



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

**NATIONAL
SENIOR CERTIFICATE**

GRADE 12

ENGINEERING GRAPHICS AND DESIGN P1
FEBRUARY/MARCH 2014

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

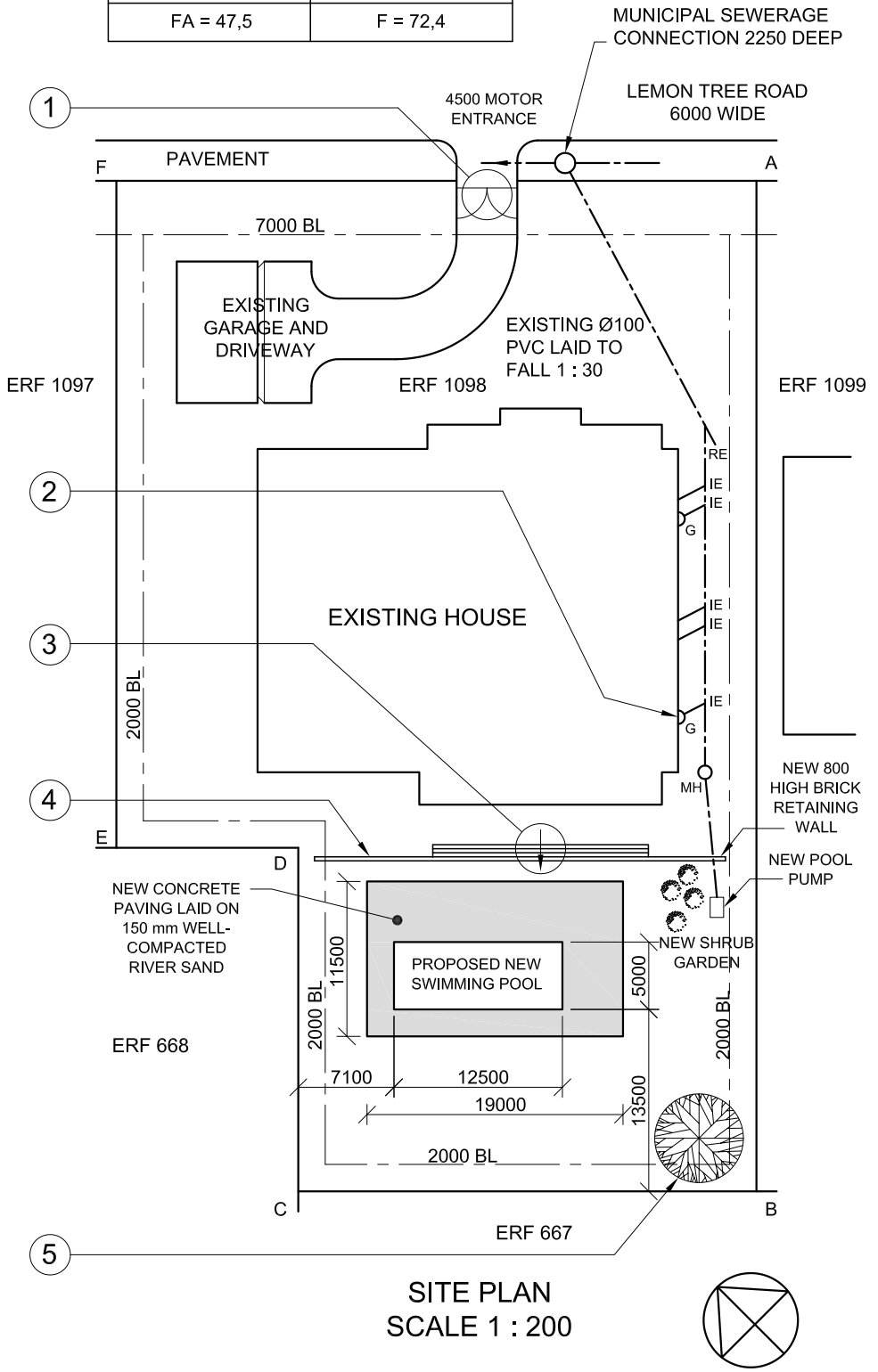
FOR OFFICIAL USE ONLY										
QUESTION	MARKS OBTAINED			½	SIGN	MODERATED			½	SIGN
1										
2										
3										
4										
TOTAL										
	2	0	0			2	0	0		

FINAL CONVERTED MARK	CHECKED BY
100	

COMPLETE THE FOLLOWING:
CENTRE NUMBER
CENTRE NUMBER
EXAMINATION NUMBER
EXAMINATION NUMBER

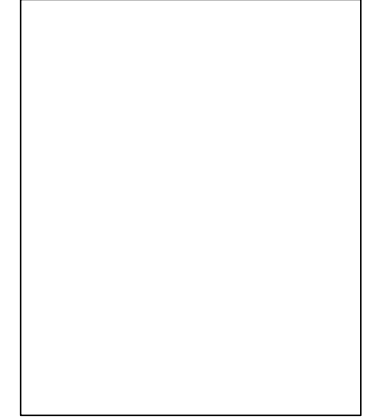


SIDE LENGTHS AND CORNER HEIGHTS ON ERF NUMBER 1098 PIETERMARITZBURG. SURVEYED ON 01-04-2011	
LENGTHS IN METRES	HEIGHTS IN METRES
AB = 75	A = 73,8
BC = 34	B = 77,6
CD = 25,5	C = 77,9
DE = 13,5	D = 77,0
EF = 49,5	E = 76,9
FA = 47,5	F = 72,4



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

20. In the space below, draw, in neat freehand, the front view and top view of the SANS 10143 graphical symbol (convention) for a SHOWER.



ARCHITECT'S SIGNATURE

CLIENT'S SIGNATURE

REVISION	DATE	DESCRIPTION

PRINTED BY PATSY PRINTERS DATE OF PRINT 17-02-2014

DRAWING TITLE **SITE PLAN**

PROJECT NUMBER 2014-001 DRAWN BY P XABA DATE 19-01-2014

REFERENCE CODE DBE-2014-01 CHECKED BY P THAKER DATE 05-02-2014

DRAWING NUMBER 13-001-SIP APPROVED BY M ZUNGU DATE 14-02-2014

PROJECT
PROPOSED NEW SWIMMING POOL FOR AM MBUTU ON ERF NUMBER 1098 AT 87 LEMON TREE ROAD, PIETERMARITZBURG

BUDGET DRAUGHTING
26 CHURCH STREET
PIETERMARITZBURG
Tel: 033 245 3434

QUESTION 1: ANALYTICAL (CIVIL)

Given:

The site plan of an existing house with a proposed new swimming pool, a title panel 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 all refer to the accompanying drawing and title panel. **[30]**

QUESTIONS		ANSWERS	
1	On what date was the plan approved?	1	
2	Who prepared the site plan?	1	
3	What scale is indicated for the drawing?	1	
4	What is the project number?	1	
5	What is the name of the draughting firm?	1	
6	How many stands border erf number 1098?	1	
7	What is the fall on the existing sewerage line?	1	
8	How deep is the municipal sewerage connection in metres?	1	
9	Name the encircled feature at 1.	1	
10	Name the feature labelled 'G' at 2.	1	
11	What does the arrow in the circle at 3 indicate?	1	
12	Name the feature at 4.	1	
13	Name the feature at 5.	1	
14	Which elevation of the existing house faces the pool?	1	
15	How long is the north-eastern boundary line of erf 1098 in metres?	2	
16	What is the width and length of the swimming pool in metres?	2	
17	Determine the area of the concrete paving around the swimming pool in square metres. Show ALL calculations.	3	
18	Determine the perimeter of erf 1098 in metres. Show ALL calculations.	3	
19	Determine the shortest distance from the swimming pool to the south-eastern building line in metres. Show ALL calculations.	3	
20	In the space provided in the title panel, draw, in neat freehand, the front view and top view of the SANS 10143 graphical symbol (convention) for a SHOWER.	3	
TOTAL		30	

EXAMINATION NUMBER	
EXAMINATION NUMBER	2





QUESTION 2: TRANSITION PIECE

Given:

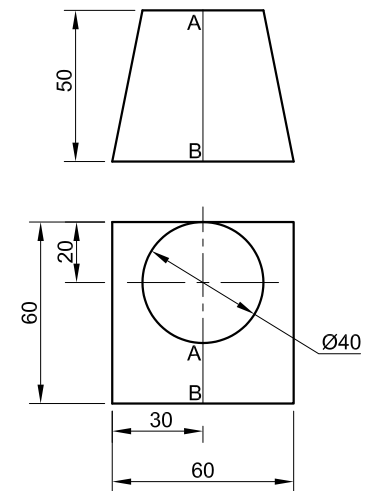
The front view and top view of a square-to-round transition piece.

Instructions:

Draw, to scale 1 : 1, the following:

- 2.1 The given front view and top view
- 2.2 The development of the surface of the transition piece. Make **AB** the seam.

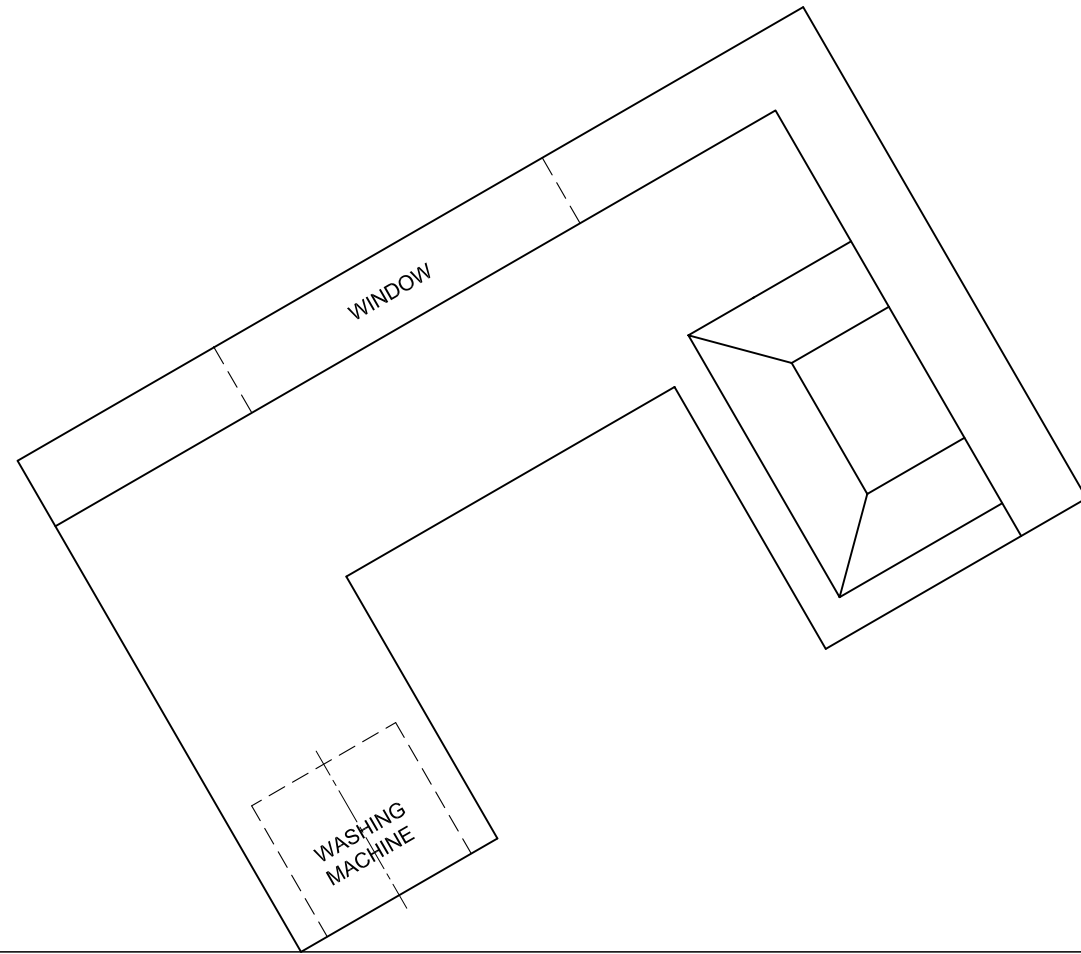
Show ALL necessary construction. **[35]**



AB IS THE SEAM.

ASSESSMENT CRITERIA			
1	GIVEN	5	
2	CONSTRUCTION	4	
3	TRUE LENGTHS	8	
4	DEVELOPMENT	18	
TOTAL		35	
EXAMINATION NUMBER			
EXAMINATION NUMBER			3





QUESTION 3: PERSPECTIVE

Given:

Two views showing the interior of a kitchen 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.

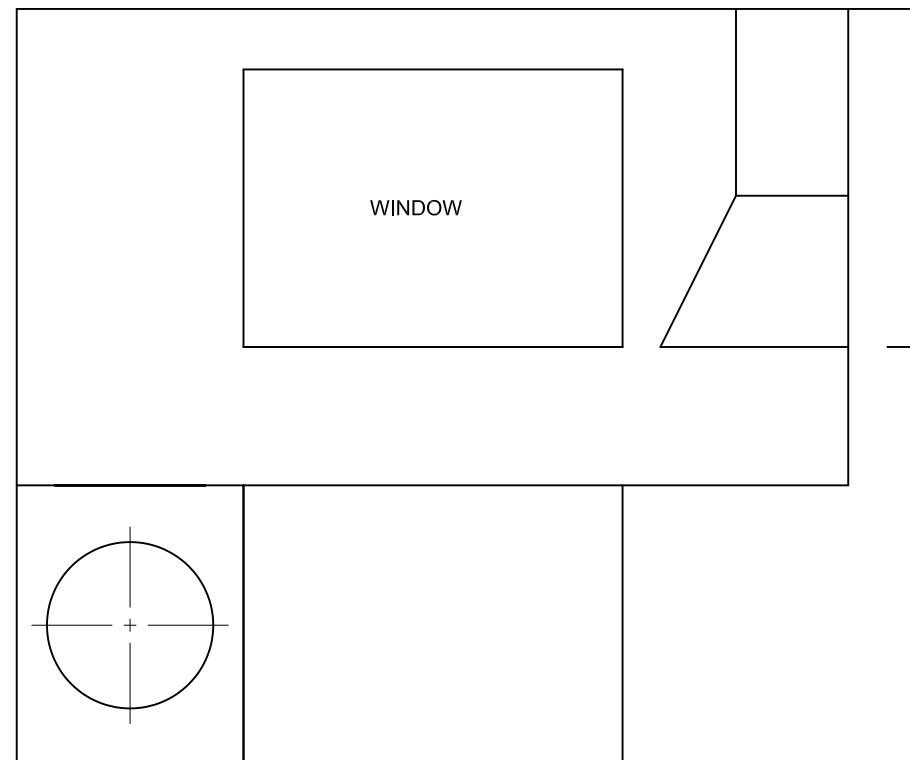
- Align the drawing sheet with the ground line (GL).
- Determine and label the vanishing points.
- Show ALL necessary construction.
- Show the wall thickness at the window.
- Show the depth of the washing machine drum.
- NO hidden detail is required. **[39]**

PP

HL

GL




SP













HL

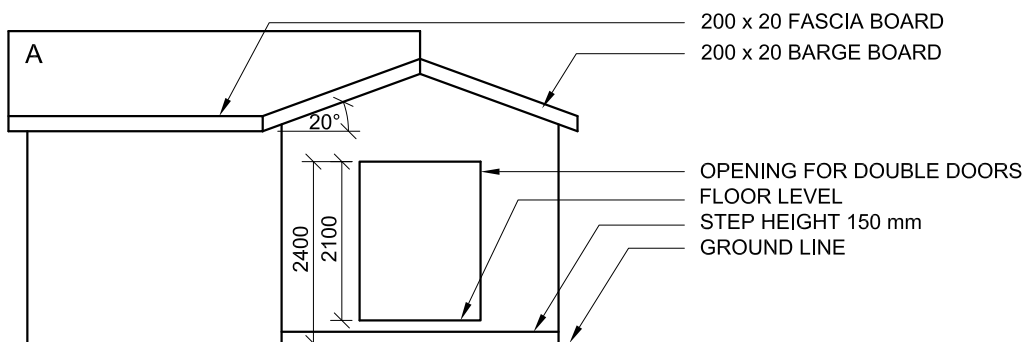
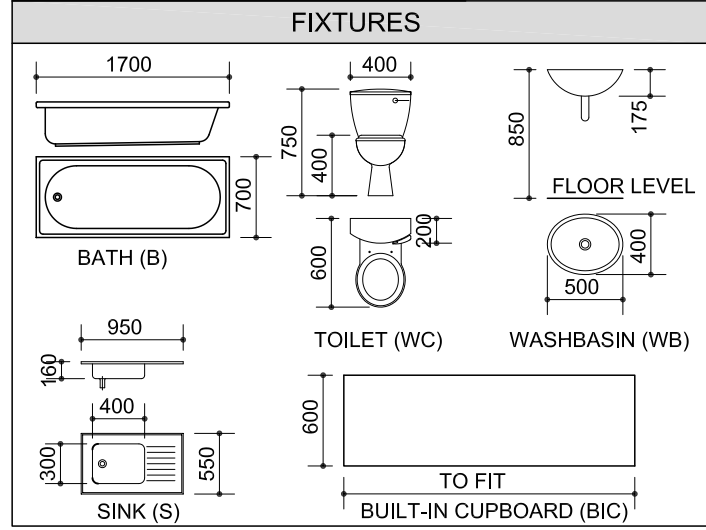
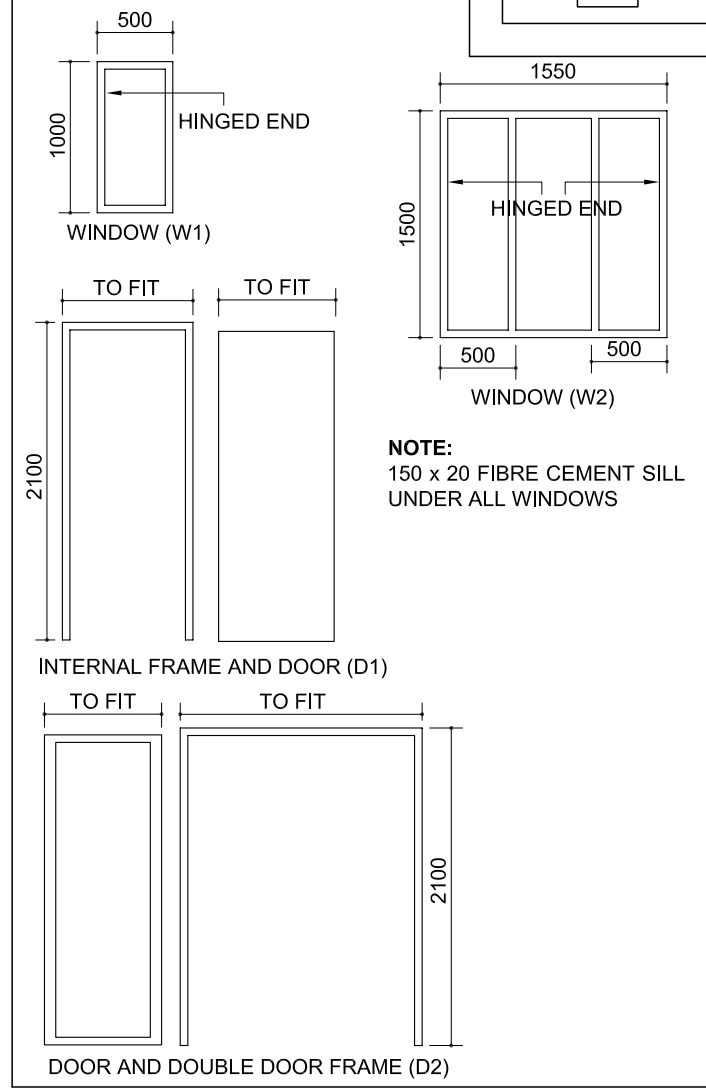
ASSESSMENT CRITERIA			
1	CONSTRUCTION + VPs	6	
2	WALLS + CUPBOARDS	17½	
3	EXTRACTOR + CIRCLES	15½	
TOTAL		39	
EXAMINATION NUMBER			
EXAMINATION NUMBER			
EXAMINATION NUMBER			4



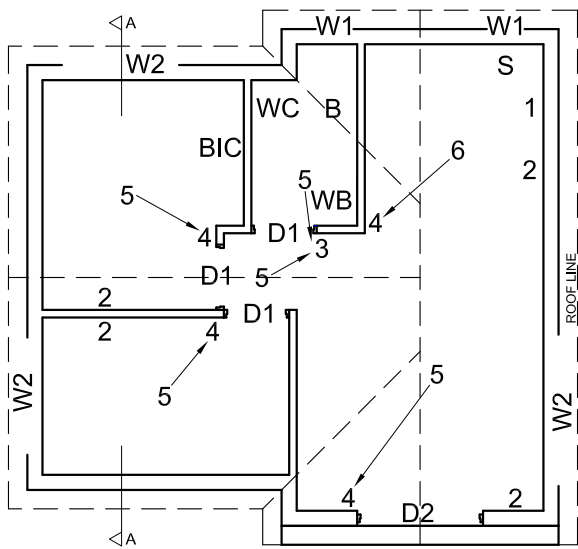
ROOF COMPONENTS	
	114 x 38 WALL PLATE
	75 x 50 PURLINS
	ROOF CAP

ELECTRICAL SYMBOLS	
	
	
	
	
	

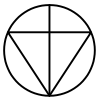
WINDOW AND DOOR SCHEDULE



INCOMPLETE NORTH ELEVATION



INCOMPLETE FLOOR PLAN



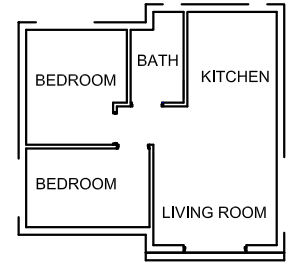
ROOF NOTES:
15 mm FIBRE CEMENT SHEETS ON 75 x 50 mm PURLINS @ 950 mm c/c

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

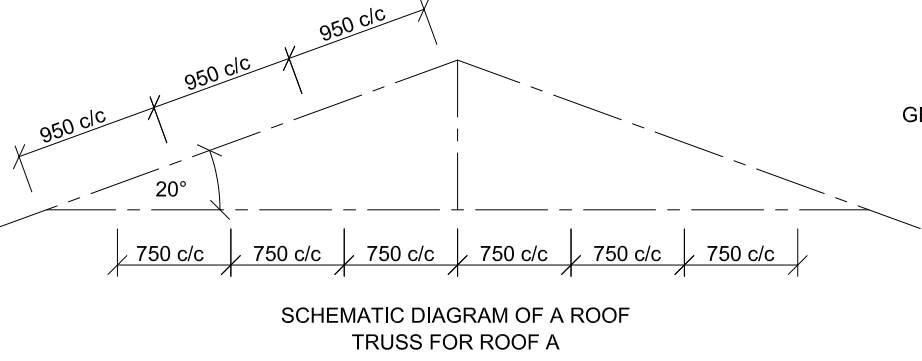
ROOF PITCH 20° WITH 200 x 20 mm FASCIA BOARD AND 200 x 20 mm BARGE BOARDS ON THE GABLES

PLASTER CEILING BOARD ON 38 x 38 mm BRANDING @ 750 mm c/c

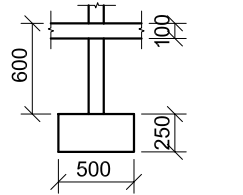
FLOOR FINISH:
BEDROOMS: CARPET
BATHROOM: TILES
KITCHEN: TILES
LIVING ROOM: TILES



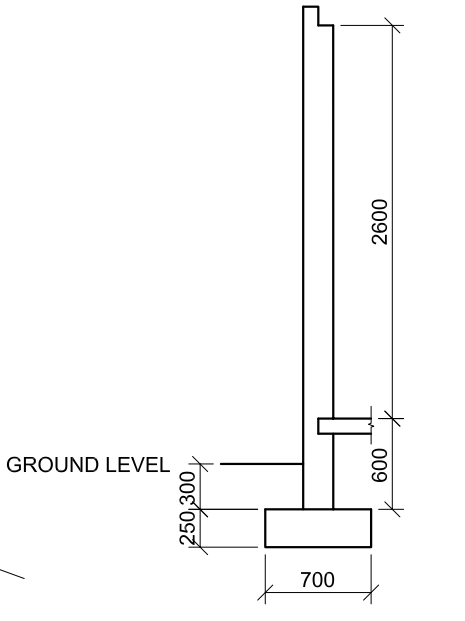
ROOM DESIGNATIONS



SCHMATIC DIAGRAM OF A ROOF TRUSS FOR ROOF A



INCOMPLETE FOUNDATION AND INTERNAL WALL DETAIL



INCOMPLETE FOUNDATION AND EXTERNAL WALL DETAIL

QUESTION 4: CIVIL DRAWING

Given:

- The incomplete north elevation of a new house, showing the walls, the entrance opening, the roof and notes
- The incomplete floor plan, showing the walls, position of the doors, windows, fixtures and the electrical fittings
- Roof notes and a schematic diagram of a roof truss
- The floor finishes and a diagram showing the room designations
- The incomplete foundation, wall detail of an internal and an external wall
- A table of roof components
- A table of electrical symbols
- A window and door schedule
- A table of fixtures
- The incomplete floor plan of the new house, drawn to scale 1 : 50, on page 6

Instructions:

- Answer this question on page 6.
- Using the given incomplete floor plan, draw, in first-angle orthographic projection and to scale 1 : 50, the following views of the new house:
 - 4.1 The complete floor plan
 - 4.2 The north elevation
 - 4.3 A sectional elevation on cutting plane A-A
- ALL drawings must comply with the guidelines and graphical symbols contained in the SANS 10143.

SPECIFICATIONS:

- THE FLOOR PLAN
- Add the following features to the drawing:**
- ALL the doors and windows
 - ALL the fixtures as indicated by the abbreviations
 - ALL the electrical fittings as indicated by the numbers
 - ALL hatching detail

THE NORTH ELEVATION

- Show the following features on the drawing:**
- The outside walls and the finished floor level
 - The double doors and step
 - The roof detail, including the barge boards and fascia board

THE SECTIONAL ELEVATION

- Show the following features on the drawing:**
- The complete foundation, wall, slab, roof and ceiling detail
 - The window detail, with a double lintel
 - The detail of the window on the east-facing wall
 - ALL hatching detail

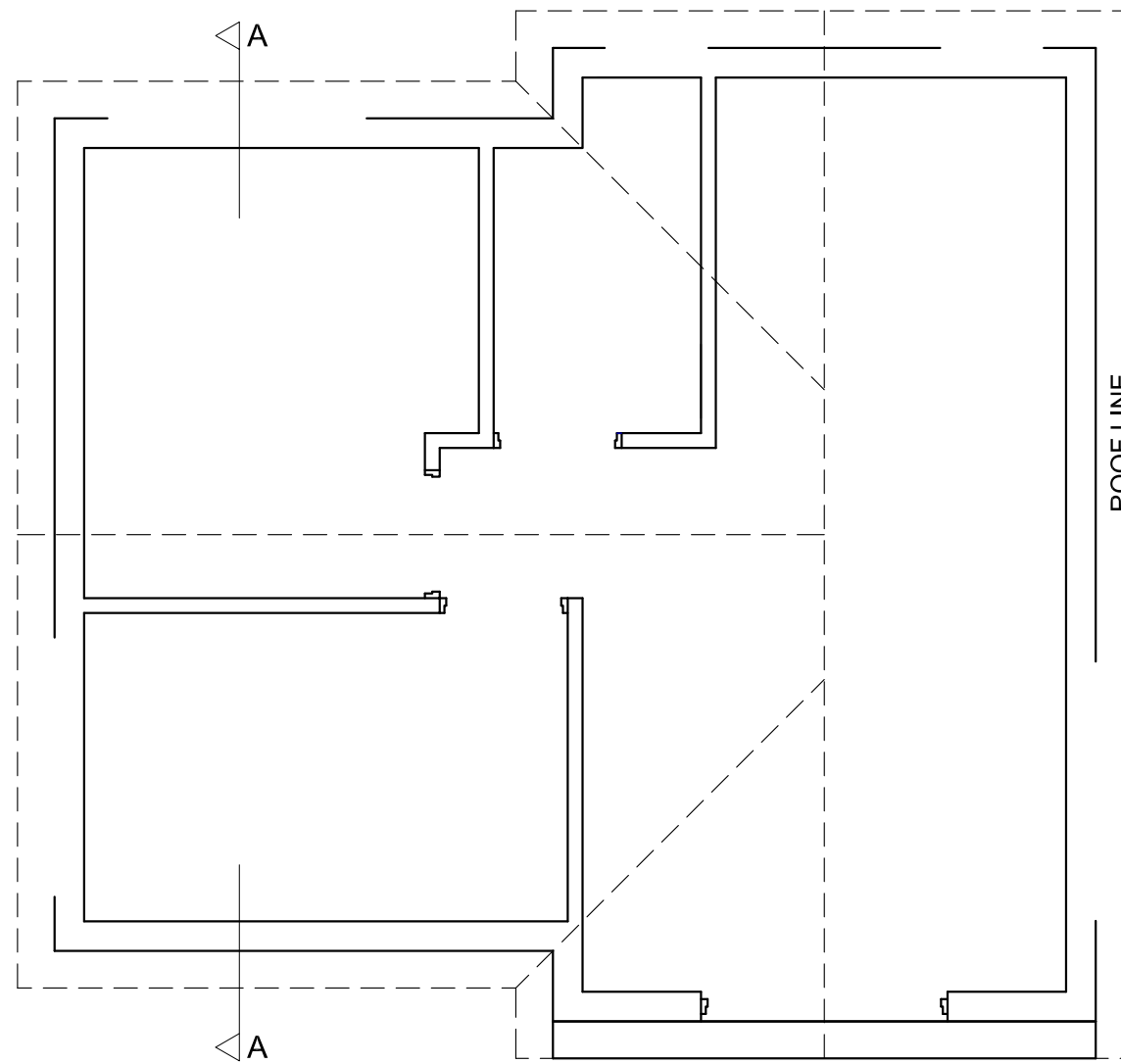
Label the following:

- The room designations with floor finishes
- The north elevation and the sectional elevation
- Using the correct abbreviations, label the following features in the correct view: natural ground level, finished floor level and damp-proof course

NOTE:

ALL substructure hatching may be drawn in freehand. [96]





FLOOR PLAN
SCALE 1 : 50

ASSESSMENT CRITERIA					
FLOOR PLAN					
		POSSIBLE	OBTAINED	SIGN	MODERATE
1	LABELS	5			
2	ELECTRICAL	11			
3	FIXTURES	11			
4	DOORS + WINDOWS	15			
5	HATCHING	3			
SUBTOTAL		45			
NORTH ELEVATION					
1	WALLS + FFL + STEP	3			
2	ROOF + FACIA GUTTER + RWDP	6½			
3	DOOR	2			
4	LABELS	1½			
SUBTOTAL		13			
SECTIONAL ELEVATION					
1	ROOF	12			
2	WALLS + FLOOR + FOUNDATION	11½			
3	WINDOWS	7			
4	HATCHING	5			
5	LABELS	2½			
SUBTOTAL		38			
TOTAL		96			
EXAMINATION NUMBER					
EXAMINATION NUMBER					
6					

