TP Central Odisha Distribution Limited | TP Nothern Odisha Distribution Limited | TP Southern Odisha Distribution Limited | TP Western Odisha Distribution Limited

CENTRALIZED CONTRACTS GROUP

NIT No.: TPCODL / CCG / 2024-25 / 1000001803

Corrigendum- I

NIT No.: TPCODL / CCG / 2024-25 / 1000001803

Rate Contract - Supply of 1.1kV LT AB Cable at TPCODL, TPNODL, TPSODL & TPWODL for One Year

Dated 23rd February 2025

Following changes in tender document is made;

1.3 Calendar of Events (Page No. 6)

(b)	Date by which Interested and Eligible Bidder to pay Tender Fee and confirm participation as mentioned in "Procedure to Participate in Tender"	**27-02-2025**
(e)	Due date and time of receipt of Bids	**03.03.2025 [15:00 hrs]**
(f)	Date & Time of opening technical bids	**03.03.2025 [15:30 hrs]**
(g)	Date & Time of opening of Price of qualified bids	**To be notified to the successful bidders**

3.1 Price Basis: (Page No. 7)

-Rate shall remain variable as per IIEMA formula. 04th February 2025 is the base date for PV calculation (IEEMA Circular – January 2025).

Pre-bid response & Revised Technical Specification attached below;

All other terms and conditions of the above tender shall remain unaltered.

Yours faithfully,
-sd-
HoD - Contracts (TPCODL) & CCG

Format for Pre-Bid Queries
Tender No: TPCODL / CCG / 23-24 / 1000001803
Tender Description: Rate Contract - Supply of 1.1kV LT AB Cable at TPCODL, TPNODL, TPSODL & TPWODL for One Year

Sr. No.	Detailed Reference to Tata Power Technical Document. Please specify Document No / Clause No / Page No	Description as per Bid Document	Remarks - Query / Clarification	Tata Power Response
1	2	3	4	5
		NIT No. / Tender Description		TPCODL / CCG / 2024-25 / 1000001803 Tender Description: Rate Contract - Supply of 1.1kV LT AB Cable at TPCODL, TPNODL, TPSODL & TPWODL for One Year
1	3.1 Event of Information	Price Basis – Price is fixed & Firm.	In view of market volatility, it is not possible to quote competitive price keeping it FIRM & FIXED for more than 1 year i.e contractual period of 12 months plus initial 3 to 4 months bid finalization period. In order to safeguard both parties from the impact of significant price changes, it is proposed to allow Price variation that will provide a fair and transparent mechanism for dealing with such fluctuations. This will also ensure that the project remains financially viable and both Tata Power and suppliers like us can proceed with a clear understanding of the potential price changes without unnecessarily loading the price apprehending the market fluctuation as is in case of FIRM price. It is therefore humbly requested to consider variable price with Base price 30 days prior to date of NIT and price variation upward or downward may be considered as per CACMAI or IEEMA price circulars as is being followed by all almost all the major power utilities like Andhra, Telengana, Jharkhand, Chatisgarh electricity boards including Powergrid (Copies of NITs attached for reference). This is very much in conformity to open tender guidelines for public procurement and will not only add competitive edge to the bidding but also provide bidders like us with a level playing field to quote competitive price which will be a win win solution to both the buyer and bidders.	Rate shall remain variable as per IIEMA formula. 04th February 2025 is the base date for PV calculation (IEEMA Circular – January 2025).
2	6.1 Event of information	Validity of Bid – 180 days with provision for further extension.	The validity of Bid may be suitably curtailed due to reason explained above.	As per Tender T&C
3	Release Order	RO issuance.	As this is a centralized contract with provisions for issuance RC by CCG and RO by different discoms. It is requested that RO may please be routed through CCG in a planned manner rather than directly by respective Discom which at times if issued simultaneously by all the discoms likely to affect capacity and cause delay in supply.	As per Tender T&C
4	12. Event of Information.	Delivery at central store or site locations	Delivery of material may kindly be limited to Central stores of different discoms.	As per Tender T&C
5	Page No. 2 Item no. 5	2x35+1x25mm2 AB Cable	Kindly confirm the messenger conductor will be 35 sq.mm or 25 sq.mm as we supplied 2x35+1x35mm2 AB Cable to TPCODL earlier.	Shall be as per TS i.e. 2x35+1x25mm2 AB Cable
6			We have ERDA type test report for supplied 2x35+1x35mm2 AB Cable. Pls confirm your acceptability of this TTR against your tendered item.	Accepted
7		Standard Drum length for 2X 35 +1x25 sq.mm AB cable mentioned in NIT as 500 mtrs + / -5%	We propose to accept drum length for 1000 mtrs + / - 5% instread. Kindly convey your acceptance	Shall be as per TS
8	Page No. 2 Item no. 6	1x35+1x25mm2 AB Cable	There is no spec. for this item. Earlier we supplied. Kindly share the spec.	Refer Tendered specification number as attached
9			We have ERDA type test report for supplied 2x35+1x35mm2 AB Cable. Pls confirm your acceptability of this TTR against your tendered item as well.	Will be valid for 2x35+1x25mm2 AB Cable Line item
10			We propose to accept drum length for 1000 mtrs + / - 5% since there is no spec. / guidelines avaialble with this tender. Kindly convey your acceptance.	Shall be as per TS
11	Cl no. 5.1.1 Page no. 8	1st part EMD BG	The last date for physically submission of hard copy of EMD BG has not been mentioned in subject tender. Kindly confirm.	Same as Bid submission date
12	Cl no. 1.3 Page no. 6	Due date & time of receipt of Bids	We request an extension for the submission of the tender by 7–10 days, until 6th March 2025, instead of 24th February 2025, as a special case. As you may be aware, the international event "ELECRAMA" is scheduled to take place in Greater Noida, Delhi, from 22nd to 26th February 2025, and all our key team members will be attending.	As per Calender Event on Corrigendum
13	Annexure-1, Page-19	Prices shall be Firm till the validity of contract	Request you to accept IEEMA variable instead of FIRM similar as that of other HT/LT power cables tenders. Kindly also mentioned Base date of IEEMA, if applicable.	Rate shall remain variable as per IIEMA formula. 04th February 2025 is the base date for PV calculation (IEEMA Circular – January 2025).

Format for Pre-Bid Queries
Tender No: TPCODL / CCG / 23-24 / 1000001803
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Sr. No.	Detailed Reference to Tata Power Technical Document. Please specify Document No / Clause No / Page No	Description as per Bid Document	Remarks - Query / Clarification	Tata Power Response
1	2	3	4	5
14	Specification No. ENG-LV-3017, Clause No. 4 of Sl. No.12(a)(iii)	As per Bid document, Nominal No. of wire & Dia is 7/3.02 for Street Light conductor	It was 7/1.71 for street Light Conductor.	Noted
15	Cl. No.3.1, Pg. No.-7 & Cl. No.13.1.1, Pg. No.15	Price will be fixed and firm during the contractual period. Rates shall remain firm throughout RC Period	Price to be varaible as per IEEMA Price Variation Clause. PV Clause has been allowed in another NIT for Power & Control Cables.IEEMA formulae and factors as published in IEEMA Circular Ref No. 021/DIV/CAB/05 dated 18th January, 2021 to be governing factor. Base circular to be January 2025 circular issued in february 2025. Base month for Bid Price to remain same throughout the negotiation process till OutlineAgreement / Rate Contract is finalized. Purchase Order against Outline Agreement / Rate Contact will be placed at PVC corrected price. The said price shall then remain firm till completion of delivery and bill payment.	Rate shall remain variable as per IIEMA formula. 04th February 2025 is the base date for PV calculation (IEEMA Circular – January 2025).
16	Cl. No.5.1,1 Pg. No.-9	EMD Original Hard Copy shall be delivered at the following address in Envelope	EMD in the form of BANK GUARANTEE if delivered to the bank in SWIFT Mode to be considered as delivered at the address.	As per Tender T&C
17	Cl. No. 5.1.2.3, Pg. No. 10 & Cl. No. 8, Pg. No.42	Type Test Certificate* of same or higher rating. **The type tests specified in technical specifications should have been carried out within five years (unless otherwise explicitly stated)* . Type tests should have been conducted in certified Test laboratories during the period not exceeding 10 years from the date of opening the bid	Type Test Certificate of 3 Phase Core with Messenger and Street light to be considered. Also Type Test Report conducted within 10 Years instead of 5 Years to be considered valid.	Shall be as per latest CEA Guidelines for TTRs.
18	Cl. No.13.1.3, Pg. No.16	PBG of 5% of RC value shall be submitted within 21 days of issuance of RC	PBG of 3% of RC Value to be considered.	As per Tender T&C
19		2CX35+1CX25 sq.mm AB Cable specification not available	Please confirm whether it is Bare Messenger or Insulated Messenger	Bare Messanger
20		Type Test Reports of the variety to be clarified	We would like to obtain the Grouping guidelines for the variety of Type Test Reports required as the no. of items are around 26.	For this NIT-Type test reports for 4X95+1X95+1X16 & 4X50+1X50+1X16 for 4Core LT ABC for 2C&1C- Type test report for 2CX35+25 are required
21	Cl. No. 8, Pg- No.42	All the tests shall be conducted at CPRI/ ERDA/ Approved Govt. Labs by TATA ODISHA DISCOM as per relevant IS	Notorised Undertaking / Declaration on a Non-Judicial Stamp Paper to make available the Type Test Report from CPRI /ERDA / Approved Govt. NABL Laboratory before placement of RC to be considered.	Type test reports shall be provided as per Technical Specification
22	Cl. No.4 . 16 of STSpecification No. ENG-LV-3017, Pg. No. 53	Standard Drum Length 500 Mtr	1000 Mtr Standard Drum Length for : 1) 4CX35+35+16, 5) 2CX35+25, 6) 1CX35+25 to be accepted	Shall be as per TS
23		Short Length (Non-Standard Length)	10% of the ordered Quantity in non standard length (subject to minimum 50% of the Standard Length) to be accepted.	Shall be as per TS
24		Account details in the name of 'Company (Bidder) - Escrow A/c ' acceptable.	To be Acceptable as the same has been confirmed for another Tender	As per Tender T&C
25	Cl. No.9.3-Affirmative Action, Pg. No. 74	Private limited company: Only such firms shall qualify which have SC/ST directors holding equal to or more than 50% of the total ownership pattern of the firm. Governing document shall be Memorandum of Understanding (MoU) and/or Article of Association (AoA).	In addition Notorised copy of Form 32 declaring appointment of Directors and Notorised Copy of CA Certificate certifying shareholding pattern and confirming more than 50% holding considered to be valid since Form MGT 7 filing due date is 30/11/2025 for the current year.	As per Tender T&C

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26	Clause No. 6 of 13.1 Special Conditions of Contract (Page No. 16)	Delivery period shall be 60 days from date of receipt of release order / CAT-A issuance, whichever is later.	Delivery to be stagged over the year instead of release a RO in a particular time / month (which is beyond our manufacturing facility)	Delivery period shall be 60 days from date of receipt of release order / CAT-A issuance, whichever is later. The delivery period for a quantity of up to 300 KM shall be 60 days from the date of issuance of the RO or GTP drawing approval, whichever is later. For quantities exceeding 300 KM, the delivery period shall be mutually agreed upon between the BA and the DISCOM. DISCOMs may also plan delivery in a staggered manner based on business requirements, as per the mutual agreement. In such cases, a month-wise delivery plan along with delivery date will be specified in the SCC of the RO

TATA POWER

TECHNICAL SPECIFICATION
COVER SHEET

Document No. : TPU-D-ENG-LV-30003

Document Title : LT AB Cable

Release date : 13-01-2025

Prepared by	Reviewed by	Reviewed by	Reviewed by	Reviewed by	Reviewed by	Reviewed by	Approved by	Released by
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Central Engineering Services	TATA POWER	TECHNICAL SPECIFICATION FOR LT AB Cable

CONTENTS

Central Engineering Services	TATA POWER	TECHNICAL SPECIFICATION FOR LT AB Cable

1. SCOPE:

This specification covers the technical requirements of design, manufacture, test at manufacturer's works, packing & forwarding, supply and unloading at store/site and performance of LT ABC cable for trouble free and efficient operation. The specific requirements are covered in the enclosed technical data sheet.

The sizes specified in the specifications are tabulated below:

Sl.No	Phase Conductor	Messenger	Street light
1	4C X 150	1C X 150 (Insulated)	1C X 16
2	4C X 95	1C X 95 (Insulated)	1C X 16
3	4C X 70	1C X 70 (Insulated)	1C X 16
4	4C X 50	1C X 50 (Insulated)	1C X 16
5	4C X 35	1C X 35 (Insulated)	1C X 16
6	3C X 95	1C X 70 (Insulated)	1C X 16
7	3C X 70	1C X 50 (Insulated)	1C X 16
8	3C X 50	1C X 35 (Insulated)	1C X 16
9	3C X 35	1C X 25 (Insulated)	1C X 16
10	1C X 35	1C X 25 (Insulated/bare)	-
11	3C X 50	1C X 35 (Insulated)	-
12	3C X 35	1C X 25 (Insulated)	-
13	2C X35	1C X25 (Bare)	-
14	2C X25	1C X25 (Bare)	-

2. APPLICABLE STANDARDS:

The equipment covered by this specification shall unless otherwise stated, be designed, manufactured and tested in accordance with the latest editions of the following Indian, International Standards and shall conform to the regulations of the local authorities:

IS-398 (Part IV)	Aluminum conductor for overhead transmission purposes- Part IV Aluminum alloy stranded conductor
IS-5216	Guide for safety procedures and practices in electric works
IS-7098 (part-I)	Specification for Cross-linked_ polyethylene insulated PVC sheathed cables- Part I for working voltage up to and including 1100 volts.
IS-8130	Specification for Conductor for insulated electric cables & flexible cords.
IS-10418	Specification for drums for electric cables
BS-5468	Cross-linked polyethylene insulation of electric cables
IEC-540	Test methods for insulations and sheaths of electric cables and cords
IEC-60228/3	Conductor for insulated cables
IEC-60502-1	Power cables with extruded insulation and their accessories for rated voltages from 1kV (Um=1.2kV), up-to 30kV(Um=36kV)-Part 1:Cables forrated voltages of 1 kV /Um=1,2kV)

	and 3kV/Um=3.6kV)
ASTM G-53/DIN 56687	UV testing of XLPE insulation
SANS 1713	South African Standard for Aerial Bunched conductor
IS14255	Aerial Bunched conductors for working voltages up to and including 1100 volts

3. CLIMATIC CONDITIONS:

SL.NO.	CONDITIONS	VALUES
1	Max. altitude above sea level	1200m
2	Max. Ambient Temperature	50 °C
3	Max. Daily average ambient temp	35 °C
4	Min Ambient Temp	0 °C
5	Maximum temperature attainable by an object exposed to sun	60 °C
6	Maximum Humidity	95%
7	Minimum Humidity	10%
8	Average No. of thunderstorm days per annum	70
9	Average Annual Rainfall	150 cm
10	Average No. of rainy days per annum	120
11	Thermal Resistivity of soil	150 Deg. Ccm/W
12	Wind Pressure	126 kg/sq. m up to an elevation of 10 meter.
14	Earthquakes of intensity in horizontal direction	equivalent to seismic acceleration of 0.3g
15	Earthquakes of intensity in vertical direction	equivalent to seismic acceleration of 0.15g
16	Wind velocity	300 km/hr.

Environmentally, some of the regions, where the work will take place include coastal areas, subject to high relative humidity, which can give rise to condensation. Onshore winds will frequently be salt laden. On occasions, the combination of salt and condensation may create pollution conditions for outdoor insulators. Some places are in heavily industrial polluted areas. Therefore, Outdoor material and equipment shall be designed and protected for use in exposed, heavily polluted, salty, corrosive and humid coastal atmosphere.

The atmosphere is generally laden with mild acid and dust in suspension during the dry months and is subjected to fog in cold months. The design of equipment and accessories shall be suitable to withstand seismic forces as mentioned above.

4. GENERAL TECHNICAL REQUIREMENTS:

Table 1:

SL NO	DESCRIPTION	UNITS	Requirement
1	Type of Cable		LT ABC cable with cross linked polyethylene insulated Phase, neutral and street lighting core twisted around the bare messenger wire.

2	Size of Aerial Bunched cable		4CX150mm²(P)+1CX150mm²(M)+1CX16 mm²(S)	
			4CX95mm²(P)+1CX95mm²(M)+1CX16 mm²(S)	
			4CX70mm²(P)+1CX70mm²(M)+1CX16 mm²(S)	
			4CX50mm²(P)+1CX50mm²(M)+1CX16mm²(S)	
			4CX35mm²(P)+ 1CX35mm²(M)+1CX16mm² (S)	
3	Rated Voltage	kv	1.1	
4	System Voltage	kv	0.415 - 0.433	
5	Nominal Area of Phase Conductor	mm²	4CX150mm²(P)+1CX150mm²(M)+1CX16 mm²(S)	150
			4CX95mm²(P)+1CX95mm²(M)+1CX16 mm²(S)	95
			4CX70mm²(P)+1CX70mm²(M)+1CX16 mm²(S)	70
			4CX50mm²(P)+1CX50mm²(M)+1CX16mm²(S)	50
			4CX35mm²(P)+ 1CX35mm²(M)+1CX16mm² (S)	35
6	Nominal Area of Messenger	mm²	4CX150mm²(P)+1CX150mm²(M)+1CX16 mm²(S)	150
			4CX95mm²(P)+1CX95mm²(M)+1CX16 mm²(S)	95
			4CX70mm²(P)+1CX70mm²(M)+1CX16 mm²(S)	70
			4CX50mm²(P)+1CX50mm²(M)+1CX16mm²(S)	50
			4CX35mm²(P)+ 1CX35mm²(M)+1CX16mm² (S)	35
7	Phase & Neutral Core		Stranded compacted circular aluminum conductor, Extruded XLPE insulated	
8	Messenger Wire		Stranded compacted circular aluminum alloy conductor	
9	Maximum conductor temperature during continuous operation	Deg C	90	
10	Maximum conductor temperature during short circuit	Deg C	250	
11	**Phase Core RYBN insulated**			
a)	**Conductor**			
(i)	Material		EC Grade Aluminum of H4 Grade to IS: 8130:1984	
(ii)	No. of Cores & Nominal Size	mm²	4CX150mm²(P)+1CX150mm²(M)+1CX16 mm²(S)	4CX150
			4CX95mm²(P)+1CX95mm²(M)+1CX16 mm²(S)	4CX95
			4CX70mm²(P)+1CX70mm²(M)+1CX16 mm²(S)	4CX70
			4CX50mm²(P)+1CX50mm²(M)+1CX16mm²(S)	4CX50
			4CX35mm²(P)+ 1CX35mm²(M)+1CX16mm² (S)	4CX35
(iii)	Minimum number of strand wires As per IS 8130, Table no 2		4CX150mm²(P)+1CX150mm²(M)+1CX16 mm²(S)	15
			4CX95mm²(P)+1CX95mm²(M)+1CX16 mm²(S)	15
			4CX70mm²(P)+1CX70mm²(M)+1CX16 mm²(S)	12
			4CX50mm²(P)+1CX50mm²(M)+1CX16mm²(S)	6
			4CX35mm²(P)+ 1CX35mm²(M)+1CX16mm² (S)	6
(iv)	Diameter		Shall be suitably selected to meet conductor DC resistance as per IS 8130	
(v)	Max. DC Resistance of phase conductor at 20 deg.C	Ω/km	4CX150mm²(P)+1CX150mm²(M)+1CX16 mm²(S)	0.206
			4CX95mm²(P)+1CX95mm²(M)+1CX16 mm²(S)	0.320
			4CX70mm²(P)+1CX70mm²(M)+1CX16 mm²(S)	0.443
			4CX50mm²(P)+1CX50mm²(M)+1CX16mm²(S)	0.641

			4CX35mm²(P)+ 1CX35mm²(M)+1CX16mm² (S)	0.868
(vi)	Shape of Conductor		Stranded Compacted Circular	
(vii)	Short Circuit current rating of conductor for 1 sec	kA	4CX150mm²(P)+1CX150mm²(M)+1CX16 mm²(S)	14.1
			4CX95mm²(P)+1CX95mm²(M)+1CX16 mm²(S)	8.93
			4CX70mm²(P)+1CX70mm²(M)+1CX16 mm²(S)	6.58
			4CX50mm²(P)+1CX50mm²(M)+1CX16mm²(S)	4.7
			4CX35mm²(P)+ 1CX35mm²(M)+1CX16mm² (S)	3.29
(viii)	Continuous current rating in air at 40 Deg. C		4CX150mm²(P)+1CX150mm²(M)+1CX16 mm²(S)	280
			4CX95mm²(P)+1CX95mm²(M)+1CX16 mm²(S)	230
			4CX70mm²(P)+1CX70mm²(M)+1CX16 mm²(S)	200
			4CX50mm²(P)+1CX50mm²(M)+1CX16mm²(S)	149
			4CX35mm²(P)+ 1CX35mm²(M)+1CX16mm² (S)	125
(ix)	Diameter of conductor core		To be provided by bidder in the GTP with the Technical bid	
(x)	Weight of conductor core		To be provided by bidder in the GTP with the Technical bid	
b)	**Insulation**			
i)	Material		XLPE Insulation as per IS 14255:1995 (Black colored)	
ii)	Nominal Thickness	mm	4CX150mm²(P)+1CX150mm²(M)+1CX16 mm²(S)	1.7
			4CX95mm²(P)+1CX95mm²(M)+1CX16 mm²(S)	1.5
			4CX70mm²(P)+1CX70mm²(M)+1CX16 mm²(S)	1.5
			4CX50mm²(P)+1CX50mm²(M)+1CX16mm²(S)	1.5
			4CX35mm²(P)+ 1CX35mm²(M)+1CX16mm² (S)	1.2
iii)	Tolerance in Insulation Thickness	mm	XLPE Insulation as per IS 14255	
iv)	Diameter of insulation/core		To be provided by bidder in the GTP with the Technical bid	
v)	Weight of one core		To be provided by bidder in the GTP with the Technical bid	
12	**Street light core**			
a)	**Conductor**			
i)	Material		EC grade aluminum of H4 grade to IS: 8130:1984	
ii)	Nominal size	mm²	16	
iii)	Nominal no. of wire As per IS 8130, Table no 2		6 (As per IS 8130, Table no 2)	
iv)	Max DC resistance at 20 deg. C	Ohm/k m	1.91(As per IS 8130:1984)	
v)	Shape of conductor		Stranded compacted circular	
b)	**Insulation**			
i)	Material		As per IS: 14255:1995	
ii)	Nominal thickness	mm	1.2	
iii)	Tolerance in Insulation Thickness		XLPE Insulation as per IS 14255:1995 (Black colored)	
iv)	Diameter of conductor		To be provided by bidder in the GTP with the Technical bid	
v)	Weight of conductor		To be provided by bidder in the GTP with the Technical bid	
vi)	Weight of insulation		To be provided by bidder in the GTP with the Technical bid	
13	**Bare Messenger Wire**			
a)	**Messenger wire**			
i)	Material		Aluminum Alloy Wire	

ii)	Nominal size	mm²	4CX150mm²(P)+1CX150mm²(M)+1CX16 mm²(S)	150
			4CX95mm²(P)+1CX95mm²(M)+1CX16 mm²(S)	95
			4CX70mm²(P)+1CX70mm²(M)+1CX16 mm²(S)	70
			4CX50mm²(P)+1CX50mm²(M)+1CX16mm²(S)	50
			4CX35mm²(P)+ 1CX35mm²(M)+1CX16mm² (S)	35
iii)	No and Nominal Dia (As per IS 14255 clause no 6.2 & IS 398 part 4, table no 2)	No./mm	4CX150mm²(P)+1CX150mm²(M)+1CX16 mm²(S)	19/3.15
			4CX95mm²(P)+1CX95mm²(M)+1CX16 mm²(S)	7/4.16
			4CX70mm²(P)+1CX70mm²(M)+1CX16 mm²(S)	7/3.57
			4CX50mm²(P)+1CX50mm²(M)+1CX16mm²(S)	7/3.02
			4CX35mm²(P)+ 1CX35mm²(M)+1CX16mm² (S)	7/2.54
iv)	Calculated Maximum resistance at 20 deg C (As per IS 14255 table no 3 & IS 398 part 4, table no 2)	Ohm/k m	4CX150mm²(P)+1CX150mm²(M)+1CX16 mm²(S)	0.229
			4CX95mm²(P)+1CX95mm²(M)+1CX16 mm²(S)	0.357
			4CX70mm²(P)+1CX70mm²(M)+1CX16 mm²(S)	0.492
			4CX50mm²(P)+1CX50mm²(M)+1CX16mm²(S)	0.689
			4CX35mm²(P)+ 1CX35mm²(M)+1CX16mm² (S)	0.986
v)	Shape of conductor		Stranded circular-compacted	
vi)	Short circuit rating for 1 sec	KA	4CX150mm²(P)+1CX150mm²(M)+1CX16 mm²(S)	14.1
			4CX95mm²(P)+1CX95mm²(M)+1CX16 mm²(S)	8.93
			4CX70mm²(P)+1CX70mm²(M)+1CX16 mm²(S)	6.58
			4CX50mm²(P)+1CX50mm²(M)+1CX16mm²(S)	4.7
			4CX35mm²(P)+ 1CX35mm²(M)+1CX16mm² (S)	3.29
vii)	Material of insulation		NA	
viii)	Thickness of insulation	mm	NA	
ix)	Min Breaking load of messenger wire (As per IS 14255 table no 3 & IS 398 part 4, table no 2)	KN	4CX150mm²(P)+1CX150mm²(M)+1CX16 mm²(S)	43.5
			4CX95mm²(P)+1CX95mm²(M)+1CX16 mm²(S)	27.8
			4CX70mm²(P)+1CX70mm²(M)+1CX16 mm²(S)	19.7
			4CX50mm²(P)+1CX50mm²(M)+1CX16mm²(S)	14
			4CX35mm²(P)+ 1CX35mm²(M)+1CX16mm² (S)	9.8
xi)	Diameter of messenger wire		To be provided by bidder in the GTP with the Technical bid	
xii)	Weight of messenger wire		To be provided by bidder in the GTP with the Technical bid	
14	Over all weight of AB Cable		To be provided by bidder in the GTP with the Technical bid	
15	Core Identification		Core Identification: RIDGES required for phase identification – A) Ridges shall be provided on two locations on the Outer sheath at 180 degree apart. 1 ridge for R phase, 2 ridges for Y phase, 3 ridges for B phase and there shall be no ridge for neutral core. B) There shall be clearly visible phase embossing with R/ Y/ B letters on respective core at every 3 inches and the letter “N” on neutral core shall be embossed at every meter.	
16	Formation of cable		Four (RYBN) insulated phase and street light core shall be twisted around the bare Earth cum messenger wire to form the circular assembly.	
17	Standard Drum Length	Mtr	500	
18	Tolerance in Drum length	%	+/-5%	
19	Reference Standard		IS 14255	

20	Embossing on XPLE cable		Embossing on phase insulation of the cable: manufacturer name 1100V, size of cable, ISI, month & year of manufacturing, Property of TPCODL/ TPNODL/ TPWODL/ TPSODL/TPDDL/TPADL/TPC, PO number & date, XLPE

Table 2:

SL NO	DESCRIPTION	UNITS	Requirement	
1	Type of Cable		LT ABC cable with cross linked polyethylene insulated Phase and street lighting core twisted around the insulated neutral cum messenger wire	
2	Size of Aerial Bunched cable		3CX95mm²(P)+1CX70mm²(M)+1CX16 mm²(S)	
			3CX70mm²(P)+ 1CX50mm²(M)+1CX16mm(S)	
			3CX50mm²(P)+1CX35mm²(M)+1CX16mm²(S)	
			3CX35mm²(P)+ 1CX25mm²(M)+1CX16mm² (S)	
3	Rated Voltage	kv	1.1	
4	System Voltage	kv	0.415 - 0.433	
5	Nominal Area of Phase Conductor	mm²	3CX95mm²(P)+1CX70mm²(M)+1CX16 mm²(S)	95
			3CX70mm²(P)+ 1CX50mm²(M)+1CX16mm(S)	70
			3CX50mm²(P)+1CX35mm²(M)+1CX16mm²(S)	50
			3CX35mm²(P)+ 1CX25mm²(M)+1CX16mm² (S)	35
6	Nominal Area of Messenger	mm²	3CX95mm²(P)+1CX70mm²(M)+1CX16 mm²(S)	70
			3CX70mm²(P)+ 1CX50mm²(M)+1CX16mm(S)	50
			3CX50mm²(P)+1CX35mm²(M)+1CX16mm²(S)	35
			3CX35mm²(P)+ 1CX25mm²(M)+1CX16mm² (S)	25
7	Phase Core		Stranded compacted circular aluminum conductor, Extruded XLPE insulated	
8	Neutral core & Messenger Wire		Stranded compacted circular aluminum alloy conductor, Extruded XLPE insulated	
9	Maximum conductor temperature during continuous operation	Deg C	90	
10	Maximum conductor temperature during short circuit	Deg C	250	
11	**Phase Core RYB insulated**			
a)	**Conductor**			
(i)	Material		EC Grade Aluminum of H4 Grade to IS: 8130:1984	
(ii)	No. of Cores & Nominal Size	mm²	3CX95mm²(P)+1CX70mm²(M)+1CX16 mm²(S)	3CX95
			3CX70mm²(P)+ 1CX50mm²(M)+1CX16mm(S)	3CX70
			3CX50mm²(P)+1CX35mm²(M)+1CX16mm²(S)	3CX50
			3CX35mm²(P)+ 1CX25mm²(M)+1CX16mm² (S)	3CX35
(iii)	Minimum number of strand wires As per IS 8130, Table no 2		3CX95mm²(P)+1CX70mm²(M)+1CX16 mm²(S)	15
			3CX70mm²(P)+ 1CX50mm²(M)+1CX16mm(S)	12
			3CX50mm²(P)+1CX35mm²(M)+1CX16mm²(S)	6

			3CX35mm²(P)+ 1CX25mm²(M)+1CX16mm² (S)	6
(iv)	Diameter		Shall be suitably selected to meet conductor DC resistance as per IS 8130	
(v)	Max. DC Resistance of phase conductor at 20 deg.C	Ω/km	3CX95mm²(P)+1CX70mm²(M)+1CX16 mm²(S)	0.320
			3CX70mm²(P)+ 1CX50mm²(M)+1CX16mm(S)	0.443
			3CX50mm²(P)+1CX35mm²(M)+1CX16mm²(S)	0.641
			3CX35mm²(P)+ 1CX25mm²(M)+1CX16mm² (S)	0.868
(vi)	Shape of Conductor		Stranded Compacted Circular	
(vii)	Short Circuit current rating of conductor for 1 sec	kA	3CX95mm²(P)+1CX70mm²(M)+1CX16 mm²(S)	8.93
			3CX70mm²(P)+ 1CX50mm²(M)+1CX16mm(S)	6.58
			3CX50mm²(P)+1CX35mm²(M)+1CX16mm²(S)	4.7
			3CX35mm²(P)+ 1CX25mm²(M)+1CX16mm² (S)	3.29
(viii)	Continuous current rating in air at 40 Deg. C	A	3CX95mm²(P)+1CX70mm²(M)+1CX16 mm²(S)	230
			3CX70mm²(P)+ 1CX50mm²(M)+1CX16mm(S)	200
			3CX50mm²(P)+1CX35mm²(M)+1CX16mm²(S)	149
			3CX35mm²(P)+ 1CX25mm²(M)+1CX16mm² (S)	125
(ix)	Diameter of conductor core		To be provided by bidder in the GTP with the Technical bid	
(x)	Weight of conductor core		To be provided by bidder in the GTP with the Technical bid	
b)	**Insulation**			
i)	Material		XLPE Insulation as per IS 14255:1995 (Black colored)	
ii)	Nominal Thickness	mm	3CX95mm²(P)+1CX70mm²(M)+1CX16 mm²(S)	1.5
			3CX70mm²(P)+ 1CX50mm²(M)+1CX16mm(S)	1.5
			3CX50mm²(P)+1CX35mm²(M)+1CX16mm²(S)	1.2
			3CX35mm²(P)+ 1CX25mm²(M)+1CX16mm² (S)	1.2
iii)	Tolerance in Insulation Thickness	mm	XLPE Insulation as per IS 14255	
iv)	Diameter of insulation/core		To be provided by bidder in the GTP with the Technical bid	
v)	Weight of one core		To be provided by bidder in the GTP with the Technical bid	
12	**Street light core**			
a)	**Conductor**			
i)	Material		EC grade aluminum of H4 grade to IS: 8130:1984	
ii)	Nominal size	mm²	16	
iii)	Nominal no. of wire As per IS 8130, Table no 2		6	
iv)	Max DC resistance at 20 deg. C	Ohm/k m	1.91(As per IS 8130:1984)	
v)	Shape of conductor		Stranded compacted circular	
b)	**Insulation**			
i)	Material		XLPE As per IS: 14255:1995 (Black colored)	
ii)	Nominal thickness	mm	1.2	
iii)	Tolerance in Insulation Thickness		XLPE Insulation as per IS 14255:1995	
iv)	Diameter of conductor		To be provided by bidder in the GTP with the Technical bid	
v)	Weight of conductor		To be provided by bidder in the GTP with the Technical bid	

vi)	Weight of insulation		To be provided by bidder in the GTP with the Technical bid	
13	**Neutral Cum Messenger Wire**			
a)	**Conductor**			
i)	Material		Aluminum Alloy Wire	
ii)	Nominal size	mm²	3CX95mm²(P)+1CX70mm²(M)+1CX16 mm²(S)	70
			3CX70mm²(P)+ 1CX50mm²(M)+1CX16mm(S)	50
			3CX50mm²(P)+1CX35mm²(M)+1CX16mm²(S)	35
			3CX35mm²(P)+ 1CX25mm²(M)+1CX16mm² (S)	25
iii)	No and Nominal Dia of each strand	No./m m	3CX95mm²(P)+1CX70mm²(M)+1CX16 mm²(S)	7/3.57
			3CX70mm²(P)+ 1CX50mm²(M)+1CX16mm(S)	7/3.02
			3CX50mm²(P)+1CX35mm²(M)+1CX16mm²(S)	7/2.54
			3CX35mm²(P)+ 1CX25mm²(M)+1CX16mm² (S)	7/2.14
iv)	Calculated Maximum resistance at 20 deg C	Ohm/k m	3CX95mm²(P)+1CX70mm²(M)+1CX16 mm²(S)	0.492
			3CX70mm²(P)+ 1CX50mm²(M)+1CX16mm(S)	0.689
			3CX50mm²(P)+1CX35mm²(M)+1CX16mm²(S)	0.986
			3CX35mm²(P)+ 1CX25mm²(M)+1CX16mm² (S)	1.38
v)	Shape of conductor		Stranded circular-compacted	
vi)	Short circuit rating for 1 sec	kA	3CX95mm²(P)+1CX70mm²(M)+1CX16 mm²(S)	6.58
			3CX70mm²(P)+ 1CX50mm²(M)+1CX16mm(S)	4.7
			3CX50mm²(P)+1CX35mm²(M)+1CX16mm²(S)	3.29
			3CX35mm²(P)+ 1CX25mm²(M)+1CX16mm² (S)	2.35
b)	**Insulation**			
vii)	Material of insulation		XLPE Insulation as per IS 14255 (Black colored)	
viii)	Thickness of insulation	mm	3CX95mm²(P)+1CX70mm²(M)+1CX16 mm²(S)	1.5
			3CX70mm²(P)+ 1CX50mm²(M)+1CX16mm(S)	1.5
			3CX50mm²(P)+1CX35mm²(M)+1CX16mm²(S)	1.2
			3CX35mm²(P)+ 1CX25mm²(M)+1CX16mm² (S)	1.2
ix)	Min Breaking load of messenger wire	KN	3CX95mm²(P)+1CX70mm²(M)+1CX16 mm²(S)	19.7
			3CX70mm²(P)+ 1CX50mm²(M)+1CX16mm(S)	14
			3CX50mm²(P)+1CX35mm²(M)+1CX16mm²(S)	9.8
			3CX35mm²(P)+ 1CX25mm²(M)+1CX16mm² (S)	7
xi)	Diameter of messenger wire		To be provided by bidder in the GTP with the Technical bid	
xii)	Weight of messenger wire		To be provided by bidder in the GTP with the Technical bid	
14	Over all weight of AB Cable		To be provided by bidder in the GTP with the Technical bid	
15	Core Identification		Core Identification: RIDGES required for phase identification – A) Ridges shall be provided on two locations on the Outer sheath at 180 degree apart. 1 ridge for R phase, 2 ridges for Y phase, 3 ridges for B phase and there shall be no ridge for neutral core. B) There shall be clearly visible phase embossing with R/ Y/ B letters on respective core at every 3 inches and the letter “N” on neutral core shall be embossed at every meter.	
16	Formation of cable		3 phase cores &1 street lighting core xlpe insulated are laid up over insulated messenger with R-H direction of Lay	
17	Standard Drum Length	Mtr	500	

18	Tolerance in Drum length	%	+/-5%
19	Reference Standard		IS 14255
20	Embossing on XPLE cable		Embossing on phase insulation of the cable: manufacturer name 1100V,size of cable, ISI, month & year of manufacturing, Property of TPCODL/ TPNODL/ TPWODL/ TPSODL/TPDDL/TPADL/TPC, PO number & date, XLPE

Table 3:

SL NO	DESCRIPTION	UNITS	Requirement	
1	Type of Cable		1CX35mm²(P)+1CX25mm²(M)	LT ABC cable with XLPE insulated Phase core twisted around the insulated/bare neutral cum messenger wire.
			3CX50mm²(P)+1C×35mm²(M)	LT ABC cable with XLPE insulated Phase core twisted around the insulated neutral cum messenger wire.
			3CX35mm²(P)+1CX25mm²(M)	
			2CX35mm²(P)+1CX25mm²(M)	LT ABC cable with XLPE insulated Phase and neutral core twisted around the bare messenger wire
			2CX25mm²(P)+1CX25mm²(M)	
2	Size of Aerial Bunched cable		1CX35mm²(P)+1CX25mm²(M)	
			3CX50mm²(P)+1C×35mm²(M)	
			3CX35mm²(P)+1CX25mm²(M)	
			2CX35mm²(P)+1CX25mm²(M)	
			2CX25mm²(P)+1CX25mm²(M)	
3	Rated Voltage	kv	1.1	
4	System Voltage	kv	1CX35mm²(P)+1CX25mm²(M)	240
			3CX50mm²(P)+1C×35mm²(M)	0.415 - 0.433
			3CX35mm²(P)+1CX25mm²(M)	
			2CX35mm²(P)+1CX25mm²(M)	240
			2CX25mm²(P)+1CX25mm²(M)	
5	Nominal Area of Phase Conductor	mm²	1CX35mm²(P)+1CX25mm²(M)	35
			3CX50mm²(P)+1C×35mm²(M)	50
			3CX35mm²(P)+1CX25mm²(M)	35
			2CX35mm²(P)+1CX25mm²(M)	35
			2CX25mm²(P)+1CX25mm²(M)	25
6	Nominal Area of Messenger	mm²	1CX35mm²(P)+1CX25mm²(M)	25
			3CX50mm²(P)+1C×35mm²(M)	35
			3CX35mm²(P)+1CX25mm²(M)	25
			2CX35mm²(P)+1CX25mm²(M)	25
			2CX25mm²(P)+1CX25mm²(M)	25
7	Phase Core		Stranded compacted circular aluminum conductor, Extruded XLPE insulated.	

8	Neutral core		1CX35mm²(P)+1CX25mm²(M)	**Same as insulated messenger** (Stranded compacted circular aluminum alloy conductor, Extruded XLPE insulated.)
			3CX50mm²(P)+1C×35mm²(M)	
			3CX35mm²(P)+1CX25mm²(M)	
			2CX35mm²(P)+1CX25mm²(M)	**Same as insulated phase** (Stranded compacted circular aluminum conductor, Extruded XLPE insulated)
			2CX25mm²(P)+1CX25mm²(M)	
9	Messenger Wire		1CX35mm²(P)+1CX25mm²(M	Stranded compacted circular aluminum alloy conductor, Extruded XLPE insulated/bare.
			3CX50mm²(P)+1C×35mm²(M)	Stranded compacted circular aluminum alloy conductor, Extruded XLPE insulated.
			3CX35mm²(P)+1CX25mm²(M)	
			2CX35mm²(P)+1CX25mm²(M)	Stranded compacted circular aluminum alloy conductor, bare.
			2CX25mm²(P)+1CX25mm²(M)	
10	Maximum conductor temperature during continuous operation	Deg C	90	
11	Maximum conductor temperature during short circuit	Deg C	250	
12	**Phase Core RYBN insulated**			
a)	**Conductor**			
(i)	Material		EC Grade Aluminum of H4 Grade to IS: 8130:1984	
(ii)	No. of Cores & Nominal Size	mm²	1CX35mm²(P)+1CX25mm²(M)	1CX35
			3CX50mm²(P)+1C×35mm²(M)	1CX50
			3CX35mm²(P)+1CX25mm²(M)	3Cx35
			2CX35mm²(P)+1CX25mm²(M)	2Cx35
			2CX25mm²(P)+1CX25mm²(M)	2Cx25
(iii)	Minimum number of strand wires As per IS 8130, Table no 2		1CX35mm²(P)+1CX25mm²(M)	6
			3CX50mm²(P)+1C×35mm²(M)	6
			3CX35mm²(P)+1CX25mm²(M)	6
			2CX35mm²(P)+1CX25mm²(M)	6
			2CX25mm²(P)+1CX25mm²(M)	6
(iv)	Diameter		Shall be suitably selected to meet conductor DC resistance as per IS 8130	
(v)	Max. DC Resistance of phase conductor at 20 deg.C	Ω/km	1CX35mm²(P)+1CX25mm²(M)	0.868
			3CX50mm²(P)+1C×35mm²(M)	0.641
			3CX35mm²(P)+1CX25mm²(M)	0.868
			2CX35mm²(P)+1CX25mm²(M)	0.868
			2CX25mm²(P)+1CX25mm²(M)	1.2
(vi)	Shape of Conductor		Stranded Compacted Circular	

(vii)	Short Circuit current rating of conductor for 1 sec	kA	1CX35mm²(P)+1CX25mm²(M)	3.29
			3CX50mm²(P)+1C×35mm²(M)	4.7
			3CX35mm²(P)+1CX25mm²(M)	3.29
			2CX35mm²(P)+1CX25mm²(M)	3.29
			2CX25mm²(P)+1CX25mm²(M)	2.36
(viii)	Continuous current rating in air at 40 Deg. C	A	1CX35mm²(P)+1CX25mm²(M)	125
			3CX50mm²(P)+1C×35mm²(M)	149
			3CX35mm²(P)+1CX25mm²(M)	125
			2CX35mm²(P)+1CX25mm²(M)	125
			2CX25mm²(P)+1CX25mm²(M)	117
(ix)	Diameter of conductor core		To be provided by bidder in the GTP with the Technical bid	
(x)	Weight of conductor core		To be provided by bidder in the GTP with the Technical bid	
b)	**Insulation**			
i)	Material		XLPE Insulation as per IS 14255:1995 (Black color)	
ii)	Nominal Thickness	mm	1CX35mm²(P)+1CX25mm²(M)	1.2
			3CX50mm²(P)+1C×35mm²(M)	1.5
			3CX35mm²(P)+1CX25mm²(M)	1.2
			2CX35mm²(P)+1CX25mm²(M)	1.2
			2CX25mm²(P)+1CX25mm²(M)	1.2
iii)	Tolerance in Insulation Thickness	mm	XLPE Insulation as per IS 14255	
iv)	Diameter of insulation/core		To be provided by bidder in the GTP with the Technical bid	
v)	Weight of one core		To be provided by bidder in the GTP with the Technical bid	
12	**Street light core**			
a)	**Conductor**		NA	
i)	Material			
ii)	Nominal size	mm²		
iii)	Nominal no. of wire			
iv)	Max DC resistance at 20 deg. C	Ohm/k m		
v)	Shape of conductor			
b)	**Insulation**			
i)	Material			
ii)	Nominal thickness	Mm		
iii)	Tolerance in Insulation Thickness			
13	**Insulated Neutral Cum Messenger Wire / Bare Messenger**			
a)	**Conductor**			
i)	Material		Aluminum Alloy Wire	
ii)	Nominal size	mm²	1CX35mm²(P)+1CX25mm²(M)	25
			3CX50mm²(P)+1C×35mm²(M)	35
			3CX35mm²(P)+1CX25mm²(M)	25
			2CX35mm²(P)+1CX25mm²(M)	25
			2CX25mm²(P)+1CX25mm²(M)	25
iii)	No and Nominal Dia of each	No./m m	1CX35mm²(P)+1CX25mm²(M)	7/2.14

	strand		3CX50mm²(P)+1C×35mm²(M)	7/2.54
			3CX35mm²(P)+1CX25mm²(M)	7/2.14
			2CX35mm²(P)+1CX25mm²(M)	7/2.14
			2CX35mm²(P)+1CX25mm²(M)	7/2.14
iv)	Calculated Maximum resistance at 20 deg C	ohm/k m	1CX35mm²(P)+1CX25mm²(M)	1.38
			3CX50mm²(P)+1C×35mm²(M)	0.986
			3CX35mm²(P)+1CX25mm²(M)	1.38
			2CX35mm²(P)+1CX25mm²(M)	1.38
			2CX25mm²(P)+1CX25mm²(M)	1.38
v)	Shape of conductor		Stranded circular-compacted	
vi)	Short circuit rating for 1 sec	kA	1CX35mm²(P)+1CX25mm²(M)	2.35
			3CX50mm²(P)+1C×35mm²(M)	3.29
			3CX35mm²(P)+1CX25mm²(M)	2.35
			2CX35mm²(P)+1CX25mm²(M)	2.35
			2CX25mm²(P)+1CX25mm²(M)	2.35
b)	**Insulation**			
vii)	Material of insulation		1CX35mm²(P)+1CX25mm²(M)	XLPE Insulation as per IS 14255 (Black color) / bare As per discom requirement
			3CX50mm²(P)+1C×35mm²(M)	XLPE Insulation as per IS 14255 (Black color)
			3CX35mm²(P)+1CX25mm²(M)	
			2CX35mm²(P)+1CX25mm²(M)	NA
			2CX25mm²(P)+1CX25mm²(M)	NA
viii)	Thickness of insulation	mm	1CX35mm²(P)+1CX25mm²(M)	1.2 (For insulated messenger) & NA (For bare messenger)
			3CX50mm²(P)+1C×35mm²(M)	1.2
			3CX35mm²(P)+1CX25mm²(M)	1.2
			2CX35mm²(P)+1CX25mm²(M)	NA
			2CX25mm²(P)+1CX25mm²(M)	NA
ix)	Min Breaking load of messenger wire	KN	1CX35mm²(P)+1CX25mm²(M)	7
			3CX50mm²(P)+1C×35mm²(M)	9.8
			3CX35mm²(P)+1CX25mm²(M)	7
			2CX35mm²(P)+1CX25mm²(M)	7
			2CX35mm²(P)+1CX25mm²(M)	7
x)	Diameter of messenger wire		To be provided by bidder in the GTP with the Technical bid	
xi)	Weight of messenger wire		To be provided by bidder in the GTP with the Technical bid	
14	Over all weight of AB Cable		To be provided by bidder in the GTP with the Technical bid	
15	Core Identification		1CX35mm²(P)+1CX25mm²(M)	**Core Identification:** A) Ridges shall be provided on two locations on the Outer sheath at 180 degree apart. 1 ridge for R phase, and there shall be no ridge for neutral core. B) There shall be clearly

				visible phase embossing with R letter on respective core at every 3 inches and the letter "N" on neutral core shall be embossed at every meter. **Note –** No N printing required for bare messenger/Neutral.
			3CX50mm²(P)+1C×35mm²(M)	**Core Identification:** A) Ridges shall be provided on two locations on the Outer sheath at 180 degree apart. 1 ridge for R phase, 2 ridge for Y phase & 3 ridge for B phase and there shall be no ridge for neutral core. B) There shall be clearly visible phase embossing with R/Y/B letter on respective core at every 3 inches and the letter "N" on neutral core shall be embossed at every meter.
			3CX35mm²(P)+1CX25mm²(M)	
			2CX35mm²(P)+1CX25mm²(M)	**Core Identification:** A) Ridges shall be provided on two locations on the Outer sheath at 180 degree apart. 1 ridge for R phase, and there shall be no ridge for neutral core. B) There shall be clearly visible phase embossing with R letter on respective core at every 3 inches and the letter "N" on neutral core shall be embossed at every meter.
			2CX25mm²(P)+1CX25mm²(M)	
16	Formation of cable		1CX35mm²(P)+1CX25mm²(M)	1 phase core XLPE insulated shall be twisted around the insulated/bare earth cum messenger wire, with R-H direction of lay.
			3CX50mm²(P)+1C×35mm²(M)	3 phase cores XLPE insulated shall be twisted around the insulated earth cum messenger wire, with R-H direction of lay
			3CX35mm²(P)+1CX25mm²(M)	
			2CX35mm²(P)+1CX25mm²(M)	2 cores (PN) XLPE insulated

			2CX25mm²(P)+1CX25mm²(M)	shall be twisted around the bare messenger wire, with R-H direction of lay
17	Standard Drum Length	Mtr	1CX35mm²(P)+1CX25mm²(M)	1000
			3CX50mm²(P)+1C×35mm²(M)	500
			3CX35mm²(P)+1CX25mm²(M)	500
			2CX35mm²(P)+1CX25mm²(M)	1000
			2CX25mm²(P)+1CX25mm²(M)	1000
18	Tolerance in Drum length	%	+/-5%	
19	Reference Standard		IS 14255	
20	Embossing on XPLE cable		Embossing on phase insulation of the cable: manufacturer name 1100V, size of cable, ISI, month & year of manufacturing, Property of TPCODL/ TPNODL/ TPWODL/ TPSODL/TPDDL/TPADL/TPC, PO number & date, XLPE	

5. GENERAL CONSTRUCTION

CONDUCTORS:

All conductors shall be Class 2, Stranded, compacted circular, High electrical conductivity, Aluminum, Grade H4 as per IS 8130:1984.
Before stranding, the conductor shall be circular in cross section, uniform in quality, solid, smooth and free from scale, sharp edges and other defects.
Conductor shall conform to the standards for permissible number of joints in any one of the single wires forming every complete length of conductor, for location of joints in same layer of conductors and for method of making such joints. No joint shall be made in any conductor after it is stranded.
All conductors shall be of high electrical conductivity Aluminum as specified, conforming to requirement of relevant standards.
Note – Raw material supplier shall be from Nalco/Balco/Vedanta/Hindalco.

INSULATION:

The insulating material shall be Cross Linked Polyethylene (XLPE) applied by extrusion as per latest IS:14255 and its latest amendments.
The insulation shall be both heat and moisture resistant and shall be suitable for continuous operation at conductor temperature of 90 Degree Centigrade, rising momentarily to 250 Degree Centigrade under short circuit conditions.
It shall be free from any foreign material or porosity visible to unaided eye. The insulation shall be so applied that it fits closely to1he conductor and it shall be possible to remove insulation without damaging the conductor. The XLPE insulation shall be ultraviolet protected for operation in direct sunlight.
It shall be free from any foreign material or porosity visible to unaided eye. The insulation shall be so applied that it fits closely to the conductor and it shall be possible to remove insulation without damaging the conductor. Average thickness of the insulation shall not be less than nominal value specified in latest IS:14255 with latest amendments. The tolerance on the thickness shall be as specified in latest IS:14255.
The insulating material shall have excellent electrical properties with regard to resistivity, dielectric constant and loss factor and shall have high tensile strength and resistance to abrasion. This shall not deteriorate at elevated temperatures or when immersed in water. The insulation shall be preferably fire resistant and resistant to chemicals

like acids, alkalis, oils and ozone.
Note – Raw material supplier shall be Dow/ Borealis/ Hanwa/ K Kalpana or D Dev/ KLJ only.

MESSENGER WIRE:

The insulated messenger wire shall be made of aluminum alloy, generally conforming to latest IS:14255. The conductor shall be of heated aluminum-magnesium-silicon alloy wires containing approximate 0.5% magnesium and approximately 0.5% silicon conforming to IS 398(Part 4). Insulation shall be as per IS 14255.
Note – Raw material supplier shall be from Nalco/Balco/Vedanta/Hindalco.

CORE IDENTIFICATION:

Ridges required for phase identification in 4CX150+1CX150+1CX16 / 4CX95+1CX95+1CX16 / 4CX70+1CX70+1CX16 / 4CX50+1CX50+1CX16 / 4CX35+1CX35+1CX16 LT AB cable:

A) Ridges shall be provided on two locations on the Outer sheath at 180 degree apart. 1 ridge for R phase, 2 ridges for Y phase, 3 ridges for B phase and there shall be no ridge for neutral core.
B) There shall be clearly visible phase embossing with R/ Y/ B letters on respective core at every 3 inch. And the letter “N” on neutral core shall be embossed at every meter.

Ridges required for phase identification in 3CX95+1CX70+1CX16 / 3CX70+1CX50+1CX16 / 3CX50+1CX35+1CX16 / 3CX35+1CX25+1CX16 / 3CX50+1C×35 / 3CX35+1CX25 LT AB cable:

A) Ridges shall be provided on two locations on the Outer sheath at 180 degree apart. 1 ridge for R phase, 2 ridges for Y phase, 3 ridges for B phase and there shall be no ridge for neutral core.
B) There shall be clearly visible phase embossing with R/ Y/ B letters on respective core at every 3 inch. And the letter “N” on neutral core shall be embossed at every meter.

Ridges required for phase identification in 2Cx25+1x25 / 1CX35+1CX25 LT AB cable:

A) Ridges shall be provided on two locations on the Outer sheath at 180 degree apart. 1 ridge for R phase, and there shall be no ridge for neutral core.
B) There shall be clearly visible phase embossing with R letter on respective core at every 3 inch. And the letter “N” on neutral core shall be embossed at every meter.

Ridges required for phase identification in 3Cx35+1x25 / 2CX35+1CX25 LT AB cable:

A) Ridges shall be provided on two locations on the Outer sheath at 180 degree apart. 1 ridge for R phase, 2 ridges for Y phase, 3 ridges for B phase and there shall be no ridge for neutral core, and there shall be no ridge for neutral core.
B) There shall be clearly visible phase embossing with R/Y/B letter on respective core at every 3 inch. And the letter “N” on neutral core shall be embossed at every meter.

LAYING OF CORES:

Cores shall be laid up with a right-hand lay, and shall have a lay length not exceeding 28(d1+d2), where;

- d1 is the core diameter, including sheath, in mm.
- d2 is the diameter of the messenger, including the outer protective covering where applicable, in mm.

Note – For Delhi application Lay ratio of the 4Cx150sqmm + 1x150sqmm + 1Cx16sqmm LT AB cable shall be 40 to 45 times the core diameter.

STRANDING:

The wire used in the construction of a stranded conductor shall, before and after stranding, satisfy all the relevant requirements of IS 398(Part-lV): 1994.The lay ratio of the different layers shall be within the limits given in IS 398(Part-lV): 1994. The successive layers shall have opposite directions of lay, the outermost layer being right-handed. The wires in each layer shall be evenly and closely stranded. The lay ratio of any layer shall not be greater than the lay ratio of layer immediately beneath it.

CABLE DRUM:

Cables shall be furnished in the specified reels or coil lengths of 500 meters/ 1000 meters as per clause 4 of this specification. Drums shall be of non-returnable wooden drums as per IS 10418:1982 and the drums should be free from defects such as through cracks, knots, warps and split. The ends of the cables shall be suitably sealed by means of non-hygroscopic sealing. The tolerance on the Drum length shall be +/- 5% / as per PO terms.

6. MARKING:

The cable shall carry the following information either stenciled on the drum or contained in a label attached to it:

- Reference to the Standards.
- Manufacturer's name·
- Type of cable.
- Voltage grade.
- Number of cores.
- Nominal cross-section area of the conductor.
- Length of the cable on the drum.
- Length of the cable perm.
- Marking of PO
- Direction of rotation· of the drum.
- Gross mass.
- Country of manufacture.
- Year of manufacture.
- ISI Certification mark.

Note – Sequential meter marking shall be available on Neutral core.

7. TESTS:

All routine, acceptance & type tests shall be carried out in accordance with the relevant IS/IEC. All

Routine/acceptance tests shall be witnessed by the purchaser/his authorized representative. All the components shall also be type tested_ as per the relevant standards. Following tests shall be necessarily conducted on the LT ABC cables in additions to others specified in the IS/IEC/SANS Standards.

ACCEPTANCE TESTS:

- Tensile test (for phase/street light conductor)
- Wrapping Test (for phase/street light conductor)
- Breaking load test for messenger conductor
- Elongation test for messenger conductor
- Conductor Resistance test for messenger and phase conductor.
- Test for thickness of insulation
- Hot set test for XLPE insulation
- Tensile strength and elongation test at break for test of insulation
- High voltage test.
- Insulation resistance (volume resistivity test).
- UV test for XLPE insulation (black carbon content and dispersion test).
- Carbon black dispersion test. (The carbon black Dispersion Test shall be witnessed by Tata power representative at the time of inspection, separate type test report shall be submitted.2. Carbon black Content and Dispersion test shall be conducted as acceptance test on every lot at the time of material inspection)

ROUTINE TESTS:

- Conductor resistance test
- High voltage test

TYPE TESTS:

- Tests on phase/street light Conductor
    - Tensile test
    - Wrapping test
    - Resistance test
- Tests on messenger Conductor
    - Breaking load test
    - Elongation test.
    - Resistance test.
- Physical Test for XLPE Insulation:
    - Tensile strength and elongation at break
    - Ageing in air oven
    - Hot test

- Shrinkage test
- Water absorption (gravimetric)
- Carbon black Content & Dispersion.
- Insulation resistance (Volume resistivity) test.
- Test for thickness insulation.

- High voltage test.

- **OPTIONAL TESTS**

  - Bending Test

8. TYPE TEST CERTIFICATES:

The Bidder shall furnish the type test certificates of the cable for the tests as mentioned as above as per the corresponding standards. All the tests shall be conducted at CPRI/ERDA/Any other reputed & equivalent lab. as per relevant IS. Type tests should have been conducted in certified Test laboratories during the period not exceeding 10 years from the date of opening the bid. In the event of any discrepancy in the test reports, i.e., any test report not acceptable, or any/all type tests (including additional same shall be carried out without any cost implication to TPCODL/ TPNODL/ TPSODL/ TPWODL/TPDDL/TPADL/TPC.

9. PRE-DISPATCH INSPECTION:

The material shall be subject to inspection by a duly authorized representative of the TPCODL/ TPNODL/ TPSODL/ TPWODL/TPDDL/TPADL/TPC. Inspection may be made at any stage of manufacture at the discretion of the purchaser and the equipment, if found unsatisfactory as to workmanship or material, the same is liable to rejection. Bidder shall grant free access to the places of manufacturing to TPCODL/ TPNODL/ TPSODL/ TPWODL/TPDDL/TPADL/TPC representatives at all times when the work is in progress. Inspection by the TPCODL/ TPNODL/ TPSODL/ TPWODL/TPDDL/TPADL/TPC or its authorized representatives shall not relieve the bidder of his obligation of furnishing equipment in accordance with the specifications. Material shall be dispatched after specific MDCC (Material Dispatch Clearance Certificate) is issued by TPCODL/ TPNODL/ TPSODL/ TPWODL/TPDDL/TPADL/TPC.

Following documents shall be sent along with material.

- Test reports
- MDCC issued by TPCODL/ TPNODL/ TPSODL/ TPWODL/TPDDL/TPADL/TPC
- TPCODL/ TPNODL/ TPSODL/ TPWODL/TPDDL/TPADL/TPC Invoice in duplicate
- Packing list
- Drawings & catalogue
- Guarantee / Warrantee card
- Delivery Challan
- Other Documents (as applicable).

10. INSPECTION AFTER RECEIPT AT STORE:

The material received at TPCODL/ TPNODL/ TPSODL/ TPWODL/TPDDL/TPADL/TPC, store will be inspected for

acceptance and shall be liable for rejection, if found different from the reports of the pre-dispatch inspection and one copy of the report shall be sent to Engineering department and contracts department.

11. GUARANTEE:

Bidder shall stand guarantee towards design, materials, workmanship & quality of process/ manufacturing of items under the contract for due and intended performance of the same, as an integrated product delivered under this contract. In the event any defect is found by the company up to a period of 30 months from the date of commissioning or 36 months from the date of last supplies made under the contract, whichever is earlier, (the time scale of 30/36 months could be enhanced subject to mutual agreements). Bidder shall be liable to undertake to replace/rectify such defects at his own costs. within mutually agreed timeframe, and to the entire satisfaction of the Company, failing which the Company will be at liberty to get it replaced/rectified at supplier's risks and costs and recover all such expenses plus the Company's own charges (@ 20% of expenses incurred), from the supplier or from the "Security cum Performance Deposit" as the case may be.
The bidder shall further be for "free replacement" for another period of three years from the end of the guarantee period for any latent defects if noticed and reported by the purchaser.

12. PACKING AND TRANSPORT:

The cable shall be wound on Non-returnable MS/Steel drums as per IS/ Steel Drum of recycled steel and packed in line with requirements of IS 10418- 1982. The ends of the cable shall be sealed by means of non-hygroscopic sealing material. Bidder shall ensure that all the equipment covered under this specification shall be prepared for rail/road transport in a manner so as to protect the equipment from damage in transit.

13. TENDER SAMPLE:

Bidder shall submit the sample of material with the offer (in case of first supply to TPCODL/ TPNODL/ TPSODL/ TPWODL/TPDDL/TPADL/TPC).

14. QUALITY CONTROL:

The bidder shall submit Quality Assurance Plan (QAP) indicating the various stages of inspection, the tests and checks which will be carried out on the material of construction, components during manufacture and bought out items and fully assembled component and equipment after finishing. As part of the plan, a schedule for stage and final inspection within the parameters of the delivery schedule shall be furnished. The Purchaser's engineer or its nominated representative shall have free access to the manufacturer's/sub-supplier's works to carry out inspections.

15. TESTING FACILITIES:

Bidder shall have adequate in-house testing facilities for carrying out all routine tests & acceptance tests as per relevant International/Indian standards.

16. MANUFACTURING FACILITIES:

The successful bidder shall submit the bar chart for various manufacturing activities clearly elaborating each stage, with quantity. This bar chart should be in line with the Quality assurance plan submitted with the offer.

17. SPARES, ACCESSORIES AND TOOLS

The bidder shall provide a list of complete set of accessories and tools required for erection and maintenance of LT ABC along with the installation procedure.

18. DRAWINGS AND DOCUMENTS:

Following drawings and documents shall be prepared based on TPCODL/ TPNODL/ TPSODL/ TPWODL/TPDDL/TPADL/TPC Specifications and statutory requirements with complete BOM and shall be submitted with bid.

- Completely filled in Schedule "A" Guaranteed Technical Particulars.
- Work Experience details
- Type test certificates.
- General descriptions of the equipment and all components including brochure.

After the award of the contract, four (4) copies of the drawings, drawn to scale, describing the equipment in detail shall be forwarded for approval and shall subsequently provide four (4) complete sets of final drawings, one of which shall be auto positive suitable for reproduction, before the dispatch of the equipment. Soft copy (compact Disk CD) of all the drawing, GTP, test certificates shall be submitted after the final approval of the same to the purchaser.

Following Drawings / Documents shall be submitted after the award of the contract.

SL.No	Description	For Approval	For Review information	Final Submission
1	Technical Particulars	✓		✓
2	Manual / Catalogues / drawings for all components		✓	
3	Technical details and test certificates of XLPE compound		✓	✓
4	Cross sectional area of the cable		✓	✓
5	Installation instructions		✓	✓
6	Instructions for use		✓	✓
7	Transport/shipping dimension drawing		✓	✓
8	QA & QC Plan	✓	✓	✓
9	Routine, Acceptance and type test certificates	✓	✓	✓
10	Fault level calculation for armor and manual	✓	✓	✓

All the documents and drawings shall be in English language only.

Instruction Manuals: Bidder shall furnish two (2) soft copies (CD) and four (4) hard copies of nicely bound manual (in

English Language) covering erection and maintenance instructions and all relevant information pertaining to the main equipment as well as auxiliary devices.

19. SCHEDULE- "A" GUARANTEED TECHNICAL PARTICULARS: (To be furnished by bidder)

All clauses and points in the specification to be complied as per Clause Number 4.0(GENERAL TECHNICAL PARAMETERS) & Clause Number 5.0 (GENERAL CONSTRUCTION)

20. SCHEDULE "B" DEVIATIONS:

(TO BE ENCLOSED WITH TECHNICAL BID)

All deviations from this specification shall be set out by the Bidders, clause by Clause in this schedule. Unless specifically mentioned in this Schedule, the tender shall be deemed to confirm the purchaser's specifications:

SL. No	Clause No.	Details of deviation with justifications

We confirm that there are no deviations apart from those detailed above.

Seal of the Company:

Signature
Designation