

CPCCBC4006B

SELECT, PROCURE AND STORE CONSTRUCTION MATERIALS FOR LOW RISE PROJECTS

ASSESSMENT SUMMARY

The assessment activities for *CPCCBC4006B Select, procure and store construction materials for low rise projects* cover all aspects of the unit of competency required. To demonstrate competence in this unit, a participant must undertake all tasks and complete them satisfactorily and consistently. For Apprentices and Trainees, this includes employer completion of the Employer Record Book (ERB).

Participants must read all the information given before starting any assessment task. The assessment tasks are intended to be equitable, fair and flexible. If a participant has any questions or requires alternative arrangements to be made such requests should be directed to their Trainer/Assessor, who should note such arrangements in the 'Assessor Comments' on the affected assessment. If a participant feels they are not yet ready to be assessed, they should discuss their options with their Trainer/Assessor.

To satisfactorily complete the assessment, the participant is required to answer all questions correctly and demonstrate their skills to industry standards. If a participant does not answer some questions or perform some tasks, they will be deemed 'Not Satisfactory' for the task and 'Not Yet Competent' for the unit of competency. The Trainer/Assessor is able to provide the participant with additional information on interpreting the assessment outcomes and provide guidance on the participant's options. Should a participant still be deemed 'Not Satisfactory' they will have the opportunity to undertake a supplementary assessment or appeal the result.

By signing the cover page for each assessment item, the participant acknowledges they understand the assessment instructions and requirements and consent to being assessed. The participant also verifies and assures the RTO that the work submitted is their own work.

Participant Name	Yanzhong ZHU
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Task	Assessment Results	
Theory Exam	☐ Satisfactory	☐ Not Yet Satisfactory
Practical Assessment	☐ Satisfactory	☐ Not Yet Satisfactory
Outcome for Unit of Competency	☐ Competent	☐ Not Yet Competent

Assessor Name	
Assessor Signature	
Unit Competence Determination Date	Click here to enter a date.

CPCCBC4006B

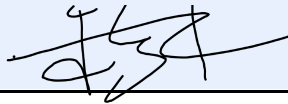
SELECT, PROCURE AND STORE CONSTRUCTION MATERIALS FOR LOW RISE PROJECTS

THEORY EXAM INSTRUCTIONS

- This exam will occur under standard assessment conditions.
 - An oral examination may be allowed under certain circumstances, whereby the Participant's answers will be documented by a party other than the Participant. This must be acknowledged in writing (e.g. FT001 and Assessor Comments)
- Participants must provide enough detail in their responses to demonstrate their knowledge and skills.
- Please fill in the details below, providing your name, signature and date of assessment.
 - Your signature acknowledges that this is your own work.
- Assessors are to complete marking in pen of a different colour to the Participant.
- If a Participant initially answers a question incorrectly but modifies their response, they must follow the instructions below:
 - If a Participant changes their response in writing, they must put their initials next to the written change.
 - If a Participant changes their response verbally, this must be noted on the exam paper by the assessor.

Participant name Yanzhong ZHU

Participant signature



Date 18/03/2021

Assessor name

Assessor signature

Date Click here to enter a date.

Number of questions	Number of questions answered correctly	Task outcome (Tick)	
44		Satisfactory	Not Yet Satisfactory
		☐	☐

Q1. Which of the following documents and/or people would you refer to when selecting materials for a building project? Tick all that apply.

Answer	Choice	Possible Answers	☐
	☒	Australian Standards	
	☒	Contract	
	☒	Drawings	
	☒	Manufacturer	
	☒	National Construction Code	
	☒	Specifications	
	☒	Tolerances	

Q2. Identify the Volume and Parts of the NCC that relate to suitability of materials for Classes 1 and 10, and Classes 2 to 9.

Answer	Classes 1 and 10	Classes 2 to 9	☐
	Volume2, S1, Part a5	Volume1, SA, Part a5	

Q3. Identify the assessment methods used to verify a performance solution.

Answer	-Evidence of suitability	☐
	-A verification method	
	-Expert judgement	
	-Comparison with the Deemed-to-Satisfy provisions	

Q4. Which of the following solutions for material selection often references the Australian Standards? Tick your response.

Answer	Choice	Possible Answers	☐
	☒	Deemed-to-Satisfy solution	
	☐	Performance solution	

Q5. Identify five (5) materials commonly used for *low rise buildings* in your region. For each material, identify the following:

- Its name
- Properties of the material

Answer

#	Material name	Properties
1	Concrete	Concrete has a rather low tensile strength, it is generally strengthened using steel rods or bars (known as rebars), referred to as reinforced concrete. A vibrator is used to eliminate any air that has been entrained when the liquid concrete mix is poured around the ironwork.
2	Wood	Different structures can be built in most climates very flexible under loads, keeping strength while bending incredibly strong when compressed vertically There are many types so specific species are better for various uses than others
3	Metal	Metal figures quite prominently in prefabricated structures used in most cosmopolitan cities. It requires a great deal of human labour to produce metal, especially in large amounts needed for the building industries.
4	Fabric	Fabric has been revived as a major construction technique with the development of tensile architecture and synthetic fabrics. Modern buildings can be made of flexible material such as fabric membranes, and supported by a system of steel cables or internal (air pressure.)
5	Rock	Dry-stone walls have been built for as long as humans have put one stone on top of another. Eventually different forms of mortar were used to hold stones together, cement now the most common.



- Q6. For each of the materials in Q5. identify the following:
- Quality of the material (i.e. durability, serviceability, cost effectiveness)
 - Compatibility and non-compatibility of the material (i.e. what it would/would not be suitable for)

Answer

#	Quality	Compatibility
1	Durability-good, serviceability-good, cost effectiveness-expensive	Main materials for most of construction work
2	Durability-good, serviceability-good, cost effectiveness-cheap	Main materials for most of construction work
3	Durability-good, serviceability-good, cost effectiveness- very expensive	Main materials for most of construction work
4	Durability-good, serviceability-good, cost effectiveness-median	Part of materials required
5	Durability-good, serviceability-good, cost effectiveness-median	Main materials for most of construction work-



Q7. Identify five (5) physical characteristics that may be considered when evaluating potential building materials.

Answer

- Electrical conductivity
- Density and specific gravity
- Strength
- Thermal conductivity and capacity
- Moisture absorption

☐

Q8. Match the terms and definitions below by writing the appropriate letter next to each number in the centre column.

Term		Answers
1	Carbon footprint	1 -c
2	CO ₂ e	2 -e
3	Embodied energy	3 -a
4	Embodied water	4 -d
5	GHG	5 -b

Definition	
A	The amount of energy required to manufacture a product
B	Total GHG emissions produced during manufacture construction and use
C	Greenhouse gas emissions
D	The amount of water required to manufacture a product
E	CO ₂ equivalent tonnes emitted into the atmosphere

☐

Q9. Which of the following materials would be considered as 'low energy content'? Tick all that apply.

Choice	Possible Answers
☐	Bricks
☒	By-products of other industrial processes
☐	Cement
☐	Glass
☐	Metals
☐	Plastics
☒	Sand
☒	Stone
☒	Timber

☐

Q10. Refer to the table below and identify the wall material type that has the smallest embodied energy and emission impact.

COMPONENT	kWh/ m2 indoor floor area	Kg CO2e/ m2 indoor floor area
Floor suspended slab 114 - 117 mm	208	68
Floor suspended timber on stumps	76	26
ROOF		
Roof steel frame colorbond steel or tile	209	72
Roof timber frame colorbond steel or tile	143	47
WALLS		
Walls double brick; s/b interior	312	103
Walls brick veneer timber frame	204	67
Walls timber frame fibro clad	61	20
Walls steel frame fibro clad	90	30
Walls Timber frame timber clad	68	23
Walls pre-cast concrete	264	88
Walls concrete block	160	53
OTHER , APPLICABLE TO ALL HOMES REGARDLESS OF TYPE		
Construction, admin, transport, other materials such as copper pipes, glass, aluminium	406	144
Floor coverings assume approx. 50% ceramic tile 50% polypropylene carpet	61	20
Fittings, fixed appliances built in \$ bathroom, kitchen, w/robes	96	43
ADDITIONS	kWh/ m2 area or m length	Kg CO2e/ m2 area or m length
Roofed open areas - alfresco / porch / verandah / carport	352	117
Garage single brick or cavity walls, concrete slab, steel or tile roof	675	219
Open Carport	352	117
Fence brick or metal (per metre length, assuming 1.5 m height)	186	61
Paving (brick or concrete)	96	32
Pool (concrete below ground)	534	198

Answer Timber frame Fibro Clad



Q11. Identify the Volume and Parts of the NCC that relate to energy efficiency of materials for Classes 1 and 10, and Classes 2 to 9.

Answer

Classes 1 and 10	Classes 2 to 9
Volume 2, Part 2.6	Volume 1, Section J

☐

Q12. Identify the relevant section of the Standards and Tolerances Guide and the associated Australian Standard that addresses residential slabs and footings.

Answer

Standards and Tolerances Guide	Australian Standard
2.2 Footing and slabs generally	AS 2870

☐

Q13. Identify the relevant section of the Standards and Tolerances Guide and the associated Australian Standard that addresses roof tiles.

Answer

Standards and Tolerances Guide	Australian Standard
6.4 Roof Tiles	AS 2049 & AS 2050

☐

Q14. Identify the Volume and Parts of the NCC that relate to safety barriers for swimming pools for Classes 1 and 10, and Classes 2 to 9.

Answer

Classes 1 and 10	Classes 2 to 9
Volume 2, P 3.10.1	Volume 1, G1.1

☐

Q15. In some states, barriers and fences for swimming pools are not entirely regulated by the NCC, as noted in the Ancillary Provisions and State and Territory Variations. Identify the applicable Act and Regulation that regulate safety barriers for swimming pools in your jurisdiction.

Answer 180712 QDC MP 3.4

☐

Q16. Identify the Australian Standard that relates to safety barriers for swimming pools.

Answer AS 1926.2007

☐

Q17. True or False (Tick your response): According to the Standard in Q16. all gates must be fitted with a self-closing device that will return the gate to a closed position from any position without the use of manual force.

Answer

☒	True
☐	False

☐

Q18. Identify the Volume and Parts of the NCC that relate to fire-resistance of building elements for Classes 1 and 10, and Classes 2 to 9.

Answer

Classes 1 and 10	Classes 2 to 9
Volume 2, Section A, Part A5	Volume 1, Section A, Part A5

☐

Q19. Identify the Australian Standard that relates to fire-resistance tests for elements of construction.

Answer AS 1530.4:2014

☐

Q20. For all NCC Classes, where the ground or subfloor space is excessively damp or subject to frequent flooding, which durability class must the subfloor framing must be used where above ground?

Answer Class 1 &2

☐

Q21. Identify the Australian Standards that must be observed when meeting the requirements for Q20.

Answer AS 5604-2005

☐

Q22. True or False (Tick your response): Where materials are not used as intended (or without considering NCC requirements), this can make a significant difference to the life or serviceability of the structure.

Answer

☒	True
☐	False

☐

Q23. Explain why durability and serviceability impact on the cost effectiveness of chosen materials.

Answer The Building Code sets minimum required levels of durability for different building elements, and this will be a primary driver for materials selection. Beyond this, durability and maintenance requirements should be considered together across the expected service life of the building. Some materials that do not appear to offer high levels of durability may actually perform well over many decades with the right maintenance.

☐

Q24. Provide an example of short term degradation of materials and describe its effects on a building on structure.

Answer Timber is often prone to short term degradation. When exposed to the weather it may suffer from weathering, causing splitting and crumbling or if it is unprotected and remains damp for long periods, it will rot. Some timbers are naturally resistant to rot, for example western red cedar. These timbers form a protective skin on the surface that keeps them relatively intact

☐

Q25. Provide an example of long term degradation of materials and describe its effects on a building on structure.

Answer Timber can also be vulnerable to chemical attack, from liquids, fumes or pollution. Attack is normally rapid at higher temperatures and hardwoods tend to be more susceptible than softwoods. Most timbers are resistant to weak acids, but susceptible to strong acids. Exposure to steam, such as in high temperature steaming processes, can cause serious reduction in the strength of timber



Q26. You have spoken to a supplier who has indicated that some of the client's desired materials are unavailable. When considering alternative building materials what must be taken into consideration (i.e. other than the client's requirements)?

Answer Client requirements
Material availability or lack of availability
Environmental issues
Life Cycle Assessment methodology

An alternative material or building practice should only be considered if it is performance tested, efficient, environmentally sustainable or more cost-effective.

You need to evaluate and select alternative materials in the event that specified materials are unavailable or unsuitable, with consideration to:

- Availability
- Environmental impact
- Transportation
- Embedded energy
- Handling
- Fire resistance rating
- Testing
- Compatibility
- Waste reduction
- Acoustic properties
- Reuse/recycling
- Life-cycle cost
- Renewable non-renewable
- Short and long-term degradation



Q27. Identify two (2) things that you should look for when receiving a delivery of materials.

Answer

1. Before the delivery person leaves and before you sign anything:
Confirm the correct quantity
Confirm the condition of the delivery

2. The contents must be in perfect condition. Perfect means no damages at all. If, however, the box is damaged but the contents are still in tact, then this is not considered damage by the shipping company.

☐**Q28. If you encounter issues with delivery, what two (2) options do you have?****Answer**

Accept the shipment with 'conditions' or
Reject the entire shipment

☐**Q29. Which of the following should be assessed before shifting materials?
Tick all that apply.****Answer**

Choice	Possible Answers
☒	What needs to be relocated (e.g. size, weight)
☒	The relocation area, site layout and obstacles
☒	Distance and time to relocate load
☒	Whether a team is available and/or appropriate
☒	Whether PPE must be worn (e.g. for hazardous materials)

☐**Q30. What document should you refer to for guidance on how to handle and store hazardous chemicals?****Answer**

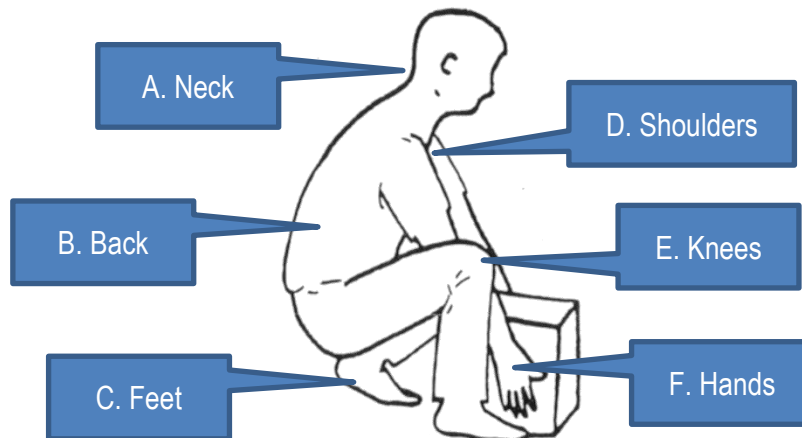
Safety Data Sheet

☐**Q31. Name three (3) ways you can reduce the risk of injury if a load is too heavy for one person to carry, push or pull.**

Answer team lift, lighten the load, use a mechanical aid



- Q32. In the diagram below a person is lifting a tool box.
Filling in the table, indicate how each body part should be used/placed.



Answer ☐

Area of body (Letter)	How it should be placed
D	Level
A	Upright
F	Good grip
B	Natural curve
E	Bent
C	Flat, facing load

- Q33. How should construction materials and components be handled?
Tick all that apply.

Answer ☐

Choice	Possible Answers
☒	Sorted to suit material type and size, separating hazardous material
☒	Stacked or stockpiled for ease of identification and retrieval
☐	Stored in access ways for ease of retrieval
☒	Stored clear of access ways
☒	Handled and positioned ready for installation

- Q34. Identify the Australian Standard that relates to the storage and handling of LP gas.

Answer ☐

Q35. List one (1) testing method for each of the building materials listed below.

Answer	Material name	Properties	☐
	Concrete	Concrete cylinders or cubes are normally tested in a hydraulic press. A universal machine for tension, compression and bending is also used	
	Metals	The strength of metals is reduced if they are repeatedly loaded alternately in tension and compression. This test is called 'repeated loading' if the load is applied several hundred or thousands of times, and fatigue loading if the load is applied millions of times. Ductility is tested by bending a bar around a pin over a wide angle. Hardness is tested by indentation with a diamond or a hardened steel ball. If the tensile strength has been tested, then the hardness of the metal can be deduced. The toughness of a metal can also be deduced from the tension test. Toughness is defined as the energy required to break a material. The greater the area contained under a stress-strain curve up to failure, the greater the toughness of the material.	
	Timber	When timber is used in domestic construction where it is not highly stressed, a visual grading may be a sufficient means of testing the material. Because of imperfections in individual pieces, stress grading is usually more reliable than testing of selected pieces. A stress grading machine tests every individual piece of timber using a very fast and economical method. The test is based on the relationship between the strength and the deflection of timber. Each piece of timber is deflected at several points along its length, and the deflection category marked by means of a spot of dye. The timber is then classified visually by its colour markings.	

Q36. What Code gives detailed tables which state the required grade of timber for specific sizes and uses?

Answer ☐

Q37. Name two (2) ways that defects may be seen in timber.

Answer ☐

It is important that you can identify the defects that are associated with a timber type.

It is also important that you can determine visually whether timbers have been exposed to hazards, such as fire, termites or weathering

Q38. Identify two (2) tests that may be performed to determine the durability of stone.

Answer ☐

acid immersion to test how quickly it dissolves under acidic conditions, wetting and drying and water absorption

saturation coefficient

Q39. Name two (2) ways that defects may be seen in stone.

Answer ☐

Limestones tend to be susceptible to crystallisation processes such as frost and salt attack and some sandstones can suffer salt damage. Sandstones that contain carbonate cements tend to be susceptible to acid attack from polluted environments, as are some slates.

If water retention rates of the stone are important, for matching or for a particular area, then the porosity and the saturation coefficients of the stone can also be measured. The saturation coefficient is a measure of how much of the pore space in a stone will be full of water after soaking for a long time

Q40. True or False (Tick your response): Under a contract, builders and other specialist tradespersons are the ones most likely to rectify or remedy problems that arise from incorrect installation, application or placement of materials.

Answer ☐

☒	True
☐	False

Q41. Name two (2) established methods that may be used to preserve timber.

Answer

- Painting, adequate ventilation and detailing to prevent water remaining next to timbers are all useful in preventing fungal attacks.
- Preservative treatments can also be applied to deter either insects or fungi. This can be done by brushing or spraying, or by dip diffusion or pressure impregnation. Preservatives commonly used are tar-based oils such as creosote, organic compounds dissolved in solvents such as zinc naphthalene and water-based compounds such as copper-chrome-arsenate.



Q42. Identify two (2) established methods that may be used to protect ferrous metals.

Answer

- Painting metal can sometimes do all of these and is a common solution. A good paint system on steel will combine the use of rust inhibiting primers, moisture proof barriers and practicable maintenance features.
- Other coatings such as galvanising provide even better protection. When metalwork is exposed or near more corrosive environments such as industrial areas or coastal areas special protection is typically required, such as can be achieved with epoxy paint systems or galvanising.



Q43. Explain why the corrosion resistance of non-ferrous metals is superior to that of ordinary steel.

Answer ☐ This is a result of the production of a ceramic coating of oxide or salt on the metal which protects it from further corrosion.

**Q44. When should aluminium be coated with bituminous paint?
Tick all that apply.**

Answer ☐

Choice	Possible Answers
☐	At all times
☒	When it is buried in soil
☒	When it comes in contact with chemical materials
☒	When it is immersed in water
☐	When it is used on bitumen

CPCCBC4006B

SELECT, PROCURE AND STORE CONSTRUCTION MATERIALS FOR LOW RISE PROJECTS

PRACTICAL ASSESSMENT INSTRUCTIONS

- The following practical assessment will require the Participant to complete work related activities.
- The Assessor will conduct observations of the Participant's work to determine whether they display sufficient practical skills and knowledge.
- Please fill in the details below – providing your name, signature and date of assessment.
 - The Participant's signature acknowledges that the Assessor provided clear instructions and the Participant understood what was required to complete this assessment.
- The Assessor may substitute a Practical Task with an alternate task of equal value.
 - Alternate tasks must be fully documented by the assessor in the Assessor Comments area.

Participant name Yanzhong ZHU

Participant signature



Date 18/03/2021

Assessor name Ying SHE

Assessor signature



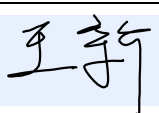
Date 18/03/2021

Task	Task outcome (Tick)	
	Satisfactory	Not Yet Satisfactory
Task 1 (Occasion 1)	☒	☐
Task 1 (Occasion 2)	☒	☐

ASSESSOR COMMENTS

CPCCBC4006B

SELECT, PROCURE AND STORE CONSTRUCTION MATERIALS FOR LOW RISE PROJECTS

Practical Task 1 (2X)		
Description of task: On two (2) occasions, a suitable observer is to verify the participant's ability to supervise systems through which materials are selected, acquired and stored on site for the following projects: Occasion 1: Construction classified as Class 1 and 10 construction Occasion 2: Construction classified in Classes 2 to 9 with a gross floor area not exceeding 2000 square metres, not including Type A or Type B construction The participant is to gather evidence of how they have completed each component of the Practical Task, which is to be submitted with this Practical Assessment sheet. Evidence to be submitted may include: - Copy of PO sent to site team for materials. - Email correspondence sighting need for materials, delivery of materials and storage of materials (if relevant). The observer is to provide detailed comments on the tasks completed by the participant. The assessor is to verify the observer's comments in the Assessor Comments section, and provide the Practical Assessment outcome on the front cover of this document.		
Resources required: Computer, Building Contract, Drawings, Specifications, Building materials (including timber, and ferrous and non-ferrous metal).		
Assessment of task		
Name of participant:	Yanzhong Zhu	
Name of observer:	Xin WANG	
Role of observer (Confirm suitability to sign)	Supervisor	
Email address of observer	Smo.l@live.cn	
Signature of observer:		
Date:	18/03/2021	
When completing the task, did the participant:	Tick if satisfactorily completed. Provide comments if left unticked.	
	1 st Occasion	2 nd Occasion
1 Evaluate building materials		
1.1A. Identify suitability of materials commonly used in the region for low rise buildings.	☒	☒
1.1B. Through research and testing, identify properties of different materials, their quality and compatibility and non-compatibility and maintain effective sampling and organisational record-keeping processes.	☒	☒
1.1C. Identify the environmental impacts of different materials.	☒	☒
1.1D. Identify the impact of allowable tolerances on the conversion of naturally occurring materials.	☒	☒

1.1E.	Identify and check tolerances for installing and assembling materials with regard to the nature of the work being performed and the requirements of relevant construction industry Australian standards.	☒	☒
2 Material selection			
1.2A.	Select materials structurally adequate and appropriate for the building system specified in the contract, drawings and specifications.	☒	☒
1.2B.	Select materials after considering: - Safety - Required fire resistance rating - Suitability to the application - Durability - Serviceability and cost effectiveness - Compliance with NCC, legislation, regulations and Australian Standards	☒	☒
1.2C.	Consider short and long-term degradation of materials in relation to the building's proposed life cycle.	☒	☒
1.2D.	Select and evaluate alternative materials, if specified materials were unavailable or unsuitable – justifying decisions to regulatory authorities, as necessary	☒	☒
1.2E.	Finalise selection of materials in accordance with contractual requirements and in consultation with relevant professionals and the client, compiling results in a report.	☒	☒
1.2F.	Effectively communicate using the following methods: - Language/concepts appropriate to cultural differences - Non-verbal communication	☒	☒
3 Supervising materials on site			
1.3A.	Determine limitations and effects of transportation on material and components, taking action in potentially damaging circumstances.	☒	☒
1.3B.	Ensure materials were correctly and safely handled on site using appropriate equipment and safe work practices.	☒	☒
1.3C.	Communicate with manufacturers and suppliers to ensure materials are stored in accordance with specifications and Australian standards.	☒	☒
1.3D.	Implement processes for inspecting all materials delivered on site for naturally occurring and/or manufactured defects before installation.	☒	☒
1.3E.	Ensure personnel were aware of actions to be taken in the case of defects caused by incorrect installation, application or placement.	☒	☒
1.3F.	Preserve and protect timber and ferrous and non-ferrous metal used in the construction process.	☒	☒
The Participant's performance was: ☒ Satisfactory ☐ Not Satisfactory			

OBSERVER COMMENTS