



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL
SENIOR CERTIFICATE

GRADE 12

ENGINEERING GRAPHICS AND DESIGN P1

FEBRUARY/MARCH 2012

MARKS: 100

TIME: 3 hours

This question paper consists of 6 pages.



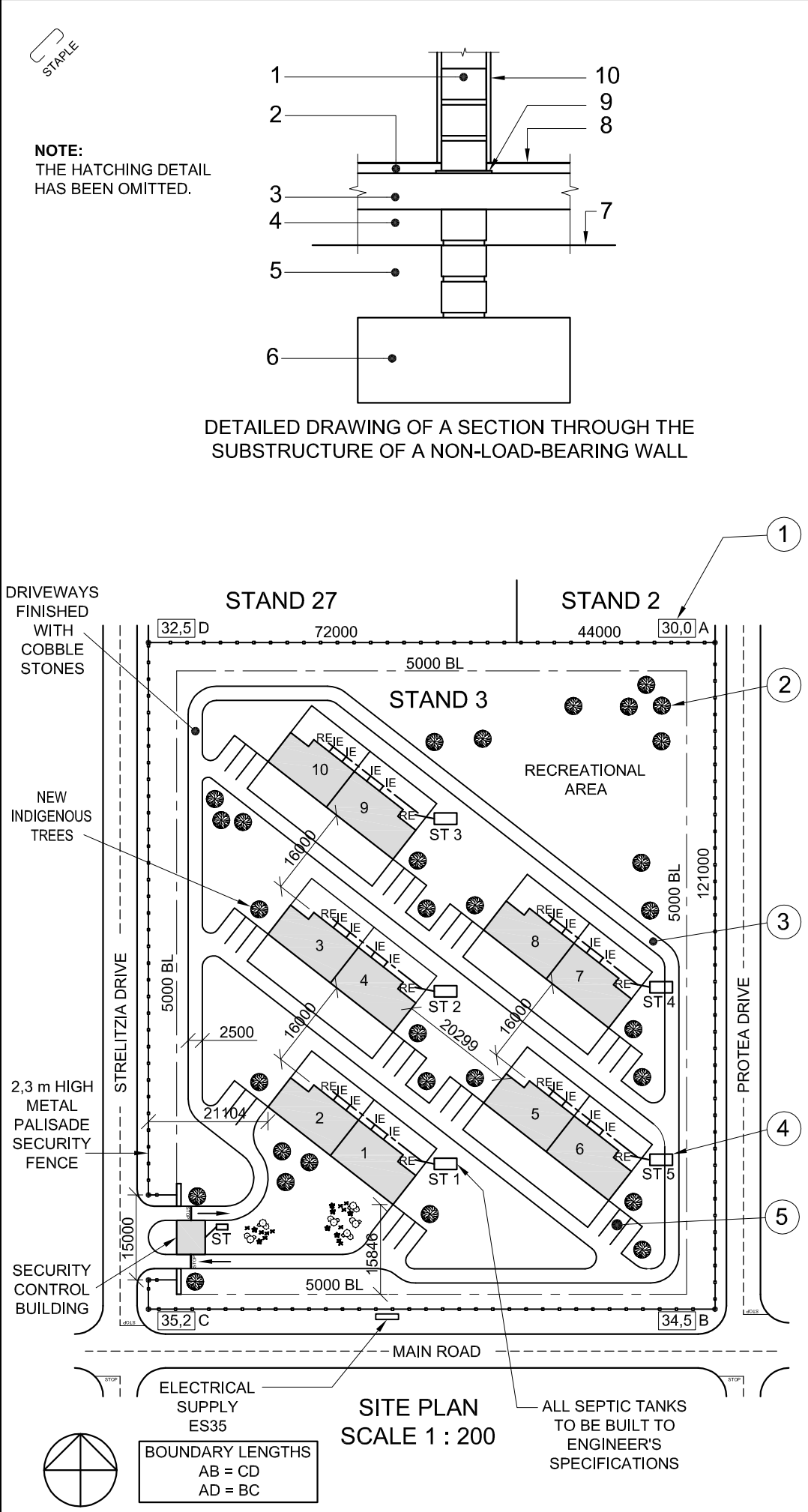
INSTRUCTIONS AND INFORMATION

- 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
1									
2									
3									
4									
TOTAL									
	2	0	0			2	0	0	

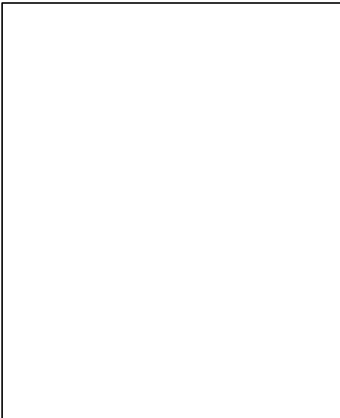
FINAL CONVERTED MARK	CHECKED BY
100	

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



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

14. In the space below, draw, in neat freehand, the front view and top view of the SABS 0143 convention for a SHOWER.



ARCHITECT'S SIGNATURE

CLIENT'S SIGNATURE

REVISION	DATE	DESCRIPTION
<div>NEW WAVE ARCHITECTS 5 ARGILE DRIVE DURBAN Tel: 031 303 8459</div>		
PRINTED BY ZAPPY PRINTERS		DATE OF PRINT 2012-01-10
DRAWING TITLE SITE PLAN		
PROJECT NEW CLUSTER HOMES FOR DUBE TRUST ON STAND 3 AT 58 STRELITZIA ROAD GINGINDLOVU.		
PROJECT NUMBER 18		DRAWING NUMBER 002-A
REFERENCE CODE Q1P1-SUP-2012		DRAWN BY SANELE
		CHECKED BY LEBO
DATE 2011-02-30	SCALE 1 : 200	

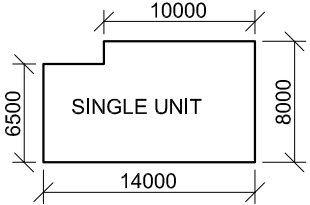


QUESTION 1: ANALYTICAL (CIVIL)

Given:
A detailed drawing of a section through the substructure of a non-load-bearing wall, the site plan for a new complex with 10 cluster homes, 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 drawing of a section through the substructure of a non-load-bearing wall, link the number on the drawing with the correct component in the column to the right of this question.	FOUNDATION		10
		DAMP-PROOF COURSE		
		GROUND LEVEL		
		INTERNAL WALL		
		CONCRETE SLAB		
		COMPACTED HARDCORE		
		UNDISTURBED EARTH		
		SCREED		
		PLASTER		
		FINISHED FLOOR LEVEL		
2	What is the reference code for the drawing?		1	
3	Who was responsible for the printing of the site plan?		1	
4	What is the distance from the building line to the palisade fence?		1	
5	In which road is the access to the property located?		1	
6	What does the feature at 1 indicate?		1	
7	Name the feature at 2.		1	
8	Name the feature at 3.		1	
9	Name the feature at 4.		1	
10	Name the feature at 5.		1	
11	How many buildings are on the stand?		1	
12	What is the surface finish of the driveways in the complex?		1	
13	Determine the total length of the metal palisade security fence line in metres. Show ALL calculations.		3	
14	In the space provided in the title panel, draw, in neat freehand, the front view and top view of the SABS 0143 convention for a shower.		3	
15	In the space below, determine the total area of a single unit in square metres.		3	
ANSWER 15 Show ALL calculations.				
			TOTAL	30



EXAMINATION NUMBER	
EXAMINATION NUMBER	
2	

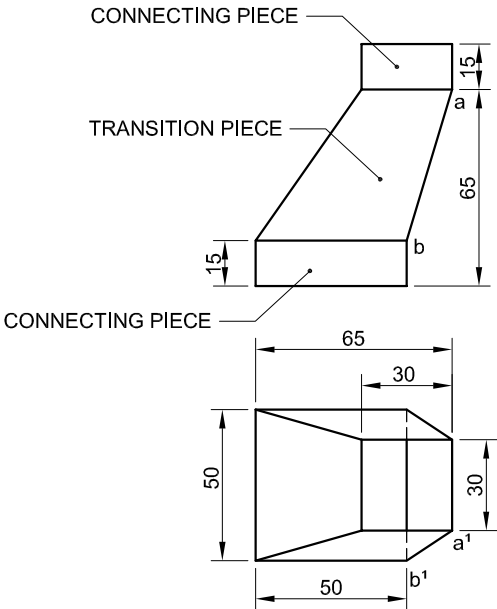


QUESTION 2: DEVELOPMENT

Given:
The front view and top view of a portion of a duct showing a 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 portion of the duct.
 - 2.2 Develop the surface of the transition piece ONLY. Make edge AB the seam.

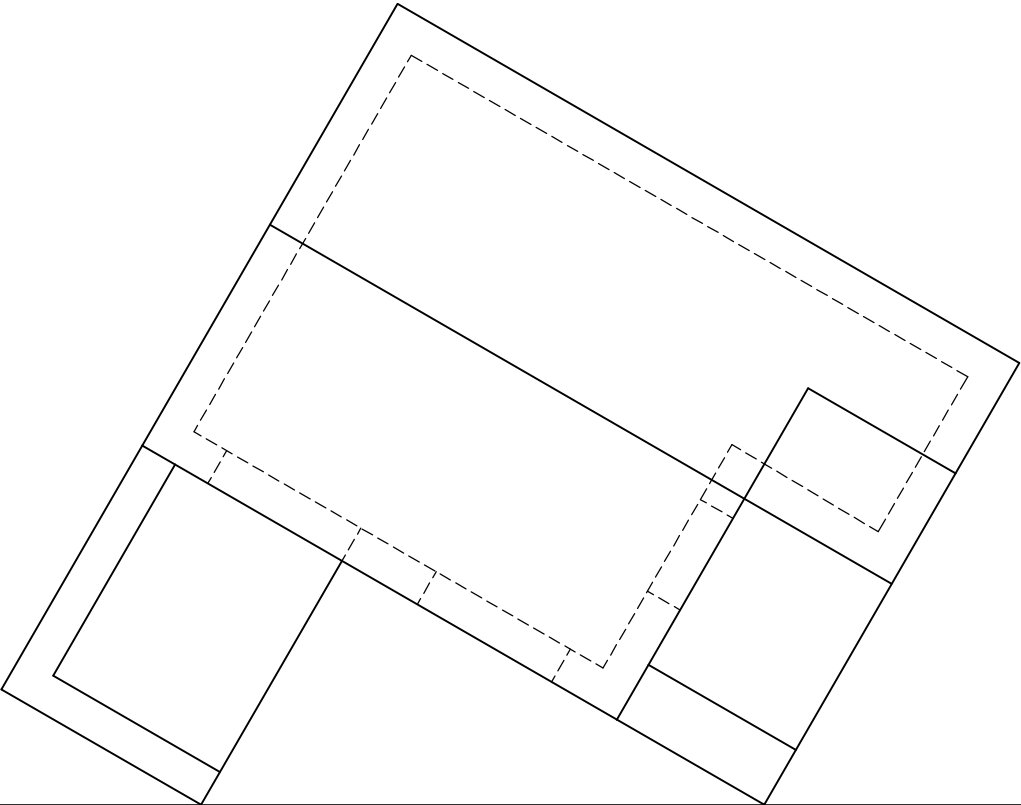
Show ALL necessary construction and fold lines. **[34]**



EDGE **AB** IS THE SEAM.

ASSESSMENT CRITERIA					
1	FRONT VIEW + TOP VIEW	11			
2	TRUE LENGTH METHOD	10			
3	DEVELOPMENT	13			
	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 windows.
 - NO hidden detail is required.
- [40]

PP

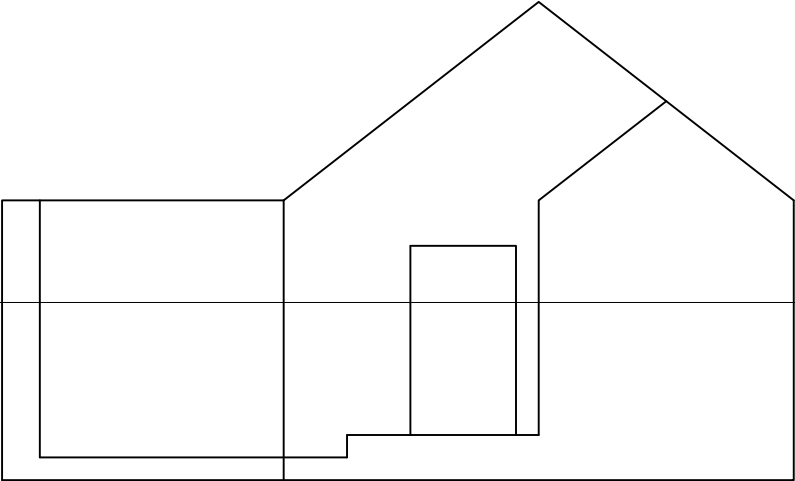
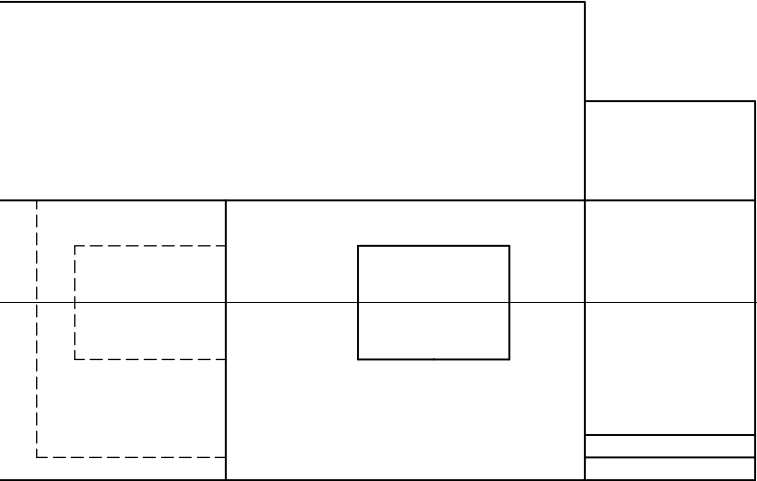
PP

HL

HL

GL

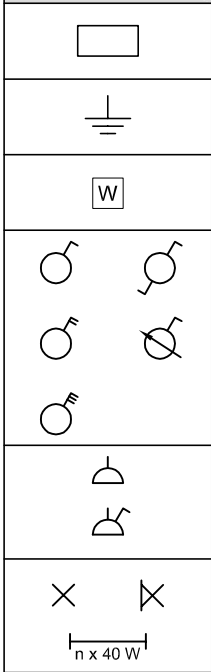
GL



SP

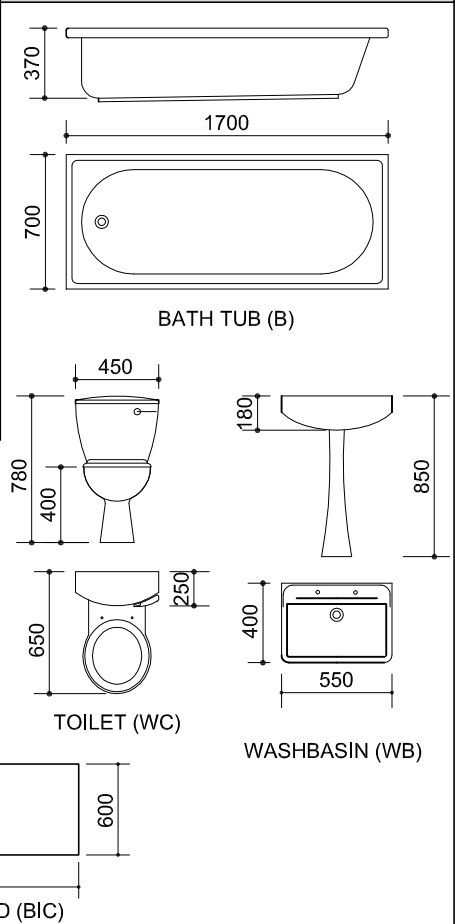
ASSESSMENT CRITERIA					
1	CONSTRUCTION + VPs	7			
2	STAIRS	7			
3	WALLS + DOOR + WINDOWS	17			
4	ROOF	9			
	TOTAL	40			
EXAMINATION NUMBER					
EXAMINATION NUMBER					4

ELECTRICAL SYMBOLS

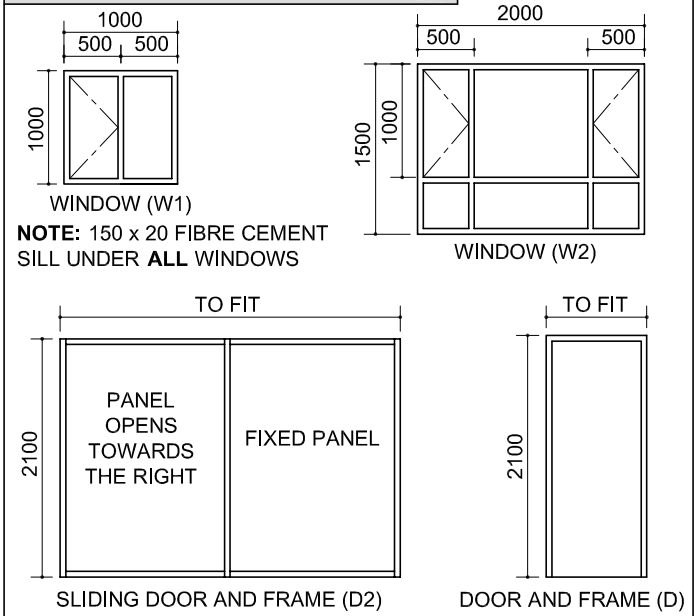


ROOF COMPONENTS	
	75 x 50 PURLINS
	228 x 20 FASCIA BOARD
	114 x 38 WALL PLATE

FIXTURES

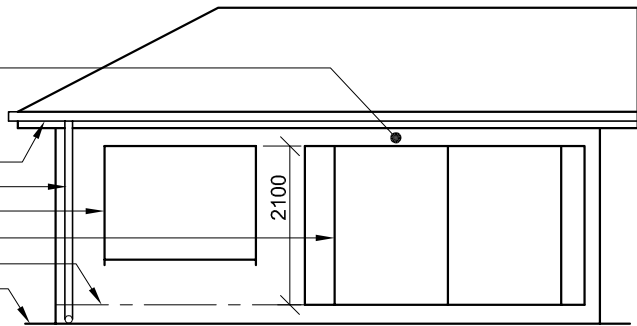


DOOR AND WINDOW SCHEDULE



200 x 150 CONCRETE
SUPPORT BEAM

100 x 100 BOX GUTTER
Ø100 mm RWDP
W2 WINDOW
SLIDING DOOR
FLOOR LEVEL
GROUND LINE



INCOMPLETE NORTH-EAST ELEVATION

FIXTURES

- D1 HINGED DOOR OPENINGS
- D2 SLIDING DOOR OPENING
- W1, W2 WINDOW OPENINGS
- B BATH
- S SINK
- WC TOILET
- WB WASHBASIN
- BIC BUILT-IN CUPBOARD

ELECTRICAL FIXTURES

- 1. THREE-POLE LIGHT SWITCH
- 2. SINGLE-POLE LIGHT SWITCHES
- 3. CEILING LIGHT
- 4. 2 x 40 W FLUORESCENT TUBES
- 5. SWITCH SOCKET OUTLETS

NOTE:
THE ARROW SHOWS THE LIGHT
CONNECTION TO THE SWITCH.

ROOF NOTES:

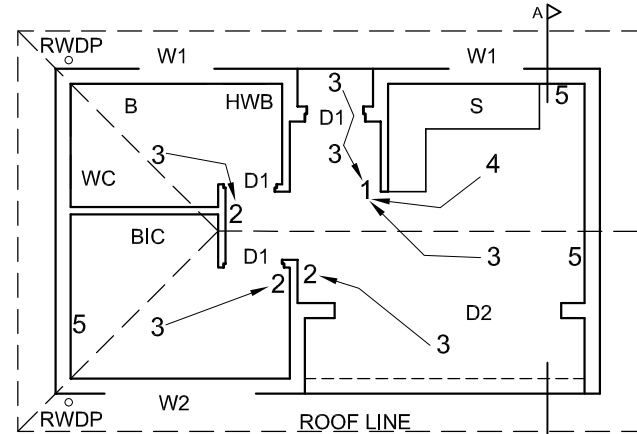
ROOF COVER 15 mm CORRUGATED
IRON ON 75 x 50 mm PURLINS @
1450 c/c.

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

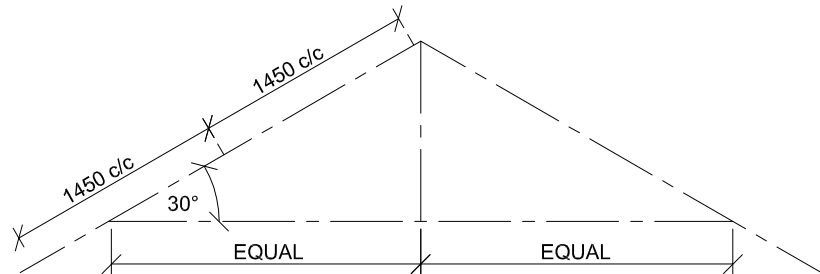
ROOF PITCH 30° WITH 228 x 20 mm
FASCIA BOARD ON BOTH ENDS.

100 mm SQUARE BOX GUTTER

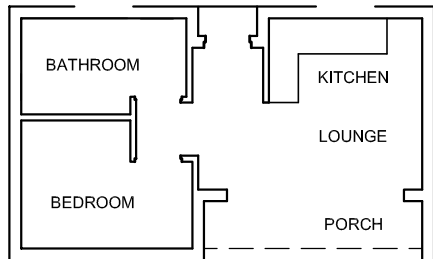
PLASTER CEILING BOARD ON 4
STRIPS OF 38 x 38 mm BRANDING,
EVENLY SPACED



INCOMPLETE FLOOR PLAN



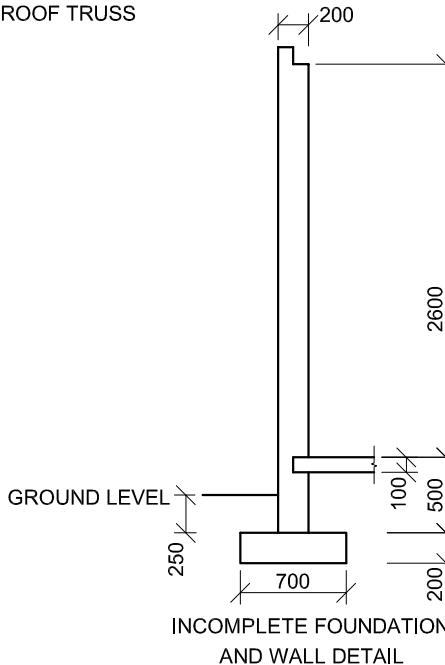
SCHEMATIC DIAGRAM
OF A ROOF TRUSS



ROOM DESIGNATIONS
WITH FLOOR FINISH

FLOOR FINISH

- KITCHEN: TILES
- LOUNGE: TILES
- PORCH: TILES
- BEDROOM: CARPET
- BATHROOM: TILES



QUESTION 4: CIVIL DRAWING

Given:

- The incomplete north-east elevation of a new **cottage** showing the walls, the position of the windows, sliding door, the roof and notes
- The incomplete floor plan showing the walls, position of the windows, doors, fixtures and the electrical fixtures
- Roof notes and a schematic diagram of a roof truss
- A diagram showing the room designations and floor finishes
- The incomplete foundation and wall detail
- A table of electrical symbols
- A table of roof components
- A table of fixtures
- A door and window schedule
- The incomplete floor plan of the new **cottage**, 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 **cottage**:
 - 4.1 The complete floor plan
 - 4.2 The north-east 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 doors and windows. Show the direction of opening for the sliding door.
- ALL fixtures as indicated by the abbreviations
- ALL the electrical fixtures as indicated by the numbers
- ALL hatching detail

THE NORTH-EAST ELEVATION

Show the following features on the drawing:

- The outside walls
- The roof detail including the gutter, fascia board and rainwater downpipe
- The window and sliding door detail including all the directions of opening

THE SECTIONAL ELEVATION

Show the following features on the drawing:

- The complete foundation, wall, slab, roof and ceiling detail
- The sliding door detail
- ALL hatching detail

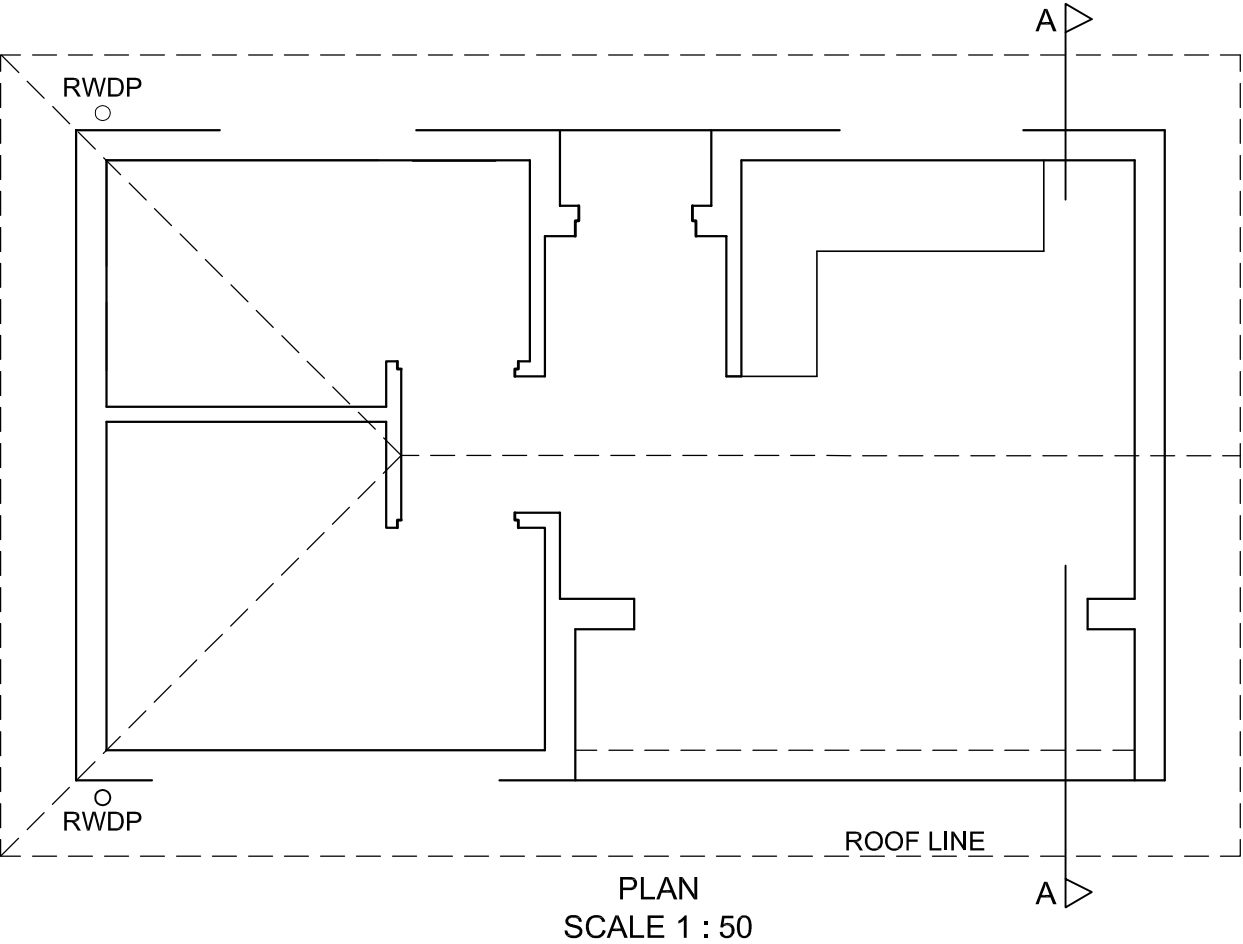
Label the following:

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

NOTE:

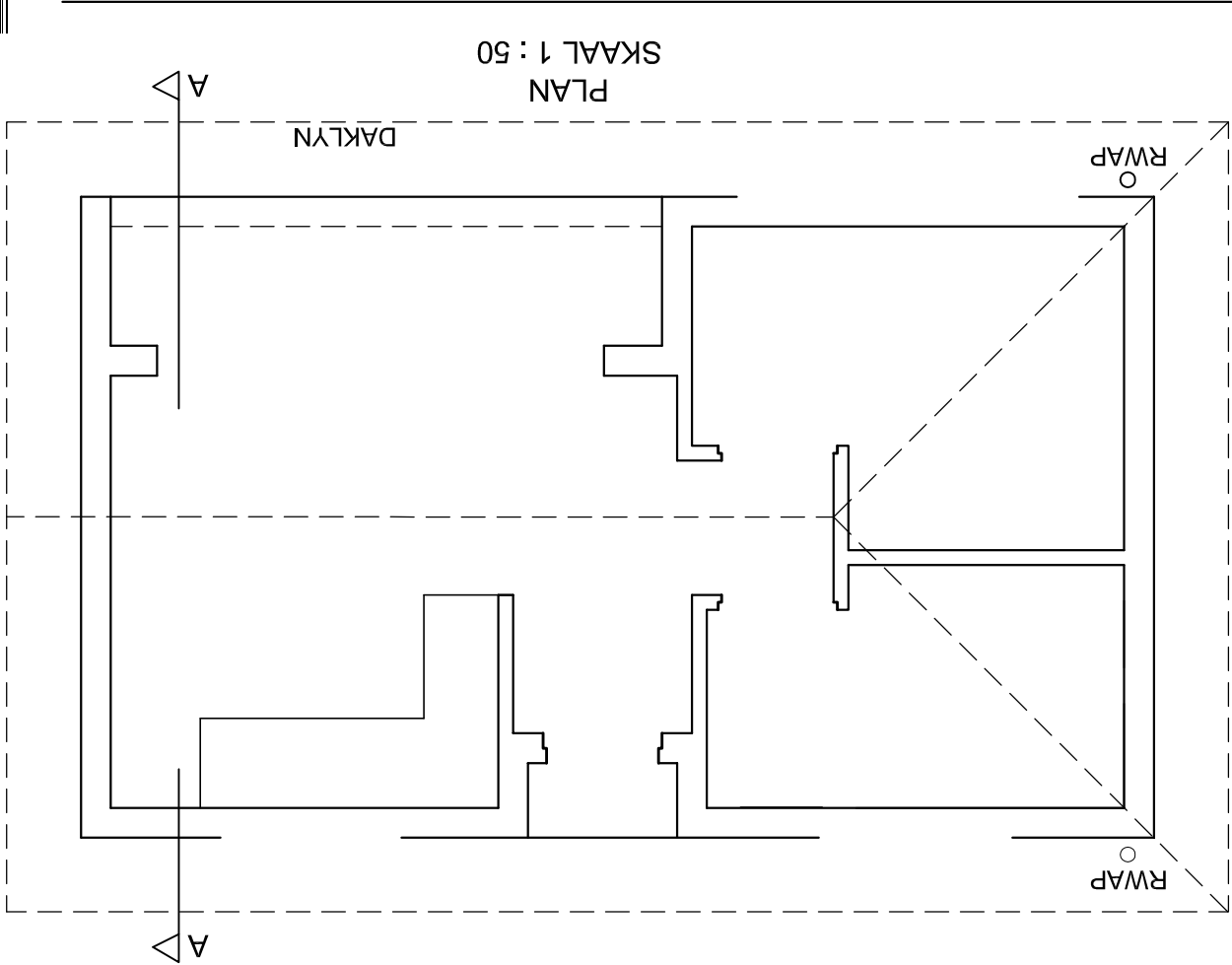
- ALL substructure hatching may be drawn in freehand. [96]





ASSESSMENT CRITERIA					
FLOOR PLAN					
1	LABELS	5			
2	ELECTRICAL	8			
3	FITTINGS	6			
4	DOORS + WINDOWS	12			
5	HATCHING	6			
SUBTOTAL		37			
NORTH-EAST ELEVATION					
1	WALLS + FFL	4			
2	ROOF + GUTTER + RWDP	6½			
3	WINDOWS + DOOR	9			
4	LABELS	1½			
SUBTOTAL		21			
SECTIONAL ELEVATION					
1	ROOF	13			
2	WALLS + FLOOR + FOUNDATIONS	15½			
3	SLIDING DOOR	1			
4	LABELS	1½			
5	HATCHING	7			
SUBTOTAL		38			
TOTAL		96			
EXAMINATION NUMBER					
EXAMINATION NUMBER					6

ASSESSERINGSKRITERIA				
VLOERPLAN				
1	BYSKRIFTE	5		
2	ELEKTRIES	8		
4	TOEBEHORE	6		
5	DEURE + VENSTERS	12		
6	ARSEERING	6		
SUBTOTAL		37		
NOORD-OOS-AANSIG				
1	MURE + VVV	4		
2	DAK + GEUT + RWAP	6½		
3	VENSTERS + DEUR	9		
4	BYSKRIFTE	1½		
SUBTOTAL		21		
DEURSNEEFAANSIG				
1	DAK	13		
2	MURE + VLOER + FONDASIES	15½		
3	SKUIFDEUR	1		
4	BYSKRIFTE	1½		
5	ARSEERING	7		
SUBTOTAL		38		
TOTAL		96		
EKSAMENNOMMER				
EKSAMENNOMMER				
6				



VRAAG 4: SIVIELE TEKENING

Geggee:

Die onvolledige noord-oos-aansig van 'n nuwe **kothuis** wat die mure, die posisie van die vensters, skuifdeur, die dak en notas toon

Die onvolledige vloerplan wat die mure, posisie van die vensters, deure, toebehore en die elektriese toebehore toon

Daknotas en 'n skematiese diagram van 'n dakkap

'n Diagram wat die kameraanduidings en vloerafwerkings toon

Die onvolledige fondasie- en muurbesonderhede

'n Tabel met elektriese simbole

'n Tabel met dakkomponente

'n Tabel met toebehore

'n Deur- en vensterskedule

Die onvolledige vloerplan van die nuwe **kothuis**, geteken volgens skaal 1 : 50, op bladsy 6

Instrukties:

Beantwoord hierdie vraag op bladsy 6.

Deur die gegewe onvolledige vloerplan te gebruik, teken, volgens skaal 1 : 50 en die spesifikasies, die volgende aansigte van die nuwe **kothuis**:

4.1 Die volledige vloerplan

4.2 Die noord-oos-aansig

4.3 'n Deursnee-aansig volgens snylak A-A

ALLE tekene moet voldoen aan die riglyne en konvensies vervat in die *SABS 0143*.

SPEKIFIKASIES:

DIE VLOERPLAN

Voeg die volgende kenmerke by die tekening:

Al die deure en vensters. Toon die oopmaakrigting van die skuifdeur.

Al die toebehore soos aangedui deur die afkortings nommers

Al die elektriese toebehore soos aangedui deur die die

Al die arseringsbesonderhede

DIE NOORD-OOS-AANSIG

Toon die volgende kenmerke op die tekening:

Die buitemure

Die dakbesonderhede, insluitend die geut, fassieplank en reënwaterafvoertyp

Die venster- en skuifdeurbesonderhede, insluitend al die oopmaakrigtings

DIE DEURSNEEAANSIG

Toon die volgende kenmerke op die tekening:

Die volledige fondasie-, muur-, betonblad-, dak- en platon-besonderhede

Die skuifdeurbesonderhede

Al die arseringbesonderhede

Benoem die volgende:

Die noord-oos-aansig en die deursnee-aansig

Die kameraanduidings met vloerafwerkings

Deur die korrekte afkortings te gebruik, benoem die volgende kenmerke op die korrekte aansig: grondvlak en vogweeraag.

LET WEL:

ALLE substruktuurarsering mag in vryhand geteken word.

5

200 x 150 BETON-STEUNBALK

100 x 100 BAKGEUT

Ø100 mm RW/AP

W2 VENSTER

SKUIFDEUR

VLOERVLAK

GRONDLYN

ONVOLLEDIGE NOORD-OOS-AANSIG

2100

ONVOLLEDIGE VLOERPLAN

DAKLYN

W2

5

3

2

D1

BIC

SK

WB

3

2

D1

3

4

OWB

15

W1

3

D1

3

5

D2

3

ONVOLLEDIGE NOORD-OOS-AANSIG

2100

200 x 150 BETON-STEUNBALK

100 x 100 BAKGEUT

Ø100 mm RW/AP

W2 VENSTER

SKUIFDEUR

VLOERVLAK

GRONDLYN

ONVOLLEDIGE NOORD-OOS-AANSIG

2100

ONVOLLEDIGE VLOERPLAN

DAKLYN

W2

5

3

2

D1

BIC

SK

WB

3

2

D1

3

4

OWB

15

W1

3

D1

3

5

D2

3

ONVOLLEDIGE FONDASIE- EN MUURBESONDERHEDE

2600

200

700

250

100

500

GRONDLAK

VLOERAFWERKING

KOMBUIS: TEELS

SITKAMER: TEELS

STOEP: TEELS

SLAAPKAMER: MAT

BADKAMER: TEELS

KAMERAANDUIDINGS MET VLOERAFWERKINGS

STOEP

SITKAMER

KOMBUIS

SLAAPKAMER

BADKAMER

SKEMATIESE DIAGRAM VAN 'N DAKKAP

200

1450 s/s

30°

1450 s/s

GELYK

GELYK

BARCODE

E A S T E R N - C A P E A

ELEKTRIESE SIMBOLE

W

⎓

□

×

×

n x 40 W

DAKKOMPONENTE

75 x 50 KAPLATTE

228 x 20 FASSIEPLANK

114 x 38 MUURPLAAT

TOEBEHORE

370

1700

BAD (B)

700

180

450

780

400

250

650

875

450

950

510

400

550

WASBAK (WB)

TOILET (SK)

OPWASBAK (OWB)

INGEBODE KAS (BIC)

OM TE PAS

600

TOEBEHORE

1000

500

500

1000

VENSTER (W1)

1500

1000

500

500

VENSTER (W2)

2000

500

500

1000

OM TE PAS

2100

OM TE PAS

SKUIFDEUR EN RAAM (D2)

DEUR EN RAAM (D)

NOTA: 150 x 20 VESLSEMENTVENSTER-BANK ONDER ALLE VENSTERS

OM TE PAS

PANEEL

REGTERKANT

MAAK NA OOP

VASTE PANEEL

VRAAG 3: PERSPEKTIEF

Gege:

Twee aansigte van 'n kothuis en die inligting benodig om 'n tweepuntspeskieffekening te teken.

PV – Prentvik

HL – Horizon

GL – Groundlyn

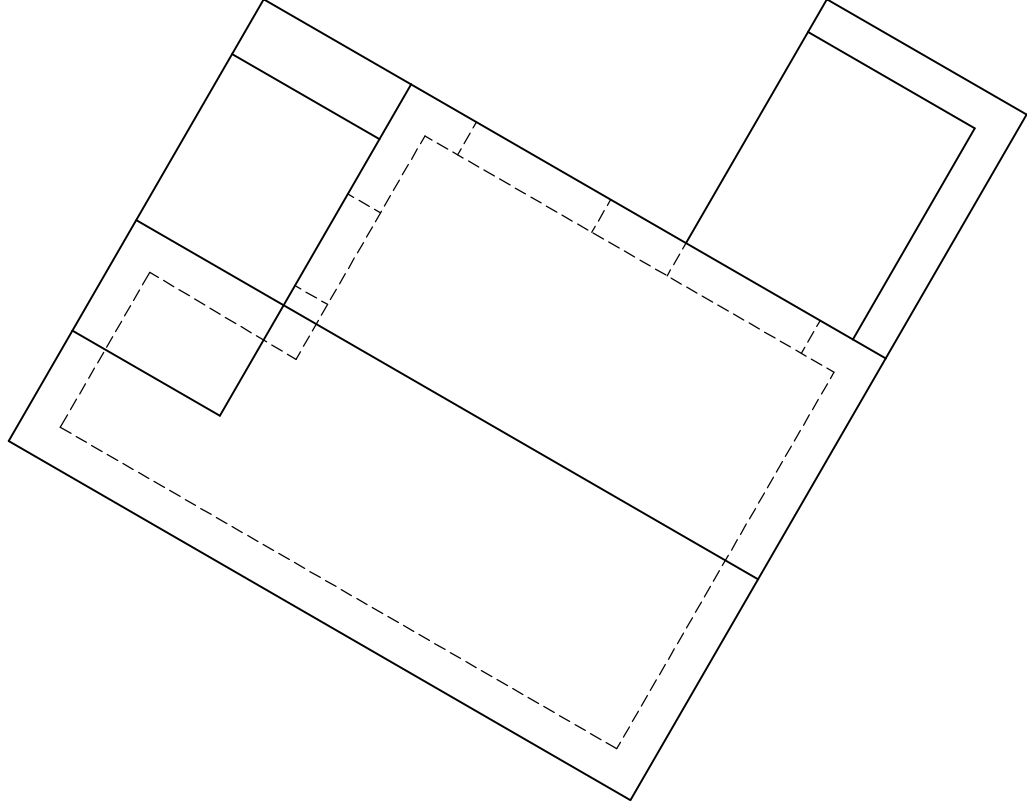
SP – Staandpunt

Instruksies:

Voltooï die perspektieftkening.

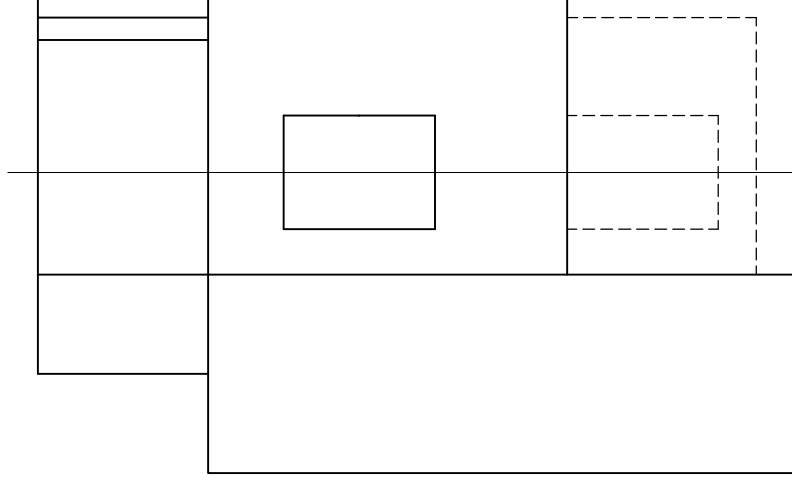
- Rīg die tekenvel volgens die grondlyn (GL).
- Toon ALLE nodige konstruksies.
- Toon die muurdikte by die deur en die vensters.
- GEEN verborge besonderhede word verhang nie.

[40]



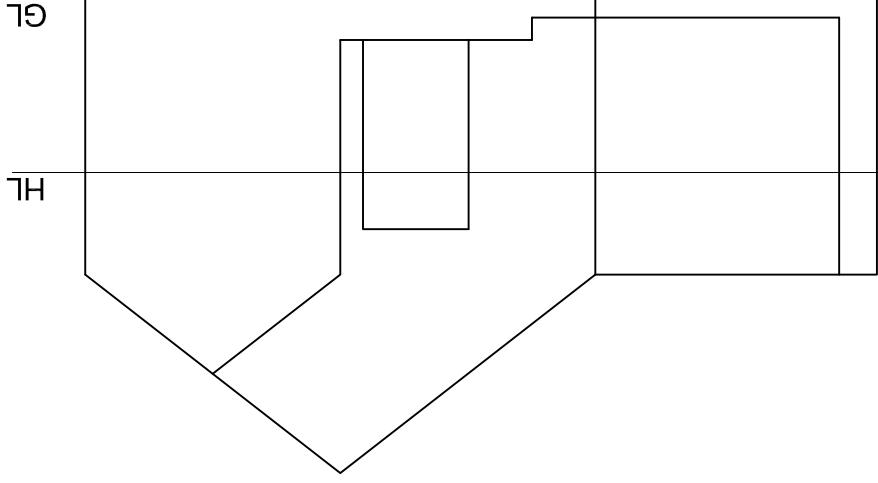
Ad

Ad



7H

79



7H

79

SP



Kopiereg voorbehou

ASSESSERINGSKRITERIA				
KONSTRUKSIES + VP ^e	7			
TRAPPE	7			
MURE + DEUR + VENSTERS	17			
DAK	9			
TOTAAL	40			
EKSAMENNOMMER				
EKSAMENNOMMER				
4				

Blaai om asseblief



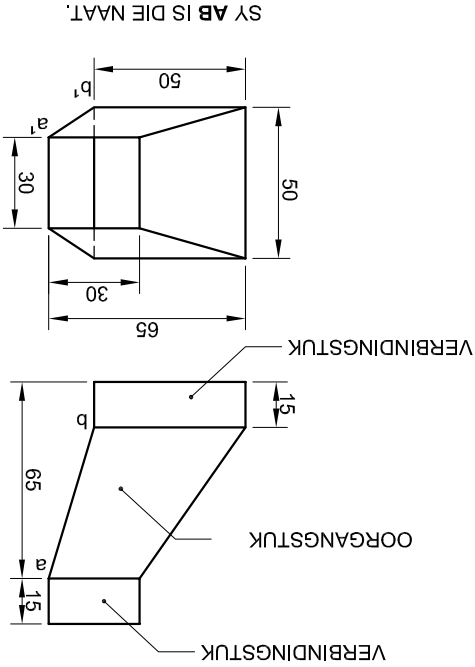
VRAAG 2: ONTWIKKELING

Gegee:
Die vooraansig en boaansig van 'n gedeelte van 'n kanaal wat 'n vierkant-na-vierkant-oorgangstuk met twee verbindingstukke toon.

Instruksie:
2.1 Teken, volgens skaal 1 : 1, die gegewe vooraansig en boaansig van die gedeelte van die kanaal.
2.2 Ontwikkel die oppervlak van SLEGS die oorgangstuk. Maak sy AB die naat.

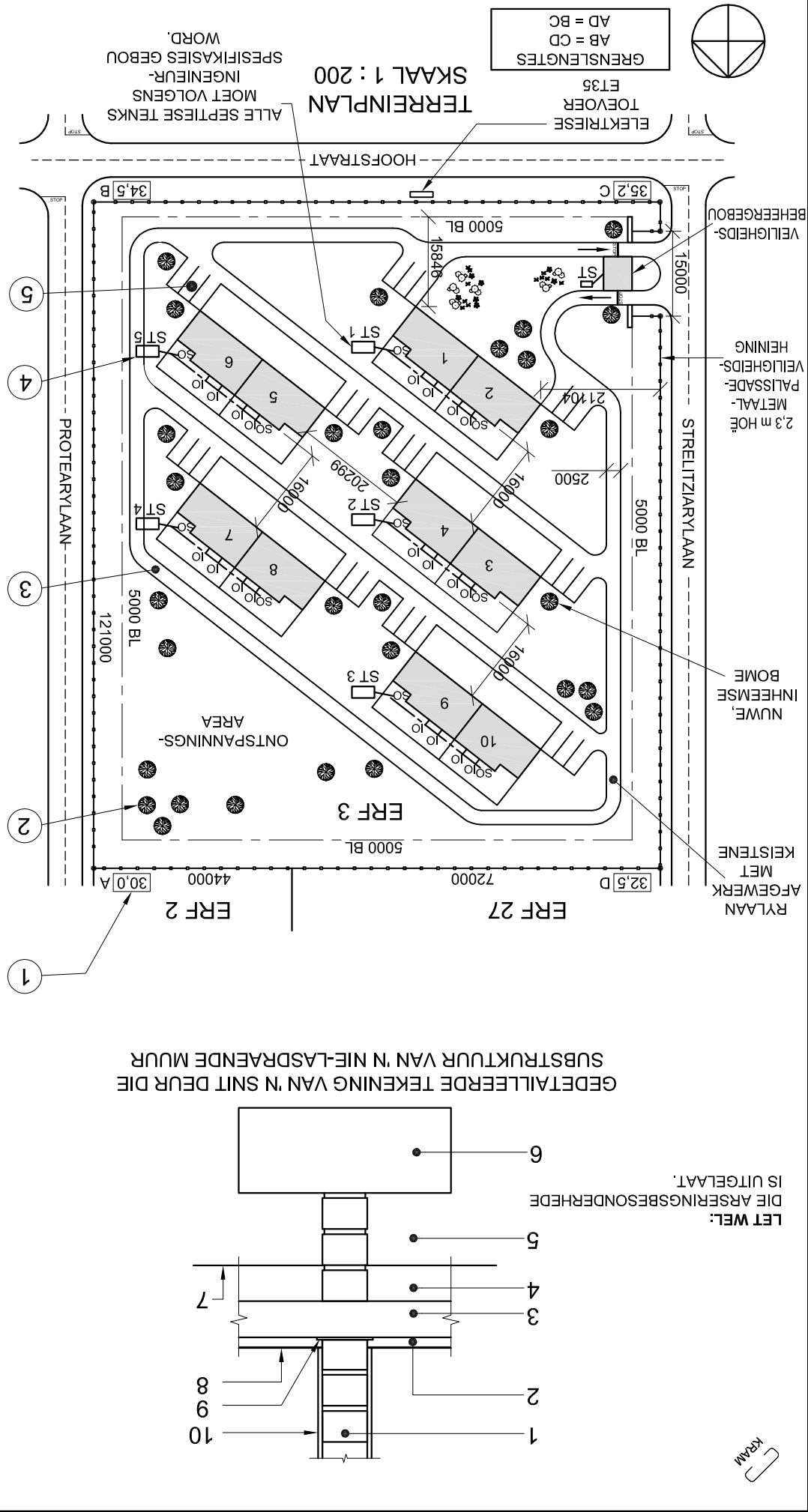
Toon ALLE nodige konstruksies en vollyne.

[34]



ASSESSERINGSKRITERIA					
1	VOORAANSIG + BOAANSIG	11			
2	WARELENGTE-METODE	10			
3	ONTWIKKELING	13			
TOTAAL		34			
EKSAMENNOMMER					
EKSAMENNOMMER					
EKSAMENNOMMER		3			







NASIONALE
SENIOR SERTIFIKAAT

GRAAD 12

INGENIEURSGRAFIKA EN -ONTWERP V1

FEBRUARIE/MAART 2012

PUNTE: 100

TYD: 3 uur

Hierdie vraestel bestaan uit 6 bladsye.



Kopiereg voorbehou



1. Hierdie vraestel bestaan uit VIER vrae.
2. Beantwoord AL die vrae.
3. ALLE tekene is in eerstehoekse ortografiese projeksie, tensy anders aangedui.
4. ALLE tekene moet voltooi word met instrumente, tensy anders aangedui.
5. ALLE antwoorde moet akkuraat en netjies geteken word.
6. AL die vrae moet, soos voorgeskryf, op die VRAESTEL beantwoord word.
7. AL die bladsye moet weer in nommervolgorde vasgeklam word, ongeag of die vraag beantwoord is.
8. Tydsbeplanning is noodsaaklik om al die vrae te voltooi.
9. Drukskryf jou eksamennummer in die blokkie voorsien op elke bladsy.
10. Enige besonderhede of afmetings wat nie gegee is nie, moet in goeie verhouding veronderstel word.

INSTRUKSIES EN INLICHTING

SLEGS VIR AMPTELIKE GEBRUIK											
VRAAG			PUNTE BEHAL			GEMODEREER			TEKEN		
1	2	3	4								
TOTAAL											
2	0	0				2	0	0			

FINALE VERWERKTE PUNT	NAGESIEN DEUR
100	

VOLTOOI DIE VOLGENDE:			
SENTRUMNUMMER			
SENTRUMNUMMER			
EKSAMENNUMMER			
EKSAMENNUMMER			