



Australian Government

Department of Education, Employment and Workplace Relations

NWP555 Apply construction principles to civil engineering works

Release: 1

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Modification History

NWP555 Release 1: Primary release.

Unit Descriptor

This unit of competency sets out the knowledge and skills required to apply the fundamental principles and concepts associated with planning, estimating and costing to the preparation and interpretation of tender documents, costs estimates and the reporting of actual versus estimated project costs. This includes the documenting of people, plant, equipment and processes employed in the water industry.

Application of the Unit

This unit applies to para-professionals in a water operations environment where civil engineering construction is undertaken.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

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 tasks you need to be able to perform, to demonstrate that you can achieve 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

- 1 Develop planning, estimating, costing and construction principles of a civil engineering construction project**
 - 1.1 Obtain and implement OHS and *environmental requirements* for the work area.
 - 1.2 Identify planning, estimating, costing and construction principles of a from documentation, work requests or discussions with *appropriate personnel*.
 - 1.3 Identify construction project material from documents, work requests or discussions with appropriate personnel.
 - 1.4 Evaluate design references to complete the planning, estimating, costing and construction principles in accordance with *enterprise procedures*.
 - 1.5 Obtain resources and equipment needed for the task and check for correct operation in accordance with enterprise procedures.
 - 1.6 Appropriate personnel are consulted to ensure the work is co-ordinated effectively with others involved at the work site.
- 2 Complete planning, estimating, costing and develop construction principles of a civil engineering project**
 - 3.1 Complete planning, estimating, costing and construction principles in accordance with enterprise procedures.
 - 3.2 Use design references according to manufacturer's manuals and enterprise procedures.
 - 3.3 Record, analyse and apply outcomes according to enterprise procedures.
 - 3.4 Select methods for dealing with unexpected situations on the basis of discussions with appropriate personnel, job specifications and enterprise procedures.
- 3 Compile, document and present results**
 - 4.1 Record, analyse and report results in accordance with initial brief and enterprise procedures.
 - 4.2 Maintain and store design references in accordance with enterprise procedures.
 - 4.3 Store and archive results according to enterprise procedures.

Required Skills and Knowledge

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

Required skills:

- literacy skills to read and analyse project designs and briefs
- writing skills to prepare completion reports

Required knowledge:

- equipment required to perform the particular type of excavation
- pipework bed, joint and laying techniques
- types of excavations
- OHS requirements in a civil construction setting
- road construction techniques and standards
- civil construction materials including steel, concrete and quarried materials

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.

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

The candidate should demonstrate the ability to:

- plan, estimate, cost and develop construction principles of a civil engineering project on more than one occasion and in different contexts

Context of and specific resources for assessment

Access to the workplace and resources including:

- documentation that should normally be available in a water industry organisation
- workplace specific equipment and technology
- supervision and experienced team members to provide observations, feedback and third party reports
- enterprise operating procedures and work allocation
- relevant codes, standards, and government regulations

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.

Assessment processes and techniques must be culturally appropriate, and appropriate to the language and literacy capacity of the candidate and the work being performed.

Validity and sufficiency of evidence require that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice
- a decision of competence should only be made when the assessor has complete confidence in the person's competence over time and in various contexts
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence
- where assessment is for the purpose of recognition (RCC/RPL), the evidence provided will need to be authenticated and show that it represents competency demonstrated over a period of time

- assessment can be through simulated project-based activity and must include evidence relating to each of the elements in this unit

In all cases where practical assessment is used it will be combined with targeted questioning to assess the underpinning knowledge. Questioning will be undertaken in a manner appropriate to the skill levels of the candidate, any cultural issues that may affect responses to the questions, and reflecting the requirements of the competency and the work being performed.

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.

Environmental requirements may include:

- control of gas, fume, vapour, smoke emissions, including fugitive emissions
- management of liquid waste
- management of solid waste
- control of excessive energy and water use
- control of excessive noise

Appropriate personnel may include:

- supervisor
- colleague
- foreman
- team leader
- supervising engineer
- teacher

Enterprise procedures may include:

- the use of tools and equipment
- instructions, including job sheets, cutting lists, plans, drawings and designs
- reporting and communication
- manufacturers' specifications and operational procedures

Unit Sector(s)

Not applicable.

Competency Field

Civil Engineering.