



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

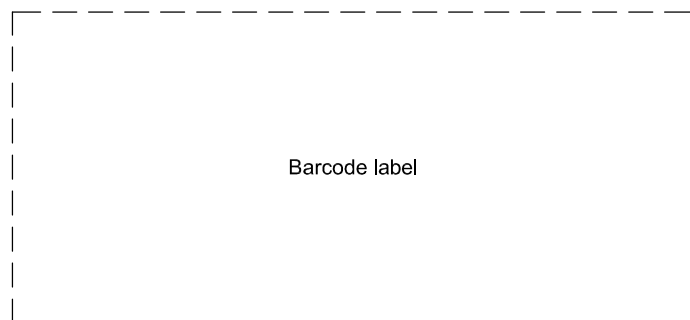
SENIOR CERTIFICATE EXAMINATIONS/ NATIONAL SENIOR CERTIFICATE EXAMINATIONS

ENGINEERING GRAPHICS AND DESIGN P1
MAY/JUNE 2025

MARKS: 100

TIME: 3 hours

This question paper consists of 6 pages.



Barcode label

DO NOT FOLD THE QUESTION PAPER IN HALF.

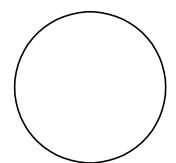
INSTRUCTIONS AND INFORMATION

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.

FOR OFFICIAL USE ONLY															
QUESTION	MARKS OBTAINED			$\frac{1}{2}$	SIGN	MODERATED			$\frac{1}{2}$	SIGN	RE-MARKING			$\frac{1}{2}$	SIGN
1															
2															
3															
4															
TOTAL															
	2	0	0			2	0	0			2	0	0		

FINAL CONVERTED MARK	CHECKED BY
100	

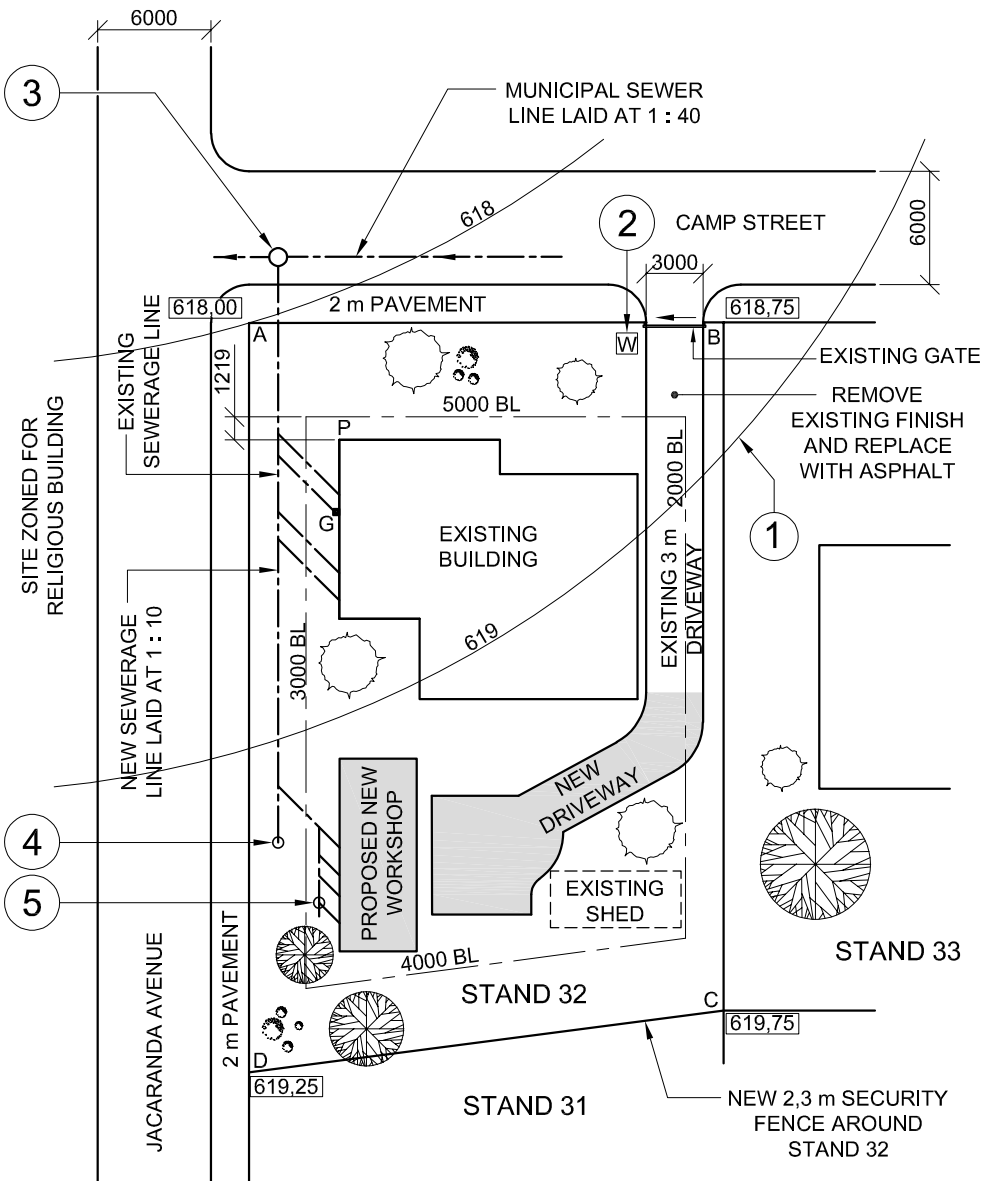
COMPLETE THE FOLLOWING:
CENTRE NUMBER
CENTRE NUMBER
EXAMINATION NUMBER
EXAMINATION NUMBER





LAND SURVEYOR'S CERTIFICATE OF THE BOUNDARY LENGTHS OF STAND 32 IN MILLIMETRES	
AB	22800
BC	36400
CD	23000
DA	39400

SYMBOL LEGEND	
DECIDUOUS TREE	
EVERGREEN TREE	
SHRUB	



SITE PLAN SCALE 1 : 400



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 20
In the space below, draw, in neat freehand, the SANS 10143 graphical symbol for:
(a) BATH (elevation and plan)
(b) DISTRIBUTION BOARD

(a) BATH (elevation and plan)

(b) DISTRIBUTION BOARD

REVISION	DATE	DESCRIPTION
2	07/02/2024	REPOSITION ELECTRICAL METER
1	05/02/2024	EXTENSION OF DRIVEWAY

PRINTED BY: CHERRY PRINTERS DATE: 08/02/2024

CJE ARCHITECTS
99 WILLOW TREE ROAD
ZEERUST 1091 CJE-ARC@gmail.com

PROJECT ARCHITECT:
SIPHO DLAMINI

PROJECT TITLE:
PROPOSED NEW WORKSHOP FOR ANTEBELLA AND ASSOCIATES, ON STAND 32, CAMP STREET, ZEERUST

DRAWING TITLE:
SITE PLAN

PROJECT NUMBER: 82848-24	DRAWING NUMBER: W S - 4 A - 0 5		
REFERENCE CODE: 12186127	SCALE: 1 : 400		
DRAWN: JACK	DATE: 04/02/2024	CHECKED: DIANNE	DATE: 07/02/2024

QUESTION 1: ANALYTICAL (CIVIL)

Given:

The site plan of an existing building with a proposed new workshop and driveway, a title panel and a table of questions. The drawing is not presented to the indicated scale.

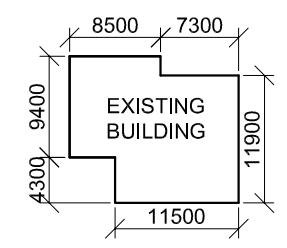
Instructions:

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 is the name of the architectural firm?	1	
2	What scale is indicated for the site plan?	1	
3	What was the first revision?	1	
4	In which street is the entrance to STAND 32?	1	
5	What is the height of the highest corner of STAND 32 in metres?	1	
6	What new finish must be used on all the driveways?	1	
7	How many evergreen trees are on STAND 32?	1	
8	What new security feature must be added to STAND 32?	1	
9	What is the width of the pavements in millimetres?	1	
10	What does the ratio 1 : 40 on the municipal sewerage line indicate?	1	
11	What does the contour line at 1 indicate?	1	
12	What does the feature at 2 indicate?	1	
13	What line type indicates that a feature must be removed?	1	
14	What is the shortest distance from corner P on the existing building to Camp Street in metres?	1	
15	In what colour must new wood be indicated on elevations?	1	
16	With reference to the sewerage lines, what abbreviations are associated with the features at:	3: 4: 5:	3
17	What will be built across the road north-east of STAND 32?	1	
18	In the space below (ANSWER 18), determine the perimeter of STAND 32 in metres.	3	
19	In the space below (ANSWER 19), determine the combined total area of the existing building and the proposed new workshop in square metres, if the total area of the new workshop is 41,59 m ² .	4	
20	In the space in the title panel (ANSWER 20), draw, in neat freehand, the SANS 10143 graphical symbol for: (a) BATH (elevation and plan) and (b) DISTRIBUTION BOARD...	4	
TOTAL		30	

ANSWER 18
Show ALL calculations.
(Do NOT round off the answer.)

ANSWER 19
Show ALL calculations.
(Do NOT round off the answer.)



EXAMINATION NUMBER	
EXAMINATION NUMBER	2





QUESTION 2: SOLID GEOMETRY

Given:

- The front view and top view of a right regular hexagonal pyramid and a right regular pentagonal prism that is centrally pierced by a right square prismatic hole
- An auxiliary view of the pentagonal prism
- Cutting plane A-A that cuts both solids

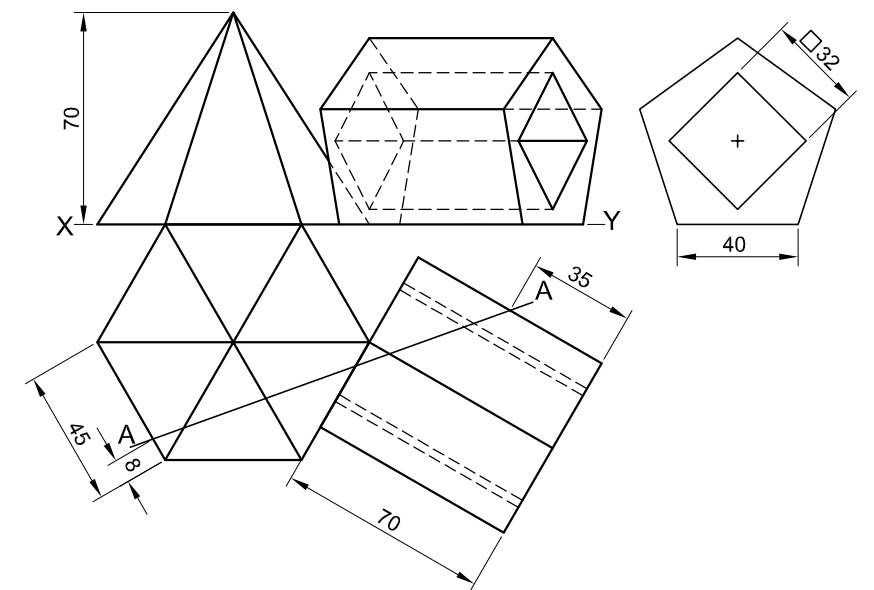
Instructions:

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

- 2.1 The given top view
- 2.2 A sectional front view
- 2.3 The true shape of the cut surface of the pentagonal prism

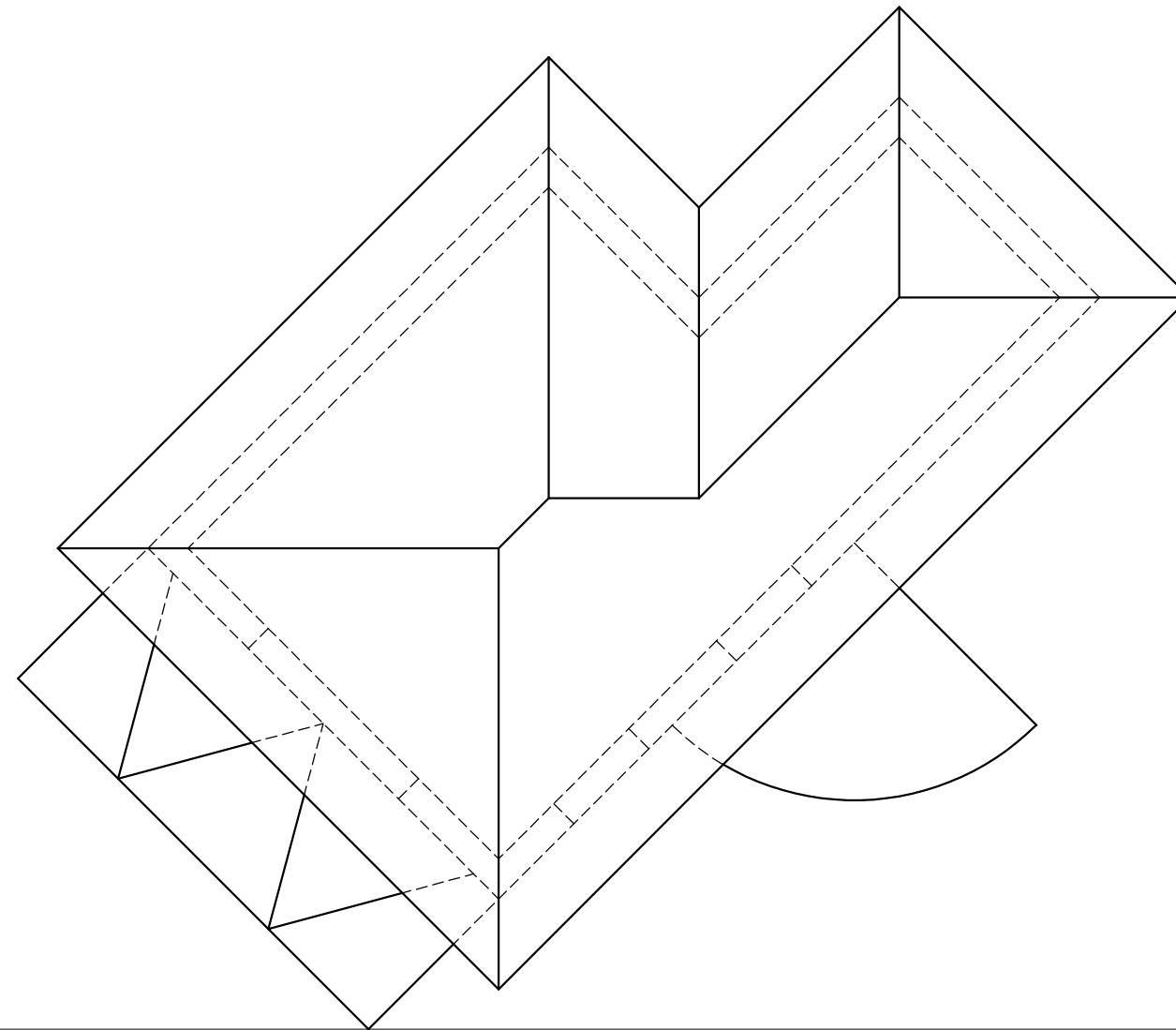
- Planning is essential.
- Show ALL hidden detail.
- Show ALL construction.

[38]



ASSESSMENT CRITERIA			
1	TOP VIEW + CONSTRUCTION	12 1/2	
2	SECTIONAL FRONT VIEW	19	
3	TRUE SHAPE	6 1/2	
PENALTIES (-)			
TOTAL		38	
EXAMINATION NUMBER			
EXAMINATION NUMBER			
EXAMINATION NUMBER			3





QUESTION 3: PERSPECTIVE

Given:

Three views of a tuck shop, with closed eaves and the information needed to draw a two-point perspective drawing

PP – Picture plane

HL – Horizon line

GL – Ground line

SP – Station point

Instructions:

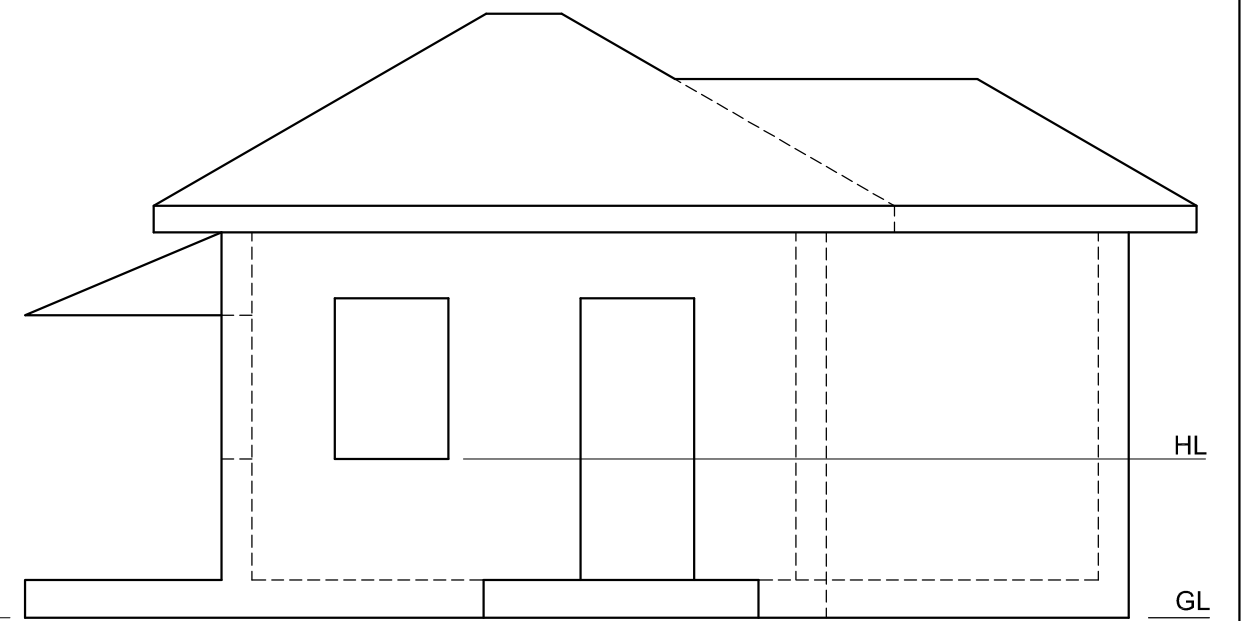
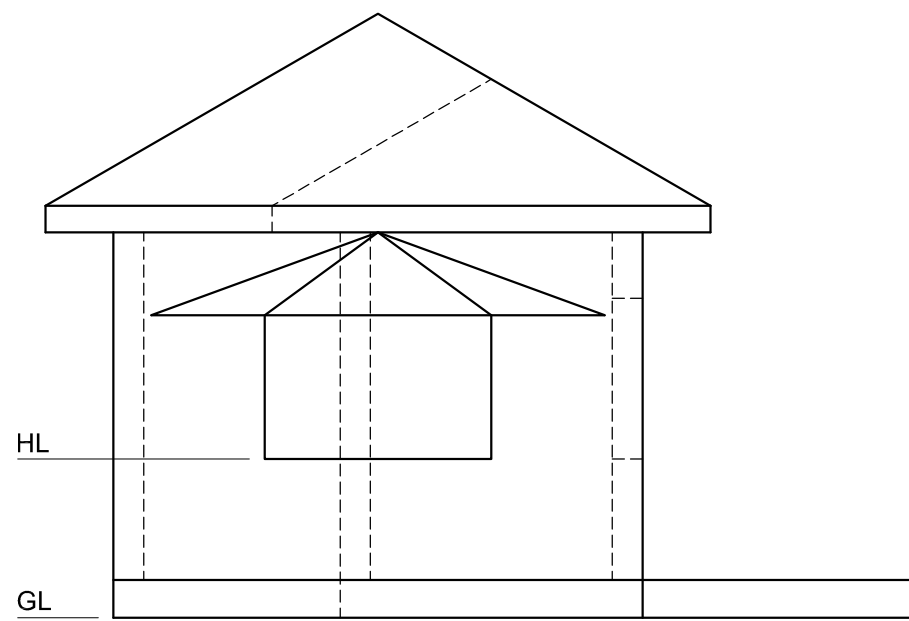
Complete the perspective drawing.

- Align the drawing sheet with the ground line (GL).
- Determine and label the vanishing points.
- Show ALL construction.
- Show depth at the door and windows.
- NO hidden or internal detail is required. **[40]**

ASSESSMENT CRITERIA				
1	CONSTRUCTION	6		
2	WALLS	7 ½		
3	WINDOW + DOOR	10 ½		
4	ROOFS	11 ½		
5	ARC	4 ½		
PENALTIES (-)				
TOTAL		40		

PP

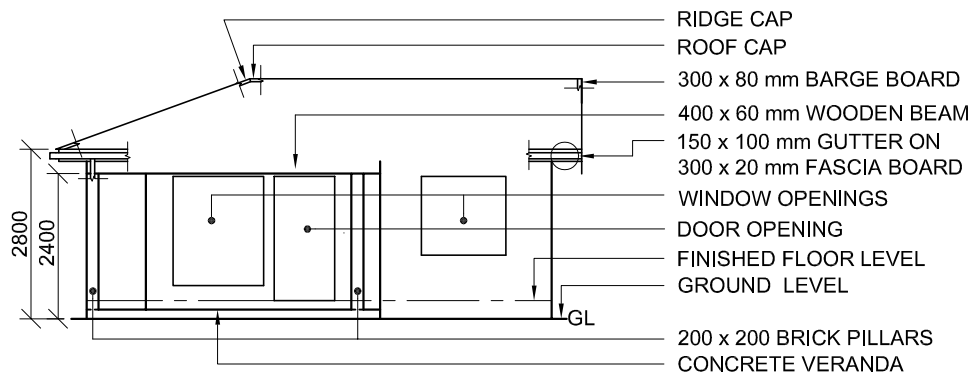
PP



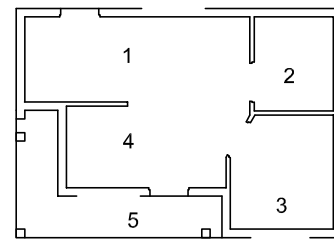
SP

EXAMINATION NUMBER	
EXAMINATION NUMBER	4





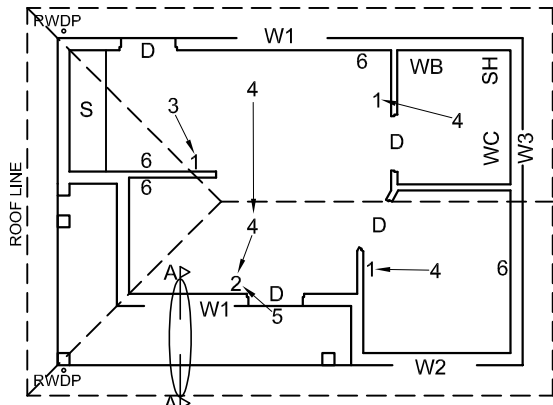
INCOMPLETE SOUTH ELEVATION



ROOM DESIGNATIONS

FLOOR FINISHES

- 1 KITCHEN: TILE
- 2 BATHROOM: TILE
- 3 BEDROOM: WOOD
- 4 LIVING AREA: WOOD
- 5 VERANDA: GRANO



INCOMPLETE FLOOR PLAN

FEATURES

- D DOOR
- W1 WINDOW
- W2 WINDOW
- W3 WINDOW

FIXTURES

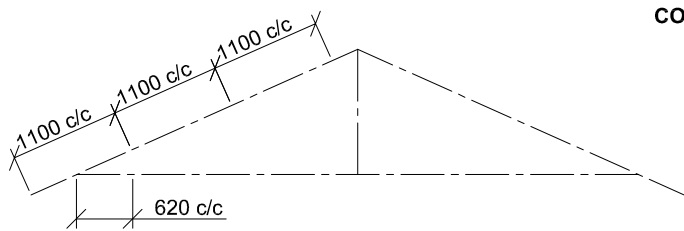
- WC TOILET
- WB WASHBASIN
- S SINK
- SH SHOWER

ELECTRICAL FITTINGS

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

NOTE:

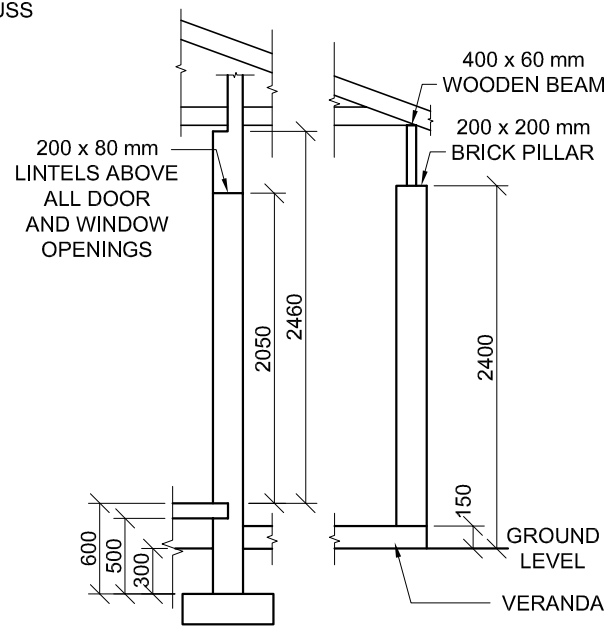
THE ARROW SHOWS THE LIGHT CONNECTION TO THE SWITCH.



SCHEMATIC DIAGRAM OF A COMPLETE ROOF TRUSS

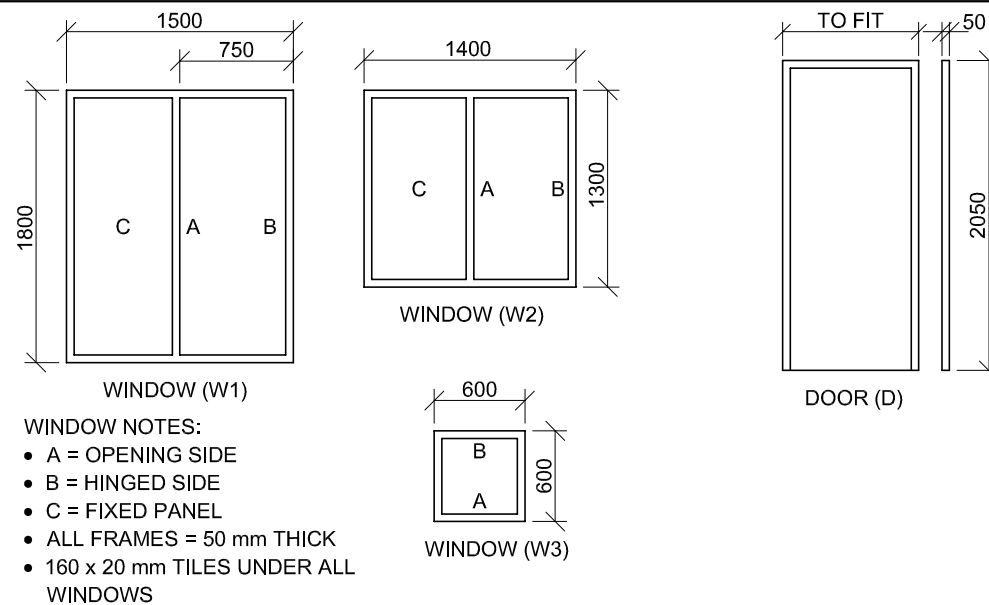
ROOF NOTES:

- 20° ROOF PITCH
- 120 x 40 mm ROOF TRUSSES ON 120 x 40 mm WALL PLATES
- 500 mm ROOF OVERHANG TO END OF ROOF TRUSS
- 20 mm FIBRE CEMENT ROOF SHEETING ON 80 x 50 mm PURLINS @ 1100 mm c/c
- 300 x 20 mm FASCIA BOARDS WITH 150 x 100 mm GUTTERS ON ALL SIDES, AND Ø75 RWDP
- 300 x 80 mm BARGE BOARDS ON GABLED END, FLUSH WITH OUTSIDE EDGE OF GUTTERS
- 10 mm CEILING BOARDS ON 40 x 40 mm BRANDING STRIPS @ 620 c/c



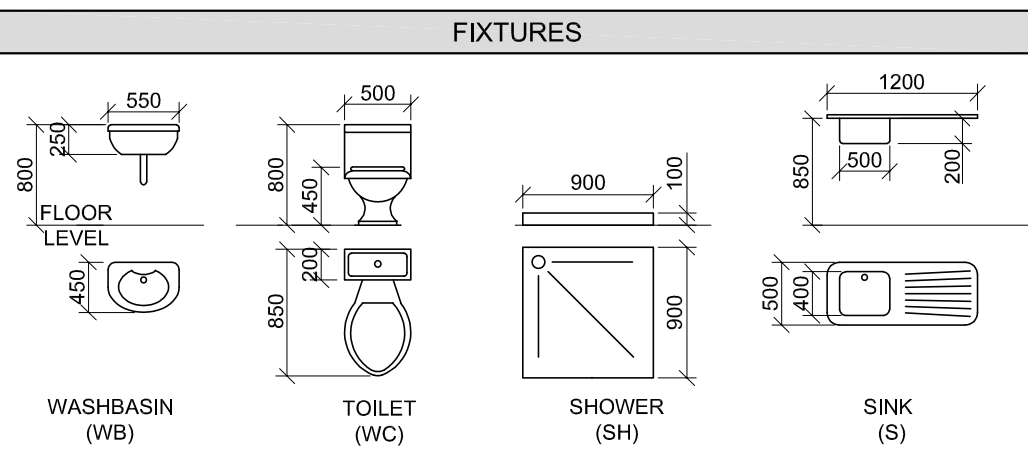
INCOMPLETE FOUNDATION, EXTERNAL WALL, VERANDA AND ROOF DETAIL AT CUTTING PLANE A-A, AND BRICK PILLAR

DOOR AND WINDOW SCHEDULE



ROOF COMPONENTS	
	300 x 20 mm FASCIA BOARD
	150 x 100 mm GUTTER
	80 x 50 mm PURLINS
	300 x 80 mm BARGE BOARD
	ROOF CAP AND RIDGE CAP

ELECTRICAL SYMBOLS	



QUESTION 4: CIVIL DRAWING

Given:

- The incomplete south elevation of a **new house**, showing the walls, veranda, brick pillars, the door and window openings, roof and labels
- The incomplete floor plan showing the walls, veranda, brick pillars, the positions of the doors, windows, electrical layout, fixtures and the roof line
- Schematic diagram of a complete roof truss and roof notes
- The incomplete foundation, external wall, veranda and roof detail at cutting plane A-A, and brick pillar
- Room designations and floor finishes
- A door and window schedule
- A table of roof components
- A table of electrical symbols
- A table of fixtures
- 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 line 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 the 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 SOUTH ELEVATION

Show the following features on the drawing:

- The outside walls, windows, door, brick pillars, wooden beam and veranda detail
- The roof detail including the fascia board, gutter, rainwater downpipe and barge board
- The finished floor level

- 4.2 Using the incomplete foundation and break line, 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:

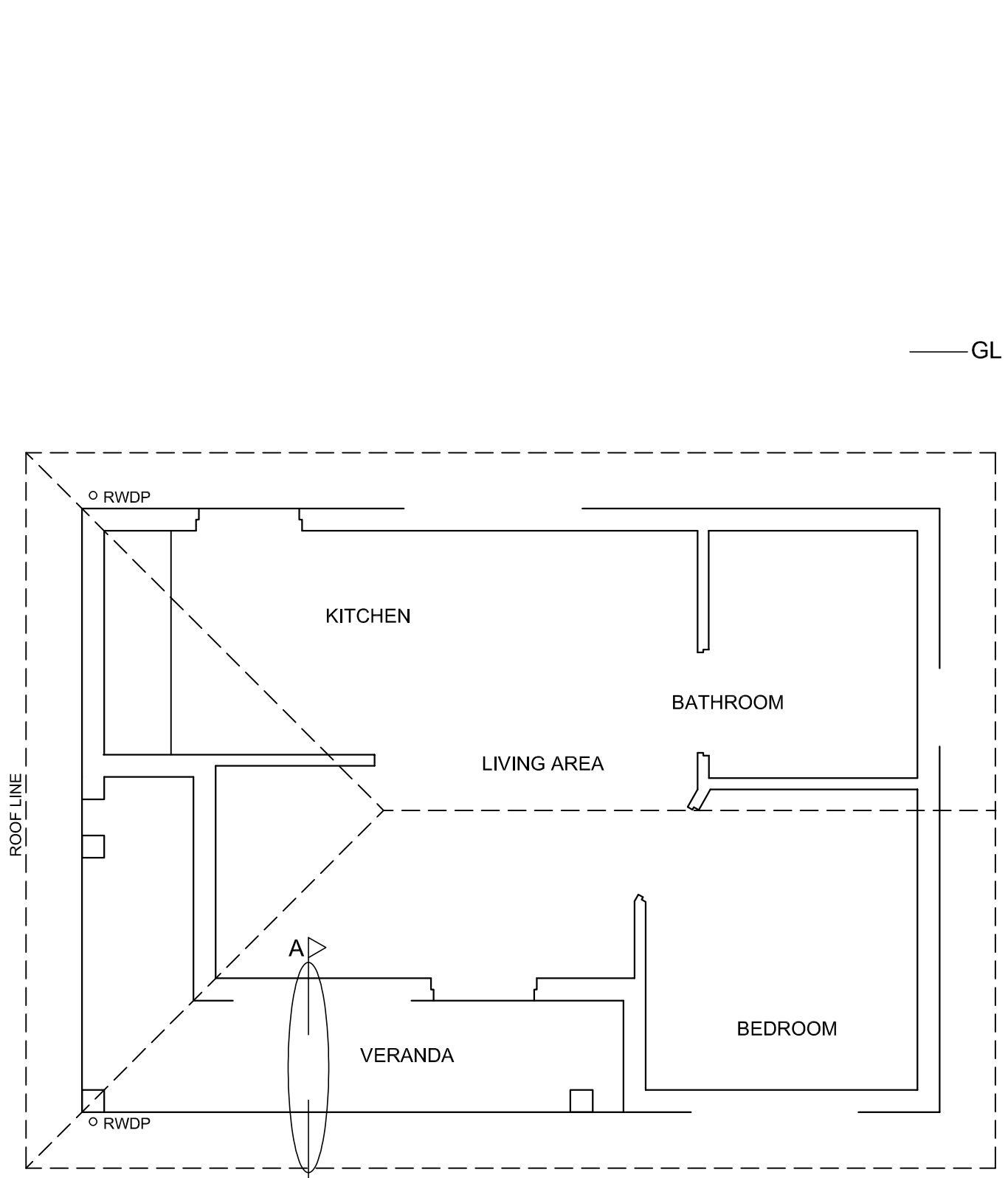
- The complete foundation, external wall, slab, veranda, beam and window detail
- The roof detail, including the fascia board, gutter and barge board
- The brick pillar and wall detail to the right (east) of cutting plane A-A
- ALL hatching detail. ONLY the substructure hatching may be drawn in neat freehand.

Label the following:

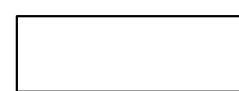
- The south elevation
- The floor finishes
- Ground level, finished floor level and damp-proof course (use the correct abbreviations and show them on ALL relevant views)

NOTE: ALL drawings must comply with the **guidelines** and **graphical symbols** as contained in the **SANS 10143**. [92]





FLOOR PLAN
SCALE 1 : 50



SECTION A-A
SCALE 1 : 20



MARK ALLOCATION FOR SECTION OF ROOF		FOR OFFICIAL USE ONLY	
A		INCORRECT SCALE(S) USED	
B		NON-ALIGNMENT OF VIEWS	
C		VIEW(S) ROTATED	
D		SECTION VIEWED INCORRECTLY	
E		INCORRECT LETTERING	
F			
G			
H			
J			
TOTAL		TOTAL	

ASSESSMENT CRITERIA					
FLOOR PLAN					
		POSSIBLE	OBTAINED	SIGN	MODERATED
1	DOORS + WINDOWS	12			
2	FIXTURES	7 1/2			
3	ELECTRICAL	10 1/2			
4	HATCHING	3			
5	LABELS	2 1/2			
SUBTOTAL		35 1/2			
SOUTH ELEVATION					
1	ROOF + RWDP + BEAM	7			
2	WALLS + FFL + VERANDA	5			
3	DOOR + WINDOW	10			
4	LABELS	1			
SUBTOTAL		23			
DETAILED SECTION					
1	ROOF DETAIL	12			
2	SLAB + WALL + VERANDA	10			
3	HATCHING	6 1/2			
4	WINDOW	3 1/2			
5	LABELS	1 1/2			
SUBTOTAL		33 1/2			
TOTAL		92			
PENALTIES (-)					
GRAND TOTAL					
EXAMINATION NUMBER					
EXAMINATION NUMBER					