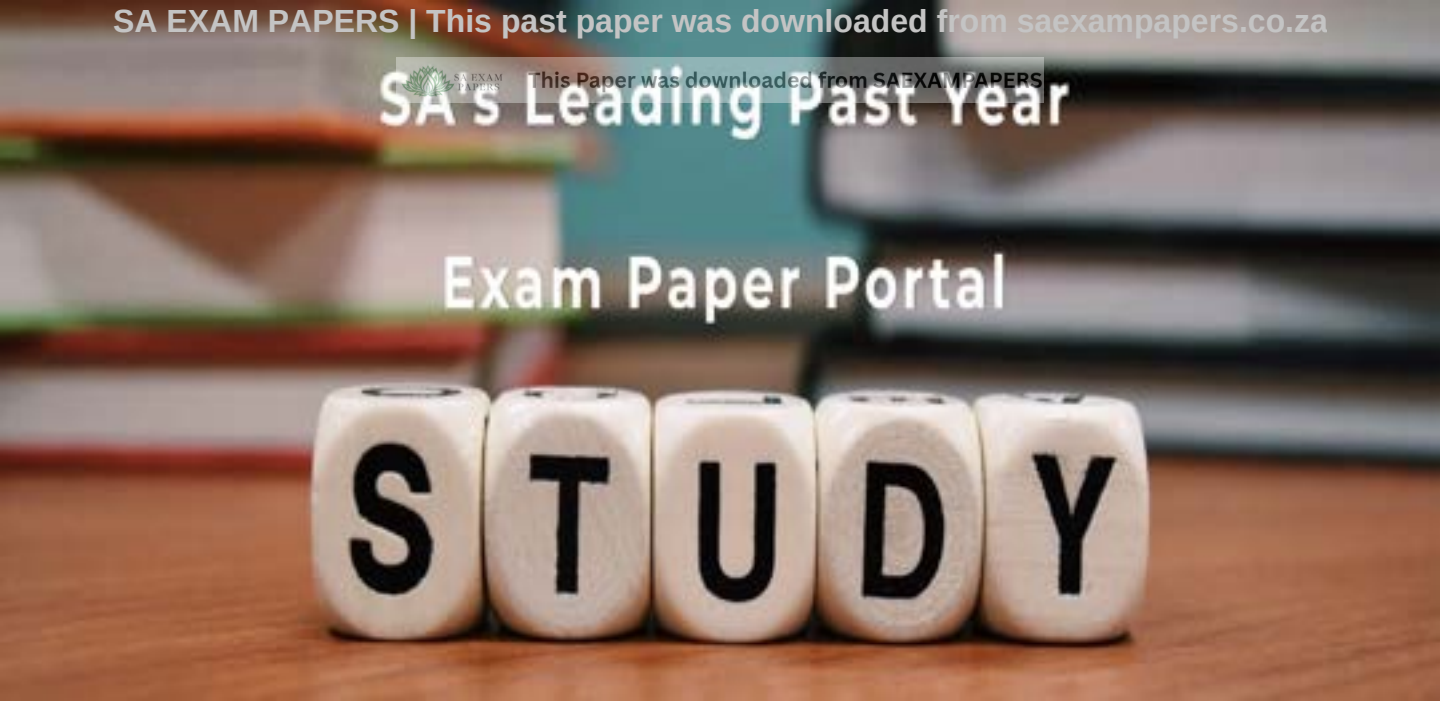


Province of the
EASTERN CAPE
DEPARTMENT OF EDUCATION

NATIONAL SENIOR CERTIFICATE

GRADE 12

GRDSE1

ENGINEERING GRAPHICS AND DESIGN P1

SEPTEMBER 2025

PREPARATORY EXAMINATION

MARKS: 200

TIME: 3 hours

This question paper consists of 6 pages.

INSTRUCTIONS AND INFORMATION

1. This 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. ALL drawings are in first angle orthographic projection, unless stated otherwise.
5. ALL drawings must be prepared using pencil and instruments, unless otherwise stated.
6. ALL answers must be drawn accurately and neatly.
7. The questions must be answered on the question paper, as instructed.
8. ALL the answer sheets must be re-stapled in numerical sequence and handed in irrespective of whether the question was attempted or not.
9. Time management is essential in order to complete all the questions.
10. Print your name in the block provided on every ANSWER SHEET.
11. Any details or dimensions not given, must be assumed in good proportion.

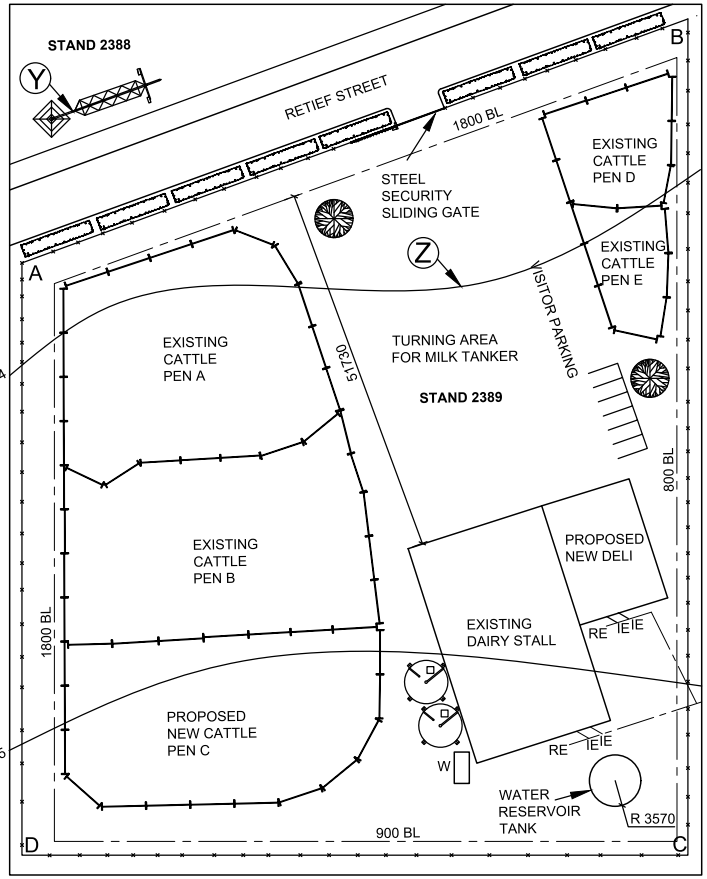
FOR OFFICIAL USE ONLY							
					MODERATED MARK		
1							
2							
3							
4							
TOTAL							
	2	0	0		2	0	0

FINAL CONVERTED MARK	CHECKED BY
100	

COMPLETE THE FOLLOWING:
NAME
NAME
EXAMINATION CENTRE
EXAMINATION CENTRE

SYMBOL LEGEND		
1		2 000 mm LENGTH PER CATTLE PANEL
2		1 800 mm HIGH SECURITY FENCING
3		PIVOT- SINGLE TOWER
4		INDIGENOUS TREE
5		HEDGE SHRUB
6		SINGLE SILO WITH 32 TON FEEDING CAPACITY

LAND SURVEYOR'S CERTIFICATE OF THE BORDER LINE LENGTHS AND CORNER HEIGHTS OF STAND 2389 SURVEYED ON 2025-04-15	
BORDERLINE LENGTHS IN MILLIMETRES	CORNER HEIGHTS IN METRES
AB = 99 120	A = 613,5
BC = 116 760	B = 613
CD = 92 960	C = 615
DA = 82 810	D = 615,5



SITE PLAN
SCALE 1 : 700

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 17
In the space below, draw in neat freehand, the front view and top view of the SANS 10143 graphical symbol for a **WATER CLOSET**.

REVISION	DATE	DESCRIPTION
3		
2	2025-05-12	Add a steel security sliding gate
1	2025-04-22	Indicate the height of the security fence

MARITZ AND POTGIETER ARCHITECTS
211 COMBRETUM ROAD
HUMEWOOD, GQEBERHA
082 119 2678
mp.architects@gmail.com

PRINTED BY:	DATE OF PRINT:
VIVID DESIGNS	2025-06-18

DRAWING TITLE: **SITE PLAN**

PROJECT:
NEW DELI PROPOSAL
ON STAND 2389 FOR
MRS. D. VAN JAARSVELD
Cnr. RETIEF STREET, PATENSIE

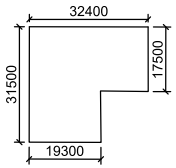
PROJECT NUMBER:	DRAWING NUMBER:		
10-2025	KD-18/04-25		
DATE:	DRAWN:	CHECKED:	SCALE:
2025-03-15	GEOFFREY	CLARK	1 : 700
REFERENCE CODE:	DRAWING NO.:		
SITE- 2389-25	1 of 4		

QUESTION 1: ANALYTICAL (CIVIL)

Given:
The site plan of an existing dairy stall with alterations of a new proposed deli on stand 2389, a title block 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 block. **[28]**

	QUESTIONS	ANSWERS		
1	What is the name of the architect firm?		1	
2	On what date was the site plan printed?		1	
3	What was the reason for the second revision of the site plan?		1	
4	How many existing cattle pens are there on stand 2389?		1	
5	In what colour should the existing dairy stall be presented on the siteplan?		1	
6	How many cattle panels are used for cattle pen D and E?		1	
7	Name the feature at **Y**.		1	
8	Name the feature at **Z**.		1	
9	What is the purpose of the open space, in front of the dairy stall, on the site plan?		1	
10	What does the abbreviation **RE** stand for?		1	
11	What is the total feed storage capacity of the silos on stand 2389?		1	
12	Determine the diameter of the water reservoir, in meters.		2	
13	In relation to the north point, which elevation of the existing dairy stall faces Retief street?		2	
14	Determine the shortest distance from the dairy stall to the borderline, AB, next to Retief street, in meters.		3	
15	Determine, in the space provided below (ANSWER 15) **the total length of the cattle panels around cattle pen A,** in meters. Show all calculations.		3	
16	Determine, in the space provided below (ANSWER 16), the **total area of the existing dairy stall and proposed new deli, on stand 2389,** in square meters. Show all calculations and formula.		3	
17	In the space at the title panel (ANSWER 17), draw in neat freehand, the top view and front view of the SANS 10143 graphical symbol for a **water closet**.		4	
	ANSWER 15 Show ALL calculations.	**ANSWER 16** Show ALL calculations.	**TOTAL**	**28**



NAME

NAME 2

QUESTION 2: INTERPENETRATION AND DEVELOPMENT

Given:

- The complete top view and incomplete front view of a pentagonal pipe S with a square branch pipe T. The axes of both pipes lie in a common vertical plane.

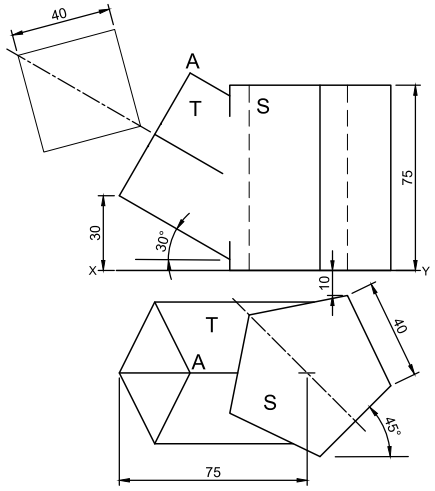
Instructions:

Draw to scale 1 : 1, the following views of the two pipes:

2.1 The given top view.
2.2 The complete front view clearly showing the curve of the interpenetration.
2.3 The left view, which ONLY shows the main pipe S, which clearly shows the line of interpenetration between the two pipes.
2.4 Develop the surface of branch pipe T.

- ALL hidden detail is required.
- Show ALL necessary constructions.

[35]



ASSESSMENT CRITERIA			
1	TOP VIEW	9	
2	FRONT VIEW	11½	
3	LEFT VIEW	7½	
4	DEVELOPMENT	7	
PENALTIES (-)			
	TOTAL	**35**	

NAME
NAME 3

QUESTION 3: PERSPECTIVE

Given:

- Three views of a house with a hip and valley roof design and the information needed to draw a two-point perspective drawing.

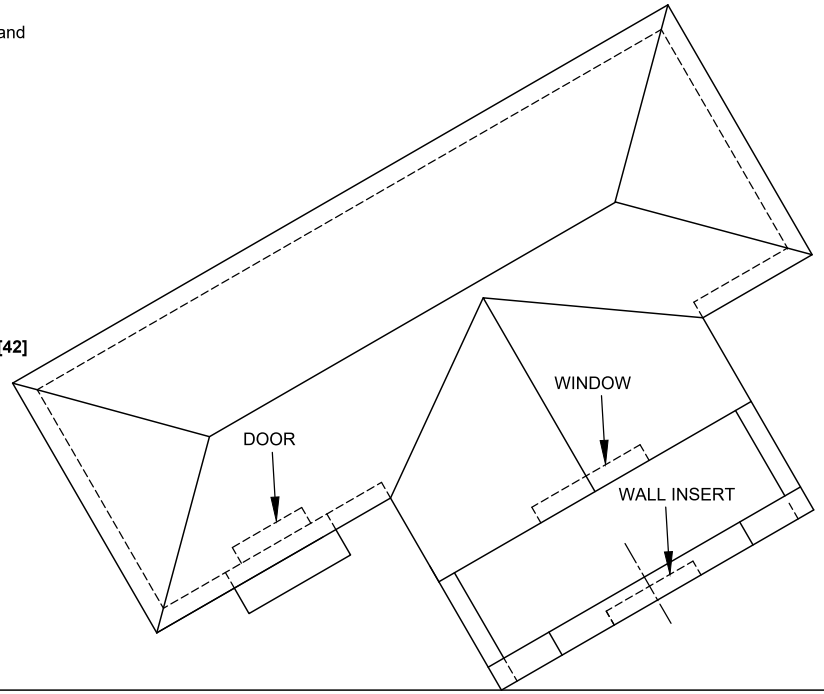
PP − Picture plane
HL − Horizon line
GL − Ground line
SP − Station point

Instructions:

Complete the perspective drawing.

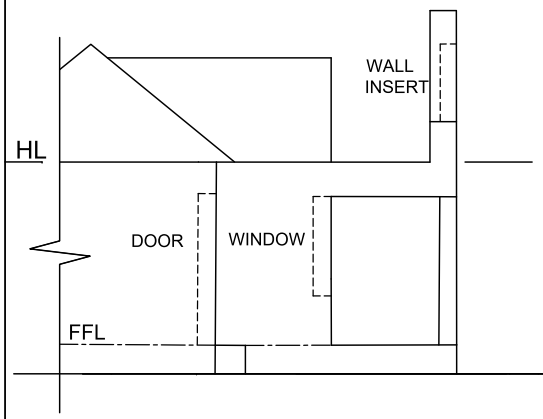
- Align the drawing sheet with the ground line (GL).
- Determine and label the vanishing points.
- Show ALL necessary construction.
- NO hidden detail is required.

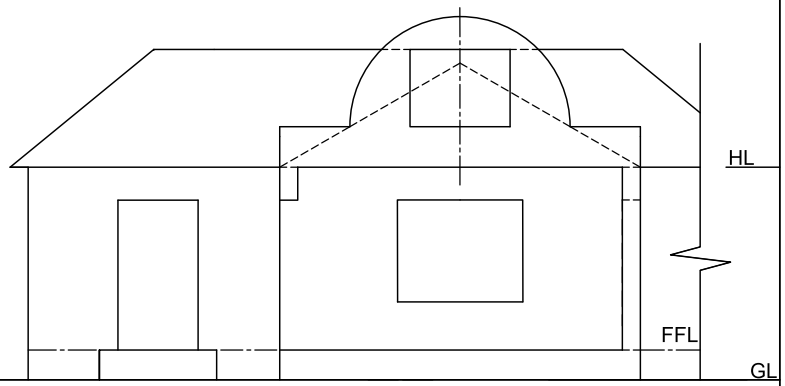
[42]



ASSESSMENT CRITERIA					
1	CONSTRUCTION + VP's	6			
2	WALLS + PORCH + STEP	18			
3	ROOF	4			
4	WINDOWS + DOOR + WALL INSERT	9½			
5	ARCH + CONSTRUCTION	4½			
	PENALTIES (-)				
	TOTAL	**42**			

PP

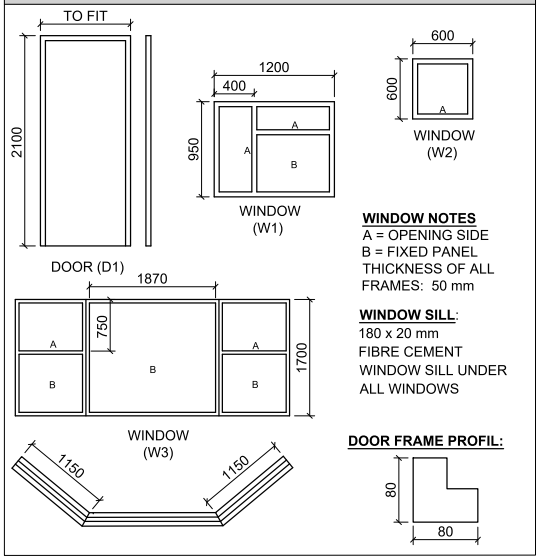




SP

NAME	
NAME	4

DOOR AND WINDOW SCHEDULE



WINDOW NOTES
A = OPENING SIDE
B = FIXED PANEL
THICKNESS OF ALL FRAMES: 50 mm

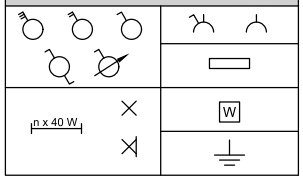
WINDOW SILL:
180 x 20 mm
FIBRE CEMENT
WINDOW SILL UNDER ALL WINDOWS

DOOR FRAME PROFIL:

ROOF COMPONENTS

RIDGE COVER	300
200 x 20 mm FASCIA BOARD	
150 x 100 GUTTER	

ELECTRICAL SYMBOLS



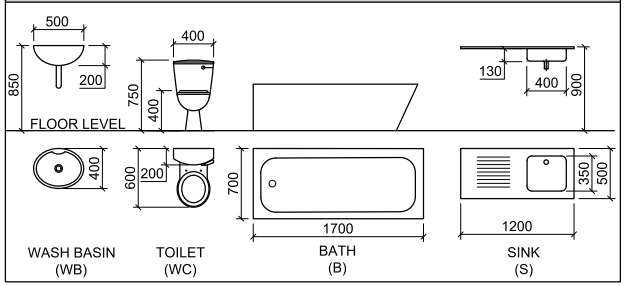
FEATURES
D1 DOORS
W1 + **W2** + **W3** WINDOWS

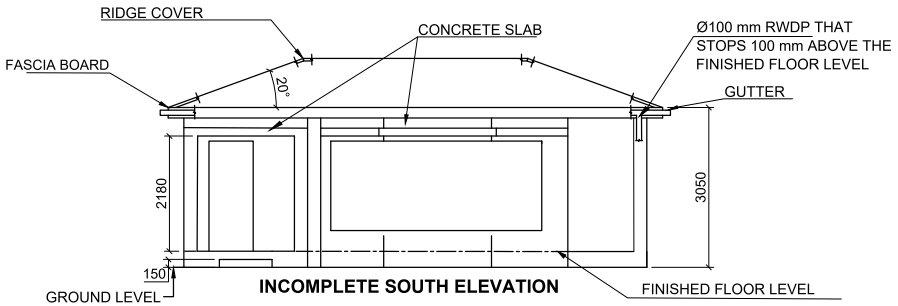
FIXTURES
S SINK
B BATH
WC TOILET
WB WASH BASIN

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

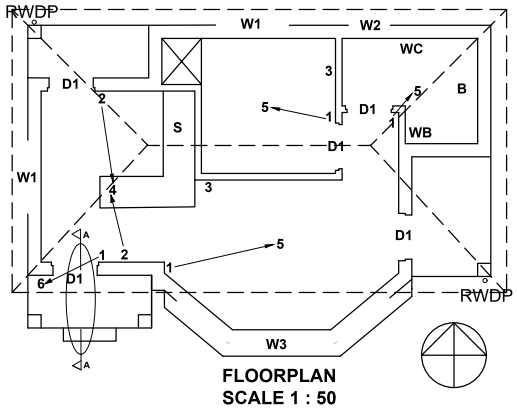
NOTE:
THE ARROWS ON THE FLOOR PLAN SHOW THE LIGHT CONNECTION TO THE SWITCH.

SANITARY FIXTURES





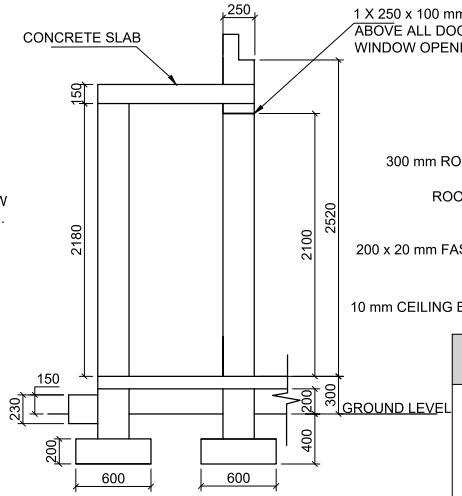
INCOMPLETE SOUTH ELEVATION



FLOORPLAN
SCALE 1 : 50

FLOOR FINISHES

1. KITCHEN:	TILES
2. BEDROOM:	CARPET
3. BATHROOM:	TILES
4. LIVING ROOM:	WOOD



DIMENSION GUIDE:
INCOMPLETE FOUNDATION AND EXTERNAL WALL DETAIL

ROOF NOTES:
20° ROOF PITCH

114 x 38 mm ROOF TRUSSES ON 114 x 38 mm WALL PLATES

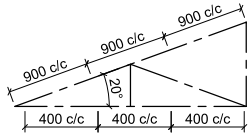
300 mm ROOF OVERHANG TO THE END OF THE ROOF TRUSS

ROOF COVER: 20 mm FIBRE CEMENT ROOF SHEETING ON 75 x 50 mm PURLINS @ 900 mm c/c

200 x 20 mm FASCIA BOARD WITH 150 X 100 mm GUTTERS ON ALL SIDES AND A Ø100 mm RAINWATER DOWN-PIPE

10 mm CEILING BOARD ON 38 x 38 mm BRANDERING @ 400 mm c/c

SCHEMATIC DIAGRAM OF ROOF TRUSS FOR ROOF



QUESTION 4: CIVIL DRAWING

Given:
- The incomplete south elevation of a **new house**, showing the walls, windows and door openings, the steps and patios with pillars, the roof and notes.
- The incomplete floor plan showing the walls, steps, patios with pillars, position of the doors, windows, fixtures and the electrical layout.
- A schematic diagram of a single roof truss and roof notes.
- The incomplete foundation and external wall with dimensions.
- A door and window schedule.
- A table of electrical symbols.
- A table of roof components.
- Floor finishes.
- A table of sanitary fixtures.
- The incomplete floor plan, of a **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 Use the given incomplete floor plan, to draw, in first-angle orthographic projection 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 sanitary fixtures as indicated by the abbreviations
- ALL electrical fittings as indicated by the numbers
- ALL hatching detail

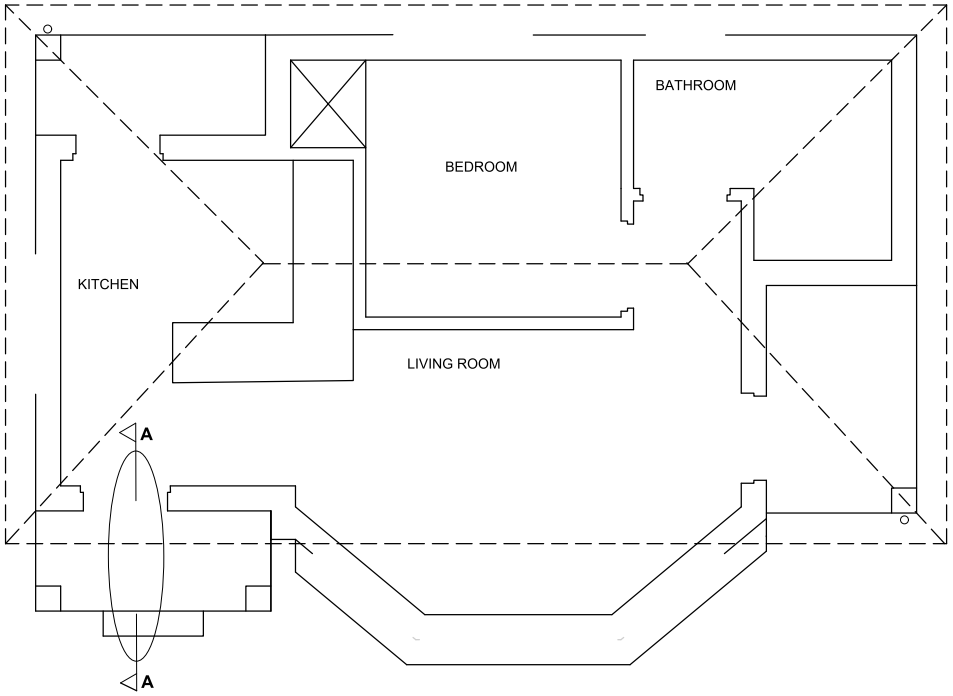
4.1.2 **THE COMPLETE SOUTH ELEVATION**
Show the following features on the drawing:
- The outside walls, door, step, patios with pillars and the detailed windows.
- The roof detail, including the fascia boards, ridge covers and gutters.
- The finished floor level.

4.2 Using the given foundation and break line 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 incomplete floor plan.
Show the following features on the drawing:
- The complete foundation-, concrete slab-, external wall-, lintel and door frame detail.
- The step, with the pillar, to the west of the cutting plane **A-A**
- The roof detail, including the fascia board and gutter.
- ALL hatching detail. ONLY the substructure hatching may be drawn in neat freehand.

Label the following:
- The south elevation.
- The floor finishes.
- Ground level and finished floor level (use the correct abbreviations and show it on ALL the relevant views)

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

NGL



FLOOR PLAN
SCALE 1 : 50

DETAILED SECTION A-A
SCALE 1 : 20

ROOF DETAIL: MARK ALLOCATION			
A	ROOF ANGLE	½	
B	ROOF SHEET	1	
C	ROOF TRUSS OVERHANG	2½	
D	PURLIN + SPACING	1½	
E	BRANDERING + SPACING	1½	
F	CEILING BOARD	½	
G	WALL PLATE	1	
H	FACIA BOARD	1½	
I	GUTTER	1	
TOTAL		**11**	

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

ASSESSMENT CRITERIA			
FLOOR PLAN			
1	DOORS + WINDOWS	15	
2	ELECTRICAL	8	
3	FIXTURES	7	
4	HATCHING	3	
5	LABELS	2	
	SUBTOTAL	**35**	
EAST ELEVATION			
1	ROOF DETAIL	8	
2	WALLS + PATIOS + STEP	10 ½	
3	DOOR + WINDOW	8	
4	LABELS	1	
	SUBTOTAL	**27 ½**	
DETAILED SECTION			
1	ROOF DETAIL	11	
2	FOUNDATIONS + WALLS + FLOOR + PILLAR	7 ½	
3	DOOR + STEPS + CONCRETE SLAB	5	
4	HATCHING	8 ½	
5	LABELS	½	
	SUBTOTAL	**32 ½**	
	TOTAL	**95**	
PENALTIES (-)			
	GRAND TOTAL		

NAME
NAME 6