

CPCCBC4010B APPLY STRUCTURAL PRINCIPLES TO RESIDENTIAL LOW RISE CONSTRUCTIONS & CPCCBC4011B APPLY STRUCTURAL PRINCIPLES TO COMMERCIAL LOW RISE CONSTRUCTIONS ASSESSMENT SUMMARY

The assessment activities for *CPCCBC4010B Apply structural principles to residential low rise constructions* & *CPCCBC4011B Apply structural principles to commercial low rise constructions* 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	UAA Darshika
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Theory Exam	☐ Satisfactory	☐ Not Yet Satisfactory
Practical Assessment	☐ Satisfactory	☐ Not Yet Satisfactory
	☐ Competent	☐ Not Yet Competent
	☐ Competent	☐ Not Yet Competent

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

CPCBC4010B APPLY STRUCTURAL PRINCIPLES TO RESIDENTIAL LOW RISE CONSTRUCTIONS & CPCBC4011B APPLY STRUCTURAL PRINCIPLES TO COMMERCIAL LOW RISE CONSTRUCTIONS

THEORY EXAM INSTRUCTIONS

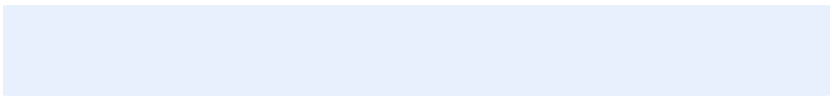
- This exam will occur under standard assessment conditions.
 - An oral examination may be allowed under certain circumstances, whereby the Participant's answers will be documented by a party other than the Participant. This must be acknowledged in writing (e.g. FT001 and Assessor Comments)
- Participants 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 UAA Darshika

Participant signature Darshika

Date 13/04/2021

Assessor name Myles Walder

Assessor signature 

Date Click here to enter a date.

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

ASSESSOR COMMENTS

Q1. What is the most important aspect in the design of buildings?
Tick your response.

Answer	Choice	Possible Answers	☐
	☐	Aesthetics	
	☐	Cost	
	☐	Location	
	☒	Stability	

Q2. Where can the definitive properties of materials used in the building industry be found? Tick your response.

Answer	Choice	Possible Answers	☐
	☒	Australian Standards	
	☐	Building journals	
	☐	Practical learning on the job	
	☐	Textbooks on building	

Q3. Which industry professional would you contact for structural advice?
Tick your response.

Answer	Choice	Possible Answers	☐
	☐	Architect	
	☐	Draftsperson	
	☒	Engineer	
	☐	Quantity surveyor	

Q4. Which industry professional would you contact for the preparation of working drawings? Tick your response.

Answer	Choice	Possible Answers	☐
	☐	Building surveyor	
	☒	Draftsperson	
	☐	Quantity surveyor	

Q5. Briefly describe the role of an architect.

Answer

Architects are people who design buildings and in many cases also supervises their construction. They help you to set a viable and realistic budget, guide you through the planning process and obtain competitive quotes and manage consultants.



Architects also:

- Develop a client design brief
- Prepare concept sketches and working out what is possible
- Prepare site analysis reports including documentation of site constraints
- Prepare contract documentation, including the contract, specifications and working drawings
- Organise tendering
- Oversee contract administration
- Organise design development and permit applications
- Monitor the budget

Q6. What is the difference between a building surveyor and a land surveyor?

Answer

The land surveyor takes care of assessing the spatial layout of the site. Building surveyors deal with legal issues and permits surrounding planning and construction.



Land surveyors assess the surrounding terrain and landscape for the purpose of development.

Land surveyors also:

- Take levels on a site to produce detailed contour plans
- Determine location of existing buildings and other features on a site
- Set out the building line, marking the location of columns or the external perimeter of a building
- Check the vertical alignment of a building during construction
- Conduct boundary surveys and re-establishment of survey pegs
- Check the positioning and overall height of a structure at completion to ensure compliance with the conditions of permits

Building surveyors provide professional advice on property and construction, which spans across residential, commercial, industrial, leisure and agriculture projects. They check that buildings comply with all building Codes (including maintenance, repair, alteration and renovation of existing buildings).

Building surveyors also:

- Assess building plans submitted for approval to ensure compliance
- Provide advice/assistance to builders/owners before finalisation/lodging plans
- Pre-purchase inspection of all types of buildings
- Inspect buildings during construction to ensure methods and materials
- Keep records and write reports of building progress and instances where regulations have been breached and plans have been altered

- Give evidence in court when prosecutions are necessary for breaches of building regulations
- Issue compliance certificates on completion

Q7. Which industry professional would you contact for matters relating to cost? Tick your response.

Answer

Choice	Possible Answers
☐	Architect
☐	Building surveyor
☐	Engineer
☒	Quantity surveyor

Q8. A land surveyor is to reinstate survey pegs. Which of the following documents would the surveyor need? Tick your response.

Answer

Choice	Possible Answers
☒	Title
☐	Contour plans
☐	Project specifications

Q9. When preparing a trench a builder digs through a gas pipe which was not shown on the plans. Which report should be used to prove the mistake was not the builder's? Tick your response.

Answer

Choice	Possible Answers
☐	Engineer's drawings
☒	Condition report
☐	Soil report

Q10. Which two (2) of the following can be determined from the contour report? Tick your responses.

Answer

Choice	Possible Answers
☒	Extent of cut and fill
☒	Height of retaining walls

☐	Location of trees
☐	Location of windows

Q11. The customer has requested a glass balcony. Which document would the builder refer to for information on structural members? Tick your response.

Answer	Choice	Possible Answers	☐
	☐	Building specifications	
	☐	Condition report	
	X	Engineering report	

Q12. The builder is planning a project and requires information on the location of fixtures and fittings, windows and doors. Which plans show this information? Tick your response.

Answer	Choice	Possible Answers	☐
	X	Cross sections	
	X	Floor plans	
	☐	Footings designs	

Q13. After an inspection, the client believes that what was installed is different to what they had chosen in the contract. What document details the materials the builder was meant to use? Tick your response.

Answer	Choice	Possible Answers	☐
	X	Building specifications	
	☐	Plan of the subdivision	
	☐	Site plan	

Q14. What key pieces of information can be found on a site plan? Tick all that apply.

Answer	Choice	Possible Answers	☐
	X	Location of street frontage	

X	Location of proposed building
X	North point

Q15. What is the purpose of a footing design?

Answer

Footing plans provide details on footing depths and widths, slabs and stiffening beams and the type and positioning of steel reinforcement. These documents must also be included in a building permit application.



Q16. Why would a pre-commencement site inspection be conducted?
Tick your response.

Answer

Choice	Possible Answers
X	To ensure all contract documentation clearly reflects the actual site
☐	It allows the supervisor to get some fresh air
☐	To ensure that the client actually owns the property
☐	So that levels can be taken to check the slope of the site



Q17. What are the dead loads in a building? Tick your response.

Answer

Choice	Possible Answers
☐	All stationary materials
☐	Permanent materials
X	Roofing materials
☐	Use for which the building is intended



Q18. What is the formula for calculating a dead load?

Answer

Dead load = Volume of member x Unit weight of materials (supplied)



Q19. What are the live loads in a building? Tick your response.

Answer

Choice	Possible Answers
X	Loads arising from the function of the structure
X	Loads due to rain
☐	Loads due to wind
X	Utility services

☐

Refer to the table shown below to respond to Q20. to Q21. These values are used to calculate live loads using the formula: Area of floor x Live load rating.

Live loads for floors as per building usage	Uniformly distributed load (kPa or kN/m ²)
Houses	1.5
Flats, motel bedrooms, apartments	2.0
Offices	3.0
Workshops	5.0
Parking, vehicle >2.5t	5.0
Hospitals, school assembly areas with fixed seating	3.0
Dance halls, bars, lounges	5.0

Q20. Calculate the live load of a guest house measuring 23m x 8m. Show your calculations.

Answer

Live load = Area x Live load rating (supplied)
 = 23 x 8 x 1.5 kN
 = 276kN

□

Q21. Calculate the live load of a commercial office premises floor measuring 33m x 11m. Show your calculations.

Answer

Live load = Area x Live load rating (supplied)
 = 33 x 11 x 3
 = 1,089kN

□

Please refer to the information below in responding to Q22. to Q25.

There is a building 21m long x 10m wide x 8m high with a 25° pitched gable roof. The rafter line on the metal clad roof measures 5.5m on the rafter line (from the fascia/gutter line up to the ridge line).

The wind load is calculated as *Area of surface x Wind load rate*. The wind load rates are as follows:

- Windward wall is 21 metres long x 8 metres high with a wind load rate of +1.5kN/m²;
- Leeward wall is 21 metres long x 8 metres high with a wind load rate of -0.8kN/m²;
- Windward roof with a wind load rate of +0.8kN/m²; and
- Leeward roof with a wind load rate of -1.5kN/m²

Q22. What is the wind load of the windward wall? Tick your response.

Answer

Choice	Possible Answers
☐	-252kN
☐	134.4kN
☒	252kN
☐	86.4kN

☐

Q23. What is the wind load for the leeward wall? Tick your response.

Answer

Choice	Possible Answers
☒	-134.4kN
☐	-94.2kN
☐	252kN
☐	134.4kN

☐

Q24. What is the wind load for the leeward roof? Tick your response.

Answer

Choice	Possible Answers
☒	-173.25kN
☐	92.4kN
☐	173.25kN
☐	-134.4kN

☐

Q25. What is the wind load for the windward roof? Tick your response.

Answer

Choice	Possible Answers
☐	252kN
☐	-92.4kN
☐	-252kN
☒	92.4kN

☐

Q26. Explain the term 'load path' in reference to a building.

Answer

The load path is the direction in which each consecutive load will pass through connected members. The sequence commences at the highest point of the structure, working all the way down to the footing system – ultimately transferring the total load of the structure to the foundation. So the lowest structural member must be strong enough to support all the members above it.

- Foundation supports the footings
- Footings support the flooring structure which consist of bearers, joists and flooring
- Stud walls and bracing transfer their load to the flooring
- Roof trusses support the battens which support the roof cladding and this load is transferred to the walls.



Q27. Forces are represented as vectors and have three (3) properties. Name these properties.

Answer

1. Magnitude – the size of the force
2. Direction – the direction of the force
3. Position – the place where the force acts



Q28. Name five (5) structural members that a building may consist of.

Answer

- Bearers, joists, lintels, girders and beams
- Roofing members or Trusses
- Columns, posts and stumps
- Walls (load-bearing)
- Retaining walls



Q29. What should be considered when determining the shape and type of material to use?

Answer

The type of material used and the shape of a structural member have a significant impact upon its structural effectiveness.
The two main principles of structural effectiveness are:
1. Mechanical properties – strength, toughness, elasticity, plasticity, ductility, malleability, brittleness, hardness
2. Section properties - the mathematical properties of structural shapes



Q30. Match the mechanical properties and definitions below by writing the appropriate letter next to each number in the centre column.

Answer

Mechanical properties		Answers	Definitions	
1	Brittleness	1 - G	A	The resistance the structural member is able to offer the load that will just cause fracture.
2	Elasticity	2 - C	B	The resistance to a fracture point of a material by repeated bending or twisting after yield point has passed.
3	Ductility	3 - E	C	Present if a material deforms with loading and then returns to its original shape when the loads are removed.
4	Hardness	4 - H	D	If a material deforms when loaded and does not return to its original shape when the load is removed, causing permanent deformation.
5	Malleability	5 - F	E	Enables a material to be drawn out in the direction of its length.
6	Plasticity	6 - D	F	Can be hammered or otherwise worked into various shapes.
7	Strength	7 - A	G	Causes material to break or snap off without any noticeable lengthening.
8	Toughness	8 - B	H	The degree of resistance to indentation or abrasion.



Q31. Match the beam types and descriptions by writing the appropriate letter next to each number in the centre column.

Answer

Beam type		Answers	Description	
1	Cantilevered	1 - A	A	Overhang their supports.
2	Continuously supported	2 - C	B	Supported at each end only.
3	Simply supported	3 - B	C	Supported by 3+ support points.



Q32. Match the column considerations and explanations by writing the appropriate letter next to each number in the centre column.

Answer	Column consideration	Answer	Explanation	☐
	1 Axially loaded column	1 - A	A The load is central to the centre of gravity axis.	
	2 Buckling	2 - E	B The load is off-centre, resulting in bending and compressing stress being applied to the column.	
	3 End fixity and effective length	3 - C	C The rigid connection to other members at the top and bottom affects the way a column buckles.	
	4 Non-axially loaded column	4 - B	D Affects the maximum load a column can be allowed to support.	
	5 Slenderness ratio	5 - D	E Occurs at the weakness axis unless a lateral restraint is used to prevent it.	

Q33. Explain how a column is in compression.

Answer	When the load is central to the centre of gravity axis, it produces a direct compressive stress within the column. Axially loaded columns are sometimes referred to as 'concentric columns'. • The loads applied to a column are only axial loads. • Loads on columns are typically applied at the ends of the member, producing axial compressive stresses. • However, on occasion the loads acting on a column can include axial forces, transverse forces, and bending moments (e.g. beam-columns). • Very short column lengths require extremely large loads to cause the member to buckle. • Large loads result in high stresses that cause crushing rather than buckling.	☐
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Q34. Explain the letters 'CHS' and 'SHS' with reference to columns.

Answer	The most efficient shape for a column is the circular hollow section (CHS). The second most efficient shape is the square hollow section (SHS).	☐
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Q35. Match the retaining wall types and descriptions by writing the appropriate letter next to each number in the centre column.

Answer	Retaining wall	Answer	Description	
	1	1 - B	A	Leans into the excavated soil and constructed at an angle between 45 and 80 degrees. Typically constructed from brickwork or pre-cast interlocking concrete units.
	2	2 - C	B	Relies upon the correct placement of steel reinforcement and varying thickness of concrete to resist the soil pressure.
	3	3 - A	C	Relies on its own weight to resist soil forces. Typically constructed from stone, brickwork or concrete.

Q36. What is a ground level concrete slab floor?

Answer	Ground slabs are poured directly into excavated trenches in the ground and rely on the existing ground for support. The ground (or foundation) must be strong enough to support the concrete slab. Concrete slabs are floor systems of concrete and steel reinforcing. They are constructed on the ground. • Slab on the ground – Supported on the ground A ground level slab is a large flat stretch of concrete, usually between 100 – 500mm thick which forms the foundation of a house.	
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Q37. What should you consider when selecting the type of slab floor?

Answer	Soil properties of the ground on which the slab is to be supported. Climate at the building site Type of superstructure (loads to the foundation) Quality control in materials use and in construction	
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Q38. True or False (Tick your response): Concrete slab floors are popular in the construction of structures because they take less time to construct.

Answer	☐	True	☐
	X	False	

Q39. Match the following slab structural performance terms with the descriptions by writing the appropriate letter next to each number in the centre column.

Answer	Term		Answer	Description		☐	
	1	Foundation movement		1 - C	A		Placed along the perimeter of the slab. Design is influenced by the reactivity of the soils.
	2	Slab bending		2 - B	B		Movement is classified as dishing or doming.
	3	Stiffening beams		3 - A	C		Addressed by regulating the moisture content of the soil.

Q40. Which of these terms relate to a roof truss? Tick your response.

Answer	Choice	Possible Answers	☐
	☐	Chord, knee, web	
	☐	Spider, pitch, chord	
	☐	Ankle, heel, tar	
	☒	Web, heel, pitch	

Q41. What are important considerations when undertaking demolition work? Describe relevant legislation, regulations and/or Codes of Practice relating to planning requirements, environmental standards, and safe work practices.

Answer	Structural principles - Demolition You must carry out all demolition work of existing structures in accordance with laws, Australian Standards and planning requirements. 1. Ensure you have obtained required licences 2. Check whether you need a demolition permit (e.g. refer to your City Council's requirements) Safe work practices are a vital part of the demolition process. Demolition – Safe Work Practices All demolition operations are to be in accordance with Australian Standards and Codes of Practices including: • Work Health and Safety Regulations 2011 (Qld) • Demolition Code of Practice 2013 (Qld) • AS 2601: The demolition of structures Work Health and Safety Regulation 2011 Part 4.6 Demolition work	☐
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Division 1 Notice of demolition work

142 Notice of demolition work

Division 2 Licence to carry out demolition work

143 Requirement to hold a licence to carry out demolition work

144 Nominated competent person must be present or readily available

144A Recognition of licences to carry out demolition work issued in other jurisdictions

Division 3 Licensing process

144B Who may apply for a licence

144C Application for licence to carry out demolition work

144D Content of application

144E Additional information

144F Decision on application

144G Regulator to be satisfied about additional matters

144H Matters to be taken into account

144I Refusal to grant licence—process

144J Conditions of licence

144K Duration of licence

144L Licence document

144M Licence document to be available

Division 3 Duties relating to falling objects

315B Application of div 3

315C Definitions for div 3

315D What is mesh for div 3

315E Risk assessment and control measures for civil construction work and housing construction work

315F Control measures for construction work that is not civil construction work or housing construction work

315G Additional control measures if measured angle is 75° or more, other than for demolition work or work erecting or dismantling formwork

315H Control measures for demolition work or work erecting or dismantling formwork

Part 8.6 Demolition and refurbishment

447 Application of pt 8.6

448 Review of asbestos register

449 Duty to provide asbestos register

450 Duty to obtain asbestos register

451 Determining presence of asbestos or ACM

452 Identification and removal of asbestos before demolition

453 Identification and removal of asbestos before demolition of domestic premises

454 Emergency procedure

455 Emergency procedure—domestic premises
456 Identification and removal of asbestos before refurbishment
457 Refurbishment of domestic premises

Division 6 Certificate for prescribed activity that is demolition work
732 Existing certificate to perform demolition work continues as a transitional demolition work licence
733 Transitional demolition work licence and requirement for nominated supervisor
734 Transitional demolition work licence and requirement to train worker
735 Existing provisions about certificate process continue to apply for a transitional demolition work licence
736 Conditions for transitional demolition work licence

Q42. When demolition is being undertaken, which of the following items must be checked daily? Tick all that apply.

Answer

Choice	Possible Answers
☒	All boundaries are secured against unlawful entry
☐	All hazardous materials are removed or covered as required by OHS legislation
☒	All openings and elevated free edges are properly guarded
☒	All potential fire and safety hazards are eliminated and disconnected services are secured
☐	Asbestos is left on the nature strip for the garbage pickup
☒	Demolished materials have not been left on any floor or structure if their weight exceeds the safe carrying capacity of the floor or structure
☒	Emergency access routes are clear of debris
☒	Footpaths and public access are clear of demolished materials
☐	Neighbours have been notified not to hang out their washing
☒	No structure or part of a structure is left in such a condition that it may become dangerous, such as collapse due to wind or vibration
☐	Partly demolished elements are stabilised and loose materials are secured against bad weather
☐	Signs and balloons are in place for the garage sale
☐	Tell the demolisher to take a long lunch break as you don't need supervision
☒	Temporary hoardings, bracing, shoring and propping is tight and secure and in place as required to protect both workers and public



Q43. Identify two (2) requirements under the NCC with regards to construction in bushfire prone areas?

Answer

- A. Constructed in accordance with AS 3959;
- B. Constructed in accordance with NASH Standard – Steel Framed Construction in Bushfire Areas.
- C. Designed and constructed to reduce the risk of ignition from a bushfire, appropriate to the—
 - I. Potential for ignition caused by burning embers, radiant heat or flame generated by a bushfire; and
 - II. Intensity of the bushfire attack on the building;
- D. Provided with vehicular access to the site to assist fire fighting and emergency personnel defend the building or evacuate occupants;

☐

Q44. What does AS3959 refer to?

Answer

All buildings located in a designated bushfire prone area are to be constructed in accordance with the requirements of AS 3959 Construction of buildings in bushfire prone areas.
AS 3959 assesses the bushfire risk based on the severity of the building's potential exposure to ember attack, radiant heat and direct flame contact.

☐

Q45. Which of the following can assist with providing sufficient restraint to transfer wind forces to the ground to prevent collapse, uplift or sliding off the footing systems? Tick all that apply.

Answer

Choice	Possible Answers
X	Anchorage systems
X	Bracing systems
X	Connecting structural elements together

☐

Q46. Which Australian Standard outlines the requirements of high wind areas?

Answer

AS 1170.2

☐

Q47. The acceleration coefficient is a number which indicates the expected severity of the earthquake ground movement. Which Australian Standard should be referenced for this information?

Answer

AS1170.4

☐

Q48. True or False (Tick your response): Where the acceleration coefficient is greater than 0.15, there are additional NCC requirements than where the acceleration coefficient is 0.12.

Answer

☐	True
X	False

☐

Q49. Which of the following areas require specific compliance in alpine areas? Tick all that apply.

Answer

Choice	Possible Answers
X	Access bridges
X	Access for emergency vehicles
X	External doorways
X	External ramps

☐

Q50. Identify the Volume and Parts of the NCC that relate to each of the following areas for Classes 1 and 10, and Classes 2 to 9.

Answer

Topic	Classes 1 and 10	Classes 2 to 9
Bushfire	Volume 2 - Part 3.7.4	Volume 1 - Part G5
High wind	Volume 2 - Part 3.10.1	
Earthquake	Volume 2 - Part 3.10.2	
Alpine area	Volume 2 - Part 3.7.5	Volume 1 - Part G4
New technologies	Volume 2 - Part A5	Volume 1 - Part A2.2

☐

Q51. How are emerging building technologies and methods assessed in the National Construction Code? Tick all that apply.

Answer

Choice	Possible Answers
X	Using verification methods
X	With 'deemed to satisfy' provisions
X	With documentary evidence

☐

Q52. True or False (Tick your response): Footings should be set out in accordance with the building plan.

Answer

☒	True
☐	False

☐

Q53. Name three (3) different types of footing systems for Classes 1 and 10, and Classes 2 to 9.

Answer

Classes 1 and 10	Classes 2 to 9
• Columns or stumps • Concrete slab floors • Piers and beams	• Concrete slab floors • Drilled or driven piles • Mass concrete piers

☐

Q54. Identify the Volume and Parts of the NCC that relate to footings (including damp coursing and provision of termite barriers) for Classes 1 and 10, and Classes 2 to 9.

Answer

Classes 1 and 10	Classes 2 to 9
Footings - Volume 2, Part 3.2 Volume 2 - Part 3.1.3 - Termite Risk Management Volume 2 - Part 2.2 - Damp and weatherproofing	Footings - Volume 1, Parts B1.4 Volume 1 - F1.9 Volume 1 - Damp-proofing F1.10 Damp-proofing of floors on the ground

☐

Q55. For each of the following identify two (2) Australian Standards that relate to footings.

Answer

Classes 1 and 10	Classes 2 to 9
AS 2870 AS 2159	AS 2870 AS 2879

☐

Q56. Name two (2) materials that may be used for damp proof coursing.

Answer

- I. Corrosion resistant metal (e.g. aluminium, copper or zinc)
- II. Impact resistant plastics like polyethylene.

☐

Q57. Name two (2) termite resistant materials.

Answer

- A. Steel, aluminium or other metals
- B. Concrete

☐

Q58. Name three (3) different types of floor systems for Classes 1 and 10, and Classes 2 to 9.

Answer

Classes 1 and 10	Classes 2 to 9
1. Concrete slab floor 2. Brick bases 3. Timber and steel floor construction	1. Concrete slab floor (suspended or slab-on-ground) 2. Brick bases 3. Engineered timber products

☐

Q59. What should be considered when constructing a floor system?

Answer

When constructing the floor system it is important to take into consideration the type of flooring, the laying of pipes and reinforcement.

☐

Q60. Which Australian Standard is referenced in Volumes 1 and 2 of the NCC regarding the requirements for slabs and footings?

Answer

AS 2870

☐

Q61. Name three (3) different types of materials used for wall systems or structures falling under Classes 1 and 10, and Classes 2 to 9.

Answer

Classes 1 and 10	Classes 2 to 9
Cavity brick Concrete block Structural steel	Lightweight concrete Timber Cavity brick



Q62. Identify the Volume and Parts of the NCC that relate to masonry wall systems for Classes 1 and 10, and Classes 2 to 9.

Answer

Classes 1 and 10	Classes 2 to 9
NCC Volume 2: Part 3.3	NCC Volume 1: B1.4



Q63. Which Australian Standard is referenced in Volumes 1 and 2 of the NCC regarding masonry structures?

Answer

Australian Standard 3700.



Q64. Explain the purpose of bracing.

Answer

• Bracing enables the framework to resist horizontal forces (load resistance of live, dead, wind loads) particularly wind loads as buildings must transmit the load through the structure to the foundation.

Bracing is attached to studs to provide lateral support to wall framing.



Q65. Explain the purpose of fixings and tie-downs.

Answer

Fixings are necessary to ensure the structural adequacy of the interconnection of the various framing members.
Tie-down fixings provide for structural connections to resist uplift and shear forces in floor, wall and roof framing. Where specific tie-down fixings provide equal or better resistance to gravity or shear loads, nominal nailing is not required.



Q66. Which Australian Standard relates to timber frames, bracing and fixings?

Answer

AS1684



Q67. For the Australian Standard in Q66. which part relates to cyclonic areas?

Answer

• AS 1684.3 — Cyclonic areas



Q68. Which of the following should be observed when checking the quality of the frame (whether, factory pre-cut and pre-nailed, factory pre-cut and assembled on site, or cut and assembled on site)? Tick all that apply.

Answer

Choice	Possible Answers
☐	Fixings must be protected from corrosion
☐	Fixings must be protected from termites
☒	Provision has been made for plumbing services and fixtures
☐	Tie downs and nominal nailing must both be present
☒	Top and bottom plates have a tight fit on studs
☐	Top plate is to be reinforced when rafters land on top of plates
☒	Walls are tied together



X	Walls are plumb
X	Walls are square

Q69. True or False (Tick your response): Sarking is a substitute for cladding and is regarded as the principal means of weatherproofing.

Answer

☐	True
X	False

☐

Q70. What is flashing?

Answer

Flashings are used at corners and vertical joints and around openings to ensure that water is prevented from penetrating the wall frame cavity.

☐

Q71. Identify the Volume and Parts of the NCC that relate to wall cladding material requirements for Classes 1 and 10, and Classes 2 to 9.

Answer

Classes 1 and 10	Classes 2 to 9
Volume 2 - Part 3.5.3	Volume 1: Specification J1.2

☐

Q72. True or False (Tick your response): Timber can stand greater stresses than brickwork.

Answer

X	True
☐	False

☐

Q73. True or False (Tick your response): Individual timber boards for cladding should be nailed together at the overlap.

Answer

☐	True
--------------------------	------

☐

X	False
---	-------

**Q74. When should flashing materials be fixed to plywood cladding?
Tick your response.**

Answer	☐	
Choice	Possible Answers	
☐	After the cladding is fixed	
X	Before the cladding is fixed	
☐	While the cladding is being fixed	
☐	At any convenient time	

Q75. What is the purpose of articulation joints? Tick your response.

Answer	☐	
Choice	Possible Answers	
☐	They allow for shrinkage in a building	
☐	They tie the brickwork to the frame	
X	They allow for movement in a building	
☐	They seal the cavities	

Q76. When is the most appropriate time for the rough-in to occur for a brick veneer building constructed on a concrete slab Tick your response.

Answer	☐	
Choice	Possible Answers	
☐	Before brickwork	
X	After brickwork	
☐	After plasterboard	
☐	Any time	

Q77. Apart from plumbing and electrical, name four (4) other services that should be considered at rough-in.

Answer

- I. Communication systems
- II. Extractive vacuum and exhaust systems
- III. Passive and active fire detection and prevention systems
- IV. Powered systems for operating doors and windows

☐

Q78. Identify the Volume and Parts of the NCC that relate to window installation for Classes 1 and 10, and Classes 2 to 9.

Answer

Classes 1 and 10	Classes 2 to 9
NCC Volume 2: Part 3.6	NCC Volume 1: B1.4, F1.13, J3.4

☐

Q79. Name two (2) Australian Standards that relate to the installation of windows.

Answer

AS 1288, AS 2047

☐

Q80. What is the purpose of a window schedule? Tick your response.

Answer

Choice	Possible Answers
☒	To help work out the appropriate type of window
☐	To work out the appropriate opening size of windows
☐	To work out whether to use a timber or aluminium frame
☐	To work out the height of a window

☐

Q81. Identify the Volume and Parts of the NCC that relate to door installation for Classes 1 and 10, and Classes 2 to 9.

Answer

Classes 1 and 10	Classes 2 to 9
Volume 2: Part 3.6.4.1	Volume 1: D2.19

☐

Q82. **What Australian Standard must the design of a timber roof truss adhere to?**

Answer

AS 1720.1



Q83. What is a roof system? Name three (3) roof types.

Answer

A roof system is the structure that forms the roof of a building.

☐

Types of roof systems include:

- Gable
- Hip
- Skillion

Q84. True or False (Tick your response): Roof trusses can be modified on site to suite different needs.

Answer

☐	True
X	False

☐

Q85. Devise a checklist for ensuring the quality of an installed roof frame.

Answer

Quality Procedure : - Checklist

- Rise and pitch of roof against plan
- Correct propping of ridge, hips, valleys, rafters and under purlins at correct centres
- Adequate collar ties
- Line of rafter, hips and valleys
- Support to strutting beams
- Fascia and barge boards
- All tie-downs and fixings
- Ceiling joist and alignment with rafters
- Hanging beams
- Trimmers for location
- Trimming to manhole

☐

Q86. Devise a checklist for ensuring the quality of an installed roof truss.

Answer

Quality Procedure : - Checklist

- Truss layout plan
- Manufacturer's specifications for tiedowns, bracings and lateral stability
- Roof truss certification
- Adequacy of supporting structure
- Dimension, overall width and length of wall for fit
- Support to girder trusses
- Plumb and spacings
- All tie-downs and fixings
- Location of specialised trusses
- Trusses have not been modified on-site
- Eave overhangs
- Trimming to manhole.



Q87. Name three (3) roof cladding materials.

Answer

Roof cladding materials include:

- Brick veneer
- Tiles (concrete, clay, metal)
- Sheeting



Q88. What pitch of roof should roof tiles be applied? Are there exceptions?

Answer

Roof tiles can generally be used on roofs of 15° or greater pitch, however, some materials and methods of manufacture require 25° or greater pitch.



Q89. When installing corrugated metal roof sheeting, which is the preferred direction of laying sheets to improve side lap effectiveness for minimising leakage? Tick your response.

Answer

Choice	Possible Answers
☐	Away from the prevailing weather
☐	Towards the north
☒	Towards the prevailing weather

☐

Q90. True or False (Tick your response): Sarking is advisable under any roof.

Answer

☒	True
☐	False

☐

Q91. What Australian Standard relates to sarking?

Answer

☐

Q92. Name three (3) items that may require roof penetration.

Answer

☐

Q93. Identify the sections/parts of NCC Volume 1 that relate to the installation of skylights.

Answer

☐

CPCBC4010B APPLY STRUCTURAL PRINCIPLES TO RESIDENTIAL LOW RISE CONSTRUCTIONS & CPCBC4011B APPLY STRUCTURAL PRINCIPLES TO COMMERCIAL LOW RISE CONSTRUCTIONS

PRACTICAL ASSESSMENT INSTRUCTIONS

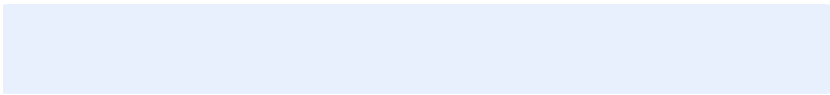
- The following practical assessment will require the Participant to complete work related activities.
- The Assessor will conduct observations of the Participant's work to determine whether they display sufficient practical skills and knowledge.
- Please fill in the details below – providing your name, 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 UAA Darshika

Participant signature Darshika

Date 13/04/2021

Assessor name Myles Walder

Assessor signature 

Date Click here to enter a date.

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

ASSESSOR COMMENTS

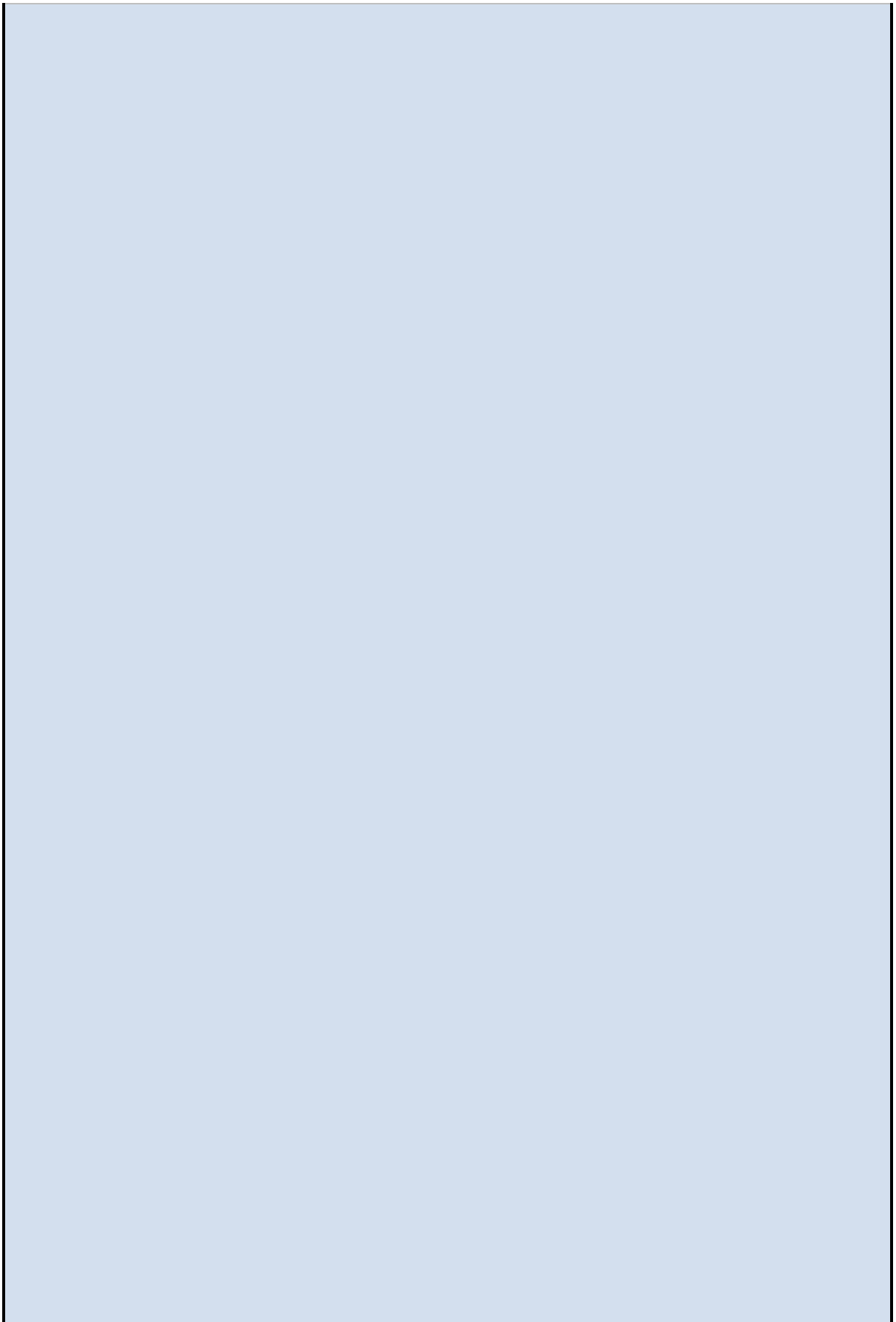
CPCCBC4010B APPLY STRUCTURAL PRINCIPLES TO RESIDENTIAL LOW RISE CONSTRUCTIONS

Practical Task 1	
Description of task: A suitable observer is to verify the participant's ability to apply structural principles to the erection and demolition of a low rise residential structure (Classes 1 and 10). 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: • Photographic evidence of projects, including detailed descriptions of all structural elements • Documentation from a project structurally designed; for example a garage, small extension, etc. including: ○ A copy of the plans and/or specifications ○ Identification of site classification, uplift forces, wind ratings, ○ Component selection methods – for example; BCA references, Australian Standard references 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: Plans, computer, suitable work area appropriate to the construction process.	
Assessment of task	
Name of participant:	UAA Darshika
Name of observer:	Myles Walder
Role of observer (Confirm suitability to sign)	
Email address of observer	
Signature of observer:	
Date:	Click here to enter a date.
When completing the task, did the participant:	Tick if satisfactorily completed. Provide comments if left unticked.
1 Apply structural principles to planning	
1.1A. Identify main structural principles that apply to the erection or demolition of the structure.	☐
1.1B. Describe structural performance in terms of the effect of section properties on various materials.	☐
1.1C. Explain structural performance characteristics of the slabs, floors, beams, columns and retaining walls – and apply to the planning of the construction work.	☐
1.1D. Coordinate demolition of existing structures in accordance with safe work practices, legislative, environmental and planning requirements.	☐
2 Structural integrity of buildings	
1.2A. Consult relevant industry professionals to provide advice regarding the design process and structural integrity of the proposed building – using language and concepts appropriate to cultural differences (including non-verbal communication).	☐

1.2B.	Collect and analyse project documentation to assist with the analysis of plans and specifications.	☐
1.2C.	Analyse project documentation for compliance with National Construction Code requirements for bushfire, high wind, earthquake and alpine environments.	☐
1.2D.	Assess new and emerging building technologies, techniques and materials for application to the construction process and their compliance with National Construction Code requirements and Australian standards.	☐
1.2E.	Conduct pre-commencement site inspection to confirm analysis.	☐
3 Footing system		
1.3A.	Set out footings in accordance with building plans.	☐
1.3B.	Assess structural integrity of the footings specified in the plans for compliance with relevant codes and accepted industry construction principles.	☐
1.3C.	Lay footings specified in building's plan, checking for compliance with project documentation.	☐
1.3D.	Plan, implement and check damp coursing, provision of termite barriers and other relevant techniques in accordance with codes, standards and industry practice.	☐
4 Floor system		
1.4A.	Assess concrete slab or bearers and joists specified in building plan for structural integrity and compliance with relevant codes and accepted industry construction principles.	☐
1.4B.	Supervise laying of floor system specified in building's plan, checking for compliance with project documentation.	☐
5 Structural and non-structural wall systems		
2.5A.	Identify and analyse technical construction principles and performance of materials to be used in the construction in the planning of the building and construction project.	☐
2.5B.	Plan, implement and check application of bracing requirements, tie-downs, tolerance, allowances and fixing and installation of components for compliance with relevant Australian standards, codes and manufacturer specifications.	☐
2.5C.	Select structural timber members for low rise buildings to conform to AS1684 requirements.	☐
2.5D.	Put processes in place to ensure quality of the frame – whether factory pre-cut and pre-nailed, factory pre-cut and assembled on site, or cut and assembled on site.	☐
2.5E.	Attach and check vapour permeable sarking or a waterproof membrane relevant to the construction method.	☐
6 Roof system		
2.6A.	Assess structural integrity of roof system components specified in building plan for compliance with relevant codes and accepted industry construction principles.	☐
2.6B.	Plan, implement and check erection of roof trusses in accordance with requirements of building plan, type of roof being construction, relevant codes and accepted industry construction principles.	☐
2.6C.	Put processes in place to ensure quality of the manufactured roof trusses or hand-cut roof system.	☐
2.6D.	Plan roof sarking and cladding and supervise installation for compliance with codes, standards and industry practice.	☐
7 External wall cladding		
2.7A.	Assess structural performance of cladding to be used for bracing in the frame construction for compliance with relevant codes, manufacturer specifications and accepted industry construction principles.	☐
2.7B.	Supervise installation of cladding as specified in building plan, and check for compliance with standards and accepted industry construction principles.	☐
2.7C.	Supervise installation of windows and external doors to ensure compliance with relevant codes, manufacturer specifications and accepted industry construction principles.	☐

The Participant's performance was: ☐ Satisfactory ☐ Not Satisfactory

OBSERVER COMMENTS



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CPCCBC4011B APPLY STRUCTURAL PRINCIPLES TO COMMERCIAL LOW RISE CONSTRUCTIONS

Practical Task 2		
Description of task: A suitable observer is to verify the participant's ability to apply structural principles to the erection and demolition of a low rise commercial structure (Classes 2 to 9 with a gross floor area not exceeding 2000m ² , but 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: - Photographic evidence of projects, including detailed descriptions of all structural elements - Documentation from a commercial works structurally designed; including: - A copy of the plans and/or specifications - Identification of site classification, uplift forces, wind ratings - Component selection methods – for example; BCA references, Australian Standard references 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: Plans, computer, suitable work area appropriate to the construction process.		
Assessment of task		
Name of participant:	UAA Darshika	
Name of observer:	Myles Walder	
Role of observer (Confirm suitability to sign)		
Email address of observer		
Signature of observer:		
Date:	Click here to enter a date.	
When completing the task, did the participant:	Tick if satisfactorily completed. Provide comments if left unticked.	
1 Apply structural principles to planning		
2.1A. Identify main structural principles that apply to the erection or demolition of the structure.	☐	
2.1B. Describe structural performance in terms of the effect of section properties on various materials.	☐	
2.1C. Explain structural performance characteristics of the slabs, beams, columns and retaining walls – and apply to the planning of the construction work.	☐	
2.1D. Coordinate demolition of existing structures in accordance with safe work practices, legislative, environmental and planning requirements.	☐	
2 Structural integrity of buildings		

2.2A.	Consult relevant industry professionals to provide advice regarding the design process and structural integrity of the proposed building – using language and concepts appropriate to cultural differences (including non-verbal communication).	☐
2.2B.	Collect and analyse project documentation to assist with the analysis of plans and specifications.	☐
2.2C.	Analyse project documentation for compliance with National Construction Code requirements for bushfire, high wind, earthquake and alpine environments.	☐
2.2D.	Assess new and emerging building technologies, techniques and materials for application to the construction process and their compliance with National Construction Code requirements and Australian standards.	☐
2.2E.	Conduct pre-commencement site inspection to confirm analysis.	☐
3 Footing system		
2.3A.	Set out footing systems in accordance with building plans.	☐
2.3B.	Assess structural integrity of the footings specified in the plans for compliance with relevant codes and accepted industry construction principles.	☐
2.3C.	Lay footings specified in building's plan, checking for compliance with project documentation.	☐
2.3D.	Plan, implement and check damp coursing, provision of termite barriers and other relevant techniques in accordance with codes, standards and industry practice.	☐
4 Floor system		
2.4A.	Assess floor system components specified in building plan for structural integrity and compliance with relevant codes and accepted industry construction principles.	☐
2.4B.	Supervise laying of structural floor system specified in building's plan, checking for compliance with project documentation.	☐
5 Structural wall systems and wall cladding systems		
2.5A.	Identify and analyse technical construction principles and performance characteristics of structural wall systems and wall cladding systems in the planning of the building and construction project.	☐
2.5B.	Identify, implement and check processes for erecting wall systems and wall cladding systems for compliance with manufacturer specifications and relevant Australian standards and codes.	☐
2.5C.	Identify and implement building plans and relevant standards and codes to ensure appropriate allowances were made for relevant services to be installed.	☐
2.5D.	Install windows and external doors in compliance with relevant codes, manufacturer specifications and accepted industry construction principles.	☐
6 Structural roof systems and roof cladding systems		
2.6A.	Assess structural integrity of the structural roof system and roof cladding system components specified in the building's plan for compliance with relevant codes and accepted industry construction principles.	☐
2.6B.	Plan and implement and check construction of roof system and roof cladding system (including details of service penetrations, skylights and roof ventilators) according to building plan's requirements, type of roof being constructed, relevant codes and accepted industry construction principles.	☐
2.6C.	Put processes in place to ensure quality of finished roof system.	☐
The Participant's performance was: ☐ Satisfactory ☐ Not Satisfactory		

OBSERVER COMMENTS