

ISEBE LEMFUNDO LEMPUMA KOLONI
EASTERN CAPE EDUCATION DEPARTMENT
OOS-KAAP ONDERWYSDEPARTEMENT

NATIONAL
SENIOR CERTIFICATE

GRADE 12



ENGINEERING GRAPHICS AND DESIGN P1

SEPTEMBER 2018

PREPARATORY EXAMINATION

MARKS: 200

TIME: 3 hours

This question paper consists of 6 pages.

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INSTRUCTIONS AND INFORMATION

1. The question paper consists of FOUR questions.
2. Answer ALL the questions.
3. All drawings must be drawn to scale 1 : 1, unless otherwise stated.
4. The questions must be answered on the answer sheets provided.
5. All the answers sheets must be re-stapled in numerical sequence and handed in irrespective of whether the question was attempted or not.
6. Careful time management is essential in order to complete all the questions.
7. Print your name in the block provided on every ANSWER SHEET.
8. All answers must be drawn accurately and neatly.
9. Any details or dimensions not given must be estimated in good proportion.
10. ALL drawings are in first angle orthographic projection, unless stated otherwise.

FOR OFFICIAL USE ONLY									
								MODERATED MARK	
1									
2									
3									
4									
TOTAL									
2				0				2	
0				0				0	

FINAL CONVERTED MARK	CHECKED BY
100	

COMPLETE THE FOLLOWING:	
NAME	
NAME	
EXAMINATION CENTRE	
EXAMINATION CENTRE	

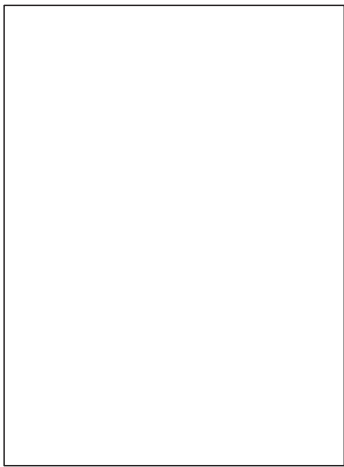
LAND SURVEYOR'S CERTIFICATE OF THE SIDE LENGTHS AND CORNER HEIGHTS ON STAND 102. SURVEYED ON 2018-07-20	
LENGTHS IN MILLIMETERS	CORNER HEIGHTS IN METERS
AB = 45800	A = 820
BC = 84000	B = 808
CD = 46000	C = 807.7
DA = 87000	D = 821

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 17
In the space provided below, draw, in neat freehand, the front view and top view of the *SANS 10143* convention for a single URINAL.



A	2017-08-12	INDICATE THE TYPE OF FENCING USED	
REVISION	DATE	DESCRIPTION	
PRINTED BY		DATE OF PRINT	
OFFICE FOR YOU		2018-09-01	
DRAWING TITLE			
SITE PLAN			
PROJECT			
PROPOSED NEW OUTBUILDINGS AND PAVING FOR MR. M. MULLER ON STAND 102, 3 DU PLESSIS STREET, PATENSIE			
PROJECT NUMBER 09-2018		DRAWING NUMBER 01012018	
DATE 2018-01-21	DRAWN KYLE	CHECKED REBECCA	SCALE 1 : 300
REFERENCE CODE SITE-2018			

QUESTION 1: ANALYTICAL (CIVIL)

Given:
The site plan for an existing house with new proposed buildings, a title panel and a table of questions. The drawing has not been prepared to the indicated scale.

Instructions:
Complete the table below by neatly answering the questions, which refer to the accompanying drawing and title panel. **[25]**

QUESTIONS		ANSWERS		
1	What is the reference code of the drawing?		1	
2	Who checked the drawing?		1	
3	On what date was the site plan printed?		1	
4	What revision must be done to the site plan?		1	
5	Who is the owner of stand 102?		1	
6	What feature is visible to the west of stand 102?		2	
7	What is the height of the fence around the tennis court in mm.		1	
8	What does the abbreviation RE stand for?		1	
9	What does the abbreviation W stand for?		1	
10	How many inspection eyes are required for the new buildings?		1	
11	What feature is indicated by arrow A ?		1	
12	What feature is indicated by arrow B ?		1	
13	What colour is used to indicate new buildings on a site plan?		1	
14	What colour is used to indicate an existing sewerage on a site plan?		1	
15	In the space provided below, determine the perimeter of the stand 102 in meters .		2	
16	In the space provided below, determine the total area of the PAVING around the swimming pool in square meters .		4	
17	In the space provided in the title panel, draw, in neat freehand, the front view and top view of the <i>SABS 10143</i> convention for a SINGLE URINAL.		4	
		TOTAL	25	

ANSWER 15
Show ALL calculations

ANSWER 16
Show ALL calculations

NAME

NAME

2



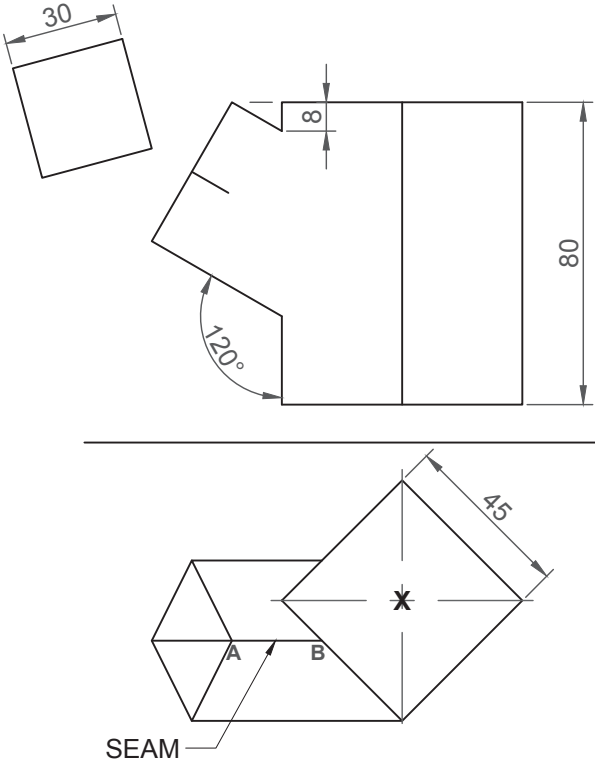
QUESTION 2: INTERPENETRATION AND DEVELOPMENT

- Given:
- The incomplete front view and complete top view of two square pipes penetrating one another.
 - Starting point **X** for the top view.
 - Starting points **AB** for the development of the branch pipe.

- Instructions:
- Draw to scale 1 : 1, the following views of the interpenetrating pipes:
- 2.1 The top view. (start at point **X**)
 - 2.2 The complete front view, clearly showing the curve of interpenetration.
 - 2.3 The surface development of the **branch pipe** with **AB** as the seam.

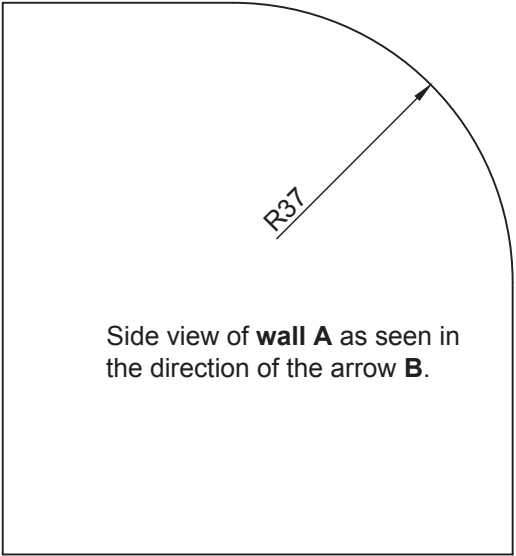
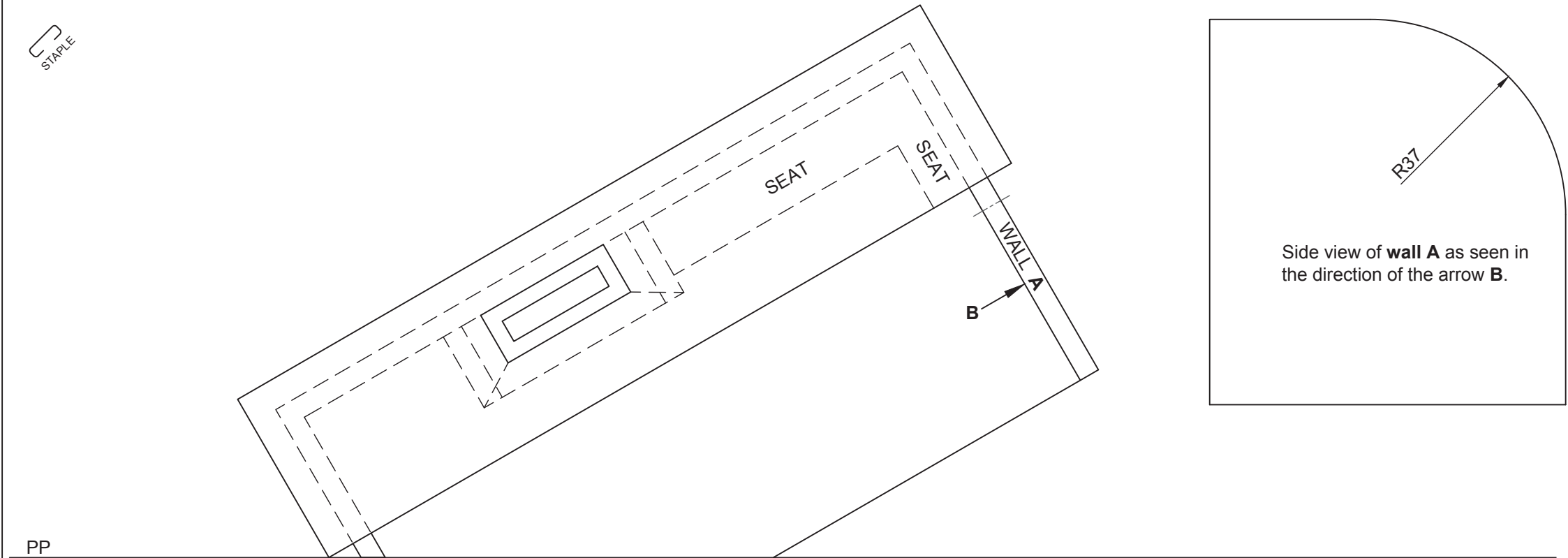
- Show ALL hidden detail and folding lines.
- Show ALL necessary construction lines.

[32]



ASSESSMENT CRITERIA					
1	TOP VIEW & CENTRE LINES	7			
2	FRONT VIEW	12			
3	CONSTRUCTIONS	2			
4	DEVELOPMENT	11			
PENALTIES (-)					
TOTAL		32			

NAME	
NAME	3



QUESTION 3: PERSPECTIVE

- Given:**
- Two views of a BRAAI AREA and the information needed to draw a two-point perspective drawing
 - A Side view of wall **A**

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 necessary construction.
 - NO hidden detail is required.

[45]

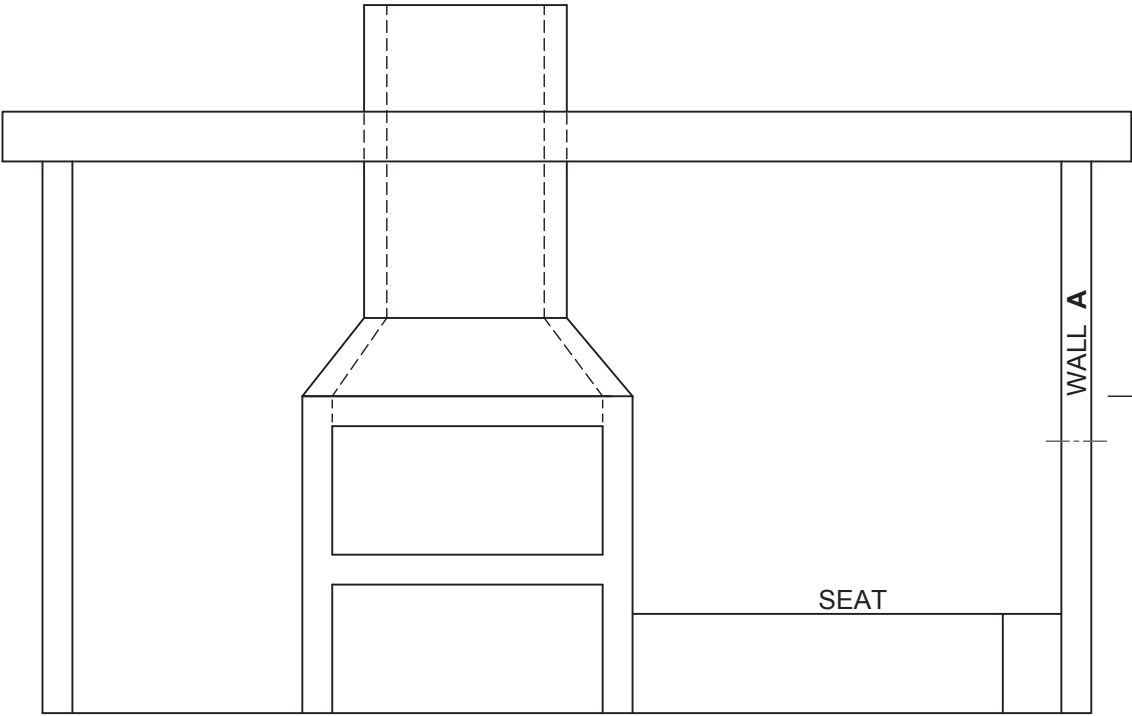
ASSESSMENT CRITERIA					
1	CONSTRUCTION + VPs	4			
2	BRAAI & SEAT	23			
3	WALLS & ROOF SLAB	13			
4	CIRCLE	5			
TOTAL		45			

PP

HL

GL

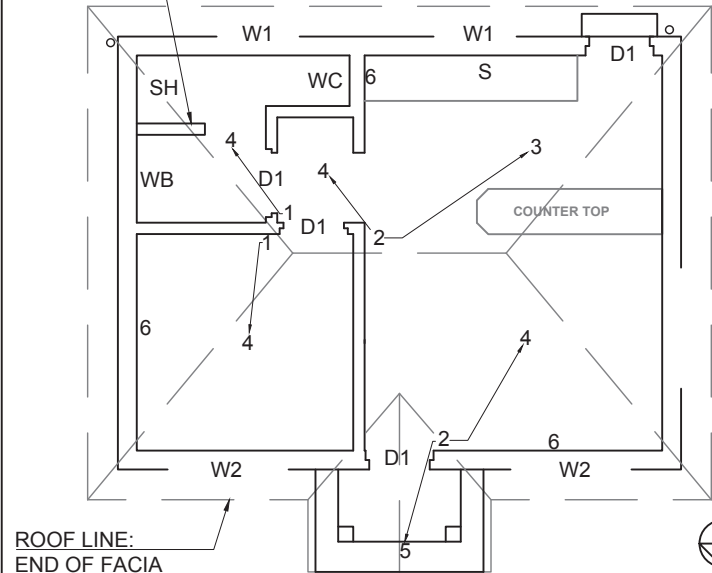
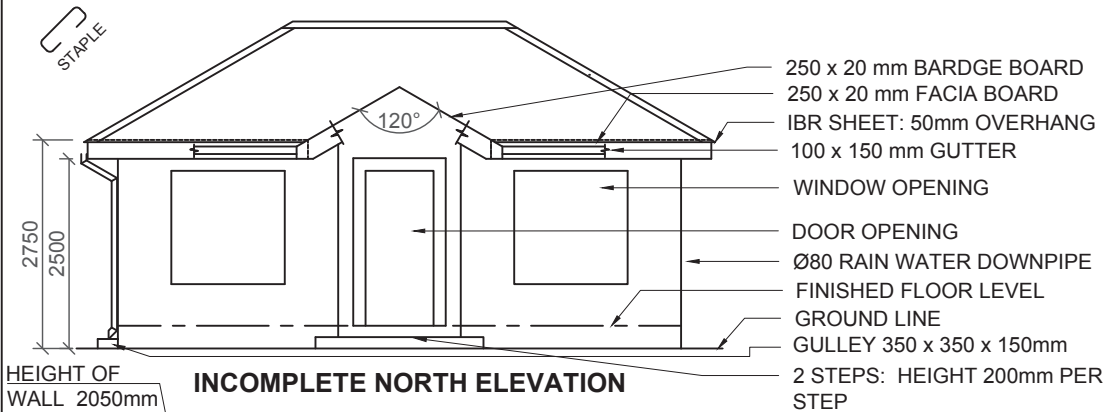
SP



NAME

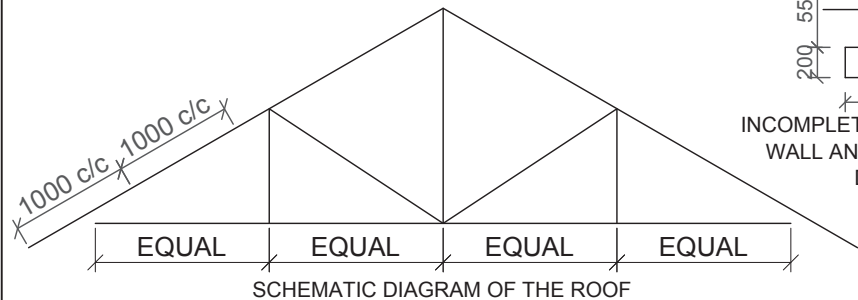
NAME

4



ROOF NOTES:

- ROOF PITCH 30° WITH 250 x 20 mm FACIA BOARD ON THE SIDES
- ROOF CAP MUST BE FITTED ON THE RIDGE.
- 250 x 20 mm BARGE BOARDS ON THE ROOF ENDS
- ROOF COVER 50 mm IBR SHEET ON 75 x 50 mm PURLINS @ 1000 mm c/c
- 114 x 38 mm ROOF TRUSS ON 114 x 38 mm WALL PLATES
- 9 mm CEILING BOARD ON 38 x 38 mm BRANDERING STRIPS @ 400 mm c/c
- 100 x 150 mm GUTTER ON ALL THE SIDES



FEATURES

- D1 DOOR
- W1 WINDOW
- W2 WINDOW

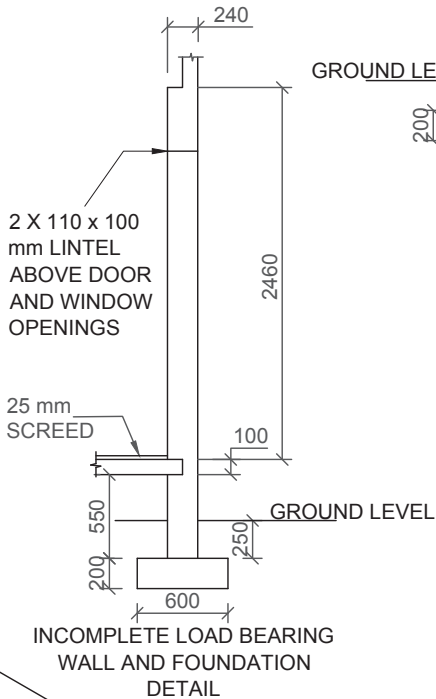
FIXTURES

- WC TOILET
- WB WASH BASIN
- SH SHOWER
- S SINK

ELECTRICAL FITTINGS

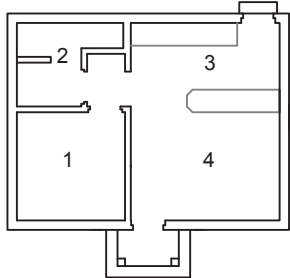
- 1. LIGHT SWITCH - SINGLE-POLE
- 2. LIGHT SWITCH - DOUBLE-POLE
- 3. FLUORESCENT LIGHT 2 x 40 W
- 4. CEILING LIGHT
- 5. WALL MOUNTED LIGHT
- 6. SWITCHED SOCKET OUTLET

NOTE:
THE ARROWS ON THE FLOOR PLAN SHOW THE LIGHT CONNECTION TO THE SWITCH.

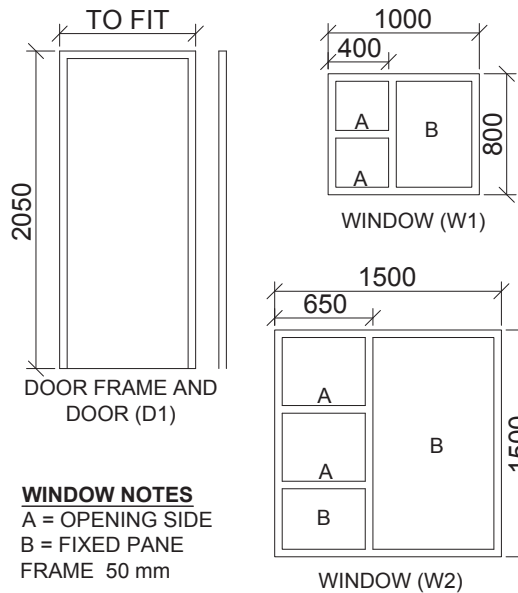


FLOOR FINISHES

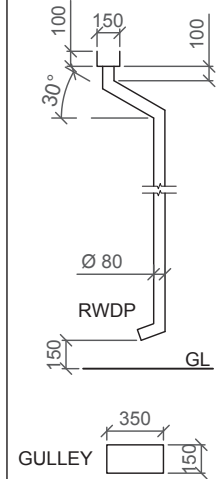
- 1 BEDROOM: CARPET
- 2 BATHROOM: TILE
- 3 KITCHEN: TILE
- 4 LIVING AREA: LAMINATED FLOORING



DOOR AND WINDOW SCHEDULE



RAINWATER ITEMS

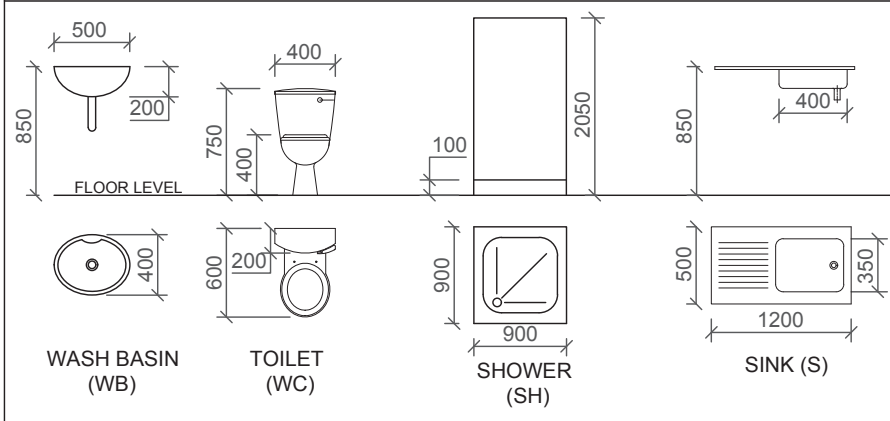


ROOF COMPONENTS

	250 x 20 mm FASCIA BOARD
	ROOF CAP
	75 x 50 mm PURLINS

ELECTRICAL SYMBOLS

SANITARY FIXTURES



QUESTION 4: CIVIL DRAWING

Given:

- The incomplete north elevation of a **house**, showing the walls, the windows, the door opening, the roof and notes.
- The incomplete floor plan showing the roof line, walls, position of the doors, windows, fixtures and electrical layout.
- A schematic diagram of a roof truss and roof notes
- The incomplete foundation and wall detail
- Room designations and floor finish
- A door and window schedule
- A table of sanitary fixtures
- A table of roof components
- A table of electrical symbols
- A table of rainwater items
- The floor plan of the **house**, drawn to scale 1 : 50 and the incomplete foundation of 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, draw, in first-angle orthographic projection and to scale 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 abbreviations
- ALL electrical fittings as indicated by numbers
- ALL hatching detail

4.1.2 THE NORTH ELEVATION

Show the following features on the drawing:

- The outside walls, steps, window and door detail
- The roof detail, including the fascia board, gutter, rain-water down pipes, gulley, barge board and roof ridge
- The finished floor level

4.2 In the space provide on page 6, draw, to **scale 1 : 20**, a **DETAILED SECTION** on cutting plane A-A of the area in the ellipse shown on the floor plan.

Show the following features on the drawing:

- The complete foundation, external wall with window detail and shower wall.
- The roof detail, including the fascia board and gutter.
- ALL hatching detail. ONLY the substructure hatching may be drawn in neat freehand.
- The completed break line.
- Start at the given starting point.

Label the following:

- The north elevation and scale.
- The room designations and floor finishes.
- Using the correct abbreviations, label the following features in the correct view: ground level; finished floor level and damp proof course.

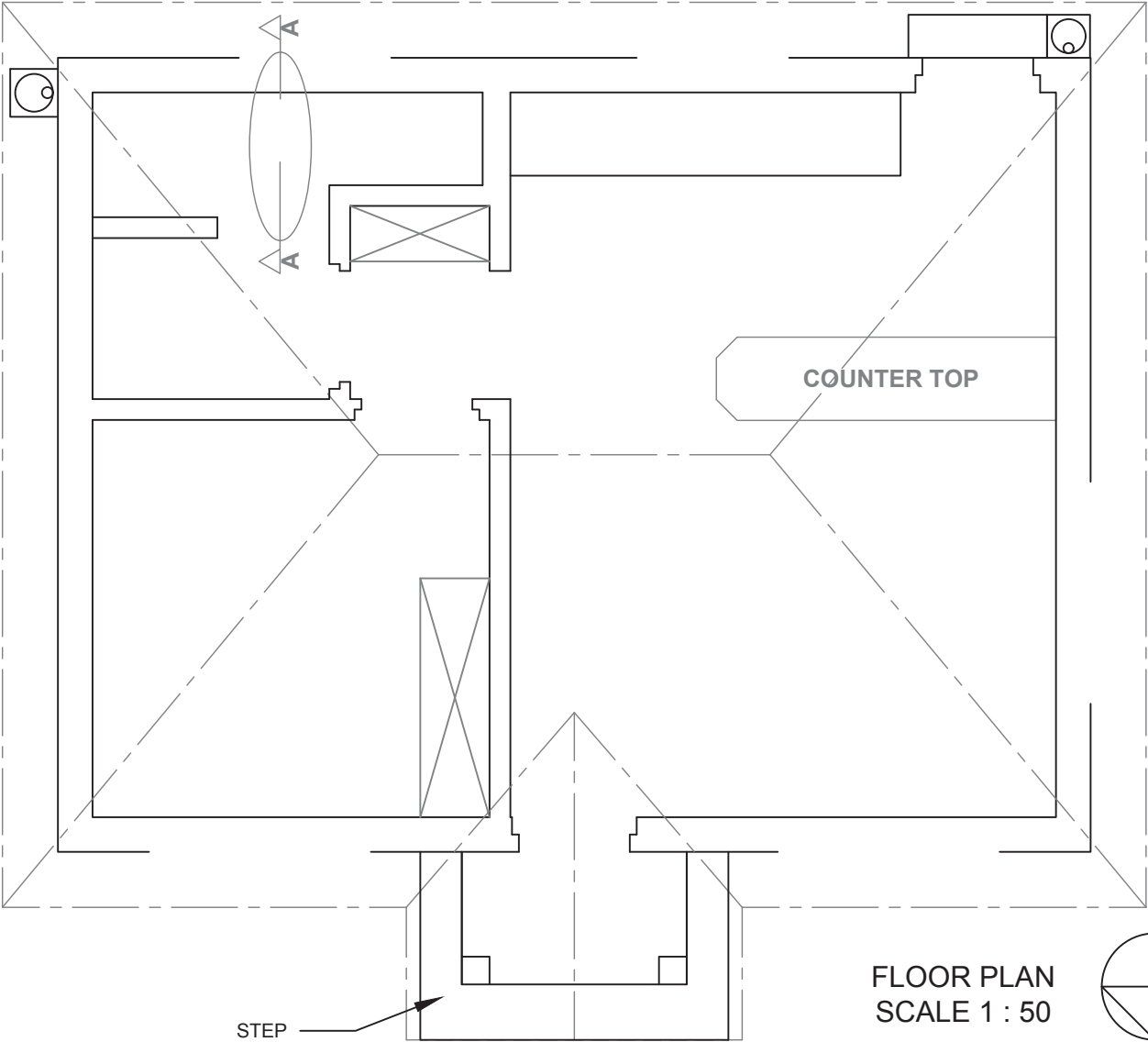
NOTE:

ALL drawings must comply with the **guidelines** and **graphical symbols** contained in the **SANS 10143**. [98]



PENALTIES		
1	INCORRECT OVERALL SCALE	
2	INCORRECT POSITIONING OF VIEWS	
3	NON-ALIGNMENT OF VIEWS	
TOTAL PENALTIES (-)		

ASSESSMENT CRITERIA					
FLOOR PLAN					
1	DOORS + WINDOWS	11 ½			
2	ELECTRICAL	10			
3	FIXTURES	6			
4	HATCHING	3			
5	LABELS	4			
SUBTOTAL		34 ½			
NORTH ELEVATION					
1	ROOF, GUTTER, FACIA, BADGE BOARD	11			
2	WALLS + STEPS + GULLEY	7			
3	DOORS + WINDOWS	11 ½			
4	LABELS	2			
SUBTOTAL		31 ½			
DETAILED SECTION					
1	ROOF DETAIL	10			
2	FOUNDATIONS + WALLS + SLAB	9			
3	SILL + WINDOW + SHOWER + LINTELS	4			
4	HATCHING	7			
5	LABELS	2			
SUBTOTAL		32			
TOTAL		98			
PENALTIES (-)					
FINAL TOTAL					

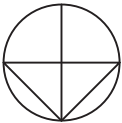


INCOMPLETE BREAK LINE
FOR DETAILED SECTION

STARTING POINT FOR
DETAILED SECTION

DETAILED SECTION ON A-A
SCALE 1 : 20

FLOOR PLAN
SCALE 1 : 50



NAME

NAME