2	Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures

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

- Construction of earthworks is to include cut and fill with existing material, the forming of existing material, the replacement of unsuitable materials, the stabilising of unsuitable materials, and the use of geo-synthetic material
- Plant to be directed in support of road earthworks construction may include rollers, graders, skid-steers, dozers, scrapers, backhoes, excavators, front-end loaders, tip-trucks and water carts
- Earthworks may include but not be limited to haul roads, formed/prepared roads, access roads, pads and dam walls
- Drawings are to include but not be limited to survey control line drawings, type cross sectional drawings, working plans, annotated cross sections and drainage cross sections

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 underground and overhead services, other machines, personnel, restricted access barriers, traffic control, 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

Safety (OH&S) (continued)	• 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 this unit are to include but may not be limited to emergency shutdown and stopping, organisational first aid requirements and evacuation
Environmental Requirements	• Environmental requirements are to include but are not 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 be 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	• State/Regulatory Authorities may include Federal, State and Local Authorities
Tools and Equipment	• Tools and equipment are to include but not be limited to levelling equipment, tape measure, string lines and may include shovels, hand saws, crow bars and hammers
Materials	• Materials may include but not be limited soils, granular materials, stabilising materials, geofabrics and water
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
	• On site meeting processes may include notification/scheduling (time, place, purpose), task discussions and local coordination of procedural and operational issues
Fault reporting	• Reporting of faults is to be in accordance with company's workplace procedures and may be written or verbal

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, material safety data sheets (MSDS) and diagrams or sketches
- Safe work procedures related to conducting earthworks
- Regulatory/legislative requirements pertaining to conducting earthworks
- Manufacturers' specifications and instructions
- Organisation work specifications and requirements
- Instructions issued by authorised organisational or external personnel
- Relevant Australian Standards
- State road authority specifications
- Local government specifications

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
- Completion of the earthworks construction is to include as a minimum:
  - set out a section of earthworks with a full cut, fill and curve
  - assessment of earthworks formation including cuts and fills
  - placement and compaction of sub-grade replacement materials

  with the finished works meeting required dimensions, heights and specifications
- Safe and effective operational use of tools, small 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:
  - Type, uses and limitations of plant used for earthworks construction
  - Earthworks construction and sub grade preparation techniques
  - Work recording techniques including specifications, check-lists and drawings
  - Setting out procedures
  - Processes for the calculation of material requirements
  - Compaction and stabilisation techniques/methods
  - Plan reading and interpretation
  - Site and equipment safety requirements
  - Site isolation and traffic control responsibilities and authorities
  - Responsibilities under the Environmental Management Plan
  - Materials handling methods
  - Project quality requirements
  - Civil construction terminology
  - JSA's/Safe work method statement

The context of assessment

- The application of competency is to be assessed in the workplace or a realistically simulated workplace which satisfies
- Standard and authorised work practices, job specifications, risks and 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 Australian Standards, State Road Authority and/or local government 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:

- Realistic tasks covering the mandatory task requirements
- Construction materials relevant to earthworks construction and preparing sub-grade
- Levelling equipment, hand and power tools, plant and equipment appropriate to preparing sub-grade
- Suitable work area appropriate to the construction activity
- Enterprise work schedules, instructions, plans and job specifications

… End …

BCCRC3007B Conduct road pavement construction

Unit Descriptor

This unit specifies the competency required to conduct the construction of a road pavement. It includes the minimum criteria for competency assessment.

The competency includes the set-out, the direction of plant for the placement, spreading, compaction and trimming of granular pavement materials and the post operation clean up.

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 work	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 Set out sub-base/base	2.1 Job is set out to plan from survey controls
	2.2 Offset pegs/profiles are established to line and level as specified
3 Place and spread materials	3.1 Layer depth for spreading materials is determined and plant operators are informed accordingly
	3.2 Trucks are directed to correct location and the method of dispatching for load placement is specified
	3.3 Moisture content of materials is checked and

uniformly adjusted

3.4 Pavement laying is assessed to ensure that the specified heights and the overall dimensions are achieved

4	Compact materials	4.1	Roller operators are correctly informed of the required number of passes
		4.2	Compaction process is assessed to ensure the nominated number of passes are made to achieve uniform compaction across the pavement
		4.3	Pavement trimming is checked to ensure specified tolerances are achieved
5	Clean up	5.1	Work area is cleared and materials disposed of or recycled in accordance with project environmental management plan
		5.2	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

- The road pavement includes all the materials above the sub-grade and below the wearing surface. It may also be known as sub-base and/or base structure
- Construction of road pavement is to include the sub-base structure, base structure, surface finish and the repair of surface defects but it does not include the wearing surface
- Plant to be directed in support of construction may include rollers, graders, skid-steers, backhoes, paver, excavators, front-end loaders, tip-trucks and water carts
- Blending of materials may occur on site and is commonly performed by the grader
- Line and level for paver control is established including but not limited to use of a string line
- Surfaces may include but not be limited to haul roads, formed/prepared roads, access roads, pads and dam walls
- Drawings are to include but not be limited to survey and control line drawings, type cross sectional drawings and working plans

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

Safety (OH&S) continued)	• Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with underground and overhead services, other machines, personnel, restricted access barriers, traffic control, 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 related to this unit are to include but may not be limited to emergency shutdown and stopping, organisational first aid requirements and evacuation
Environmental Requirements	• Environmental requirements are to include but are not 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 be 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	• State/Regulatory Authorities may include Federal, State and Local Authorities
Tools and Equipment	• Tools and equipment are to include but not be limited to shovels, levelling equipment, string lines, crowbars, tape measures, handsaws, cutting knives, hammers and may include trowels and formwork
Materials	• Materials may include gravel, rock, sand, blended materials, stabilised materials and other quarried product which meet the required specifications
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
	• On site meeting processes may include notification/ scheduling (time, place, purpose), task discussions and local coordination of procedural and operational issues

Fault reporting

- Reporting of faults is to be in accordance with company's workplace procedures and may be written or verbal

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, material safety data sheets (MSDS) and diagrams or sketches
- Safe work procedures related to the construction of road pavement
- Regulatory/legislative requirements pertaining to the construction of road pavement structures
- Manufacturer's specifications and instructions
- Organisation work specifications and requirements.
- Instructions issued by authorised organisational or external personnel
- Relevant Australian Standards
- State road authority specifications
- Local government specifications

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
- Completion of the construction of a road pavement including:
  - set out of base
  - placement and spreading of materials
  - compaction of materials

  with the results gaining acceptance as being 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:
  - Basic pavement materials types and their characteristics
  - Type, uses, limitations and safety requirement of road pavement structure construction equipment
  - Setting out procedures
  - Compaction methods
  - Site and equipment safety requirements including appropriate state or territory legislation, regulations and codes
  - Site isolation and traffic control responsibilities and authorities
  - Work recording techniques including specifications, check-lists and drawings
  - Processes for the calculation of material requirements
  - Plan reading and interpretation
  - Responsibilities under the Environmental Management Plan
  - Materials handling methods
  - Project quality requirements
  - Civil construction terminology
  - Mechanical interlock and the effect of fines and moisture content on compaction
  - JSA's/Safe work method statement

The context of assessment

- The application of competency is to be assessed in the workplace or a realistically simulated workplace which satisfies
- Standard and authorised work practices, job specifications, risks and 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 Australian Standards, State Road Authority and/or local government 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:

- Realistic tasks covering the mandatory task requirements
- Construction materials relevant to constructing road pavement
- Levelling equipment and measuring devices
- Access to support plant and operations
- Traffic management devices
- Enterprise work schedules and instructions and job specifications

… End …