



## KERALA STATE ELECTRICITY BOARD Ltd

Incorporated under the Companies Act, 1956)  
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### ABSTRACT

RDSS - Tendering procedure and the Selection of the type of covered conductor for re-conductoring of 33 kV lines - Sanction accorded - Orders issued.

### Corporate Office (SBU-T)

BO (FTD)No.866,2022(D(T,SO,F&S)/T1/RDSS/2022-23/)

Thiruvananthapuram, Dated: 28.10.2022

- Read: 1. B.O. (FTD) No. 631/2022 (CA=3/AEE2/RDSS-Implementation) dated 21.07.2022.  
2. Office Order D(T&SO) No. 445/2022 (DIRTISO-AEE1/2022/1149) dated 05.04.2022.  
3. Letter No. DB1/TDN/G45/RDSS/22-23/1074 dated 22.09.2022 of the Chairperson, Technical Specification Committee.  
4. Letter No. CE/TRN/AEE2/RDSS/2022-23/1132 dated 03.10.2022 of the Chief Engineer Transmission North.  
5. Note No. D(T,SO,P&S)/T1/RDSS/2022-23/162 dated 05.10.2022 of the Director (Transmission, System Operation, Planning & Safety) (Agenda 19/10/22).

### ORDER

KSEBL has accorded sanction as per the B.O. read as 1<sup>st</sup> above to carry out the infrastructure works for loss reduction under RDSS on total turnkey mode with district as a minimum unit and to authorise the regional Chief Engineers to invite tenders for the entire work of district or combination of districts in total turnkey mode. The meeting chaired by the Hon'ble Minister of Electricity on 13.09.2022 has decided to proceed with the total turnkey mode of execution on regional basis. 499 circuit kilometres of 33 kV line re-conductoring works are proposed under loss reduction scheme in Phase I of RDSS.

A Technical committee has been constituted as per the Office Order read as 2<sup>nd</sup> above for finalizing the technical specifications of transmission materials to be procured for various works under RDSS. The Committee after analysing the pros and cons of various types of covered conductors available in the Indian market has submitted their recommendations as per the letter read as 3<sup>rd</sup> above. The Committee observed that even though power loss due to leakage can be avoided by using any type of covered conductor, the main part of power loss in the system being the IR loss, the covered conductor selected should have less resistance and high ampacity compared to the existing Dog conductor. The technical particulars of different type of 33kV class covered conductor available in Indian market are compared for selecting the suitable one.

The Committee suggested that among the various types of conductors, 120 sq.mm AAAC is found to be the most suitable one for the purpose of KSEBL. The resistance of this conductor is 0.259 to 0.261 ohms/km whereas that for Dog conductor is 0.2733 ohms/km (4.9% less).

The current carrying capacity of 120 sq.mm AAAC conductor is 345A to 350A as against 254A for Dog conductor (36.8% high). The breaking load of 120 sq.mm AAAC (34.9 kN) is also better (6.7% high) than that of Dog (32.7 kN).

In the case of ACSR category, the Committee suggested 125 sq.mm AL59 ACS as a preferred option for the requirement of KSEBL. The resistance of this conductor is 0.226 ohms/km which is 17.3% less than that of Dog conductor. The current carrying capacity (384 A) is 51.18% higher and the breaking load (40.2 kN) is 22.9% higher than that of Dog conductor. However, the weight of 125 sq.mm AL59 ACS conductor is 755 kg/km, which is 17.96% higher than that of 120 sq.mm AAAC (640 kg/km).

Interactions with the major manufacturers of covered conductors in India revealed that both ACSR and AAAC type covered conductors are being manufactured in India and that generally for sizes above 99 sq.mm, AAAC is the preferred option by the utilities in other states since the breaking load is sufficient to draw the line with AAAC itself as the size increases. Further, it was informed that the cost of AL59 ACS will be 2 to 3% higher than that of AAAC covered conductor.

In conclusion, the Committee suggested that covered conductors with 120 sq.mm AAAC and 125 sq.mm AL59 ACS are both found suitable as far as loss reduction perspective is concerned and also the specification of both are superior to that of ACSR Dog conductor in all respects. However, the weight of 125 sq.mm AL59 ACS conductor is about 18% higher than that of 120 sq.mm AAAC and also the price is higher than that of AAAC conductor. It is also noted that AAAC conductor is generally opted by the utilities in other states for drawing covered conductors of higher sizes.

As reported by the Chief Engineer (Trans. North) as per the letter read as 4<sup>th</sup> above, the performance of 33 kV covered conductors already in use in KSEBL is satisfactory. KSEBL had taken a decision earlier not to use AAAC in 11kV network based on the chances of breakage. As per the details now available, the issue is not significant in the case of 33kV covered conductor. Considering all the above, the Director (Transmission, System Operation, Planning & Safety), as per the note read as 5<sup>th</sup> above, suggested to use 120 sq.mm AAAC (All Aluminium Alloy Conductor) covered conductor for the 33 kV line reconductoring works under RDSS project.

Having considered the matter in detail, the Full Time Directors in its meeting held on 12.10.2022,

Resolved to accord sanction to use 120 sq.mm AAAC (All Aluminium Alloy Conductor) covered conductors for the 33 kV line reconductoring works included under RDSS phase I project under loss reduction scheme.

Further resolved that as allowed in the guidelines, the approach for execution shall be on partial turnkey basis and the high cost items (eg. transformer, ABC conductor, covered conductors) shall be procured and supply schedule prepared in such a way that if any State MSME/PSU is participating in the tender they shall get time period to ensure that there is no disruption in supply. Director shall complete the formalities to inform implementation modalities of all components of RDSS to Government to get approval and later submit the same to PFC, REC and MoP.

Resolved further that tendering of work shall be done either district wise or clubbing with backward districts. The RDSS tendering shall be done by October and accordingly all follow ups to be done.

Orders are issued accordingly.

**By Order of the  
Full Time Directors**

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**LEKHA G  
Company Secretary**

To:

The Chief Engineer (Transmission South)  
The Chief Engineer (IT, CR & CAPS)  
The Chief Engineer (Transmission North).

Copy to: The Financial Adviser/ Chief Internal Auditor/ Company Secretary

The TAs to CMD/ D(T,SO,P&S)/ D(D,IT&SCM/ D(G-E)/ D(G-C)/ D(REES,S,N,S &W))  
The PA to Director (Finance & HRM)  
The Deputy Chief Engineer (CAPS)  
The CA to Secretary (Administration)  
Stock File.

Forwarded / By Order

*[Signature]*

Assistant Executive Engineer