



**NATIONAL  
SENIOR CERTIFICATE**

**GRADE 11**

**ENGINEERING GRAPHICS AND DESIGN P 1**

**NOVEMBER 2022**

**MARKS: 200**

**TIME: 3 hours**

**This question paper consists of 6 pages.**

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## INSTRUCTIONS AND INFORMATION

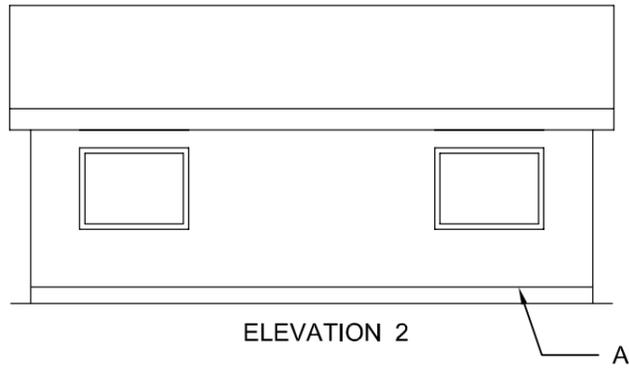
1. The paper consists of FOUR questions.
2. Answer ALL the questions.
3. All drawings must be drawn to scale 1 : 1, unless otherwise stated.
4. The questions must be answered on the answer sheets provided.
5. All the answers sheets must be re-stapled in numerical sequence and handed in irrespective of whether the question was attempted or not.
6. Careful time management is essential in order to complete all the questions.
7. Print your name in the block provided on every ANSWER SHEET.
8. All answers must be drawn accurately and neatly.
9. Any details or dimensions not given must be estimated in good proportion.
10. ALL drawings are in first angle orthographic projection, unless stated otherwise.

FOR OFFICIAL USE ONLY					
					MODERATED MARK
1					
2					
3					
4					
TOTAL					
	<b>2</b>	<b>0</b>	<b>0</b>		<b>2 0 0</b>

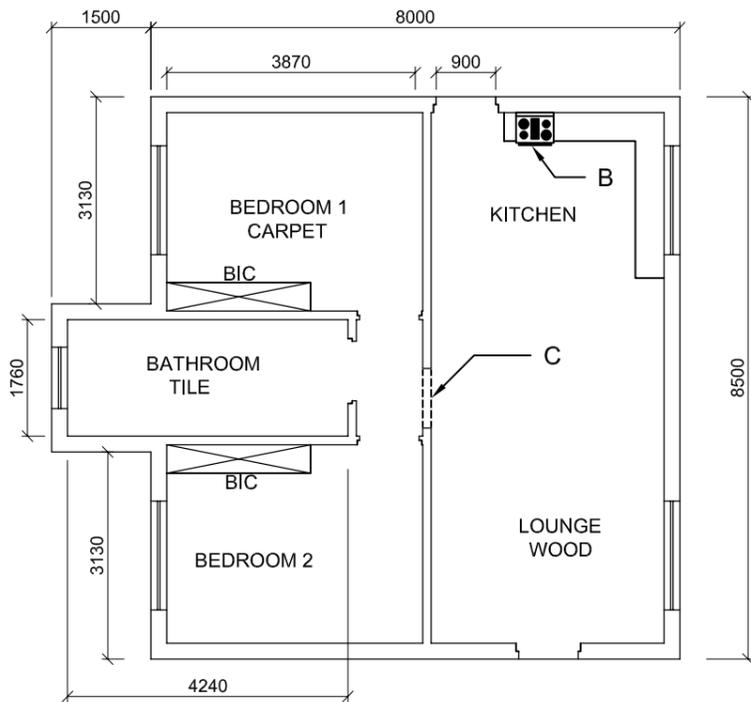
FINAL CONVERTED MARK	CHECKED BY
<b>100</b>	

COMPLETE THE FOLLOWING:
NAME
NAME
EXAMINATION CENTRE
EXAMINATION CENTRE

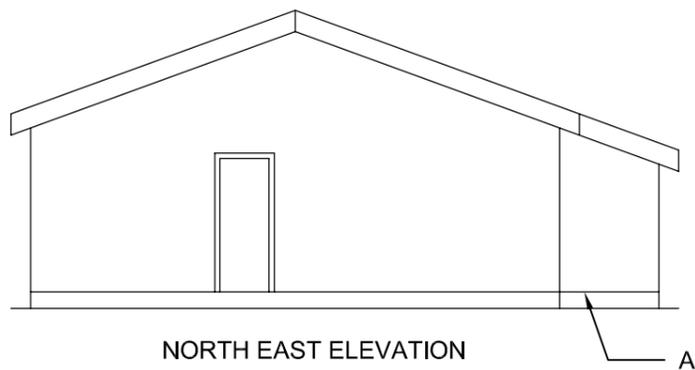
Please turn over **1**



ELEVATION 2



VIEW 1



NORTH EAST ELEVATION

**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 16**

REVISION	DATE	DESCRIPTION
3	2021-02-28	ADD HATCHING
2	2021-02-28	SHOW THE FLOOR FINISH FOR EACH ROOM
1	2021-02-26	SHOW THE SCALE

**GLENDIA ARCHITECTS**

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PRINTED BY: DINDELA PRINTERS  
DATE OF PRINT: 2021-04-12

DRAWING TITLE:  
FLOOR PLAN WITH ELEVATIONS

PROJECT:  
PROPOSED NEW DWELLING FOR  
**MR. P. CEKISO** ON STAND 13,  
UITENHAGE, EASTERN CAPE.

PROJECT NUMBER: EGD 2021 - 01  
DRAWING NUMBER: PC2021

DATE: 2021-01-17  
DRAWN: HLASO  
CHECKED: DLABA  
SCALE: 1 : 100

REFERENCE CODE: DOE-2021EC  
PAGE NUMBER: 1 OF 4

**QUESTION 1A: ANALYTICAL (CIVIL)**

**Given:**

A incomplete floor plan and two elevations of a new dwelling. A title panel and a table of questions. The drawing has not been prepared according to the indicated scale.

**Instructions:**

Complete the table below by neatly answering the questions, which refer to the accompanying drawing and title panel. **[33]**

QUESTIONS		ANSWERS	
1	Who is the client?	1	
2	What is the reference code of the drawing?	1	
3	How many signatures are required on the drawing?	1	
4	On what date was the house plan printed?	1	
5	Line <b>A</b> indicates the <b>FFL</b> . What line type should be used for this?	1	
6	What does the abbreviation <b>BIC</b> stand for?	1	
7	What item is indicated by <b>B</b> ?	1	
8	How many exterior doors open to the outside of the house?	2	
9	What does the line indicated by arrow <b>C</b> , illustrate?	2	
10	In what colour would new masonry be presented on a drawing?	1	
11	In what colour would new glass be presented on a drawing?	1	
12	What SI unit are used for the dimensions on the given drawing?	2	
13	What would view 1 be called?	1	
14	What would elevation 2 be called?	2	
15	Have all the proposed revision been made on the drawing? Motivate your answer.	2	
16	In the space provided in the title panel, draw, in neat freehand, the front view and top view of the <b>SABS 10143</b> graphical symbol (convention) for a BATH.	4	
17	In the space provided below, (answer 17) determine the perimeter of the house, in meter.	4	
18	In the space provided below, (answer 18) determine the total tile area of the bathroom floor in square meter.	5	

**ANSWER 17**

**ANSWER 18**

**TOTAL 33**

**NAME**

**NAME**

**2**

**QUESTION 2: INTERPENETRATION AND DEVELOPMENT**

**Given:**

- A top view and incomplete front view of a pentagonal pipe penetrating a square pipe.
- Starting point **X**, the centre of the main pipe (vertical pipe) in the top view.
- An auxiliary view of the pentagonal pipe.
- Seam **AB**, the starting point for the development

**Instructions:**

Draw to scale 1:1, the following views of the interpenetrating pipes:

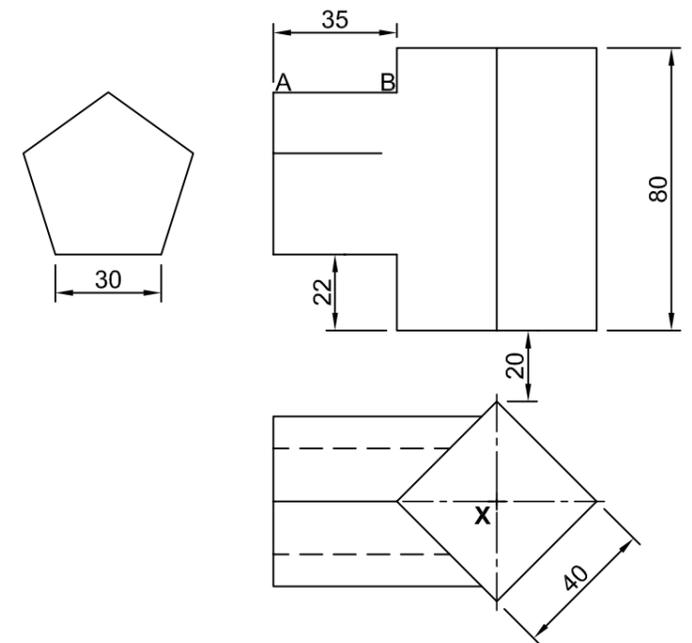
- 2.1 The given top view
- 2.2 The complete front view clearly showing the curve of interpenetration.
- 2.3 The left view.
- 2.4 The development of the branch pipe (pentagonal pipe) with **AB** as the seam.

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

[40]

B

A



X

ASSESSMENT CRITERIA				
1	TOP VIEW + CONSTRUCTION	8		
2	FRONT VIEW	9		
3	LEFT VIEW	9		
5	DEVELOPMENT	14		
PENALTIES (-)				
<b>TOTAAL</b>		<b>40</b>		

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

**QUESTION 3: PERSPECTIVE**

**Given:**

Three views of a HOUSE and the information needed to draw a two-point perspective drawing.

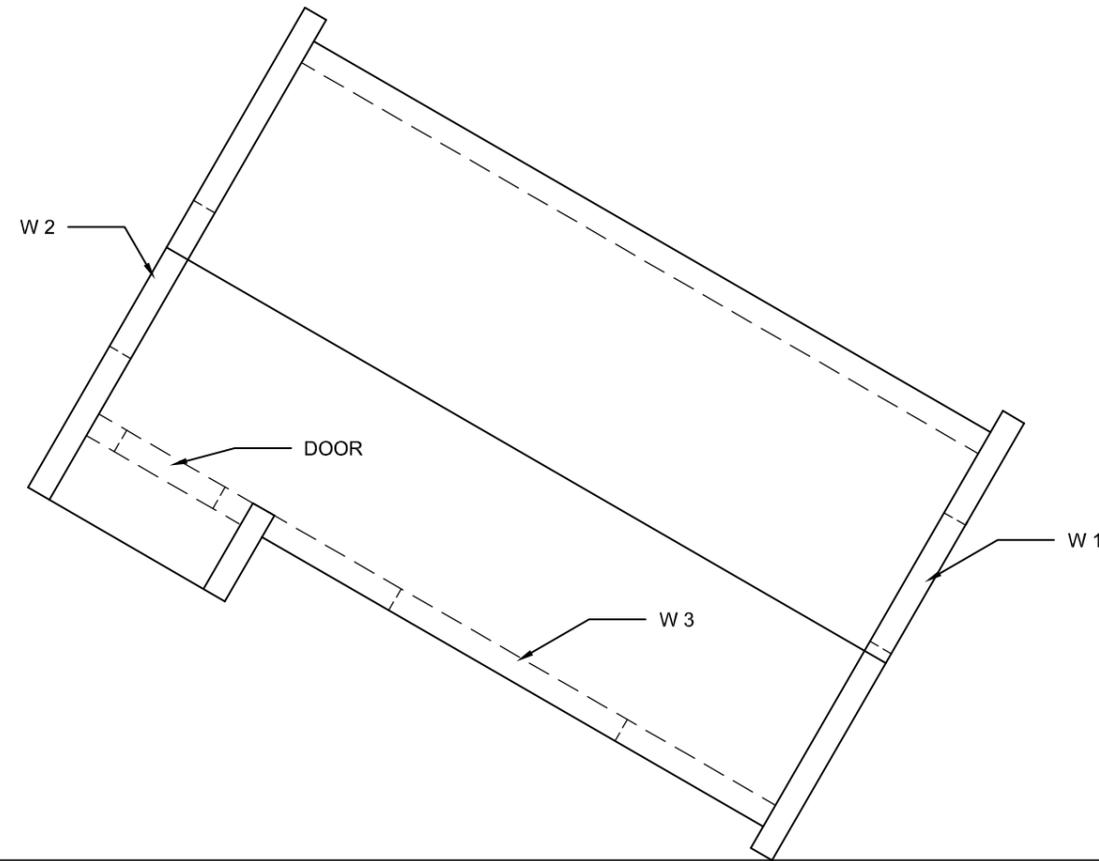
- PP – Picture plane
- HL – Horizon line
- GL – Ground line
- SP – Station point

**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.
- W = Window

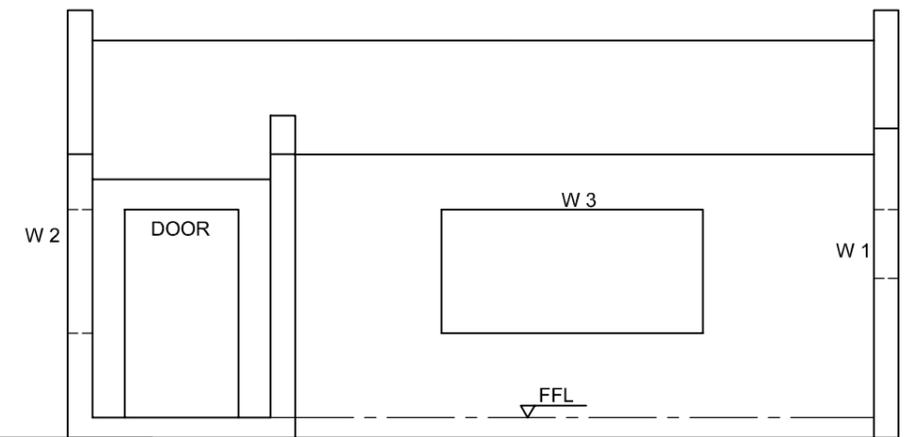
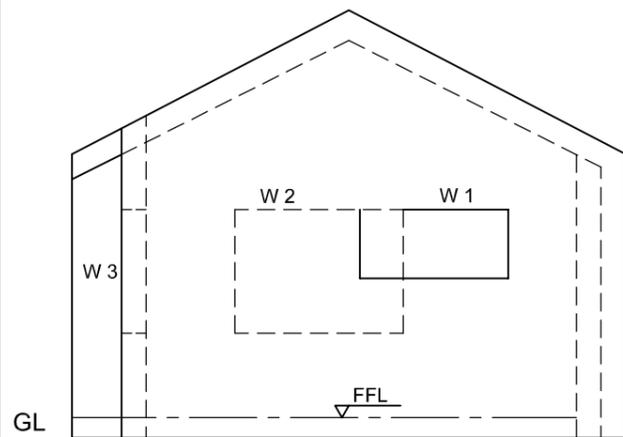
[36]



ASSESSMENT CRITERIA				
1	CONSTRUCTION AND VPs	7		
2	ROOF	4		
3	WALLS	18		
4	WINDOWS	7		
PENALTIES (-)				
<b>TOTAL</b>		<b>36</b>		

PP

HL



<b>NAME</b>	<b>4</b>
-------------	----------

**QUESTION 4: CIVIL DRAWING**

**Given:**

- The incomplete EAST ELEVATION of a proposed new one bedroom dwelling, showing the walls, step, windows, door openings and notes.
- The incomplete floor plan showing the walls, position of the doors, windows and sanitary fixtures.
- The incomplete foundation and wall detail.
- Room designations and floor finishes.
- A door and window schedule.
- A table of sanitary fixtures.
- The floor plan of the new dwelling, drawn to scale 1 : 50 and the starting point P for the sectional view 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 dwelling:

**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 hatching detail.

**4.1.2 THE EAST ELEVATION**

**Show the following features on the drawing:**

- The outside walls, step, doors and window detail, window sills, and the garage ramp.
- Draw a break line 3000 mm above the ground level.
- The finished floor level.

4.2 In the space provided on page 6, using the incomplete foundation and break line, 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:**

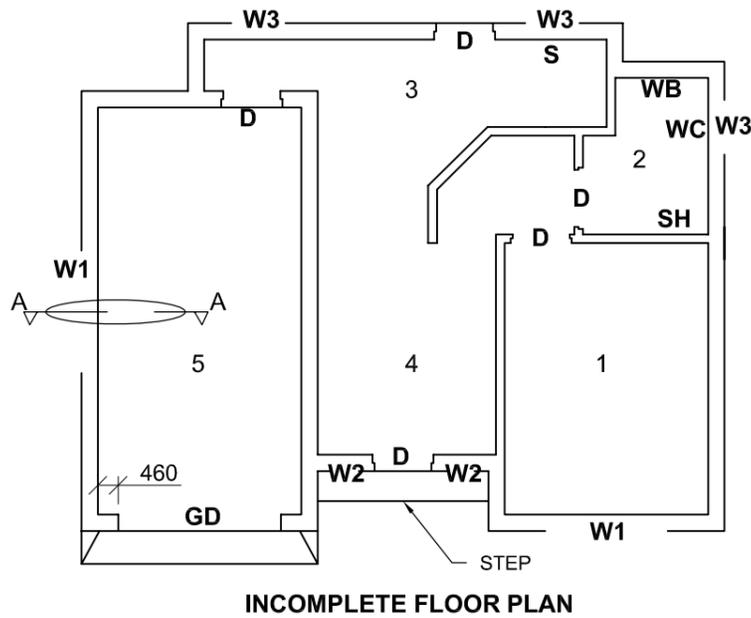
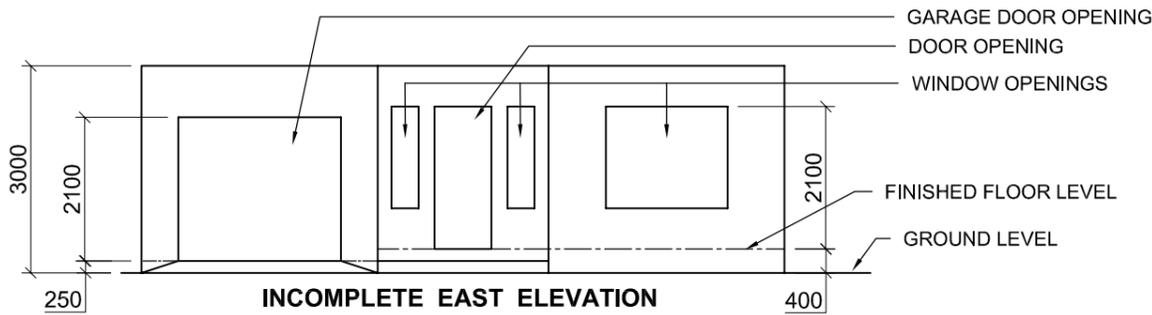
- The complete foundation, external wall and window detail.
- The lintels above the window.
- The window sill under the window.
- Show a part of the garage door opening.
- ALL hatching detail.
- ALL substructure hatching may be drawn neat in freehand.

**Label the following:**

- The east elevation and scale.
- Detailed section A : A and scale.
- The room designations and floor finishes.
- Using the correct abbreviations, label the following features in the correct view: natural ground level, finished floor level and damp proof course.

**NOTE:**

- ALL drawings must comply with the guidelines and graphical symbols contained in the SANS 10143. [91]



**ROOM DESIGNATIONS AND FLOOR FINISHES**

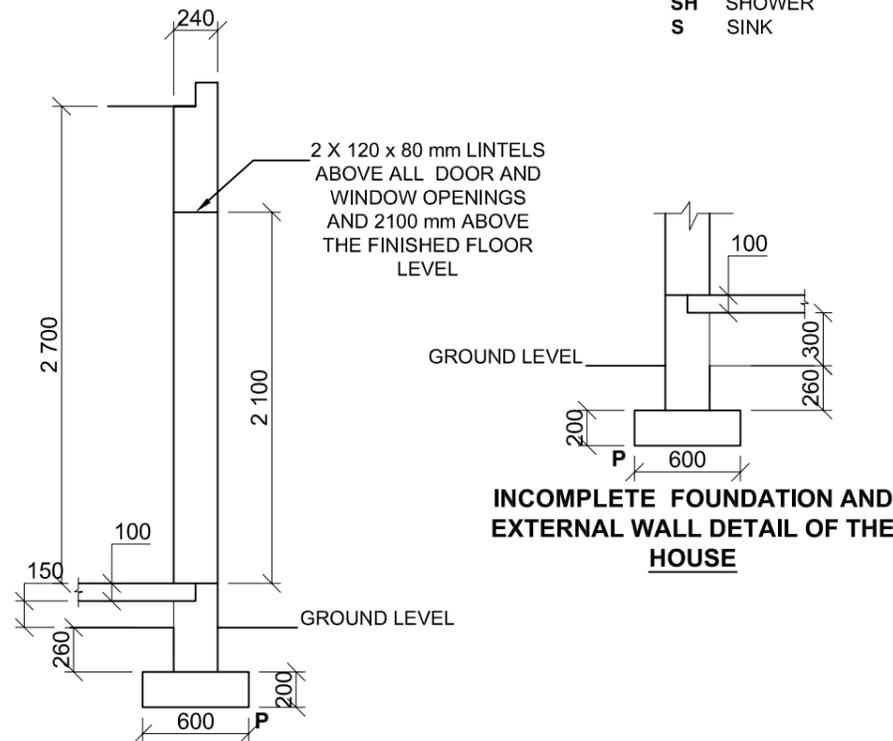
1. BEDROOM	CARPET
2. BATHROOM	TILE
3. KITCHEN	TILE
4. LOUNGE	WOOD
5. GARAGE	CEMENT

**FEATURES**

D	DOOR
GD	GARAGE DOOR
W1	WINDOW
W2	WINDOW
W3	WINDOW

**FIXTURES**

WC	TOILET
WB	WASH BASIN
SH	SHOWER
S	SINK

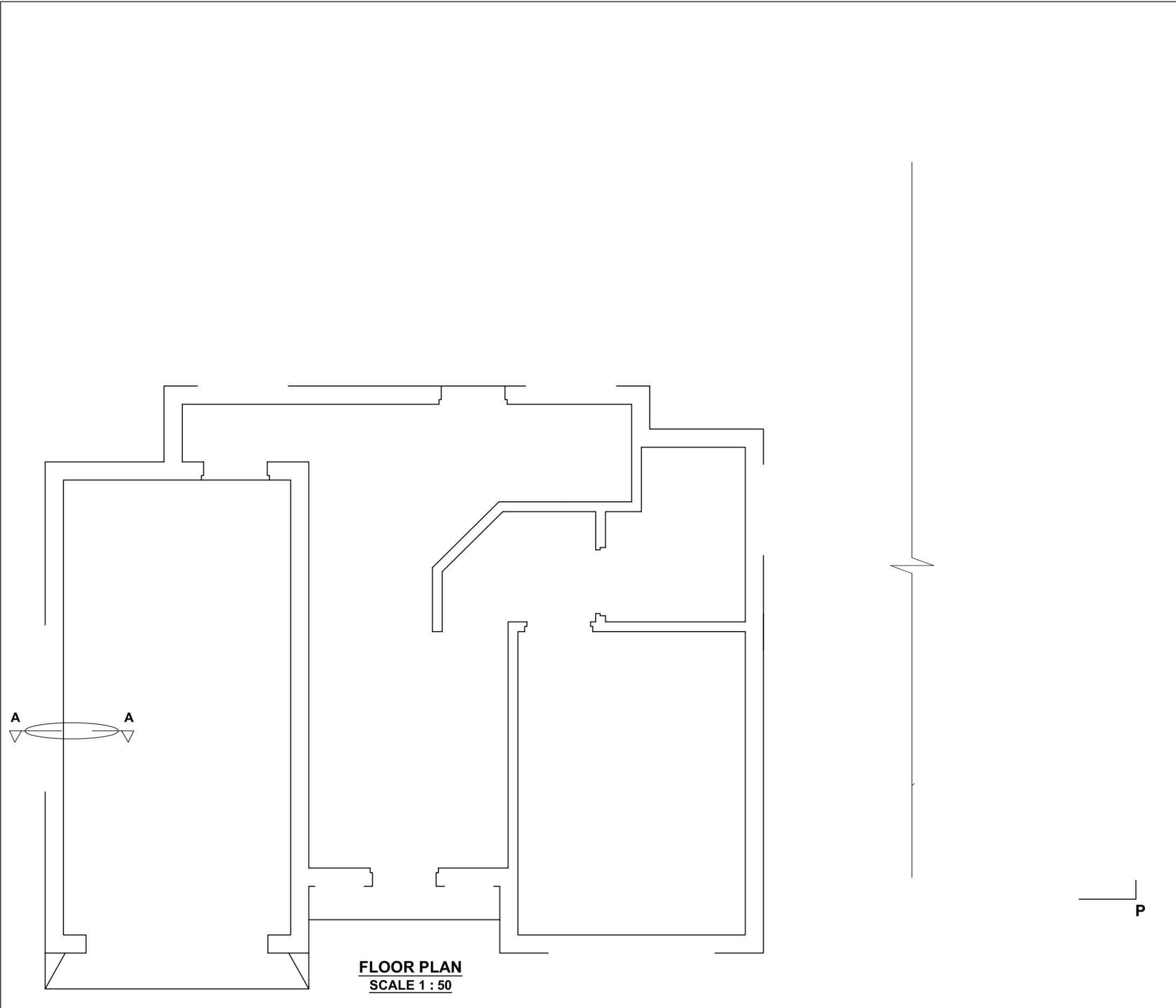


**INCOMPLETE FOUNDATION AND EXTERNAL WALL DETAIL OF THE GARAGE**

DOOR AND WINDOW SCHEDULE	
<p>2600 2100 GARAGE DOOR (GD)</p>	<p>TO FIT 2100 DOOR FRAME AND DOOR (D)</p>
<p>450 1500 WINDOW (W2)</p>	<p>450 2000 450 1500 WINDOW (W1)</p>
<p>1000 900 WINDOW (W3)</p>	<p><b>WINDOW NOTES</b></p> <p>A = OPENING SIDE B = HINGED SIDE C = FIXED PANE THICKNESS OF ALL FRAMES: 50 mm</p> <p><b>WINDOW SILL:</b> 180 x 20 mm FIBRE CEMENT SILL UNDER ALL WINDOWS</p>

SANITARY FIXTURES			
<p>900 900 SHOWER (SH)</p>	<p>500 200 WASH BASIN (WB)</p>	<p>750 400 TOILET (WC)</p>	<p>850 400 FLOOR LEVEL SINK (S)</p>
<p>900 900 SHOWER (SH)</p>	<p>400 WASH BASIN (WB)</p>	<p>200 700 TOILET (WC)</p>	<p>500 1200 350 SINK (S)</p>

NAME	
NAME	5



**FLOOR PLAN**  
SCALE 1 : 50

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

ASSESSMENT CRITERIA				
FLOOR PLAN				
1	DOORS AND WINDOWS	20 1/2		
2	FIXTURES	8 1/2		
3	LABELS	5		
4	HATCHING	5		
<b>SUB-TOTAL</b>		<b>39</b>		
EAST ELEVATION				
1	WALLS, STEPS, FFL AND BREAK LINE	6 1/2		
2	DOOR AND WINDOWS	14 1/2		
3	LABELS	2		
<b>SUB-TOTAL</b>		<b>23</b>		
DETAILED SECTION				
1	FOUNDATIONS, WALLS AND FLOOR	8		
2	WINDOW, SILL, LINTEL AND GARAGE DOOR	13		
3	HATCHING	5 1/2		
4	LABELS	2 1/2		
<b>SUB-TOTAL</b>		<b>29</b>		
<b>TOTAL</b>		<b>91</b>		
PENALTIES (-)				
<b>GRAND TOTAL</b>				

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