



འབྲུག་སྤྱི་ལམ་ལས་འཛིན།

Bhutan Power Corporation Limited

(An ISO 9001:2015, ISO 14001:2015 & ISO 45001:2018 Certified Company)

Registered Office, Thimphu

Procurement Services Department

Thimphu: Bhutan



BPC/PSD/Electrical Materials/2022/03/05

March 22, 2022

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Subject: Addendum No. V

Tender Title: Supply and Delivery of Electrical Line Materials and Substation Equipment

Reference: BPC/PSD/Electrical Materials/2022/03 dated February 11, 2022

Dear Sir/Madam,

This is to inform all the bidders that PSD, BPC would like to issue amendment against the above referred tender. The tender submission dateline is now preponed to March 29, 2022. The BOQ of Lot 2 and lot 4 is also changed and accordingly the EMD amount for the lots are changed. The detail commercial and technical requirements of the lots are mentioned under the BDS (Bid Data Sheet) and Schedule of Supply which are attached herewith.

Therefore, Bidders are advised to note the changes and quote accordingly. All other terms and conditions shall remain same.

Thanking you.

Yours sincerely,

(Nim Dorji)
General Manager



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DRUK HOLDING & INVESTMENTS LTD.

GROUP STANDARD BIDDING DOCUMENT

GOODS (BDS)



Tender Reference: BPC/PSD/Electrical Materials/2022/03 dated February 11, 2022 for the supply and delivery Electrical Line Materials and Substation Equipment



Contents

SECTION II. BID DATA SHEET 3



SECTION II. BID DATA SHEET

The Bid Data Sheet (BDS) contains information and provisions that are specific to a particular bidding process. The Purchaser must specify in the BDS only information that the Instructions to Bidders (ITB) request be specified in the BDS. All information shall be provided, and no clause shall be left blank. To facilitate the preparation of the BDS, its clauses are numbered with the same numbers as the corresponding ITB clauses. This guide provides information to the Purchaser on how to enter all required information, and includes a BDS format that summarizes all information to be provided.

ITB	Particulars																										
1.1	Tender No.: BPC/PSD/Electrical Materials/2022/03 dated February 11, 2022																										
1.1	Tender Name: The Supply and Delivery of Electrical Line Materials and Substation Equipment.																										
1.1	Purchaser: Procurement Services Department, Bhutan Power Corporation Limited, Yarden Lam, Post Box No. 580, Thimphu, Bhutan.																										
1.1	The number and identification of Lots comprising this tender are: <table border="1" data-bbox="438 891 1471 1809"> <thead> <tr> <th>Lot No.</th> <th>Lot Description</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>11 kV ID VCB Panels and Accessories</td> </tr> <tr> <td>2</td> <td>Distribution Boards (AC & DC), Battery Bank and Accessories</td> </tr> <tr> <td>3</td> <td>Telescopic Pole Fittings</td> </tr> <tr> <td>4</td> <td>Conductor Hardware and GI steel Pole Fittings</td> </tr> <tr> <td>5</td> <td>Fault Passage Indicator (FPI)</td> </tr> <tr> <td>6</td> <td>Transformer Spare Parts and Accessories</td> </tr> <tr> <td>7</td> <td>Miscellaneous Items for Transformer Maintenance</td> </tr> <tr> <td>8</td> <td>Copper Wire</td> </tr> <tr> <td>9</td> <td>Distribution Pillar and Termination Kit</td> </tr> <tr> <td>10</td> <td>HV Switching Equipment</td> </tr> <tr> <td>11</td> <td>ABC Cables</td> </tr> <tr> <td>12</td> <td>PVC Cables</td> </tr> </tbody> </table>	Lot No.	Lot Description	1	11 kV ID VCB Panels and Accessories	2	Distribution Boards (AC & DC), Battery Bank and Accessories	3	Telescopic Pole Fittings	4	Conductor Hardware and GI steel Pole Fittings	5	Fault Passage Indicator (FPI)	6	Transformer Spare Parts and Accessories	7	Miscellaneous Items for Transformer Maintenance	8	Copper Wire	9	Distribution Pillar and Termination Kit	10	HV Switching Equipment	11	ABC Cables	12	PVC Cables
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8.2	For Bid clarification purposes, the Purchaser's address is: Attention: The General Manager. Address: Procurement Services Department, Bhutan Power Corporation Limited, Yarden Lam, Post Box No. 580, Thimphu, Bhutan. Telephone number: +975-2-326289 Electronic mail address: nim.dorji@bpc.bt																										



	copy to: psdbpc@gmail.com/kinzangwangmo@bpc.bt
8.3	Bid Clarification request will be received on or before: Time : 17:00 hour Date : March 23, 2022
8.5	A pre-bid meeting shall not take place.
12.1	The Bidder shall submit with its Bid the following additional documents: a) <i>Copies of valid Trade License</i> b) <i>Latest Tax Clearance Certificate</i> c) <i>Compliance to Delivery Schedule</i>
15.1	Alternative Bids shall not be permitted.
16.3	The Bidder shall quote prices in DDP (Delivered Duty Paid), RSD, Pasakha (Place of destination) for all the lots as per incoterm 2020. Notwithstanding any possible misinterpretation/ambiguity in interpretation, it is explicitly clarified that the offered prices shall be all inclusive covering all costs including but not limited to transportation, insurance, taxes and duties and any other costs for delivery of the materials to the Purchaser at the designated place of delivery/destination.
16.3 (a) (iii)	The final destination is: Pasakha, Regional Store Divisions, Phuentsholing, Bhutan.
16.3 (b) i, ii, & iii	The price shall be inclusive of all taxes and duties that are applicable both inside and outside the purchaser's country.
16.5	Bids are being invited for lots
18.1	The prices quoted by the Bidder <i>shall not be adjustable</i> except under the circumstances specified under Clause 38.3 (e)
19.1, 19.2 and 19.3	Bid Prices shall be quoted in Ngultrum for goods offered from Bhutan, in Indian Rupees for goods offered from India; and in US dollar/major foreign currencies for goods offered from other Countries. Bid Prices expressed in Indian currency and US Dollars/major foreign currencies shall be accepted and evaluated in accordance to ITB 38. For bid evaluation purpose the exchange rate will be based on the Telegraphic Transfer (TT) selling rate published by the Royal Monetary Authority (RMA) of the Kingdom of Bhutan on the day of bid opening or the immediate preceding date as posted by the RMA. For bid expressed in Indian currency and US Dollars/major foreign currencies, payments shall be made in equivalent Ngultrum through banking channel and the responsibilities of payment transfer and transfer charges lie on the Suppliers.



20.1	<p>Technical Specifications</p> <p>The minimum technical specification (where ever required) are detailed out under respective Lot and Price schedule. Any technical deviation shall be brought out in the GTP forms for the items where GTP forms are provided and for the items where GTP forms are not required, the deviation shall be brought out in the deviation sheet provided. If the deviations are not mentioned in GTP and deviation sheet provided, the specification shall be considered as complied with the requirement.</p>																										
20.2	<p>Guaranteed Technical Specifications (GTPs) <i>“is” required /to be offered if any</i></p> <table border="1" data-bbox="461 584 1501 1527"> <thead> <tr> <th data-bbox="461 584 1150 640">Item / Lot Description</th> <th data-bbox="1150 584 1501 640">Remarks</th> </tr> </thead> <tbody> <tr> <td data-bbox="461 640 1150 696"><i>Lot 1: 11 kV ID VCB Panels and Accessories</i></td> <td data-bbox="1150 640 1501 696"><i>Required Item A1</i></td> </tr> <tr> <td data-bbox="461 696 1150 813"><i>Lot 2: Distribution Boards (AC &DC), Battery Bank and Accessories</i></td> <td data-bbox="1150 696 1501 813"><i>Required for item 1,2,3 &4</i></td> </tr> <tr> <td data-bbox="461 813 1150 880"><i>Lot 3: Telescopic Pole Fittings</i></td> <td data-bbox="1150 813 1501 880"><i>To be Offered</i></td> </tr> <tr> <td data-bbox="461 880 1150 958"><i>Lot 4: Conductor Hardware and GI Steel Pole Fittings</i></td> <td data-bbox="1150 880 1501 958"><i>To be Offered</i></td> </tr> <tr> <td data-bbox="461 958 1150 1025"><i>Lot 5: Fault Passage Indicator (FPI)</i></td> <td data-bbox="1150 958 1501 1025"><i>Required</i></td> </tr> <tr> <td data-bbox="461 1025 1150 1093"><i>Lot 6:Transformer Spare Parts and Accessories</i></td> <td data-bbox="1150 1025 1501 1093"><i>To be Offered</i></td> </tr> <tr> <td data-bbox="461 1093 1150 1193"><i>Lot 7: Miscellaneous Items for Transformer Maintenance</i></td> <td data-bbox="1150 1093 1501 1193"><i>To be Offered</i></td> </tr> <tr> <td data-bbox="461 1193 1150 1261"><i>Lot 8:Copper Wire</i></td> <td data-bbox="1150 1193 1501 1261"><i>To be Offered</i></td> </tr> <tr> <td data-bbox="461 1261 1150 1328"><i>Lot 9: Distribution Pillar and Termination Kit</i></td> <td data-bbox="1150 1261 1501 1328"><i>Required for Item 1 &2</i></td> </tr> <tr> <td data-bbox="461 1328 1150 1395"><i>Lot 10: HV Switching Equipment</i></td> <td data-bbox="1150 1328 1501 1395"><i>To be Offered</i></td> </tr> <tr> <td data-bbox="461 1395 1150 1462"><i>Lot 11: ABC Cables</i></td> <td data-bbox="1150 1395 1501 1462"><i>Required</i></td> </tr> <tr> <td data-bbox="461 1462 1150 1527"><i>Lot 12: PVC Cables</i></td> <td data-bbox="1150 1462 1501 1527"><i>Required</i></td> </tr> </tbody> </table> <p>a) <i>The bid for that item(s)/Lot(s) shall be rejected if the GTP required Forms are not duly filled up and submitted as specified under respective lot.</i></p> <p><i>The bidders are required to duly fill up the GTP forms provided in the bidding document. The catalogue/brochures of the items shall not be considered as GTP of the item. Further, if there are discrepancies between the item catalogue/brochures and the offered GTP, then GTP shall prevail.</i></p> <p><i>For convenience purpose, the GTP in Excel format is attached herewith. The GTP must be seal, sign and fill up without any alteration to its format.</i></p>	Item / Lot Description	Remarks	<i>Lot 1: 11 kV ID VCB Panels and Accessories</i>	<i>Required Item A1</i>	<i>Lot 2: Distribution Boards (AC &DC), Battery Bank and Accessories</i>	<i>Required for item 1,2,3 &4</i>	<i>Lot 3: Telescopic Pole Fittings</i>	<i>To be Offered</i>	<i>Lot 4: Conductor Hardware and GI Steel Pole Fittings</i>	<i>To be Offered</i>	<i>Lot 5: Fault Passage Indicator (FPI)</i>	<i>Required</i>	<i>Lot 6:Transformer Spare Parts and Accessories</i>	<i>To be Offered</i>	<i>Lot 7: Miscellaneous Items for Transformer Maintenance</i>	<i>To be Offered</i>	<i>Lot 8:Copper Wire</i>	<i>To be Offered</i>	<i>Lot 9: Distribution Pillar and Termination Kit</i>	<i>Required for Item 1 &2</i>	<i>Lot 10: HV Switching Equipment</i>	<i>To be Offered</i>	<i>Lot 11: ABC Cables</i>	<i>Required</i>	<i>Lot 12: PVC Cables</i>	<i>Required</i>
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	b) For the item(s)/Lot(s) of which GTP forms are not provided under respective lot, the bidders are requested to submit the catalogue or drawings for individual items or offer GTP if there is any. The offered items shall be clearly indicated in the catalogue and if there is any deviation, brought out in deviation sheet provided.																										
,20.3	The period of time for which the Goods are expected to be functioning (for the purpose of spare parts, special tools, etc.): <i>Not Applicable</i> .																										
21.1	Financial Capability The Bidder shall furnish documentary evidence that it meets the financial requirement(s): <i>Not Applicable</i>																										
21.2	Experience and Technical Capacity The Bidder shall furnish documentary evidence to demonstrate that it meets the following experience requirement(s): <i>ISO Certificate, list of previous clients, relevant catalogues, notarized test certificates, list of past performance certificates and manufacturer's profile for all new brands that are introduced in BPC.</i>																										
21.3(a)	<p>Manufacturer's Authorization (MA) "is" required/Not Required</p> <table border="1"> <thead> <tr> <th>Lot Description</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td>Lot 1: 11 kV ID VCB Panels and Accessories</td> <td>Required</td> </tr> <tr> <td>Lot 2: Distribution Boards (AC &DC), Battery Bank and Accessories</td> <td>Required</td> </tr> <tr> <td>Lot 3: Telescopic Pole Fittings</td> <td>Required</td> </tr> <tr> <td>Lot 4: Conductor Hardware and GI Steel Pole Fittings</td> <td>Required</td> </tr> <tr> <td>Lot 5: Fault Passage Indicator (FPI)</td> <td>Required</td> </tr> <tr> <td>Lot 6:Transformer Spare Parts and Accessories</td> <td>Required</td> </tr> <tr> <td>Lot 7: Miscellaneous Items for Transformer Maintenance</td> <td>Not Required</td> </tr> <tr> <td>Lot 8:Copper Wire</td> <td>Required</td> </tr> <tr> <td>Lot 9: Distribution Pillar and Termination Kit</td> <td>Required</td> </tr> <tr> <td>Lot 10: HV Switching Equipment</td> <td>Required</td> </tr> <tr> <td>Lot 11: ABC Cables</td> <td>Required</td> </tr> <tr> <td>Lot 12: PVC Cables</td> <td>Required</td> </tr> </tbody> </table> <p>a) The bid for that item(s)/Lot(s) shall be rejected if the Manufacturer's Authorization is not submitted for which the Manufacturer's Authorization is required.</p> <p>b) The Bidders are to mention the brand and origin of goods in the price schedule and submit the Manufacturer's Authorization accordingly.</p>	Lot Description	Remarks	Lot 1: 11 kV ID VCB Panels and Accessories	Required	Lot 2: Distribution Boards (AC &DC), Battery Bank and Accessories	Required	Lot 3: Telescopic Pole Fittings	Required	Lot 4: Conductor Hardware and GI Steel Pole Fittings	Required	Lot 5: Fault Passage Indicator (FPI)	Required	Lot 6:Transformer Spare Parts and Accessories	Required	Lot 7: Miscellaneous Items for Transformer Maintenance	Not Required	Lot 8:Copper Wire	Required	Lot 9: Distribution Pillar and Termination Kit	Required	Lot 10: HV Switching Equipment	Required	Lot 11: ABC Cables	Required	Lot 12: PVC Cables	Required
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	c) <i>The brands (restricted/preferred) are mentioned in the price schedule and bidders are to quote accordingly. Item/lots for which brands are restricted, no alternative/ substitute brand shall be accepted and shall be considered as non-responsive for that particular item/lot.</i>																										
21.3 (b)	After sales maintenance, repair, spare parts stocking and related services: are not Required , and the Bidder therefore is <i>not required</i> to be represented by a suitably equipped and able agent in Bhutan.																										
21.3 (c)	Joint Venture, Consortium (JV/C) Bids are permitted: "YES" , the number of partners forming Joint Venture, Consortium (JV/C) : <i>Two</i>																										
22.1	The Bid validity period shall be 90 days from the last date of bid submission i.e., up to June 27, 2022 .																										
23.1	<p>The Bidder shall furnish a bid security in the amount and currencies as shown below in favour of Director, FAS, BPC:</p> <table border="1" data-bbox="459 840 1497 1594"> <thead> <tr> <th>Lot Description</th> <th>Amount (Nu.)</th> </tr> </thead> <tbody> <tr> <td><i>Lot 1: 11 kV ID VCB Panels and Accessories</i></td> <td><i>335,000.00</i></td> </tr> <tr> <td><i>Lot 2: Distribution Boards (AC &DC), Battery Bank and Accessories</i></td> <td><i>41,000.00</i></td> </tr> <tr> <td><i>Lot 3: Telescopic Pole Fittings</i></td> <td><i>15,000.00</i></td> </tr> <tr> <td><i>Lot 4: Conductor Hardware and GI Steel Pole Fittings</i></td> <td><i>147,000.00</i></td> </tr> <tr> <td><i>Lot 5: Fault Passage Indicator (FPI)</i></td> <td><i>530,000.00</i></td> </tr> <tr> <td><i>Lot 6:Transformer Spare Parts and Accessories</i></td> <td><i>34,000.00</i></td> </tr> <tr> <td><i>Lot 7: Miscellaneous Items for Transformer Maintenance</i></td> <td><i>32,000.00</i></td> </tr> <tr> <td><i>Lot 8:Copper Wire</i></td> <td><i>42,000.00</i></td> </tr> <tr> <td><i>Lot 9: Distribution Pillar and Termination Kit</i></td> <td><i>47,000.00</i></td> </tr> <tr> <td><i>Lot 10: HV Switching Equipment</i></td> <td><i>128,000.00</i></td> </tr> <tr> <td><i>Lot 11: ABC Cables</i></td> <td><i>470,000.00</i></td> </tr> <tr> <td><i>Lot 12: PVC Cables</i></td> <td><i>97,000.00</i></td> </tr> </tbody> </table> <p>Preferably Bid Security should be submitted for the individual lots. Combined Bid Security would be also accepted. However, if the combined Bid Security is not sufficient in terms of total amount, the offer for the entire quoted lots would be treated as non-responsive as per ITB 23 and not considered for further evaluation.</p> <p>For e-bids, bidders shall submit the Bid Security in original form to Procurement Service Departments (PSD), Head Office/ Regional Store Division (RSD), Phuentsholing/RSD Gelephu on or before the deadline for the submission of bids and also upload the scan copy of bid security in the www.tender.bt</p>	Lot Description	Amount (Nu.)	<i>Lot 1: 11 kV ID VCB Panels and Accessories</i>	<i>335,000.00</i>	<i>Lot 2: Distribution Boards (AC &DC), Battery Bank and Accessories</i>	<i>41,000.00</i>	<i>Lot 3: Telescopic Pole Fittings</i>	<i>15,000.00</i>	<i>Lot 4: Conductor Hardware and GI Steel Pole Fittings</i>	<i>147,000.00</i>	<i>Lot 5: Fault Passage Indicator (FPI)</i>	<i>530,000.00</i>	<i>Lot 6:Transformer Spare Parts and Accessories</i>	<i>34,000.00</i>	<i>Lot 7: Miscellaneous Items for Transformer Maintenance</i>	<i>32,000.00</i>	<i>Lot 8:Copper Wire</i>	<i>42,000.00</i>	<i>Lot 9: Distribution Pillar and Termination Kit</i>	<i>47,000.00</i>	<i>Lot 10: HV Switching Equipment</i>	<i>128,000.00</i>	<i>Lot 11: ABC Cables</i>	<i>470,000.00</i>	<i>Lot 12: PVC Cables</i>	<i>97,000.00</i>
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23.5	The Bid Security validity period shall be valid till July 27, 2022 .
24.1 & 25.1	In addition to the original Bid, the number of copies is: <i>Not Applicable</i>
25.2(b)	For bid submission purposes only, the Purchaser's address is: <i>Attention: The General Manager</i> <i>Address: Procurement Services Department, Bhutan Power Corporation Limited, Yarden Lam, Post Box No. 580, Thimphu, Bhutan.</i>
25.3	Mode of Tendering is Single Stage – One Envelope Process .
25.8	Bidders are required to submit e-bids through e-procurement system (www.tender.bt). Bidders have to visit website www.tender.bt for vendor registration if the vendor has not registered in the e-procurement platform and submit the bid online. The user manual for vendor registration and bidding process is available under Downloads in website www.tender.bt
26.1	The deadline for the submission of Bid is: March 29, 2022 at 11:00 hours
29.1	The Bid Opening shall take place at: Address: Conference Hall, Head Office, BPC, Thimphu Date : March 29, 2022 Time : 12:00 Hours Venue : BPC Conference Hall
37.1	A margin of five percent (5%) Domestic Preference shall not apply .
38.3 (a)	Evaluation will be done for: Lot wise <i>A lot with an alternative item price shall be rejected and that lot shall not be considered for further evaluation.</i> <i>In case some items are not quoted for a particular lot, the corporation reserves the right to cost load the highest responsive rate of other bidders for the purpose of evaluation of that lot if it was determined that the non-quoted items are not a major component of the lot or do not form an integral element of the lot. Actual order shall however be done based on the lowest rate that has been quoted in that bid package.</i>
38.3(e)	The adjustments shall be determined using the following criteria: (a) Deviation in Delivery schedule: <i>Yes</i> <i>No credit will be given to earlier delivery but Bids offering late delivery schedules (LDS) will be accepted but the Bids shall be adjusted for the purpose of the bid</i>

	<p><i>evaluation only adding at the rate of @one (1) per cent of the bid price for each week of delay to the bid price. Bids offering delivery schedules beyond 1 (one) month of the delivery period shall be rejected.</i></p> <p>(b) Deviation in payment schedule: No</p> <p>(c) The cost of major replacement components, mandatory spare parts, and service: No</p> <p>(d) The availability in Bhutan of spare parts and after-sales services for the equipment offered in the Bid : No</p> <p>(e) The projected operating and maintenance costs during the life of the equipment: No</p> <p>(f) The performance and productivity of the equipment offered: No.</p>
38.6	Bidders shall be allowed to quote prices for one or more lots. The price schedule must be completed without any alteration to its format.
44.2 & 45.1	The successful Bidder shall submit the performance security and sign the Contract within fifteen (15) days after the issuance of the Notification of Award.



SECTION VII: SCHEDULE OF SUPPLY

- 1. Delivery and Completion Schedule**
- 2. Technical Specification**



1. Delivery and Completion Schedule

The Delivery period shall be commence from the date of signing contract.

Lot Description	No. of days
<i>Lot 1: 11 kV ID VCB Panels and Accessories</i>	150 days
<i>Lot 2: Distribution Boards (AC &DC), Battery Bank and Accessories</i>	150 days
<i>Lot 3: Telescopic Pole Fittings</i>	150 days
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<i>Lot 5: Fault Passage Indicator (FPI)</i>	150 days
<i>Lot 6:Transformer Spare Parts and Accessories</i>	120 days
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<i>Lot 10: HV Switching Equipment</i>	150 days
<i>Lot 11: ABC Cables</i>	150 days
<i>Lot 12: PVC Cables</i>	150 days



2. Technical Specification

Table of Content

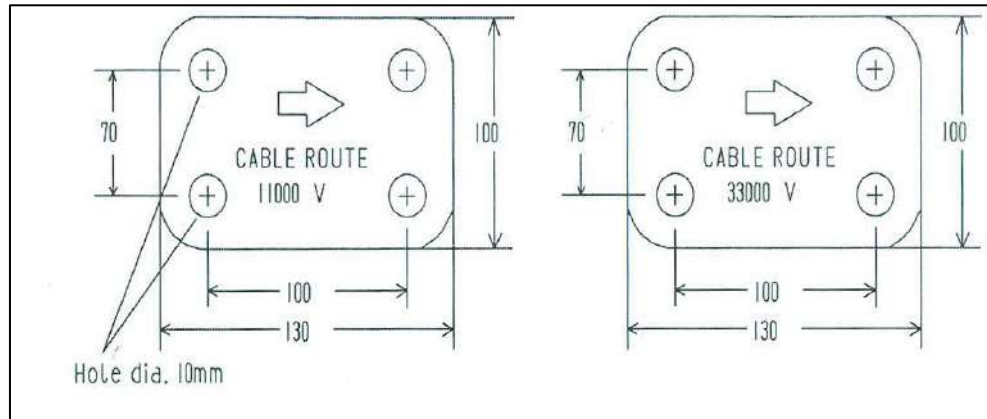
SI #	Technical Specification
1	Common Technical Specification and Test Standards
2	Technical Specifications for the Lots and drawings
3	GTP to be filled up by bidder
4	Price Schedule



LOT-4: Conductor Hardware and GI Steel Pole fittings

Cable Route Markers

Cable Route Marker Plate with Nuts & Bolts. The length and breath of the plate should be 130x100 mm. The thickness of the plate should be 10 mm. The diameter of the hole should be 10 mm. The length of the Nut (Nut and Bolt) should be 75 mm and the diameter should be 8 mm as per the below drawings.



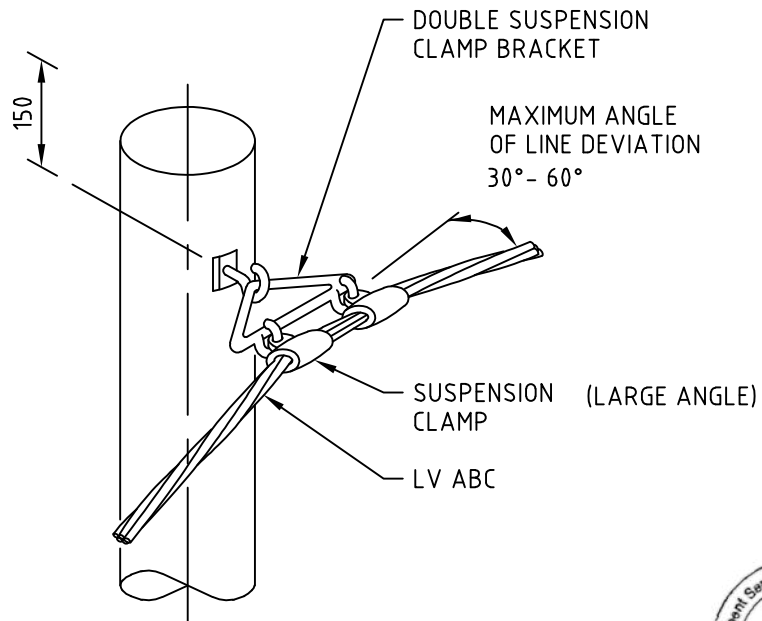
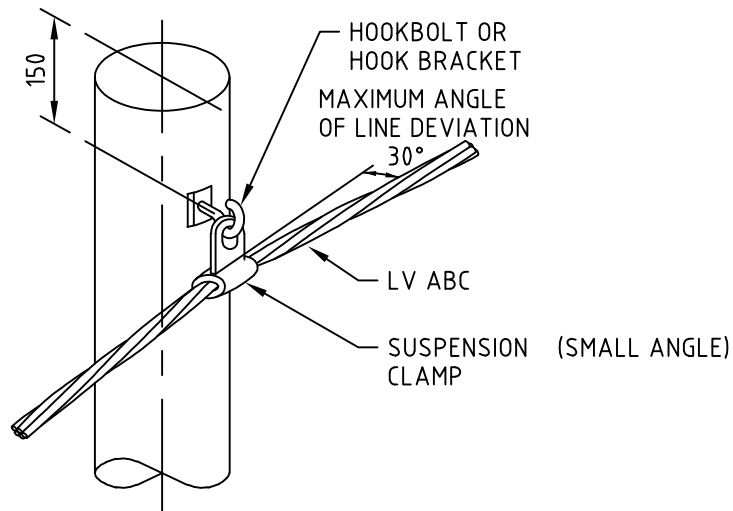
Suspension Clamp SA

Each assembly shall be delivered complete with all necessary devices suitable for attachment to round steel poles by stainless steel strap. All metal fitting shall be of good quality galvanized mild steel or cast aluminium alloy. Each of the suspension/angle/dead end assemblies shall be supplied with a 1.75 m of stainless steel trap with two buckles.

Bundled end protection shall be provided for protecting cable dead ends and shall comprise a set of heat shrinkable polymeric terminal caps for fitting on each conductor, together with protective black PVC sleeve of 500mm length.

Refer Drawing no. BPC-DDCS-2020-14/2-4





NOTES

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



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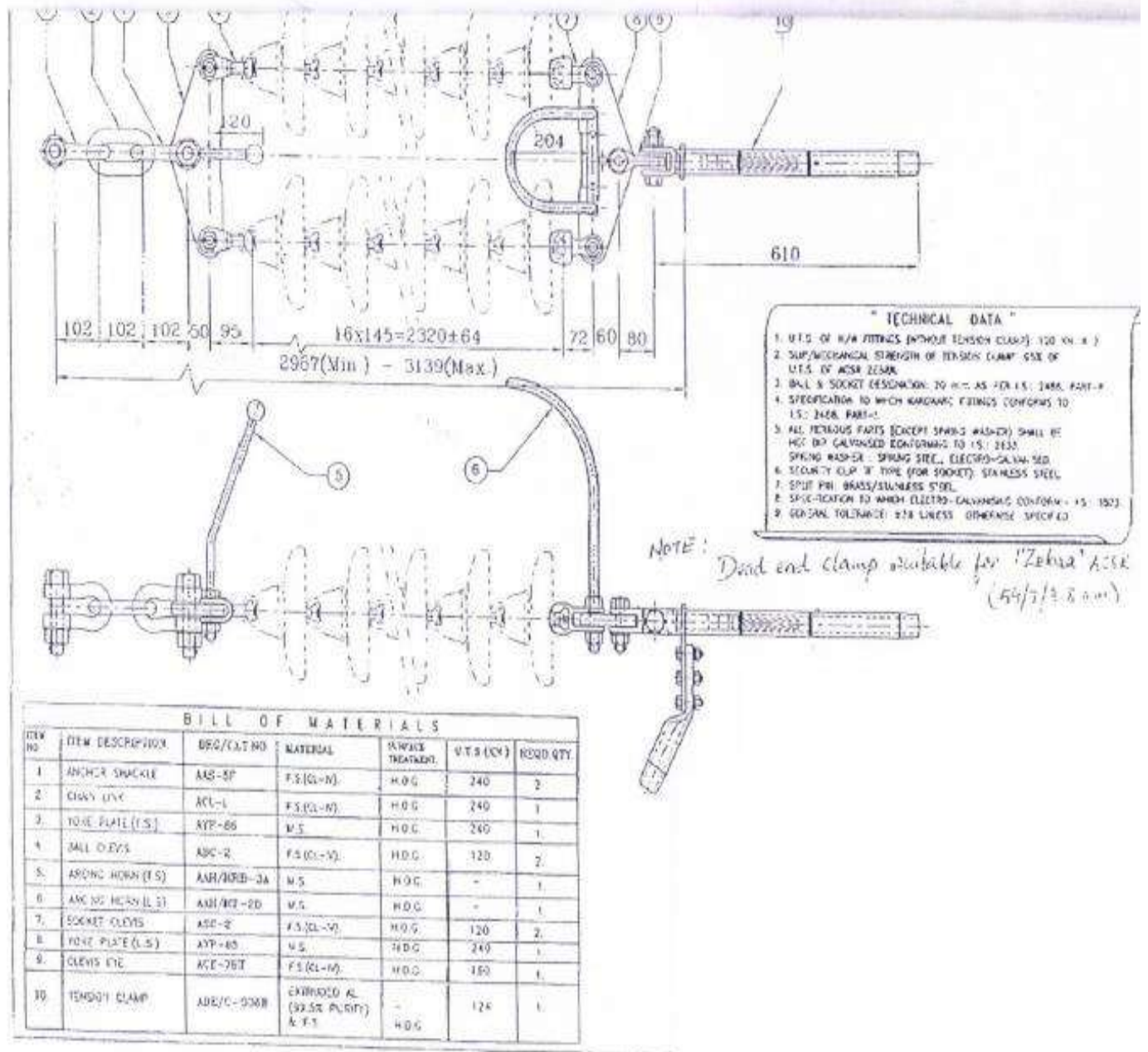
**LV ABC
INTERMEDIATE & ANGLE POLES DETAILS**

TITLE	NAME	DATE
DESIGNED BY		
CHECKED BY		
APPROVED BY		

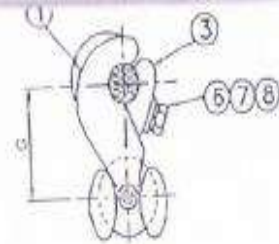
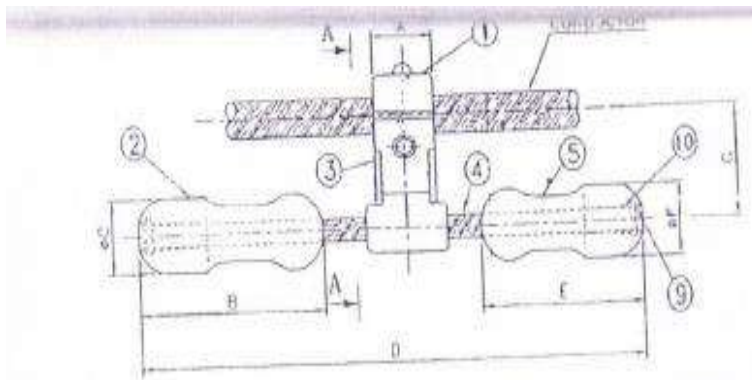
DRAWING NO. BPC-DDCS-2020-14/2-4

**REVISION
2020**

1. Double tension hardware fitting for 220kV ACSR Zebra conductors:



2. Vibration Damper for 220kV ACR Zebra conductor:



SECTION A-A

CONDUCTOR CODE NAME	CAT. NO.	D I A	A	B	PC	D	E	HF	G	APPROX. WT.(KG)
ACR ZEBRA	AVD-4R-3	28 #2	60	185	57	510	163	55	87	4.65

- TECHNICAL DATA**
- ITEM CONFORMS TO IS: 9705.
 - MASS PULL OFF VALUE : 500 KG.
 - SLIP STRENGTH OF CLAMP :
BEFORE FATIGUE TEST-2.5 KN.(MIN).
AFTER FATIGUE TEST-2.0 KN.
 - U.T.S OF MESSENGER CABLE : 135 KG/50mm.(Min)
 - MESSENGER CABLE : 19 STRAND
 - LAY RATIO OF MESSENGER CABLE : 9-10
 - GENERAL TOLERANCE : ±2%
 - TIGHTENING TORQUE : 6.5 KG-M
 - WEIGHT IS INDICATIVE ONLY, NOT MANDATORY
 - RESONANCE FREQUENCIES

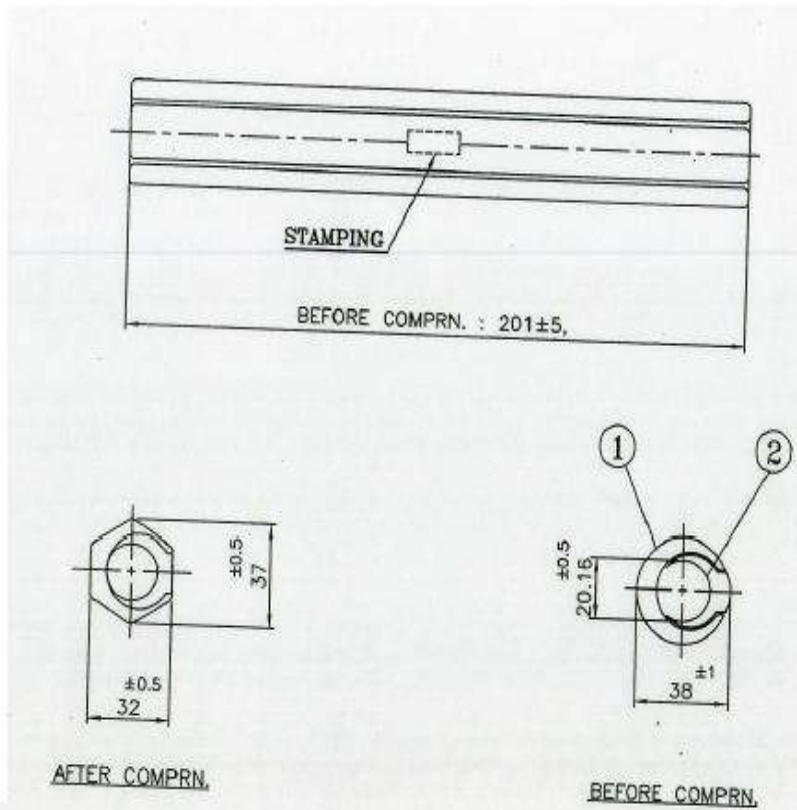
1st	2nd	3rd	4th
10±1	14±1	20±2	35±2

BILL OF MATERIALS


ITEM NO.	DESCRIPTION	MATERIAL	QTY./SET
1	HOOK HALF CLAMP	AL. ALLOY(4600)S.617	1
2	DAMPER MASS (BIG)	C.I. H.D.G. IS:210	1
3	COVER HALF CLAMP	AL. ALLOY(4600)S.617	1
4	MESSENGER CABLE	HIGH T.S. H.D.G.	19 STRAND
5	DAMPER MASS (SMALL)	C.I. H.D.G. IS:210	1
6	16 mm. FLAT WASHER	U.S. H.D.G. FE-410, IS:2062	1
7	16 mm. SPRING WASHER	SP. STEEL S.G. IS: 3083 & 4072	1
8	SCREW	C.S. H.D.G. GR-5.6.5 1307	1
9	SEALING PLUG	AL. ALLOY(4600)S.617	2
10	TAPER SLEEVES	AL. ALLOY(4600)S.617	2



3. Repair sleeve for 66kV ACSR Wolf conductors:



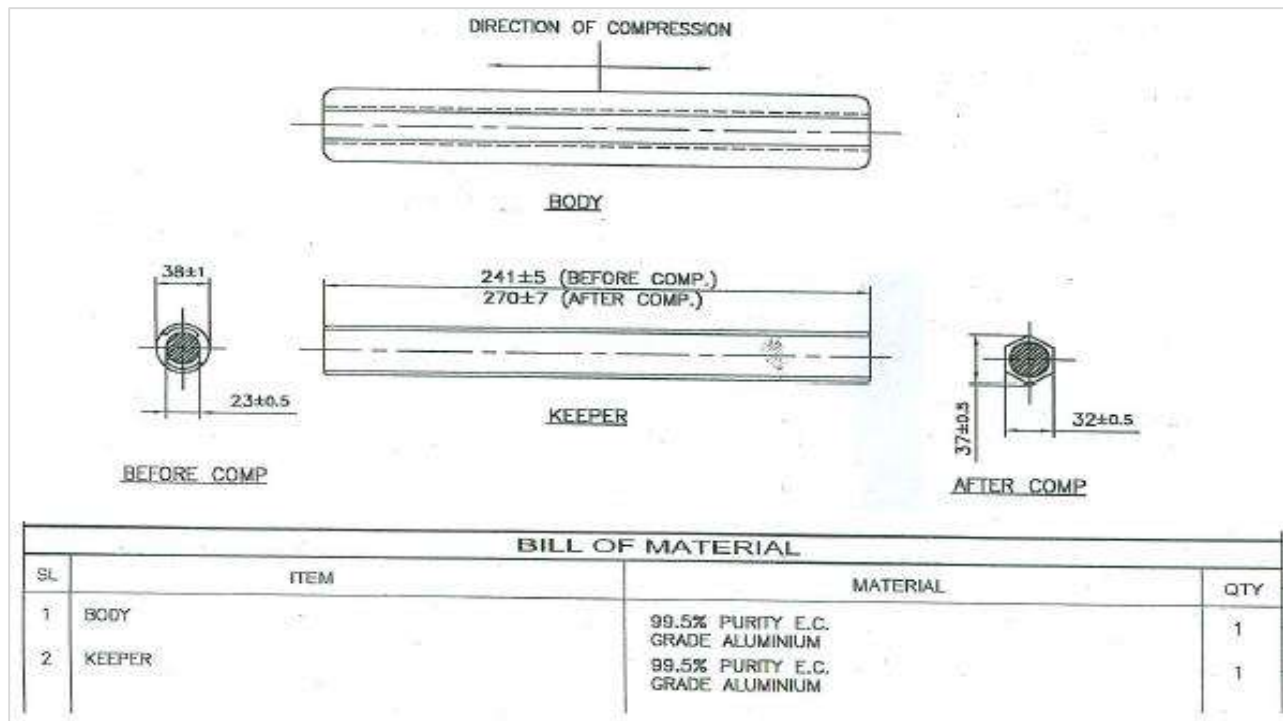
TECHNICAL DATA

- 1) ALL DIMENSIONS ARE IN mm.
- 2) CAPACITY OF HYDRAULIC COMPRESSOR 100 TON
- 3) RESISTANCE LESS THAN 75% OF RESISTANCE OF THE EQUIVALENT LENGTH OF CONDUCTOR.
- 4) REPAIR SLEEVE CONFORM TO IS : 2121 (PART-II)
- 5) TOTAL WEIGHT : 0.29 KG. (APPROX).
- 6)  **EMC** 18.13 MM

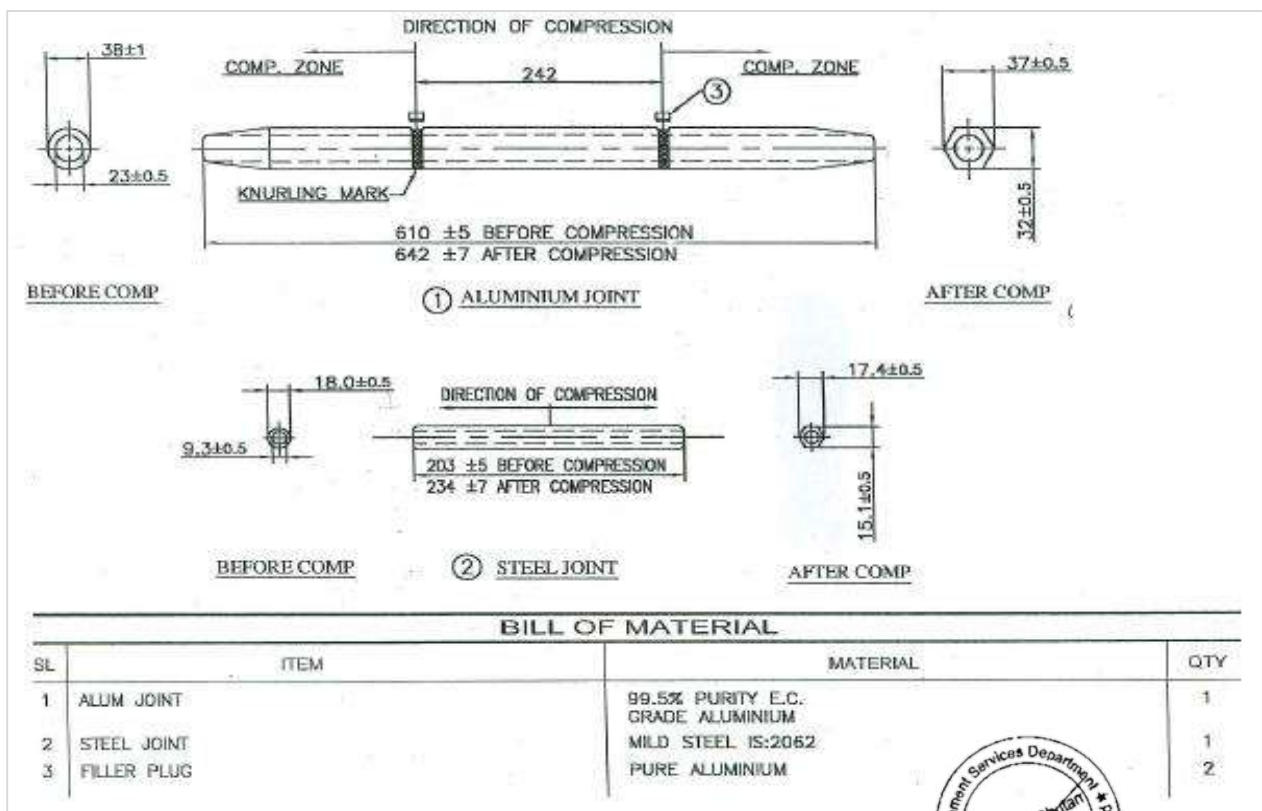
2	KEEPER PIECE	ALUMINIUM ALLOY 19500/1050 IS:733	----	2267	1
1	BODY	ALUMINIUM ALLOY 19500/1050 IS:733	----	2266	1
NO	DESCRIPTION	MATERIAL	SURFACE TREATMENT	REF.NO.	QTY.



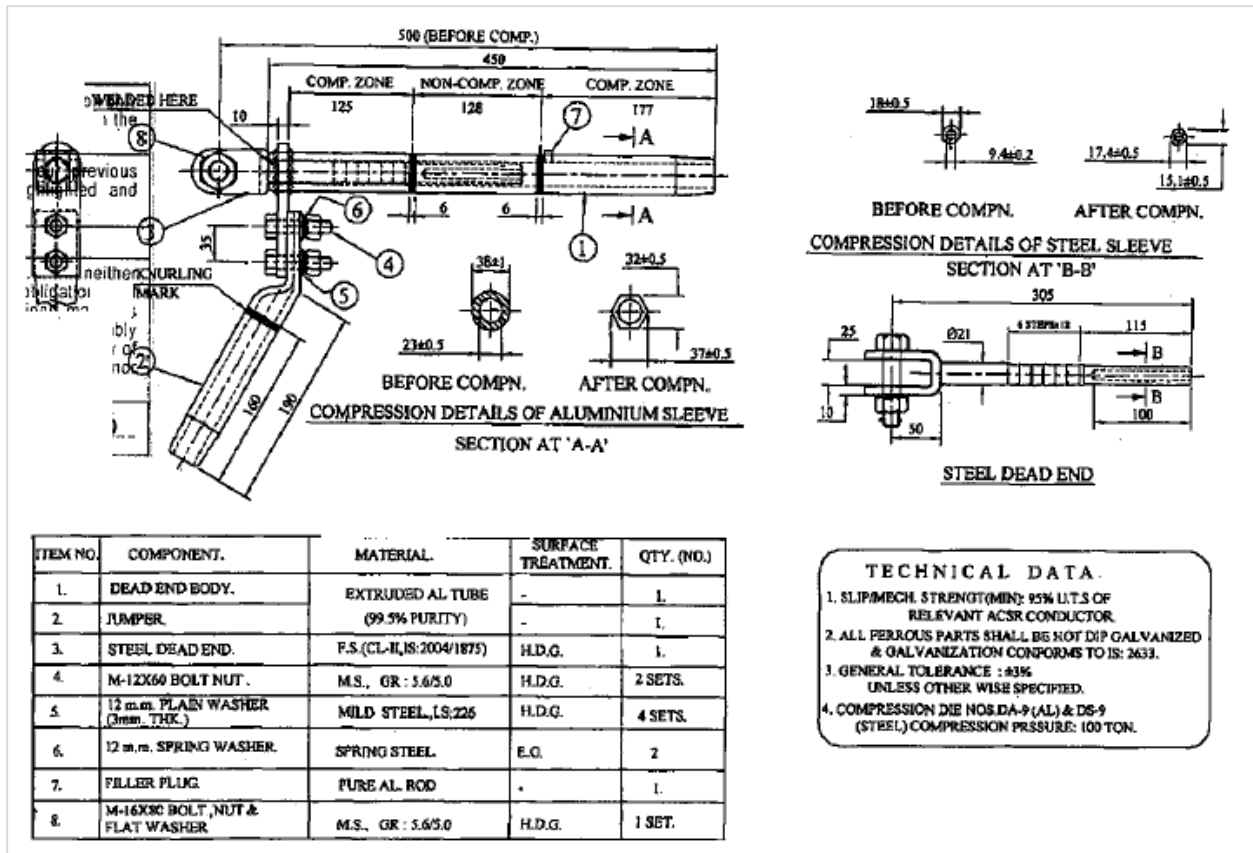
3. Repair sleeves for 132kV ACSR Panther conductors:



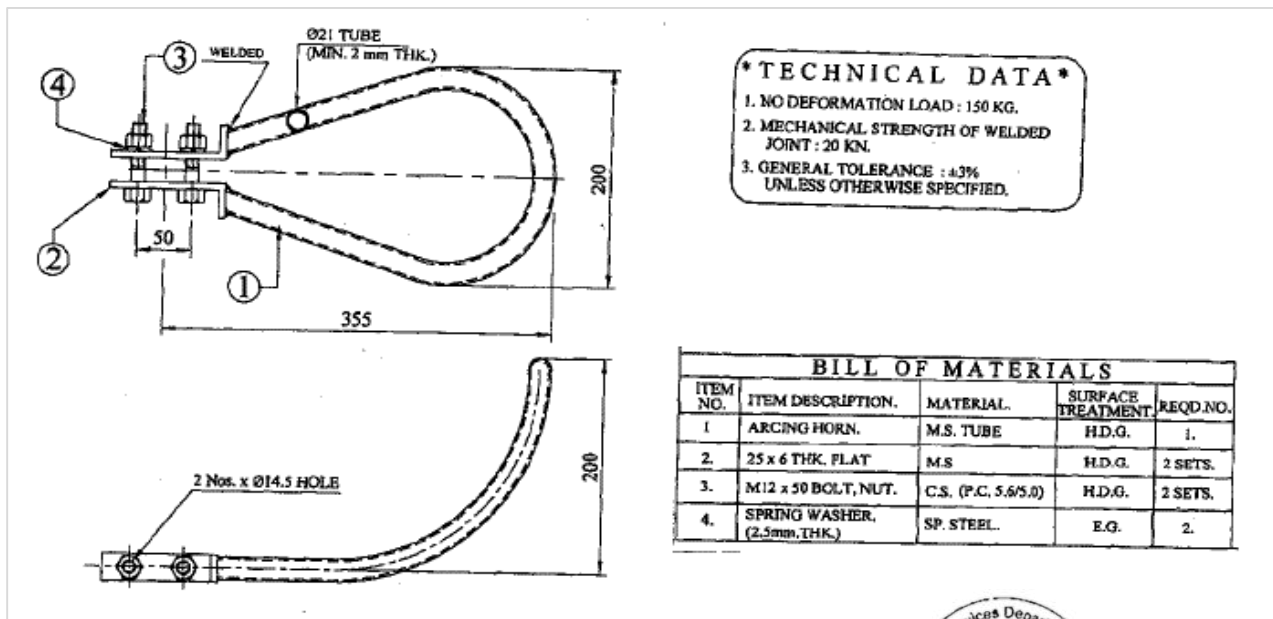
4. Mid-span joint for 132kV ACSR Panther conductors:



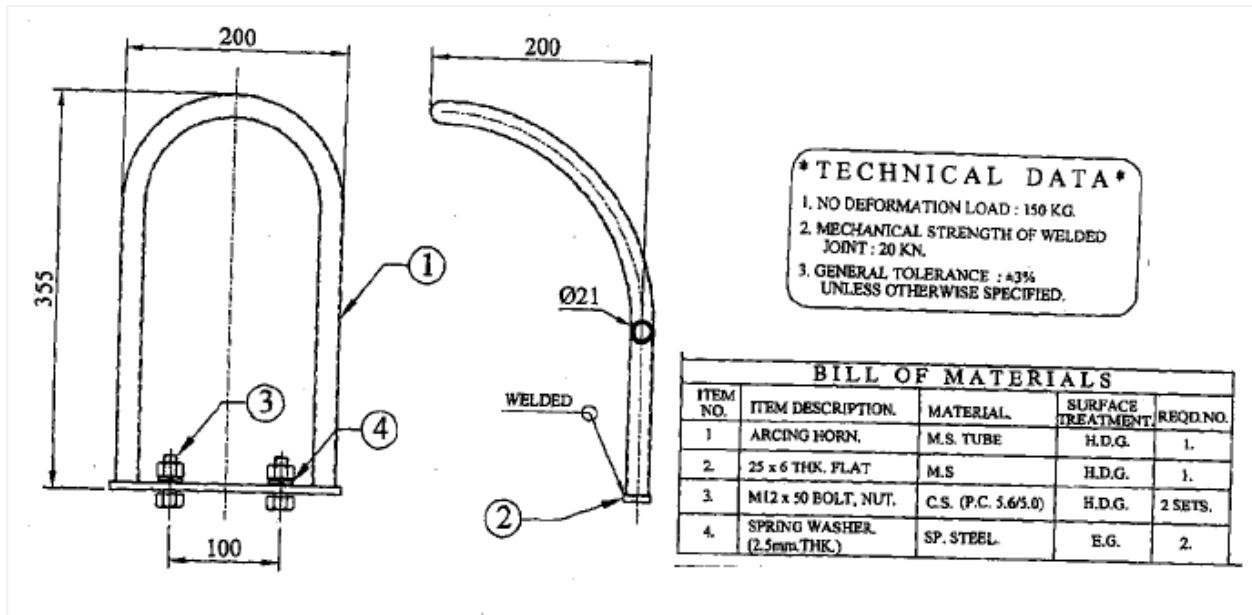
5. Dead end joint (Al & steel) for 132kV ACSR Panther conductors:



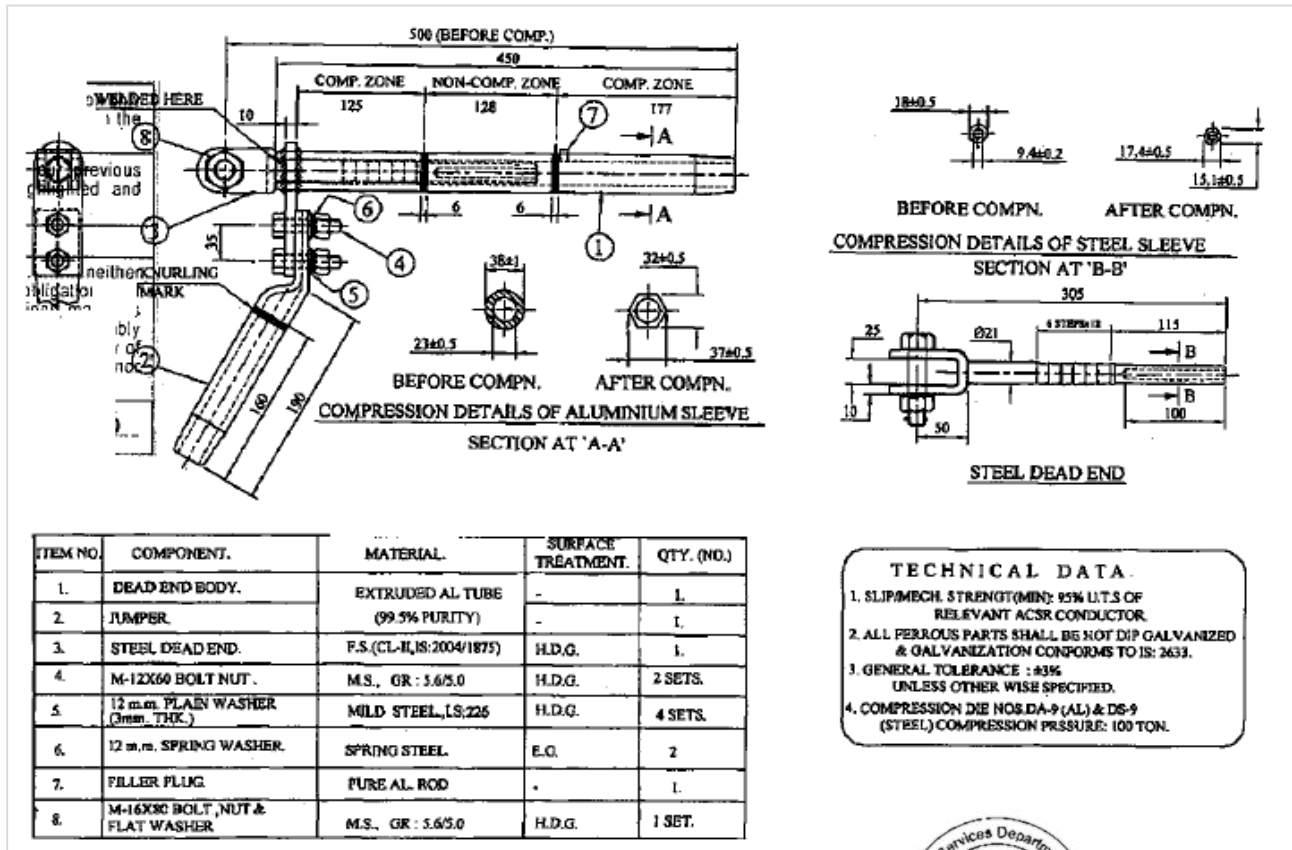
6. Single tension arcing horn for 132kV ACSR Panther conductors:



7. Double tension arcing horn for 132kV ACSR Panther conductors:



8. Jumper corn (only) for 132kV ACSR Panther conductors:



CONDUCTOR FITTINGS & ACCESSORIES

General

This specification covers the design, manufacture, testing, supply, delivery and performance requirements of MV overhead conductor fittings and accessories.

MV overhead conductors' fittings:

- (a) P.G. Connectors
- (b) Preformed Dead End Terminations
- (c) Compression Joints

Applicable Standards

IEC 61238-1 for compressions and connectors

IS 2121-2 & 4 for conductors and earth wire accessories for overhead power line

IEC 60502-2&4 for constructions, dimensions and test requirements

TECHNICAL SPECIFICATIONS

General

Connectors are required for aluminium to aluminium, aluminium to copper and steel to steel non-tension and tension joints, and for connecting copper and aluminium conductor to terminals of electrical equipment. The connectors shall be complete with any special tools, protective grease, tapes, bolts and washers appropriate for their application. In addition all connectors shall comply with the following:

- 1) the contact shall be firm so that the current distribution among the strands of the conductors is uniform;
- 2) the conductivity of the connector shall be at least 95% of that of the conductor and it shall be designed to carry continuously the full rated current of the conductor for which it is used;
- 3) the contact pressure shall be maintained throughout its service life; and
- 4) corona discharge shall be kept to a minimum.

All compression connectors shall be suitable for installation using either manual or hydraulic compression tools. Details of dies and tools required for the compression connectors offered shall be submitted with the bid. Complete instructions for the installation of each type of connector shall be provided by the Supplier.

Oxide inhibiting grease shall be suitable for aluminium to aluminium to copper bolted joints and as a filling compound for aluminium fittings which accept copper conductors. The compound shall be free from zinc particles or grit,



shall be high 'drop point' grease based and shall remain stable at high temperatures.

Parallel Groove (PG) Connector

General

Non-tension type bolted parallel groove connectors (P.G. connector) are required for jumpers, spur take-offs, and drop connections to dropout fuses. The P.G. connector shall be of one or two bolt type (one bolt type shall be used for connection of shield wire SWG 7/2mm only). IEC61238 or other national or international Standards which ensure equal or higher quality shall be applicable.

The edges of the connector barrels shall be rounded to assist stress relief when the connectors are used with covered conductors.

All connectors shall be supplied pre-filled with high quality oxide inhibiting compound and shall be protectively capped to prevent spillage or spoilage of this compound. All connectors shall be clearly and permanently marked with the correct conductor size range and category.

In addition all connectors shall comply with the following:

- The current must be uniformly distributed among the strands of the conductors.
- The connector must have at least the same conductance as the conductor and carry the full continuous current rating of the conductor size they are designed for.
- The original quality of contacts shall be maintained throughout the connectors service life.

The connectors shall be made of corrosion-resistant alloy with a minimum tensile strength 400 MPa. The resistance of all clamps shall not be more than 50% of the resistance of the conductor itself over the same length as the clamp.

The connectors shall:

- Have serrated conductor grooves,
- Interlocking fingers,
- Be recessed to prevent bolt head turning during tightening,
- Have a one, two, or three bolt pattern to suit conductor size and current rating,
- Have bolts of sufficient length to allow installation without disassembling the connector,
- Have conductor entries of a generous radius to prevent damage to strands, and
- Be pre-filled with joint compound.



Packaging

Each connector shall be supplied in an individual sealed clear plastic bag or pocket. The bag shall be adequately durable to ensure no grease or oxide inhibiting compound is lost or spoiled prior to the time of installation. The bag shall be labelled with the makers name or trade mark, and the size range of the fitting. Bags shall be further packaged in cardboard or similar containers in quantities of approximately 100 fittings of the identical description.

Preformed dead end terminations

Preformed dead end terminations for AAAC covered conductor shall be manufactured from aluminium alloy. Dead end terminations for galvanised steel conductor shall be manufactured from galvanized steel. A UV-radiation and weather resistant end (terminations) cap shall be provided one for each preform termination. The end caps shall be suitable size for fitting with the outer of covered conductors.

The minimum failing load of the dead end fittings shall be not less than 100% of the breaking load of the matching conductor, as mentioned in the relevant clauses in this Technical Specification. The loop dimensions shall be suitable for the matching thimble fittings. The fittings shall have marks to show the crossover points for correct installation.

The preformed terminations shall be supplied for termination of the following shield wire and guy wire

- 7/8 SWG G.I. stay wire; and
- 7/2.0 mm G.I. shield wire with accessories

The 7/2.0 mm G.I. shield wire will be terminated by a preformed dead end termination at top cross arm (G.I. Channel 75mm x 50mm x 6mm). ***The necessary strain clamp sets for connecting the preformed dead end termination to the top cross arms shall be provided along with the preformed terminations for shield wire (refer to drawing).*** The cost for provision of these clamp sets shall be included in the itemized prices for preformed dead end terminations for shield wire.

Tension Joints

Full Tension Mid-Span Joints (Tension Joints) shall be of the compression in-line sleeve type suitable for connection of AAAC Covered Conductor;

The Supplier shall provide appropriate type of full tension mid-span joints conforming to the conductors' strands.



The compression type jointing sleeve shall be designed to have the strength at least 95% of the rated breaking strength of the conductor to which it is fitted.

The outer insulation cover shall be provided along with mid-span joints for covered conductors with UV-radiation and weather resistant thermoplastic.

G.I. Suspension Clamp for Shield wire

The galvanized steel suspension clamp for shield wire will be used for installation of shield wire on the top of single telescopic pole. The materials other than galvanized steel shall not be used for the suspension clamp because of shield wire's connectivity to the earthing. The gripping part shall suit for the size of shield wire. The Supplier shall refer to the installation method of shield wire mentioned in relevant Technical Specifications in relation to shield wire, and properly design a type of suspension clamp for shield wire.

The suspension clamps shall be supplied along with necessary hock bolt (M16), nut and washers by individual packing.

Strain Fittings for Shield Wire with Preformed Dead End Termination

All the necessary fittings for straining the shield wire at the cross-arm (G.I. Channel 75 x 5 x 6 mm) on the top of double pole structure shall be supplied by the Supplier for this Package along with the preformed dead end termination. The fittings shall be properly designed/selected by the Supplier. The Purchaser recommends that the fitting may include a crossarm strap, an eye-thimble, bolts, washers and nuts.

INSPECTIONS AND TESTS

General

All tests shall be carried out in accordance with the relevant IEC Standards and other applicable Standards.

The cost for the tests shall be included in the prices estimated in the Price Schedules of Goods.

The Bidder shall submit type test reports with the bid. In case the type test reports submitted with Bid are of the tests conducted earlier than five years as on the date of bid opening, the Supplier shall repeat these type tests at no extra costs to the Purchaser.

Inspection

The Supplier shall intimate the Purchaser about the detailed program about the tests and inspection at least one month in advance.



Inspection and tests on all the Goods offered shall be carried out in the presence of Purchaser's representative unless inspection waiver has been given to the Supplier. The inspection shall be carried out as per the test procedure that has been approved by the Purchaser. The Supplier shall assist the work of the Purchaser's inspector by providing copies of all relevant Standards and test procedures, and allowing the inspector full use of the necessary tapes, measures and laboratory equipment, together with ample space and assistance in the handling of Goods for inspection.

The Supplier shall submit all final test and inspection reports to Purchaser's representative (inspector) during his stay at the workshop for the inspection. The inspector shall issue a "Dispatch Clearance" to the Supplier when the tests and inspection has successfully completed in compliance with the Technical Specifications.



GALVANIZED POLE FITTINGS

General

This specification represents the minimum requirements for the works. The Supplier shall provide equipment, which meets or exceeds these minimum requirements. These items are being sought as additions to existing networks; it is essential to maintain compatibility with existing hardware and line design, as well as with established local work practices and methods.

Clamps

The clamps shall be designed and manufactured to properly fit the channels on the poles at the expected height. The internal diameter of semi-circle ring part in clamp shall be designed to suit the outer diameter of poles at the expected height. The clamps shall be adjustable to be used for some range of poles diameters so that such universal design will reduce the number of clamp sizes. The size of bolt and nut for pole clamps shall be equal or more than M16.

Full Clamp

This clamp shall be designed to suit for mounting two steel channels on the double pole structures such as cross arm assemblies for lines and substations. This clamp consists of two sets of bolt and nut (comprised of a full threaded bolt, a flat washer, a spring washer and a nut) provided to support the cross-arms. Welding of bolts on the clamps shall not be allowed. These bolts-heads shall not bulge on the internal surface of the ring after assembly. Another two sets of bolt and nut (comprised of a full thread bolt, a nut, a spring washer and a two flat washers) shall be provided for coupling the half-round rings.

Half-Clamp

A semicircle clamps shall be designed for mounting one steel channel/ angle on the single or double pole structures. This clamp will consist of two sets of bolt and nut (comprised of a full thread bolt, a nut, a spring washers and two flat washers). The clamp shall be designed to fit the single channel on poles and the space of bolting part between clamp and channel may be designed at approximately $\frac{1}{4}$ of the outer diameter of pole.

Clamps for Steel swaged Pole

- “M” clamp is used for supporting two channels on the double pole structures such as cross arms and transformer platform.
- “U+M” clamp is used for supporting single cross arm channel on single pole structure. It is a combination of “U” clamp and “M” clamp.
- “Full clamp” is used for supporting intermediate supports for cross bracing. ABS handle support and equipment supports.
- Stay clamp consist of two “U” clamps.



The detail of clamps used for steel swaged pole is given in the drawing no. BPC-DDCS-2020-15/7-7

Line Cross-arm Assemblies for Steel Swaged Pole.

Single Pole Assemblies

Single pole structure is used for small angle or tangent lines. Single pole assembly shall consist of following items:

Pole fittings for Single pole assemblies		
	Items	Quantity
A	SP Top Hamper Assembly	
i	ISMC 100 x 50, welded in L-shape	1 No.
ii	“U+M” clamp with GI nuts and bolts, 16 mm dia, 125 mm long, complete with one flat washer and one spring washer	1 Set
B	SP Cross Arm Assembly	
i	ISMC 100x50, 1620 mm length complete with necessary hole	1 No.
ii	U+M” clamp with GI nuts and bolts, 16 mm dia, 125 mm long, complete with one flat washer and one spring washer	1 Set

Double Pole Assemblies

Double pole will be used for large angle lines or at the dead end point on MV distribution lines.

Pole Fittings for Double Pole Assemblies		
	Items	Quantity
1	DP Top Cross arm Assembly (10 m)	
i	ISMC 100x50, 3150 mm length complete with necessary holes	2 Nos
ii	“M” Clamp	4 Nos
iii	Sets of GI Nuts and bolts, 16 mm dia, 175 mm long, complete with one flat washer and one spring washer along with 20 mm dia GI pipe for clamps	4 sets
iv	MS flat string bracing, 50 x 6 mm, 227 mm length complete with necessary holes for fixing insulator	6 Nos
v	Sets of GI nuts and bolts, 16 mm dia, 150 mm long, complete with one flat washer and one spring washer along with 20mm dia pipe for bolting MS flat and disc insulator	6 Sets
2	DP cross Bracing Assembly (10 m)	

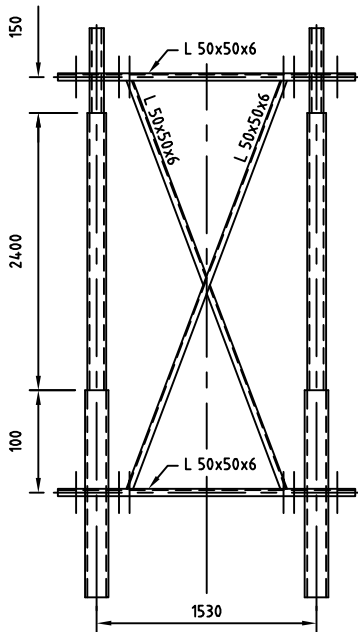


i	MS angle 50x50x6 mm, 2030 mm length complete with necessary holes	1 No.
ii	MS angle 50x50x6 mm, 2000 mm length complete with necessary holes	1 No.
iii	MS angle 50x50x6 mm, 2919 mm length complete with necessary holes	2 Nos.
iv	Full clamp (pole dia 114.3 mm outer dia)	2 Nos.
v	Full clamp (pole dia 165.1 mm outer dia)	2 Nos.
vi	Sets of GI nuts and bolts, 16 mm dia, 100 mm long, completed with one flat washer and one spring washer	8 sets
vii	Sets of GI nuts and bolts, 16 mm dia, 35 mm long, complete with one flat washer and one spring washer	5 Sets

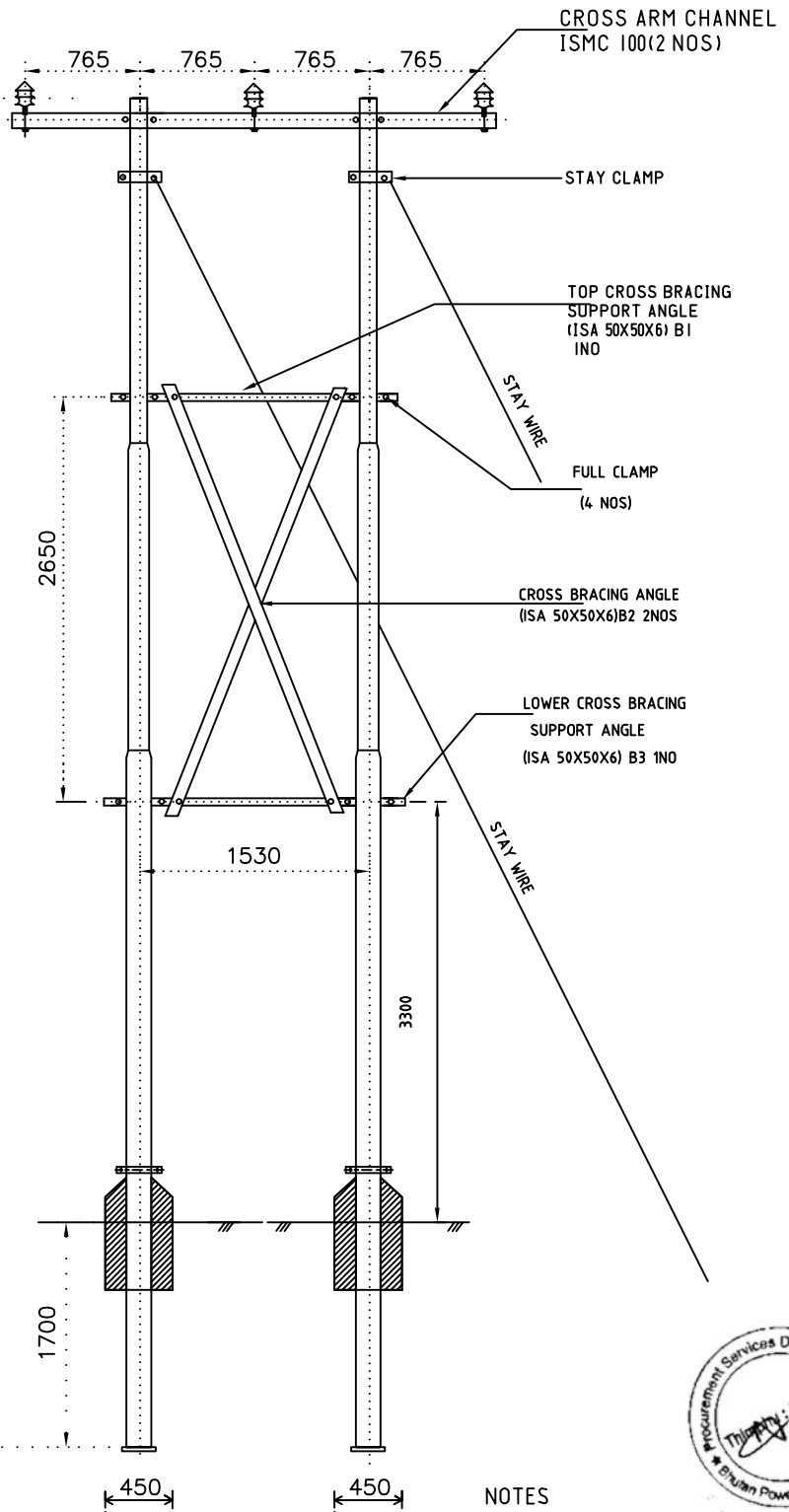
Details are given in drawing no. BPC-DDCS-2020-18/2-11



BRACING ASSEMBLY DETAILS



(9000)
10000



(9M) 110M STEEL TUBULAR POLE	2	STEEL
CROSSARM CHANNEL	2	MS
DISC INSULATOR SET	6	PORCELAIN
PIN INSULATOR SET	3	PORCELAIN
CLAMP WITH NUTS & BOLTS (U+M)	2	MS
STAY SET ASSEMBLY	2	MS
BASE PLATE	2	MS
DESCRIPTION	QTY	MATERIAL

NOTES

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



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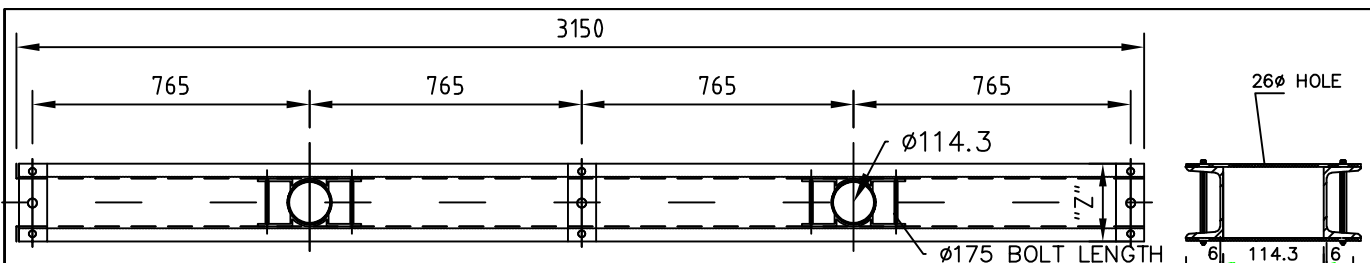
11 & 33 KV H-FRAME

DOUBLE POLE ARRANGEMENT (STEEL TUBULAR POLES)

TITLE	NAME	DATE
DESIGNED BY		
CHECKED BY		
APPROVED BY		

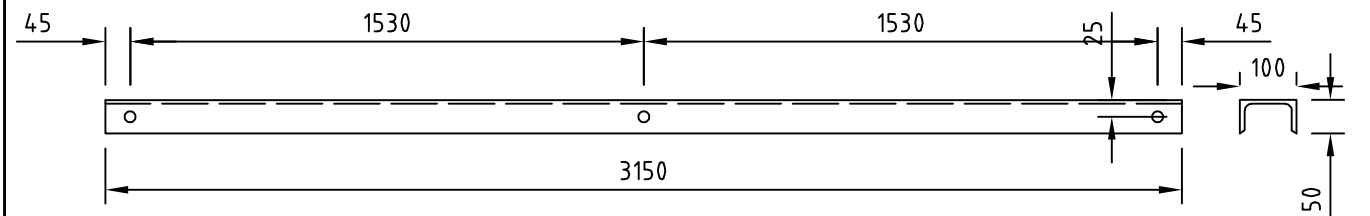
DRAWING NO.
BPC-DDCS-2020-18/2-11

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2020



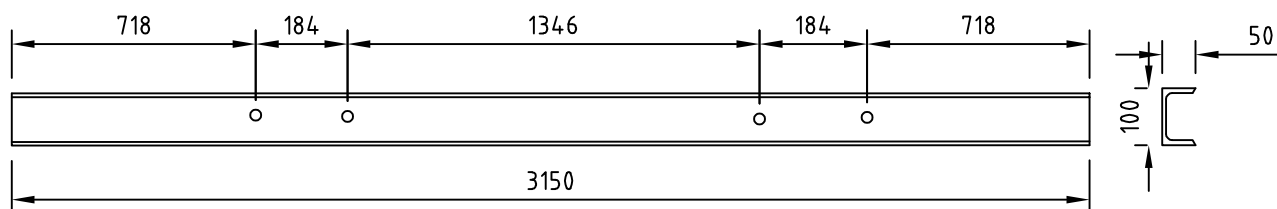
TOP/BOTTOM DETAIL OF CROSSARM

ISMC 100x50 (2 NOS)



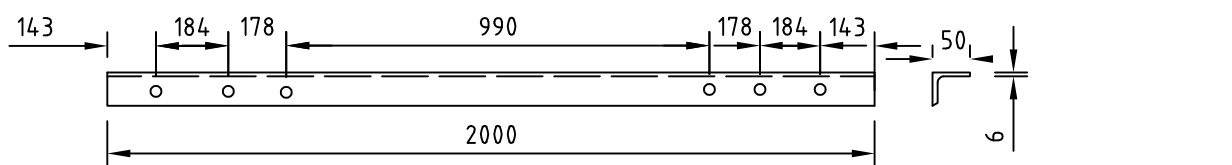
TOP VIEW OF CROSSARM - CHL

ISMC 100x50 (2 NOS)



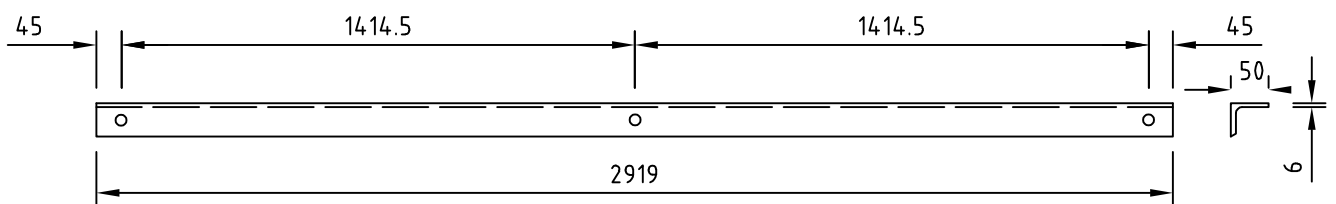
FRONT VIEW OF CROSSARM - CHL

ISMC 100x50 (2 NOS)



DETAIL OF BRACING - B1

ISA 50x50x6 (1 NO)




DETAIL OF BRACING - B2

ISA 50x50x6 (2 NOS)

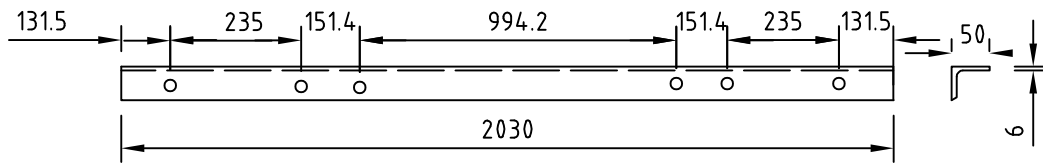
NOTES

1. DIMENSIONS AS SHOWN ARE IN mm.
2. DRAWING IS NOT TO SCALE.
3. ALL BOLT HOLES TO BE 18MM EXCEPT FOR THE ONE INDICATED.



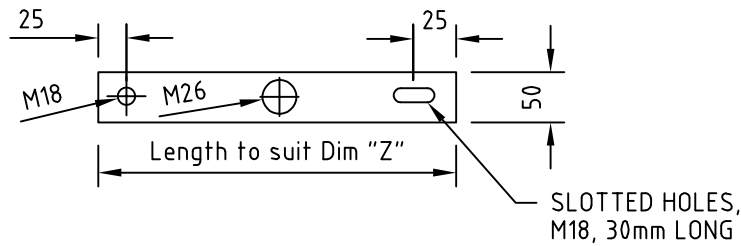
	BHUTAN POWER CORPORATION LIMITED		ENGINEERING AND RESEARCH DEPARTMENT	
			DISTRIBUTION DESIGN & CONSTRUCTION STANDARD 11 & 33 KV H-FRAME	
TITLE	NAME	DATE	CHANNEL & BRACING DETAIL (STEEL TUBULAR POLES)	
DESIGNED BY				
CHECKED BY				
APPROVED BY				
			DRAWING NO. BPC-DDCS-2020-18/3-11	REVISION 2020

DETAIL OF BRACING - B3



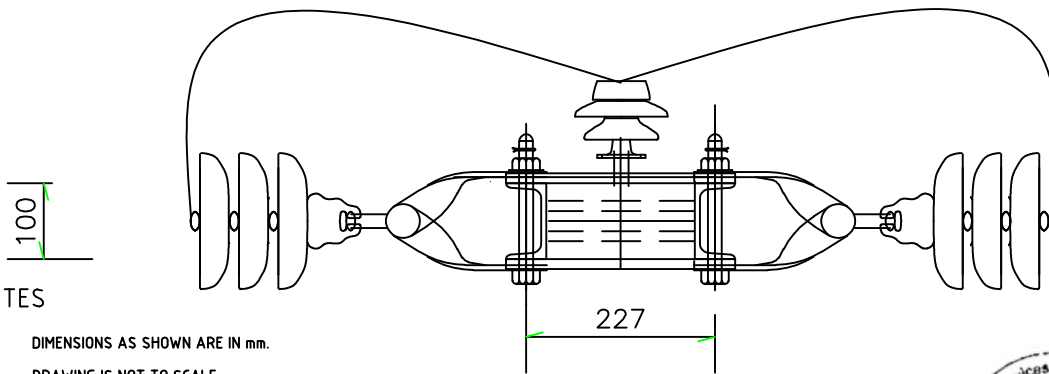
ISA 50x50x6 (1 NO)

DETAIL OF MS STRING LACING FLAT



FL 50x6 (6 NOS)
M16X185 MM BOLT LENGTH (6NOS)


FIXING OF PIN AND DISC INSULATOR ON CROSSARM



NOTES

1. DIMENSIONS AS SHOWN ARE IN mm.
2. DRAWING IS NOT TO SCALE.
3. STANDARDS
IS 2062-1992/IS 1161 OR EQUIVALENT STEEL FOR GENERAL STRUCTURAL PURPOSES
IS 808-1964: OR EQUIVALENT DIMENSIONS FOR HOT ROLLED STEEL BEAM COLUMN CHANNEL AND ANGLE SECTION
4. MINIMUM TENSILE STRENGTH - 420 MPA
5. ALL ITEMS SHALL BE MILD STEEL (MS) PAINTED WITH ONE COAT OF RED OXIDE PRIMER IN ACCORDANCE WITH ISO 12944-7 OR ANY OTHER EQUIVALENT INTERNATIONAL STANDARD. HOWEVER, NUTS AND BOLTS SHALL BE HOT DIPPED GALVANISED WITH ZINC COATING 600 GRAM PER SQUARE METER.
6. DISC ARRANGEMENT IS SHOWN FOR 33kV SYSTEM, TAKE ONE DISC INSULATOR FOR 11kV SYSTEM



 BHUTAN POWER CORPORATION LIMITED	ENGINEERING AND RESEARCH DEPARTMENT	
	DISTRIBUTION DESIGN & CONSTRUCTION STANDARD 11 & 33 KV H-FRAME	
TITLE	NAME	DATE
DESIGNED BY		
CHECKED BY		
APPROVED BY		
DRAWING NO. BPC-DDCS-2020-18/4-11		REVISION 2020
CHANNEL & BRACING DETAIL (STEEL TUBULAR POLES)		

Price Schedule

Lot 2: Distribution Boards (AC & DC), Battery Bank and Accessories

SL#	Description	UoM	Qty	Technical Specification	Brand and Country of Origin	Unit Rate in DDP (Nu.)	Amount in DDP (Nu.)	
1	AC Distribution Board	No.	1	Refer Technical Specification and GTP parameters				
2	DC Distribution board, 110 V	No.	1					
2	Maintenance free VRLA battery 110V DC, 200 AH	Set	1					
4	Float cum Boost charger (40A + 60A)	No.	1					
Total Lot Amount (Nu.)								



Price Schedule

Lot 4: Conductor Hardware and Steel Pole Fittings						
SL#	Description	UoM	Qty	Brand and Country of Origin	Unit Rate in DDP (Nu.)	Amount in DDP (Nu.)
1	Single tension hardware fittings (complete set) for 132kV ACSR Panther conductor.	Sets	10			
2	Double tension hardware fittings (complete set) for 132kV ACSR Panther conductor.	Sets	5			
3	Dead End Joint (Al & Steel) for 132kV ACSR Panther conductor.	Sets	10			
4	Arcing horn for single tension 132kV ACSR Panther conductor.	Nos.	10			
5	Arcing hor for double tension 132kV ACSR Panther conductor.	Nos.	10			
6	Jumper cone for 132kV ACSR Panther conductor.	Nos.	10			
7	Vibration damper for 220kV ACSR Zebra conductor.	Nos.	50			
8	Double tension hardware fittings (complete set) for ACR Zebra conductor.	Sets	20			
9	11KV Cable route marker with nut & bolts	SET	217			
10	33KV Cable route marker with nut & bolts	SET	100			
11	Suspension Clamp-SA For 3Cx95sqmm11kV ABC	SET	20			
12	Tension Jt. with insl. cover-AAAC 50mm2	NO	28.00			
13	Tension Jt. with insl.cover(111mm2)-AAAC	NO	77.00			
14	Preform deadend termination-AAAC 49.5mm2	NO	109.00			
15	Preform dead end terminations for AAAC Covered 100sq.mm	NO	420.00			
16	Preform termination - 100sqmm	NO	2,927.00			
17	Preform termination - 150sqmm	NO	1,507.00			
18	Cross arm assembly for H frame (100mm)	Set	462			
19	Cross bracing assembly for double pole	Set	205			
Total Lot Amount (Nu.)						

