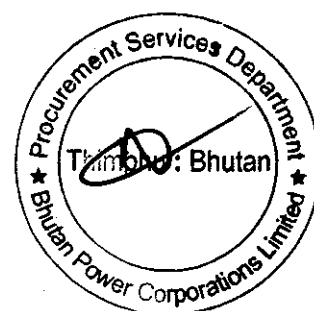


Technical Specification for Lot 2 (Distribution Boxes)

Technical Specification for Lot No. 2 (Distribution Boxes)



1. Distribution Boxes

1.0 Scope

This specification covers the design, manufacture, testing at manufacture's work before dispatch, packing and transportation to BPC stores.

1.1 Code and Standard:

The construction, inspection and testing of the feeder pillar shall comply with all currently applicable status, regulations and safety codes in the locality where the feeder pillar will be installed. The feeder pillar drawing is attached herewith.

The applicable standards: IS 5039 and IS 13703 part 2

1.2 Construction Features:

- 1.2.1 The Distribution Pillar shall be sheet steel enclosed and should be robust, dust, weather and vermin proof providing a degree of protection of IP 52 for indoor use and IP 54 for outdoor use. CRCA Mild steel Sheet of at least 2.5 mm shall be used with smooth finished, leveled and free from flaws and properly braced to prevent wobbling.
- 1.2.2 The Distribution pillar shall be provided with hinged doors openable from the center. It should be also provided with IEC standard type lock and pad locking arrangement.
- 1.2.3 Doors, removable covers, if any and plate shall be gasket all around with neoprene gaskets, and this is essential to prevent ingress of dust and vermin.
- 1.2.4 All live parts shall be provided with at least phase to phase and phase to earth clearance in air of 25 mm and 20 mm respectively.
- 1.2.5 The suitable removable cable gland plate of 2.5 mm cold rolled sheet steel should be provided. The interior cabling space should be strictly as per drawing attached.
- 1.2.6 The external earthing terminal with M10 and 19 mm x 6 mm Aluminum alloy of E91E grade earthing strip inside should be provided.

1.3 Painting:

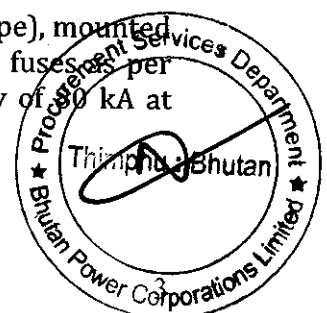
1.3.1 All parts shall be cleaned in a six stage surface prep machine prior to painting, including:

- Heated alkaline wash;
- Fresh Water rinse;
- Heated iron phosphate coat;



Technical Specification for Lot 2 (Distribution Boxes)

- Fresh water rinse;
 - Recirculated deionised water rinse;
 - Fresh deionised water mist
- 1.3.1 After prepping, the equipment shall be dried at 250 degrees for 5-1/2 minutes.
- 1.3.2 Epoxy polyester hybrid power plant shall be electrostatically applied.
- 1.3.3 The coated parts are then oven cured for 20 minutes at up to 450 degrees to provide a furniture quality finish. The hot parts are cooled to ambient temperature prior to packaging.
- 1.3.4 After curing, the paint finish is inert and no volatile emissions are present. There are no fugitive (stray) emissions in the finished product.
- 1.3.5 Gloss: 50 – 60 degrees
Impact Resistance: 18.07 Nm
Flexibility: 180 degrees, 1/4 "mandrel
Pencil hardness: 2H
Cross hatch adhesion: 100%
Salt spray: 200 hours minimum
Humidity resistance: 200 hours minimum
Micron thickness: 80 microns
- 1.4 Main Busbar:**
- 1.4.1 Main bus bar shall be of Aluminum alloy of grade E91E, and as specified in drawing and conforming to relevant standard IS: 5082.
- 1.4.2 Bus bar shall be located in horizontal formation but with gradual gradient as indicated in drawing.
- 1.4.3 All bus bar shall be a solid strip without joints and shall be rated continuously. The maximum temperature of the bus bar under operating conditions when carrying rated normal current at rated frequency should not exceed 85°C.
- 1.4.4 Bus bar shall be adequately supported on insulators to withstand dynamic stresses due to short circuit current. Bus bar support insulators shall conform to relevant standard IS: 2544.
- 1.4.5 Bus bar should not be painted and all performance characteristics specified shall be obtained with unpainted bus bars.
- 1.5 Fuses:**
- 1.5.1 Generally, fuses shall be of HRC cartridge fuse link (Blade contact type), mounted on different sizes of fuse bases required for different sizes of HRC fuses per requirement under the Price Schedule having a rupturing capacity of 80 kA at 415 V, A.C. 50 Hz.



1.6 Interior Lighting

- 1.6.1 The Distribution Pillar shall be provided with a 230V, single phase, 50 Hz, 11W, LED Bayonet bulb fixture placed diagonally opposite for interior illumination and controlled by a piano switch and HRC fuse link HF of 2 Amps for lamp.
- 1.6.2 The Distribution Pillar should be supplied completely wired, ready for the Bhutan Power Corporation Limited's external connections at the terminal blocks. All wiring should be carried out with 650 V grade, PVC insulated, 7/20 standard copper wire.

1.7 Labels and Danger Plate:

- 1.7.1 The Distribution Pillar shall be provided with individual component labels with pillar designation or rating. The danger sign as indicated in drawing should be drawn on every pillar. Both external-earthing terminals shall be levelled.

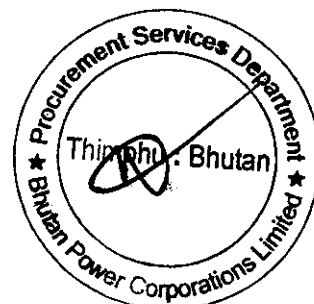
1.8 Colour of the Enclosure

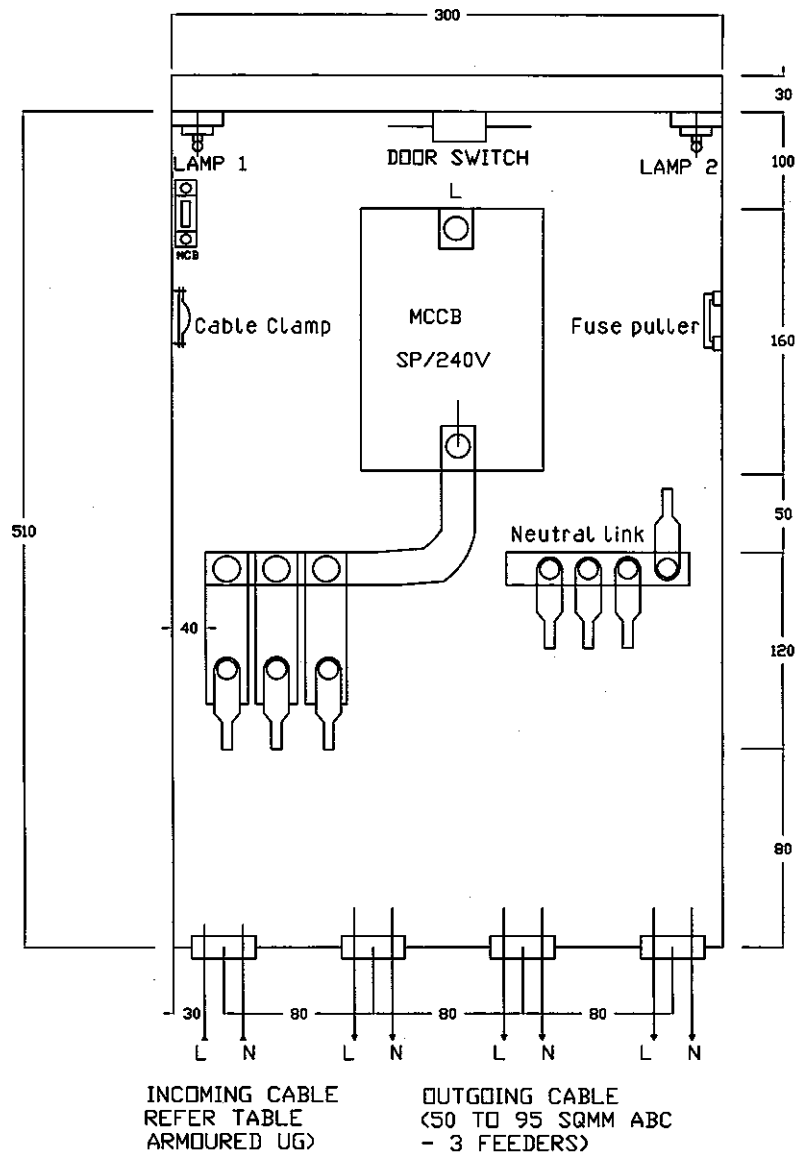
The colour of enclosure should be RAL 7035 (Light Grey).

1.9 Submission of Test Certificate & Drawings

The supplier shall provide the type test certificates for the boxes done within Ten (10) years from the reputed testing laboratory.

The Supplier shall provide to the Purchaser the drawings if the contract is awarded for the final approval.


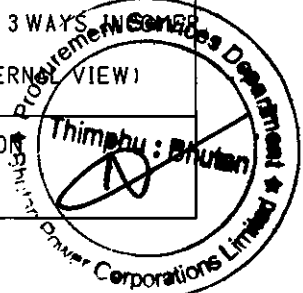


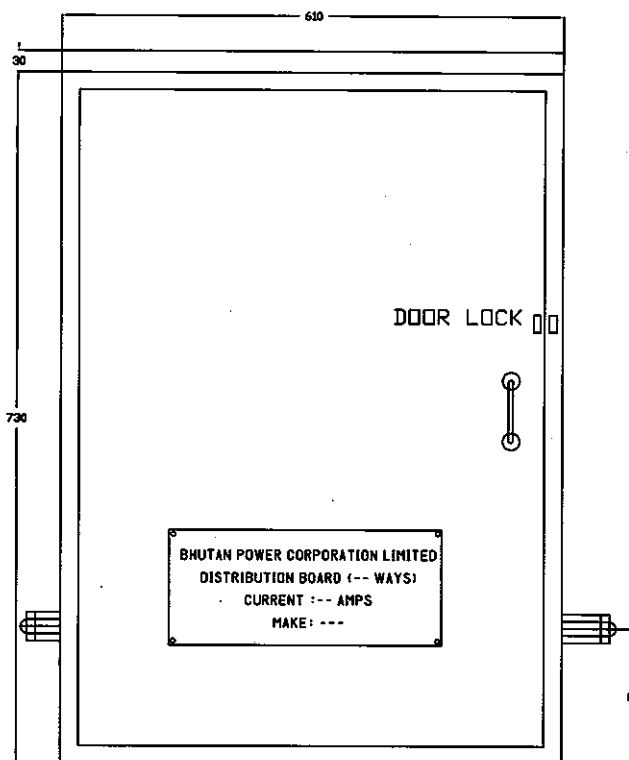


NOTES

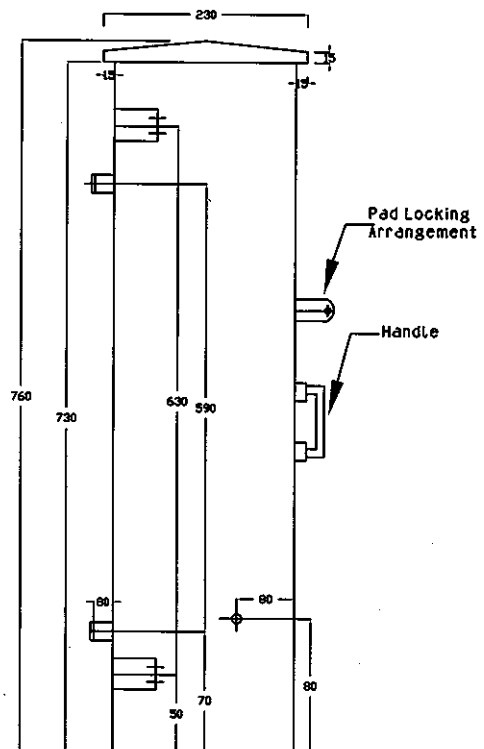
INNER DEVICE:

- MCCB UPTO 63 TO 160A, 1NO. SP- 240V
- HRC FUSES: UPTO 100A, 3NDS/2NDS DEPENDING ON NUMBER OF WAYS.
- PROVIDE ONE NUMBER OF HRC FUSE PULLER FOR EVERY BOARD.
- CABLE LUG TO BE SUPPLIED FIXED WITH THE BOARD FOR APPROPRIATE CABLE SIZES.

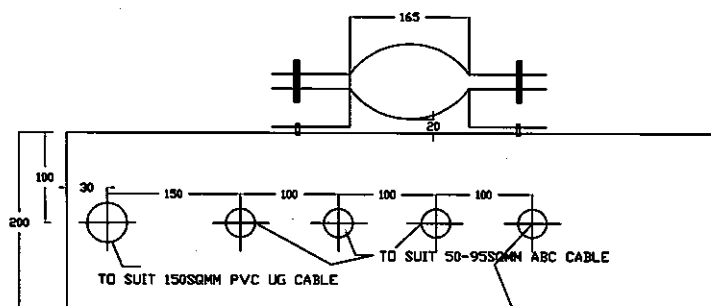
	BHUTAN POWER CORPORATION LIMITED		ENGINEERING AND RESEARCH DEPARTMENT	
			TITLE : DISTRIBUTION DESIGN & CONSTRUCTION STANDARD SINGLE PHASE TRANSFORMER LV DISTRIBUTION BOARD, 3 WAYS, INCOMING MCCB - UPTO 160 A, OUTGOING HRC FUSE UPTO 100 A (INTERNAL VIEW)	
TITLE	NAME	DATE	DRAWING NO. BPC-DDCS-2022-24A/1-2	
DESIGNED BY				
CHECKED BY				
APPROVED BY				
			REVISION 2022	



FRONT VIEW



SIDE VIEW



BOTTOM VIEW

FIXED CABLE GLAND PLATE WITH PUNCHED HOLES FOR CABLE ENTRY (OUTGOING 4 NOS) AND (INCOMING 1NO)

NOTE:

KVA RATING	MCCB RATING	PHASE BUSBAR SIZE	NEUTRAL BUSBAR SIZE
16	63A	12x6MM AL.ALLOY, GR-610I	12x4MM AL.ALLOY, GR-610I
25	63A	12x6MM AL.ALLOY, GR-E9IE	12x4MM AL.ALLOY, GR-610I
63	160A	25x6MM AL.ALLOY, GR-E9IE	25x4MM AL.ALLOY, GR-610I
125	250A	50x5MM AL.ALLOY, GR-E9IE	25x5MM AL.ALLOY, GR-610I

*BAYONET LAMP (IND) TO BE PROVIDED
*REFER TABLE 101 & 101 IN DDCS FOR CABLE AND MCCB RATING



BHUTAN POWER CORPORATION LIMITED

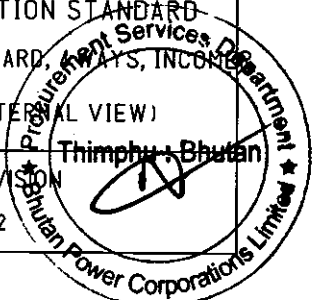
ENGINEERING AND RESEARCH DEPARTMENT

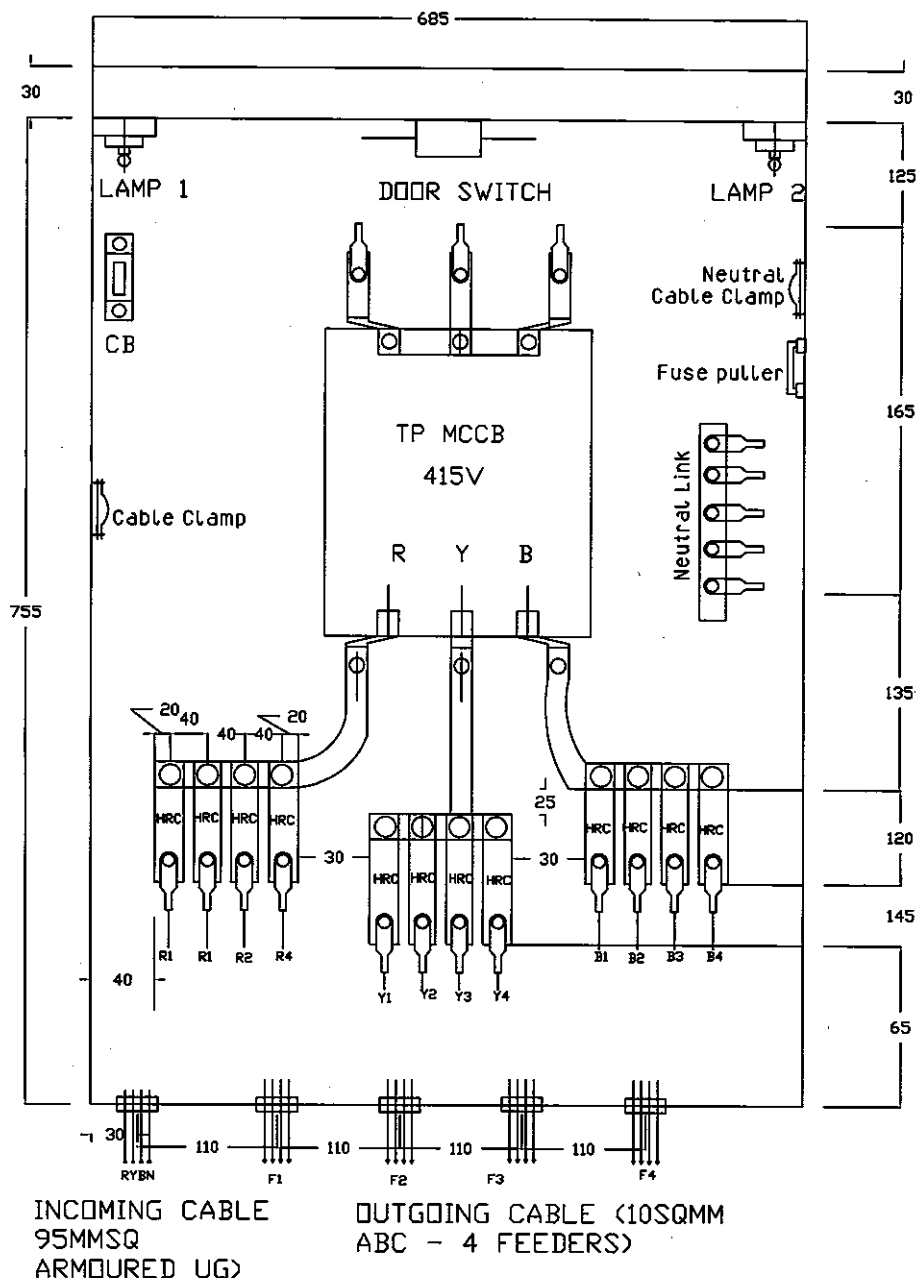
TITLE : DISTRIBUTION DESIGN & CONSTRUCTION STANDARD
THREE PHASE TRANSFORMER LV DISTRIBUTION BOARD, MCCB-UP TO 250A, OUTGOING HRC FUSE UP TO 125A (EXTERNAL VIEW)

TITLE	NAME	DATE
DESIGNED BY		
CHECKED BY		
APPROVED BY		

DRAWING NO. BPC-DDCS-2022-24B/2-2

REVISION
2022





NOTES

INNER DEVICE:

- MCCB UPTO 32 TO 250A, 1NO, TP-415V
- HRC FUSES: UPTO 125A, 6 NOS/12NOS DEPENDING ON NUMBER OF WAYS.
- PROVIDE ONE NUMBER OF HRC FUSE PULLER FOR EVERY BOARD.
- CABLE LUG TO BE SUPPLIED FIXED WITH THE BOARD FOR APPROPRIATE CABLE SIZES.
- TO BE USED WITH 16kVA, 25 kVA, 63 kVA & 125 kVA 3 PHASE TRANSFORMER RATING



BHUTAN POWER
CORPORATION LIMITED

ENGINEERING AND RESEARCH DEPARTMENT

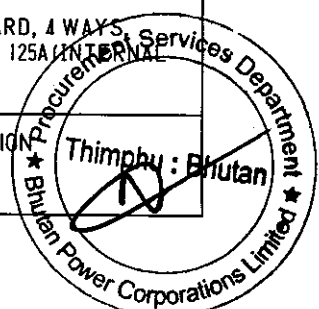
TITLE : DISTRIBUTION DESIGN & CONSTRUCTION STANDARD

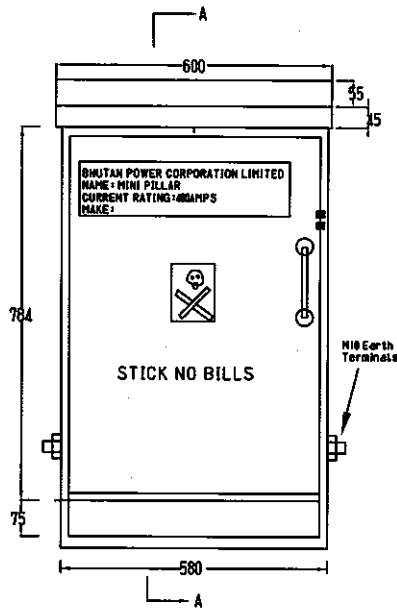
THREE PHASE TRANSFORMER LV DISTRIBUTION BOARD, 4 WAYS,
INCOMER MCCB-UPTO 250A, OUTGOING HRC FUSE UPTO 125A (INTERNAL
VIEW)

TITLE	NAME	DATE
DESIGNED BY		
CHECKED BY		
APPROVED BY		

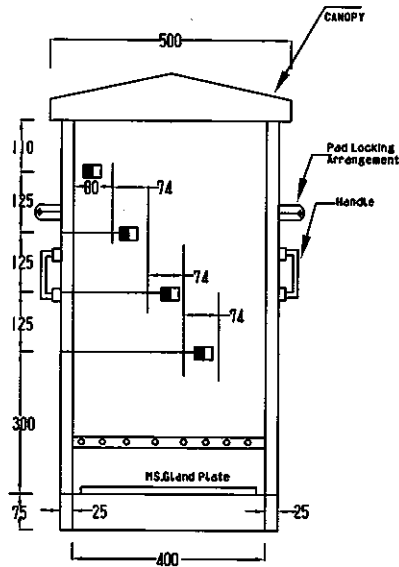
DRAWING NO. BPC-DDCS-2022-24B/1-2

REVISION
2022

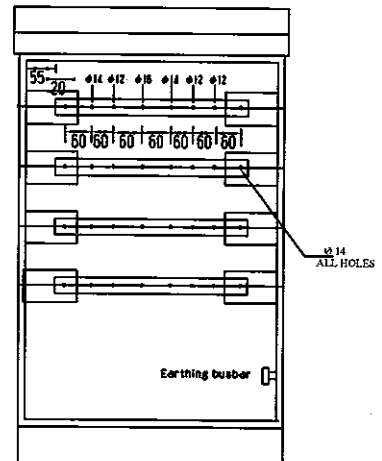




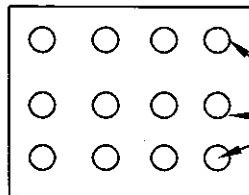
FRONT ELEVATION



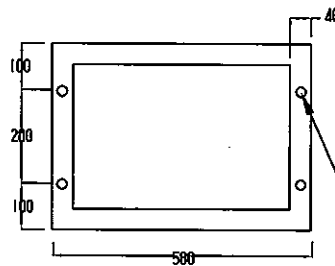
SIDE ELEVATION: (A:A)



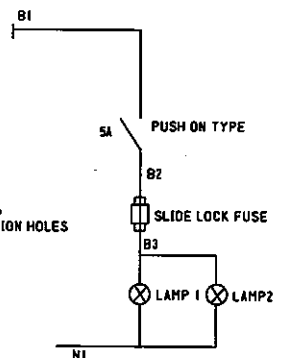
FRONT ELEVATION WITHOUT DOOR



GLAND PLATE DETAILS



FOUNDATION PLAN



PHASE BUS BAR - 1X10X50MM AL. ALLOY
 NEUTRAL - 1X10X50MM AL. ALLOY.
 MATERIAL - THE FEEDER PILLAR (INCLUDING BASE CHANNEL SHALL BE FABRICATED OUT OF 2.5MM MS SHEET
 PAINT - RAL 7035
 EARTH BUS BAR - 1X10X20MM AL. ALLOY.

NOTES

1. DIMENSIONS AS SHOWN ARE IN MM.
2. DRAWING NOT TO SCALE.



BHUTAN POWER CORPORATION LIMITED

ENGINEERING AND RESEARCH DEPARTMENT

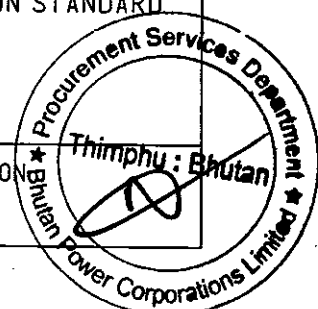
TITLE : DISTRIBUTION DESIGN & CONSTRUCTION STANDARD

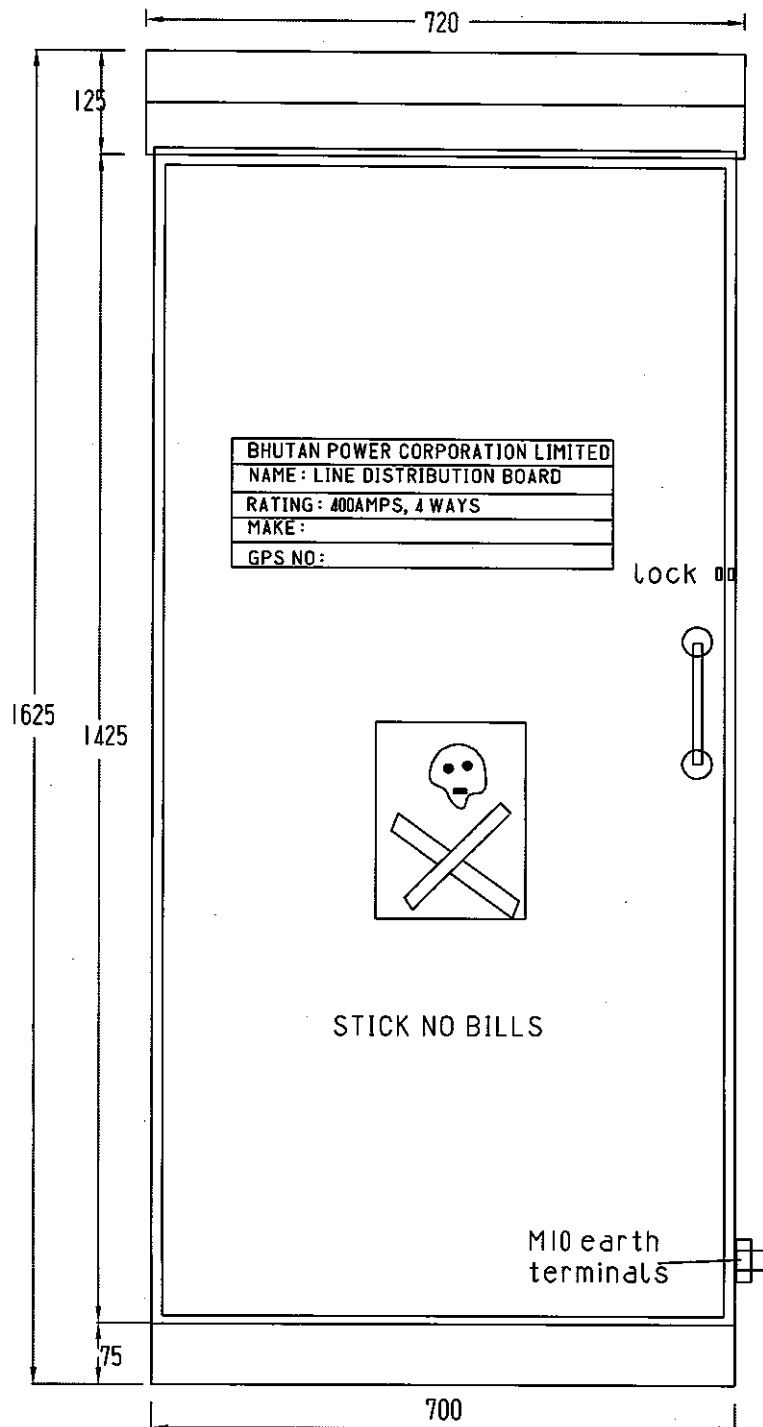
MINI FEEDER PILLAR 400AMPS

TITLE	NAME	DATE
DESIGNED BY		
CHECKED BY		
APPROVED BY		

DRAWING NO. BPC-DOCS-2022-25


REVISION
2022

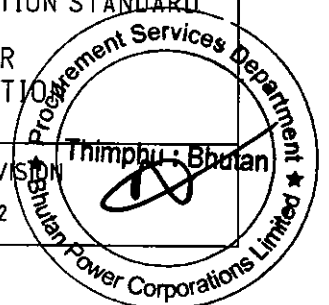




NOTES

1. DIMENSIONS AS SHOWN ARE IN MM.
2. DRAWING NOT TO SCALE.

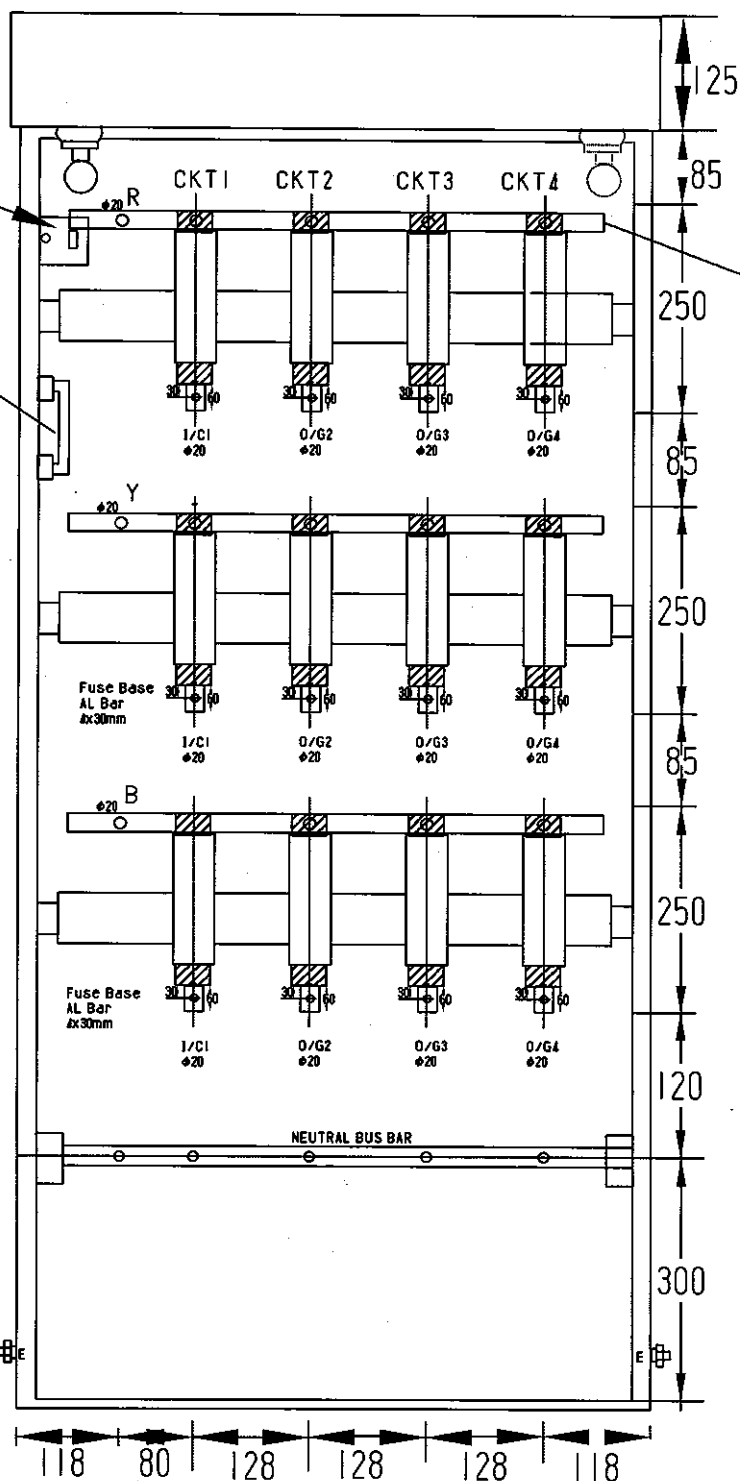
 BHUTAN POWER CORPORATION LIMITED			ENGINEERING AND RESEARCH DEPARTMENT	
			TITLE : DISTRIBUTION DESIGN & CONSTRUCTION STANDARD 4WAYS DISTRIBUTION PILLAR FRONT ELEVATION & SIDE ELEVATION	
TITLE	NAME	DATE	DRAWING NO. BPC-DDCS-2022-26/1-5 REVISION 2022	
DESIGNED BY				
CHECKED BY				
APPROVED BY				



Paino Switch & Rewireable Fuse for lamp

HRC fuse puller

40X 10 MM AL. BUSBAR



NOTES

1. DIMENSIONS AS SHOWN ARE IN MM.
2. PROVIDE ONE NO. OF FUSE PULLER FOR EVERY DISTRIBUTION BOARD.



BHUTAN POWER CORPORATION LIMITED

ENGINEERING AND RESEARCH DEPARTMENT

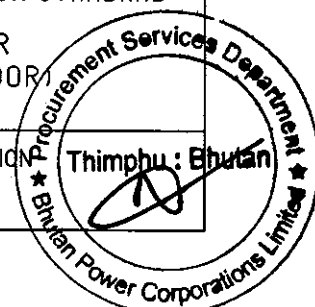
TITLE : DISTRIBUTION DESIGN & CONSTRUCTION STANDARD

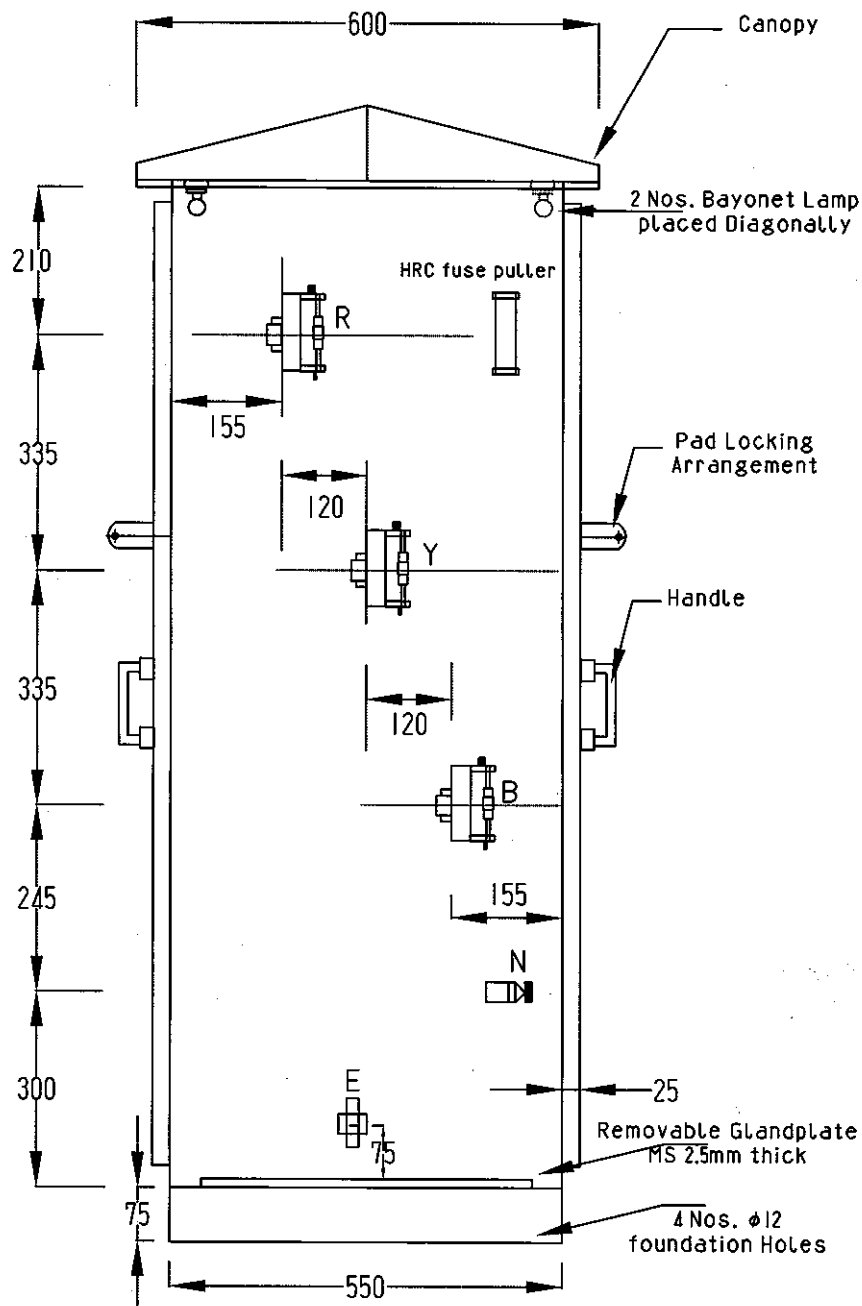
4WAYS DISTRIBUTION PILLAR
(FRONT ELEVATION WITHOUT DOOR)

TITLE	NAME	DATE
DESIGNED BY		
CHECKED BY		
APPROVED BY		

DRAWING NO. BPC-DDCS-2022-26/2-5


REVISION
2022






NOTES

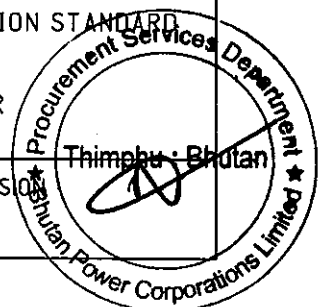
1. DIMENSIONS AS SHOWN ARE IN MM. THE PILLAR SHALL BE TWO SIDED DOORS
2. DRAWING NOT TO SCALE.

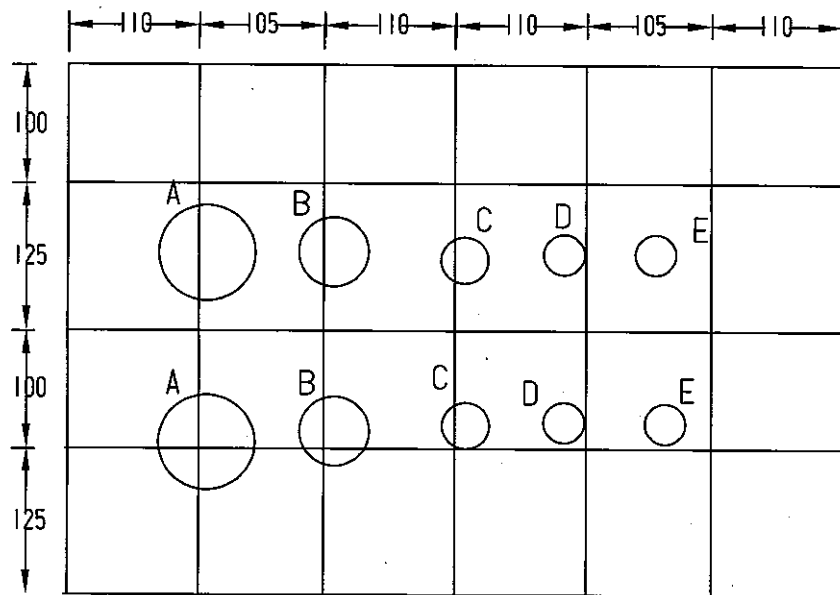
 <div>BHUTAN POWER CORPORATION LIMITED</div>	ENGINEERING AND RESEARCH DEPARTMENT	
	TITLE : DISTRIBUTION DESIGN & CONSTRUCTION STANDARD	
	4WAYS DISTRIBUTION PILLAR	
	DRAWING NO. BPC-DDCS-2022-26/3-5	REVISION 2022
TITLE	NAME	DATE
DESIGNED BY		
CHECKED BY		
APPROVED BY		

Procurement Services


Thimphu : Bhutan

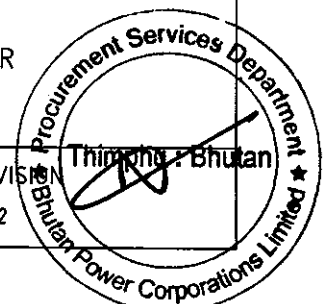


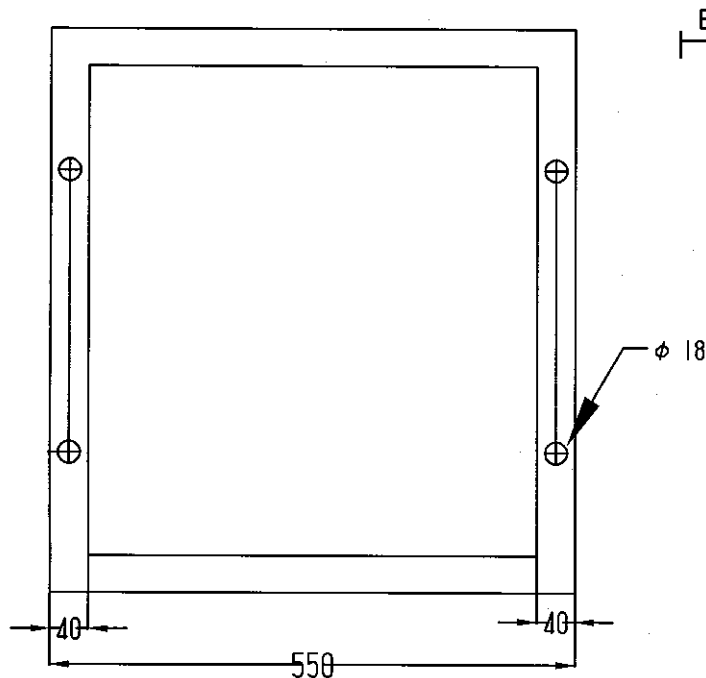




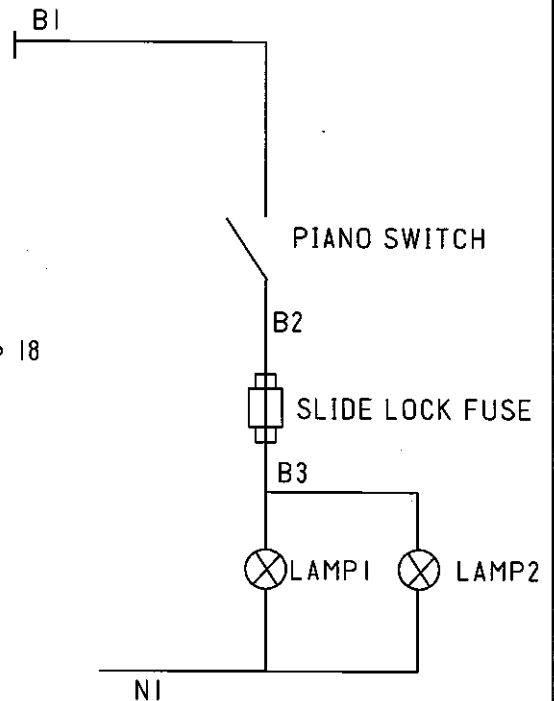
GLAND PLATE	HOLE SIZE
A-4CX300sq.mm-KNOCKOUT	2.78"
B-4CX185sq.mm-KNOCKOUT	2.29"
C-4CX150sq.mm-KNOCKOUT	2.09"
D-2CX10sq.mm-KNOCKOUT	0.75
E-2CX6sq.mm-KNOCKOUT	0.65"

	BHUTAN POWER CORPORATION LIMITED		ENGINEERING AND RESEARCH DEPARTMENT	
			TITLE : DISTRIBUTION DESIGN & CONSTRUCTION STANDARD	
4WAYS DISTRIBUTION PILLAR (GLAND PLATE DETAIL)				
TITLE	NAME	DATE		
DESIGNED BY				
CHECKED BY				
APPROVED BY			DRAWING NO. BPC-DDCS-2022-26/4-5	REVISION 2022






FOUNDATION PLAN

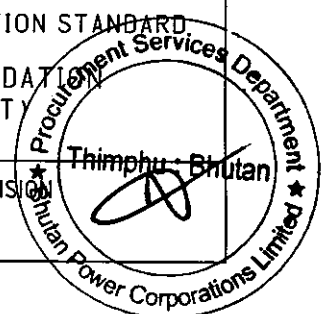


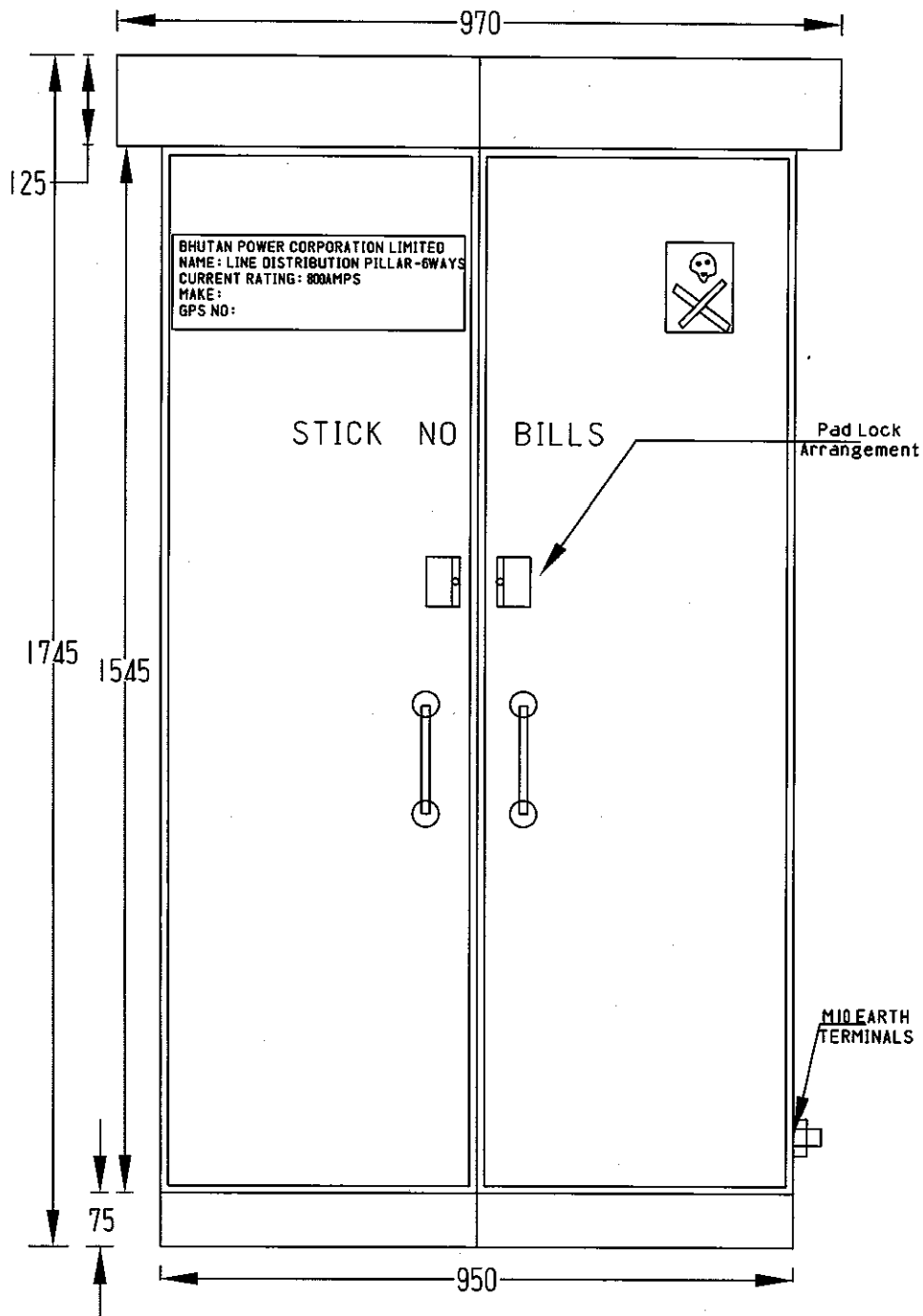
NOTES:

PHASE - 40X10MM AL - 3NOS. & NEUTRAL - 40X10 MM, EARTH - 1X10X20MM, AL ALLOY AL - 1 NO. MATERIAL - THE FEEDER PILLAR (INCLUDING BASE CHANNEL) SHALL BE FABRICATED OUT OF 2.5MM MS SHEET PAINT - SEIMENS GREY.

CORRECT CABLE GLAND SIZE TO BE USED ACCORDINGLY WITH CABLE SIZE
REFER TABLE 105 FROM DDCS FOR FUSE RATING


 BHUTAN POWER CORPORATION LIMITED			ENGINEERING AND RESEARCH DEPARTMENT	
			TITLE : DISTRIBUTION DESIGN & CONSTRUCTION STANDARD 4WAYS DISTRIBUTION PILLAR (FOUNDATION DETAILS AND LIGHTING CIRCUIT)	
TITLE	NAME	DATE	DRAWING NO. BPC-DDCS-2022-26/5-5	REVISION 2022
DESIGNED BY				
CHECKED BY				
APPROVED BY				

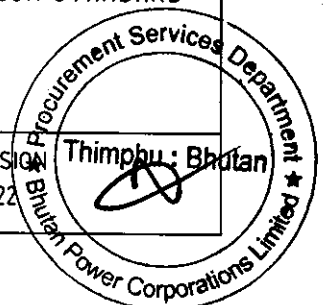


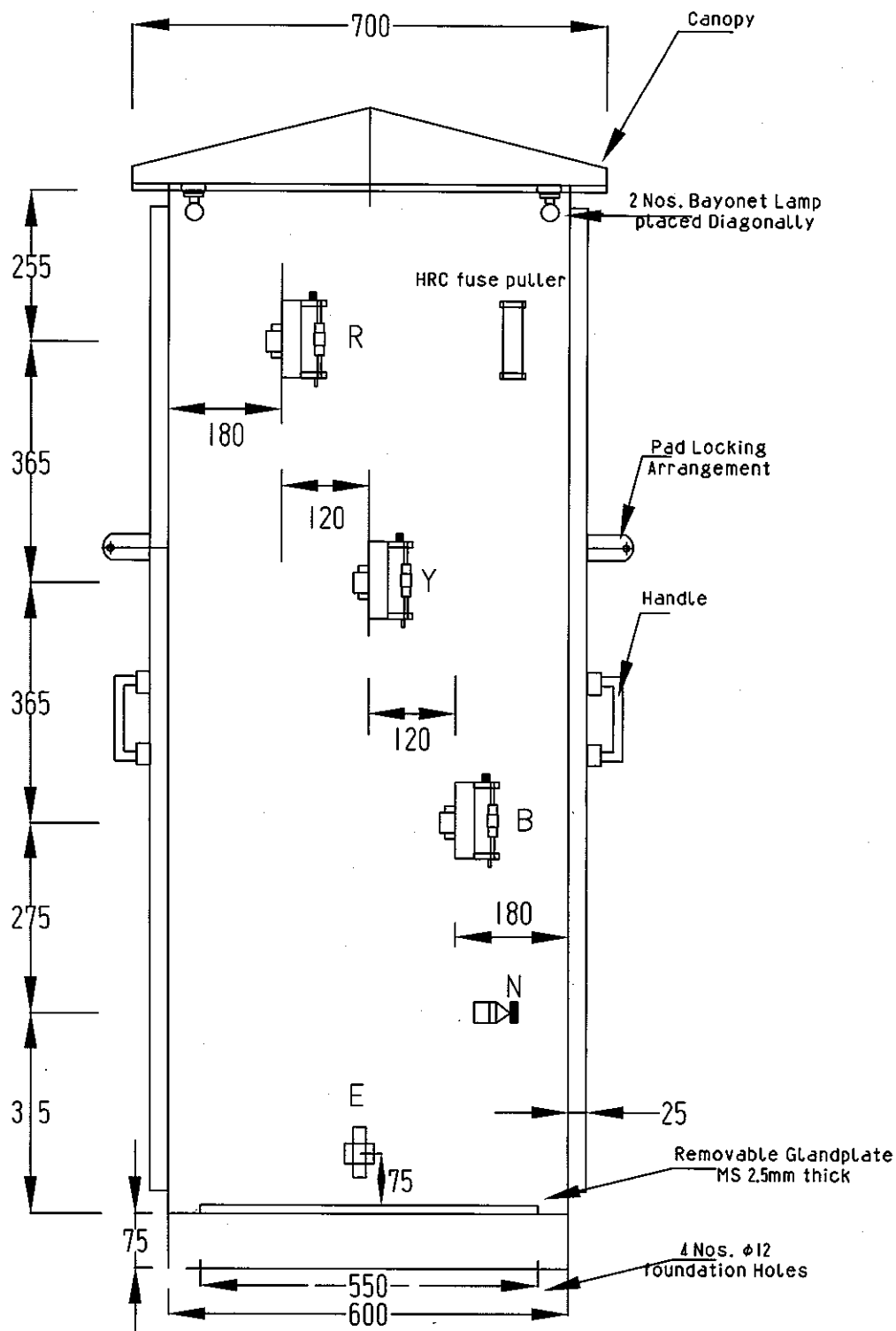


NOTES

1. DIMENSIONS AS SHOWN ARE IN MM.
2. DRAWING NOT TO SCALE.


 BHUTAN POWER CORPORATION LIMITED			ENGINEERING DESIGN & RESEARCH DEPARTMENT	
			TITLE : DISTRIBUTION DESIGN & CONSTRUCTION STANDARD	
			DISTRIBUTION PILLAR (FRONT ELEVATION)	
TITLE	NAME	DATE	DRAWING NO. BPC-DDCS-2022-27/1-5	REVISION
DESIGNED BY				
CHECKED BY				
APPROVED BY				

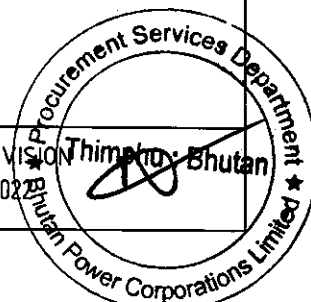


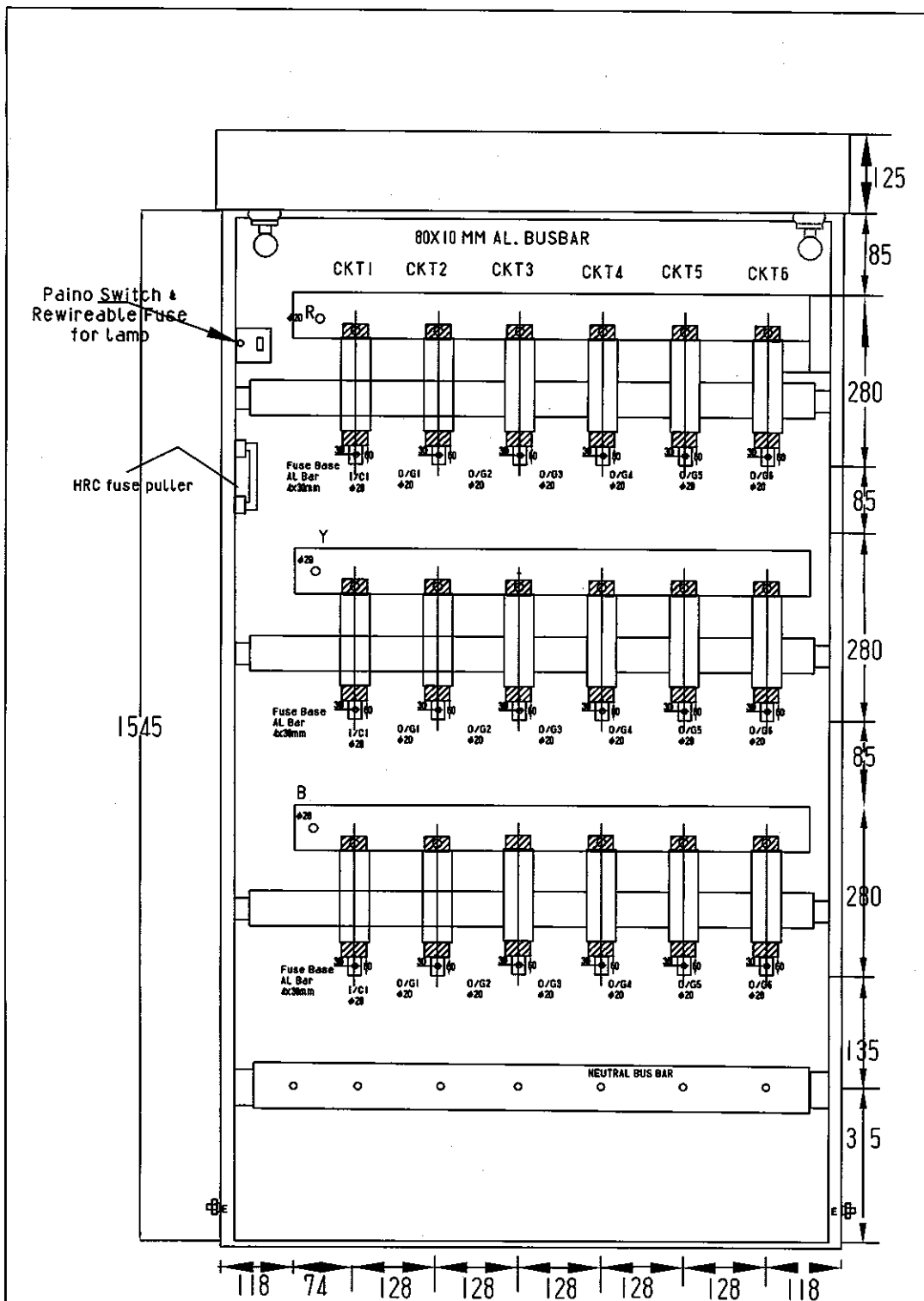


NOTES

1. DIMENSIONS AS SHOWN ARE IN MM. THE PILLAR SHALL BE TWO SIDED DOORS
2. DRAWING NOT TO SCALE.

 <p>BPC Bhutan Power Corporation Limited</p>	<p>BHUTAN POWER CORPORATION LIMITED</p>		<p>ENGINEERING DESIGN & RESEARCH DEPARTMENT</p>	
	<p>TITLE : DISTRIBUTION DESIGN & CONSTRUCTION STANDARD</p>		<p>DISTRIBUTION PILLAR (SIDE ELEVATION)</p>	
TITLE	NAME	DATE	DRAWING NO.	
DESIGNED-BY			BPC-DDCS-2022-27/2-5	
CHECKED BY			REVISION	
APPROVED BY			2022	





1. DIMENSIONS AS SHOWN ARE IN MM.
2. PROVIDE ONE NO. FUSE FULLER FOR EVERY DISTRIBUTION BOARD



BHUTAN POWER CORPORATION LIMITED

ENGINEERING DESIGN & RESEARCH DEPARTMENT

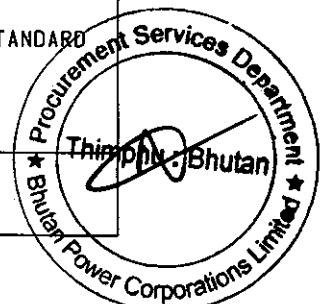
TITLE : DISTRIBUTION DESIGN & CONSTRUCTION STANDARD

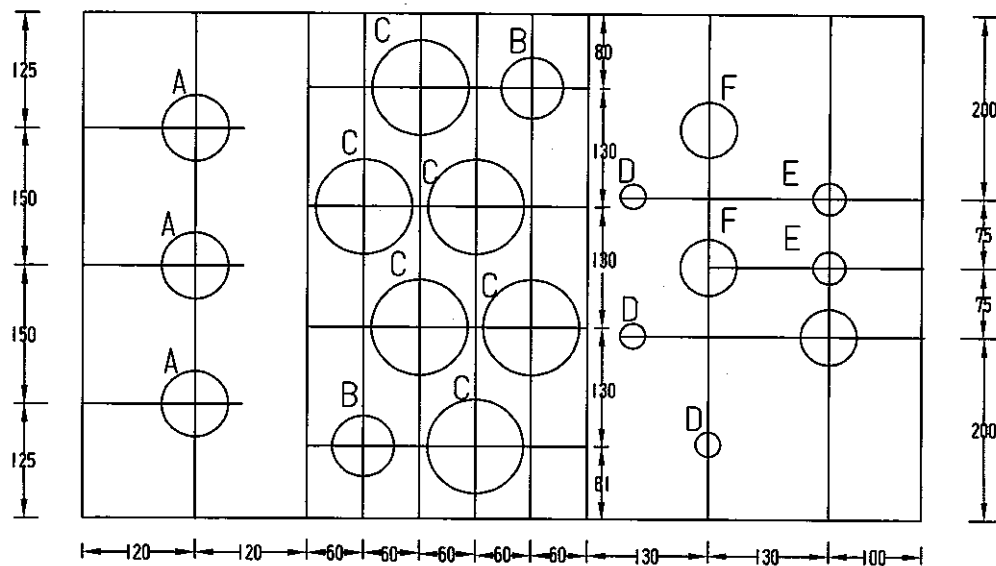
DISTRIBUTION PILLAR
(FRONT ELEVATION WITHOUT DOOR)

TITLE	NAME	DATE
DESIGNED BY		
CHECKED BY		
APPROVED BY		

DRAWING NO.
BPC-DDCS-2022-27/3-5

REVISION
2022





MS. GLAND PLATE

HOLE SIZE

A - 1CX500SQ.MM-KNOCKOUT	6.72"
B - 4CX400SQ.MM-KNOCKOUT	3.16"
C - 4CX300SQ.MM-KNOCKOUT	2.78"
D - 4CX240SQ.MM-KNOCKOUT	2.25"
E - 2CX6SQ.MM	0.75"
F - 2CX10SQ.MM	1"



**BHUTAN POWER
CORPORATION LIMITED**

ENGINEERING DESIGN & RESEARCH DEPARTMENT

TITLE : DISTRIBUTION DESIGN & CONSTRUCTION STANDARD

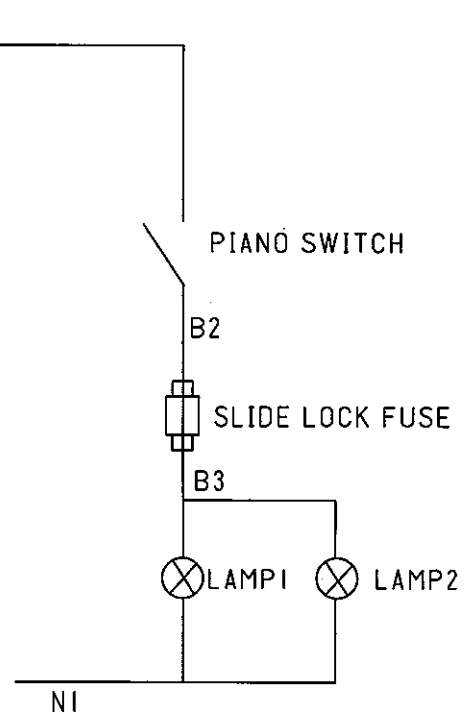
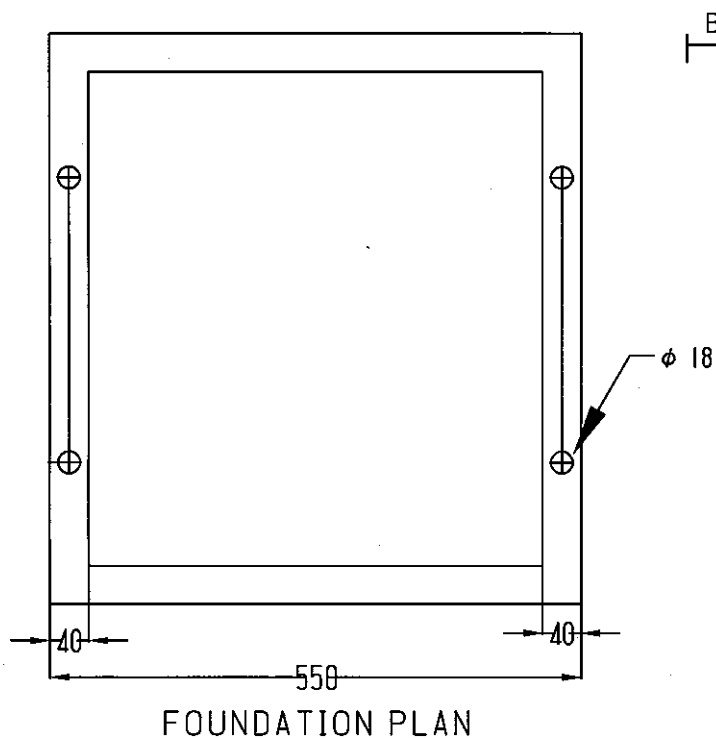
**DISTRIBUTION PILLAR
(GLAND PLATE DETAILS)**

TITLE	NAME	DATE
DESIGNED BY		
CHECKED BY		
APPROVED BY		

**DRAWING NO.
BPC-DDCS-2022-27/4 -5**

**REVISION
2022**






NOTES:

PHASE - 80x10MM AL - 3NOS., NEUTRAL - 80x5MM AL - 1 NO. MATERIAL & EARTH - 1X6X20MM, AL ALLOY. THE FEEDER PILLAR (INCLUDING BASE CHANNEL) SHALL BE FABRICATED OUT OF 2.5MM MS SHEET PAINT - SEIMENS GREY.

CORRECT CABLE GLAND SIZE TO BE USED ACCORDINGLY WITH CABLE SIZE
REFER TABLE 105 FROM DDCS FOR FUSE RATING

 <p>BHUTAN POWER CORPORATION LIMITED</p>	ENGINEERING DESIGN & RESEARCH DEPARTMENT	
	<p>TITLE : DISTRIBUTION DESIGN & CONSTRUCTION STANDARD</p> <p>DISTRIBUTION PILLAR (FOUNDATION DETAILS AND LIGHTING)</p>	
TITLE	NAME	DATE
DESIGNED BY		
CHECKED BY		
APPROVED BY		
<p>DRAWING NO. BPC-DDCS-2022-27/5-5</p>		<p>REVISION 2022</p>

