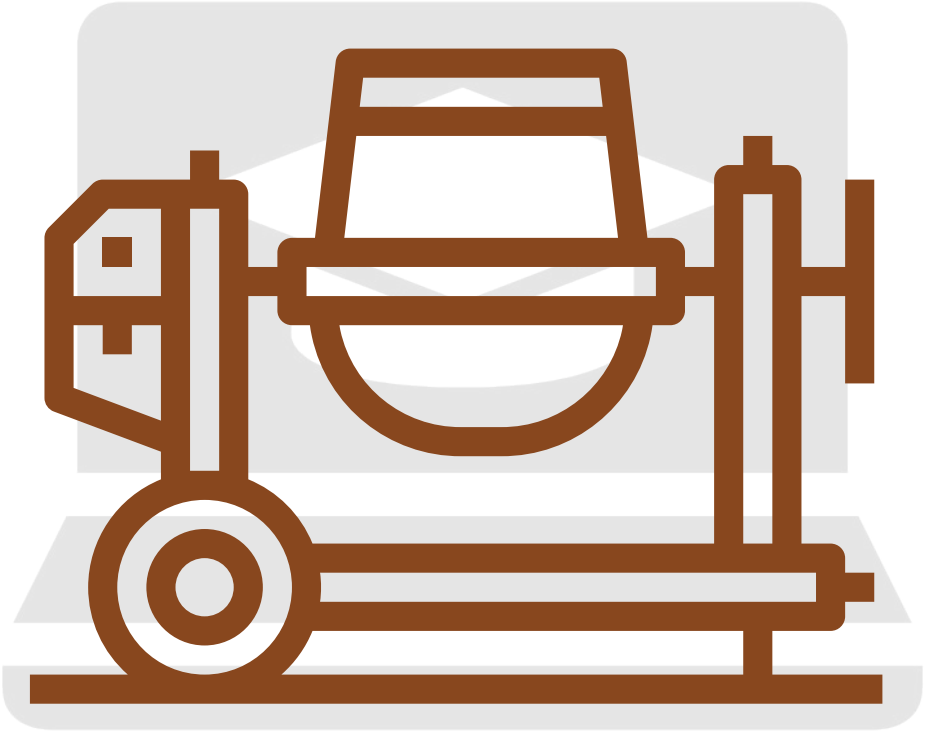
BCATS

BUILDING, CONSTRUCTION AND ALLIED TRADE SKILLS

Concrete works

Teacher/Tutor resource



Unit Standard 12933 (v5), **Level 2**

Complete minor concrete works as a BCATS project.

6 CREDITS

BCITO buildingpeople

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Teaching and assessment tips

Purpose

This unit standard credits learners who can complete two minor concrete works. The examples in the student handbook are of projects that were constructed in consultation with Kaiapoi High School's Level 2 building class and their School Principal and the Board of Trustees. It is to be expected that your students' actual projects will be designed to work within your school/community environment.

Students need to:

- calculate materials correctly and prepare orders for materials
- excavate the ground
- construct formwork and placing hard fill
- mix, place, finish, and cure concrete
- complete all tasks safely
- keep the work area clean and tidy
- clean and store tools, plant and equipment correctly.

Unit Interpretation

Two minor concrete works are to be completed. These works could be a path, a slab foundation for a non consent building or garden shed, a concrete wall of less than 350mm in height, or projects of similar complexity. Please see the Assessment Schedule at the end of this document for more-detailed requirements.

Calculation of quantities and the order form must include quantities for formwork, aggregate and cement. The completed order must be attached to the Assessor Observation Sheet.

You may wish to give your students a work diary to help them record the processes and problem solving that occurs throughout their projects. Work diary and order form templates are available in the 'Level 2 generic resources' folder on www.bconstructive.org.nz and in the teacher resources on www.myBCITO.nz. You can alternatively source or design your own.

Photographic or other evidence to show that the concrete projects have been finished must also be attached to the Assessor Observation Sheet.

Assessment

Information to support assessment decisions should, wherever possible, be collected naturally as the BCATS project progresses.

Assessment of this unit standard consists of:

- **completion of an order, including calculations for materials and**
- **completion of two minor concrete works and**
- **completion of the Assessor Observation Sheet.**

Alignment with other unit standards

Developing programmes that integrate teaching and learning helps to provide students with meaningful and manageable learning opportunities. The following unit standards are not an exhaustive list of which you could include in your programme and nor should one feel obligated to offer all as linked units. Other unit standards you include will depend on your overall programme of study and what best meets your learners' needs.

Level 2

12938: *Lay paving blocks as a BCATS project*

If you plan your concrete works projects as at least one stage of a larger project, you could incorporate a paving project. An example is a concreted area featuring a paved insert of at least 1m².

24354: *Demonstrate knowledge of health and safety legislation and apply safe working practices in a BCATS environment*

Alongside the required theory component of US 24354, the concrete projects provides students with the opportunity to demonstrate safe practices.

24357: *Receive instructions and communicate information in relation to BCATS projects*

Projects where students need to work together to successfully complete them provide many opportunities to demonstrate they can receive instructions and communicate well. The concrete projects can therefore contribute to the achievement of US 24357.

24358: *Plan and monitor the construction of a BCATS project, and quality check the product*

As students are required to work off a plan and specifications, calculate the materials required and prepare an order for materials, they are in a position to plan and monitor the stages of construction and perform the quality checks required for US 24358.

24361: *Apply mathematical processes to BCATS projects*

Students need to select mathematical methods to achieve project outcomes and use trigonometry and at least one of numerical calculations, measurement, and geometry to achieve US 24361. Providing trigonometry is included in addition to the calculations of measurement, quantities, volumes, and area required to achieve US 12933, the concrete projects can contribute to the achievement of US 24361.

24350: *Identify, select, use, and maintain portable power tools for BCATS projects*

12927: *Demonstrate knowledge of, select, maintain, and use hand tools used for BCATS projects*

The concrete projects can contribute to the achievement of each of the unit standards noted above. While students may not necessarily complete the theory aspects of the standards as part of their projects, they should be encouraged to document evidence of the tools and machinery they selected and used.

Assessment Schedule

US 12933 (v5) - Complete minor concrete works as a BCATS project (Level 2, Credit 6)

Evidence, including photos of completed projects, for this unit standard must be presented for ***two*** minor concrete works. Minor concrete works can include a path, a slab foundation for a non-consent building or garden shed, a concrete wall of less than 350mm in height, or projects of similar complexity.

Outcome 1	Calculate quantities and prepare an order for materials for minor concrete works.	**Assessment evidence and judgement**
PC 1.1	Quantities of materials are calculated from working drawings and job specifications.	Evidence gathered from students calculations and the Assessor Observation Sheet showing: • quantities of boxing, hardfill, cement and builders mix etc are calculated correctly.
PC 1.2	An order for materials is prepared in accordance with workplace practice.	Evidence gathered using order list: • order list for both projects is correct.
Outcome 2	**Excavate ground, construct formwork and place hardfill for minor concrete works.**	**Assessment evidence and judgement**
PC 2.1	Ground is excavated in accordance with job specifications.	Evidence gathered from the concrete project and the Assessor Observation Sheet showing: • excavation is neat and accurate.
PC 2.2	Formwork is set up to ensure that finished concrete is in accordance with job specifications.	Evidence gathered from the concrete project and the Assessor Observation Sheet showing: • formwork is level, true and sturdy.
PC 2.3	Hardfill is placed in accordance with job specifications.	Evidence gathered from the concrete project and the Assessor Observation Sheet showing: • correct amount of hardfill is compacted without disturbing boxing.
Outcome 3	**Mix, place, finish and cure minor concrete works.**	**Assessment evidence and judgement**
PC 3.1	Concrete is mixed in accordance with job specifications.	Evidence gathered from the concrete project and the Assessor Observation Sheet showing: • concrete is mixed to correct consistency.
PC 3.2	Concrete is placed, compacted and finished in accordance with job specifications.	Verified photos of the concrete project and evidence from the Assessor Observation Sheet showing: • concrete is placed, compacted and finished neatly and correctly.
PC 3.3	Concrete is cured in accordance with job specifications.	Evidence gathered from the concrete project and the Assessor Observation Sheet showing: • there is no excessive cracking in the cured concrete.
Outcome 4	**Complete work operations.**	**Assessment evidence and judgement**
PC 4.1	All operations are safely completed in accordance with workplace practice.	Evidence gathered from the Assessor Observation Sheet showing: • appropriate PPE selected and used • tools used correctly and safely • personal safety and safety of others observed.
PC 4.2	Workplace, tools, plant and equipment are cleaned, and tools, plant and equipment stored in accordance with work place practice.	Evidence gathered from the Assessor Observation Sheet showing: • work area cleaned • waste disposed of • tools, plant and equipment cleaned and stored correctly.