

2306/304

**MEASUREMENT OF BUILDING
AND CIVIL ENGINEERING WORKS**

Oct./Nov. 2021

Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL

DIPLOMA IN QUANTITY SURVEYING

**MEASUREMENT OF BUILDING AND
CIVIL ENGINEERING WORKS**

3 hours

INSTRUCTIONS TO CANDIDATES

You should have the following for this examination:

Answer booklet;

Dimension papers;

A copy of the Standard Method of Measurement of Building and Associated Civil Works for Eastern Africa (SMM);

A copy of the Civil Engineering Standard Method of Measurement (CESMM);

Scientific calculator.

This paper consists of FIVE questions in TWO sections; A and B.

Answer THREE questions; choosing TWO questions including question 1 (COMPULSORY) from section A and ONE from section B.

Question 1 carries 40 marks while the rest carry 30 marks each.

Maximum marks for each part of a question are indicated.

Candidates should answer the questions in English.

This paper consists of 6 printed pages.

**Candidates should check the question paper to ascertain that
all the pages are printed as indicated and that no questions are missing.**

SECTION A

Answer Question 1 (COMPULSORY) and another ONE question from this section.

Use the Standard Method of Measurement of Building and Associated Civil Works for Eastern Africa (S.M.M.)

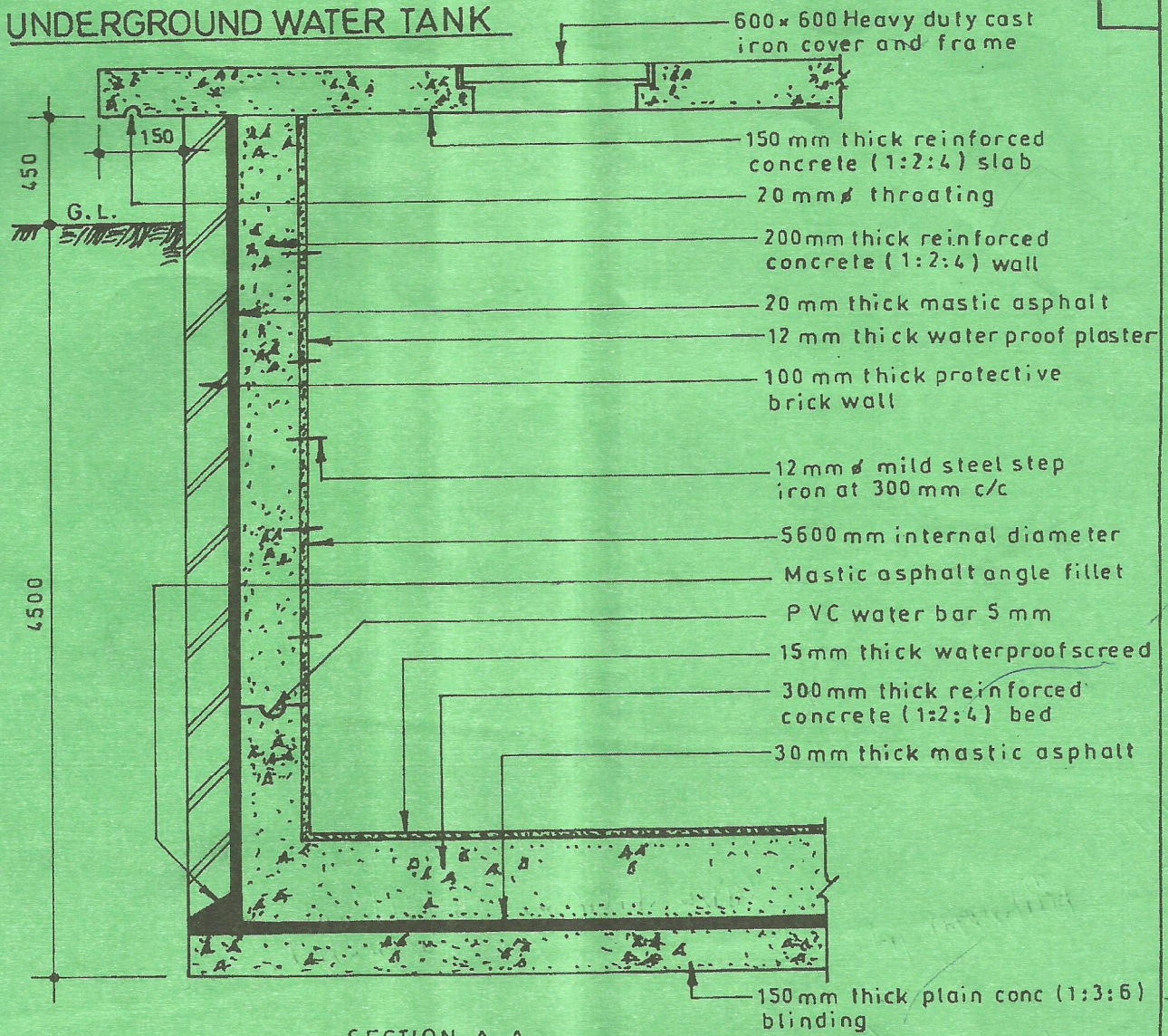
1. Take off all quantities for the underground water tank shown on **drawing No. 01**. (40 marks)
2. **Drawing No. 02** shows the plans, sections and details of a staircase. Take off all quantities for the staircase. (30 marks)
3. With reference to **drawing No. 03**, take off all quantities for the cold water plumbing installation from the water company's mains including connection to the sanitary fittings. (30 marks)

SECTION B

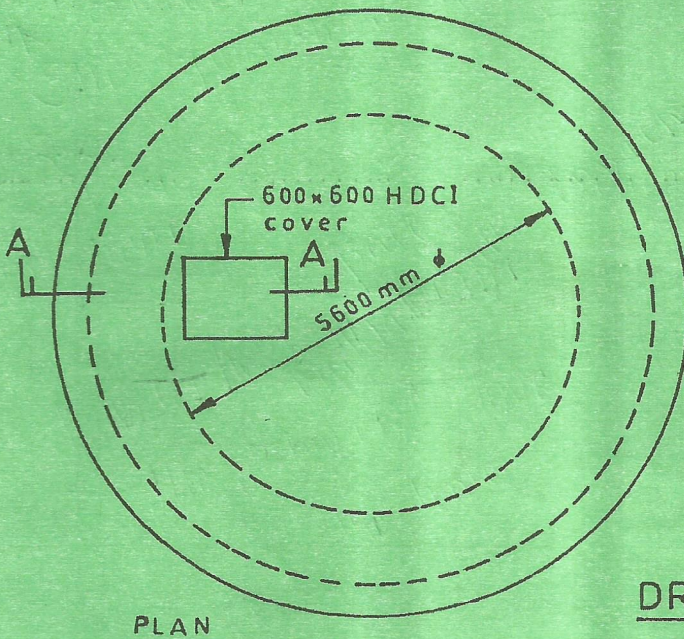
Answer any ONE question from this section.

4. **Drawing No. 04** shows the plan and section of a pump chamber. Using the civil engineering standard method of measurement (CESMM), take off all quantities for the works. (30 marks)
5. (a) Outline the procedure of bill preparation using the traditional method. (6 marks)
- (b) State **five** functions of a bill of quantity in building contracts. (5 marks)
- (c) (i) Explain the following as used in building contracts:
 - (I) contract sum;
 - (II) provisional sum;
 - (III) prime cost sum.
- (ii) Explain **four** methods of valuing variations.
- (iii) Outline **five** roles of a quantity surveyor. (19 marks)

UNDERGROUND WATER TANK



SECTION A-A

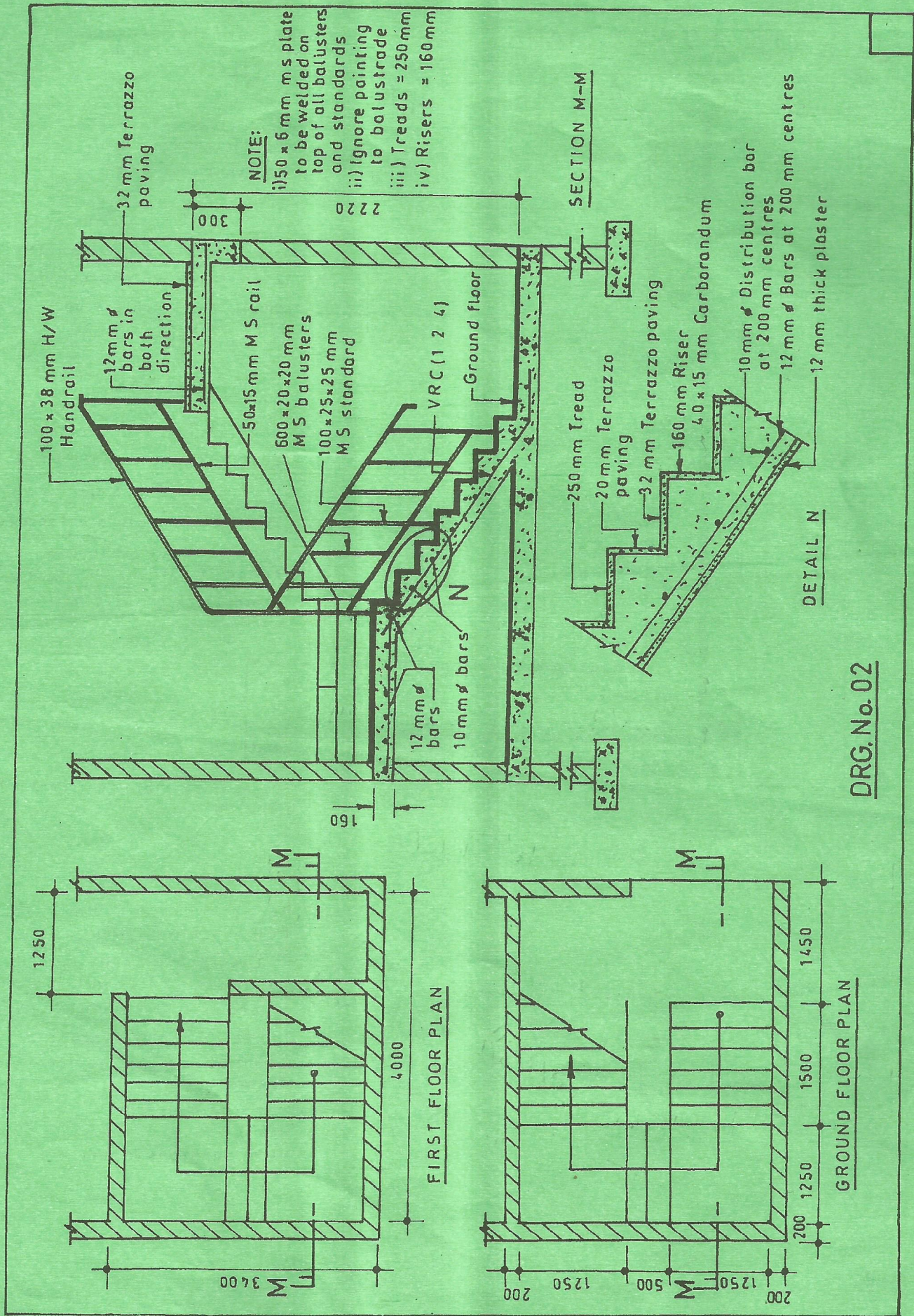


PLAN

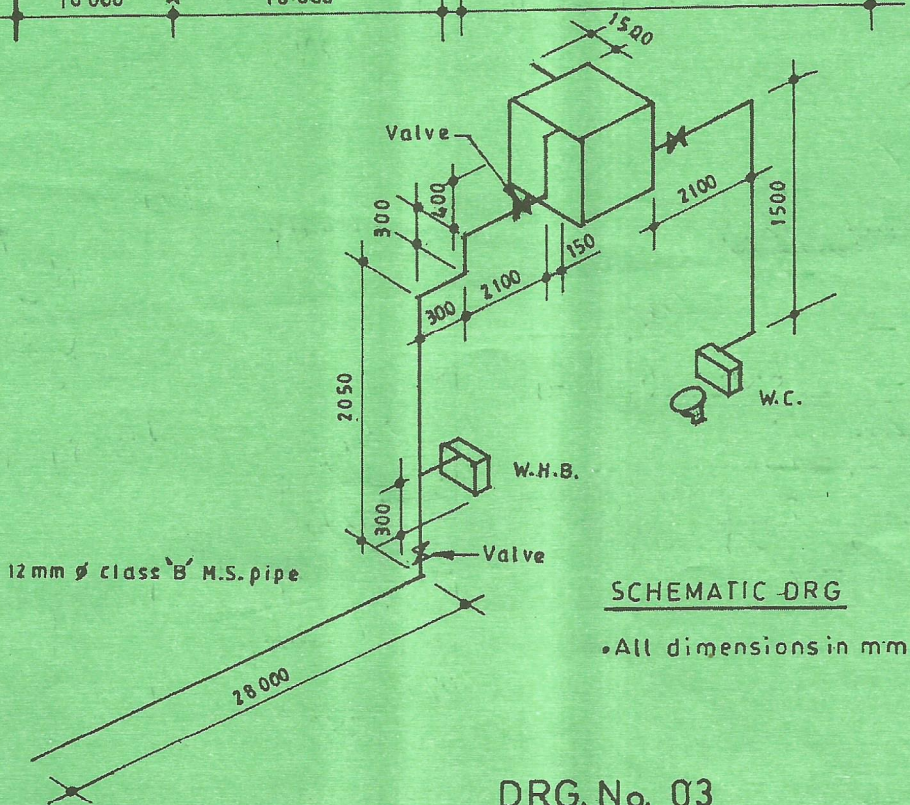
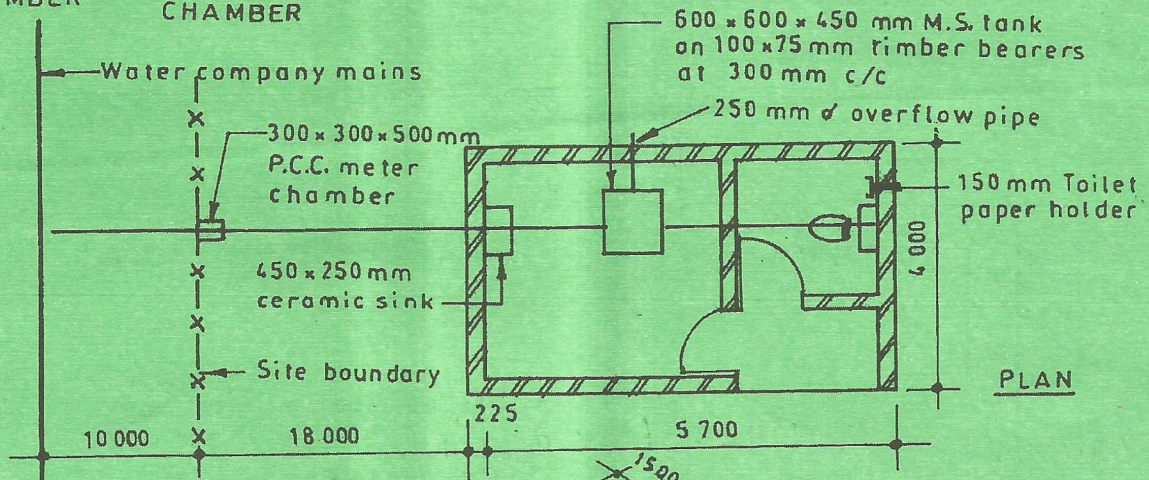
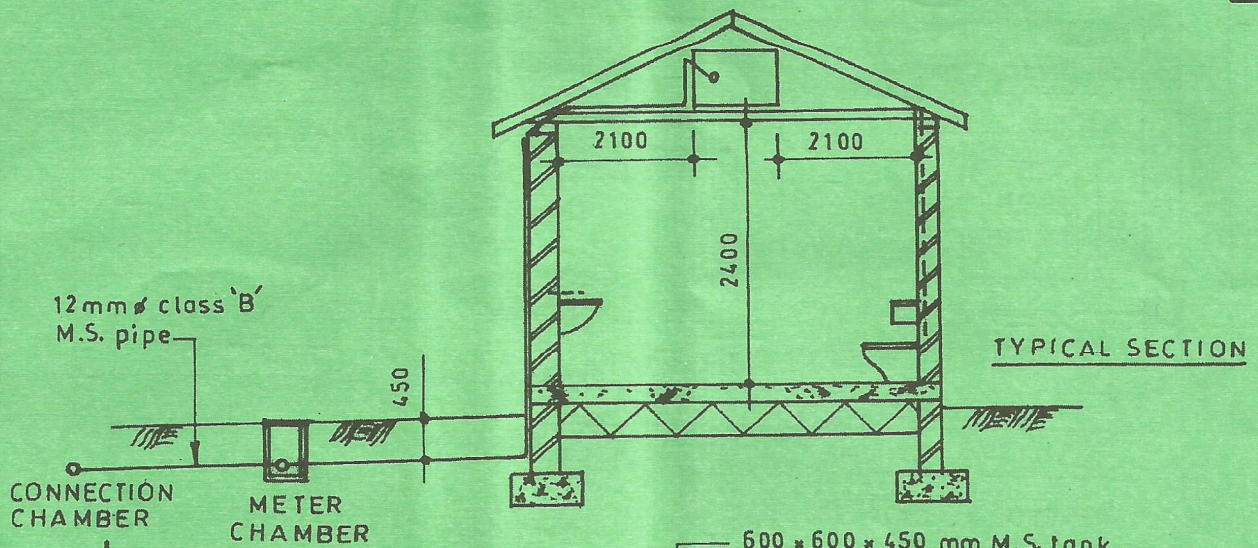
NOTE:

- 1 Rock commences 3.2 m below ground level
- 2 Protective wall constructed after structural wall is cast
- 3 Ignore reinforcement
- 4 Top soil 150 mm average
- 5 3 No. trees on site av. 700 mm diameter
- 6 Tree stump on site
- 7 Site is bushy
- 8 All dimensions in mm

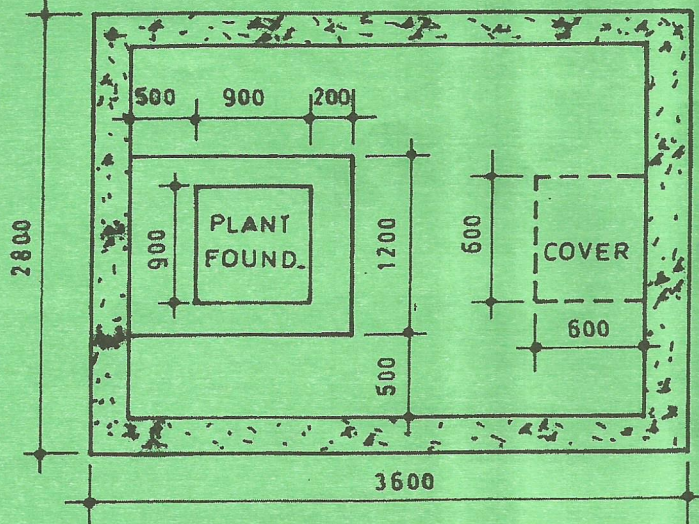
DRG. No. 01



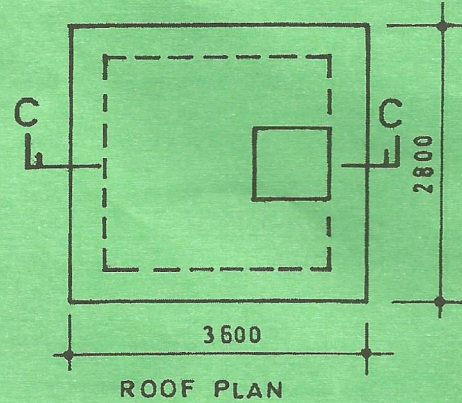
DRG. No. 02



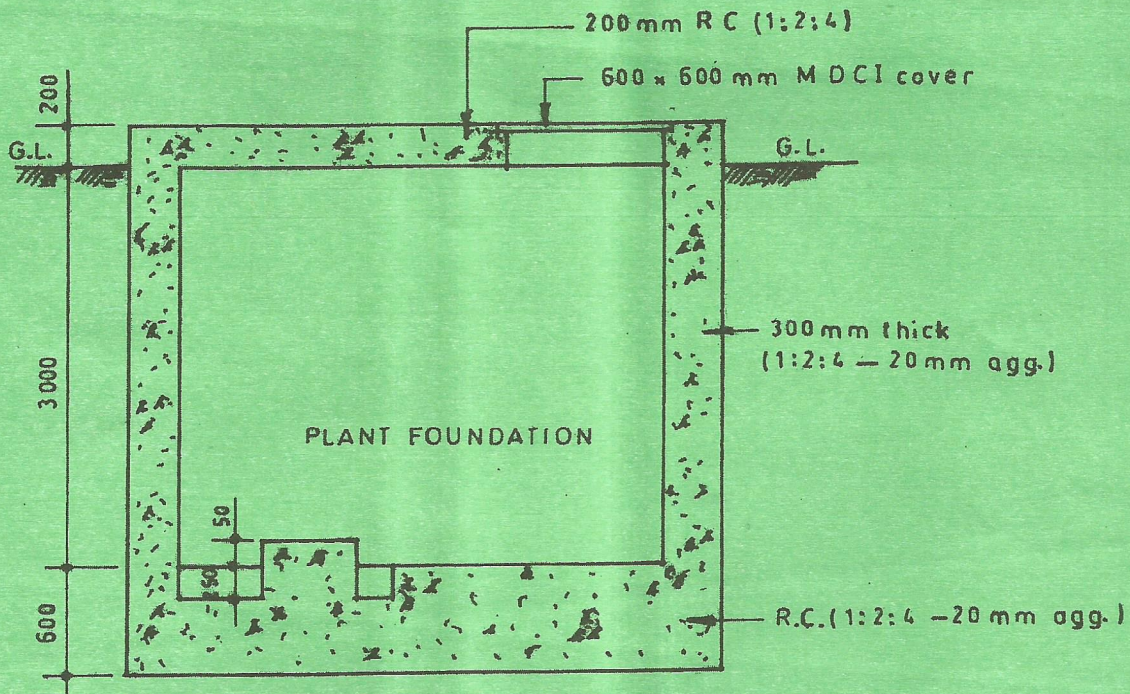
DRG. No. 03



FLOOR PLAN DETAILS



ROOF PLAN



SECTION C-C

NOTE:

1. Site is bushy
2. Vegetable soil 200 mm av deep
3. 3 No Trees to be removed av 2 m girth
4. A concrete house to be demolished size 4 m x 3 m x 3 m high
5. Pipe line 10 m long 200 mm ϕ to be removed

DRG. No. 04

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