Saudi Electricity Company	الشركة السعودية للكهرباء

SEC DISTRIBUTION CONSTRUCTION STANDARD	SDCS-02
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SDCS-02

CONSTRUCTION STANDARD

FOR

UNDER GROUND NETWORK

PART 7

INSTALLATION OF KWH METER BOXES

INSIDE

METER ROOMS

TABLE OF CONTENTS

1 Introduction

This construction standard specifies the minimum requirements for the design of meter room and method of installation of KWH meter boxes inside meter rooms.
It is intended to assist the field engineers and technicians to achieve uniform standard in construction to ensure a satisfactory and economical level of service without operation restrictions so that the operational errors are minimized for safety and reliability of the system.

2 Revisions and additions

This construction standard is subject to revision if new material and methods of operation and construction are developed. The latest revision of this construction standard shall be applicable.

3 Service conditions and system parameters

For construction and operation of meter room, the service conditions and system requirements shall be as given in the latest revision of SEC General Requirements For All Equipment / Material Specification No. 01-SDMS-01.

4 Design of Meter Room

4.1 Meter room design has been classified into two prototypes (type 1) and (type 2) as shown in the attached drawings figure (1 & 2) as a guideline for the minimum requirements. It may be modified according to the available space and number of meters required to be installed in the room after agreement between the consumer and SEC planning engineer.

4.2 The following points are required to be considered at site during the selection of meter room design:

4.2.1. The minimum inner dimensions of the room shall be 2000 mm X 2000 mm to serve up to 32 meters for type 1, and 3800 mm X 3610 mm to serve up to 96 meter for type 2 to provide adequate working space and facilitate the opening/removal of the meter box covers for installation and maintenance.

4.2.2. Meter room should be easily accessible without any obstruction.

4.2.3. Meter Room height shall not be less than 2700 mm to insure good air circulation and ventilation.

4.2.4. Meter Room shall not be located on the top of sewerage system or water tanks. However, in case if it is not possible to avoid such service the standard height of the room and trench depth must be maintained.

4.3 Door and cable entry pipes:

4.3.1 Access to the meter room shall be from the front by means of hinged metal doors, fitted with a heavy-duty locking device to secure them at closed position, and one stainless steel hasp set for separate SEC standard pad locking.

4.3.2 Door shall be opened to outside the room either to right or left hand side. It shall be provided with door stoppers and locking at open position to protect from swinging in order to avoid accidents.

4.3.3 All door hinges and its fixing bolts and nuts shall be concealed and made of rigid material.

4.3.4 Locking shall be as follows:

- Handle shall be high grade stainless steel.
- Shall be operated by central handle lock by using SEC standard key or pad lock according to SEC specification SEC-02-02 latest revision.
- Handle shall have integral lock and shall be inaccessible by means of stainless steel pivoted cover in addition to a hasp for padlocking as shown in figure (3).
- Integral lock shall be cylindrical type and its manufacturer shall be approved by SEC.
- Locking rotation shall be maintained within 90 degrees.

4.3.7 Stainless steel hasp and cover set for padlock shall be 3 mm thick.

4.3.8 The door shall be made of steel 1000 mm wide and 2000 mm high excluding the doorframe.

4.3.9 Ventilation louvers shall be provided as shown in figure (3).

4.3.10 Door shall be bonded to any metal framework by a bolted removable 35 mm^2 tinned copper braid.

4.4. For the entry of SEC cables into the meter room, PVC pipes of 100 mm diameter in compliance with latest revision of relevant SEC specification shall be provided.

4.5. These pipes shall be provided preferably from the door wall side. The number of the pipes shall be equal to the number of meter circuits defined by SEC planning engineers. Alternately the concerned SEC engineers can accept any suitable location of pipes in case of any difficulties.

4.6. Reinforced concrete cable trench:

4.6.1 Reinforced concrete cable trench 15cm thick shall be provided in the meter room as shown in figures (1 & 2). The trench shall be 600 mm wide and 800 mm deep running along the walls and covered by removable Chequered steel plate as shown in figure (5).

4.6.2 Steel reinforcement 10mm diameter 20cm c/c on both directions to be provided as reinforcement for the concrete trench walls and bottom.

4.6.3 Steel angel L5 to be fixed on the concrete trench edge.

4.6.4. Lean concrete 10cm thick to be placed under the trench.

4.7 The upper edge of the cable trench shall be 50 mm wider than the standard width of the trench to form a grove of 25 x 10 mm all around the trench for fixing of the trench cover as shown in figures (4 & 5).

4.8 The trench cover plates shall be made of equal lengths, not more than 1000 mm each, easily interchangeable and cut to fit 650 mm width of the trench with reasonable clearance as shown in fig (5).

4.9 Finishing Color:

The interior of the meter room shall be adequately protected against weather changes and painted with pure white color with a smooth surface finish as per SEC specification 01-SDMS-01 latest revision and refer to (Civil Work Requirements).

4.10 Lighting:

The meter room shall have minimum 1x40 watts fluorescent lamp for each sq. meter of the room area.

5 Method of Meters Installation

5.1. Mainly the meters shall be installed in the Inside Room Fiberglass Reinforced Polyester Meter Box according to SEC spec. No. 42-SDMS-03 latest revision for any group of KWH meters installation**.**

5.3. CT meter boxes for 200, 300 and 400 Amps may be used if required in conjunction with the Inside Room meter boxes to complete the installation as per SEC spec No. 42-SDMS-01 latest revision.

5.4. Clearance between any two KWH meter boxes installed facing each other shall not be less than 1000 mm as shown in the attached figures (1 & 2).

5.6. Consumers Cables shall be laid in the trenches by using galvanized steel trays of 200 mm width, fixed on the trench wall in two rows 200 mm apart, SEC cables shall be laid directly in the trench as shown in figure (6).

5.7. All meter boxes shall be installed at a height of 200 mm from ground to the bottom of the meter box.

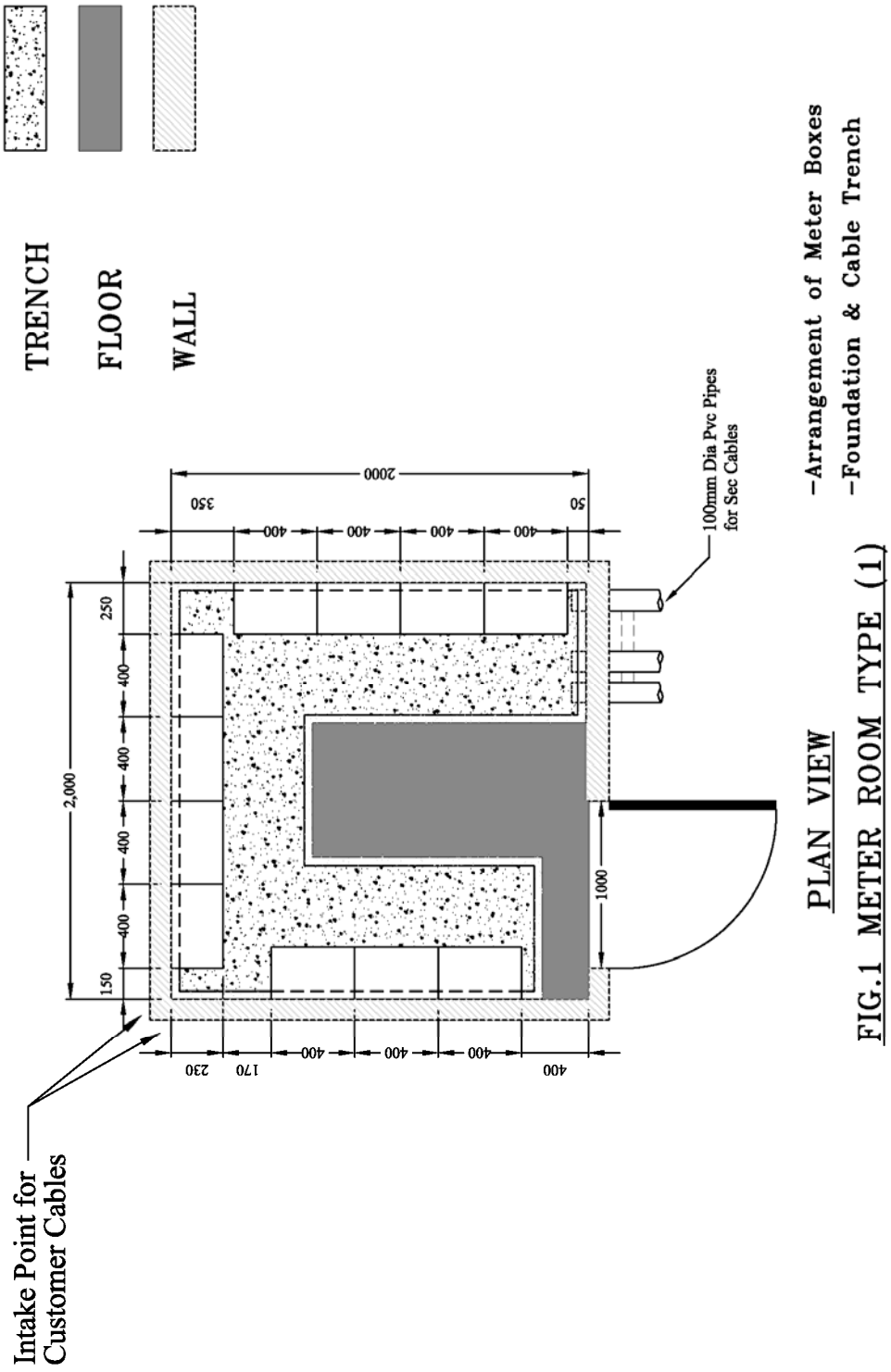
6 Civil construction requirements

All civil works shall be done according to SEC unified (Civil Work Requirements) latest revision.

7 Drawings

- Fig. 1 Meter Room Type 1
- Fig. 2 Meter Room Type 2

- Fig. 3 Meter Room Door
- Fig. 4 & 5 Trench Details & Trench Cover
- Fig. 6 & 7 Meters Feeding Assembly
- Fig. 8 Dimensions Referred To Ground Level

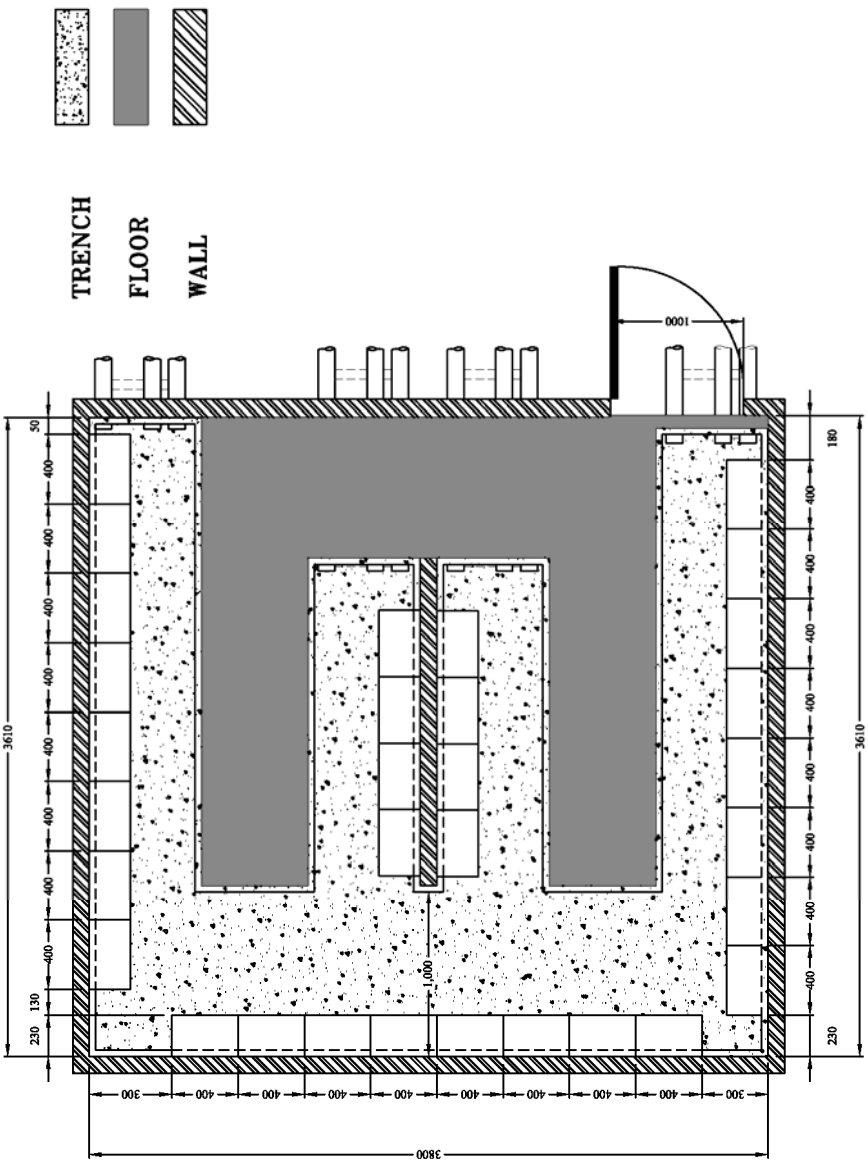


PLAN VIEW

FIG.1 METER ROOM TYPE (1)

-Arrangement of Meter Boxes
-Foundation & Cable Trench

-Arrangement of Meter Boxes
-Foundation & Cable Trench



PLAN VIEW

FIG.2 METER ROOM TYPE (2)

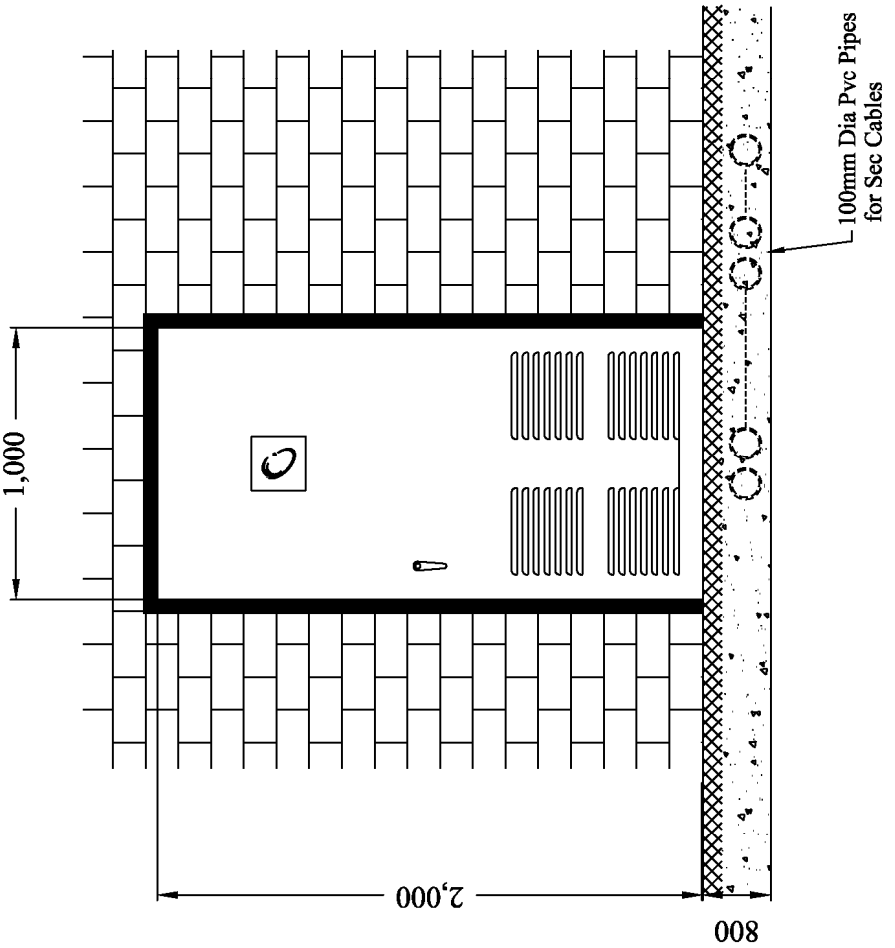


FIG. 3 METER ROOM DOOR

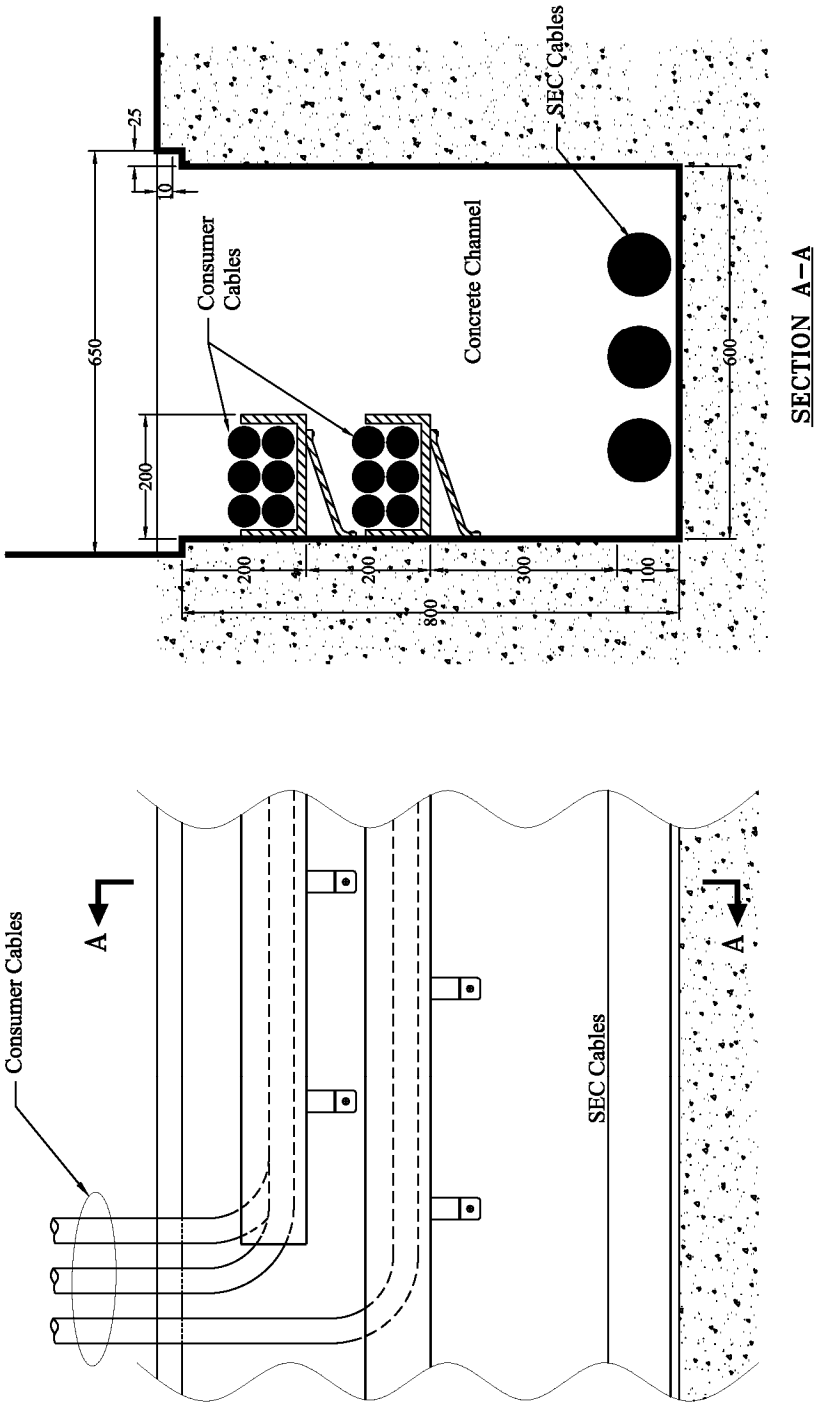


FIG. 4 CABLE TRENCH INSIDE METERS ROOM

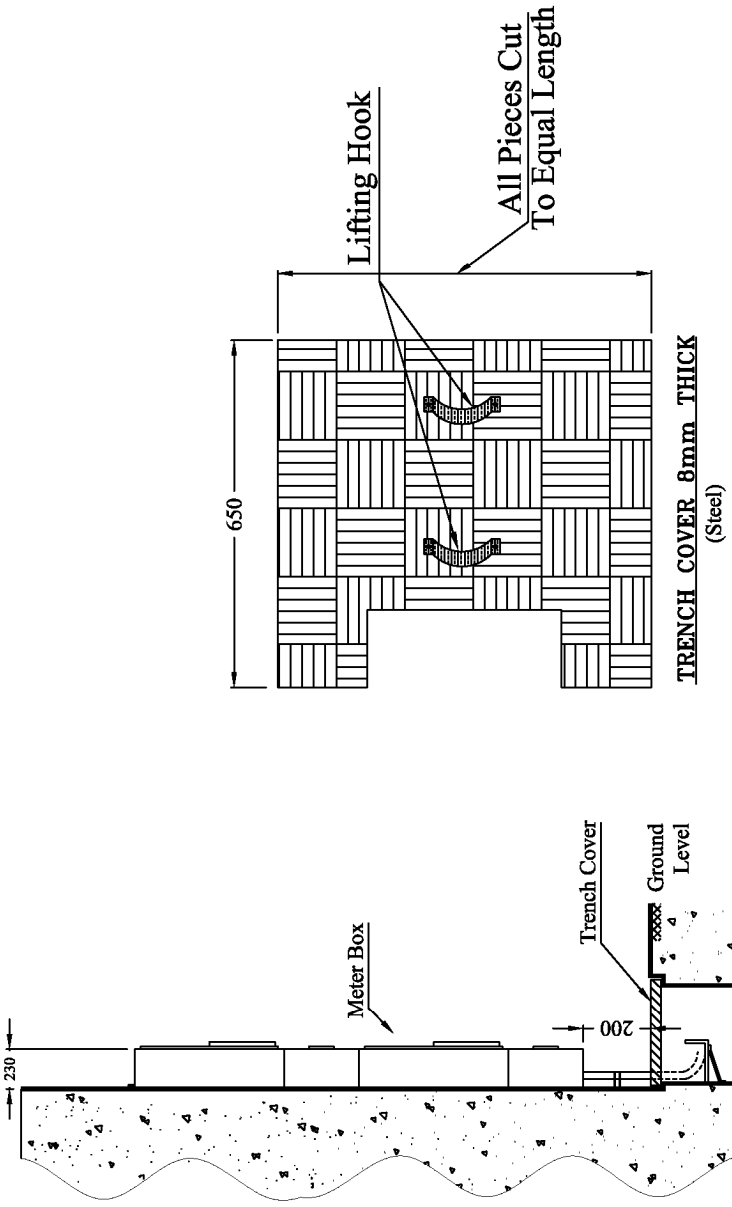


FIG.5 CABLE TRENCH COVER

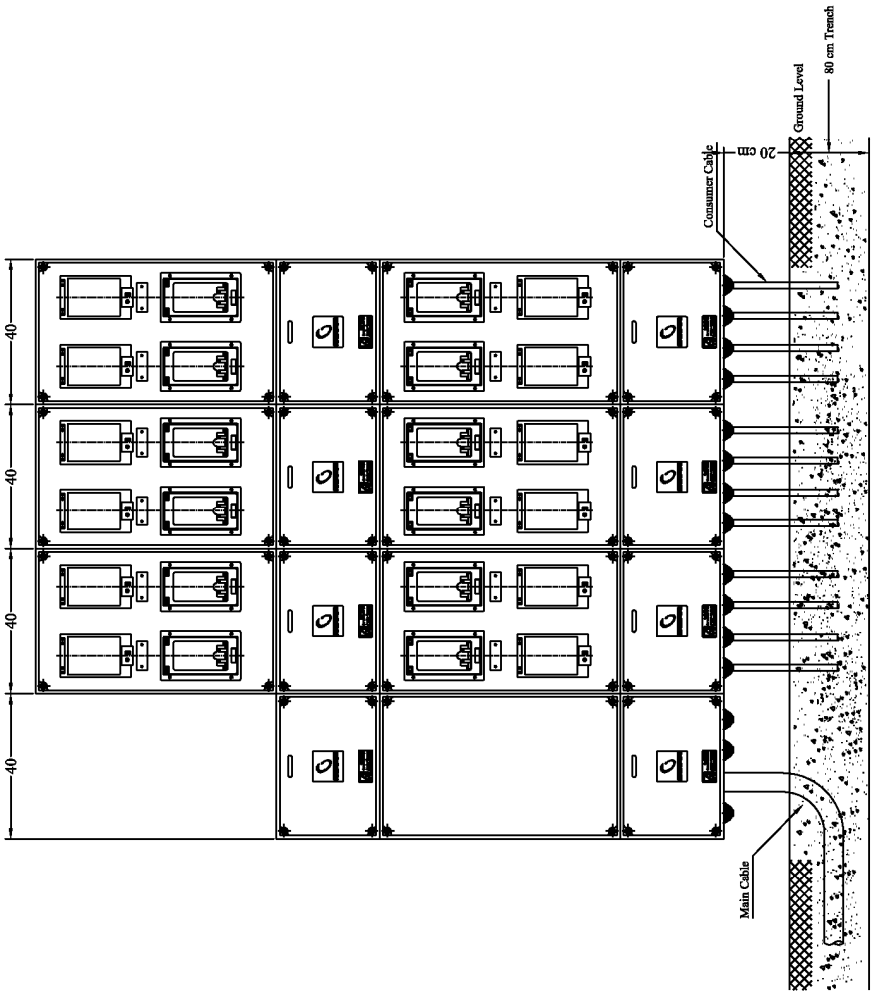


FIG. 6 12 METERS FEED AT LEFT SIDE

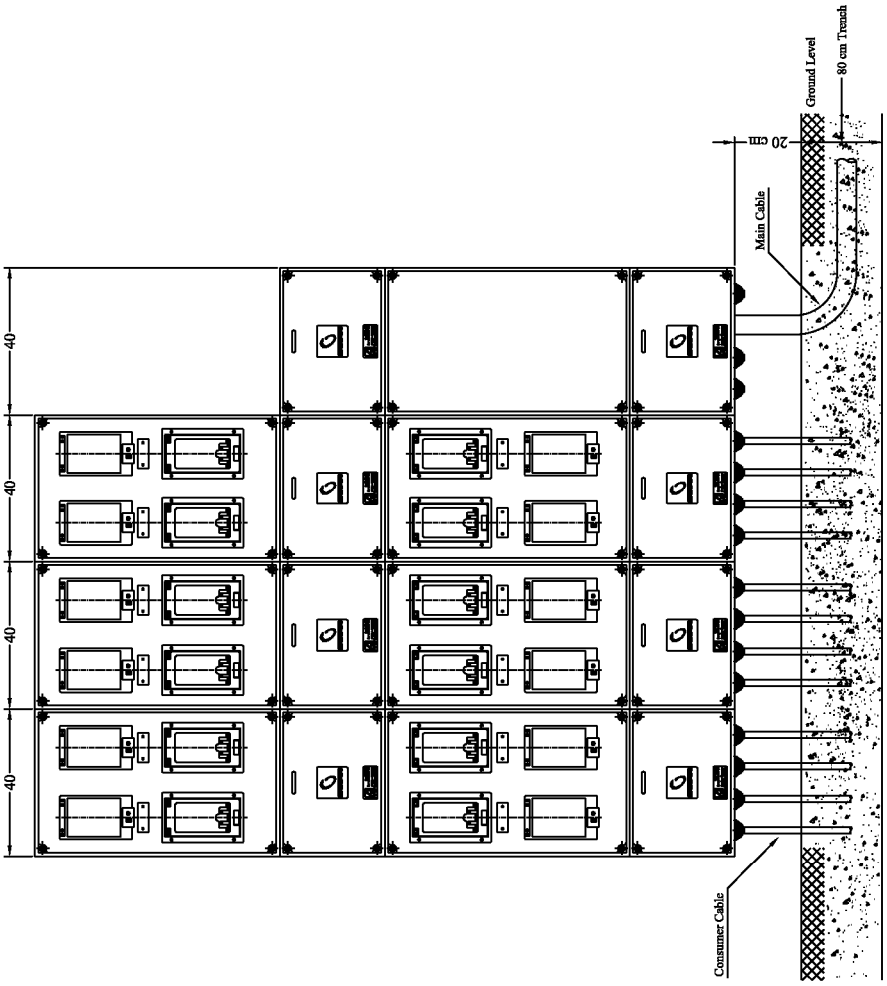


FIG. 7 12 METERS FEED AT RIGHT SIDE

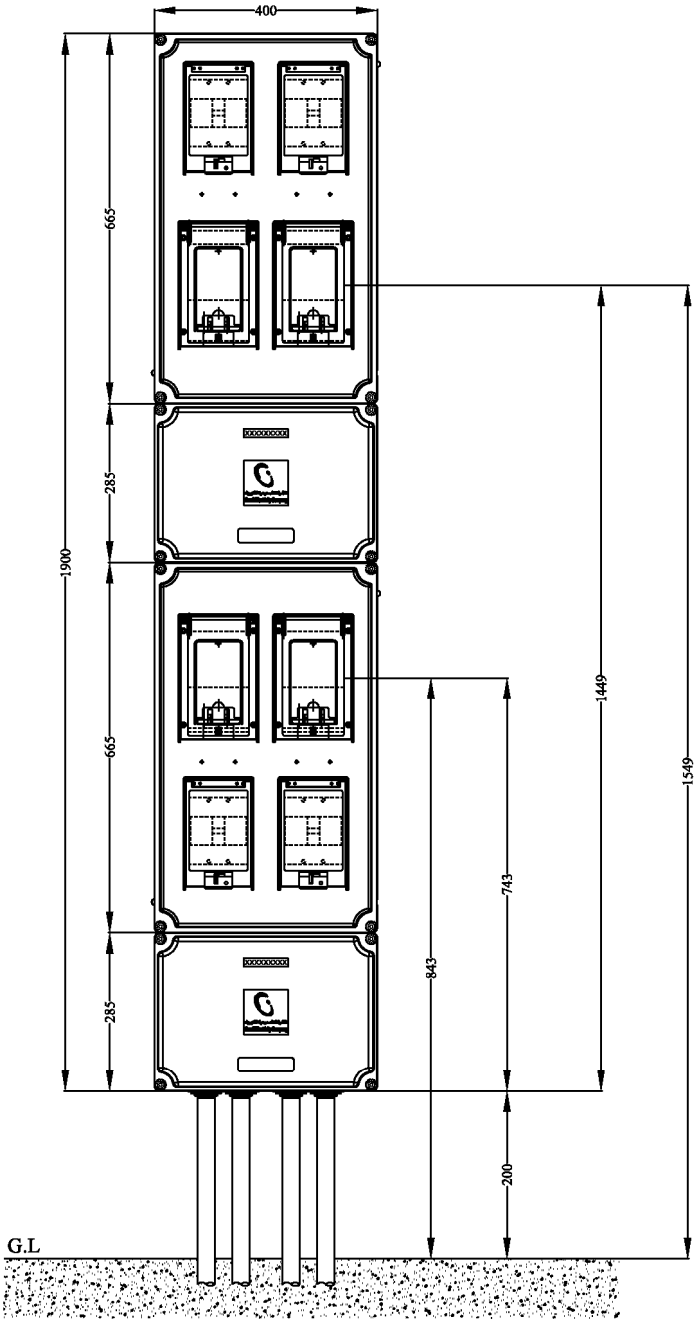


FIG. 8 DIMENSIONS REFERED TO GROUND LEVEL