



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

**NATIONAL
SENIOR CERTIFICATE**

GRADE 12

ENGINEERING GRAPHICS AND DESIGN P1
NOVEMBER 2011

MARKS: 100

TIME: 3 hours

This question paper consists of 6 pages.



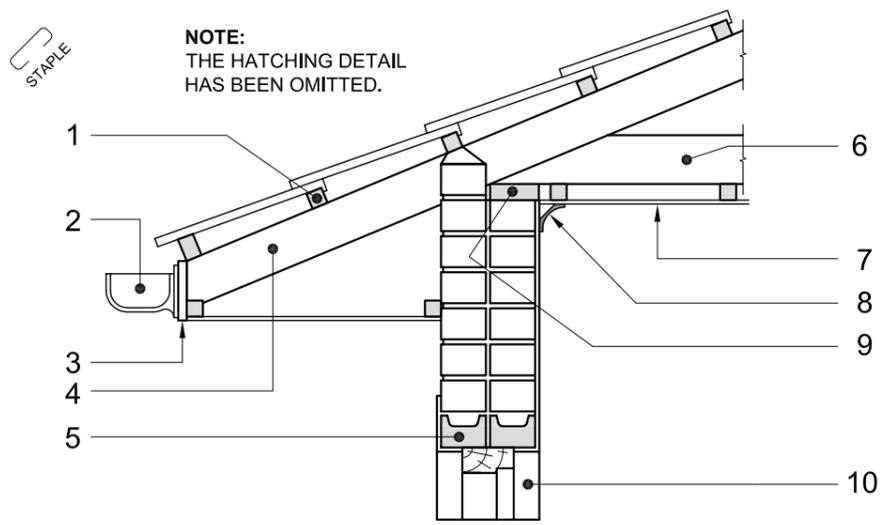
INSTRUCTIONS AND INFORMATION

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.
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	

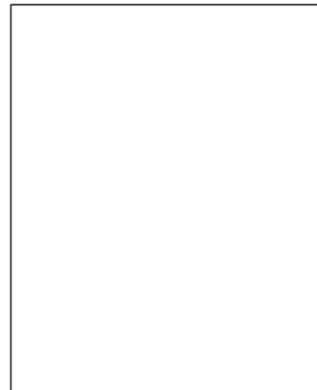
COMPLETE THE FOLLOWING:
CENTRE NUMBER
CENTRE NUMBER
EXAMINATION NUMBER
EXAMINATION NUMBER



DETAILED DRAWING OF A SECTION THROUGH THE COMPONENTS OF A WALL AND ROOF

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

14. In the space provided below, draw, in neat freehand, the symbol for the north point according to *SABS 0143*.



ARCHITECT'S SIGNATURE

CLIENT'S SIGNATURE

REVISION	DATE	DESCRIPTION

MEDI-DESIGN ARCHITECTS
121 CHURCH STREET
PRETORIA
Tel: 012 312 8459

PRINTED BY: DDP DATE OF PRINT: 2011-06-17

DRAWING TITLE:
SITE PLAN

PROJECT:
PROPOSED MEDICAL CENTRE FOR DR SMITH AND PARTNERS ON STAND 92 AT 19 HOSPITAL ROAD BENONI.

PROJECT NUMBER: 34	DRAWING NUMBER: 2/08
REFERENCE CODE: Q1P1-S-2011	DRAWN BY: SANELE CHECKED BY: LEBO

DATE: 2011-05-30 SCALE: 1 : 150



QUESTION 1: ANALYTICAL (CIVIL)

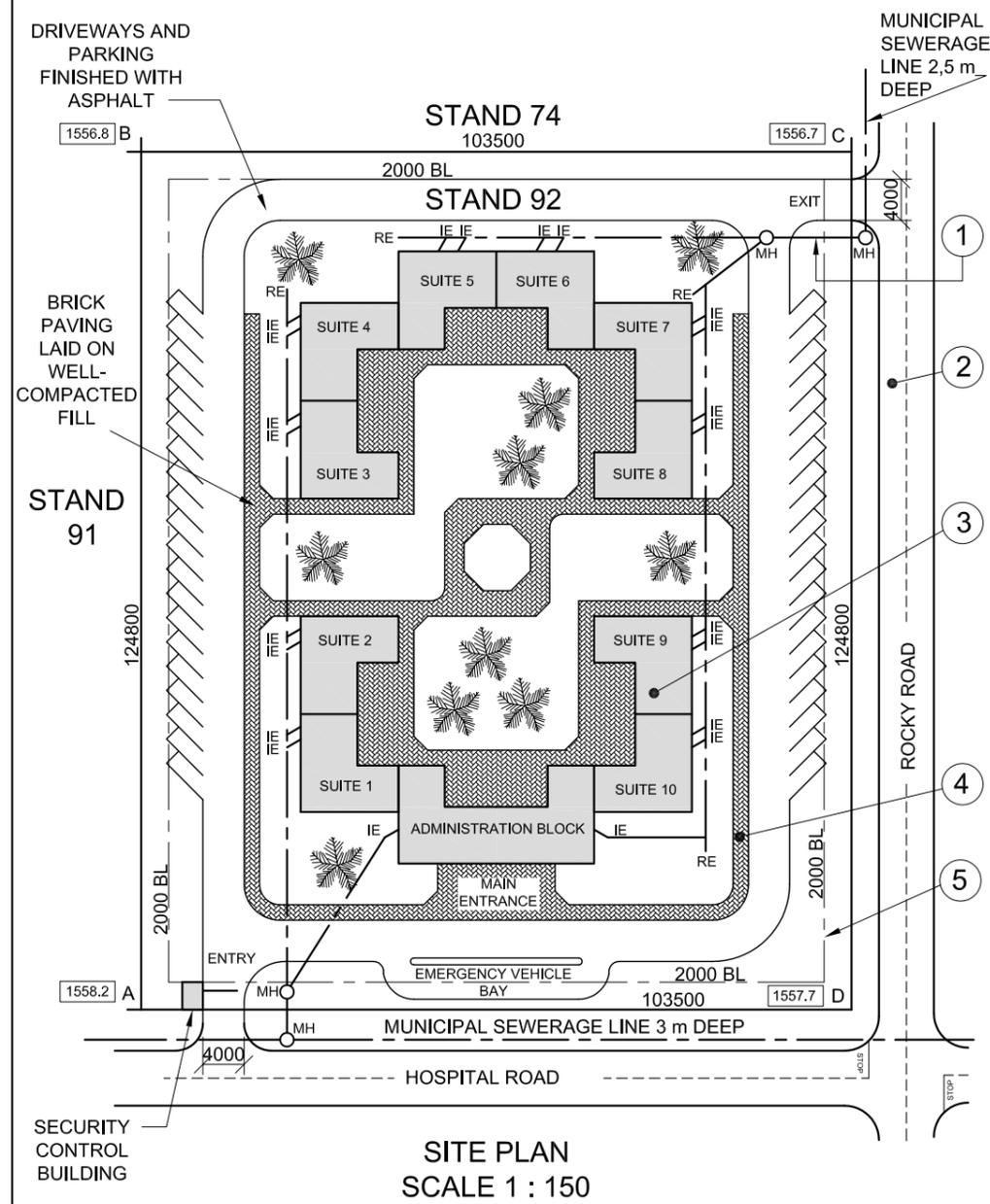
Given:

A detailed drawing of a section through the components of a wall and roof, the site plan for a proposed medical centre, a title panel and a table of questions. The drawings have not been prepared to the indicated scale.

Instructions:

Complete the table below by neatly answering the questions, which all refer to the accompanying drawings and title panel. [30]

QUESTIONS		ANSWERS																					
1	With reference to the detailed section through the components of a wall and roof, link the number on the drawing with the correct component in the column to the right of this question.	<table border="1"> <tr><td>CEILING BOARD</td><td></td></tr> <tr><td>GUTTER</td><td></td></tr> <tr><td>REVEAL</td><td></td></tr> <tr><td>RAFTER</td><td></td></tr> <tr><td>WALL PLATE</td><td></td></tr> <tr><td>FASCIA BOARD</td><td></td></tr> <tr><td>BATTEN</td><td></td></tr> <tr><td>TIE BEAM</td><td></td></tr> <tr><td>CORNICE</td><td></td></tr> <tr><td>LINTEL</td><td></td></tr> </table>	CEILING BOARD		GUTTER		REVEAL		RAFTER		WALL PLATE		FASCIA BOARD		BATTEN		TIE BEAM		CORNICE		LINTEL		10
CEILING BOARD																							
GUTTER																							
REVEAL																							
RAFTER																							
WALL PLATE																							
FASCIA BOARD																							
BATTEN																							
TIE BEAM																							
CORNICE																							
LINTEL																							
2	What is the drawing number?		1																				
3	In which road is the exit of the property located?		1																				
4	What does the line at 1 indicate?		1																				
5	Name the feature at 2.		1																				
6	Name the feature at 3.		1																				
7	Name the feature at 4.		1																				
8	What does the line at 5 indicate?		1																				
9	How many rodding eyes are shown on the site plan?		1																				
10	How many proposed suites must be built?		1																				
11	Which is the highest corner of the stand?		2																				
12	Determine the perimeter of stand 92 in metres. Show ALL calculations.		3																				
13	Determine the total area of stand 92 in square metres. Show ALL calculations.		3																				
14	In the space provided in the title panel, draw, in neat freehand, the symbol for the north point according to <i>SABS 0143</i> .		3																				
TOTAL			30																				



SITE PLAN
SCALE 1 : 150

EXAMINATION NUMBER	
EXAMINATION NUMBER	2



QUESTION 2: DEVELOPMENT

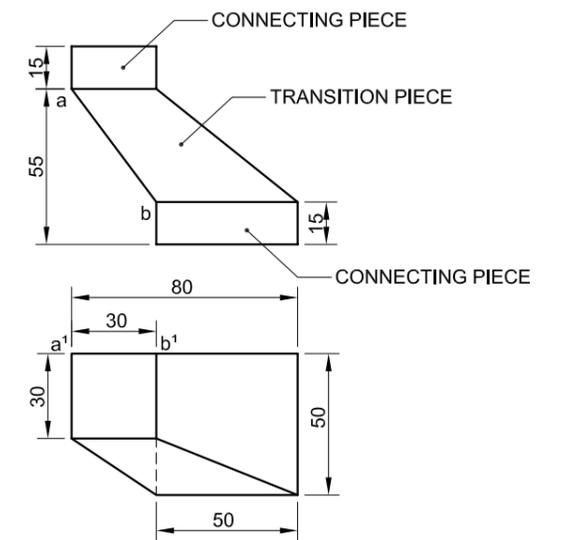
Given:

The front view and top view of a portion of a duct showing an offset square-to-square transition piece with two connecting pieces.

Instructions:

- 2.1 Draw, to scale 1 : 1, the given front view and top view of the given portion of the duct.
- 2.2 Develop the surface of the transition piece ONLY. Make edge AB the seam.

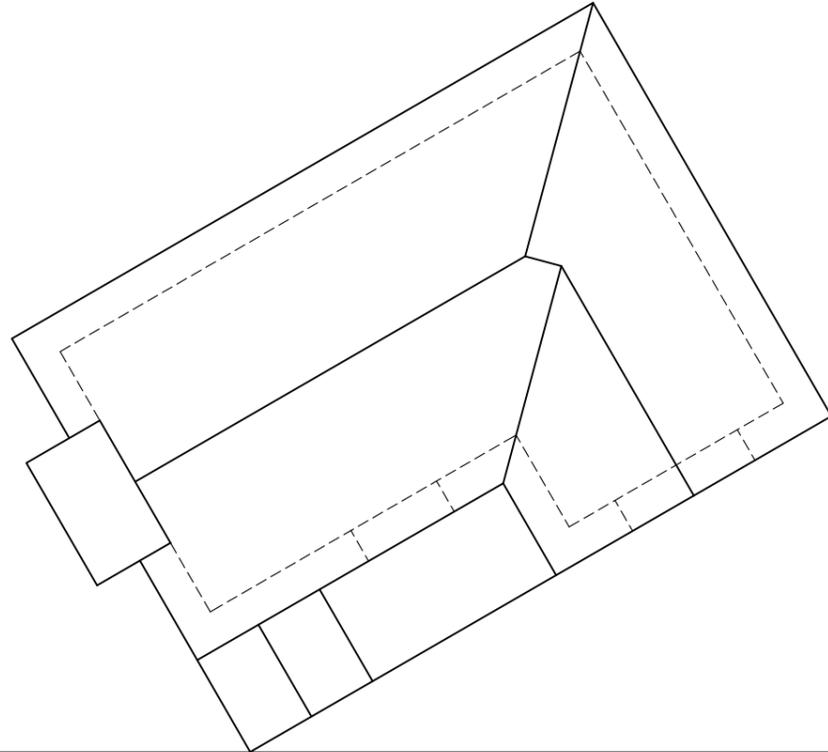
Show ALL necessary construction and fold lines. **[34]**



EDGE **AB** IS THE SEAM.

ASSESSMENT CRITERIA			
FRONT VIEW + TOP VIEW	10		
TRUE LENGTH + METHOD	10		
DEVELOPMENT	14		
TOTAL	34		
EXAMINATION NUMBER			
EXAMINATION NUMBER			3





QUESTION 3: PERSPECTIVE

Given:

Two views of a cottage 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).
- Show ALL necessary construction.
- Show the wall thickness at the door and the window.
- NO hidden detail is required. **[41]**

PP

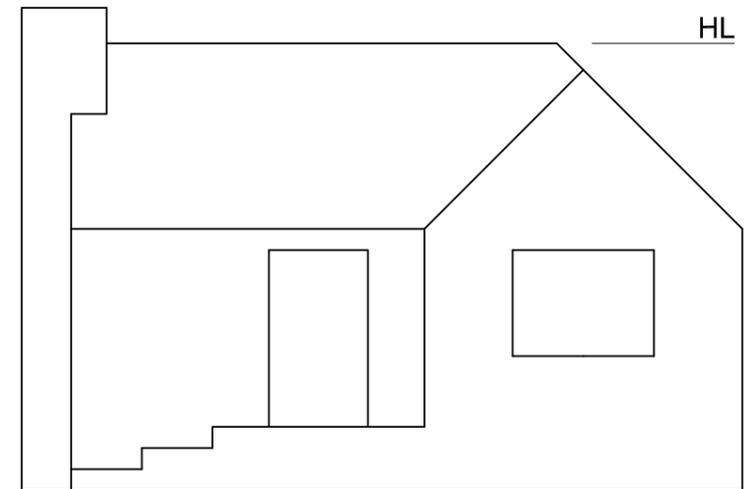
HL

GL

HL

+

SP

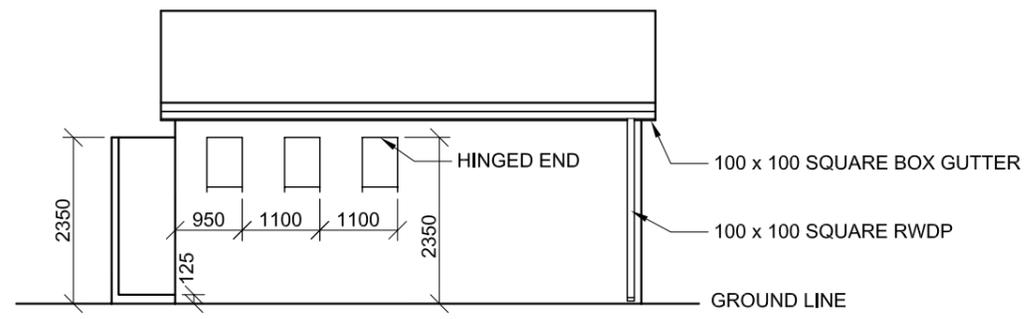
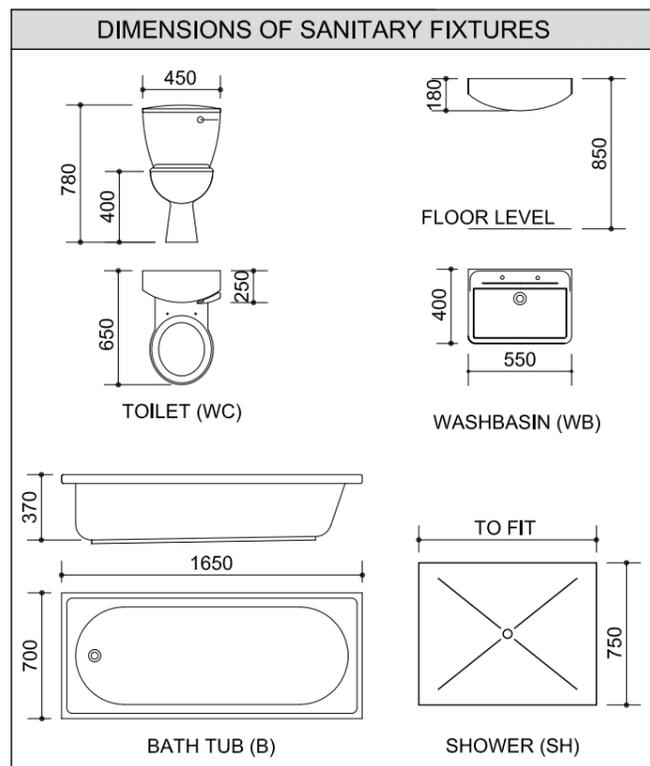
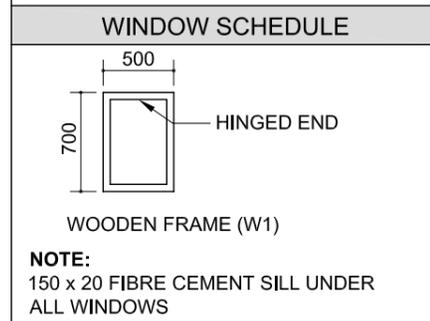
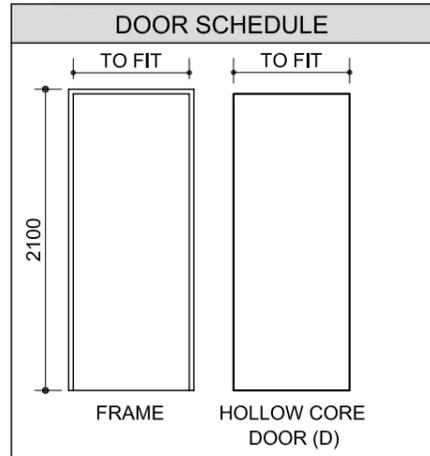


ASSESSMENT CRITERIA			
CONSTRUCTION + VPs	7		
BUILDING	18		
ROOF + CHIMNEY	16		
TOTAL	41		
EXAMINATION NUMBER			
EXAMINATION NUMBER			4

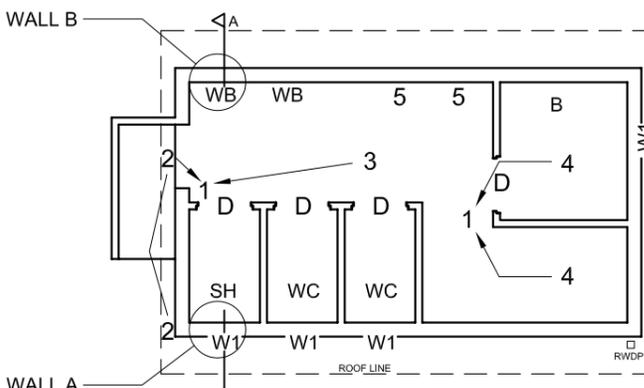


ROOF COMPONENTS	
	75 x 50 PURLINS
	228 x 20 FASCIA BOARD
	114 x 38 WALL PLATE

ELECTRICAL SYMBOLS	



INCOMPLETE NORTH ELEVATION



INCOMPLETE FLOOR PLAN

- FIXTURES**
- D DOORS
 - W1 WINDOW OPENINGS
 - B BATH
 - SH SHOWER
 - WC TOILET
 - WB WASHBASIN

- ELECTRICAL FIXTURES**
1. TWO-POLE LIGHT SWITCH
 2. OUTSIDE LIGHT
 3. 2 x 40 W FLUORESCENT TUBES
 4. CEILING LIGHT
 5. SWITCH SOCKET OUTLET
- NOTE: THE ARROWS SHOW THE LIGHT CONNECTION TO THE SWITCH.**

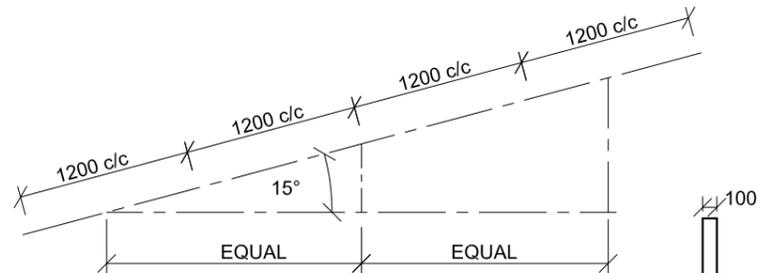
ROOF NOTES:
 ROOF COVER 15 mm FIBRE CEMENT BOARD ON 75 x 50 mm PURLINS @ 1200 c/c

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

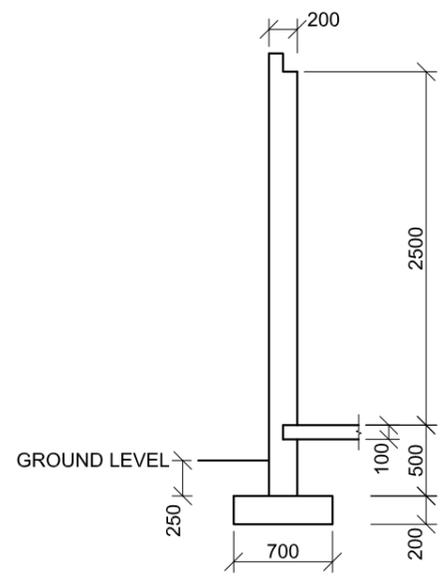
228 x 20 mm FASCIA BOARD ON BOTH ENDS

ROOF PITCH 15°

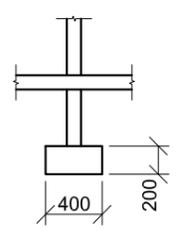
100 mm SQUARE BOX GUTTER



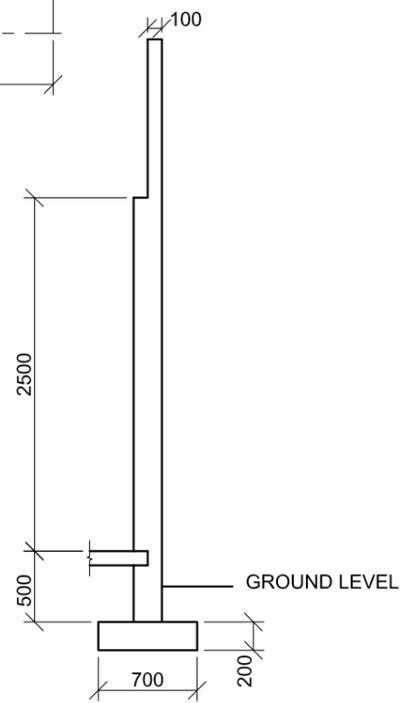
SCHEMATIC DIAGRAM OF A ROOF TRUSS



INCOMPLETE FOUNDATION AND WALL 'A' DETAIL ON A-A



INCOMPLETE FOUNDATION AND INTERNAL WALL DETAIL



INCOMPLETE FOUNDATION AND WALL 'B' DETAIL ON A-A

QUESTION 4: CIVIL DRAWING

Given:

- The incomplete north elevation of a new **ablution block** for a campsite showing the walls, the position of the windows, the roof and notes
- The incomplete floor plan showing the walls, position of the windows, doors, sanitary fixtures and the electrical fixtures
- Roof notes and a schematic diagram of a roof truss
- The incomplete foundation and wall detail of wall 'A' and wall 'B' on cutting plane A-A
- A table of roof components
- A door and window schedule
- A table of electrical symbols
- A table of sanitary fixtures
- The incomplete floor plan of the new **ablution block**, drawn to scale 1 : 50, on page 6

Instructions:

- Answer this question on page 6.
- Using the given incomplete floor plan, draw, to scale 1 : 50 and to the specifications, the following views of the new **ablution block**:
 - 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 conventions contained in the *SABS 0143*.

SPECIFICATIONS:

THE FLOOR PLAN

Add the following features to the drawing:

- ALL the doors and windows
- The sanitary fixtures as indicated with the abbreviations
- ALL the electrical fixtures as indicated with the numbers

THE NORTH ELEVATION

Show the following features on the drawing:

- The outside walls
- The roof detail including the gutter, fascia board and rainwater downpipe
- The window detail
- The finished floor level

THE SECTIONAL ELEVATION

Show the following features on the drawing:

- The complete foundation, wall, slab and roof detail
- The window, with a single lintel, and door detail
- ALL features and fixtures on and to the east of cutting plane A-A
- ALL hatching detail

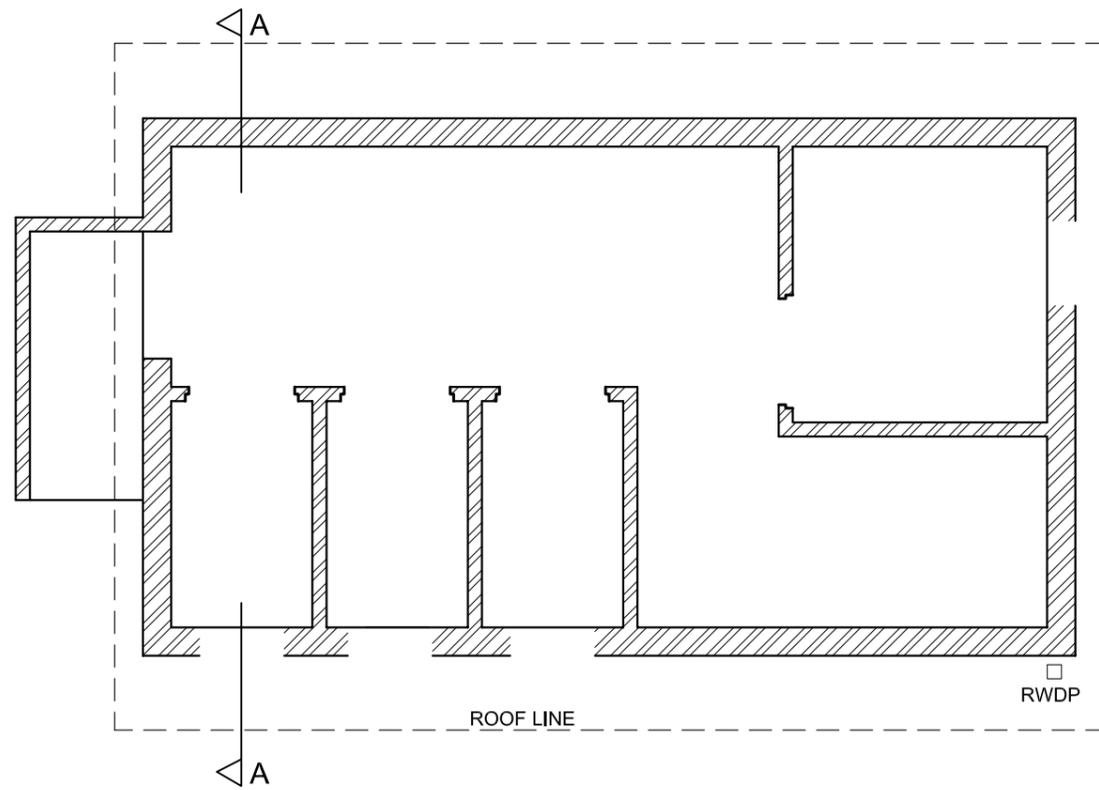
Label the following:

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

NOTE:

- ALL substructure hatching may be drawn in freehand. **[95]**





ASSESSMENT CRITERIA				
FLOOR PLAN				
1	LABELS	2		
2	ELECTRICAL	7		
3	FIXTURES	8		
4	DOORS + WINDOWS	14		
SUBTOTAL		31		
NORTH ELEVATION				
1	WALLS + FFL	4		
2	ROOF + FACIA + GUTTER + RWDP	5		
3	WINDOWS	10½		
4	LABELS	1½		
SUBTOTAL		21		
SECTIONAL ELEVATION				
1	ROOF	11		
2	WALLS + FLOOR + FOUNDATION	14½		
3	WINDOW + DOORS + FIXTURES	8		
4	HATCHING	7		
5	LABELS	2½		
SUBTOTAL		43		
TOTAL		95		
EXAMINATION NUMBER				
EXAMINATION NUMBER				
				6

