



Australian Government

Department of Education, Employment and Workplace Relations

RIICSG405A Carry out inspections of civil structures

Release: 1

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Modification History

Not applicable.

Unit Descriptor

This unit covers the carrying out of inspections of civil structures in Civil Construction. It includes the requirements for ensuring that the planning, preparing, initiating, monitoring, adjusting and reporting of inspections of civil structures are carried out in accordance with the accepted industry principles.

Application of the Unit

This unit is limited to the carrying out of maintenance and general condition inspections and does not include detailed structural inspections.

This unit is appropriate for those working in a supervisory role or as a technical specialist, to carrying out of inspections of civil structures 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

Elements describe the essential outcomes of a unit of competency.	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.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Ensure planning and preparation of tasks is carried out	<p>1.1. Access, interpret and apply <i>compliance documentation</i> relevant to the work activity</p> <p>1.2. Access, interpret and clarify the <i>specific task information and requirements</i> relevant to undertaking the <i>inspections of civil structures</i></p> <p>1.3. Ensure a <i>job plan</i>, is available which makes best use of the available resources and meets the civil structures inspection task requirements</p>
2. Ensure initiation of tasks is carried out	<p>2.1. Confirm that the necessary <i>resources</i> are available for the safe, effective and efficient conduct of the civil structures inspections task</p> <p>2.2. Ensure clear and timely <i>instructions</i> are communicated to <i>team members</i> and others involved, for the safe, effective and efficient conduct of the inspections of civil structures</p>
3. Oversee the execution of tasks	<p>3.1. <i>Monitor</i> civil structures inspection task performance to ensure it achieves the <i>required outcomes</i></p> <p>3.2. <i>Initiate</i> adjustments to civil structure inspection practice or job plan to ensure safe execution of work and achievement of required outcomes</p> <p>3.3. Ensure plant equipment and tools maintenance requirements are carried out and recorded</p>
4. Report on the execution of tasks	<p>4.1. Complete and submit reports as required</p> <p>4.2. Recommend changes to improve the safety, efficiency and effectiveness of the execution of tasks</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 in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to carry out of inspections of civil structures:

- apply legislative, organisation and site requirements and procedures
- interpret project contract and specification requirements and procedures
- interpret project site soil and geological data
- identify soil and rock types
- interpret meteorological data
- identify drainage issues
- interpret material properties and test results, including compaction test results
- interpret project site geotechnical data
- interpret project site hydrological data
- interpret project engineering survey information
- interpret project plans and drawings
- interpret project specifications
- prepare for and conduct briefings, toolbox and site meeting
- prepare of short messages
- prepare and presenting of job reports
- prepare and maintaining of log books and diaries
- provide leadership
- apply performance monitoring skills
- apply set out requirements and procedures
- set up and use levelling devices
- establish construction offsets
- apply supervisory skills
- develop workplace relationships
- develop individuals and the team
- apply inspection requirements and procedures
- calculate quantities for the execution of tasks, including:
 - volumes
 - grades
 - percentages
 - areas
 - resource consumption figures, including required supply rates
- interpret civil structures materials properties and test results
- provide recommendations for the improvement of the safe, effective and efficient

execution of inspections of civil structures
Required knowledge
<p>Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to carry out of inspections of civil structures:</p> <ul style="list-style-type: none"> • risk assessment and management requirement and procedures • statutory compliance requirements and procedures • occupational health and safety requirements and procedures • environmental management requirements and procedures • quality management requirements and procedures • work zone traffic management requirements and procedures • contract management requirements and procedures • communication requirements and procedures • administrative requirements and procedures • civil structures inspection plant and equipment capabilities and application • plant, equipment and tools maintenance requirements and procedures • operational techniques for the execution of inspections of civil structures • civil structures inspection resource requirements and procedures • activities scheduling requirements and procedures • civil structures inspection materials delivery requirements and procedures • job plan drafting of and administration requirements and procedures • reporting requirements and procedures • workplace relationship requirements and procedures • organisational, client and site operational requirements • relationship between various areas of civil works • team leadership techniques • works planning techniques • civil structures inspection monitoring methods • engineering survey principles • materials quality and delivery requirements and procedures • mentoring techniques • estimating principles • civil works construction sequencing • civil structures inspection and related activities' terminology • set out requirements and procedures • works planning techniques • monitoring methods

Evidence Guide

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.

Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	<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 the carrying out of inspections of civil structures • implementation of appropriate procedures and techniques for the safe, effective and efficient carrying out of inspections of civil structures • working with others to plan, prepare and conduct inspections of civil structures • provision of clear and timely instruction and supervision by the individual of those involved in inspections of civil structures • evidence of the consistent successful carrying out of inspections of civil structures
Context of and specific resources for assessment	<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. • Evidence for assessment is best gathered using the outcomes of products and processes in the workplace. • 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

	<p>environment to sensitively accommodate cultural diversity.</p> <ul style="list-style-type: none"> • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • 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 procedures and techniques for the safe, effective and efficient achievement of the required outcomes • consistently achieving the required outcomes • first hand testimonial evidence of the candidate's: <ul style="list-style-type: none"> • working with others to plan, prepare and conduct inspections of civil structures • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of inspections of civil structures
Guidance information for assessment	<p>Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.</p>

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, 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.

Relevant compliance documentation may include:	<ul style="list-style-type: none"> • legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Specific task information and requirements may include:	<ul style="list-style-type: none"> • site geological and geotechnical data, including: <ul style="list-style-type: none"> • rock types and characteristics • soil types and characteristics • site hydrological data, including: <ul style="list-style-type: none"> • surface water • ground water • site meteorological data, including: <ul style="list-style-type: none"> • rainfall • humidity • temperature • wind • site engineering survey data • known and potential site hazards, constraints and conditions • site cultural and heritage information • task specifications • task drawings • sources of materials • other organisations and contractors involved in the task or related tasks • coordination, timing and budgeting requirements
Civil structures may include:	<ul style="list-style-type: none"> • civil concrete structures, including: <ul style="list-style-type: none"> • bridges, including their:

	<ul style="list-style-type: none"> • foundations • abutments • piers • beams • decks • pre-cast and in-situ elements • normally reinforced and pre-stressed elements • retaining walls • water storage tanks and small dams • noise barriers • culverts • safety barriers • civil steel structures, including: <ul style="list-style-type: none"> • bridges • sign gantries • vertical sign supports • noise barrier supports • guardrails • civil timber structures, including: <ul style="list-style-type: none"> • bridges, jetties and wharves • retaining walls • noise barriers • civil masonry, crib and gabion structures, including: <ul style="list-style-type: none"> • masonry walls • crib walls • gabion walls • foundations for these walls
Inspections of civil structures may include:	<ul style="list-style-type: none"> • site preparation methods • traffic control • safety measures • inspection methods • defect marking procedures • civil structure inspection recording methods
Job plan is to include:	<ul style="list-style-type: none"> • human resource requirements • plant and machinery requirements • construction materials requirements • sub-contractor support requirements • waste disposal requirements

	<ul style="list-style-type: none"> • coordination requirements • activity scheduling • materials delivery scheduling • risk assessment and management requirements • occupational health and safety (OHS) requirements • quality management requirements, including testing scheduling requirements • traffic management requirements • environmental requirements • task monitoring requirements • task performance monitoring requirements • communication requirements • reporting requirements
Resources are to include:	<ul style="list-style-type: none"> • labour • plant, equipment and tools • highway haulage vehicles • construction materials • sub-contractor services
Instructions are to include:	<ul style="list-style-type: none"> • briefings • handovers • work orders • toolbox meetings • site meetings
Team members may include:	<ul style="list-style-type: none"> • other members of the organisation's management team • members of the team directly involved in the task • suppliers representatives • sub-contractors representatives • supervisors or managers of other organisations who are involved in related tasks
Set out is to include:	<ul style="list-style-type: none"> • control lines • cleared width • batters • off-sets
Monitor is to include:	<ul style="list-style-type: none"> • ongoing risk assessment • engineering survey • sampling and testing • observation and recording • general supervision

Required outcomes may include:	<ul style="list-style-type: none"> • civil structures report requirements • inspection cost requirements • identification of concrete structures and elements problems, such as: <ul style="list-style-type: none"> • cracks • delamination • displacement • water where it should not be • rust stains and • lime leaching • identification of steel structures and elements problems, such as: <ul style="list-style-type: none"> • deflection • corrosion • cracking • damaged protective coating • missing, damaged or loose fastenings • Identification of timber structures and elements problems, such as: <ul style="list-style-type: none"> • deflection • cracking • rotting • lamination • moisture • pest attack • missing, damaged or loose fastenings • identification of masonry, crib or gabion structures and elements problems, such as: <ul style="list-style-type: none"> • settling • cracking • missing mortar • efflorescence • weephole condition
Initiate is to include:	<ul style="list-style-type: none"> • written communication • oral communication

Unit Sector(s)

Civil Structure (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.