STAPLE

basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

ENGINEERING GRAPHICS AND DESIGN P1

NOVEMBER 2018

MARKS: 100

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 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			½	SIGN	MODERATED			½	SIGN	RE-MARKING			½	SIGN
1															
2															
3															
4															
TOTAL															
	2	0	0			2	0	0			2	0	0		

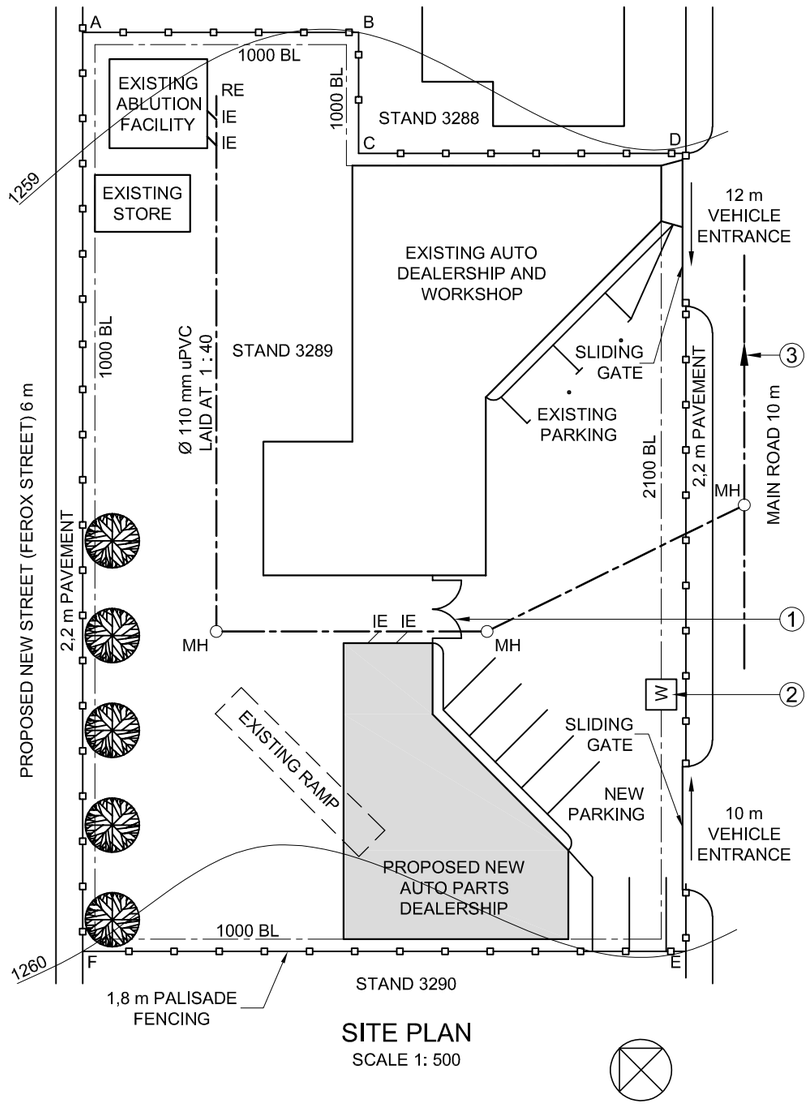
FINAL CONVERTED MARK	CHECKED BY
100	

Barcode label

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

STAPLE

LAND SURVEYOR'S CERTIFICATE OF THE BOUNDARY LENGTHS AND CORNER HEIGHTS OF STAND 3289, SURVEYED ON 2017-08-31	
BOUNDARY LENGTHS IN MILLIMETRES	CORNER HEIGHTS IN METRES
AB = 22500	A = 1259
BC = 9850	B = 1259
CD = 26690	C = 1259
DE = 65050	D = 1259
EF = 49190	E = 1260
FA = 74900	F = 1260



SITE PLAN
SCALE 1: 500

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 19
In the space below, draw, in neat freehand and according to the *SANS 10143:*
a) FACE BRICK hatching
b) The graphical symbol for a GULLY

a)

b)

REVISION	DATE	DESCRIPTION

FRESH DESIGNS
51 Munnik Street
Bray
010 810 4321
fd.architects@gmail.com

PRINTED BY:	DATE OF PRINT:
I-PRINT	2018-05-21

DRAWING TITLE:
SITE PLAN

PROJECT:
PROPOSED NEW AUTO PARTS DEALERSHIP FOR REGROW HOLDINGS ON STAND 3289, MAIN ROAD, PORT ELIZABETH.

PROJECT NUMBER:	DRAWING NUMBER:		
FDBS-2018	1 OF 7		
DATE:	DRAWN:	CHECKED:	SCALE:
2018-04-05	MP	CIC	1 : 500
REFERENCE CODE:			
Q1P1-2018			

QUESTION 1: ANALYTICAL (CIVIL)

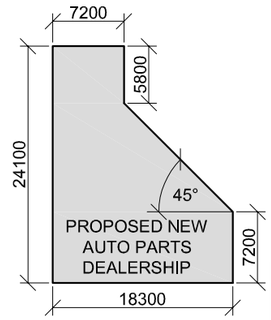
Given:
The site plan of an existing auto dealership and workshop with a proposed new auto parts dealership, a title panel and a table of questions. The drawing has not been prepared to the indicated scale.

Instructions:
Complete the table below by neatly answering the questions, which refer to the accompanying drawing, title panel and civil content. **[30]**

	QUESTIONS	ANSWERS			
1	What is the title of the drawing?		1		
2	On what date was the drawing prepared?		1		
3	What scale is indicated for the drawing?		1		
4	What is the name of the proposed new street?		1		
5	How many existing buildings are there on STAND 3289?		1		
6	How many parking bays are shown?		1		
7	What does the abbreviation *RE* stand for?		1		
8	How wide are the pavements in millimetres?		1		
9	What do the two arcs at 1 indicate?		1		
10	Name the feature at 2.		1		
11	How many manholes are shown?		1		
12	What type of fencing surrounds STAND 3289?		1		
13	What feature is shown on STAND 3288?		1		
14	What is the number of the STAND south west of STAND 3289?		2		
15	Why is the existing ramp shown with broken lines?		1		
16	What does the arrow on the line at 3 indicate?		1		
17	What is the fall of the sewer line?		1		
18	In what colour could new concrete be indicated on a layout drawing?		1		
19	In the space in the title panel (ANSWER 19), draw, in neat freehand and according to the *SANS 10143* a) FACE BRICK hatching, and b) the graphical symbol for a GULLY.		4		
20	In the space below (ANSWER 20), determine the total length of the fence in metres.		4		
21	In the space below (ANSWER 21), determine the total area of the proposed new auto parts building in square metres. Round off the answer to THREE decimal places.		3		
		TOTAL	**30**		

ANSWER 20
Show ALL calculations.

ANSWER 21
Show ALL calculations.



EXAMINATION NUMBER	
EXAMINATION NUMBER	2

STAPLE

QUESTION 2: SOLID GEOMETRY

Given:

- The front view of a right equilateral triangular pyramid and a right regular hexagonal prism
- The top view of the pyramid and the axis of the prism
- An auxilliary view of the prism
- Cutting plane A-A

Specifications:

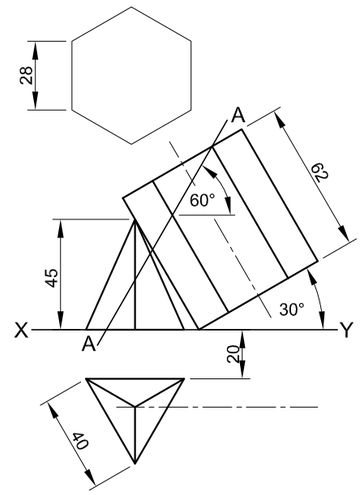
- The prism leans against the pyramid.
- Both solids are cut by cutting plane A-A.

Instructions:

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

2.1 The given front view
2.2 A sectional top view
2.3 A sectional left view
2.4 The true shape of the cut surfaces

- Planning is essential.
- Show ALL construction.
- Show ALL hidden detail. **[40]**

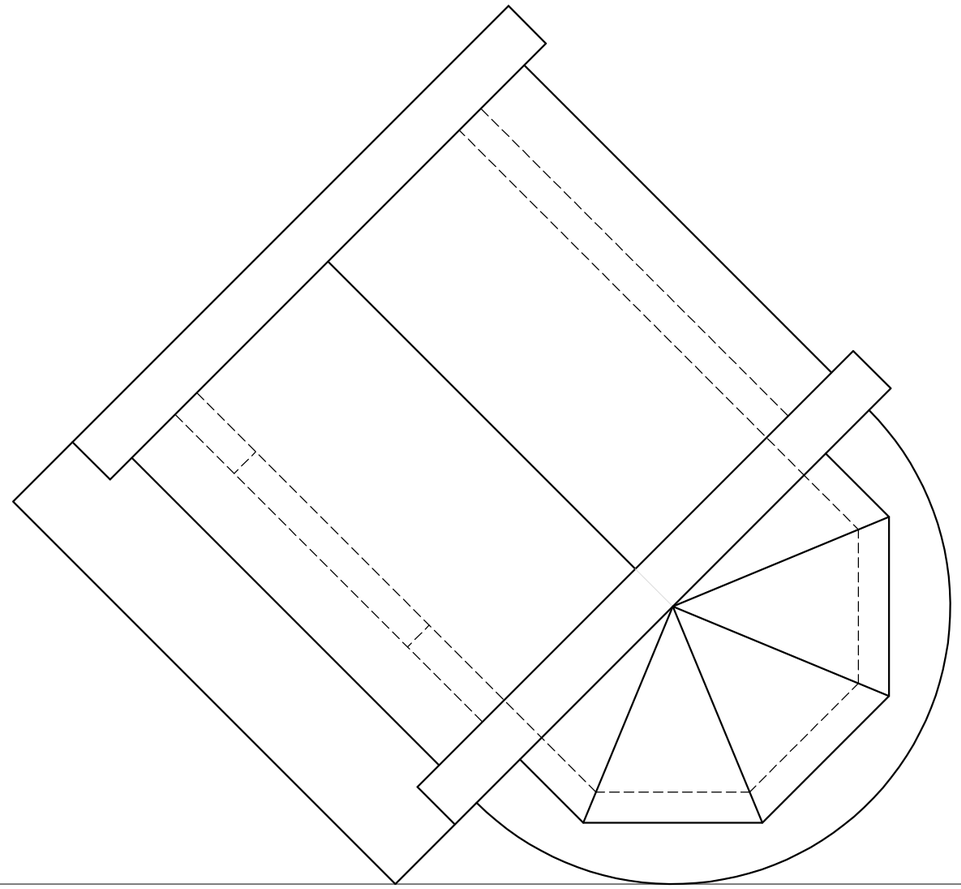


ASSESSMENT CRITERIA						
1	CONSTRUCTION	1				
2	FRONT VIEW	5 ½				
3	SECTIONAL TOP VIEW	14 ½				
4	SECTIONAL LEFT VIEW	12 ½				
5	TRUE SHAPE	6 ½				
PENALTIES (-)						
	TOTAL	**40**				

EXAMINATION NUMBER

EXAMINATION NUMBER 3

STAPLE



PP

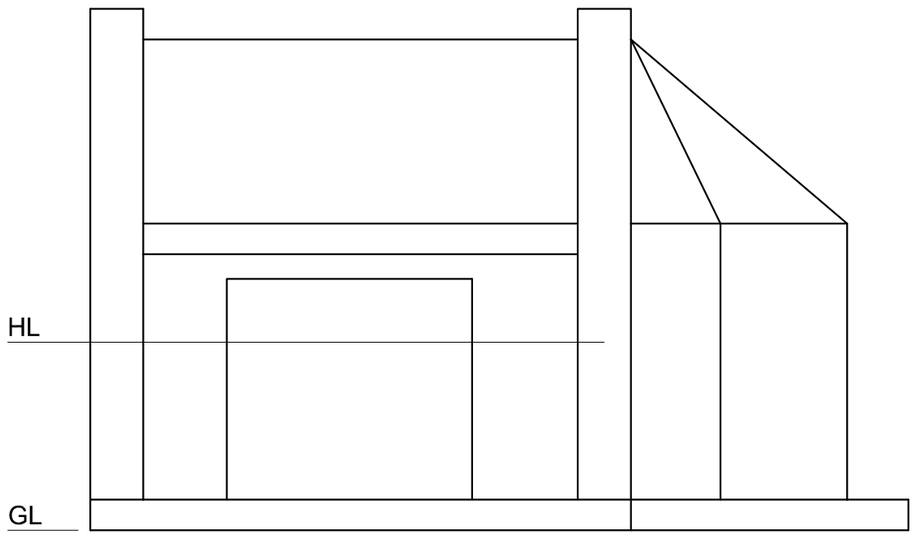
QUESTION 3: PERSPECTIVE

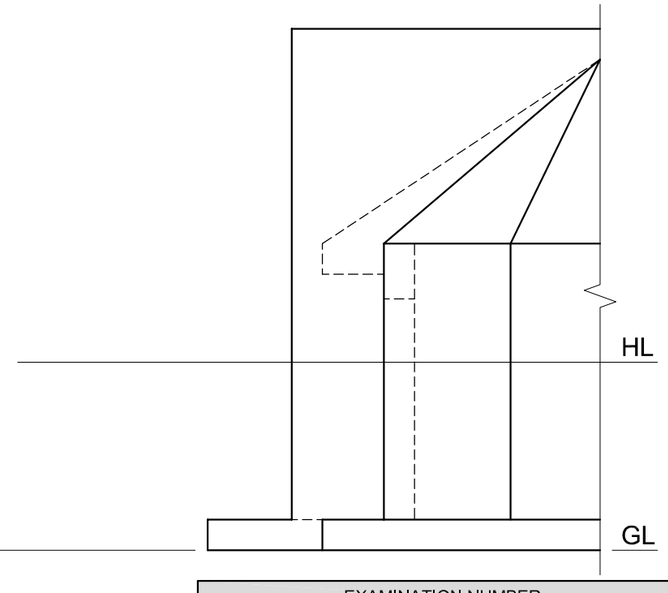
Given:
Two complete views and a partial view of a function hall and the information needed to draw a two-point perspective drawing
PP – Picture plane
HL – Horizon line
GL – Ground line
SP – Station point

Instructions:
Complete the perspective drawing.

- Align the drawing sheet with the ground line (GL).
- Determine and label the vanishing points.
- Show internal lines seen through the doorway.
- Show ALL construction.
- NO hidden detail is required. **[37]**

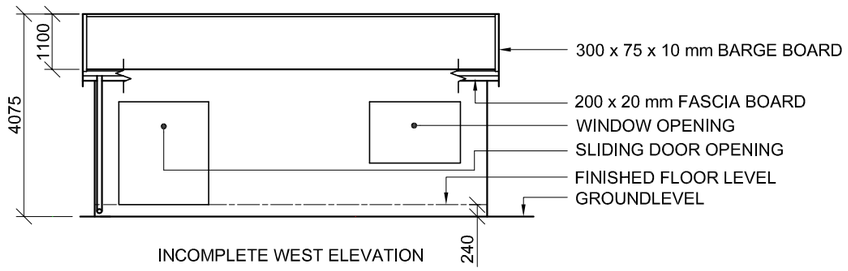
ASSESSMENT CRITERIA					
1	CONSTRUCTION	6			
2	OUTER STRUCTURE	9 ½			
3	INNER STRUCTURE	8			
4	SIDE STRUCTURE	7			
5	ARCS	6 ½			
PENALTIES (-)					
	TOTAL	**37**			



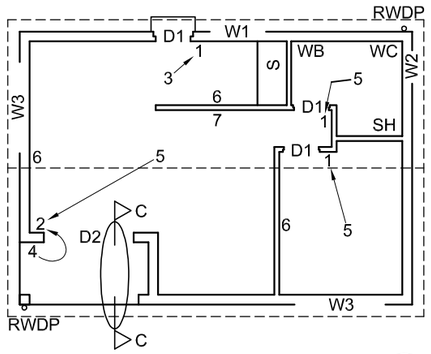


SP

EXAMINATION NUMBER	
EXAMINATION NUMBER	4



INCOMPLETE WEST ELEVATION



INCOMPLETE FLOOR PLAN

FEATURES

D1	DOOR
D2	SLIDING DOOR
W1 TO **W3**	WINDOWS

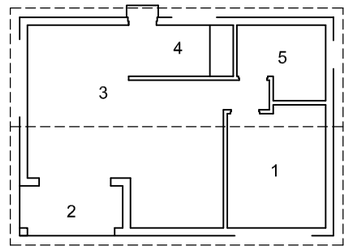
FIXTURES

WC	TOILET
WB	WASHBASIN
SH	SHOWER
S	SINK

ELECTRICAL FITTINGS

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

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

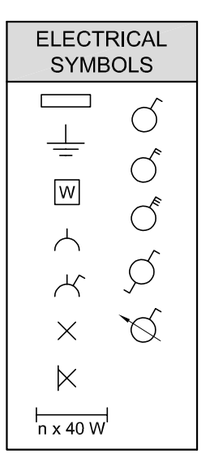


ROOM DESIGNATIONS

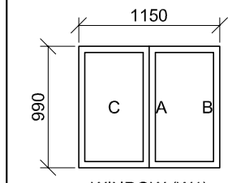
FLOOR FINISHES

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

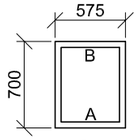
ELECTRICAL SYMBOLS



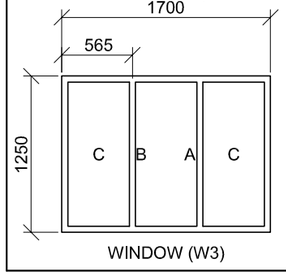
DOOR AND WINDOW SCHEDULE



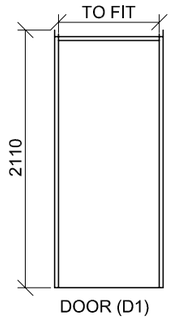
WINDOW (W1)



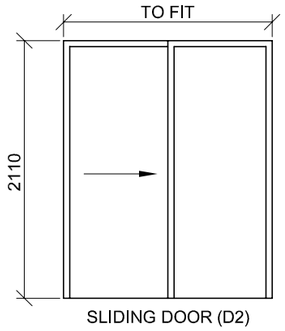
WINDOW (W2)



WINDOW (W3)



DOOR (D1)



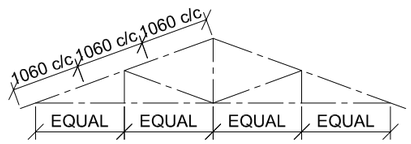
SLIDING DOOR (D2)

WINDOW NOTES:

- A = OPENING SIDE
- B = HINGED SIDE
- C = FIXED PANEL
- 150 x 20 mm FIBRE CEMENT SILL UNDER ALL WINDOWS
- ALL FRAMES 50 mm THICK

ROOF COMPONENTS

	114 x 38 mm WALL PLATE		300 x 75 x 10 mm FIBRE CEMENT BARGE BOARD
	200 x 20 mm FASCIA BOARD	300	ROOF CAP



SCHEMATIC DIAGRAM OF A ROOF TRUSS

ROOF NOTES:
20° ROOF PITCH

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

240 mm ROOF OVERHANG TO END OF ROOF TRUSSES

30 mm CORRUGATED ROOF SHEETING ON 75 x 50 mm PURLINS @ 1060 mm c/c

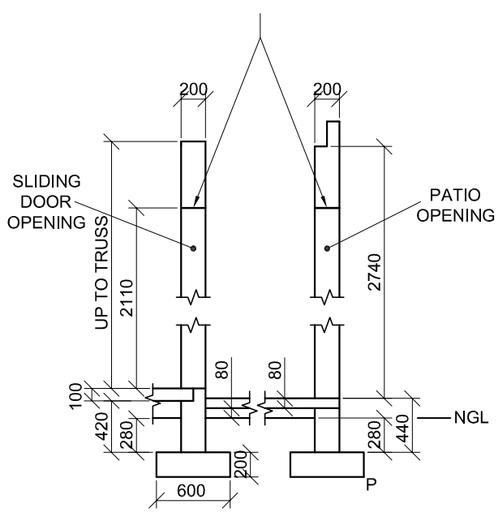
300 x 75 x 10 mm BARGE BOARD ON GABLE ENDS, 20 mm PAST THE GUTTER

200 x 20 mm FASCIA BOARD ON BOTH SIDES

150 x 100 mm GUTTER ON BOTH SIDES WITH Ø100 RAINWATER DOWN-PIPES

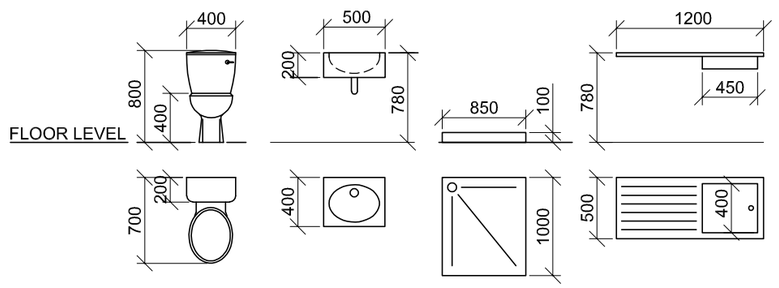
10 mm CEILING BOARD ON 38 x 38 mm BRANDERING STRIPS @ 460 mm c/c

200 x 80 mm LINTELS ABOVE ALL DOORS, WINDOWS AND OPENINGS, ALL AT THE SAME HEIGHT



INCOMPLETE DETAIL OF FOUNDATIONS AND WALLS FOR THE VERANDA

FIXTURES



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

QUESTION 4: CIVIL DRAWING

Given:

- The incomplete west elevation of a **new house** showing the walls, the sliding door and 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 foundations and walls for the veranda
- 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 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
- The fixtures as indicated by the abbreviations
- ALL electrical fittings as indicated by the numbers
- ALL hatching detail

4.1.2 **THE COMPLETE WEST ELEVATION**

Show the following features on the drawing:

- The outside walls, sliding door and window detail
- The veranda detail
- The roof detail, including the roof cap, barge boards, fascia board, gutter 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 foundations and walls for the veranda
- The door detail
- The roof detail, including the fascia board, gutter and barge board
- ALL hatching detail. ONLY the substructure hatching may be drawn in neat freehand.

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*. **[93]**

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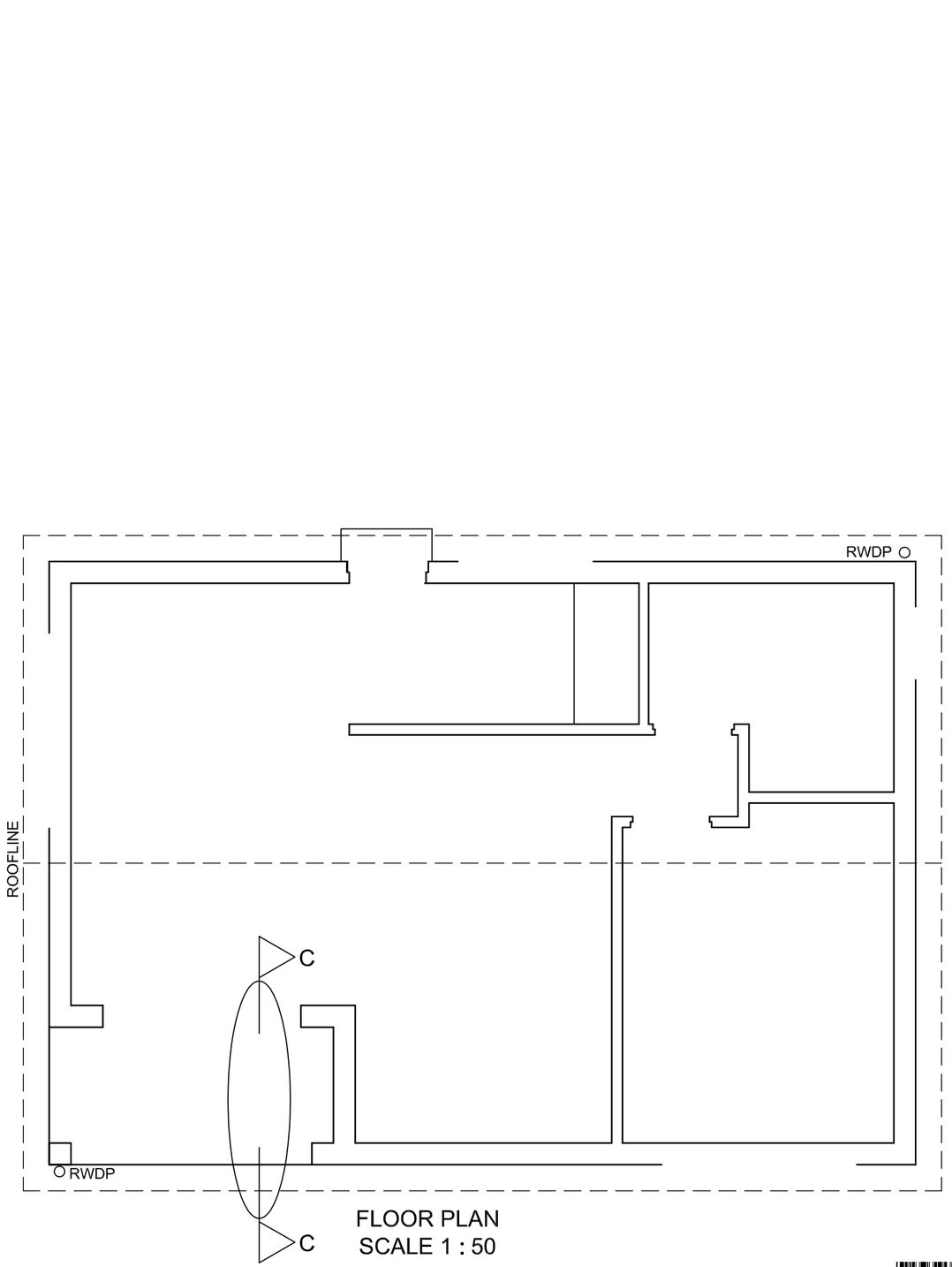

FLOOR PLAN
SCALE 1 : 50

DETAILED SECTION C-C
SCALE 1 : 20

P

MARK ALLOCATION FOR ROOF SECTION (4.2)	
A (1)	
B (1)	
C (2)	
D (3)	
E (2)	
F (1)	
G (1)	
H (2)	
I (1)	
J (1)	
TOTAL	

FOR OFFICIAL USE ONLY	
INCORRECT SCALE	
NON-ALIGNMENT OF VIEWS	
VIEW(S) ROTATED	
SECTION VIEWED INCORRECTLY	
INCORRECT LETTERING	
TOTAL	

ASSESSMENT CRITERIA					
FLOOR PLAN					
		POSSIBLE	OBTAINED	SIGN	MODERATED
1	DOORS + WINDOWS	13 ½			
2	FIXTURES	7			
3	ELECTRICAL	9 ½			
4	HATCHING	4			
5	LABELS	5			
SUBTOTAL		**39**			
WEST ELEVATION					
1	ROOF + RWDP	5 ½			
2	WALLS + FFL + STEP	4			
3	DOOR + WINDOW	7 ½			
4	LABELS	1 ½			
SUBTOTAL		**18 ½**			
DETAILED SECTION					
1	ROOF	12			
2	FOUNDATION + WALL + SLAB + DOOR + LINTEL	13 ½			
3	HATCHING	9			
4	LABELS	1			
SUBTOTAL		**35 ½**			
TOTAL		**93**			
TOTAL PENALTIES (-)					
GRAND TOTAL					

EXAMINATION NUMBER

EXAMINATION NUMBER 6