STAPLE

Confidential

basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

INSTRUCTIONS AND INFORMATION

1. This question paper consists of FOUR questions.
2. Answer ALL the questions.
3. ALL drawings are in first-angle orthographic projection, unless otherwise stated.
4. ALL drawings must be prepared using pencil and instruments, unless otherwise stated.
5. ALL answers must be drawn accurately and neatly.
6. ALL the questions must be answered on the QUESTION PAPER, as instructed.
7. ALL the pages, irrespective of whether the question was attempted or not, must be re-stapled in numerical sequence in the TOP LEFT-HAND CORNER ONLY.
8. Time management is essential in order to complete all the questions.
9. Print your examination number in the block provided on every page.
10. Any details or dimensions not given must be assumed in good proportion.

SENIOR CERTIFICATE EXAMINATIONS/
NATIONAL SENIOR CERTIFICATE EXAMINATIONS

ENGINEERING GRAPHICS AND DESIGN P1

MAY/JUNE 2024

MARKS: 100

TIME: 3 hours

This question paper consists of 6 pages.

Barcode label

FOR OFFICIAL USE ONLY															
QUESTION	MARKS OBTAINED			½	SIGN	MODERATED			½	SIGN	RE-MARKING			½	SIGN
1															
2															
3															
4															
TOTAL															
	2	0	0			2	0	0			2	0	0		

FINAL CONVERTED MARK	CHECKED BY
100	

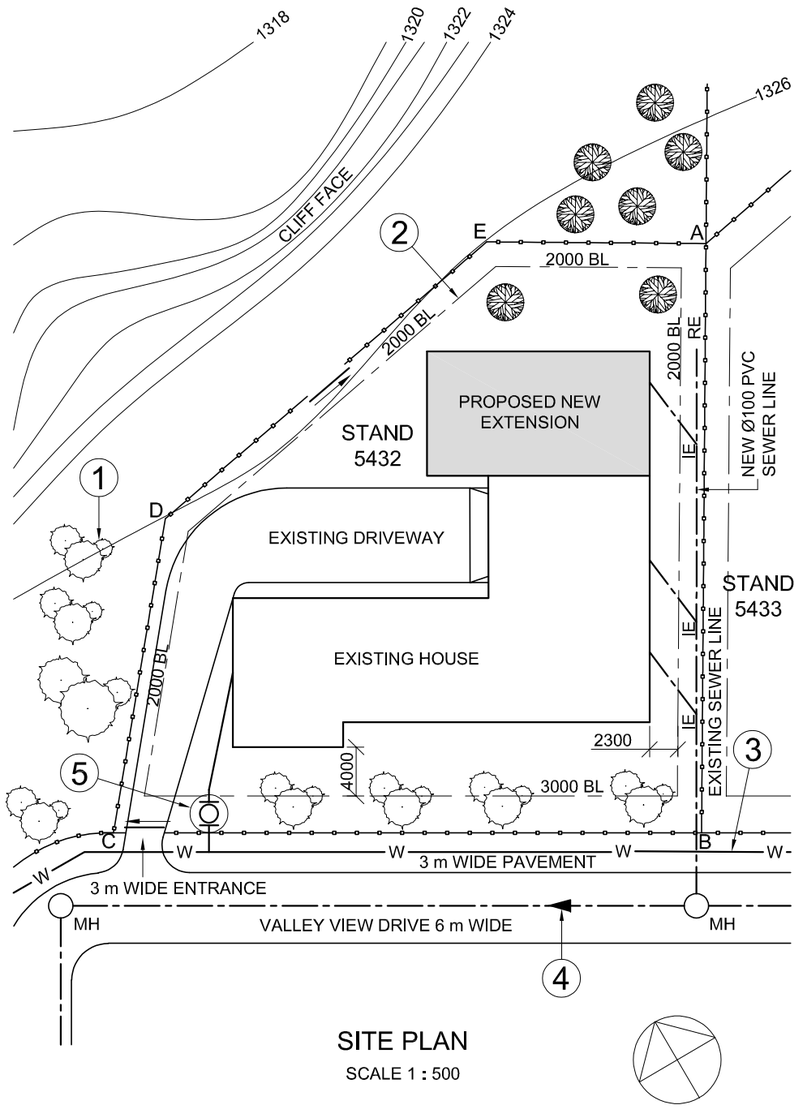
COMPLETE THE FOLLOWING:
CENTRE NUMBER
CENTRE NUMBER
EXAMINATION NUMBER
EXAMINATION NUMBER

DO NOT FOLD THE QUESTION PAPER IN HALF.

STAPLE

LAND SURVEYOR'S CERTIFICATE OF THE CORNER HEIGHTS AND BOUNDARY LENGTHS OF STAND 5432			
CORNER HEIGHTS IN METRES		BOUNDARY LENGTHS IN METRES	
A	1327	AB	48,04
B	1328	BC	47,96
C	1327	CD	25,95
D	1326	DE	34,58
E	1326	EA	?

SYMBOL LEGEND		
1	MUNICIPAL WATER SUPPLY	— W —
2	INDIGENOUS TREES	
3	SHRUBBERY	
4	PALISADE FENCE 1800 mm HIGH	



SITE PLAN

SCALE 1 : 500

NOTE:
Contractors must verify all dimensions and levels on site before commencing work. Architects to be notified immediately of any discrepancies.

ARCHITECT'S SIGNATURE .....

CLIENT'S SIGNATURE .....

ANSWER 21
In the space below, draw, in neat freehand, the front view and top view of the *SANS 10143* graphical symbol for a WASH TUB.

1	05/05/2023	ADD MUNICIPAL WATER LINE
REVISION	DATE	DESCRIPTION

CEK ARCHITECTURAL CONSULTANTS
9 OELSE AVENUE
PRIESKA
8940

053 691 0181 www.cek_consult.co.za

PRINTED BY:	DATE OF PRINT:
QUICK PRINT	08/05/2023

DRAWING TITLE:
SITE PLAN

PROJECT:
PROPOSED NEW EXTENSION FOR
MR AJ DE JAGER
ON STAND 5432,
21 VALLEY VIEW DRIVE, PRIESKA

PROJECT NUMBER:	DRAWING NUMBER:		
PRA2024-102	3 of 7		
DATE:	DRAWN:	CHECKED:	SCALE:
04/05/2023	CHADLIN	JANE	1 : 500
REFERENCE CODE:			
NFC1-2023			

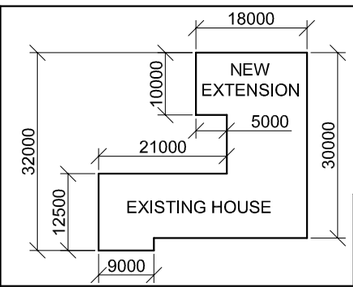
QUESTION 1: ANALYTICAL (CIVIL)

Given:
The site plan of an existing house with a proposed new extension, a title panel and a table of questions. The drawing is not presented to the indicated scale.

Instructions:
Complete the table below by neatly answering the questions, which refer to the accompanying drawing, title panel and civil content. **[30]**

	QUESTIONS	ANSWERS			
1	What was Jane responsible for?		1		
2	What scale is indicated for the site plan?		1		
3	On what date was the drawing printed?		1		
4	Who must notify the architect of any discrepancies before commencing with the work?		1		
5	What is the width of VALLEY VIEW DRIVE in metres?		1		
6	How many sliding gates are on STAND 5432?		1		
7	What does the abbreviation *IE* stand for?		1		
8	What natural feature lies outside and parallel to boundary line DE of STAND 5432?		1		
9	Name the feature at 1.		1		
10	What does the line at 2 indicate?		1		
11	Name the feature at 3.		1		
12	What is the height of the palisade fence in metres?		1		
13	What is the diameter of the new sewer line?		1		
14	What does the arrow at 4 indicate?		1		
15	Name the encircled feature at 5.		1		
16	How far is the existing house from VALLEY VIEW DRIVE in metres?		2		
17	In what colour should new concrete be indicated on elevations?		1		
18	Which elevation of the existing house faces VALLEY VIEW DRIVE?		2		
19	If the perimeter of STAND 5432 is 173560 mm, determine, in metres, the length of boundary line EA in the space below (ANSWER 19).		3		
20	In the space below (ANSWER 20), determine the combined total area of the existing house and new extension in square metres.		3		
21	In the space in the title panel (ANSWER 21), draw, in neat freehand, the front view and top view of the *SANS 10143* graphical symbol for a WASH TUB.		4		
		TOTAL	**30**		

ANSWER 19
Show ALL calculations.



ANSWER 20
Show ALL calculations.

EXAMINATION NUMBER	
EXAMINATION NUMBER	2

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QUESTION 2: INTERPENETRATION

Given:

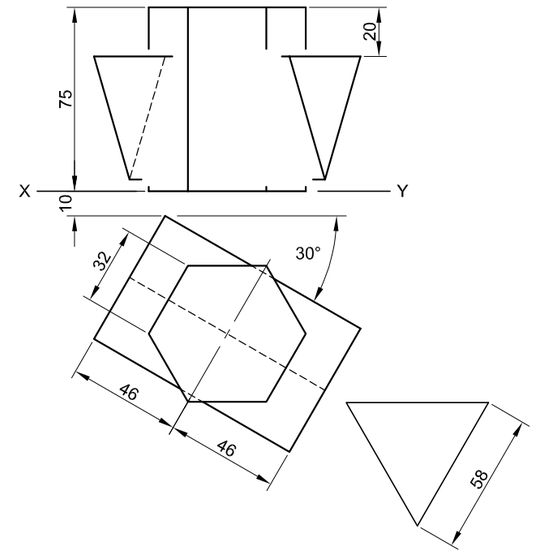
- The top view and incomplete front view of a right equilateral triangular prism that passes through a right regular hexagonal prism. The axes of both solids lie in a common vertical plane.
- An auxiliary view of the triangular prism

Instructions:

Draw, to scale 1 : 1, the following views of the interpenetrating solids:

2.1 The given top view
2.2 The complete front view, clearly showing both curves of interpenetration
2.3 The complete right view, clearly showing both curves of interpenetration

- Planning is essential.
- Show ALL hidden detail.
- Show ALL construction. **[36]**

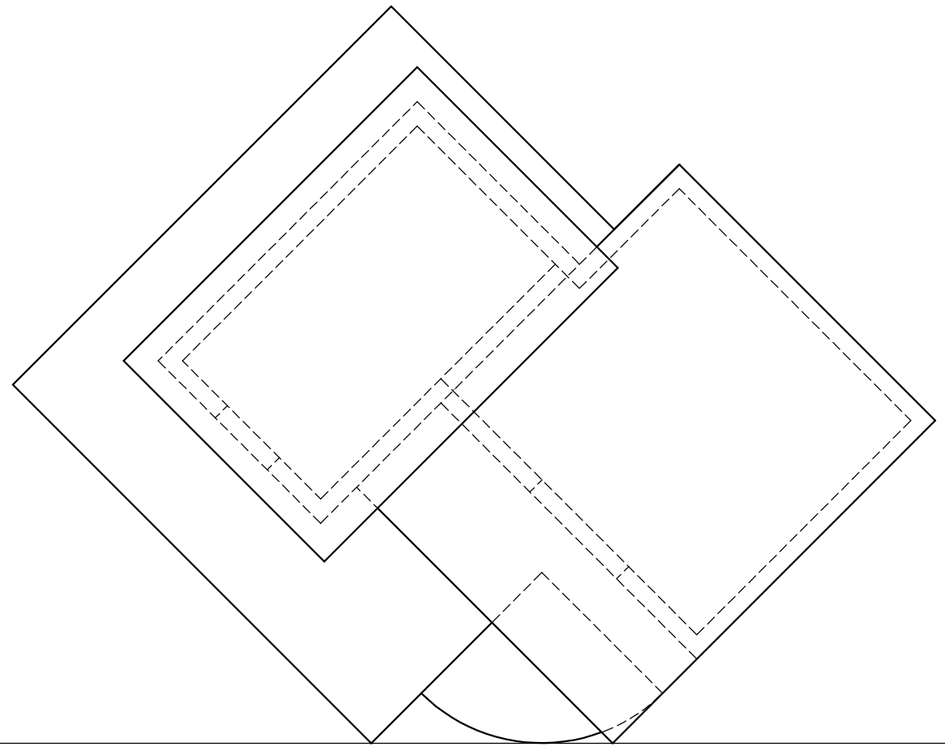


ASSESSMENT CRITERIA						
1	TOP VIEW	10				
2	FRONT VIEW	14				
3	RIGHT VIEW	12				
PENALTIES (-)						
	TOTAL	**36**				

EXAMINATION NUMBER

EXAMINATION NUMBER 3

STAPLE

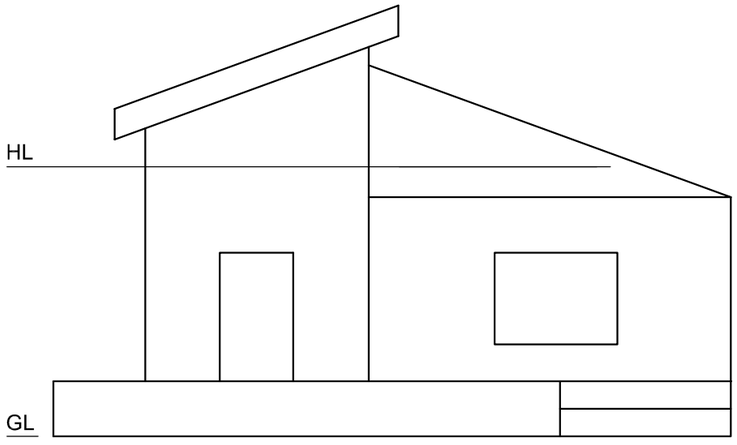


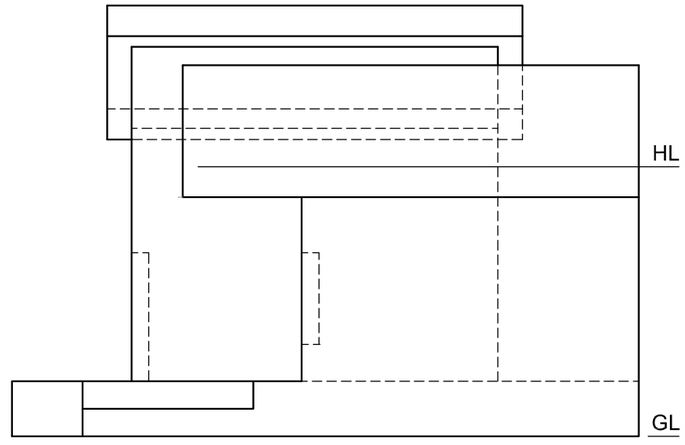
QUESTION 3: PERSPECTIVE

Given:
Three views of a building and the information needed to draw a two-point perspective drawing
PP – Picture plane
HL – Horizon line
GL – Ground line
SP – Station point

Instructions:
Complete the perspective drawing.
- Align the drawing sheet with the ground line (GL).
- Determine and label the vanishing points.
- Show ALL construction.
- Show depth at the door and window.
- NO interior detail is required. **[39]**

ASSESSMENT CRITERIA					
1	CONSTRUCTION	6			
2	WALL + BASE + STAIRS	12 ½			
3	WINDOW + DOOR	6			
4	ROOF	9			
5	ARC	5 ½			
PENALTIES (-)					
	TOTAL	**39**			

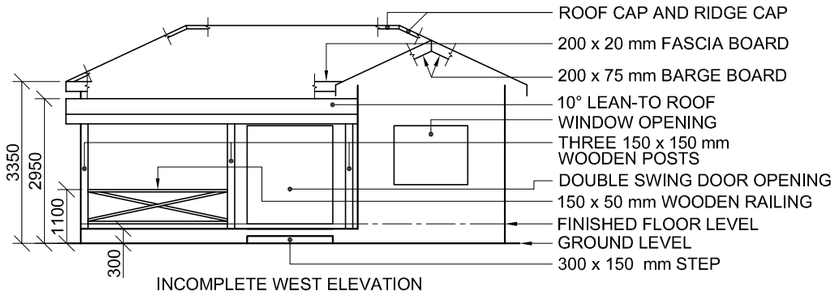




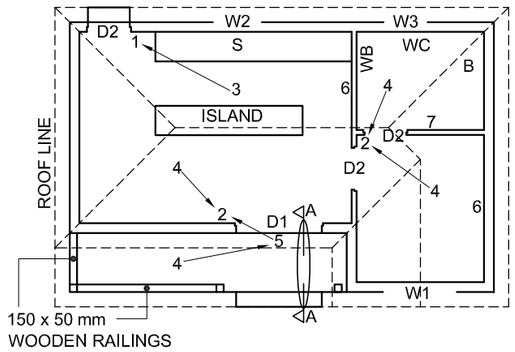
SP

EXAMINATION NUMBER

EXAMINATION NUMBER 2024



INCOMPLETE WEST ELEVATION



INCOMPLETE FLOOR PLAN

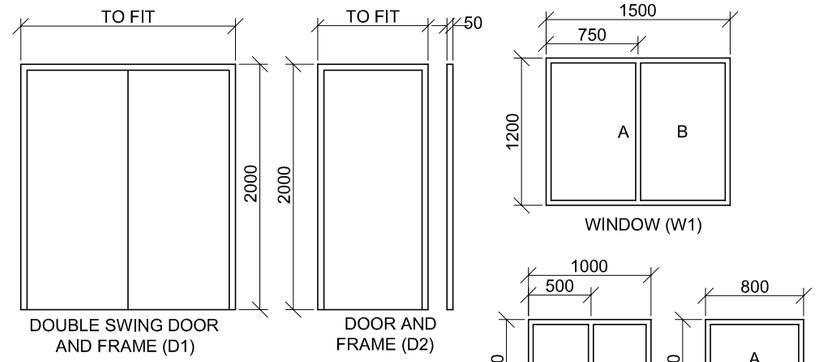
FEATURES
D1 DOUBLE SWING DOOR
D2 DOOR
W1 WINDOW
W2 WINDOW
W3 WINDOW

FIXTURES
WC TOILET
WB WASH-BASIN
B BATH
S SINK

ELECTRICAL FITTINGS
1. ONE-WAY SWITCH - SINGLE-POLE
2. ONE-WAY SWITCH - DOUBLE-POLE
3. FLUORESCENT LIGHT 2 x 60 W
4. CEILING LIGHT
5. WALL-MOUNTED LIGHT
6. SWITCHED SOCKET OUTLET
7. SOCKET OUTLET

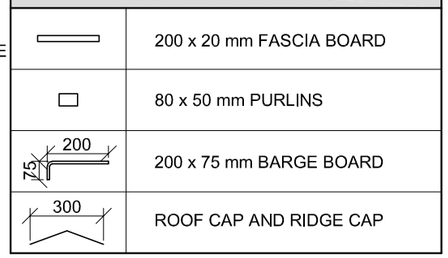
NOTE:
THE ARROW SHOWS THE LIGHT CONNECTION TO THE SWITCH.

DOOR AND WINDOW SCHEDULE

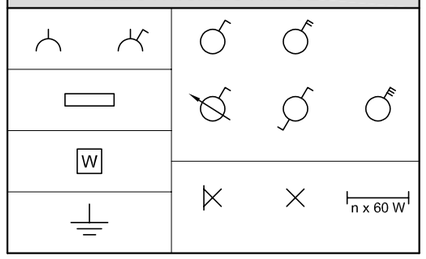


WINDOW NOTES:
- A = OPENING SIDE
- B = FIXED PANEL
- ALL FRAMES = 50 mm THICK
- 150 x 150 x 20 mm CERAMIC TILE SILL UNDER ALL WINDOWS

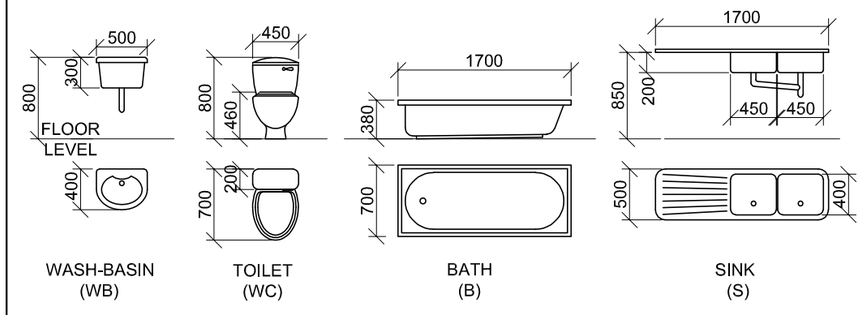
ROOF COMPONENTS



ELECTRICAL SYMBOLS



FIXTURES



ROOF NOTES:
25° ROOF PITCH

120 x 40 mm ROOF TRUSSES ON 120 x 40 mm WALL PLATES

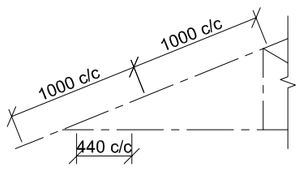
300 mm ROOF OVERHANG TO END OF ROOF TRUSS

40 mm CORRUGATED ROOF SHEET ON 80 x 50 mm PURLINS @ 1000 mm c/c

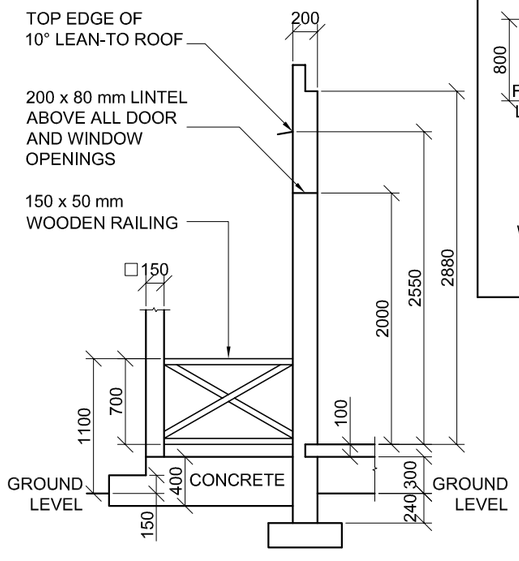
200 x 20 mm FASCIA BOARDS ON ALL SIDES

200 x 75 mm BARGE BOARDS ON GABLED ENDS 250 mm PAST FASCIA BOARDS

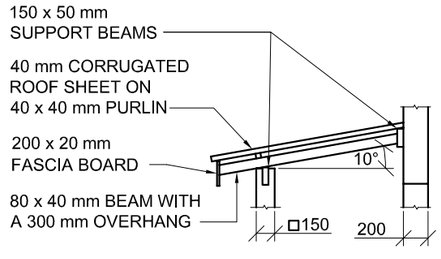
10 mm CEILING BOARDS ON 40 x 40 mm BRANDERING STRIPS @ 440 mm c/c



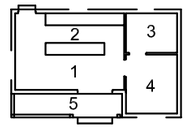
INCOMPLETE SCHEMATIC DIAGRAM OF A ROOF TRUSS AT CUTTING PLANE A-A



INCOMPLETE FOUNDATION, EXTERNAL WALL, VERANDA AND RAILING DETAIL



INCOMPLETE LEAN-TO ROOF DETAIL



ROOM DESIGNATIONS

FLOOR FINISHES
1. LIVING AREA - VINYL
2. KITCHEN - TILES
3. BATHROOM - TILES
4. BEDROOM - CARPET
5. VERANDA - TILES

QUESTION 4: CIVIL DRAWING

Given:
- The incomplete west elevation of a **new house**, showing the walls, step, the double swing door and window openings, the roof, labels, veranda and railing
- The incomplete floor plan showing the walls, steps, veranda, positions of the doors, windows and fixtures, and the electrical layout
- An incomplete schematic diagram of a roof truss at cutting plane A-A and roof notes
- The incomplete foundation, external wall, veranda and railing detail
- A door and window schedule
- A table of roof components
- A table of electrical symbols
- A table of fixtures
- Room designations and floor finishes
- Incomplete lean-to roof detail
- The incomplete floor plan and position of the ground level of the **new house**, drawn to scale 1 **:** 50, and the incomplete foundation and break lines for the detailed section, drawn to scale 1 **:** 20, on page 6

Instructions:
Answer this question on page 6.

4.1 Using the given incomplete floor plan and position of the ground level, draw, to scale 1 **:** 50, the following views of the **new house:**

4.1.1 **THE COMPLETE FLOOR PLAN**
Add the following features to the drawing:
- ALL doors and windows
- ALL fixtures as indicated by the abbreviations
- ALL electrical fittings as indicated by the numbers
- ALL hatching detail

4.1.2 **THE COMPLETE WEST ELEVATION**
Show the following features on the drawing:
- The outside walls, step, window and double swing door detail (in the closed position)
- The roof detail, including the fascia board and barge boards
- The veranda, railing, posts and lean-to roof detail
- The finished floor level

4.2 Using the incomplete foundation and break lines, draw, to scale 1 **:** 20, the **DETAILED SECTION** on cutting plane A-A of the area in the ellipse shown on the incomplete floor plan.

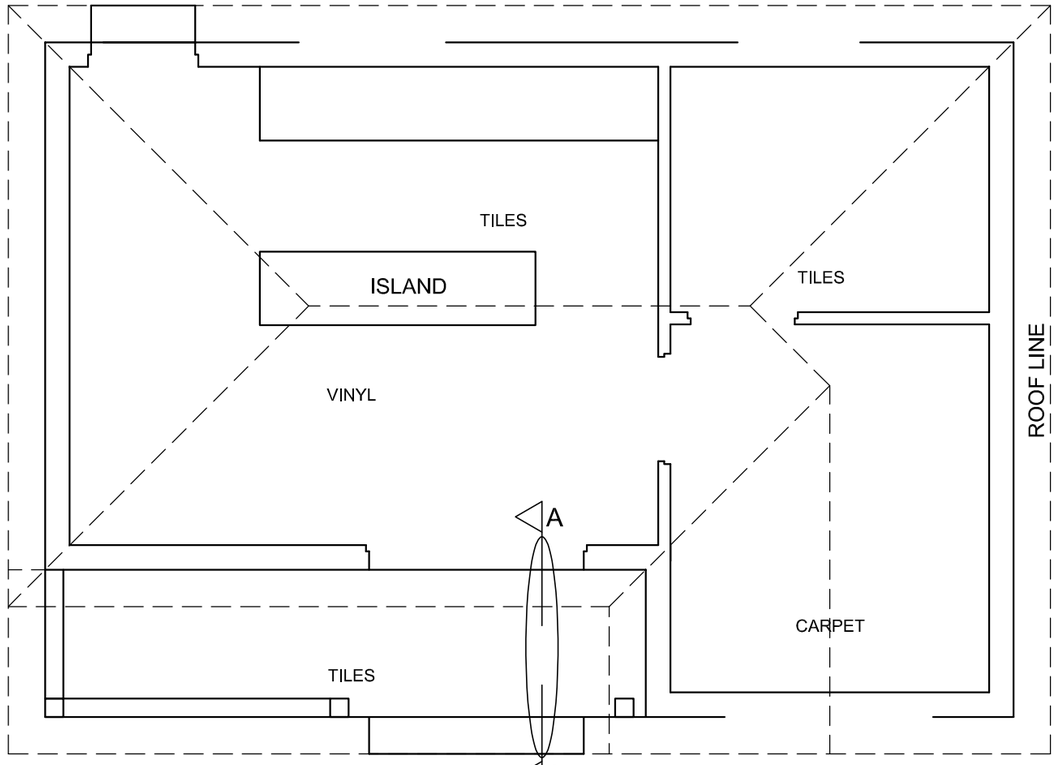
Show the following features on the drawing:
- The complete foundation, external wall and door detail
- The roof detail, including the fascia board
- The veranda and lean-to roof detail
- The post and railing, as well as the fascia board to the left (north) of cutting plane A-A
- ALL hatching detail. ONLY the substructure hatching may be drawn in neat freehand.

Label the following:
- The room designations
- Ground level, finished floor level and damp-proof course (use the correct abbreviations and show it on ALL relevant views)

NOTE: ALL drawings must comply with the **guidelines** and **graphical symbols** as contained in the *SANS 10143.* **[95]**

GL

WEST ELEVATION



FLOOR PLAN
SCALE 1 : 50

MARK ALLOCATION FOR SECTION OF ROOF	
A	
B	
C	
D	
E	
F	
G	
H	
J	
TOTAL	

FOR OFFICIAL USE ONLY	
INCORRECT SCALE(S) USED	
NON-ALIGNMENT OF VIEWS	
VIEW(S) ROTATED	
SECTION VIEWED INCORRECTLY	
INCORRECT LETTERING	
NOT USING BREAK LINES	
TOTAL	

ASSESSMENT CRITERIA

FLOOR PLAN

		POSSIBLE	OBTAINED	SIGN	MODERATED
1	DOORS + WINDOWS	11			
2	FIXTURES	8 ½			
3	ELECTRICAL	9 ½			
4	HATCHING	4			
5	LABELS	2 ½			
SUBTOTAL		**35 ½**			
WEST ELEVATION					
1	ROOF + LEAN-TO	8 ½			
2	WALLS + POSTS + VERANDA	5			
3	DOORS + WINDOW	6 ½			
4	STEP + FFL + RAILING	4 ½			
5	LABELS	½			
SUBTOTAL		**25**			
DETAILED SECTION					
1	ROOF DETAIL	15			
2	SLAB + WALL + STEPS + POST	10			
3	HATCHING	5 ½			
4	RAILING	3			
5	LABELS	1			
SUBTOTAL		**34 ½**			
TOTAL		**95**			
PENALTIES (-)					
GRAND TOTAL					

EXAMINATION NUMBER

EXAMINATION NUMBER 6