



education

Department of
Education
FREE STATE PROVINCE

ENGINEERING GRAPHICS AND DESIGN TEST

GRADE 12

MARCH 2020

TIME: 1 $\frac{1}{2}$ HOUR

TOTAL: 160

This question paper consists of 4 pages

INSTRUCTIONS AND INFORMATION

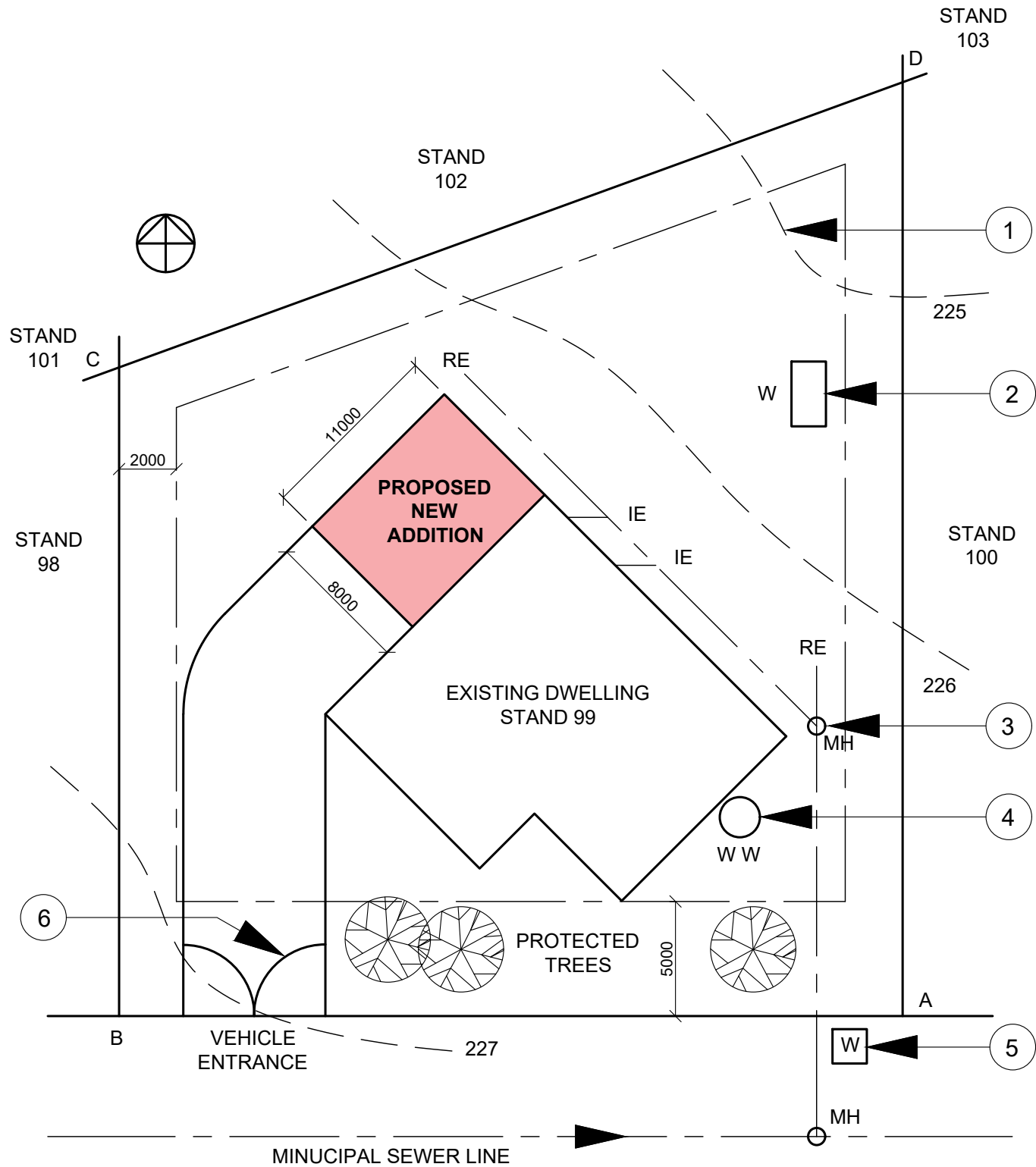
1. This question paper consists of FOUR questions
2. Answer ALL the questions.
3. ALL drawings are in first-angle orthographic projection, unless stated otherwise.
4. ALL drawings must be drawn to scale 1:1, unless stated otherwise.
5. ALL questions must be answered on the DIAGRAM SHEET as instructed.
6. ALL the pages must be restapled in numeric sequence, irrespective of whether the question was attempted or not.
7. Time management is essential in order to complete all the questions.
8. Print your name and surname as well as the grade in the space provided on each page.
9. ALL answers must be drawn accurately and neatly.
10. ALL necessary construction and projection lines must be shown.
11. Plan each drawing carefully from the given position, which is indicated on the diagram sheets.
12. Any details or dimensions not given must be assumed in good proportion.

FOR OFFICIAL USE ONLY								
QUESTION	MARKS OBTAINED			$\frac{1}{2}$	MODERATEF			$\frac{1}{2}$
1								
2								
TOTAL								
	1	2	0		1	2	0	

FINAL CONVERTED MARK	CHECKED BY
<u>50</u>	

NAME & SURNAME

LAND SURVEYORS CERTIFICATE OF THE BOUNDARY LENGTHS AND CORNER HEIGHTS OF STAND 99 (SURVEYED ON 20-09-2010)	
BOUNDARY LENGTHS	CORNER HEIGHTS
AB - 31 250	A - 226.8
BC - 23 750	B - 227.2
CD - 32 830	C - 226.5
DA - 33 000	D - 224.7



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

REVISION	DATE	DESCRIPTION
5		
4		
3	2019/05/24	Alteration to warm storage
2	2019/05/20	Alteration to driveway
1	2019/05/18	Alteration to gates

A&A
ARCHITECTS
1024 FOREST DRIVE
MOSSEL BAY
044 555 2792

PRINTED BY MOBI PRINT DATE OF PRINT 2020-02-23

DRAWING TITLE
SITE PLAN
SCALE 1:200

PROJECT
PROPOSED NEW GARAGE FOR MR M TSABALALA ON STAND 99 AT 20 WEST DRIVE EAST LONDON

DRAWN BY S MOTOBO DATE 2019-05-10

CHECKED BY KHABO DATE 2019-05-15

DRAWING NUMBER 1911006 REFERENCE CODE SACIAJB-01

QUESTION 1: ANALYTICAL (CIVIL)

Given:

The site plan for a proposed new house and swimming pool, a title panel and a table of questions. The drawing has not been prepared to the indicated scale.

Instructions:

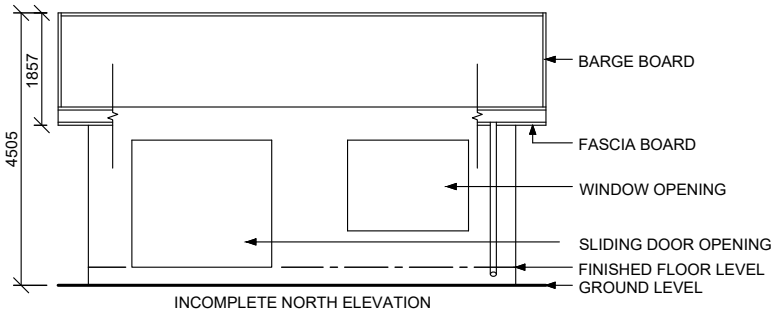
Complete the table below by neatly answering the questions, which refer to the accompanying drawing title panel. [20]

QUESTIONS		ANSWERS	
1	What type of drawing is shown?	1	
2	What is the stand number of the site?	1	
3	What is the scale of the drawing?	1	
4	On what date was the site surveyed?	1	
5	What is the total length of the southern boundary line in meters?	1	
6	What SI unit is used for the dimensions?	1	
7	In which South African city would you find this property?	1	
8	What is the distance from the western boundary line of the given plot towards the build line?	1	
9	How many inspection eyes are shown?	1	
10	What is the feature at 1 called?	1	
11	What is the feature at 2 called?	1	
12	What is the feature at 3 called?	1	
13	What is the feature at 4 called?	1	
14	What is the feature at 5 called?	1	
15	In the space provided below, determine the surface area for the proposed new addition.	2	
16	In the space provided below, draw freehand, the front view and top view of the SANS convention for a bath	4	
TOTAL		20	

QUESTION 15

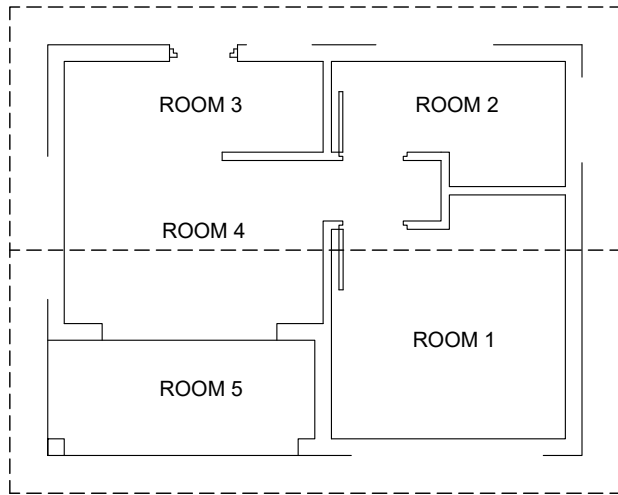
QUESTION 16

NAME & SURNAME



ROOF NOTES:

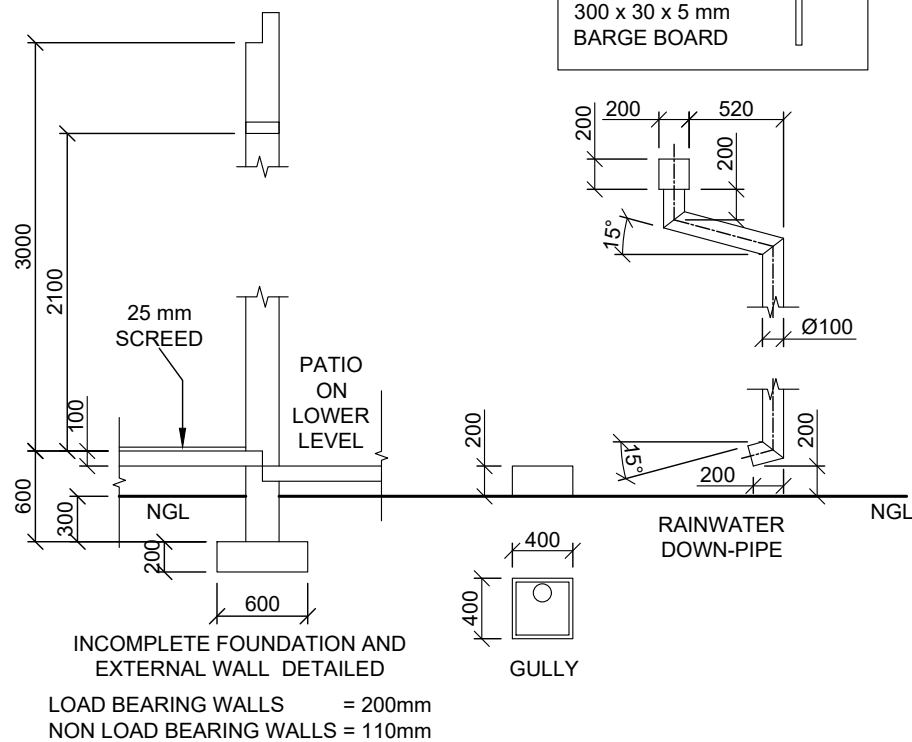
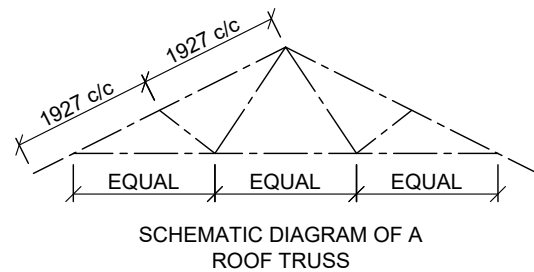
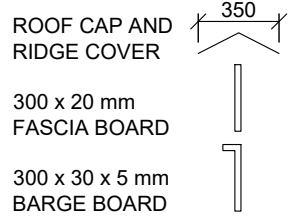
- ROOF COVER:** 30 mm CORRUGATED ROOF SHEETING
- PURLINS:** 75 x 50 mm
- PURLIN SPACING:**
 - MAKSIMUM DISTANCE 1060 mm c/c
 - MINIMUM DISTANCE 900 mm c/c
- PITCH:** 30°
- ROOF TRUSSES:** 114 x 38 mm
- WALL PLATES:** 114 x 38 mm
- ROOF OVERHANG:** WALL TO END 500 mm
- CEILING BOARD:** 10 mm
- BRANDERING:** 38 x 38 mm
- BRANDERING SPACING:**
 - MAXIMUM DISTANCE - 450 c/c
 - MINIMUM DISTANCE - 350 c/c



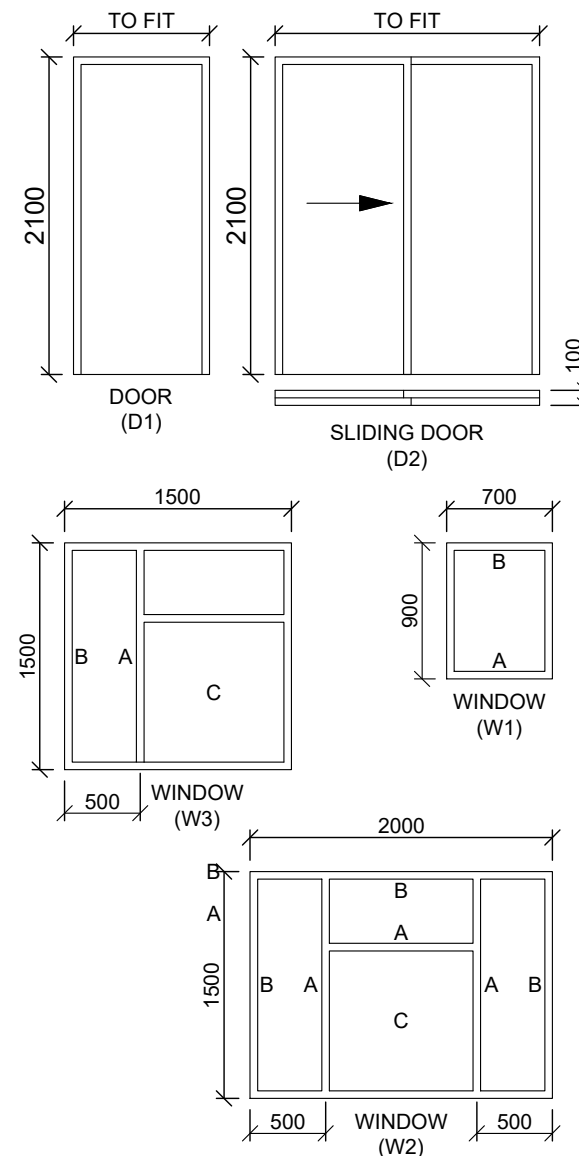
ROOM DESIGNATIONS AND FLOOR FINISHING

- | | |
|------------------|-------|
| ROOM 1: BEDROOM | WOOD |
| ROOM 2: BATHROOM | TILES |
| ROOM 3: KITCHEN | TILES |
| ROOM 4: LOUNGE | WOOD |
| ROOM 5: PATIO | GRANO |

ROOF COMPONENTS



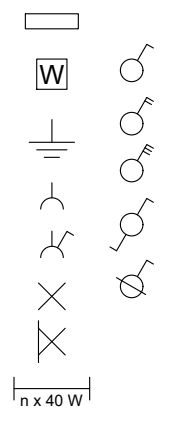
DOOR AND WINDOW SCHEDULE



DOOR AND WINDOW NOTES:

- A = OPENING SIDE
- B = HINGED SIDE
- C = FIXED PANEL
- 150 x 20 mm FIBRE CEMENT SILL (30°) UNDER ALL WINDOWS
- 200 x 75 mm LINTEL ABOVE ALL DOOR & WINDOW OPENINGS
- ALL LINTELS ARE AT THE SAME HEIGHT
- ALL FRAMES 50mm THICK

ELECTRICAL SYMBOLS

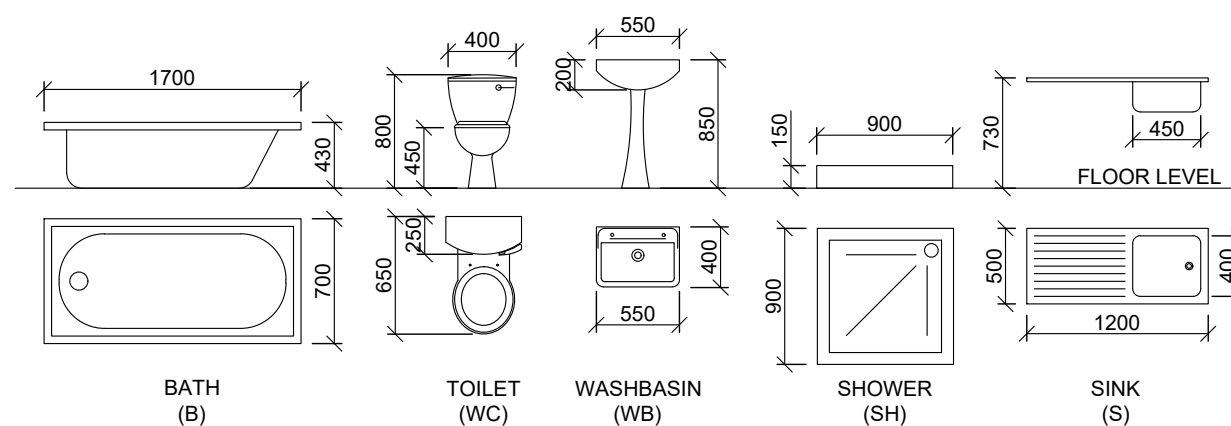


ELECTRICAL FITTINGS

- ONE-WAY SWITCH - SINGLE POLE
- ONE-WAY SWITCH - DOUBLE POLE
- 2 x 40W - FLUORESCENT LIGHT
- CEILING LIGHT
- WALL-MOUNTED LIGHT
- SWITCH SOCKET OUTLET
- SOCKET OUTLET
- DISTRIBUTION BOARD

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

FIXTURES



QUESTION 4: CIVIL DRAWING

Given:

- The incomplete west elevation of a new house showing the walls, window openings, the roof and notes.
- The incomplete floor plan showing the walls, positions of the doors, windows, fixtures and the electrical layout.
- A schematic diagram of a roof truss and roof notes
- The incomplete detail of the foundation and walls.
- The rainwater down-pipe detail.
- Room designations and floor finishes.
- A table of electrical symbols
- A door and window schedule.
- A table of roof components.
- A table of fixtures.
- The incomplete floor plan of the new house, drawn to scale 1 : 50 and the incomplete foundation and break line 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 a **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 abbreviations.
- ALL electrical fittings as indicated by the numbers.
- ALL hatching detail.

4.1.2 THE COMPLETE NORTH ELEVATION.

Show the following features on the drawing:

- The outside walls, door and window detail.
- The roof detail, including the roof cap, barge boards, fascia board, gutters and rainwater down-pipe.
- The finished floor level.

4.2 Using the incomplete foundation and break line on page 6, draw, to scale 1:20, a DETAILED SECTION on cutting plane C-C of the area in the ellipse shown on the incomplete floor plan.

Show the following features on the drawing:

- The complete detail of the foundation and walls
- ALL hatching detail. ONLY the substructure hatching may be drawn in neat free hand.
- The door detail.
- The roof detail, including the fascia board, gutter and barge board
- The barge boards should be extended to cover the gutters on the west elevation and the east elevation.

Label the following:

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

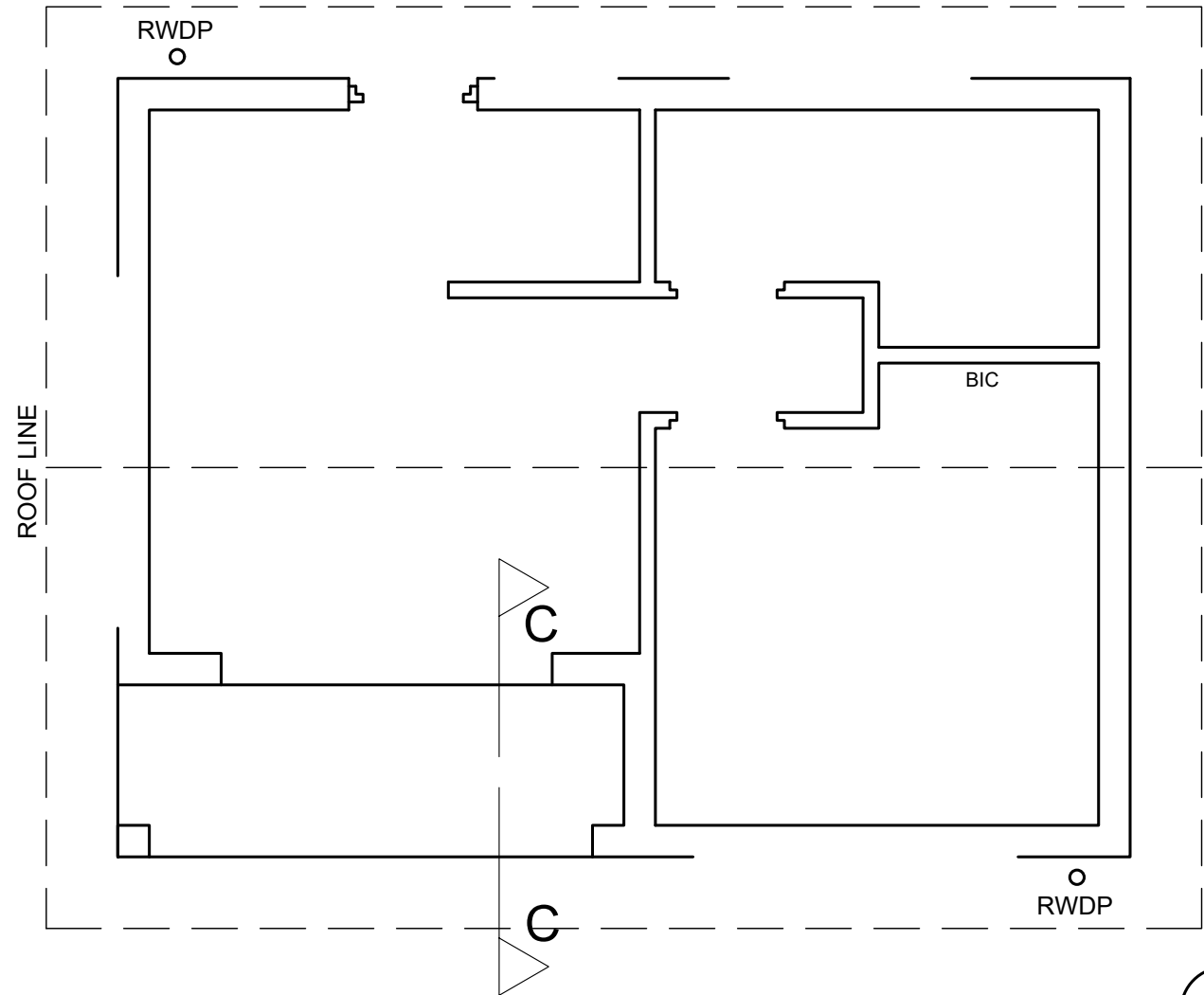
NOTE:

- ALL drawings must comply with the guidelines and graphical symbols as contained in the SANS 10143. [100]



FOR OFFICIAL USE ONLY		ROOF SECTIONED DETAIL	
INCORRECT SCALE	-2	A	Roof angle (1)
NON-ALIGNMENT OF VIEWS	-2	B	Roof Sheet (1)
VIEW(S) ROTATED	-2	C	Purlin & spacing (1)
SECTION VIEWED INCORRECTLY	-2	D	Truss profile & size (2)
INCORRECT LETTERING	-1	E	Fascia Board (1)
		F	Gutter & down pipe (5)
		G	Barge board (1)
		H	Wall plate (1)
		I	Branding & spacing (2)
		J	Ceiling board (1)
		TOTAL 16	

NGL



ASSESSMENT CRITERIA			
FLOOR PLAN			
1	DOORS + WINDOWS	13	
2	FIXTURES	8 1/2	
3	ELECTRICAL	9 1/2	
4	HATCHING	4	
5	LABELS	6	
SUB TOTAL 1		41	
NORTH ELEVATION			
1	ROOF + RWDP	6	
2	WALLS + FFL + STEP	4	
3	DOOR + WINDOW	10	
4	LABELS	1	
SUB TOTAL 2		21	
DETAILED SECTION			
1	ROOF	16	
2	FOUNDATION + WALL + SLAB + DOOR + LINTEL	11	
3	HATCHING	8	
4	LABELS	3	
SUB TOTAL 3		38	
TOTAL		100	
TOTAL PENALTIES (-)			
GRAND TOTAL			
NAME & SURNAME			
			4