**NZQA**

**Approved**

Achievement standard: 91059 Version 3

Standard title: Demonstrate understanding of basic concepts used to make products from resistant materials

Level: 1

Credits: 4

Resource title: Concrete pavers

Resource reference: Construction and Mechanical Technologies VP-1.22 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-02-2015-91059-02-7323 |
| 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: 91059

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Learner instructions

# Introduction

This assessment activity requires you to create a report that demonstrates your understanding of basic concepts used to make pavers from concrete materials.

You are going to be assessed on how comprehensively you demonstrate your understanding of basic concepts used to make pavers from concrete materials.

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

Produce a report that demonstrates your understanding of basic concepts used to make pavers from concrete materials.

Make sure you do the following:

* describe characteristics of a concrete paver such as profile, hardness, malleability, ductility, elasticity, etc
* explain safe techniques to be used with concrete pavers. The techniques must cover one or more from each of the following four categories:
	+ measuring or marking out
	+ sizing, shaping, or forming
	+ joining or assembling
	+ finishing, detailing or tuning.
* explain which combinations of techniques (shown above) and concrete pavers would be suitable for use in a situation:
	+ for example the combination of techniques and materials used to lay concrete pavers in a small patio area.
* explain how the characteristics of a concrete paver would influence safe technique selection for all of the techniques listed above:
	+ for example explain how a petrol engine driven concrete cutting saw is used, why the control of dust is necessary, and what purpose the water feed on the saw has.
* explain which combinations of techniques (shown above) combined with concrete pavers would be suitable for use in a situation:
	+ for example explain techniques that would be used to measure and mark out an area for a small paved patio suitable for use as a barbeque area, and also explain the process of laying, joining and finishing the concrete pavers for a patio.
* discuss why concrete materials require particular techniques for their safe handling and use:
	+ for example discuss how the characteristics of concrete materials require the selection of specialist safety and cutting equipment that can deal safely with high temperatures, dust, noise, vibration, petrol fumes and electricity.
* discuss why techniques and concrete materials are combined in different ways across two or more situations, for example discuss:
	+ techniques that are used to measure and mark out an area for a small paved patio suitable for use as a barbeque area, and then discuss the process of laying, joining and finishing the pavers for this patio
	+ techniques that would be used to pave a small area in a busy shopping area, and the further safety techniques and control of hazards when working in public areas.

The situations you could consider that would impact on materials characteristics and their techniques could include:

* wet or dry area
* ease or optimisation of production
* one off versus mass production
* budget constraints
* life expectancy
* maintenance plan
* target market, for example the age-group of the end users, the quality expectation of the end users
* position of the material within the product.

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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 basic concepts used to make products from concrete materials such as pavers.

Learners need to show that they can process and interpret information, and prepare a report that discusses why resistant materials require particular techniques for their safe handling and use, and why techniques and resistant materials are combined in different ways across two or more situations.

# Conditions

Learners could work independently or in groups to develop their understanding, but they need to create their report independently, and will be assessed individually.

# Resource requirements

Assessors/educators will provide learners with the opportunities to explore a range of products made from concrete materials in order to discuss the materials used, their characteristics and the techniques that would be appropriate to work with them safely.

# Additional information

None.

# Assessment schedule: Construction and Mechanical Technologies 91059 – Concrete pavers

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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 basic concepts used to make pavers from concrete materials by:* describing the characteristics of concrete materials

For example:* the learner uses terms such as profile, hardness, malleability, ductility, and elasticity to describe the characteristics of a concrete paver.
* explaining safe techniques to be used with concrete materials

For example, the learner explains safe techniques used with concrete pavers for at least one of each of the following categories:* + measuring/marking out, e.g. how to safely measure quantities of cement
	+ sizing/shaping/forming e.g. how to safely cut a concrete paver using a diamond blade saw
	+ joining/assembling, e.g. the safe handling and transfer of concrete
	+ finishing/detailing/tuning, e.g. the safe techniques used when using solvent based products used to seal concrete surfaces.
* describing which combinations of techniques and concrete materials would be suitable for use in a situation

For example, the learner describes:* + techniques that would be used to measure and mark out an area for a small paved patio suitable for use as a barbeque area
	+ the process of laying, joining and finishing the concrete pavers for a patio.

*The above expected learner responses are indicative only and relate to just part of what is required.* | The learner demonstrates in-depth understanding of basic concepts used to make pavers from concrete materials by:* explaining how the characteristics of concrete materials influence safe technique selection

For example:* the learner uses terms such as profile, hardness, malleability, ductility, and elasticity to explain the characteristics of a concrete paver
* the learner explains how the characteristics of concrete pavers require the selection of specialist safety and cutting equipment that can deal safely with high temperatures, dust, noise, vibration, petrol fumes, and electricity.
* explaining safe techniques to be used with concrete materials

For example, the learner explains safe techniques used with concrete pavers for at least one of each of the following categories:* + measuring/marking out, e.g. how to safely measure quantities of cement
	+ sizing/shaping/forming e.g. how to safely cut a concrete paver using a diamond blade saw
	+ joining/assembling, e.g. the safe handling and transfer of concrete
	+ finishing/detailing/tuning, e.g. the safe techniques used when using solvent based products used to seal concrete surfaces.
* explaining which combinations of techniques and concrete materials would be suitable for use in a situation

For example, the learner explains:* + how different techniques that would be used to measure and mark out an area for a small paved patio are suitable for use as a barbeque area
	+ why the process of laying, joining and finishing the concrete pavers for a patio is suitable.

*The above expected learner responses are indicative only and relate to just part of what is required.* | The learner demonstrates comprehensive understanding of basic concepts used to make pavers from concrete materials by:* discussing why concrete materials require particular techniques for their safe handling and use

For example:* the learner uses terms such as profile, hardness, malleability, ductility, and elasticity when discussing the characteristics of a concrete paver
* the learner discusses how the characteristics of concrete pavers require the selection of specialist safety and cutting equipment that can deal safely with high temperatures, dust, noise, vibration, petrol fumes, and electricity, compared with other techniques that might be used safely when working with the concrete pavers.
* explaining safe techniques to be used with concrete materials

For example, the learner explains safe techniques used with concrete pavers for at least one of each of the following categories: * + measuring/marking out, e.g. how to safely measure quantities of cement
	+ sizing/shaping/forming e.g. how to safely cut a concrete paver using a diamond blade saw
	+ joining/assembling, e.g. the safe handling and transfer of concrete
	+ finishing/detailing/tuning, e.g. the safe techniques used when using solvent based products used to seal concrete surfaces.
* discussing why techniques and concrete materials are combined in different ways across two or more situations

For example, the learner:* + compares and contrasts techniques that would be used to measure and mark out an area for a small paved patio suitable for use as a barbeque area, then discusses the process of laying, joining and finishing the pavers for a patio, comparing different processes and deciding how/why different techniques and materials are combined
	+ discusses techniques that would be used to pave a small area in a busy shopping area, and discusses further safety techniques and control of hazards when working in public areas.

*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.