TECHNICAL UNIVERSITY OF MOMBASA

SCHOOL OF ENGINEERING AND TECHNOLOGY
Department of BUILDING & Civil engineering
UNIVERSITY EXAMINATIONS FOR:

BACHELOR OF TECHNOLOGY IN CIVIL ENGINEERING
TCV 4412 : CONSTRUCTION MEASUREMENT 1I

END OF SEMESTER EXAMINATION
SERIES: April 2025
TIME: 2 HOURS

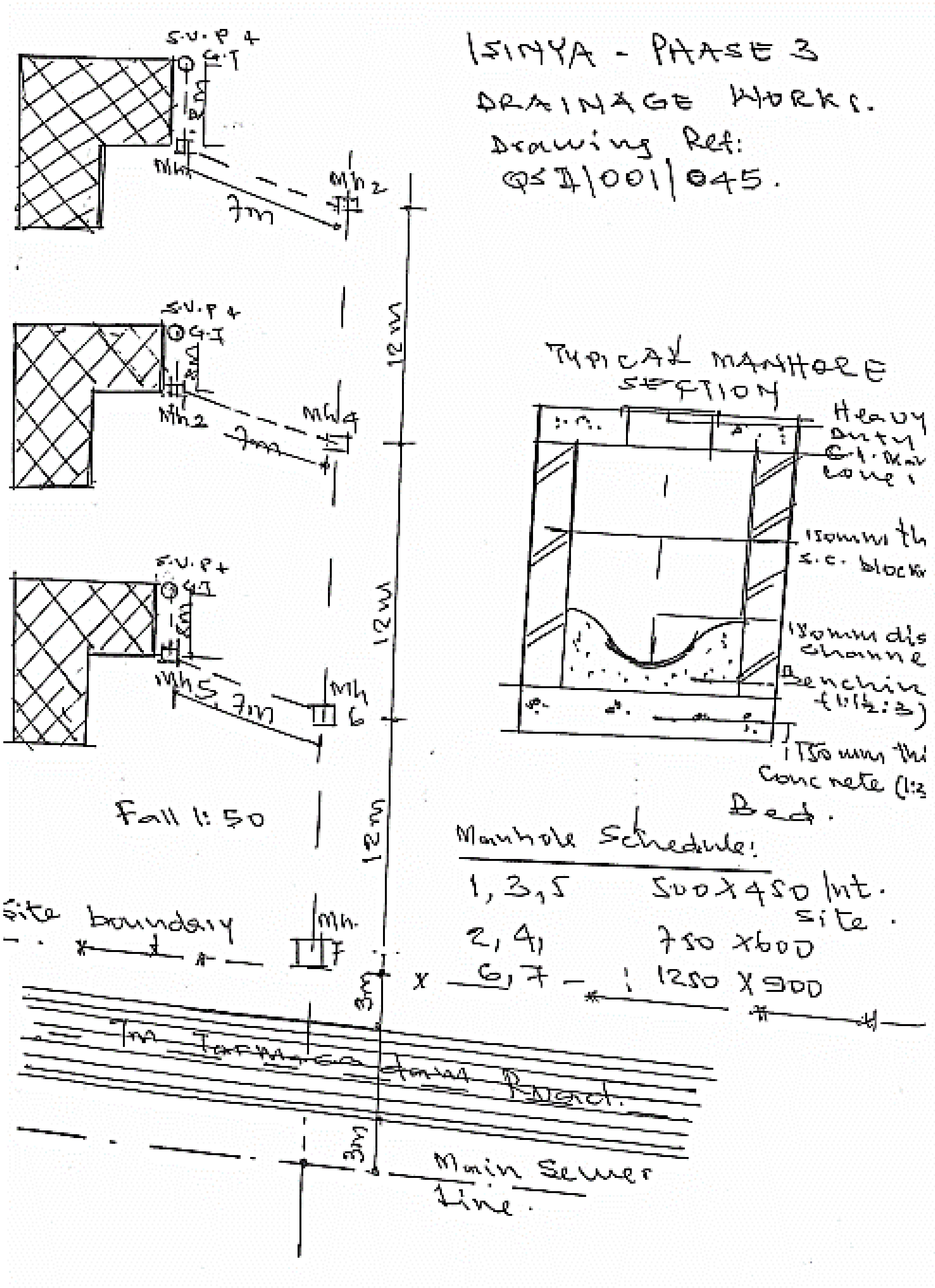
Instructions to Candidates
You should have the following for this examination

- *Answer Booklet, examination pass and student ID*
- *The standard method of measurement for building and related works for East Africa, (SMM 2008 edition)*
- *Answer booklet*
- *Dimension papers.*
- *Calculator*

This paper consists of **four** questions.
Attempt question ONE (Compulsory) and any other TWO questions.
Do not write on the question paper.

QUESTION ONE (COMPULSORY 30 MARKS)

a) Take off all quantities of the drainage works for Isinya Phase Three, drainage system, manholes works only, as shown on drawing no. MW2/001/45. **(30 marks)**



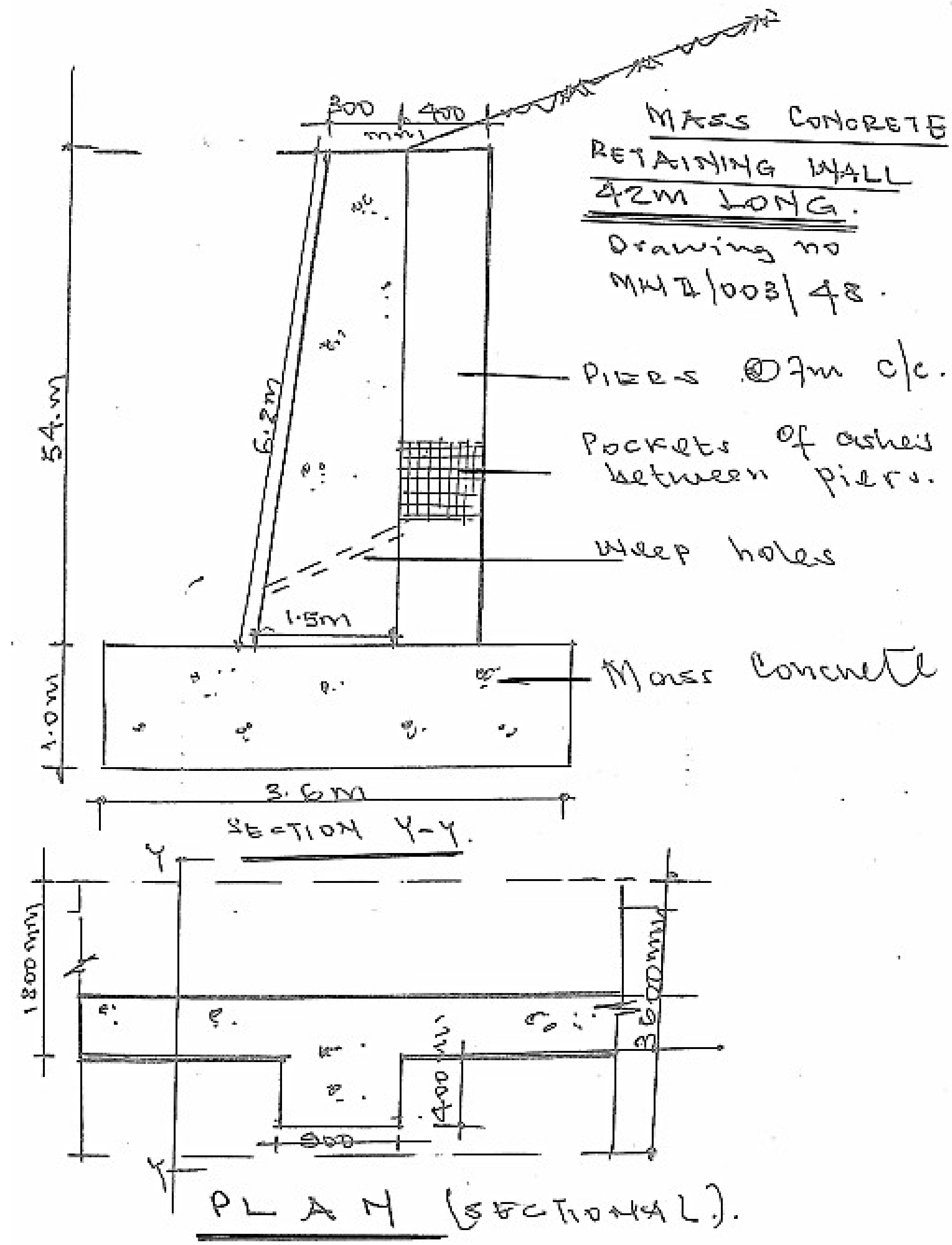
ISINYA - PHASE 3
DRAINAGE WORKS.
Drawing Ref:
QS II/001/045.
S.V.P & G.T
Mh
Mh 2
7m
Mh 2
Mh 4
Mh 5
Mh 6
Mh. 7
12m
12m
12m
3m
3m
Fall 1: 50
Site boundary
7m Tarmac Road.
Main Sewer Line.
TYPICAL MANHOLE SECTION
Heavy duty C.I. Manhole cover
150mm th S.C. blocks
150mm dia channel
Benching (1:1½:3)
150 mm thick Concrete (1:3 Bed.
Manhole Schedule:
1, 3, 5 500 x 450 Int. site.
2, 4, 750 x 600
6, 7 1250 x 900

Question TWO, (20 marks)

a) Square, abstract and bill all the measured works in question ONE, above. **(20 marks)**

Question THREE, (20marks)

a) Use the CESMM 4, to take off quantities of the mass retaining wall as shown in drawing number MW2/003/45. **(20 marks)**


MASS CONCRETE RETAINING WALL 42M LONG.
Drawing no MHB/003/48.
300
400
mm
Piers @7m c/c.
Pockets of ashes between piers.
Weep holes
Mass Concrete
5.4m
6.2m
1.5m
1.0m
3.6m
SECTION Y-Y.
Y
1800mm
3600mm
400
900
PLAN (SECTIONAL).

Question FOUR (20 marks)

a) Outline the applications of bills of quantities in the construction industry.

b) Outline the following types of bills in measurement;

   i. Trade bills
   ii. Elemental bills.

c) Using hypothetical examples, explain 'the accounting rate of returns', investment appraisal method.

Question FIVE, (20 marks)

Explain the following terms as used in the civil engineering method of measurement;

a) Method-related charges, and distinguish between time related and method related charges.
b) Explain, with the aid of hypothetical examples, the following functions of a quality surveyor.
c) Preparation of interim certificates.
d) Cost analysis.