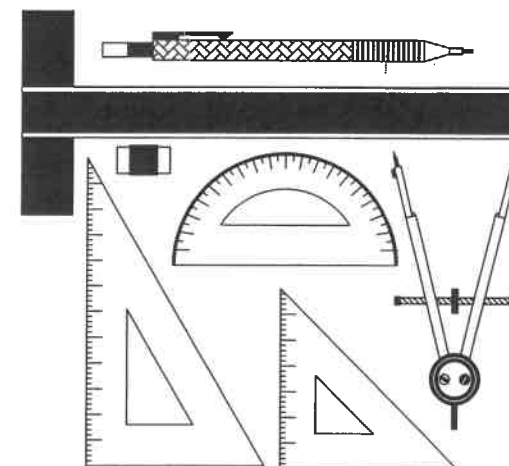




MARKING GUIDELINES



NATIONAL SENIOR CERTIFICATE EXAMINATION
2019

ENGINEERING GRAPHICS AND DESIGN
PAPER 1

MARKS: 200
TIME: 3 HOURS

FOR OFFICIAL USE ONLY					
QUESTION	SECTION	MARK	MODERATED	MAXIMUM	CODE
1	CIVIL ANALYTICAL			20	
2	INTERPENETRATION & DEVELOPMENT			40	
3	TWO-POINT PERSPECTIVE			40	
4	CIVIL DRAWING			100	
	TOTAL			200	

PLEASE READ THE FOLLOWING INSTRUCTIONS CAREFULLY

1. This question paper consists of **6 pages** including the cover page and **4 questions**.
2. **All** questions must be answered.
3. Unless specified otherwise, all questions are in **First-angle Orthographic Projection**.
4. Unless specified otherwise, all questions are to be completed to a **scale of 1:1**.
5. **All** answer sheets must be restapled in numerical order, even questions that have not been answered.
6. **All construction work** must be shown.
7. Print your **examination number** neatly on each page.
8. Use only the **answer sheets** provided.
9. Your drawings should reflect **neatness** and **accuracy**.
10. All dimensions or detail not given may be **assumed** in **good proportion**.
11. Your drawings should comply with SANS 10143.

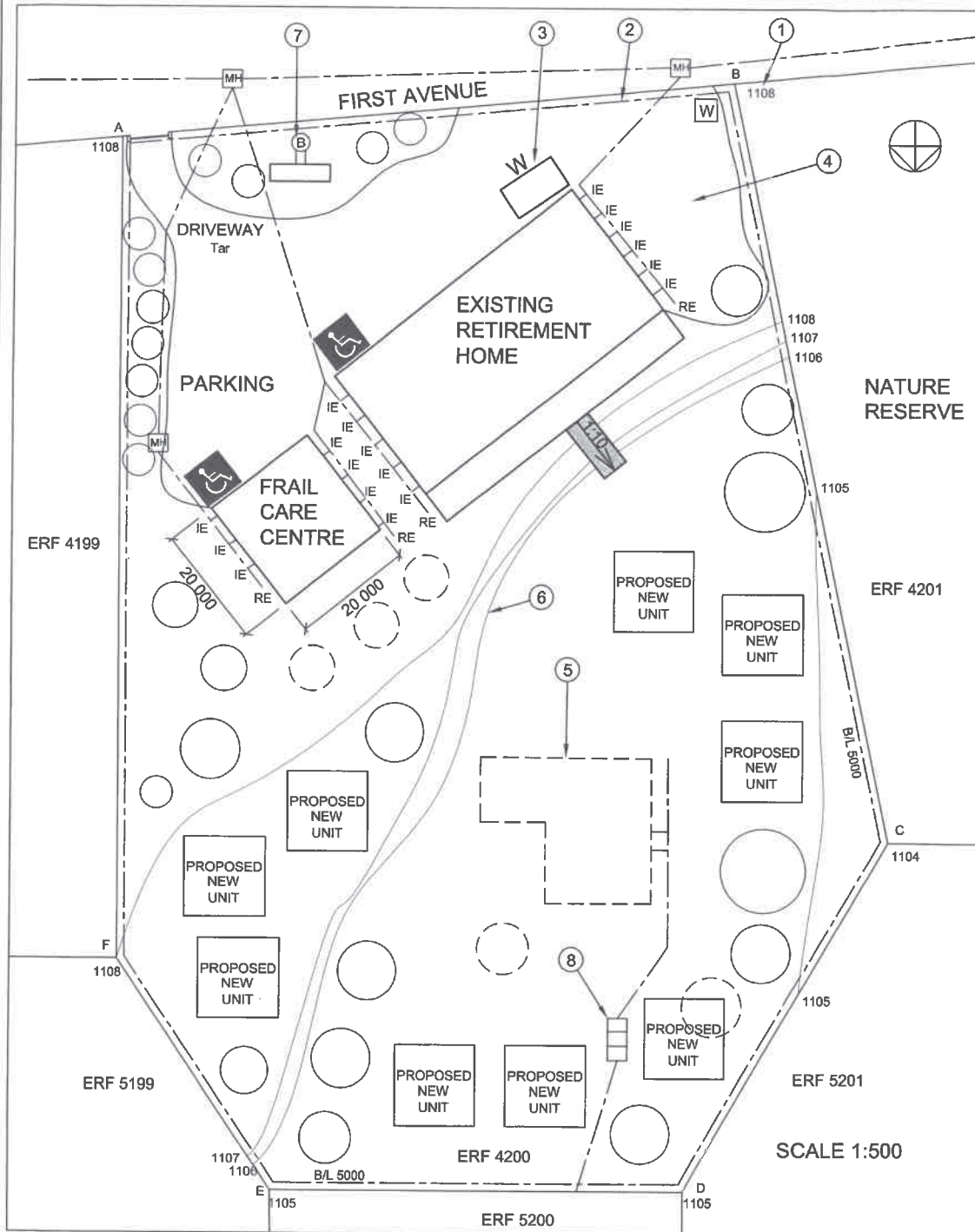
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QUESTION 1

CIVIL
ANALYTICAL



STUDY THE ADJACENT DRAWING AND ANSWER THE QUESTIONS THAT FOLLOW:

1.1 What type of civil drawing is shown?	SITE PLAN
1.2 Which ERF is to the NORTHEAST of the retirement complex?	5199
1.3 How many manholes are there in this drawing?	4
1.4 Which corner has the lowest elevation? (either A,B,C,D,E or F)	C
1.5 How many trees need to be removed?	5
1.6 What is the feature at 1 called?	CORNER / BEACON HEIGHT
1.7 What is the feature at 2 called?	BUILDING LINE
1.8 What is the feature at 3 called?	WATER TANK
1.9 What is the feature at 4 called?	SEWER LINE
1.10 What is indicated at feature 5?	WORK TO BE REMOVED
1.11 Has the ramp been drawn correctly?	NEE
1.12 What is the feature at 6 called?	CONTOUR
1.13 What is the feature at 7 called?	FIRE HYDRANT
1.14 What is the feature at 8 called?	SEPTIC TANK
1.15 In what colour would a proposed new unit be drawn on this plan?	RED/GREY
1.16 Is this drawing drawn to the scale indicated?	NO
1.17 What does the abbreviation IE stand for?	INSPECTION EYE
1.18 What is the closest that a new unit can be placed to ERF 5200?	5000 mm / 5 m
1.19 In the space below, determine the area of the Frail Care Centre in m ² .	

$$\begin{aligned} \text{Area} &= \text{length} \times \text{breadth} \\ &= 20 \text{ m} \times 20 \text{ m} \\ &= 400 \text{ m}^2 \end{aligned}$$

Answer:

EXAMINATION NUMBER

ANSWER SHEET 1

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QUESTION 2

INTERPENETRATION & DEVELOPMENT

The drawings below show the COMPLETE Top and Right View as well as the INCOMPLETE Front View of a **CYLINDRICAL PIPE** which has been joined together with a **SQUARE DUCT** and drawn in First-angle Orthographic Projection. An Auxiliary View of the square duct is also shown in the Top and Front Views.

Draw the following:

- 2.1 the complete Front View clearly showing the curve of interpenetration. Show all hidden detail.
- 2.2 the development of only half of the cylindrical pipe which joins with the duct, clearly showing the curve of interpenetration.

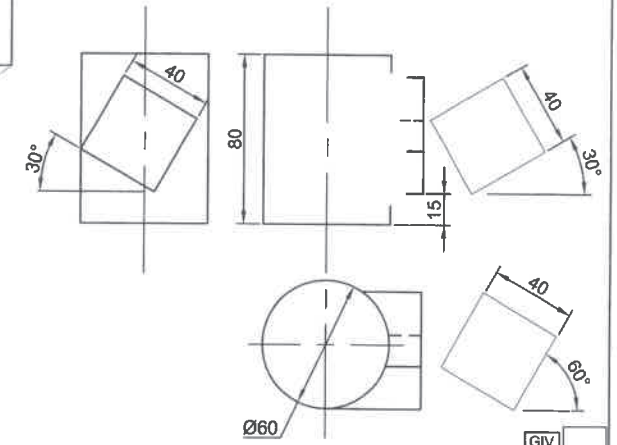
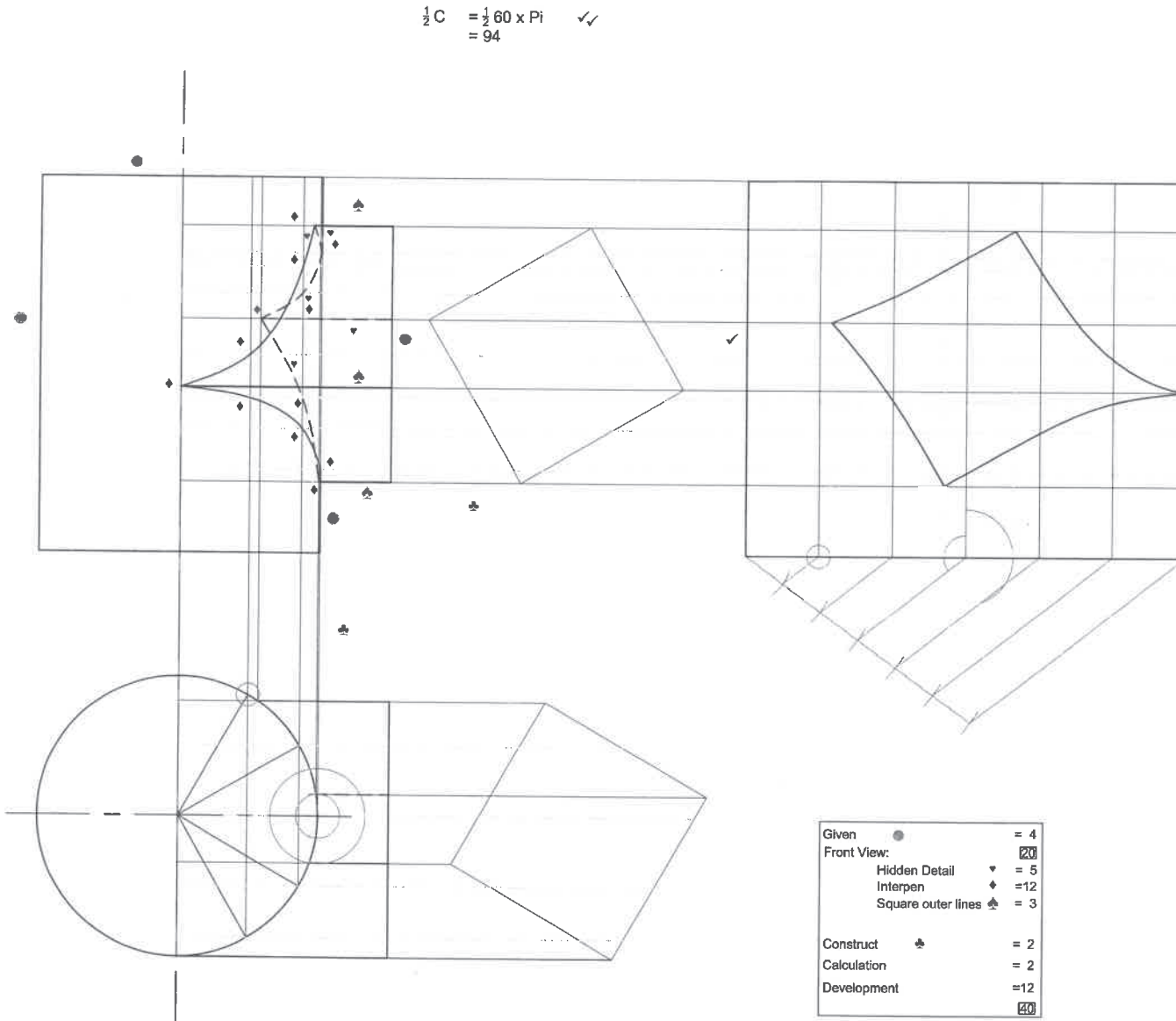
Show all construction and calculations.
Do not draw the right view.

The complete Top View and an Auxiliary View have already been drawn in position.

ASSESSMENT CRITERIA

You will be assessed on your ability to do the following:

- draw and complete the Front View 24
- show necessary construction 2
- develop and draw the cylindrical pipe 14



Given	●	= 4
Front View:	□	= 20
Hidden Detail	▽	= 5
Interpen	◆	= 12
Square outer lines	♣	= 3
Construct	♣	= 2
Calculation		= 2
Development		= 12
		40

GIV	4
FV	20
CON	2
DEV	14

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QUESTION 3

TWO-POINT PERSPECTIVE

PTS	•	60/2 =	30
CON	◊	=	2
Arcs	⊕	=	7
VPS	•	=	1
			40

The figures show the three views of the inside of a tuck shop with built-in cupboards and a semi-circular serving hatch. Some walls have been removed to see inside the room.
 Draw a neat two-point perspective view of the tuck shop.

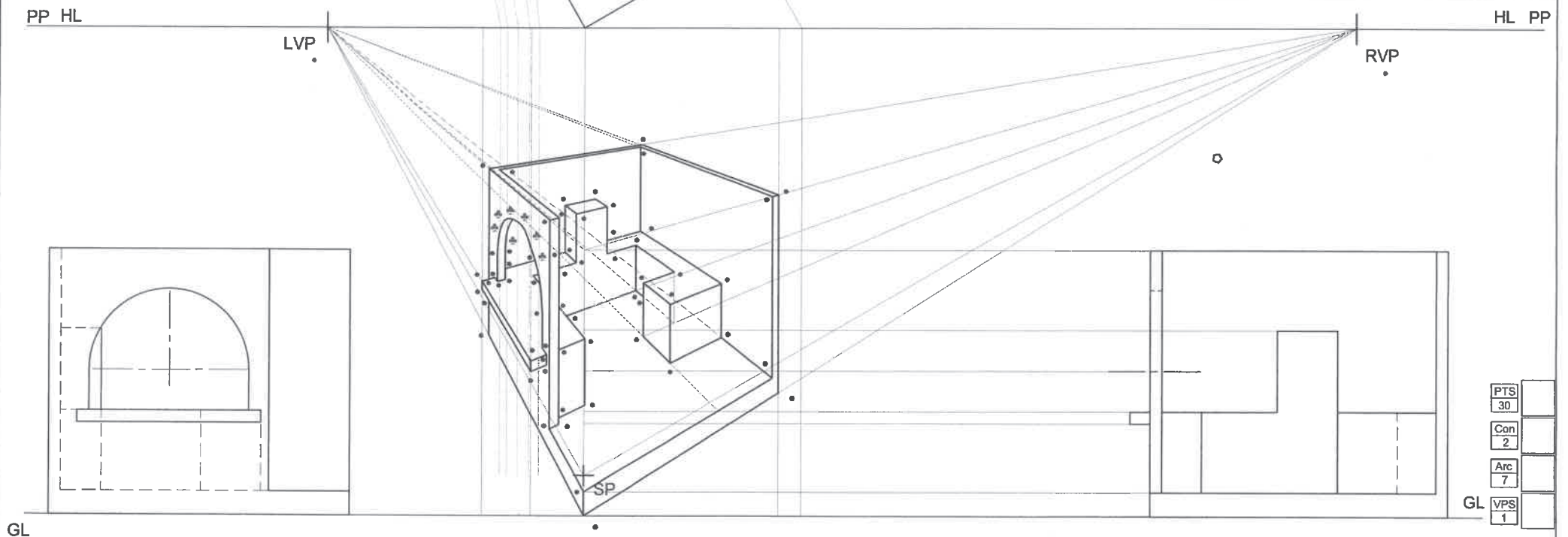
- PP - Picture Plane
- HL - Horizon Line
- GL - Ground Line
- SP - Station Point

Neatly label the vanishing points RVP and LVP.
 NO HIDDEN DETAIL IS REQUIRED.

ASSESSMENT CRITERIA

You will be assessed on your ability to do the following:

- determine and label the vanishing points 1
- draw the two-point perspective view 39



PTS	30
Con	2
Arc	7
VPS	1

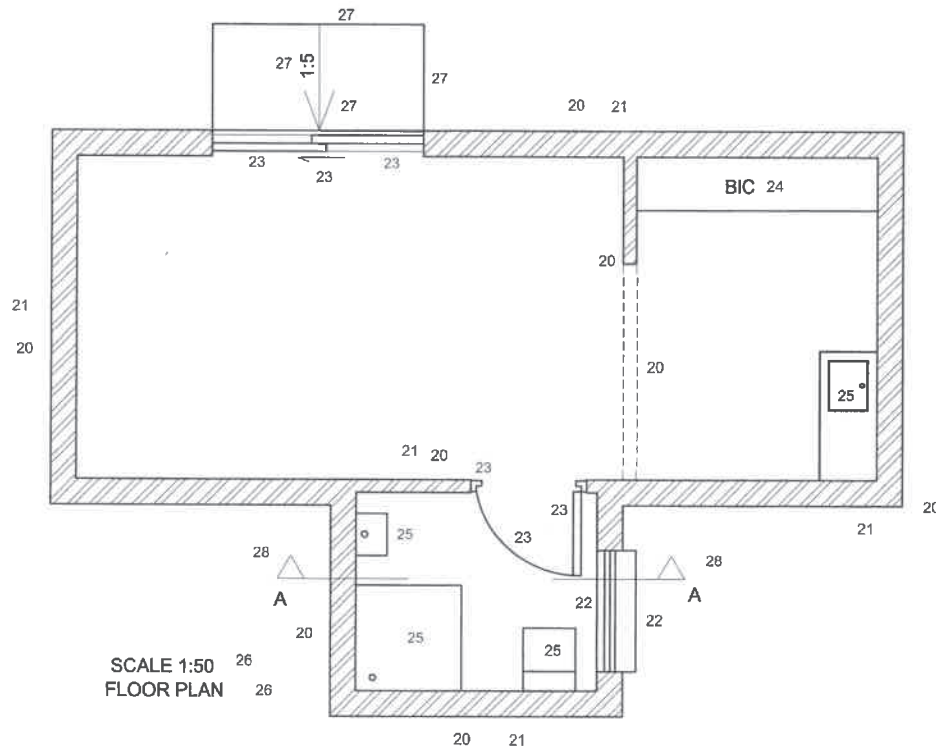
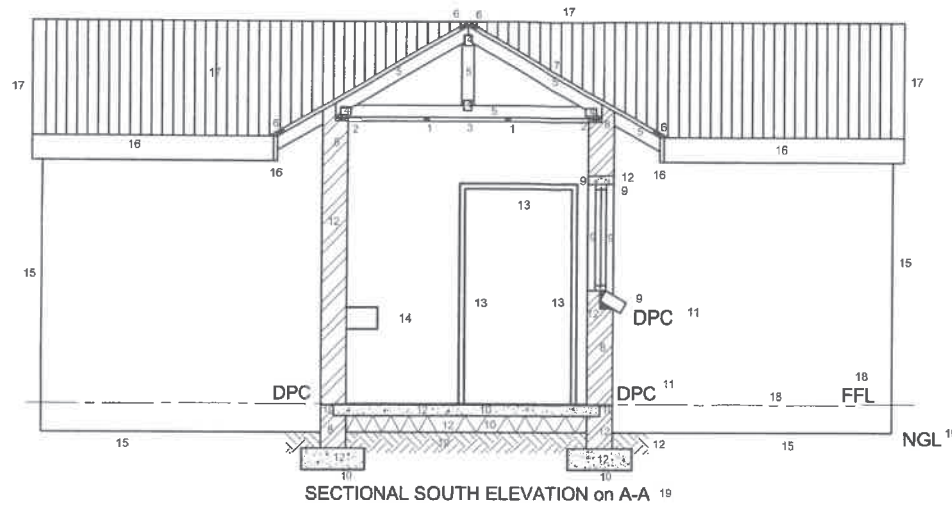
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ANSWER SHEET 3

QUESTION 4

CIVIL
DRAWING



Assessment Criteria

Sectional Elevation

1 Ceiling Battens		
2 Wall Plates		
3 Ceiling Board		
4 Truss Plates		
5 Roof Truss		
6 Purlins		
7 Roof		
8 Sectioned Walls		
9 Sectioned Window		
10 Floor & Foundation		
11 DPC		
12 Hatching		
13 Internal Door		
14 Basin		
15 External Walls		
16 Fascia Boards		
17 Roof Detail		
18 Finished Floor Level		
19 Labels		

Subtotal

Floor Plan

20 Walls		
21 Hatching		
22 Window		
23 Doors		
24 Cupboard		
25 Plumbing Fixtures		
26 Labels		
27 Ramp		
28 Cutting Plane		

Subtotal

TOTAL

ANSWER SHEET 4

EXAMINATION NUMBER

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