



NATIONAL SENIOR CERTIFICATE

GRADE 12

DATE:	MAY/ JUNE 2024
SUBJECT:	ENGINEERING GRAPHICS AND DESIGN
PAPER:	1
MARKS:	100
TIME:	3 Hours
NUMBER OF PAGES:	6
MEMORANDUM	

INSTRUCTIONS AND INFORMATION

1. This paper consists of FOUR questions.
2. Answer all the questions.
3. ALL questions are in first-angle orthographic projection, unless otherwise stated.
4. ALL drawings must be prepared using pencil and instruments, unless otherwise stated.
5. ALL answers must be drawn accurately and neatly.
6. ALL questions, as prescribed, must be answered on the question paper.
7. ALL pages must be placed in numerical order and stapled in ONLY the TOP LEFT CORNER once complete, regardless whether the question was answered or not.
8. Time management is essential in order to complete all the questions.
9. Print your examination number in the supplied block on each page.
10. Dimension details not indicated must be estimated according to proportions.

FOR OFFICIAL USE ONLY

QUESTION	MARK OBTAINED	½	SIGN	MODERATED	½	SIGN	RE-MARKING	½	SIGN
1									
2									
3									
4									
TOTAL:	2	0	0	2	0	0	2	0	0

FINAL CALCULATED MARK

CHECKED

100


SOUTH AFRICAN COMPREHENSIVE ASSESSMENT INSTITUTE

SUID-AFRIKAANSE KOMPREENSIEWE ASSESSERINGSINSTITUUT

CENTRE NUMBER

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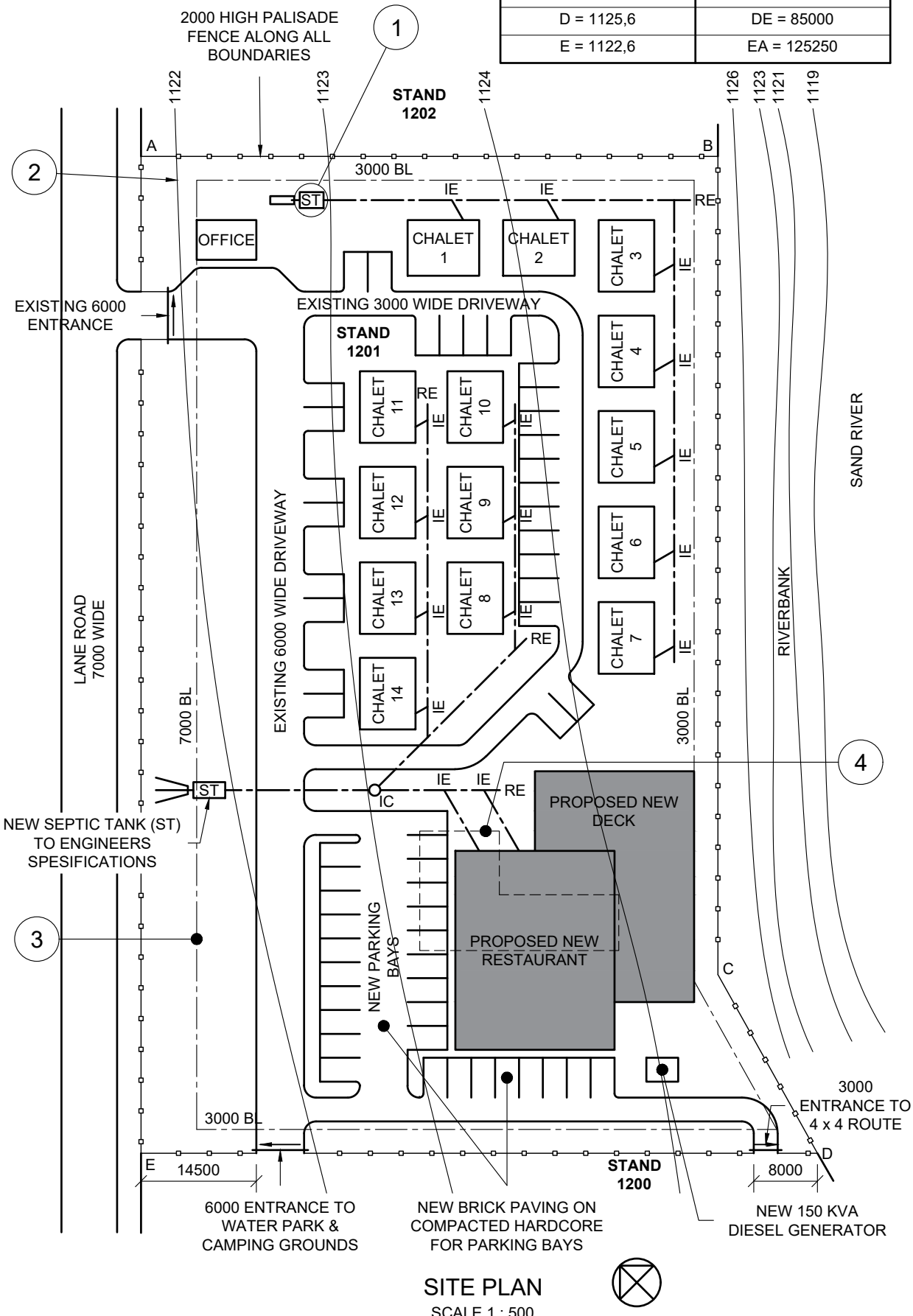
EXAMINATION NUMBER

EXAMINATION NUMBER

1

STAPLE

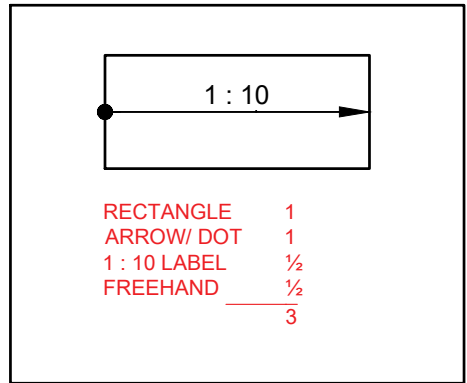
LAND SURVEYOR'S CERTIFICATE OF THE BOUNDARY LENGTHS AND CORNER HEIGHTS OF STAND 1201, SURVEYED ON 2023/05/23	
CORNER HEIGHTS IN METRES	BOUNDARY LENGTHS IN MILLIMETRES
A = 1121,7	AB = 72500
B = 1125,2	BC = 102800
C = 1125,3	CD = 25690
D = 1125,6	DE = 85000
E = 1122,6	EA = 125250



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

ARCHITECT SIGNATURE: _____
CLIENT'S SIGNATURE: _____

ANSWER 19
In the space below, draw, in neat freehand, the top view of the SANS 10143 graphical symbol for a ramp with a slope of 1 : 10.



QUESTION 1: CIVIL ANALYTICAL

Given:
A site plan of a resort with a proposed new restaurant and proposed new deck, a title panel and a table of questions. The drawing is not presented to the indicated scale.

Instructions:
Complete the table below by neatly answering the questions, which all refer to the accompanying drawing, title panel and civil content.

[30]

QUESTIONS		ANSWERS	
1	What scale is indicated for the SITE PLAN?	1 : 500 ✓	1
2	Who prepared the drawing?	CHUCK ✓	1
3	Who is the client?	WATER PARK FUN INC. ✓	1
4	Which printing company was used?	FUTURE PRINTERS ✓	1
5	What is the last revision?	FIX CHALETS NUMBERS ✓	1
6	How many new structures must be added to STAND 1201?	2 ✓	1
7	What does the abbreviation ST at 1 stand for?	SEPTIC TANK ✓	1
8	How many rodding eyes are shown on STAND 1201?	4 ✓	1
9	In which color could new wood be indicated on a plan or section?	YELLOW ✓	1
10	In which two metric units can dimensions on a site plan be indicated?	MILLIMETRES/ mm ✓ AND METRES/ m ✓	2
11	What does the line at 2 indicate?	CONTOUR ✓	1
12	What does the line at 3 indicate?	BUILDING LINE ✓	1
13	What does the line at 4 indicate?	BUILDING/STRUCT TO BE REMOVED ✓	1
14	Determine the difference between the highest and lowest corner of STAND 1201, in metres.	$1125,6 - 1121,7 = 3,9 \text{ m}$ ✓✓	2
15	What is the shortest distance between the entrance to the water park & camping ground and the entrance to the 4 x 4 route, in metres?	$85 - 14,5 - 6 - 8 = 56,5 \text{ m}$ ✓✓✓	3
16	Which elevation of the proposed new deck is facing Sand river?	SOUTH-EAST ✓✓	2
17	In the space below, ANSWER 17, determine the total area for the new restaurant, including the new deck, in square metres. Show ALL calculations.		3
18	In the space below, ANSWER 18, determine the perimeter of STAND 1201, in metres. Show ALL calculations.		3
19	In the space in the title panel, ANSWER 19, draw, in neat freehand, the top view of the SANS 10143 graphical symbol for a ramp with a slope of 1 : 10.		3
TOTAL:		30	

REVISION	DATE	DESCRIPTION
2	2022/06/09	FIX CHALETS NUMBERS
1	2022/06/05	ADD NEW SEPTIC TANK (ST) ON EXISTING SEWER LINE

PRINTED BY: FUTURE PRINTERS
DATE OF PRINT: 2022/06/12

CROXLEY & CO. ARCHITECTS
1025 LYNNWOOD AVENUE
PRETORIA
TELL: 012 256 368

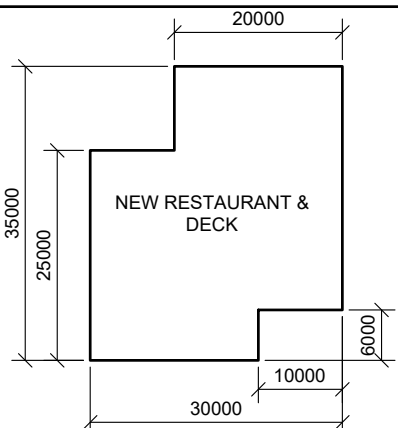
DRAWING TITLE: **SITE PLAN**

PROJECT: **PROPOSED NEW RESTAURANT AND DECK FOR WATER PARK FUN INC. ON STAND 1201 ON LANE ROAD, MOKOPANE.**

PROJECT NUMBER: EGD1B-2023
DRAWING NUMBER: 1 of 7

REFERENCE CODE: P1BQ1-2023
DRAWN: CHUCK
CHECKED: ROB

DATE: 2023/06/01
SCALE: 1 : 500



ANSWER 17
 $(20 \times 6) + (19 \times 30) + (20 \times 10) = 890 \text{ m}^2$ ✓

ANSWER 18
 $72,5 + 102,8 + 25,69 + 85 + 125,25 = 411,24 \text{ m}$ ✓

EXAMINATION NUMBER	
EXAMINATION NUMBER	2

STAPLE

QUESTION 2 SOLID GEOMETRY

Given:

- The front view and top view of a right equilateral triangular prism and a right hexagonal pyramid.
- An auxiliary view for the triangular prism
- Cutting plane A-A

Specifications:

- The two solids do not touch
- Both solids are cut by cutting plane A-A
- The cutting plane passes through point P

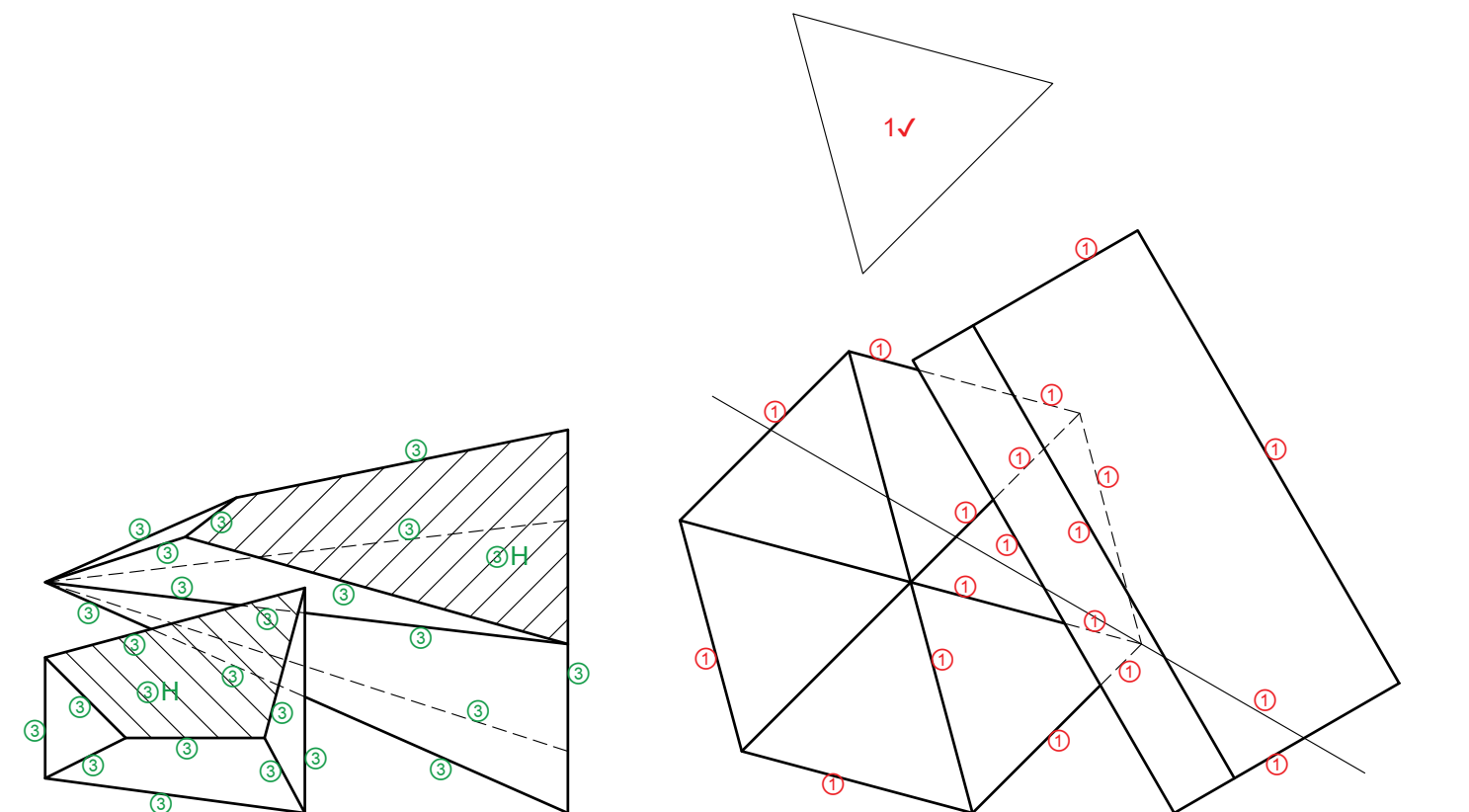
Instructions:

Draw, to a scale of 1 : 1, the following views of the two solids.

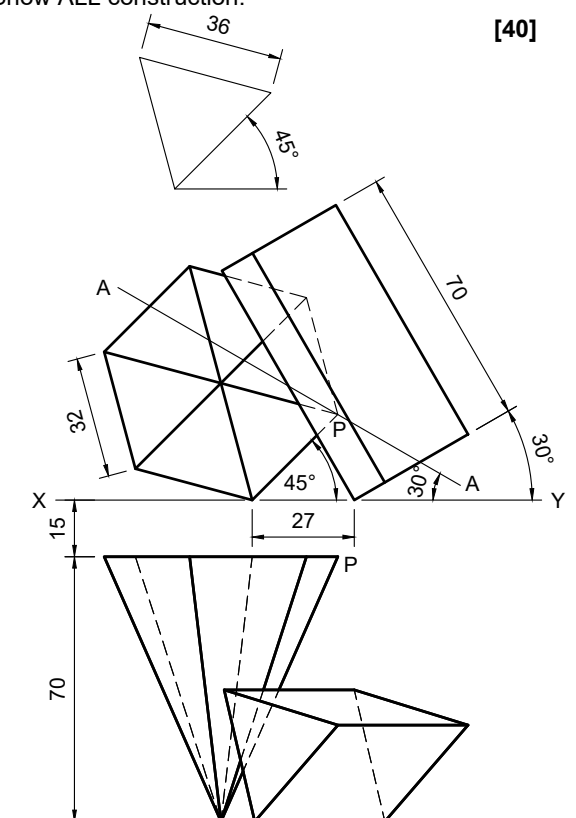
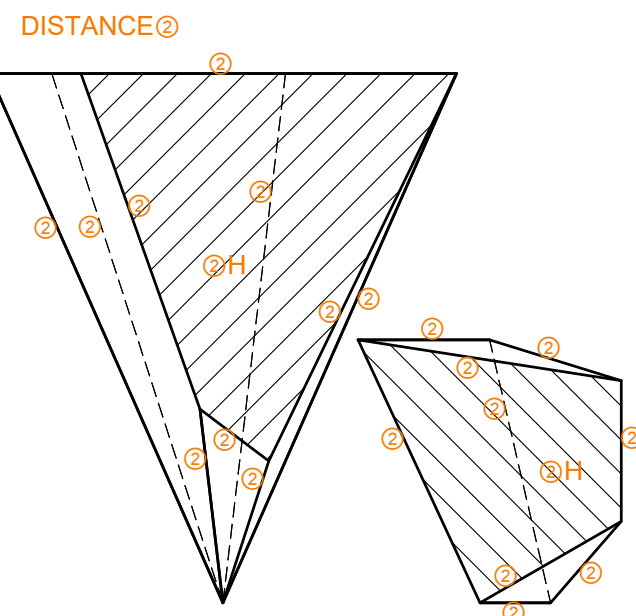
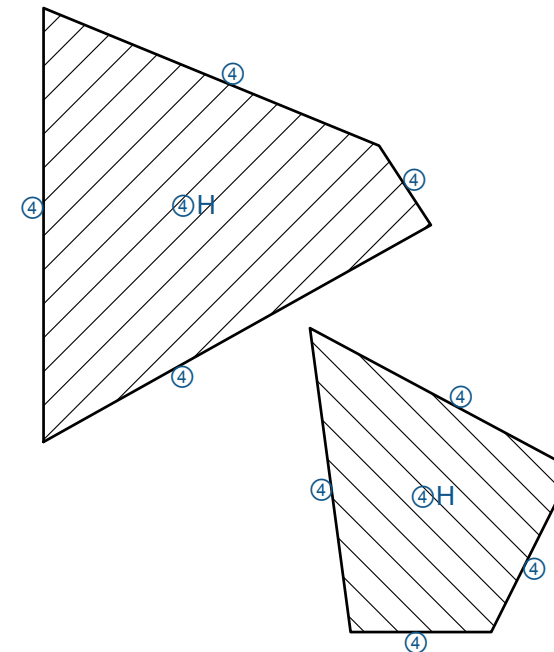
- 2.1. The given front view
- 2.2. A sectional top view
- 2.3. A sectional right view
- 2.4. The true shape of the cut surfaces of BOTH solids

- Planning is essential.
- Show ALL hidden detail.
- Show ALL construction.

[40]



4-ANY ACCEPTABLE METHOD ✓



ASSESSMENT CRITERIA			
1	FRONT VIEW	10½	
2	TOP VIEW	11	
3	RIGHT VIEW	12½	
4	TRUE SHAPE	6	
PENALTIES(-):			
TOTAL:		40	
EXAMINATION NUMBER			
EXAMINATION NUMBER			3

STAPLE

QUESTION 3 PERSPECTIVE

Given:

Three views of a house and all the information needed to draw a two point perspective drawing

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

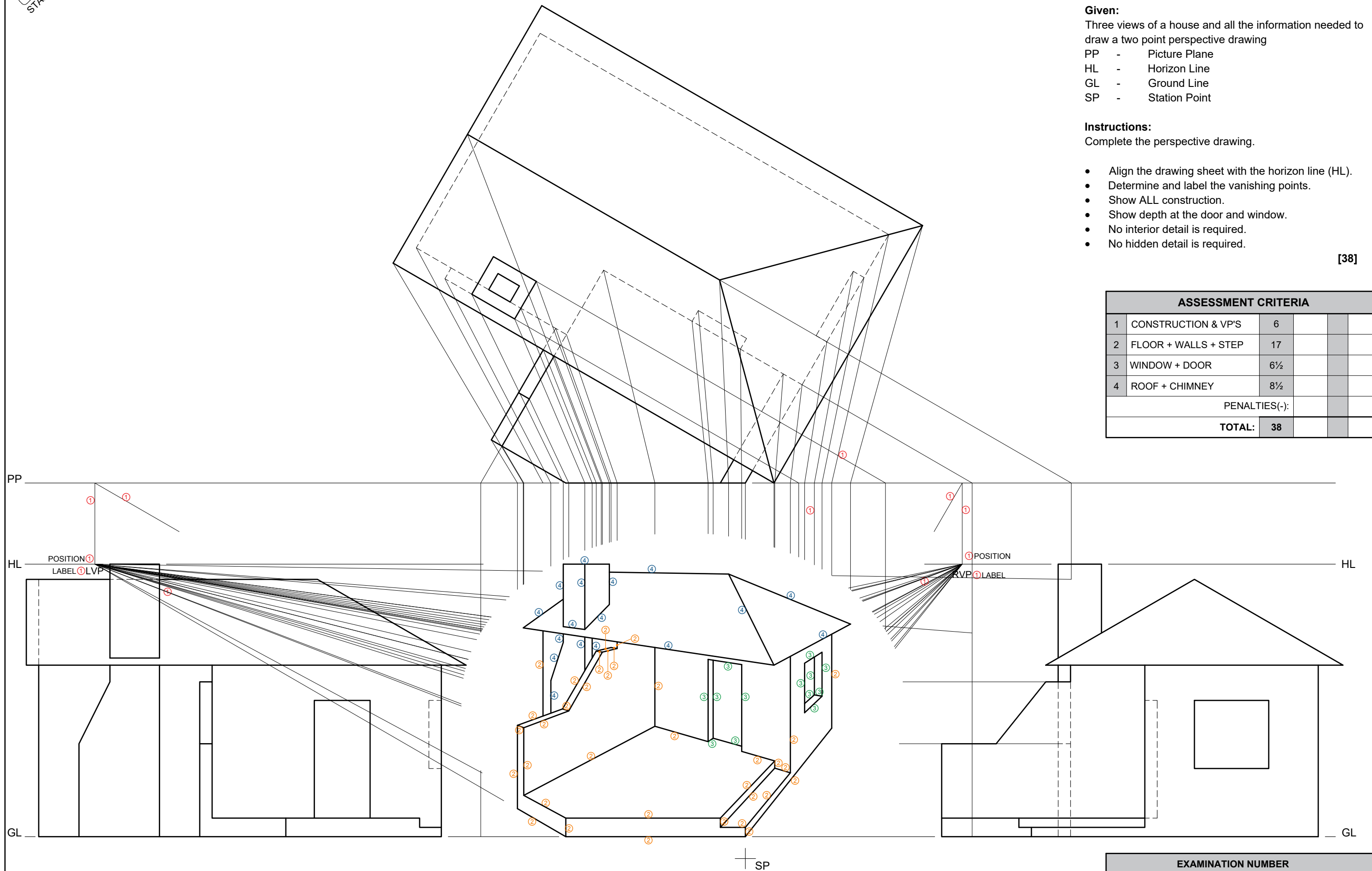
Instructions:

Complete the perspective drawing.

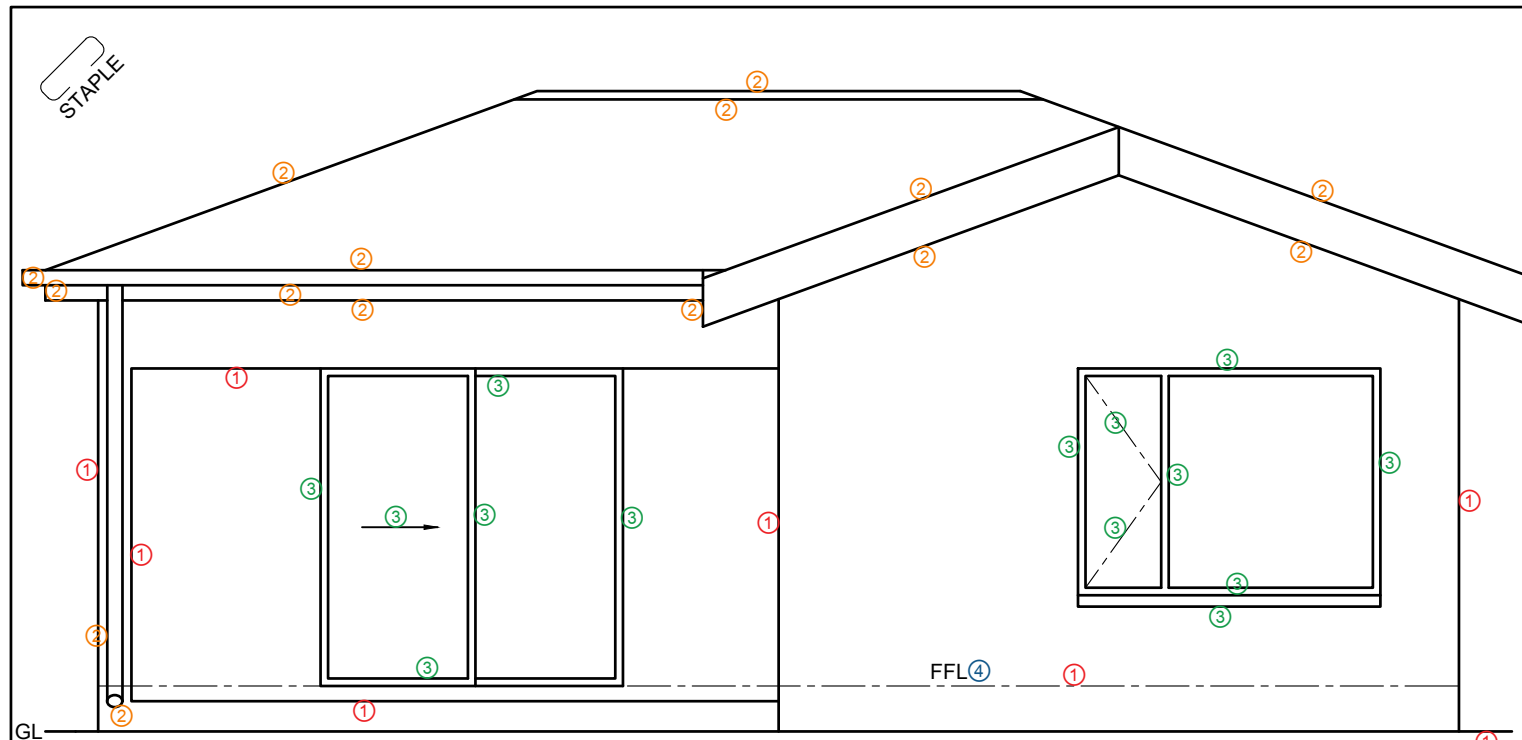
- Align the drawing sheet with the horizon line (HL).
- Determine and label the vanishing points.
- Show ALL construction.
- Show depth at the door and window.
- No interior detail is required.
- No hidden detail is required.

[38]

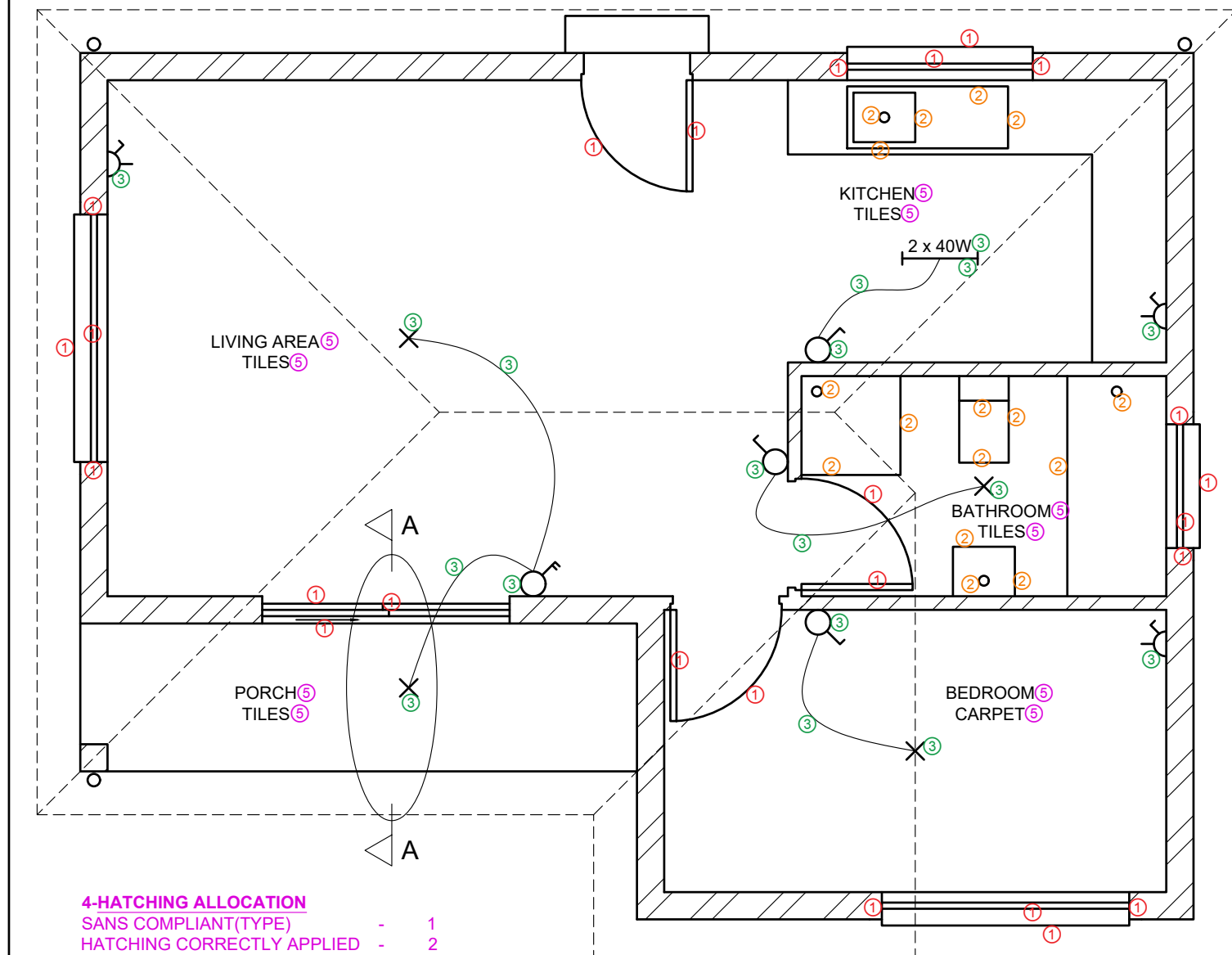
ASSESSMENT CRITERIA			
1	CONSTRUCTION & VP'S	6	
2	FLOOR + WALLS + STEP	17	
3	WINDOW + DOOR	6½	
4	ROOF + CHIMNEY	8½	
PENALTIES(-):			
TOTAL:		38	



EXAMINATION NUMBER	
EXAMINATION NUMBER	4



SOUTH-WEST ELEVATION ④

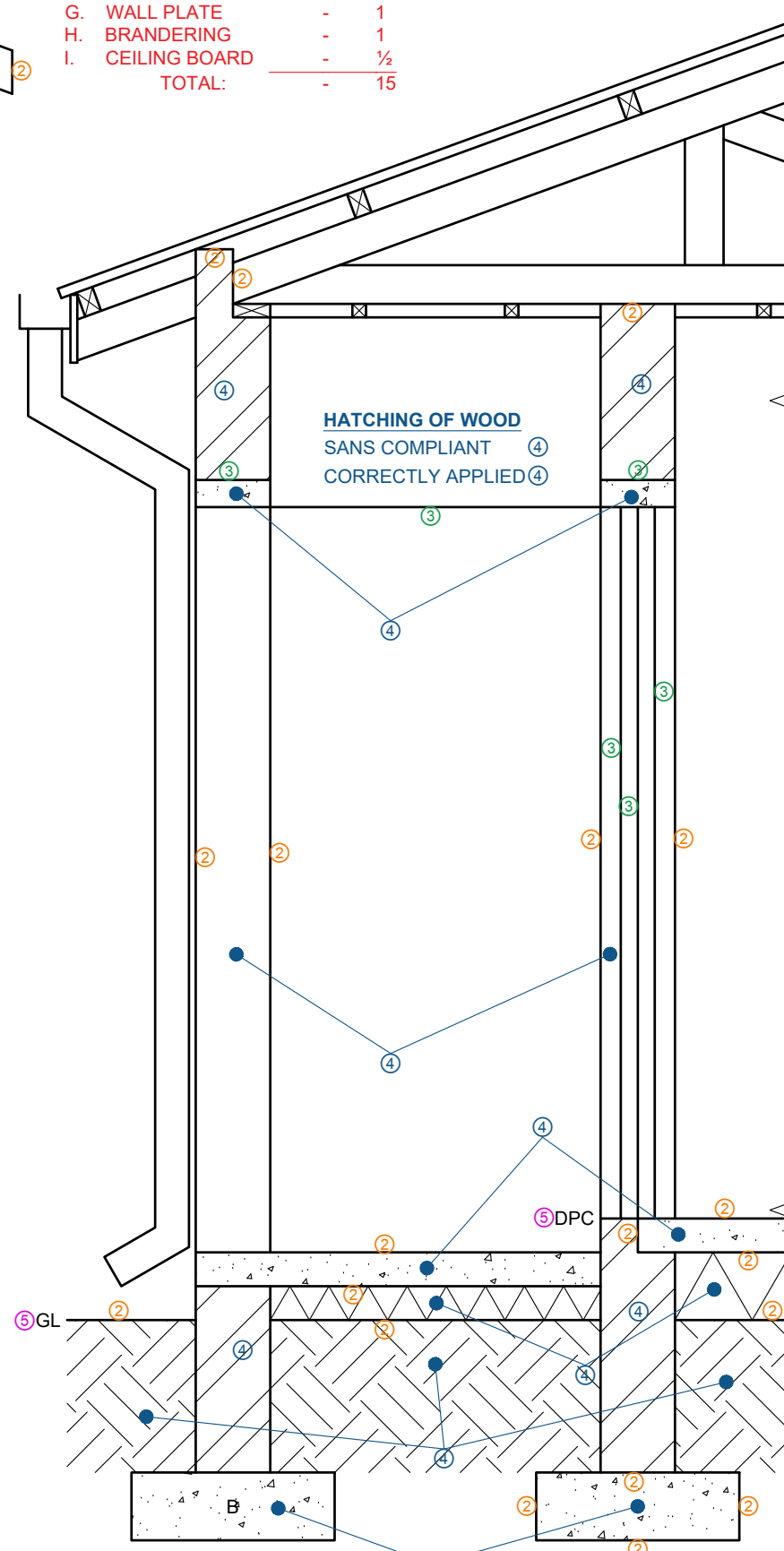


FLOOR PLAN
SCALE 1 : 50

- 4-HATCHING ALLOCATION**
- SANS COMPLIANT(TYPE) - 1
 - HATCHING CORRECTLY APPLIED - 2
 - TOTAL - 3

1-ROOF MARK ALLOCATION

- A. ROOF ANGLE - 1
- B. ROOF SHEET - 1
- C. PURLIN+SPACING - 1½
- D. TRUSS+OVERHANG - 5
- E. FASCIA BOARD - 1
- F. GUTTER+RWDP - 3
- G. WALL PLATE - 1
- H. BRANDING - 1
- I. CEILING BOARD - ½
- TOTAL: - 15



SECTION A-A
SCALE 1 : 20

MARK ALLOCATION FOR ROOF SECTION		PENALTIES	
A		INCORRECT SCALE	
B		NON-ALIGNMENT OF VIEWS	
C		VIEWS ROTATED	
D		SECTION VIEWED INCORRECTLY	
E		INCORRECT LETTERING	
F			
G			
H			
I			
TOTAL:		TOTAL:	

ASSESSMENT CRITERIA			
FLOOR PLAN			
1	WINDOWS + DOORS	12½	
2	FIXTURES	8	
3	ELECTRICAL	9	
4	HATCHING	3	
5	LABELS	5	
SUBTOTAL:		37½	
SOUTH-WEST ELEVATION			
1	WALLS + FFL	4	
2	ROOF + GUTTER	8	
3	DOOR + WINDOW	7	
4	LABELS	1	
SUBTOTAL:		20	
DETAILED SECTION			
1	ROOF DETAIL	15	
2	WALL + SLAB	9½	
3	DOOR + LINTEL + PATIO OPENING	3	
4	HATCHING	6	
5	LABELS	1	
SUBTOTAL:		34½	
TOTAL:		92	
PENALTIES(-):			
GRAND TOTAL:			
EXAMINATION NUMBER			
			5