



Australian Government

RIICFW302E Install temporary and permanent rock anchors

Release: 1

RIICFW302E Install temporary and permanent rock anchors

Modification History

Release	Comments
Release 1	This version first released with RII Resources and Infrastructure Industry Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to install temporary and permanent rock anchors in civil construction. This includes setting up anchor holes, installing permanent anchor bolts finished with mesh and shotcrete, installing temporary anchor bolts, and stressing, locking and sealing anchors.

It applies to those working in operational roles. They generally work under minimal supervision to undertake a broad range of tasks in varied work contexts, using some discretion and judgement in selecting equipment, services or contingency measures.

Licensing, legislative and certification requirements that apply to this unit can vary between states, territories and industry sectors. Users must check requirements with relevant body before applying the unit.

Unit Sector

Civil construction

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Plan and prepare to install rock anchor	1.1 Obtain, interpret, clarify and confirm work instructions 1.2 Access, interpret and apply documentation required to install rock anchors and confirm work activity is compliant 1.3 Obtain and interpret emergency procedures, and identify steps required to respond to emergencies 1.4 Select and wear personal protective equipment according to site requirements 1.5 Confirm and identify requirements for complying with environmental protection, safety and traffic management signage

ELEMENT	PERFORMANCE CRITERIA
	requirements 1.6 Identify potential hazards and environmental issues, implement control measures within scope of own role and escalate where required 1.7 Select plant, tools and equipment required to carry out tasks and check for faults 1.8 Identify, confirm, and locate materials required for work application
2. Set up and prepare anchor holes	2.1 Drill holes to depth and diameter according to job requirements 2.2 Clean holes 2.3 Confirm bond length of holes for permanent anchors are tested for leakage, grouted, re-drilled and retested according to job requirements 2.4 Cover holes temporarily to prevent entry of foreign material
3. Install anchors to anchor holes	3.1 Confirm components align with job requirements 3.2 Grease, sheathe and assemble anchors according to job requirements 3.3 Prepare temporary anchors with spacers and fit grout tubes according to job requirements 3.4 Prepare permanent anchors with spacers, fit grout tubes and prepare external polyethylene sheath according to job requirements 3.5 Install anchors and sheaths to full depth according to job requirements 3.6 Set up grouting plant and flow monitoring apparatus according to job requirements 3.7 Mix and pump grout into hole according to job requirements
4. Set up anchorage assembly and stress anchors	4.1 Position anchorage using packing materials 4.2 Stress anchors to loads specified by job requirements 4.3 Lock off anchors to loads specified by job requirements 4.4 Install mesh according to job requirements 4.5 Apply shotcrete according to job requirements 4.6 Monitor permanent anchors at scheduled intervals, and record anchor's residual load 4.7 Cut anchors according to job requirements and seal
5. Conduct clean-up activities	5.1 Clear work area and dispose of or recycle materials according to site requirements 5.2 Clean, check, perform maintenance on and store plant, tools and equipment according to manufacturer specifications and site requirements

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Numeracy	Calculates basic measurements including mass and dimensions
Oral communication	- Identifies and interprets information from verbal instructions - Conveys information and instructions to others verbally
Self-management	Monitors and minimises own exposure to worksite risks and hazards during work activities

Unit Mapping Information

Supersedes and is equivalent to RIICFW302D Install temporary and permanent rock anchors.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272>

Assessment Requirements for RIICFW302E Install temporary and permanent rock anchors

Modification History

Release	Comments
Release 1	This version first released with RII Resources and Infrastructure Industry Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- install temporary and permanent rock anchors on at least two occasions, including:
 - installing at least ten permanent anchor bolts, finished with mesh and shotcrete and
 - installing at least ten temporary anchor bolts.

During the above, the candidate must:

- locate and apply required legislation, documentation, policies and procedures
- identify, report and record hazards and risks
- work with others to install temporary and permanent rock anchors that meets required outcomes, including:
 - communicating with others to receive and clarify work instructions
 - using communication techniques and equipment, including signage to advise others of work activity and exclusion zones.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- legislation required to install temporary and permanent rock anchors
- policies, procedures and documentation required to install temporary and permanent rock anchors, including those relating to:
 - hazard and risk management
 - work health and safety
 - emergency response
 - site and equipment safety
 - environmental protection

- waste management
- communication techniques and equipment
- site isolation and traffic control responsibilities
- operational, maintenance and basic diagnostic procedures
- project quality requirements job plans and specifications
- site requirements
- manufacturer specifications for required plant and equipment
- workplace recording and reporting
- principles and techniques required to install temporary and permanent rock anchors, including those relating to:
 - scaffolding and work platform installation
 - water erosion
 - earthworks
 - foundation work
 - soil types and characteristics, including:
 - sand
 - rock
 - clay
 - shale
 - gravel
 - silt
 - ground stabilisation
 - stressing
 - roof and wall support
 - anchor types and use, including temporary anchors
 - shotcrete
 - tests for leakage
 - residual loads
 - interpreting engineering drawings
- types, characteristics, technical capabilities and limitations of plant and equipment required to install temporary and permanent rock anchors, including:
 - compressors
 - pneumatic tools
 - spanners
 - drilling rigs
 - grouting rigs
 - anchor bolts
 - spiling bars spacers
- materials safety data sheet (SDS) compliance processes

- components of job safety analyses (JSAs), job safety environmental analyses (JSEAs), and safe work method statements (SWMs)
- civil construction terminology relating to installing temporary and permanent rock anchors.

Assessment Conditions

Mandatory conditions for assessment of this unit are stipulated below. The assessment must:

- include access to:
 - personal protective equipment
 - equipment required to install temporary and permanent rock anchors
- be conducted in a safe environment; and,
- be assessed in the context of this sector's work environment; and,
- be assessed in compliance with required legislation/regulation and using policies, procedures and processes directly related to the industry sector for which it is being assessed; and,
- confirm consistent performance can be applied in a range of relevant workplace circumstances.

Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated work environment* provided it is realistic and sufficiently rigorous to cover all aspects of this sector's workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.

Assessor requirements

Assessors must be able to clearly demonstrate current and relevant industry knowledge and experience to satisfy the mandatory regulatory standards as set out in the Standards for Registered Training Organisations 2015/Australian Quality Training Framework mandatory requirements for assessors current at the time of assessment and any relevant licensing and certification requirements. This includes:

- vocational competencies at least to the level being delivered and assessed
- current industry skills directly relevant to the training and assessment being provided
- current knowledge and skills in vocational training and learning that informs their training and assessment
- formal relevant qualifications in training and assessment
- having knowledge of and/or experience using the latest techniques and processes
- possessing the required level of RII training product knowledge
- having an understanding and knowledge of legislation and regulations relevant to the industry and to employment and workplaces
- demonstrating the performance evidence, and knowledge evidence outlined in this unit of competency, and
- the minimum years of current** work experience after competency has been obtained as specified below in an industry sector relevant to the outcomes of the unit.

It is also acceptable for the appropriately qualified assessor to work with an industry expert to conduct assessment together and for the industry expert to be involved in the assessment judgement. The industry expert must have current industry skills directly relevant to the training and assessment being provided. This means the industry subject matter expert must demonstrate skills and knowledge from the minimum years of current work experience after competency has been obtained as specified below, including time spent in roles related to the unit being assessed:

Industry sector	AQF indicator level***	Required assessor or industry subject matter expert experience
Drilling, Metalliferous Mining, Coal Mining, Extractive (Quarrying) and Civil Infrastructure	1	1 year
	2	2 years
Drilling, Coal Mining, Extractive (Quarrying), Metalliferous Mining and Civil Infrastructure	3-6	3 years
Other sectors	Where this unit is being assessed outside of the resources and infrastructure sectors assessor and/or industry subject matter expert experience should be in-line with industry standards for the sector in which it is being assessed and where no industry standard is specified should comply with any relevant regulation.	

*Guidance on simulated environments has been stipulated in the RII implementation guide located on VETNet.

**Assessors can demonstrate current work experience through employment within industry in a role relevant to the outcomes of the unit; or, for external assessors this can be demonstrated through exposure to industry by conducting a minimum number of site assessments as determined by the relevant industry sector, across various locations.

*** While a unit of competency does not have an AQF level, where a unit is being delivered outside of a qualification the first numeric character in the unit code should be considered as the AQF indicator level for assessment purposes.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272>