

UNIVERSITY OF SWAZILAND
Faculty of Health Sciences
DIPLOMA IN ENVIRONMENTAL HEALTH
FINAL EXAMINATION PAPER 2005

**TITLE OF PAPER : BUILDING CONSTRUCTION TECHNOLOGY
PART B**

COURSE CODE : EHS 206

DURATION : 3 HOURS

MARKS : 100

INSTRUCTIONS :

- THIS PAPER CONTAINS FIVE QUESTIONS.**
- QUESTION FOUR AND SEVEN ARE COMPULSORY**
- USE A PEN TO COMPLETE ALL PARTS OF THE ANSWER BOOK PROVIDED.**
- EACH QUESTION CARRY 20 MARKS.**
- ALL WRITTEN WORK TO BE IN INK**
- ALL SKETCHES TO BE IN PENCIL ON THE UNRULED A4 & A3 PAPER.**
- A DRAWING BOARD FORMS PART OF THE EXAMINATION.**
- CALCULATORS MAY BE USED BUT THEY MUST BE SILENT AND NON-PROGRAMMABLE.**
- NO PAPER SHOULD BE BROUGHT INTO NOR TAKEN OUT OF THE EXAMINATION ROOM.**
- BEGIN EACH QUESTION ON A SEPARATE SHEET OF PAPER.**

DO NOT OPEN THIS QUESTION PAPER UNTIL PERMISSION IS GRANTED BY THE INVIGILATOR.

Question 1.

[20 marks]

- a. Briefly discuss **TWO** methods of seasoning timber, stating merits and demerits of each method. (8 marks)
- b. In each of the following, illustrate with sketches, **TWO** defects that may occur on timber:
- (i) During growth
 - (ii) During conversion
 - (iii) During seasoning
- (6 marks)
- c. Explain, **TWO** types of fungal growth on timber (6 marks)

Question 2.

[20 marks]

- a. With the aid of neat sketches where appropriate, discuss the procedures involved in the setting out of a rectangular building up to the marking of the foundation trenches on the ground (10 marks)
- b. In an isometric view, illustrate a typical timbering method that can be adopted in loose wet clay soils. (10 marks)

Question 3.

[20 marks]

- a. Differentiate by means of sketches, between the following terms:
- (i) Environment and built environment
 - (ii) Site investigation and soil investigation.
 - (iii) Combined drainage system and partially separate drainage system
 - (iv) Solid ground floors and suspended timber ground floors
- (16 marks)
- b. Illustrate with neat sketches the following types of foundation, stating in which type of subsoil each would be recommended:
- (i) Ordinary strip foundation
 - (ii) Deep strip foundation
 - (iii) Stepped strip foundation
 - (iv) Raft foundation
- (4 marks)

Question 4.

[20 marks]

- a. With the aid of a neat sketch, show how a drawing sheet is set on the drawing board, before the commencement of drawing the plan, elevations, sections and end views.
(6 marks)
- b. It is important to keep drawings as clean as possible and to preserve the surface of the paper, especially if colour is to be used. List four points to be constantly be kept in mind by students, in order to keep the drawing clean?
(4 marks)
- c. To a scale of 1:10, draw a cross-section of a substructure utilizing the given information below:
- (i) Wall thickness 230mm
 - (ii) Dpc height 200mm above original ground level
 - (iii) Hardcore thickness 150mm
 - (iv) Concrete slab thickness 100mm
 - (v) Blinding layer 50mm
 - (vi) Foundation width 650mm
- (10 marks)

Question 5.

[20marks]

The pleasing of a finished drawing will depend, amongst other factors, upon the layout and the relationship of various presentations on the drawing sheet.

- a. State **FOUR** factors to be considered in order to avoid an unbalanced presentation of a finished drawing.
(4 marks)
- b. Briefly explain with the aid of sketches where appropriate the following types of drawings. State their recommended metric scales.
- 1) Site Plan (4 marks)
 - 2) Floor Plan (4 marks)
 - 3) Elevation (4 marks)
 - 4) Sections (4 marks)

Question 6.

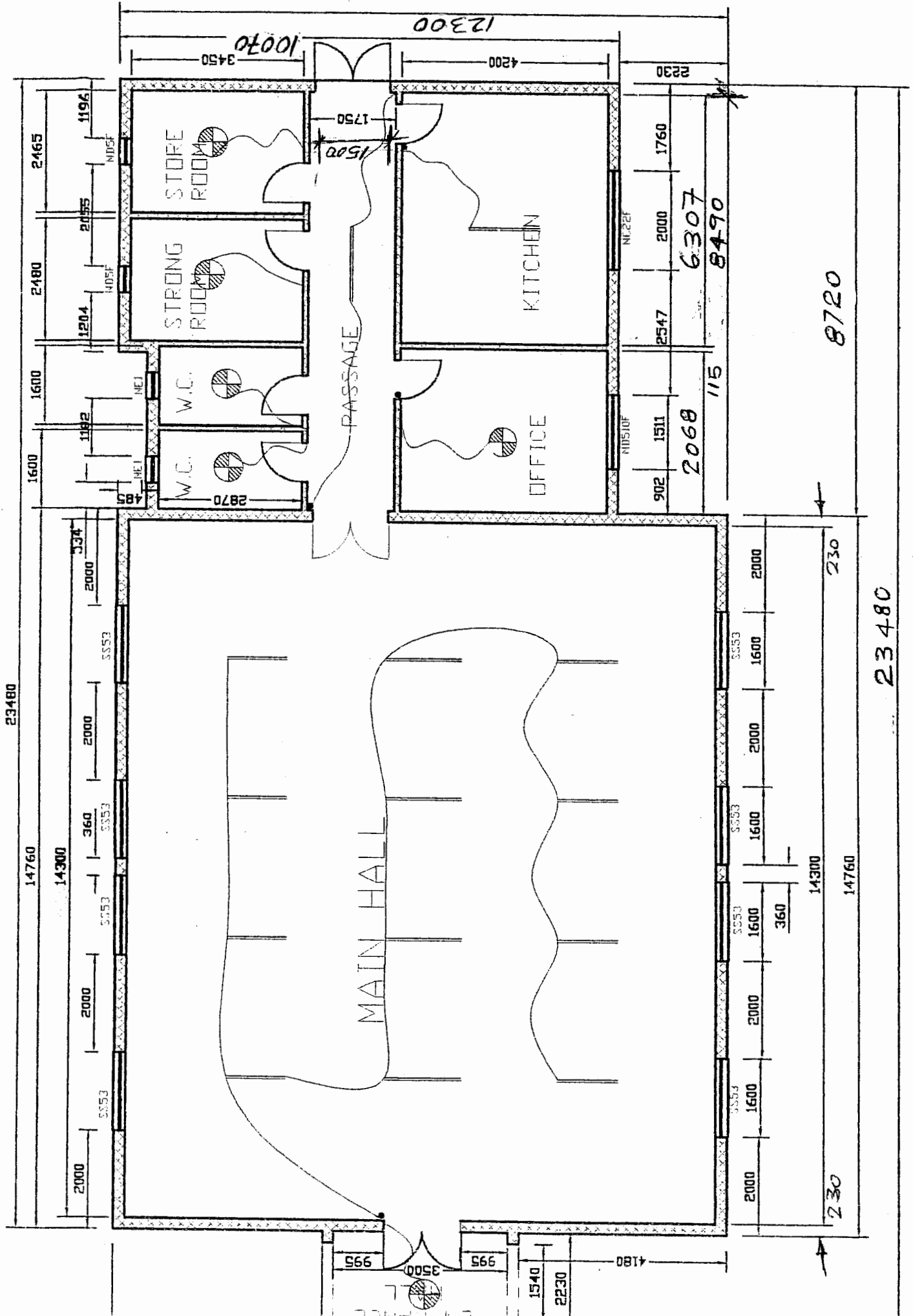
[20marks]

- a. Roofs have to perform a number of functions Briefly explain **FIVE** of the functions that roofs have to perform
(10 marks)
- b. State **TEN** fundamental rules that should be followed when dimensioning working drawings.
(10 marks)

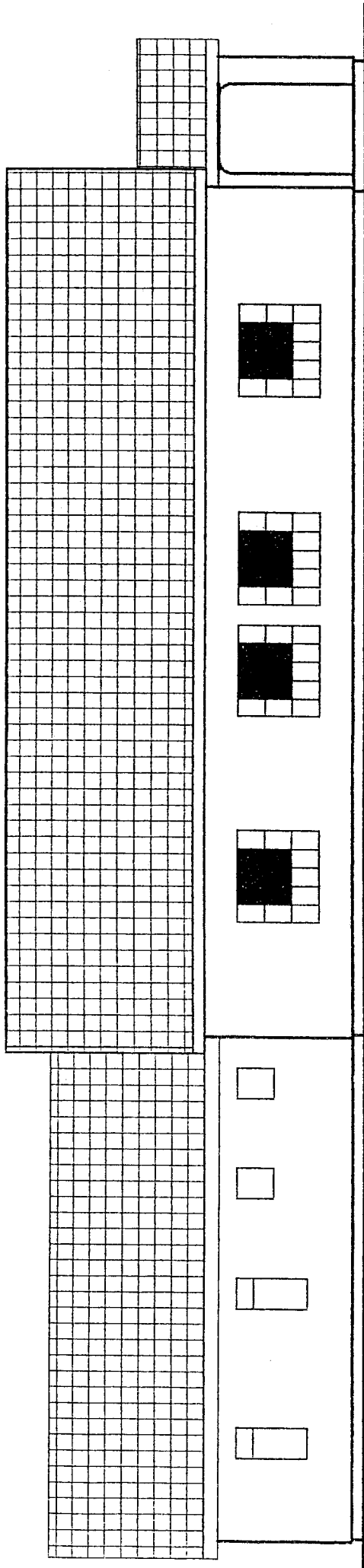
Question 7.

[20 marks]

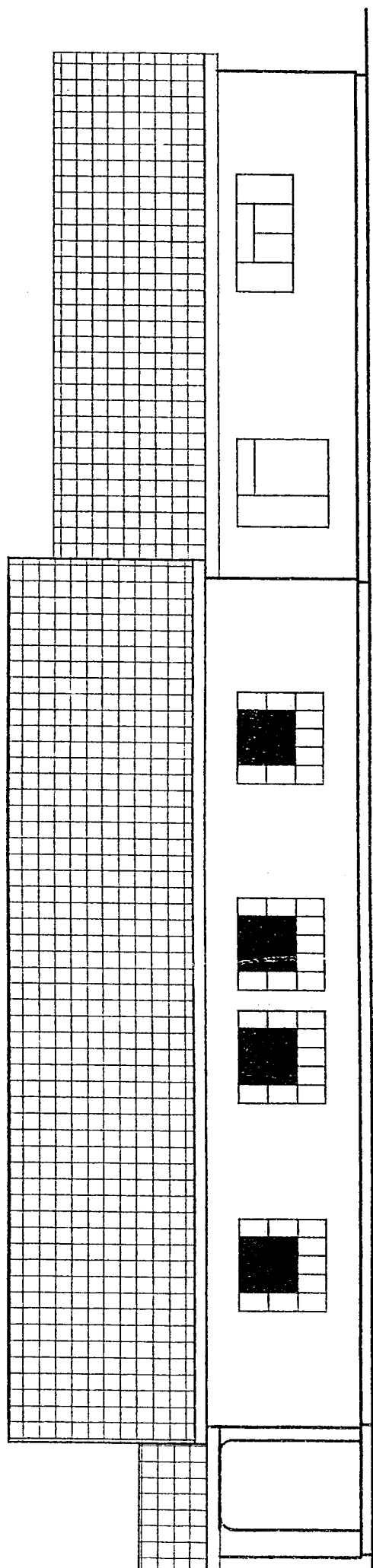
- a. Utilizing the attached working drawings and the provided dimension papers, take-off and square dimensions for the substructure work, ignore verandah, floor layer constructions and formulation of descriptions.
(12 marks)
- b. Calculate for:
- i. The number of rafters to be ordered for the Man Hall when rafter centre to centre is 900mm
 - ii. The number of ceiling board to be ordered for the Office, allow 5% for breakage and cutting. One ceiling board measures 3.600m x 1.200m
 - iii. The number of ceramic floor files to be ordered for the Kitchen. One floor tile measures 300mm x 300mm, allow 2¹/₂ % for breakage and cutting
 - iv. The number of blocks to be ordered for the substructure work. Assume eight (8) blocks in one square metre, allow 3% for cutting and breakage.
(8 marks)



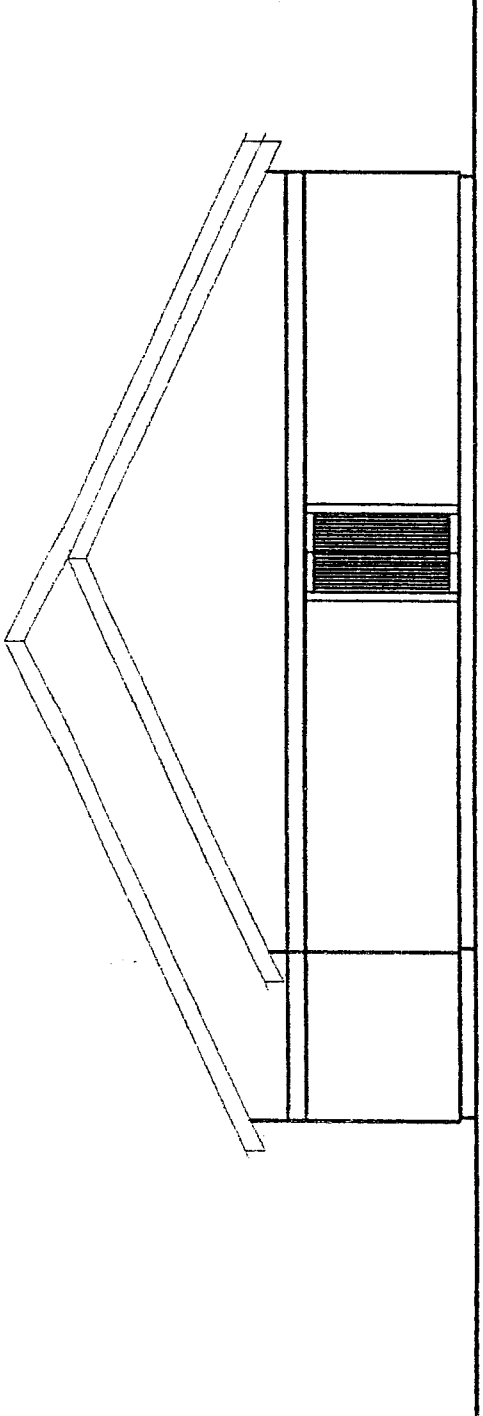
FLOOR PLAN (1:100)



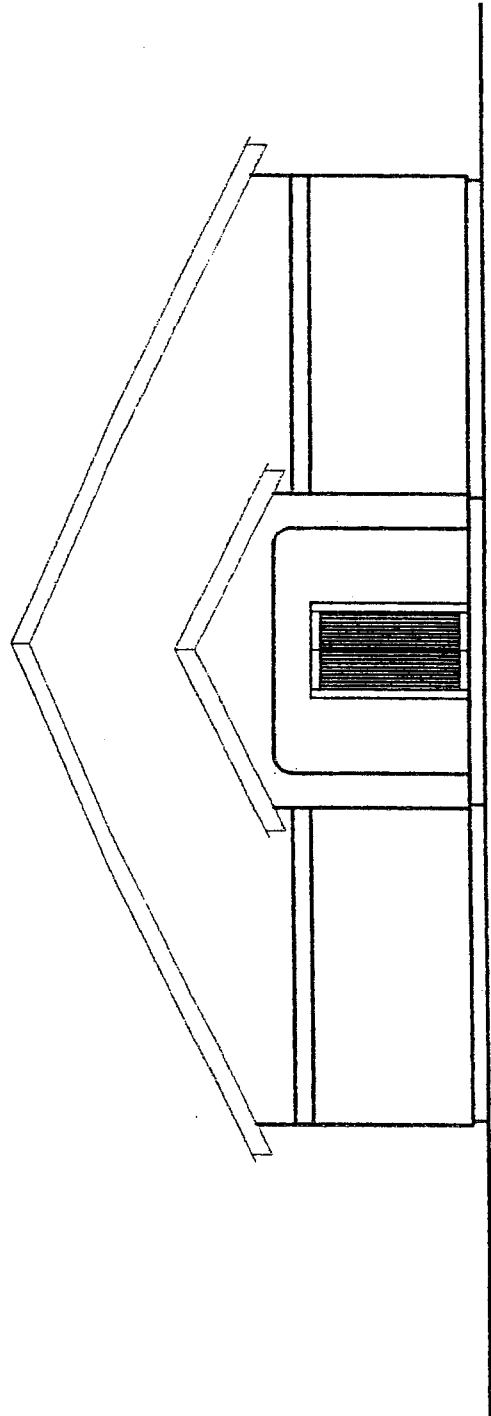
BACK ELEVATION (11002)



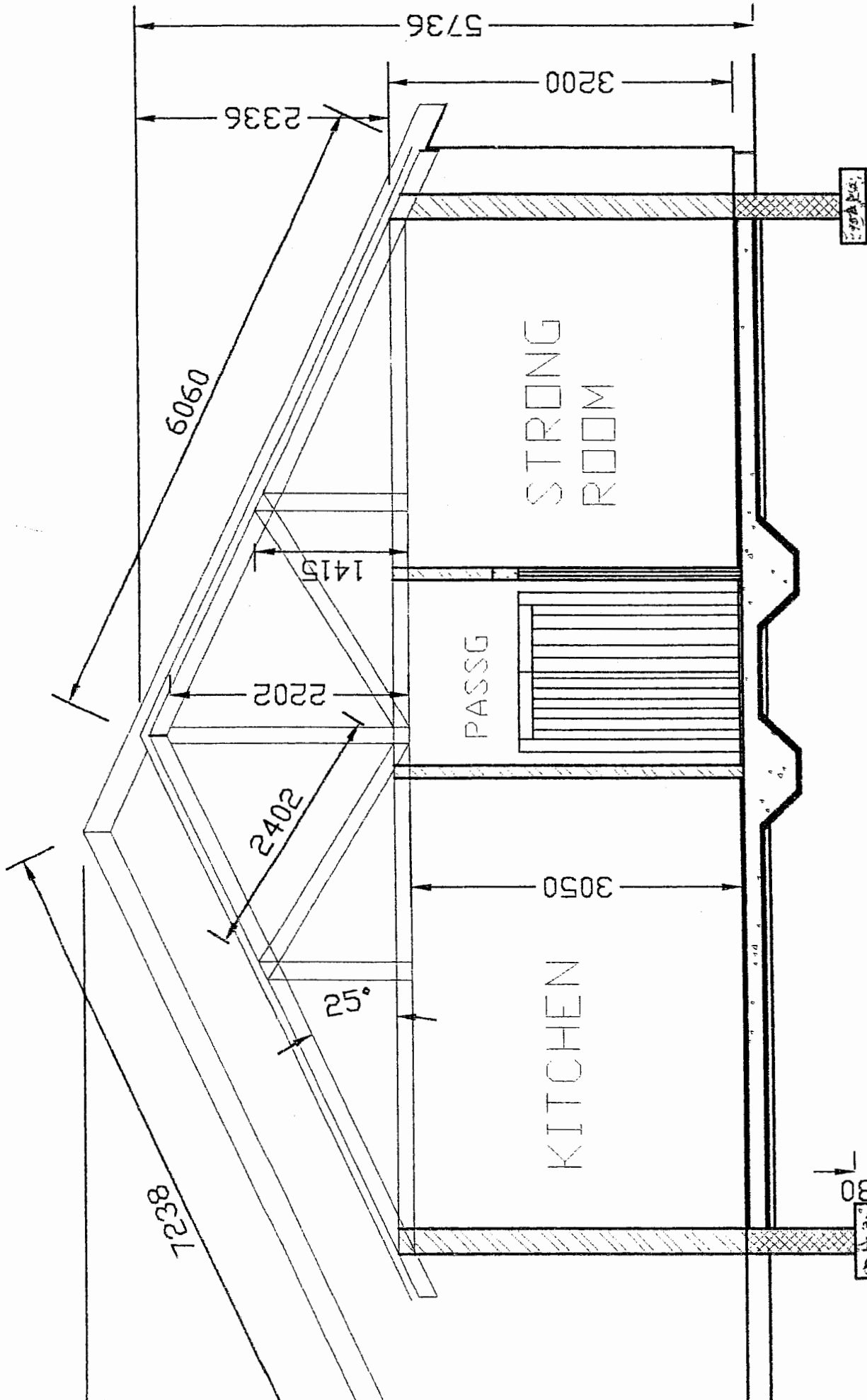
FRONT ELEVATION (11002)



LEFT ELEVATION (111002)



RIGHT ELEVATION (111002)



SECTION A-A (1:50)

