



Australian Government

Department of Education, Employment and Workplace Relations

RIICFW302A Install temporary and permanent rock anchors

Release: 1

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Modification History

Not applicable.

Unit Descriptor

This unit covers the installation of temporary and permanent rock anchors in the civil construction industry. It includes planning and preparing, setting up and preparing anchor holes, installing anchors to anchor holes, setting up anchorage assembly to stress anchors, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

<p>Elements describe the essential outcomes of a unit of competency.</p>	<p>Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.</p>
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply compliance documentation relevant to the work activity 1.2. Obtain, confirm and apply work instructions, including plans, specifications, quality requirements and operational details to the allotted task 1.3. Obtain and confirm safety requirements from the site safety plan and organisational policies and procedures, and apply to the allotted task 1.4. Identify, obtain and implement signage requirements from the project traffic management plan 1.5. Select plant, tools and equipment to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.6. Identify environmental protection requirements from the project environmental management plan, and confirm and apply to the allotted task
2. Set up and prepare anchor holes	2.1. Check components to verify conformity with job requirements 2.2. Grease, sheathe and assemble anchors to specifications 2.3. Prepare temporary anchors with spacers and fit grout tubes 2.4. Prepare permanent anchors with spacers, fit grout tubes and prepare external polyethylene sheath 2.5. Install anchors and sheaths to full depth, without damage and to specifications 2.6. Set up grouting plant and flow monitoring apparatus to design requirements 2.7. Mix and pump grout into hole
3. Install anchors to anchor holes	3.1. Check components to verify conformity with job requirements 3.2. Grease, sheathe and assemble anchors to specifications 3.3. Prepare temporary anchors with spacers

	<p>and fit grout tubes</p> <p>3.4. Prepare permanent anchors with spacers, fit grout tubes and prepare external polyethylene sheath</p> <p>3.5. Install anchors and sheaths to full depth, without damage and to specifications</p> <p>3.6. Set up grouting plant and flow monitoring apparatus to design requirements</p> <p>3.7. Mix and pump grout into hole</p>
4. Set up anchorage assembly and stress anchors	<p>4.1. Correctly place anchorage using packing materials as specified</p> <p>4.2. Stress anchors to nominated loads</p> <p>4.3. Lock off anchors to nominated loads as designed</p> <p>4.4. Install mesh to job specification</p> <p>4.5. Apply shotcrete to design depth, tolerance and job specification</p> <p>4.6. Monitor permanent anchors at scheduled intervals to determine and record anchor's residual load</p> <p>4.7. Cut anchors where required and seal to specification requirements</p>
5. Clean up	<p>5.1. Clear work area and dispose of or recycle <i>materials</i> in accordance with project environmental management plan</p> <p>5.2. Clean, check, maintain and store plant, tools and equipment</p>

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to install temporary and permanent rock anchors:

- apply legislative, organisation and site requirements and procedures for installing temporary and permanent rock anchors
- apply legislative, organisation and site requirements and procedures for conducting earthworks
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to install temporary and permanent rock anchors:

- site and equipment safety requirements
- foundation work
- temporary and permanent rock anchors and their installation techniques
- scaffolding and work platform installation
- construction principles
- processes for interpreting engineering drawings
- soil, sand, rock, clay, shale, gravel and silt types and characteristics
- water erosion
- 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
- JSAs/safe work method statements

Evidence Guide

<p>The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.</p>	
<p>Overview of assessment</p>	
<p>Critical aspects for assessment and evidence required to demonstrate competency in this unit</p>	<p>The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following:</p> <ul style="list-style-type: none"> • knowledge of the requirements, procedures and instructions for installing temporary and permanent rock anchors • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of temporary and permanent rock anchor installation • working with others to undertake and complete the installation of temporary and permanent rock anchors that meets all of the required outcomes • consistent timely completion of temporary and permanent rock anchor installation that safely, effectively and efficiently meets the required outcomes • installation of a minimum of ten permanent anchor bolts, finished with mesh and shotcrete • installation of a minimum of ten temporary anchor bolts
<p>Context of and specific resources for assessment</p>	<ul style="list-style-type: none"> • This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites

	<p>may differ due to the site circumstances.</p> <ul style="list-style-type: none"> • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.
Method of assessment	<p>This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:</p> <ul style="list-style-type: none"> • written and/or oral assessment of the candidate's required knowledge • observed, documented and/or first hand testimonial evidence of the candidate's: <ul style="list-style-type: none"> • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes • consistent achievement of required outcomes • first hand testimonial evidence of the candidate's: <ul style="list-style-type: none"> • working with others to undertake and complete the installation of temporary and permanent rock anchors
Guidance information for assessment	<p>Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.</p>

Range Statement

<p>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, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<p>Relevant compliance documentation may include:</p>	<ul style="list-style-type: none"> • legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
<p>Safety requirements may include:</p>	<ul style="list-style-type: none"> • OHS 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 • safe operating procedures are to include but not be limited to recognising and preventing hazards associated with overhead and underground services, other machines, personnel, traffic control, working 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 equipment operation are to include but may not be limited to emergency shutdown and stopping, extinguishing fires, organisational First Aid requirements and evacuation
<p>Site may include:</p>	<ul style="list-style-type: none"> • cuttings • tunnels • embankments

Signage may include:	<ul style="list-style-type: none"> • escort vehicle • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades • traffic conditions signage
Traffic may include:	<ul style="list-style-type: none"> • congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Plant, tools and equipment may include:	<ul style="list-style-type: none"> • compressors • pneumatic tools • spanners • drilling rigs • attachments • grouting rigs
Environmental requirements may include:	<ul style="list-style-type: none"> • organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Requirements may include:	<ul style="list-style-type: none"> • ground stabilisation • roof and wall support • stressing
Anchors may include:	<ul style="list-style-type: none"> • anchor bolts • cable anchoring • spiling bars • grouted anchors and bolts • mechanically anchored bolts • dowels
Temporary anchors be required for:	<ul style="list-style-type: none"> • construction processes • stability for temporary structures • stability to operating plant
Materials may include:	<ul style="list-style-type: none"> • anchor bolts • spiling bars • steel cables

	<ul style="list-style-type: none">• ribbed steel bards
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Unit Sector(s)

Foundation Works

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.