



basic education

Department:  
Basic Education  
REPUBLIC OF SOUTH AFRICA

NATIONAL  
SENIOR CERTIFICATE

GRADE 12

ENGINEERING GRAPHICS AND DESIGN P1

NOVEMBER 2024

MARKS: 100

TIME: 3 hours

This question paper consists of 6 pages.

Barcode label

DO NOT FOLD THE QUESTION PAPER IN HALF.

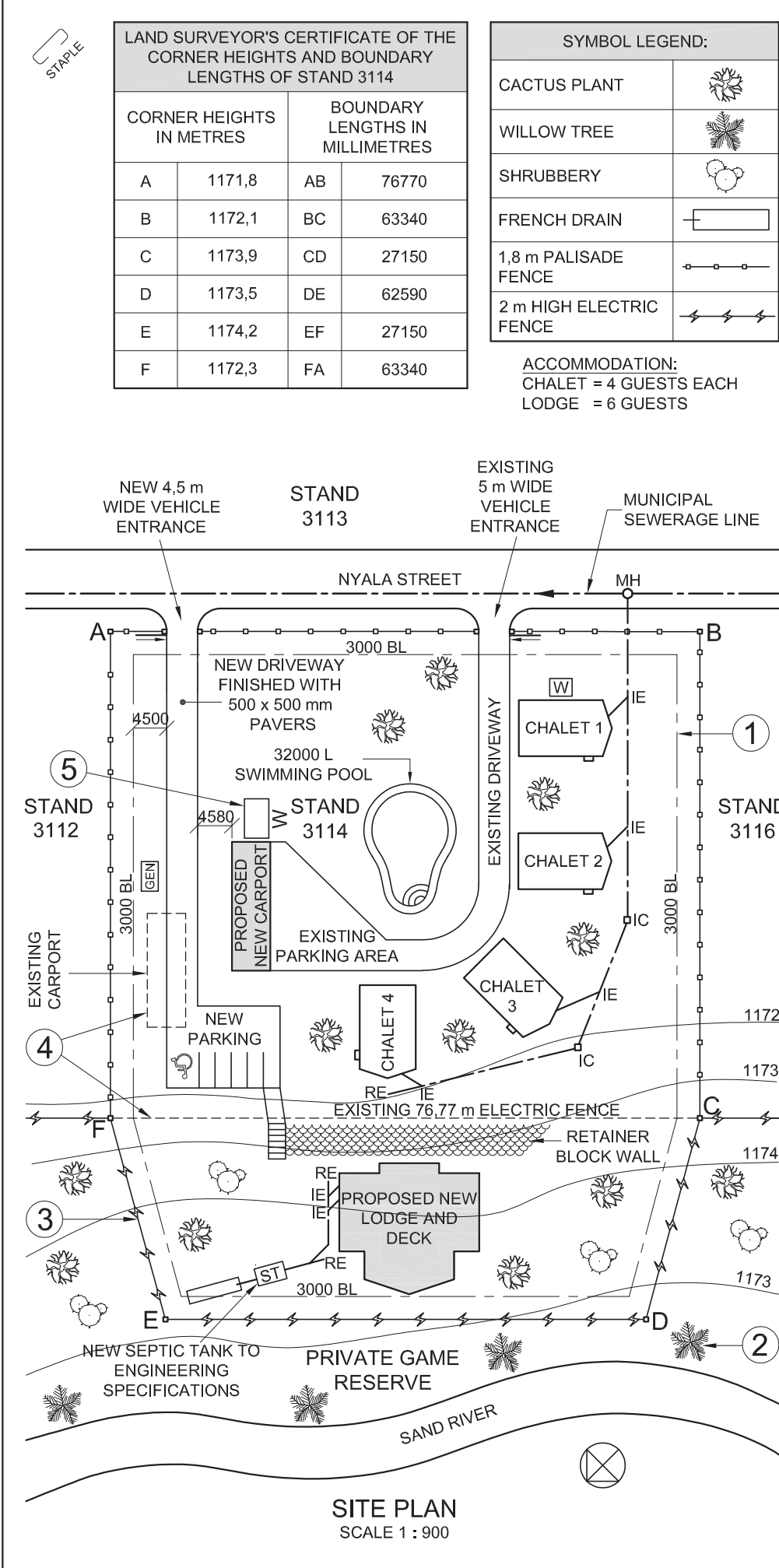
INSTRUCTIONS AND INFORMATION

- 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



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) The front view of a BIDET  
(b) An electrical REGULATING SWITCH/DIMMER

(a) BIDET

(b) Electrical REGULATING SWITCH/DIMMER

2	22/11/2023	ADD WATER TANK
1	17/11/2023	MOVE FRENCH DRAIN
REVISION	DATE	DESCRIPTION

HSJ ARCHITECTS  
27 ORIBI DRIVE  
KRUGER HILL  
POLOKWANE  
4059

www.safari-plus.co.za  
019 405 9777

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CHEETAH PRINTERS	26/10/2023

DRAWING TITLE:

SITE PLAN

PROJECT:

PROPOSED NEW LODGE, DECK AND CARPORT FOR MR D BRITS, ON STAND 3114, 7 NYALA STREET, TUGELA RIVER, LIMPOPO

PROJECT NUMBER: 40-1302		DRAWING NUMBER: 0214-59
DATE: 29/09/2023	DRAWN: STEVEN	CHECKED: PALESA
REFERENCE CODE: FJM-2614/L		SCALE: 1 : 900

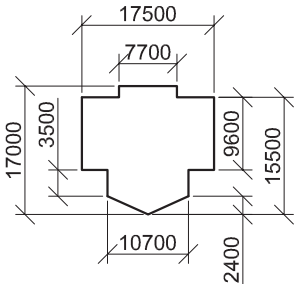
QUESTION 1: ANALYTICAL (CIVIL)

**Given:**  
The site plan of an existing resort with a proposed new lodge and deck, as well as a new carport, 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 does the number 0214-59 refer to?	1		
2	Who is the client?	1		
3	Who printed the drawing?	1		
4	In which town is the architectural firm situated?	1		
5	What was the second revision?	1		
6	How high is corner D above sea level in metres?	1		
7	Name the feature at 1.	1		
8	Name the natural feature at 2.	1		
9	What is the height of the feature at 3 in millimetres?	1		
10	What must happen to the features at 4?	1		
11	Name the symbol at 5.	1		
12	What is the finish on the new driveway?	1		
13	What does the abbreviation <i>B/C</i> on floor plans stand for?	1		
14	In what colour must new drain pipes be indicated on drainage installation drawings?	1		
15	What is the shortest distance from the proposed new carport to the boundary line with STAND 3112 in metres?	2		
16	With reference to the north point, in what direction does the sewerage flow in the municipal sewerage line?	2		
17	What is the proposed total number of guests that would be accommodated at the resort?	2		
18	In the space below (ANSWER 18), determine the total perimeter of the area ABCF in metres.	3		
19	In the space below (ANSWER 19), determine the total area of the new lodge and deck in square metres.	3		
20	In the space in the title panel (ANSWER 20), draw, in neat freehand, the <i>SANS 10143</i> graphical symbol for: (a) the front view of a BIDET, and (b) an electrical REGULATING SWITCH/DIMMER.	4		
TOTAL		30		

ANSWER 18  
Show ALL calculations.



ANSWER 19  
Show ALL calculations.

EXAMINATION NUMBER

EXAMINATION NUMBER

2



QUESTION 2: SOLID GEOMETRY

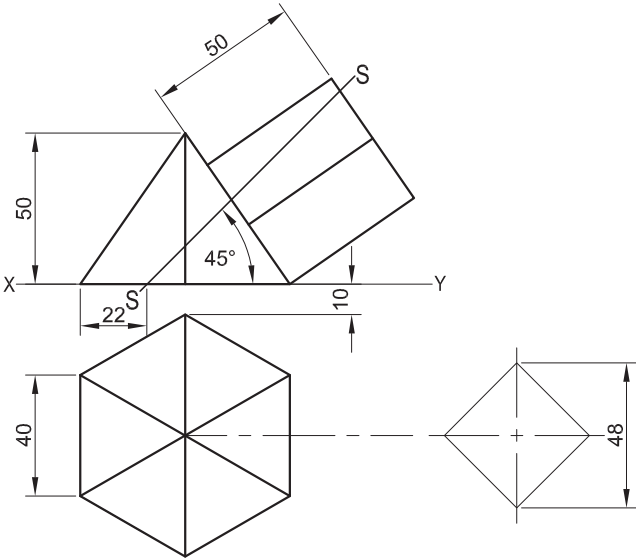
- Given:**
- The front view of a right regular hexagonal pyramid and a right square prism
  - The top view of the right regular hexagonal pyramid, with the axes and an auxiliary view for the right square prism
  - Cutting plane S-S

- Specifications:**
- The lower base of the right square prism rests against the right side triangular face of the hexagonal pyramid
  - Both solids are cut by cutting plane S-S

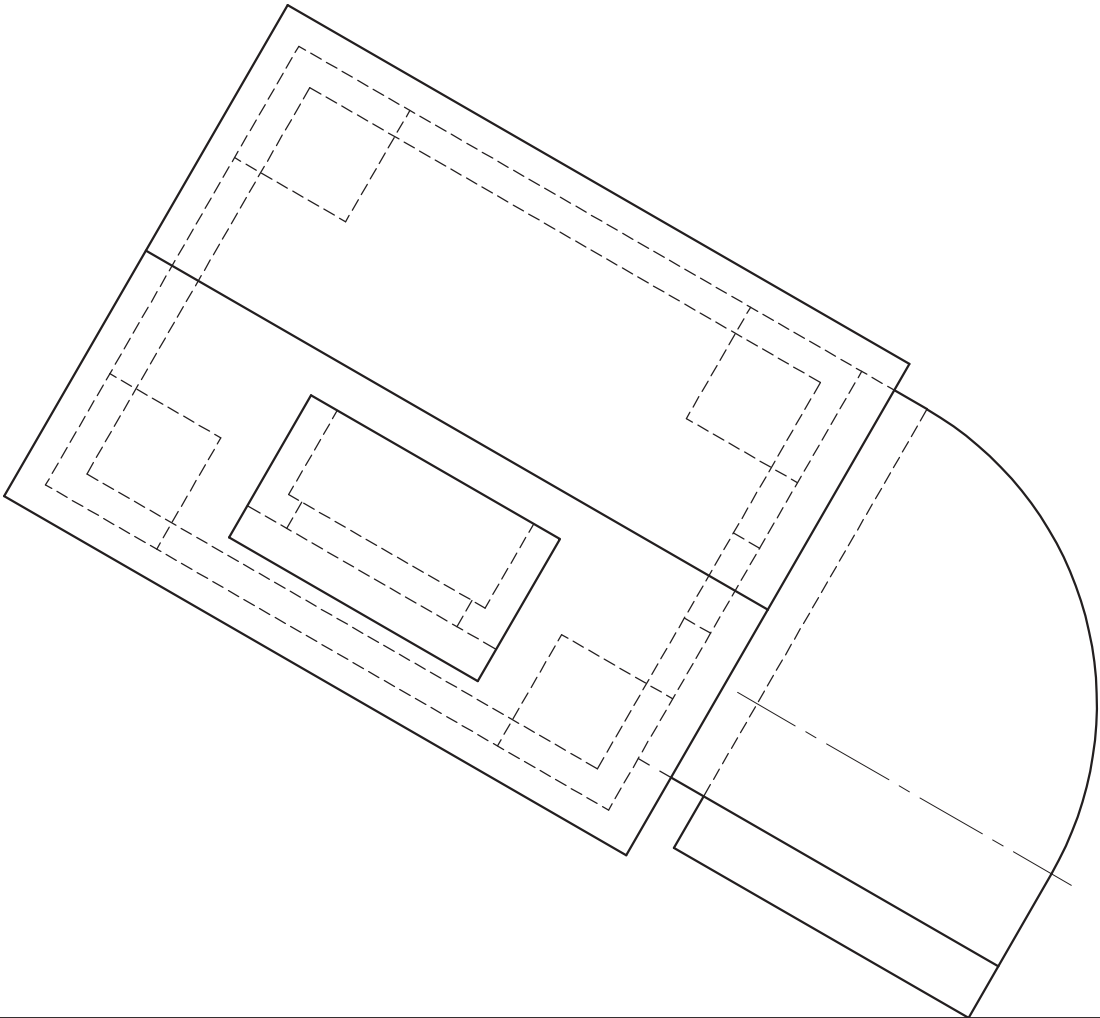
- Instructions:**  
Draw, to scale 1 : 1, the following views showing both solids:
- 2.1 The given front view
  - 2.2 A sectional top view
  - 2.3 A sectional left view

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

[38]



ASSESSMENT CRITERIA					
1	FRONT VIEW	7 <sup>1</sup> / <sub>2</sub>			
2	SECTIONAL TOP VIEW	16 <sup>1</sup> / <sub>2</sub>			
3	SECTIONAL LEFT VIEW	14			
PENALTIES (-)					
TOTAL		38			
EXAMINATION NUMBER					
EXAMINATION NUMBER					3



QUESTION 3: PERSPECTIVE

**Given:**  
Three views of an A-frame house on blocks 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 internal or hidden detail is required.

[40]

ASSESSMENT CRITERIA					
1	CONSTRUCTION	6			
2	FLOOR + STEPS	12			
3	WINDOWS + DOOR	9 <sup>1</sup> / <sub>2</sub>			
4	ROOF	7			
5	ARC	5 <sup>1</sup> / <sub>2</sub>			
PENALTIES (-)					
TOTAL		40			

PP

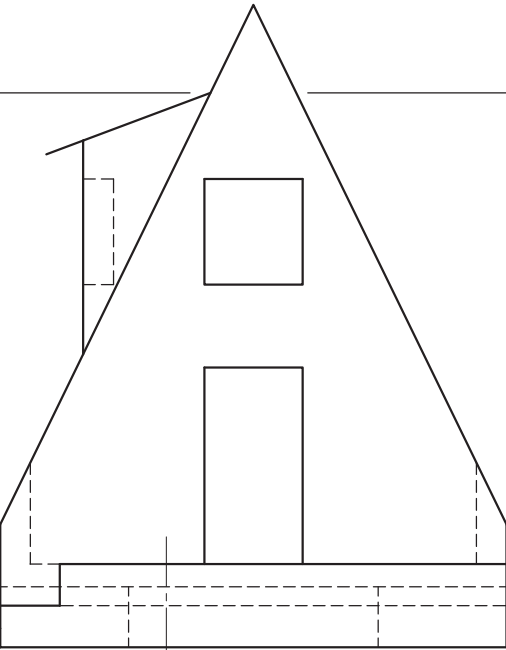
HL

GL

SP

HL

GL



EXAMINATION NUMBER

EXAMINATION NUMBER

4



Architectural section drawing of a building facade. The drawing shows a concrete patio at the base, with a ground level indicated by a dashed line. Above the patio is a wall section. Key dimensions and labels include:

- 120 x 40 mm WALL**: Label for the top horizontal wall section.
- OF ROOF TRUSS**: Label for the horizontal section above the roof truss.
- ON 80 x 50 mm**: Label for the horizontal section below the roof truss.
- ABLE END 150 mm**: Label for the end of the wall section.
- ES**: Label for the end of the section.
- mm BRANDERING**: Label for the branding area.
- 200 x 80 mm LINTELS ABOVE ALL DOOR AND WINDOW OPENINGS**: Label for the lintels above door and window openings.
- 200**: Dimension for the width of the lintel.
- 2100**: Dimension for the height of the wall section.
- 2600**: Dimension for the total height of the wall section.
- 300**: Dimension for the height of the concrete patio.
- 200**: Dimension for the width of the concrete patio.
- GROUND LEVEL**: Label for the ground level line.
- CONCRETE PATIO**: Label for the concrete patio.
- 100**: Dimension for the width of the concrete patio.
- 450**: Dimension for the width of the concrete patio.

**FIXTURES**

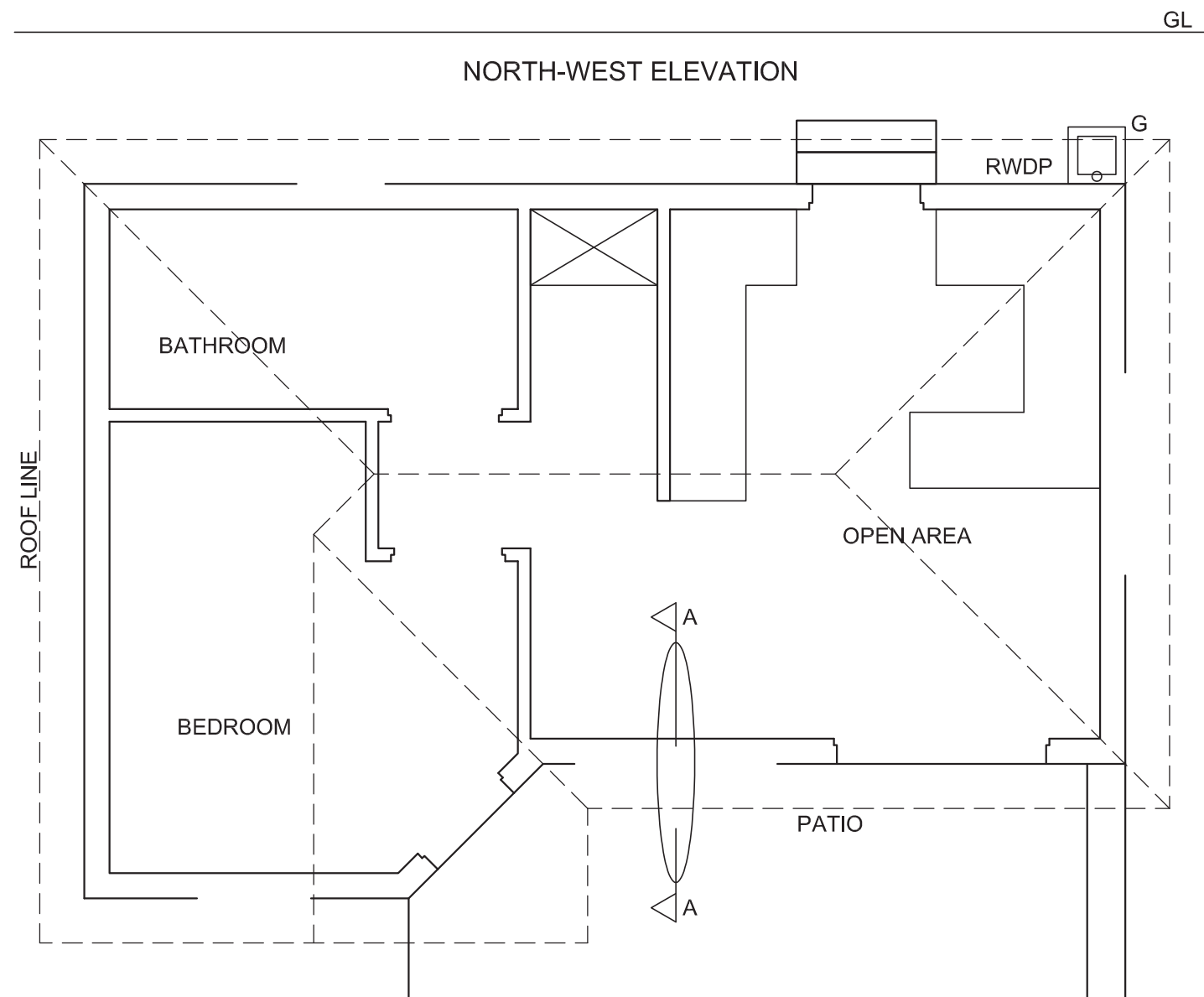
TOILET (WC)      SINK (S)      SHOWER (SH)      WASHBASIN (WB)

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



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					
<b>TOTAL</b>			<b>TOTAL</b>		

ASSESSMENT CRITERIA					
FLOOR PLAN					
		POSSIBLE	OBTAINED	SIGN	MODERATED
1	DOORS + WINDOWS	14			
2	FIXTURES	7			
3	ELECTRICAL	7 $\frac{1}{2}$			
4	LABELS	2			
5	HATCHING	3			
SUBTOTAL		33 $\frac{1}{2}$			
NORTH-WEST ELEVATION					
1	ROOF + RWDP	7 $\frac{1}{2}$			
2	WALLS + STEPS	4			
3	DOORS + WINDOWS	11 $\frac{1}{2}$			
4	LABELS	$\frac{1}{2}$			
SUBTOTAL		23 $\frac{1}{2}$			
DETAILED SECTION					
1	ROOF DETAIL	13			
2	SLAB + WALL	7			
3	HATCHING	6 $\frac{1}{2}$			
4	WINDOW + DOOR	7			
5	LABELS	1 $\frac{1}{2}$			
SUBTOTAL		35			
TOTAL		92			
PENALTIES (-)					
GRAND TOTAL					
EXAMINATION NUMBER					
EXAMINATION NUMBER					6



SECTION A-A  
SCALE 1 : 20

FLOOR PLAN  
SCALE 1 : 50