

**ISEBE LEMFUNDO LEMPUMA KOLONI
EASTERN CAPE EDUCATION DEPARTMENT
OOS-KAAP ONDERWYSDEPARTEMENT**

**NATIONAL
SENIOR CERTIFICATE**

GRADE 12

**ENGINEERING GRAPHICS AND DESIGN P1
SEPTEMBER 2015
TRIAL EXAMINATIONS**

MARKS: 200

TIME: 3 hours

This question paper consists of 6 pages.

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INSTRUCTIONS AND INFORMATION

1. The question paper consists of FOUR questions.
2. Answer ALL the questions.
3. All drawings must be drawn to scale 1:1, unless stated otherwise.
4. The questions must be answered on the answer sheets provided.
5. All the answer sheets must be re-stapled in numerical sequence and handed in irrespective of whether the question was answered or not.
6. Careful time management is essential in order to complete all the questions.
7. Print your name in the block provided on every answer sheet.
8. All answers must be drawn accurately and neatly.
9. Any detail or dimensions not given must be assumed in good proportion.

FOR OFFICIAL USE ONLY				
				MODERATED MARK
1				
2				
3				
4				
TOTAL				
	2	0	0	

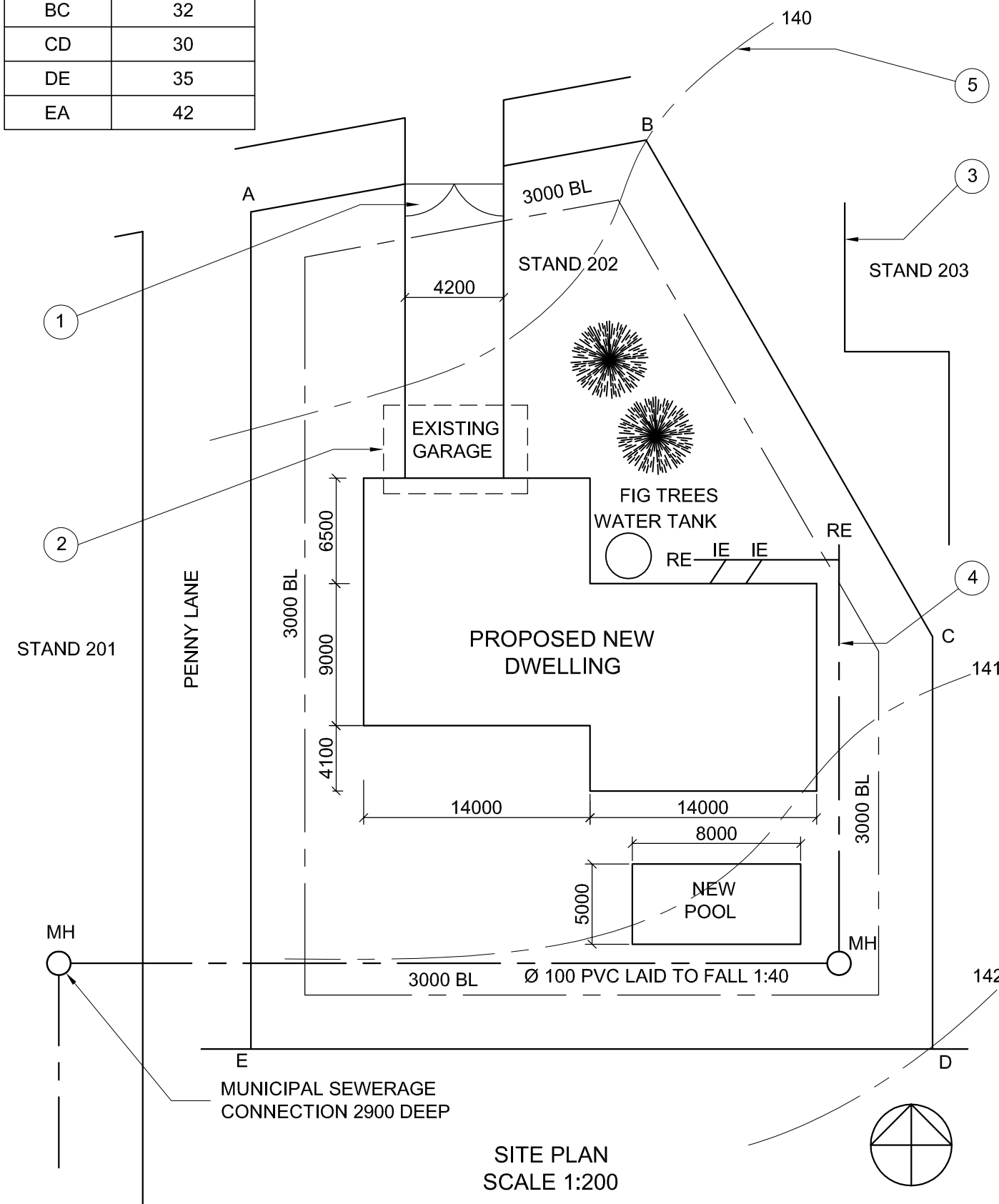
FINAL CONVERTED MARK	CHECKED BY
100	

COMPLETE THE FOLLOWING:
NAME
NAME
EXAMINATION CENTRE
EXAMINATION CENTRE

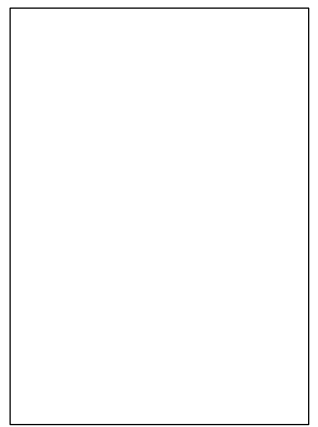


LAND SURVEYOR'S CERTIFICATE SIDE LENGTHS IN METERS

AB	29
BC	32
CD	30
DE	35
EA	42



20. In the space provided below, draw in neat freehand, the front view and top view of the SANS 0143 graphic symbol for a DOUBLE KITCHEN SINK.



ARCHITECT'S SIGNATURE

CLIENT'S SIGNATURE

REVISION	DATE	DESCRIPTION
1	14-06-2015	NEW POOL

DRAWING TITLE
 PROPOSED NEW DWELLING FOR
 T. ROBERTS ON STAND No. 202 AT
 20 BAKER STREET, PARKSIDE,
 PORT ELIZABETH

PROJECT 2015 - 105	REFERENCE CODE EC-TR-15	DATE 18-10-15
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DRAWING NUMBER NASH 111	DRAWN BY S.STILLS	DATE 12-01-15
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DATE OF PRINT 24-02-2015	CHECKED BY D. CROSBY	DATE 6-01-15
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N. YOUNG ARCHITECTS
 18 MITCHELL STREET WALMER
 PORT ELIZABETH
 TEL: 041 555 2323

QUESTION 1: ANALYTICAL (CIVIL)

Given:
 The site plan for a new dwelling and swimming pool, a title panel and a table of questions.

Instructions:
 Complete the table below by neatly printing the answers to the questions, which all refer to the accompanying drawing and title panel **[30]**

QUESTIONS		ANSWERS	
1	What is the reference code of the drawing?	1	
2	What scale is indicated for the drawing?	1	
3	Who checked the drawing?	1	
4	How wide is the driveway in meters?	1	
5	What is the fall of the sewerage line?	1	
6	What is the height at corner B?	1	
7	In what colour must a new dwelling on a site plan be indicated?	1	
8	In which direction is the front of the house facing?	1	
9	Name the feature at 1.	1	
10	What must happen to the existing garage at 2?	1	
11	What do the lines labelled 3 indicate?	1	
12	Name the line at 4.	1	
13	Name the line at 5.	1	
14	How many rodding eyes are there?	1	
15	What is the length of the new pool?	1	
16	What is the total length of the west facing walls of the dwelling in meters?	2	
17	What is the difference in height between corners B and D?	2	
Show all the calculations for the following two questions			
18	What is the total length of the boundary in meters?	3	
19	What is the total area of the dwelling in m ² ?	4	
20	In the space provided in the title panel, draw in neat freehand the front view and top view of the SANS 0143 graphic symbol for a DOUBLE KITCHEN SINK.	4	
TOTAL		30	

NAAM	2
NAAM	



QUESTION 2: SOLID GEOMETRY

Given:

A front view and an auxiliary view of a hexagonal prism with a hexagonal hole.

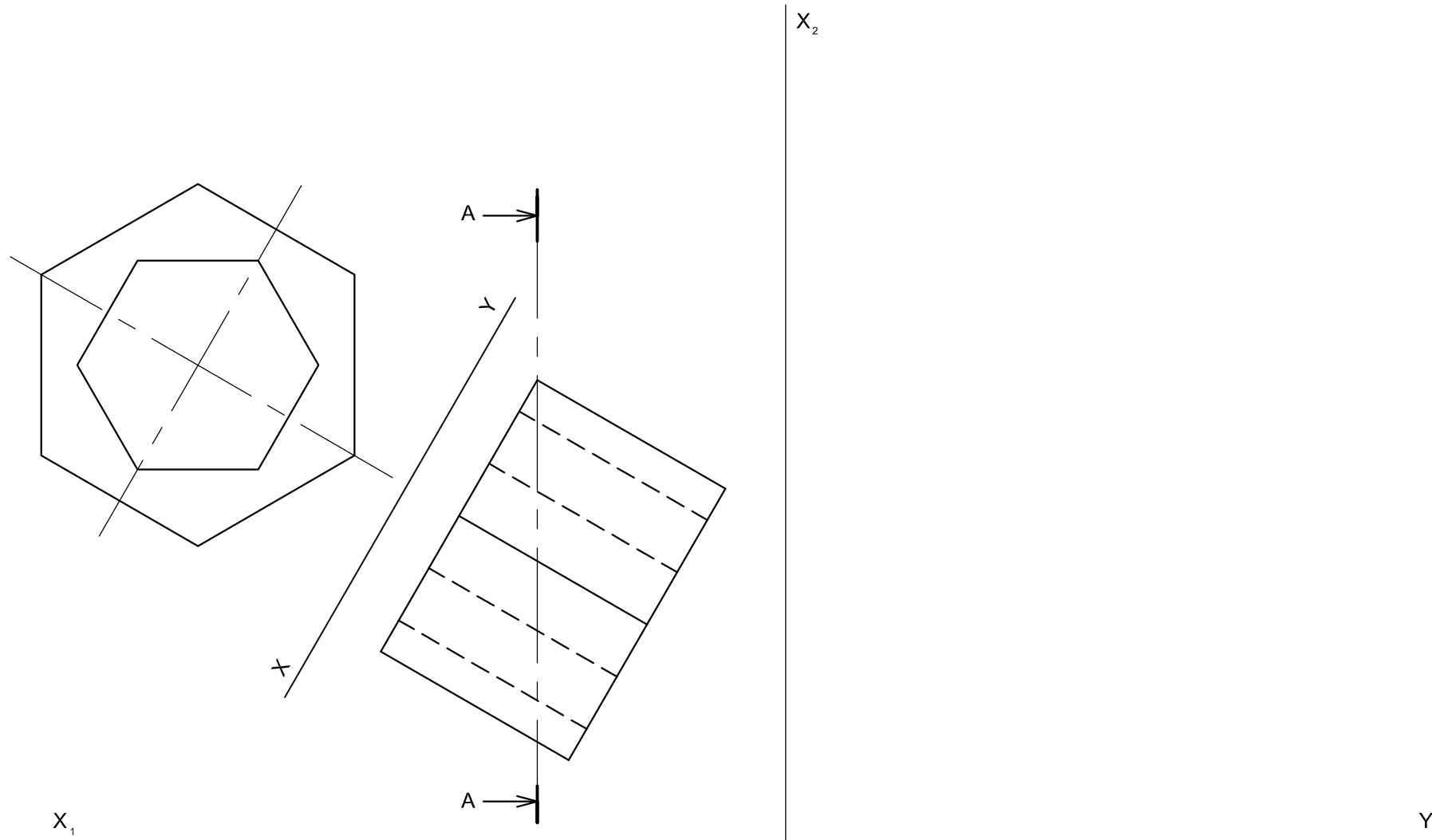
Instructions:

- 2.1 Draw a sectional left view on cutting plane AA.
- 2.2 Draw a top view.

Note:

Do not show any hidden detail

[30]



ASSESSMENT CRITERIA		
Sectional left view	18	
Top view	12	
TOTAL	30	

NAAM	3
NAAM	



QUESTION 3: PERSPECTIVE

Given:

A plan and two elevations of a house, as well as the Picture Plane (PP), Horizon Line (HL), Ground Line (GL) and Station Point (SP).

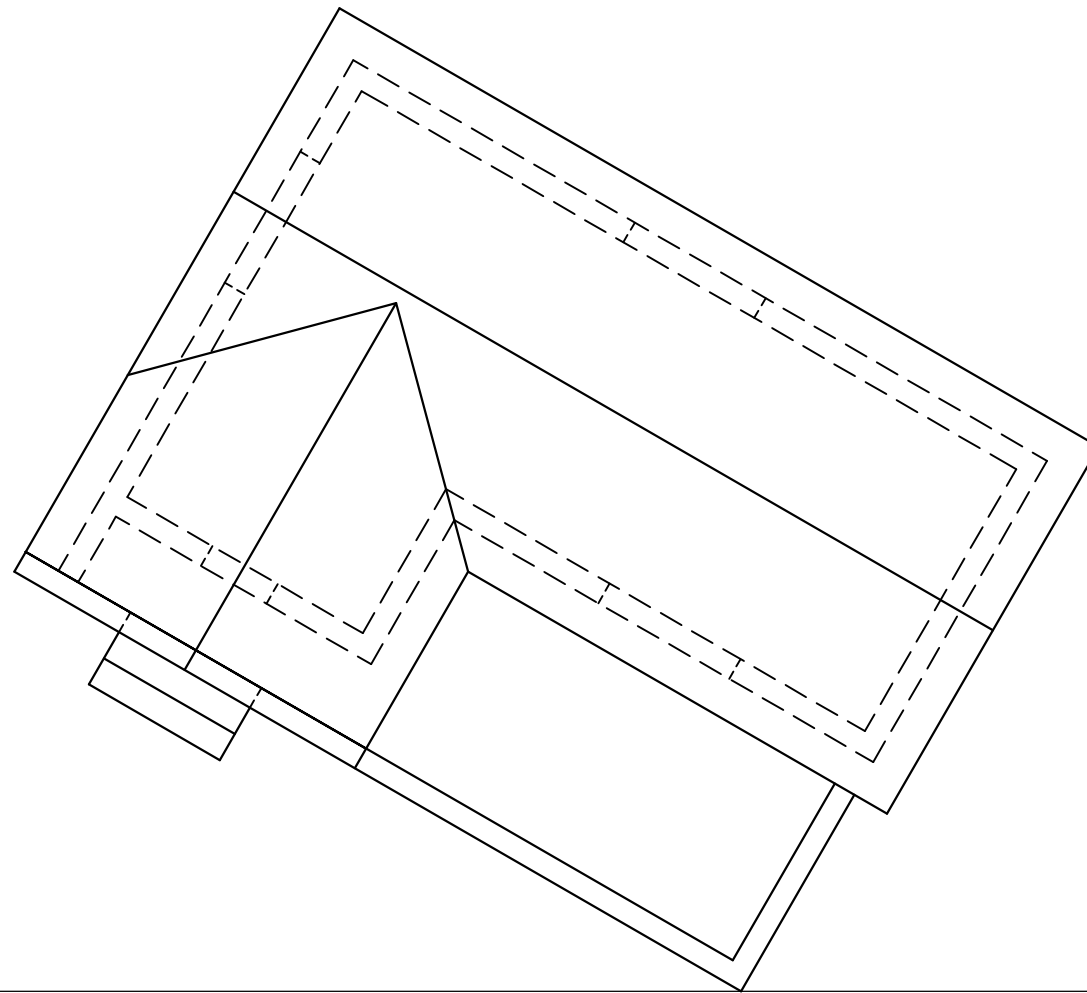
Instructions:

- Determine the vanishing points and label them.
- Draw the two-point perspective view of the house.

Notes:

No hidden detail must be shown.
Show all the construction lines.

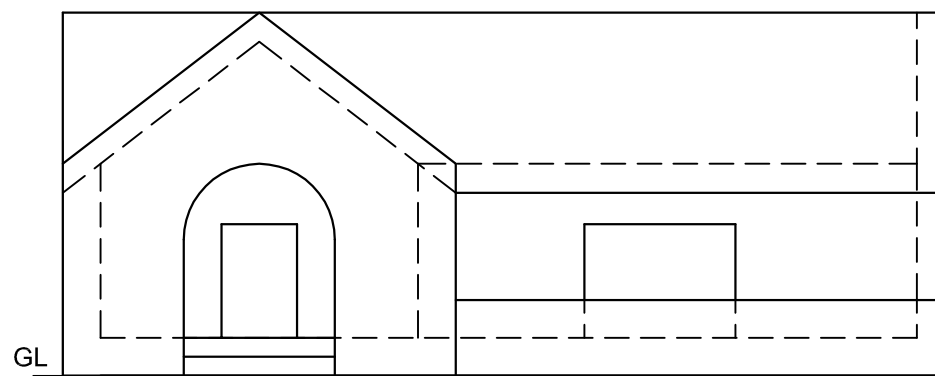
[41]



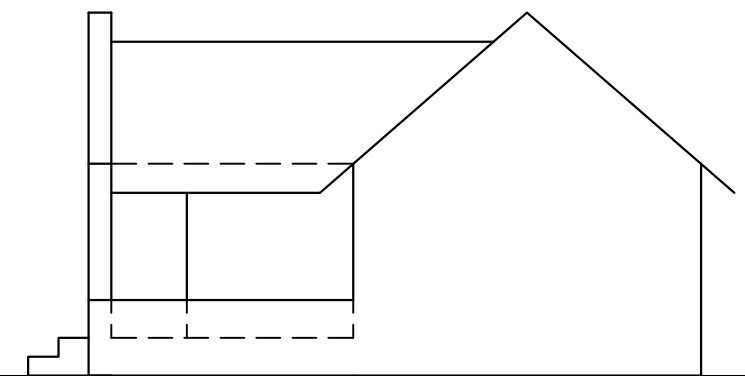
ASSESSMENT CRITERIA		
1 Vanishing points and labels	3	
2 Constructions	6	
3 Roof	8	
4 Walls and openings	18	
5 Steps and arc	6	
TOTAL	41	

PP

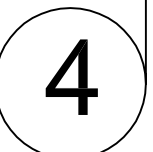
HL



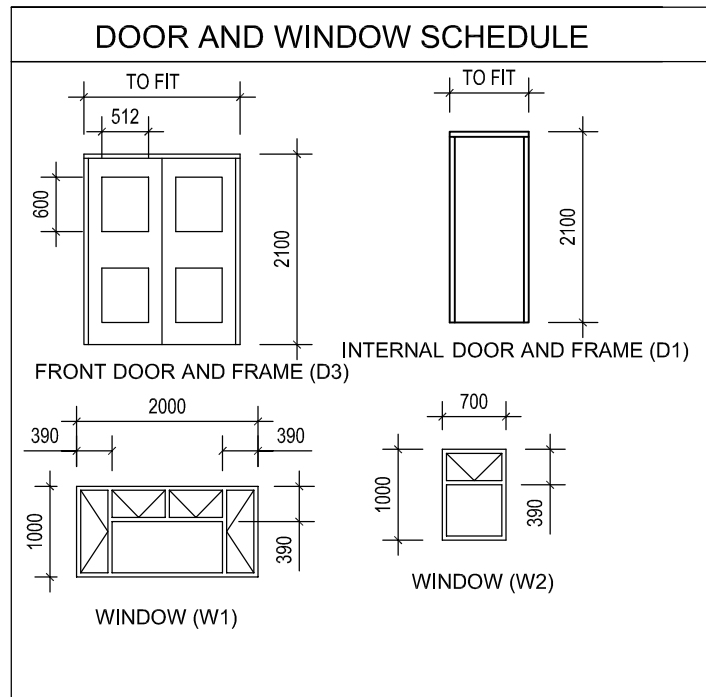
GL



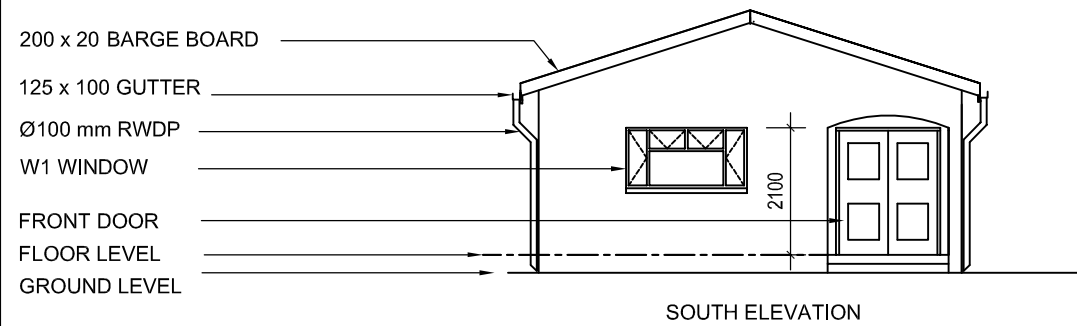
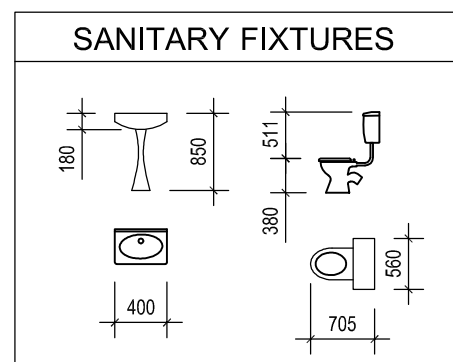
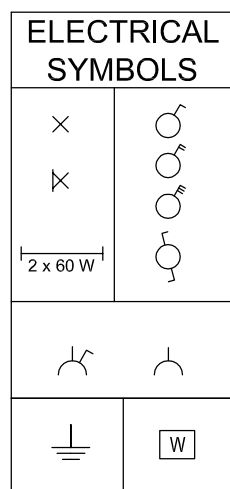
NAME
NAME



STAPLE



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



FIXTURES

- D1 INTERIOR DOOR OPENINGS
- D2 FRONT DOOR
- W1 WINDOW OPENINGS
- W2 WINDOW OPENINGS
- WC TOILET
- WB WASHBASIN

ELECTRICAL FITTINGS

1. TRIPLE-POLE LIGHT
2. DOUBLE-POLE LIGHT SWITCH
3. SINGLE-POLE LIGHT SWITCH
4. 2 x 40 FLUORESCENT TUBES
5. CEILING LIGHT
6. SWITCH SOCKET OUTLET

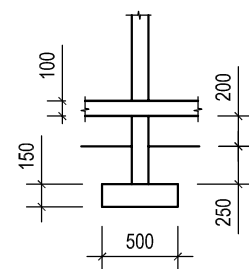
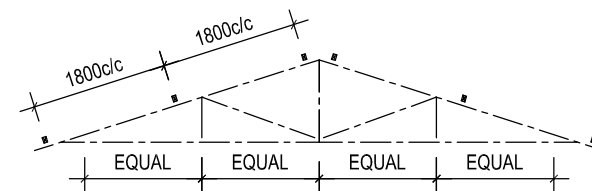
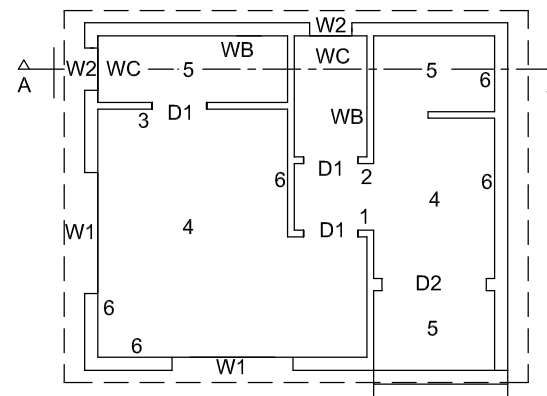
ROOF NOTES:

ROOF COVER: 15 mm CORRUGATED IRON ON 75 x 50 mm PURLINS @ 1800 C/C

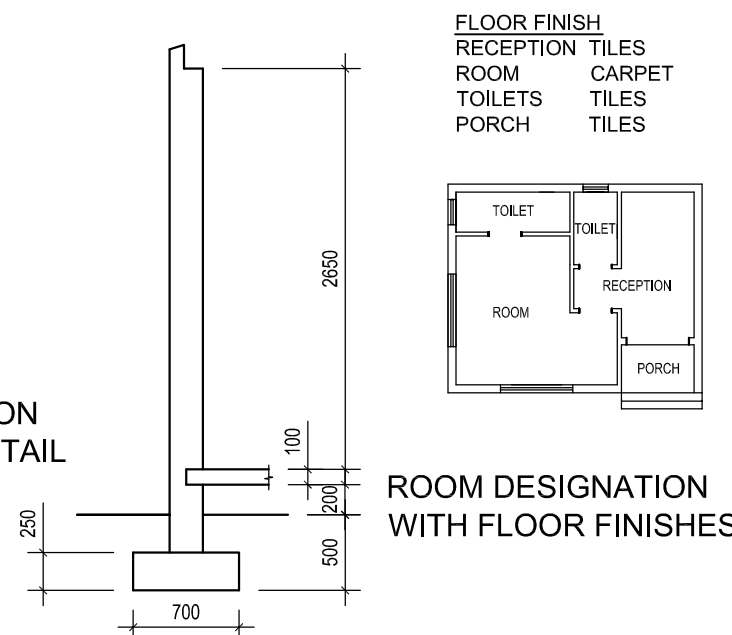
114 x 38 mm ROOF TRUSSES ON 125 x 38 mm WALL PLATES

ROOF PITCH 18° WITH 216 x 32 mm FASCIA BOARDS

PLASTER CEILING BOARD ON 7 STRIPS OF 38 x 38 mm BRANDING EVENLY SPACED



INCOMPLETE FOUNDATION AND INTERNAL WALL DETAIL



QUESTION 4: CIVIL DRAWING

Given:

- The complete south elevation of a new **doctor's surgery** showing the walls, the front door, the window, the roof and notes
- The incomplete floor plan showing the walls, position of the doors, windows, fixtures and electrical fittings
- Roof notes and a schematic diagram of one roof truss
- The incomplete foundation and wall detail
- The floor finishes and a diagram showing the room designations
- A table of roof components
- A table of sanitary fixtures
- A table of electrical symbols
- A door and window schedule
- The incomplete floorplan of the **doctor's surgery**, drawn to a scale of 1:50 on page 6

Instructions:

Use answer sheet 4 and the information given on page 5 to draw, according to the given specifications, the following views of the surgery, to a scale of 1:50:

- **The complete floor plan**
- **The complete sectional elevation on cutting plane A-A**
- **The west elevation**

SPECIFICATIONS:

THE FLOOR PLAN

Add the following features to the floor plan:

- All the doors and windows
- All the symbolic sanitary fixtures as indicated by the abbreviations
- All the electrical symbols as indicated by the numbers
- All the hatching detail

THE SECTIONAL ELEVATION

Show the following detail on the sectional elevation:

- The complete foundation, wall, slab, roof and ceiling detail
- The window detail, with a double lintel
- The sanitary fixtures
- All the hatching detail

THE WEST ELEVATION

Show the following features on the west elevation:

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

Label the following:

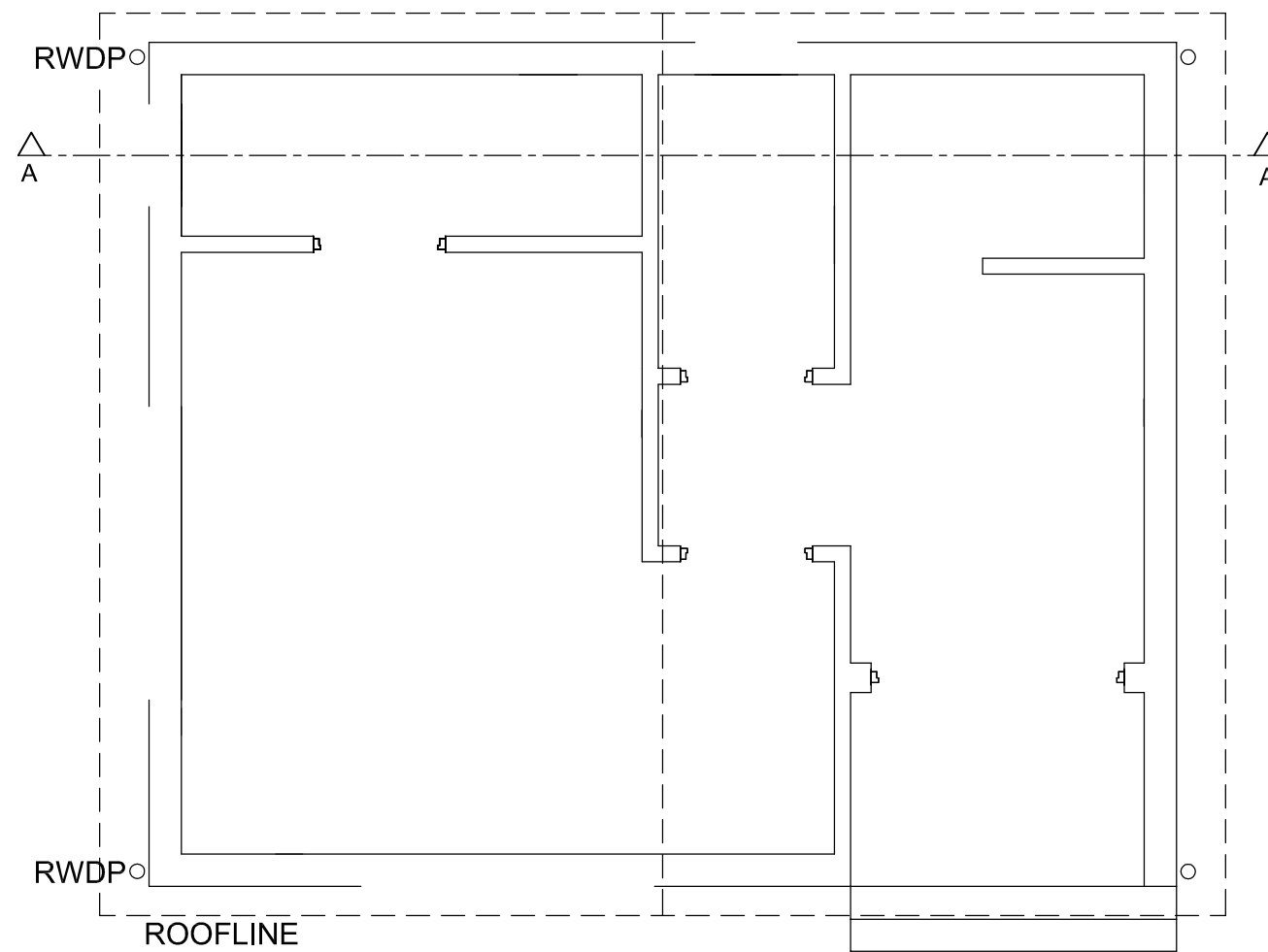
- The west elevation and sectional elevation
- The room designations with floor finishes
- Using the correct abbreviations, label the following features in the correct view: ground level and damp proof course.

NOTE:

- All substructure hatching may be drawn in freehand
- ALL drawings must comply with the guidelines contained in the **SABS 0143**.



ANSWER SHEET 4



ASSESSMENT CRITERIA	
FLOOR PLAN	
1 LABELS	6
2 ELECTRICAL	10
3 FITTINGS	4
4 DOORS+WINDOWS	13
5 HATCHING	4
SUB TOTAL	37
SECTIONAL ELEVATION	
1 ROOF+CEILING	21
2 WALLS+FLOOR+FOUNDATION	13
3 WINDOW+DOORS	4
4 FIXTURES	2
5 HATCHING	3
6 LABELS	2
SUB TOTAL	45
WEST ELEVATION	
1 WALLS+FFL+STEP	4
2 ROOF+FASCIA+ RWDP	5
3 WINDOWS	7
4 LABELS	1
SUBTOTAL	17
TOTAL	99

NAME
NAME

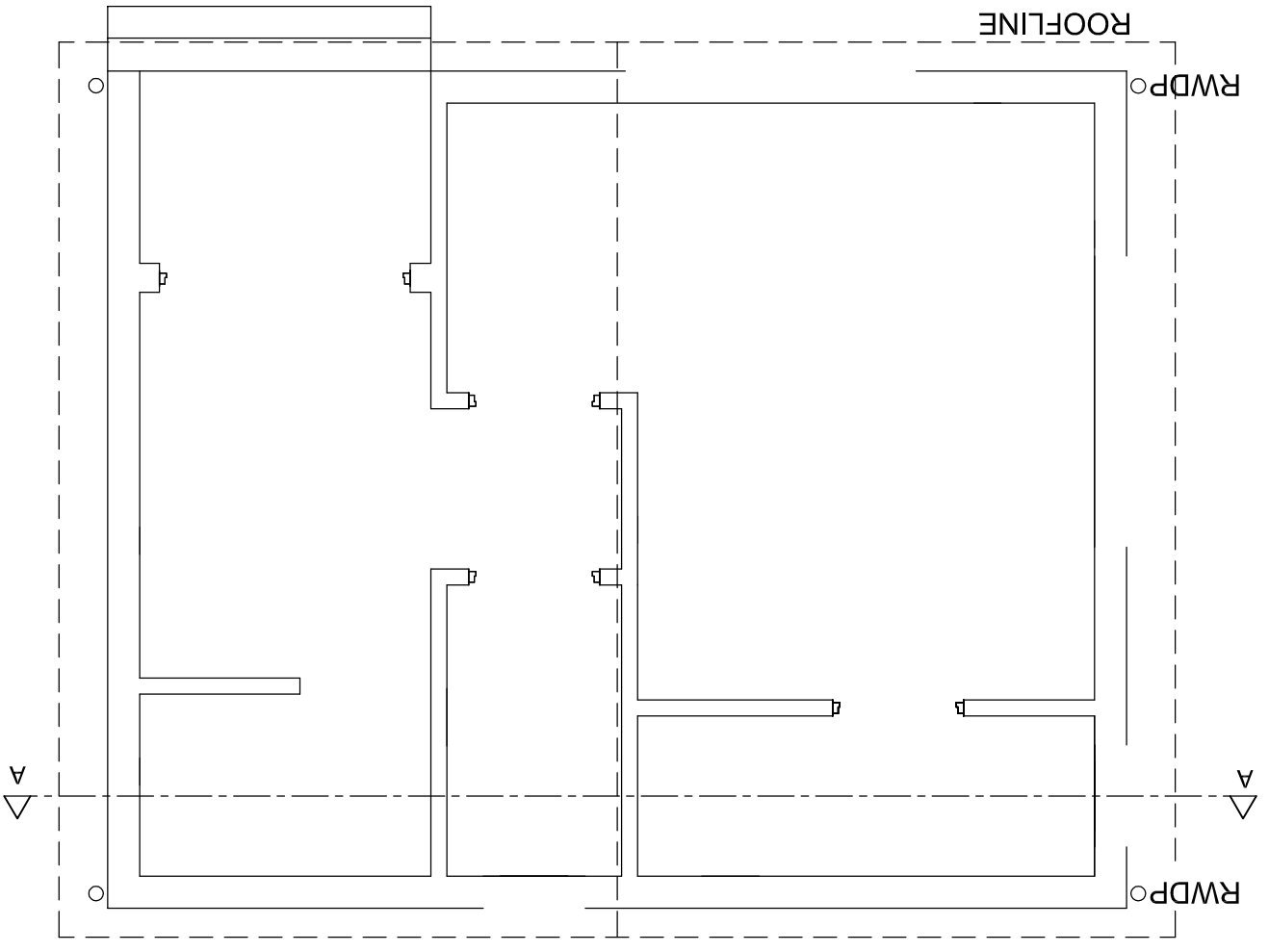
6



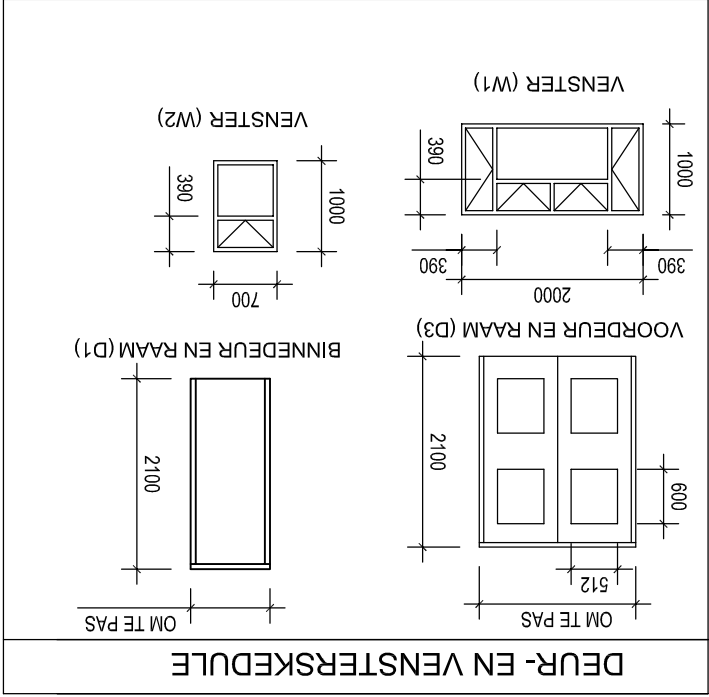
ANSWER SHEET 4

NAME	
NAME	

ASSESSMENT CRITERIA	
FLOOR PLAN	
1	LABELS
6	
2	ELECTRICAL
10	
3	FITTINGS
4	
4	DOORS+WINDOWS
13	
5	HATCHING
4	
SUB TOTAL	
37	
SECTIONAL ELEVATION	
1	ROOF+CEILING
21	
2	WALLS+FLOOR+FOUNDATION
13	
3	WINDOW+DOORS
4	
4	FIXTURES
2	
5	HATCHING
3	
6	LABELS
2	
SUB TOTAL	
45	
WEST ELEVATION	
1	WALLS+FLL+STEP
4	
2	ROOF+FASCIA+ RWDP
5	
3	WINDOWS
7	
1	LABELS
1	
SUBTOTAL	
17	
TOTAL	
99	

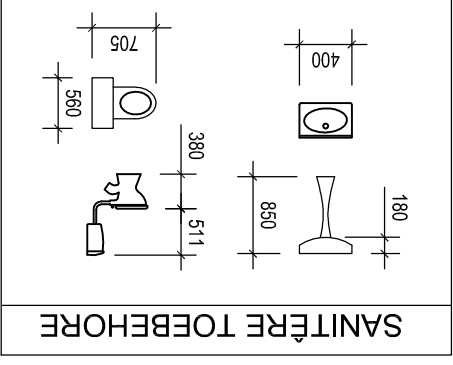


6



DAKKOMPONENTE	
75 x 50 DAKLATTE	
228 x 20 FASSIEFLANK	
125 x 38 MUURPLAAT	
KAPPING	

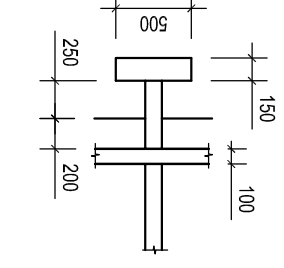
ELEKTRIESE SIMBOLE	
2 x 60 W	



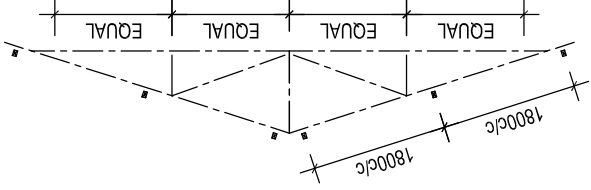
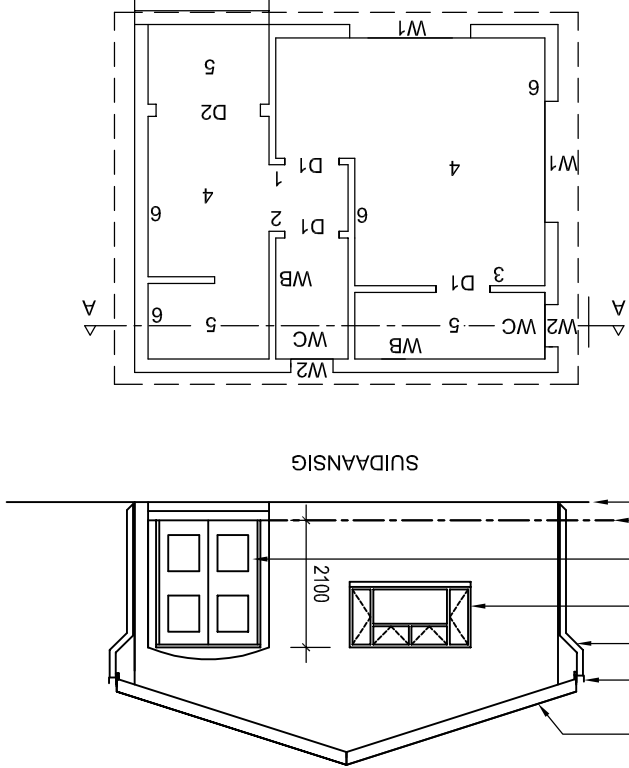
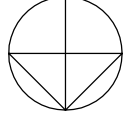
SANITÊRE TOEBEHORE

- 200 x 20 WINDVEER
- 125 x 100 GEUT
- Ø100 mm RWAP
- W1 VENSTER
- VOORDEUR
- VLOERVLAK
- GRONDVLAK
- TOEBEHORE
- D1 BINNEDEUROPENINGE
- D2 VOORDEUR
- W1 VENSTEROPENINGE
- W2 VENSTEROPENINGE
- WC TOILET
- WB WASBAK
- ELEKTRIESE TOEBEHORE
- 1. DRIEPOOL-LIGSKAKELAAR
- 2. DUBBELPOOL-LIGSKAKELAAR
- 3. ENKELPOOL-LIGSKAKELAAR
- 4. 2 x 40 FLUORESSIEERBUISE
- 5. PLAFONLIG
- 6. SKAKELAARRAAGPUNT

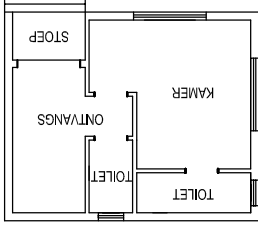
DAKNOTAS:
 DAKBEDEKKING: 15 mm SINKPLAAT
 OP 75 x 50 mm KAPLATTE @ 1800
 S/S
 114 x 38 mm DAKKAPPE OP 125 x 38
 mm MUURPLATE
 DAKHELLING 18° MET 216 x 32 mm
 FASSIEFLANKE
 GIPSPLAFONBORD OP 7 STROKE
 38 x 38 mm PLAFONLATTE,
 EWERDIG GESPASIEER



ONVOLLEDIGE FONDSIE- EN
 BINNEMUURBESONDERHEDE

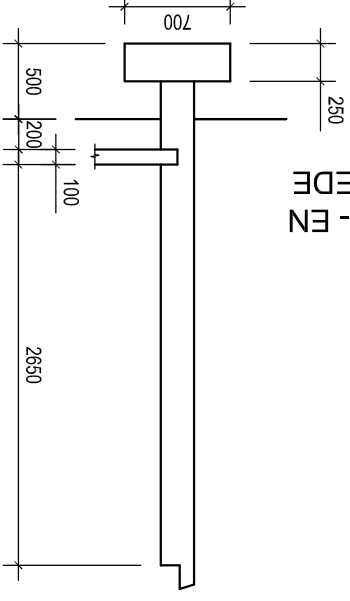


- VLOERAFWERKING
- ONTVANGS TÊLS
- KAMER TAPYT
- TOILETTE TÊLS
- STOEP TÊLS



KAMERAANDUIDINGS
 MET VLOERAFWERKINGS

ONVOLLEDIGE FONDSIE- EN
 BUITEMUURBESONDERHEDE



VRAAG 4: SIVIELE TEKENING

Gegee:

- Die volledige suidaansig van 'n nuwe **dokterspreekkamer** wat die mure, die voordeur, die venster, die dak en notas toon
- Die onvolledige vloerplan wat die mure, posisie van die deure, vensters, toebehe en elektriese simbole toon
- Daknotas en 'n skematiese diagram van een dakkap
- Die onvolledige fondasie- en muurbesonderhede
- Die vloerwerkings en 'n diagram wat die kameraanduidings toon
- 'n Tabel met dakkomponente
- 'n Tabel met sanitêre toebehe
- 'n Tabel met elektriese simbole
- 'n Deur- en vensterskedule
- Die onvolledige vloerplan van die **dokterspreekkamer**, geteken volgens skaal 1:50 op bladsy 6

Instrukties:

Gebruik antwoordblad 4 en die inligting wat gegee word op bladsy 5 om volgens die gegewe spesifikasies, die volgende aansigte van die spreekkamer volgens 'n skaal van 1:50 te teken:

- Die volledige vloerplan
- Die voltooid deursnee-aansig op snyvlak A-A
- Die wesaansig

SPESIFIKASIES:

DIE VLOERPLAN

Voeg die volgende kenmerke by die vloerplan:

- Al die deure en vensters
- Al die simbolese sanitêre toebehe soos aangedui deur die afkortings
- Al die elektriese simbole soos aangedui deur die nommers
- Al die arseringsbesonderhede

DIE DEURSNEE-AANSIG

Toon die volgende besonderhede op die deursnee-aansig:

- Die volledige fondasie-, muur-, betonblad-, dak- en platonbesonderhede
- Die vensterbesonderhede met 'n dubbel-latei
- Die sanitêre toebehe
- Al die arseringsbesonderhede

DIE WESAANSIG

Toon die volgende kenmerke op die wesaansig:

- Die buitemure en voltooid vloerlak
- Die dakbesonderhede, insluitend die geut, fassieplank en reënwaterafvoertyp
- Die vensterbesonderhede

Benoem die volgende:

- Die wesaansig en deursnee-aansig
- Die kameraanduidings met vloerwerkings
- Deur die korrekte afkortings te gebruik, benoem die volgende kenmerke op die korrekte aansig: grondvlak en vogweertag.

LET WEL:

- Alle substruktuurarsiering mag in vryhand geteken word.
- Alle tekenwerk moet voldoen aan die riglyne wat in die *SABS 0143* vervat word.



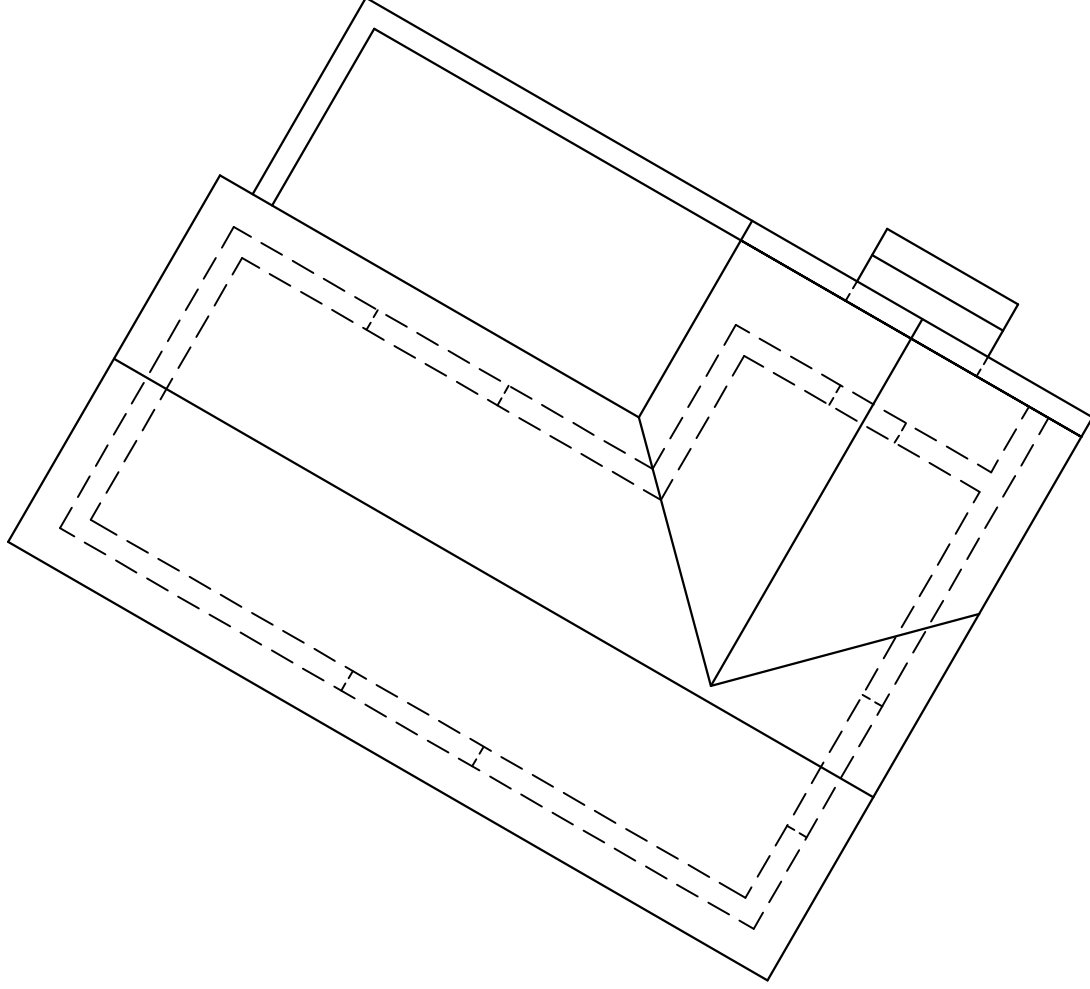
VRAAG 3: PERSPEKTIEF

Gegee:
'n Plan en twee aansigte van 'n huis, sowel as die Preenvlak (PV), Horisonlyn (HL), Grondlyn (GL) en Staandpunt (SP).

- Instruksies:**
- Bepaal die verdwynpunte en benoem hulle.
 - Teken die tweepuntperspektieftekening van die huis.

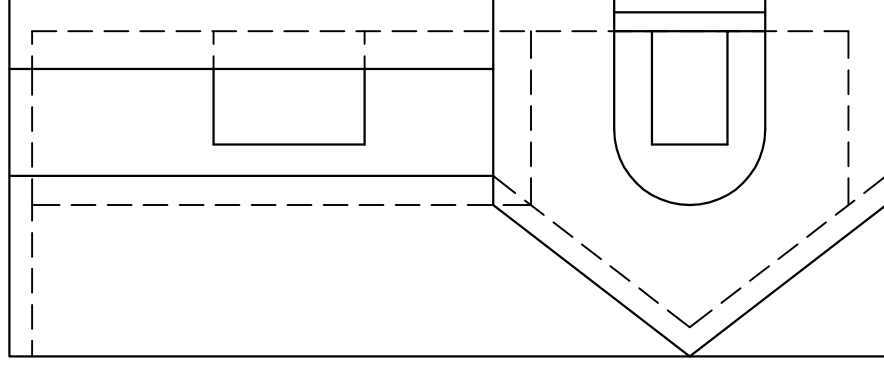
Notas:
Geen verborge besonderhede moet getoon word nie.
Toon alle konstruksielynne. [41]

ASSESSERINGSKRITERIA	
1 Verdwynpunte en byskritte	3
2 Konstruksies	6
3 Dak	8
4 Mure en openings	18
5 Trappe en boog	6
TOTAAL	41

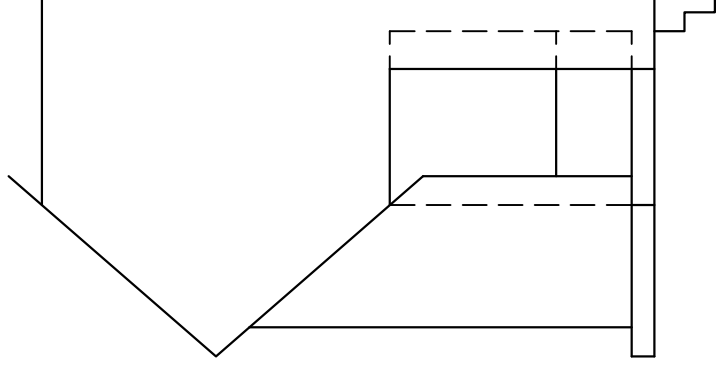


PP

HL



GL



NAAM

NAAM

4

VRAAG 2: VASTE MEETKUNDE

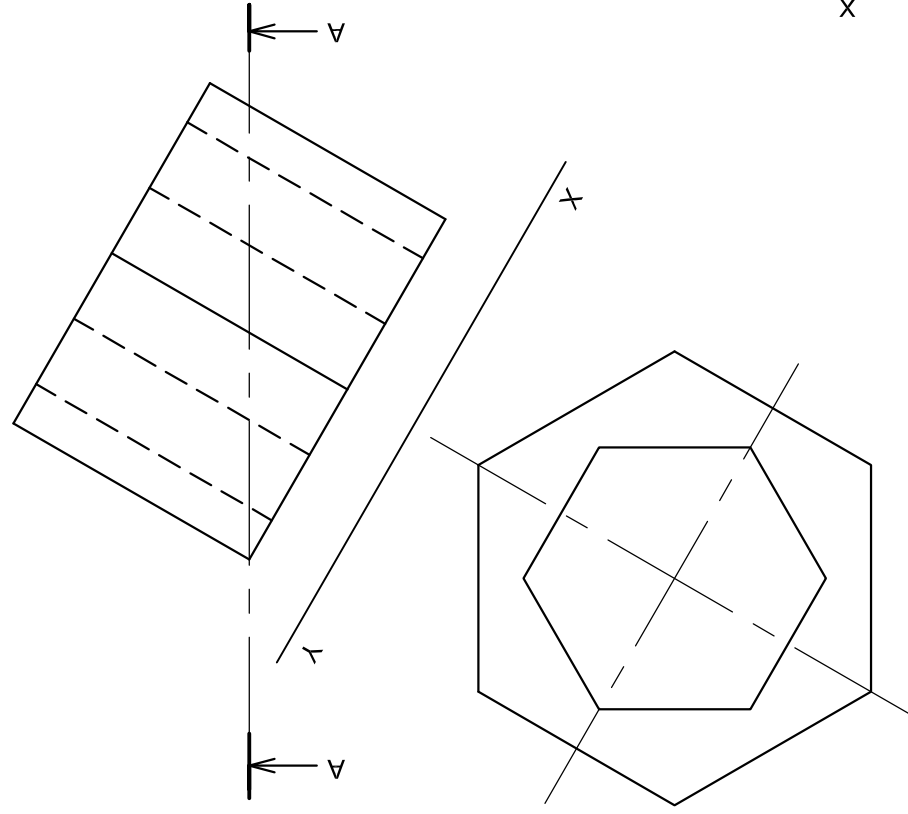
Gegee:
'n Voorraansig en 'n hulpaansig van 'n seskantige prisma met 'n seskantige gat.

Instrukties:
2.1 Teken 'n deursnit-inkeraansig op snyvlak AA.

2.2 Teken 'n boaansig.

Let wel:

Moet nie verborgte besonderhede toon nie [30]



Y₁

X₂

X₁

Y₂

3	NAAM	
	NAAM	

ASSESSERINGSKRITERIA		
	18	Deursnit-inkeraansig
	12	Boaansig
	30	TOTAAL

VRAAG 1 : ANALITIES (SIVIEL)

Gegee:
Die terreinplan vir 'n nuwe woning en swembad, 'n titelpaneel en 'n tabel met vrae.
Instruktes:
Voltooi die tabel hieronder deur die antwoorde van die vrae wat almal na die volgende tekene en titelpaneel verwys neëtes te drukskrif.
[30]

ANTWOORDE

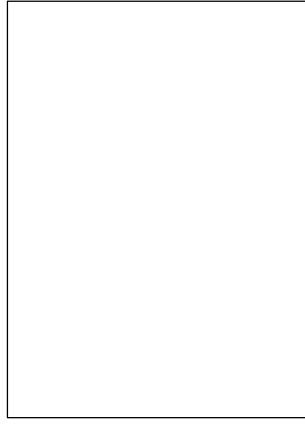
VRAE		ANTWOORDE	
1	Wat is die verwysingskode van die tekening?	1	
2	Watter skaal is vir die tekening aangewys?	1	
3	Wie het die tekening nagesien?	1	
4	Hoe wyd is die oprit in meters?	1	
5	Wat is die val van die rioollyn?	1	
6	Wat is die hoogte by hoek B?	1	
7	In watter kleur moet 'n nuwe woning op 'n terreinplan aangedui word?	1	
8	In watter rigting wys die voorkant van die woning?	1	
9	Benoem die kenmerk by 1.	1	
10	Wat moet met die bestaande motorhuis by 2 gedoen word?	1	
11	Wat word deur die lyn by 3 getoon?	1	
12	Benoem die lyn by 4.	1	
13	Benoem die lyn by 5.	1	
14	Hoewel steekō is daar?	1	
15	Wat is die lengte van die nuwe swembad?	1	
16	Wat is die totale lengte van die weswysende muur van die woning in meters?	2	
17	Wat is die verskil in hoogte tussen hoek B en D?	2	
Toon alle berekeninge vir die volgende twee vrae			
18	Wat is die totale lengte van die grenslyn in meter?	3	
19	Wat is die totale area van die woning in m ² ?	4	
20	In die spasie voorsien in die titelpaneel, teken in neëtese vryhand, die vooraansig en boansig van die SANS 0143 grafiese simbool van 'n dubbelkombuisopwasbak.	4	
TOTAAL		30	

NAAM

NAAM

2

20. In die spasie voorsien hieronder, teken in neëtese vryhand, die vooraansig en boansig van die SANS 0143 grafiese simbool van 'n dubbelkombuisopwasbak.



ARGITEK SE HANDTEKENING
KLIËNT SE HANDTEKENING

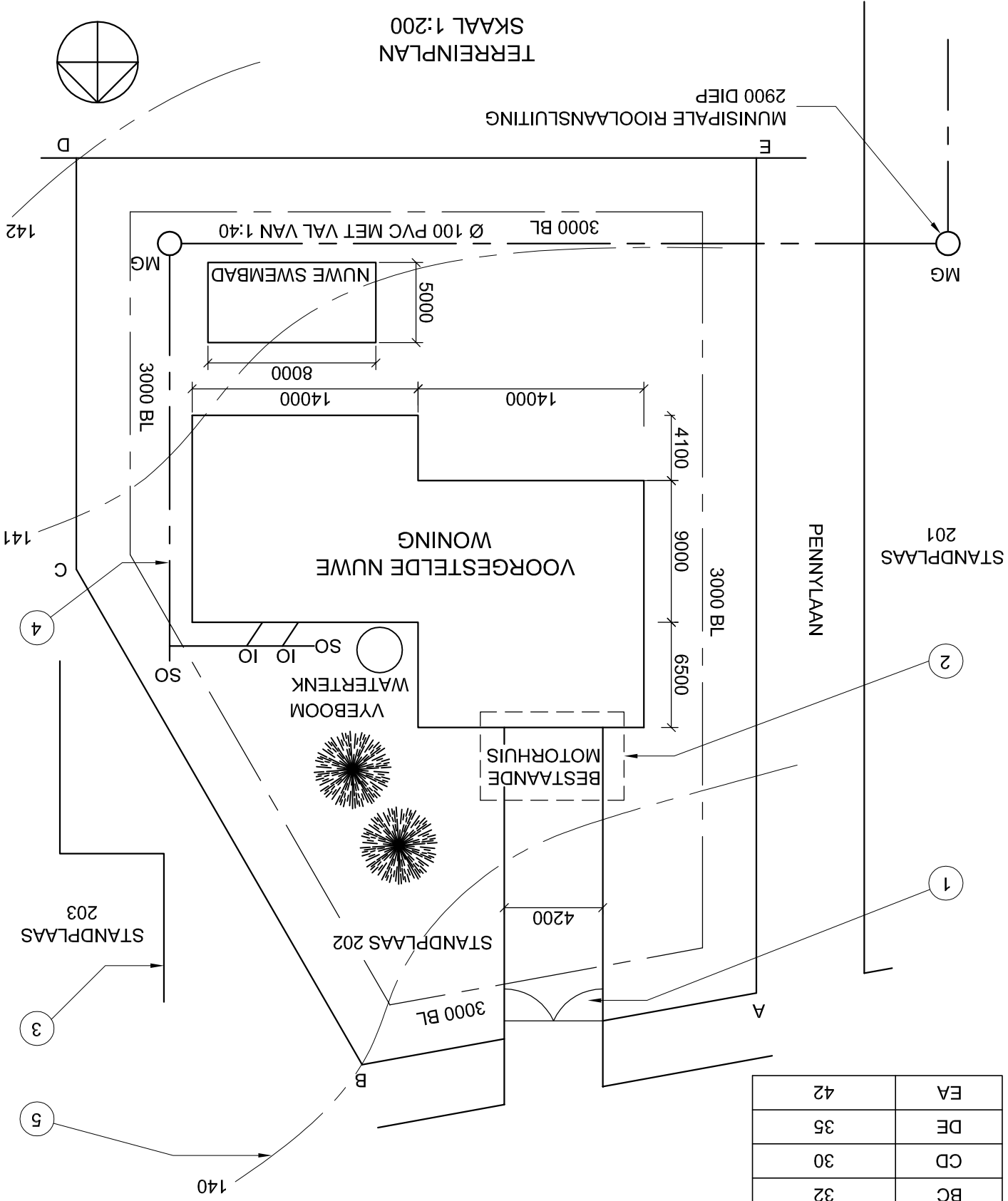
HERSIENING	DATUM	BESKRYWING
1	14-06-2015	NUWE SWEMBAD

TEKENTITEL	VOORGESTELDE NUWE WONING VIR T. ROBERTS OP ERF N. 202 TE BAKERSSTRAAT 20, PARKSIDE, PORT ELIZABETH
PROJEK	2015 - 105
VERWYSING	18-10-15
S-KODE	2015 - 105
DATUM	18-10-15

TEKENING	NOMMER	DEUR	GETEKEN	DATUM
NASH 111	11	S. STILLIS	12-01-15	12-01-15
Drukdatum	24-02-2015	NAGESIEN	DEUR	DATUM
		D. CROSBY	6-01-15	6-01-15

N. YOUNG ARGITEKTE
MITCHELLSTRAAT 18 WALMER
PORT ELIZABETH
TEL: 041 555 2323

LANDMETERS-VERSLAG	
SYLENGTES IN METER	
EA	42
DE	35
CD	30
BC	32
AB	29



TERREINPLAN
SKAAL 1:200





ISEBE LEMFUNDO LEMPUMA KOLONI
EASTERN CAPE EDUCATION DEPARTMENT
OOS-KAAP ONDERWYSDEPARTEMENT

NASIONALE
SENIOR SERTIFIKAAT

GRAAD 12

INGENIEURSGRAFIKA EN -ONTWERP V1
SEPTEMBER 2015
VOORBEREIDINGSEKSAMEN

PUNTE: 200

TYD: 3 uur

Die vraestel bestaan uit 6 bladsye.

Kopiereg voorbehou

INSTRUKSIES EN INLIGTING

1. Die vraestel bestaan uit VIER vrae.
2. Beantwoord ALLE vrae.
3. Alle tekenne moet volgens skaal 1:1 gemaak word, tensy anders vermeld.
4. Alle vrae moet op die gegewe antwoordvelle beantwoord word.
5. Alle antwoordvelle moet weer in nummervolgorde vasgeklam en ingelewer word, ongeag of die vraag beantwoord is of nie.
6. Sorgvuldige tydsbeplanning is nodig om alle vrae te beantwoord.
7. Drukskrif jou naam in die blokkie op elke antwoordvel voorsien.
8. Alle antwoorde moet akkuraat en netjies gedoen word.
9. Besonderhede of afmetings wat uitgelat is, moet in goeie verhouding beraam word.

SLEGS VIR AMPTELIKE GEBRUIK

GEMODEREERDE PUNT					
1					
2					
3					
4					
TOTAAL					
		2	0	0	

FINALE VERWERKTE PUNT	100
NAGESIEN DEUR	

VOLTOOI DIE VOLGENDE:

NAAM _____

NAAM _____

EKSAMENSENTRUM _____

EKSAMENSENTRUM _____