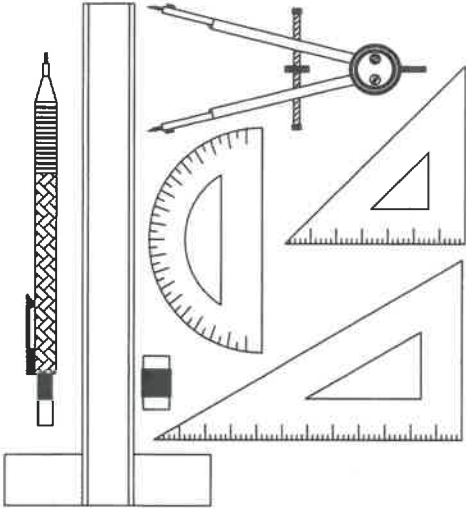




MARKING GUIDELINES



NATIONAL SENIOR CERTIFICATE EXAMINATION
NOVEMBER 2024

ENGINEERING GRAPHICS AND DESIGN
PAPER 1

MARKS: 200
TIME: 3 HOURS

PLEASE READ THE FOLLOWING INSTRUCTIONS CAREFULLY

1. This question paper consists of **5 pages** including the cover page and **4 marking guidelines**.
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.
12. All measurements are in millimetres (mm) unless otherwise indicated.

FOR OFFICIAL USE ONLY

QUESTION	SECTION	MARK	MODERATED	MAXIMUM	CODE
1	CIVIL ANALYTICAL			20	
2	INTERPENETRATION			40	
3	PERSPECTIVE			40	
4	CIVIL DRAWING			100	
	TOTAL			200	

PLEASE PASTE THE BARCODED LABEL HERE

CHECKED BY

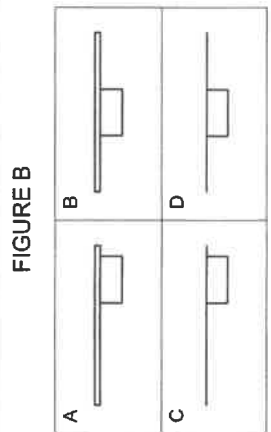
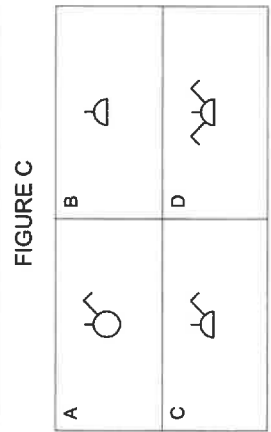
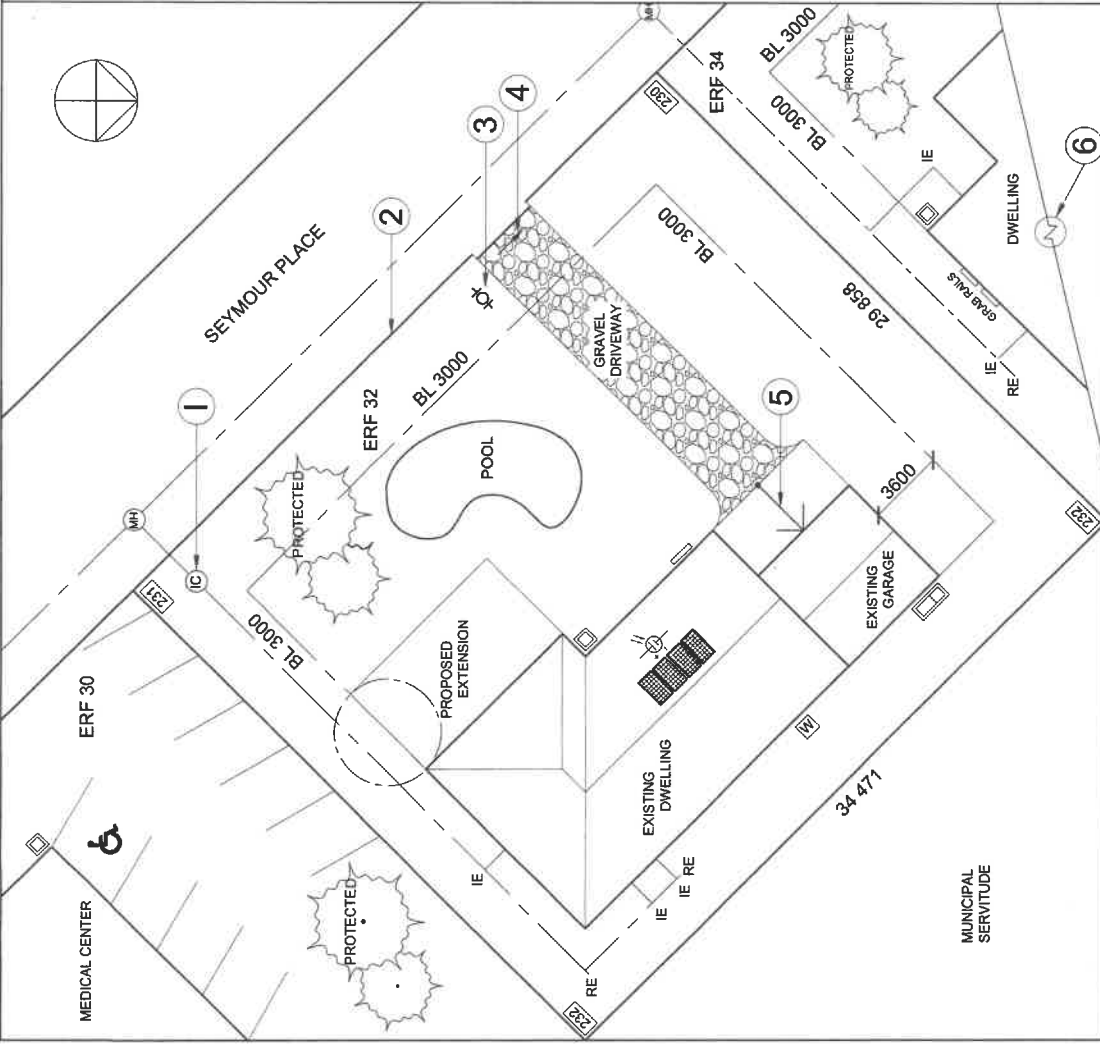
EXAMINATION NUMBER

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QUESTION 1
CIVIL
ANALYTICAL

STUDY THE ADJACENT DRAWINGS AND ANSWER THE QUESTIONS THAT FOLLOW. INDICATE THE LETTER CORRESPONDING TO YOUR ANSWER IN THE BLOCK PROVIDED

1.1 What type of drawing is shown? A. Site Plan B. Civil Drawing C. Floor Plan D. House Plan	A	1
1.2 How many rodding eyes are shown on this drawing? A. 1 B. 2 C. 3 D. 4	C	1
1.3 What does the abbreviation "IC", at 1, stand for? A. Inspection Cavity B. Inspection Cell C. Inspection Cubicle D. Inspection Chamber	D	1
1.4 What is the line at 2 called? A. Sewer Line B. Boundary Line C. Contour Line D. Building Line	B	1
1.5 What does the symbol at 3 indicate? A. Water Meter B. Stop Valve C. Safety Valve D. Pool Pump	A	1
1.6 What does the arrow at 4 represent? A. Gate Opening B. Driveway Direction C. Property Entrance D. Pedestrian Entrance	A	1
1.7 What does the arrow at 5 represent? A. Property Inclination B. Driveway Direction C. Garage Entrance D. Ramp	D	1
1.8 What is the encircled feature at 6 called? A. Symmetry B. Check Valve C. Interrupted View D. Break in Continuity	D	1
1.9 How many trees were originally on this drawing? A. 7 B. 6 C. 3 D. 2	A	1
1.10 How many gullies are shown on this drawing? A. 1 B. 2 C. 3 D. 4	C	1
1.11 If a car turns left into Seymour Place from the driveway, in which direction would it be moving? A. South West B. North West C. South East D. North East	C	1
1.12 How have the needs of handicapped people been catered for in ERF 30? A. Ramp B. Disabled Parking C. Gravel Driveway D. Grabrails	B	1
1.13 Which corner of ERF 32 is the lowest? A. North B. South C. East D. West	D	1
1.14 What is the distance between the existing garage and the dwelling on ERF 34, in metres? A. 3 m B. 6 m C. 6,6 m D. 9,6 m	D	1
1.15 In what unit of measurement are the dimensions of the corner beacon heights shown? A. Millimetres B. Metres C. Centimetres D. Decimetres	B	1
1.16 What feature suggests that load shedding is catered for? A. Distribution Board B. Solar Panels C. Regulator Switch D. Electricity Meter	B	1
1.17 What is the area of ERF 32 in metres squared? A. 1029235118 B. 1029235,118 C. 10292,35118 D. 1029,235118	D	1
1.18 If the entire ERF 32 was fenced, how many metres of fencing is required? Round off the answer to the nearest metre. A. 127 m B. 128 m C. 129 m D. 130 m	C	1
1.19 Refer to Figure B. Which image is the SANS 10143 symbol for a single sink unit? A. A B. B C. C D. D	A	1
1.20 Refer to Figure C. Which image is the SANS 10143 symbol for a switched socket outlet? A. A B. B C. C D. D	C	1



ANSWER SHEET 1

EXAMINATION NUMBER

20 MARKS

QUESTION 2
INTERPENETRATION

Given:

- The **INCOMPLETE** Front View and **COMPLETE** Top View of a **SQUARE PIPE** penetrated by a **SQUARE DUCT**. The axes of the duct and pipe lie in a common vertical plane.
- The auxiliary views of the square duct.

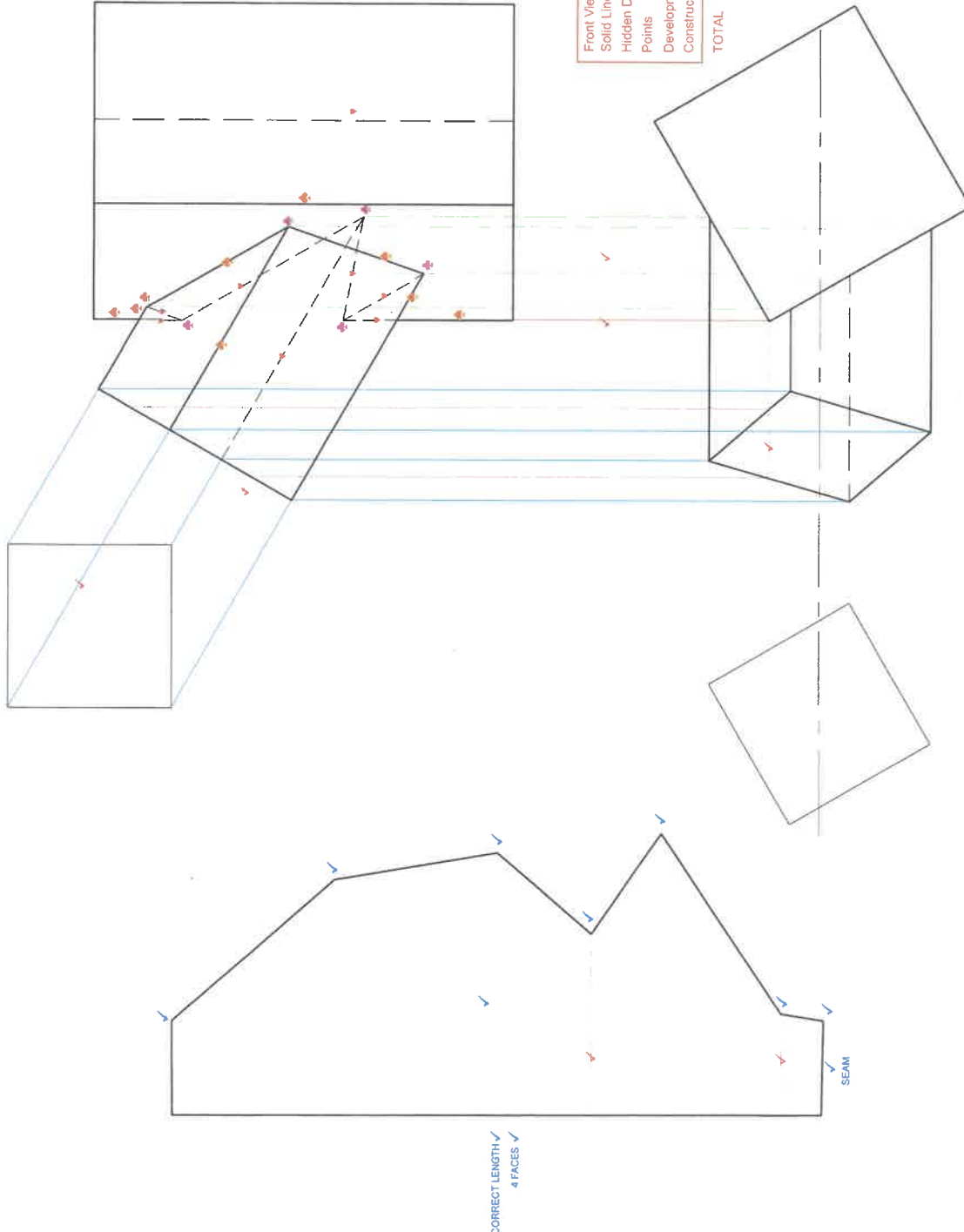
Instruction:

- Draw the complete **FRONT** view, clearly showing the lines of interpenetration.
- Draw the development of the **SQUARE DUCT** only.
- Use the given **SEAM** as your start.
- Show all hidden detail.
- Show all construction.

ASSESSMENT CRITERIA

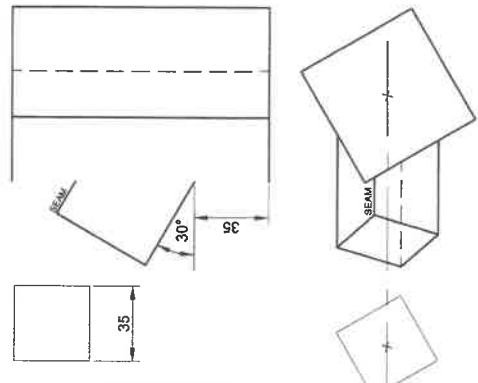
You will be assessed on your ability to do the following:

- determine and draw the lines of interpenetration 20
- complete the Front View 7
- draw the development 13



CORRECT LENGTH ✓
4 FACES ✓

Front View	✓	= 8
Solid Lines	✓	= 8
Hidden Detail	✓	= 6
Points	✓	= 11
Development	✓	= 7
Construction	✓	= 7
TOTAL		= 40



LINES	8
H/D	8
PTS	6
DEV	11
CON	7

40 MARKS

EXAMINATION NUMBER

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ANSWER SHEET 2

QUESTION 3
TWO-POINT
PERSPECTIVE

The figures show the three views of a dwelling with a chimney and porch.
 Draw a neat two-point perspective drawing of the dwelling.

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

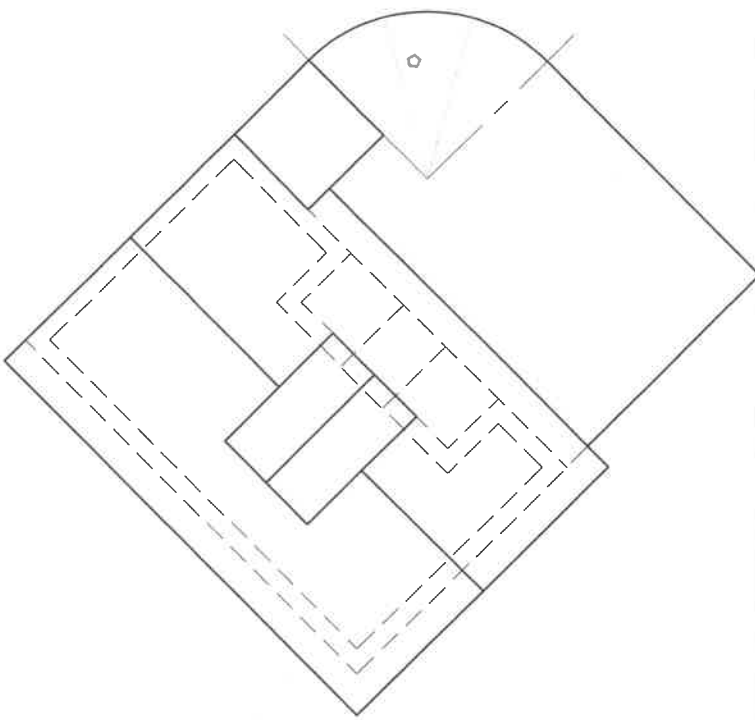
Determine and neatly label the vanishing points RVP and LVP.

NO HIDDEN DETAIL IS REQUIRED.

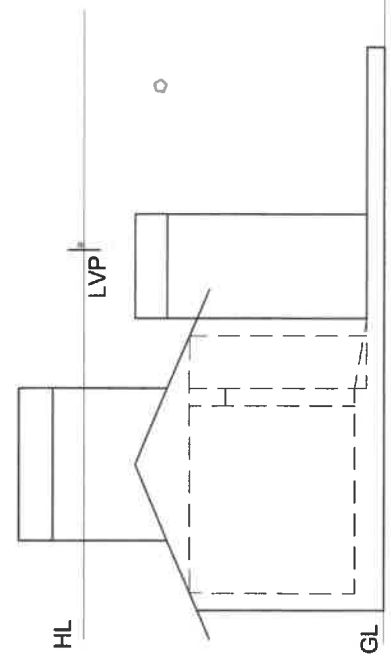
ASSESSMENT CRITERIA

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

- determine and label the vanishing points 2
- draw the two-point perspective view 38

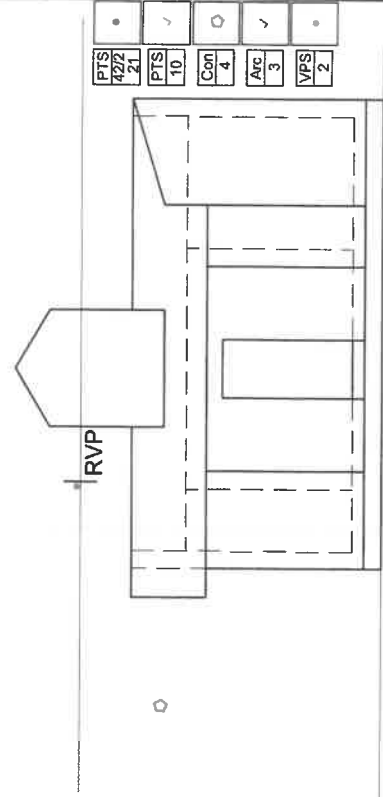


PP



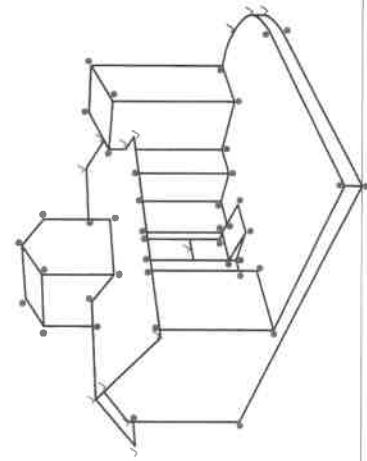
HL

GL



RVP

PTS	43/43	21	PTS	10	Con	4	ARC	3	VPS	2
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spt

40 MARKS

EXAMINATION NUMBER

ANSWER SHEET 3

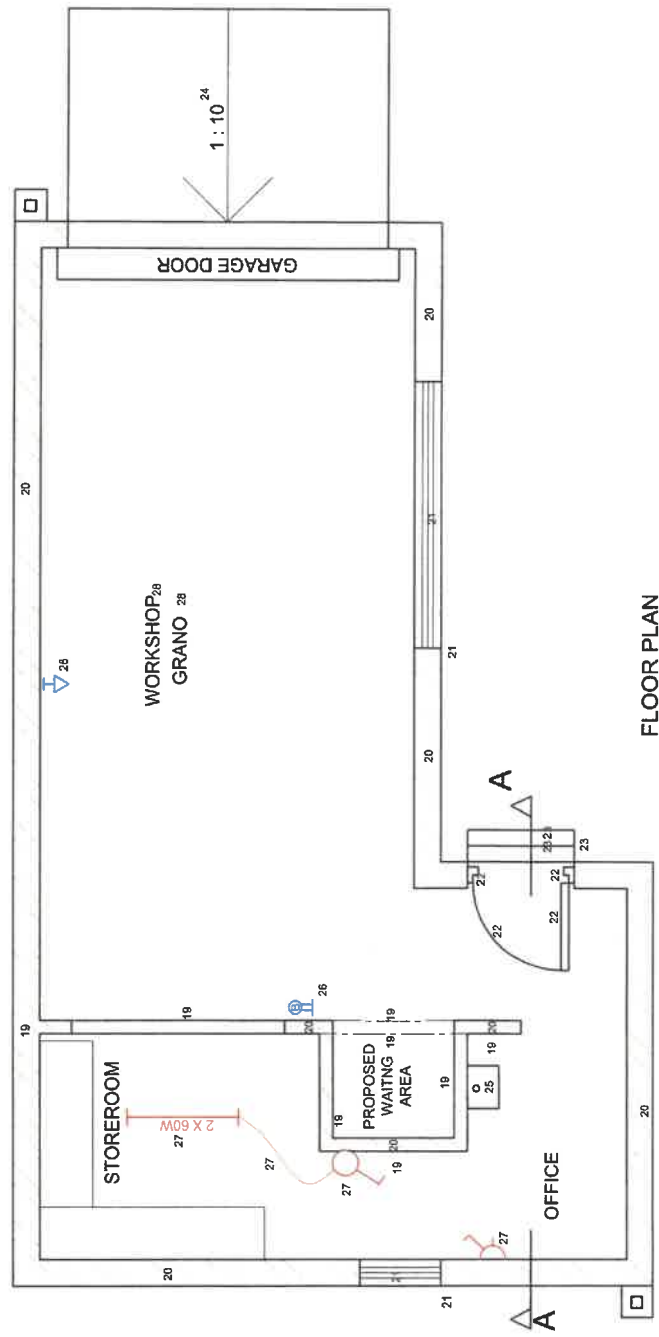
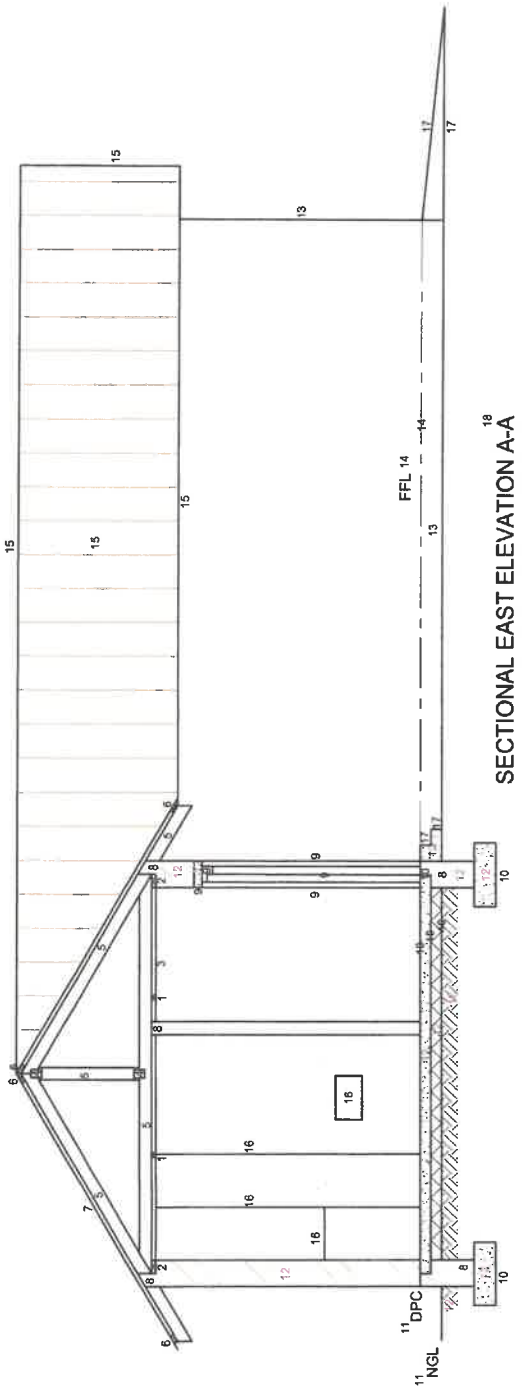
QUESTION 4
CIVIL
DRAWING

Assessment Criteria

Sectional Elevation	
1 Ceiling Battens	2
2 Wall Plates	2
3 Ceiling Board	1
4 Truss Plates	2
5 Roof Truss	5
6 Purlins	4
7 Roof	1
8 Sectioned Walls	5
9 Sectioned Door	5
10 Floor & Foundation	6
11 DPC & NGL	2
12 Hatching	11
13 External Walls	2
14 Finished Floor Level	2
15 Roof Detail	4
16 BIC, Wall & WB	4
17 Step & Ramp	4
18 Label	1
Subtotal	63

Floor Plan

19 Walls	8
20 Hatching	8
21 Windows	4
22 Door	4
23 Step	3
24 Ramp Inclination	1
25 Plumbing Fixture	1
26 Fire Protection Symbols	2
27 Electrical	4
28 Labels	2
Subtotal	37
TOTAL	100



EXAMINATION NUMBER

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ANSWER SHEET 4