MAHAVITARAN
Maharashtra State Electricity Distribution Co. Ltd.

Maharashtra State Electricity Distribution Company Limited

SPECIFICATION NO. STORES: MSC-II/DB/Urban/2011/01

TECHNICAL SPECIFICATION

FOR

63, 100 kVA, 200 kVA LT DISTRIBUTION BOX with MCCBs for Urban Areas

FOR

DISTRIBUTION SYSTEM

IN

MSEDCL

I N D E X

MAHARASHTRA STATE ELECTRICITY DISTRIBUTION COMPANY

Technical Specifications for

63,100,200 KVA L.T. DISTRIBUTION BOX with M.C.C.Bs.

SPECIFICATION NO. STORES: MSC-II/DB/Urban/2011/01

1. SCOPE:

Specification covers the design, manufacture, testing at works and supply of Distribution Boxes made out of **CRCA MS** for controlling the L.T. feeders from the L.T. side of Distribution Transformers. The system shall be A.C. 3 phase, 4 wire, 433 V, 50 HZ with effectively grounded neutral.

2. SERVICE CONDITIONS:

The equipment to be supplied against this specification shall be suitable for satisfactory continuous operation under the following tropical conditions.

2.1	Maximum ambient temperature (Degree C)	50
2.2	Maximum temperature in shade (Degree C)	45
2.3	Minimum Temperature (Degree C)	3.5
2.4	Relative Humidity (percent)	10 to 95
2.5	Maximum Annual rain fall (mm)	1450
2.6	Maximum wind pressure (kg/sq.m)	150
2.7	Maximum altitude above mean sea level (Meter)	1000
2.8	Isoceranic level (days per year)	50
2.9	Siesmic level (Horizontal Acceleration)	0.3 g

Moderately hot and humid tropical climate conductive to rust and fungus growth ….

3. SYSTEM DETAILS:

Distribution Boxes are meant for control and protection of Distribution Transformers with relevant parameters as under:-

S.N.	Particulars	Details		
1.	KVA rating	63 KVA	100 KVA	200 KVA
2.	Voltage	433 V, 3 Ph, (3x 250 V)		
3.	Frequency	50 HZ		
4.	Phases	3 phase, solidly grounded neutral		
5.	Approximate full load current of transformer	84 A	133 A	270 A
6.	No. of Outgoing circuits	2 nos		3 nos

4. Applicable Standards:

a. IS :13947/1993 (Part 3) for Isolator (Switch Disconnector)

b. IS: 13947/1993 (Part2)(amended upto date) for L.T. MCCBs.

c. IS: 8623/1993 (amended upto date) for enclosure Box & for degree of protection provided by enclosures of electrical equipments.

d. IS: 4237/1982, IS:8623/1993 (amended upto date) – for general requirement of L.T. switchgears.

e. IS 13703/1993 (Part I & II amended upto date) for HRC Fuse Base and HRC Fuse Link.

f. IS: 5 /2007 - Colours of Ready Mixed paints and Enamels.
g. IS: 13871/1993 – Powder coatings – specifications
h. IS : 6005/1998 – Code of Practice for phosphating of iron and steel.
i. IS: 13411/1992 – Glass Reinforced Polyester Dough Moulding Compounds

5. MANUFACTURE/CONSTRUCTION OF BOXES:

a. Distribution Boxes shall have Isolator (Switch Disconnector) and HRC fuse base with links on incoming circuit and single pole MCCBs & Link Disconnector on outgoing circuits with necessary interconnecting Bus Bars/ Links.

b. Standard General Arrangement of Isolators, HRC fuse base with links, MCCBs, Link Disconnector, Neutral Links, Bus Bars, connecting links, Cable termination arrangement etc inside the Box is shown in the enclosed drawing No. Dist /DB/05 for 63/100 KVA and Drawing No. Dist / DB/ 02 for 200 kVA distribution boxes.

6. INCOMING CIRCUIT –

6.1 Isolator (Switch Disconnector) -

Each distribution box shall have one triple pole Isolator (Switch Disconnector), conforming to relevant IS and MSEDCL specification. The bidder shall indicate makes and types of offered isolator in GTP. The **successful** bidder shall submit Type Test Report of the Isolator as specified in Cl. No. 12.3 (II) for approval of CE (Stores) before commencement of supply. The Switch disconnector to be provided in the Distribution Box will be as per MSEDCL's approval as given in the detailed purchase order.

The Isolator should be front operated triple pole type. The casing of Isolator shall be of non-tracking, heat resistant insulating material of Dough Moulding Compound (DMC) of D_3 Grade as per IS:13411/1992, no separate enclosure is required. Isolator Base should withstand the breaking capacity of 80 kA. To extinguish the arc immediately in isolators, in each phase archutes with minimum 12 strips shall be provided.

The isolator should be front operated triple pole type. The isolator shall be robust in construction and easy for operation. The handle of the isolator should be detachable easily for security purpose while working on L.T. circuits.

The characteristics of Isolator shall be as follows:

S.N	Characteristics	Rating		
		63 KVA	100 KVA	200 KVA
1.	Basic uninterrupted duty	250 A		600A
2.	Mechanism	Manual quick make quick break		
3.	Standard applicable	IS : 13947 /1993 amended upto date		
4.	Utilization category	AC –23 A		
5.	Mechanical Endurance	As per IS 13497 /1993 amended upto date		
6.	Electrical Endurance	As per IS: 13947 /1993 amended upto date		
7.	Rated Duty	Uninterrupted		
8	Making /Breaking capacity	Not less than requirement of AC –23 A category		
9.	Two seconds rating	4 KA		8 KA
10.	Rated insulation voltage	660 V		

The terminal connector strips of the isolator shall be projecting out of isolator of 80 mm (minimum) in length on cable connection side and 60mm (minimum) on HRC fuse base side as shown in the drawings. In 63 /100/200 KVA distribution box, the cross section of the strips on outside of the isolator shall be provided as below:

63/100 KVA - 25X5 mm.

200 KVA - 50X 6 mm

The material of isolator strips shall be EC grade tin-plated copper. The terminal strips shall be continuous from the point of contact separation inside the Isolator.

6.2 HRC FUSE

HRC Fuse of suitable capacity shall be provided between outgoing terminal of Switch Disconnector (Isolator) and incoming Busbar as shown in the Drg.No. Dist/DB/08 to facilitate electrical breaking of the circuit. Each Distribution Box shall have 3 Nos. of HRC Fuse Base with HRC Fuse Links (Blade type Contacts).

The bidder shall indicate in GTP, the make, type and capacity of HRC Fuse Base and Fuse Links offered.

6.2.1 HRC FUSE BASE

The base of the HRC Fuse shall be of non-tracking, heat resistant insulating material of Dough Moulding Compound (DMC) of D_3 Grade as per IS:13411/1992. The Fuse Base shall be sturdy in construction.

The extension terminal connector strips of the Fuse Base shall be projecting out on both sides, made with two pieces (half portion of the terminal contact and extension strip should be continuous in one piece), as shown in the drawing. The dimensions shall be as shown in the drawing. The material for both strips shall be Silver Plated EC Grade copper. HRC Fuse Base & fuse link should have withstand the breaking capacity of 80 kA.

HRC Fuse base shall be suitable for fuse of 200A for 63/100 KVA distribution box and 400 A for 200 kVA distribution box.

6.2.2 HRC FUSE LINK

The HRC Fuse Links shall be sturdy in construction of "Din Type". Breaking Capacity shall be 80 kA. For fault indication red pop up indicator should come out instantly on fusing. Manufacturer's name, current rating, breaking capacity and type shall be marked on HRC fuse link.

HRC Fuse link Current rating for 63/100 /200 KVA distribution box shall be as follows:

63 KVA - 100 A

100 KVA - 160 A

200 KVA - 315 A.

The **successful** bidder shall submit Type Test Report of the HRC fuse base and HRC fuse link as specified in Cl. No. 12.3 (III) for approval of CE(Stores) before commencement of supply. The HRC fuse base with links to be provided in the Distribution Box will be as per MSEDCL's approval given in the detailed purchase order.

7. OUTGOING CIRCUITS:

7.1 MCCBs

Each distribution box shall have 6 nos. of single-pole MCCBs in 63 KVA /100 KVA Box and 9 nos of single-pole MCCBs in 200 KVA box to protect outgoing circuits. MCCB shall be conforming to this specification. The bidder shall indicate the makes and types of MCCBs offered in GTP. The **successful** bidder shall submit Type Test Report of the MCCB as specified in Cl. No. 12.3 (IV) for approval of CE(Stores) before commencement of supply. The MCCBs to be provided in the Distribution Box will be as per MSEDCL's approval as given in the detailed purchase order. The colour of MCCBs for 63/100 /200 kVA distribution box shall be as follows:

63 KVA - Brown

100 KVA - Dark admiral gray

200 KVA - Black

MCCB shall have quick make quick break mechanism. Making of MCCB shall only be manual but breaking of MCCBs shall be electrical as well as manual.

The detailed specification for MCCBs shall be as under.

S.N	**Particulars**	**Details**		
1.	KVA rating	63 KVA	100 KVA	200 KVA
2.	Rated current	150 A		200 A
3.	Fixed overload release setting (A)	60 A	90 A	120 A
4.	No. of poles	Single pole		

5.	Rated service short circuit breaking capacity (kA) which is equal to ultimate breaking capacity as per IS 13947 /1993	10 KA at 0.4 p.f . (lag)
	The sequence of operation for this test shall be, O - t - CO - t - CO, and t = 3 min.). The test shall be done at 250V at 0.4 p.f. (lag). Voltage rating phase to phase 433 V and phase to earth 250V.	
6.	Power factor for short circuit (Max.)	0.4 lag
7.	Utilization category	A
8.	Rated Insulation Voltage	660 V

The Busbar dropper and Terminal connection strip of Link Disconnector shall be placed in contact terminal of MCCB as shown in the drawing.

The rated service short circuit breaking capacity as specified in clause No. 5 above, shall be based on the rated service short circuit test carried out at specified power factors.

To extinguish the arc immediately in MCCBs, archutes with minimum 8 strips shall be provided.

While the above stipulation regarding the test power factor and the sequence of operation shall be binding, the other procedure for making the short circuit test and circuit etc. shall generally be in accordance with the Indian Standard applicable to the type of circuit breakers under test.

7.2 TIME CURRENT CHARACTERISTICS of MCCBs:

The L.T. MCCBs shall have time current characteristics as follows:

Multiple of normal Current setting	**Tripping time**
1.05	More than 2.5 hrs.
1.2	More than 10 minutes and less than 2 hrs.
1.3	Less than 30 minutes
1.4	Less than 10 minutes
2.5	Less than 1 minute
4.0	Not less than 2 seconds
6.0	Less than 5 seconds
12.0	Instantaneous (less than 40 milli seconds.)

For above time/current characteristic, the reference calibration temperature of the breaker shall be 50°C. Deration, if any, upto 60°C. ambient temperature shall not exceed 10% of the current setting indicated above.

7.3 LINK DISCONNECTOR :

Link Disconnector of 200 A capacity shall be provided between outgoing terminal of MCCB & cable connection as shown in the Drg.No.Dist/DB/09 to facilitate mechanical breaking (manual isolation) of the circuit. 63 /100 kVA Distribution Box shall have 6 Nos. of link Disconnectors and 200 kVA distribution box shall have 9 nos of link Disconnectors.

The bidder has to indicate the makes and types of Link Disconnector offered in GTP. The **successful** bidder shall submit Type Test Report of Link Disconnector as specified in Cl. No. 12.3 (V) for approval of CE (Stores) before commencement of supply. The link Disconnectors to be provided in the Distribution Box will be as per MSEDCL's approval as given in the detailed purchase order.

The base of the Link Disconnector shall be of non-tracking, heat resistant insulating material of Dough Moulding Compound (DMC) of D_3 Grade as per IS:13411/1992. The Link Disconnector shall be sturdy in construction and easy in operation.

The link of Link Disconnector shall be of Tin-plated E.C. grade copper. The construction of the Link Disconnector shall be such that it shall be hinged type on cable connection end and disconnectable at the MCCB end. The disconnection will be with the help of special handle/puller. One handle/puller shall be supplied alongwith each Distribution Box. The terminal connector strips of the Link Disconnector of 25 x 5 mm cross section, shall be projecting out of Link disconnector for minimum length of 80 mm. on cable connection side and 40 mm on MCCB outgoing side (as shown in the Drg DIST/DB/09). The cross section of knife edge link shall be 20 x 4 mm. The material for both the strips and links shall be tin-plated E.C. grade copper. The size of bimetallic lugs hole & the hole on the disconnectors strip on cable side should be same. The base of Link Disconnectors for 63 /100/200 kVA distribution box shall be rated as follows :

63 and 100 KVA - 150 A .

200 KVA - 200 A.

8 BUSBARS AND CONNECTIONS:

As shown in Drg. DIST/DB/03 & DIST/DB/07, the Incomer feeder should be on right side of the distribution box and all outgoing feeders will be on left side of the distribution box, with phase sequence RYB to be maintained. The phase busbars and feeder droppers from busbars shall be of tin-plated E.C. grade copper. The phase busbar strips shall be of size 25X5 mm for 63 KVA/100 KVA and 40X8 mm for 200 KVA box. Feeder droppers shall be 25X5 mm. Incomer dropper of 25 x 5 mm cross section for 63 /100 KVA box and 40 x 8 mm cross section for 200 KVA box be provided. All busbars and droppers shall be properly drilled and deburred. Each busbars shall be of one single strip without any joint.

Busbars shall be provided with durable PVC insulating sleeves of standard colour code for different phases. Corrugated/Spring & Plain washers shall be used for Nut-Bolt connections.

Busbars shall be mounted on suitable size support insulators which should be tightened from inside. i.e. once fitted , should not be able to removed.
Minimum clearances, wherever shown, shall be as per General Arrangement Drawing enclosed with this specifications. Other clearances shall be as per requirement of IS: 4237/1982 amended upto date.

9 ENCLOSURE:

9.1 The Box & Doors shall be made up of CRCA MS sheet of 2mm thickness.

9.2 The manufacturing process of Box shall be either Deep Drawn process or Fabrication.

9.3 In case of Deep drawn type distribution boxes, the rounding of corners and slope on Top shall be as shown in the drawing. No joints in the body of the Box are permitted in Deep Drawn Process.

9.4 In case of fabricated box sharp corners & one side slope will be acceptable. The fabrication boxes, involving welding, shall not have more than two joints.

9.5 The welding process of both type of distribution boxes shall be done by MIG (Metal Inert Gas) welding and workmanship/finishing should be good enough.

9.6 **A. For Fabrication Box** : the general overall clear dimensions of 63 / 100 KVA Distribution Box shall be 1000 x 1010 x 325 (LXHXW)mm. The height of distribution boxes on front side shall be 1010 mm and backside shall be 990 mm. (Drg No. Dist/DB/01/A) The general clear dimensions of 200 kVA Distribution Box shall be 1305 x 1060 x 325 (LXHXW) mm. The height of distribution boxes on front side shall be 1060 mm and backside shall be 1040 mm. (Drg No. Dist/DB/02/A).

B. For Deep Drawn Box: the general clear dimensions of 63 / 100 KVA Distribution Box shall be 1000 x 1010 x 325 (LXHXW)mm. without considering collor of box. The center height of distribution box on front side shall be 1010 mm and right & left side of the box shall be 995 mm without considering collar of the box. (Drg No. Dist/DB/01/B) The general clear dimensions of 200 kVA distribution box shall be 1305 x 1060 x 325 (LXHXW) mm without considering collar of the box and door. The center height of the distribution box on front side shall be 1060 mm & right & left side of the box shall be 1045 mm without considering collar of the box. (Drg No. Dist/DB/02/B).

9.7 The Base and doors of enclosure shall be individually in one piece without any welding, except for fixing of the accessories like hinges, clamps, mounting clamps, bolts etc.

A.63/100 kVA boxes shall have one door as shown in the drawing fixed on right side of the box with four hinges provided from inside of box.

B.200 kVA boxes shall have two doors as shown in drawing fixed on right side & left side of the box with four hinges on both sides shall be provided from inside of box. On closing of doors, right door shall rest on the left door.

Base and doors shall have flange / collars as shown in drawing. Collar of Base and doors shall overlap by 10mm. Rubber gasket of suitable size shall be provided in between base and doors, such that it provides proper sealing between the door and base of box to avoid penetration of dust & ingress of water. Degree of protection shall be **IP- 33** as per IS-8623/1993 (amended up to date). Rubber Gasket shall be fixed with suitable adhesive. Four hinges on each side shall be provided from inside of the box to fix the doors. Hinges shall be minimum 50 mm in length & made from 2mm thick sheet. Hinge stainless steel pin diameter shall be 4mm. The hinges shall not be visible from outside.

9.8 The MCCBs, Link Disconnector, Isolator and HRC fuse base with link shall be housed inside the enclosure. Isolator operating handle shall be accessible only after opening of the doors.

9.9 Four set of Louvers (two sets on each side) of suitable size shall be provided as shown in drawing. The louvers shall be provided such that heat dissipation is proper. The perforated sheet of 20 SWG with 2.5 mm holes shall be welded from inside of the louvers.

9.10 Mounting of components inside the enclosure shall allow free air circulation keeping the clearances as per drawings No. Dist/DB/02 & Dist/DB/05 attached with specification.

9.11 Locking Arrangement to the Box:
The locking arrangements to boxes shall be such that the door (s) shall be automatically closed without applying external force. The door should be front operated with a common handle provided outside the door. In addition to this, C&R panel door locks shall be provided to the door at top & bottom. Key way shall be provided on the door for operating the lock from out side. Key way shall be provided with cover. A nylon washer shall be provided between the handle and door to avoid penetration of water.

9.12 A suitable cable termination arrangement with support insulators shall be provided on Isolators and Link Disconnectors. The bimetallic lugs of adequate size, as per enclosed specification & drawing, shall be provided. Clearances, Creepages and convenience in making connections shall be ensured.

9.13 Tin-plated EC grade copper Neutral Busbar of 300 x 30 x 5mm for 63/100 KVA box and 525 x 50 x 5mm for 200 KVA Box capable of carrying for full load current. Neutral Busbar shall be isolated with respect to body. The bimetallic lugs of adequate size, as per enclosed specification & drawing, shall be provided. Neutral Busbar shall be as shown in the drawing attached with the specifications.

9.14 Two galvanized earthing Bolts of M12 x 50 mm size shall be welded from inside and projecting outside of the box as shown in the drawing. There should be no powder coating on the earthing bolts. Two Nuts with washers shall be provided on each bolt.

9.15 Three bottom plates of the size 125mm x 125mm fixed with four screws from inside shall be provided for incoming and outgoing cables. Bottom plates shall be provided with suitable holes and rubber glands for the cables. Rubber glands shall be made such that internal diameter of glands provided for cables should be closed with the rubber film of minimum 1mm thickness. Cable will go through the glands by cutting the film of the glands. Bottom plates shall also be provided with cable clamps as shown in drawing.

9.16 Necessary fixing arrangement shall be provided at the back of the enclosure to ensure proper fixing on double pole structure by means of suitable clamps at 4 places.

9.17 Danger Board as shown in drawing no.Dist/DB/14 attached with specifications shall be riveted on the box as per IS:2551. Danger board marking by painting shall not be accepted.

9.18 All the components inside the Box shall be mounted on CRCA MS strips of 2mm thickness. The mounting strips shall be provided with required bends or ribs to give the extra strength and shall be powder coated or zinc plated.

9.19 All joints of current carrying parts shall be bolted with 8.8 grade High Tensile MS Nuts & Bolts, Corrugated/spring & Plain Washers. The nuts & bolts should be of hexagonal type. All the nuts, bolts & washers should be properly zinc plated.

9.20 Each distribution box shall be supplied with proper packing in five ply - corrugated box.

9.21 Name plate having details such as Month & year of manufacturing, Name of manufacturer/Trade mark, Sr.No, and rating of Distribution box, shall be riveted on the Distribution box door. The name plate should be of stainless steel of thickness 1 mm. Mahavitaran logo in Marathi Language shall be embossed on the door of the distribution box. Marathi slogans as per attached Annexure – I shall be painted in glowing colour (Red/ Yellow/ Bright Green/Orange). The letter size, font, height & length shall be suitable to the size of distribution boxes such that slogan can be clearly readable from 30 feet distance. There are total 15 nos Marathi slogans, out of them one slogan has to be painted per box. All slogans shall be covered equally on the ordered quantity. All above shall be so placed to give box good look.

9.22 Incoming and outgoing circuit should be duly highlighted with paint by stencil printing.

9.23 Adequate slope on the top of box shall be provided to drain out rainwater from the top.

9.24 3 Nos. MCCBs and 3 Nos. HRC fuse links in spare should be invariably provided with each box.

9.25 Good-quality plastic sticker leaflet should be pasted inside of distribution box door. The matter of instruction leaflet is given along with this specification. All the instructions in leaflet should be in Marathi language.

10 CABLE TERMINATION:

Adequate size of Bimetallic lugs shall be provided for 3½ core, LT XLPE cable on incoming side and out going side for 63/100/200 KVA boxes as below :

	Incoming side	Outgoing Side
63 KVA	120 sq.mm	50/ 70 sq.mm
100 KVA	120 sq.mm	50/70 sq.mm
200 KVA	185 sq.mm	120 sq.mm.

11 FINISHING OF DISTRIBUTION BOX:

The outer side and inside surface of the box shall be properly Pre-treated / Phosphated in seven tank process as per IS: 6005 and shall be applied powder coating of minimum 40 micron thickness. The Colour shade of **smoke gray** for 63 kVA box and **light gray** for 100 and 200 KVA box as per IS: 5/2007 (Colours of Ready Mixed paints and Enamels) shall be applied inside & outside surface of the box. Powder coating shall be suitable for outdoor use, conforming IS: 13871/1993 – Powder coatings. The process facility shall be in-house to ensure proper quality for outdoor application.

12 TESTS & TEST CERTIFICATES:

In case of bought out items, routine and acceptance tests as per relevant IS and this specification shall be carried out at the original manufacturers' works.

12.1 Routine Test (Carried out on all boxes):

12.1.1 Overall Dimensions Checking.

12.1.2 Insulation Resistance Tests.

12.1.3 High Voltage Test at 2500 V, 50 Hz AC for one minute.

12.1.4. Operation Test on MCCB/Isolator/Link Disconnector / HRC fuse base and fuse links.

12.2. Acceptance Tests (on complete Distribution Box):

Following tests shall be carried out as per acceptance tests in addition to routine tests on one random sample of each rating out of the lot offered for inspection:

i) Temperature rise test on one sample of each rating.

Temperature rise test will be carried out as per the procedure given below:

For temperature rise test, a distribution box with all assembly of MCCBs / Link Disconnectors / Isolator / HRC fuse base with link shall be kept in an enclosure such that the temperature outside the box shall be maintained at 50 ° C.

20% more current than transformer secondary capacity i.e. for 63 KVA Distribution Transformers full load current 84A, 20 % more is 100 A shall be kept in incoming circuit keeping outgoing circuits short, till the temperature stabilizes and maximum temperature rise should be recorded.

ii) Time-Current Characteristics

The MCCB should be tested for time current characteristics at 1.05 & 1.2 times of overload release setting current and should pass the requirement given in clause- 7.2.

12.3. TYPE TESTS :

I ON COMPLETE BOX:

a. Temperature rise test:- The temperature rise test should be carried out as per IS: 8623 -1993

b. High voltage test shall be carried out as per IS:8623/ 1993 amended upto date.

c. Short Time Withstand Current Test on Distribution Box shall be carried out as per IS 8623 or latest version.

d. The Distribution Box should be subjected to Short Time Withstand Current Test for 4KA for 2 seconds for 63/100 KVA Box and 8 KA for 2 second for 200 KVA box) all the circuits independently. The test should be carried out after by- passing MCCBs.

e. Degree of protection for **IP- 33** on complete box shall be carried out as per IS: 13947/1993 or the latest version thereof.

f. Time /current characteristic test on MCCBs shall be carried out as per clause **7.2** of this specification as stated above.

II) ON ISOLATOR (SWITCH DISCONNECTOR):

All type tests on Isolator (Switch Disconnector) as per IS: 13947/1993 (Part III) amended up to date shall be carried out.

III) ON HRC fuses base and HRC fuse links :

All type tests on HRC fuses and HRC fuse links IS 13703/1993 (Part I & II amended upto date) for HRC Fuse Base and HRC fuse link shall be carried out.

IV) ON MCCB:

All type tests on MCCB as per IS-13947 amended upto date shall be carried out.

V) ON Link Disconnector:

Following tests shall be carried out on link disconnector as per IS:

1. Short Circuit Withstand Strength
2. Temperature rise Limits
3. Mechanical Operations

12.4 TYPE - TEST CERTIFICATES:

The Distribution Box, Isolator (Switch Disconnector), HRC fuse, HRC Fuse Link and MCCB offered shall be fully type tested as per relevant IS and this specification. The successful Bidder shall furnish detailed type test reports before commencement of supply. The detailed Type Test Reports shall be furnished with relevant oscillogram and certified Drawings of the equipment tested. The purchaser reserves the right to demand repetition of some or all the Type Tests in presence of purchaser's representative at purchaser's cost.

All the type tests shall be carried out from laboratories accredited by National Accreditation Board of Testing and Calibration Laboratories (NABL), Department of science & technology , Govt. of India to prove that the complete Box, Isolator, HRC fuse, Link Disconnector & MCCB meet the requirements of the specification. The tenderer should also furnish certificate from laboratories that laboratories are having all the requisite test facility available in house. The type test Reports conducted in manufacturers own laboratory and certified by testing institute shall not be acceptable.
The Tenderer should furnish the particulars giving specific required details of Distribution Boxes, MCCBs, Isolator and Link Disconnector in Schedule `A' attached.

The offers without details in Schedule `A' stand rejected.

13. TESTING & MANUFACTURING FACILITIES :

The Tenderer must clearly indicate what testing facilities are available in the works of manufacturer and whether the facilities are adequate to carry out all Routine & Acceptance Tests. These facilities should be available to MSEDCL's Engineers, if deputed to carry out or witness the tests in the manufacturer's works. The tenderer must have all the in-house testing facilities to carry out the acceptance tests on the Box.

The tenderer shall furnish detailed process of manufacturing & Powder coating. In case box manufacturing/Powder Coating is to be carried out from outside agencies, the tenderer shall furnish the facilities available with the sub-vendor. Undertaking from sub-vendor, regarding providing services of these facilities, shall be submitted.

14. PROTOTYPE SAMPLE:

The successful bidders should manufacture 3 Nos. of prototype L.T. Distribution Boxes as per the specification and keep ready at their works for the purpose of sample inspection and testing. The MSEDCL at their option may sent a team of Engineers to the works. Prior intimation of this inspection may not be given to the Bidder.

15. INSPECTION:

All routine & acceptance tests and inspection of material shall be carried out at the place of manufacturer. The manufacturer shall offer the Inspector (representing the purchaser) all reasonable facilities, free of charge at the time of Inspection.

The representative of the CE(Stores) and the Executive Engineer (INSPECTION WING) shall jointly inspect the first lot of each rating of box.

16 . REJECTION:

The purchaser may select one box at random from a lot of 100 Distribution Boxes of each type or part thereof as may be supplied to stores from time to time. The Box so selected must pass all the Type Tests mentioned above otherwise the whole lot of 100 boxes or part thereof, from which the box is selected, will be rejected. For this purpose, lots will be made, consisting of 100 boxes per lot of each rating, at stores after supply.

The testing under this clause will be done in any Laboratory of the MSEDCL's choice including MSEDCL's own Laboratory. Notice of such tests will be given by the MSEDCL to supplier. The supplier is at liberty to be present during the testing.

17. SCHEDULES:

The tenderer shall fill in the following schedules which form part of the tender specification and offer. If the schedules are not submitted duly filled-in with the offer, the offer shall be liable for rejection.

Schedule 'A' – Guaranteed Technical Particulars

Schedule `B' - Tenderer's Experience.

The tenderer shall submit the list of orders for similar type of equipments, executed or under execution during the last three years, with full details in the schedule of Tenderer's experience (Schedule `B') to enable the purchaser to evaluate the tender.

18. DRAWINGS ENCLOSED:

i) Dist/DB/02/A ii) Dist/DB/02/B

iii) Dist/DB/02 iv) Dist/DB/03

v) Dist/DB/01/A vi) Dist/DB/01/B

vii) Dist./DB/05 viii) Dist./DB/07

ix) Dist./DB/08 x) Dist./DB/09

xi) Dist./DB/12 xii) Dist./DB/13

xiii) Dist./DB/14 xiv) Annexure -I

The successful bidder shall submit set of all above drawings of the distribution box and its components shall be submitted in triplicate to CE(Stores) office and get approved before commencement of supply.

SCHEDULE - `A'

E-tendering Guaranteed Technical Particulars

SCHEDULE - `B'

SCHEDULE OF TENDERER'S EXPERIENCE

Tenderer shall furnish here a list of similar orders executed/under execution by him to whom a reference may be made by Purchaser in case he considers such a reference necessary.

Sr. No.	Name of Client & Description	Value of order	Period of supply and commissioning	Name & Address to whom reference may be made.
1	2	3	4	5

NAME OF FIRM _____

NAME & SIGNATURE OF THE TENDERER_____

DESIGNATION _____

DATE _____

TECHNICAL SPECIFICATION OF BIMETALLIC LUGS

1) SCOPE:

Bimetallic terminal lugs are for use in Distribution Boxes/Distribution Transformer and other O&M application for Crimping Copper and Aluminum Cables and termination on surface namely Aluminum/Brass/Copper Plated terminals without the use of Bimetallic washers.

2) STANDARD:

Bimetallic lug crimped joint should conform to all tests laid down in IS-8337 e.g. clause 4.1.1 (6.2) for initial resistance and clause 4.1.3 (6.4) for Electrical Load Cycle test for 1000 Cycles and Tensile Test clause 4.2 (6.5). Type Test certificate to this effect giving numerical values obtained must be provided.

3) SERVICE CONDITION:

The Lugs to be supplied against this specification shall be suitable for satisfactory continuous operation under the following tropical conditions.

3.1	Maximum ambient temperature (Degree C)	50
3.2	Maximum temperature in shade (Degree C)	45
3.3	Minimum Temperature (Degree C)	3.5
3.4	Relative Humidity (percent)	10 to 95
3.5	Maximum Annual rain fall (mm)	1450
3.6	Maximum wind pressure (kg/sq.m)	150
3.7	Maximum altitude above mean sea level (Meter)	1000
3.8	Isoceranic level (days per year)	50
3.9	Siesmic level (Horizontal Acceleration)	0.3 g
3.10	Moderately hot and humid tropical climate conductive to rust and fungus growth.	

4) MATERIAL SPECIFICATION:

Bimetallic lug should be made for electrolytic grade aluminum. Each lug should be copper coated by electrolytic process and rich layer of tin should be mounted through out the lug to protect from Galvanic Corrosion. The lugs shall be such that the rich layer of tin should not peel of during operation. Individual lot should be pre filled with conductive inhibition compound and lug should be duly capped to prevent oozing of compound. The ductility of material should be such that flow ability of material be adequate to flow in to the strand of the conductor and withstand on crimping pressure of 8500 PSI. The cut cross section of the joints shall be homogeneous.

5) GENERAL REQUIREMENTS:

The minimum dimensions of the bimetallic lug in respect of barrel thickness and holes diameter should conform to enclosed Drawing No.DIST/DB/13.

6) TESTS:

i) Initial resistance test of bimetallic crimped joint as per IS 8337.
ii) Heating cycle test for 1000 cycles of crimped joint of bimetallic lugs as per IS 8337.
iii) Tensile strength test of the crimped joint of bimetallic lug as per IS: 8337.
iv) Dimensional test as per drawing/offer.

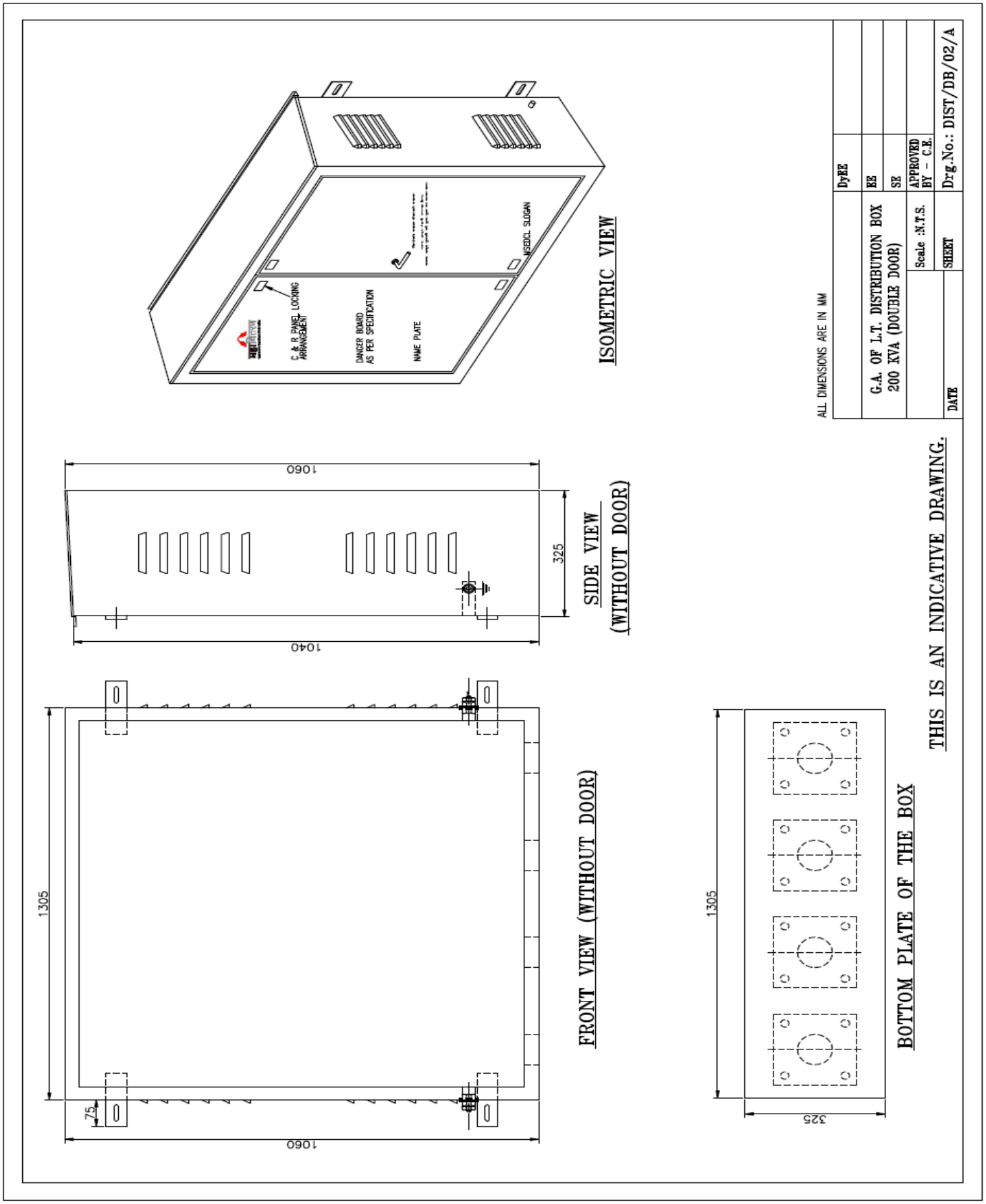
7 TEST CERTIFICATES:

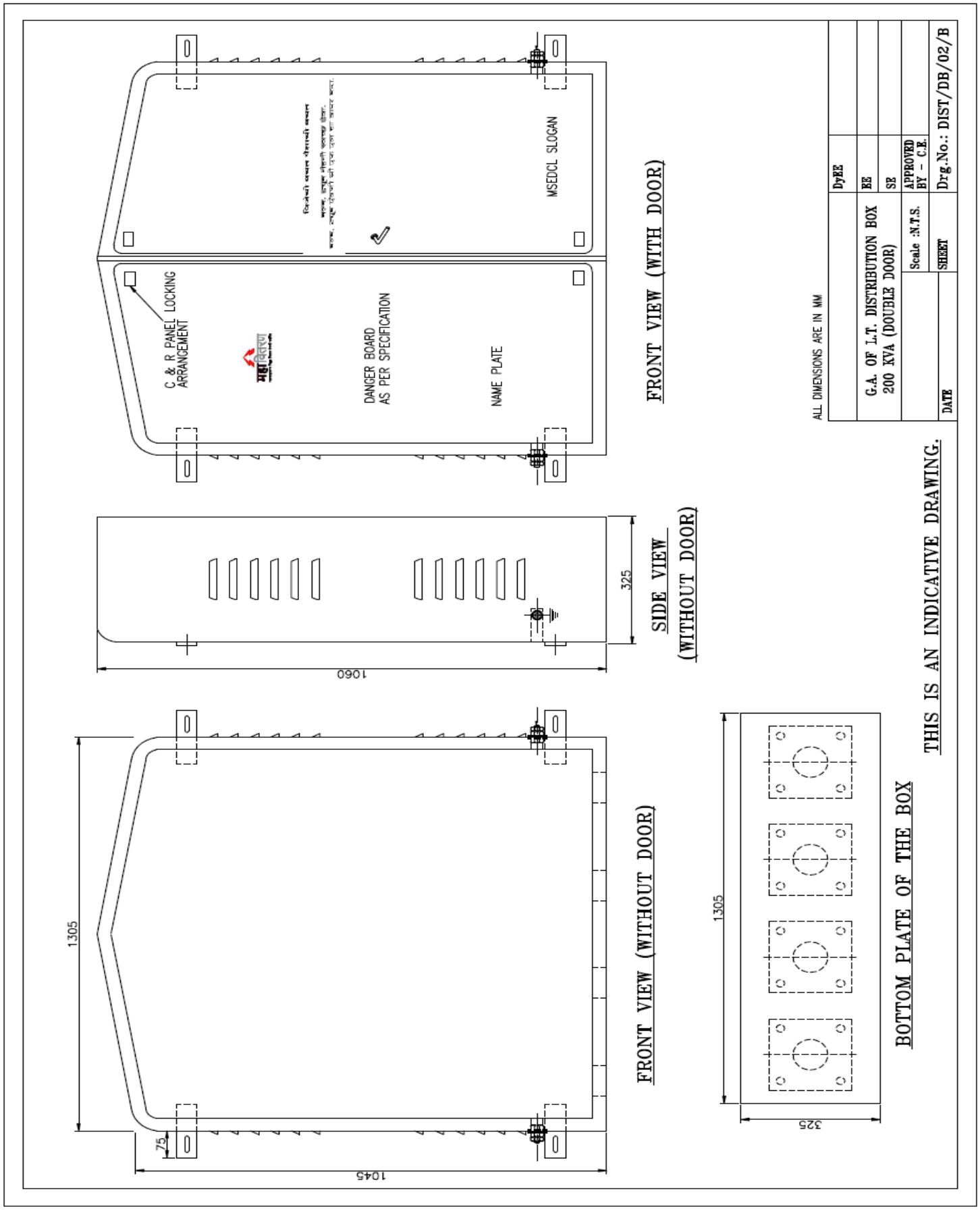
At present the following makes and types of bimetallic lugs are accepted by the MSEDCL.

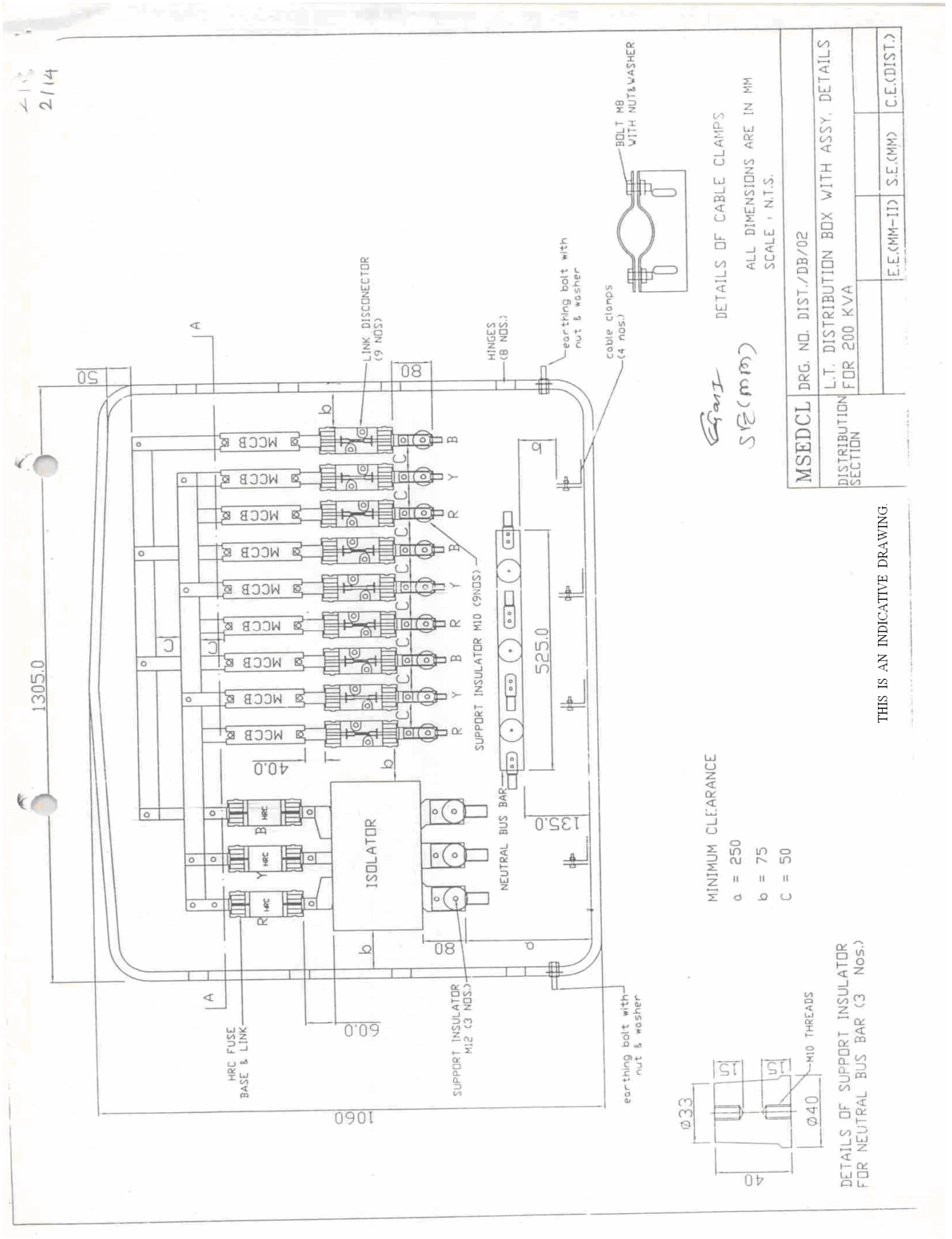
Usha Martin Industries, Ismail, Chetna , Klippon, SRI, Alcon, NES , Hames and HB

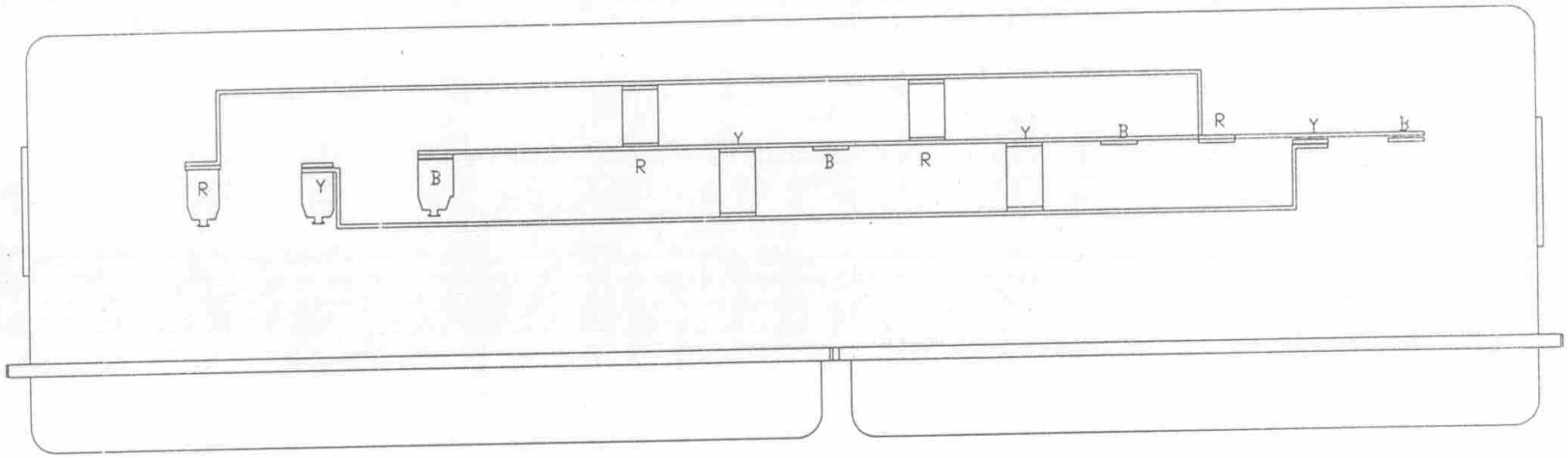
In case any other equivalent make of bimetallic lugs, if bidder offer, they should indicate makes and types of bimetallic lugs in E-tendering GTP. The bidders should submit complete test reports of the bimetallic lugs as per this specification, clause No. 6 to CE (Stores) for approval before commencement of supply. The Tests on lugs should be done in any reputed independent laboratory.

8) DRAWING ENCLOSED: No.DIST/DB/13


C & R PANEL LOCKING ARRANGEMENT
DANGER BOARD AS PER SPECIFICATION
NAME PLATE
MSEDCL SLOGAN
ISOMETRIC VIEW
1060
325
1040
SIDE VIEW
(WITHOUT DOOR)
1305
75
1060
FRONT VIEW (WITHOUT DOOR)
1305
325
BOTTOM PLATE OF THE BOX
ALL DIMENSIONS ARE IN MM
G.A. OF L.T. DISTRIBUTION BOX
200 KVA (DOUBLE DOOR)
DyEE
EE
SE
APPROVED BY - C.E.
Scale :N.T.S.
DATE
SHEET
Drg.No.: DIST/DB/02/A
THIS IS AN INDICATIVE DRAWING.


C & R PANEL LOCKING ARRANGEMENT
DANGER BOARD AS PER SPECIFICATION
NAME PLATE
MSEDCL SLOGAN
FRONT VIEW (WITH DOOR)
1060
325
SIDE VIEW (WITHOUT DOOR)
1305
1045
75
FRONT VIEW (WITHOUT DOOR)
1305
325
BOTTOM PLATE OF THE BOX
THIS IS AN INDICATIVE DRAWING.
ALL DIMENSIONS ARE IN MM
G.A. OF L.T. DISTRIBUTION BOX 200 KVA (DOUBLE DOOR)
Scale :N.T.S.
DATE
SHEET
DyEE
EE
SE
APPROVED BY - C.E.
Drg.No.: DIST/DB/02/B


2/14
1305.0
1060
50
80
A
LINK DISCONECTOR (9 NOS)
HINGES (8 NOS.)
earthing bolt with nut & washer
cable clamps (4 nos.)
BOLT M8 WITH NUT&WASHER
MCCB
R Y B
C
SUPPORT INSULATOR M10 (9NOS)
525.0
135.0
40.0
60.0
ISOLATOR
NEUTRAL BUS BAR
HRC FUSE BASE & LINK
SUPPORT INSULATOR M12 (3 NOS.)
earthing bolt with nut & washer
DETAILS OF CABLE CLAMPS
ALL DIMENSIONS ARE IN MM
SCALE : N.T.S.
MINIMUM CLEARANCE
a = 250
b = 75
C = 50
Ø33
Ø40
M10 THREADS
40
DETAILS OF SUPPORT INSULATOR FOR NEUTRAL BUS BAR (3 Nos.)
MSEDCL
DRG. NO. DIST./DB/02
L.T. DISTRIBUTION BOX WITH ASSY. DETAILS FOR 200 KVA
DISTRIBUTION SECTION
E.E.(MM-II)
S.E.(MM)
C.E.(DIST.)
THIS IS AN INDICATIVE DRAWING.



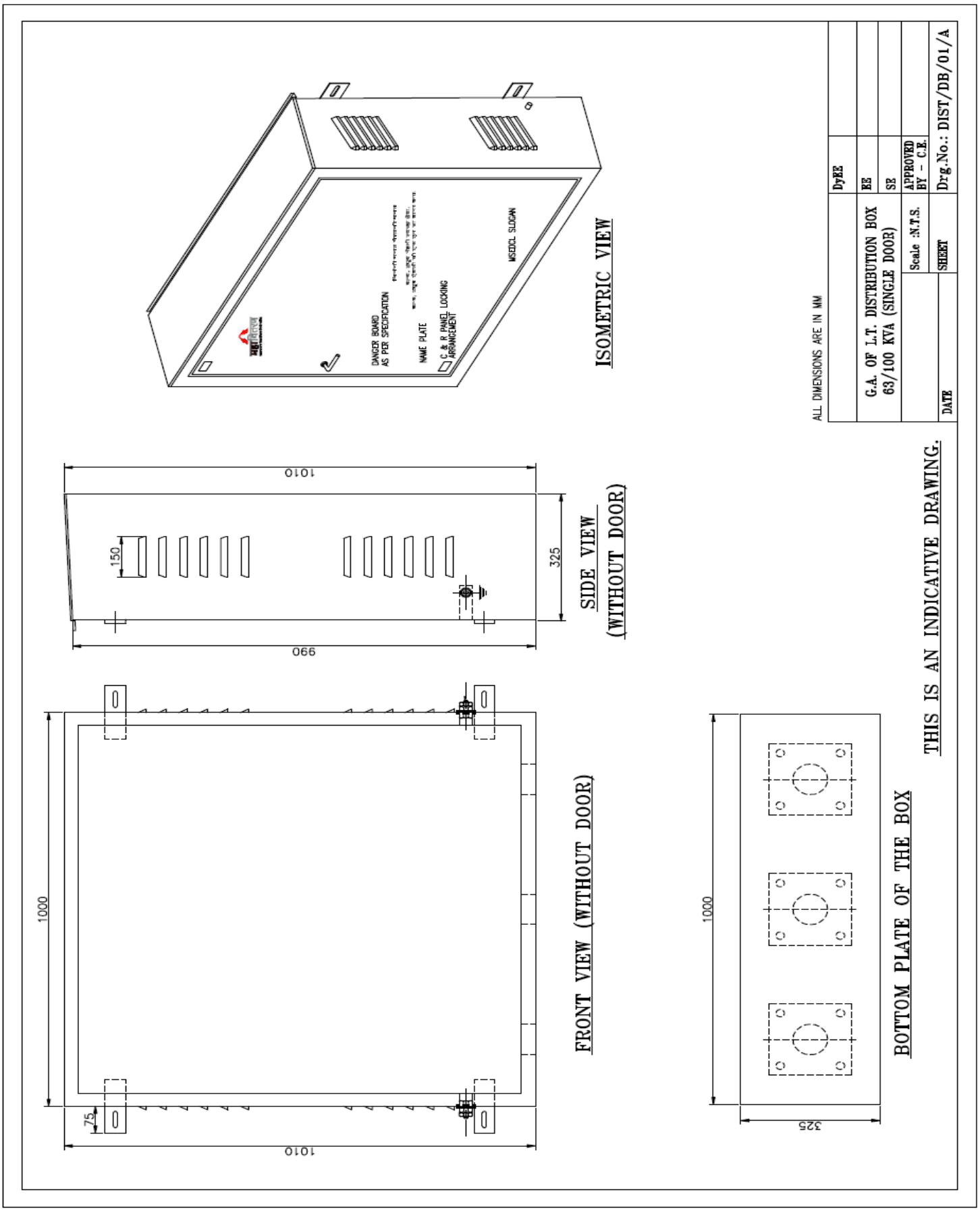
SECTION "A-A" WITH BUS BAR ASSEMBLY DETAILS.

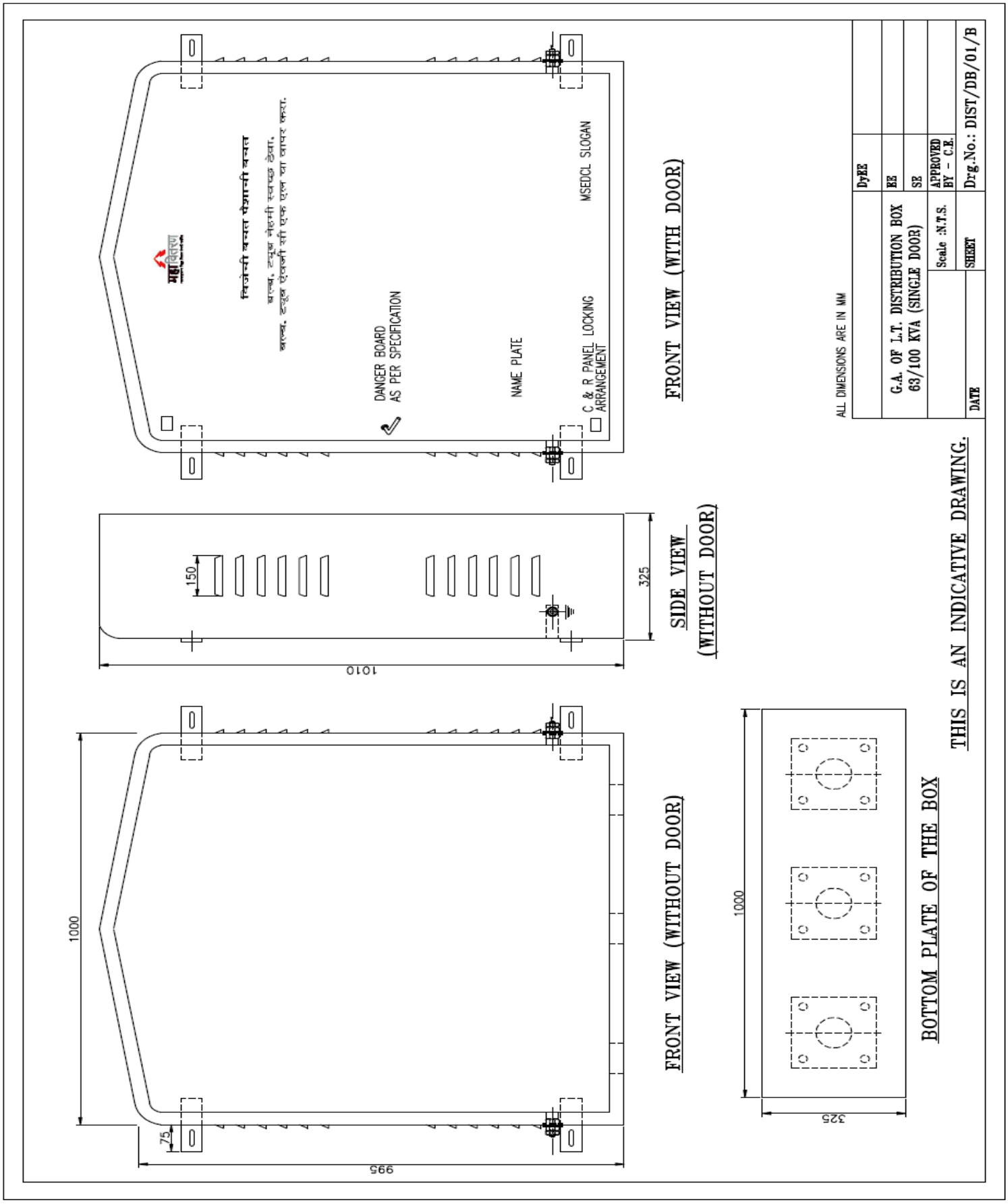
Copy ALL DIMENSIONS ARE IN MM

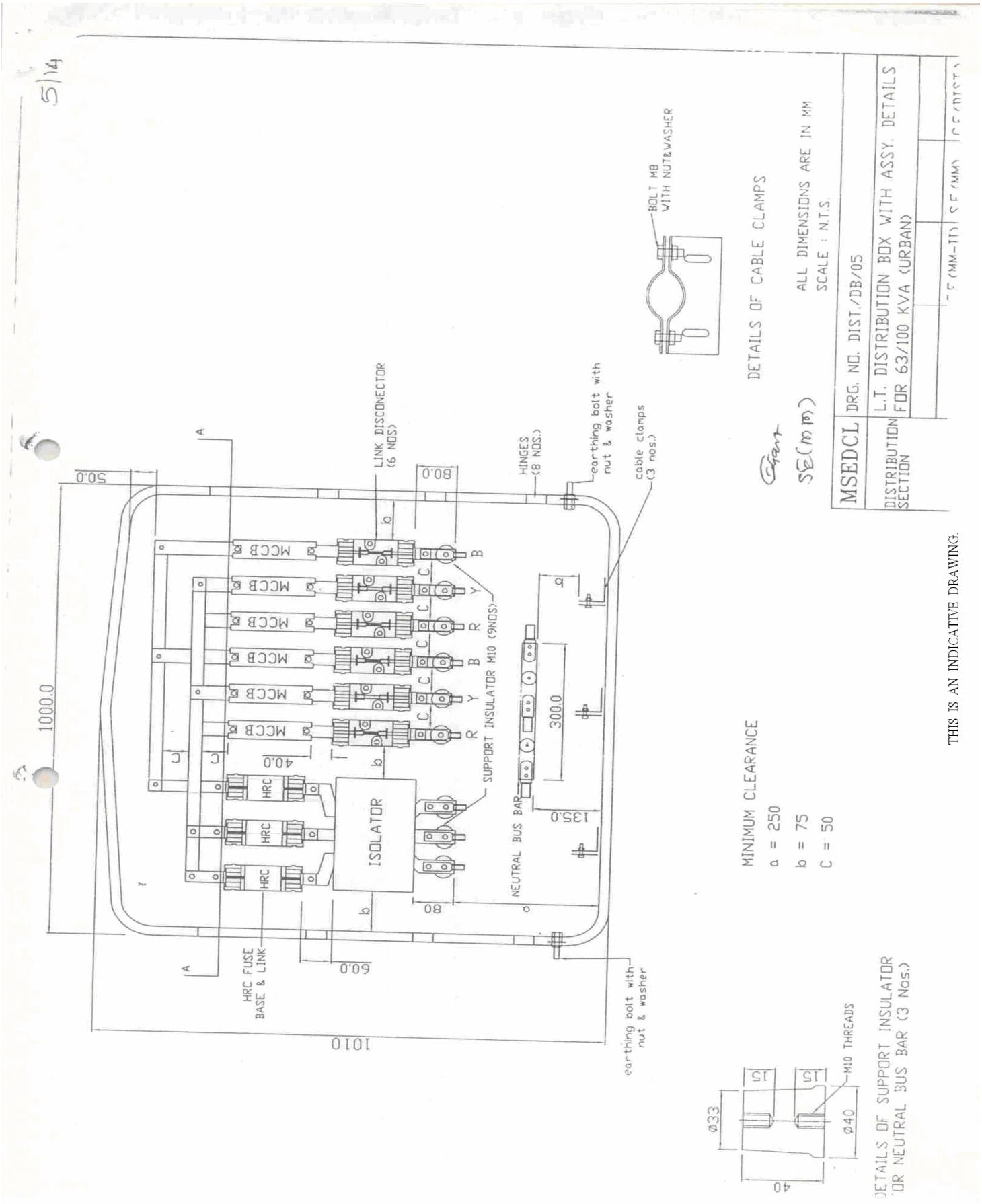
SIZE(mm) SCALE : N.T.S.

MSEDCL	DRG. NO. DIST./DB/03			
DISTRIBUTION SECTION	L.T. DISTRIBUTION BOX WITH BUS BAR DETAILS FOR 200 KVA			
		E.E.(MM-II)	S.E.(MM)	C.E.(DIST.)

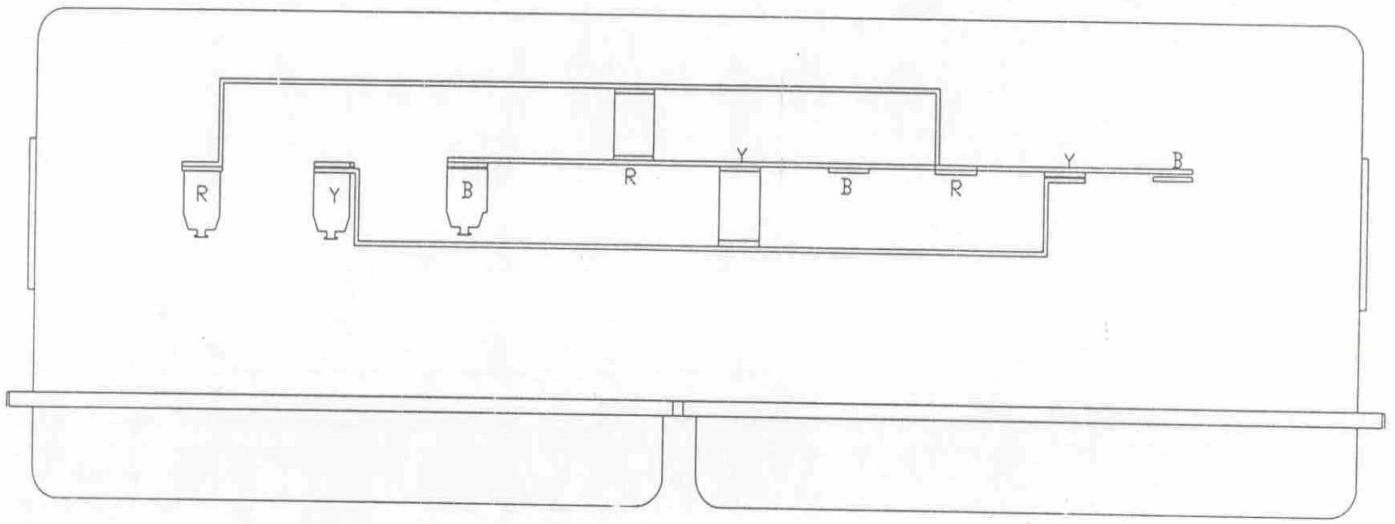
THIS IS AN INDICATIVE DRAWING.


ISOMETRIC VIEW
DANGER BOARD AS PER SPECIFICATION
NAME PLATE
C & R PANEL LOCKING ARRANGEMENT
MSEDCL SLOGAN
SIDE VIEW (WITHOUT DOOR)
1010
150
325
990
FRONT VIEW (WITHOUT DOOR)
1000
75
1010
BOTTOM PLATE OF THE BOX
1000
325
THIS IS AN INDICATIVE DRAWING.
ALL DIMENSIONS ARE IN MM
DyEE
EE
SE
APPROVED BY - C.E.
G.A. OF L.T. DISTRIBUTION BOX 63/100 KVA (SINGLE DOOR)
Scale :N.T.S.
DATE
SHEET
Drg.No.: DIST/DB/01/A


FRONT VIEW (WITH DOOR)
DANGER BOARD
AS PER SPECIFICATION
NAME PLATE
C & R PANEL LOCKING
ARRANGEMENT
MSEDCL SLOGAN
SIDE VIEW
(WITHOUT DOOR)
150
325
1010
FRONT VIEW (WITHOUT DOOR)
1000
75
995
BOTTOM PLATE OF THE BOX
1000
325
ALL DIMENSIONS ARE IN MM
THIS IS AN INDICATIVE DRAWING.
G.A. OF L.T. DISTRIBUTION BOX
63/100 KVA (SINGLE DOOR)
DyEE
EE
SE
APPROVED
BY - C.E.
Scale :N.T.S.
DATE
SHEET
Drg.No.: DIST/DB/01/B



THIS IS AN INDICATIVE DRAWING.



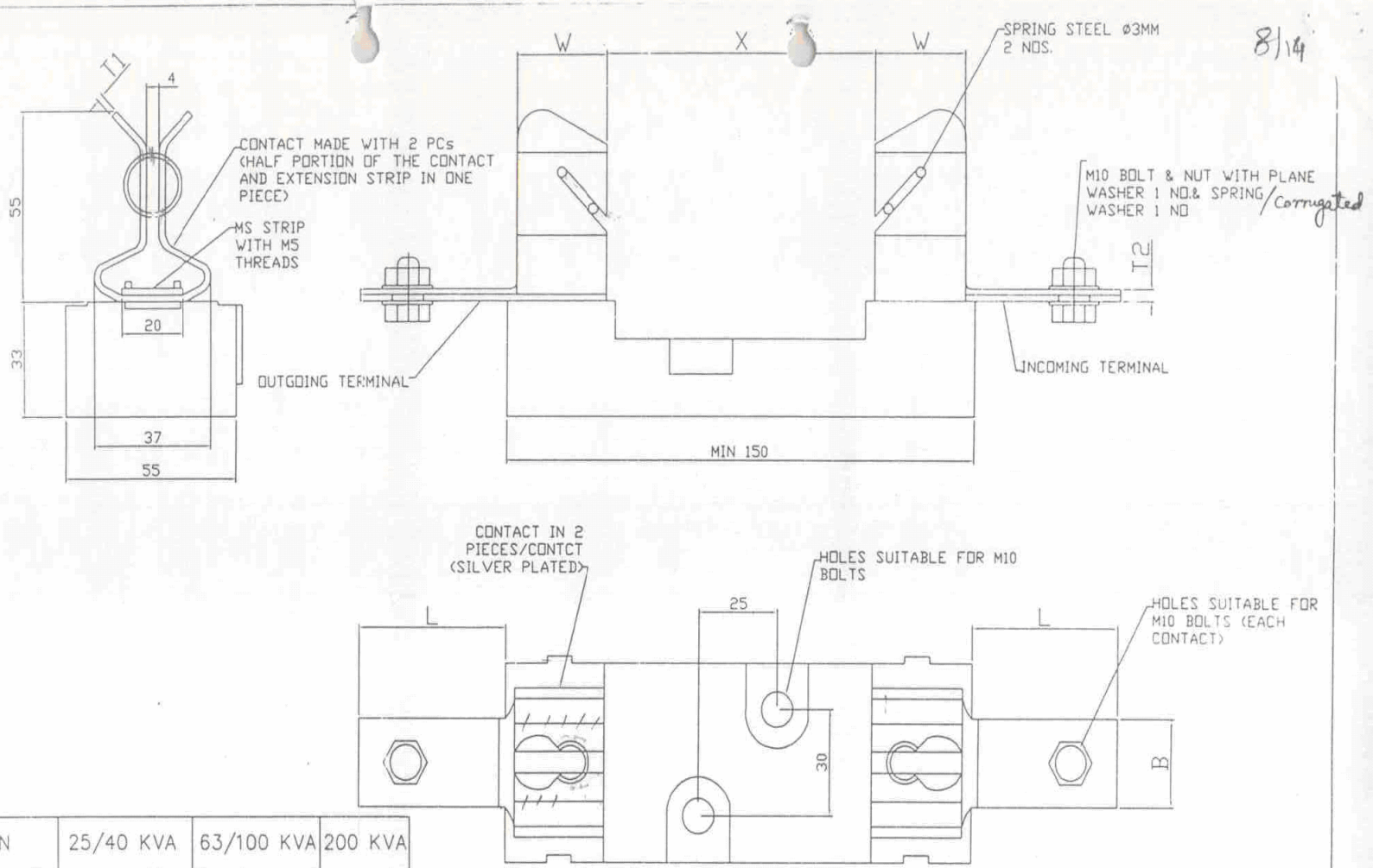
SECTION "A-A" WITH BUS BAR ASSEMBLY DETAILS.

Sfz(mm)

ALL DIMENSIONS ARE IN MM
SCALE : N.T.S.

MSEDCL	DRG. NO. DIST./DB/07			
DISTRIBUTION SECTION	L.T. DISTRIBUTION BOX WITH BUS BAR DETAILS FOR 25/40/ 63/100 KVA (RURAL/URBAN)			
		E.E.(MM-II)	S.E.(MM)	C.E.(DIST.)

THIS IS AN INDICATIVE DRAWING.



DESCRIPTION	25/40 KVA	63/100 KVA	200 KVA
FUSE BASE CURRENT RATING	80 Amps	200 Amps	400 Amps
TERMINAL THICKNESS T1	1.25 MM	1.8 MM	3 MM
TERMINAL THICKNESS T2	2.5 MM	3.6 MM	6 MM
X	74 MM	84 MM	86 MM
W	29 MM	29 MM	35 MM
L	25 MM	25 MM	38 MM
B	28 MM	28 MM	34 MM

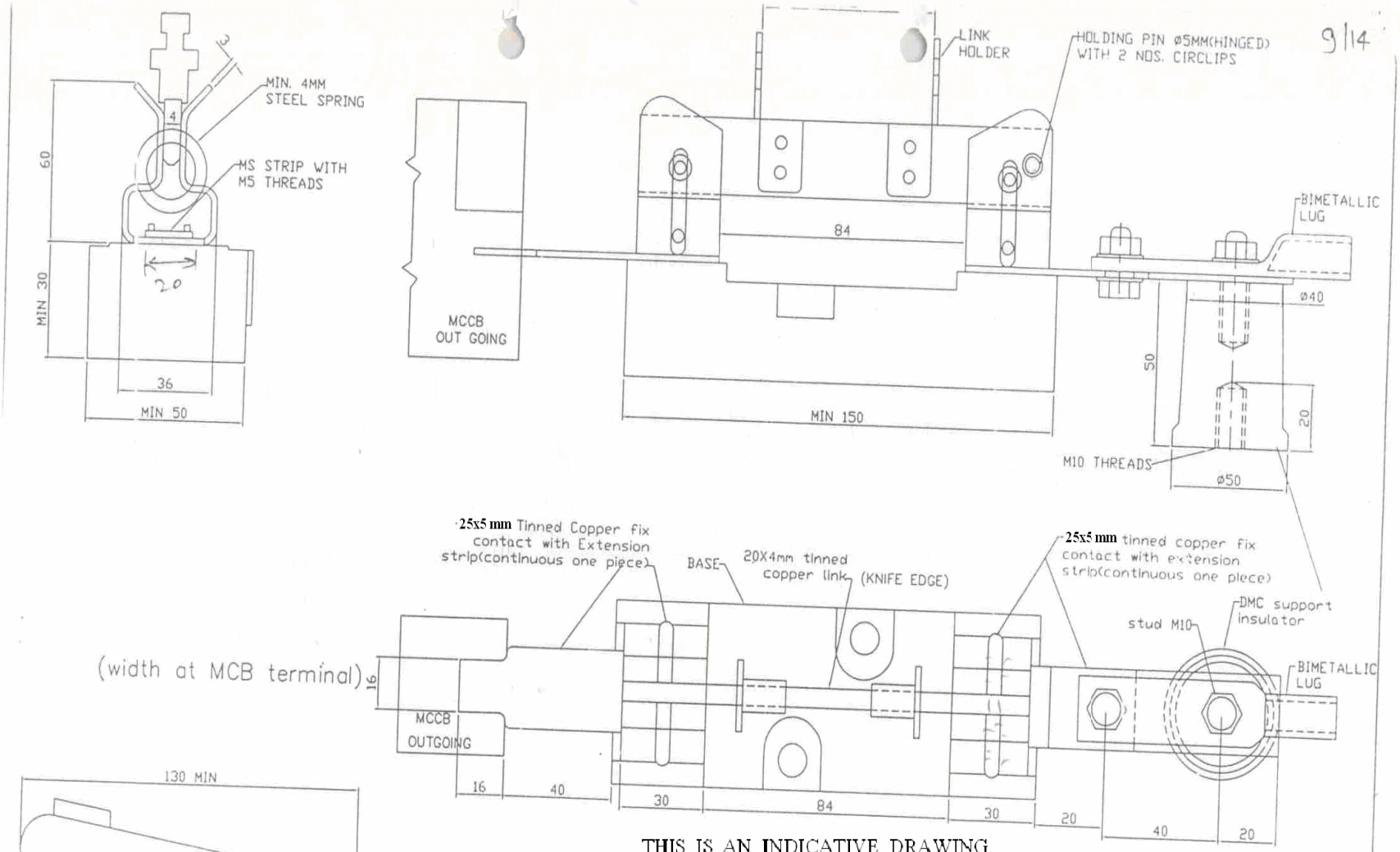
THIS IS AN INDICATIVE DRAWING.

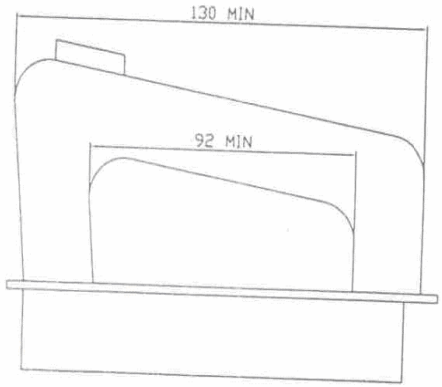
ALL DIMENSIONS ARE IN MM

SCALE : N.T.S.

SE(MM)

MSEDCL	DRG. NO. DIST./DB/08			
DISTRIBUTION SECTION	HRC FUSE BASE FOR 25/40/63/ 100/200 KVA			
		F.E.(MM-II)	S.E.(MM)	C.E.(DIST.)





PULLER/HANDLE

THIS IS AN INDICATIVE DRAWING.

ALL DIMENSIONS ARE IN MM

SCALE : N.T.S.

SE(MM)

MSEDCL	DRG. NO. DIST./DB/09
DISTRIBUTION SECTION	DETAILS OF LINK DISCONNECTOR FOR 63/100/200 KVA DISTRIBUTION BOX (URBAN)

	E.E (MM-II)	S.E (MM)	C.E (DIST.)

12/14 4

महाराष्ट्र स्टेट इलेक्ट्रीसिटी डिस्ट्रीब्यूशन कंपनी लिमिटेड

एल. टी. डिस्ट्रीब्युशन बॉक्स् _____ के. व्ही. ए. ट्रान्सफॉर्मरसाठी

हया डिस्ट्रीब्युशन बॉक्स् मधील साधनांची माहीती.

१) इन्कमींग स्वीचची क्षमता = _____ अॅम्पिअर्स

२) सिंगल फेज एम. सी.सी.बी. / किटकॅट ची एकूण संख्या = _____

३) एम. सी.सी.बी चे करंट सेटिंग / किटकॅट चे रेटिंग (प्रत्येक फेज साठी) = _____ अॅम्पिअर्स.

४) लिंक डिस्कनेक्टर्सची एकूण संख्या = _____

अ) डिस्ट्रीब्युशन बॉक्स् जोडताना खाली दिल्याप्माणे काळजी घ्यावी.

१) वरीलप्रमाणे सर्व साधने बॉक्समध्ये आहेत काय याची खात्री करा.

२) सर्व नट बोल्ट कनेक्शन्स योग्य प्रमाणशीर हत्यारे वापरुन घट्ट करा. कारण कनेक्शन वाहतुकीमुळे ढिले होण्याची शक्यता असते.

३) नट–बोल्ट आवळताना बॉक्स् सोबत दिलेल्या प्लॅस्टिक पिशवीत / साधन विशिष्ट ग्रीसचा वापर सढळ हाताने करावा. नट–बोल्ट आवळल्यानंतर राहिलेले / वर आलेले ग्रीस तसेच राहू द्या. ते काढू नका.

4) इन्कमिंग (येणाऱ्या) व आऊटगोईंग (जाणाऱ्या) साठी खाली दिलेल्या आकाराची केबल वापरा.

ट्रान्सफॉर्मरची क्षमता	डिस्ट्रिब्युशन बॉक्समधील केबल	
	इन्कमिंगचा आकार (ट्रान्सफॉर्मरकडून येणारी)	आऊटगोईंगचा आकार (लाईनकडे जाणारी)
२५ के. व्ही. ए.	३.५ कोअर ५० स्क्वेअर एम. एम.	३.५ कोअर ३५ स्क्वेअर एम. एम.
६० के. व्ही. ए.	३.५ कोअर ७० स्क्वेअर एम. एम.	३.५ कोअर ३५/५० स्क्वेअर एम. एम.
१२ के. व्ही. ए.	३.५ कोअर १२० स्क्वेअर एम. एम.	३.५ कोअर ५०/७० स्क्वेअर एम. एम.
१०० के. व्ही. ए.	३.५ कोअर १२० स्क्वेअर एम. एम.	३.५ कोअर ५०/७० स्क्वेअर एम. एम.
२०० के. व्ही. ए.	३.५ कोअर १८० स्क्वेअर एम. एम.	३.५ कोअर १२० स्क्वेअर एम. एम.

इन्कमिंग स्विचला/लिंक डिस्कनेक्टरला केबल जोडण्यासाठी लग्जचा वापर करा.

५) केबलच्या वायरचा आकार हा वक्रीवर्गी त्रिकोणासारखा असतो. तो लग्ज वापरण्यापूर्वी गोल करून घ्या.

वायर लग्जमध्ये घालताना व केबलराहित लग्ज जोडताना विशिष्ट ग्रीसचा (पेट्रोलियम जेलीचा) वापर करा. इन्कमिंग (येणाऱ्या) व आऊटगोईंग (जाणाऱ्या) वायर्स लग्जशिवाय टर्मिनलमध्ये सेट करू नका. तो त्रासदायक आहे.

बोल्टने आवळून घट्ट करा. त्यामध्ये फ्लॅट (सपाट) वॉशर, स्प्रिंग वॉशर व ग्रीस वापरण्यास विसरू नका.

६) डिस्ट्रिब्युशन बॉक्सची वापरात न घेतलेली छिद्रे उघडी असल्यास ती बंद करा म्हणजे उंदीर, घूस, साप, पाल, चिमणी वगैरेसारखे प्राणी आतमध्ये जाणार नाहीत व शॉर्ट सर्किटचा धोका टाळला जाईल.

७) बॉक्सच्या तळाशी दिलेल्या पी.व्ही.सी. च्या विना ब्रासच्या रिंग (ग्लैड) डिस्ट्रिब्युशन बॉक्सच्या इन्कमिंग व आऊटगोईंग वायरींच्या छिद्रामधुनी पक्क्या करा म्हणजे वायरी तेथे घासल्या जाणार नाहीत.

८) सर्व काम संपल्यानंतर डिस्ट्रिब्युशन बॉक्सचा दरवाजा व्यवस्थित बंद करून कुलुप लावण्यास विसरू नका.

९) नियमित सर्व जॉईंट्स (सांधे) तपासा व आवश्यकतेनुसार घट्ट करा.

ब) <u>एम. सी. सी. बी. वापरण्याबाबत घेण्याची काळजी.</u>

१) एम. सी. सी. बी हा सर्विस ब्रेकर असून दिलेल्या ठराविक करंट रेटिंगवर तो ट्रिप होत असतो म्हणून लाई नवरील वीजभार त्या मर्यादेतच ठेवा.

२) एम. सी. सी. बी ट्रिप झाल्यानंतर थोडया वेळानंतर "नॉब" ऑफपोझिशनवर आणा म्हणजे एम. सी. सी. बी. रीसेट होईल. एम. सी. सी. बी ऑन/ऑफपोझिशनवर नसा.

३) लाईनवर काम करावयाचे असल्यास प्रथम एम. सी. सी. बी. बंद करा टेस्टरने खात्री करा ऑफपोझिशनला आहे

४) एम. सी. सी. बी. बंद करून लिंकडिस्कनेक्टर ओपन करा. तसेच लाईनला स्पर्श करण्यापूर्वी अर्थिंग रॉडचा वापर करून लाईन "अर्थ" करा. एम. सी. सी. बी. वापरात करण्याचा वेळा करंट सेटिंग बदलण्याचा प्रयत्न करू नका. लाईनचे काम झाल्यानंतर प्रथम लिंकडिस्कनेक्टर क्लोज करा व नंतर एम. सी. सी. बी. ऑन करा.

५) एम. सी. सी. बी. बदलताना तो वर नमूद केलेल्या / योग्य करंट रेटिंगचाच वापर करा.

क) <u>इन्कमिंग स्विच वापरण्याबाबत सूचना :</u>

१) इन्कमिंग स्विच रामोस्च "ऑन / ऑफ" करू शकाल अशा पध्दतीचा आहे. "ऑन / ऑफ" इन्डीकेशन ऑपरेटिंग हॅन्डलवर आहे.

२) इन्कमिंग स्विच "ऑन" करण्यासाठी हॅन्डल क्लॉकवाईज (घडयाळाच्या) दिशेने फिरवा.

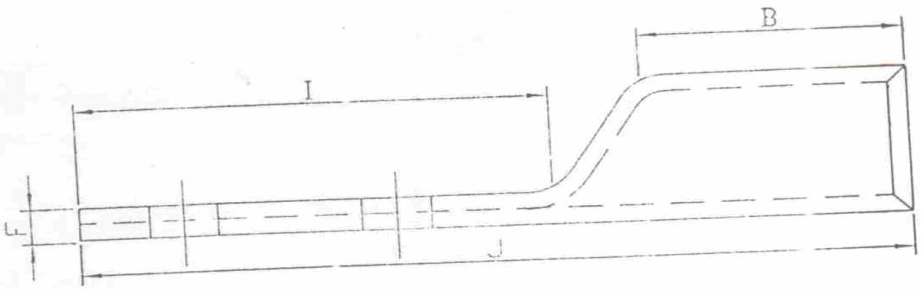
३) इन्कमिंग स्विच "ऑफ" करण्यासाठी हॅन्डल अँन्टिक्लॉकवाईज (घडयाळाच्या विरूद्ध) दिशेने फिरवा.

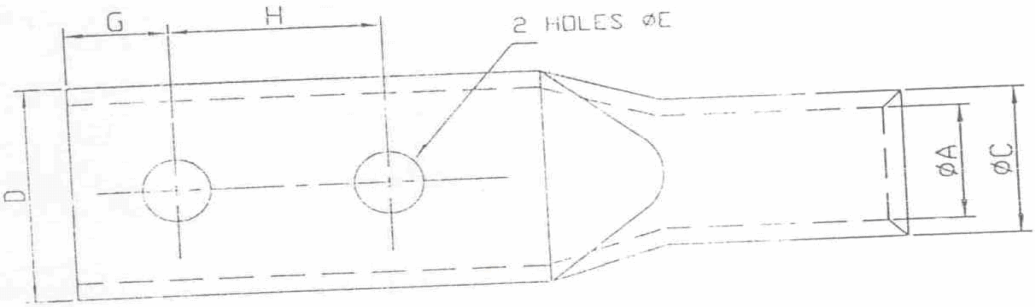
४) इन्कमिंग स्विच बदलताना तो वर नमूद केलेल्या / योग्य ऑप्शिअर क्षमतेचाच वापरा.

लक्षात ठेवा हा डिस्ट्रिब्युशन बॉक्स व्यवस्थित हाताळल्यास ट्रान्सफॉर्मरचे व इतर मालमत्तेचे नुकसान टाळता येते. तसेच लाईन स्टाफला सुद्धा अधिकसुरक्षितता मिळते

INSTRUCTIONS LEAFLET IN MARATHI				MSEDCL
22/8		22.8.06	24/08/06	DISTRIBUTION SECTION
WRITTEN BY Dy. E.E (MM-II)	CHK. BY E.E. (MM-II)	SUB. BY S.E.(MM)	APPR. BY C.E.(Dist)	DRG NO. Dist./ DB/ 12

13/14



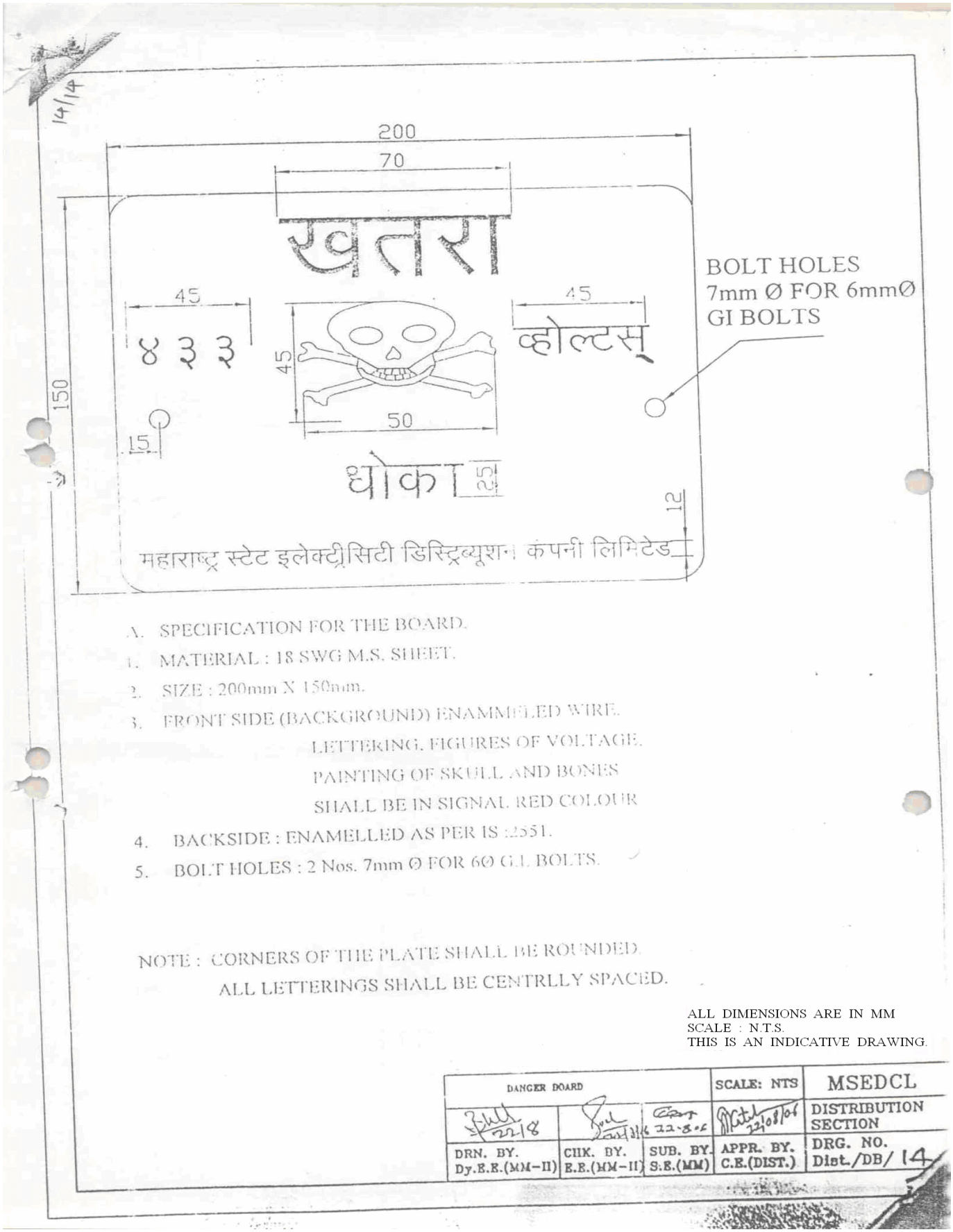


CABLE SIZE	ØA	ØC	D	F	ØE	B	G	H	I	J
(25 SQ MM)	7.0	9.7	13.7	2.7	8.2	21	11	20.0	–	70
(35 SQ MM)	8.0	10.8	15.4	2.8	8.2	21	11	20.0	–	70
(50 SQ MM)	9.6	13.6	20.0	3.5	10.3	30	13	40	65.0	115
(70 SQ MM)	11.8	17.0	24.0	5.3	10.3	38	13	40	65.0	115
(95 SQ MM)	13.0	17.0	30.0	3.9	10.3	30	13	40	65.0	115
(120 SQ MM)	15.6	21.9	30.0	6.0	13.0	50	20	40	81.0	145
(150 SQ MM)	16.5	22.0	31.5	5.3	13.0	50	20	40	90.0	156
(185 SQ MM)	18.2	27.6	50.0	9.0	13.0	50	20	40	90.0	156
(225 SQ MM)	21.8	30.0	50.0	7.5	13.0	50	20	40	90.0	156
(240 SQ MM)	21.8	30.0	50.0	7.5	13.0	50	20	40	90.0	156
(300 SQ MM)	24.0	31.0	45.0	6.8	13.0	50	20	40	90.0	156

ALL DIMENSIONS ARE IN MM
SCALE : N.T.S.
THIS IS AN INDICATIVE DRAWING.

BIMETALLIC LUGS			SCALE: NTS	MSEDCL
				DISTRIBUTION SECTION
DRN. BY. Dy.E.E(MM-II)	CHK. BY. E.E.(MM-II)	SUB.. BY. S.E.(MM)	APPR.. BY. C.E.(DIST.)	DRG. NO. Dist./DB/ 13

STORES: MSC-II/DB/Urban/2011/01



A. SPECIFICATION FOR THE BOARD.

1. MATERIAL : 18 SWG M.S. SHEET.
2. SIZE : 200mm X 150mm.
3. FRONT SIDE (BACKGROUND) ENAMMELED WIRE. LETTERING, FIGURES OF VOLTAGE, PAINTING OF SKULL AND BONES SHALL BE IN SIGNAL RED COLOUR
4. BACKSIDE : ENAMELLED AS PER IS :2551.
5. BOLT HOLES : 2 Nos. 7mm Ø FOR 60 G.I. BOLTS.

NOTE : CORNERS OF THE PLATE SHALL BE ROUNDED.
ALL LETTERINGS SHALL BE CENTRLLY SPACED.

ALL DIMENSIONS ARE IN MM
SCALE : N.T.S.
THIS IS AN INDICATIVE DRAWING.

DANGER BOARD			SCALE: NTS	MSEDCL
22/8		22.8.06	22/08/06	DISTRIBUTION SECTION
DRN. BY. Dy.E.E.(MM-II)	CHK. BY. E.E.(MM-II)	SUB. BY. S.E.(MM)	APPR. BY. C.E.(DIST.)	DRG. NO. Dist./DB/ 14

Annexure - I

1) विजेची बचत पैशाची बचत

बल्ब, ट्यूब नेहमी स्वच्छ ठेवा,
बल्ब, ट्यूब ऐवजी सी एफ एल चा वापर करा.

2) विजेची बचत पैशाची बचत

एक युनिट विजेची बचत म्हणजे
दीड युनिट विजेची निर्मिती

3) विजेची बचत पैशाची बचत

गरज नसेल तेव्हा दिवे, पंखे व
विजेची इतर उपकरणे बंद ठेवा.

4) विजेची बचत पैशाची बचत

सायंकाळी ६ ते रात्री १० या वेळेत
इस्त्री, मिक्सर, गिझर, ओव्हन
या उपकरणांचा वापर टाळा.

5) विजेची बचत पैशाची बचत

४० वॅटचा साधा बल्ब २५ तासात एक युनिट
वीज खातो तेवढाच प्रकाश देणाऱ्या १० वॅटच्या
सीएफएलसाठी १०० तास लागतात.

6) विजेची बचत पैशाची बचत

स्वच्छता गृह, शयनकक्ष, व्हरांडा अशा ठिकाणी मंद प्रकाश देणा-या कमी क्षमतेच्या दिव्यांचा वापर करा.

7) **विजेची बचत पैशाची बचत**
आवश्यक तेवढा गारवा निर्माण झाल्यावर एअर कंडिशनर, कुलर बंद करा.

8) **विजेची बचत पैशाची बचत**
एक दिवा येई अनेक कामी
पैशांची करी बचत नामी

9) **विजेची बचत पैशाची बचत**
विजेची बचत हा विजेचा नवा स्त्रोत
उज्ज्वल भविष्यासाठी आज करा बचत

10) **विजेची बचत पैशाची बचत**
थेंबे थेंबे तळे साचे
तुमच्या बचतीने वीज वाचे

11) **विजेची बचत पैशाची बचत**
असेल शक्य जेथे जेथे वीज वाचवा तेथे तेथे

12) **विजेची बचत पैशाची बचत**
मोफत व विपुल सूर्य प्रकाशाचा पुरेपूर वापर करा.

13) **विजेची बचत पैशाची बचत**
विजेचे साहित्य दर्जेदारच वापरा.

14) **विजेची बचत पैशाची बचत**
नैसर्गिक ऊर्जा स्त्रोतांचा पुरेपूर वापर करा.

15) **विजेची बचत पैशाची बचत**
सुर्यप्रकाश आहे फुकट
वीज मिळते विकत
विजेची बचत हीच विजेची निर्मिती.

GURANTEED TECHNICAL PARTICULARS for 63,100,200 KVA L.T. Distribution Boxes with MCCB for Urban area		
Sr.NO	**GTP Parameters**	
1	Name of Manufacturer	TEXT
2	Applicable Reference standards	TEXT
3	Process of manufacturing	TEXT
4	Clear Dimensions of box	TEXT
5	Rating of distribution Box in KVA	NUMERICAL
6	Thickness of Enclosure (in mm)	TEXT
7	Material of Enclosure	TEXT
8	Rated Voltage in Volts	NUMERICAL
9	Colour shade of Distribution Box (Inside and Outside)	TEXT
10	Degree of protection IP-33 as per IS-8623/1993 (amended upto date) of enclosure	TEXT
11	Sets of Louvers provided to the box.	NUMERICAL
12	Size of perforated sheet 20 SWG CRCA MS with 2.5mm holes shall be fitted from inside of the louvers	TEXT
13	Type, Size & material Hinges provided to the doors	TEXT
14	Hinges pin diameter & material	TEXT
15	Danger Board shall be riveted on the box door as per IS 2551 (Yes/No)	BOOLEAN
16	No. Doors & handle provided to the box	TEXT
17	Locking arrangement provided to the box	TEXT
18	Simple C&R panel locking arrangement provided to the box (YES/NO)	BOOLEAN
19	Detailed Name plate provided (Yes/No)	BOOLEAN
20	Material & thickness of name plate	TEXT
21	Before powder coating pretreating / phosphating of boxes i.e. in seven tank process shall be carried out as per relevant IS (Yes/No)	TEXT
22	Whether manufacturer have seven tank process facility and powder coating in house (YES/NO)	BOOLEAN
23	In case facility of manufacturing & powder coating of boxes is not available with bidder, undertaking to provide it by sub vendor shall be submitted. (YES/NO)	BOOLEAN
24	Marathi slogans shall be painted on each box as per annexure attached with technical specification (Yes/ No)	BOOLEAN
25	Welding process shall be MIG (Metal Inert Gas) (Yes/NO)	BOOLEAN
26	Material & Size of Busbar	TEXT
27	Material & Size of neutral busbar	TEXT
28	Busbar support insulator provided as per drawings (Yes/No)	TEXT
29	Size & No. of Earthing nutbolts provided	TEXT
30	No. & Size of Bottom plates provided to the Box	TEXT
31	Fixing arrangement provided	TEXT
32	Size of component mounting strip	TEXT
33	Packing of box	TEXT
34	Name or Trade mark of Manufacturer of ISOLATOR (SWITCH DISCONNECTOR)	
35	Type of ISOLATOR (SWITCH DISCONNECTOR)	TEXT
36	Designation of ISOLATOR (SWITCH DISCONNECTOR)	TEXT
37	Rating of Isolator in Amp	TEXT
38	Rated Current of Isolator in Amp	NUMERICAL
39	Rated Voltage of Isolator in Volts	NUMERICAL
40	Basic Uninterrupted Duty of Isolator	NUMERICAL
41	Utilization category of Isolator	TEXT
42	Rated short time withstand capacity of isolator for 2 seconds in kA	TEXT

43	Rated insulation voltage of Isolator in Volts	TEXT
44	The Material of base of isolator shall be DMC	TEXT
45	The DMC base of isolator withstand breaking capacity shall be 80 kA	TEXT
46	The archutes provided in the isolator as technical specifications	TEXT
47	Size of strips on outside of the Isolator provided in mm	TEXT
48	Name or Trade Mark of Manufacturer of HRC Fuse Base	TEXT
49	Rated Current of HRC Fuse Base in Amps	NUMERICAL
50	Rated Voltage of HRC Fuse Base in Volts	NUMERICAL
51	Breaking Capacity of HRC Fuse Base in kA	NUMERICAL
52	The base material of HRC Fuse Base	TEXT
53	Contact material of HRC Fuse base	TEXT
54	Name & Trade mark of Manufacturer of HRC Fuse link	TEXT
55	Rated Current of HRC Fuse Link in Amps	Numerical
56	Rated Voltage of HRC Fuse Link in Volts	NUMERICAL
57	Breaking Capacity of HRC Fuse Link in kA	NUMERICAL
58	Fault Indication provided HRC Fuse Link	TEXT
59	Name or Trade mark of Manufacturer of LINK DISCONNECTOR	TEXT
60	Reference standard applied	TEXT
61	Rated Current of LINK DISCONNECTOR in Amp	NUMERICAL
62	Rated Voltage of LINK DISCONNECTOR in Volts	NUMERICAL
63	The base material of Link Disconnector	TEXT
64	Size of the terminal connector strips of the Link Disconnector in mm	TEXT
65	Material & Size of Male contact terminal of LINK DISCONNECTOR	TEXT
66	Material & Size of Female contact terminal (Solid link hinged) of LINK DISCONNECTOR	TEXT
67	Handle/ puller provided with each Distribution Box (Yes/No)	BOOLEAN
68	Make of Bimetallic lugs	TEXT
69	Reference standard applied for Bimetallic lugs	TEXT
70	Name of manufacturer of MCCB	TEXT
71	Reference of standard for MCCB	TEXT
72	Type designation (i.e.Fixed /Variable)	TEXT
73	Type of overload release	TEXT
74	No.of Poles	TEXT
75	Rated current (amps)	NUMRICAL
76	Rated Voltage & Frequency	TEXT
77	Rated short Circuit Breaking capacity in KA	TEXT
78	The archutes provided in MCCB as technical specifications	TEXT
79	Ultimate Breaking capacity	TEXT
80	Utilization category	TEXT
81	Overload release setting provided in Amps	NUMERICAL
82	Colour of MCCB	TEXT
83	All Type tests carried out on Distribution Box with assembly, Isolator, HRC Fuse Base & Fuse Link, MCCB & Link disconnector at NABL as per Technical specification and relevant IS shall be submitted before commencement of supply. (Yes/No).	BOOLEAN