



Australian Government

Department of Education, Employment and Workplace Relations

RTF3204A Construct concrete structures and features

Release: 1

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Modification History

Not applicable.

Unit Descriptor

This competency standard covers the process of constructing concrete structures and features as a component of landscape project works. These structures and features may include paths, driveways, edgings, footings, floors, steps, walls, fences, pool surrounds, entertaining areas and ornamental garden elements.

The construction of concrete structures and features is likely to be under limited supervision from others, with checking only related to overall progress and is usually done within established routines, methods and procedures. Some discretion and judgement may be required depending on the type of structure or feature to be constructed. For example, it may be a driveway at ground level or a fence that is constructed vertically.

Application of the Unit

Not applicable.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

Not applicable.

Elements and Performance Criteria Pre-Content

Not applicable.

Elements and Performance Criteria

Elements and Performance Criteria

Element	Performance Criteria
1 Plan and prepare work	1.1 Plans and specifications are interpreted and clarified with the supervisor. 1.2 The quantity and quality of materials are checked to ensure they conform to design drawings and specifications. 1.3 Tools and equipment are selected and checked for serviceability according to enterprise guidelines. 1.4 OHS hazards are identified, risks assessed and controls implemented. 1.5 Environmental implications of constructing concrete structures are identified and reported to the supervisor.
2 Set out and prepare the site	2.1 Services are determined and located from site plans. 2.2 The position of the structure or feature is marked out according to design drawings and specifications. 2.3 Profiles are established to conform to the tolerances nominated within the design drawings and specifications. 2.4 Subsoil is prepared by removing all debris, vegetable matter and topsoil to provide a solid foundation for concrete. 2.5 Drainage systems are installed according to design drawings and specifications. 2.6 Form work is installed to the site in a manner that will ensure it remains rigid during concrete pouring operations. 2.7 Sub-base material is placed and compacted to the required finished levels. 2.8 Preparation of the site is completed according to the type of structure or feature to be constructed.

- 3 Mix and pour concrete
 - 3.1 Proportions for concrete mix are determined according to the strength requirements of the project.
 - 3.2 Volume of dry materials necessary to produce final concrete mix is determined.
 - 3.3 All dry ingredients and required **additives** are mixed together to ensure a thorough blending of all materials is achieved.
 - 3.4 Sufficient water is introduced to produce a concrete mix to the required consistency.
 - 3.5 Concrete mix samples are taken for **testing**, if required, to check for conformity to specifications.
 - 3.6 Concrete is poured to designated levels in a manner to avoid segregation of materials.
 - 3.7 Concrete is consolidated using an approved vibration method to industry standard (AS3600) to ensure air pockets are eliminated.
- 4 Finish concrete
 - 4.1 Concrete is screeded to a flat surface to maintain the desired finished level.
 - 4.2 Surface is trowelled according to design drawings and specifications.
 - 4.3 A Concrete is **finished off** according to design drawings and specifications.
- 5 Check quality of work and clean up site
 - 5.1 Quality of finished works is inspected to ensure the standard of the finished structure or feature is in accordance with design drawings and specifications.
 - 5.2 Form work is removed and cleaned in a manner which will allow for re-use of the form work.
 - 5.3 All debris is removed and disposed of in a manner that minimises risk to the environment.
 - 5.4 All tools and equipment are cleaned and stored according to enterprise guidelines.

Required Skills and Knowledge

Not applicable.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in constructing concrete structures and features requires evidence that work can be planned and prepared for, that a site for concrete placement can be prepared according to design drawings and specifications, and that concrete can be mixed, placed and finished according to the required standards.

The skills and knowledge required to construct concrete structures and features must be **transferable** to a different work environment. For example, this could include different structures and features, concrete mixes and locations.

What specific knowledge is needed to achieve the performance criteria?

Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts, and to deal with unplanned events. The knowledge requirements for this competency standard are listed below:

Mpa testing theory and what effects Mpa specifications in a concrete mix

the comparative environmental implications associated with soil removal and the establishment of drainage systems

industry standards in relation to reinforcing and consolidating concrete.

sub-base and sub-grade materials and preparation.

What specific skills are needed to achieve the performance criteria?

To achieve the performance criteria, appropriate literacy and numeracy levels as well as some complementary skills are required. These include the ability to:

interpret design drawings and specifications and transpose the information to site

measure and construct profiles using mathematical techniques

establish levels using levelling equipment

undertake and interpret tests performed on a concrete mix

place, consolidate and finish concrete.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

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| 1. How can communication of ideas and information (2) be applied? | Information regarding what type of structure or feature is to be installed may need to be communicated to other members of the work team. |
| 2. How can information be collected, analysed and organised (2)? | Information on tests applied to the concrete mix may need to be collected, analysed and acted upon. |
| 3. How are activities planned and organised (2)? | The installation of concrete structures and features may need to be planned and organised according to the prevailing weather conditions. |
| 4. How can team work (2) be applied? | Team work may be applied when undertaking concrete pouring operations. |
| 5. How can the use of mathematical ideas and techniques (2) be applied? | Mathematical ideas and techniques may be applied when calculating the volume of concrete required for the job. |
| 6. How can problem-solving skills (2) be applied? | Problems may arise with the stability of the form work applied to a concrete site. |
| 7. How can the use of technology (2) be applied? | Technology may be applied when working out the volume of concrete needed, or researching what type of curing agent/method to use. |

Are there other competency standards that could be assessed with this one?

This competency standard **could** be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to the **Assessment Guidelines**. Further advice may also be sought from the relevant **sector booklet**.

Range Statement

Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment requirements may depend on the work situations available

What **tools and equipment** are likely to be used when constructing concrete structures and features?

Tools and equipment may include levelling equipment, string lines, tape measures, spades, shovels, wheelbarrow, concrete mixer, trowels and screeding equipment.

What **OHS hazards** may apply to this standard?

OHS hazards may include manual handling, solar radiation, obstacles, and slipping on wet surfaces.

What **OHS controls** may be relevant to this standard?

OHS controls may include safe lifting and transporting techniques, the drinking of fluids, basic first aid, and the appropriate use of personal protective clothing and equipment such as boots, overalls and sun hat, erection of safety signs and barriers, the identification of site access points, and the safe storage of materials.

What **environmental implications** are likely to be considered?

Consideration may be given to the impact of soil disturbance and the alteration to water flow during construction and after the structure or feature has been constructed.

What **services** are likely to be located on site?

Services may include power, gas, water, stormwater, sewerage or septic connections, phone and optical cables.

What **drainage systems** are likely to be installed?

Drainage systems may include sumps, agricultural drains, storm water pipes, slotted pipes, open drains and channels.

What other preparation tasks may need to be **completed** before the placement of concrete?

Other preparation tasks to be completed may include the installation of a waterproof membrane, reinforcement according to industry standards (AS1554.3), and the application of a release agent to form work.

What concrete **additives** may be relevant to this standard?

Additives may include colouring agents, retardants and accelerants.

What **testing** is likely to be undertaken on

Testing may include a concrete slump test

the concrete mix?

and Mpa testing.

How is the concrete likely to be **finished off**? Finishing off the concrete may include the addition of a curing agent, insertion of expansion jointing and control joints, or diamond saw cuts after a period of drying.

For more information on contexts, environment and variables for training and assessment, refer to the Sector Booklet.

Unit Sector(s)

Not applicable.