

CPCCBC6001

APPLY BUILDING CODES AND STANDARDS TO THE CONSTRUCTION PROCESS FOR LARGE BUILDING PROJECTS

ASSESSMENT SUMMARY

The assessment activities for *CPCCBC6001 Apply building codes and standards to the construction process for large building projects* cover all aspects of the unit of competency. For Apprentices/Trainees, this includes supervisor completion of the Apprentice/Trainee Record (ATR).

Participants must read all the information given before starting any assessment task. The assessment tasks are intended to be fair, flexible, valid and reliable. 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 all questions or perform all tasks, they will be deemed 'Not Satisfactory' for the task and 'Not Yet Competent' for the unit of competency.

The Trainer/Assessor can provide the Participant with additional information on interpreting the assessment outcomes and guide the Participant's options. If a Participant is still deemed 'Not Satisfactory' they will have the opportunity to undertake a supplementary assessment or appeal the result as per the process in the Student Handbook.

By signing below, the Participant acknowledges:

- They understand the assessment instructions and requirements, and consent to being assessed.
- The work submitted is to be their own work – with the work of/with others needing to be clearly acknowledged and documented.
- They consent to any photo/video recording of their work that occurs during assessment.

Participant name	Michael Brady
Participant signature	

Pre-requisite unit(s) to be achieved and authenticated prior to undertaking assessment

☐ Not applicable

Task	Date completed	Assessment Results	
Theory Exam	Select Date.	☐ Satisfactory	☐ Not Satisfactory
Workbook	Select Date.	☐ Satisfactory	☐ Not Satisfactory
Practical Assessment	Select Date.	☐ Satisfactory	☐ Not Satisfactory
Outcome for CPCCBC6001	Select Date.	☐ Competent	☐ Not Yet Competent

Evidence requirements checklist (ticked by assessor and evidence supplied to RTO)

- | | |
|--|--|
| ☐ Theory Exam
☐ Workbook
☐ Practical Assessment | ☐ Workplace Quality document/s and/or Quality Assurance Template
☐ Existing building fire protection checklist
☐ Site and Working Plans |
|--|--|

Assessor name	
Assessor signature	

CPCBC6001

APPLY BUILDING CODES AND STANDARDS TO THE CONSTRUCTION PROCESS FOR LARGE BUILDING PROJECTS

THEORY EXAM

Participant name	Michael Brady
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FOR THE PARTICIPANT
Instructions
- You will complete written questions as outlined on the following pages. You must attempt all questions and provide enough detail in your responses to demonstrate your knowledge. - It is anticipated that you should complete this assessment within two (2) hours, but additional time may be allowed upon negotiation with the Assessor. - You must complete all questions unassisted by the Assessor or other personnel but may refer to reference material as needed. All questions must be answered correctly for a 'Satisfactory' assessment outcome to be awarded. - An oral examination may be allowed under certain circumstances, whereby your answers will be documented by another party. - Any written questions that are incomplete, or not answered satisfactorily will need to be completed again after further training support. - If you answer a question incorrectly but modify your response, put your initials next to the written change (or the Assessor must initial a verbal change).
Resources required
Pen

FOR THE ASSESSOR
Instructions
- Where oral examination has occurred, ensure that this is acknowledged in writing (e.g. FT001 and Assessor Comments) - All questions must be satisfactorily demonstrated by the Participant for a Satisfactory determination (indicated by an Assessor tick to the right of the question). - Assessors are to complete marking in pen of a different colour to the Participant. - If the Participant verbally modifies their response, write in the modified response verbatim and put your initials next to the written change.

ASSESSOR COMMENTS

As necessary, outline:

- Details on reattempts, alternative arrangements or reasonable adjustments made.
- Where a Participant is deemed 'Not Satisfactory', provide recommendations for future training.

Q1. Explain why it is important to understand references the NCC makes to Australian Standards.

Answer The NCC provides a set of technical provisions for the design, construction, and performance of buildings, plumbing and drainage systems as a minimum standard, the Australian Standards detailed guidance on how this technical criteria is to be met and ensuring all items are compliant.



Q2. You have been asked to develop a tender proposal for a large government building in your State/Territory. Discuss in depth any legislation and Codes your submission must comply with?

Answer AS 4120 – 1994 details the code of tendering defining the obligation of tenderers and process of Call for Tenders, Return of tender documents, Evaluation of tender documents, Formulation of tenders, submission of tenders, Confidentiality.



Building and construction COP 2000

Code of tendering and performance of building work Amendment instrument 2022

Volumes 1 and 2 of the BCA (given affects through the Environmental planning and assessment act 1979

Volume 3 of the Australian plumbing code. Given through the environmental planning and assessment act 2011.

1. NCC vol.1 J6D6 Ductwork insulation
2. NCC vol.1, Specification 5 Fire-resisting construction S5C19 Type A fire-resisting construction – car parks.
3. NCC vol.1, C1P1 structural stability during a fire
4. NCC vol.1, C1P2 Spread of fire
5. NCC vol.1, C2D3 Calculation of rising in storeys

6. NCC vol.1, C2D4 Buildings of multiple classifications
7. NCC vol.1, D2D3 Number of exits required.
8. NCC vol.1, D3D27 Re-entry from fire-isolated exits
9. NCC vol.1, E1D4 Sprinklers
10. NCC vol.2, Part H4D4 Room heights
11. NCC vol.2, Part H2D4 Masonry

In addition to the above, construction processes and methodologies would need to be assessed to ensure that everything is covered.

E.g the use of precast or tilt up panels, Curtain wall systems, Post tension slabs etc.

All requirements to ensure safe work practices and that you are compliant with all legislation and codes in regards to safety need to be assessed along with the methodology.

Q3. Describe the listed NCC compliance assessment methods used to determine compliance using a Performance Solution pathway.

Answer

Assessment method	Description
Evidence of suitability	Evidence of suitability must be in accordance with Part A5 which consist of the following assessment methods. A5G2 – Evidence of suitability – Vol. 1,2 & 3 Is the form of evidence supplied by way of original certificate, report or document pertaining to the material, product, plumbing product used in construction or design. A5G3 Evidence of suitability – Vol.1 & 2 BCA Evidence of Certificate of conformity, Certificate of accreditation, certification from RPEQ A5G4 – Evidence of suitability Vol. 3 PCA Ensuring the products being used meets AS/NZS 4020 and have the accredited testing reporting.
Verification methods	Verification methods consist of a test, an inspection, a calculation or other method that determines whether a performance solution complies with the relevant performance requirements. The verification method used must be acceptable to the appropriate authority.
Comparison with DTS Provisions	allows a comparison between the DTS Provision and a proposed building or plumbing and drainage solution. If it can be demonstrated to the appropriate authority that the solution complies in an equivalent or superior way to the DTS Provisions, then it can be deemed to meet the relevant Performance Requirements. A Deemed to Satisfy Solution is achieved by following all appropriate Deemed to Satisfy Provisions in the NCC. The Deemed to Satisfy Provisions are prescriptive. They include materials, components, design factors, and construction methods that, if used, are deemed to meet the Performance Requirements, hence the term “Deemed-to-Satisfy”.



Expert Judgement	is the judgement of a person who has the qualifications and experience necessary to determine whether a building or plumbing and drainage solution complies with the Performance Requirements. Where physical criteria are unable to be tested or modelled by calculation, the opinion of a technical expert may be accepted. Contemporary and relevant qualifications and/or experience are necessary to determine whether a Performance Solution complies with the Performance Requirements. The level of qualification and/or experience may differ depending on the complexity of the proposal and the requirements of the regulatory authority.
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Q4. Discuss the importance of documenting quality assurance and quality control processes relevant to the build.

Answer

The primary goal of Quality Management Plan (QMP) is to establish processes and standards that ensure consistency, reliability, and quality at every stage of production.

QMP processes set clear guidelines and standards that all employees must follow. QMP identifies potential issues in processes before they can lead to defects or errors. By addressing these issues proactively, QMP prevents costly mistakes down the line.

When customers receive consistently high-quality products or services, their satisfaction levels increase. This leads to customer loyalty, positive reviews, and potential referrals.

It identifies defects and errors in products or services, ensuring that only those meeting quality standards are released to customers.

It verifies that products or services comply with relevant quality standards, regulations, and customer requirements.

By detecting and addressing defects before products or services reach customers, a QMP minimizes the risk of recalls, customer complaints, and legal issues, and provides valuable feedback to improve processes. If a defect is identified, the root cause is investigated, and corrective actions are implemented to prevent recurrence.



Q5. Discuss the basic principles of structural design and how stress or strain occurs.

Answer

Stress refers to the force applied to a material per unit area, while strain is a deformation or change in the shape of the material that results from the applied force. Different materials can exhibit very different stress-strain behaviour's depending on their composition, structure, and loading conditions.

Various types of stress can occur inside an object, including compressive stress, tensile stress, shear stress, and torsional stress.

Stress is defined as the force per unit area that acts on a material. This property helps define how different materials behave under specific loading conditions.

Strain is a measure of the deformation of a material under the influence of an external force. It represents the amount of deformation that occurs in a material when subjected to stress.



Q6. Discuss compressive and tensile stresses on buildings?

Answer Two key types of forces involved in building any structure are tension and compression. Every material has the ability to hold up to a certain amount of tension and a certain amount of compression. A tension force is one that pulls and stretches the materials apart. A compression force is one that squeezes material together.

An example of tension force in a building would be the steel cable on the lift, the fibres within the material will be pulled apart by the weight of the lift.

An example of compression force would be when a column bears a load, it experiences compression forces that allow it to withstand the downward forces and maintain structural stability.



Q7. Describe considerations you make when writing workplace procedures.

Answer Procedures should communicate what readers need to know, not just what they want to know. They might need to know how to do the process correctly, faster, or with less waste. They also might like to know why they have to do something a certain way, where they can go for help, and what happens if something goes wrong.

- Set out the aim of the procedure.
- Explain why the procedure was developed.
- List who the procedure applies to
- Set out what is acceptable or unacceptable.
- Set out the consequences of not complying with the procedure.
- Provide a date of when the procedure was developed or updated.



Q8. Discuss the listed levels found in the NCC Performance Hierarchy.

Answer

Performance Hierarchy	Description
Objectives	To create a performance based code that states the minimum requirements that builders and plumbers along with building elements must meet.
Functional statements	Are statements which describe how buildings and building elements achieve the requirements set out in the NCC
Performance requirements	Are the minimum level that buildings, building elements and plumbing/drainage systems must meet.
Building Solutions	Performance solutions address the performance requirements set out in the NCC by using one or more of the assessment methods. Deemed to satisfy solution is a solution that is set out in the NCC. Alternative solution has the required documentation and input from experts in the required field or licensed professionals that ensures the solution meets the requirements of the NCC.



Q9. Discuss two (2) properties, two (2) characteristics and two (2) limitations of concrete when used for buildings.

Answer

	Concrete
Properties	Strength – concrete can be designed to multiple strengths to allow it to be used in most construction situations. Durability – concrete once fully cured has high strength providing a durable product that has one of the longer life spans across building materials.
Characteristics	Concrete has the ability to resist natural disasters like cyclones and earthquakes. Concrete can withstand high winds and constant weather making it a preferred choice for tall buildings
Limitations	Concrete requires formwork to mould the liquid form, this adding further expense. Concrete has a low toughness compared to other materials like steel – the ability to absorb direct impact.



Q10. Discuss three (3) benefits of using glass in buildings?

Answer

1. Increased natural light, glass allows natural light to enter a building, which can reduce the need for artificial lighting and save energy costs.
2. Glass is waterproof and dustproof – Glass has a shiny, smooth surface, making it resistant to dust and cleans easily. In contrast to other materials, glass is simple to maintain.
3. Glass is UV stable because it doesn't get affected by UV radiation so cracks, discoloration, or even disintegration won't occur. It can last for a long time, in contrast to substances like plasters, which are not able to withstand UV radiation.



Q11. Describe information you can determine from the working drawings and specifications when organising the excavation for the site of a three (3) storey unit block with underground parking.

Answer ☐

General Notes – detailing responsibilities and how to use the documentation

Ground conditions – soil type, required removal of soil or import of material.

Bulk Excavation details – quantities to be removed, design of batters

Shoring details – for excavation of basement

Pile details – Standards required to be meet, load requirements.

Foundation – structural details of the foundation to calculate the required detailed excavations

Service details – details of underground services required to be installed.

Slab details – Excavation preparation for slab works.

Q12. Who would you discuss materials and plans with to ensure compliance with NCC Performance Requirements and site safety. Provide two (2) and explain your answers.

Answer ☐

Assessing design and materials to be used should be reviewed with multiple professionals across the project. Materials being used should have input from the supplier of the material to obtain all the product technical data, any certificate of conformity or accreditation. The materials should also be assessed and reviewed by RPEQ to ensure materials meets the design requirements. All plans/design documentation must be reviewed by the professional for the individual discipline of design ie.(structural design – reviewed by RPEQ Structural Engineer) (Noise & Vibration – Noise & Vibration engineer)

Throughout the entire design a safety in design process should be developed by the design team to nominate safety risks and issues identified during the design that have the potential to affect the safety of others due to how the design is completed. The risks identified are then changes to the design are identified to minimise the risks.

Working through site safety with the project safety coordinator to establish project risks and risk mitigation prior to works starting onsite is the key to a safe delivery of a project.

Q13. Why may you need to use a combination of Performance Solutions and Deemed-to-Satisfy (DtS) solutions to comply with the Performance Requirements of the NCC

Answer

The performance solution in its own right may not fully satisfy the performance requirements. The sections of the performance solutions that do not satisfy the Performance Requirements can be satisfied by a Deemed-to-Satisfy solution. Combining the two solutions can then satisfy the Performance Solution.

A Performance Solution requires an assessment method to ensure it satisfies the Performance Requirements. An assessment method is to use a Deemed-to-Satisfy (DtS) provision, if the Performance Solution is reliant on this assessment method then to achieve a DtS Provision a DtS solution is used meeting the required assessment methods (evidence of suitability & Expert Judgement).

A Deemed-to-Satisfy Solution can show compliance with the Deemed-to-Satisfy Provisions



CPCCBBC6001

APPLY BUILDING CODES AND STANDARDS TO THE CONSTRUCTION PROCESS FOR LARGE BUILDING PROJECTS

WORKBOOK

Participant name	Michael Brady
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Resources required
Pen

FOR THE ASSESSOR
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ASSESSOR COMMENTS

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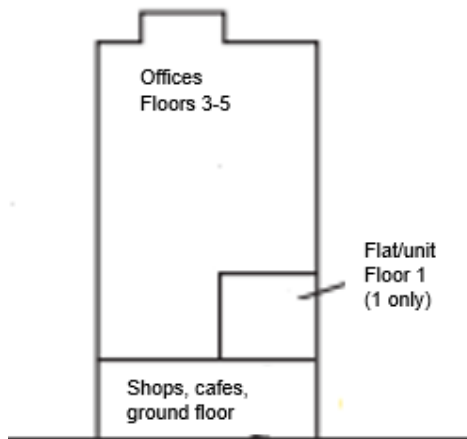
NOTE

At times, you will be provided with a specific business context to which you must respond, otherwise it is anticipated that you will use a workplace of your choosing (your own, or hypothetical) to provide the context to the task.

At all times, the responses in your assessment must reference **Australian** (Queensland or Federal) documentation, including legislation, regulations, codes of practice, standards and guidance publications.

ACTIVITY 1

Access the NCC via the internet to determine the Building Classification/s that apply to the building diagram below. The building is to contain offices in the upper floors, one caretaker flat on the first floor and shops and cafes on the ground floor. Explain your findings below.



Answer

Ground Floor: Class 6
Floor 1: Class 4
Floors 3 – 5: Class 5

Satisfactory
Outcome



ACTIVITY 2

Access the NCC via the internet to locate the requirements applicable to a building development in the Brisbane area, containing 6 sole-occupancy units, two (2) on each level, each being a separate dwelling.

This building includes one (1) basement level designated for car parking.

The proposed building structure requires reinforced concrete floors and columns.

Document your findings or where in the NCC the information can be located.

Building Description

Classification

Class 2 Building Classification (Page 62 Vol.1)

Class 2 does not cover the car park due to it being multistorey building (7a for the car park Page 65 Vol.1)

Rise in Storeys

Is the sum of the greatest number of storeys above ground level (Page 101 Vol.1)

Number of Storeys

3 Storeys (Page 101 Vol.1)

Type of construction

Type A (Table C2D2 Page 108 Vol.1)

Climate Zone and description

Zone 2 (ABCB climate zone map / Page 169 Vol.2)

Fire resistance and stability

Locate fire resistance information

Type A (Table C2D2 Page 108 Vol.1)

C2D33 storey building as the basement is not included.

C2D4 (1) In a building of multiple classifications, the type of construction required for the building is the most fire-resisting type resulting from the application of Table C2D2 on the basis that the classification applying to the top storey applies to all storeys.

Compartmentation and fire separation

Specification 5 Fire resisting construction

S5C3 Fire protection for a support of another part [2019: Spec C1.1: 2.2] (1) Where a part of a building required to have an FRL depends upon direct vertical or lateral support from another part to maintain its FRL, that supporting part, subject to (2), must— (a) have an FRL not less than that required by other provisions of this Specification; and (b) if located within the same fire compartment as the part it supports have an FRL in respect of structural adequacy the greater of that required— (i) for the supporting part itself; and (ii) for the part it supports; and (c) be non-combustible— (i) if required by other provisions of this Specification; or (ii) if the part it supports is required to be non-combustible.

Table S5C11g

Floors 90/90/90

Roofs 90/60/30

Columns 90/--/--

S5C15 Type A fire-resisting construction — roof: Concession [2019: Spec C1.1: 3.5] A roof need not comply with Table S5C11g if its covering is non-combustible and the building— (a) has a sprinkler system (other than a FPAA101D or FPAA101H system) complying with Specification 17 installed throughout; or Building element FRL (in minutes): Structural adequacy / Integrity / Insulation Class 2, 3 or 4 part Class 5, 7a or 9 Class 6 Class 7b or 8 Other loadbearing internal walls, internal beams, trusses and columns 90/--/ 120/--/ 180/--/ 240/--/ Floors 90/90/90 120/120/120 180/180/180 240/240/240 Roofs 90/60/30 120/60/30 180/60/30 240/90/60 S5C11 (1 May 2023) Fire resistance NCC 2022 Volume One - Building Code of Australia Page 138 (b) has a rise in storeys of 3 or less; or (c) is of Class 2 or 3; or (d) has an effective height of not more than 25 m and the ceiling immediately below the roof has a resistance to the incipient spread of fire to the roof space of not less than 60 minutes.

S5C17 Type A fire-resisting construction — internal columns and walls: Concession [2019: Spec C1.1:3.7] For a building with an effective height of not more than 25 m and having a roof without an FRL in accordance with S5C15, in the storey immediately below that roof, internal columns other than those referred to in S5C11(1)(d) and internal walls other than fire walls and shaft walls may have— (a) in a Class 2 or 3 building: FRL 60/60/60; or

So in summary:

Assumed there are sprinklers in the building Slabs are concrete and are FRL

90/90/90

Columns are 90/--/-- except the top floor for columns supporting the roof. They can be FRL 60/60/60 due to the concession S5C17.

Internal dividing walls to the two occupancies can be either be load bearing or non-load bearing and must be 90/90/90

Basement level must be a separate compartment to the rest of the building.

Fire hazard properties of materials, assemblies, fixtures and linings

Volume one Section C Fire resistance

Specification C1.10. Page 112

C2C11 Fire hazard properties states that class 2 buildings must comply with specification

Table S7C2: Fire hazard property requirements

Lining, material or assembly	Requirement
Floor linings and floor coverings	S7C3
Wall linings and ceiling linings	S7C4
Air-handling ductwork	S7C5
Lift cars	S7C6
In fire control rooms subject to Specification 6 and fire isolated exits	S7C7
In Class 9b buildings used as a theatre, public hall or the like — fixed seating in the audience area or auditorium; and a proscenium curtain <i>required</i> by Specification 32	S7C7
Escalators, moving walkways and non- <i>required</i> non-fire-isolated stairways or pedestrian ramps subject to Specification 14	S7C7
<i>Sarking-type material</i>	S7C7
Attachments to internal floors, walls and ceilings	S7C7
Other materials including insulation	S7C7

C2D10 page 110. Non-combustible building elements details that Type A construction must have a number of Non-Combustible building elements

FRL's deemed to be achieved by walls Table S1C2b Page 63 and 64

NCC 2019 ammendment 1 part 3.2 state particulars about concrete and reinforcement conformity.

Material requirements

Reinforced concrete requirements relative to Australian Standards

Concrete must conform to AS3600
 Post installed fastenings and cast in's AS
 5216 B1D4 (b) Concrete page 93 volume 1
 Part 3.2.3 Concrete and reinforcing NCC 2019 A1

Volume 2

Specification 1 Fire resistance of building
 elements S1C2 Rating

A building element meets the requirements of this Specification if—
 (ii) AS 3600 if it is a concrete structure;

Glazing requirements specifically for windows, sliding doors with frames and balconies.

C3D77 vertical separation of openings in external walls page 119 Volume 1

Again assuming that the building has a sprinkler system so In short the need for designing
 compliant separation or spandrels or the like are greatly reduced :

(2) The requirements of (1) do not apply to—

(c) a building which has a sprinkler system (other than a FPAA101D or FPAA101H
 system) complying with Specification 17 installed throughout; or

(d) openings within the same stairway; or (e) openings in external walls where the floor

separating the storeys does not require an FRL with respect to integrity and insulation.

(3) For the purposes of C3D7, window or other opening means that part of the external wall of a building that does not have an FRL of 60/60/60 or greater

Glazing: For the purposes of— (a) Section J of Volume One, except for a sole-occupancy unit of a Class 2 building or a Class 4 part of a building—

(i) a transparent or translucent element and its supporting frame located in the envelope; and

(ii) includes a window other than a roof light; or

(b) Section J of NCC Volume One, for a sole-occupancy unit of a Class 2 building or a Class 4 part of a building

Definitions NCC 2022 Volume Two - Building Code of Australia Page 179

(i) a translucent element and its supporting frame located in the external fabric of the building; and includes a window other than a roof light; or (c) Part H6 of NCC Volume Two and Section 13 of the

**Satisfactory
Outcome**



ACTIVITY 3

The building discussed in ACTIVITY 2 includes one (1) basement level designated for car parking.

Provide information required for

- Bored piling to retain the soil and enable basement walls.
- Work Health and Safety
- Water proofing
- Water ingress

Document your findings or where the information can be located.

Bored piling to retain soil and enable basement walls

1st would be to understand the soil and ground conditions.

This would be done by a geotechnical survey of the area to understand bearing pressures below the basement level so a design can be completed on the piles that allow strength for soil retention, taking into account ground water levels and water pockets in the ground.

After that is done a design is completed by an engineer stating pile diameters, reinforcement sizes, capping beam design and concrete strengths. This will also take into account the complete building structure and how the foundation work with the final product.

Depending on the amount of ground retention or force imposed on the piles around the excavation, pile anchors may be introduced.

This is when a drill machine, drills a hole through the piles and into the ground beyond the perimetres of the wall and then a steel cable is installed and the end of the cable is grouted into the ground.

Once the grout has been verified as strong enough the steel cable would have a plate put on the end of it and a machine pulls the cable to a designed tension.

Once the tension is achieved the cable is locked off with a clamp where it would remain until a design influenced designated time.

Pile depths are critical as the "socket" depth must be achieved.

The socket is the depth into the solid ground (design influenced) that the pile would need to not only take the compression force of the building above but also the lateral forces of the ground the piles are holding up.

For the design there could be a number of options on how the wall is built.

Contiguous piles are where piles are drilled in next to each almost touching which forms a continuous wall after the gap between the piles are filled in after excavation. Usually used where unstable ground condition wont enable the piles to be further apart as the excavation would collapse in between the piles during excavation works.

Soldier piles are placed apart from each other and vary in spacings depending on ground conditions. Construction is completed during the excavation where after the excavation, wall is shaped to take a reinforced shotcrete wall.

AS2159-2009- Design and Installation. AS3600 Concrete and reinforcements

NCC 2019 volume 2 A1 part 3.0 structural provisions

Work Health and Safety

Things to consider:

Safe work Method statements and procedures for workers prior to starting.

Safe Sequence of works including the engineer detailing what excavation depths can be achieved before anchors or shotcrete walls are installed.

Safe Access and Egress in and out of the excavation for both workers and vehicles/Trucks.

Emergency preparedness for workers inside the excavation including emergency exits. The use of water to suppress dust and the like.

Lighting for the works and access ways.

Ensuring the plant is the correct type for the task. Ensuring plant is in good condition

PPE- hi vis, hearing, eye and skin protection.

Working with chemicals (concrete and fuel

etc)

Most information can be found under the Excavation Code of practice 2021 and WHS Act and regulations

Water proofing

Waterproofing designs for piled excavations can vary:

Wet walls are generally walls that are designed that water can seep through the wall but systems are in place to catch the water into designed drains and retain it to be pumped out or drained away.

There are also cases when excavating into rock that there is no shotcrete wall and water simply drains to the bottom of excavation and is drained through the designed system.

Normally shotcrete walls have drainage cells installed behind prior to shotcrete to channel the water down to a drainage system keeping the wall relatively dry.

There are several designs where water proofing of the shotcrete walls can be achieved. A common one is through additives that are put into the concrete and shotcrete that waterproofs the wall.

On construction joints of shotcrete or joints from shotcrete walls to piles a waterproofing detail could be achieved via a number of different products on the market.

AS2159-2009

Water ingress

Most designs have been completed with a known chance that water will come through the wall as completely waterproofing a excavated wall is a very hard task unless there is a way to get in behind the walls.

Designs of buildings should detail how the water will be dealt with and ensure that it does not come into the buildings critical areas.

This could be with perimeter drainage systems, secondary walls that are built in front of excavated walls and waterproofed, steps in slabs to ensure water does not come into areas that cannot be wet

AS2159-2009

**Satisfactory
Outcome**



CPCCBC6001

APPLY BUILDING CODES AND STANDARDS TO THE CONSTRUCTION PROCESS FOR LARGE BUILDING PROJECTS

PRACTICAL ASSESSMENT

Participant name	Michael Brady
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FOR THE PARTICIPANT
Instructions
• The tasks outlined on the following pages will require performance of normal workplace activities, as a result of a structured activity set by an Observer in the workplace or a simulated activity set by your Assessor/Observer. • The timeframe for these tasks will be established by your Assessor/Observer, in consideration of location conditions and industry requirements. • You must complete all tasks unassisted by the Assessor or other personnel, unless the steps note this assistance. • You must attempt all tasks (and itemised steps) for a 'Satisfactory' assessment outcome to be awarded. ○ For any observation conducted that is incomplete, or without satisfactory performance, the observation will need to be completed again after further training support.

FOR THE ASSESSOR/OBSERVER
Instructions
• The following observation record should be used to judge and record your observations of the Participant as they complete the task(s) set. You must record your observations of the Participant's performance. ○ For each occasion, indicate the task performed and whether it was a simulation or workplace-based task. ▪ Any simulated assessment must ensure the Participant still performs under workplace conditions which reflect industry standards. ○ In the comments, provide clear detail regarding the task that the Participant was required to do (e.g. PPE used, materials handled, attachments connected, plant types). • All steps must be satisfactorily demonstrated by the Participant for a 'Satisfactory' determination (indicated by an Assessor tick to the right of each itemised step, or an Observer tick to the right of each itemised step, and confirmation by an Assessor in the Assessor Comments). ○ Where you have determined that one or more task steps have not been satisfactorily demonstrated, provide the Participant with additional support and outline details of such assistance in the Assessor/Observer Comments. Allow the Participant two (2) further opportunities to demonstrate the task again to allow an opportunity for a 'Satisfactory' assessment outcome to be achieved. ○ If after three (3) attempts the Assessor determines that the Participant cannot demonstrate the required steps, a 'Not Satisfactory' outcome is to be determined.

TASK OUTCOME					
Task	Date	Task Type (Tick)	Location	Task outcome (Tick)	
				Satisfactory	Not Satisfactory
Task 1	9/05/2024	☒ Workplace ☐ Simulation	Mackay Hospital	☒	☐

ASSESSOR COMMENTS: GENERAL

As necessary, outline:

- Details on reattempts, alternative arrangements or reasonable adjustments made.
- Where a Participant is deemed 'Not Satisfactory', provide recommendations for future training.

ASSESSOR COMMENTS: PRACTICAL TASK 1

- ☒ Individual student (as named on cover page)
☐ Multiple students [☐ All from Attendance Report, ☐ Specific students involved – identify students]

Task	Provide detail
1.1A.	Specify how scope of work was determined: Through Architectural scope page 14 and contractual arrangements outside the scope.
1.1A.	Specify how general requirements and prescriptive requirements of the NCC were determined and documented:
1.1B.	How were relevant Australian Standards identified and located:
1.2A. 1.2B. 1.3A. 1.3H. 1.5C. 1.5D.	Specify (✓) where building classifications, criteria requirements and performance solutions were documented: ☐ Workplace Quality document ☐ Quality Assurance Template ☐ Other (please specify): ☒ Document attached as evidence
1.3F.	Specify (✓) who was consulted regarding compliance options: ☒ Project management ☐ Relevant tradesperson ☐ Builder ☐ Supplier ☐ Other (please specify):
1.4A. 1.4B.	Specify (✓) where NCC requirements for passive and active fire protection and performance solutions were documented: ☐ Workplace Quality document ☐ Quality Assurance Template ☒ Other (please specify): ☒ Document attached as evidence

ASSESSOR COMMENTS: PRACTICAL TASK 1	
1.4C.	Specify existing buildings checked for compliance with active fire protection requirements: ☒ Is checklist used attached as evidence? Not applicable of this project as it is a new project
1.5A. 1.5B.	Specify (✓) communication methods applied to manage construction and other trades compliance: ☒ Emails ☐ Schedule ☐ Memos ☐ Daily meetings ☐ Site induction ☐ Other (please specify):
1.5E.	Specify how non-confirming building materials and products were managed using evidence of suitability: Not applicable on this project as it is in design stage. If it does happen later it is reviewed by project certifiers to ensure compliance.

CPCCBC6001

APPLY BUILDING CODES AND STANDARDS TO THE CONSTRUCTION PROCESS FOR LARGE BUILDING PROJECTS

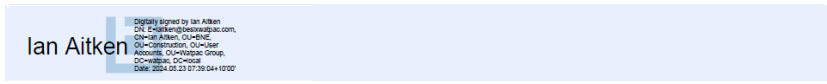
Practical Task 1

Description of task:

The participant must demonstrate the skills and knowledge to make a range of critical decisions in relatively complex situations while applying building codes and standards to one (1) building project over three (3) storeys, with below ground construction to meet the requirements of the National Construction Code (NCC) prior to the build commencing. The participant must also inspect existing buildings for fire compliance. Assessor and observer will be looking for evidence including:

- Interpret relevant codes and standards' requirements.
 - Determine the scope of works and NCC general requirements and Performance Requirements to achieve a DTS solution.
 - Identify Australian Standards referenced in the NCC Relevant to the build and confirm the requirements.
- Classify the building/s.
 - Determine the use and arrangement of the building and apply the appropriate NCC classification/s.
 - Locate and document NCC requirements for multiple classifications.
- Apply solutions to construction problems.
 - Determine the range of NCC criteria required to ensure project compliance.
 - Identify alternative, compliant solutions for construction problems to comply with NCC Performance Requirements.
 - Meet the Performance Requirement of the NCC by applying a Performance Solution supported by one or a combination of the Assessment Methods.
 - Use a Deem-to-Satisfy (DTS) solution supported by one or a combination of Assessment Methods to meet NCC compliance.
 - Use a combination of Performance Solutions and DTS solutions to comply with the Performance Requirements of the NCC.
 - Discuss compliance options with relevant construction personnel to ensure compliance with NCC Performance Requirements.
 - Identify and complete relevant documentation to meet Performance Requirements of the NCC.
- Apply fire protection requirements.
 - Read the NCC requirements to determine fire resistance required for all classes and types of buildings.
 - Identify and apply NCC requirements with respect to passive and active fire protection to all classes and types of buildings.
 - Check existing buildings for compliance with passive and active fire protection requirements according to NCC requirements. (See HO2 and NCC to create checklist)
- Implement strategy to manage construction compliance.
 - Establish strategies to manage construction compliance of large, complex and high-rise buildings with the NCC.
 - Implement and coordinate the work of professionals involved in the development and management of the building process.
 - Seek effective design solutions for buildings of more than three storeys to meet the needs of clients and ensure compliance with the NCC.
 - Design and implement quality assurance processes to ensure effective and compliant management of the construction process.
 - Detect non-conforming building materials and products and manage the evidence of suitability as required in the NCC.

These tasks may be simulated or real. 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 includes site plan and workplace documents covering the information required. A template is available.

Practical Task 1	
The Observer is to provide detailed comments on the tasks completed by the Participant (on the Observer Comments, overleaf). The Assessor is to verify the Observer's comments, noting their findings in the Assessor Comments (on the back of the Practical Assessment cover page) and provide the assessment outcome.	
Resources required: Construction schedules, plans, drawings and specifications for one (1) building project over three (3) storeys, with below ground construction; workplace quality policies and procedures; technology to access building and related industry codes, standards and manufacturer product information and materials specifications; Technology to access the NCC and current relevant Acts and Regulations. PPE as required.	
Observer details	
Name of observer:	Ian Aitken
Role of observer (Confirm suitability to sign)	Project Manager QBCC 79393
Email address of observer	iaitken@besixwatpac.com
Signature of observer:	 Digitally signed by Ian Aitken DN: cn=Ian Aitken, o=Besix Watpac, ou=Construction, ou=User Accounts, ou=Watpac Group, cn=Ian Aitken, c=Australia Date: 2024.05.23 07:29:04+1000
Date:	Select Date.

When completing the task, did the Participant:	Tick if satisfactorily completed. Provide comments if left unticked.
1 Interpret relevant codes and standards' requirements	
1.1A. Determine the scope of works and NCC general requirements and Performance Requirements to achieve a DTS solution.	☒
1.1B. Identify Australian Standards referenced in the NCC Relevant to the build and confirm the requirements.	☒
2 Classify the building	
1.2A. Determine the use and arrangement of the building and apply the appropriate NCC classification/s.	☒
1.2B. Locate and document NCC requirements for multiple classifications.	☒
3 Apply solutions to construction problems	
1.3A. Determine the range of NCC criteria required to ensure project compliance.	☒
1.3B. Identify alternative, compliant solutions for construction problems to comply with NCC Performance Requirements.	☒
1.3C. Apply a Performance Solution supported by one or a combination of the Assessment Methods to meet the Performance Requirement of the NCC.	☒
1.3D. Use a Deem-to-Satisfy (DTS) solution supported by one or a combination of Assessment Methods to meet NCC compliance.	☒
1.3E. Use a combination of Performance Solutions and DTS solutions to comply with the Performance Requirements of the NCC.	☒
1.3F. Discuss compliance options with relevant construction personnel to ensure compliance with NCC Performance Requirements.	☒
1.3G. Lead discussions to explore solutions to complex design problems with relevant construction personnel.	☒
1.3H. Identify and complete relevant documentation to meet Performance Requirements of the NCC.	☒

When completing the task, did the Participant:	Tick if satisfactorily completed. Provide comments if left unticked.
4 Apply fire protection requirements	
1.4A. Read the NCC requirements to determine fire resistance required for all classes and types of buildings.	☒
1.4B. Identify and apply NCC requirements with respect to passive and active fire protection to all classes and types of buildings.	☒
1.4C. Check existing buildings for compliance with passive and active fire protection requirements according to NCC requirements. <i>(See HO2 and NCC to create checklist)</i>	☒
5 Implement strategy to manage construction compliance	
1.5A. Establish strategies to manage construction compliance of large, complex and high-rise buildings with the NCC.	☒
1.5B. Implement and coordinate the work of professionals involved in the development and management of the building process.	☒
1.5C. Seek effective design solutions for buildings of more than three storeys to meet the needs of clients and ensure compliance with the NCC.	☒
1.5D. Design and implement quality assurance processes to ensure effective and compliant management of the construction process.	☒
1.5E. Detect non-conforming building materials and products and manage the evidence of suitability as required in the NCC.	☒

Observer comments:

Michael is the project manager at the Mackay Base Hospital Expansion project and is currently working through the design process starting from schematic design managing the design through to construction documentation. Throughout this design period Michael has been required to work with and manage multiple disciplines of consultants and clients to bring the design together ready for construction to meet the project requirements.

Throughout the design Michael has worked through current coded assessments which included a requirement for the building to meet an impact resistance rating of 4. With a current façade system in the market not designed to meet this rating it has been required to review a system that would withstand a three point impact test.

Design requirements of a hospital involve a multitude of detailed standards and codes that must be utilised when completing a design as part of this Michael has shown great involvement in ensuring the requirements are maintain within all design aspects.