



education

Department:
Education
REPUBLIC OF SOUTH AFRICA

**NATIONAL
SENIOR CERTIFICATE**

GRADE 12

ENGINEERING GRAPHICS AND DESIGN P1
FEBRUARY/MARCH 2010

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 stated otherwise.
4. ALL drawings must be drawn to scale 1:1, unless stated otherwise.
5. ALL the questions must be answered on the QUESTION PAPER as instructed.
6. ALL the pages must be restapled in numerical sequence, irrespective of whether the question was attempted or not.
7. Time management is essential in order to complete all the questions.
8. Print your examination number in the block provided on every page.
9. Any details or dimensions not given, must be assumed in good proportion.
10. ALL answers must be drawn accurately and neatly.

| FOR OFFICIAL USE ONLY | | | | | | | | | | |
|-----------------------|----------------|---|---|---|------|-----------|---|---|---|------|
| QUESTION | MARKS OBTAINED | | | ½ | SIGN | MODERATED | | | ½ | SIGN |
| 1 | | | | | | | | | | |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | |
| 4 | | | | | | | | | | |
| TOTAL | | | | | | | | | | |
| | 2 | 0 | 0 | | | 2 | 0 | 0 | | |

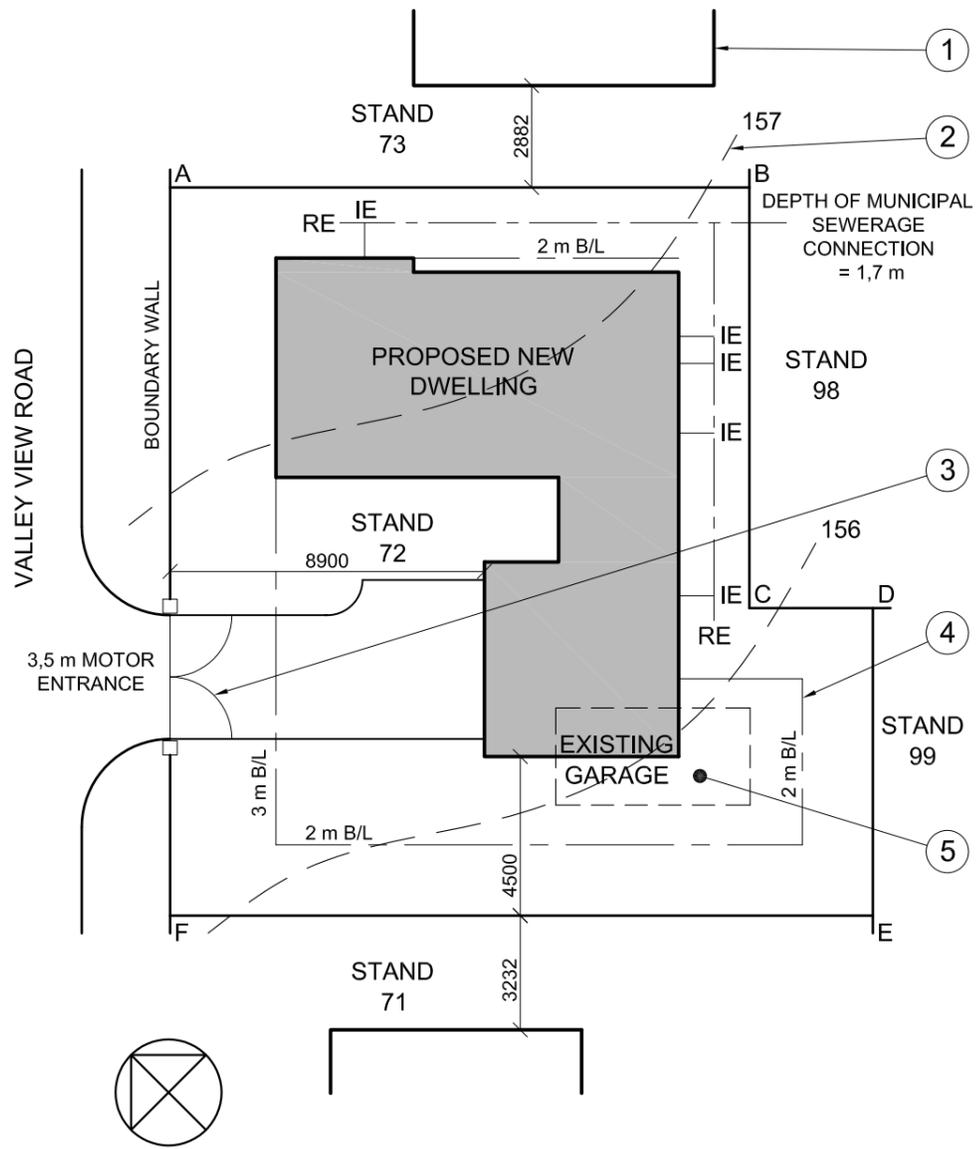
| | |
|----------------------|------------|
| FINAL CONVERTED MARK | CHECKED BY |
| 100 | |

| |
|--------------------------------|
| COMPLETE THE FOLLOWING: |
| CENTRE NUMBER |
| CENTRE NUMBER |
| EXAMINATION NUMBER |
| EXAMINATION NUMBER |



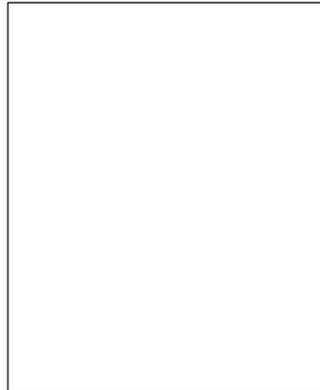
LAND SURVEYOR'S CERTIFICATE OF THE SIDE LENGTHS AND CORNER HEIGHTS OF STAND 72 AT 24 VALLEY VIEW ROAD WATERFALL SURVEYED ON 22-05-2009

| LENGTHS IN METRES | HEIGHTS IN METRES |
|-------------------|-------------------|
| AB = 16 400 | A = 157,5 |
| BC = 11 900 | B = 156,9 |
| CD = 3 500 | C = 156,3 |
| DE = 8 700 | D = 155,8 |
| EF = 19 900 | E = 155,2 |
| FA = 20 600 | F = 156,4 |



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

19. In the space below, draw, in neat freehand, the front view and top view of the SABS convention for a washbasin.



ARCHITECT'S SIGNATURE

CLIENT'S SIGNATURE

| REVISION | DATE | DESCRIPTION |
|----------|------|-------------|
| | | |
| | | |

GOVENDER & SONS ARCHITECTS
12th AVENUE WATERFALL
Tel: 031 709 8943

PRINTED BY PVDW DATE OF PRINT 09-05-2009

DRAWING TITLE
SITE PLAN

PROJECT
NEW DWELLING FOR LP BARKER ON STAND 72 AT 24 VALLEY VIEW ROAD WATERFALL

| | | |
|-------------------------------|-------------------------------|---------------------|
| PROJECT NUMBER 25-01-2009 | DRAWING NUMBER Q1P1-S-2010 | |
| REFERENCE CODE Q1P1-S-2010 | DRAWN BY MARC | CHECKED BY CRAIG |
| SCALE 1:200 | DATE 25-03-09 | |

QUESTION 1: ANALYTICAL (CIVIL)

Given:

The site plan of a proposed new dwelling with a title block and a table of questions.

Instructions:

Complete the table below by neatly printing the answers to the questions which all refer to the accompanying drawings and title block. **[30]**

| QUESTIONS | | ANSWERS |
|--------------|--|-----------|
| 1 | What is the name of the architectural firm responsible for designing the dwelling? | 1 |
| 2 | What scale is indicated for the drawing? | 1 |
| 3 | What is the reference code for the drawing? | 1 |
| 4 | Who checked the drawing? | 1 |
| 5 | How many times has the drawing been revised? | 1 |
| 6 | What does the line labelled 1 indicate? | 1 |
| 7 | What does the line labelled 2 indicate? | 1 |
| 8 | What does the curve labelled 3 indicate? | 1 |
| 9 | What does the line labelled 4 indicate? | 1 |
| 10 | What must happen with the existing garage labelled 5? | 1 |
| 11 | What is the street address of the new dwelling? | 1 |
| 12 | What is the stand number to the northeast of stand 72? | 2 |
| 13 | How far is the new dwelling from the southwestern boundary line? | 2 |
| 14 | What is the depth of the municipal sewerage connection? | 2 |
| 15 | What colour must all new concrete be on sectional elevations of presentation drawings? | 2 |
| 16 | What colour must all new buildings be on the site plan of presentation drawings? | 1 |
| 17 | Determine the total area of the stand in square metres. | 3 |
| 18 | If the total area of the new dwelling is 125 m ² , determine the percentage of the stand that is covered by the new dwelling. | 3 |
| 19 | In the space provided on the title block, draw, in neat freehand, the front view and top view of the SABS convention for a washbasin. | 4 |
| TOTAL | | 30 |

| | |
|--------------------|---|
| EXAMINATION NUMBER | |
| EXAMINATION NUMBER | 2 |



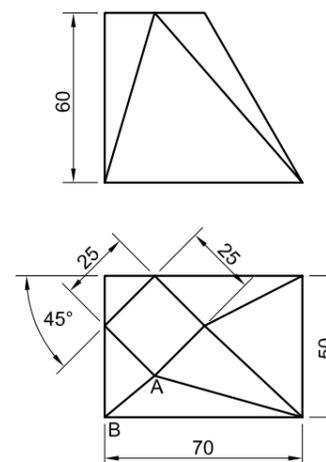
QUESTION 2: DEVELOPMENT

Given:

The front view and top view of a rectangular-to-square transition piece.

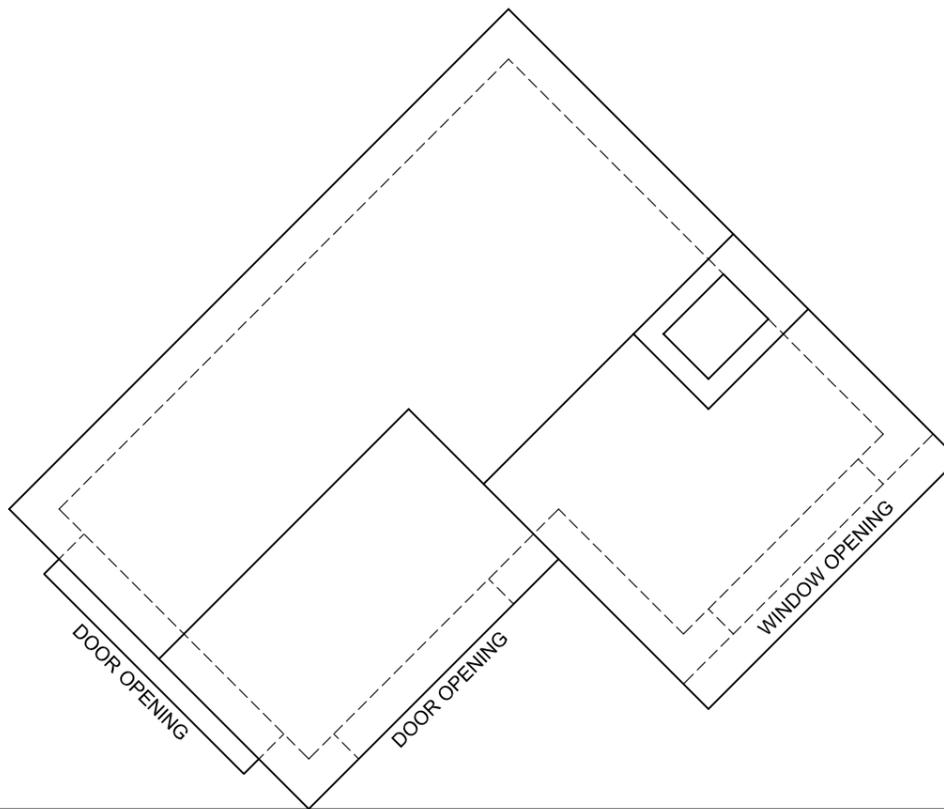
Instructions:

- 2.1 Draw, to scale 1:1 and in first-angle orthographic projection, the following views of the transition piece:
 - 2.1.1 The top view
 - 2.1.2 The front view
 - 2.1.3 The left view
- 2.2 Develop the surface of the transition piece. Make the edge marked AB the seam.
- 2.3 Show ALL necessary construction and fold lines. **[34]**



EDGE AB IS THE SEAM.

| ASSESSMENT CRITERIA | | | |
|-------------------------|-----------|--|---|
| TOP + FRONT + LEFT VIEW | 9 | | |
| TRUE LENGTHS | 8 | | |
| DEVELOPMENT | 17 | | |
| TOTAL | 34 | | |
| EXAMINATION NUMBER | | | |
| | | | |
| EXAMINATION NUMBER | | | 3 |



QUESTION 3: PERSPECTIVE

Given:

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

PP – Picture Plane

HL – Horizon Line

GL – Ground Line

SP – Station Point

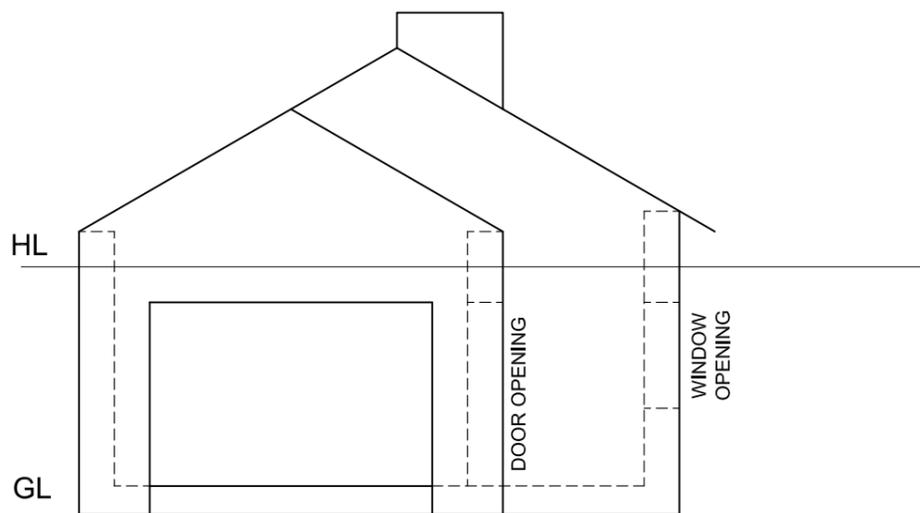
Instructions:

Complete the perspective drawing.

- Align the drawing sheet with the horizon line (HL).
- Locate and label the vanishing points.
- Show ALL visible detail inside the building.
- NO hidden detail is required.
- Show ALL necessary construction.

[39]

PP



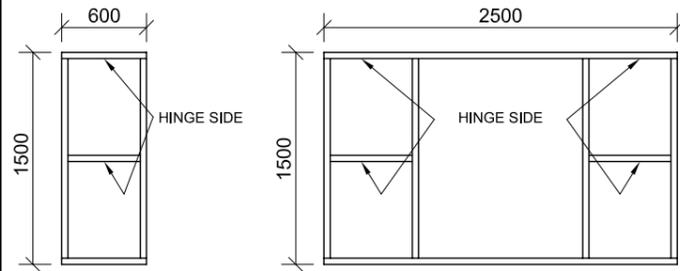
HL

+

SP

| ASSESSMENT CRITERIA | | | |
|---------------------|-----------|--|---|
| CONSTRUCTION + VPs | 5 | | |
| PART (A) | 16½ | | |
| PART (B) | 6½ | | |
| ROOF + CHIMNEY | 11 | | |
| TOTAL | 39 | | |
| EXAMINATION NUMBER | | | |
| | | | |
| EXAMINATION NUMBER | | | 4 |

DOOR AND WINDOW SCHEDULE

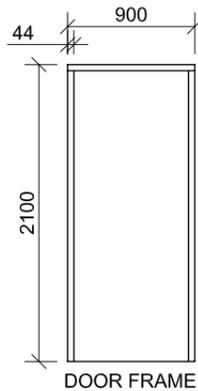


WINDOW
SG1
MERANTI

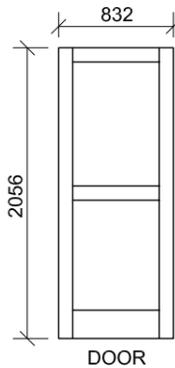
WINDOW
SH4
MERANTI

GLASS
3 mm CLEAR GLASS

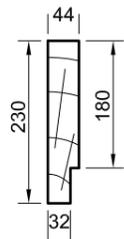
GLASS
3 mm CLEAR GLASS



DOOR FRAME
230 x 44 mm MERANTI
DOOR FRAME



DOOR
EXTERIOR
MERANTI DOOR



FRAME
PROFILE

ELECTRICAL SYMBOLS

| LIGHTS | SWITCHES | SOCKET OUTLETS |
|----------------------|----------|----------------|
| OR OR 2 x 40 W | | |

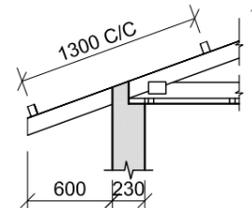
ROOF NOTES:
ROOF COVER:
15 mm RCP ON 75 x 50 mm
PURLINS @ 1 300 C/C

114 x 38 mm GANG-NAILED
ROOF TRUSS ON A
114 x 38 mm WALL PLATE

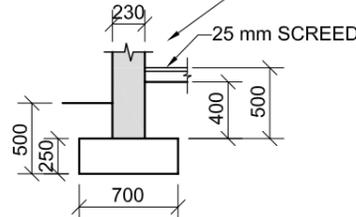
228 x 38 mm FASCIA BOARD

6 mm CEILING BOARD
ON 38 x 38 mm BATTENS
@ 1 200 mm C/C

ROOF PITCH 20°



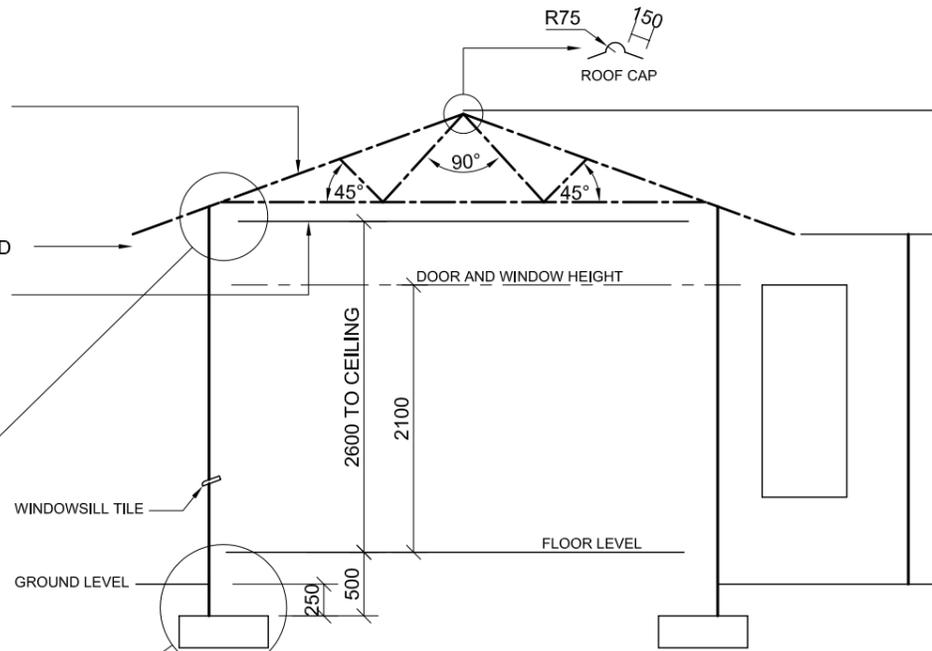
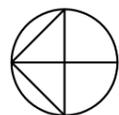
INCOMPLETE ROOF AND
WALL DETAIL



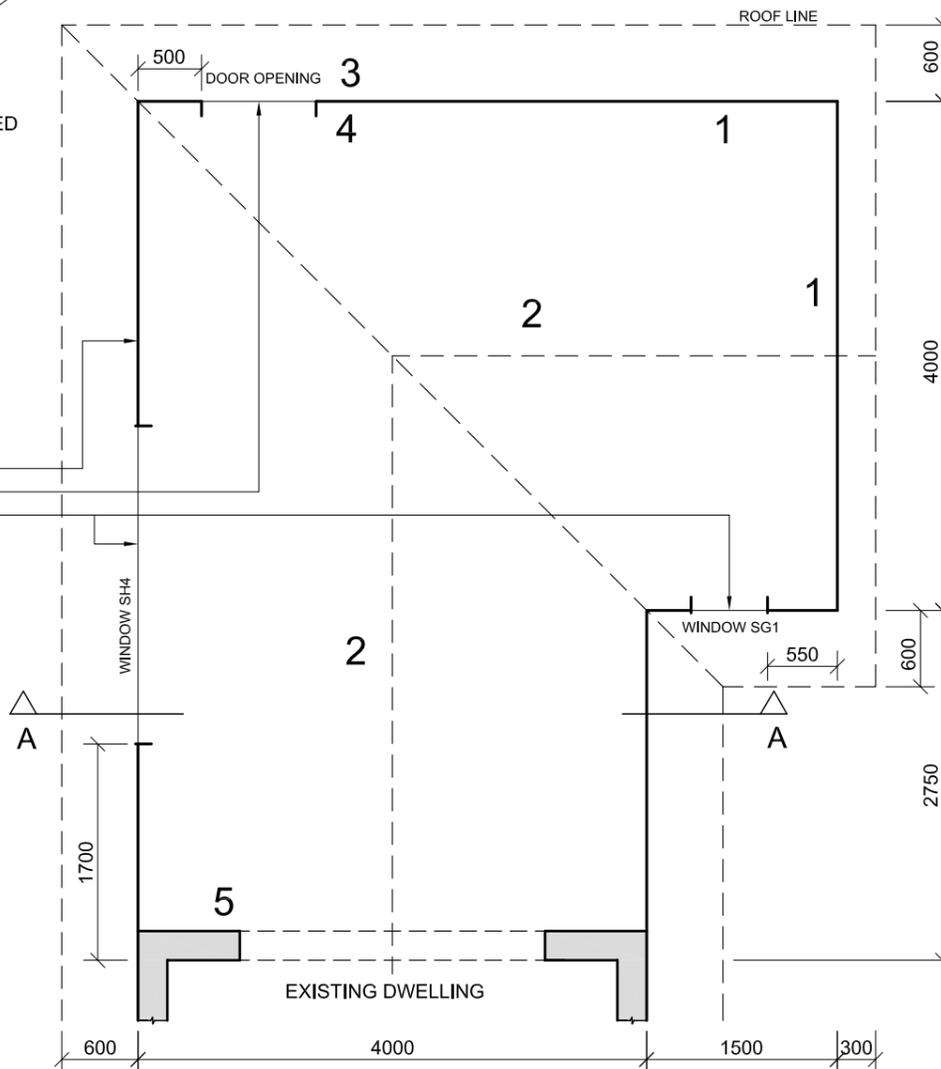
INCOMPLETE FOUNDATION
AND WALL DETAIL

EXTERIOR FEATURES
230 mm LOAD-BEARING WALL
DOOR OPENING
WINDOW OPENINGS

ELECTRICAL FEATURES
1. SWITCHED SOCKET OUTLET
2. 2 x 40 W FLUORESCENT TUBES
3. OUTSIDE LIGHT
4. TWO-POLE LIGHT SWITCH
5. SINGLE-POLE LIGHT SWITCH



INCOMPLETE SECTIONAL WEST
ELEVATION



INCOMPLETE FLOOR PLAN

QUESTION 4: CIVIL DRAWING

Given:

- The incomplete sectional west elevation on cutting plane A-A of a new **family room** showing the outline of the walls and a schematic drawing of the roof truss
- The incomplete floor plan of the new **family room** showing the outline of the walls and the positions of all the features, notes and dimensions
- A door and window schedule
- A table of electrical symbols
- The incomplete roof and wall detail
- The incomplete foundation and wall detail
- The complete north elevation of the new **family room**, drawn to scale, on page 6

Instructions:

- Answer this question on page 6.
- Using the given north elevation as a guide, draw, to scale 1:50 and according to the given specifications:
 - 4.1 The complete floor plan
 - 4.2 The complete sectional west elevation on cutting plane A-A
- ALL drawings must comply with the guidelines contained in the SABS 0143.

SPECIFICATIONS:

THE FLOOR PLAN

Show the following features on the drawing:

- ALL the walls with hatching detail
- The door and windows
- ALL the electrical features as indicated with numbers on the incomplete floor plan
- The roof line
- The cutting plane A-A

THE SECTIONAL WEST ELEVATION

Show the following features on the drawing:

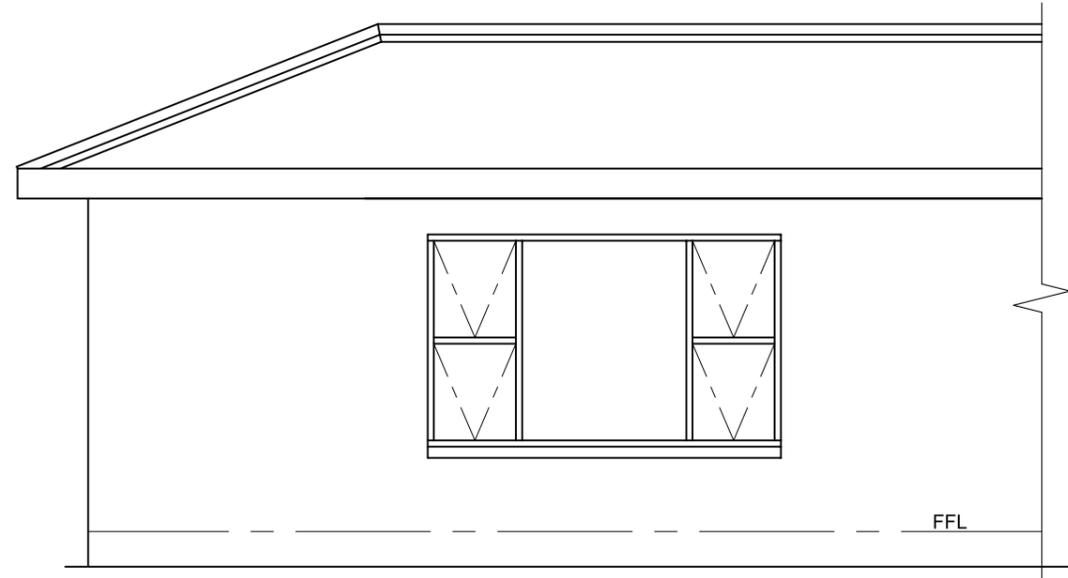
- The complete foundation, wall, slab and roof truss detail
- The door and window detail
- ALL hatching detail
- ALL other detail of the family room as seen from the west

Label the following:

- The floor plan, including the scale
- The sectional elevation
- Using the correct abbreviations, label the following features on the correct view: natural ground level, damp-proof course, room designation (family room) and floor finish (ceramic tile)

NOTE:

ALL substructure hatching may be drawn in freehand. [97]



NORTH ELEVATION



| ASSESSMENT CRITERIA | | | | | |
|--------------------------|----------------------------|-----------|----------|------|----------|
| SECTIONAL WEST ELEVATION | | | | | |
| | | POSSIBLE | OBTAINED | SIGN | MODERATE |
| 1 | ROOF + CEILING | 24½ | | | |
| 2 | WINDOW + DOOR | 14 | | | |
| 4 | WALLS + FLOOR + FOUNDATION | 11½ | | | |
| 5 | HATCHING | 5½ | | | |
| 6 | LABELS | 3½ | | | |
| SUBTOTAL | | 59 | | | |
| FLOOR PLAN | | | | | |
| 1 | ROOF | 4 | | | |
| 2 | WINDOWS + DOOR | 7 | | | |
| 3 | WALLS | 9 | | | |
| 4 | ELECTRICAL | 8½ | | | |
| 5 | HATCHING | 3½ | | | |
| 6 | LABELS + A-A | 6 | | | |
| SUBTOTAL | | 38 | | | |
| TOTAL | | 97 | | | |
| EXAMINATION NUMBER | | | | | |
| EXAMINATION NUMBER | | | | | |