**NZQA**

**Approved**

Achievement standard: 91347 Version 3

Standard title: Demonstrate understanding of advanced concepts used to make products

Level: 2

Credits: 4

Resource title: It’s in concrete

Resource reference: Construction and Mechanical Technologies VP-2.22 v2

Vocational pathway: Construction and Infrastructure

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| Quality assurance status | These materials have been quality assured by NZQA. NZQA Approved number A-A-02-2015-91347-02-8229 |
| Authenticity of evidence | Assessors/educators must manage authenticity for any assessment from a public source, because learners may have access to the assessment schedule or exemplar material.Using this assessment resource without modification may mean that learners’ work is not authentic. Assessors/ educators may need to change figures, measurements or data sources or set a different context or topic to be investigated or a different text to read or perform. |

Vocational Pathway Assessment Resource

Achievement standard: 91347

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Learner instructions

# Introduction

This assessment activity requires you to create a presentation that demonstrates your understanding of advanced concepts used to make concrete based products.

You are going to be assessed on how comprehensively you demonstrate understanding of advanced concepts used to make concrete based products. You need to prepare a presentation that explains the differences between safe practices in classroom and industrial environments, and discusses how accepted conventions guide construction of concrete based products in diverse contexts.

The following instructions provide you with a way to structure your work so you can demonstrate what you have learnt and achieve success in this standard.

Assessor/educator note: It is expected that the assessor/educator will read the learner instructions, and modify them if necessary to suit their learners.

# Task

Complete a presentation that demonstrates your understanding of advanced concepts used to make products from concrete. Confirm with your assessor/educator the format of your presentation.

Include the following:

* describe the accepted conventions used in construction of concrete based products. For example, you could describe accepted conventions that are used to achieve symmetrical and parallel sides in formwork for concrete based products
* explain how accepted conventions support the construction of products in a specific context. For example, you could explain the conventions for making a garden patio such as joining pavers so they are flush and parallel, or for laying out concrete blocks to produce a particular symmetrical pattern or effect
* explain how accepted conventions are achieved through use of tools, techniques and materials when making concrete based products. For example, you could explain the tools and techniques required to make a concrete mould for a bird bath; you could explain the materials that are required to make the mould, manufacture and pour the concrete and join separate parts of the mould
* explain the strategies that are used in a classroom situation to manage safety. For example, as part of your explanation, explain how the use of residual current devices (RCD) helps prevent the potential for fatal electric shocks
* explain the differences between safe practice in a classroom situation, and in an industrial setting such as a factory manufacturing pre-cast concrete products
* discuss how accepted conventions guide construction of concrete based products in similar contexts. For example, you could compare and contrast the conventions used in constructing a range of outdoor garden concrete based products in a classroom situation. Conventions might include flush, parallel, perpendicular, symmetry, tolerance, taper and plumb
* discuss how accepted conventions guide construction of concrete based products in diverse contexts. For example, you could compare and contrast making garden ornaments in a classroom situation or at home, as opposed to laying a steel reinforced concrete floor on a building site, building a hydro dam or an undersea water tunnel.

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Assessor/Educator guidelines

# Introduction

The following guidelines are supplied to enable assessors/educators to carry out valid and consistent assessment using this internal assessment resource.

As with all assessment resources, education providers will need to follow their own quality control processes. Assessors/educators must manage authenticity for any assessment from a public source, because learners may have access to the assessment schedule or exemplar material. Using this assessment resource without modification may mean that learners' work is not authentic. The assessor/educator may need to change figures, measurements or data sources or set a different context or topic. Assessors/educators need to consider the local context in which learning is taking place and its relevance for learners.

Assessors/educators need to be very familiar with the outcome being assessed by the achievement standard. The achievement criteria and the explanatory notes contain information, definitions, and requirements that are crucial when interpreting the standard and assessing learners against it.

# Context/setting

This activity requires learners to present evidence of their comprehensive understanding of the following:

* conventions used when constructing a concrete based product, how these are achieved through use of tools, techniques and materials, and how these support construction in a context
* strategies used to manage safety in a classroom environment, and explaining safe practices in classroom as opposed to an industrial environment.

# Conditions

This is an individual activity.

Decide on the format of the final presentation.

# Resource requirements

Learners require access to information on conventions used in concrete construction, and on safe practices followed in industrial environments. This could include:

* New Zealand Standards of relevance to the concrete industry
* Health and Safety in Employment Act (1992) and its amendments (2003)
* CCANZ (Concrete Council Association of New Zealand) <http://www.ccanz.org.nz/default.aspx>

Learners may also require access to particular materials to demonstrate how accepted conventions are achieved. This might include materials used to make concrete (for example, sand, gravel, cement), to reinforce it (for example, steel rods, mesh) and to achieve particular finishes (for example, Rugasol, a steel brush, a trowel, a broom or brush, a paint roller). Other materials may be required to demonstrate other conventions applied when, for example, pouring concrete under water in the tremie process (for example water, bucket, pipe).

Industry visit to such places as concrete manufacturers and building sites would also support learners in developing understandings.

# Additional information

It may be easier for learners to show their understanding after they have made a concrete based product (for example a garden themed product such as a seat, a birdbath, a concrete block barbeque, a raised garden or paving). These final understandings may be informed by some initial investigations before the product is made. However, not having made such a product does not exclude a learner from achieving this standard.

For the purposes of this standard:

* health and safety practice includes strategies to manage the safety, responsibility for this, reporting systems, liabilities, monitoring for exposures and safe practice
* diverse contexts refer to the wider physical and social environment, including the scale of the project; for example diverse situations might include:
	+ the home and/or classroom situation where smallish products are made
	+ the building industry where floors/foundations are laid or precast walls go up
	+ an engineering environment where vehicle related products are constructed.

# Assessment schedule: Construction and Mechanical Technologies 91347 – It’s in concrete

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| --- | --- | --- |
| Evidence/Judgements for Achievement | Evidence/Judgements for Achievement with Merit | Evidence/Judgements for Achievement with Excellence |
| The learner demonstrates understanding of advanced concepts used to make concrete based products by:* describing accepted conventions used in construction of products

For example:The learner, as part of their description, refers to photos when they describe accepted conventions (e.g. flush, parallel, square, symmetry, array, tolerance, clearances, taper), for concrete based products in general such as formwork for a garden patio.* explaining how accepted conventions support construction of products in a specific context

For example:The learner, as part of their explanation, explains the conventions followed when making garden products out of concrete blocks i.e. joining the blocks so they are flush, laying out the blocks to produce a particular pattern or effect.* explaining how accepted conventions are achieved through use of tools, techniques and materials in a specific context

For example:The learner explains the tools and techniques required to make a concrete mould for a bird bath. The learner explains the materials that are required to make the mould, manufacture and pour the concrete, and join separate parts of the mould.* explaining strategies used to manage safety in a classroom environment

For example:The learner explains how they have used residual current devices to help prevent the potential for fatal electric shocks.*The above expected learner responses are indicative only and relate to just part of what is required.* | The learner demonstrates in-depth understanding of advanced concepts used to make concrete based products by:* discussing how accepted conventions guide construction of products in similar contexts

For example:The learner compares and contrasts the conventions used in constructing a range of outdoor garden concrete based products within their workshop. Conventions might include, e.g. flush, parallel, perpendicular, symmetry, tolerance, taper and plumb.* explaining the differences between safe practice in classroom and industrial environments

For example, the learner:* + explains how the same hazard management is covered but may differ in liability and legal implications, using examples of specific safety practices that are followed in each environment; this could include comparing learner’s responsibility for using protective gear in the workshop, and employee and/or assessor/educator’s liability for failing to use these
	+ compares this with employer’s responsibility in ensuring they are used on a construction site.

*The above expected learner responses are indicative only and relate to just part of what is required.* | The learner demonstrates comprehensive understanding of advanced concepts used to make concrete based products by:* discussing how accepted conventions guide construction of products in diverse contexts

For example:The learner compares and contrasts conventions used in different contexts, and how these are achieved to ensure the product is fit for purpose; such contexts and conventions could include mixing and pouring concrete to make garden furniture, and conventions used when making undersea water tunnels.* explaining the differences between safe practice in classroom and industrial environments

For example, the learner:* + explains how the same hazard management is covered but may differ in liability and legal implications, using examples of specific safety practices that are followed in each environment; this could include comparing learner’s responsibility for using protective gear in the workshop, and employee and/or assessor/educator’s liability for failing to use these
	+ compares this with employer’s responsibility in ensuring they are used on a construction site.

*The above expected learner responses are indicative only and relate to just part of what is required.* |

Final grades will be decided using professional judgement based on an examination of the evidence provided against the criteria in the Achievement Standard. Judgements should be holistic, rather than based on a checklist approach.