

# ZIMBABWE DIGITAL BROADCASTING MIGRATION PROJECT

## Detailed Design Drawings

Site ID:		Site Name:	Chikombedzi
Latitude:	S: 21° 40' 48.61"	Longitude:	E: 31° 19' 12.72"
Site type:	New Greenfield	Tower:	113m TV Tower



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SITE NAME: Chikombedzi

SITE ID:

LAND ID :

WBS:

RFQ NO:

PROJECT NUMBER:

LATITUDE: S: 21° 40' 48.61"

LONGITUDE: E: 31° 19' 12.72"

SURVEY DATE:  
 RADIO ENGINEER:  
 SUPERVISOR:  
 DRAWN BY:  
 DATE:



HUAWEI TECHNOLOGIES ZIMBABWE (PRIVATE) LTD  
 17th Floor, 28 Life Towers, 3rd  
 May Avenue, Harare, Zimbabwe  
 Tel: +263 4 79327  
 Fax: +263 4 79324

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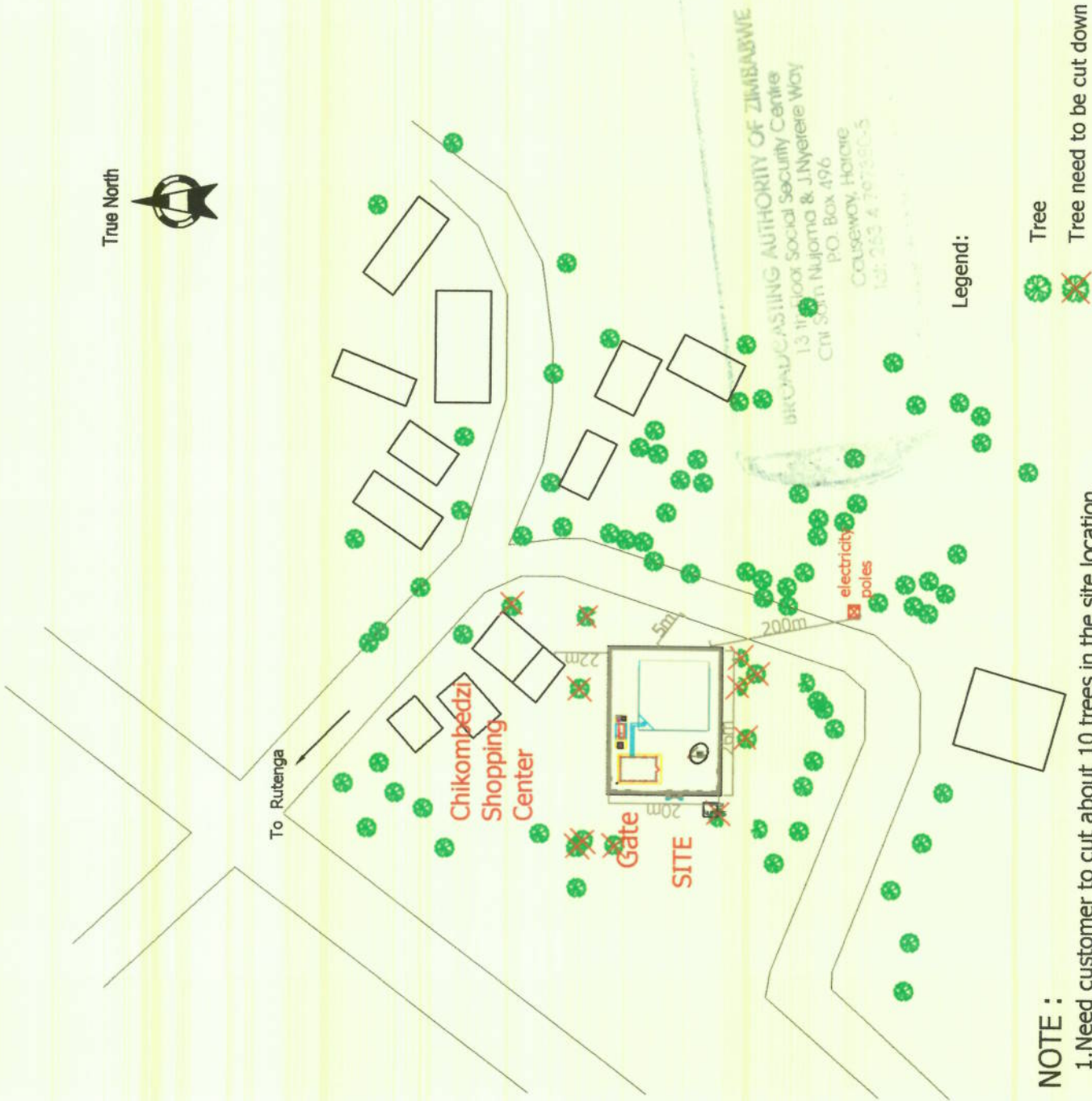
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 May Avenue, Harare, Zimbabwe  
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NO: DATE: DESCRIPTION:

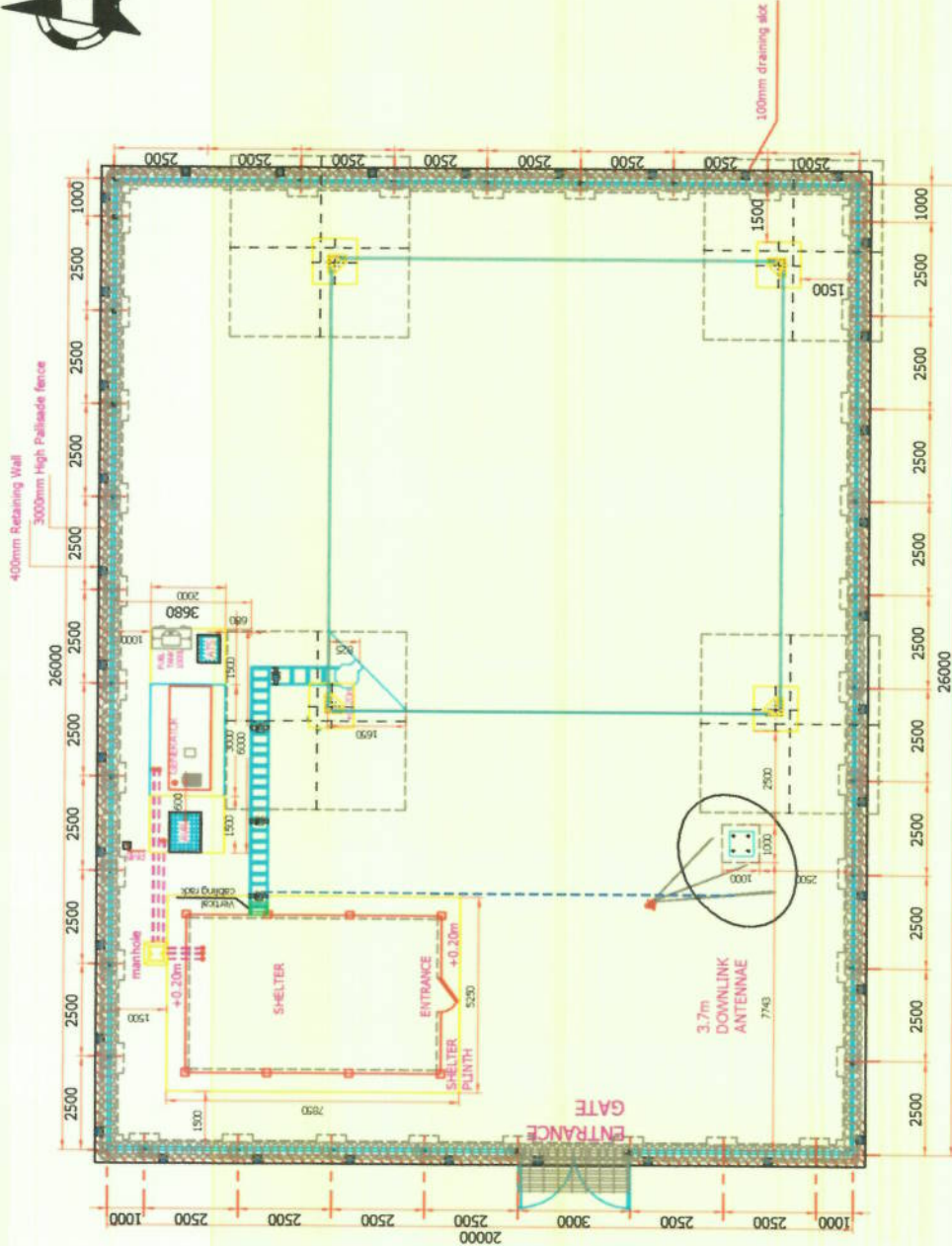
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N.T.S	1	A	1

LOCALITY PLAN



**NOTE :**  
 1. Need customer to cut about 10 trees in the site location.  
 2. Toilet position is determined by the customer.

True North



### SITE LAYOUT

SCALE-1:100

#### Legend:

- $\phi 100\text{mm}$  PVC pipe
- $\phi 110\text{mm}$  PVC pipe underground
- $\phi 50\text{mm}$  PVC pipe underground
- Draining Slot

#### NOTE :

1. The Satellite dish should be facing north-west, the accurate orientation should be determined by the satellite manufacturer.
2. Cable should be laid through the reserved PVC pipe.
3. After the cable jointing completed, using silicone rubber sealing PVC pipe orifice to prevent inflow water.
4. The width of drainage channel should be 100mm.
5. All the edges to be chamfered at 25 mm.

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SUPERVISOR:

DRAWN BY:

DATE:



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17th Floor, 28 UK Tower, 3601  
Newlands Estate, Harare  
Tel: +263 4 797380/5

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HUAWEI 1st FLOOR, 28 UK CENTRE  
RAIMBOW TOWERS GARDENS  
PO BOX 1800, SALESWA, HARARE  
DATE: 2024/05/15  
NO: 4797380/5

SCALE: N.T.S

ISSUE: 1

DRAWING: A

SHEET NO: 2

SITE PLAN

SITE NAME: Chikombedzi

SITE ID:

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RADIO ENGINEER:  
SUPERVISOR:  
DRAWN BY:  
DATE:



HUAWEI TECHNOLOGIES ZIMBABWE PRIVATE LTD  
17th FLOOR, 28 LINCOLN TOWER, 3600  
Moyo Avenue, Harare, Zimbabwe  
Tel: +263 4 793257  
Fax: +263 4 793254

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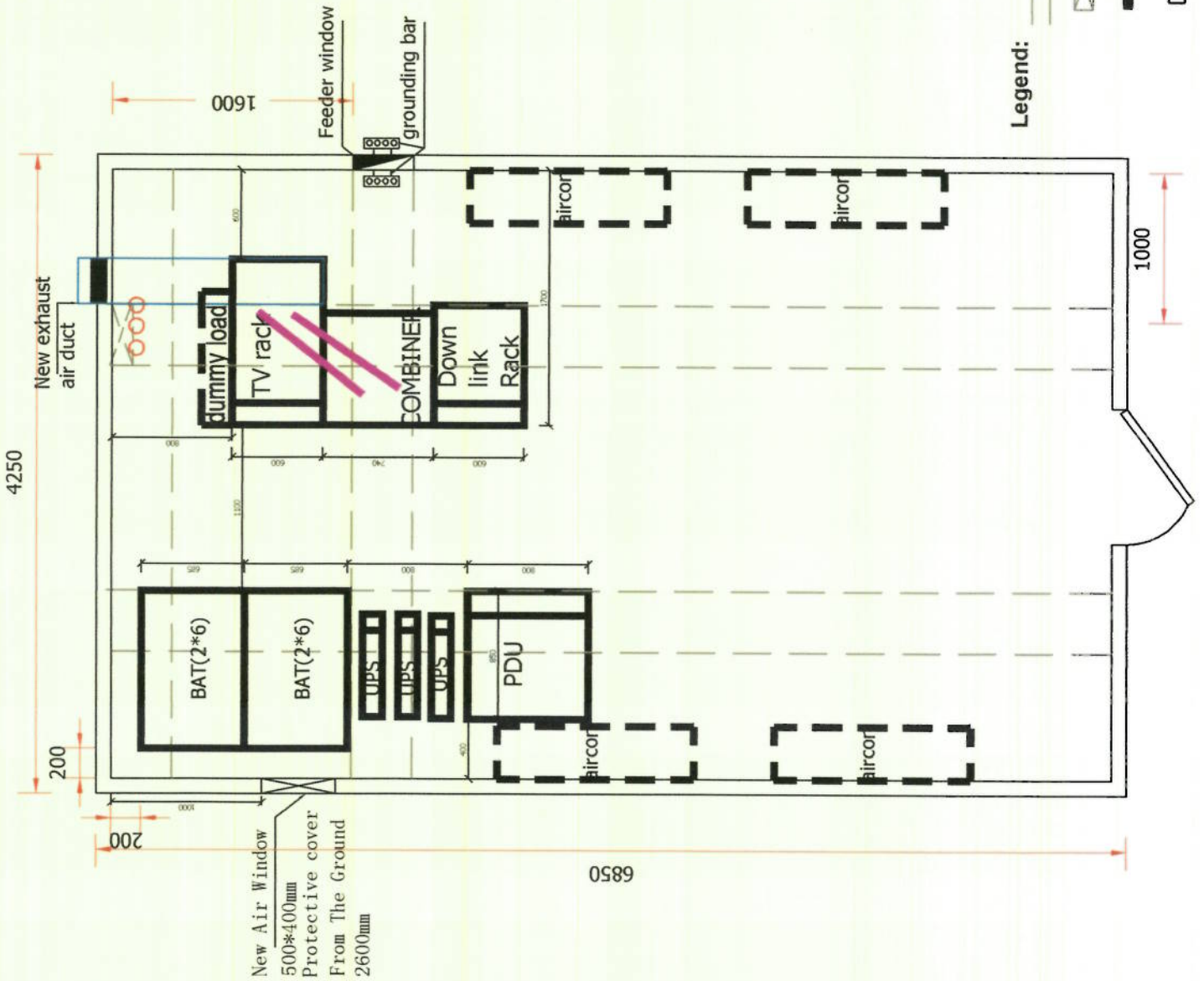
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DATE: 03/05/2015  
NO: 1  
DESCRIPTION: USEWAY, HARARE

SCALE: N.T.S  
ISSUE: 1  
DRAWING: A  
SHEET NO: 3

SHELTER PLAN



Legend:

- Cable Tray
- ⊞ Vertical Cable Tray
- EXIT PLATE
- Aircon

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111, HARARE CENTRE  
HARARE, ZIMBABWE  
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Fax: +263 4 792204

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DATE:

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1st FLOOR, MEDIA CENTRE

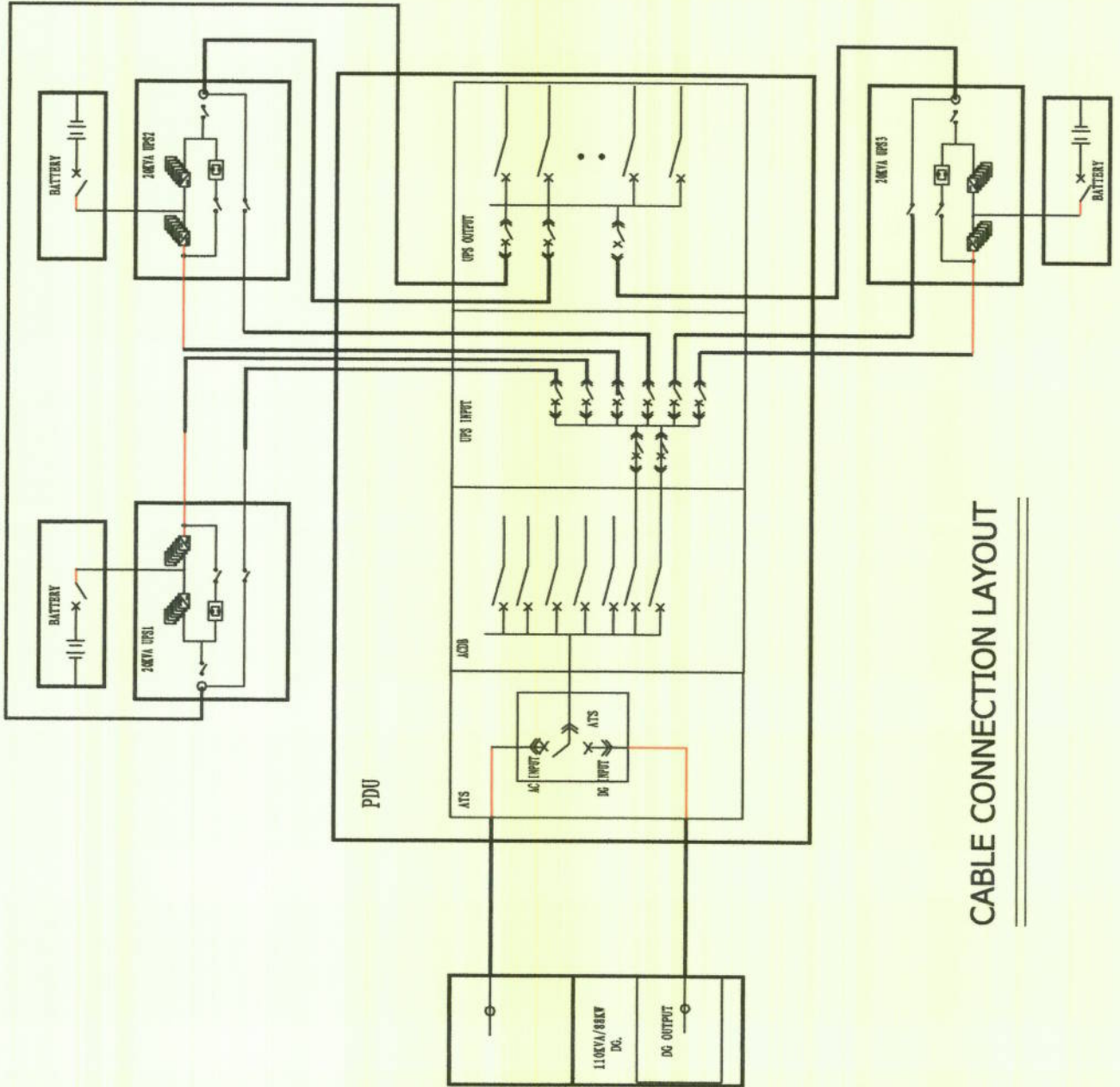
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P.O. BOX 450, GAUSEMAY, HARARE

TEL: +263 4 797330/5

SCALE: N.T.S. ISSUE: 1 DRAWING: A SHEET NO: 4

CABLE CONNECTION LAYOUT



CABLE CONNECTION LAYOUT

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SUPERVISOR:

DRAWN BY:

DATE:



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17th Floor, 28 UN Towers, 30th  
Moyo Avenue, Harare, Zimbabwe  
Tel: +263 4 79287  
Fax: +263 4 79284

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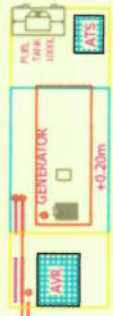
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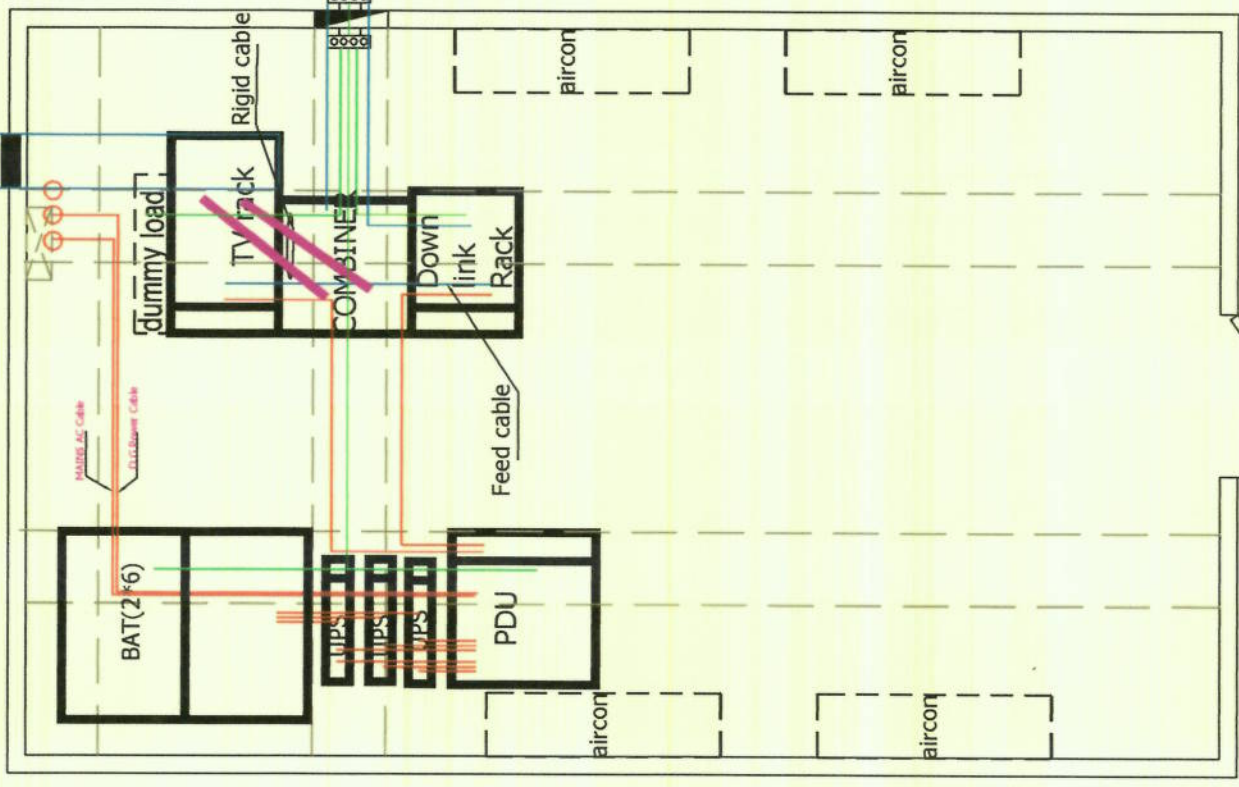
BROADCASTING AUTHORITY OF ZIMBABWE  
1st Floor, Media Centre  
Rainbow Towers  
P.O. Box 196, Salisbury  
Harare  
DATE: 22.11.15  
NO: DESCRIPTION: +263 4 79738 4/5

SCALE: N.T.S. ISSUE: 1 DRAWING: A SHEET NO: 5

SHELTER PLAN

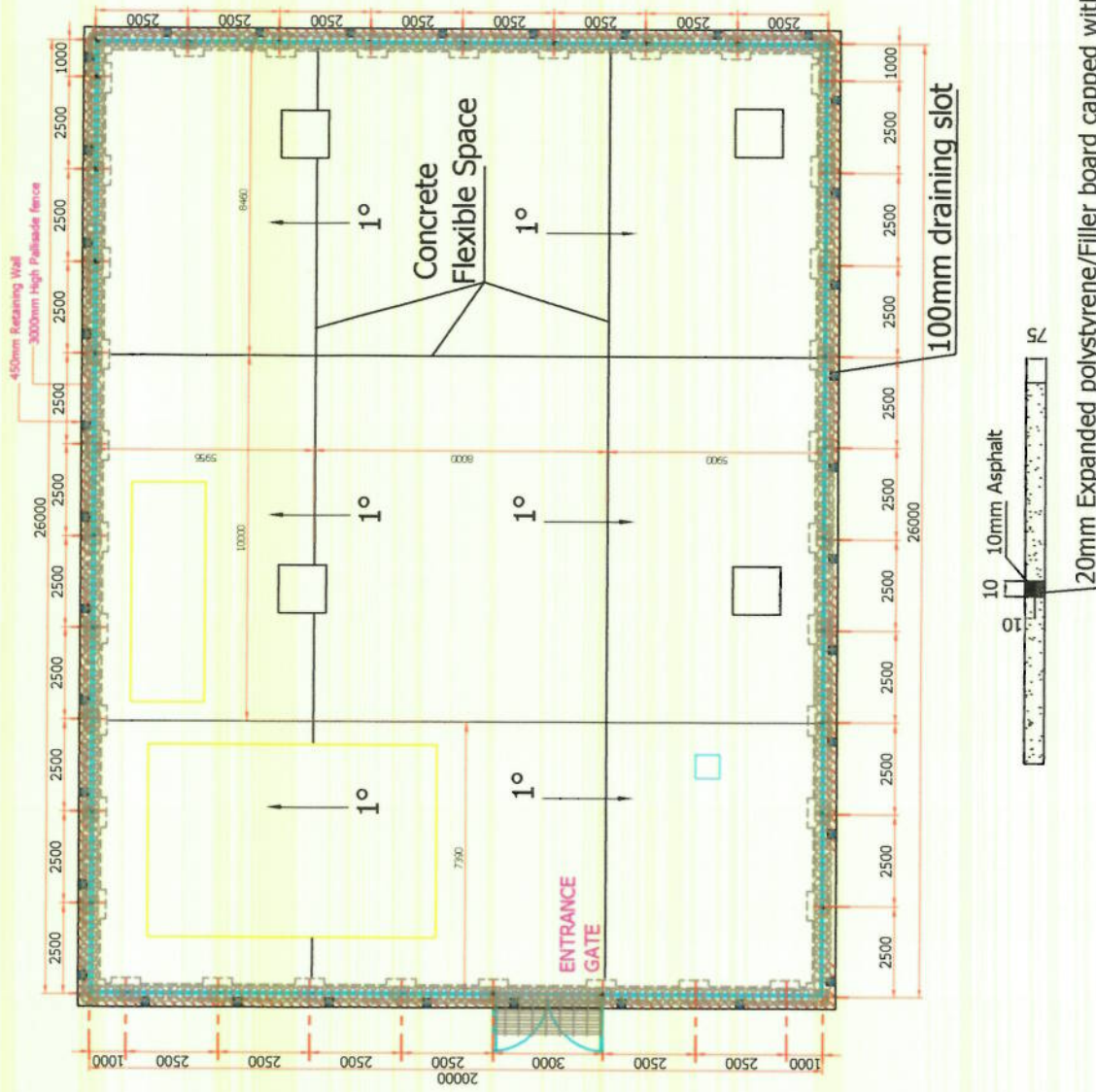


New exhaust air duct



Legend:

- Power Cable
- Signal cable
- Grounding cable



**NOTE:**

1. Pouring the ground floor of base station, the ground is divided into nine panel, leaving two 2cm expansion joints.
2. After the concreting, fill the joint with asphalt.
3. Base station floor tilt to the gate side of 1 degree, to ensure that there is no stagnant water in the station.

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DATE:



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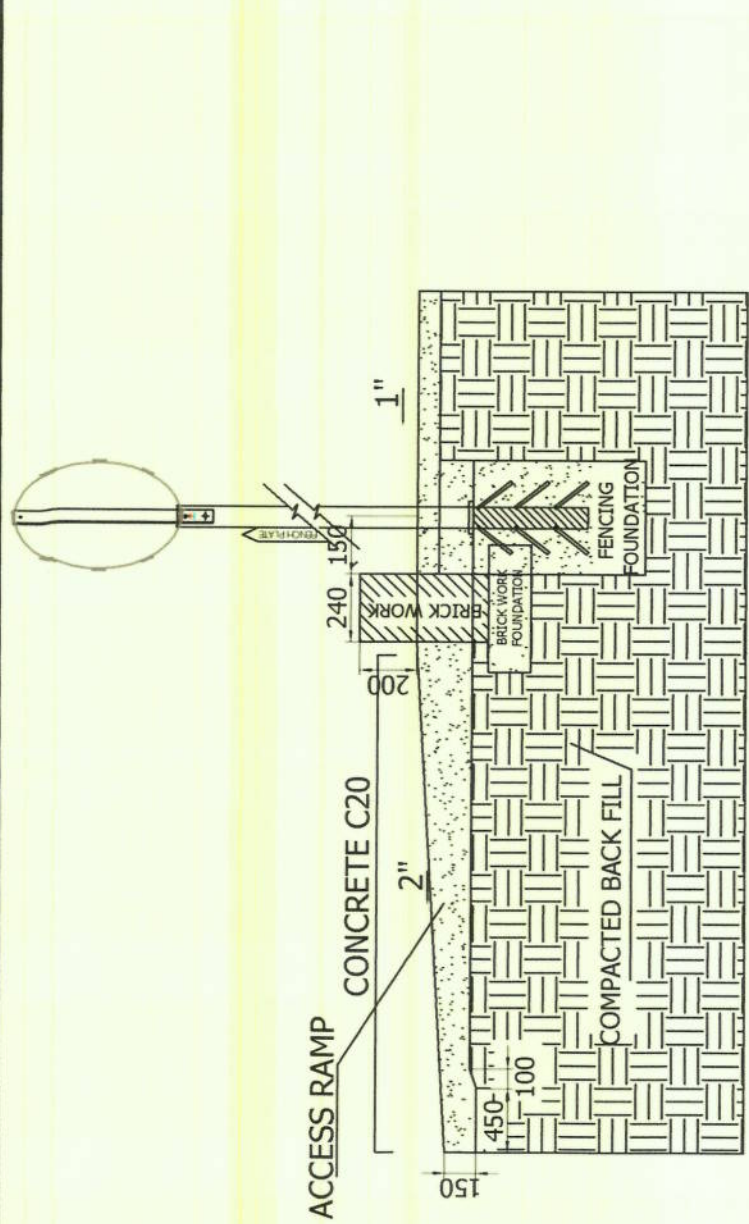
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 100, PARK AVENUE, HARARE, ZIMBABWE  
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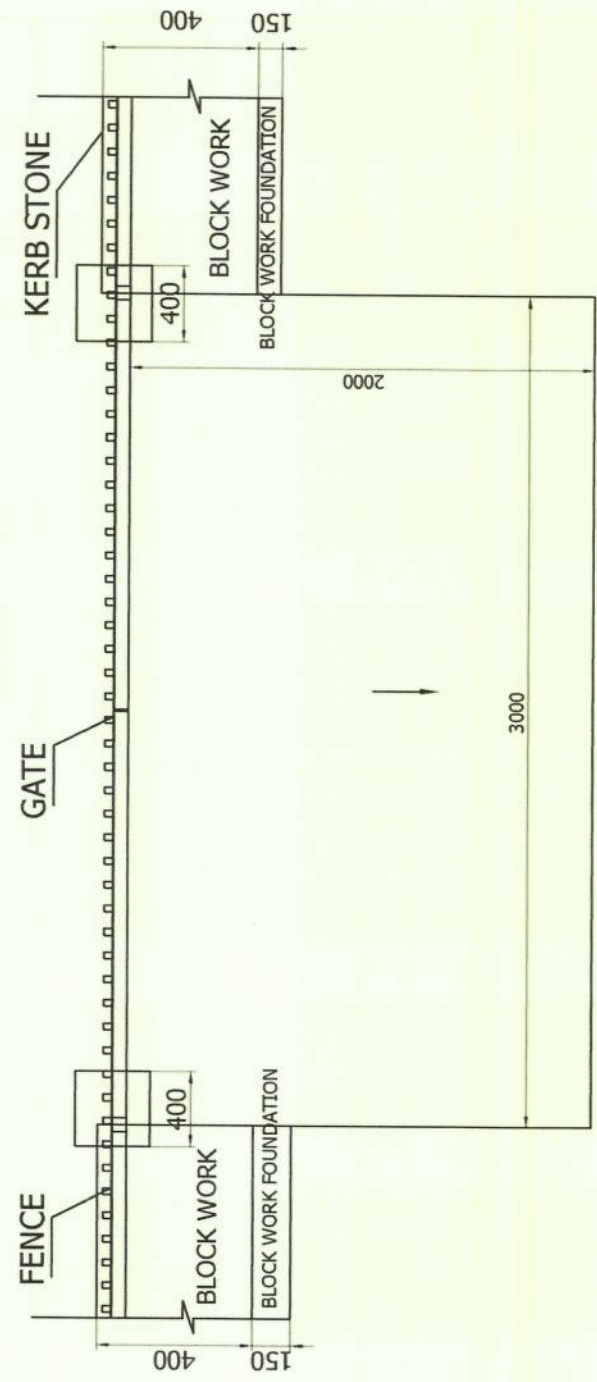
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DATE:	DATE:		
NO:	DESCRIPTION:		
SCALE: N.T.S	ISSUE: 1	DRAWING: A	SHEET NO: 6
FENCE 1			







**A-A SECTION**



**ACCESS RAMP**

SITE NAME: Chilkombedzi

SITE ID:

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DATE:

NO: DATE:

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 8th FLOOR, MEDIA CENTRE  
 PATTERSON TOMES GROUNDS  
 CAUSAWAY, HARARE  
 DESCRIPTION: TEL: +263 4 797380/5

DATE: 2020/01/15

NO: 180

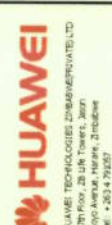
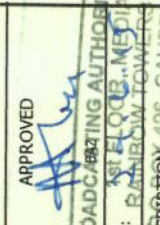
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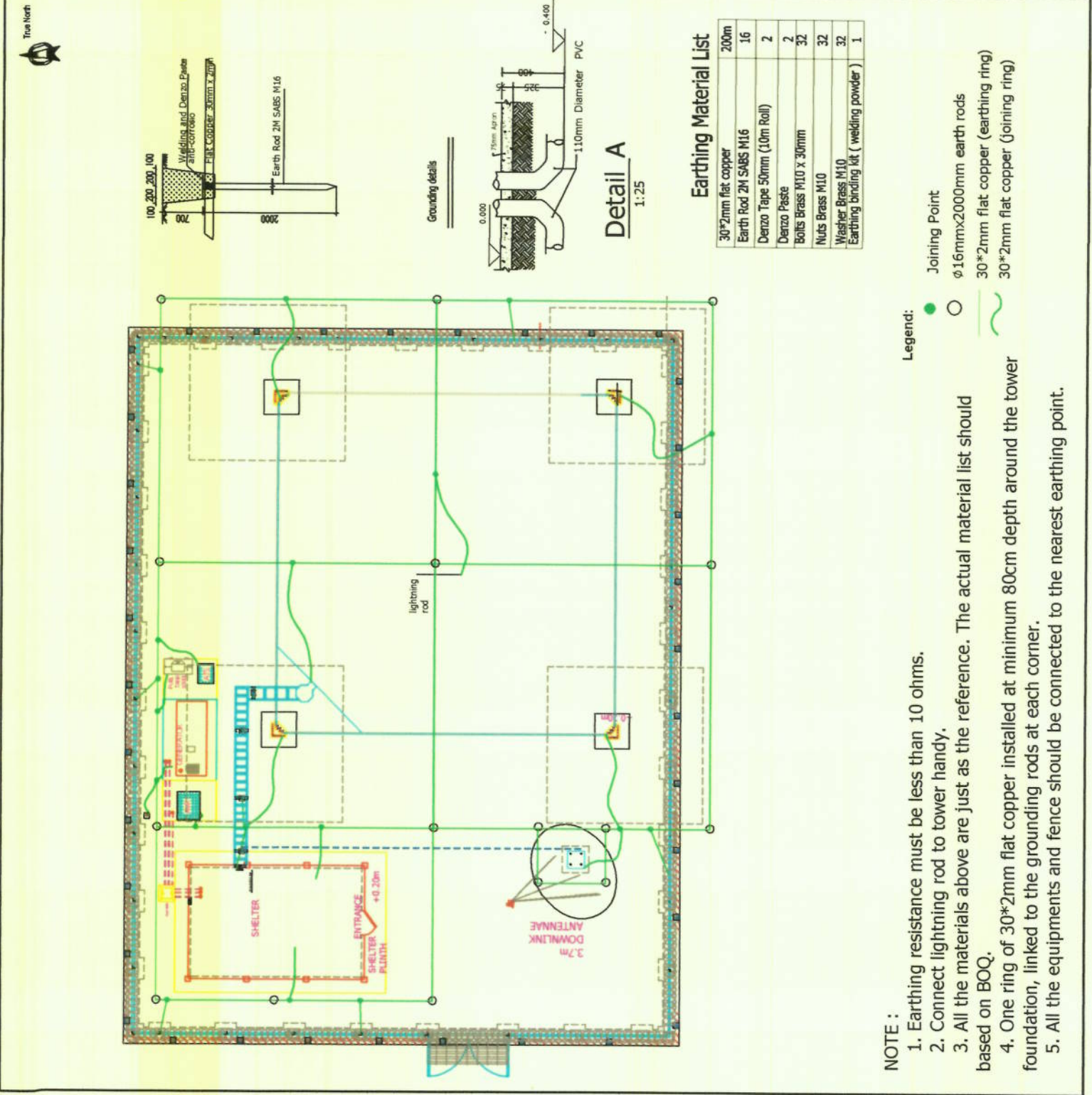
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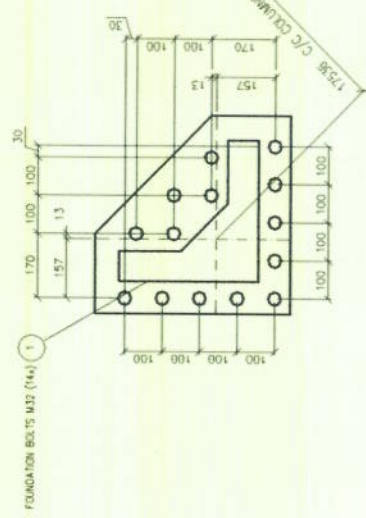
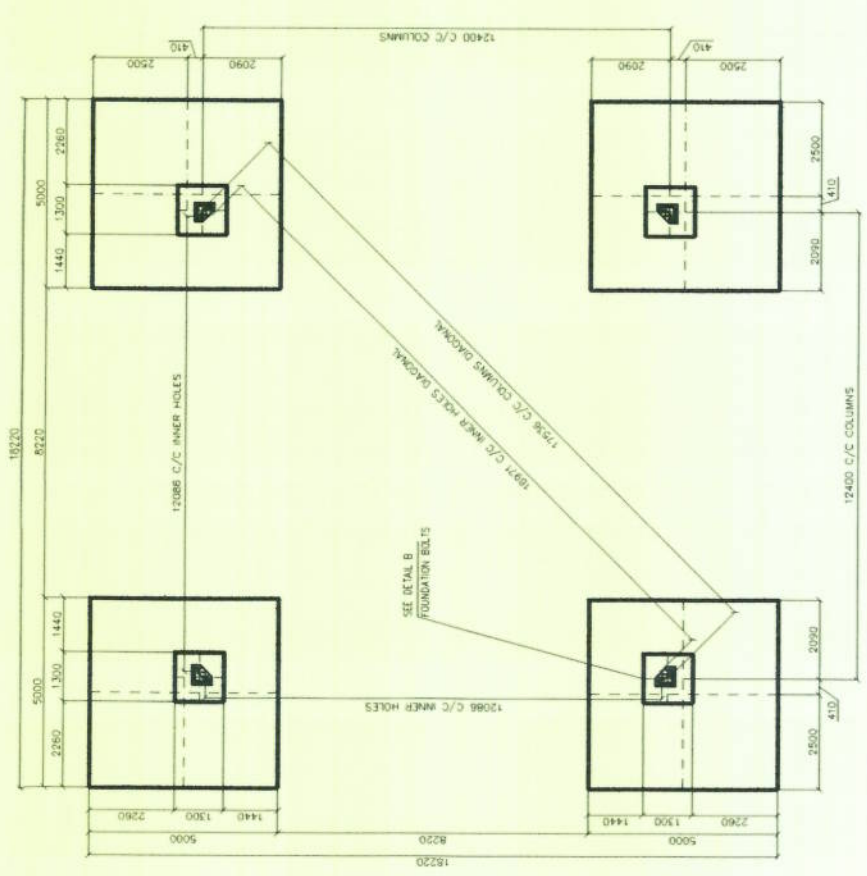
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RFQ NO:	
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SUPERVISOR:	
DRAWN BY:	
DATE:	
 <small>HUAWEI TECHNOLOGIES ZIMBABWE PRIVATE LTD          100, 200, 201, 100          HARARE, ZIMBABWE          Tel: +263 4 79287          Fax: +263 4 79234</small>	
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HUAWEI	
DATE:	BROADCASTING AUTHORITY OF ZIMBABWE
NO:	DATE: 18 FEB 2024
	DESCRIPTION: MEDIA CENTRE RAINBOW TOWERS GROUNDS
	DESCRIPTION: 496, CAUSEWAY, HARARE
	TEL: 0263 4 79 380/5
SCALE: N.T.S	ISSUE: 1
	DRAWING: A
	SHEET NO: 9
EARTHING	



### Earthing Material List

30*2mm flat copper	200m
Earth Rod 2M SABS M16	16
Denzo Tape 50mm (10m Roll)	2
Denzo Paste	2
Bolts Brass M10 X 30mm	32
Nuts Brass M10	32
Washer Brass M10	32
Earthing binding kit (welding powder)	1

- NOTE :**
1. Earthing resistance must be less than 10 ohms.
  2. Connect lightning rod to tower handy.
  3. All the materials above are just as the reference. The actual material list should be based on BOQ.
  4. One ring of 30\*2mm flat copper installed at minimum 80cm depth around the tower foundation, linked to the grounding rods at each corner.
  5. All the equipments and fence should be connected to the nearest earthing point.
- Legend:**
- Joining Point
  - φ16mmx2000mm earth rods
  - 30\*2mm flat copper (earthing ring)
  - 30\*2mm flat copper (joining ring)



VIEW B - B  
SCALE 1:100

DETAIL B  
SCALE 1:10

- ALLOWABLE SOILBEARING CAPACITY: 150 kPa AND ABOVE NO GROUND WATER.
- REINFORCEMENT QUALITY: MIN 420 MPa
- REINFORCEMENT WEIGHT: 14105 kg. EXCL FOUNDATION BOLTS
- CONCRETE GRADE: C25 (TESTCUBE STRENGTH 37 MPa)
- CONCRETE VOLUME: 71.1 m<sup>3</sup>
- EXCAVATION VOLUME: 434.0 m<sup>3</sup>
- MINIMUM CONCRETE COVERS TO BE 50 mm
- C30 COMPOSITION: CEMENT 1, SAND 1, AGGREGATES 2, 4, AGGREGATES B
- ANGLE OF FRUSTRUM 30 DEGREES.
- SETTING TEMPLATES: TO BE SUPPLIED BY JARLSØ.

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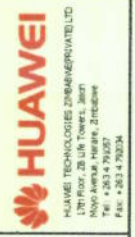
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DATE:

NO:

DATE:

DESCRIPTION:

SCALE:

N.T.S

ISSUE:

1

DRAWING:

A

SHEET NO:

10

TOWER FOUNDATION

BROADCASTING AUTHORITY OF ZIMBABWE  
1st FLOOR MEDIA CENTRE  
50, BOYD TOWERS CENTRE  
PO BOX 1095, CAUSEWAY HARARE  
TEL: +263 4 7978727  
FAX: +263 4 7978728

SITE NAME: Chikombedzi

SITE ID:

LAND ID:

WBS:

RFQ NO:

PROJECT NUMBER:

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RADIO ENGINEER:

SUPERVISOR:

DRAWN BY:

DATE:



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BROADCASTING AUTHORITY OF ZIMBABWE  
1st FLOOR, MEDIA CENTRE  
RAINBOW TOWERS GROUNDS  
P.O. BOX 256, CAULFIELD WAY, HARARE  
TEL: +263 4 79 380/5

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DATE:

NO:

DESCRIPTION: TOWER FOUNDATION 2

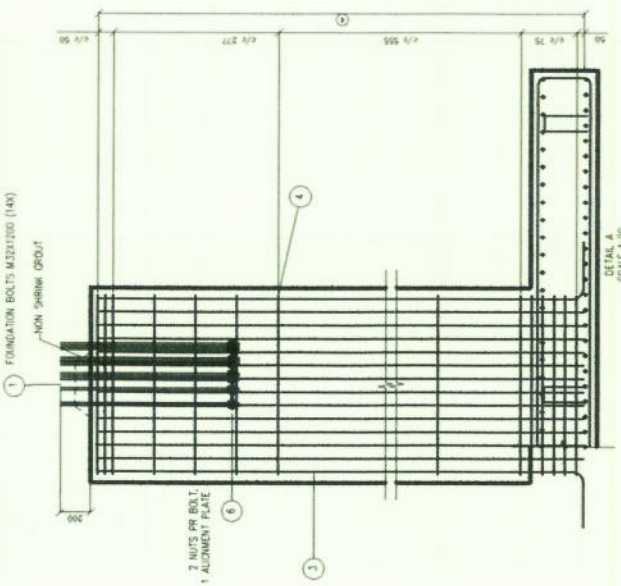
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ISSUE: 1

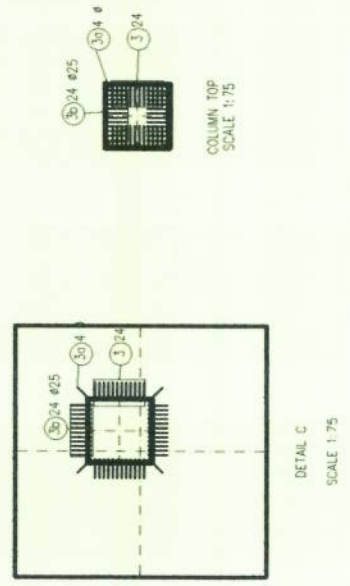
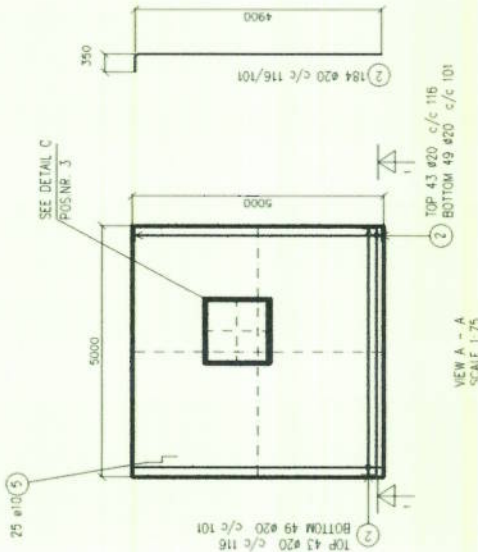
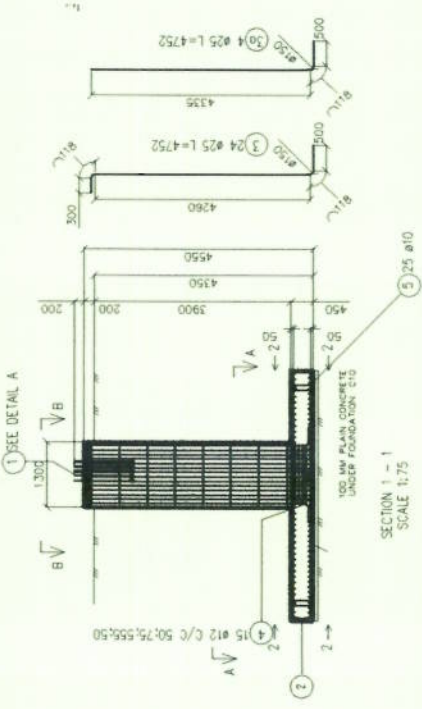
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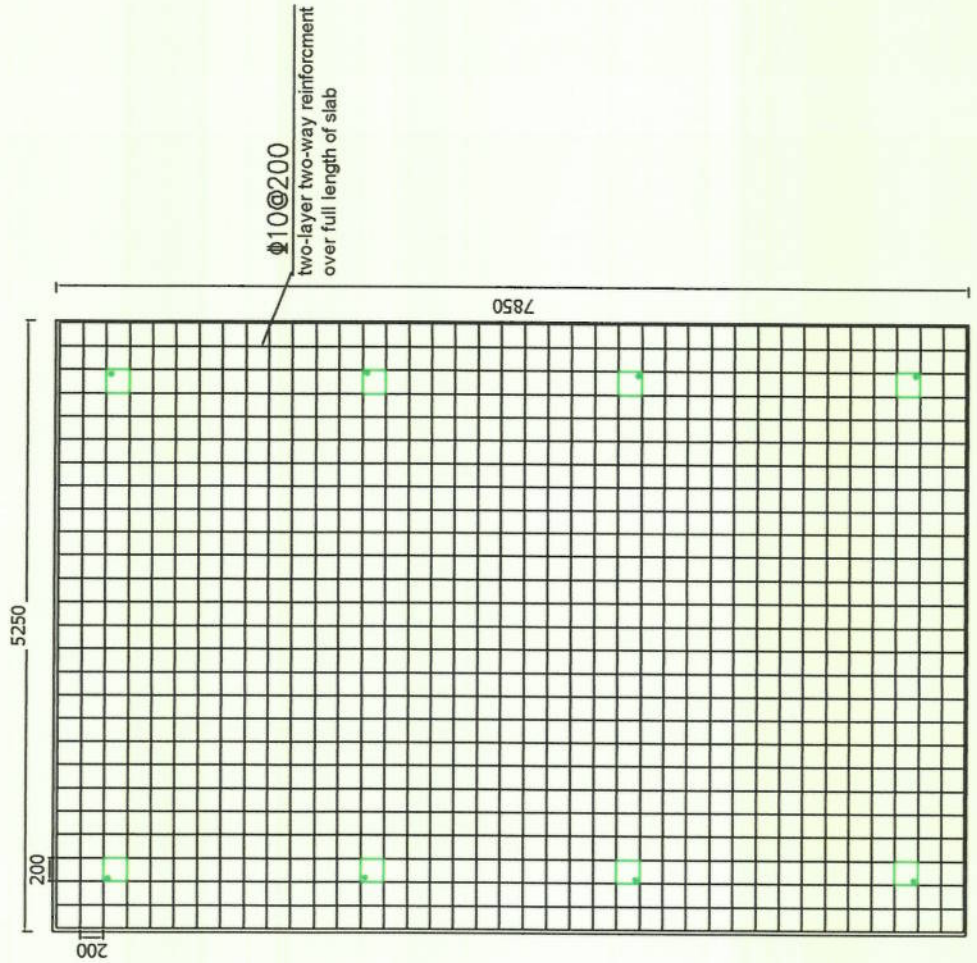
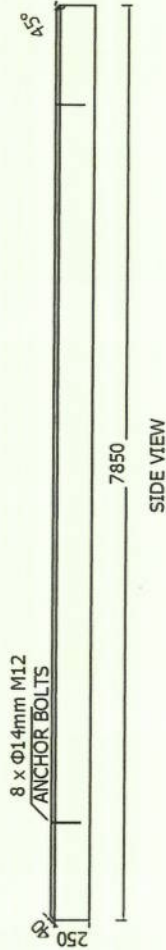
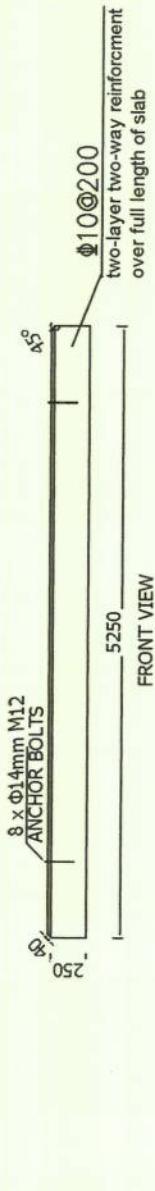
SHEET NO: 11

TOWER FOUNDATION 2



POS	TYPE	TOTAL PCS	TOTAL DIA (mm)	LENGTH (m)	TOTAL WEIGHT (kg)	TOTAL LENGTH (m)	Manufacturing Sketch
							(mm)
2	-	736	20	5,25	9529,2	386,4	
3	-	96	25	5,296	1959,1	508,42	
3a	-	16	25	4,921	303,4	78,74	
3b	-	96	25	5,271	1949,9	506,01	
4	-	64	12	5,0	284,1	320	
5	NS-00	100	10	1,282	79,0	128,2	
6	ALIGNMENT PLATE	4	NA	NA	NA	NA	





TOP VIEW

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SUPERVISOR:

DRAWN BY:

DATE:



**HUAWEI**

HUAWEI TECHNOLOGIES ZIMBABWE PRIVATE LTD  
 100, P.O. BOX 28, UN TOWER, 3601  
 HARARE, ZIMBABWE  
 Tel: +263 4 791057 Fax: +263 4 792294

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 8th FLOOR, MEDIA CENTRE  
 RAIBEDGW TOWERS GROUNDS  
 DATE: P.O. BOX 496, CAUSEWAY, HARARE  
 DESCRIPTION: TEL: +263 4 797380/5

DATE:

NO: DATE:

DESCRIPTION:

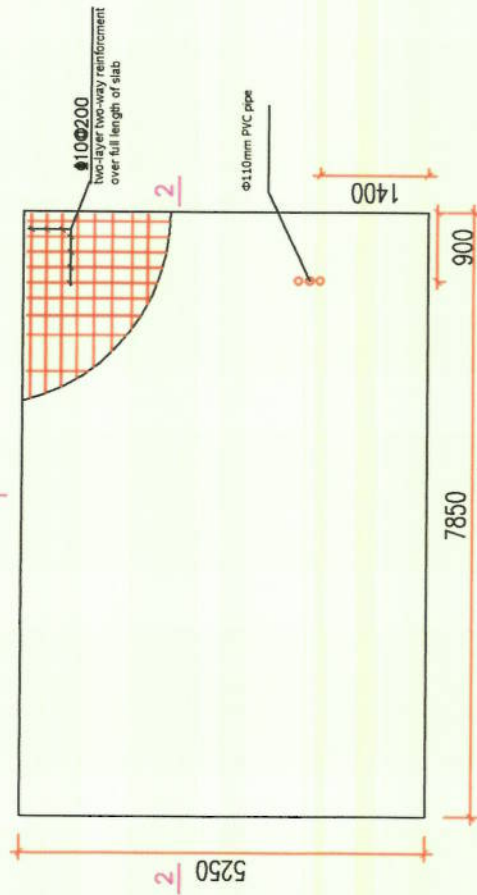
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ISSUE: 1

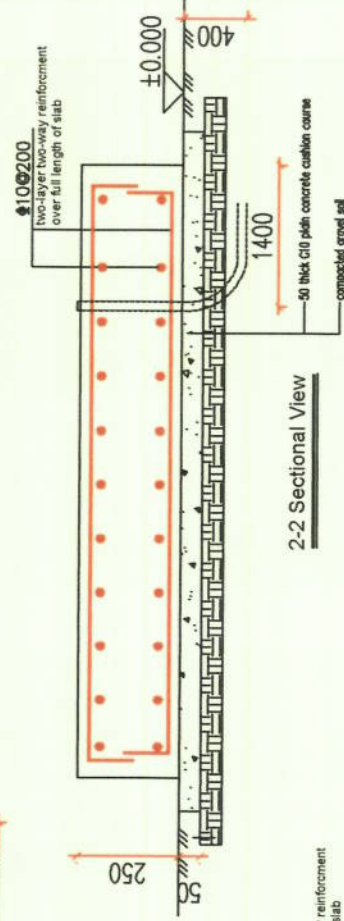
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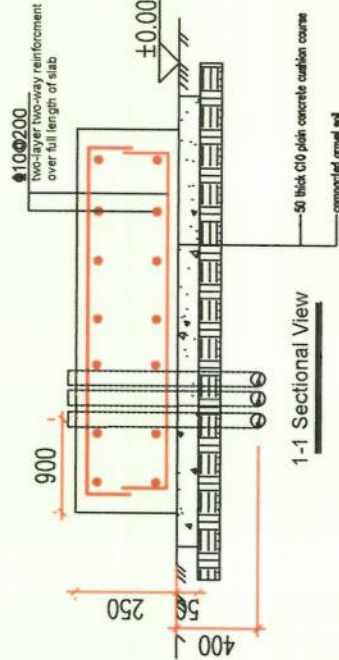
SHELTER PLINTH



Floor plan of shelter foundation



2-2 Sectional View



1-1 Sectional View

Reinforcement grade	Shape	Quantity	Length (m)	Weight (KG)	Total Weight (KG)
Φ10	7750	27	215	132.68	551.17
Φ10	7750	27	215	132.68	
Φ10	5150	40	214	132	
Φ10	5150	40	214	132	
Φ10	300x230x300	26	35.36	21.8	

- Notes:
- This project is the shelter foundation, the weight of the shelter is about 5 tons;
  - Elevation  $\pm 0.000$  of this project is the elevation of the natural ground of the project site, the top plane of the foundation is 250mm above the ground;
  - The foundation concrete adopts C25 and the thickness of concrete protecting course is 50mm.
  - All the edges to be chamfered at 25 mm.

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Tel: +263 4 791057

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DATE:

NO:

DATE:

DESCRIPTION:

SCALE:

N.T.S

ISSUE:

1

DRAWING:

A

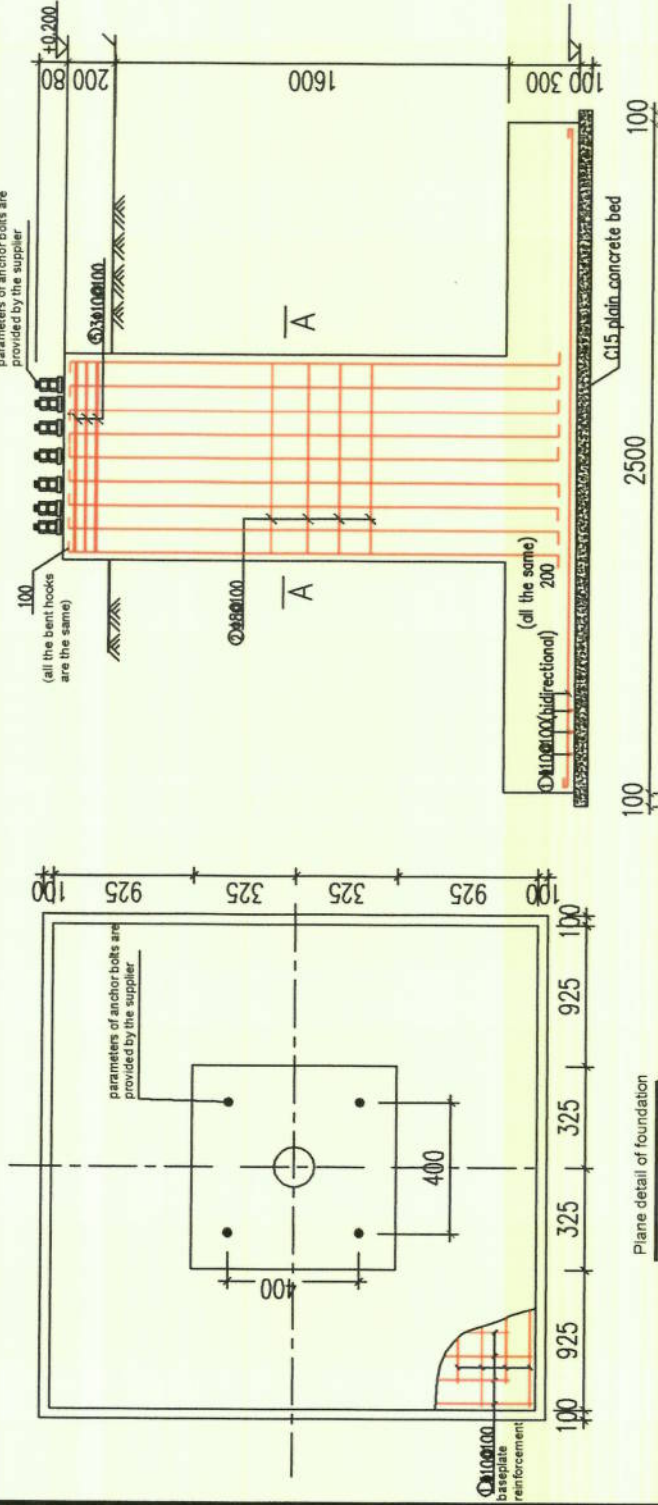
SHEET NO:

13

SHELTER PLINTH Details Layout

BROADCASTING AUTHORITY OF ZIMBABWE  
APPROVED  
P.O. BOX 1489, CAUSEWAY, HARARE  
DATE: 29.6.15

### Downlink Dish Foundation Details Layout



### Section detail of foundation

BAR BENDING SCHEDULE FOR THE DOWNLINK FOUNDATION									
Bar code	Shape	Bar Mark	Bar Size	Members	Total	Bar Length(mm)	Total Length(m)	Kg/m	Total Weight(kg)
01		01	Y10	26	2	2600	135.20	0.62	83.28
02		02	Y8	17	1	1200	20.40	0.39	8.04
03		03	Y16	12	1	2430	28.16	1.58	46.01
04		04	Y8	17	2	730	24.82	0.39	9.78
05		05	Y10	3	1	1200	3.60	0.62	2.22
Total Uplink Foundation Weight in kg									149.33

#### Technical Requirement for The Foundation:

- The foundation is concrete class C25 which is 1:1:2
- Concrete volumes are: RCC Class C25 - 2.6355m<sup>3</sup>  
PCC Class C15 - 0.729 m<sup>3</sup>
- Excavated volume - 16.038 m<sup>3</sup>
- Backfill volumes - 12.6735 m<sup>3</sup>

- The top of tower foundation can also be post-cast by reserving a thickness of 300mm, which is cast using a higher grade of micro-expansion concrete after the locating plate is leveled and the installation of the iron tower is finished.
- Make terrace within the range of 1m around the tower foundation to prevent rainwater permeation, the terrace practice: cast 40 thick C20 concrete and vibrocompact it, pave 80 thick broken stones or broken bricks and pour M2.5 mixed mortar, spread plain soil and tamp it, make slope of 2% around the terrace.
- The bearing course of foundation base is sand course, it is needed to well make slope protection during the excavation, and well manage construction organization and safety measures.
- The foundation base concrete adopts C25 concrete.

SITE NAME: Chikombedzi

SITE ID:

LAND ID :

WBS:

RFQ NO:

PROJECT NUMBER:

LATITUDE: S: 21° 40' 48.61"

LONGITUDE: E: 31° 19' 12.72"

SURVEY DATE:

RADIO ENGINEER:

SUPERVISOR:

DRAWN BY:

DATE:



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APPROVED

HUAWEI

DATE:

NO:

DESCRIPTION:

DATE: 29.6.15

DATE:

DESCRIPTION:

SCALE: N:1:5

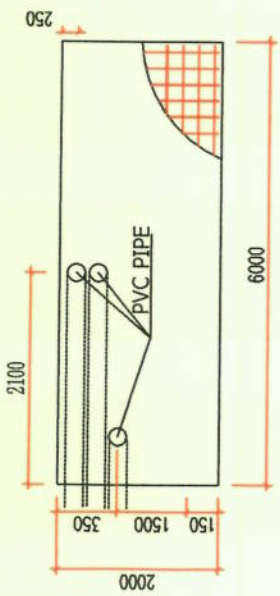
ISSUE: 1

DRAWING: A

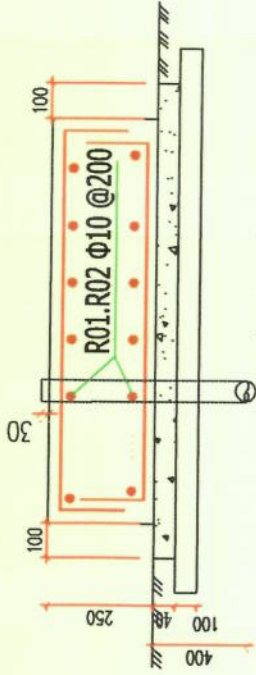
SHEET NO: 14

Downlink Dish Foundation Details Layout

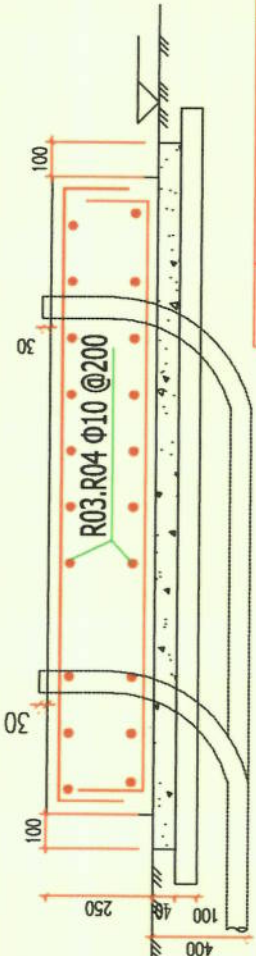




TOP VIEW



Section B-B



Section A-A

Volume of reinforced concrete	3.0 m <sup>3</sup>
Backfilling	0.41 m <sup>3</sup>
Blinding Concrete	0.5456m <sup>3</sup>

Reinforcement grade	SHAPE	QUANTITY	LENGTH (m)	WEIGHT (KG)	TOTAL WEIGHT (KG)
Φ10	5910	11	65	40	154.2
Φ10	5910	11	65	40	
Φ10	1910	30	57.5	35.5	
Φ10	1910	30	57.5	35.5	
Φ10	300 230 300 230 300	5	6.8	4.2	

SITE NAME: Chikombedzi

SITE ID:

LAND ID :

WBS:

RFQ NO:

PROJECT NUMBER:

LATITUDE: S: 21° 40' 48.61"

LONGITUDE: E: 31° 19' 12.72"

SURVEY DATE:

RADIO ENGINEER:

SUPERVISOR:

DRAWN BY:

DATE:



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APPROVED: BROADCASTING AUTHORITY OF ZIMBABWE  
 181, ZOO MEDIA CENTRE  
 RAINBOW TOWERS GROUNDS  
 P.O. BOX 84266, CAUSEWAY, HARARE  
 DATE: 21.10.15

NO: DATE: DESCRIPTION:

SCALE: N.T.S. 1  
 DRAWING: A  
 SHEET NO: 15

D.G PLINTH

Notes:

- This project is the foundation of newly built outdoor 110KVA/88KW box type D.G set, the weight is about 1.6 tons.;
- The ±0.000 of this project is the elevation of natural ground on the site. Site positioning is determined during the construction. Except for the elevations expressed in m, all the dimensions as shown on the drawing are expressed in mm.;
- The foundation concrete adopts C20, the thickness of concrete protective layer is 40 ;
- Pay attention to the facilities like underground pipelines, ditches, etc. during the foundation excavation, if there is any abnormal phenomenon, immediately notify relevant department to study and solve it;
- Perform rust-proofing and corrosion resistance treatment of the welded area of the grounding grid.
- All the edges to be chamfered at 25 mm .

SITE NAME: Chikombedzi

SITE ID:

LAND ID :

WBS:

RFQ NO:

PROJECT NUMBER:

LATITUDE: S: 21° 40' 48.61"

LONGITUDE: E: 31° 19' 12.72"

SURVEY DATE:  
RADIO ENGINEER:  
SUPERVISOR:  
DRAWN BY:  
DATE:



HUAWEI TECHNOLOGIES ZIMBABWE (PVT) LTD  
17th Floor, 28 UNK Tower 5, 3600  
Maple Avenue, Harare, Zimbabwe  
Tel: +263 4 79327  
Fax: +263 4 791345

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APPROVED

HUAWEI

DATE:

NO:

APPROVED

CUSTOMER

BROADCASTING AUTHORITY OF ZIMBABWE

14

DATERADIBAW GOWE 5

PO BOX 888 GARDENWAY HARARE

DESCRIPTION: 1: 203 4 791345

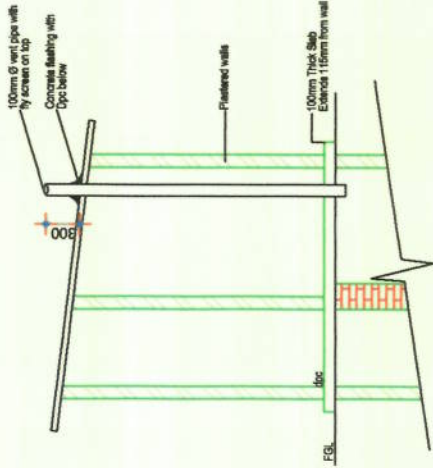
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ISSUE: 1

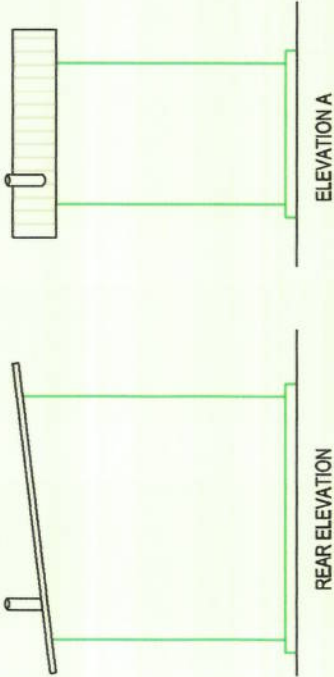
DRAWING: A

SHEET NO: 16

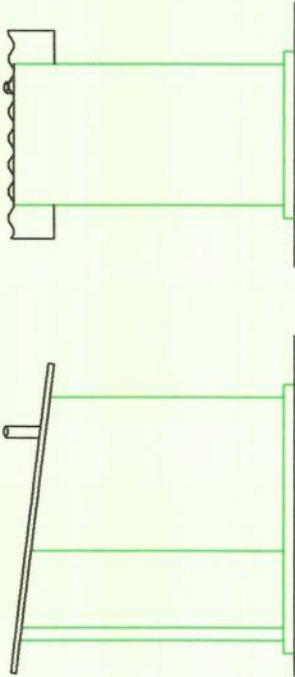
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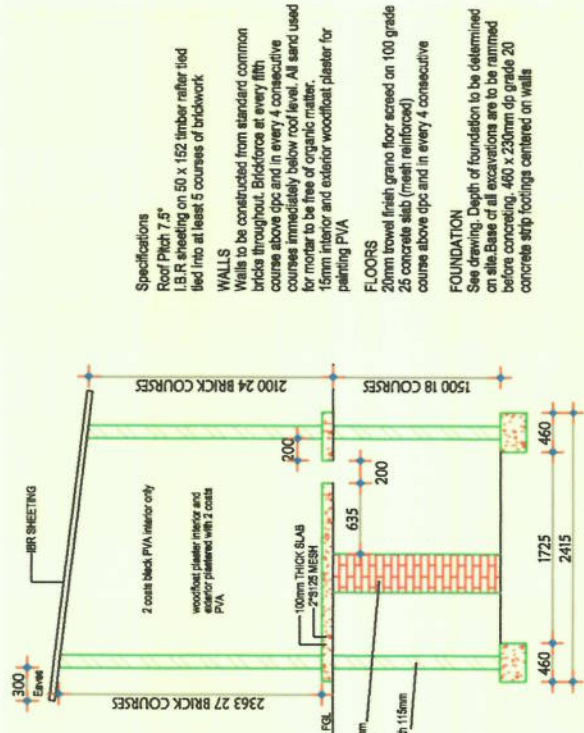
SECTION B-B



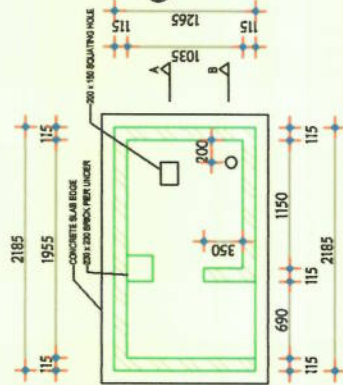
ELEVATION A



ELEVATION B



SECTION A-A



FLOOR PLAN

**Specifications**  
Roof Pitch 7.5°  
I.B.R. sheeting on 50 x 152 timber rafters tied  
into at least 5 courses of brickwork

**WALLS**  
Walls to be constructed from standard common  
bricks throughout. Bridgework at every fifth  
course above epc and in every 4 consecutive  
courses immediately below roof level. All sand used  
for mortar to be free of organic matter.  
15mm interior and exterior woodfloat plaster for  
painting PVA

**FLOORS**  
20mm trowel finish grano floor screed on 100 grade  
25 concrete slab (mesh reinforced)  
course above epc and in every 4 consecutive

**FOUNDATION**  
See drawing. Depth of foundation to be determined  
on site. Base of all excavations are to be rammed  
before concreting. 400 x 230mm dp grade 20  
concrete strip footings centered on walls

SITE NAME: Chikombedzi

SITE ID:

LAND ID :

WBS:

RFQ NO:

PROJECT NUMBER:

LATITUDE: S: 21° 40' 48.61"

LONGITUDE: E: 31° 19' 12.72"

SURVEY DATE:  
RADIO ENGINEER:  
SUPERVISOR:  
DRAWN BY:  
DATE:



HUAWEI TECHNOLOGIES ZIMBABWE (PVT) LTD  
12th Floor, 28 UN Towers, 3rd St  
Maple Avenue, Harare, Zimbabwe  
Tel: +263 4 793507  
Fax: +263 4 793524

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COMMENCEMENT OF WORK.

APPROVED

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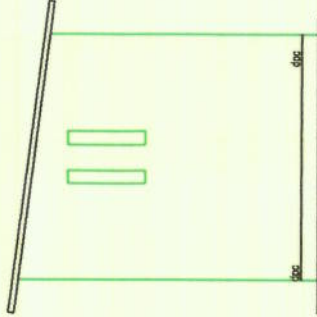
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NO: \_\_\_\_\_

DATE: \_\_\_\_\_  
DESCRIPTION: \_\_\_\_\_

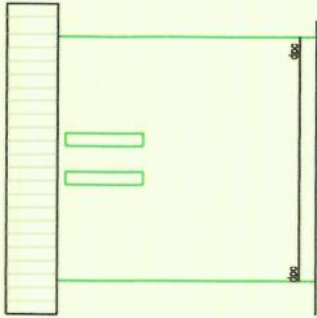
BROADCASTING AUTHORITY OF ZIMBABWE  
1 CUSTOMER, MEDIA CENTRE  
RAIBOW TOWERS, HARARE  
P.O. BOX 496, SAULUS  
DATE: 2024.05.15  
DESCRIPTION: +263 4 797 380/5

SCALE: N.T.S.  
ISSUE: 1  
DRAWING: A  
SHEET NO: 17

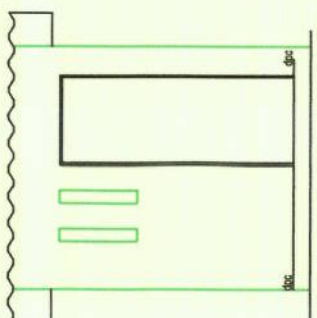
GUARDROOM



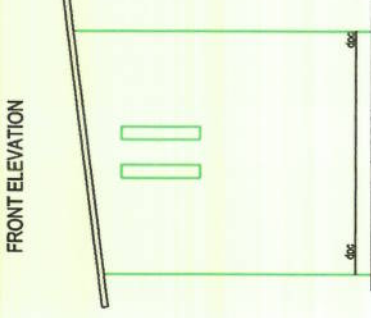
FRONT ELEVATION



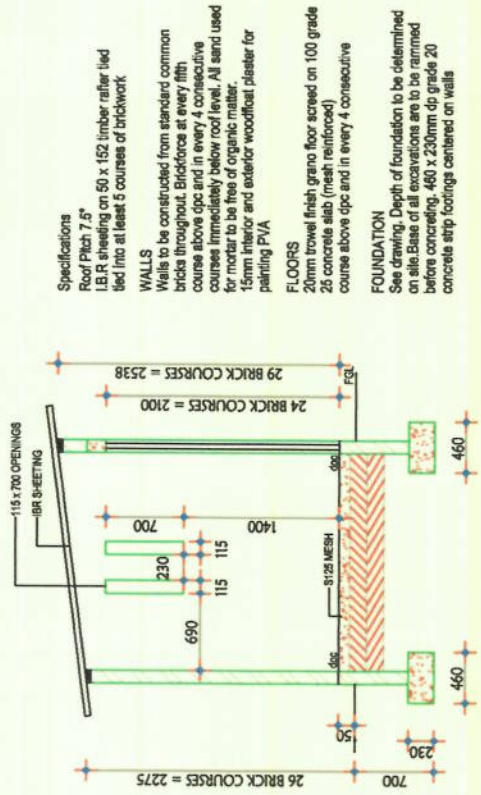
REAR ELEVATION



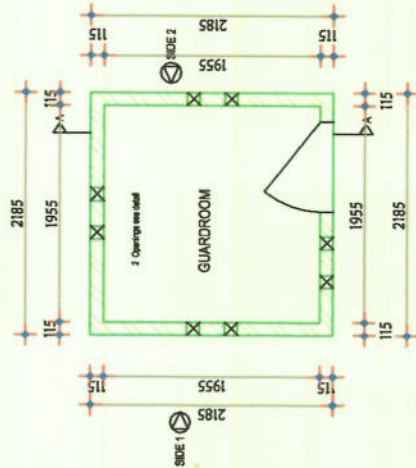
SIDE 1



SIDE 2



SIDE 2



FLOOR PLAN

Specifications

Roof Pitch 7.5°  
I.B.R sheeting on 50 x 152 timber rafter tied  
into at least 5 courses of brickwork  
WALLS  
Walls to be constructed from standard common  
bricks throughout. Brickwork at every fifth  
course above gpc and in every 4 consecutive  
courses immediately below roof level. All sand used  
for mortar to be free of organic matter.  
15mm interior and exterior woodfloat plaster for  
painting PVA  
FLOORS  
20mm trowel finish grano floor screed on 100 grade  
25 concrete slab (mesh reinforced)  
course above gpc and in every 4 consecutive  
FOUNDATIONS  
See drawing. Depth of foundation to be determined  
on site. Base of all excavations are to be rammed  
before concreting. 460 x 230mm dp grade 20  
concrete strip footings centered on walls

SITE NAME: Chikombedzi

SITE ID:

LAND ID :

WBS:

RFQ NO:

PROJECT NUMBER:

LATITUDE: S: 21° 40' 48.61"

LONGITUDE: E: 31° 19' 12.72"

SURVEY DATE:  
RADIO ENGINEER:  
SUPERVISOR:  
DRAWN BY:  
DATE:



HUAWEI TECHNOLOGIES ZIMBABWE PRIVATE LTD  
12th Floor, 20 Link Towers, 3rd St  
Harare, Zimbabwe  
Tel: +263 4 792527  
Fax: +263 4 792524

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COMMENCEMENT OF WORK.

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BROADCASTING AUTHORITY OF ZIMBABWE  
12th FLOOR, MEDIA CENTRE  
RAINFLOWER TOWERS, 20 LINK TOWERS,  
HARARE  
DATE: 09.03.2016  
CUSTOMER: CALS  
PROJECT NO: 700380/5

DATE:

NO:

DATE:

DESCRIPTION:

SCALE:

N.T.S

ISSUE:

1

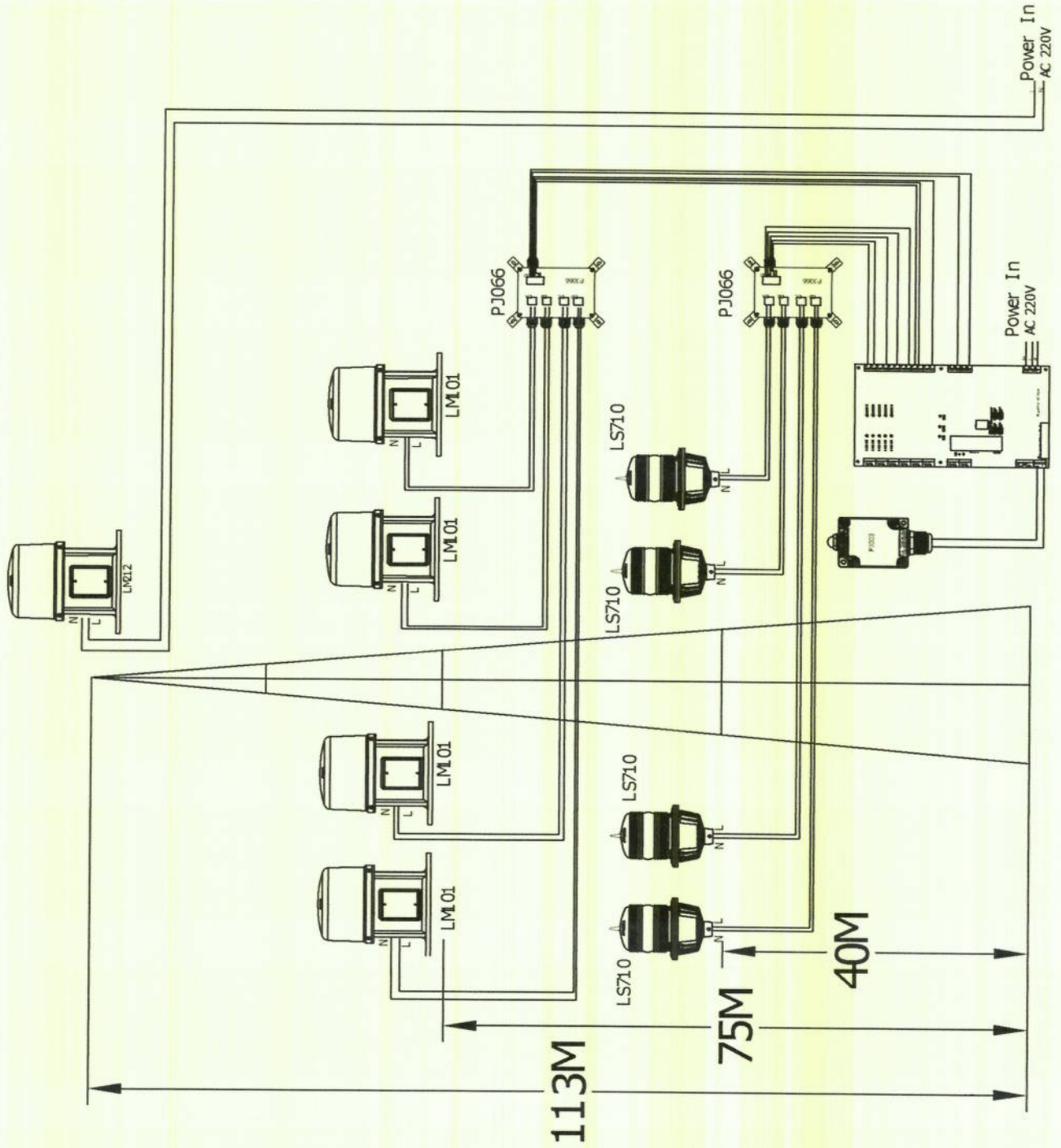
DRAWING:

A

SHEET NO:

18

4 Leg Wiring Diagram



SITE NAME: Chikambedzi

SITE ID:

LAND ID :

WBS:

RFQ NO:

PROJECT NUMBER:

LATITUDE: S: 21° 40' 48.61"

LONGITUDE: E: 31° 19' 12.72"

SURVEY DATE:

RADIO ENGINEER:

SUPERVISOR:

DRAWN BY:

DATE:



HUAWEI TECHNOLOGIES ZIMBABWE PRIVATE LTD  
13th floor, 28 Link Tower, 3rd Mile  
Noye Avenue, Harare, Zimbabwe  
Tel: +263 4 793267  
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DATE:

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DESCRIPTION:

SCALE:

N.T.S

ISSUE:

1

DRAWING:

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SHEET NO:

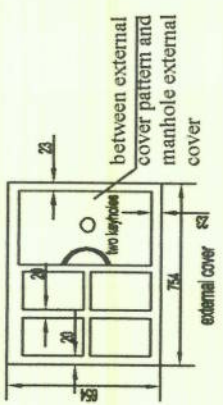
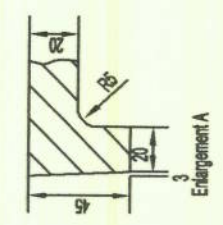
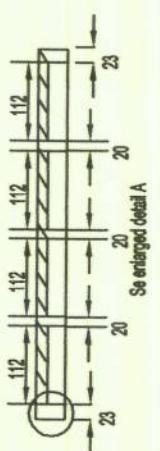
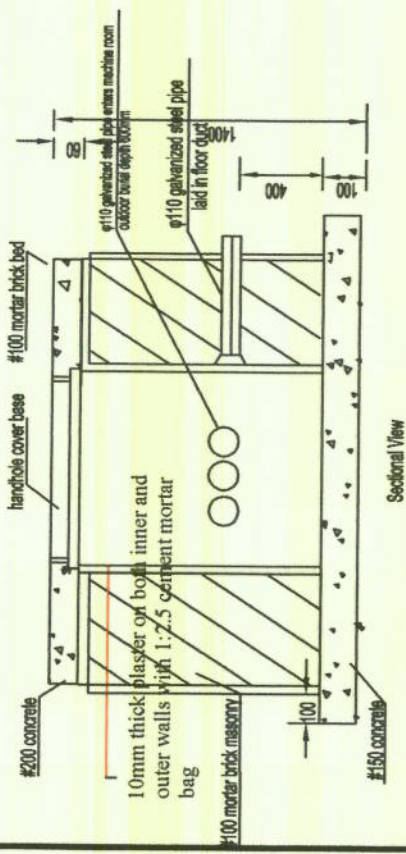
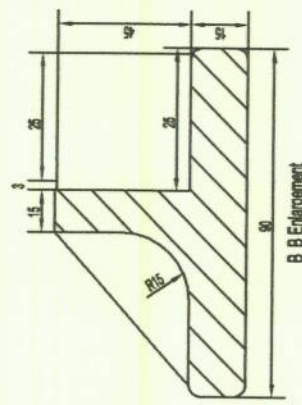
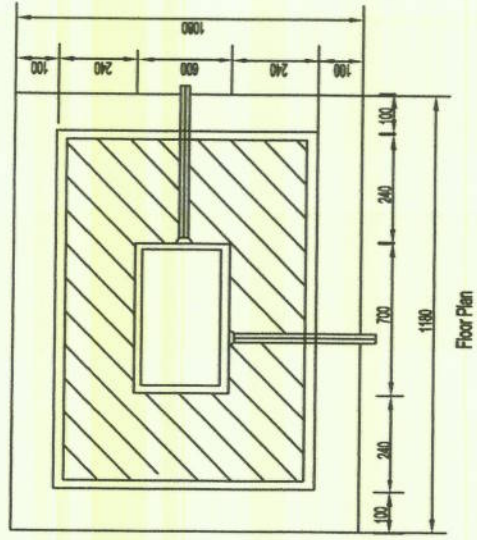
19

The Structure Of Manhole

BROADCASTER'S AUTHORITY OF ZIMBABWE  
13th floor, 28 Link Tower, 3rd Mile  
Noye Avenue, Harare, Zimbabwe  
Tel: +263 4 793267  
Fax: +263 4 792534

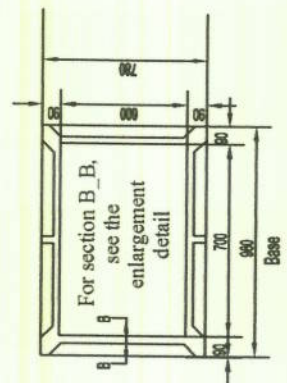
Notes: Processing technical requirements are described as follows:

1. All S
2. Cast corner radius R3-R5
3. Material HT15-32



Reference table of main materials

Slr	Name	Unit	Qty
1	external cover of manhole	Set	1
2	#100 machine made brick	Per	161
3	#425 cement	kg	71
4	medium sand	kg	317
5	stone	kg	225



Notes:

1. The small handhole is used for upward laying of buried cable or entry into the office.
2. The earth excavation volume is about 1.2 cubic meters and the construction requires 3.43 man-days (of which 0.43 man-day for earth excavation and 3 man-days for masonry).
3. The quota is calculated according to 0.6m excavation, for example, 0.1m increase or decrease, then 24 pieces of bricks and 5kg cement shall be increased or decreased.