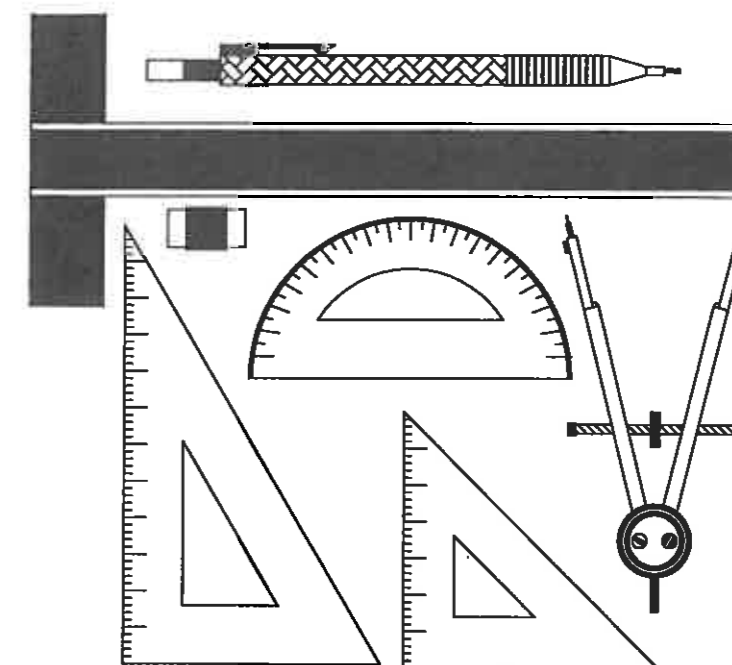




NATIONAL SENIOR CERTIFICATE EXAMINATION
2013

ENGINEERING GRAPHICS AND DESIGN
PAPER 1

MARKS: 200
TIME: 3 HOURS



| FOR OFFICIAL USE ONLY | | | | | | |
|-----------------------|-----------------------|------|-----------|---------|------|--|
| QUESTION | SECTION | MARK | MODERATED | MAXIMUM | CODE | |
| 1 | CIVIL ANALYTICAL | | | 22 | | |
| 2 | DEVELOPMENT | | | 38 | | |
| 3 | TWO POINT PERSPECTIVE | | | 40 | | |
| 4 | CIVIL DRAWING | | | 100 | | |
| SYMBOL | TOTAL | | | 200 | | |
| | | | | 100 | | |

| | |
|----------------------|------------|
| FINAL CONVERTED MARK | CHECKED BY |
| 100 | |

PLEASE READ THE FOLLOWING INSTRUCTIONS CAREFULLY

1. This question paper consists of **6 pages** including the cover page and **4 questions**.
2. **All** questions must be answered.
3. Unless specified otherwise, all questions are in **First Angle Orthographic Projection**.
4. Unless specified otherwise, all questions are to be completed to a **scale of 1:1**.
5. **All** answer sheets must be re-stapled in numerical order, even questions that are not attempted/blank.
6. All **construction work** must be shown.
7. Print your **examination number** neatly on each page.
8. Use only the **drawing sheets** provided.
9. Your drawings should reflect **neatness** and **accuracy**.
10. All dimensions or detail not given may be **assumed** in **good proportion**.

EXAMINATION NUMBER

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B S G ARCHITECTS

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REG. NO. ST 1610

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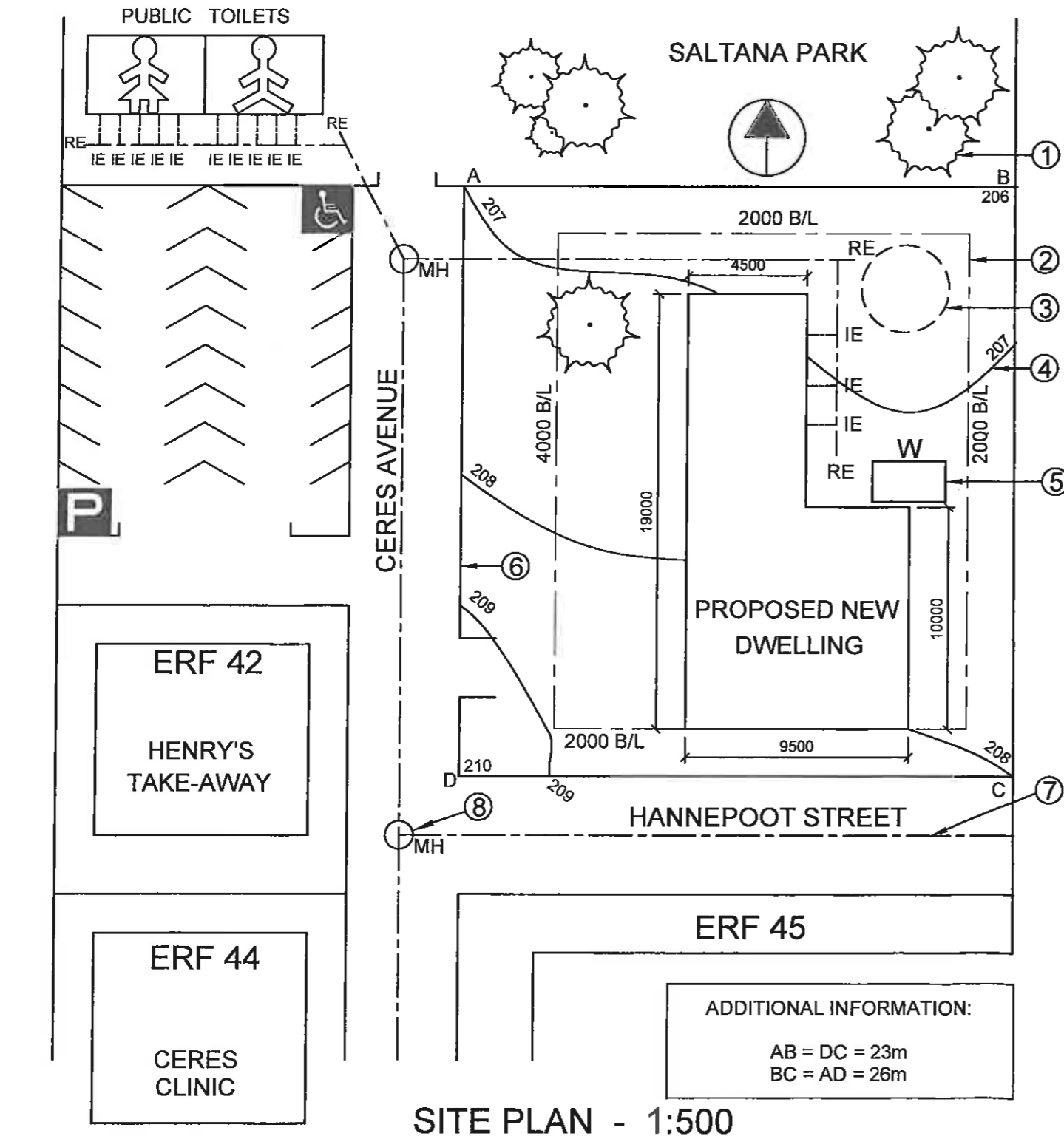
TEL: 021-3751244
FAX: 021-3751245
CELL: 0831228122
www.bsgarch.co.za
design@bsgarch.co.za



12 GRAPE RD P.O. BOX 128
PAARL PAARL
7646 7646

PROPOSED NEW DWELLING
MR K.P. MULLEN
CERES AVENUE
ERF 41
WORCESTER

DRAWN BY: ALAN GARDEN
CHECKED BY: ROGER JONES
APPROVED BY: M&L CONSULTANTS
DATE: 23 JULY 2005
SIGNED: MR M.P. NOLEN



QUESTION 1

CIVIL
ANALYTICAL

STUDY THE ADJACENT DRAWING AND INFORMATION AND ANSWER THE QUESTIONS THAT FOLLOW:

| | | |
|---|------------------|---|
| 1.1 What type of civil drawing is shown? | | 1 |
| 1.2 What elevation faces the car park? | | 1 |
| 1.3 Who checked the drawing? | | 1 |
| 1.4 In which town is the architect's office located? | | 1 |
| 1.5 What is the erf number of the proposed new dwelling? | | 1 |
| 1.6 What is the feature at 1 called? | | 1 |
| 1.7 What is the feature at 2 called? | | 1 |
| 1.8 What is the feature at 3 called? | | 1 |
| 1.9 What is the feature at 4 called? | | 1 |
| 1.10 What is the feature at 5 called? | | 1 |
| 1.11 What is the feature at 6 called? | | 1 |
| 1.12 What is the feature at 7 called? | | 1 |
| 1.13 What is the feature at 8 called? | | 1 |
| 1.14 How far is the proposed new dwelling from Hannepot Street? | | 1 |
| 1.15 From which road would you enter the driveway? | | 1 |
| 1.16 Give 4 examples how the human needs of people living in this area have been fulfilled. | 1 2 3 4 | 4 |
| 1.17 In the space below, determine the area of the proposed new dwelling in m. ² | | 3 |

Answer: _____

22 MARKS

EXAMINATION NUMBER

ANSWER SHEET 1

| | | | | | | | | | | | | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
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QUESTION 2
TRANSITION DEVELOPMENT

The figure shows the Front View and *INCOMPLETE* Top View of a VACUUM NOZZLE in First Angle orthographic projection.

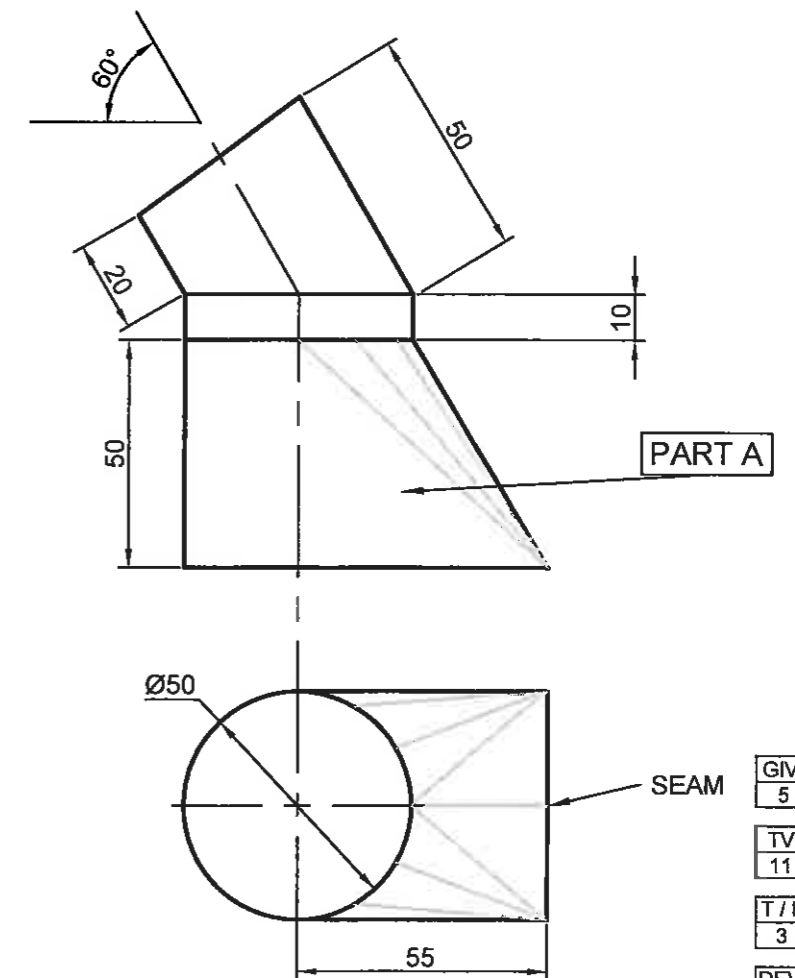
Draw the following:

- 2.1 the FRONT view of the VACUUM NOZZLE.
Position it appropriately on the given centre line.
- 2.2 the complete TOP view of the VACUUM NOZZLE.
Position it appropriately on the given centre lines.
DO NOT SHOW ANY HIDDEN DETAIL.
- 2.3 the development of the transition piece (PART A) using triangulation and general development techniques.
Show all construction and calculations.

ASSESSMENT CRITERIA

You will be assessed on your ability to do the following:

- draw the given front view 3
- draw the complete top view 13
- find the necessary true lengths 3
- develop the transition piece 19



| | | |
|-----|----|--|
| GIV | 5 | |
| TV | 11 | |
| T/L | 3 | |
| DEV | 19 | |

38 MARKS

EXAMINATION NUMBER

| | | | | | | | | | | | | | | | | | | | | |
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ANSWER SHEET 2

QUESTION 3

TWO POINT PERSPECTIVE

The figure shows the three views of a dwelling with a swimming pool at ground level. Draw a neat two-point perspective view of the dwelling and pool.

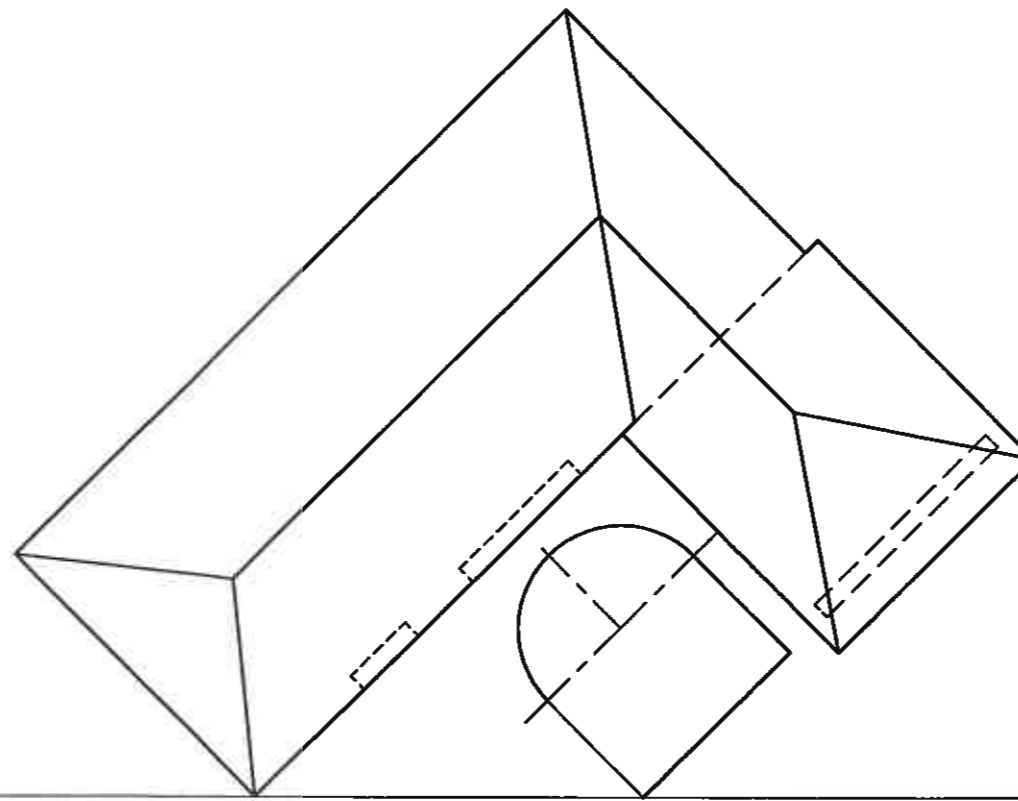
- PP - Picture Plane
- HL - Horizon Line
- GL - Ground Line
- SP - Station Point

Show the wall thickness where applicable.
Neatly label the vanishing points RVP and LVP.
SHOW NO HIDDEN DETAIL.

ASSESSMENT CRITERIA

You will be assessed on your ability to do the following:

- determine and label the vanishing points 2
- show all necessary projection and construction 3
- determine the two point perspective view 35

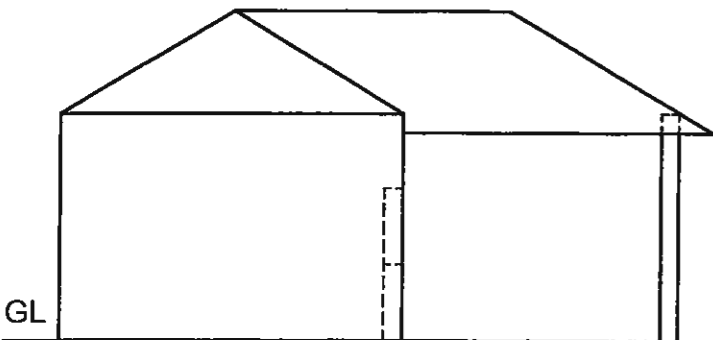


PP

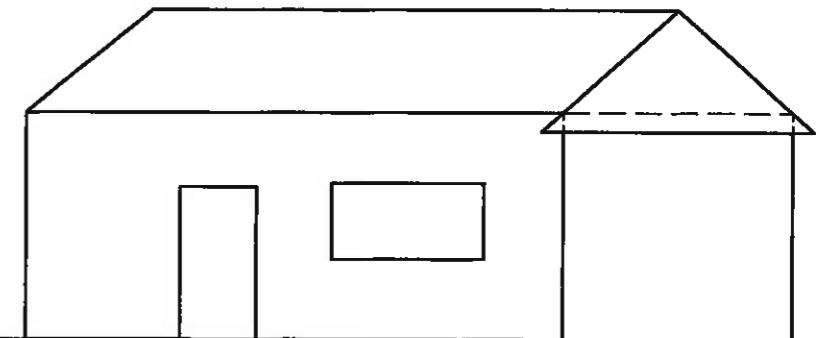
PP

HL

HL



GL



GL

PTS
19

Pool
9

W/D
7

VPS
2

CON
3



40 MARKS

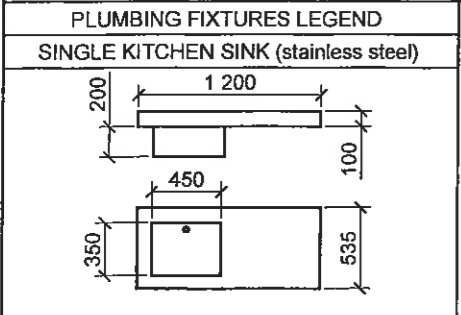
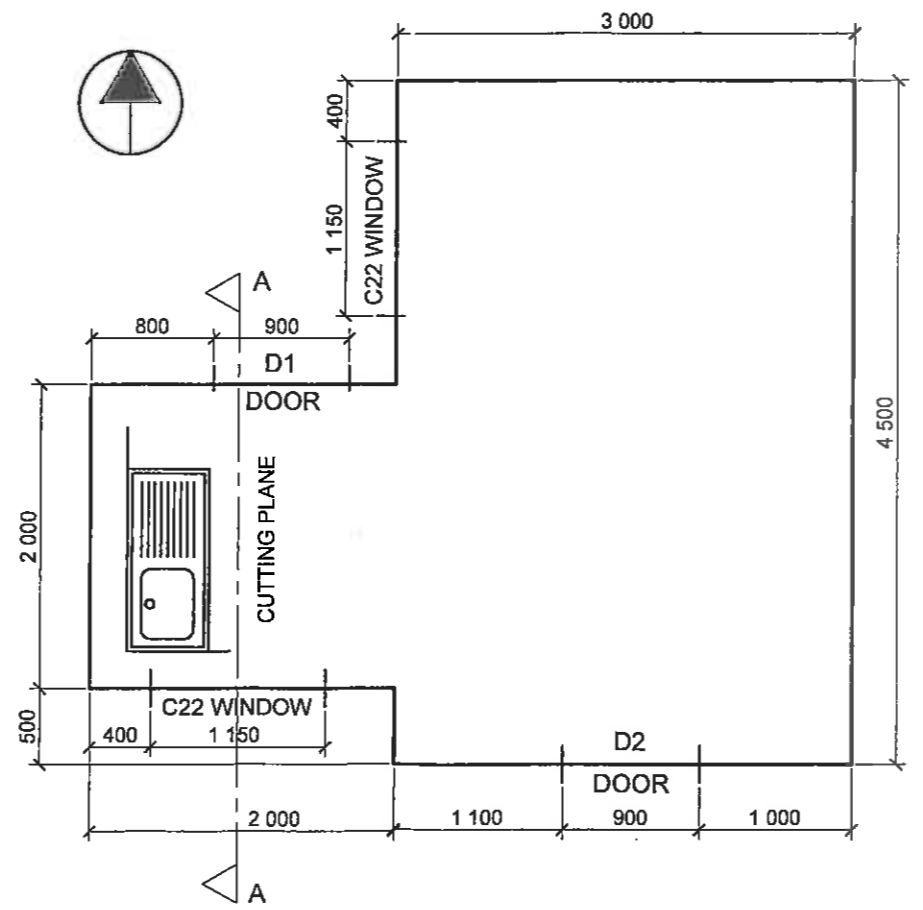
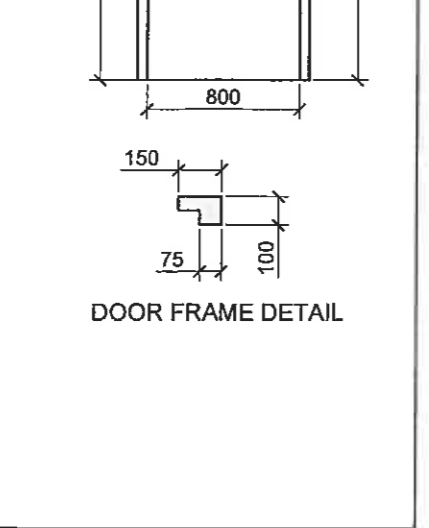
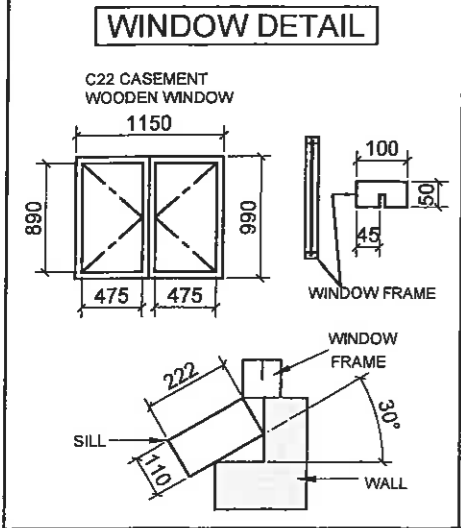
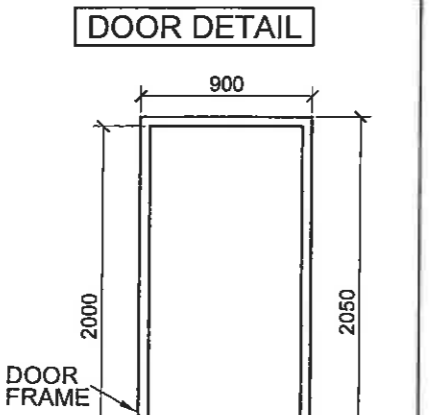
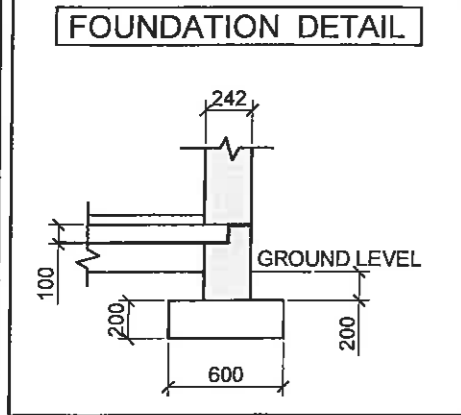
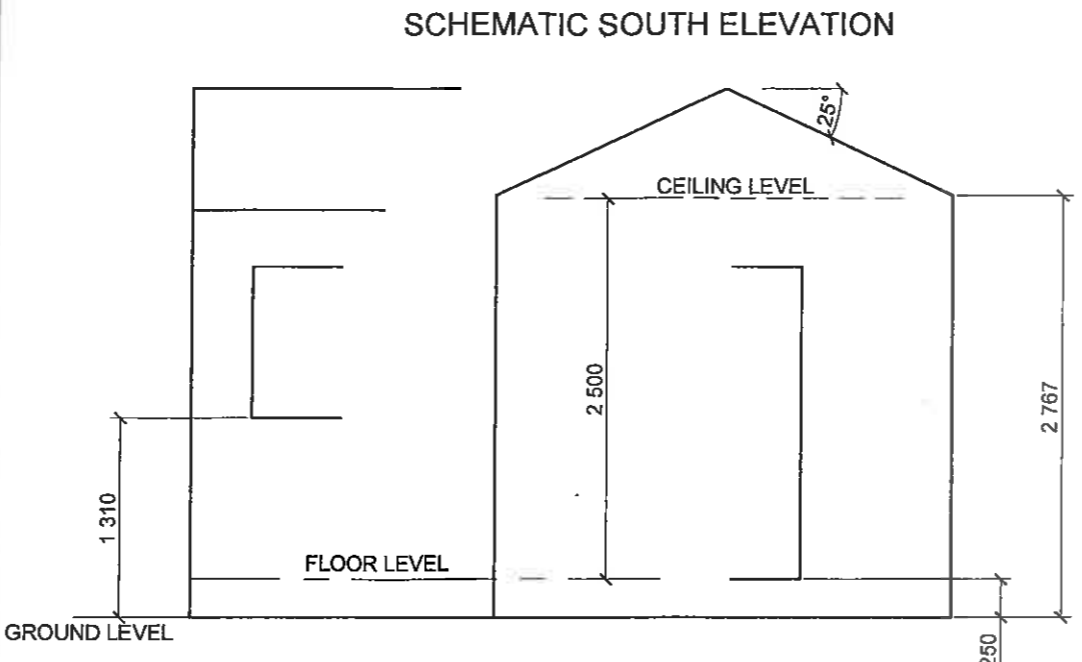
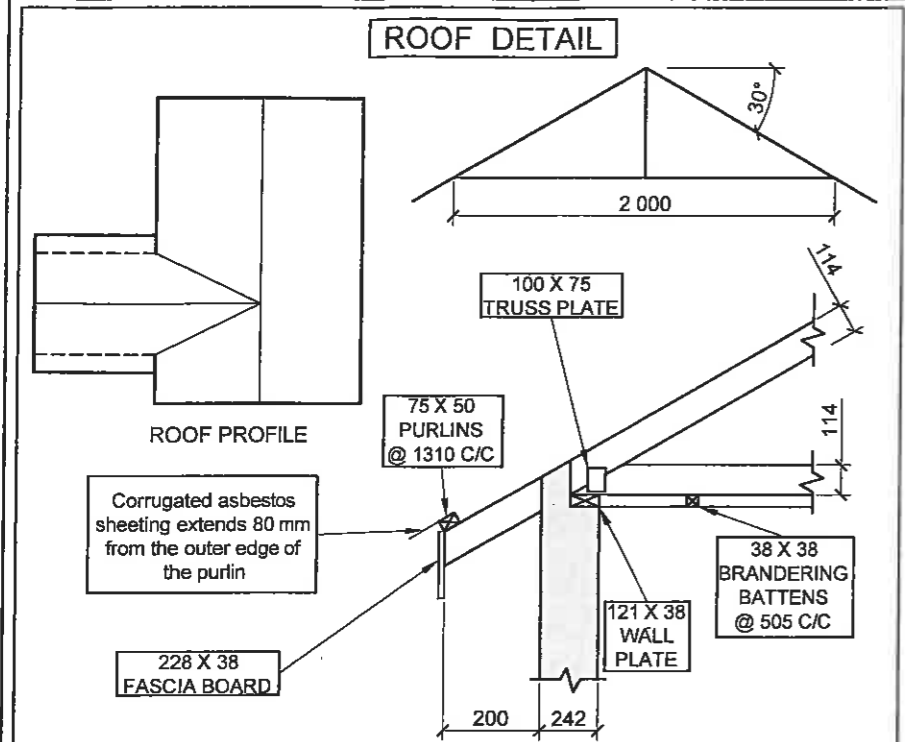
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ANSWER SHEET 3

QUESTION 4

CIVIL DRAWING



Answer this question on ANSWER SHEET 4.
Use a scale of 1:50.
All drawings must comply with SABS 10143.

- The following is given:**
- An incomplete schematic floor plan of a **LOW-COST HOUSE**
 - ▶ window and door positions
 - ▶ perimeter dimensions and cutting plane A-A
 - An incomplete schematic elevation
 - ▶ door and window positions, ceiling height, ground and floor levels
 - Door frame detail
 - Incomplete foundation detail
 - Roof detail, including purlin, batten and truss detail
 - Plumbing fixtures legend
 - Window, window frame and window sill detail

- Draw the following:**
- 1) The **complete** floor plan
 - 2) The **SOUTH** elevation
 - 3) The **sectional EAST** elevation

- FLOOR PLAN INSTRUCTIONS**
- Insert all window and door details
 - Insert and label the cutting plane
 - Insert the following electrical detail:
 - ▶ A TWO, 40 watt fluorescent tube light in the middle of the room
 - ▶ a single wall mounted light outside the **southern door**
 - ▶ one switch for both lights
 - ▶ one switched socket outlet on the **eastern wall**

- SECTIONAL EAST ELEVATION INSTRUCTIONS**
- Complete the foundation details
 - Insert all floor slab details
 - ▶ use 10 mm screed and 150 mm compacted hardcore filling
 - Label the ground level and damp proof course
 - Draw in the sectional window in the space indicated
 - ▶ use ONE, 242 x 75 concrete lintel above the window
 - ▶ use 222 x 110 quarry tile window sill
 - ▶ show the window frame detail and label the damp proof course
 - Draw in the sectional door showing the door frame detail
 - Roof details
 - ▶ draw the roof truss using 114 x 38 rafters and 100 x 75 plates
 - ▶ use FOUR, 76 x 38 purlins spaced at 1 310 centres
 - ▶ use TWO, 121 x 38 wall plates
 - ▶ use TWO, 38 x 38 battens spaced at 505 centres
 - ▶ use corrugated asbestos sheeting for the roof and a 30° pitch
 - ▶ use 228 x 38 fascia boards
 - ▶ use 9 mm gypsum ceiling boards
 - Insert the following plumbing detail according to the legend given:
 - ▶ A single steel sink in the position as indicated so that the top of the sink is 900mm from the floor
 - Complete all hatching detail
 - Label the sectional East Elevation

- SOUTH ELEVATION INSTRUCTIONS**
- Draw the complete outside south elevation showing window and door details
 - Show some detail for the asbestos roof sheeting
 - Label the South Elevation

EXAMINATION NUMBER

| | | | | | | | | | | | | | | | | |
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QUESTION 4

**CIVIL
DRAWING**

Assessment Criteria

Sectional Elevation

| | | | |
|----|--------------------|----|--|
| 1 | Ceiling Battens | 2 | |
| 2 | Wall Plates | 2 | |
| 3 | Ceiling Board | 1 | |
| 4 | Truss Plates | 4 | |
| 5 | Roof Truss | 5 | |
| 6 | Purlins | 4 | |
| 7 | Roof | 1 | |
| 8 | Walls | 4 | |
| 9 | Window | 6 | |
| 10 | Door | 3 | |
| 11 | Floor & Foundation | 6 | |
| 12 | Sink | 3 | |
| 13 | DPC / Labels | 4 | |
| 14 | Hatching | 10 | |
| 15 | Facsia Board | 2 | |

| | | | |
|------------------|--|----|--|
| Sub Total | | 57 | |
|------------------|--|----|--|

South Elevation

| | | | |
|----|--------------|---|--|
| 16 | Walls | 7 | |
| 17 | Roof Detail | 1 | |
| 18 | Window | 8 | |
| 19 | Facsia Board | 1 | |
| 20 | Window Sill | 3 | |
| 21 | Door | 4 | |
| 22 | Label | 1 | |

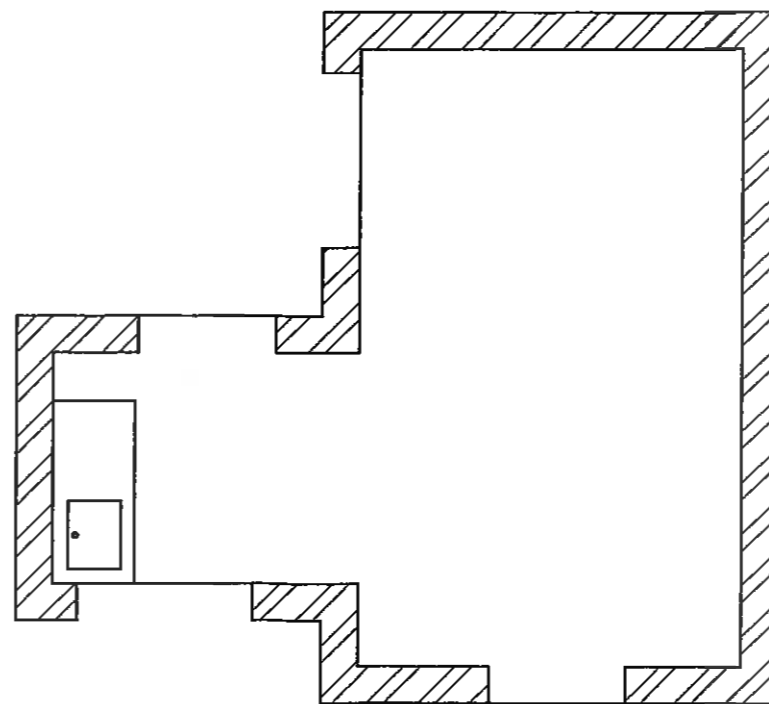
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| Sub Total | | 25 | |
|------------------|--|----|--|

Floor Plan

| | | | |
|----|---------------|---|--|
| 23 | Windows | 4 | |
| 24 | Doors | 6 | |
| 25 | Electrical | 6 | |
| 26 | Cutting Plane | 2 | |

| | | | |
|------------------|--|----|--|
| Sub Total | | 18 | |
|------------------|--|----|--|

| | | | |
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| TOTAL | | 100 | |
|--------------|--|-----|--|



SCALE 1:50
FLOOR PLAN

100 MARKS

EXAMINATION NUMBER

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ANSWER SHEET 4