

UNIVERSITY OF SWAZILAND
Faculty of Health Sciences
DIPLOMA IN ENVIRONMENTAL HEALTH
FINAL EXAMINATION PAPER 2006

TITLE OF PAPER : BUILDING COINSTRUCTION
TECHNOLOGY PART B

COURSE CODE : EHS 206

DURATION : 3 HOURS

MARKS : 100

INSTRUCTIONS : THIS PAPER CONTAINS **SEVEN**
QUESTIONS

: ANSWER **FIVE** QUESTIONS

: QUESTION **FOUR** AND **SEVEN** ARE
COMPULSORY

: USE A PEN TO COMPLETE ALL PARTS OF
THE ANSWER BOOK PROVIDED

: EACH QUESTION CARRIES **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 OR OUT OF
THE EXAMINATION ROOM

: BEGIN EACH QUESTION ON A SEPARATE
SHEET OF PAPER

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

QUESTION 1**[20 MARKS]**

- a. Explain, what is meant by the term seasoning of timber **[4 MARKS]**
- b. Discuss, stating the merits and demerits of the following types of timber preservatives:
- i. Water soluble preservatives
 - ii. Organic solvent preservatives
- [8 MARKS]**
- c. There are various methods of timber preservatives in use today. Explain the following methods of timber preservations:
- i. Open tank application
 - ii. Pressure application
- [8 MARKS]**

QUESTION 2**[20 MARKS]**

- a. State **TEN** factors that deserve consideration when selecting a floor finish **[10 MARKS]**
- b. Outline **FIVE** functional requirements of the following types of floors:
- i. Ground floors **[5MARKS]**
 - ii. Upper floors **[5 MARKS]**

QUESTION 3**[20 MARKS]**

- a. Outline **TEN** functional requirements of all forms of Infill Panel Walls **[10 MARKS]**
- b. State **FIVE** advantages and **THREE** disadvantages of Curtain walling **[8MARKS]**
- c. Briefly explain the meaning of Curtain Walling **[2 MARKS]**

QUESTION 4**[20 MARKS]**

- a. Differentiate between a sketch and a drawing. **[4 MARKS]**
- b. Outline SIX basic rules to be observed by students in a drawing office when producing sketches. **[6 MARKS]**
- c. Illustrate in isometric view, a one-brick wall built in English bond with a corner and with a one stopped end, to six course high with 1st and 2nd course plans. **[10MARKS]**

QUESTION 5**[20 MARKS]**

- a. Explain, with the aid of a sketch, the term "concrete cover", stating why the reinforcement bars are hooked **[4 MARKS]**
- b. With the aid of a sketch illustrate the two forces acting on a concrete lintel and state how you would overcome the problem of failing due to loads on it **[4 MARKS]**
- c. Discuss, how a slump test is carried out on site, on fresh concrete **[10 MARKS]**
- d. Explain the following terms:
- i. Building line **[2 MARKS]**
 - ii. Datum peg **[2MARKS]**

QUESTION 6

[20 MARKS]

A major task for the designer of a building is to carefully consider the drainage of effluents.

- a. With the aid of sketches where appropriate, define the following terms:
- i. Subsoil water
 - ii. Surface water
 - iii. Foul or soil water
 - iv. Drains
 - v. Partially separate system

[10 MARKS]

- b. To a scale 1 : 20 draw the plan and section of a manhole using the following specification:

External length	- 1200mm
Internal width	- 900mm
Wall thickness	- 150mm
Render	- 15mm
Concrete base slab thickness	- 150mm
Top concrete slab	- 100mm
Depth from bottom of concrete slab to invert level	- 1200mm
Manhole frames	- 450 x 450mm

[10 MARKS]

QUESTION 7

[20 marks]

- a. Utilizing the attached working drawing and provided dimension paper, take-off and square dimensions for the following:

1. Excavation of the vegetable topsoil
2. Disposal of the excavated spoil
3. Excavation of foundations
4. Risk of collapse or trench timbering
5. Concrete in foundations
6. Block work to dpc level

[12 MARKS]

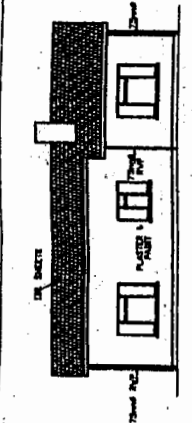
b. With reference to the attached working drawing calculate:

- i. Number of ceiling boards to be ordered for the living room , when one asbestos ceiling measures 3.6m x 1.2 m, allowing 2.5% for cutting and breakage

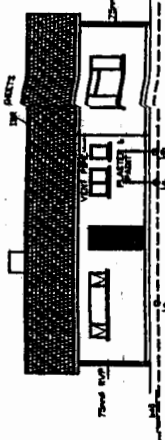
[4MARKS]

- iii. The number of PVA tiles for bedroom 1 and 2, to be ordered, assuming 12 tiles in one square metre, allowing 2% for cutting

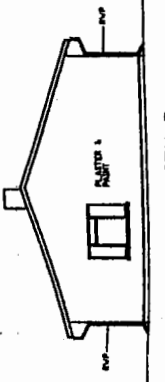
[4MARKS]



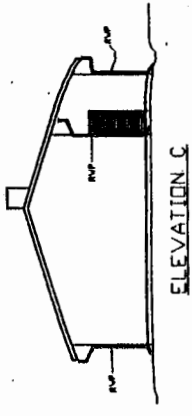
ELEVATION A
SCALE 1/80



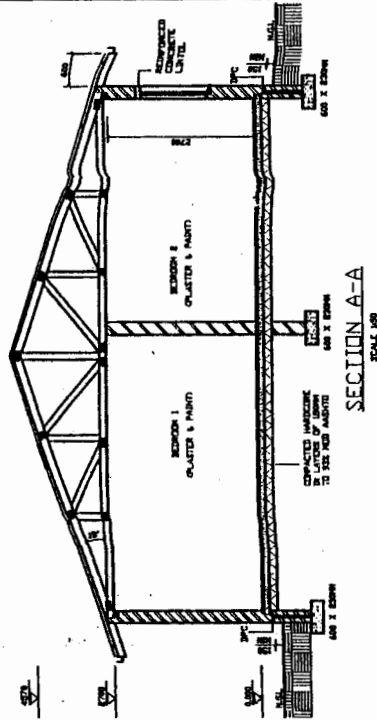
ELEVATION B
SCALE 1/80



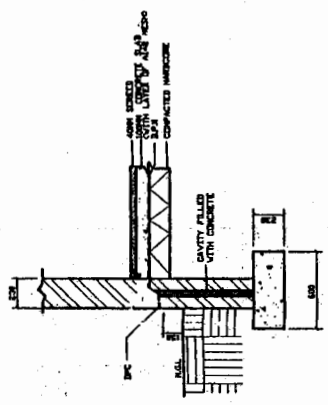
ELEVATION D
SCALE 1/80



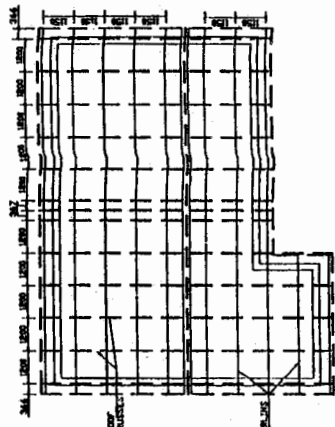
ELEVATION C
SCALE 1/80



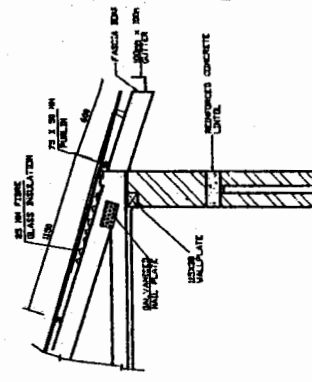
SECTION A-A
SCALE 1/80



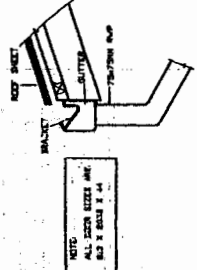
FOUNDATION DETAIL
SCALE 1/80



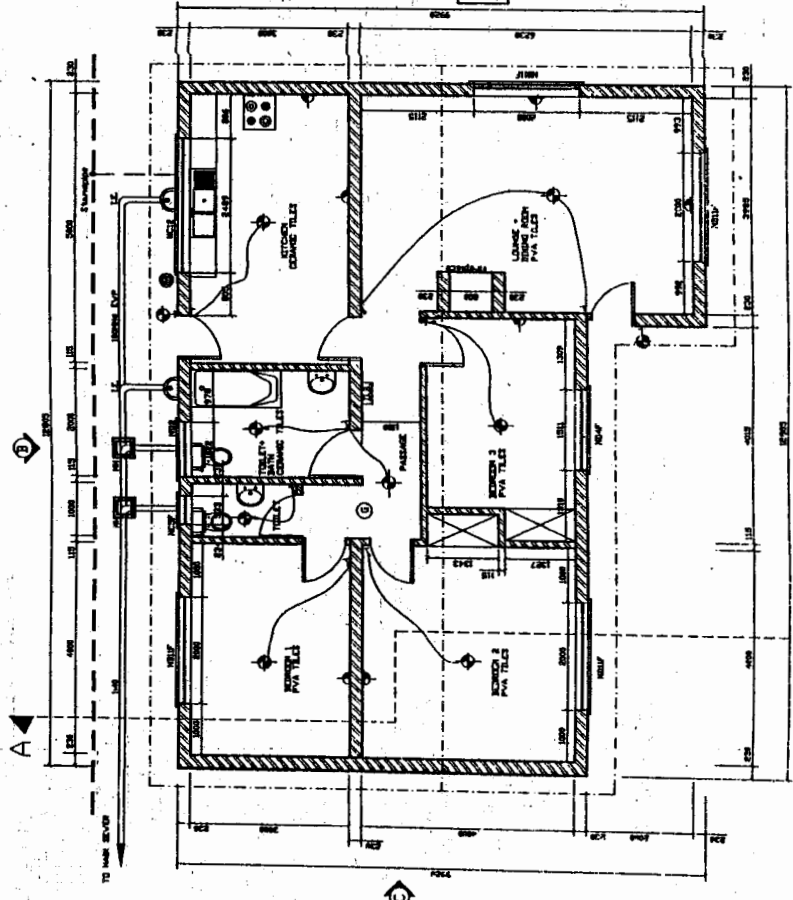
ROOF PLAN
SCALE 1/80



ROOF DETAIL
SCALE 1/80



GUTTER DETAIL
SCALE 1/80



PLAN
SCALE 1/80

ELECTRIC LEGEND

—	INTERIOR WIRING
—	CEILING LIGHT POINT
—	WALL WANE LIGHTS
—	OUTLET POSITION
—	PLUG POINT
—	LIGHT SWITCH
—	POWER CONTROL UNIT
—	FOR BUILDING NOTES REFER TO DRAWING PAGE NO. 22

UPGRADING OF THE MBABANE-NGWENYA (MRS) ROAD
MBABANE BYPASS

DATE: 11/11/2011
 REVISIONS:
 NO. 1: AS SHOWN
 NO. 2: DAVIS PART USE 03
 NO. 3: REVISION

BCOM
BOTSWANA CONSULTING AND ENGINEERING

Oudeng Odongo & Partners
Consulting Engineers

Kingdom of Swaziland
Ministry of Public Works and Transport

TYPICAL 3-BEDROOM HOUSE
PLAN, SECTIONS, DETAILS AND ELEVATIONS (TYPE 3)