



CPCBC4012B

READ AND INTERPRET PLANS AND SPECIFICATIONS

THEORY EXAM INSTRUCTIONS

1. This exam will occur under standard assessment conditions.
 - An oral examination may be allowed under certain circumstances. Answers will be documented and FT003 (Oral examination declaration form) must be completed.
2. Participants must provide enough detail in their responses to demonstrate their knowledge and skills.
3. Please fill in the details below, providing your name, signature and date of assessment.
 - Your signature acknowledges that this is your own work.
4. 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 Cia Dermanakis

Participant signature

Assessor name _____

Assessor signature

Date 26/02/2018

Number of questions	Number of questions answered correctly	Satisfactory?	
		Yes	No
77		☐	☐



ASSESSOR COMMENTS

Q1. What does the term 'plan' mean when referencing plans and drawings for construction purposes?

Answer

For construction purposes, plans show what the proposed structure will look like when completed and how it will be constructed.

More specifically, it refers to the layout of rooms, the interior components and arrangement of a house, and how the house is to be located in relation to the site or road. Plans may also show elevations ie the view of the house from each of the four sides.



Q2. Name the people and organisations who will have an interest in plans and drawings for a construction project.

Answer

The following people will have interests in plans and drawings:

- the client
- the lending body
- local council
- supply authorities, (water, sewerage, drainage)
- electricity, gas and cable supply companies
- builders and sub-contractors (carpenters, bricklayers, concreters, painters, plasterers, kitchen manufacturers)
- engineers
- real estate agents
- neighbours
- landscapers
- various material or product suppliers
- environmental agencies
- mechanical service installers, e.g. air conditioning, fire alarms.



Q3. What will plans show to the interested parties?

Answer

The plans will show **trades people**:

- what will be constructed where i.e. the location and details of components that trades people will be required to build.
- information required to generate estimates and written quotes for services i.e. materials and quantities being used for construction
- provide a reference illustration for trades people.

The plans will show **council**:

- information to enable assessment of the building for compliance to code ie. height, position and bulk of the building

The plans will show **surveyors**:

- information to 'set out'.



Q4. What types of plans is it necessary to be familiar with for building and construction projects?

Answer

It is necessary to be familiar with:

1. **Location Plans** (1:5,000) show the exact location, lot number and orientation of a block to correctly identify the relevant building site.
2. **Site/Block Plans** (1:500) provide a view of address, orientation to north, boundaries, topology, a reference height to other site levels, services etc
3. **Foundation Plans** (1:500) show the shape and dimensions of the foundation in order to lay out and construct footings and foundations.
4. **Floor Plans** (Basic and General Arrangement) (1:50/100) show a birds eye view of the size and relationships between rooms, spaces and other physical features present at one level of a structure.
5. **Elevation Plans** (1:100) show how the house will look from the outside, typically when standing in front of each of the four external walls to show the finish and size of windows, doors and balconies
6. **Section Plans** (1:100) show a vertical view (slice) through the building to illustrate height and position of piers, beams etc.



Q5. All plans and drawings give a compass direction.

Which compass direction is always shown and on which drawings is it likely to be found?

Answer North is always shown, and is likely to be found on location plans, site/block plans, floor plans and elevation plans.



Q6. What does a location plan contain?

Answer A Location Plan is typically drawn at a scale of 1:5,000 and shows the exact location, lot number and orientation of a block to correctly identify the relevant building site.



Q7. What does a site or block plan contain?

Answer A Site/Block Plan is typically drawn at a scale of 1:500 and contains:

- the address,
- orientation to north,
- site boundaries in relation to the proposed building and any existing dwellings,
- topology,
- contours and slopes,
- a reference height to other site levels,
- depths where they may occur,
- distance from the boundaries to the building foot print,
- driveways, stormwater drainage, easements and right of carriage,
- soil and surface water drains, pipe sizes,
- service runs,
- paving,
- retaining walls.



Q8. What features would you expect to look for and find on plans and drawings for a construction project?

Answer

On construction plans we would expect to find:

- Scale of drawing
- North orientation
- Number and size of rooms
- Materials to be used
- Building orientation to north point
- Site boundaries showing location of proposed building
- Plan page number, client name, project address,
- Reference numbers and dates
- Major geological and topographical features
- Contours and slopes
- Depths where they may occur
- Distance from the boundaries to the building foot print
- Driveways, stormwater drainage, easements and right of carriage
- Paving
- Retaining walls
- Soil and surface water drains, pipe sizes
- Service runs from the house to mains - utility services location (sewer, water, gas, electricity)
- New levels on the site in connection with the new house
- Rooms and their uses
- Windows
- Doors
- Interior walls and hallways
- WC's
- Appliances
- Any interior features such as fireplaces, saunas and whirlpools
- how the house will look from the outside



Q9. What do floor plans identify?**Answer**

Floor Plans identify a view from above of which rooms, spaces other physical features are present in one level/floor of the structure - and the size and relationships between them.



This includes any :

- Rooms and their uses
- Windows
- Doors
- Interior walls and hallways
- WC's
- Appliances
- Interior features such as fireplaces, saunas and whirlpools

Q10. What are elevation views? What do they provide to the plan reader?**Answer**

Elevation Views are typically drawn at a scale of 1:100 and show how the house will look from the outside, typically when standing in front of each of the four external walls.



They illustrate size; finish to the external wall; and size of windows, doors and balconies.

Q11. What is a section?**Answer**

A Section is a vertical view or cross-section through the building which is used to illustrate the :

Q12. What are detailed drawings?

Answer Detail drawings show a small part of the building at a larger scale (typically 1/10, 1/5 or full size), to show how the component parts fit together. They can also be used to show small surface details and decorative elements.

**Q13. What are specifications?**

Answer Building Specifications are a detailed list of exactly what is to be used in the build including :

- full description of work
- precise list of materials
- details of all fittings, fixtures and finishes
- precise list of products

**Q14. What information will you find in a title block to a drawing?**

Answer We would expect to find the following in a title block :

- Project Name
- Project Address
- Project Number
- Drawing Title
- The North Point
- Scale of drawing
- Date of drawing
- Drawing or Reference Number
- Revision Number
- Contact details of the entity that prepared the drawings.



Q15. What is the significance of the Australian Architectural Standards?

Answer The AAS details which symbols must be used in construction drawings in order to maintain consistent representation and interpretation of structures.

**Q16. What will you find in the Waste Management Plans & Site Management plans?**

Answer A **Waste Management Plan (WMP)** outlines how to waste that is generated during a) demolition and construction and b) the ongoing use of the development, will be managed. This includes :

- who is responsible for managing waste,
- a forecast of the types and volumes of waste,
- how each waste type will be managed - reduced, reused, recycled, other recovery or disposal,
- how contractors will be supported to ensure legal waste management,
- how the waste will be measured during the project.



A **Construction and Site Management Plan (CSMP)** documents the agreed construction approach on an approved development. It would outline find components such as :

- construction hours
- noise control
- air and dust management
- stormwater and sediment control
- removal of hazardous material
- public safety, amenity and site security
- protection of council assets
- council permits
- waste management
- traffic management.

Q17. What is a landscape plan?

Answer A landscape plan is used to plan the layout for an outdoor area. It is a scaled, visual representation that shows the extent, function, context and attributes of areas to be landscaped and can include :

- natural elements like flowers, trees, and grass
- man-made elements such as lawn furniture, fountains, and sheds,
- overlays for irrigation and lighting,
- It provides a basis for cost estimation and materials selection.

☐**Q18. What is the purpose of a shadow diagram? Who primarily would seek one?**

Answer A shadow diagram calculates the amount of shadow cast by the proposed development, and whether there will be 'overshadowing' (the shadow is cast across neighbouring properties).

These diagrams can be requested for by planning departments at council, or sometimes building surveyors.

☐**Q19. What is a bracing schedule?**

Answer A bracing schedule specifies the amount and type of sheathing or lateral bracing that is needed for the house to withstand the applicable design wind speed.

☐

**Q20. What must we do with plans and drawings in our on-site environments?
How often should plans and drawings be viewed on site?**

Answer

On-site the plans and drawings should be inspected often, and used as a "source of truth" for the build.



Plans and drawings should be referenced frequently by all trades, site/project managers and the client while on-site. Plans/drawings can be referenced to checks prior, during and after work to ensure the actual build is being executed as planned and agreed.

Q21. Explain the meaning of the abbreviations in the table below.

Answer

Abbreviation	Meaning
ACRYL	Acrylic
AS	Australian Standard
ASSD	Assumen Datum
B	Basin
BN	Bull nose
BTH	Bath
BWK	Brickwork
CB	Concrete Block



CF	Concrete Floor
CG	Clear Glass
CJ	Ceiling Joist
CORR	Corrugated
CWT	Cold Water Tank
DG	Double Glazing
DH	Double Hung
DPC	Damp Proof Course
DSB	Distribution Switch Board
DW	Dishwasher
EJ	Expansion Joint
FPBD	Fibrous Plaster Board
FFL	Finished Floor Level
FHR	Fire Hose Reel
GPO	General Purpose Outlet
HBD	Hardboard
HTR	Heater
HWD	Hardwood

Q22. Why and when would you use presentation drawings?

Answer Presentation drawings are illustrations used to convey design concepts to third parties and help an audience visualise community impact, potential lifestyle, look and feel etc.



They can be used:

- in public hearings and design reviews,
- to demonstrate review board compliance,
- to advertise existing stock plans.

Q23. Service drawings provide information about a variety of different components and equipment. In order to identify individual items, it is usual to give them a reference number on drawings such as services layout drawings and location plans.

What details might we expect to see from service drawings?

Answer Service drawings for modern construction typically would include details such as:

- hot and cold water supplies,
- refuse disposal,
- heating,
- ventilation
- above and below ground drainage,
- sanitary appliances,
- air conditioning,
- electrical installations,
- telecommunications,
- gas installations,
- fire protection, and
- security systems.



Q24. What are working drawings? What do they record?

Answer Working drawings contain sufficiently detailed plans, views and notes to enable construction without requiring any additional information. In particular, they contain notes and comments that clarify the appearance or construction as depicted in another sketch.



Q25. What is an isometric view?

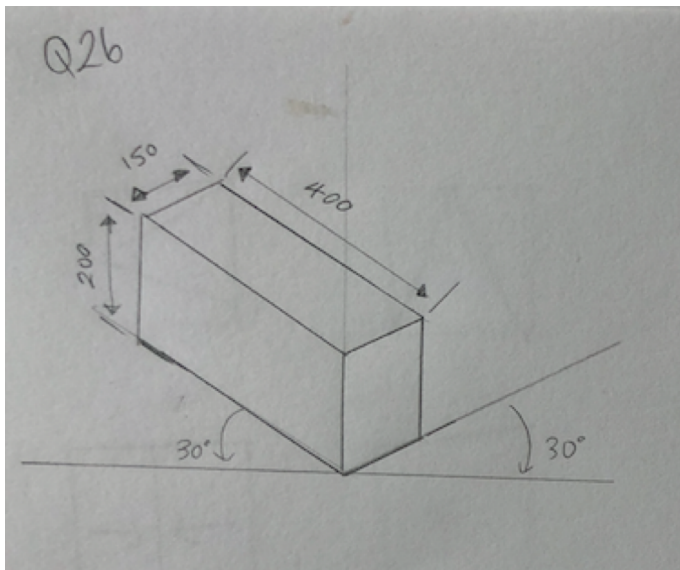
Answer

An isometric view is a three dimensional depiction of an object, typically at the same scale as the original drawing. The perspective can have one, two, or three vanishing points as seen by the observer.



Q26. Sketch a concrete block in isometric view.

Answer



Q27. What is the purpose of perspective projection and representation in drawing of architectural buildings and edifices?

Answer

Perspective representation gives the person viewing it the ability to better visualise what the building or edifice will ultimately look like in “real life”, similar to how it will be seen when a person is perhaps looking at the building from across the street or as they approach the building walking on a pavement.

Other plans related to the build such as floor plans and elevations are typically two-dimensional and therefore don't provide a visual sense of height, width and depth.

**Q28. What is a topographical survey?****Answer**

A topographic survey is a method of surveying areas to set out the exact position of a proposed structure to ensure the construction is completed within the legal boundary.

**Q29. What is an ecological survey?**

Answer

An ecological survey identifies the habitats and/or species that exist within an area at the time of the survey, and flags any ecological constraints that may impact the development.



Q30. What is significant to keep in mind when developing the Schedule of Quantities (also known as a Bill of Quantities)?

Answer

The amounts listed in the Schedule of Quantities (SoQ) is usually not the actual amount used in the build.

In order for a Contractor to be compensated for these variations, it is important ensure the SoQ's has been expressly incorporated or referenced into the contract. If not, it is unlikely the Contractor will legally be able to claim for any variations and may be out of pocket.



Q31. What should be applied in consideration of stress, load and bearing calculations in the design, the drawings and the building of a structure?

Answer

The following should be applied in the design, drawing and building of a structure :

- 1) Identification and compliance with all **building code** requirements as listed in the NCC Building Code of Australia (BCA)
 - a) Volume 1 for Class 2-9 building,
 - b) Volume 2 for Class 1 and 10a buildings,
- 2) All **performance requirements** as set out by Standards Australia.



Q32. What is a prime cost (PC) item? Give an example.

Answer

A prime cost is an allocation in the contract for necessary build items not yet selected. By law this must be at or above the base cost to reasonably purchase the items. If items selected are more expensive then a contract variation will need to be raised.

For example, in the contract sum an allocation of \$50/m² for tiles may have been made by the client and builder. Upon selection, the client may have opted for a more expensive tile costing \$60/m², thus requiring a contract variation specifying the exact tile and additional cost.



Q33. What is a provisional sum (PS) item? Give an example.

Answer

The provisional sum is equivalent to a contingency fund to allow for unforeseen additional costs that may occur in the build as more information is uncovered.

For example, having completed a soil test and budgeted for soil preparation, a Contractor may begin excavation only to uncover large rocks which needed to be cleared for an additional cost. Despite doing due diligence to estimate the cost, the provisional sum would need to be drawn on in order to complete the build.



Q34. Suggest when you would need to provide 'additional' plans. Give some examples of such plans.

Answer

In certain cases additional plans may be required where it is deemed the development may impact on the public, traffic, services and surrounds.

For example :

- A **traffic and parking assessment report** where developments seek to vary Council's traffic and/or parking requirements
- **Detailed Car Parking Plan** where it is proposed to provide for car parking
- **Stormwater Drainage Concept Plan** to show how stormwater will be managed on the site.



Q35. How do you identify and record customer variations?**Answer**

- Any variations requested by the customer should be provided in writing (for traceability).
- Identify whether the request constitutes a variation to the works outlined in the project specifications
- If so, update any variations (additions or deductions) to the project specifications/contract ensuring to capture any impact on time, cost and materials.
- Ensure any changes are agreed to and signed by both the contractor and the client, with no work commencing until the variation is executed.

**Q36. When reading and interpreting (or amending) variations project specifications, what documentation should you also refer to?****Answer**

Before applying variations to project specifications they should be cross-referenced against the following to ensure there are no issues:

- Plans
- Contract documentation
- Engineers details
- Building permits
- Other permits
- Legal documentation.

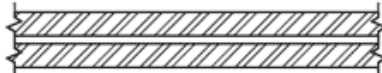
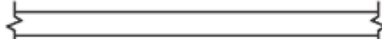


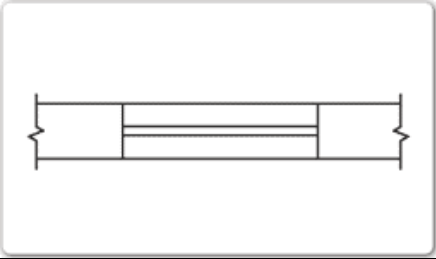
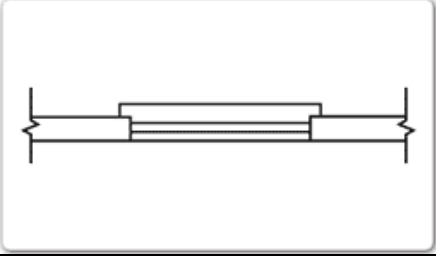
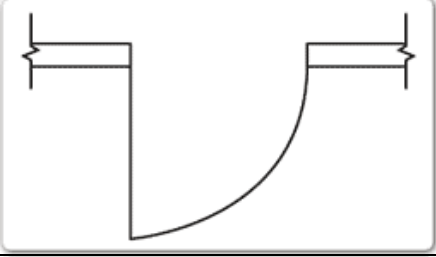
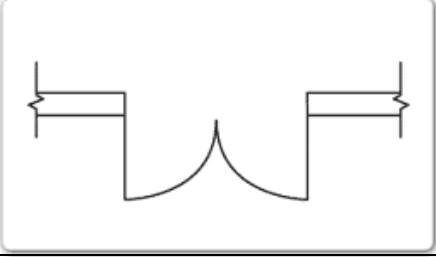
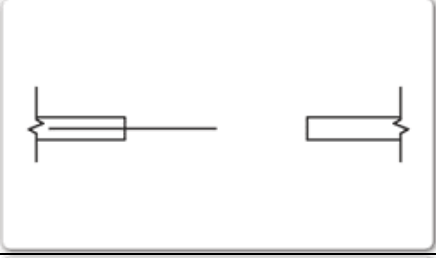
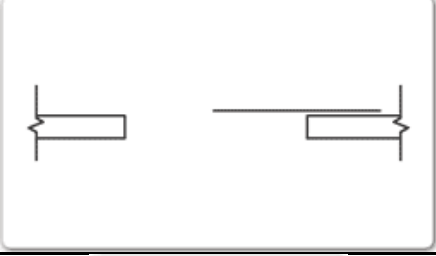
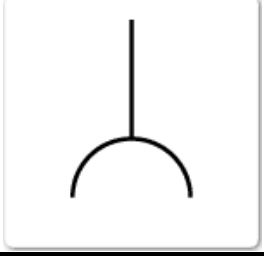
Q37. So you don't end up in a dispute what strategies can you employ with your customer/client/home owners?

Answer ☐ Ensure there is high communication, visibility and traceability of requests - and their impact - by documenting all variations in writing, and ensuring that any variations are signed off by all parties. This way all requests, decisions made, and consequences are clear.

Q38. Name each of the drawing symbol images shown in the table below.

Answer ☐

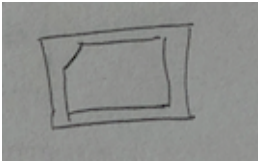
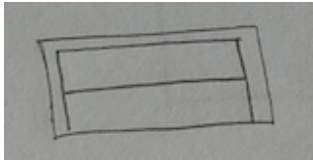
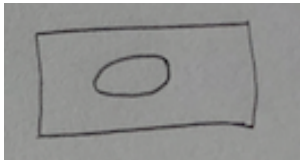
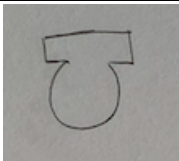
Name	Image
Double Brick Wall	
Brick veneer	
Timber Wall	

Window in cavity wall	
Window in single wall	
Single swing door (single leave opening 90°)	
Double swing door (double leaves opening 90°)	
Sliding door into a pocket	
Sliding door exposed on wall	
Socket	

Q39. Draw symbols for the following items.

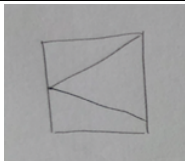
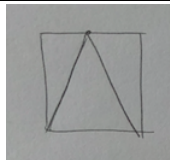
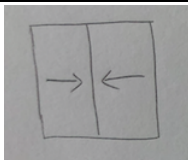
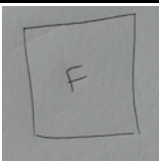
Answer

Item	Drawing	
Basin		
Bidet		
Bath		
Drinking fountain		
Sink: Single bowl		
Sink: Double bowl		
Tub: Double		
Tub: Single		
Drinking trough		
Hotplates		

Shower	
Shower bath	
Urinal stall	
Vanity basin	
Water Closet (Toilet)	

Q40. Draw the following window symbols in elevation.

Answer

Item	Drawing
Hinged at side	
Hinged at top	
Sliding horizontally	
Fixed	



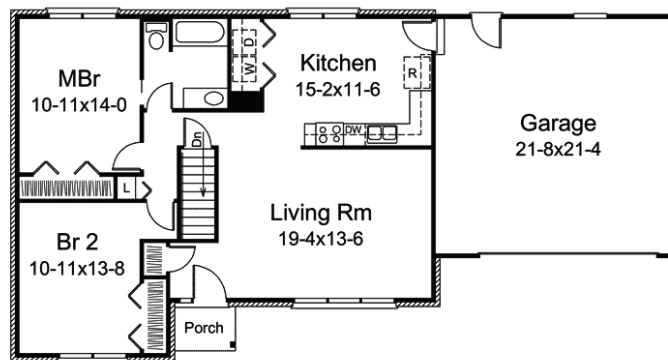
Q41. Draw symbols for the following items.

Answer

Item	Drawing
Brickwork	
Blockwork	
Concrete	
Plaster/Render	



Q42. Provide a description of the residence shown in the plan drawing below.



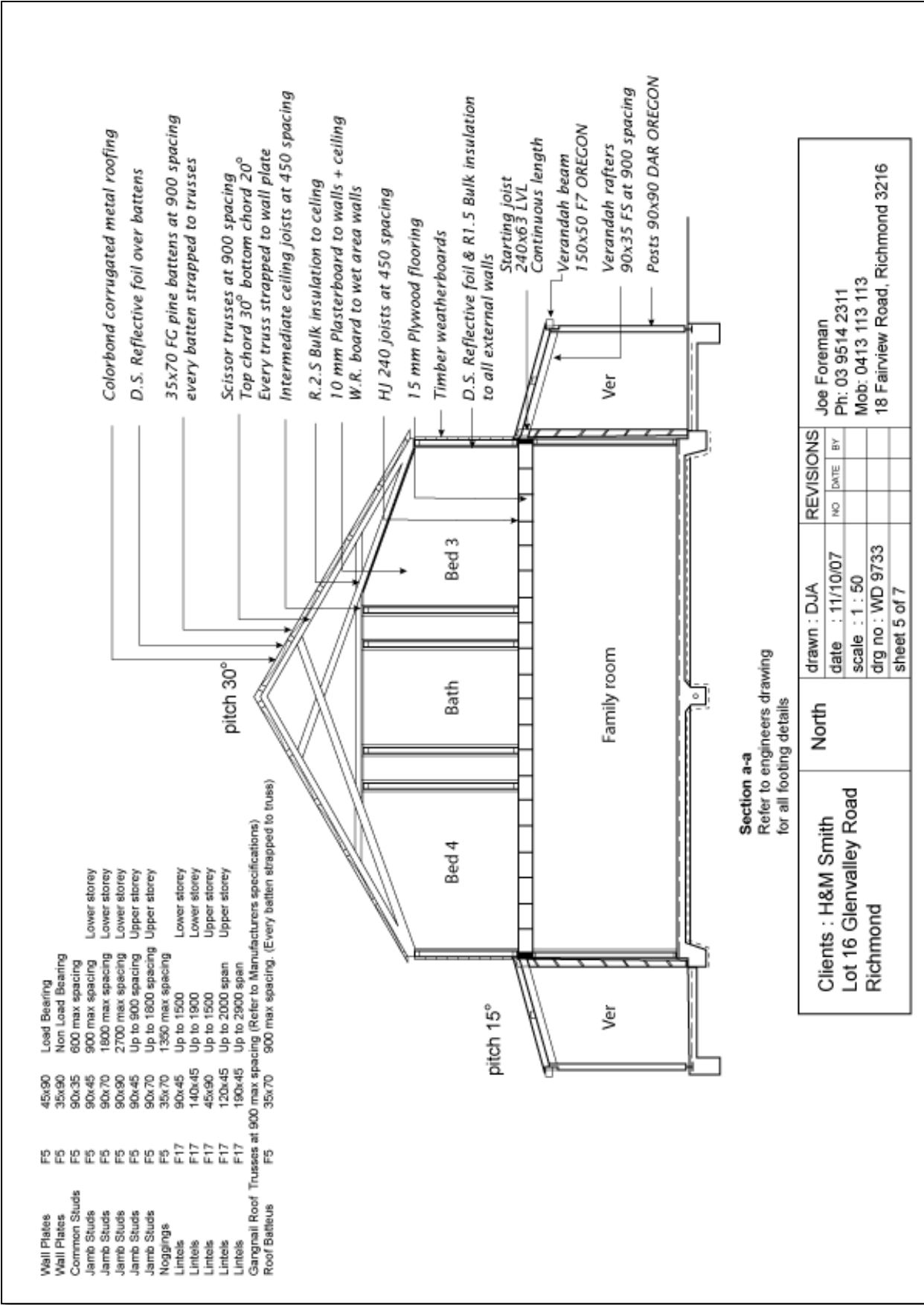
Answer

The two-level brick veneer residence has two-bedrooms, one bathroom, a kitchen and living room. Stairs lead to a lower floor. Each bedroom has folding-door built in wardrobes. The bathroom has a bath, vanity, separate toilet but no shower. The kitchen features a European laundry with washer and dryer, a dishwasher, refrigerator, cooker, double sink and a direct entry into the garage. The front entry to the house is via a porch area which leads directly into the living room.





Refer to the sectional drawing below to respond to Q43. to Q63.



Q43. Give a brief description about the building from the detail available in the sectional drawing.

Answer ☐ The building is a double story weatherboard with a wooden frame, pitched corrugated iron roof, and oregon wood verandah's at both front and back.

It has a family room, at least one bathroom and at least four bedrooms.

Internal walls are plasterboard, and all external walls are insulated.

Q44. Who is the client?

Answer ☐ H&M Smith

Q45. Where is this project to be built?

Answer ☐ Lot 16 Glenvalley Road, Richmond

Q46. What are the contact details for the draftsman?

Answer ☐ Joe Foreman,
Ph: 03 9514 2311
Mob : 0413113113
18 Fairview Rd, Richmond, 3216

Q47. What sheet number is this drawing?

Answer ☐ 5 of 7

Q48. What timber is required for loading and non-load bearing walls?

Answer ☐ Load bearing walls require 45x90 timber, Non-load bearing walls require 35x90 timber.

Q49. What spacing is recommended for common studs?

Answer 600 max

☐

Q50. What type of roof truss is to be installed?

Answer The roof is a scissor truss.

☐

Q51. What centres are the trusses positioned at?

Answer 900

☐

Q52. What size are the veranda posts?

Answer 90x90

☐

Q53. What timber species are the veranda posts to come from?

Answer Oregon

☐

Q54. What pitch is the roof?

Answer 30 degrees

☐

Q55. What size are the noggings and at what spacing?

Answer 35x70 at 1350 max spacing

☐

Q56. What size are the ceiling joists?

Answer 240mm

☐

Q57. What timber is used for roof battens and what spacing?

Answer 35x70 Pine at 900 spacing

☐

Q58. What thickness is the plasterboard sheeting?

Answer 10mm

☐

Q59. What type of flooring is to be installed?

Answer 15 mm plywood

☐

Q60. What is the roof cladding material?

Answer Colourbond corrugated metal roofing

☐

Q61. Where will you find information about the footings?

Answer Section a-a of the Engineers Drawing

☐

Q62. What do the letters DAR refer when timber ordering?

Answer Dressed All Round (DAR) meaning the wood has been planed smooth on all sides with rounded edges.

☐

Q63. Explain 240 x 63 LVL. What does it refer to on the section?

Answer This is a joist made of Laminated Veneer Lumber (structural wood) that is of length 240mm and width 63mm.

☐

Refer to the drawing overleaf to respond to Q64. to Q75.

Q64. What is the number of the drawing?

Answer 2

☐

Q65. What is the Job Number?

Answer 00R-112

☐

Q66. What is the scale of the drawing?

Answer 1:100

☐

Q67. What does the drawing show?

Answer This drawing shows the North, South, West and East elevations of the house, along with a Sectional drawing.

☐

Q68. Which view shows the front of the house?

Answer ☐

Q69. How many motor vehicles can be parked in the garage?

Answer ☐

Q70. What are the window and doors made from?

Answer ☐

Q71. What is the size of the eaves?

Answer ☐

Q72. What are the eaves lined with?

Answer ☐

Q73. What type of roof structure is the roof built from?

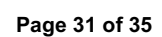
Answer ☐

Q74. What is the roof cladding materials made from?

Answer ☐

Q75. What is the roof pitch?

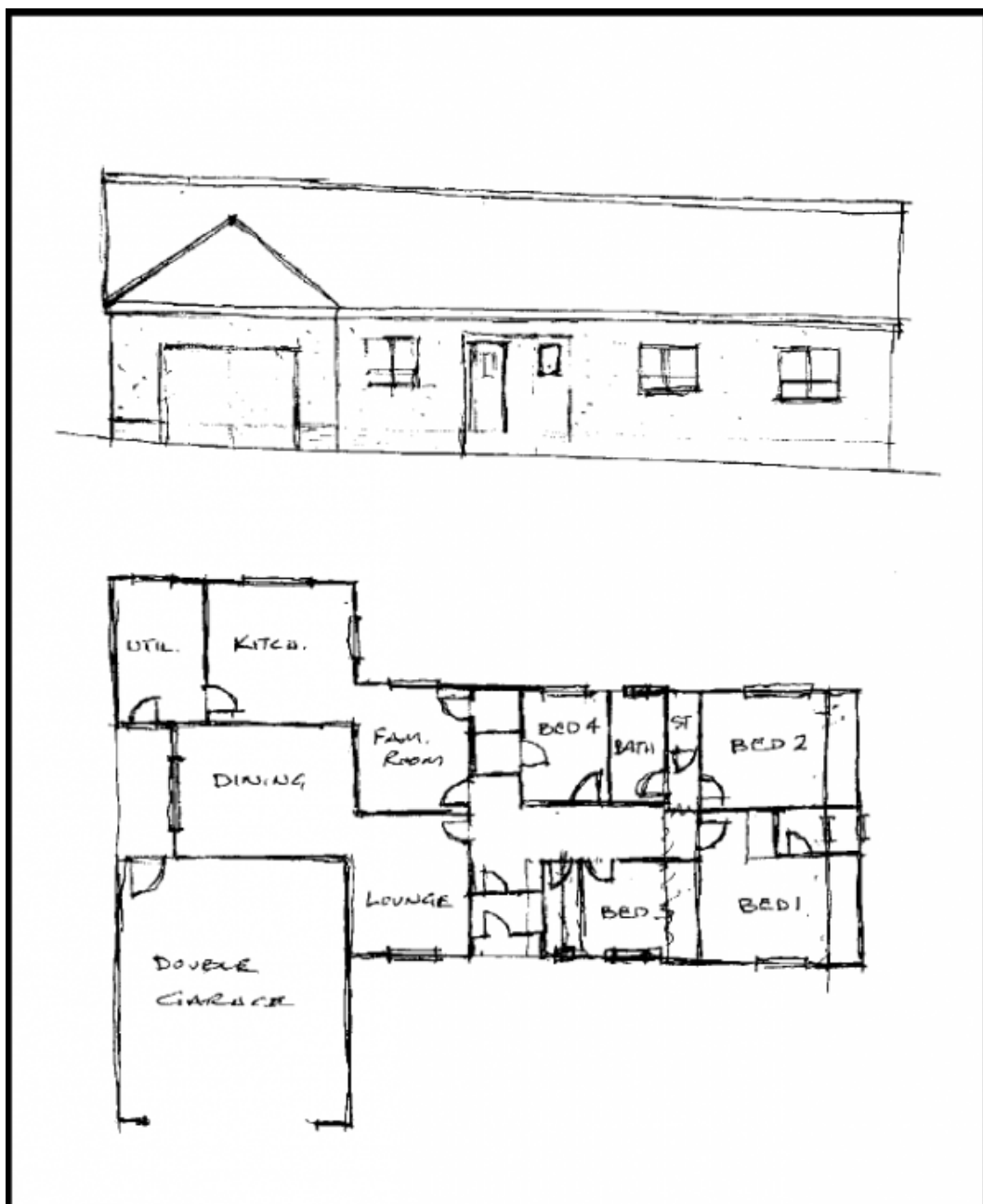
Answer ☐



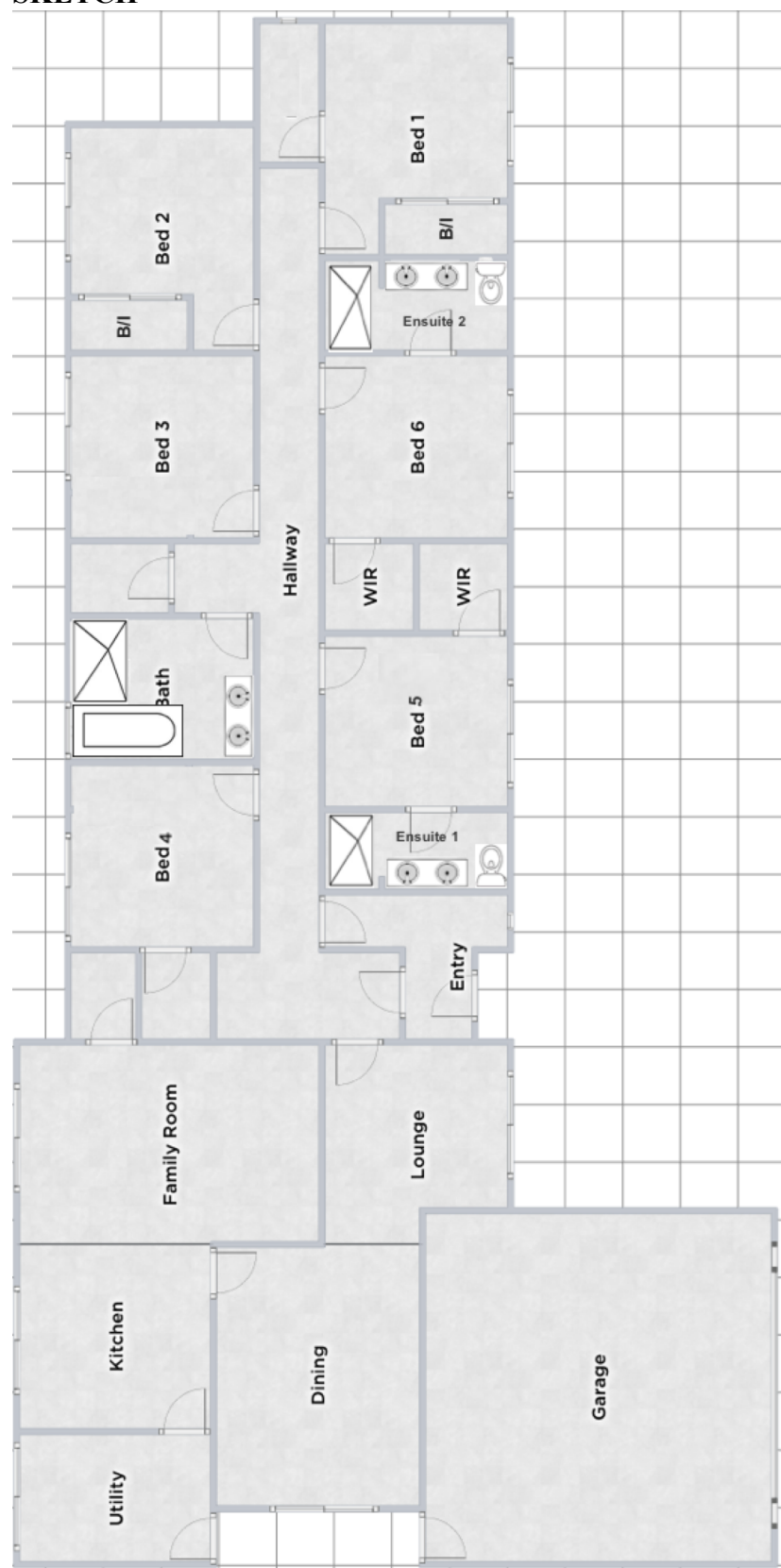
- Q76. You have spoken with a client on the phone and they are seeking to make amendments to some plans. They wish to add two more bedrooms to extend their home from the current four bedrooms to six bedrooms.

The two new bedrooms are to both have ensuites (including single shower in each, double bowl vanity unit and under cupboard and toilet) with walk in robes, including the extension of the existing hallway with built-ins for the existing Bed 1 and Bed 2. The Family Room is to be extended to the rear wall in line with kitchen rear wall.

The client has faxed through the image below. Re-sketch and redesign the drawing and add the two new bedrooms along with extended hallway, ensuites, walk-in robes and the Family Room extension for consideration by the client.



SKETCH



Answer



Q77. Referring to Q76. compose an email to the client, providing an estimate of the additional labour hours/costs and material quantities/costs that have resulted from the their request.

Answer

Dear Phil and Sally,

Trust you are well!

We received your sketch highlighting changes you would like made to your plans and have developed an amended plan to cater for the additions (see attached plan).

To confirm, it's our understanding you wish to add the following to the plans:

- 1) Extend the family room equal to the kitchen wall.
- 2) Add a built in robe to Bed 1 and Bed 2 on your sketch.
- 3) Add Bedrooms 5 and 6 which each have attached :
 - a) An ensuite containing
 - i) a double vanity with undercupboard,
 - ii) a shower, and
 - iii) a toilet
 - b) walk in wardrobes with swing doors (not sliding).
- 4) Extend the existing hallway to accommodate the additional rooms.

Below is an estimate of the additional cost in order to make the changes listed :

Item	Description	Estimate
Family Room		
101	Extension of family room	\$1845
Bed 1		
102	Built-in robe with sliding doors	\$495
Bed 2		
103	Built-in robe with sliding doors	\$495
Bed 5		
104	Addition of Bed 5	\$2795
105	Addition of WIR with swing door	\$1045
Ensuite 1		
106	Addition of Ensuite	\$2550
107	Framed shower with pivot door	\$1065
108	Toilet	\$268
109	Double vanity with undercupboard	\$855
Bed 6		
110	Addition of Bed 5	\$2795
111	Addition of WIR with swing door	\$1045
Ensuite 2		
112	Addition of Ensuite	\$2550

113	Framed shower with pivot door	\$1065
114	Toilet	\$268
115	Double vanity with undercupboard	\$855
Hallway		
116	Extension of Hallway	\$475

The total variation estimate for the proposed changes is **\$20,466**.

Can you please respond via email with your confirmation to proceed with the attached changes, and I will raise a formal variation for signing.

Alternatively, if you would like to make any changes to the variation please don't hesitate to contact me.

Regards,

Cia Dermanakis
ABC Builders P/L