



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

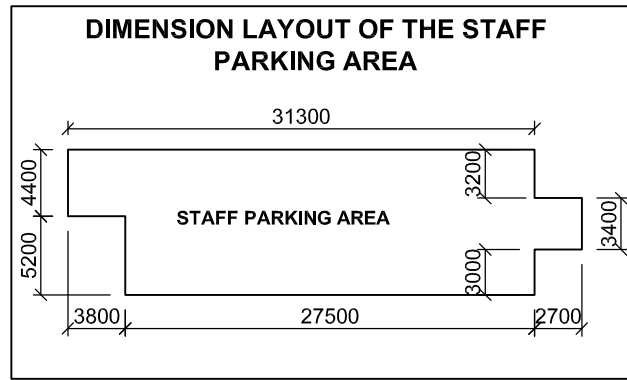
1. The question paper consists of FOUR questions.
2. Answer ALL the questions.
3. All drawings must be drawn to scale 1 : 1, unless otherwise stated.
4. ALL drawings are in first angle orthographic projection, unless stated otherwise.
5. ALL drawings must be prepared using pencil and instruments, unless 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				
<b>TOTAL</b>				
	<b>2</b>	<b>0</b>	<b>0</b>	<b>2 0 0</b>

FINAL CONVERTED MARK	CHECKED BY
<b>100</b>	

COMPLETE THE FOLLOWING:
NAME
NAME
EXAMINATION CENTRE
EXAMINATION CENTRE

SYMBOL LEGEND		
1		13 mm CRUSHED STONE
2		PALISADE FENCING
3		BETA FENCING
4		INDIGENOUS TREE
5		PALM TREE



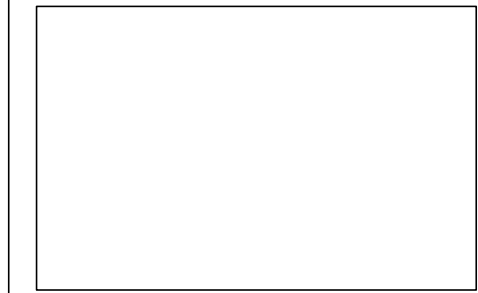
LAND SURVEYOR'S CERTIFICATE OF THE SIDE LENGTHS AND CORNER HEIGHTS OF STAND 121 SURVEYED ON 2021-11-16

LENGTHS IN MILLIMETRES	CORNER HEIGHTS IN METRES
AB = 42200	A = 342,5
BC = 93500	B = 345,1
CD = 42200	C = 345,8
AD = 93500	D = 341,9

**NOTE:**  
Contractors must verify all dimensions and levels on the site before commencing work. Architects to be notified immediately of any discrepancies.

ARCHITECT'S SIGNATURE .....  
CLIENT'S SIGNATURE .....

**ANSWER 17**  
In the space below, draw, in neat freehand, the front and top view of the SANS 10143 graphical symbol for a BATH.



REVISION	DATE	DESCRIPTION
2	2022-01-24	Add all street names
1	2022-01-19	Indicate disabled parking areas

**MLANDWA ARCHITECTS**  
21 SEDIDI STREET  
ALEXANDRIA  
082 222 7888  
mlandwa.architect@hotmail.com

PRINTED BY: **LUDIDI PRINTERS**      DATE OF PRINT: **2022-02-14**

DRAWING TITLE:  
**SITE PLAN**

PROJECT:  
**PROPOSED NEW DEVELOPMENT FOR MRS DLAYEDWA STAND 121, Cnr. VOORTREKKER & KROG STREET ALEXANDRIA**

PROJECT NUMBER: <b>02-2022</b>	DRAWING NUMBER: <b>DEL011-2021</b>		
DATE: <b>2021-11-21</b>	DRAWN: <b>RONNIE</b>	CHECKED: <b>DLABA</b>	SCALE: <b>1 : 300</b>
REFERENCE CODE: <b>SITE- 121A-22</b>	DRAWING NO.: <b>1 OF 6</b>		

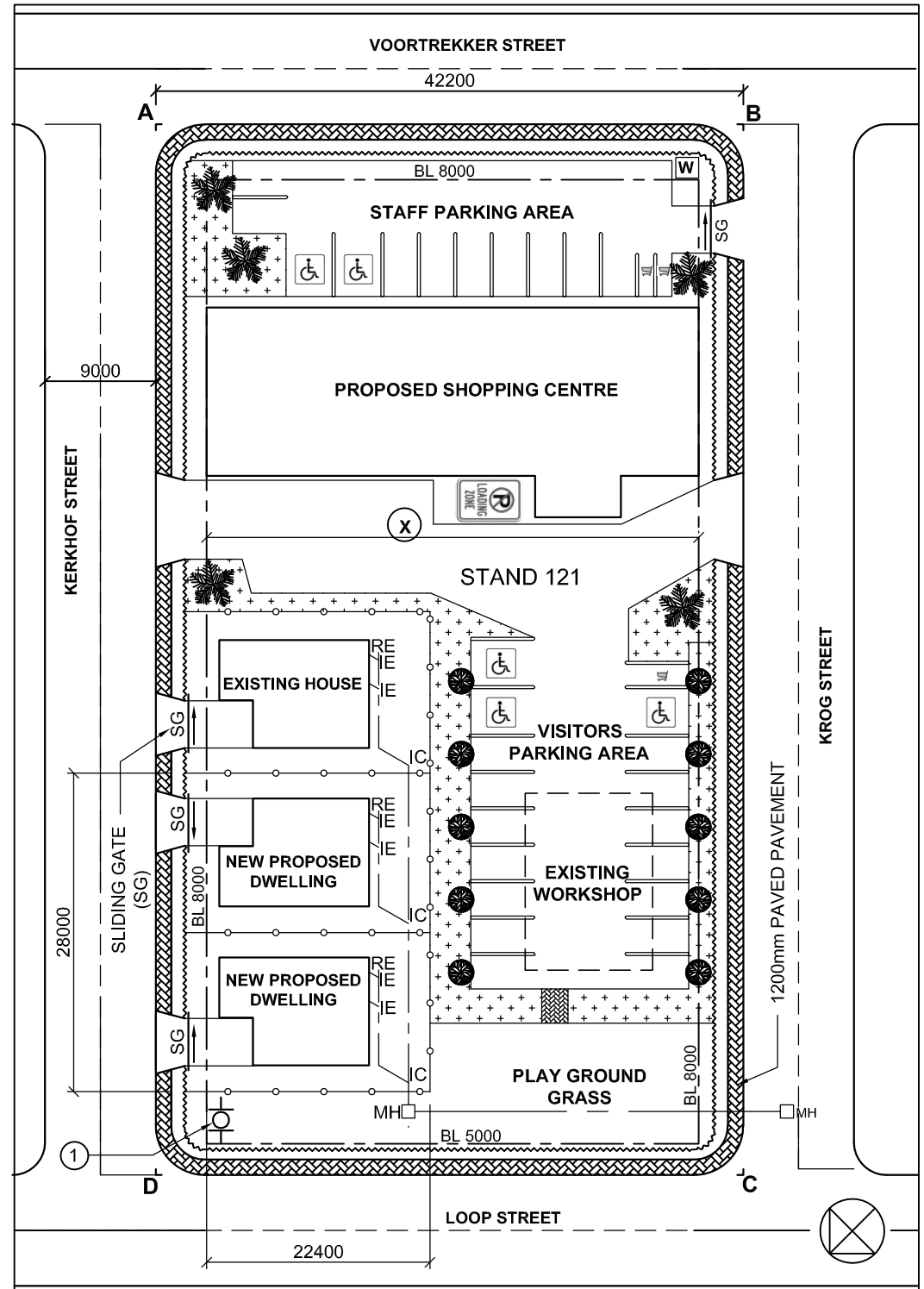
**QUESTION 1: ANALYTICAL (CIVIL)**

**Given:**  
The site plan of a new development with new dwellings, shopping centre, parking areas, a title block 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 and title block. [29]

QUESTIONS		ANSWERS	
1	Who is the architect of the development on STAND 121?	1	
2	Who is the owner of the development?	1	
3	What is the reference code?	1	
4	What is the width of the pavement in meters?	1	
5	The existing workshop is drawn with hidden lines. What does the hidden lines mean to the contractor?	2	
6	Name the feature at 1.	1	
7	How many sliding gates need to be installed?	1	
8	What type of fence must be used between the new proposed dwellings?	1	
9	In what colour should the new proposed dwellings be indicated on the site plan?	1	
10	How many parking bays for disabled are there for the visitors?	1	
11	How many inspection chambers must be installed at the new proposed dwellings?	1	
12	Name the type of material that must be used as a ground cover under the trees, around the parking area.	1	
13	With reference to the north point, on which side of the shopping centre is the staff parking area?	2	
14	Determine the total length (indicated with an X) of the shopping centre, in meter.	2	
15	The existing house is already fenced with a palisade fence. Determine, in the space below (Answer 15) how many meters of palisade fence need to be purchased to fence the two new dwellings. The Kerkhof street side already has betafence and do not need palisade.	3	
16	In the space provided below (ANSWER 16), determine the <b>total area of the staff parking area</b> , in square meters. See dimension layout of staff parking.	5	
17	In the space in the title panel (ANSWER 17), draw in neat freehand, the front and top view of the SANS 10143 graphical symbol for a BATH.	4	

<b>ANSWER 15</b> Show ALL calculations.	<b>ANSWER 16</b> Show ALL calculations.	<b>TOTAL</b>	<b>29</b>
		<b>NAME</b>	
		<b>NAME</b>	<b>2</b>



**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.

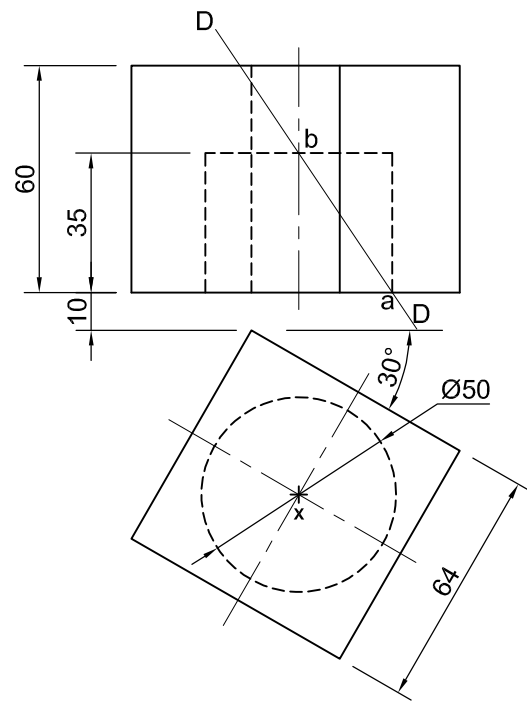
**Instructions:**

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 ½		
2	FRONT VIEW	6		
3	SECTIONAL RIGHT VIEW	12		
4	TRUE SHAPE	8 ½		
PENALTIES (-)				
<b>TOTAL</b>		<b>31</b>		

<b>NAME</b>	
<b>NAME</b>	
	<b>3</b>

**QUESTION 3: PERSPECTIVE**

**Given:**

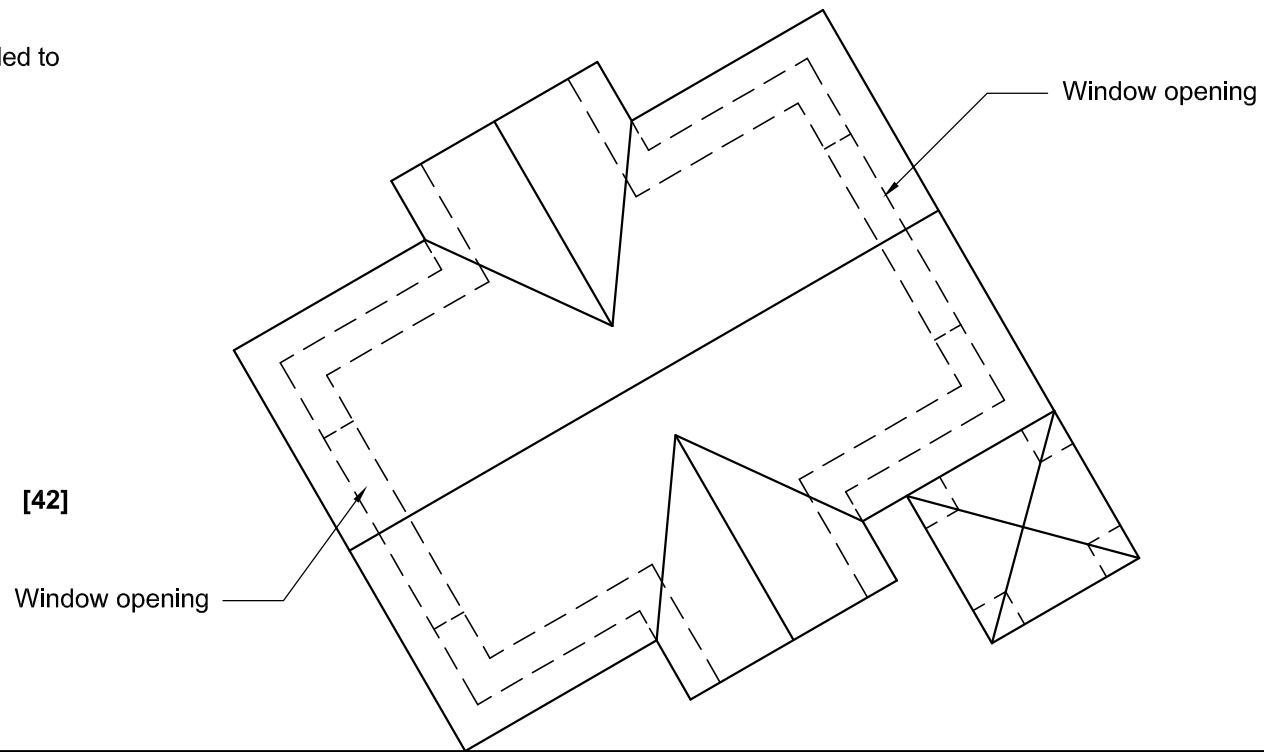
- Two views of a small chapel and the information needed to draw a two-point perspective drawing.

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

**Instructions:**

Complete the perspective drawing.

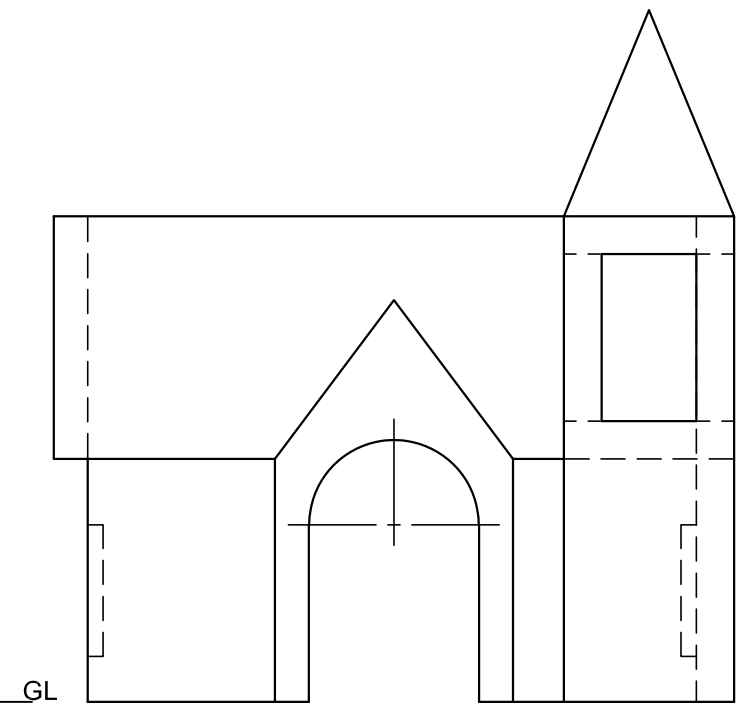
- Align the drawing sheet with the ground line (GL).
- Determine and label the vanishing points.
- Show ALL necessary construction.
- NO hidden detail is required.



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 (-)				
<b>TOTAL</b>		<b>42</b>		

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:**

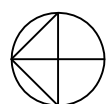
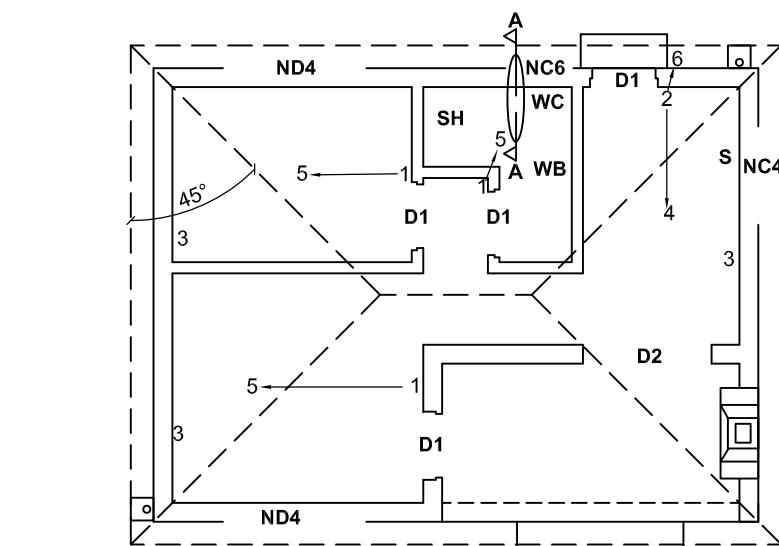
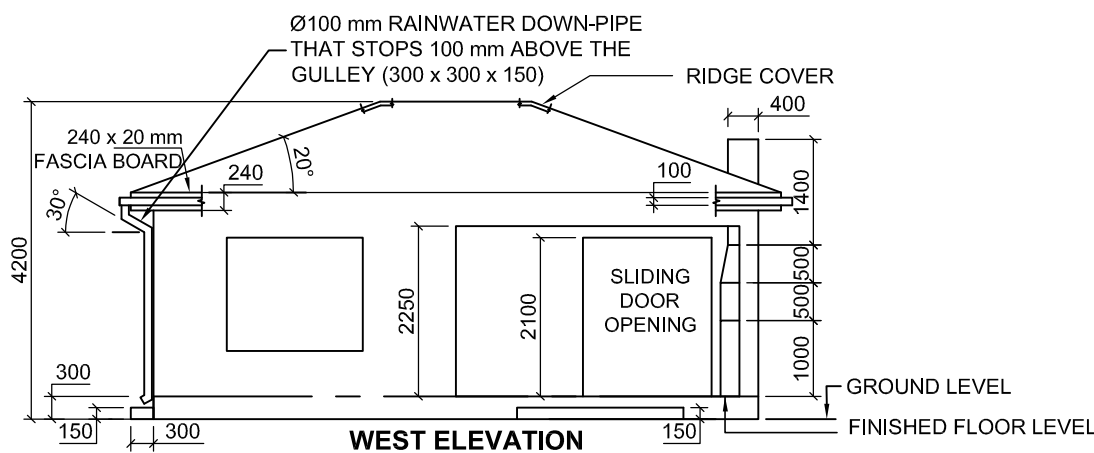
- The complete foundation, external wall, lintel and window detail.
- The shower to the north of the cutting plane **A-A**
- The roof detail, including the fascia board and gutter.
- ALL hatching detail. **ONLY** the substructure hatching may be drawn in neat freehand.

**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.

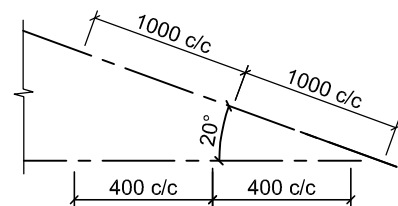
114 x 38 mm ROOF TRUSSES ON  
114 x 38 mm WALL PLATES.

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.

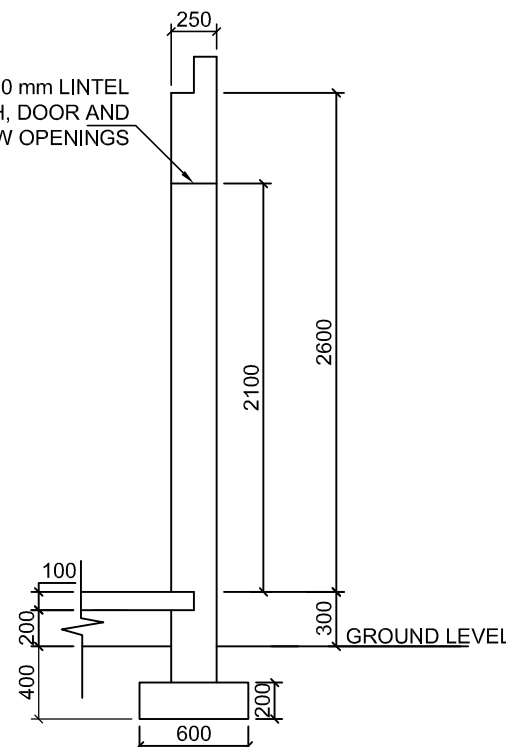
240 x 20 mm FASCIA BOARD WITH 150 X 100 mm GUTTERS ON ALL  
SIDES AND A Ø100 mm RAINWATER DOWN-PIPE

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

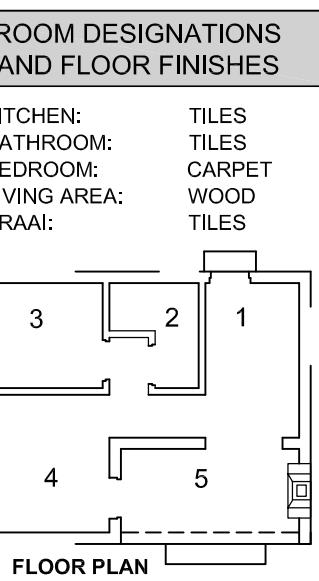
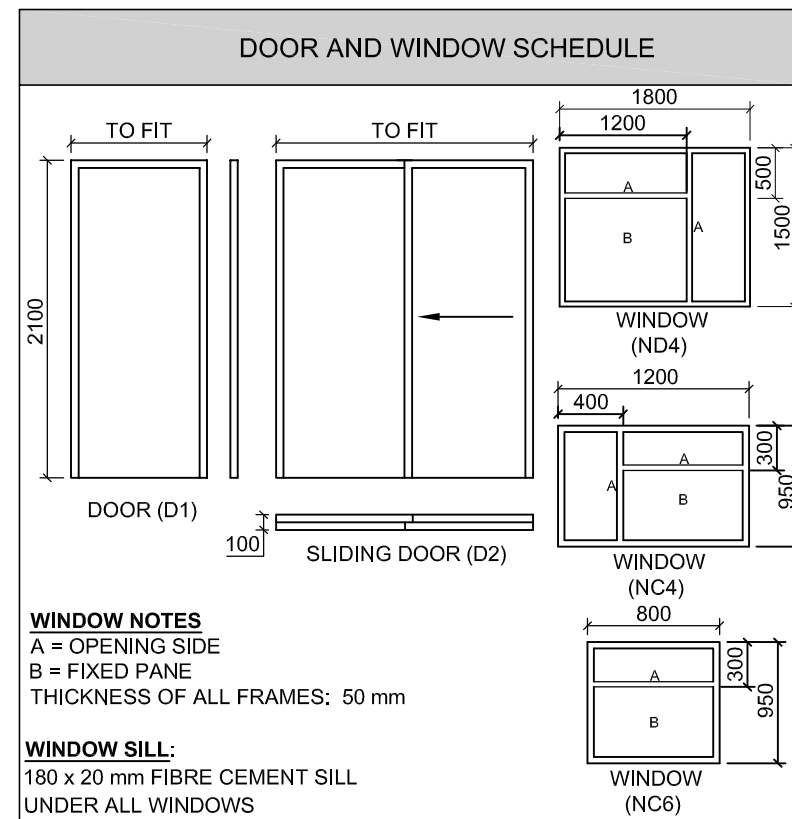
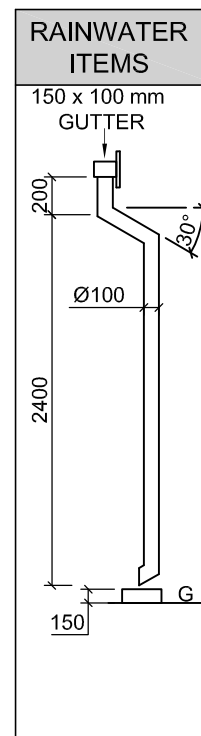


**SCHEMATIC DIAGRAM OF THE  
ROOF TRUSS FOR ROOF**

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

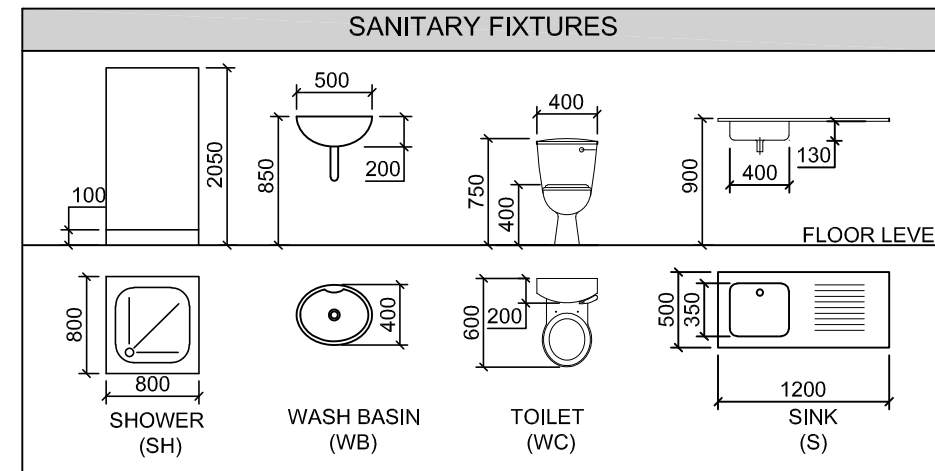


**DIMENSION GUIDE:  
INCOMPLETE FOUNDATION AND  
EXTERNAL WALL DETAIL**



ROOF COMPONENTS	
	240 x 20 mm FASCIA BOARD
	ROOF CAP AND RIDGE COVER
	150 x 100 GUTTER

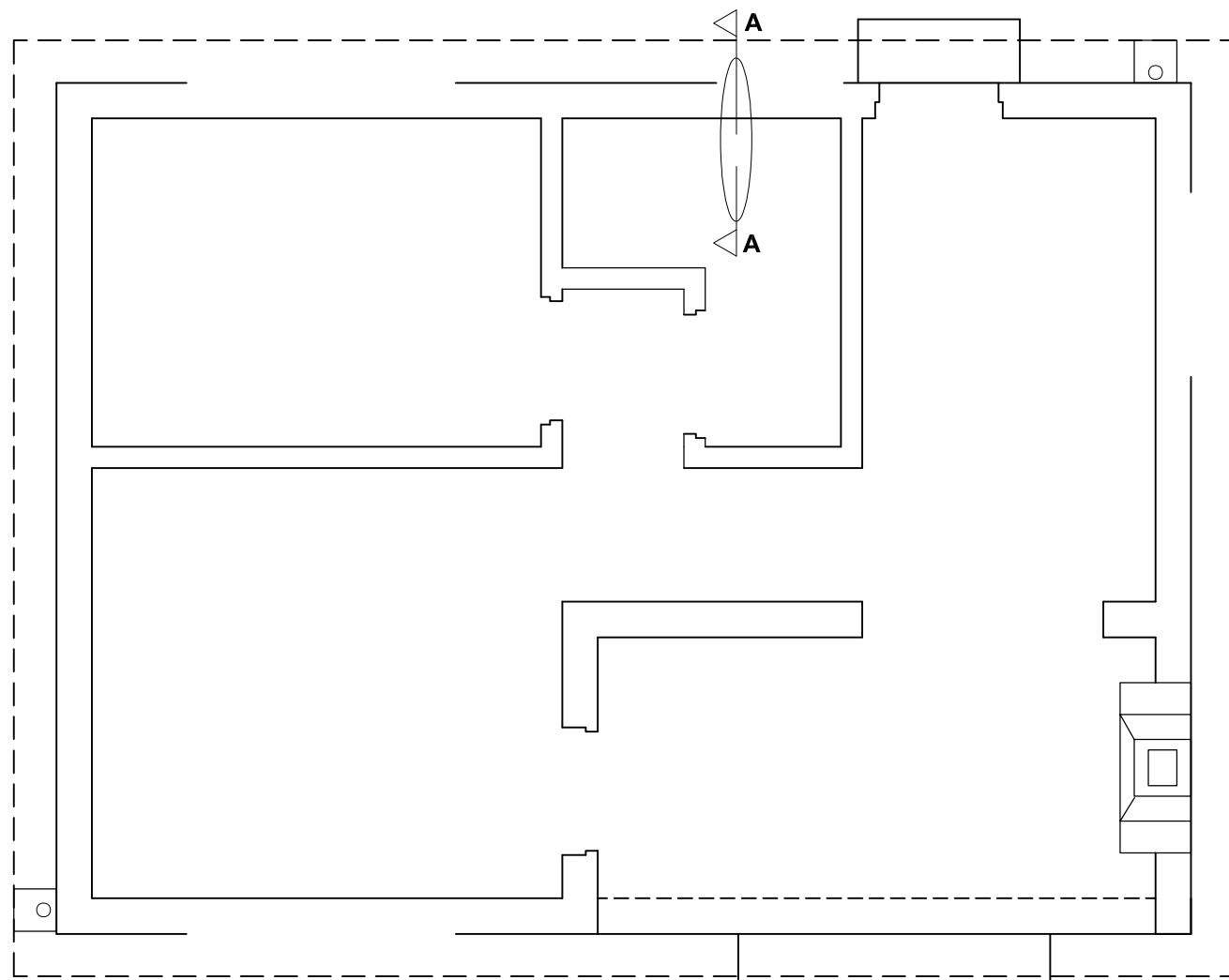
ELECTRICAL SYMBOLS	



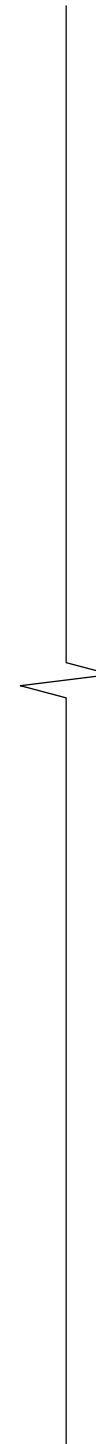
ROOF DETAIL: MARK ALLOCATION							
A	ROOF ANGLE	1/2		F	CEILING BOARD	1/2	
B	ROOF SHEET	1		G	WALL PLATE	1	
C	ROOF TRUSS	3		H	FACIA BOARD	1	
D	PURLIN + SPACING	1 1/2		I	GUTTER	1	
E	BRANDERING + SPACING	1 1/2					
<b>TOTAL</b>						<b>11</b>	

PENALTIES		
1	INCORRECT SCALE	
2	NON-ALIGNMENT OF VIEWS	
3	INCORRECT LETTERING	
<b>TOTAL PENALTIES (-)</b>		

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



FLOOR PLAN  
SCALE 1 : 50



DETAILED SECTION A-A  
SCALE 1 : 20

<b>NAME</b>	
<b>NAME</b>	
6	