CPCCBC6016
ASSESS CONSTRUCTION FAULTS IN LARGE BUILDING PROJECTS
ASSESSMENT SUMMARY

The assessment activities for *CPCCBC6016 Assess construction faults in 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	Michael Brady Digitally signed by Michael Brady DN: E=mbrady@besixwatpac.com, CN=Michael Brady, OU=BNE, OU=Construction, OU=User Accounts, OU=Watpac Group, DC=watpac, DC=local Location: Mackay Reason: I am approving this document Contact Info: mbrady@besixwatpac.com Date: 2024.06.22 16:21:31+10'00'

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
Practical Assessment	Select Date.	☐ Satisfactory	☐ Not Satisfactory
Outcome for CPCCBC6016	Select Date.	☐ **Competent**	☐ **Not Yet Competent**

Evidence requirements checklist (ticked by assessor and evidence supplied to RTO)	
☐ Theory Exam	☐ Practical Assessment ☐ Rectification report with detailed sketches

Assessor name	
Assessor signature	

CPCCBC6016
ASSESS CONSTRUCTION FAULTS IN LARGE BUILDING PROJECTS

THEORY EXAM

Participant name	

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.
  o An oral examination may be allowed under certain circumstances, whereby your answers will be documented by another party.
  o 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 the purpose of the Building Act 1975.**

Answer The purpose of the Building Act 1975 is to govern all building work in Queensland, empowering the regulation of certain aspects of buildings and structures.

Q2. **Explain the purpose of the Plumbing and Drainage Act 2018.**

Answer The purpose of the Plumbing and Drainage Act 2018 is to regulate the carrying out of plumbing or drainage work in a way that reduces risks to public health and safety and the environment.

Q3. **a) What is the name of the Environmental Protection Act in your State/Territory?**
b) What is the purpose of this Act and its regulations?

Answer

a) My State is Queensland – the EPA relevant to my area is the Environmental Protection Act 1994

b) The purpose of the Act and regulations is to protects Queensland's environment while allowing for development that improves the total quality of life, both now and in the future, in a way that maintains ecological processes.

Q4. **What are the requirements for compliance and conformance according to National Construction Code (NCC)?**

Answer All building products and materials must be 'fit for purpose' under the NCC. The NCC requires that evidence of suitability be established to demonstrate that a material, design or construction meets a Performance Requirement or Deemed-to-Satisfy (DTS) Provision.

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Q5. **Discuss the purpose of Work Health and Safety 'Codes of Practice'.**

Answer Codes of Practice provide practical guidance for businesses on how to achieve health and safety standards required under the Work Health and Safety Act 2011 (WHS Act). A code of practice also has effective ways to identify and manage risks. Codes are reviewed and updated to unsure they are up to date. In building, you are expected to meet or better the requirements in the codes of practice.

☐

Q6. **The National Construction Code (NCC) Volume Two Amendment 1 – Part 3.0 Structural provisions discusses 'Resistance to actions'. Explain what is stated.**

Answer It explains that the resistance of a building or structure must be greater than the most critical action effect resulting from different combinations of actions, where—

(a)
the most critical action effect on a building or structure must be determined in accordance with 3.0.3 of the NCC (Determination of individual actions) and the general design procedures contained in AS/NZS 1170.0; and

(b)
the resistance of a building or structure is determined in accordance with 3.0.4 of the NCC (Determination of structural resistance of materials and forms of construction).

☐

Q7. **What is covered in AS/NZS 1170 series?**

Answer

The AS/NZS 1170 series is a set of standards that provides guidelines for structural design actions. It covers various loads, such as wind actions, snow and ice actions and earthquake actions.

Q8. **Explain why you should review project drawings, details and specifications when assessing construction faults in buildings.**

Answer

Information presented in project drawings, details and specifications should provide a clear and structurally safe and compliant method of how a structure is built. Design should always be approved by the relevant competent person/engineer. It is important all of these details are reviewed by the team to ensure a safe building methodology and by an engineer to ensure the safety of the structure during building and post completion.

Q9. **Discuss the basic principles of structural design that must be considered in any building design.**

Answer

When designing a building, this must be done with consideration of all forces that will be imposed on the building both during construction and during the life of the building thereafter. Basic principles of structural design include the following:

- **Material selection:** Choosing appropriate materials based on their properties and performance as well as consideration for location and weather.
- **Stability:** The resistance of a structure to overturning, sliding, or collapsing
- **Strength:** The capacity of a structure to resist applied forces without failure
- **Load-bearing capacity:** The ability of a structure to support loads and forces
- **Stiffness:** The rigidity of a structure that prevents excessive deflection or deformation

All the above should consider the location of the building, likely loads internal and external, height, temperature/wind/other environmental factors such as consideration for cyclones or earthquakes if built within certain zones.

Q10. **Discuss compressive and tensile stresses on buildings.**

Answer

If the force pulls the member (tension) it results in a tensile stress; if the force pushes the member (compression) it results in compressive stress. Tensile stresses stretch a member, and compressive stresses squeeze a member.

An example of this in building terms would be a concrete slab stress on a pile or placing something on top of a suspended concrete slab. In this case placing external compressive force would create an equal and opposing force in the concrete as atoms in the makeup of the concrete structure attempt to retain their original interatomic distances (compressive stress).

An example of tensile stress would be the force being applied to an anchor bolt fixed to the underside a concrete slab, tasked with supporting an structural steel awning hanging below. It would be important the bolt is installed correctly and is capable of producing a sufficient amount of tensile yield to support the structure without any fracture or failure.

Q11. **Discuss the structural significance of building basements in tall buildings.**

Answer

Basements create a good stable structural base, capable of supporting heavy loads above, including lateral loads imposed on a building.

The extra depth of structure provided by basement levels provides additional opportunity and allows for a solid foundation design the can provide additional passive pressure against the active earth pressure imposed on the piles of the building.

This supplies the building with greater ability to cope with climate change effects in the soil and provides an all-round stronger foundation which is more important the higher your building is.

Q12. **What is meant by the term the 'aesthetics' of a structural design?**

Answer

In structural design, this could be in reference to a building's shape, texture, size, colour, balance, emphasis, contrast, symmetry, unity, movement, proportion, alignment, pattern, space, decoration, culture, and context. The aeasthetic refer to the buildings 'appeal' like beauty or art.

Aesthetics can serve as a vital link between technological advancement, design, and architecture.

Often times, there may be a requirement for a building's design to meet a certain specified aesthetic, which may mean to either blend with its surroundings, or even stand-out if that is the preferred aesthetic.

Q13. **Explain economic factors and how these affect design.**

Answer

Economic factors refer to the associated cost of performing work. A budget in most cases – at least loosely – is developed based of a proposed design and timeline of a project prior to any work commencing. These factors would include cost of design, labour, project staff, materials, machinery, tools, and many other factors prior to and during the life of the project build.

Economic factors affect design in several ways. A building, as previously mentioned, will often be designed to meet a budget. The building methodology will affect the program (time taken) and number of personnel required, which in turn will equate to an estimated labour cost for the build.

The materials used may be selected to suit the budget of the job, however in addition to cost, it is important that design also considers the quality of the materials, service life, maintenance frequency, and the safety in design for construction/maintenance required. The quality of a building can also affect the sell on or rental income value of the job. Another consideration is the availability of labour, materials, machinery etc. required to perform the job.

By changing the design direction for one of the above elements, you are likely to affect the economical outcome. In a D&C project, a client may ask for five different designs to be proposed with a cost plan created for each design. The cost plan will likely play a large role in the decision of design.

Q14. **'The function of a structure is to resist forces in equilibrium' - what does this mean?**

Answer

This means that structures must be designed to be resistant to all forces anticipated to act upon them during their existence. Achieving this outcome is a key basis for appropriate design.

Q15. **Why is reinforced concrete commonly used for the construction of high-rise buildings?**

Answer

Reinforced concrete is commonly used in construction of high-rise buildings because it is stronger than standard concrete due to incorporating additional materials within the concrete, such as steel rods which increase its load-bearing capacity.

It is used because it has so many desirable mechanical properties, providing it with a high relative strength, high toleration of tensile strain. It provides durability, strength, ductility, versatility, and is economical in comparison to alternative options.

Q16. **Discuss why you might need to consult the structural engineer regarding the loads and forces acting on a beam or column.**

Answer

It is important that all structural elements of a building are designed and approved by a qualified structural engineer. It is important that an engineer can view the structure wholistically when equating forces and loads acting on a beam or column, as connecting structures and external forces/loads imposed will dictate which design and building methodology and materials are necessary.

Information on proposed design, materials, intended use, location etc. should all be shared with an engineer, so all factors can be considered, and the engineer can make an informed decision on how the beam/column should be built and why the resulting design will be adequate for the life span of the structure.

Q17. **Determine the bending behaviour of a column under axial load.**

Answer

A column is a vertical structural member that is used to transfer compressive loads. A column, for example, may transfer loads from a ceiling, floor, or roof slab or a beam to the foundations. Columns carry the bending moment about one or both of their cross-sectional axes

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Q18. **Describe the performance characteristics of columns under eccentric load.**

Answer

When the eccentricity of the load is applied away from the column's web, the rigidity of the column decreases, causing the structure to lose stability faster

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Q19. **Discuss bending moments, shear forces, deflection and torsion of beams and slabs.**

Answer

Beams/Slabs	Response
Beams	Deflection is the amount the beam bends or sags when shrinkage occurs, and a force is applied. Torsion is when a load creates a force that results in deformity like twisting. Spandrel beams are a good example of this. The torsional behaviour of a spandrel beam is a significant feature as slab load is fundamentally transmitted from the beam to the column by torsion. Therefore, the beam requires additional attention to torsional failure during design. Shear forces and bending movements develop in a beam when it is subjected to external loads. As a result a beam must withstand external shear forces and bending movements. To withstand shear forces and bending movements, the beam must develop internal resistance.
Slabs	A slab's bending moments are the reactions of the slab based off the load imposed on the slab. When occurring near the center of the span on the top side of the slab, this is called the positive bending moment, and at the bottom of the slab (i.e. connection between slab and column beneath) that is called the negative bending moment. Shear forces on a slab are applied by things such as walls, columns, beams etc. and the shear strength is the slab supporting itself against the forces applied from the opposite direction before failure. Deflection of a slab is the amount of bending or deformation that occurs in the slab due to the weight of the concrete and any loads placed on the slab. Torsion is when the slab twists. For example, this could be due to reaction of a supporting member (i.e. a column) being subject to a negative bending moment

Q20. **Discuss how beams are connected to columns. Explain your answer.**

Answer

Connection between beam and column is typically via reinforcement. The column is typically poured first. A splice re-bar connection to the beam's internal reinforcement would be the most likely way of doing this.

The splicing detail and all reinforcement requirement for the column and beam would need to be detailed by an engineer and approved following formwork and re-bar installation and prior to specified concrete being poured.

As mentioned, the column would be formed with reinforcement installed, then poured. The beam would then be formed and reinforcement installed, including the sliced connection, and then poured.

Q21. **Describe the slenderness ratio and its effect on columns.**

Answer

A reinforced concrete column's slenderness ratio is the ratio of the column's length, lateral dimensions, and end fixity. It evaluates the reinforced concrete column's ability to withstand buckling pressure.

It is used to determine the design load and categorise various columns as short, intermediate, or long. A column's slenderness ratio indicates the likelihood of buckling failure. The more the slenderness ratio, the more is the tendency of the column to fail by buckling effect in that direction.

Q22. **Discuss the characteristics of dead loads and live loads. Include how each is calculated.**

Answer

Load	Characteristics and calculations
Dead load	Dead load is gravity's downward pressure on a structure. To calculate dead load, you need volume V and the unit weight of the structural elements. Assume the volume of beam= 1.8m3 Unit weight of reinforced concrete= 24 kN/m3 So, the dead load of the beam= volume* unit weight = 1.8*24 Dead load= 43.2 kN
Live load	Live load is the weight added to the permanent structure. See below for calculating live loads. For example, assume we calculate the live load of the floor of the house To calculate live load, we need the area of the floor and the live load rating of a house. Assume area of floor= 24m2 Live load rating of a house= 1.5kPa Live load = 24*1.5 Live load = 36kN

Q23. **What is the advantage of using composite floor systems consisting of steel beams, profiled metal decking, and reinforced concrete slabs?**

Answer

Many advantages of using composite floor systems are detailed below:

- Composite floor deck helps to strengthen a flooring system.
- It's more lightweight
- Results in less waste
- Typically takes less labour to construct
- Without need for props, materials costs tend to be are lower
- Can reduce project time resulting in a shorter program.
- Less concrete required.

Q24. **Discuss the characteristics of the following high performance structural elements.**

Answer

Structural element	Characteristics
Castellated beams	A castellated beam has a regular and repeating pattern of hexagonal holes. It is made by cutting the pattern lengthwise across two halves, offsetting them, and then welding them together to form a single expanded beam. The primary application for castellated beams is to cover long distances with a lightweight section. In general, castellated beams are appropriate for spans greater than 30 feet in length.
Laminated beams	Because of its high strength and dimensional stability, laminated wood outperforms solid wood. Whereas solid wood posts and beams will crack and twist over time, a glulam member of the same size (and often smaller) will remain stable for many years while maintaining its aesthetic appeal.
Pre-stressed concrete beams	Restressing entails inducing compressive stresses in the zone, which tend to become tensile when subjected to external loads. This compressive stress cancels out the tensile stress, resulting in no tension (or only very small values within the tensile strength of the concrete).

Answer

Structural element	Characteristics
Trusses	A truss is a structure made up of members arranged in connected triangles so that the entire assembly behaves as if it were a single object. Trusses are commonly found in bridges, roofs, and towers. Trusses are made up of triangular units made up of straight members. A truss is a rigid structure made up of members such as beams connected by nodes. A truss is a structure in engineering that "consists of two-force members only, with the members, organised so that the assemblage as a whole behaves as a single object."
Waffle slabs	Because of their efficiency in vibration control, waffle pod slabs are useful for public buildings that carry a lot of weight. They are reinforced in both directions. This improves vibration control capacity. It indicates that the structure can withstand the vibration caused by crowd movements.

Q25. **How does thermal impact affect a load on structure?**

Answer

thermal loads causes element to expand or shrink. Temperature changes cause materials to expand or contract in response to changes in temperature, which can create stress on the components

Stress appears when you block that deformation caused by these changes which is why allowing for expansion and contraction in construction is important.

Thermal loads have affect on materials such as concrete, glass, steel, timber and can cause thermal stresses, and thermal deformations in structures, which can affect their performance, safety, and durability.

These effects can be accounted for by performing a structural analysis. This is the process of solving the equilibrium equation to obtain the displacements, stresses, and strains in the structure. Structural analysis can be done using linear or nonlinear methods. Linear methods assume that the structure behaves elastically and that the thermal loads are small and proportional to the temperature changes. Nonlinear methods account for the nonlinear behaviour of the structure and the large and nonlinear thermal loads.

Structural analysis can be done using analytical, numerical, or experimental methods and results can determine whether the thermal impact will have a significant structural affect on the building. If it will, the other designs must be considered.

Q26. **Describe the process associated with fabricating and installing tilt-up concrete panels.**

Answer

The process entails forming and pouring reinforced concrete wall panels horizontally on-site, usually on the final building floor slab, followed by 'tilting' the panel up into its final position with a large mobile crane. Steps would look like:

1. Prepare the Site and Pour the Foundation Slab. ...
2. Create Concrete Wall Forms and Prepare for Concrete Pour. ...
3. Pour the Concrete. ...
4. Lift Concrete Panels in Place. ...
5. Remove Optional Formliners, Caulk Joints and Finish Panels

Q27. **What are the impacts of creep and shrinkage on concrete structures?**

Answer

Creep and shrinkage can result in a significant loss of prestress. Excessive deflections, often with cracking, have resulted from an underestimation of multi-decade creep in many large-span prestressed segmentally erected box girder bridges (over 60 cases documented).

Q28. **Discuss considerations that must be made when using masonry in the construction of high-rise buildings.**

Answer

- Building height and load capacity – The height of the masonry wall & expected loads it will bear (both dead & live).
- Building codes and regulations –You must always double-check the weight-bearing loads of the masonry support you are choosing. The continuous height of the masonry must not exceed what is specified
- Channel system is often used as a means of attachment for various masonry support components. The channel is fixed in the buildings structure, usually steel or concrete and the brackets of the angles of the masonry support are then connected to these channels using appropriate fixing methods.
- Fire rating of the masonry. Ensuring this meets any requirement.
- Thermal impacts. Consider the environmental conditions the masonry support system may be exposed to. In coastal or harsh weather areas, corrosion resistance materials are essential to maintain the system's longevity. Also consider thermal movement.
- Ease of installation – can it be installed safely, sequentially and in a cost and labour effective way.
- Aesthetic considerations - Some masonry support can impact the aesthetics of a building. Depending on the design vision and architectural vision you may opt for a visible shelf angle or a concealed support such as Brick Slips.
- catch systems – any external masonry may come with the risk of falling objects. It is important to consider controls to ensure this risk is captured and mitigated.

Q29. **Explain the differences between structural steel and cold-formed steel.**

Answer

Cold formed steel is created by rolling thin strips of steel at room temperature – as opposed to the molten hot temperatures required to produce structural steel.

Metal studs are the elementary components of any cold formed steel structure. Before being brought to the job-site, they are rolled into various shapes depending on how they will be used.

These studs are also known as C studs, Z studs, U tracks.

Cold formed steel framing is perfect for small to mid-scale projects that are up to 4 to 6 storeys. These include but are not limited to:

- Modular homes
- Hospital rooms
- Malls and retail stores
- Schools

Structural steel has many uses, but the most common are large projects such as ships and skyscraper buildings. It is extremely durable and trusted as a primary steel framing system for tall buildings.

As opposed to light gauge steel, structural steel is used to frame large scale structures such as high-rise buildings and bridges, industrial facilities.

Here are a few examples of structures that would require structural steel framing:

- Stadiums
- Skyscrapers
- Aircraft hangars
- Hospitals
- Wind Turbines
- Suspension bridges
- Oil platforms

Q30. **Discuss three (3) uses of aluminium in the construction industry and why it is used.**

Answer

1. Facades - because of its intrinsic properties of lightness and corrosion resistance, it is the perfect material for external cladding.

2. Ladders – because it's lightweight, they are easy to lift and move. They are high-strength for their purpose and are also non-magnetic. They are reust and corrosion-resistant.

3. Scaffolding – alumium scaffold is ideal for mobile scaffolding during construction because it is lighter, more manoeuvrable, and lasts longer than steel scaffolding

Q31. **Briefly discuss the use of the following temporary structures and components in the construction of large and complex buildings.**

Answer

Temporary structure	Use
Bracing	Bracing's primary function is to provide stability and resist lateral loads, which can come from either diagonal steel members or a concrete 'core.' The bracing system should carry all lateral loads, bracing frames, beams, and columns only designed to support vertical loads.
Closed Sheeting	A continuous frame with vertical or horizontal sheathing planks is laid side by side to form a continuous retaining wall supporting the excavation face.
Formwork props	Propping is a system of structural members used to support loads temporarily during construction. The forces generated by these loads must be fully resolved, with props or columns providing all of the support required for the work under construction, such as beams, formwork, etc.
Pressure resistant formwork	The formwork, which resists pressure while the concrete is being poured into columns. It is used where pressure is too high, and the formwork bears the pressure, hence the name pressure resisting formwork

Answer

Temporary structure	Use
Scaffolding sole plates	Sole plates are used to distribute the weight from the base plate to the ground
Shields	The shields act as a temporary support structure that prevents the surrounding soil from becoming unstable
Shoring collar set	When a building, vessel, structure, or trench is in danger of collapsing during repairs or alterations shores (props) temporarily support it. Shoring is provided by the shores, timber or metal prop. Shoring can be vertical, angled or horizontal.
Soldier set	A trench soldier set is a must-have in the construction industry. They are intended to provide support to trench walls and work around services such as electricity, water, and drainage when working in a trench.

Q32. **How do you determine which document to use when communicating construction problems to relevant personnel?**

Answer

On every Jobsite, compliance documentation is critical to all aspects of operations. The documentation specifies the type of work, the construction timeline, and the procedures for completing the task, from work instructions to quality and environmental requirements. It is important to receive these forms of documentation before work so you can reference them when required.

In these texts, statements including the words "must," "shall," or "will" are frequently used to emphasise that there are legal requirements that has to be observed. Each project location will have its own set of compliance documentation to review.

These documents stipulate that the tasks be completed to the required standards. It is significant to know your obligations under the compliance documents such as:

- The WHS Act 2011
- The WHS Regulations 2011
- Codes of Practice
- Australian Standards
- SDS

You may also require information such as

- Operational manuals
- Site rules

Q33. **You are contracted to undertake refurbishment of an inner-city hotel. Explain how this is different from a restoration or renovation.**

Answer

Refurbishing a space is the act of cleaning it, decorating it, and providing it with new equipment or facilities. It would not include any structural changes and tends to be internal works.

Restoration is the work of restoring something to a previous state/condition. This may or may not involve any structural change.

Renovation is the act or process of repairing, renewing, or restoring to good condition. In building this may involve structural changes such as an extension on an existing structure.

Q34. **Discuss why you might suggest refurbishing using fire-resistant building materials where possible.**

Answer

Fire safety compliance is continually updated. It is always worth suggesting the use of fire-resistant building materials to ensure the building meets the require codes for the present time and ideally if possible bettering those standards which may be stricter in the future.

Another key consideration is devastating fires, resulting in both land and property damage. While you cannot predict the actions of others or the occurrence of these fires, there are certain measures we can take to help protect buildings as much as possible. Fire resistant building materials are vital in helping to prevent the spread of fire in both residential and commercial buildings.

Q35. **Complete the table below by identifying the type of fire-resisting construction (i.e. Type A, Type B, or Type C) given the following class of building and number of storeys each class of building has.**

Answer

Rise in Storeys	Class of building: 2,3,9	Class of building: 5,6,7,8
4 or more	A	A
3	A	B
2	B	C
1	C	C

Q36. **Describe how you would monitor alternative forms of construction to ensure compliance.**

Answer

It is critical to manage and monitor alternative forms of construction to ensure compliance, which benefits both the project manager and the clients.

Different steps to manage a construction project to ensure the compliance:

- Bids:- Construction managers who want to complete their construction project submit a bid to the owner.
- Selection methods
- Payment contracts
- Feasibility and design
- Pre-construction
- Procurement
- Construction
- Owner occupancy

Steps to monitor a construction project:

- Examine the construction work and determine its level of completion.
- Evaluate overall conformance with the bank's understanding of the GC Contract.
- Examine the material and workmanship for adequacy and compliance to NCC.
- Check for compliance with the terms of the construction loan agreement.
- Examine the sufficiency of the contractor's payment application.
- Recognise and report construction changes, as well as potential and pending change orders.
- Determine and report the status of stored materials and, if necessary, off-site materials.
- Examine the construction schedule's adherence.
- Obtain verification of quality control measures from relevant agencies, architects and engineers, material testing laboratories, and qualified construction inspectors.
- Evaluate the adequacy of on-site labour and address any potential work hindrances or stoppages.
- If requested, assess the sufficiency of funds remaining to complete the project and make recommendations as needed.
- Ensure that all major contract payment invoice applications are accompanied by a current conditional and unconditional lien release.

CPCCBC6016
ASSESS CONSTRUCTION FAULTS IN LARGE BUILDING PROJECTS

PRACTICAL ASSESSMENT

Participant name	Michael Brady

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	Select Date.	☐ Workplace ☐ Simulation		☐	☐

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 specific construction fault/s on Type A building requiring rectification.
1.1A.	Specify (✓) construction faults associated with two (2) of: ☐ Structural ☐ Installation ☐ Refurbishment ☐ Renovation ☐ Restoration ☐ Other (please specify):
1.1C. 1.1D. 1.5A. 1.5B.	Specify workplace practices adhered to when documenting and communicating construction problems to relevant personnel and external professionals.
1.1E.	Specify problem-solving techniques applied:
1.2A.	Specify existing or designed-in construction common/ not common problems identified. ☐ None ☐ Other (please specify):
1.2B.	Specify alternative methods or materials suggested.
1.2C.	Specify equipment and programs accessed to extract information:
1.4C. 1.5C.	Specify how alternative method of construction will be managed and monitored.

CPCCBC6016
ASSESS CONSTRUCTION FAULTS IN LARGE BUILDING PROJECTS

Practical Task 1

Description of task:

The participant must demonstrate the skills and ability to assess construction faults and determine remedial action for construction faults associated with at least two (2) of the following: structural; installation; refurbishment; renovation or restoration on a Type A building project. The assessor will be seeking evidence of:

- Identify and analyse construction faults.
  - Collect information relating to specific construction faults.
  - Analyse original construction project plans and specifications to identify potential causes of construction faults or problems. Use problem-solving techniques to identify typical faults and problems.
  - Adhere to workplace practices when documenting and communicating construction problems to relevant personnel.
  - Make contact with project team members and external professionals to elicit expert analysis and opinions.
  - Use problem-solving techniques to identify typical faults and problems.
  - Develop and document a rectification action that meets the Performance Requirements of the National Construction Code (NCC).
- Analyse construction techniques, methods and materials.
  - Analyse working drawings and specifications to identify any existing or designed-in construction problems.
  - Prepare alternative methods and materials to meet the project specification objectives and comply with the NCC and relevant building legislation.
  - Use equipment and programs to access, extract information and develop relevant documentation.
  - Use building terminology accurately in the communication of issues.
- Evaluate alternative construction solutions.
  - Consider and analyse commonly occurring on-site problems with building materials and their causes.
  - Prepare reports identifying available alternative methods and materials available to meet the construction aims and objectives of the specifications.
  - Prepare detailed sketches of available alternative methods and materials that meet the construction aims and objectives of the specification.
- Resolve construction faults using alternative construction methods.
  - Consider and document solutions and recommend suitable alternative methods to resolve the problem and meet project aims and objectives and organisational processes.
  - Integrate selected methods into the project construction works to align with construction schedules and timeframes.
  - Manage and monitor alternative forms of construction to ensure compliance.
- Communicate preferred solution to construction problem.
  - Use digital tools to document technical resolution in detail of identified problem.
  - Lodge appropriate documentation and communicate with appropriate project and other construction professionals.
  - Determine and implement strategies to monitor corrective action processes and procedures.

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. 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:

Type A building project; access to equipment, technology and software to assess and remediate construction faults in large building projects and collaborate effectively with external professionals; access to relevant government building legislation codes and standards; access to environmental and sustainability requirements; access to manufacturer specifications and installation instructions; workplace policies, procedures and site safety requirements; project plans and specifications.

Practical Task 1	
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:	Ian Aitken Digitally signed by Ian Aitken DN: E=iaitken@besixwatpac.com, CN=Ian Aitken, OU=BNE, OU=Construction, OU=User Accounts, OU=Watpac Group, DC=watpac, DC=local Date: 2024.05.23 07:36:02+10'00'
Date:	

When completing the task, did the Participant:		Tick if satisfactorily completed. Provide comments if left unticked.
1 Identify and analyse construction faults.		
1.1A.	Collect information relating to specific construction faults.	☑
1.1B.	Analyse original construction project plans and specifications to identify potential causes of construction faults or problems. Use problem-solving techniques to identify typical faults and problems.	☑
1.1C.	Adhere to workplace practices when documenting and communicating construction problems to relevant personnel.	☑
1.1D.	Make contact with project team members and external professionals to elicit expert analysis and opinions.	☑
1.1E.	Use problem-solving techniques to identify typical faults and problems.	☑
1.1F.	Develop and document a rectification action that meets the Performance Requirements of the National Construction Code (NCC).*(attach rectification request/ report)*	☑
2. Analyse construction techniques, methods and materials.		
1.2A.	Analyse working drawings and specifications to identify any existing or designed-in construction problems.	☑
1.2B.	Prepare alternative methods and materials to meet the project specification objectives and comply with the NCC and relevant building legislation.	☑
1.2C.	Use equipm ent and programs to access, extract information and develop relevant documentation.	☑
1.2D.	Use building terminology accurately in the communication of issues.	☑
3. Evaluate alternative construction solutions.		
1.3A.	Consider and analyse commonly occurring on-site problems with building materials and their causes.	☑
1.3B.	Prepare reports identifying available alternative methods and materials available to meet the construction schedule and objectives of the specifications.*(attach report/s)*	☑
1.3C.	Prepare detailed sketches of available alternative methods and materials that meet the construction aims and objectives of the specification.).*(attach detailed sketches)*	☑
4. Resolve construction faults using alternative construction methods		
1.4A.	Consider and document solutions and recommend suitable alternative methods to resolve the problem and meet project aims and objectives and organisational processes. *(attach report/s)*	☑
1.4B.	Integrate selected methods into the project construction works to align with construction schedules and timeframes.	☑

When completing the task, did the Participant:		Tick if satisfactorily completed. Provide comments if left unticked.
1.4C.	Manage and monitor alternative forms of construction to ensure compliance.	☑
5. Communicate preferred solution to construction problem.		
1.5A.	Use digital tools to document technical resolution in detail of identified problem.	☑
1.5B.	Lodge appropriate documentation and communicate with appropriate project and other construction professionals.	☑
1.5C.	Determine and implement strategies to monitor corrective action processes and procedures.	☑

Observer comments:
Needed to create a simulation as this project is in early works stage.