

National Certificate in Building, Construction and Allied Trades Skills (BCATS)
Teacher Information & Resources

**Complete minor concrete works
as a BCATS project**

Unit Standard – 12933

Level 2, Credit 4





Teaching and assessment tips

Intent – The intent of the unit standard is that the learner is able to complete two minor concrete works including;

- calculating quantities,
- excavating the ground,
- preparing an order,
- constructing formwork and placing hardfill.

They need to mix and place concrete and ensure the correct curing method is used.

Unit standard 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, etc. If a different project is selected it must be of similar complexity to those above.

Quantities of hardfill do not have to be included in quantity calculations.

Calculation of quantities and the order form must include quantities for formwork, aggregate and cement.

The skills required for this unit standard are assessed using the Assessor Observation sheet, a copy of the learner's calculations of quantities, their order form, and evidence of two minor concrete works.

An order form template may be sourced from the internet or you can design your own or use a facsimile of your school or business order form. The completed order must be attached to the assessor observation sheet.

Evidence to show that the concrete works have been finished and cured must also be attached to the Assessor Observation sheet. This may be in the form of a verified photo.

Assessment



Assessment of this unit standard consists of:

- Completion of an order, including calculations for quantities of formwork, aggregates and cement and
- Completion of the Assessor Observation sheet and
- Completion of two minor concrete works (verified photo(s) to be attached).

Examples of oral assessment questions

1. What are the three methods of producing concrete?

- *Dry pre-mixed.*
- *Site mixed.*
- *Ready mixed.*

2. What is builder's mix and how is it obtained?

a) A proportional mix of sand and aggregate already graded and mixed.

b) Available from most building supply outlets.

3. What are the three main ingredients of concrete?

Water, cement and aggregate.

4. Calculate the volume of concrete to a depth of 70mm for a path 15 metres long and 1.5 metres wide:

$$\begin{aligned}\text{Volume of concrete} &= \text{length} \times \text{width} \times \text{depth} \\ &= 15.000 \times 1.500 \times 0.070 \\ &= 1.575 \text{m}^3\end{aligned}$$

5. What is formwork and why is it used?

Temporary timbers or boxing used to retain the concrete in the correct place until it sets.

6. Briefly explain why concrete needs to be cured.

To ensure that the concrete retains sufficient moisture for the chemical reaction between the water and cement to be completed.

Assessor Observation Sheet – Concrete works

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Student Name:	
Project 1:	Location:
Project 2:	Location:

Assessor observation:

Assessment criteria: <i>This unit standard requires the completion of two projects, including calculations and order form for formwork, aggregates and cement.</i>		Comments and/or notes
Calculations of materials (including formwork, aggregate and cement) attached	Project 1 <input type="checkbox"/> Project 2 <input type="checkbox"/>	
Order form for materials (including formwork, aggregate and cement) attached	Project 1 <input type="checkbox"/> Project 2 <input type="checkbox"/>	
Ground is excavated, formwork set up and hard fill placed	Project 1 <input type="checkbox"/> Project 2 <input type="checkbox"/>	
Concrete is placed, compacted and finished	Project 1 <input type="checkbox"/> Project 2 <input type="checkbox"/>	
Concrete is cured	Project 1 <input type="checkbox"/> Project 2 <input type="checkbox"/>	
Work is in accordance with job specifications	Project 1 <input type="checkbox"/> Project 2 <input type="checkbox"/>	
All operations completed safely and according to site/workplace practices	Project 1 <input type="checkbox"/> Project 2 <input type="checkbox"/>	
Tools are looked after and put away correctly	Project 1 <input type="checkbox"/> Project 2 <input type="checkbox"/>	
Verified photo(s) of finished projects are attached	Project 1 <input type="checkbox"/> Project 2 <input type="checkbox"/>	
Assessor name:	Date:	RESULT: A = Achieved, N = Not Yet Achieved
Assessor signature:		

Assessment Schedule

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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
ER 1.1	Quantities of materials are calculated from working drawings and job specifications.	Evidence gathered from students calculations and the assessor observation sheet showing; <ul style="list-style-type: none"> Quantities of boxing, hardfill, cement and builders mix etc are calculated correctly
ER 1.2	An order for materials is prepared in accordance with workplace practice.	Evidence gathered using order list; <ul style="list-style-type: none"> Order list for both projects is correct
Outcome 2	Excavate ground, construct formwork and place hardfill for minor concrete works.	Assessment evidence and judgement
ER 2.1	Ground is excavated in accordance with job specifications.	Evidence gathered from practical projects and the assessor observation sheet showing; <ul style="list-style-type: none"> Excavation is neat and accurate
ER 2.2	Formwork is set up to ensure that finished concrete is in accordance with job specifications.	Evidence gathered from practical projects and the assessor observation sheet showing; <ul style="list-style-type: none"> Formwork is level, true and sturdy
ER 2.3	Hardfill is placed in accordance with job specifications.	Evidence gathered from practical projects and the assessor observation sheet showing; <ul style="list-style-type: none"> Correct amount of hardfill is compacted without disturbing boxing
Outcome 3	Mix, place, finish and cure minor concrete works.	Assessment evidence and judgement
ER 3.1	Concrete is mixed in accordance with job specifications.	Evidence gathered from practical projects and the assessor observation sheet showing; <ul style="list-style-type: none"> Concrete is mixed to correct consistency
ER 3.2	Concrete is placed, compacted and finished in accordance with job specifications.	Evidence gathered from practical projects and the assessor observation sheet showing; <ul style="list-style-type: none"> Concrete is placed, compacted and finished neatly and correctly
ER 3.3	Concrete is cured in accordance with job specifications.	Evidence gathered from practical projects and the assessor observation sheet showing; <ul style="list-style-type: none"> There is no excessive cracking in the cured concrete
Outcome 4	Complete work operations.	Assessment evidence and judgement
ER 4.1	All operations are safely completed in accordance with workplace practice.	Evidence gathered from the assessor observation sheet showing; <ul style="list-style-type: none"> Appropriate PPE selected and used Tools used correctly and safely Personal safety and safety of others observed
ER 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; <ul style="list-style-type: none"> Work area cleaned Waste disposed of Tools, plant and equipment cleaned and stored correctly