



Australian Government

DEFCA312B Construct equipment bridging

Release: 2

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Modification History

Release	TP Version	Comments
2	DEF12 V2	Application added. Evidence Guide updated.
1	DEF12 V1	First release

Unit Descriptor

This unit covers the competency required to construct, and recover gap crossing bridging equipment, to facilitate the movement of personnel, vehicles, cargo and equipment.

Bridges will normally be constructed on a temporary basis under field conditions to meet the operational need to provide a crossing point over a gap for personnel and equipment. When the crossing is no longer required the bridge is either recovered to storage or redeployed to another crossing.

Equipment bridging is constructed from designed and certified bridge modules and parts to provide a temporary or permanent bridge over a gap.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication. In a Defence context, this means that there is no civilian need to hold this unit in order to meet licensing, legislative, regulatory or certification requirements.

Application of the Unit

This competency was developed for combat engineer personnel required to construct, and recover gap crossing bridging equipment, to facilitate the movement of personnel, vehicles, cargo and equipment in a deployed operational environment but is applicable to any individual in this field of work.

The person will usually be engaged in bridge construction by leading a team and working autonomously.

All activities are carried out in accordance with relevant organisational policies and procedures.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a Unit of Competency.

Performance Criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the Range Statement. Assessment of performance is to be consistent with the Evidence Guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare and plan for gap crossing	1.1 Requirement is received, understood and confirmed with higher authority as necessary. 1.2 Resource availability and serviceability is identified and constraints are determined. 1.3 <i>Site survey</i> , risk and environmental assessment are conducted. 1.4 Suitable bridge design is selected based on site survey and available <i>resources</i> . 1.5 Construction/dismantle plan is developed in accordance with design, resources, risks and environmental considerations. 1.6 Problems that cannot be resolved locally are referred to higher authority for resolution. 1.7 Competence of team members is confirmed and monitored. 1.8 Construction team is briefed in accordance with <i>standard procedures</i> . 1.9 Outside agencies are liaised with as required. 1.10 Work health and safety (WHS) requirements and recognised safety precautions are applied throughout the operation in accordance with standard procedures.
2. Construct gap crossing	2.1 Construction team is directed and supervised in accordance with construction plan. 2.2 All unexpected situations that require a quick and decisive response are recognised and responded to in accordance with operational requirements and standard procedures. 2.3 Checks are completed for security, alignment and stability. 2.4 Support from outside agencies is organised and directed. 2.5 Technical advice is provided to higher authority or support agencies. 2.6 Gap crossing site and gap crossing are <i>maintained</i> in accordance with standard procedures.
3. Dismantle gap crossing and refurbish site and equipment	3.1 Construction team is directed and supervised in accordance with dismantle plan. 3.2 Gap crossing equipment, tools and materials are recovered, cleaned and maintained.

- 3.3 Gap crossing equipment, tools and materials are either stored or redeployed to another site in accordance with standard procedures.
- 3.4 Site is refurbished in accordance with environmental requirements.
- 3.5 **Documentation** is completed in accordance with standard procedures.
- 3.6 Post activity analysis is conducted and subsequent recommendations are made in accordance with standard procedures.

Required Skills and Knowledge

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

Required Skills

- command and control skills
- manage resources
- operate optical levelling and surveying devices
- personal communications skills
- produce detailed design/plans
- produce detailed written and verbal reports
- record and process data and information
- take and record accurate measurements

Required Knowledge

- anchorages
- booming procedures and centre of gravity
- duration of bridge use - temporary or permanent
- equipment bridge design features/requirements:
 - site requirements (reconnaissance):
 - location
 - gap width, depth, obstacles, etc.
 - current and direction
 - angle of repose
 - abutment design or enhancement
 - soils testing and compaction methods
 - routes in/out
 - parts
 - specifications
 - user manual,
 - material handling equipment requirements and support
 - construction sequence
 - designed traffic/load (MLC/tonnage)
 - above ground or surface (stepped abutment)
- equipment bridge types:
 - medium girder bridge (MGB)
 - air portable bridge (APB)
 - rapid emplacement bridge (REB)
 - line of communication bridge (LOC)
 - bailey bridge, acrow bridge (FMB)
- jacking system

- legal responsibilities
- mathematics to a level necessary to meet all design and construction requirements
- relevant legislation and procedures in relation to civil construction and environmental requirements
- relevant WHS regulations/requirements, equipment, material and personal safety requirements
- types of bridge category:
 - single span, multi span,
 - simply supported or continuous
- variations in construction sequences:
 - restricted sites
 - floating piers
 - multiple piers

Evidence Guide

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

Assessment must confirm the ability to lead a team to construct, maintain and dismantle a multi span bridging of not less than 30 metres made from modularised or improvised means.

Consistency in performance

Competency should be demonstrated over time and across a range of simulated or actual workplace situations that allows for the construction of multi-span bridging under a range of field conditions.

Context of and specific resources for assessment

Context of assessment

Competency should be assessed in the workplace or in a simulated work environment. Assessment need only be completed once due to the high cost and complex nature of the task.

Specific resources for assessment

Access to construction equipment and materials; communications equipment; a suitable site; and a construction team.

Range Statement

The Range Statement relates to the Unit of Competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording in the Performance Criteria is detailed below.

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| <i>Site survey</i> may include: | <ul style="list-style-type: none"> • gap assessment (measurements, profiling, soil tests, California bearing ratio, angle of repose of banks, routes in and out, etc) • reconnaissance • underwater inspection for obstacles • water current measurement |
| <i>Resources</i> may include: | <ul style="list-style-type: none"> • construction materials • equipment bridge (medium girder bridge, line of communication bridge, floating support bridge, bailey bridge, air portable bridge, acrow bridge) • tools • vehicles |
| <i>Standard procedures</i> may include: | <ul style="list-style-type: none"> • Australian Standards • job guides, pamphlets and other publications • manufacturers' handbooks, industry specifications and technical instructions • WHS regulations • organisational policies and procedures • relevant local government by-laws • relevant state or federal legislation or regulations • written and verbal orders and job instructions |
| <i>Maintenance</i> may include: | <ul style="list-style-type: none"> • drainage • inspections • repair • traffic control |
| <i>Documentation</i> may include: | <ul style="list-style-type: none"> • construction documentation (design and construction plan) • environmental compliance • equipment documentation • maintenance records |

Unit Sector(s)

Not applicable.