



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

**NATIONAL
SENIOR CERTIFICATE**

GRADE 11



**ENGINEERING GRAPHICS AND DESIGN P1
NOVEMBER 2020**

MARKS: 200

TIME: 3 hours

This question paper consists of 6 pages.

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INSTRUCTIONS AND INFORMATION

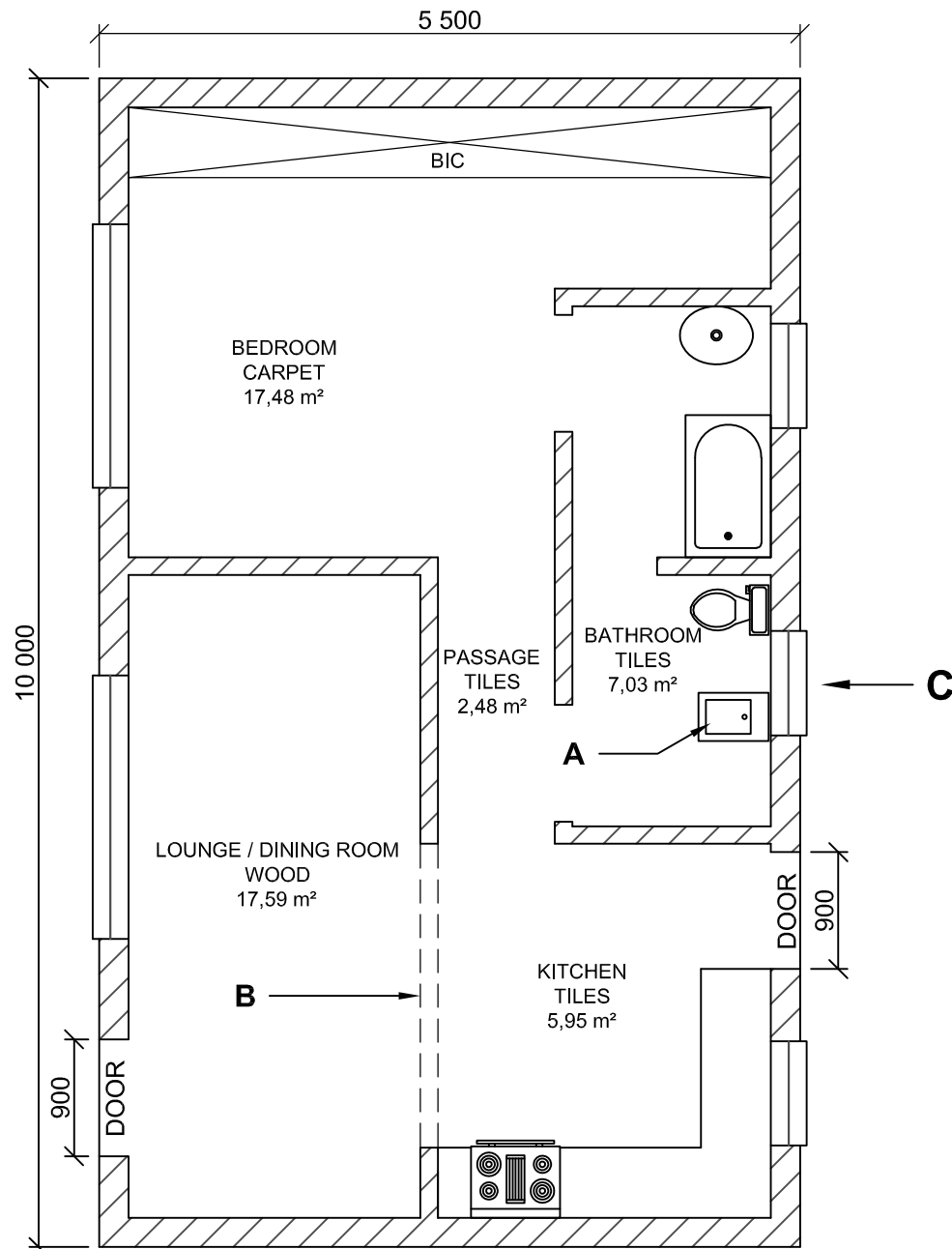
1. The paper consists of FOUR questions.
2. Answer ALL the questions.
3. All drawings must be drawn to scale 1 : 1, unless otherwise stated.
4. The questions must be answered on the answer sheets provided.
5. All the answers sheets must be re-stapled in numerical sequence and handed in irrespective of whether the question was attempted 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 details or dimensions not given must be estimated in good proportion.
10. ALL drawings are in first angle orthographic projection, unless stated otherwise.

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

FINAL CONVERTED MARK	CHECKED BY
100	

COMPLETE THE FOLLOWING:
NAME
NAME
EXAMINATION CENTRE
EXAMINATION CENTRE

INCOMPLETE FLOOR PLAN



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

ARCHITECT'S SIGNATURE

CLIENT'S SIGNATURE

3	2020-03-27	COMPLETE THE WINDOWS
2	2020-03-27	INSERT THE DOORS
1	2020-03-27	CORRECT THE HATCHING IN THE FLOOR PLAN
REVISION	DATE	DESCRIPTION

BOTHA ARCHITECTS
11 Da Gamma street
JEFFREYSBAY
6330
TEL: 072 293 0392
FAX: 042 293 0392
EMAIL: kbotha@gmail.com

PRINTED BY: BLUEDEVILLE
DATE OF PRINT: 2020-04-01

DRAWING TITLE: FLOOR PLAN

PROJECT: PROPOSED NEW HOUSE FOR MRS. X. RUPPING, STAND 1442, THORNHILL, EASTERN CAPE.

PROJECT NUMBER: DP 2020 - 04
DRAWING NUMBER: 1 of 4

DATE: 2020 -03- 20
DRAWN: LINDO
CHECKED: TYRON
SCALE: NTS

REFERENCE CODE: DOE-2020

QUESTION 1A: ANALYTICAL (CIVIL)

Given:

The incomplete floor plan of a house. A title panel and a table of questions. The drawing has not been prepared to an indicated scale.

Instructions:

Complete the table below by neatly answering the questions, which refer to the accompanying drawing and title panel. [28]

QUESTIONS		ANSWERS	
1	What is the name of the architectural firm responsible for drawing the house plans?	1	
2	What is the project number for this drawing?	1	
3	Who was the person responsible for checking the correctness of the drawing?	1	
4	Who is the person responsible for drawing the floor plan?	1	
5	When was the drawing printed?	1	
6	Who is the owner of the house?	1	
7	What feature is indicated by the symbol at A ?	1	
8	What feature does the line, indicated by arrow B show?	2	
9	What does the abbreviation NTS in the title panel stand for?	1	
10	Has revision 3 been done correctly? Explain	1	
11	What is wrong with the hatching in the floor plan?	2	
12	What does the abbreviation BIC indicate?	2	
13	Which VIEW is indicated by arrow C ?	2	
14	What is the width of the doors in mm if a scale of 1 : 100 was used?	2	
15	In the space provided below, determine the perimeter of the entire house.	4	
16	In the space provided below, determine the total floor area that must be tiled, in square meters.	4	
TOTAL		27	

ANSWER 15

ANSWER 16

NAME

NAME

2

QUESTION 2: INTERPENETRATION AND DEVELOPMENT

Given:

- The top view and incomplete front view of a right regular triangular prism that penetrates a right regular hexagonal prism.
- The auxiliary view of the triangular prism.
- The position of point **X**, the centre of the hexagon and starting point for the top view.
- A starting point **AB** for the development required.

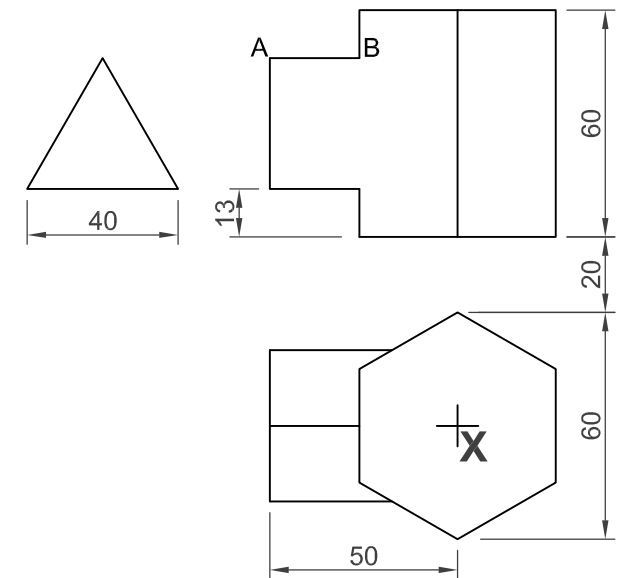
Instructions:

Draw, to a scale 1 : 1 and in first angle orthographic projection, the following views of the two solids:

- 2.1 The given top view using point **X** as a starting point.
- 2.2 The complete front view showing the curve of interpenetration.
- 2.3 The left view
- 2.4 The surface development of the triangular prism.
Use line **AB** as reference point.

Show ALL constructions.

[39]



X

B

A

ASSESSMENT CRITERIA				
1	TOP VIEW + CONSTRUCTION	6		
2	FRONT VIEW + INTERPENETRATION	9		
3	LEFT VIEW	8		
4	DEVELOPMENT	16		
TOTAL		39		

NAME	
NAME	3

QUESTION 3: PERSPECTIVE

Given:

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

PP – Picture plane

HL – Horizon line

GL – Ground line

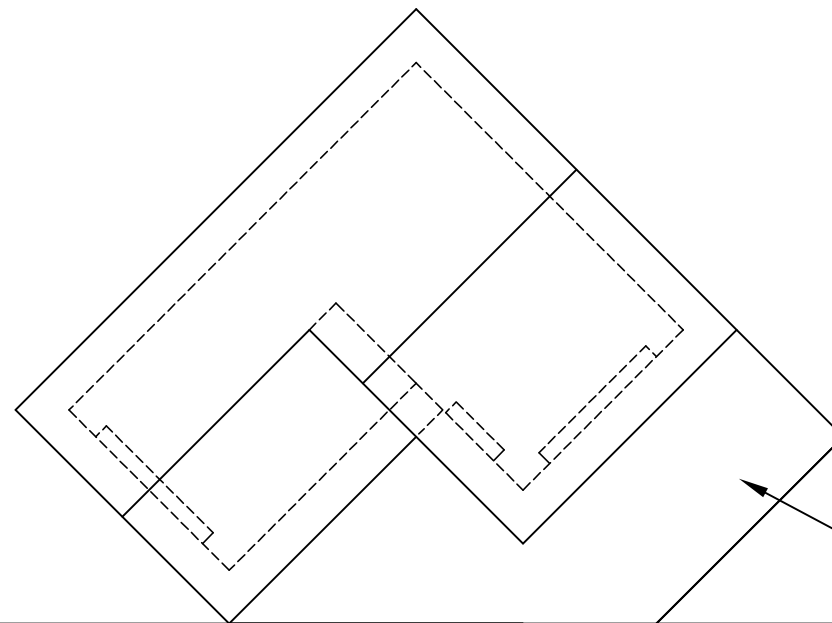
SP – Station point

Instructions:

Complete the perspective drawing.

- Align the drawing sheet with the ground line (GL).
- Determine and label the vanishing points.
- Show ALL necessary construction.
- NO hidden detail is required.

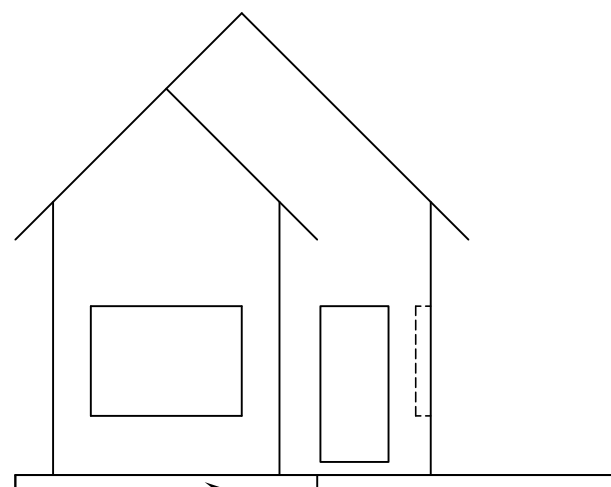
[44]



CEMENT PORCH AROUND THE HOUSE

PP

HL



CEMENT PORCH AROUND THE HOUSE

+
SP

GL

ASSESSMENT CRITERIA				
1	CONSTRUCTION + VPs	5		
2	ROOF	15		
3	WALLS	7		
4	DOOR + WINDOWS	10		
5	PORCH	7		
TOTAL		44		

NAME

NAME

4

QUESTION 4: CIVIL DRAWING

Given:

- The incomplete SOUTH ELEVATION of a **proposed new dwelling**, showing the walls, step, windows, the door openings and notes.
- The incomplete floor plan showing the walls, position of the doors, windows and sanitary fixtures.
- The incomplete foundation and wall detail.
- Room designations and floor finishes.
- A door and window schedule.
- A table of sanitary fixtures.
- The floor plan of the new dwelling, drawn to **scale 1 : 50** and the starting point **P** for the sectional view to **scale 1 : 20** (on page 6).

Instructions:

Answer this question on page 6.

4.1 Using the given incomplete floor plan draw in first-angle orthographic projection and to **scale 1 : 50**, the following views of the **new dwelling**:

4.1.1 THE COMPLETE FLOOR PLAN

Add the following features to the drawing:

- ALL doors and windows.
- ALL sanitary fixtures as indicated by the abbreviations.
- ALL hatching detail.

4.1.2 THE SOUTH ELEVATION

Show the following features on the drawing:

- The outside walls, step, doors and window detail as well as the window sill under the windows.
- Draw a break line 2 700 mm above the finished floor level.
- The finished floor level.

4.2 In the space provided on page 6, using the incomplete foundation and break line, draw, to **scale 1 : 20**, a **DETAILED SECTION** on cutting plane **A-A** of the area in the ellipse shown on the incomplete floor plan.

Show the following features:

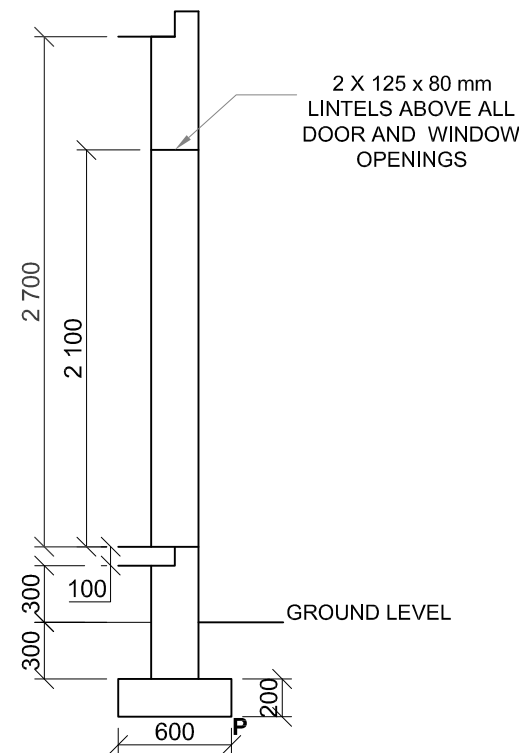
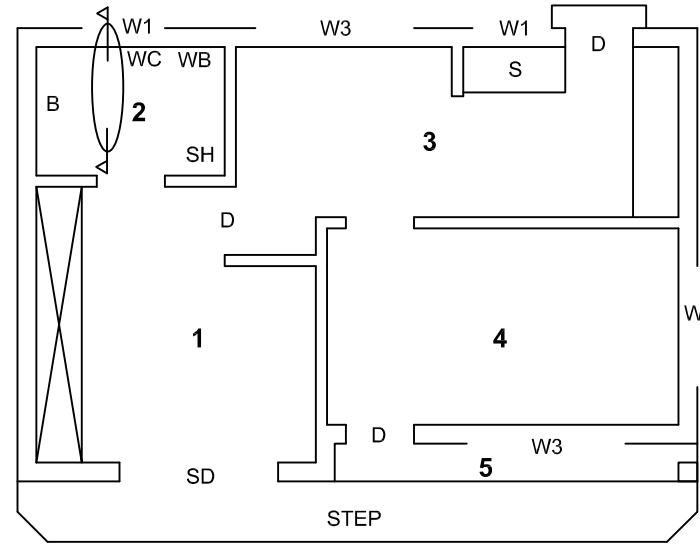
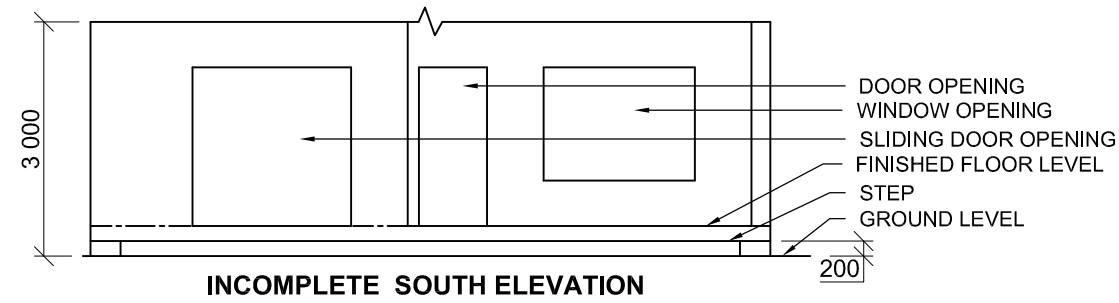
- The complete foundation, external wall and window detail.
- The lintels above the window.
- The window sill under the window.
- The bath in position.
- Indicate with dimensioning the length of the bath.
- ALL hatching detail.
- ALL substructure hatching may be drawn neat in freehand.

Label the following:

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

NOTE:

- ALL drawings must comply with the **guidelines** and **graphical symbols** contained in the **SANS 10143**. [89]



INCOMPLETE WALL AND FOUNDATION DETAIL

ROOM DESIGNATIONS

FLOOR FINISHES

- | | |
|-------------|--------|
| 1. BEDROOM | CARPET |
| 2. BATHROOM | TILE |
| 3. KITCHEN | TILE |
| 4. LOUNGE | WOOD |
| 5. PORCH | CEMENT |

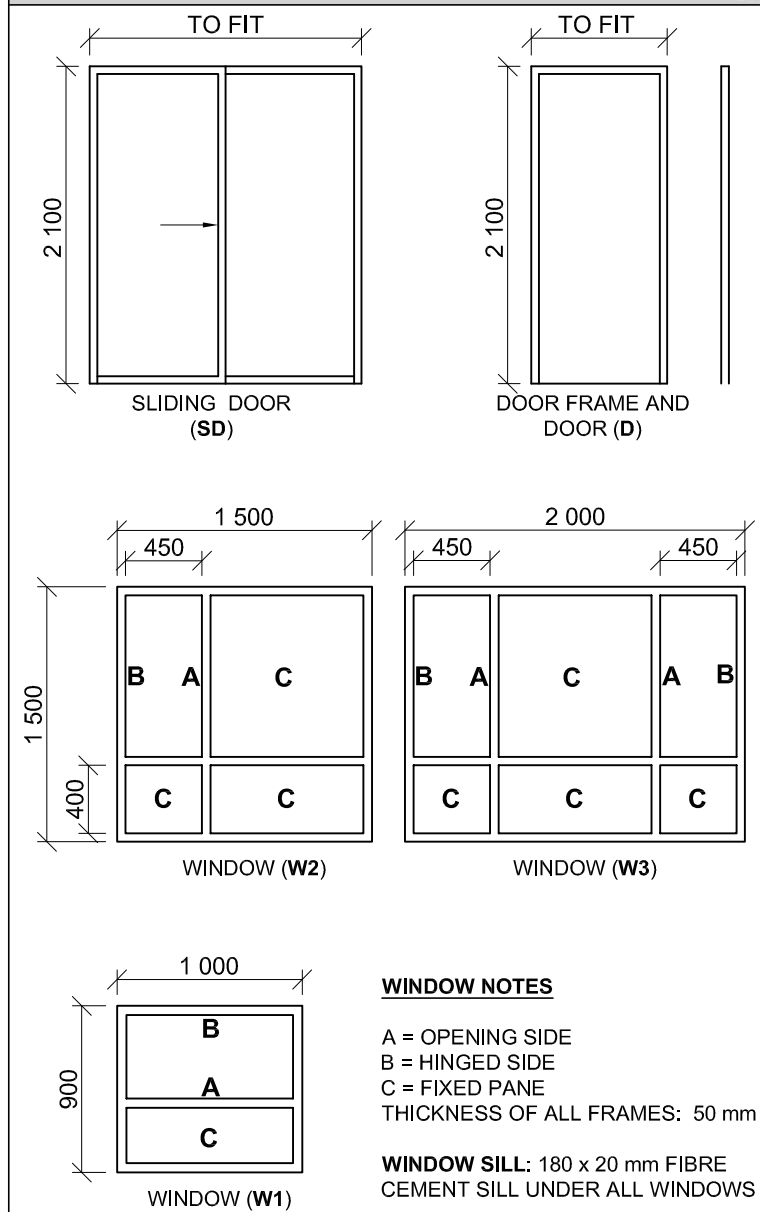
FEATURES

- D** DOOR
- SD** SLIDING DOOR
- W1** WINDOW
- W2** WINDOW
- W3** WINDOW

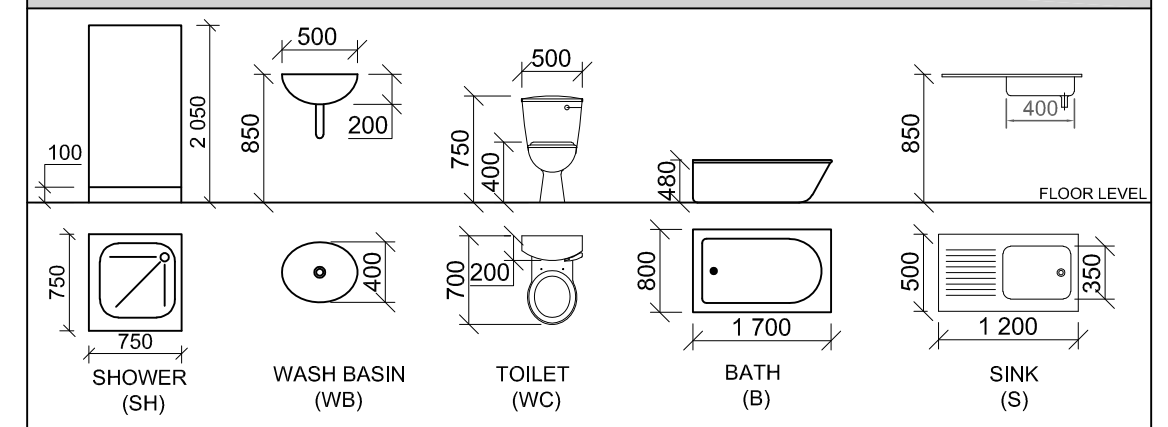
FIXTURES

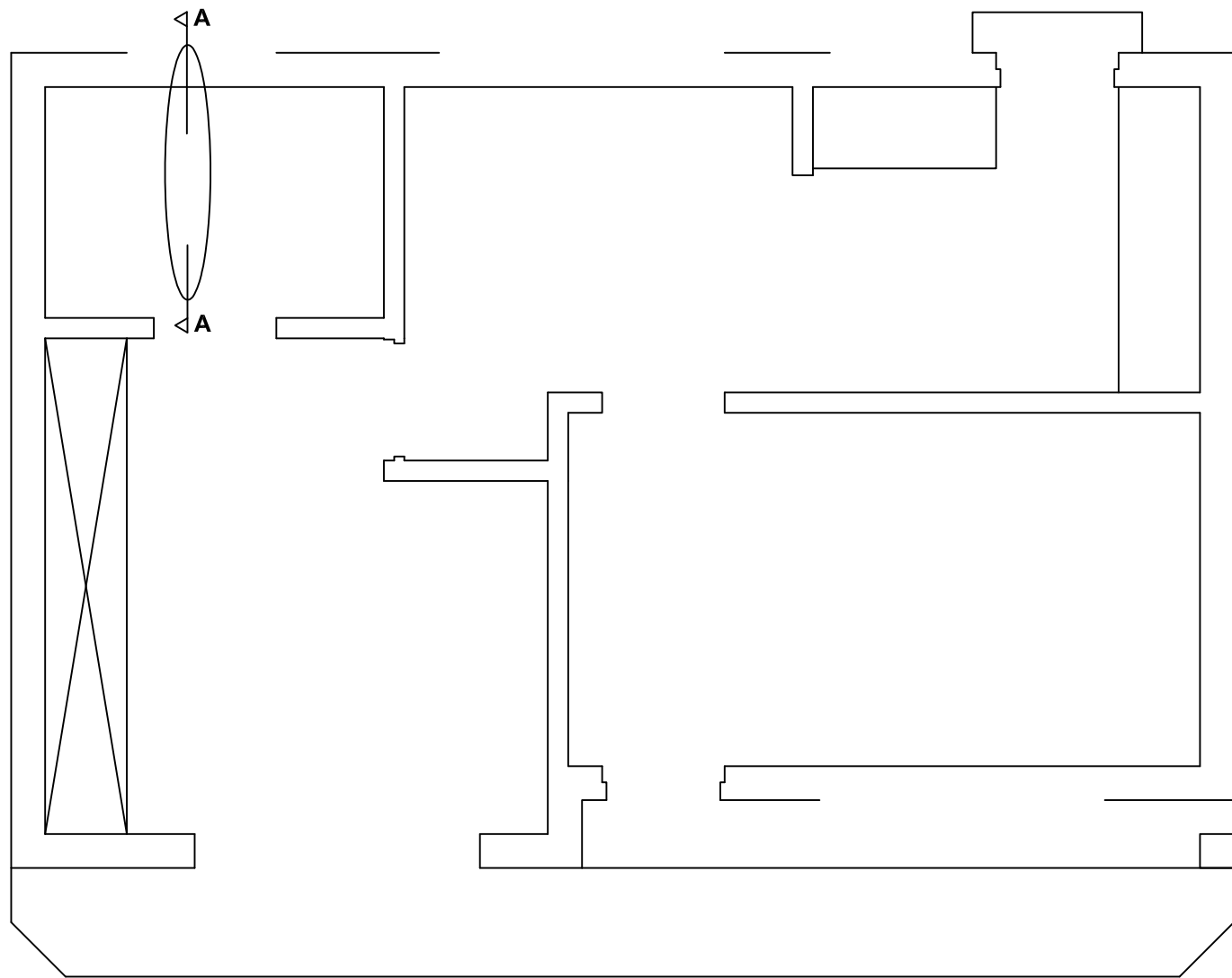
- WC** TOILET
- WB** WASH BASIN
- SH** SHOWER
- B** BATH
- S** SINK

DOOR AND WINDOW SCHEDULE

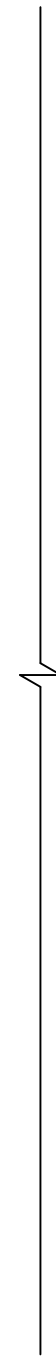


SANITARY FIXTURES





FLOOR PLAN
SCALE 1 : 50



DETAILED SECTION ON A : A
SCALE 1 : 20

PENALTIES		
1	INCORRECT OVERALL SCALE	
2	INCORRECT POSITIONING OF VIEWS	
3	NON-ALIGNMENT OF VIEWS	
TOTAL PENALTIES (-)		

ASSESSMENT CRITERIA				
FLOOR PLAN				
1	DOORS + WINDOWS	17		
2	FIXTURES	9		
3	LABELS	5		
4	HATCHING	5		
SUB TOTAL		36		
SOUTH ELEVATION				
1	WALLS + STEPS + FFL + BREAK LINE	7		
2	DOOR + WINDOWS	14		
3	LABELS	2		
SUB TOTAL		23		
DETAILED SECTION				
1	FOUNDATIONS+WALLS + SLAB	8 1/2		
2	WINDOW + SILL + LINTEL	10		
3	HATCHING	6 1/2		
4	BATH	2 1/2		
5	DIMENSION	1		
6	LABELS	1 1/2		
SUB TOTAL		30		
TOTAL		89		
PENALTIES (-)				
GRAND TOTAL				

NAME	
NAME	
6	



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**GRADE 11
GRAAD 11**

**ENGINEERING GRAPHICS AND DESIGN P1
INGENIEURSGRAFIKA EN -ONTWERP V1**

**NOVEMBER 2020
MEMORANDUM**

MARKS / PUNTE: 200

TIME / TYD: 3 hours / uur

This memorandum consists of 7 pages.
Hierdie memorandum bestaan uit 7 bladsye.

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**PAPER 1
QUESTION 1: ANALYTICAL MARKING GUIDELINE**

ANSWERS		
1	BOTHA ARCHITECTS	1
2	DP 2020 - 04	1
3	TYRON	1
4	LINDO	1
5	2020-04-01	1
6	MRS. X. RUPPING	1
7	BIDET	1
8	ARCH / OPENING IN THE WALL	2
9	NOT TO SCALE	1
10	NO. THE WINDOW MUST HAVE TWO LINES INSTEAD OF ONE	2
11	MECHANICAL HATCHING OR WRONG HATCHING TYPE USED	2
12	BUILD IN CUPBOARD	2
13	WEST VIEW / WEST ELEVATION	2
14	900 mm	2
15	ANSWER BELOW	4
16	ANSWER BELOW	4
TOTAL		28

**VRAESTEL 1
VRAAG 1: ANALITIES NASIENRIGLYN**

ANTWOORDE		
1	BOTHA ARGITEKTE	1
2	DP 2020 - 04	1
3	TYRON	1
4	LINDO	1
5	2020-04-01	1
6	MEV. X. RUPPING	1
7	BIDET	1
8	BOOG (OPENING) IN DIE MUUR	2
9	NIE VOLGENS SKAAL	1
10	NEE. DIE VENSTERS MOET TWEE LYNE HÊ IPV EEN	2
11	MEGANIESE OF VERKEERDE TIPE ARSERING IS GEBRUIK	2
12	INGEBOUDE KAS	2
13	WESAANSIG / WES ELEVASIE	2
14	900 mm	2
15	ANTWOORD ONDER	4
16	ANTWOORD ONDER	4
TOTAL		28

QUESTION / VRAAG 15

Toon alle berekeninge / Show all calculations
 calculation: + / x 2 (L + B) ✓ + / x berekening
 correct values 2 (10 + 5,5) ✓ korrekte waardes
 correct answer 2 x 15,5 ✓ korrekte antwoord
 correct unit = 31 m ✓✓ korrekte eenheid

[4]

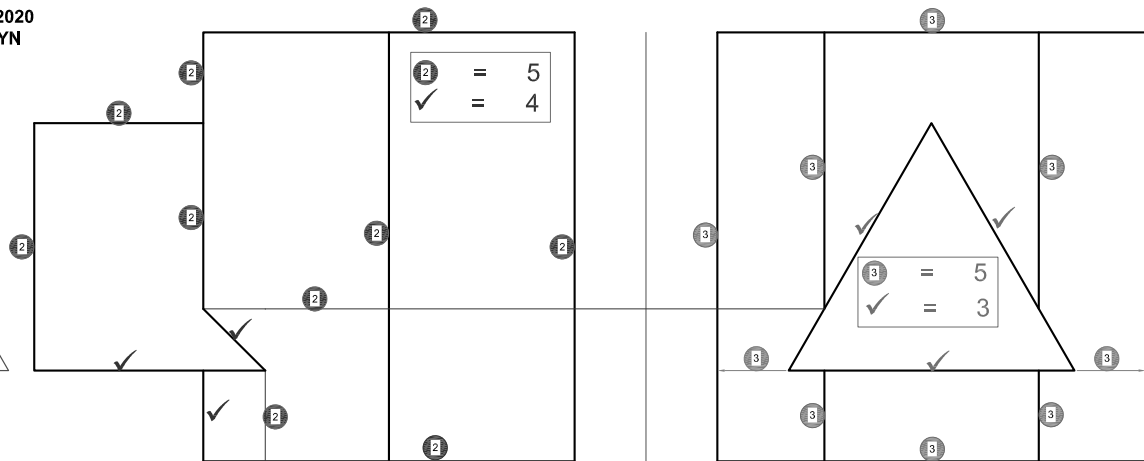
QUESTION / VRAAG 16

Toon alle berekeninge / Show all calculations
 calculation (+) 7.03 ✓ berekening (+)
 correct values 2.48 ✓ korrekte waardes
 correct answer + 5.95 ✓ korrekte antwoord
 correct unit (m) 15.46 m² ✓✓ korrekte eenheid (m)

[4]

PAPER 1 - QUESTION 2: INTERPENETRATION AND DEVELOPMENT
Gr. 11
NOVEMBER 2020
MARKING GUIDELINE

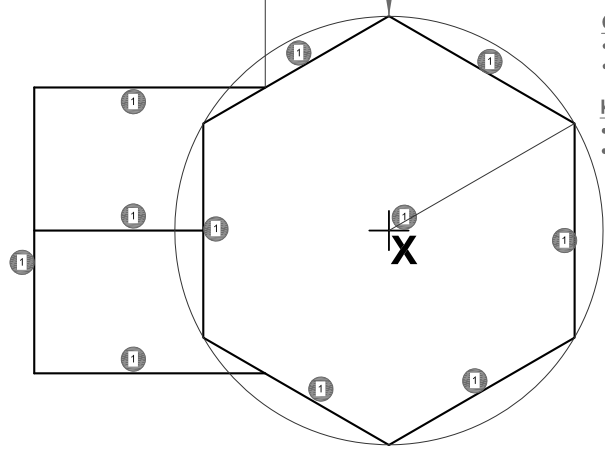
VRAESTEL 1 - VRAAG 2: INTERPENETRASIE EN ONTWIKKELING
Gr. 11
NOVEMBER 2020
NASIENRIGLYN



2 = 5
✓ = 4

3 = 5
✓ = 3

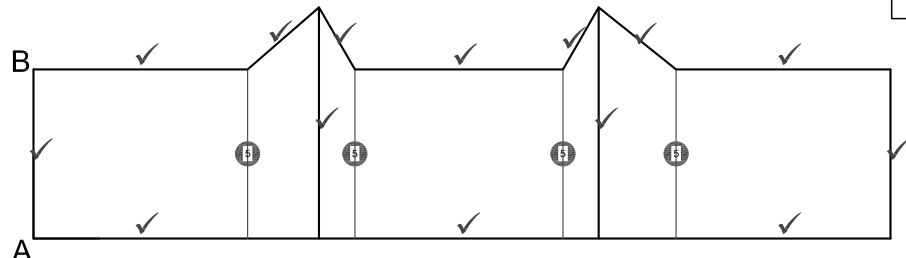
20mm



- Construction** 1
- correct placing
 - hexagon construction
- Konstruksie** 1
- korrekte plasing
 - seskant konstruksie

ASSESSERINGSKRITERIA		
1	BOAANSIG + KONSTRUKSIE	6
2	VOORAANSIG	9
3	LINKERAANSIG	8
4	ONTWIKKELING	16
TOTAAL		39

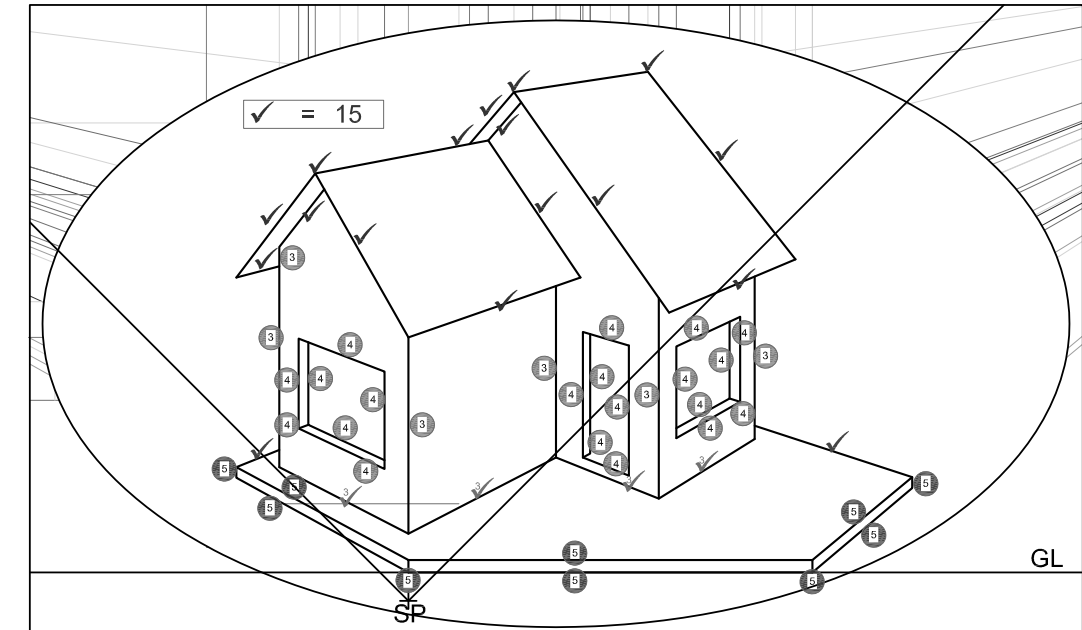
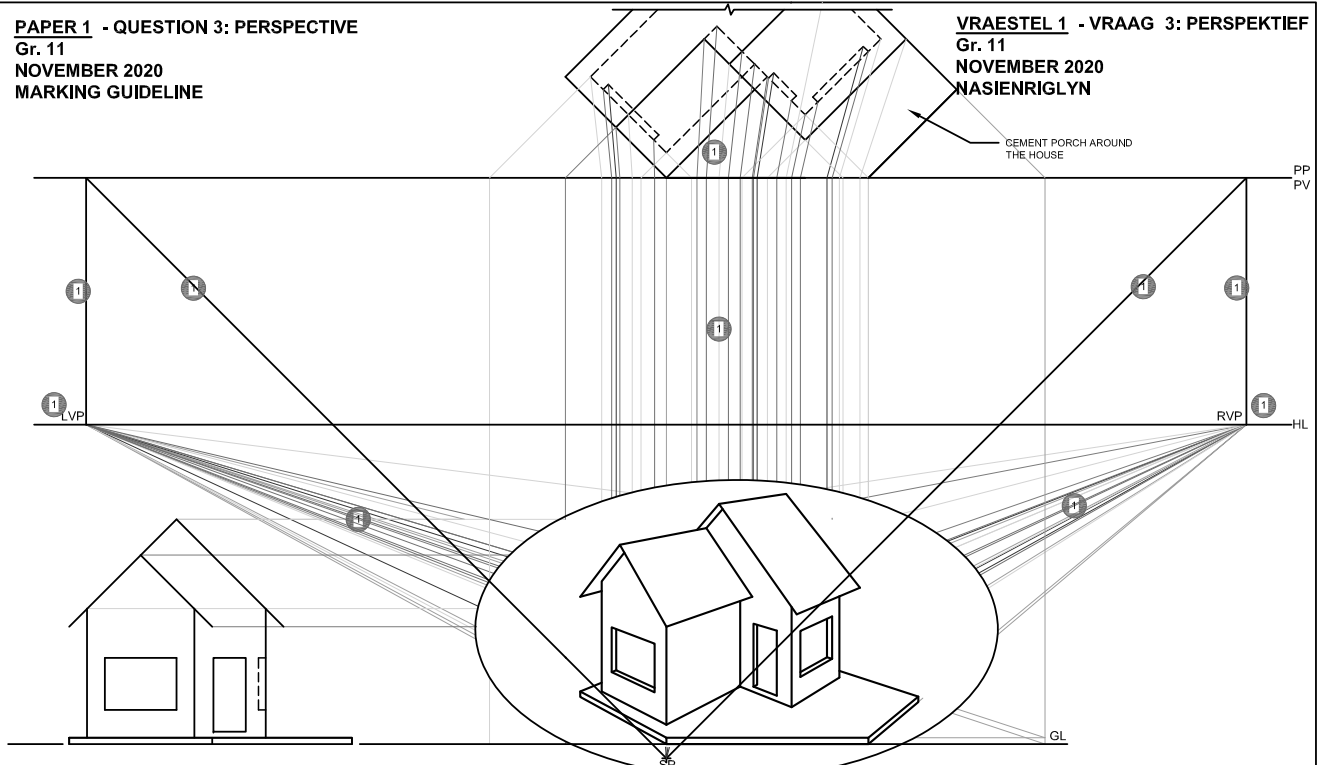
ASSESSMENT CRITERIA		
1	TOP VIEW + CONSTRUCTION	6
2	FRONT VIEW	9
3	LEFT VIEW	8
4	DEVELOPMENT	16
TOTAL		39



3 = 2
✓ = 14

PAPER 1 - QUESTION 3: PERSPECTIVE
Gr. 11
NOVEMBER 2020
MARKING GUIDELINE

VRAESTEL 1 - VRAAG 3: PERSPEKTIEF
Gr. 11
NOVEMBER 2020
NASIENRIGLYN



ASSESSMENT CRITERIA		
1	CONSTRUCTION + VP's	5
2	ROOF	15
3	WALLS	7
4	DOOR + WINDOWS	10
5	PORCH	7
TOTAL		44

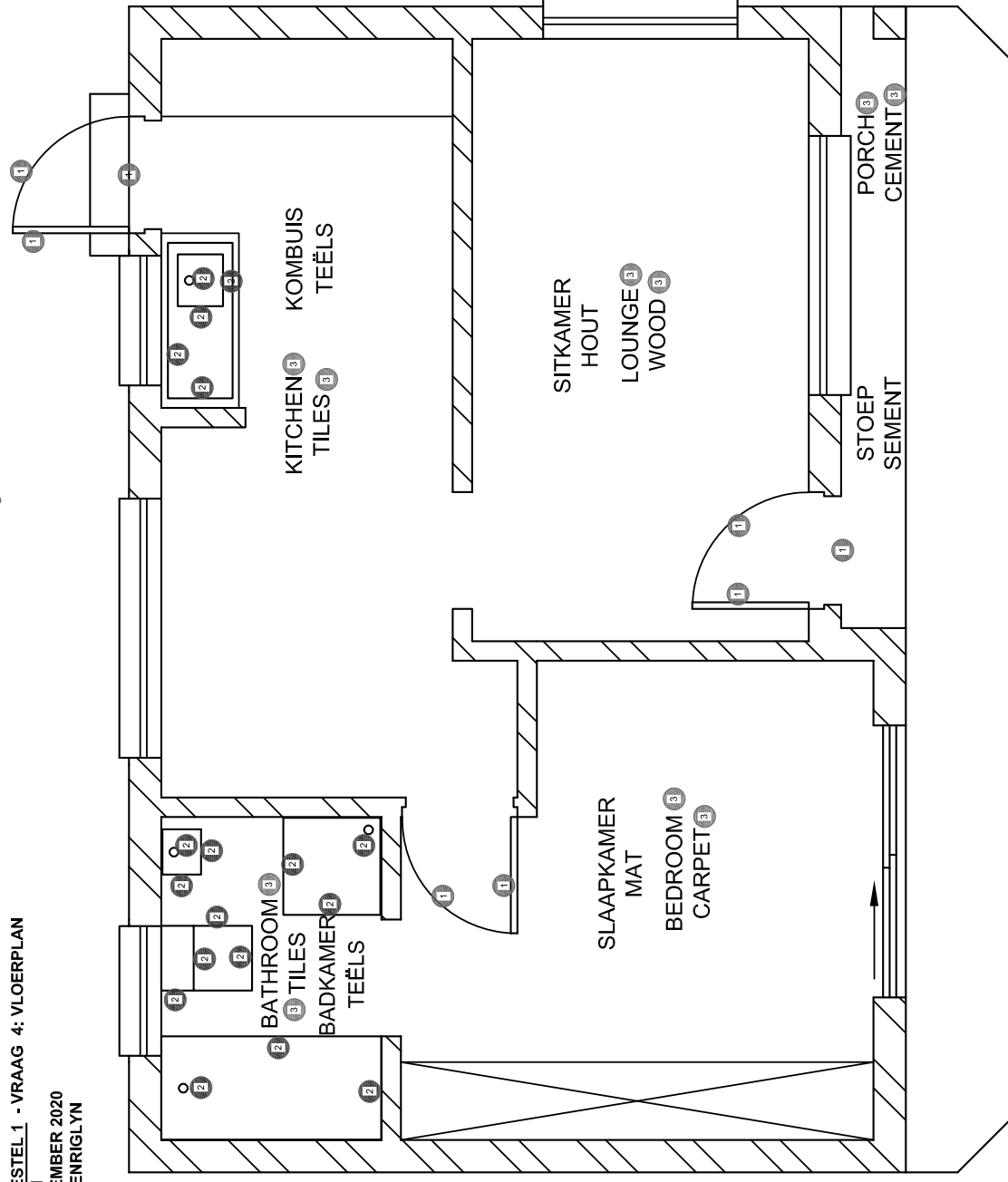
ASSESSERINGSKRITERIA		
1	KONSTRUKSIE & VPte	5
2	DAK	15
3	MURE	7
4	DEUR + VENSTERS	10
5	STOEP	7
TOTAAL		44

PAPER 1 - QUESTION 4: FLOOR PLAN
Gr. 11
NOVEMBER 2020
MARKING GUIDELINE

VRAESTEL 1 - VRAAG 4: VLOERPLAN
Gr. 11
NOVEMBER 2020
NASIENRIGLYN

Arsering: Alles gearseer ✓4 ✓4 ✓4 ✓4
Volgens SANS riglyne ✓4 ✓4 ✓4 ✓4
Siviele arsering is gebruik ✓4 ✓4 ✓4 ✓4
Moet instrumente gebruik

Hatching: All hatched ✓4 ✓4 ✓4 ✓4
SANS compliant ✓4 ✓4 ✓4 ✓4
Civil hatching used ✓4 ✓4 ✓4 ✓4
Instruments must be used



VLOERPLAN
SKAAL 1 : 50

FLOOR PLAN
SCALE 1 : 50

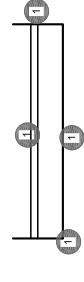
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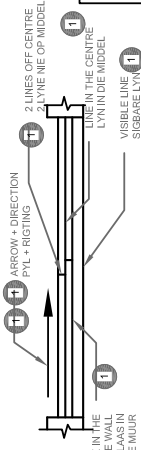
ASSESSMENT CRITERIA	
FLOOR PLAN	
1	DOORS + WINDOWS 17
2	FIXTURES 9
3	LABELS 5
4	HATCHING 5
SUB TOTAL 36	

ASSESSERINGSKRITERIA	
VLOERPLAN	
1	DEURE & VENSTERS 17
2	TOEBEHORE 9
3	BYSKRIFTE 5
4	ARSERING 5
SUBTOTAAL 36	

5 X VENSTERS / WINDOWS



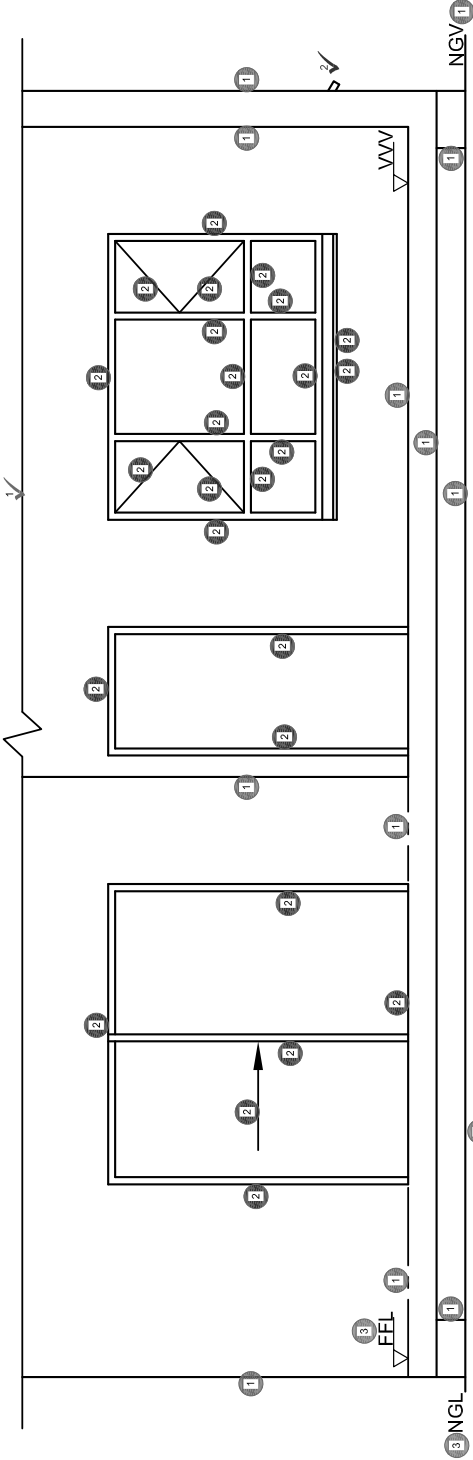
1 X SKUIFDEUR / SLIDING DOOR



5

PAPER 1 - QUESTION 4: ELEVATION
Gr. 11
NOVEMBER 2020
MARKING GUIDELINE

VRAESTEL 1 - VRAAG 4: ELEVASIE
Gr. 11
NOVEMBER 2020
NASIENRIGLYN



SOUTH ELEVATION
SCALE 1 : 50

SUID ELEVASIE
SKAAL 1 : 50

ASSESSMENT CRITERIA	
SOUTH ELEVATION	
1	WALLS + STEPS + FFL + BREAK LINE 7
2	DOOR + WINDOWS 14
3	LABELS 2
SUB TOTAL 23	

ASSESSERINGSKRITERIA	
SUID ELEVASIE	
1	MURE + TRAPPE + VVW + BREEKLYN 7
2	DEURE + VENSTERS 14
3	BYSKRIFTE 2
SUBTOTAAL 23	

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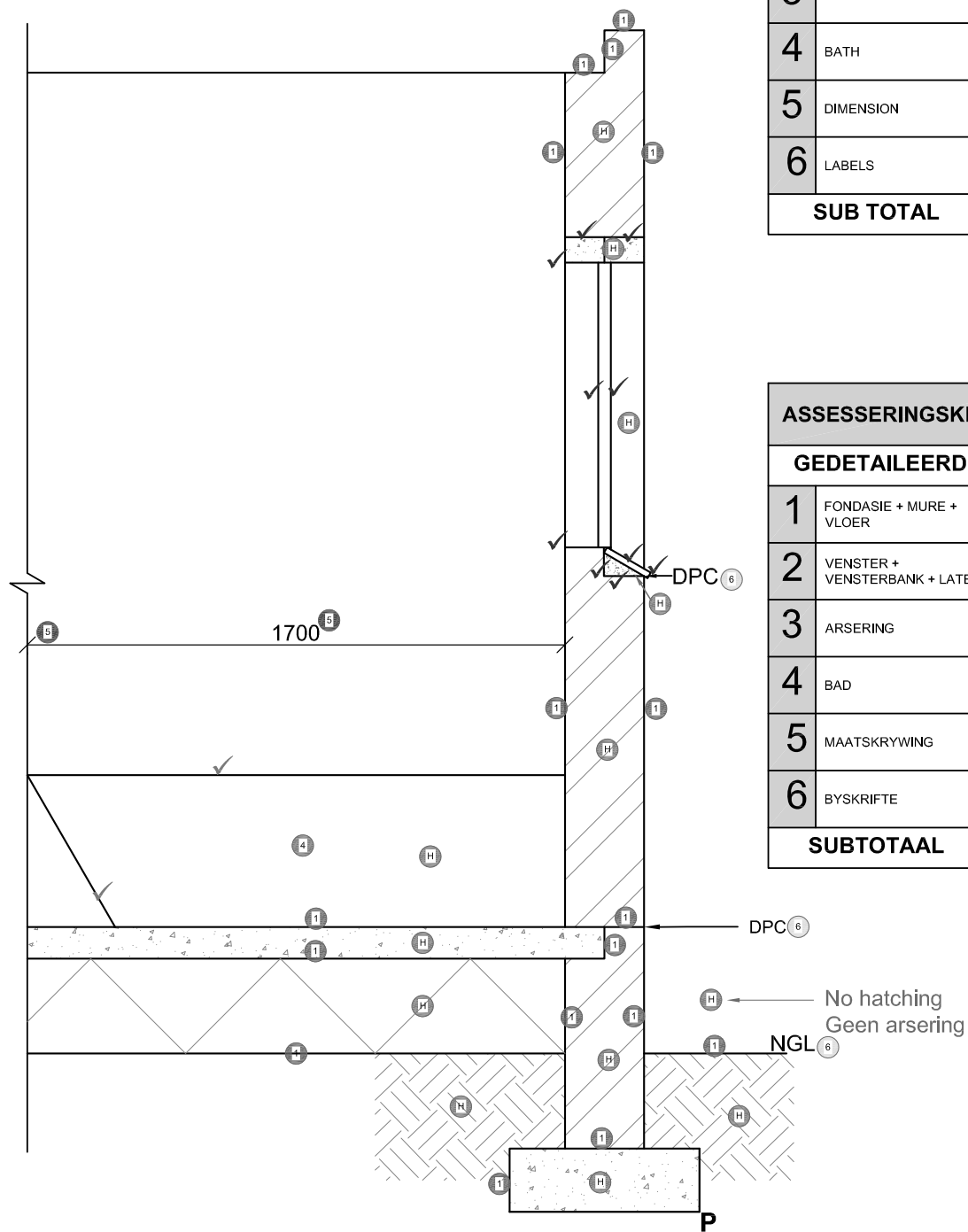
6

PAPER 1 - QUESTION 4: DETAILED SECTION
Gr. 11
NOVEMBER 2020
MARKING GUIDELINE

VRAESTEL 1 - VRAAG 4: GEDETAILEERDE SNIT
Gr. 11
NOVEMBER 2020
NASIENRIGLYN

ASSESSMENT CRITERIA		
DETAILED SECTION		
1	FOUNDATIONS + WALLS + SLAB	8 ½
2	WINDOW + SILL + LINTEL	10
3	HATCHING	6 ½
4	BATH	2 ½
5	DIMENSION	1
6	LABELS	1 ½
SUB TOTAL		30

ASSESSERINGSKRITERIA		
GEDETAILEERDE SNIT		
1	FONDASIE + MURE + VLOER	8 ½
2	VENSTER + VENSTERBANK + LATEI	10
3	ARSERING	6 ½
4	BAD	2 ½
5	MAATSKRYWING	1
6	BYSKRIFTE	1 ½
SUBTOTAAL		30



GEDETAILEERDE SNIT A : A
SKAAL 1 : 20

DETAILED SECTION ON A : A
SCALE 1 : 20