



Province of the
EASTERN CAPE
DEPARTMENT OF EDUCATION

**NATIONAL
SENIOR CERTIFICATE**

GRADE 12

ENGINEERING GRAPHICS AND DESIGN P1 (DEAF)

SEPTEMBER 2022

PREPARATORY EXAMINATION

MARKS: 200

TIME: 3 hours

This question paper consists of 6 pages.

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INSTRUCTIONS AND INFORMATION

1. The 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

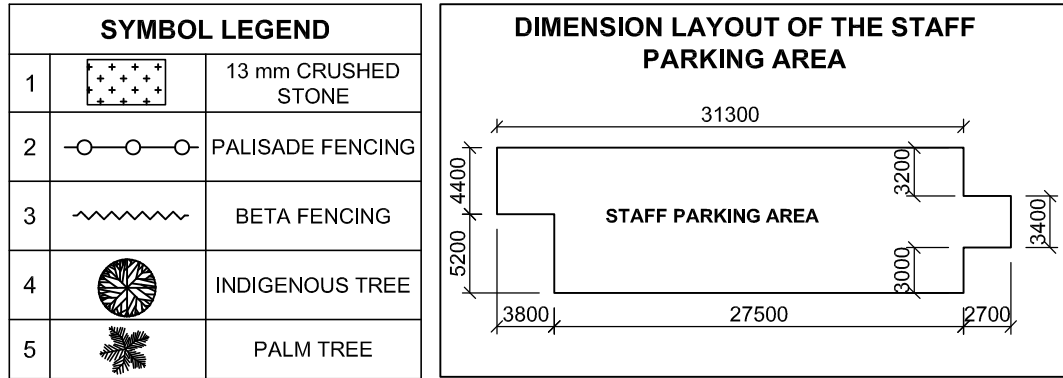
COMPLETE THE FOLLOWING:

NAME

NAME

EXAMINATION CENTRE

EXAMINATION CENTRE



QUESTION 2: SOLID GEOMETRY

Given:

- The front view and top view of a square prism with a cylindrical hole.
- Starting point **X**, the centre point of the cylindrical hole.

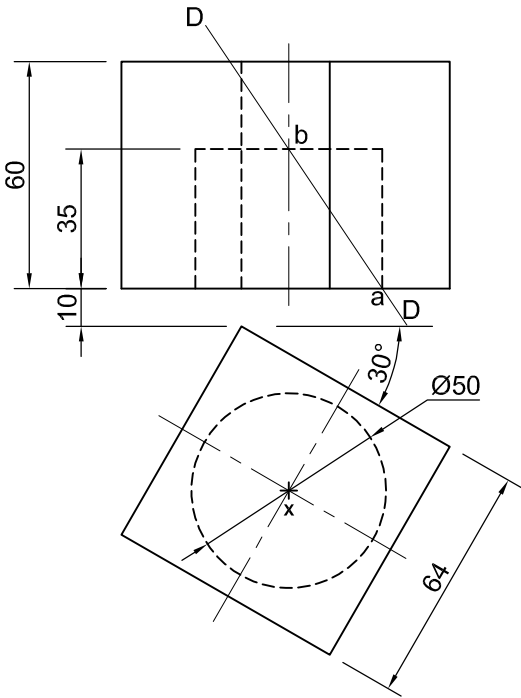
Instructions:

Draw to scale 1 : 1, the following views:

- 2.1 The top view.
- 2.2 The front view with the cutting line (Draw the cutting line through points **a** and **b**.
- 2.3 The sectional right view on cutting plane D-D
- 2.4 The true shape of the cutting area.

- Show ALL centre lines and hidden detail.
- Show ALL necessary construction lines.

[31]



+
X

ASSESSMENT CRITERIA					
1	TOP VIEW	4 ¹ / ₂			
2	FRONT VIEW	6			
3	SECTIONAL RIGHT VIEW	12			
4	TRUE SHAPE	8 ¹ / ₂			
PENALTIES (-)					
TOTAL		31			

NAME	
NAME	3

QUESTION 3: PERSPECTIVE

Given:

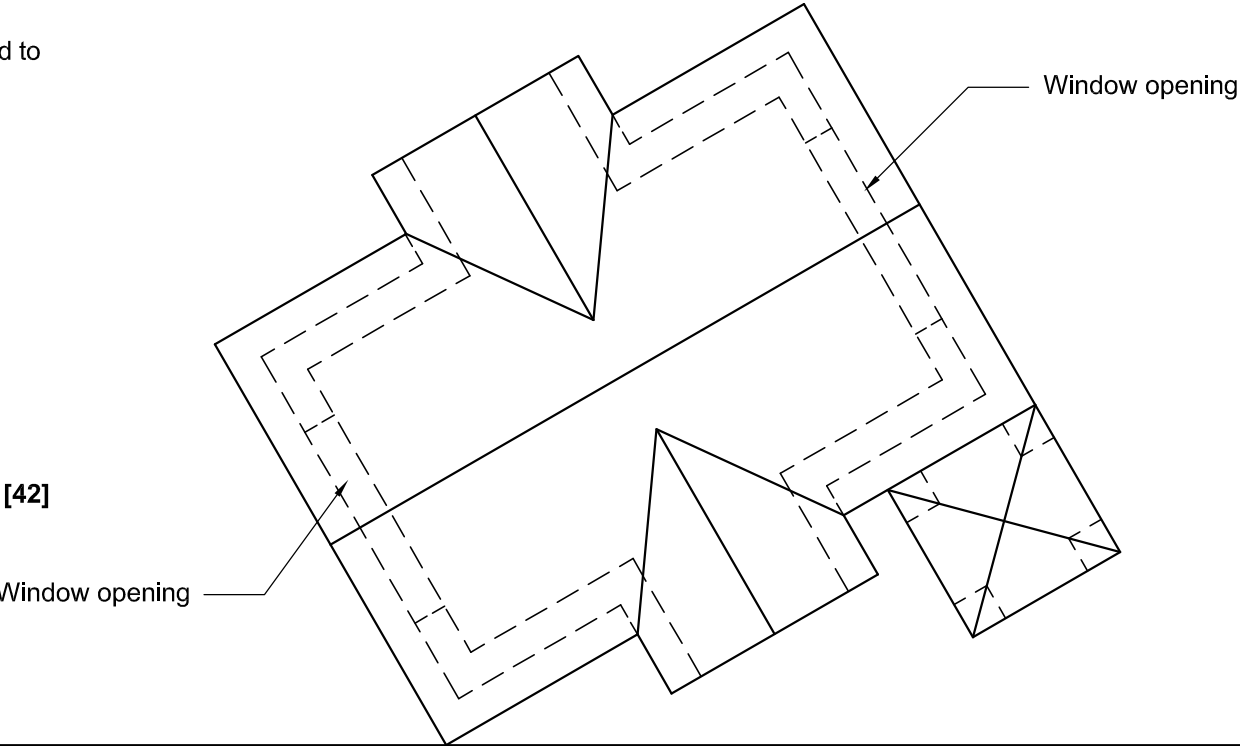
- Two views of a small chapel and the information needed to draw a two-point perspective drawing.

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

Instructions:

Complete the perspective drawing.

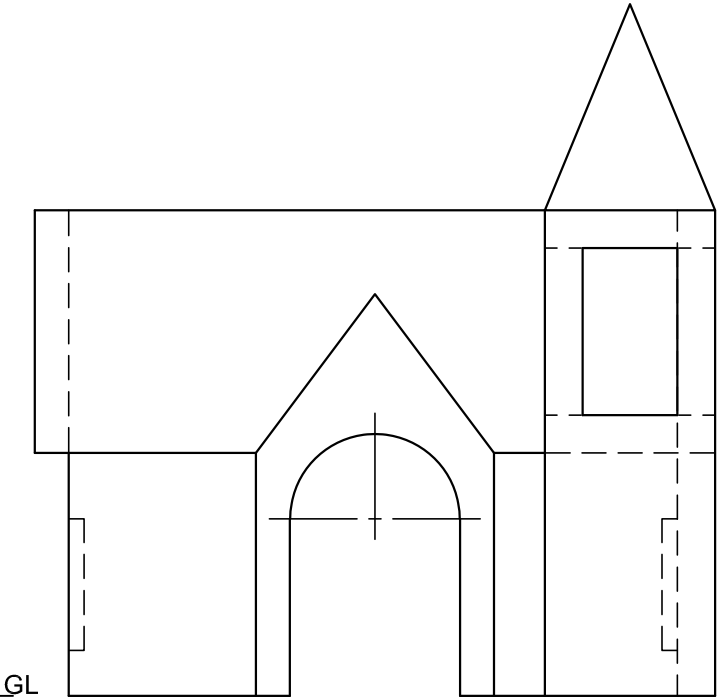
- Align the drawing sheet with the ground line (GL).
- Determine and label the vanishing points.
- Show ALL necessary construction.
- NO hidden detail is required.



ASSESSMENT CRITERIA					
1	CONSTRUCTION + VP's	5			
2	WALLS + WINDOW	11			
3	ROOF	7 ¹ / ₂			
4	TOWER	14			
5	ARCH + CONSTRUCTION	4 ¹ / ₂			
PENALTIES (-)					
TOTAL		42			

PP

HL



SP

NAME	
NAME	4

QUESTION 4: CIVIL DRAWING

Given:

- The incomplete west elevation of a **new house**, showing the walls, windows and door openings, the braai area, the roof and labels.
- The incomplete floor plan showing the walls, step, position of the doors, windows, fixtures and the electrical layout.
- A schematic diagram of the roof truss and roof notes.
- The incomplete foundation and external wall with dimensions.
- Room designations as well as floor finishes.
- A door and window schedule
- A table of sanitary fixtures
- A table of roof components
- A table of electrical symbols
- A table of rainwater items
- The incomplete floor plan and ground line of a **new house**, drawn to scale 1 : 50, and the incomplete foundation and a break line for the 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
- The complete roof line
- ALL hatching detail

4.1.2 THE COMPLETE WEST ELEVATION

Show the following features on the drawing:

- The outside walls, braai, slidingdoor,step and window detail.
- The roof detail, including the fascia boards, ridge cover, gutters, rainwater down-pipe and gully.
- 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:

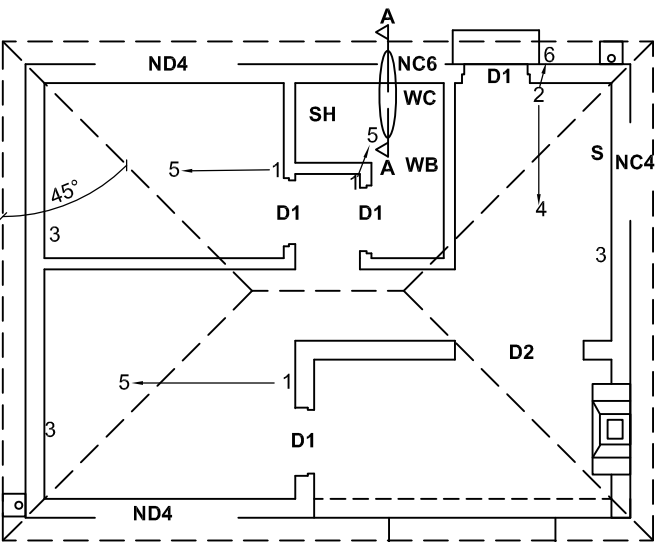
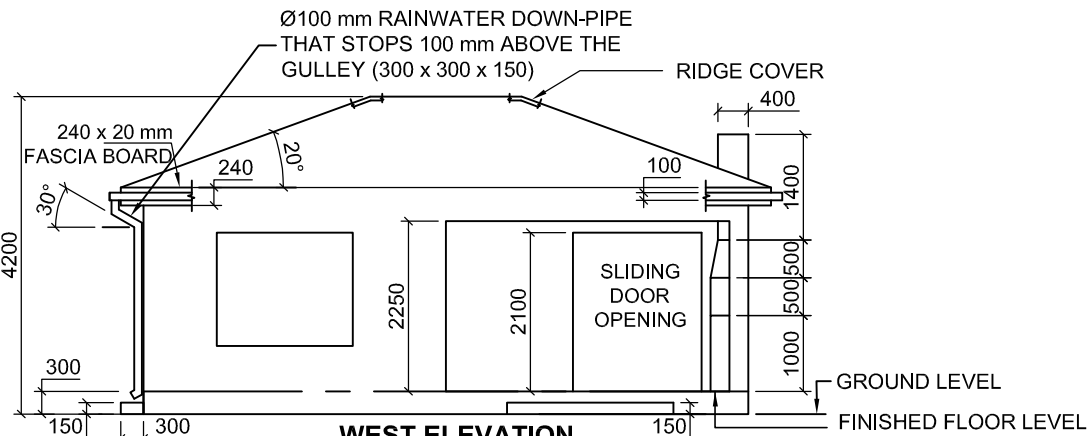
- The complete foundation, external wall, lintel and window detail.
- The shower to the north of the cutting plane **A-A**
- The roof detail, including the fascia board and gutter.
- ALL hatching detail. ONLY the substructure hatching may be drawn in neat freehand.

Label the following:

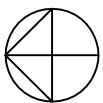
- The west elevation
- The room designations and floor finishes.
- Ground level, finished floor level and damp proof course (use the correct abbreviations and show it on ALL the relevant views)

NOTE:

ALL drawings must comply with the **guidelines** and **graphical symbols** as contained in the **SANS 10143**. [98]



FLOOR PLAN
SCALE 1 : 50



ROOF NOTES:

20° ROOF PITCH.

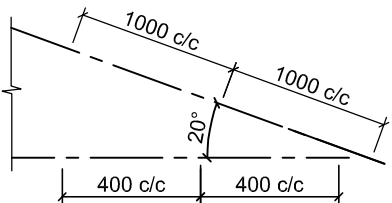
114 x 38 mm ROOF TRUSSES ON
114 x 38 mm WALL PLATES.

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 @ 1000 mm c/c.

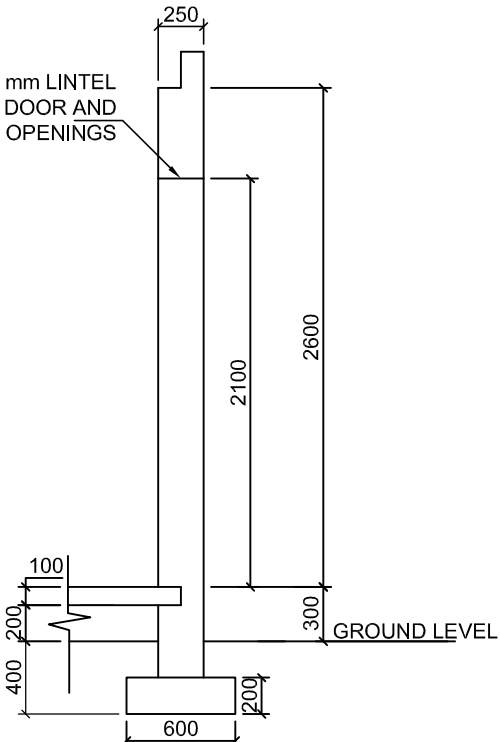
240 x 20 mm FASCIA BOARD WITH 150 X 100 mm GUTTERS ON ALL
SIDES AND A Ø100 mm RAINWATER DOWN-PIPE

10 mm CEILING BOARD ON 38 x 38 mm BRANDING @ 400 mm c/c.

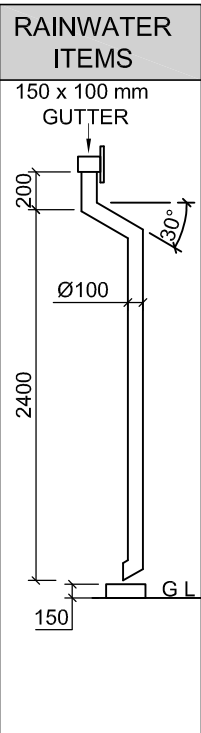


SCHEMATIC DIAGRAM OF THE
ROOF TRUSS FOR ROOF

1 X 250 x 100 mm LINTEL
ABOVE ALL ARCH, DOOR AND
WINDOW OPENINGS



DIMENSION GUIDE:
INCOMPLETE FOUNDATION AND
EXTERNAL WALL DETAIL



DOOR AND WINDOW SCHEDULE

TO FIT

TO FIT

1800

1200

2100

1500

500

A

B

A

WINDOW (ND4)

1200

400

300

950

A

B

WINDOW (NC4)

800

300

950

A

B

WINDOW (NC6)

DOOR (D1)

SLIDING DOOR (D2)

100

WINDOW NOTES

A = OPENING SIDE

B = FIXED PANE

THICKNESS OF ALL FRAMES: 50 mm

WINDOW SILL:

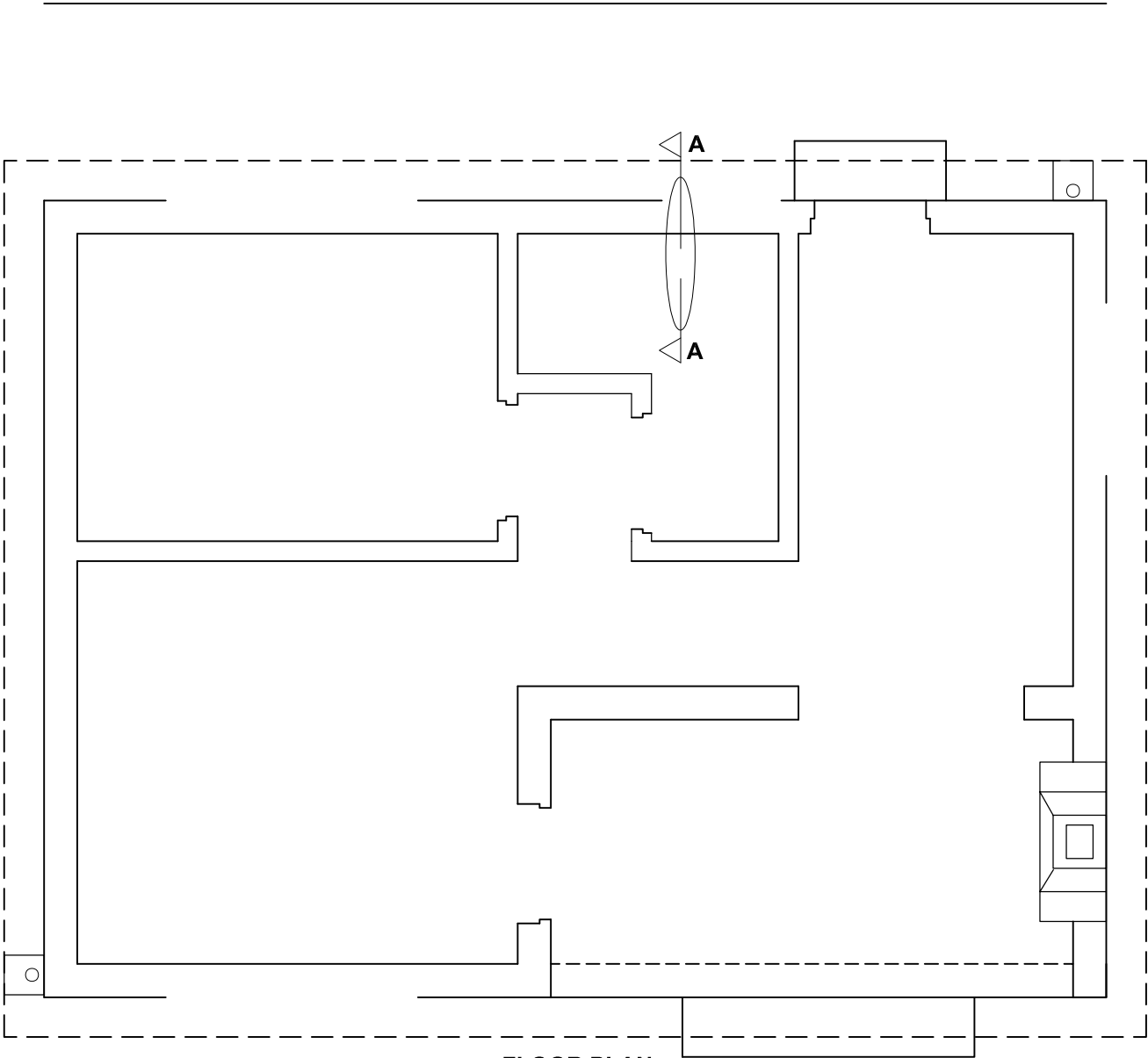
180 x 20 mm FIBRE CEMENT SILL

UNDER ALL WINDOWS

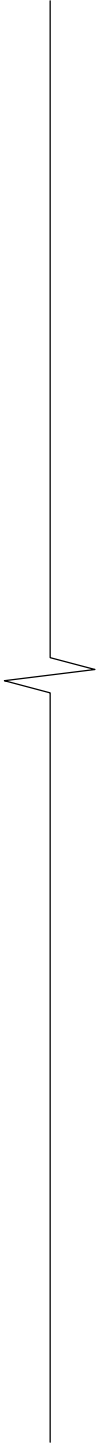
ROOF DETAIL: MARK ALLOCATION									
A	ROOF ANGLE	$\frac{1}{2}$		F	CEILING BOARD	$\frac{1}{2}$			
B	ROOF SHEET	1		G	WALL PLATE	1			
C	ROOF TRUSS	3		H	FACIA BOARD	1			
D	PURLIN + SPACING	$1\frac{1}{2}$		I	GUTTER	1			
E	BRANDERING + SPACING	$1\frac{1}{2}$							
TOTAL						11			

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

ASSESSMENT CRITERIA				
FLOOR PLAN				
1	DOORS + WINDOWS	14		
2	ELECTRICAL + ROOF LINES	11		
3	FIXTURES	7		
4	HATCHING	3		
5	LABELS	5		
SUBTOTAL		40		
NORTH ELEVATION				
1	ROOF + GUTTER + RWDP + GULLEY FACIA BOARD + RIDGE COVER	10		
2	WALLS + PORCH + BRAAI + FFL	$9\frac{1}{2}$		
3	DOOR + WINDOW	$7\frac{1}{2}$		
4	LABELS	1		
SUBTOTAL		28		
DETAILED SECTION				
1	ROOF DETAIL	11		
2	FOUNDATIONS + WALLS + FLOOR	$6\frac{1}{2}$		
3	WINDOW + SHOWER	5		
4	HATCHING	6		
5	LABELS	$1\frac{1}{2}$		
SUBTOTAL		30		
TOTAL		98		
PENALTIES (-)				
GRAND TOTAL				



FLOOR PLAN
SCALE 1 : 50



DETAILED SECTION A-A
SCALE 1 : 20

NAME	
NAME	6