STAPLE

GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

JUNE EXAMINATION

2026

ENGINEERING GRAPHICS AND DESIGN

(PAPER 1)

TIME: 3 hours

MARKS: 100

6 pages

ENGINEERING GRAPHICS & DESIGN P1

C2771E

X05

INSTRUCTIONS AND INFORMATION

1. The 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 name and surname in the block provided on every page.
10. Any details or dimensions not given must be assumed in good proportion.

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
$\frac{\quad}{100}$	

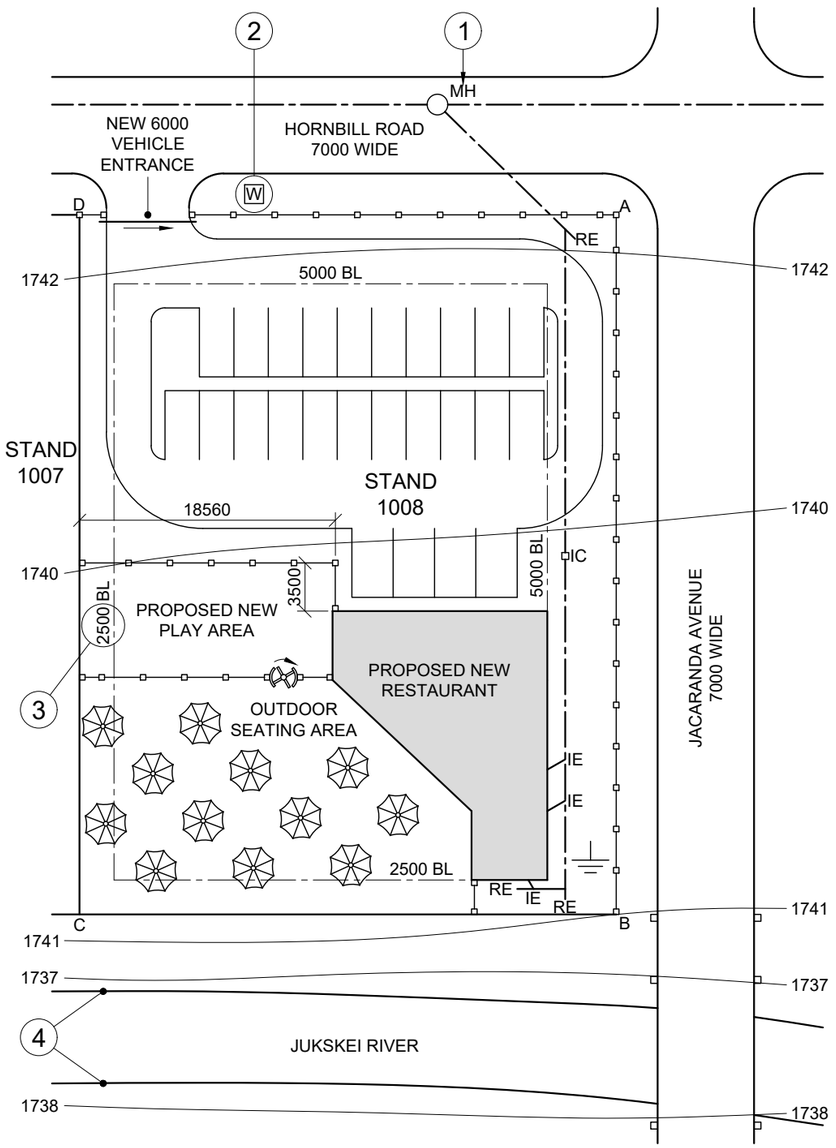
COMPLETE THE FOLLOWING:
NAME AND SURNAME
NAME AND SURNAME
CLASS AND TEACHER
CLASS AND TEACHER

DO NOT FOLD THE QUESTION PAPER IN HALF.

STAPLE

LAND SURVEYOR'S CERTIFICATE OF THE CORNER HEIGHTS AND BOUNDARY LENGTHS OF STAND 1008 SURVEYED ON 23/07/2025			
CORNER HEIGHTS IN METRES		BOUNDARY LENGTHS IN MILLIMETRES	
A	1742,4	AB	50 750
B	?	BC	38 950
C	1740,8	CD	50 750
D	1743	DA	38 950

SYMBOL LEGEND	
PALISADE FENCE	
Ø2 m TURNSTILE	
6 SEATER OUTDOOR UMBRELLA	



SITE PLAN
SCALE 1 : 500

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

ARCHITECT'S SIGNATURE.....

CLIENT'S SIGNATURE.....

ANSWER 20
In the space below, draw, in neat freehand, the *SANS 10143* graphical symbol for (a) a GREASE TRAP and the hatching symbol for (b) UNDISTURBED EARTH.

(a) GREASE TRAP

(b) UNDISTURBED EARTH

REVISION	DATE	DESCRIPTION
2	26/09/2025	ADD ARROW TO SLIDING GATE
1	26/09/2025	ADD SEPTIC TANK (ST)

PRINTED BY: BEATS PRINTERS	DATE OF PRINT: 29/09/2025

CAMBELL AND VERMAAK
2015 RIVER ROAD
SANDTON
TEL: 010 258 8855

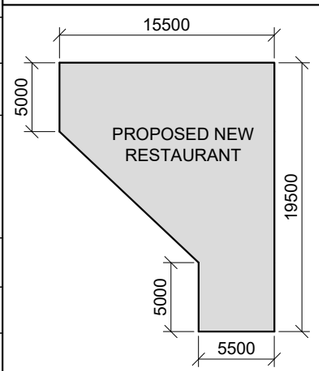
PROJECT ARCHITECT: J.S. CAMBELL	
DRAWING TITLE: SITE PLAN	
PROJECT: PROPOSED NEW RESTAURANT AND PLAY AREA FOR ENSLIN GROUP, ON STAND 1008, CORNER HORNBILL ROAD AND JACARANDA AVENUE, RANDBURG.	
PROJECT NUMBER: FSR&PA_01_2025	DRAWING NUMBER: 1 of 7
REFERENCE CODE: P1Q1-2025	DRAWN: B. BAKER / CHECKED: O. BALI
SCALE: 1 : 500	DATE: 22/09/2025 / DATE: 25/09/2025

QUESTION 1: ANALYTICAL (CIVIL)

Given:
A site plan of a proposed new restaurant and play area, a title panel and a table with 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	On which date was the drawing checked?		1		
2	To what does FSR&PA_01_2025 refer?		1		
3	On which corner in Randburg is the site located?		1		
4	Who is the architect?		1		
5	On which date was the drawing printed?		1		
6	How many revisions were made?		1		
7	Is this drawing presented to the indicated scale?		1		
8	What would be the abbreviation for *stormwater drain*?		1		
9	How wide is the new vehicle entrance, in metres?		1		
10	How many people can be seated in the outdoor seating area?		1		
11	What does the abbreviation *MH* at 1 stand for?		1		
12	Name the symbol at 2.		1		
13	What does the encircled number at 3 indicate?		1		
14	What feature do the lines at 4 indicate?		1		
15	What line type should be used to indicate existing work to be removed?		1		
16	What is the height of corner B?		2		
17	Which elevation of the proposed new restaurant faces Hornbill Road?		2		
18	In the space below (ANSWER 18), determine the area of the proposed new restaurant, in square metres.		3		
19	In the space below (ANSWER 19), determine the total length of the palisade fence required for the proposed new play area, in metres.		3		
20	In the space in the title panel (ANSWER 20), draw, in neat freehand, the *SANS 10143* graphical symbol for (a) a GREASE TRAP and the hatching symbol for (b) UNDISTURBED EARTH.		5		
		TOTAL:	**30**		



ANSWER 18
Show ALL calculations.

ANSWER 19
Show ALL calculations.

NAME AND SURNAME

NAME AND SURNAME 2

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QUESTION 2: SOLID GEOMETRY

Given:

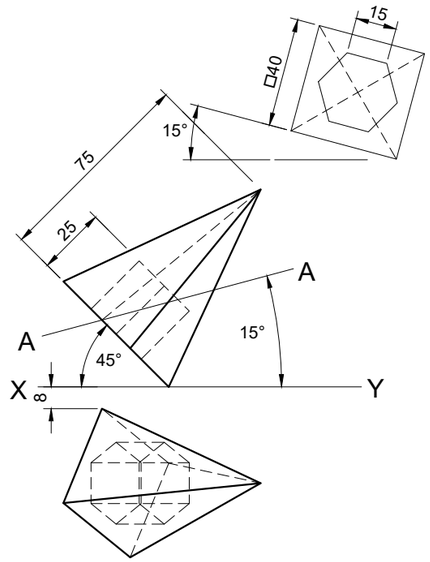
- The front view and top view of a right regular square pyramid with a right regular hexagonal prismatic hole
- An auxiliary view
- Cutting plane A-A

Instructions:

Draw, to a scale of 1 : 1, the following views of the solid:

2.1. The given front view
2.2. A sectional top view
2.3. The right view
2.4. The true shape of the cut surface

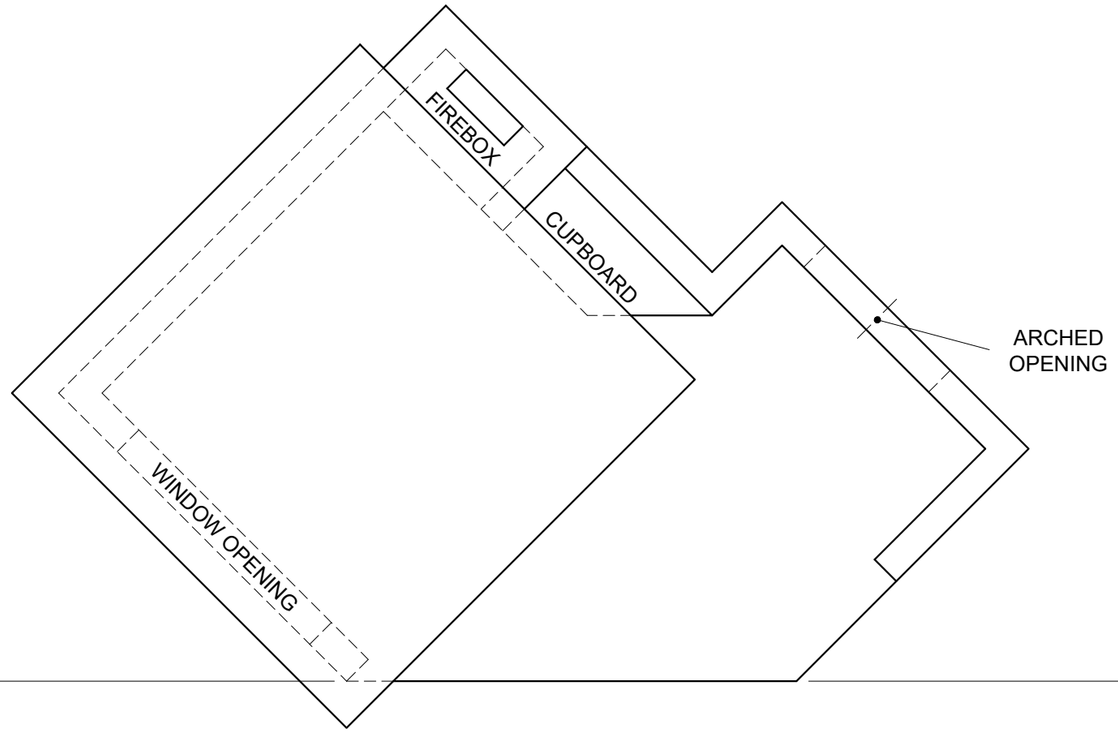
- Planning is essential.
- Show ALL hidden detail.
- Show ALL construction. **[39]**



ASSESSMENT CRITERIA						
1	FRONT VIEW	6				
2	SECTIONAL TOP VIEW	16				
3	RIGHT VIEW	12				
4	TRUE SHAPE	5				
PENALTIES(-):						
	TOTAL:	**39**				

NAME AND SURNAME	
NAME AND SURNAME	3

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QUESTION 3: PERSPECTIVE

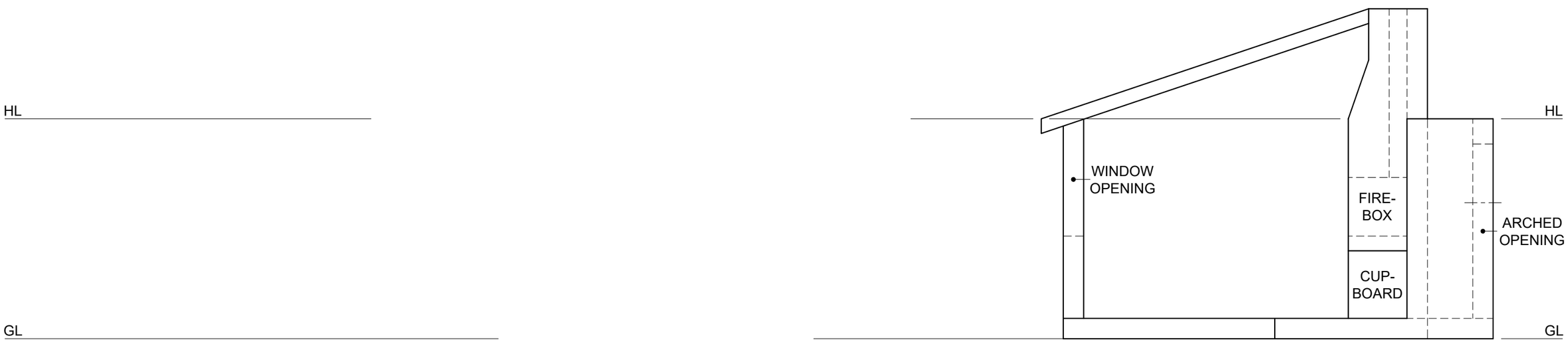
Given:
Two views of an outside area and all the information needed to draw a two-point perspective drawing

PP - Picture plane
HL - Horizon line
GL - Ground line
SP - Station point

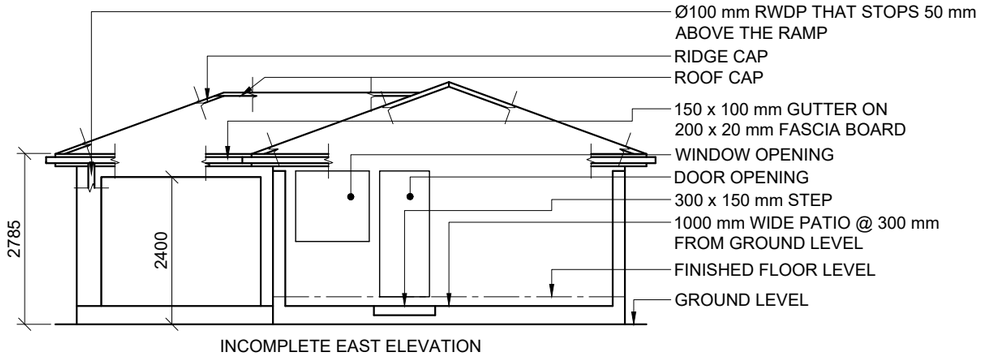
Instructions:
Complete the perspective drawing.

- Align the drawing sheet with the horizon line (HL).
- Determine and label the vanishing points.
- Show ALL construction.
- Show depth at the window, arched and firebox openings.
- NO hidden detail is required. **[40]**

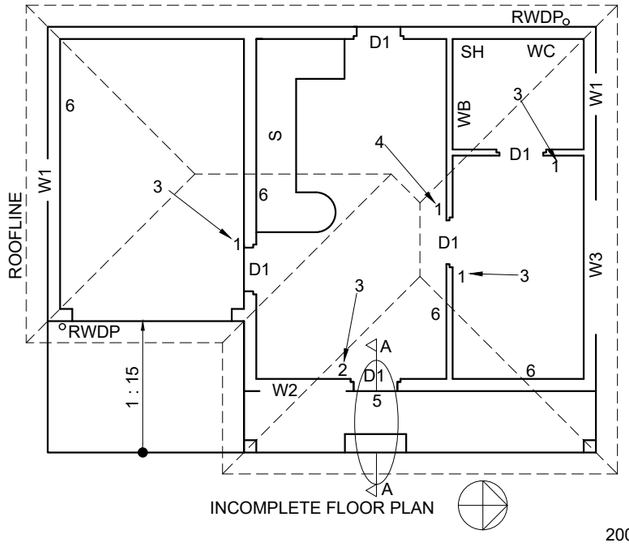
ASSESSMENT CRITERIA					
1	CONSTRUCTION & VPs	6			
2	WALLS + FLOOR	10			
3	WINDOW + ARCH	10			
4	ROOF	4			
5	BRAAI + CUPBOARD	10			
PENALTIES(-):					
TOTAL:		**40**			



NAME AND SURNAME	
NAME AND SURNAME	4



INCOMPLETE EAST ELEVATION

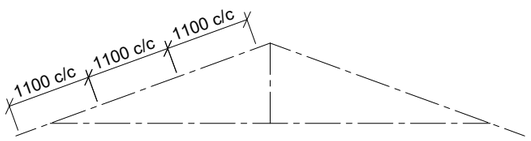


INCOMPLETE FLOOR PLAN

FIXTURES
WC TOILET
WB WASH BASIN
SH SHOWER
S SINGLE SINK

ELECTRICAL FEATURES
1. ONE-WAY SWITCH - SINGLE-POLE
2. ONE-WAY SWITCH - DOUBLE-POLE
3. CEILING LIGHT
4. FLUORESCENT LIGHT (2 x 40 W)
5. WALL-MOUNTED LIGHT
6. SWITCHED SOCKET OUTLET

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



SCHEMATIC DIAGRAM OF ROOF TRUSS

ROOF NOTES:
20° ROOF PITCH

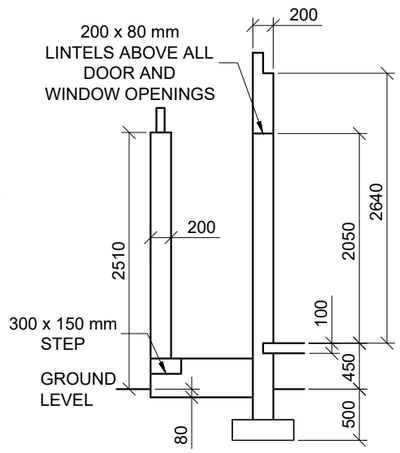
110 x 40 mm ROOF TRUSS ON
110 x 40 mm WALL PLATES

350 mm ROOF OVERHANG TO END OF ROOF TRUSS

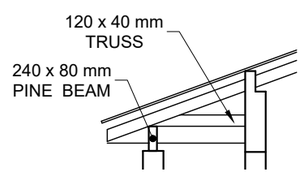
30 mm CORRUGATED ROOF SHEETING ON
75 x 50 mm PURLINS @ 1100 mm c/c

150 x 100 mm GUTTERS ON 200 x 20 mm FASCIA BOARDS ON ALL SIDES

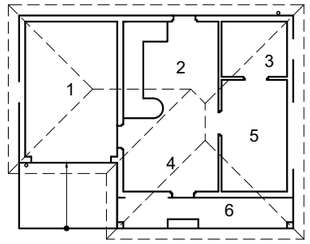
9 mm GYPSUM BOARDS ON 40 x 40 mm BRANDERING STRIPS @ 400 mm c/c



INCOMPLETE STEP, PATIO, EXTERNAL WALL, COLUMN AND FOUNDATION DETAIL



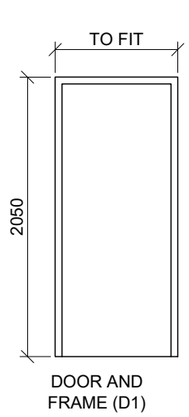
INCOMPLETE ROOF AND COLUMN DETAIL



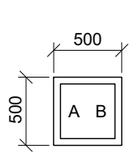
ROOM DESIGNATION AND FLOOR FINISHES

1.	GARAGE	-	EPOXY RESIN
2.	KITCHEN	-	TILES
3.	BATHROOM	-	TILES
4.	LIVINGROOM	-	LAMINATE FLOOR
5.	BEDROOM	-	CARPET
6.	PATIO	-	STONE

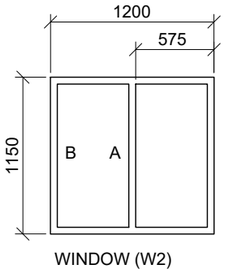
DOOR AND WINDOW SCHEDULE



DOOR AND FRAME (D1)

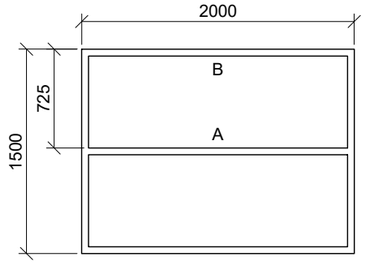


WINDOW (W1)



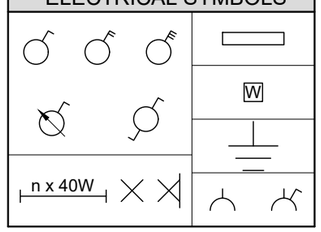
WINDOW (W2)

WINDOW NOTES:
- 180 x 20 mm WINDOWSILL UNDER ALL WINDOWS
- ALL FRAMES 50 mm THICK
- A = OPENING SIDE
- B = HINGED SIDE



WINDOW (W3)

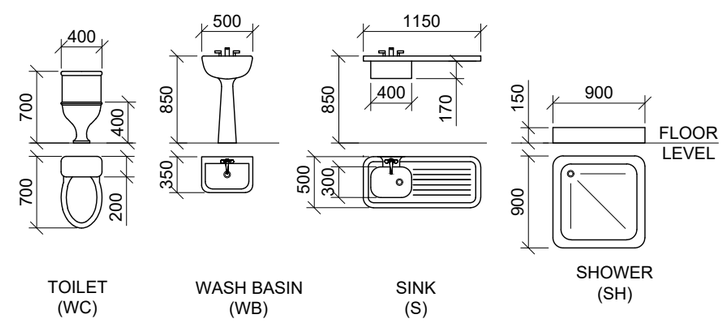
ELECTRICAL SYMBOLS



ROOF COMPONENTS

	110 x 40 mm WALL PLATE
	200 x 20 mm FASCIA BOARD
	150 x 100 mm GUTTER
300	ROOFCAP

FIXTURES



TOILET (WC) WASH BASIN (WB) SINK (S) SHOWER (SH)

QUESTION 4: CIVIL DRAWING

Given:
- The incomplete east elevation of a **house**, showing the walls, step, the door and window openings, the roof and labels
- The incomplete floor plan showing the walls, step, patio, positions of the doors, windows, fixtures, and the electrical layout
- A schematic diagram of a roof truss and roof notes
- The incomplete step, patio, external wall, column and foundation detail
- The incomplete roof and column detail
- Room designations and floor finishes
- A door and window schedule, with window notes
- A table of electrical symbols
- A table of roof components
- A table of fixtures
- The incomplete floor plan and position of the ground level of the **house**, drawn to a scale of 1 : 50, and the incomplete foundation and a break line for the detailed section, drawn to scale 1 : 20 , on page 6

Instructions: Answer the following question on page 6.

4.1. Using the given incomplete floor plan, draw, to a scale of 1 : 50, the following views of the **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 detail as indicated by the numbers
- All hatching detail

4.1.2. **THE COMPLETE EAST ELEVATION**
Show the following features on the drawing:
- The outside walls, step, door and window detail
- The roof detail, including the roof cap, fascia board, gutter and barge boards
- The RWDP
- The finished floor level

4.2. Using the incomplete foundation and the break line on page 6, draw, to a scale of 1 : 20, a **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 step, patio, external wall and foundation detail
- The door detail
- The roof detail, including the fascia board and gutter
- All hatching detail. ONLY the substructure hatching may be drawn in freehand.

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

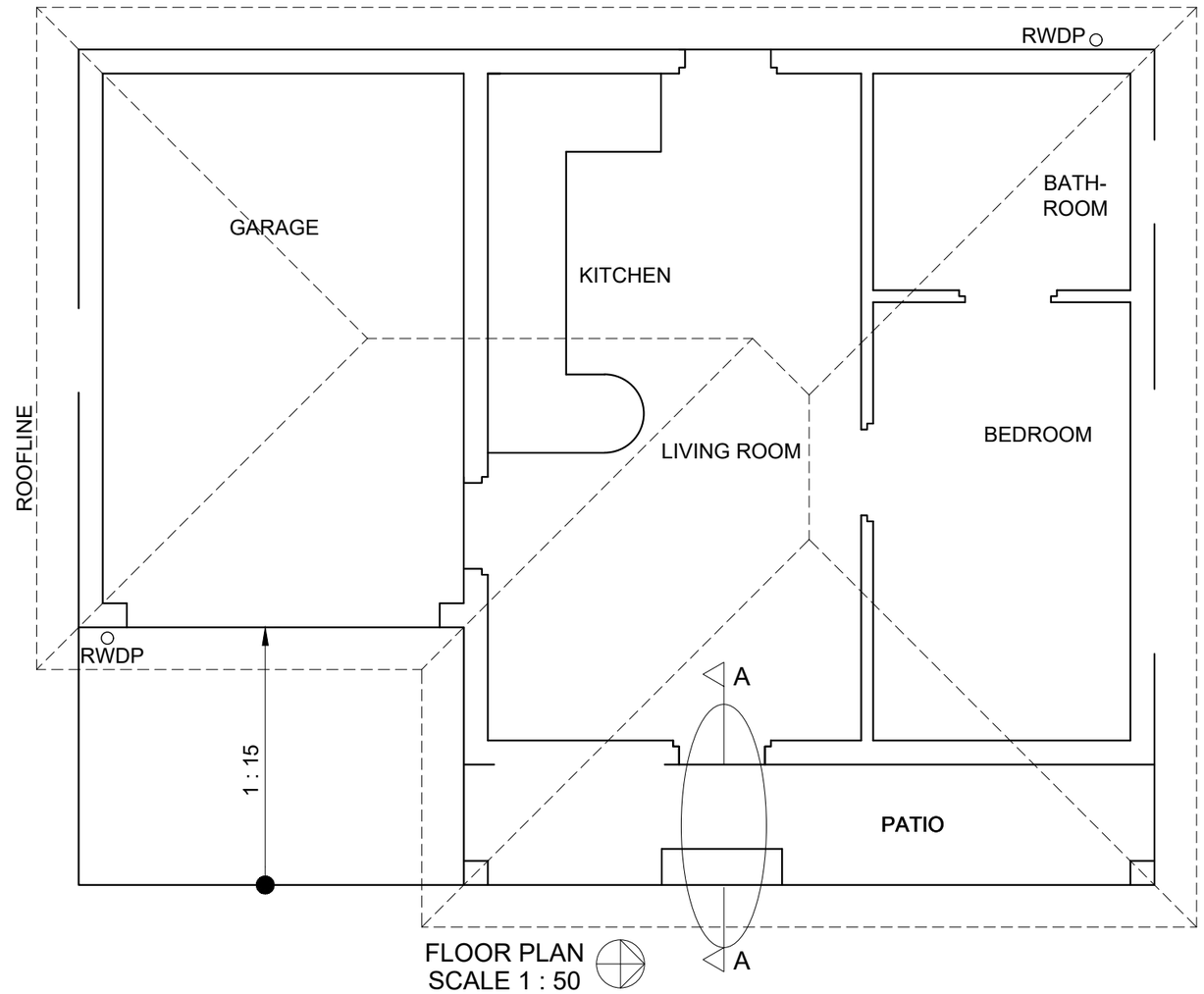
NOTE:
ALL drawings must comply with the **guidelines** and **graphical symbols** as contained in the *SANS 10143*. **[91]**

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MARK ALLOCATION FOR ROOF SECTION			
A	ANGLE + ROOF COVER + PURLINS		
B	TRUSS + OVERHANG		
C	WALL PLATE + BRANDERING + CEILING		
D	FASCIA + GUTTER		
	TOTAL:		

PENALTIES	
INCORRECT SCALE	
NON-ALIGNMENT OF VIEWS	
VIEWS ROTATED	
SECTION VIEWED INCORRECTLY	
INCORRECT LETTERING	
TOTAL:	

GL



FLOOR PLAN
SCALE 1 : 50

SECTION A-A
SCALE 1 : 20

ASSESSMENT CRITERIA					
FLOOR PLAN					
		POSSIBLE	OBTAINED	SIGN	MODERATED
1	WINDOWS + DOORS	13			
2	FIXTURES	7 ½			
3	ELECTRICAL	11			
4	HATCHING	3			
5	LABELS	3			
	SUBTOTAL:	**37 ½**			
EAST ELEVATION					
1	ROOF + RWDP	9			
2	WALLS + STEP + COLUMNS + PATIO	6 ½			
3	DOOR + WINDOW + GARAGE	8			
4	LABELS	1			
	SUBTOTAL:	**24 ½**			
DETAILED SECTION					
1	ROOF DETAIL	12			
2	WALL + SLAB + STEP + COLUMN	9 ½			
3	DOOR + LINTEL	1			
4	HATCHING	5 ½			
5	LABELS	1			
	SUBTOTAL:	**29**			
	TOTAL:	**91**			
PENALTIES(-):					
	GRAND TOTAL:				
NAME AND SURNAME					
NAME AND SURNAME					6

End