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Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

SENIOR CERTIFICATE EXAMINATIONS/ NATIONAL SENIOR CERTIFICATE EXAMINATION

CIVIL TECHNOLOGY: WOODWORKING

2021

MARKING GUIDELINES

MARKS: 200

This marking guideline consists of 21 pages.

INSTRUCTIONS FOR THE MARKERS**1. Markers should:**

- Familiarise themselves with the question and answer before evaluating the responses of candidates.
- Always interpret the responses of the candidates within the context of the question.
- Consider any relevant and acceptable answer during pre-marking but should strictly adhere to the answers after finalisation of the marking guideline.
- There are two approaches to answering questions, these are (1) to describe and (2) to explain.

If a candidate is required to explain e.g., a process in 4 steps, only the first 4 responses should be considered.

If, however a candidate is required to e.g., explain or describe how to transfer heights from one point to another using a transparent pipe level we need to consider that candidates may write a long description not necessarily well organised as an intellectual response may do. In this case the marker needs to evaluate the complete statement to judge if the candidate explained the required outcome satisfactorily and allocate marks on merit. The marker should apply his/her professional judgement with these types of questions.

- Mark what the candidate wrote and do not award marks for answers that the marker thinks the candidate meant with what was written.
- Indicate the tick or cross right at the position where the mark needs to be awarded or where the candidate made the error.
- Accept the letter corresponding with the correct answer as well as the answer written in full in multiple-choice questions.
- Accept incorrect spelling in one-word answers unless the spelling changes the meaning of the answer.

2. For calculations:

- A mark is only awarded if the correct unit is written next to the answer.
- If TWO marks are awarded ONE mark is awarded for the answer and ONE mark for the correct unit.
- Where the candidate made a principle error e.g. added instead of multiplying, no marks will be awarded for the steps. If the answer is correct according to what the candidate did, the mark for the answer can be awarded for the application of skills.

- Where an incorrect answer could be carried over to the next step, the first answer will be deemed incorrect. However, should the incorrect answer be carried over correctly, the marker has to recalculate the values, using the incorrect answer from the first calculation. If correctly used, the candidate should receive the full marks for subsequent calculations.
- Markers should consider when and where a candidate has rounded off in a calculation, as well as the subsequent effect it has on the final answer obtained. The calculation should therefore be awarded marks on merit.
- Alternative methods of calculations must be considered, provided that the correct answer is obtained.

3. When marking drawings:

- The member for which the mark should be awarded should be drawn correctly in the correct position to receive a mark.
- A member incorrectly drawn but wrongfully repeated in another position will be awarded the mark for the repeated incorrect member provided that the marking guideline provide for TWO or more marks for that member (positive marking).
- Marks can only be awarded for a label if the label is correctly indicating the correct member.
- Scale drawings should always be marked using an appropriate mask.

When a candidate drew the wrong drawing e.g.:

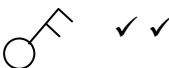
- A horizontal section instead of a vertical section, no marks will be allocated to the drawing as the candidate did not respond to the expected outcome.
- An orthographic view instead of sectional view, no marks will be allocated to the drawing as the candidate did not respond to the expected outcome.
- An orthographic view instead of an isometric view, no marks will be allocated to the drawing as the candidate did not respond to the expected outcome.
- If the incorrect drawing was drawn, the candidate can be awarded for only what was asked but mark/s for the correctness of the drawing will not be awarded e.g., if a King Post roof truss was asked in the question, and candidate drew SA-Howe Truss.

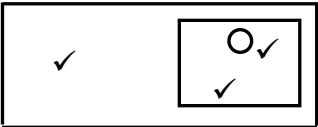
QUESTION 1: OHSA, SAFETY, MATERIALS, TOOLS AND EQUIPMENT AND JOINING (GENERIC)

- | | | | |
|-----|-------|--|------------|
| 1.1 | 1.1.1 | Paint ✓ | (1) |
| | 1.1.2 | Curing ✓ | (1) |
| | 1.1.3 | Electroplating ✓ | (1) |
| | 1.1.4 | Powder coating ✓ | (1) |
| | 1.1.5 | Galvanising ✓ | (1) |
| 1.2 | 1.2.1 | <ul style="list-style-type: none"> • Wood ✓ • Aluminium ✓ • Fibreglass • Steel ANY TWO OF THE ABOVE | (2) |
| | 1.2.2 | A ✓ <ul style="list-style-type: none"> • The ladder in B is broken/has defects. ✓ • The rungs of the ladder in B are broken. • The stiles of the ladder in B are not properly joined. • The ladder in A has no defects/is not broken. ANY ONE OF THE ABOVE | (2) |
| | 1.2.3 | <ul style="list-style-type: none"> • A ladder can be used to safely climb to a higher level. ✓ • To access a higher level than a normal person can reach from the ground. • It can be used to safely descend from heights. • To enter or exit a deep excavation. ANY ONE OF THE ABOVE | (1) |
| | 1.2.4 | <ul style="list-style-type: none"> • $\frac{1}{4}$ (One quarter) of the upright(vertical) length of the ladder ✓ • 1: 4 ratio • 75°/76° ANY ONE OF THE ABOVE | (1) |
| 1.3 | 1.3.1 | To determine:
(a) The gradient/slope for sewerage system ✓
(b) A level line/reference point from where to start tiling ✓ | (1)
(1) |
| | 1.3.2 | If the base of the tripod is not set up wide enough: <ul style="list-style-type: none"> • the laser level can be blown or knocked over. ✓ • the instrument can be damaged or its accuracy impaired if it should fall over. • the tripod will be unstable. ANY ONE OF THE ABOVE | (1) |

- 1.4
- The worker can injure himself e.g. shoulder injury. ✓
 - Can injure fellow workers e.g. load can fall.
- ANY ONE OF THE ABOVE** (1)
- 1.5
- 1.5.1
- Before it is used ✓
 - Once a week
 - After bad weather
- ANY ONE OF THE ABOVE** (1)
- 1.5.2
- Qualified person ✓
 - Experienced person in the erection and maintenance of scaffolds
- ANY ONE OF THE ABOVE** (1)
- 1.6
- 1.6.1
- Bolt ✓ (1)
- 1.6.2
- Nut/Washer and nut ✓ (1)
- 1.6.3
- Bolts and nuts secure a stronger joint. ✓
 - Use of bolts and nuts will ensure that parts are secured tightly together, which is not always possible with screws.
 - Can easily be removed.
- ANY ONE OF THE ABOVE** (1)
- [20]**

QUESTION 2: GRAPHICS AS MEANS OF COMMUNICATION (GENERIC)

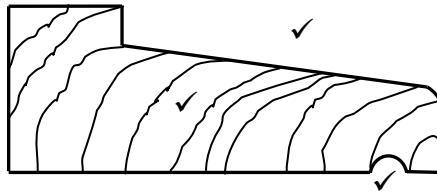
NO.	QUESTION	ANSWER	MARKS
1.	Identify the type of plan in FIGURE 2.	Site plan ✓	1
2.	Deduce from the notes the brick force installation up to window height.	Every third course ✓	1
3.	Deduce the scale that is used for FIGURE 2.	1 : 200 ✓	1
4.	Identify number 1.	Boundary line ✓	1
5.	Identify number 3.	Building line ✓	1
6.	Identify number 5.	Main sewer line/Sewer line ✓	1
7.	Identify number 7.	Entrance/Driveway ✓	1
8.	Identify number 8.	Municipal sewer connection/Municipal Manhole/Manhole ✓	1
9.	Identify number 9.	North/North symbol/direction/point ✓	1
10.	Name the item in the column for the notes in FIGURE 2 that must be installed in the bathroom.	Shower ✓	1
11.	Draw the electrical symbol as described in the column for the notes in FIGURE 2	 ✓ ✓	2
12.	Deduce from FIGURE 2 which company printed the building plan.	Henson Printers ✓	1
13.	Give the abbreviation for number 2.	RE ✓	1
14.	State the colour that you would use to indicate the new dwelling on the site plan.	Red ✓	1
15.	Deduce from FIGURE 2 why the new dwelling is to be built on a corner plot.	<ul style="list-style-type: none"> • No plot on eastern side ✓ • Quarter rounding at corner of the pavement • Paving on the eastern side • Street on the eastern side ANY ONE OF THE ABOVE	1
16.	Deduce the plot number of the new dwelling illustrated in FIGURE 2.	51 ✓	1
17.	Which elevation is the closest to Protea Street?	South elevation ✓	1

18.	What is the plot number of the property on the western side of the dwelling?	49 ✓	1
19.	Give the abbreviation for number 6.	MH ✓	1
20.	State the slope at which the main sewer line should be installed.	1:40 ✓	1
21.	Describe what was done as revision 1.	Rectify dimension ✓	1
22.	Deduce the dimension fault on the total width of the dwelling.	100/14 100/14 000 mm ✓	1
23.	State the project number for this plan.	GR 448 - 209 ✓	1
24.	What is the width of the pavement?	1 500 mm or 1,5 m ✓	1
25.	How many branch pipes are indicated on the plan?	5 ✓	1
26.	Explain the purpose of number 4.	To give access to the sewer line when blockages occur/for inspection purposes. ✓	1
27.	In what SI unit are the dimensions indicated on the plan?	mm ✓	1
28.	Draw a neat freehand drawing of the top view of the symbol of a single kitchen sink, as indicated in the <i>SANS/SABS Code of Practice for Building Drawings</i> .		3
29.	Recommend TWO types of building materials that can be used to finish the area at number 7.	Bricks/Paving ✓ Tar ✓ Concrete slab/Gravel/Asphalt/Stone paving/Cement/Sand ANY TWO OF THE ABOVE	2
30.	Calculate the total area of the plot. Give your answer in m ² . Show ALL calculations.	(35 m ✓ x 25 m ✓) = 875 m ² ✓ OR (35 000 mm x 25 000 mm) = 875 m ²	3
31.	Calculate the distance between Number 1 and Number 3 on the north elevation. Show ALL calculations.	(10 000 mm ✓ - 3 000 mm ✓) = 7 000 ✓ mm ✓ OR (10 m - 3 m) = 7 m	4
		TOTAL:	40

QUESTION 3: CASEMENTS, CUPBOARDS, WALL-PANELLING AND QUANTITIES (SPECIFIC)

- 3.1 3.1.1 A - To cover the opening between the cupboard and the ceiling. ✓
 B - To hang your clothes on. ✓
 C - To carry the weight of the cupboard. ✓
 To act as a kick plate.
 To give the door clearance to open.
 The carcass of the frame is fixed to it.
 To prevent dust and dirt from entering under the cupboard.
 To finish off the cupboard/aesthetic purposes.
 ANY ONE OF THE ABOVE AT C (3)
- 3.1.2 D - Shelf space/shelf ✓
 E - Drawer front/Drawer ✓ (2)
- 3.1.3 550 mm – 600 mm (any in between distance will be accepted) (1)
- 3.2 TWO materials to build cupboards with:
 • Chipboard ✓
 • Melamine ✓
 • Block boards
 • Plywood/Supawood/Medium density fibre board
 ANY TWO OF THE ABOVE (2)
- 3.3 Advantage of cupboards up to ceiling height:
 • It provides additional storage space in the top units. ✓
 • No dust can collect on top of the cupboard.
 ANY ONE OF THE ABOVE (1)
- 3.4 3.4.1 Fanlight ✓ (1)
- 3.4.2 The purpose of a fanlight:
 • Allow more light to enter the room. ✓
 • Allow more air circulation.
 ANY ONE OF THE ABOVE (1)
- 3.4.3 **A - Sill/Windowsill** ✓ (1)

3.4.4



ASSESSMENT CRITERIA	CM
Correctness of shape	1
Throat/drip groove	1
Hatching	1
TOTAL	3

(3)

3.5

3.5.1

Any THREE mistakes on the wall panelling:

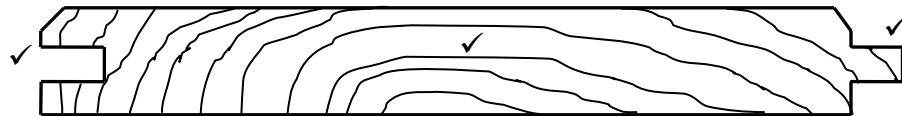
- No cornice at the top of the wall panel. ✓
- Inadequate rough grounds. ✓
- Second rough ground from the floor is too thin. It does not support the wall panel. ✓
- No quadrant mould to finish of opening between skirting and floor.

ANY THREE OF THE ABOVE

(3)

3.5.2

Tongue-and-groove board



ASSESSMENT CRITERIA	CM
Correctness of tongue and groove	2
Hatching	1
TOTAL	3

(3)

3.6

A	B	C	D	
3.6.1			Total length of fascia boards:	
			$9\,000 + 2/200 = 9\,400\text{ mm}$ ✓	
	2/✓	<u>9,4</u> ✓	18,8 m ✓	(4)
3.6.2			Length of one corrugated roof sheet:	
			$2\,900 + 50$ ✓ = 2 950 mm	
			= 2,95 m ✓	(2)
3.6.3			Number of ridge capping needed:	
			$\frac{9\,400}{2\,350}$ ✓	
			4 ridge cappings ✓	(3)

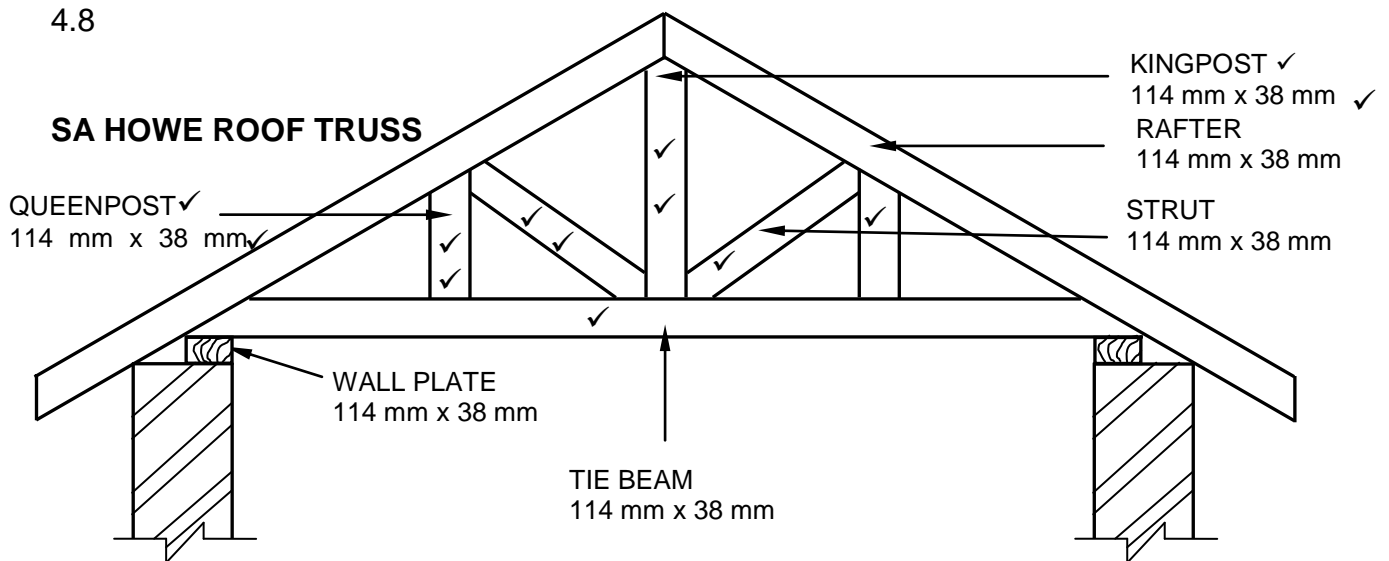
TOTAL: [30]

QUESTION 4: ROOFS, CEILINGS, TOOLS, EQUIPMENT AND MATERIALS (SPECIFIC)

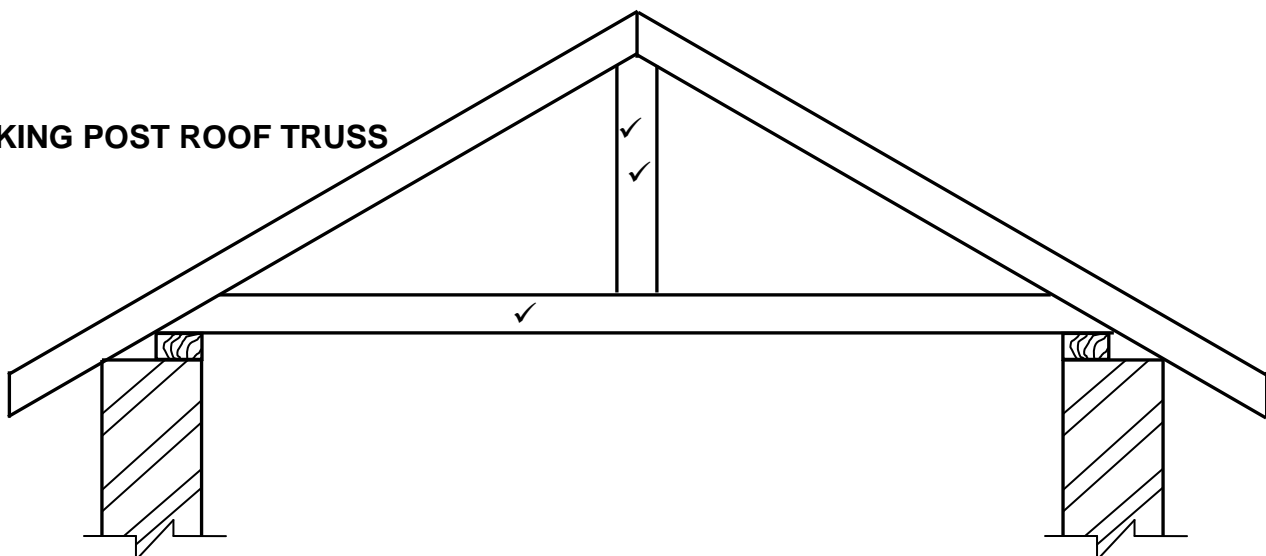
- 4.1 4.1.1 • Portable woodworking machines/Portable woodworking power tools ✓
 • Portable machines/Power tools/Electrical hand tools
 ANY ONE OF THE ABOVE (1)
- 4.1.2 Orbital sander ✓ (1)
- 4.1.3 You must wear safety goggles when operating a router:
 • because the wood cuttings or the debris may damage your eyes. ✓
 • to protect your eyes against wood cutting and debris.
 ANY ONE OF THE ABOVE (1)
- 4.1.4 TWO reasons why it is necessary to check the timber for loose knots and nails before using an electrical planer.
 • Nails in the timber may damage the blade. ✓
 • Loose knots may cause damage to the timber. ✓
 • Loose knots may cause injury to the operator.
 ANY TWO OF THE ABOVE (2)
- 4.1.5 Clamp a straight piece of timber as a guide on the timber to be cut to ensure a straight cut. ✓ (1)
- 4.1.6 Drill a hole through the timber to insert the blade for the start of the cut. ✓ (1)
- 4.1.7 The work piece must be gripped/clamped firmly before you can start the jigsaw. ✓ (1)
- 4.2 Care for spindle moulder:
 • Clean the spindle moulder after use. ✓
 • Repair or replace damage electrical cords. ✓
 • Handle the machine so as not to damage or impair its accuracy. ✓
 • Use machine only for the intended purpose.
 • Do not force material onto the cutters.
 • Avoid the use of blunt blades.
 ANY TWO OF THE ABOVE (2)
- 4.3 The sanding belt/Belt ✓ (1)

- 4.4 4.4.1 F ✓
- 4.4.2 D ✓
- 4.4.3 A ✓
- 4.4.4 H ✓
- 4.4.5 J ✓
- 4.4.6 C ✓
- 4.4.7 G ✓
- 4.4.8 E ✓ (8)
- 4.5 • Conventional trap door ✓
- Hinged trap door ✓ (2)
- 4.6 The minimum opening of a trap door:
- 610 mm x 610 mm ✓
- Both dimensions must be correct for ONE mark.** (1)
- 4.7 Differentiate between purlins and battens according to their uses:
- Roof sheeting is secured to purlins. ✓
- Roof tiles/Slate tiles/Ceiling boards are secured to battens/brandering. ✓ (2)

4.8

SA HOWE ROOF TRUSS**SINGLE LINE DIAGRAM: ONE MARK PER MEMBER**

ASSESSMENT CRITERIA	CM
Kingpost	2
Queen post	3
Strut	3
Tie beam	1
Any TWO labels and dimensions	4
TOTAL	13

KING POST ROOF TRUSS**SINGLE LINE DIAGRAM: ONE MARK PER MEMBER**

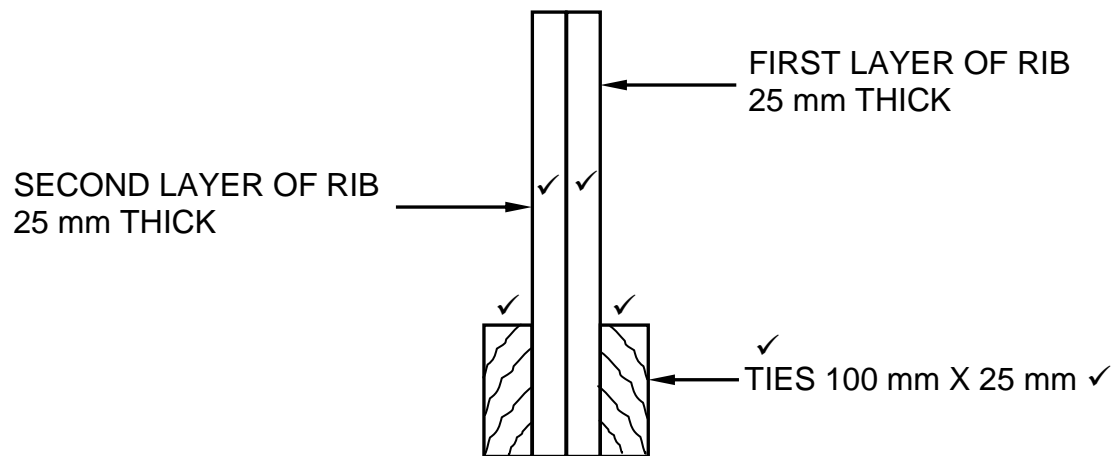
ASSESSMENT CRITERIA	CM
King post	2
Tie beam	1
TOTAL:	3

(16)

[40]

QUESTION 5: CENTERING, FORMWORK, SHORING AND GRAPHICS AS MEANS OF COMMUNICATION (SPECIFIC)

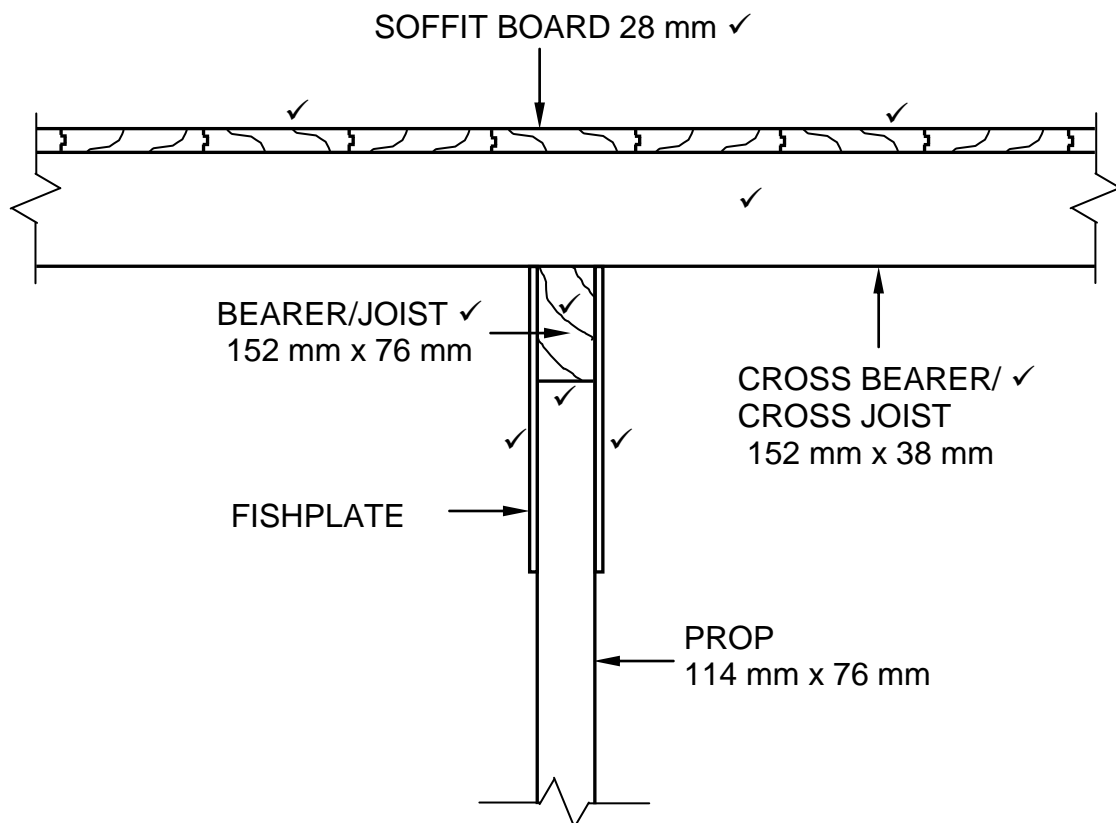
5.1



ASSESSMENT CRITERIA	MARK
Rib (2 layers)	2
Ties	2
Any ONE label and dimension	2
TOTAL:	6

(6)

5.2



ASSESSMENT CRITERIA	MARK
Soffit board	2
Cross bearer	1
Bearer	1
Fishplates	2
Hatching	1
Any THREE Labels	3
TOTAL:	10

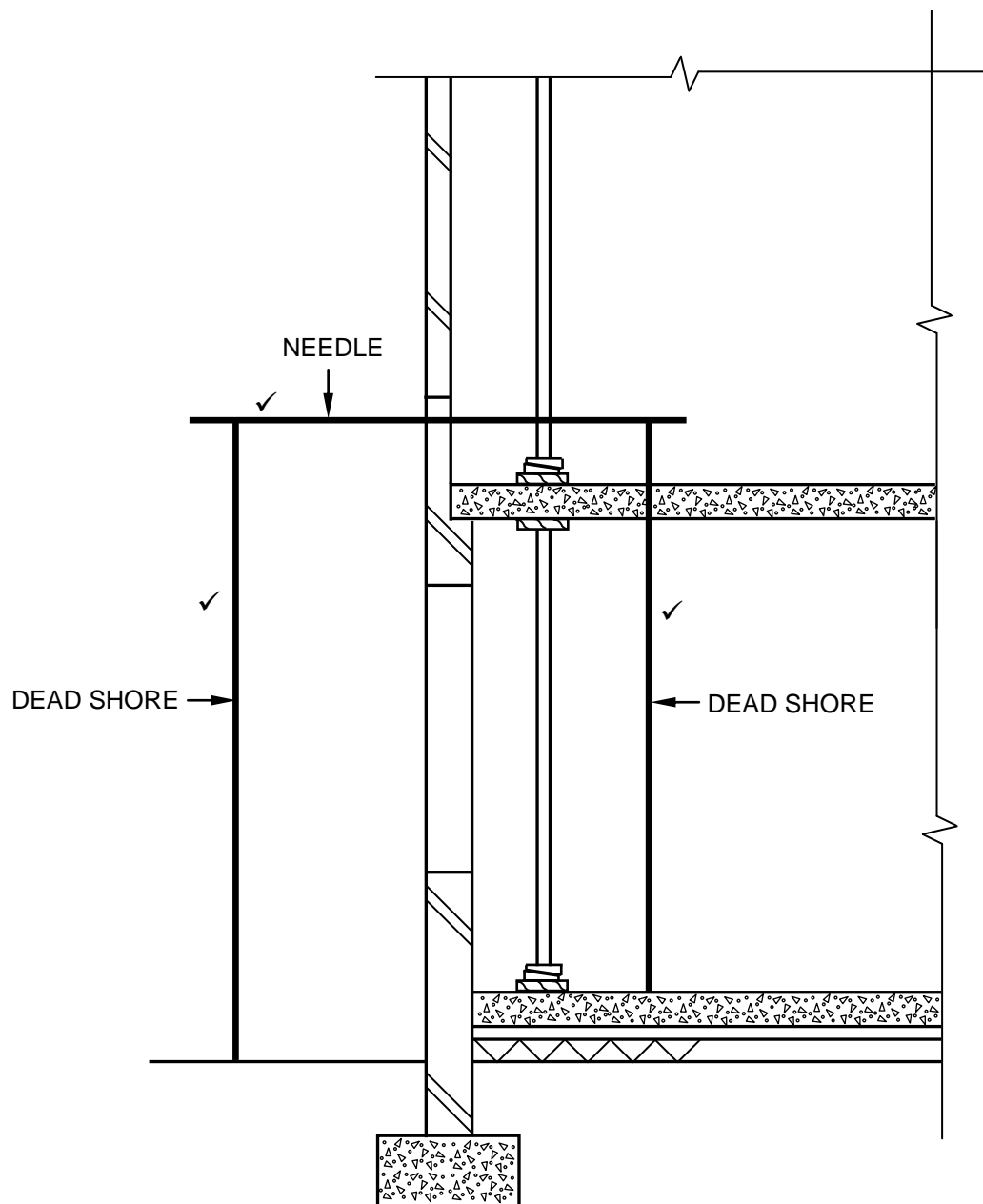
(10)

5.3

The distance between the wall and the dead shore should not be less than 1 200 mm to allow sufficient workspace. ✓

(1)

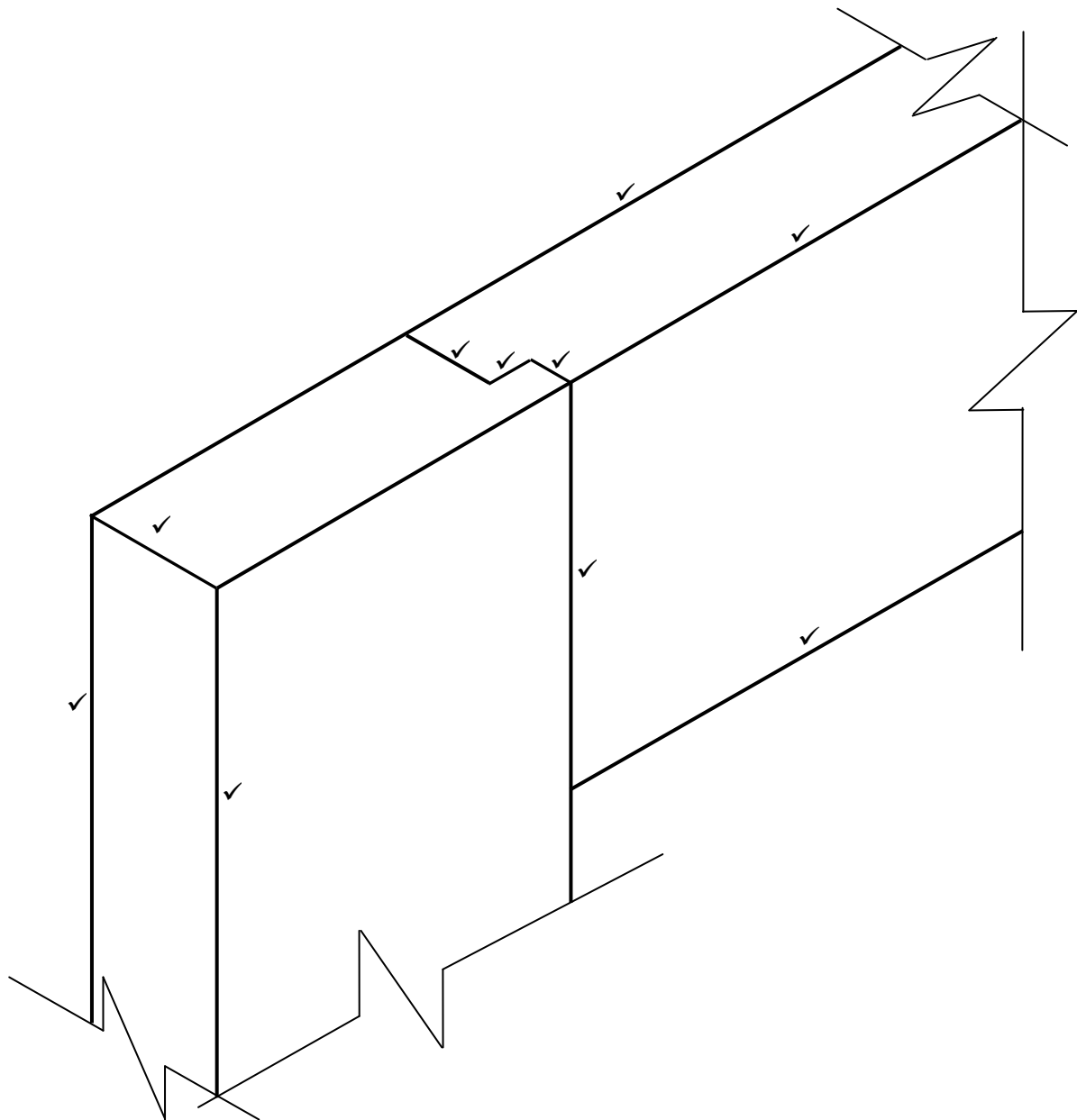
5.4



ASSESSMENT CRITERIA	MARK
Needle	1
Dead shores	2
TOTAL:	3

(3)

5.5



DRAWING NOT TO SCALE
USE A MASK TO MARK THIS QUESTION

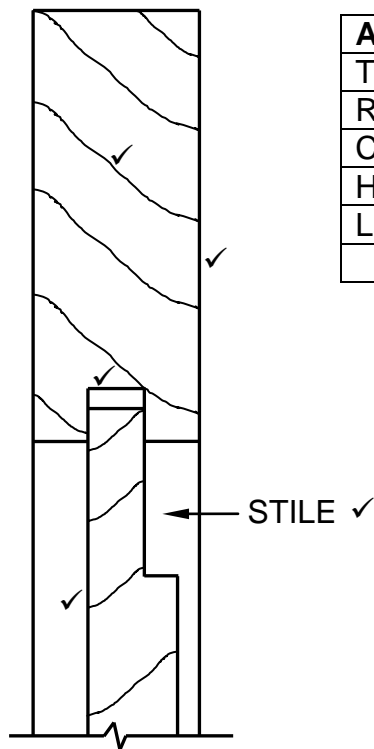
ASSESSMENT CRITERIA	MARK
Top rail	3
Stile	4
Rebate	3
TOTAL:	10

(10)
[30]

QUESTION 6: SUSPENDED FLOORS, STAIRCASES, IRONMONGERY, DOORS AND JOINING (SPECIFIC)

- | | | | |
|-----|---|--|-----|
| 6.1 | 6.1.1 | A ✓ | (1) |
| | 6.1.2 | B ✓ | (1) |
| | 6.1.3 | B ✓ | (1) |
| | 6.1.4 | A ✓ | (1) |
| | 6.1.5 | D ✓ | (1) |
| 6.2 | The minimum distance in a staircase between the pitch line and the ceiling: | | |
| | • | 2 100 mm/2,1 m ✓ | (1) |
| 6.3 | 6.3.1 | <ul style="list-style-type: none"> • A – Straight cupboard lock ✓ • B – Night latch ✓ • C – Mortise lock ✓ | (3) |
| | 6.3.2 | <ul style="list-style-type: none"> • Ideal as reinforcement/security to use with other locks. ✓ • Door lock automatically when it is closed. • Ideal for securing outside doors. • No key is needed to unlock door from the inside. <p>ANY ONE OF THE ABOVE</p> | (1) |
| 6.4 | 6.4.1 | <ul style="list-style-type: none"> • A – Stile/Hanging stile/Hinge stile ✓ • B – Brace ✓ • C – Stile/Lock stile ✓ | (3) |
| | 6.4.2 | <p>The purpose of the brace:</p> <ul style="list-style-type: none"> • To prevent sagging of the door ✓ • To strengthen the door <p>ANY ONE OF THE ABOVE</p> | (1) |
| | 6.4.3 | 22 mm ✓ | (1) |
| | 6.4.4 | Continuous barefaced double mortise-and-tenon joint ✓ | (1) |
| | 6.4.5 | It prevents rain from penetrating the grooves at the bottom rail of the door/ It allows the rainwater to run straight to the ground. ✓ | (1) |

6.5



ASSESSMENT CRITERIA	MARK
Top rail	1
Raised panel	1
Clearance/Opening	1
Hatching	1
Label of stile	1
TOTAL:	5

(5)

6.6 6.6.1 Members of a roof truss to each other ✓

(1)

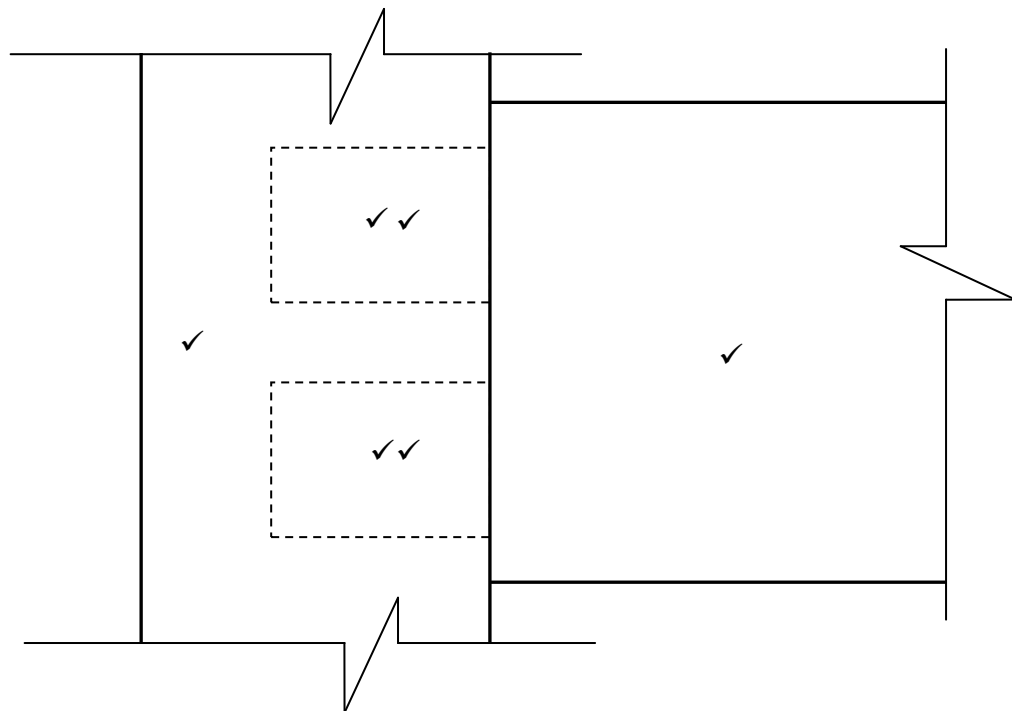
6.6.2 Brandering to tie beams ✓
 Battens to rafters
 Roof tiles to battens
ANY ONE OF THE ABOVE

(1)

6.6.3 Roof tiles to battens ✓

(1)

6.7



ASSESSMENT CRITERIA	MARK
Stile	1
Rail	1
Twin/Double tenons (Hidden detail)	4
TOTAL:	6

(6)

6.8 The purpose of an ant guard is to protect the timber against termites. ✓

(1)

6.9 6.9.1 A – Wall plate ✓

(1)

B – Floor joist ✓

(1)

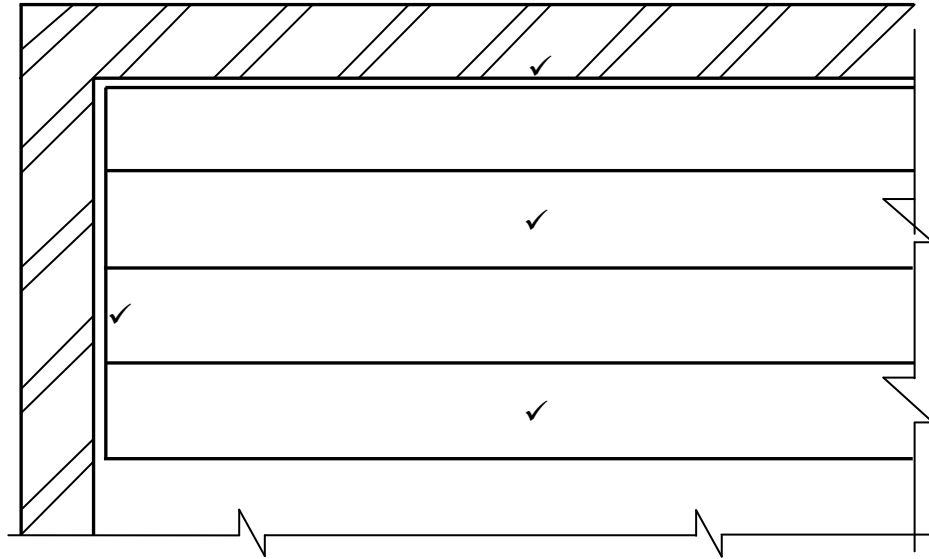
C – Brick pier ✓

(1)

D – Bearer ✓

(1)

6.9.2



ASSESSMENT CRITERIA	MARK
Floorboards correctly drawn	2
Openings against the walls	2
TOTAL:	4

If the floorboards are drawn parallel to the short wall, a maximum of ONE mark will be awarded for floorboards.

(4)
[40]

TOTAL: 200