



ASSAM ELECTRICITY GRID CORPORATION LIMITED

OFFICE OF THE MANAGING DIRECTOR

Regd. Office: (FIRST FLOOR), BIJULEE BHAWAN, PALTANBAZAR; GUWAHATI - 781001

CIN: U40101AS2003SGC007238 GSTIN: 18AAFCA4973J9Z3

PHONE: 0361-2739520 Web: www.aegcl.co.in

MINUTES OF PREBID MEETING

Bid Identification No.:	AEGCL/MD/Tech-1230/Sarusajai GSS Upg/2026/BID Dated 14.08.2026
NIT No.:	AEGCL/MD/Tech-1230/Sarusajai GSS Upg/2026/NIT Dated 14.08.2026
Name of the Work	Turnkey Conversion of Existing 220 kV Sarusajai AIS Grid Substation into 220 kV GIS Grid Substation with Provision for Future Upgradation to 400 kV Substation
Funding Agency	Internal Source of AEGCL
Date of Pre-Bid Meeting	07/09/2026
Venue of Pre-Bid Meeting	Conference Room O/o the MD, AEGCL, 1 st Floor, Bijulee Bhawan, Paltan Bazar, Guwahati-01

OPENING REMARKS:

Smt. Jayashree Devi, CGM (PP&D), AEGCL extended a warm welcome to all the prospective bidders and introduced his team.

Sri Rituparna Khargharia GM (P&D), AEGCL briefed on tender Turnkey Conversion of Existing 220 kV Sarusajai AIS Grid Substation into 220 kV GIS Grid Substation with Provision for Future Upgradation to 400 kV Substation. It was assured to the prospective bidders that comprehensive reply/clarifications shall be prepared and uploaded in the AEGCL site as well as e-tender portal in response to their raised queries on the bid document.

NAMES OF THOSE PRESENT (Attendance Sheet enclosed herewith):

1. FROM EMPLOYER:

1. Smt. Jayashree Devi, CGM (PP&D), AEGCL
2. Sri Arup Kalita, CGM (O&M) LAR, AEGCL
3. Sri Rituparna Khargharia, GM (P&D), AEGCL
4. Sri Arunav Gogoi, GM (NEAP), AEGCL
5. Sri David Bathari, GM (Civil), AEGCL
6. Sri Himangshu Raj Gogoi, DGM (P&D), AEGCL
7. Sri. Rupjyoti Sarma, DGM (NEAP), AEGCL
8. Sri Satyendra Kumar, AGM, 220kV Sarusajai GSS, Division, AEGCL
9. Sri Dhriti Lochan Hazarika, AGM (BD), AEGCL
10. Smt. Madhusmita Choudhury, DM (Civil), AEGCL
11. Smt. Sumi Phukan, DM (NEAP), AEGCL



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2. FROM PROSPECTIVE BIDDERS:

A. BIDDERS THAT WERE PRESENT AT THE PRE-BID MEETING:

1. M/s JSP Projects Pvt. Ltd.
2. M/s Jakson Ltd.
3. M/s Kalpataru Projects International Ltd.
4. M/s Bajel Projects Ltd.
5. M/s Lumino Industries Ltd.
6. M/s SPLM Infra Ltd.
7. M/s ABI Energy Solutions Ltd. (Through VC)
8. M/s BNC Power Projects Ltd. (Through VC)
9. M/s Cabcon India Ltd. (Through VC)
10. M/s GROMA Infrastructure Ltd. (Through VC)
11. M/s GVPR Engineers Ltd. (Through VC)
12. M/s Naresh Agarwal Constructions Pvt. Ltd. (Through VC)
13. M/s R.S. Infra Projects Pvt. Ltd. (Through VC)
14. M/s Siemens Energy India Ltd. (Through VC)
15. M/s Skipper Ltd. (Through VC)
16. M/s Sterling and Wilson Pvt. Ltd. (Through VC)
17. M/s Texmaco Rail & Engineering Ltd. (Through VC)
18. M/s Universal MEP Projects & Engineering Services Ltd. (Through VC)
19. M/s VIKRAN Engineering Ltd. (Through VC)

MEMBERS OF THE PRE-BID COMMITTEE:

1. The CGM (PP&D), AEGCL
2. The CGM (O&M), LAR, AEGCL
3. The CGM (F&A), AEGCL
4. The GM (P&D), AEGCL
5. The GM (NEAP), AEGCL
6. The GM (Civil), AEGCL
7. The DGM (NEAP), AEGCL
8. The AGM (BD), AEGCL
9. The AGM (LAW), AEGCL

The queries submitted by the prospective bidders were discussed by the Pre-Bid Committee and the observations made are as follows in Table-1.

[Handwritten signatures and initials]

TABLE-1:
Queries on the Bid document

Name of Work: Turnkey Conversion of Existing 220 kV Sarusajai AIS Grid Substation into 220 kV GIS Grid Substation with Provision for Future Upgradation to 400 kV Substation

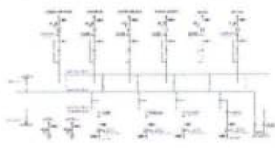
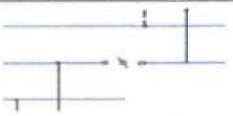
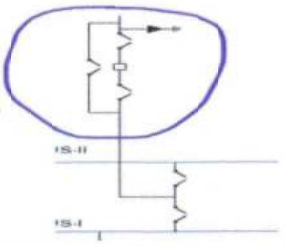
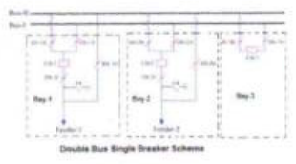
Sl. No.	Tender Clause/Description	Queries	Clarification from AEGCL
1	SLD 	There is a discrepancy in tender BOQ and tender SLD. Number of GIS bays for 132 and 220kV GIS are different. We understand no. of GIS bays to be followed from tender BOQ. Kindly confirm. Please note that in the received SLD, the extended busbar is shown, but we are considering a standard double busbar scheme. Also, as per the received SLD, the scope of supply is not clear. In the SLD, CB across DS is shown; however, in the GIS, this is not standard. As per the SLD, LA is not in the GIS scope of supply. Kindly provide the detailed SLD to clear the scope of supply.	As per BoQ. SLD shall be shared during detail engineering
2	SLD 	As per tender BOQ, there is no any busbar sectionaliser. However as per tender SLD, we observe disconnection in busbar. We understand that there is no any busbar sectionaliser in present scope of GIS as per tender BOQ. Kindly confirm	As per BoQ.
3	SLD 	 busbar scheme with bypass isolator shall be provided as shown below.	As per BoQ.
4	SLD-Sarusajai-SLD / CT & VT data	Please note that, as per the received SLD, only the CT ratio is specified. Therefore, the CT ratio has been considered as per the SLD, while the other CT parameters have been considered based on CT feasibility. The GIS OEM shall submit the detailed CT and VT parameters in the SLD. The GIS OEM can comply only with the specified parameters subject to design feasibility. Any changes to the specified parameters shall be subject to design feasibility and may have cost implications, if applicable. Kindly review and confirm	For CT, VT parameters refer Chapter-2 (Information to Bidders) of Volume-II
5	132kV GIS Building cum CRB / GIS Bay	Please note that a discrepancy has been observed regarding the GIS bay quantity between the BOQ and the received layout for the 145 kV GIS. As per the BOQ, 13 GIS bays are specified, whereas the received layout shows 15 GIS bays. Therefore, we have considered 13 GIS bays as per the BOQ. Kindly review and confirm the bay quantity.	As per BoQ

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6	220 kV GIS Building / GIS Bay	Please note that a discrepancy has been observed regarding the GIS bay quantity between the BOQ and the received layout for the 245 kV GIS. As per the BOQ, 10 GIS bays are specified, comprising 6 Nos. Line Bays, 3 Nos. Transformer Bays, and 1 No. Bus Coupler. However, the received layout shows 14 GIS bays, comprising 6 Nos. Line Bays, 4 Nos. Transformer Bays, 1 No. Bus Coupler, and 3 Nos. unidentified bays. Therefore, we have considered 10 GIS bays as per the BOQ. Kindly review and confirm the bay quantity.	As per BoQ
7	General/ Spare Parts & Special Tools	Please note that, as per the received BOQ, the special Spare parts are not mentioned, so we will provide the recommended special tools and spare parts. Kindly confirm.	As per BoQ
8	General/ GIS	We would like to inform you that, our offered model is type tested with having three Phase Bus bar encapsulated enclosure and Single Phase other equipment encapsulated enclosure. Hence we request to accept the same with integrated LCC. Also the 145kV GIS design comes all three phases encapsulated in one enclosure and it is applicable for all the equipment such as Bus bar, CB, DS, GIB etc. Kindly accept the same.	Encapsulation shall per type tested design. LCC shall be standalone.
9	General / Welded Enclosure	We Would like to inform you that, some of our component such as CB, Main bus, GIB shall be applied with welded enclosure. It was type tested as per IEC for welded enclosure, hence re type test is not envisaged	As per type tested design
10	Project Information Design Ambient Temperature : 50 degree centigrade	Offered GIS is rated for normal current of 3150 A at 40 Deg C. The same shall be derated at 50 Deg C ambient temperature. Derating calculation for the same shall be shared during execution stage. Request your kind acceptance.	As per BID
11	Project Information 245kV and 145kV Gas Insulated Switchgear 245kV and 145kV SF6 gas insulated switchgear shall have double main busbar arrangement	For 145kV GIS: There is a discrepancy in project information and tender SLD about type of busbar scheme. As per project information, double main busbar scheme is mentioned however in tender sld, main bus and transfer bus is mentioned. We understand that double main bus to be considered for present scope of 145kV GIS. Kindly confirm	Both 245kV and 145kV GIS shall be of double main busbar arrangement
12	Project Information Three nos.1-phase (isolated) SF6 ducts inside GIS hall (upto the outer edge of the wall of GIS Hall)	There is a discrepancy in CHAPTER 2: INFORMATION TO BIDDERS(ITB) and BOQ sr. No 17.06 of 245kV GIS and Sr. No 18.07 of 145kV GIS with regard to consideration of busduct calculations. We understand that BOQ to be followed. Kindly confirm whether our understanding is correct.	As per BoQ
13	Project Information This outdoor bus duct shall be measured from outer edge of the wall. SF6 gas duct inside GIS building are part of respective GIS Module.		
14	General CT Ratio	There is a discrepancy about CT ratio in tender SLD and BOQ. We understand that BOQ to be followed kindly confirm	For CT, VT parameters refer Chapter-2 (Information to Bidders) of Volume-II








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15	Project Information f) Three (3) numbers 1-phase, 1200-800/1A, (0.25-PX-PX-PX-PX), 6-core, multi ratio, current transformers duly distributed on both side of circuit breaker. (LV side of 200MVA) with minimum knee point voltage 1:2 of CT ratio. g) Three (3) numbers 1-phase, 600-300/1A, (0.25-PX-PX-PX-PX), 6-core, multi ratio, current transformers duly distributed on both side of circuit breaker. (HV side of 80MVA) with minimum knee point voltage 1:2 of CT ratio. h) Three (3) numbers 1-phase, 1200-600A/1A (0.25-PX-PX-PX-PX), 6-core, multi ratio, current transformers duly distributed on both side of circuit breaker with minimum knee point voltage 1:2 of CT ratio.	Considering compactness of GIS we request your acceptance on minimum knee point voltage 1:1 of CT ratio.	As per bid
16	Project Information 220 kV GIS Bus bars enclosures running across the length of the switchgear to interconnect each of the circuit breaker bay modules in Double Bus bar system. One (1) number 3-phase, 3150A, group operated isolator switches, complete with manual and motor driven operating mechanisms. One (1) number 3-phase, single pole group operated safety grounding switches, complete with manual and motor driven operating mechanisms. Three (3) numbers 1-phase Potential Transformers with Isolating Link One (1) number 3-phase, single pole group operated safety grounding switches, complete with manual and motor driven operating mechanisms separately for bus earthing.	For isolation purpose of Voltage Transformer during HV Test, motorised disconnectors as well as Potential Transformers with Isolating Link both are mentioned in given reference clause. In order to fulfill the purpose, Potential Transformers with manual Isolating Link will be sufficient. There will not be any requirement of motorised disconnectors. Kindly confirm	Motorised disconnector is required
17	Project Information 132 kV GIS i. Busbars enclosures running across the length of the switchgear to interconnect each of the circuit breaker bay modules in Double Busbar system. ii. One (1) number 3-phase, 3150A, group operated isolator switches, complete with manual and motor driven operating mechanisms. iii. One (1) number 3-phase, three pole group operated safety grounding switches, complete with manual and motor driven operating mechanisms. iv. Three (3) numbers 1-phase Potential Transformers with Isolating Link	For isolation purpose of Voltage Transformer during HV Test, motorised disconnectors as well as Potential Transformers with Isolating Link both are mentioned in given reference clause. In order to fulfill the purpose, Potential Transformers with manual Isolating Link will be sufficient. There will not be any requirement of motorised disconnectors. Kindly confirm	Motorised disconnector is required.
18	Project Information End Piece (Interface) module with the test link for Future extension (on both side) of Busbar module. The end piece module may be designed in such a way so that future GIS module may be tested without extending voltage to existing bus by removing the test link. End interface modules for both the buses shall be in on same alignment.	We understand that End Piece (Interface) module with the test link for Future extension shall be in scope of GIS who will perform extension in future and it is not part of present scope of supply. Kindly confirm	Future Extension Module shall be in scope of present GIS OEM.
19	Bid Vol-II Clause no. 16.4.7 100 micro-meter or smaller sintered stainless-steel particle filtered disc shall be provided in gas filling port.	Gas filling shall be done using particle filter, hence we do not envisage such filter. However separate filter unit can be used with supplied filling ports during gas handling in future.	As per bid

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20	Bid Vol-II Clause no. 16.4.8 Single or double mitered elbows shall be used with bus duct depending on mechanical stress.	The GIS OEM has a standard Design which type tested and supplied to numerous projects, of several PSU such as PGCIL major SEBs which includes AEGCL. Also, the elbow design is casted type. Hence, the same type-tested design shall be used for this project. Please accept as per the type-tested design.	Shall be as per type tested design
21	Bid Vol-II Clause no. 16.4.9 Continuous bus lengths without gas segregation shall not be acceptable for any voltage level.	Please note that, proposed busbar design FOR 220kV GIS is passive. We meet the requirement of service continuity, maintenance & repair without provision of any barrier in busbar. In addition to that by putting additional gas compartment/ barrier in busbar we are indirectly increasing gas leakage points in GIS. This type of passive non segregated busbar design is type tested as per IEC 62271-203 and accepted by various state & central utilities. We request your kind acceptance	Sagregation is required
23	Bid Vol-II Clause no. 16.4.11 As minimum flexibility in the layout arrangement, it shall be possible to remove the circuit breaker with both bus bar remaining in service	We infer the requirement calls for withdrawal of CB Interrupters during repair and maintenance, and not the circuit breaker enclosure as it is not subject to any faults	Confirmed
24	Bid Vol-II Clause no. 16.4.12 The material and thickness of the enclosures shall be such as to withstand an internal flash over without burns through for a period of 300 ms at rated short time withstand current.	This value shall be in line with IEC 62271-203	As per type tested design
25	Bid Vol-II Clause no. 16.4.14 Equipment. Inspection windows (View Ports) shall be provided for Disconnect Switch and both type of earth switches i.e. Maintenance and fast operating. Stroboscopic port shall also be provided.	View ports for DS & ES shall be provided. No stroboscopic port is available in market for GIS.	Accepted
26	Bid Vol-II Clause no. 16.4.14 Stroboscopic port shall also be provided.	Please note that the We will provide the Boroscope against this Model FLIR VS80. If there is any specification then kindly provide the same. Kindly confirm.	During detail engineering
27	Bid Vol-II Clause no. 16.4.19 The switchgear when installed and operating under the ambient conditions shall perform satisfactorily and safely under all normal and fault conditions. Even repeated operations up to the permissible servicing intervals under 100% rated and fault conditions, shall not diminish the performance or significantly shorten the useful life of the switchgear.	The switchgear is equipped with all necessary arrangements for protection from any internal and external faults without deteriorating its performance below recommended level. However, it is requested to inform the manufacturer in the event of any abnormal condition during its operation, so that suitable solution can be given.	As per bid
28	Bid Vol-II Clause no. 16.4.27 Manufacturer shall submit the study report of VFTO generated for GIS installation for 220 kV and above.	VFTO generally applies to GIS rated 400kV and above, thus a VFTO analysis report for 220kV GIS is not envisaged	Not required
29	Bid Vol-II Clause no. 16.4.35 In addition to above suitable portable scissor lift shall be provided for access of distant portion of GIS installation.		As per BoQ
30	3.1 GAS INSULATING SYSTEM: ii) Any other alarm necessary to indicate deterioration of the gas insulating system.	Not applicable for offered GIS	As per bid
34	Bid Vol-II Clause no. 16.4.43.6 C) However adequacy of number of sensors and their location shall be verified at site as per recommendations of above CIGRE Document No. 654. In case during site testing, additional UHF sensors are required, the same shall also be supplied & installed to complete the technical requirement.	The UHF sensor location and quantities are determined during the detail engineering stage. And UHF PD test will be done at the factory. Since the sensor is already technically verified during the design and testing stages, there is not need for additional sensors at site. Kindly accept the same.	Accepted

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35	Bid Vol-II, Clause no. 16.4.48 (UHF Sensor) However adequacy of number of sensors and their location shall be verified at site as per recommendations of above CIGRE Document No. 654. In case during site testing, additional UHF sensors are required, the same shall also be supplied & installed to complete the technical requirement.	The UHF sensor location and quantities are determined during the detail engineering stage. And UHF PD test will be done at the factory. Since the sensor is already technically verified during the design and testing stages, there is not need for additional sensors at site. Kindly accept the same.	Refer query reply 34
36	Bid Vol-II Clause no. 16.4.49 The horizontal clearance between GIB and GIS building /any other building wall shall be preferably three (3) meters.	The space/area utilization for such a configuration is very high and request customer to accept the standard spacing's between circuits considering the fact that the Bus-ducts are passive and requires almost no maintenance.	As per BID
37	Bid Vol-II, Clause no. 16.4.49 9) GIB Layout GIS manufacturer as per their design shall preferably use maximum three standard straight horizontal outdoor bus duct lengths for entire GIS installation to optimize the spare requirement.	We would like to inform you that, the GIB layout is governed by many factors such as site condition, Gas to Air Bushing location, GIS OEM design, clearances etc. Hence keeping the GIB types to three is not possible. We shall use least number of types as possible for GIB layout. We cannot apply using of maximum three standard straight horizontal outdoor bus duct lengths, but we will try to reduce and optimize the GIB type during the detail engineering stage. Kindly accept the same.	As per detail engineering
38	Bid Vol-II, Clause no. 16.4.52 Documentation xxv. Additional CB data to be furnished during detailed engineering: a) Design data on capabilities of circuit breakers in terms of time and number of operations at duties ranging from 100 % fault currents to load currents of the lowest possible value without requiring any maintenance or checks. b) Curves supported by test data indicating the opening time under close open operation with combined variation of trip coil voltage and hydraulic pressure. c) Contact Travel: Operating mechanism operating shaft travel and contact overlap of Circuit Breaker to be provided	Please note that the CB is type-tested and type test report will submit during detail engineering no need of additional data. Kindly accept.	As per type tested design
39	Bid Vol-II Clause no. 16.4.52 vi. DOCUMENTATION : vi. GIS Component Drawings	Being intellectual property, manufacturing drawings can not be shared.	Accepted
41	Bid Vol-II Clause no. 16.5.1.7.4 The breaker should be able to withstand all dielectric stresses imposed on it in open condition at lockout pressure continuously (i.e. 2 p.u. power frequency voltage across the breaker continuously)	The breaker should be able to withstand all dielectric stresses imposed on it in open condition at lockout pressure continuously (i.e. 2 p.u. power frequency voltage across the breaker for a specified period of time)	As per bid
43	Bid Vol-II, Clause no. 16.5.1.13 These shall confirm to class F and electrical endurance class E2 and mechanical endurance class M2.	We would like to inform you that our fast-acting earthing switch is type-tested for Class B electrical endurance class E1 & mechanical endurance class M1 as per IEC 62271-102. Kindly accept the same.	As per type tested design
44	Bid Vol-II Clause no. 16.5.1.13 HIGH SPEED MAKE PROOF GROUNDING SWITCHES These shall confirm to class F and electrical endurance class E2 and mechanical endurance class M2.	Electrical endurance class shall be E1 and mechanical endurance class M1 for high speed earth switch in line with IEC and type test report. Request your acceptance on same	As per type tested design
45	Bid Vol-II Clause no. 16.5.1.14.2.19 DISCONNECTORS (ISOLATORS) The mechanical endurance class shall be M2 as per IEC for 400kV, 220 kV and 132kV disconnectors. Electrical endurance class shall be E2.	Mechanical endurance class shall be M2. however, electrical endurance class E2 is not applicable for disconnector switch and also not mentioned in GTP.	As per bid








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46	Bid Vol-II, Clause no. 16.5.1.14.2.19 The mechanical endurance class shall be M2 as per IEC for 400kV, 220 kV and 132kV disconnectors. Electrical endurance class shall be E2.	The disconnector has mechanical endurance class of M2 and electrical endurance class is not applicable. Kindly accept the same.	As per bid
47	Bid Vol-II Clause no. 16.5.1.14.2.22 The degree of protection for the Drive Mechanism box of disconnector shall be IP55.	Considering Indoor requirement, IP4X class shall be sufficient. Consider this as deviation	As per bid
48	Bid Vol-II Clause no. 16.5.1.15.10 The safety grounding switches shall conform to the requirements of IEC- 62271-102 and shall have electrical endurance class: E2 & shall have mechanical endurance class M2 for 400 kV/220/132 kV voltage level.	Mechanical endurance class shall be M2. however, electrical endurance class shall be E0 for maintenance earth switch in line with IEC and type test report. Kindly accept the same.	As per bid
49	Bid Vol-II Clause no. 16.5.1.15.15 The degree of protection of the Drive Mechanism box of maintenance earth switch shall be IP55.	Considering Indoor requirement, IP4X class shall be sufficient. Consider this as deviation	As per bid
50	Bid Vol-II Clause no. 16.5.1.17.2 VOLTAGE TRANSFORMERS PT shall be provided with isolating link through external operation for the purpose of high voltage testing of GIS.	Noted, we are offering VT with manual IID.	Not accepted
51	Bid Vol-II, Clause no. 16.5.1.22.2.1 Minimum degree of protection of enclosure of LCC shall be IP55 The mechanism shall be housed in a dust proof cabinet and shall have IP: 55 degree of protection	We would like to inform you that, As per the received documentation we understand that the present scope GIS will be placed in inside GIS hall. The indoor GIS won't be subject to harsh environmental conditions thus we request you to kindly consider IP 44 Rating for OM box and IP 42 for LCC. Kindly accept the same.	As per bid
53	Bid Vol-II Clause no. 16.5.1.22.2.1 Minimum degree of protection of enclosure of LCC shall be IP55	Considering Indoor requirement, IP4X class shall be sufficient. Consider this as deviation	As per bid
54	Bid Vol-II Clause no. 16.5.1.23.1 The core insulation and outer sheath of cable shall be of halogen-free special polymer.	We have offered FRLS cables	As per bid
55	Bid Vol-II, Clause no. 16.7.6 The scope of such a design review shall at least include the following: 24. Proper Interfacing of High voltage test bushing. 25. TEV calculation for proper designing of insulators and bushings. 26. Ferro Resonance test report for GIS VT 27. Calculation of thermal expansion due to temperature rise in GIS.	The GIS offered is fully type tested and is compliant with the IEC requirements, hence additional calculations and design review is not envisaged.	As per type tested design
56	Bid Vol-II Clause no. 16.10 All transport packages containing critical units viz Circuit breakers and Voltage transformers shall be provided with sufficient number of impact recorders (on returnable basis) during transportation to measure the magnitude and duration of the impact in all three directions. In case of electronic impact recorder, the recording shall commence in the factory and must continue till the units reach site. The data of electronic impact recorders shall be downloaded at site and a soft copy of it shall be handed over to Engineer	GIS modules are rigidly build and does not gets affected by transportation vibrations. Large modules are shipped by splitting into small parts to reduce mechanical stress during transport. However, mechanical type shock indicators shall be provided for critical items like CB, CT, VT.	As per bid

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57	Bid Vol-II Clause no. 16.11.9 Cost of the raised platform for temporary storage is deemed to be included in overall cost. The raised platform needs to be made ready before arrival of GIS equipment at site. The contractor may use the available storage areas at site with permission of site in charge.	Shall be in the Civil contractor scope, Not in GIS OEM scope	under scope of the succesful Bidder
58	Bid Vol-II Clause no. 16.16.7 Special Tools	Excluded from GIS OEM scope of supply	under scope of the succesful Bidder
59	Bid Vol-II Clause no. 16.16.7 16.16 TESTING & MAINTENACE EQUIPMENT	Excluded from GIS OEM scope of supply	under scope of the succesful Bidder
60	Technical QR Control and Relay Panel and Substation Automation System including RTU / BCU of 220kV Voltage class The manufacturer must have designed, manufactured; type tested, which are in successful operation for at least 3 (three) years during last 7(seven) years as on the date of bid opening. The bidder should list such works executed to substantiate the requirement of this Clause. If. The manufacturer must have well established testing (including High Voltage Testing) & Service facility in India or an authorized agent in India to perform these activities,	Kindly clarify in case EPC is no a manufacturer of IED and EPC bidder take authorization from IED Manufacturer in India who have the required qualification criteria as mentioned, whether it will satisfy the requirement or not	Accepted
61	SCOPE OF WORK Associated transmission line works, including survey, design, tower foundations, towers, conductors, OPGW/earth wire, insulators, hardware fittings, stringing, line termination and commissioning of new/modified transmission lines.	Kindly clarify the detail scope of work of Transmission line	As per BoQ
62	SCOPE OF WORK B) Transmission Lines i) Conversion of 132kV Sarusajal-Kahilipara-1,2,3,4 and 132kV Sarusajal-Umtru-1,2 from overhead to cable terminated composite lattice tower line.	Kindly confirm is the complete dismantling of the existing 6 kct , removal of conductor along with all items like tension insulator, suspension insulators are also in bidders scope.	Dismantaling of existing substation not under current scope. However dismantaling under control area required for commissioning of new substation is under current scope.
63	Bid Vol-II , Clause no. 2.7 Right of Way for Transmission Lines: 2.7.3. Any right of way that may be required for execution of transmission line shall be arranged by the Contractor in favour of AEGCL. 2.7.4. For obtaining clearances from concerned departments and persuasion with the land owners to resolve the Right of Way issues are the responsibility of the Contractor. AEGCL will provide necessary assistance in obtaining aforesaid clearances from Government authorities, if required. For obtaining the clearances for Road, Railway, Power line crossings, PTCC clearance etc the Contractor shall be responsible for preparation and submission of requisite	We request AEGCL to remove any ROW related issues/Roads/Railway/power line/PTCC Clearance along with approvals from EPC bidders scope of work. The same shall be undertaken by AEGCL , EPC bidder shall support with documentation in his regard	As per bid
64	Bid Vol-II , Clause no. 2.7.6. Access roads to the work site shall be arranged by the contractor at his cost. All necessary compensation in this respect shall be borne by the Contractor.	EPC bidder shall quote as per line items mentioned in the BOQ, any other items which if required for getting material at site or completion of the job and is not a part of BOQ, these items shall be payable as per actuals.	As per Bid



TABLE-1:
Queries on the Bid document

Name of Work: Turnkey Conversion of Existing 220 kV Sarusajai AIS Grid Substation into 220 kV GIS Grid Substation with Provision for Future Upgradation to 400 kV Substation

65	Bid Vol-II , Clause no. 2.7.8 The Contractor shall make all required liaisons and accompany the concerned Revenue Authority for assessment of affected properties (both land and zirat) and shall take help of other Departments like PWD, Agriculture, Veterinary, Horticultures etc wherever deemed necessary for working out the compensation amount. For that purpose, the notification issued by the Govt of Assam No. PEL.219/2015/91 dated 10/03/2017 shall be strictly followed in conjunction with the Electricity Act 2003, The Telegraph Act 1885 and other relevant State /Central Acts. The contractor shall be liable for giving all assistance to concerned District Administration for preparation of valuation reports, estimates, provisional notice, compensation receipts and any other documents as per standard GOA or AEGCL formats. The contractor shall also make all necessary arrangements for joint survey of the land and zirat assessment with concerned officials of District administration, officials of Govt. of Assam and officials of AEGCL.	We request AEGCL to remove any Reasoning and other regulatory level approvals work from from EPC bidders scope of work.	As per bid
66	Bid Vol-II , Clause no. 2.7.13 The Acquisition of land for Sub- Stations shall be the sole responsibility of AEGCL. Whereas the Contractor shall be responsible for securing the RoW for transmission line works, AEGCL shall assist the Contractor for getting clearances from Railway, NHAI, Forest, Water, and other Govt./Statutory bodies. All statutory fees for getting clearance shall be to AEGCL's account	We request AEGCL to remove any ROW related issues/Roads/Railway/power line/PTCC Clearance along with approvals from EPC bidders scope of work. The same shall be undertaken by AEGCL, EPC bidder shall support with documentation in his regard	As per bid
67	Bid Vol-II , Clause no. 2.7.14 For settlement of ROW for private lands (including private water bodies), the clearances shall be extracted by the contractor based on the RoW notified by the Government. The land compensation amount shall be settled by the contractor through district revenue officials based on relevant provision of the GOA guidelines and as per the mechanism followed by district administration for assessment/fixation of land compensation. However, the compensation amount will be paid by AEGCL directly to the landowners on submission of Original award statement by the contractor to AEGCL against such land, duly assessed and signed by the concerned officials of District Revenue Administration. The acknowledgement for receipt of the amount by the landowner shall be through Non-judicial stamp paper.	We request AEGCL to remove any ROW related issues/Roads/Railway/power line/PTCC Clearance along with approvals from EPC bidders scope of work. The same shall be undertaken by AEGCL, EPC bidder shall support with documentation in his regard	As per bid
68	Bid Vol-II , Clause no. 2.7.15 For zirat compensation on account of crop damage, plantation damage, tree cutting etc the assessment shall be done jointly by the contractor and AEGCL officials in coordination with the district/revenue officials. Based on this assessment, the zirat payable to the beneficiaries shall be fixed and the same shall be paid to the beneficiaries by the contractor through district administration. The contractor shall then submit the Zirat bills duly endorsed by the concerned revenue official to AEGCL for reimbursement. The reimbursement of the compensation shall be made by the AEGCL within 30(thirty) working days from the date of submission of the bills.	We request AEGCL to kindly remove all the compensation related scope from EPC bidders scope. The same shall be undertaken by AEGCL only at their end.	As per bid

TABLE-1:
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Name of Work: Turnkey Conversion of Existing 220 kV Sarusajal AIS Grid Substation into 220 kV GIS Grid Substation with Provision for Future Upgradation to 400 kV Substation

69	Bid Vol-II , Clause no. 2.7.15 Statutory Clearances: It is the sole responsibility of the contractor to follow the standard clearances mentioned in the Indian Electricity Rules 1956 while execution of any works related to construction and energization of a transmission line. The contractor shall be responsible for obtaining documents/drawings/designs/maps etc making liaisons with local governmental bodies and making payments to concerned offices for obtaining approvals against statutory clearances. The contractor shall make themselves properly acquainted with all the prevalent governmental guidelines/notifications/regulations/documentary and monetary requirements as well as official procedures well in advance for ensuring no delay in work progress. AEGCL shall reimburse the amount incurred by the contractor while paying for statutory fees on submission of valid documentary evidences. The statutory clearances for which approvals are to be obtained are mentioned below: (i) PTCC (ii) Railways (iii) Airport Authorities (iv) Electrical Inspector (v) NHAI (vi) Any other clearances as deemed necessary Fees for Compensatory Afforestation, Forest Rights, etc shall be paid directly by AEGCL.	We request AEGCL to kindly remove all the Statutory clearance related scope from EPC bidders scope. The same shall be undertaken by AEGCL only at their end.	As per bid
70	Soil Investigation	we understand that AEGCL shall provide soil report, SBC data along with ERT Values. AEGCL soil report shall be binding type and civil and electrical design calculation shall be in line with the report. Any deviation from the same during the engineering stage shall be compensated	Soil Investigation is in the scope of the contractor. Reference standard drawing shall be provided from AEGCL.
71	Bid Vol-II, Clause no. 14.14 RECORDING METERS (ABT TRIVECTOR METERS): 14.14.1 General a) All meters shall be housed in dust proof, moisture resistant, black finished cases and shall be suitable for tropical use. They shall be accurately adjusted and calibrated at works and shall have means of calibration, check and adjustment at site. b) All these instruments and meters shall be flush mounted type and back connected, suitable for front panel mounting. c) The ABT meters shall be SAMAST compatible as per specification given in subsequent chapter.	Kindly provide make and model of ABT Meter which is accepted in AEGCL. Also provide input for consideration of Main & Check Meter	During detail engineering
72	Bid Vol-II, Clause no. 14.16.6 Circuit Breaker Protection a) LOCAL BREAKER BACK-UP PROTECTION SCHEME shall (i). Be tripole pole type. (ii). Have an operating time of less than 15 milli seconds (iii). Have a resetting time of less than 15 milli seconds (iv). Have three over current elements	LBB shall be part of main bus bar protection., we will not provide separate LBB relay . Kindly provide acceptance on the same	As per BID

TABLE-1:
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Name of Work: Turnkey Conversion of Existing 220 kV Sarusajal AIS Grid Substation into 220 kV GIS Grid Substation with Provision for Future Upgradation to 400 kV Substation

73	Bid Vol-II, Clause no. 14.23 TIME SYNCHRONISATION EQUIPMENT i) The equipment must be Type tested for Shock, Vibration, Dry heat, Radiated Emission, Electromagnetic field immunity, Electrostatic discharge immunity test in a Standard Laboratory. Type test report shall be submitted along with the bid. Type tests shall be more than five years as on opening of this bid. ii) The equipment shall be compliant to IEC 61850 Protocol. It shall also support the network protocols like NTPv4, SNTP, SNMPv1,2,3, SNMP Trap, SSH2, Ipv6, DHCP, HTTP (S), eMail, FTP, TELNET and Syslog	Time synchroniztion shall be provided through BCU. Separate time sync panel shall not be provided. Pis confirm	As per BID
74	Bid Vol-II, Chapter-32, 9.4.3	Gaskets shall be of EPDM material which is superior to Neoprene. In addition, they both offer good resistance to weathering and abrasion. However, EPDM is superior to neoprene in UV and Ozone resistance and may be more favorable when heat resistance is a factor. EPDM seals also provide better flexibility at low temperatures compared to neoprene.	As per type tested design
75	Bid Vol-II, Chapter-32, 9.4.4	Kindly accept that indoor installation Degree of protection shall be IP4X for total enclosure and IP2X within compartments.	As per bid
76	Bid Vol-II, Chapter-32, 9.4.6 i) Enclosure shall be constructed with rolled steel sections and cold rolled steel sheets of at least 2.0 mm thickness, Gland plates shall be 2.5 mm thick made out of hot rolled or cold rolled steel sheets and for non-magnetic material it shall be 3.0 mm.	Sheet Steel material - Offered Panels are made of Aluzinc material, Aluzinc sheet thickness shall be 2.0 mm. However front doors and end covers are made of CRCA sheet thickness 2 mm with special re-enforcement. The design has been type tested for full short circuit rating for internal arc resistance. Please suggest	As per type tested design
77	Bid Vol-II, Chapter-32, 9.4.6 iii) The Panel height may not exceed of 2600 mm	The Panel height shall be upto a max of 2700 mm	As per type tested design
78	Bid Vol-II, Chapter-32, 9.4.6 ix) The switchboard shall have the facility of extension on both sides. Adopter panels and dummy panels required to meet the various busbar arrangement, cable/bus duct termination and layouts are included in Contractor's scope of work	Please confirm the number of dummy panels are required	During detail engineering
79	Bid Vol-II, Chapter-32, 9.4.7 Thickness of silver plating shall not be less than 10 microns	Kindly accept the thickness of silver plating as 5 Micron instead of 10 Micron.	As per bid
80	Bid Vol-II, Ch.4, CL.4.6/4.8; Ch.2, CL.2.2 (referring to Volume-III - Bid Purpose Drawings, Schedule of Quantities & Misc. Documents)	Site layout/topographic drawings, soil investigation & meteorological data, ESIA report and mandatory spares list are stated to be contained in 'Volume-III'. Volume-III has not been received/made available along with the Bidding Document (only Volume-I & Volume-II furnished). Kindly upload/issue Volume-III including site layout drawing, soil investigation report, topographic data, ESIA report and the mandatory spares list, as these are essential for civil quantity verification and accurate price bid preparation.	No Volume III is available. Additional Documents uploaded may be considered as Volume-III.
81	Bid Vol-II, clause no. 5.6 (d) & BOQ.7 Type of foundation The following structures shall be supported on pile foundations: 1 Power Transformer foundations 2 Reactor foundations 3 Firewall foundation 4 GIS Building 5 Control Room Building (CRB) 6 Kiosk Building 7 Residential Buildings and Quarters 8 Any other structure specifically identified in the Contract Drawings or directed by AEGCL.	In CL.5.6(d) and BOQ it is specified pile foundation in major structures like buildings, transformer, firewall. If, soil investigation report recommends: Isolated/Mat/Raft/Spread/Open foundations for these structures with improvements, whether we need to follow soil investigation report recommendation or we have to mandatorily adopt pile foundation for structures as defined in Volume II. Kindly confirm.	As per Bid.

TABLE-1:
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Name of Work: Turnkey Conversion of Existing 220 kV Sarusajal AIS Grid Substation into 220 kV GIS Grid Substation with Provision for Future Upgradation to 400 kV Substation

82	Bid Vol-II, clause no. 5.7 (e) Steel Reinforcement	Reinforcement steel and structural steel is specified as TATA, Steel, SAIL, Jindal, RINL, we need to comply IS Codes for material technical compliance we shall be providing equivalent product confirming IS code requirements, for smooth execution.	As per BID
83	Bid Vol-II, clause no. 5.7 (e) Boundary wall	Pls share contour map to conclude on retaining structures below boundary wall Is it acceptable to AEGCL to construct different levels of boundary wall based on NGL without having retaining structures below, pls confirm.	
84	Bid volume - II Chapter -12 - TECHNICAL SPECIFICATION of SURGE ARRESTER Clause 12.6.0. SURGE MONITOR	Kindly confirm whether the surge monitor is to be provided with SCADA connectivity for both ammeter and surge counter or only Surge Counter.	As per BID
85	Bid Vol-II, clause no. 4.6 Soil data The general characteristics of the soil are given in the CHAPTER 3 OF "Volume III - BID PURPOSE DRAWINGS, SCHEDULE OF QUANTITIES AND MISCELLANEOUS DOCUMENTS". The information furnished is for reference purpose only. The Contractor shall be required to carry out soil investigation and related design based on his findings. The same would prevail for designing of tower foundation of transmission lines also.	Pls provide necessary soil data, which shall be binding with required SBC for us to estimate at bid phase and follow same during detail engineering during execution in case of any variation necessary time and cost shall be compensated.	As per Bid
86	Volume-II, Ch.4, Item 8 of Scope of Work (Dismantling/modification of existing AIS facilities); SCC CL.8.2 (24-months Completion Period) The work involves dismantling/relocation of live existing AIS equipment (including the 200MVA & 50MVA transformers under Items 39.03/39.04) while the substation remains in service, requiring planned shutdowns for safe cut-over to the new GIS installation.	The dismantling of the existing distribution/transmission system has not been carried out to date. It is understood that the dismantling work shall be undertaken after completion of the new substation and shall not form part of the Contractor's scope of work. The Employer is requested to kindly confirm the above understanding and clarify the responsibility for dismantling and disposal of the existing system.	Dismantling of existing substation not under current scope. However dismantling under control area required for commissioning of new substation is under current scope.
87	2.6 Scope of supply & Works: 2.6.5 Page No:28 VOLUME II: TECHNICAL SPECIFICATION Dismantling of the existing structures of Existing erected distribution/transmission system and transportation of these materials to designated location as provided by the employer. Includes necessary labor, loading, unloading works and hiring of machinery.	The dismantling of the existing distribution/transmission system has not been carried out to date. It is understood that the dismantling work shall be undertaken after completion of the new substation and shall not form part of the Contractor's scope of work. The Employer is requested to kindly confirm the above understanding and clarify the responsibility for dismantling and disposal of the existing system.	Dismantling of existing substation not under current scope. However dismantling under control area required for commissioning of new substation is under current scope.
88	2.6 Scope of supply & Works: 2.6.4 Page No:28 VOLUME II: TECHNICAL SPECIFICATION Erection and commissioning of common structures for housing / Installation all equipment with related civil works and earthing as per this tender specification and Bill of quantities	The existing houses/quarters allocated for staff are not part of the present scope of work. Accordingly, any erection, installation, modification, or associated civil and earthing works related to the staff houses/quarters shall be excluded from the Contractor's scope.	As per BoQ
89	Scope of Work (Volume-II, Pg.2, Item 2); BOQ Item 21.01 (Supply) & Item 39.03 (E,T&C -Dismantling/Relocation); BOQ-7 Item 4.02 (Fire Protection Wall - 80MVA) The 132/33kV transformation stage comprises 2 (two) new 80MVA transformers (BOQ Item 21.01) plus 1 (one) relocated existing 50MVA transformer (BOQ Item 39.03) = 3 nos. total. Similarly, the 220/132kV stage comprises 2 new 200MVA (Item 20.01) + 1 relocated existing 200MVA (Item 39.04) = 3 nos total.	BOQ-7 Items 4.01 & 4.02 (Fire Protection Wall) indicate a quantity of 4 Nos. each for 200MVA & 80MVA transformers respectively, against only 3 nos. of each rating in the overall scheme. Kindly clarify/correct the required quantity of Fire Protection Walls.	As per BoQ
90	Bid Vol-II, Ch.37/38 (Scope & Design of Transmission Towers); BOQ-4-LINE (Towers, Conductor & Hardware quantities)	Neither the route length, number of towers, nor the tower-spotting schedule for the new/modified transmission line stretch is furnished (also covered under the missing Volume-III drawings). Kindly furnish the transmission line route plan / single line diagram indicating the number of towers, span lengths and termination points, to enable correct assessment of the tower, conductor, insulator and hardware quantities in BOQ-4/5/6	During detail engineering

Unrestricted

TABLE-1:
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91	Bid Vol-II, Ch.4, CL4.12.2; Volume-I, Section-9, Appendix-1 (Terms of Payment – 'Plant and Mandatory Spare Parts')	Mandatory spares are required to be supplied as part of the Works, with quantities 'considered for evaluation of the bids' as per CL4.12.2, and payment terms for mandatory spares are separately provided in Appendix-1. The Price Schedule (BOQ) furnished does not contain any separate line item / schedule for Mandatory Spares. Kindly (a) furnish the mandatory spares list & quantities, and (b) clarify whether their cost is deemed included in the respective equipment supply rates or a supplementary BOQ schedule will be issued for pricing the same, since this is stated to be an evaluation parameter.	As per BoQ
92	Bid Vol-II, CHAPTER 2: 2.6.11 Page No:29 : TECHNICAL SPECIFICATION	Transformer:3x200MVA, 3-ph, 220/132kV (2 new trafo and 1 existing trafo to be shifted from existing substation) One (1) no. of existing 220/132 kV, 200 MVA transformer is presently in good working condition and has been in continuous charged/energized condition for the past two years. Therefore, the existing transformer to be considered for shifting to the proposed substation area, subject to necessary inspection, testing, and assessment of its suitability before shifting. O&M scope of this transformer to be clarified by employer.	During project implementation
93	Bid Vol-II, CHAPTER 2: 2.6.11 Page No:29 : TECHNICAL SPECIFICATION	Transformer:2x80MVA, 3-ph, 132/33kV and shifting of 1 existing 50MVA One (1) no. of existing 132/33 kV, 50 MVA transformer is presently in good working condition and has been continuously charged/energized for the past two years. Therefore, the existing transformer may be considered for shifting to the proposed substation area. O&M scope of this transformer to be clarified by employer.	During project implementation
94	CHAPTER 2 / Transformer & SAS/SCADA Requirements Relevant clauses: Digital RTCC, SCADA Integration & Interconnection	Online DGA/Moisture Analyzer and Online Insulating Oil Drying System shall be integrated with SAS/SCADA through IEC 61850, including required managed Ethernet switch in MB, redundant DC supply, FO/Ethernet, power/control cables, patch cords, MB-to-Control Room connectivity, software/licenses, configuration, testing and commissioning. The above requirements shall be considered fully included in the EPC Contractor's scope. All hardware, communication interfaces, switches, cables, power supplies, accessories, software/licenses, SCADA data-point mapping, configuration, testing, commissioning and integration required for complete monitoring/control through SAS/SCADA shall be provided by the Contractor, whether or not individually quantified in the BOQ. No additional cost shall be admissible on this account.	under scope of the succesful Bidder
95	CHAPTER 2 / Transformer & SAS/SCADA Requirements Relevant clauses: Digital RTCC, SCADA Integration & Interconnection	Online DGA/Moisture Analyzer and Online Insulating Oil Drying System shall be integrated with SAS/SCADA through IEC 61850, including required managed Ethernet switch in MB, redundant DC supply, FO/Ethernet, power/control cables, patch cords, MB-to-Control Room connectivity, software/licenses, configuration, testing and commissioning. The above requirements shall be considered fully included in the EPC Contractor's scope. All hardware, communication interfaces, switches, cables, power supplies, accessories, software/licenses, SCADA data-point mapping, configuration, testing, commissioning and integration required for complete monitoring/control through SAS/SCADA shall be provided by the Contractor, whether or not individually quantified in the BOQ. No additional cost shall be admissible on this account.	under scope of the succesful Bidder
96	Bid Vol-II 5.3 SITE CLEARANCE and Civil BOQ.	Referring to clause SITE CLEARANCE a) Clearing and grubbing The Contractor shall carry out clearing and grubbing of the entire project site, including all areas required for permanent works, temporary works, construction facilities, access roads, storage areas and any other areas as directed by AEGCL. In BOQ, only 1 job is mentioned for above site clearance. We request you to kindly provide complete details of site clearance to be done for proper estimation.	The bidders are requested to visit the site to access the quantum of site clearance required. The disposal of materials to be done considering the radius of 15KMs








TABLE-1:
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Name of Work: Turnkey Conversion of Existing 220 kV Sarusajai AIS Grid Substation into 220 kV GIS Grid Substation with Provision for Future Upgradation to 400 kV Substation

97	Bid Vol-II Substaion - Transformer A) Transformer:3x200MVA, 3-ph, 220/132kV (2 new trafo and 1 existing trafo to be shifted from existing substation) B) Transformer:2x80MVA, 3-ph, 132/33kV and shifting of 1 existing 50MVA	1) Kindly confirm whether dismantling of existing transformer is included in the bidded scope. 2) As existing transformer needs to be shifted, please provided the GA & GTP of the existing transformer. 3) As per BOQ1, only 4 Nos. NIFPS mentioned, kindly confirm whether NIFPS system also to be shifted from existing location against 2 Nos. (200MVA & 50MVA) transformer or new NIFPS shall be considered for the same.	1) Confirm 2) During Detailed Engineering 3) Confirm
98	Bid Vol-II, Clause B I Transmission line Conversion of 132kV Sarusajai-Kahilipara-1,2,3,4 and 132kV Sarusajai-Umtru-1,2 from overhead to cable terminated composite lattice tower line.	Kindly confirm whether dismantling of existing tower under bidder scope or not. Kindly confirm shutdown duration of each line for conversion as all are existing lines.	Refer query reply 86
99	Bid Vol-II, Clause C Remote end works Control and Relay Panel supply and ETC at 132/33kV Kahilipara GSS for 132kV Sarusajai-Kahilipara-1,2,3,4.	Kindly confirm A) Whether new control & power cables along with other accessories are to be considered for the same. B) Dismantling of existing CRP under bidder scope or not incl. removal of existing cables (if any).	1) As per BoQ 2) Included
100	Bid Vol-II, Clause no. 2.7 Right of Way for Transmission Lines	Kindly confirm RoW compensation in bidder scope or not.	As per bid
101	Bid Vol-II, Clause no. 4.13.3 It is envisaged that the software management courses shall extend for a period of approximately six weeks.	Kindly confirm whether software management courses shall be done at OEM premises or at site level.	As per suitability
102	Bid Vol-II, Clause no 5.3.e The Contractor shall carry out demolition and dismantling of all existing structures, buildings, sheds, boundary walls, fencing, foundations, pavements, underground structures, utilities and other obstructions within the project area as directed by AEGCL. The scope shall include excavation where necessary, dismantling, segregation of materials, loading, transportation, disposal of debris, backfilling of resulting excavations with approved material, compaction and restoration of the site to the required levels. All serviceable materials identified by AEGCL shall remain the property of AEGCL. The Contractor shall carefully dismantle, sort, stack, transport and store such materials at locations designated by AEGCL. Transportation and Disposal of any unserviceable material outside the campus shall be under scope of contractor. Sorting & Storing of serviceable materials within the campus shall be under contractors scope at the site allotted by AEGCL.	Kindly provide the approximate distance to where debris will be disposed and AEGCL store in where serviceable materials shall be stacked.	The disposal of materials to be done considering the radius of 15KMs. Serviceable materials shall be stacked as directed by Site Engineer from AEGCL within a radius of 15KMs.
103	Bid Vol-II, Clause no 5.6.d Reactor foundations, Kiosk Building, Residential Buildings and Quarters	As per layout Reactor foundations, Kiosk Building, Residential Buildings and Quarters are not mentioend. Kindly clarify the same whether all 3 are in bidder scope or not.	As per BoQ
104	Bid Vol-II, Clause no. 7 Drawings Civil Details for switchyard including fencing, officers hostels, staff hostel, security barrack, transit camp, RE residence, Store Building, 33kV control room building, security gate and all other related civil works.	Kindly provide the details of fencing, officers hostels, staff hostel, security barrack, transit camp, RE residence, Store Building, 33kV control room building, security gate.	As per BID and BoQ
105	Bid Vol-II, Clause no. 15.1 Gateway for remote control via industrial grade hardware (to SLDC) through IEC60870-5-101 & 104 protocol.	Kindly provide list data shall be intregated with SLDC and details of existing SLDC in where data shall be intregated.	During detail engineering
106	Bid Vol-II, Clause no. 15.1 Gateway shall also have redundancy and redundant Gateway shall not be housed in a single cabinet. The Gateway shall also have sufficient future expandability and this shall include data for all future provision bays as per Project Requirement.	Kindly clarify what is the meaning of "all future provision bays as per Project Requirement."	Refer Chapter 2 (Information to Bidders) of Volume-II

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Name of Work: Turnkey Conversion of Existing 220 kV Sarusajai AIS Grid Substation into 220 kV GIS Grid Substation with Provision for Future Upgradation to 400 kV Substation

107	Bid Vol-II, Clause no. 15.1 Vulnerability Audit and Penetration Testing by CERT-In empanelled firm: After successful commissioning of SAS, the successful Bidder shall do cyber Audit of the system by a CERT-In empanelled Cyber Security Auditor (to be approved by AEGCL). For that the company shall do Vulnerability assessment and Penetration testing of the SAS system and submit the report to AEGCL. The company shall fix any vulnerabilities found during the VA/PT.	Kindly confirm whether auditing cost shall under bidder scope or not.	under scope of the succesful Bidder
108	Bid Vol-II, Clause no. 15.1 Measurements The SAS shall also poll data from the Meter Server to gateway for onward communication to RCC.	Kindly provide details for communication with RCC.	During detail engineering
109	Bid Vol-II, Clause no. 15.30 GUARANTEES REQUIRED The Guarantee period will be stipulated for 1 year and beyond which Annual Maintenance Contract (AMC) will come into force.	Kindly confirm AMC will not bidder scope. If AMC under bidder scope, then what is procedure for making payment against that.	As per BoQ
110	Bid Vol-II, Clause no. 2.6.5, 2.6.11 and 4.1 (Scope of supply & Works:) Conversion is to be executed in an operational substation and includes dismantling, shifting, re-erection, shutdowns and temporary arrangements.	Kindly provide an element-wise shutdown and conversion philosophy identifying available outage durations, permissible simultaneous outages, temporary bypass arrangements, system constraints and AEGCL's responsibility for arranging shutdowns.	During project implementation
111	Bid Vol-II GCC Clauses 10.2, 40 and 41 Shutdown requirements Execution depends on timely availability of shutdowns, access, clearances and interfaces controlled by AEGCL or the system operator.	Please confirm that delay or non-availability of shutdowns, site access, operational clearances or Employer-controlled interfaces shall entitle the contractor to corresponding extension of time and reimbursement of demonstrable additional cost, including idle resources, extended insurance, BG charges and overheads.	Any shutdown required will be in the scope of AEGCL.
112	Bid Vol-II, BOQ & Layout Scope of work .2.0, BOQ & layout	As per Volumell, scope of work clause 2: Supply, erection and commissioning of power transformers: 3 × 200 MVA, 220/132 kV. BOQ: supply of GIS module for 200MVA, 220/132kV transformer-3 Layout: 4 nos. of transformers are shown We understand that we need to consider the scope of 220kV GIS modules as per BOQ. Kindly confirm	As per BoQ
113	Bid Vol-II, BOQ Scope of work .2.0, BOQ	AS per Volumell, scope of work clause 2: Supply, erection and commissioning of power transformers: 3 × 200 MVA, 220/132 kV. BOQ Line item-20: Supply of 200MVA , 220/132kV - 2 Nos Bidder request clarify whether Bidder consider supply of 2 Nos of 200MVA transformers as per BOQ or need consider as per scope 3 Nos of transformer. If 3-Nos of transformers are to be considered for supply, kindly provide revised BOQ.	As per BoQ
114	Sarusajai with 400kv layout-6-Model	The project layout indicates 4 Nos. of 200 MVA transformers. However, as per the BOQ/scope of work, it appears that 2 Nos. of new 200 MVA transformers are to be supplied/installed and 1 No. existing 200 MVA transformer is to be shifted from the existing switchyard. Kindly clarify the exact requirement and final quantity of 200 MVA transformers to be considered under the scope, including whether the fourth transformer shown in the layout is part of the present contract or an existing/proposed future transformer.	As per BoQ
115	Sarusajai with 400kv layout-6-Model	As per layout it has mentioned that 4 Nos. 132/33kV 80MVA Transformer. As per BOQ and scope of work, 2 Nos. new trafo & 1 No. trafo to be shifted from existing substation, but as per layout: 3 Nos. 80MVA trafo mentioned. Kindly clarify the same.	As per BoQ

TABLE-1:
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Name of Work: Turnkey Conversion of Existing 220 kV Sarusajai AIS Grid Substation into 220 kV GIS Grid Substation with Provision for Future Upgradation to 400 kV Substation

116	Sarusajai with 400kv layout-6-Model	Firewall for 132/33kV Transformer Please check 2 Nos. wall has been mentioned in between transformer. Whethet it is correct or shall we consider 1 no. firewall in between transformer as per standard.	As per BoQ
117	Sarusajai with 400kv layout-6-Model	Future Transformer - 220/132kV 200MVA and 132/33kV 80MVA Kindly confirm whether civil works for future transformers are excluded from the bidded	As per BoQ
118	Sarusajai with 400kv layout-6-Model	132kV Cable Route from Bay to 132kV Composit UMRU Kindly mentioned the cable for this.	As per BoQ
119	Sarusajai with 400kv layout-6-Model	Complete Single line diagram of the system Kindly provide the complete single line diagram of the system.	During detail engineering
120	Sarusajai with 400kv layout-6-Model	Kindly confirm bidder have no scope under "Future 400kV Switchyard".	As per BID and BoQ
121	Sarusajai with 400kv layout-6-Model	Kindly confirm the tentative location of 33/0.415kV 500KVA Transformer	During detail engineering
122	Bid Vol-II, Clause 5.10 The scope of work shall include the design, engineering and construction of the GIS building, Control Room Building (CRB), Residential/Colony Buildings and all associated civil, architectural and structural works complete in all respects in accordance with these Specifications, the approved drawings and applicable Indian Standards.	BOQ does not specifically provide any item/quantity for residential colony buildings, and only CRB-cum-GIS Building is indicated. Kindly clarify whether construction of residential colony buildings is included in the present scope.	As per BoQ
123	Tower Drawings	Please share Tower Drawing or else provide the BOM in terms of Total MT. I.e: HT & MS	During detail engineering
124	Manufacturer QR	Request to clarify the following for GIS and Power Transformer Manufacturer QR. GIS: 1. The GIS Type Test Report validity is specified as 10 years, whereas applicable CEA guidelines provide for 15 years. Most GIS manufacturers may have Type Test Reports complying with the 15-year validity criteria. Request AGCIL to please consider 15 years validity for GIS Type Test Reports, in line with applicable CEA guidelines, to facilitate wider manufacturer participation. 2. To establish the performance requirement only duly filled FORM-3 will be sufficient or separate Performance Certificate from end customer is required to prove the claim. Power Transformer: 1. To establish the performance requirement only duly filled FORM-3 will be sufficient or separate Performance Certificate from end customer is required to prove the claim.	As per latest guidelines of CEA
125	General	Please confirm all the metering and protection (Main Numerical Relay and Auxiliary relays such as Master Trip, Trip Circuit Supervision, Aux Trafo relay will be part of CRP and not the MV switchgear Panels. Please confirm	Part of CRP
126	General	In given documents 33kV MV Switchgear: SLD is missing. Request to please arrange the same.	During detail engineering
127	General	Feeder details, CT/PT details/ cable details are missing. Request to please arrange the same.	Refer Chapter 2 (Information to Bidders) of Volume-II

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TABLE-1:
Queries on the Bid document

Name of Work: Turnkey Conversion of Existing 220 kV Sarusajal AIS Grid Substation into 220 kV GIS Grid Substation with Provision for Future Upgradation to 400 kV Substation

128	General Approve Vendor List	Kindly provide the approved vendor/manufacturer list for the major materials and equipment covered under the scope of work, to enable the bidders to obtain quotations from the approved vendors and prepare their bids accordingly.	The preferred make/vendor list for major equipment and elements shall be as specified in the Technical Specifications / Employer's Requirements / approved vendor list of AEGCL, if applicable. In case a specific make/vendor list is not stipulated in the tender document, the bidder may propose reputed and established manufacturers meeting the specified technical requirements and compliance with all applicable standards, specifications and tender conditions. No particular make/vendor shall be considered mandatory unless specifically indicated in the tender document.
129	General Technical Civil - FGL	Kindly confirm whether the existing Finished Ground Level (FGL) of the AIS substation can be considered for the proposed GIS substation. If yes, kindly provide the existing FGL levels for our reference.	FGL shall be 1 meter above the existing Sarusajal (AIS) GSS switchyard.
130	General Technical Civil - Seismic zone	Please confirm Seismic zone is 4. Also, please share creepage and RTV requirement for said tender. We understand that the proposed project location falls under Seismic Zone V as per IS 1893 (Part 1):2016. We further understand that the 2025 edition of IS 1893 was withdrawn by BIS. Kindly confirm the applicable seismic zone and the latest applicable edition of the code to be considered for the design.	Consider Seismic Zone VI
131	General	For any Statutory clearances and permission required for tree cutting, forest clearance, shutdown permission shall be arranged by AEGCL. Reimbursement for the same shall be done by AEGCL directly. EPC shall provide necessary support only. Kindly confirm.	Confirmed
132	General	Kindly provide the following documents - 1. SLD having clear requirement and rating 2. Contour Layout 3. Details of pile foundation with drawings 4. Foundation drawings of the BUS DUCTS.	Design of SLD, contour, under the scope of bidder and shall be fixed during detail engineering. A sample pile drawing will be provided for reference.
133	General : Site Visit	During the site visit, it was observed that existing staff quarters are located away from the proposed site. The Employer is requested to kindly confirm that these existing staff quarters are not required to be demolished and do not form part of the Contractor's scope under this contract.	Confirm
134	General : BoQ	The Grand Summary is missing from BOQ_84250. Since the Grand Summary is required for incorporating the total value in the Price Bid Form and represents the consolidated value of all seven BOQs, we request the Employer to kindly provide the Grand Summary.	As per BoQ and as per provision of Assam Tender Portal
135	BoQ	As per Scope: 6-lines and 3- Transformer bays. So total Surge arrestors are required -27 Nos As per BOQ: 9 Nos of Surge arrestors are given We understand that we need to consider the 220kV surge arrestors as per BOQ. Kindly confirm.	As per BoQ
136	General : Contact Details	We intend to conduct a site survey to better understand the project requirements. To facilitate this, Please share the contact details of the concerned site person responsible.	Please Refer BID/NIT
137	General : ERT	We request you to kindly provide the ERT report of the proposed SS	Under the scope of the successful Bidder
138	General : kmz file	We request you to kindly share the kmz file for line	As per Bid
139	General : tower schedule	We request you to kindly share the tower schedule of the proposed line for better understanding	As per Bid
140	General : Tower design	1. We request you kindly clarify whether tower design drawings is provided by Client or in bidder scope. 2. If tower design is bidder scope, please clarify which utility drawings shall be adopted	Drawings will be provided. However, any modifications required during execution will be in the scope of EPC.

TABLE 1:
Queries on the Bid document

Name of Work: Turnkey Conversion of Existing 220 kV Sarusajal AIS Grid Substation into 220 kV GIS Grid Substation with Provision for Future Upgradation to 400 kV Substation

141	General : Royalty charges	Royalty of structural design	No separate royalty charges for structural design shall be payable by the Employer. The cost of all design, engineering, calculations, drawings and associated professional services required for execution of the works shall be deemed to be included in the Bid Price.
142	General : GIB prone area & Aviation indication requirement	We request you to clarify whether line comes under GIB prone area or any aviation indication requirement	As per BoQ
143	General	Kindly confirm whether Labour CESS is applicable only on the Service / Works component of the contract and is not applicable on the Supply component.	Labour Cess shall be applicable as per the provisions of the Building and Other Construction Workers' Welfare Cess Act, 1996, and the applicable rules/statutory provisions prevailing at the time of execution. The applicability and assessment of Labour Cess shall be determined in accordance with the applicable statutory provisions and the nature of the work/components covered under the contract
144	General	Hope the Dismantling of Existing Substation is not in bidder's Scope. Please confirm	Refer Reply 86
145	General	Please confirm whether any special considerations are required for the civil design, such as seismic zone, coastal zone, or other site-specific conditions	Confirmed
146	General (Site co-ordinates)	Kindly provide site co-ordinates to visit and ascertain site conditions.	As per Bid/NIT
147	General (Batching plant, labor camp, Fabrication yard)	Since the civil works include high volume of concreting, SEIL request permission to establish batching plant, labor camp, Fabrication yard within project premises.	Can be done subject to availability of space within proposed switchyard. In case sufficient space is not available, the Contractor shall arrange the required facilities outside the project premises at its own cost.
148	General (Disposal of Excavated Soil)	Kindly confirm excess excavated soil can be disposed within site premises.	Refer to SL No. 102 of this document
149	General (Underground Utilities)	Kindly confirm absence of buried cables, earth mat, or underground utilities in proposed area.	Covered in site clearance scope
150	General (Land Availability)	As a bidder we wish to know that land will be handed over prior to start of work without any hindrance within 10-15 days from receipt of LOA.	Yes
151	General (Hindrance & Time Extension)	Delays due to force majeure, rainfall, site issues shall be recorded and eligible for time extension and cost compensation. Kindly confirm.	As per BID
152	General (Use of M-Sand)	Kindly confirm use of M-sand is permitted due to non-availability of river sand.	Only River Sand Permitted
153	General (Construction Power and Water)	Bidder understands that M/s AEGCL shall provide a single tap point for Power and Water free of cost within the switchyard. Kindly Confirm	Under the scope of the successful Bidder
154	General (Site Clearance)	Kindly confirm removal of trees, poles and structures (if any) shall be in AEGCL scope.	Covered in site clearance scope
155	General (Right of way)	Bidder understands that any clearances/activities w.r.t. a) Forest Clearance and Tree Cutting (as applicable) b) Right of Way c) Railway Clearance (if applicable) d) Unauthorized Construction e) any other site access restrictions shall be in AEGCL scope. Kindly confirm. Any cost incurred w.r.t. the same shall be to AEGCL's Scope. Suitable time extension shall be given to the bidder for such access restrictions/other restrictions. Kindly Confirm.	As per BID
156	General (Existing yard demolition)	We understand with 10 days on receipt of Purchase order we will be given clearances to dismantle entire existing structures to plan our activities for sequencing of construction. Kindly confirm	Confirmed
157	220kV GIS Hall Layout	Request AEGCL to provide necessary load data on mezzanine floor slab.	As per applicable code
158	132kV GIS Hall Layout	Pls confirm Whether mezzanine floor shall be Deck sheet+RCC Slab	Yes
159	BOQ1- SL No. 2.01, 2.02, 2.03 Supply of Surge Arrester support structures, foundation bolts, nuts bolts etc as required and as per specification	Please provide the drawing of structure	Under the design scope of the successful Bidder
160	BOQ1- SL No. 3.03 220KV, 1250A Pedestal Mounted Wave Trap	Pedestal type Wave type asked, but structure not given. Please clarify	Under the design scope of the successful Bidder

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TABLE-1:
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Name of Work: Turnkey Conversion of Existing 220 kV Sarasajai AIS Grid Substation into 220 kV GIS Grid Substation with Provision for Future Upgradation to 400 kV Substation

161	BOQ1- SL No. 4.01, 4.02 Supply of CVT pipe/Lattice support structure, foundation bolts, nuts bolts etc as required and as per specification	Please provide the drawing of structure	Under the design scope of the successful Bidder
162	BOQ 1 - SL No. - 5 Supply of 36kV Indoor AIS Switchgear as per technical specification	Please share the SLD of 36 kV AIS switchgear panel . Switchgear asked AIS type , but 33 KV panel required of 33 KV GIS. Please clarify that 33 KV is GIS or AIS	During detail engineering
163	BOQ 1 - SL No. - 06	Isolator is available only for 33 KV. Plz confirm any requirement for 132 KV & 220 KV	As per BoQ
164	BOQ 1 - SL No. - 08	Hardware BOQ is not available for 220 KV Part. Please provide Disc Insulator Qty is not mentioned, It is considered with Hardware. Please confirm	As per BoQ
165	BOQ 1 - SL No. - 12 Supply of Bay Marshalling Kiosk alongwith support structures, foundation bolts and all other accessories as required	kindly provide technical specification for Bay Marshalling kiosk .	During detail engineering
166	BOQ Item 13.01 - 245 kV Bus Bar CRP; Chapter 15, Clause 14.5.1 - Control, Relay & Protection Panels	Supply of (245 kV GIS) Control, Relay & Protection Panel (Simplex Type): 245 kV Bus Bar CRP - 1 Set. The BOQ provides only 1 Set of 245 kV Bus Bar CRP. However, the technical specification indicates a minimum of 2 Nos. Bus Bar Protection Panels for the 220 kV system, and the GIS arrangement is specified with a double main busbar. Kindly clarify/revise the quantity of 245 kV Bus Bar CRP accordingly.	As per BoQ
167	BOQ Items 14.01 & 14.02 - 145 kV Line CRP; Chapter 2 - Project Configuration / Remote End Works	145 kV Line CRP (Line Differential) - 8 Sets and 145 kV Line CRP - 2 Sets; total 10 line-related CRPs. The project configuration indicates 6 Nos. of present 132 kV line bays, whereas the BOQ provides 10 line-related CRPs. Since remote-end Control & Relay Panel works at Kahilipara GSS for the Sarasajai-Kahilipara lines are also included in the tender scope, kindly clarify the intended allocation and application of these 10 CRPs, including the panels intended for local and remote-end installations.	LDR CRP: 4 Local, 4 Remote Line CRP: 2 Local
168	BOQ Item 14.06 - 145 kV Bus Bar CRP; Chapter 2 - 132 kV GIS Configuration	Supply of (145 kV GIS) Control, Relay & Protection Panel: 145 kV Bus Bar CRP - 1 Set. The 132 kV GIS is specified with a double main busbar arrangement, whereas the BOQ provides only 1 Set of 145 kV Bus Bar CRP. Kindly confirm whether a single Bus Bar Protection/Control Panel is sufficient for the complete double-bus 132 kV system or whether separate panels are required for the respective bus protection schemes	As per Technical specification
169	BOQ Item 15 - 36 kV Control, Relay & Protection Panels; 33 kV Indoor AIS Configuration	The 33 kV switchgear configuration includes PT bays; however, no separate PT Control/Relay/Protection Panel is identified in the CRP BOQ. Kindly clarify whether PT control, protection, metering and voltage-selection functions are intended to be integrated within the respective transformer/feeder CRP or BCU, or whether separate PT CRP/panels are required. The responsibility for complete PT bay control and protection shall be clearly defined in the BOQ.	To be included with the Feeder CRP. As per BoQ
170	BOQ 1- Supply (Substation) Item no. 18.07 145kV, 40kA for 3 sec, SF6 Gas Insulated Bus Duct (GIB) single phase- 750Mtr	We understand from BOQ that busduct quantity of 750Mtr mentioned is 1 phase quantity and for the offered type tested design of 3 phase encapsulated busduct we shall quote 750/3 = 250 meters . Kindly confirm.	750m of 3 phase encapsulated GIBD. Refer the updated BoQ
171	BOQ 1 - SL No. - 22 Supply of Battery & Battery Chargers, DCDB & ACDB as per specification	Technical Specification provided for 220 V & 48 V Battery & Battery Charger are different from the BOQ item . Kindly provide Revised technical Specification.	As per BoQ








TABLE-1:
Queries on the Bid document

Name of Work: Turnkey Conversion of Existing 220 kV Sarusajai AIS Grid Substation into 220 kV GIS Grid Substation with Provision for Future Upgradation to 400 kV Substation

172	BOQ 1 - SL No. - 23 Supply of Power Line Carrier Communication Equipments	1. No PLCC Quantities are mentioned in BOQ however HF Cable, EPABX & LMU quantities are required to be offered as S.No. 23.01 to 23.03. 2. Please confirm whether existing PLCC's are to be used, in case of same to be used please confirm make & model of existing PLCC. We understand there is no re-configuration/re-commissioning of existing PLCC's required. Please confirm our understanding. 3. Please provide details of LMU & LMDU along with HF Cable are to be used for which lines.	1) As per BoQ 2) Existing PLCC to be used and shifting, dismantling & recommissioning of it is under the scope of work 3) Details of existing make model to be provided during detail engineering
173	BOQ 1 - SL No. - 24 & 27 Supply of OPGW equipments as per specification a) Transmission equipment & SDH Equipment-STM-16 (ADM-upto five Direction)-2 Nos. Supply of OPGW equipments as per specification d) Termination equipment -2 Nos.	We request AEGCL to provide distribution of quantities of SDH & D&I Mux equipment at 220/132kV Sarusajai & Remote end. We understand there is no existing SDH equipment at 220/132kV Sarusajai AIS S/s	1 unit for Local end and 1 unit for Remote end
174	Cl. 29.2.6 Pg.687/939 BOQ S.No. 24 The Tenderer is supposed to make necessary survey for integration of the SDH Equipment with the existing NMS at SLDC, Kahilipara. For this if any traffic routing to SLDC is required through other Utilities; AEGCL will arrange the same. However, during interfacing with the existing telecom equipment if any hardware/software is required (at SLDC or Remote end), the Bidder has to offer the same with no cost implication to AEGCL.	We request AEGCL to provide Make/model of existing SDH Equipment & NMS make at SLDC Kahilipara.	During detail engineering
175	BOQ 1 - SL No. 25.01 to 25.04 a) 25.01 SL1-2 Set, b) 25.02 S4.1-2 Set c) 25.03 SFP to support STM-16 upto 40 Km-3 Set d) 25.04 SFP to support STM-16 upto 80 Km-2 Set	As per BOQ S.No. 25.01 to 25.04 SFP's in Set are mentioned, we understand that bidder has to offer SFP's as per BOQ (1 Set-1 No.) & SFP's for remote ends are already considered in BOQ quantity. Please confirm our understanding.	Confirm
176	BOQ 1 - SL No. 28.06 Tele-protection signalling equipment complying IEC 60834 (16 Commands) having E1/optical interface equipment-2 Nos.	We request AEGCL to confirm following for DTPC: 1. Qty distribution of DTPC. 2. We understand Main-1 & Main-2 protection (on PLCC & FOTE) are to be offered as no PLCC quantities are required to be offered or existing PLCC to be used these DTPC quantities are additional to existing PLCC protection for Main-1/Main-2 protection. Please confirm. 3. Request AEGCL to provide detailed DTPC specification specifying number of commands hardwired, IEC goose messaging required or not, distance for which optical interface (SFP) to be offered.	As per BoQ
177	BOQ 1 - SL No. 28.07 IEEE C37.94 for direct connection of line differential protection-2	We understand mentioned quantities are for Main & Remote end as C37.94 differential relay interface are proprietary in nature & both end differential relay interface card should be of same make/model. Please confirm.	Confirm
178	BOQ 1 - SL No. - 31.01 1000 sqmm, 145kV, 1-Core, XLPE cable along with all related accessories as required	1. As per clause 20.4 (1) of technical description & BOQ description, 132 kV cable is "armoured type". While as per clause 20.5.13 of technical specification, it seems Armouring is required for 33 kV grade cable only. So please clarify whether required 132 kV grade cable is required with additional Aluminium round wire armour along with corrugated Aluminium sheath or not. 2. Conductor material is not specified in BOQ. We presume cable is required with Copper conductor as per clause 20.4 of technical specification. Please confirm.	1) Without Armour 2) Copper
179	BOQ 1 - SL No. - 34	Supply of Mild Steel (Galvanized) Lattice Structures for Incoming and Outgoing gantries as required only for 132 KV Part, Plz suggest for 220 KV Part	As per BoQ

TABLE-1:
Queries on the Bid document

Name of Work: Turnkey Conversion of Existing 220kV Sarusajal AIS Grid Substation into 220 kV GIS Grid Substation with Provision for Future Upgradation to 400 kV Substation

180	BOQ 1 - SL No. - 34.01 132kV Column with Peak	Please provide the drawing of structure	Under the design scope of the successful Bidder
181	BOQ 1 - SL No. - 34.02 132kV Beam	Please provide the drawing of structure	Under the design scope of the successful Bidder
182	BOQ 1 - SL No. - 36 Supply of Fire Alarm & Detection including all accessories as per specification	Kindly provide Technical Specification for the mentioned item.	Shall be as per bid, applicable codes and general practice
183	BOQ 1 - SL No. - 37 Supply of HVAC & VENTILATION	Kindly provide Technical Specification for the mentioned item.	Shall be as per bid, applicable codes and general practice
184	BOQ-1-SS Item 38.02 (HVWS) & Item 38.03 (Nitrogen Injection Fire Protection	Item 38.02 (HVWS) is described 'for 200 MVA ICT-3 Nos and 80MVA Trafo-3 Nos', whereas Item 38.03 (Nitrogen Injection system, Qty 4 Nos.) is described 'for 200 MVA ICT-2 Nos and 80MVA Trafo-2 Nos'. Kindly clarify whether the Nitrogen Injection Fire Protection system is required only for the 2 new transformers of each rating, or for all 3 nos. (including the relocated/existing transformer), and correct the item description/quantity accordingly for uniform pricing.	As per BoQ
185	BOQ 1-SL No. 38.02 HVWS system (automatic emulsifier and manual hydrant point both) for 200 MVA ICT-3 Nos and 80MVA Trafo-3 Nos.	Please provide the detailed scope of work of HVWS system (automatic emulsifier and manual hydrant point both)	As per Design during detail engineering
186	BOQ 1 - SL No. - 39 Indoor Lighting	Kindly provide Technical Specification for the mentioned item.	During detail engineering
187	BOQ 1 - SL No. - 40 Outdoor Lighting	Kindly provide Technical Specification for the mentioned item.	During detail engineering
188	BOQ 1 - SL No. - 40.02 Lightning protection system (lightning masts 50 metres high, Lightning Spike, shield wire(7/4mm GI Shield wire), down conductors etc.) for complete substation	Please provide the structural drawing of lighting mast	Shall be under design scope of EPC
189	BOQ 1 - SL No. - 41.01 Supply of Public Addressing System, CCTV as per technical specification	Please provide the scope of work of the Public Addressing System, CCTV with technical data Sheet	During detail engineering
190	Erection BOQ-3, SL No.39.01 Erection and Testing & Commissioning of Lightning protection system (lightning masts 50 metres high, Lightning Spike, shield wire(7/4mm GI Shield wire), down conductors etc.) for complete substation alongwith construction of foundation and supply of all foundation materials and labour and earthing arrangement.	There is no supply of LM structure is provided under supply BOQ and no civil work for LM FDN in BOQ. Our understanding is Dismantalling of Existing LM structure and erection at required location along with new foundation work shall be quoted under BOQ item SL. no. 39.01 . Kindly confirm our understanding.	Refer to updated BoQ
191	Erection BOQ-3, SL No.39.02 Erection of Miscellaneous item (like MS Channel, Angle, Rail track for Transformers, Chequered plate, MS Grill plate, Switchyard and Bay Identification Name board, Anchor fastener and Display for Overall single line diagram photo with frame etc... as per site requirement and for overall completion of the project)	The erection of Miscellaneous item provided under BOQ dismantalling item. Our Understanding is dismantalling of existing miscellaneous item and erection of same at new project site location under this package shall be quoted under this item. Please clarify detailed scope of work under this schedule	Refer Reply 86
192	Erection BOQ-3, SL No.39.03 Dismantling, Transportation, Relocation, Re-erection, Testing and Re-commissioning of existing 132/33 kV, 50 MVA Transformer	Kindly provide the make detail of existing 132/33 kV, 50 MVA Transformer to be shifted and also confirm the requirement of OEM supervision for shifting, Testing and Commissioning of Existing transformer is to be required by AEGCL.	During detail engineering
193	Erection BOQ-3, SL No.39.04 Dismantling, Transportation, Relocation, Re-erection, Testing and Re-commissioning of existing 220/132 kV, 200 MVA Transformer.	Kindly provide the make detail of existing Transformer 220/132 kV, 200 MVA to be shifted and also confirm the requirement of OEM supervision for shifting, Testing and Commissioning of Existing transformer is to be required by AEGCL.	During detail engineering
194	BOQ 4 - SL No. - 1 Supply of Composite Towers	Kindly provide the detail tower Schedule of 132 KV & 220 KV composite towers.	During detail engineering

TABLE-1:
Queries on the Bid document

Name of Work: Turnkey Conversion of Existing 220 kV Sarusajal AIS Grid Substation into 220 kV GIS Grid Substation with Provision for Future Upgradation to 400 kV Substation

195	BOQ-4-LINE Item 1.01 (Composite Tower DD+9, 132kV) & Item 2.01 (132kV Tower DD+9)	Item 1.01 (Composite Tower, with provision for Surge Arrester/Cable Termination Kit mounting) and Item 2.01 (standard AAAC-suited Tower) are described as different tower types, but both indicate an identical quantity of 12.5816 MT. Kindly confirm whether these are two distinct towers required at site (i.e., total 2 nos. of 132kV towers), or whether this is a duplicated/carried-forward entry, since identical tonnage for two different tower designs needs clarification	Two Distinct Tower
196	BOQ 4 - SL.No. - 5.01 HTLS CCC Panther equivalent conductor	Please provide detail technical specification & GTP of the mentioned item.	Provided along with this documents
197	BOQ 4 - SL.No. - 8 Supply of Fibre Optic Approach Cable	As in BOQ only Fibre Optic Approach cable is mentioned, Kindly confirm if supply of OPGW fibre optic cable is in contractor's Scope or not.	No OPGW in present scope
198	Civil Works BOQ-7 Item 1.01 (Soil Investigation) and CLAUSE NO. 5.2 of CIVIL Technical Specification Under SOIL INVESTIGATION	We understand that soil investigation is included in our scope of work. As the project area is currently waterlogged/flooded, carrying out a reliable assessment of the existing soil strata and foundation requirements is difficult at the tender stage. Kindly provide the existing soil investigation report of the existing AIS substation for our reference. In case the Soil Investigation Report is not available, please provide the proposed pile foundation drawings/details, including pile diameter, length and other relevant design parameters. Alternatively, the pile foundation item may please be included on a unit-rate basis, with defined pile diameter and indicative/design length, to facilitate accurate and comparable tender pricing. Kindly provide Geotechnical Investigation Report and SBC (Safe Bearing Capacity) Report for the project site.	The SBC may be considered as 7-10 T/m². EPC shall carry out detailed soil investigation after award of the Contract, and the final SBC and other geotechnical parameters shall be established based on the actual site conditions and shall be used for the final foundation design. No additional payment shall be admissible on account of variation in the soil parameters established through the detailed investigation.
199	Civil Works- BOQ 7: Item no. 1.02 Site Clearance including necessary excavation and dismantling	During site visit we understood area of site clearance. There is huge scrape is laying in the area. Also, understand that dismantling of existing structure / building is limited to the area under this project scope of work. Kindly confirm our understanding. Kindly confirm that removal of existing scrape in site under this project scope of work is in the scope of Client. Please also clarify in the scope of dismantling work in detail. We request to kindly provide the number of buildings/structures proposed to be demolished, along with their approximate dimensions and construction details. Further, kindly provide the applicable lead distance and designated disposal location for disposal of the excavated material, muck and demolition debris. We shall not be able to assess same at this stage as it is unforeseen below ground, dismantling rcc, steel, major items qty to be quantified and amend BOQ accordingly.	All site clearance and dismantling works within the proposed project site, including existing boundary walls shall be under the Bidder scope. The Bidder shall assess the site conditions and make necessary provisions in its quoted price. No additional payment shall be made for any such clearance, dismantling, removal or disposal work required for the project.
200	Civil Works: BOQ-7 Item 1.03 (Site Preparation and Earthfilling with Compaction, Qty 130,000 CuM); Volume-I, Cl.5.1(b) (Quantity variation ±15%)	In the absence of the site layout/topographic drawing and soil investigation report (Volume-III), the basis for the earthfilling quantity of 130,000 CuM cannot be independently verified by the Tenderer. Kindly furnish the site layout drawing with existing and finished ground levels, or confirm that this quantity is a provisional estimate governed solely by the ±15% variation clause (Cl.5.1(b)) without any separate claim/verification right for the Bidder.	As per BOQ and TS
201	Civil Works: BOQ-7 Item 3.01 Construction of 200 MVA Power Transformer foundation with Burnt Oil Pit on pile foundation	Bidder request sample drawing for 200 MVA Power Transformer foundation.	Shall be as per design and under EPC scope
202	Civil Works: BOQ-7 Item 3.02 Construction of 80 MVA Power Transformer foundation with Burnt Oil Pit on pile foundation	Bidder request sample drawing for 80 MVA Power Transformer foundation.	Shall be as per design and under EPC scope
203	Civil Works: BOQ-7 Item 3.02 (Construction of 80 MVA Power Transformer Foundation, Qty 3 Nos.); BOQ Item 39.03 (Relocated 132/33kV, 50MVA Transformer)	Item 3.02 (foundation) at Qty 3 Nos. is presumably intended to cover the 2 new 80MVA transformers plus the relocated existing 50MVA transformer. Since the physical dimensions/footprint of the existing 50MVA transformer may differ from the new 80MVA units, kindly confirm whether the same foundation type/size is applicable for all 3 nos., or whether a separate foundation design/BOQ item is required for the relocated 50MVA transformer.	Shall be as per design and under EPC scope
204	Civil Works: BOQ-7 Item 3.02 Construction of 500 kVA Station Transformer foundation	Bidder request sample drawing for 500 kVA Station Transformer foundation.	Shall be as per design and under EPC scope

TABLE-1:
Queries on the Bid document

Name of Work: Turnkey Conversion of Existing 220 kV Sarusajal AIS Grid Substation into 220 kV GIS Grid Substation with Provision for Future Upgradation to 400 kV Substation

205	Civil Works: BoQ-7, Sl No. 6 HVWS with Water reservoir and Pumphouse Supply and installation of Deep tubewell, with appropriate depth required to reach aquifer with PVC casing pipe (200 mm diameter minimum), 3 HP submersible mortar pump, 40 mm diameter CPVC column pipe and Construction of Water reservoir and Pump house for fire fighting.	The tender provides for HVWS with Water Reservoir and Pump House; however, the requisite drawings/details have not been provided. The Employer is requested to kindly provide the relevant drawings/layout and details to enable proper assessment of the scope and cost.	Shall be as per design and under EPC scope
206	Civil Works: BOQ-7 Item 8.01 Approach and Internal RCC Road with precast kerb stone (The Bidder may quote the price based on the sample drawing provided with the Tender)	Please confirm the type of Approach (i.e. RCC or BT road or WBM) Approach road from main gate to near by road shall be constructed provided ROW shall be in scope of AEGCL. Kindly confirm Additionally Pls provide length and width of approach road.	As per BID
207	Civil Works: BOQ-7 Item 11.00	Please confirm the work need to consider in Associate work.	Refer to revised BoQ
208	Earth work at Dismantling Area / Site Handover	Kindly clarify whether the earthwork at the dismantling area for the new GIS over the existing office building is to be executed progressively/part-by-part, depending upon the availability of the dismantling area, or whether AEGCL will hand over the complete area/site to the Contractor prior to commencement of dismantling and earthwork activities.	Complete area will be handed over
209	Bid Vol-I, clause no. 4.2.2 (b) Average Annual Turnover Minimum average annual turnover of ₹ 540 Crore (Rupees Five Hundred Forty Crore) calculated as total certified payments received for contracts in progress or completed, within the last five (5) years. Single Entity: Must meet All Partners Combined: Must meet One Partner (Lead Partner): Must meet 60% Each Partner: Must meet 20%	Minimum average annual turnover of ₹ 540 Crore (Rupees Five Hundred Forty Crore) calculated as total certified payments received for contracts in progress or completed, within the last five (5) years. Single Entity: Must meet All Partners Combined: Must meet One Partner (Lead Partner): Must meet 50% Each Partner: Must meet 20% Turnover previous years shall be given weightage of 10% per year to bring them to current price level of the year based on factors indicated in table below: Year Up-dation factor Base Year (2026-27) 1.00 Year-1 (2025-26) 1.10 Year-2 (2024-25) 1.20 Year-3 (2023-24) 1.30 Year-4 (2022-23) 1.40 Year-5 (2021-22) 1.50	As per Bid.
210	Bid Vol-I, ITB Clause 2.20.21 Tender Hard Copy Hard Copy of Technical bid shall be submitted in the office of bid inviting entity on the date of bid submission up to 11.00 hrs	As location of most of the bidders is very long distance and due to practical reasons, it is requested that submission date of Hard Copy of technical bid, should be extended for 3 more days after the bid submission date.	As per BID
211	Bid Vol-I, Section-9, Appendix-4 (Time Schedule); SCC CL8.2	SCC CL8.2 requires the Contractor to complete part of the Facilities as per the milestone schedule finalized in Appendix-4. Appendix-4 (Time Schedule) in the Bidding Document is blank. Kindly furnish the detailed milestone/bar-chart schedule (design, manufacture, delivery, erection, T&C) so that the execution programme and cash-flow can be planned accordingly.	Time Schedule to be provided by bidder. Project Completion time is 24 Months
212	Bid Vol-I, Section-9, Appendix-5 (List of Major Items of Plant & Approved Sub-contractors)	Appendix-5 lists major items (GIS, Power Transformer, XLPE Cable, CRP & SAS) against which Approved Sub-contractors/Manufacturers are to be indicated. Appendix-5 is blank in the Bidding Document. Please clarify whether the Tenderer is required to fill and submit this Appendix along with the Bid, or whether it will be finalized/incorporated at the time of Contract Agreement execution.	As per BID
213	Shutdown / outage	Since the project involves conversion of an existing energized substation, please specify the planned shutdown/outage windows that will be made available to the contractor. this can be substantially affect manpower, erection sequence and project duration.	Shall be provided by AEGCL after award of the contract

TABLE-1:
Queries on the Bid document

Name of Work: Turnkey Conversion of Existing 220 kV Sarusajai AIS Grid Substation into 220 kV GIS Grid Substation with Provision for Future Upgradation to 400 kV Substation

214	SECTION - II - 2. Instructions to Bidders 2.31.4 The evaluation of a bid will exclude and not consider (i) IGST/SGST/CGST payable on the Goods/Items/services quoted. GST, if payable, shall be paid at the applicable rate. (ii) Any other component as specified in the BDS	Our understanding is that the Price Bid Evaluation shall be carried out excluding GST. Kindly confirm whether the evaluation shall be based on the bid price excluding GST	Confirm
215	6.1 (a) Letter of Financial Bid FORM-B1(a) Point (d). [amount of local currency in words], [amount in figures] The total Tender price from the Grand Summary should be entered by the Tenderer inside this box. Absence of the total Tender price in the Letter of Price Tender may result in the rejection of the Tender.	The Grand Summary is missing from the provided BOQ.84250. Kindly provide the Grand Summary. Further, please clarify whether the Total Tender Price to be indicated in FORM-B1(a) shall be exclusive of GST or inclusive of GST.	As per BoQ and as per provision of Assam Tender Portal
216	Bid Volume 1: Source of fund	Request you to kindly share details regarding source of fund i.e. AEGCL own funding or any external funding.	Internal Source of AEGCL
217	Bid Vol-I: Appendix 1 Terms of Payment	Referring to terms of payment of AEGCL for subject package, we request for change in payments terms i.e. inclusion of Interest free Advance 10% in Supply Portion, 10% Interest free Engineering Advance and 10% Interest free Advance for Service portion. In payment terms it is mentioned "Subject to availability of fund". Request you to please clarify the same.	As per BID
218	Bid Vol-I: Appendix 1 Terms of Payment Supply- 75% against supply of material and balance 25% after erection, completion & handing over of work.	It should be modified as: 80% on material receipt, 15% after completion of erection works and remaining 5% after handing over the work to Client.	As per BID
219	Bid Vol-I: Appendix 1 Terms of Payment Tender provides that "not more than 75%" of supply invoice value would be paid within 60 days and further makes payment subject to availability of funds.	Kindly amend the provision to provide an assured payment of 75% within 30 days of receipt and acceptance of material. Payment obligations under an EPC contract should not remain conditional upon availability of funds.	As per BID
220	Bid Vol-I: Appendix 1 Terms of Payment Supply payment retains 25%, of which 15% is linked to 50% erection and 10% to Completion/Operational Acceptance. Erection/civil payment retains another 10%.	Kindly consider payment of 90% of supply value upon receipt and acceptance, 5% on erection and 5% on Operational Acceptance. Alternatively, allow release of retained amounts against an equivalent retention BG to reduce the contractor's working-capital burden.	As per BID
221	Bid Vol-I Appendix 1; GCC Clause 12.3 Appendix 1 states that no interest shall be paid for delayed payment, while GCC provisions refer to interest on overdue sums.	Kindly remove the inconsistency and confirm that interest at the prevailing SBI MCLR plus an appropriate margin shall be payable for payments delayed beyond the stipulated due date.	As per BID
222	Bid Vol-I, Appendix 5 List of Major Items of Plant and Services and List of Approved Subcontractors	With reference to Appendix 5 – List of Major Items of Plant and Services and List of Approved Subcontractors, please clarify whether the details of the proposed major items of plant/services and subcontractors are required to be submitted at the time of bid submission, or whether the same can be submitted/approved after award of the Contract.	As per BID
223	Bid Vol-I, Appendix 8: Functional Guarantees	With reference to Appendix 8 – Functional Guarantees, please clarify whether the Functional Guarantees are required to be submitted along with the bid at the time of bid submission, or whether they are to be furnished after award of the contract by the successful bidder.	After award of the contract by the successful bidder
224	Bid Vol-I: BDS - ITB 2.37.1 Contract shall be for a period of 24 Months from the date of its signing	As per Bid document, completion time for subject tender is 24 Months. As per current market condition and demand, Supply of Major equipments i.e. GIS, Power Transformer are beyond 30 Months. Therefore, we request you to kindly extend the completion time from 24 months to 36 months. Please consider.	As per BID

TABLE-1:
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225	Bid Vol-I: Price Adjustment NOT APPLICABLE	Considering the project duration of 24 months and the frequent fluctuations in the prices of major materials and equipment, we request AEGCL to provide PV based on IEEMA for the below mentioned items 1. Power Transformer 2. EHV & LT Cables 3. GIS 4. Civil works - Reinforced concrete, Cement and building structure items 5. Steel items including tower and gabtry structure	As per BID
226	Bid Vol-I: Stamp Paper	Request you to kindly confirm stamp paper duty required for preparation of EMD. Also, we assume, EMD can be issued from any National bank. Please confirm.	As per BID
227	Bid Vol-I: Undertakings	As per bid documents, bidder required to submit undertaking on stamp paper of Rs 100 notarized. We request you to kindly allow bidders to submit undertaking on Letter head in tender stage. Further, bidder shall submit undertaking on stamp paper after award of contract by successful bidder. Please consider.	As per BID
228	Bid Vol-I: Sec-4, Evaluation and Qualification Criteria, 4.2.1 (b) Experience in Key Activities	In qualification requirement 4.2.1 (b) I. 220KV class capacity of Power/Auto Transformers. Kindly clarify, Power Transformer of 220kV or above voltage level is also acceptable.	As per BID
229	Bid Vol-I: Sec-4, Evaluation and Qualification Criteria, 4.2.1 (b) Experience in Key Activities	A. The tenderer must have the experience of design, install, test and commission of the following listed equipment's which are in successful operation for at least one year within last seven year as on the date of original bid submission. Kindly confirm, Design for Power Transformer is in Transformer OEM scope. EPC having experience of Supply, Erection, testing and commissioning is acceptable.	Confirm
230	Bid Vol-I: Sec-4, Evaluation and Qualification Criteria, 4.2.1 (c) Manufacturers/Subcontractor	In said clause, for GIS OEM, certain testing laboratories are mentioned. We request you to kindly include XIHARI testing lab also in this list or kindly mention TTR from IEC or equivalent from others lab not mentioned in this list is also acceptable. Please consider.	As per BID
231	Bid Vol-I: Sec-4, Evaluation and Qualification Criteria, 4.2.1 (c) Manufacturers/Subcontractor	FOR GIS, V. The Tenderer shall furnish performance guarantee for an amount of 20% of the ex-works cost of GIS equipment(s) for a period of five (5) years after completion of the defect liability period. No GIS OEM is accepting to this clause. Therefore, we request you to kindly remove this performance guarantee requirement or proposed new performance guarantee for an amount of 05% of the ex-work cost of GIS equipment. Please accept.	Accepted
232	Bid Vol-I Manufacturer Authorization	The Contractor agrees to supply spare parts for a period of years: Ten (10) Years.	As per BID
233	6.4 Manufacturer's Letter of Authorization3 FORM-B4 - (MLA)	As per Section V – Evaluation and Qualification Criteria, Clause 4.2.1(c), our understanding is that the Manufacturer's Letter of Authorization (MLA) is required for GIS, Power Transformers, CRP and SAS. Kindly confirm.	As per BID
234	Bid Vol-I Section-III, BDS, ITB 2.13.3, Undertaking by the contractor to supply spare parts for a period of 10 years.	Bidder required to submit an undertaking by the contractor to supply spare parts for a period of 10 years. We shall provide undertaking for supply of spare parts for a period of 10 years. However, AEGCL shall inform contractor in advance for said spare requirement. Also, payment for supplied spares shall be reimbursement at actual. Please confirm.	Confirm
235	Bid volume - I Section III - BDS - ITB 2.13.3 & Section VIII : SCC : Clause 7.3 Supply of spare parts for a period of years: Ten (10) Years	1. As mentioned in BDS , the undertaking for supplying the spare parts is to be provided during tender stage whereas as per SCC the same should be furnished after the award of contract . Kindly confirm . 2. Kindly provide AEGCL approved format for the above mentioned undertaking,	As per BDS

TABLE-1:
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Name of Work: Turnkey Conversion of Existing 220 kV Sarusajai AIS Grid Substation into 220 kV GIS Grid Substation with Provision for Future Upgradation to 400 kV Substation

236	Bid volume - I Section IV : Clause 4.2.1 (c) (V) & Section VIII : Clause 13.3.3 and 27.10 (b) Performance Security for GIS	As per mentioned Clauses, in Section IV it is mentioned that " If the tenderer is not GIS manufacturer, the agreement between the tenderer and GIS Manufacturer pertaining the performance guarantee for 20% of the ex-works cost of GIS equipment(s) for a period of five (5) years after completion of the defect liability period shall be submitted to AEGCL", whereas in SCC it is mentioned that " The Tenderer shall furnish performance guarantee for an amount of 20% of the ex-works cost of GIS equipment(s) for a period of five (5) years to cover the extended defect liability period." . We understand that according to SCC only Tenderer has to submit the performance security for 20% of ex works cost of GIS equipments after the award of contract. Kindly confirm .	Refer to Sl. No. 231 of this document
237	Bid volume - I Section VI - Bidding forms Manufacturer's Authorization for 220 KV GIS Equipment being offered	We request you to allow us to submit the MAF for GIS in manufacturer's Letterhead and duly notarized.	Confirm
238	Bid Vol-I, Clause 2.21 Submission of Technical Bid (Hardcopy) 2.21.1 In addition to online submission of the technical bid, the Bidders shall submit the hardcopy of the documents along with technical bid by post or by hand or drop in the box earmarked and placed in the office of the Procuring Entity within due date and time for submission as mentioned in the BDS. Bids so submitted shall enclose the original documents of the technical bid in sealed envelopes duly marked as "HARDCOPY OF THE TECHNICAL BID" along with the following details duly super scribed on it	Kindly confirm whether the complete set of technical bid documents is required to be submitted in hardcopy at your office.	As per IFB
239	Bid Vol-I ITB Clause No. 2.20.1 The Bidder shall furnish a Bid security in the amount of ₹ 7.5 Crores (Rupees Seven Crores Fifty Lakhs only) in the in the form of Bank Guarantee/DD/FIXED DEPOSIT from Nationalised Bank (India) in favour of ASSAM ELECTRICITY GRID CORPORATION LIMITED, AEGCL payable at Guwahati, Assam	As per the guidelines issued by the ministry of Finance, Government of India, Insurance Surety Bonds are permitted, Many Government organizations are accordingly accepting the same in lieu of Bid Security & Performance Security, we request you to kindly consider and accept the Insurance Surety Bond towards Performance Security and Bid Security for this tender.	Not allowed.
240		It is requested to kindly confirm whether the existing AIS yard is to be completely dismantled as part of the proposed GIS conversion.	Refer Reply 86
241		Please Provide below mentioned details for Transmission Line route survey: i) Existing road and access routes ii) Forest/vegetation areas- Houses/buildings and possible crossings iii) Railway, highway and river crossings iv) Existing HT/LT lines and other utility crossings v) Other relevant site constraints along the proposed TL alignment	Detailed survey under the scope of EPC
242		It is requested to provide the Google Map/KML/KMZ file with the proposed TL route, preferably before the site visit, so that the TL route survey can also be carried out effectively and the required site observations can be captured	As per BID
243	Bid Vol-I, ITB Clause 2.20.4 Bid Security Bid Security Shall be in the form of FDR/TDR/Bank Guarantee/Online EMD	In most of the utilities in India, Bid Security and Bid Performance Security is acceptable in the form of Insurance Surety Bond. It is requested to Accept Bid Security in the form of Insurance Surety Bond.	Refer to Sl. No. 239 of this document
244	Bid Vol-I, ITB Clause 2.20.6 Bid Security The Bid Security must remain valid for Forty Five (45) days beyond the original or extended validity period of the bid.	Kindly reduce the to 30 days without extend the validity period.	As per BID
245	Bid Vol-I, Clause no 40. Extension of Time for Completion The Time(s) for Completion specified in the SCC shall be extended if the Contractor is delayed or impeded in the performance of any of its obligations under the Contract.	The formal Extension of Time (EOT) along with EOT claims due to such extensions shall be discussed and issued within maximum 1 month period from the date of submission of delay analysis. Basis formal acceptance of Extension of Time and EOT claims by the contractor, the balance activities will be initiated and any delay due to issuance of Extension of Time (EOT) and claims will be to Employer's account.	As per BID

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246	Bid Vol-I, Clause no 41 The Employer may request the Project Manager, by notice to the Contractor, to order the Contractor to suspend performance of any or all of its obligations under the Contract.	The clause mentioned regarding suspension right of employer. In similar line, if the works get stopped for a substantial period i.e. more than 30 days due to reasons not attributable to the contractor or due to contractual defaults from employer's end, the contractor also will have the right to suspend the works till the issues are resolved within an acceptable time frame i.e. maximum 90 days. The necessary compensations due to this shall be discussed and agreed upon.	As per BID
247	Bid Vol-I, SCC Clause no 7.3 The Contractor agrees to supply spare parts for a period of years: Ten (10) Years. Payment of additional other than mentioned in BOQ will be made as per mutually agreed rates.	Kindly mentioned the spare parts and make mandatory provision under commercial bid to avoid any discrepancies during contract execution.	As per BOQ
248	Bid Vol-I, Chapter 4.12.2 - Mandatory Spares Employer has indicated the requirement of Mandatory Spares in CHAPTER 2 of "Volume-III- Bid Purpose Drawings, Schedule of Quantities and Miscellaneous	In tender documents Volume-III is not available. Kindly Provide Volume-III for bid costing. It was discussed in prebid meeting, kindly confirm that there is no requirement of any spares of any item other than mentioned in BOQ.	No Volume III is available. Additional Documents uploaded may be considered as Volume-III.
249	Bid Vol-I, Form EXP-3 Subcontractors (Contract for the Major Items) In foot note it is for PQR with criterion 4.2.1 ('c')	Subcontractor (Supplier of Major Items) only provide performance certificates from Utilities. Such detail as mentioned in EXP-3, Subcontractor (Supplier of Major Items) shall not provide in this Form EXP-3. All documents as mentioned in clause 4.2.1 (c), will be submitted with bid as required. It is requested to accept Performance Certificate issued by Utilities, if EXP-3 pertains to subcontractors (Vendors of Major Items)	As per BID
250	Site Development Tree Cutting	As per site big quantity of old/grown up trees are standing in the proposed substation working area. Before start of work, these are to be cut & removed from site. Our Understand is tree cutting permission from competent authorities should be in the scope of AEGCL. please confirm our understanding.	Covered in site clearance scope
251	Dismantling of Existing Infrastructure and Disposal/Transportation of Materials	The scope includes dismantling of existing infrastructure such as sheds, offices, stores, etc. However, the BOQ does not clearly specify the handling of existing materials lying within these structures/areas. Kindly clarify whether collection, loading, transportation and shifting of dismantled/existing materials to the nearest designated location/store is included in the contractor's scope.	Confirm
252	220KV ,132kV and 33kV Existing Yard dismantled scope of Work	Our Understanding is dismantling of existing 220kV ,132kV and 33kV switchyard work is not in present scope of work. Kindly confirm our understanding.	Refer Reply 86
253	4.2.1 (a) Contracts of Similar Size and Nature under 4.2 Qualification Criteria The tenderer must have designed, supplied, erected, tested & commissioned including Civil works complete at least One (1) no. AIS/GIS of 220 KV or above voltage class; The above credential shall be from any state/ central power utility and the same should have been in successful operation for at least one year within last 7 (Seven) years as on the originally scheduled date of bid opening	We have executed 220 Sub Station in which 220 KV Transformers were supplied by Department and we have erected, commissioned (including civil works). Kindly confirm if we are eligible to bid.	As per BID
254		The tenderer must have designed, supplied, erected, tested & commissioned including Civil works complete at least One (1) no. AIS/GIS of 220 KV or above voltage class; The above credential shall be from any state/ central power utility and the same should have been in successful operation for at least one year within last 10 (Ten) years as on the originally scheduled date of bid opening	As per BID
255	4.2.2 Financial Situation: 4.2.2 (b) Average Annual Turnover. Minimum average annual turnover of ₹ 540 Crore calculated as total certified payments received for contracts in progress or completed, within the last five (5) years.	(i) We understand that turnover of FY 25-26 shall be included. Kindly Confirm. (ii) We request to accept the Turnover from manufacturing sources.	As per BID
256	EMD & PBG	As the PBG amount is @ 10%, we hereby request to accept Insurance Surety Bond against EMD and PBG. We request to accept EMD/PBG by any member of JV.	Not allowed.


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257	Bid Vol-I, Clause no. 13.3.1 , Page No-130 The amount of performance security, as a percentage of the Contract Price for the Facility shall be: ten(10) percent of the contract price.	Please accept the 3% performance security	As per BID
258	Bid Vol-I, GCC Clause 13.3.3 Extended guarantee for GIS equipment beyond DLP shall be 20% for 5 years at be submitted by bidder.	It is too high and not in accordance with established practice in India. It is 10% amount of the GIS equipment for 5 years. Kindly amend it to 10%.	Refer to Sl. No. 231 of this Documents
259	Bid Vol-I, GCC Clause 13.3.3 The amount of the Security shall be 20% of the GIS equipment cost and the bank guarantee to be submitted in Non-Judiciary stamp papers of worth minimum Rs. 100/-	Kindly confirm whether BOQ Amount treated as GIS cost.	Refer to Sl. No. 231 of this Documents
260	Bid Vol-I, Clause 22 Installation As per Labour Act applicable in the State of Assam.	Kindly confirm whether BOCW applicable under this tender.	Confirm.
261	4.2.1 (C) Manufacturers/Subcontractor Guarantee for an amount of 20% of the ex-works cost of GIS equipment(s) for a period of five (5) years after completion of the defect liability period. This performance guarantee shall be in addition to Contract Performance Guarantee to be submitted by the tenderer to cover the Contractor's extended defect liability in accordance with the provision in the SCC, pursuant to GCC Subclause 27.10. If the tenderer is not the manufacturer, the agreement between the tenderer and the GIS manufacturer containing the terms and conditions pertaining to this performance guarantee for 20% of the ex-works cost of GIS equipment(s) for a period of five (5) years after completion of the defect liability period shall be submitted to AEGCL, 3 months prior to the expiry of the defect liability period.	This clause was applicable when Chinese supplier were allowed. Now chinese OEMs are not allowed and OEMs of GIS who are registered in India are heavily booked and not agreed to submit PBG of 20%. It is requested to delete this clause.	Refer to Sl. No. 231 of this Documents
262	Site Visit	We request to arrange site visit to optimize our costing.	As per BID/NIT
263	Bid Vol-I, SCC p.132 Applicable rate for liquidated damages shall not exceed: ½% (half percent) per week. Maximum deduction for liquidated damages: 10 (ten) percent of contract price.	Kindly clarify whether LD will be calculated on the total Contract Price or only the value of the delayed portion/facility. We request you to Consider the Liquidated Damages on unexecuted portion of the Contract.	As per BID
264	Bid Vol-I, SCC: 27. Defect Liability b) The other critical components covered under the extended defect liability period are GIS equipment and the period shall be for five (5) years beyond the defect liability period of the contract (as per clause 27.2 of GCC). The Tenderer shall furnish performance guarantee for an amount of 20% of the ex-works cost of GIS equipment(s) for a period of five (5) years to cover the extended defect liability period.	The bidder already Submitting 10% performance Bank Guarantee. We request you to remove this Clause. Since the complete 100% GIS scope is already covered under the EPC scope, the requirement of an additional 20% GIS Bank Guarantee may please be reviewed and removed from the tender. The additional 20% BG requirement would result in duplication of the already covered GIS scope and additional financial burden, which would ultimately impact the overall bid price and competitiveness.	Refer to Sl. No. 231 of this Documents
265	Bid Vol-I, Sec. IV, Cl. 4.2.1(b), pp.33-34	For key activities, experience is required for 220 kV transformers, 220 kV AIS/GIS CB bays, C&R panels, RTU/BCU/SAS and control-room civil works. Kindly clarify whether these experiences may be demonstrated through separate qualifying projects, or whether all activities must have been executed under one project.	As per BID
266	Bid Vol-I, Sec. V, p.40	The BOQ quantities are stated to be provisional and may vary by +15% / -15% in terms of total Contract Price. Kindly clarify whether the ±15% variation applies item-wise, schedule-wise or only to the aggregate Contract Price, and how additions/deletions of individual BOQ items will be valued.	Over all
267	Bid Vol-I Section V, Clause 5.1(b) BOQ quantities are provisional and may vary from +15% to -15% in terms of total Contract Price	Kindly confirm that all quantity variations shall be paid at the accepted item rates. Please also confirm that any cumulative change beyond ±15% shall be implemented only through a mutually agreed Change Order with corresponding price and time adjustment.	Agreed

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268	Bid Vol-I, Sec. V, p.40 & GCC/SCC	Items not specifically mentioned in the Price Schedule but required to complete the works are deemed included in other items. Kindly clarify whether new/additional works arising due to Employer's revised requirements, unforeseen site conditions or revised drawings will be treated as variation and paid separately.	As per BID
269	Technical Civil - Site demolition	We understand that demolition/dismantling of the existing AIS substation is included in the present scope of work. Kindly provide the existing AIS layout/drawing to identify the extent of dismantling and demolition works to be considered.	As per BOQ
270	Technical Civil - Material	We propose to consider the following materials and concrete grades for the works. Kindly confirm: Cement: PPC; Reinforcement Steel: Fe 500/Fe 500D (Primary Make); Structural Steel: IS 2062 (Primary Make); RCC Structures: M20; Pile Foundation/Road Structures/Water-Retaining Structures: M25; PCC: M10, 75 mm thick as levelling course below RCC works.	As per BID
271	Technical Civil - Approach road	We understand that the approach road to the existing substation is already available. Accordingly, no provision for construction of a new approach road has been considered in our offer. Kindly confirm.	The road within campus shall be under bidders scope
272	Technical Civil - Switchyard structure	We propose to design the lattice-type structures in accordance with IS 802 (Part 4):2023. Kindly confirm that the same is acceptable for the project.	The more critical requirement between codes shall be adopted for design.
273	Technical Civil - Switchyard structures factor of safety	As per the DBR, the factor of safety is indicated as 1.65 under normal conditions and 2.2 under short-circuit conditions. However, IS 802 (Part 4):2023 specifies different design criteria/factors for the respective loading conditions. Kindly confirm the applicable factor of safety and design criteria to be adopted for the lattice-type structures.	The more critical requirement between Bid and IS 802 (Part 4):2023 shall be adopted for design.
274	Technical Civil - Transformer/Reactor	the foundations for Transformers and Reactors shall be of pedestal/block type. Accordingly, grating over the Transformer/Reactor foundation has been considered in our offer as per the technical specification. Kindly confirm.	Shall be decided during detailed engineering as per standard practice
275	Technical Civil - Fire wall	We have considered RCC-framed firewalls with brick infill. The number, height and length of the firewalls will be finalized based on the approved electrical layout during detailed engineering. Kindly confirm.	As per revised BOQ and drawing
276	Technical Civil - Fire fighting Building	We have considered RCC-framed structures with brick masonry for the external and internal walls of the Fire fighting buildings. The building sizes and heights will be finalized based on design requirements and the approved electrical/layout requirements during detailed engineering. Kindly confirm.	Yes
277	Technical Civil - Fire fighting Water tank	We have considered an above-ground RCC fire water tank with a steel-truss roof. The fire water tank capacity will be considered as per the tender BOQ of 184.45 m ³ . Kindly confirm.	As per Design during detail engineering
278	Technical Civil - BOQ General	We understand that any new/additional line item required for completion of the substation works, which is not included in the present BOQ/Price Schedule, shall be treated as an additional item and paid separately based on mutually agreed rates. Kindly confirm.	As per BID
279	Technical Civil - BOQ General	We understand that the quantities indicated in the Price Schedule/BOQ-7 are tentative. The actual quantities shall be finalized based on detailed engineering and shall be measured and paid as per the quoted unit rates. Kindly confirm.	As per BOQ
280	Technical Civil - BOQ General	We understand that the Pre-Engineered Building (PEB) shall be designed considering the requirements of Clause 12 of IS 800:2007, wherever applicable. Kindly confirm.	As per IS 800:2007 and other applicable codes
281	General	It was informed in meeting that NGL of proposed substation shall be +1 Meter from existing FGL. For this retaining wall shall be required and there has not been any items for retaining wall. It is requested to add this in BOQ quantities.	As per revised BOQ and Sample drawing
282	Bid Vol-II, Scope of Work	Please confirm that BOQ quantities shall govern pricing where any mismatch exists between BOQ and Technical Specification.	As per BoQ
283	Bid Vol-II, Scope Item 1	Kindly provide BOQ-to-Scope mapping matrix showing complete coverage of all supply and services.	During detail engineering
284	Bid Vol-II, Future 400 kV Provision	Define exact scope of future 400 kV provision, including equipment, foundations, structures, cables, SAS and civil provisions.	As per BoQ
285	Bid Vol-II, GIS Conversion	Confirm whether SF6 handling plant, gas recovery system, gas cylinders and commissioning kit are included in contractor scope.	As per BoQ
286	Bid Vol-II, GIS Conversion	Confirm whether all LCC panels, marshalling kiosks, interlocking hardware and fiber interfaces are included in BOQ.	As per BoQ
287	Bid Vol-II, Transformer Scope	Provide capitalization factors for transformer losses for bid evaluation.	As per CEA "Standard Specifications and technical Parameters for Transformers and Reactors (66 kV & above voltage class)"


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288	Bid Vol-II, Transmission Line Scope	Clarify whether ROW, forest clearance, tree cutting and statutory permissions are under Owner scope or Contractor scope.	Contractor's scope
289	Bid Vol-II, Brownfield Scope	Provide detailed bay-wise shutdown availability and outage durations for AIS to GIS conversion.	During project implementation
290	Bid Vol-II, Brownfield Scope	Provide list of existing equipment to be reused, relocated or dismantled. Also confirm the Transportation Lead distance, Scrap storage area for both Civil	As per BoQ and during project implementation
291	Bid Vol-II, Brownfield Scope	Clarify ownership and disposal responsibility of dismantled AIS material.	During project implementation
292	Bid Vol-II, Land Development & Civil Works	Please provide geotechnical investigation report used for estimation and BOQ preparation.	Soil Investigation is in the scope of the contractor.
293	Bid Vol-II, Civil Works	Confirm whether piling foundations, if required provide the Qty or respective drawings.	Please refer to the sample drawing
294	Bid Vol-II, Civil Works	Confirm whether additional excavation, rock cutting and dewatering quantities shall be treated as variation.	No.
295	Bid Vol-II, Substation Equipment	Confirm approved makes/manufacturers for all major EHV equipment packages.	During detail engineering
296	Bid Vol-II, Station Transformer	Clarify guaranteed performance parameters linked to penalties and liquidated damages.	As per latest IS
297	Bid Vol-II, Control & Relay Panels	Provide bay-wise relay schedule and quantity break-up corresponding to BOQ.	Refer Chapter 14 (Technical Specification for Control & Relay Panel) of Volume-II
298	Bid Vol-II, Protection System	Confirm requirement of PMU, DR, FR and Power Quality Monitoring System.	Refer Chapter 14 (Technical Specification for Control & Relay Panel) of Volume-II
299	Bid Vol-II, SAS	Provide complete SAS architecture and communication network philosophy.	Refer Chapter 14 (Technical Specification for SAS) of Volume-II
300	Bid Vol-II, SAS	Confirm exact quantity of Operator Workstations, Engineering Workstations, Servers and GPS clocks.	As per BoQ
301	Bid Vol-II, GIS Specification	Confirm whether Partial Discharge Monitoring System is mandatory and identify associated bay quantities.	As per BoQ
302	Bid Vol-II, GIS Specification	Specify SF6 leakage guarantee requirement and applicable performance penalties.	As per Chapter 16 (Technical Specification for GIS) of Volume-II
303	Bid Vol-II, GIS Specification	Confirm number of mandatory spare bays, spare gas compartments and maintenance tools included in supply scope.	As per BoQ
304	Bid Vol-I, GCC/SCC Contract Conditions	Confirm that quantity increases arising from approved detailed engineering and unforeseen site conditions shall be payable variations.	As per BID
305	Bid Vol-II, Misc communication device	Please confirm whether SAS, communication network, battery system, GPS/NTP, fiber backbone, HVAC, and fire alarm systems are required to be sized for the ultimate 400 kV expansion configuration shown in the layout	As per present scope and BoQ
306	General: Sarusajai with 400kv layout-6-Model	Please confirm whether foundations, oil containment pits, firefighting systems, cable trenches, earth-mat extensions, and control cable provisions for future 400/220 kV 500 MVA transformers and future transformer bays are included in the current scope.	As per present scope and BoQ
307	General: Sarusajai with 400kv layout-6-Model	Please confirm whether bus reactors and associated equipment (reactor protection panels, neutral equipment, control systems, foundations, oil pits, and firefighting facilities) are included in the contract scope and BOQ.	As per present scope and BoQ
308	General: Sarusajai with 400kv layout-6-Model	Please provide line reactor rating, quantity, bay arrangement, protection philosophy, and confirm BOQ coverage for all line reactors indicated in the layout.	As per present scope and BoQ
309	General: Sarusajai with 400kv layout-6-Model	Kindly confirm the GIS make considered for layout development. Any changes required due to OEM-specific bay configuration or clearances may necessitate layout re-engineering with associated cost and time impact	Layout is flexible with any GIS make
310	General	Please confirm whether the complete auxiliary system is to be supplied under the EPC scope or whether any existing auxiliary systems can be reused. Kindly provide the exact equipment-wise scope for accurate bid estimation	As per BoQ
311	Bid Vol-II Cl.2.6.3 & 2.6.12 Transmission line scope	Kindly furnish the terrain classification (plain/hilly/forest/built-up/wetland), number of angle points, and major crossings (river/road/rail/HT lines) for Said Transmission lines.	During detail engineering
312	Bid Vol-II Cl.2.6.12(B)(i)	Please clarify the term "cable terminated composite lattice tower line" for the 132kV Kahilpara and Umtru circuits — i.e., what length/percentage of each circuit is to be converted to underground XLPE cable versus retained as overhead lattice tower construction, with route-wise break-up. Reason - UG Cable and Overhead Tower have very diff. cost.	Refer BoQ and Layout
313	Bid Vol-II Cl.2.6.12 - Transformers	One 220/132kV, 200MVA transformer and one 132/33kV, 50MVA transformer are stated to be "shifted" from the existing substation for reuse. Please confirm: (a) present age/condition and last test reports of these transformers, (b) whether refurbishment/oil filtration/works-testing is required, and (c) responsibility and insurance for handling/transporting Employer-owned transformers.	During project implementation
314	General / Site layout	Please provide the current site layout/plot plan of Sarusajai GSS showing available land for the new GIS building, 33kV extension bays, and space earmarked for future 400kV upgradation, along with boundary/space constraints.	During detail engineering

TABLE-1:
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Name of Work: Turnkey Conversion of Existing 220 kV Sarusajal AIS Grid Substation into 220 kV GIS Grid Substation with Provision for Future Upgradation to 400 kV Substation

315	General - Live substation conversion	Since Sarusajal is an operating 220/132/33kV grid substation, please indicate the anticipated shutdown philosophy — expected number, frequency and permissible duration of planned outages/night shutdowns for tie-in works, and whether coordination with SLDC for outages is arranged by AEGCL.	During project implementation
316	Bid Vol-II CL.2.6.5	Please indicate the designated location and distance from Sarusajal GSS to which dismantled AIS equipment/structures are to be transported and stored, as referred to in Clause 2.6.5.	During project implementation
317	Bid Vol-II CL.2.6.12(C)	For the Control & Relay Panel supply and ETC at 132/33kV Kahilpara GSS (remote end), Please confirm that particular item Qty and work is Included in the Given BOQ. Please confirm.	As per BoQ
318	Bid Vol-II CL.2.6.11	Please clarify the exact scope for the stated "Provision for Future Upgradation to 400kV" — whether limited to civil/space provision, or includes supply of any 400kV bus duct/equipment under the present contract.	As per BoQ
319	General	Clarification is required regarding the applicability of royalty percentage: whether it is to be calculated on the total project cost or only on the civil works component. (Relevant guideline/document enclosed for reference.)	As relevant law
320	BoQ1 Item: 38.02 vs. 38.03 - Fire protection	HVWS/emulsifier fire protection (Item 38.02) is explicitly scoped for "200 MVA ICT-3 Nos. and 80MVA Trafo-3 Nos." (i.e., all 3 positions of each, including the reused unit), whereas Nitrogen Injection Fire Protection (Item 38.03) is scoped and quantified (4 Nos.) only for "200 MVA ICT-2 Nos. and 80MVA Trafo-2 Nos." Please confirm whether Nitrogen Injection protection is intentionally excluded for the reused (3rd) transformer of each class, or whether the quantity should be 6 to match HVWS coverage.	As per BoQ
321	BoQ7 Items 3.01/3.02 vs. 4.01/4.02 - Transformer foundations/fire walls	Transformer foundation items (3.01/3.02) are quantified at 3 Nos. each (all positions, including reused units), while the corresponding RCC Fire Protection Walls (4.01/4.02) are quantified at 4 Nos. each. Please clarify the basis for 4 fire walls against 3 transformer foundations per voltage class (e.g., shared/party walls between adjacent bays).	As per BoQ
322	General	We kindly request confirmation regarding the scope for the existing transmission towers, conductors, and accessories near the boundary wall. Please clarify if the requirements include their dismantling, shifting, erection, testing, and commissioning, as a few towers are visible near the EW in the shared layout.	Refer Reply 86
323	General	In the BOQ:- Dismantling, Shifting and Erection testing Commissioning of existing 220kV PLCC Panels Dismantling, Shifting and Erection testing Commissioning of existing 132kV PLCC Panels Dismantling, Shifting and Erection testing Commissioning of existing FOTE Panels Please confirm that it is same premises where we have to carried the Sub station work.	Same premises
324	General	It was assumed that where LT lines exist within the working area of the grid substation, the corresponding work would fall under the Owner's scope. Please confirm.	Shall be under bidders scope
325	General SLD & Layout	Kindly share SLD & Layout details.	SLD during detail engineering. Layout shared
326	General BOQ	Kindly share detailed BOQ.	Refer revised BoQ
327	3. Technical Specification of GIS Pg. 03/72 Each, housing is subject to a pressure and gas tightness test and complies with the requirements of the relevant CENELEC standard.	Please note that in offered GIS, pressure and gas tightness test complies with IEC 62271-203 and relevant IEC standards.	As per Type tested design
328	3. Technical Specification of GIS Pg. 06/72 Gas Monitoring Devices: Temperature-compensated gas density monitoring devices shall be provided for each gas compartment. The devices shall provide continuous and online monitoring (Display at SAS) of the density of the gas. The monitoring device shall have two alarm settings. These shall be set so that:	Kindly note that for providing continuous and online monitoring (Display at SAS) a 4-20mA gas density monitor has been considere. Kindly confirm.	Confirmed
329	3. Technical Specification of GIS Pg. 08/72 16.4.14. Stroboscopic port shall also be provided.	Inspection window shall be provided for disconnecter, earth switch, and high-speed earth switch for visual verification of contact position.	Accepted

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TABLE-1:
Queries on the Bid document

Name of Work: Turnkey Conversion of Existing 220 kV Sarusajal AIS Grid Substation into 220 kV GIS Grid Substation with Provision for Future Upgradation to 400 kV Substation

330	3. Technical Specification of GIS Pg. 09/72 Pg. 010/72 16.4.24. To access the PT module suitable ladder shall be provided as necessary with grounding provision. 16.4.34. For 220 kV and above voltage class GIS, wherever required, stairs, fixed ladder, platforms, and walkways for operation and maintenance access to the operating mechanism and monitoring devices should be provided to permit access. The structures shall be hot-dipped galvanized steel. All structures, stairs, platforms, and walkways shall conform to the relevant occupational health and safety regulations and designed in accordance with the latest industry standards and guidelines. The platforms and walkways shall have anti-skid surfaces that can be walked on. Handrails shall be provided where necessary. The GIS supplier shall provide 3-D arrangement drawing to show the location of equipment and access to it. 16.4.35. In addition to above suitable portable scissor lift shall be provided for access of distant portion of GIS installation.	Portable free standing ladder (One number) shall be provided for accessing Bay for GIS Substation.	Suitable walkways and ladders shall be provided for accessing the GIS for maintenance works as per BID
331	3. Technical Specification of GIS Pg. 09/72 16.4.27. Manufacturer shall submit the study report of VFTO generated for GIS installation for 220 kV and above.	As per IEC 62271-102, Annex-B, Cl. B-2, VFTO is not applicable for voltages below 300kV.	Accepted
332	3. Technical Specification of GIS Pg. 10/72 3.1. GAS INSULATING SYSTEM: ii) Any other alarm necessary to indicate deterioration of the gas insulating system.	Kindly note that, for checking of SF6 Gas Quality (Deterioration) separate Portable Gas Analyser can be used, as such, such System is not envisaged in offered GIS. Also, separate portable gas analyser is excluded from CGPISL Scope.	Accepted
333	3. Technical Specification of GIS Pg. 12/72 16.4.47 GROUNDING:	CGPISL scope limited from 245kV GIS bay upto Earthing Risers. Main grounding Design (Earth Mat) and Supply is excluded from CGPISL Scope.	Under the scope of the successful Bidder
334	3. Technical Specification of GIS Pg. 22/72 Pg. 26/72 Pg. 27/72 16.5.1. CIRCUIT BREAKERS: 16.5.1.7.7 Circuit Breaker shall be supplied with auxiliary switch having additional 10 NO (normally open) and 10 NC (normally closed) contacts for future use over and above those required for switchgear interlocking and other control and protection function. 16.5.1.11. DISCONNECTORS (ISOLATORS): 16.5.1.14.2.10. Each disconnector shall be supplied with auxiliary switch having additional 8 NO (Normally Open) and 8 NC (Normally Closed) contacts for future use over and above those required for switchgear interlocking and automation purposes. These spare NO and NC contacts shall be wired up to the local control cabinet. 16.5.1.12. SAFETY GROUNDING SWITCHES: 16.5.1.15.6. Each ground switch shall be fitted with auxiliary switches having 6 NO (Normally Open) and 6 NC (Normally Closed) contacts for use by others over and above those required for local interlocking and position indication purposes. 16.5.1.13. HIGH SPEED MAKE PROOF GROUNDING SWITCHES: 16.5.1.16.8. Each high speed ground switch shall be fitted with auxiliary switches having additional 6 NO (Normally Open) and 6 NC (Normally Closed) contacts for use by others, over and above these required for local interlocking and position indication.	Kindly note that, four spare (4) normally open (NO) and four (4) normally closed (NC) provided as spare contacts & required additional auxiliary contacts needs to be multiplied in Control and Relay Panel.	As per bid
335	3. Technical Specification of GIS Pg. 23/72 16.5.1.8. CONTROLLED SWITCHING DEVICE (CSD):	Kindly confirm whether CONTROLLED SWITCHING DEVICE (CSD) is required for this project or not.	As per BoQ

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TABLE-1:
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Name of Work: Turnkey Conversion of Existing 220 kV Sarusajai AIS Grid Substation into 220 kV GIS Grid Substation with Provision for Future Upgradation to 400 kV Substation

336	3. Technical Specification of GIS Pg. 25/72 16.5.1.9. TESTS: iii. Circuit breakers meant for controlled switching shall conform to requirements of IEC/TR-62271-302. The contractor shall submit test reports to demonstrate that the offered CB conforms to the requirements of performance verification tests and parameter definition tests as per IEC/TR 62271-302. 16.5.1.10. ROUTINE TESTS: iii. Routine tests on Circuit breakers with Controlled switching device as per IEC/TR 62271-302.	Kindly note that all tests performed on the circuit breakers are in accordance with IEC 62271-100.	As per relevant IEC
337	3. Technical Specification of GIS Pg. 28/72 16.5.1.15.10. The safety grounding switches shall conform to the requirements of IEC-62271-102 and shall have electrical endurance class: E2 & shall have mechanical endurance class M2 for 400 kV/220/132 kV voltage level.	As per IEC 62271-102, Mechanical endurance class for grounding switch shall be M1 and Electrical endurance class shall be E0. Kindly accept the same.	As per bid
338	3. Technical Specification of GIS Pg. 28/72 16.5.1.15.16. Termination point grounding switch shall be able to make short circuit current and capable of breaking the induced capacitive and inductive current as per IEC 61129 (Class-B duty) considering the transient recovery switching duty imposed on grounding switch.	Kindly note that offered safety grounding switch is type tested as per IEC 62271-102.	As per relevant IEC
339	3. Technical Specification of GIS Pg. 28/72 16.5.1.13 HIGH SPEED MAKE PROOF GROUNDING SWITCHES: These shall confirm to class F and electrical endurance class E2 and mechanical endurance class M2.	As per IEC 62271-102, Mechanical endurance class for high speed earth switch shall be M1 and Electrical endurance class shall be E1. Kindly accept the same.	As per bid
340	3. Technical Specification of GIS Pg. 29/72 16.5.1.14 INSTRUMENT TRANSFORMERS: The V _k value of the CT used for distance protection shall have transient performance as per IEC 60044-6.	Please note that the CT parameters shall be finalized during the detailed engineering.	As per bid
341	3. Technical Specification of GIS Pg. 32/72 16.5.1.15. SURGE ARRESTORS: 16.5.1.18.2. Insulation co-ordination and selection of surge arrester:	Kindly note that, Insulation co-ordination study is excluded from CGPISL scope. It shall be in scope of main/EPC contractor.	Under EPC scope
342	3. Technical Specification of GIS Pg. 35/72 16.5.1.17. GIS TO CABLE TERMINATION (IF APPLICABLE)	Please note that, CGPISL is limited to cable termination (Enclosure only), however Cable Termination Kit and XLPE/Oil Termination kit is excluded from CGPISL scope.	Cable terminated GIS is not required in this project
343	3. Technical Specification of GIS Pg. 36/72 16.5.1.19. LOCAL CONTROL CUBICLE (LCC) 16.5.1.22.1.8 LCC shall be suitable for remote operation from substation automation system (SAS). Each gas tight compartment shall be monitored individually per phase basis through SAS	Please note that, Substation automation system(SAS), Control Relay panel (CRP), Bus control unit (BCU), SCADA system are excluded from CGPISL scope.	Under EPC scope
344	3. Technical Specification of GIS Pg. 38/72 16.5.1.22. ELECTRIC OVERHEAD CRANE:	EOT crane is excluded from CGPISL Scope.	Under EPC scope

TABLE-1:
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345	3. Technical Specification of GIS Pg. 48/72 16.13. ON SITE TESTING: Power frequency tests for the completed GIS at site shall be possible without removing the voltage transformers. The power frequency test voltage at site shall be 80% of the factory test voltage for 1 min at 100Hz.	The line-side VT shall be equipped with a manual isolating link to enable power-frequency withstand voltage testing of the GIS without physically removing the Voltage Transformer.(If applicable)	Motorised isolator shall be provided for the PT Module instead of manual isolating link.
346	3. Technical Specification of GIS Pg. 50/72 Pg. 51/72 16.14. TESTING & MAINTENANCE EQUIPMENT: 16.16.7 Special Tools 16.16.8 SF6 Gas Leakage Detector. 16.16.9 Gas filling and evacuating plant: (Gas Processing unit) 16.16.10 SF6 Gas Analyzer 16.16.11 Online Partial Discharge Monitoring System	Being bought out items, Special equipment's, tools, tackles & testing equipment's are excluded from CGPISL Scope.	As per BoQ under EPC scope
347	General	Please provide the preferred make/vendor list for the major equipment/elements, such as GIS, CRP, Power & Control Cables, Transformers, Circuit Breakers, Isolators, CTs/PTs, CVTs, etc.	The preferred make/vendor list for major equipment and elements shall be as specified in the Technical Specifications / Employer's Requirements / approved vendor list of AEGCL, if applicable. In case a specific make/vendor list is not stipulated in the tender document, the bidder may propose reputed and established manufacturers meeting the specified technical requirements and compliance with all applicable standards, specifications and tender conditions. No particular make/vendor shall be considered mandatory unless specifically indicated in the tender document.
348	General	Kindly confirm the warranty period of the major equipment, including the Defect Liability Period (DLP).	As per BID
349	BoQ1 Sl. No.-38- Regarding Hydrant System	Kindly provide the detailed Technical Specification, design parameters, scope of supply and BOQ details for the Fire Hydrant System, including all associated accessories, piping network, hydrants, valves, pumps, firefighting equipment, and related civil works, if applicable.	Shall be as per design and under EPC scope
350	BoQ1 Sl. No.-16.17- Kahilpara CRP-SAS Integration	Kindly provide the following details:- 1. Existing CRP / BCU details alongwith I/O details and OEM. 2. OEM, alongwith make & Model of existing Substation Automation System (SAS).	Existing SAS of 132kV Kahilpara GSS is Hitachi make
351	Section III - Bid Data Sheet (BDS) - ITB 2.37.1 Contract shall be for a period of 24 Months from the date of its signing.	Please Note based on present Lead times of raw materials , we request you to amend the clause as under : Contract shall be for a period of 36 Months from the date of its signing.	As per Bid. Contract shall be for a period of 24 Months from the date of its signing.
352	Section 9 - Appendix - 2 Price Adjustment - NOT APPLICABLE	As the Project Completion period is 24 months, we request you to allow Price Adjustment for major items like Power transformer , Conductor , Cable etc.	As per BID
353	BOQ S.No. 23 Supply of Power Line Carrier Communication Equipments	1. No PLCC Quantities are mentioned in BOQ however HF Cable, EPABX & LMU quantities are required to be offered as S.No. 23.01 to 23.03. 2. Please confirm whether existing PLCC's are to be used, in case of same to be used please confirm make & model of existing PLCC. We understand there is no re-configuration/re-commissioning of existing PLCC's required. Please confirm our understanding. 3. Please provide details of LMU & LMDU alongwith HF Cable are to be used for which lines.	As per BOQ
354	BOQ S.No. 24 & 27 Supply of OPGW equipments as per specification a) Transmission equipment & SDH Equipment-STM-16 (ADM-upto five Direction)-2 Nos. Supply of OPGW equipments as per specification d) Termination equipment -2 Nos.	We request AEGCL to provide distribution of quantities of SDH & D&I Mux equipment at 220/132kV Sarusajai & Remote end. We understand there is no existing SDH equipment at 220/132kV Sarusajai AIS S/s	As per BOQ

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355	Cl. 29.2.6 Pg.687/939 BOQ S.No. 24 The Tenderer is supposed to make necessary survey for integration of the SDH Equipment with the existing NMS at SLDC, Kahilipara. For this if any traffic routing to SLDC is required through other Utilities; AEGCL will arrange the same. However, during interfacing with the existing telecom equipment if any hardware/software is required (at SLDC or Remote end), the Bidder has to offer the same with no cost implication to AEGCL.	We request AEGCL to provide Make/model of existing SDH Equipment & NMS make at SLDC Kahilipara.	NMS make: Tejas, Hitachi or can be integrated to UNMS
356	BOQ S.No. 25.01 to 25.04 a) 25.01 S1.1-2 Set, b) 25.02 S4.1-2 Set c) 25.03 SFP to support STM-16 upto 40 Km-3 Set d) 25.04 SFP to support STM-16 upto 80 Km-2 Set	As per BOQ S.No. 25.01 to 25.04 SFP's in Set are mentioned, we understand that bidder has to offer SFP's as per BOQ (1 Set-1 No.) & SFP's for remote ends are already considered in BOQ quantity. Please confirm our understanding.	As per BOQ
357	BOQ S.No. 28.06 Tele-protection signalling equipment complying IEC 60834 (16 Commands) having E1/optical interface equipment-2 Nos.	We request AEGCL to confirm following for DTPC: 1. Qty distribution of DTPC. 2. We understand Main-1 & Main-2 protection (on PLCC & FOTE) are to be offered as no PLCC quantities are required to be offered or existing PLCC to be used these DTPC quantities are additional to existing PLCC protection for Main-1/Main-2 protection. Please confirm. 3. Request AEGCL to provide detailed DTPC specification specifying number of commands hardwired, IEC goose messaging required or not, distance for which optical interface (SFP) to be offered.	As per BOQ
358	BOQ S.No. 28.07 IEEE C37.94 for direct connection of line differential protection-2	We understand mentioned quantities are for Main & Remote end as C37.94 differential relay interface are proprietary in nature & both end differential relay interface card should be of same make/model. Please confirm.	As per BOQ
359	Bid Volume 1 Source of fund	Request you to kindly share details regarding source of fund i.e. AEGCL own funding or any external funding.	Internal Source of AEGCL
360	Bid Volume 1 Appendix 1 Terms of Payment Supply	Referring to terms of payment of AEGCL for subject package for Supply portion is: i. Progressive Payment: 75% of Total supply invoice value. ii. Remaining 25%:- a. 15% of completion of 50% total erection work, b. 5% on completion and 5% on Operational acceptance certificates. We request to amend payments terms as mentioned below :- i. Interest free Advance 10% in Supply Portion, ii. Interest free Engineering Advance 10%, iii. Progressive 55% of total supply invoice value, iv. Remaining 25%:- a. 15% of completion of 50% total erection work, b. 5% on completion and 5% on Operational acceptance certificates. Please consider.	As per BID
361	Bid Volume 1 Appendix 1 Terms of Payment Installation	Referring to terms of payment of AEGCL for subject package for Installation portion is: i. Progressive Payment: 90% against of invoice for foundation, erection and civil works. ii. Remaining 10%:- 5% on completion and 5% on Operational acceptance certificates. We request to amend payments terms as mentioned below :- i. Interest free Advance 10% of Installation Portion, ii. Progressive Payment: 80% against of invoice for foundation, erection and civil works. iii. Remaining 10%:- 5% on completion and 5% on Operational acceptance certificates.	As per BID

TABLE-1:
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362	Bid Volume 1 Appendix 1 Terms of Payment	In payment terms it is mentioned "Subject to availability of fund". Request you to please clarify the same.	The provision "Subject to availability of fund" under Appendix 1 - Terms of Payment refers to the availability of budgetary/funding provision with the Employer for processing the respective payments. However, the Employer shall make payments to the Contractor in accordance with the contractual terms and conditions and the approved payment schedule, subject to fulfillment of the relevant contractual requirements, certification of the work/supplies, and availability of funds. Accordingly, the provision shall not be construed as a waiver of the Employer's contractual payment obligations.
363	Bid Volume 1 Completion time	As per Bid document, completion time for subject tender is 24 Months. As per current market condition and demand, Supply of Major equipment i.e. Power Transformer are beyond 30 Months. Therefore, we request you to kindly extend the completion time from 24 months to 36 months. Please consider.	As per Bid. Contract shall be for a period of 24 Months from the date of its signing.
364	Bid Volume 1 Price Adjustment	As per bid document, Price adjustment is not applicable as it is fixed term contract. We like to draw your attention on current market fluctuation due to West Asia crisis. Due to this, prices of Copper, CRGO, Aluminium in International market is volatile. Therefore, we request you to kindly accept PV as per IEEMA for Power Transformer, Conductor, CVT, EHV and Power - Control Cables, Station Transformer, WT BPI, LA, Metal based items and Installation (Erection and Civil).	As per BID
365	Bid Volume 1 Stamp Paper	Request you to kindly confirm stamp paper duty required for preparation of EMD. Also, we assume, EMD can be issued from any National bank. Please confirm.	As per BID
366	Bid Volume 1 Undertakings	As per bid documents, bidder required to submit undertaking on stamp paper of Rs 100 notarized. We request you to kindly allow bidders to submit undertaking on Letter head in tender stage. Further, bidder shall submit undertaking on stamp paper after award of contract by successful bidder. Please consider.	As per BID
367	Bid Volume 1 Sec-4, Evaluation and Qualification Criteria, 4.2.1 (b) Experience in Key Activities	In qualification requirement 4.2.1 (b) i. 220KV class capacity of Power/Auto Transformers. Kindly clarify, Power Transformer of 220kV or above voltage level is also acceptable.	As per BID
368	Bid Volume 1 Sec-4, Evaluation and Qualification Criteria, 4.2.1 (b) Experience in Key Activities	A. The tenderer must have the experience of design, install, test and commission of the following listed equipment's which are in successful operation for at least one year within last seven year as on the date of original bid submission. Kindly confirm, Design for Power Transformer is in Transformer OEM scope. EPC having experience of Supply, Erection, testing and commissioning is acceptable.	Accepted
369	Bid Volume 1 Sec-4, Evaluation and Qualification Criteria, 4.2.1 (c) Manufacturers/Subcontractor	In said clause, for GIS OEM, certain testing laboratories are mentioned. We request you to kindly include XIHARI testing lab also in this list or kindly mention TTR from IEC or equivalent from others lab not mentioned in this list is also acceptable. Please consider.	As per BID
370	Bid Volume 1 Sec-4, Evaluation and Qualification Criteria, 4.2.1 (c) Manufacturers/Subcontractor	FOR GIS, V. The Tenderer shall furnish performance guarantee for an amount of 20% of the ex-works cost of GIS equipment(s) for a period of five (5) years after completion of the defect liability period. No GIS OEM is accepting to this clause. Therefore, we request you to kindly remove this performance guarantee requirement. Please consider.	As per BID
371	Bid Volume 1 Section-III, BDS, ITB 2.13.3, Undertaking by the contractor to supply spare parts for a period of 10 years.	As per AEGCL requirement, bidder need to submit an "Undertaking for supply of spare parts for a period of 10 years" and we have shared the same with our vendors and GIS OEM for their confirmation. In response to this undertaking, vendors and GIS OEM are regretting to confirm this requirement. Therefore, we request you to kindly remove this undertaking for successful participation.	As per BID
372	General	Please confirm Seismic zone. Also, please share creepage and RTV requirement for said tender.	As per BID. Seismic Zone: VI

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373	General	For any Statutory clearances and permission required for tree cutting, forest clearance, shutdown permission shall be arranged by AEGCL. Reimbursement for the same shall be done by AEGCL directly. EPC shall provide necessary support only. Kindly confirm.	Confirm
374	BOQ 84250 SL no. 1.03 Site Preparation and Earth filling with Compaction	Request you to please provide the existing contour drawing or FGL for the new GIS substation.	After award of the contract by the successful bidder
375	BOQ 84250 SL no. 1.02 Site clearance	During the site visit, it was observed that a considerable number of large trees exist within the proposed GIS substation area. Kindly clarify whether the cutting, uprooting, disposal, and removal of these trees, including obtaining any statutory permissions required from the concerned authorities, are within the scope of the bidder or shall be arranged by the owner.	As per BID
376	BOQ 84250 SL no. 2.01 220 KV GIS Building (PEB) along with GIS bay foundations complete on pile foundation (The Bidder may quote the price based on the sample drawing provided with the Tender.)	Since the soil investigation report for the proposed GIS substation is not available in the tender documents, it is difficult to estimate the pile foundation quantities accurately. Therefore, kindly provide the estimated pile quantity in running meters (RMT) or furnish the detailed pile foundation drawings/design criteria to enable proper estimation and submission of a competitive bid.	As per BID. Sample Drawing will be provided
377	New Item Rail cum road foundation.	Request you to include a separate BOQ line item for the foundation of the rail-cum-road arrangement. In case pile foundations are envisaged/recommended for the rail-cum-road foundation, kindly provide the relevant reference drawings and design details to enable accurate estimation.	As per BID
378	New Item Bus duct foundation.	Request you to include a separate BOQ line item for the foundation of the bus duct. In case pile foundations are envisaged/recommended for the bus duct foundation, kindly provide the relevant reference drawings and design details to enable accurate estimation.	As per BID
379	New Item 33 KV equipment foundation.	Request you to include a separate BOQ line item for the foundation of the 33 KV equipment's. In case pile foundations are envisaged/recommended for the 33 KV equipment foundation, kindly provide the relevant reference drawings and design details to enable accurate estimation.	As per BID
380	Technical Existing Equipments Model and Make.	We request you to please provide details of existing equipment make and model for CRP, PLCC FOTE.	Existing SAS of 132kV Kahilipara GSS is Hitachi make
381	General	We request AEGCL to clearly mention bidder scope regarding dismantling and site clearing work for estimation purposes.	As per BID
382	General	Kindly confirm, permission for shutdown (existing and remote end if any) related activities shall be done by AEGCL only. Bidder shall provide necessary support only	Confirm

TABLE-1: Queries on the Bid document Name of Work: Turnkey Conversion of Existing 220 kV Sarusajai AIS Grid Substation into 220 kV GIS Grid Substation with Provision for Future Upgradation to 400 kV Substation			
383	VOLUME II: TECHNICAL SPECIFICATION Page No. 532, 533 & 565 Clause 20.5.13 Metallic screen short-circuit withstand requirement of 31.5 kA for 3 seconds for 33 kV and 66 kV cables, Clause 20.53 Sr no 9 20.53 Sr no 9 Rated short time withstand current -31.5 KA (rms) for 1 sec.	As per Clause 20.5.13 (metallic screen short-circuit withstand requirement of 31.5 kA for 3 seconds for 33 kV and 66 kV cables) & Clause 20.53 Sr no 9, (Rated short time withstand current -31.5 KA (rms) for 1 sec). Please confirm, the short circuit fault current of metallic screen.	31.5kA for 3 Sec
384	VOLUME II: TECHNICAL SPECIFICATION Page No. 532 & 552 Clause 20.4 For 33KV: Untinned annealed copper conductor of class 2 as per IS 8130/1984 and any latest amendments to it. The shape of conductor shall be compacted, stranded, and circular/ sector shaped, shielded with conductor screen of black extruded semi conducting compound, XLPE insulation, shielded with insulation screen of black extruded semi-conducting compound, black semi-conducting tape and metallic screen of copper tape, Inner sheath extruded PVC type ST2, single layer of strip/ round steel, round hard drawn aluminium wire armoured and black extruded FR-PVC (Type ST-2) overall sheathed, conforming generally to IS:7098 (Part II) Clause 20.53, Sr. No. 18 The outer sheath compound as HDPE (Type ST-7).	Outer Sheath: It is observed that, as per Specification Clause 20.4, the outer sheath compound for 33 kV cable is specified as FR-PVC (Type ST-2). However, Clause 20.53, Sr. No. 18 specifies the outer sheath compound as HDPE (Type ST-7). There is a discrepancy between the two clauses. Please clarify the applicable outer sheath material and type for the 33 kV cable.	HDPE (Type ST-7) for 33kV cable
385	VOLUME II: TECHNICAL SPECIFICATION Page No. 565 Clause 20.53 Sr no 16 iv Insulation Screen: Type & Material Freely strippable (with heat) type extruded non-metallic semi conducting compound followed by copper metallic tape with minimum 25 % overlapping.	It is observed that the specification requires a copper metallic tape with a minimum 25% overlap over the extruded semi-conducting compound. However, as per IS 7098 (Part 2), there is no specific requirement for a minimum overlap percentage for the copper metallic tape; the requirement is to ensure 100% coverage of the cable circumference.	Shall be as per BID
386	VOLUME II: TECHNICAL SPECIFICATION Page No. 565 Clause 20.53 Sr No 10 Rated peak withstand current (1 sec) -78.75 KA	As per Clause 20.53 Sr No 10, Rated peak withstand current (1 sec) -78.75 KA, but for 400 sqmm cable, Conductor short ckt shall be 57.2 kA for 1 sec only. Please clarify	31.5kA for 3 Sec
387	VOLUME II: TECHNICAL SPECIFICATION Page No. 566 Clause 20.53 Sr No 19 Coating of outer sheath -A hard baked layer of graphite or semi conducting layer shall be applied over the outer sheath as outer electrode for testing the sheath.	As per Clause 20.53, Sr. No. 19, a hard-baked graphite or semi-conducting layer is specified over the outer sheath as an outer electrode for sheath testing. This requirement is generally applicable to EHV cables and is not required for MV cables. Please clarify.	Accepted
388	VOLUME II: TECHNICAL SPECIFICATION Page No. 566 Clause 20.53 Sr No 20 i, ii, iii i Type Test -All tests as per specifications IEC Standards. ii Routine Test -All tests as per specifications IEC Standards. iii Acceptance Test-All tests as per specifications IEC Standards.	As per Clause 20.53, Sr. No. 20 (i), (ii) and (iii), all tests are specified to be carried out as per the applicable IEC standards. However, the proposed cable is specified and designed as per IS 7098 (Part 2). Therefore, the applicable routine, type and acceptance tests shall be carried out as per IS 7098 (Part 2) and the relevant requirements specified therein. Please confirm	Shall be as per BID
389	VOLUME II: TECHNICAL SPECIFICATION Page No. 566 Clause 20.53 Sr No 21 Bending Radius -The minimum bending radius of XLPE insulated cables as follows: Cable: Bending radius Single Core: 25xD, D – diameter of overall conductor.	As per Clause 20.53, Sr. No. 21, it is observed bending radius 25xD, D – diameter of overall conductor, however as per IS 1255, above 11 kv it should be 20 X D - diameter of overall cable. Please confirm.	Accepted

Attendance Sheet

Meeting regarding: Prebid Meeting for the work - "Turnkey Construction of Existing 220 kV Saurajai AIS Grid SS into 220 kV GIS Grid S/S with provision for future upgradation to 400 kV S/S

08.09.2026

Date

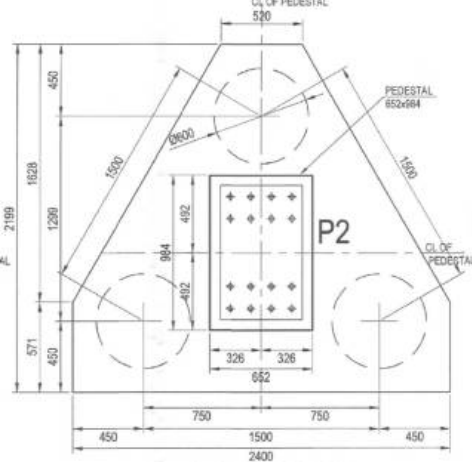
Address for Meeting

O/o the MD, AEGCL

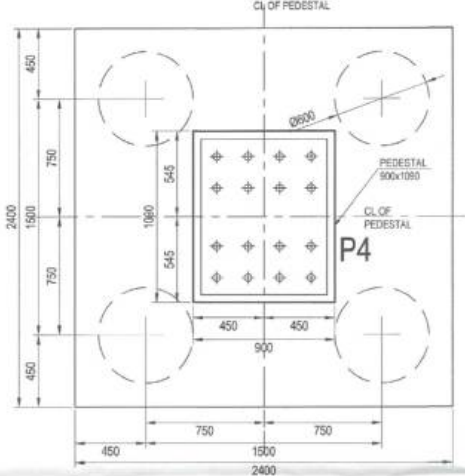
Bijulee Bhawan, Paltanbazar, City: Guwahati (Assam), PIN Code: 781001

Sl. No.	Members Present	Designation	Signature
1	Jayashree Devi	C&M, P&SD	
2	Anup Kr. Kalite	C&M & M LAR	
3	Arunav Gogoi	GM-NEAP	
4			
5	Darid Rahmi	GM (C)	
6	Audhesh Mehta	GM-JSP Project	
7	Navreen Singh	PM - Jackson	
8	Akal Sharma	D.M. Kalpataru	
9	Sayantan Nandi	AGM - Projects (KPR)	
10	Vivek Gupta	AGM Bidding (BASE)	
11	Govind Chandra	Sr. Manager (BASE)	
12	Debidutta Sena	Asstt. Manager (Training)	
13	Soumyadev Das	ENGINEER (SPML)	

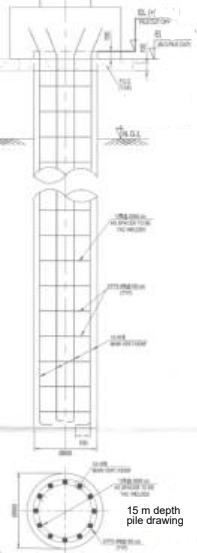
14	Ankan Halder	Engineer	
15	Satyajit Kumar	DM	
16	Biswampal Kundu	DM	
17	Kadhusmita Choudhury	DM(c)	
18	Himangshu Ray Gogoi	DAM (P&D)	
19			
20			
21			
22			
23			
24			
25			



DIMENSION DETAILS OF 3 PILES CAP



DIMENSION DETAILS OF 4 PILES CAP



Section - 2

TECHNICAL SPECIFICATIONS OF HTLS CONDUCTOR

2.1 GENERAL REQUIREMENTS

2.1.1 The offered HTLS Conductor shall be Panther equivalent HTLS conductor and shall be capable of providing minimum 1049A capacity and shall conform to latest CEA “Guidelines for Rationalized use of high performance conductors” at a continuous operating conductor temperature higher than that of not exceeding the maximum permissible operating temperature for continuous operation of the offered HTLS Conductor and without exceeding the level of maximum permissible sag as prescribe in clause no 2.1.6. and 2.2.

The physical and operating performance requirements of the transmission line with HTLS conductor are mentioned below. The bidder shall offer HTLS conductor complying with the specified requirements. The Bidder shall indicate particulars of the proposed conductor in the relevant GTP schedule of BDS along with calculations to establish compliance with the specified requirements.

The following points may be noted: -

- The offered HTLS Conductor shall be Panther equivalent HTLS conductor and shall be capable of providing minimum 1049A capacity (instead of 900A) and shall conform to latest CEA “Guidelines for Rationalized use of high-performance conductors” at a continuous operating conductor temperature higher than that of not exceeding the maximum permissible operating temperature for continuous operation of the offered HTLS Conductor and without exceeding the level of maximum permissible sag.
- The calculations for Ampacity shall be based on latest edition of IEEE Standard 738 as mentioned in CEA Guidelines for Rationalised Use of High-Performance Conductors. The parameters shall be considered accordingly. However, Ambient Temperature of 45 deg C and as per clause no 1.3.0 (Service Conditions) of Vol-II of bid document.
- The HTLS conductor shall meet the sag tension requirements against ruling span of 325m (132kV).
- The validity of the Type Test Report shall be as per CEA Guideline for the Type Tests for Major Equipments in Power Sector January 2026. The validity of type test report for High Temperature Low Sag (HTLS) Conductor shall be 10 Years from the date of bid opening.
- Wind pressure shall be 52 kg/m² (as per section-2 of Vol-II of Bid document).
- Chemical analysis of core strands (not on polymer composite core) as per CEA Guidelines for Rationalised Use of High-Performance Conductors.
- The material supplied shall be suitable for operation under the following climatic and other conditions:

Parameters	Specifications
1. Ambient temperature 2. Solar Radiation Absorption Coefficient 3. Emissivity Coefficient 4. Wind velocity 5. Solar Radiation 6. Ampacity Calculation as per IEEE 738 – 2012 or 2023? 7. Tension in Kgs for Sag-Tension Calculation	1. 45 degC 2. As per latest edition of IEEE 738 and CEA guidelines 3. As per latest edition of IEEE 738 and CEA guidelines 4. As per latest edition of IEEE 738 and CEA guidelines 5. As per latest edition of IEEE 738 and CEA guidelines 6. As per latest edition of IEEE 738 and CEA guidelines 7. Sag Tension Calculation shall be performed by the EPC contractor based on the following conditions: i. Tension at Everyday condition (32 deg, no wind): Shall not be more than 25% of the UTS of the conductor. ii. Sag at Maximum continuous operating temperature (Corresponding to maximum ampacity & ambient condition): < 7.24 m (132 kV) iii. Tension at 32 deg full wind: <70% of UTS of conductor iv. E/w or OPGW Sag shall not be more than 90% of conductor sag at all ranges of temperature and no wind condition.

2.1.2 Maximum Conductor sag for 325m (132kV) and 350m (220kV) span at steady state conductor temperature and no wind corresponding to 50 Hz alternating current of minimum 1049A per conductor under ambient conditions specified at clause no. 2.1.1 will be such that the statutory ground clearance will be maintained throughout the route keeping (erection) tension at 25% of UTS of conductor.

2.1.3 The calculations for Ampacity shall be based on IEEE Standard 738. The bidder in his bid shall furnish calculations for the ampacity based on the above Standard for the proposed HTLS conductor.

2.1.4 The design of conductor shall be suitable for operation at a steady state conductor temperature experienced for AC current flow of rated ampacity under the above ambient conditions based on ampacity calculations mentioned above. The bidder shall also indicate the maximum permissible conductor temperature for continuous operation without any deterioration of its electrical, mechanical & metallurgical properties. The bidder shall also furnish the maximum permissible conductor temperature for short-term operations including permissible duration of such short-term operation.

2.1.5 Each conductor / sub conductor in the bundle of HTLS conductor shall be suitable to carry minimum specified 50 Hz alternating current of 1049A under the ambient conditions & maximum conductor sag specified below while satisfying other specified technical requirements/parameters as mentioned in the Service condition above.

2.1.6 Maximum permissible conductor sag for 325 (132kV ACSR Panther) and 350 m (220kV ACSR Zebra) span conductor at 85°C operating temperature and nil wind corresponding to 50 Hz and at maximum alternating current 437 (132kV) amp and 900 (220kV) amp per conductor under ambient conditions specified above = 7.224m (132kV) and 8.435m (220kV). In case of HTLS conductor, the maximum sag for permissible conductor temperature and nil wind for continuous operation shall not be considered more than 7.224m (132kV) and 8.435m (220kV). The bidder shall also furnish the maximum permissible conductor temperature for short term operations including permissible duration of such short-term operation.

Technical Particulars of HTLS Conductor

The HTLS conductor shall meet the following minimum requirement

Over all diameter of complete conductor	Not exceeding 21 mm
Approx. mass of complete conductor (kg/km)	Less than or equal to 974 kg/km
Direction of lay of outer layer	Right Hand

2.1.7 The bidder shall indicate the technical particulars and details of the construction of the conductor in the relevant schedule of GTP. The bidder shall also guarantee the DC resistance of conductor at 20 deg C and AC resistance at the calculated temperature corresponding to 50Hz alternating current flow of minimum 1049Amperes at specified ambient conditions (maximum continuous operating temperature).

The bidder shall submit the supporting calculations for the AC resistance at 1049A indicating details & justifications of values of temperature coefficient of resistance & DC to AC resistance conversion factor(s) with due reference to construction / geometry of the conductor.

Note: In case of any discrepancy, CEA guidelines for Rationalised use of High-Performance conductors shall govern.

2.2 Sag-Tension Requirements

2.2.1 The HTLS conductor shall meet the following sag tension requirements for ruling span of 325m (132kV) and 350meters(220kV)

Particulars	Limiting value
Tension at every day condition (32°C, no wind)	Not exceeding 25% of UTS of proposed conductor
Sag at maximum continuous operating temp	≤7.24m (132kV) & 8.435 meters (220kV)
i) Tension at 32 deg C, full wind (52 kg/m ²)	Not exceeding 70% of UTS of Proposed conductor

2.2.2 Survey & profiling of existing line route using Total stations, verification of availability of statutory electrical clearances using PLS-CADD software. Sag -Tension calculations at various conditions mentioned above using parabolic equations shall be submitted along with the bid. These calculations shall also include calculations for determination of transition/knee point temperature. The bidder must use PLS-CADD software for sag tension calculations. **The successful bidder must submit physical sag template along with the profile drawing.**

2.2.3 The bidder shall also furnish sag & tensions under no wind for various temperatures starting from 0 deg C to maximum continuous operating temperature in steps of 5 degC.

2.2.4 After award of the contract, the Supplier shall submit Sag-Tension calculations corresponding to various conditions given above for all the existing spans and spans ranging from 50m to 350m in intervals of 50m.

Besides above, the Supplier shall also furnish details of creep characteristics in respect of HTLS conductor based on laboratory investigations/experimentation (creep test as per IEE1138) conducted on similar type of conductor and shall indicate creep strain values corresponding to 1 month, 6 month, 1 year & 10 year creep at every day tension & at maximum continuous operating temperature.

2.3 Ohmic Loss and Liquidated damage for excessive losses: -

Average ohmic losses (kW) = Loss load factor X Line length X no. of sub conductors X (continuous operating current)² X AC resistance per km guaranteed by the bidder at temperature corresponding to continuous operating current under normal condition.

On testing, if it is found that actual losses are more than the values, quoted in the bid, undisputed liquidated damages shall be recovered from the supplier at the following rates.

For each KW of excess loss Rs.3,30,220.00/KW.

For fractional Kilowatt, penalties shall be applied on pro-rata basis. No bonus shall be payable for loss, which are less than those, stated in the GTP.

2.4 Workmanship:

All the conductor strands shall be smooth, uniform and free from all imperfections, such as spills and splits, cracks, die marks, scratches, abrasions, rust etc.

The finished conductor shall be smooth, compact, uniform and free from all imperfections including kinks (protrusion of wires), wire cross over, over riding, looseness (wire being dislocated by finger/hand pressure and/or unusual bangle noise on tapping), material inclusions, white rust, powder formation or black spot (on account of reaction with trapped rain water etc.), dirt, grit etc.

2.5 Joints in Wires

2.5.1 Aluminum OR Aluminum Alloy Wires

During stranding no Aluminum/ aluminium Alloy welds shall be made for the purpose of achieving the required conductor length.

2.5.2 No joints shall be permitted in the individual wires in the outer most layer of the finished conductor. However, joints are permitted in the inner layer(s) of the conductor unavoidably broken during stranding provided such breaks are not associated

with either inherently defective wire or with the use of short lengths of Aluminium Alloy wires. Such joints shall not be more than four (4) per conductor length and shall not be closer than 15 meters from joint in the same wire or in any other Aluminium Alloy wire of the completed conductor. A record of such joints for each individual length of the conductor shall be maintained by the contractor for owners review.

2.5.3 Joints shall be made by cold pressure butt welding and shall withstand a stress of not less than the breaking strength of individual strand guaranteed.

2.5.4 Core

There shall be no joint of any kind in the finished core entering in to the manufacture of the strand. There shall also be no joints or splices in any length of the completed stranded core.

2.5.5 Tolerances

Manufacturing tolerances on the dimensions to the extent of one percent ($\pm 1\%$) shall be permitted for individual strands and the complete conductor.

2.6 Materials

The materials used for construction of the conductor shall be such that the conductor meets the specified technical and performance requirements.

2.6.1 Outer layer

The material of outer layer HTLS conductor shall be of fully annealed aluminium (0 tempered) having purity not less than 99.5% and a copper content not exceeding 0.04%. The strands shall be manufactured through appropriate manufacturing process to ensure consistent electrical, mechanical and metallurgical properties under continuous high temperature operation. Bidder shall guarantee the chemical composition in the schedule GTP of BDS and also furnish description of the manufacturing process in the Bid.

In case of fully annealed type (0 tempered) aluminium strand trapezoidal/Z-shaped wire shall only be accepted.

2.6.2 Non-Metallic Solid Core

Core of offered HTLS conductor shall be as per CEA guidelines for rationalized use of High performance conductors.

Bidder shall furnish properties and composition of the core in the GTP schedule. The core shall be of such proven quality that its properties are not deteriorated by the normal operating conditions of 145 KV transmission line in tropical environment conditions as experienced by the existing lines. The Bidder shall provide adequate details including specifications, Design Validation test reports as per ASTM B987 and performance certificates etc. in support of the suitability of the offered materials. Care to be taken for internal friction due to different material having different thermal coefficient of expansion.

2.7 Standard conductor Length

After survey of the involved section of the line by tower contractor, the supplier shall determine the most appropriate individual conductor lengths to be manufactured and supplied keeping in view tower schedules, section lengths, special crossings etc. and the drum schedules shall be submitted to the owner for review and approval.

The standard length of the conductor shall be indicated by the bidder in the guaranteed technical particulars of offer. A tolerance of $\pm 5\%$ on the standard length offered by the Bidder shall be permitted. However, during execution cut lengths shall be acceptable matching with Tower Schedule and allowable wastage of 1% added. Standard Length shall not more than 2500 meters. All lengths outside this limit of tolerance shall be treated as random lengths.

Random lengths will be accepted provided no length is less than 70% of the standard length and the total quantity of such random lengths shall not be more than 10% of the total quantity ordered. When one number random length has been manufactured at any time, five (5) more individual lengths each equivalent to the above random length with a tolerance of $\pm 5\%$ shall also be manufactured and all the above six random lengths shall be dispatched in the same shipment. At no point, the cumulative quantity supplied of such random lengths shall not be more than 12.5% of the total cumulative quantity supplied including such random lengths. However, the last 20% of the quantity ordered shall be supplied only in standard lengths as specified.

Bidder shall also indicate the maximum single length, above the standard length, he can manufacture in the guaranteed technical particulars of offer. This is required for special stretches like river crossing etc. The Employer reserves the right to place orders for the above lengths on the same terms and conditions applicable for the standard lengths during the pendency of the Contract.

2.8 Supervision in Stringing

2.8.1 The installation & hot line restringing of the offered HTLS conductor for the above transmission line shall be carried out by the transmission line contractor under supervision of the HTLS conductor supplier or Qualified Bidder itself. Bidder 's responsibility is to provide Sag-Tension chart based on existing site conditions. It may be noted that AEGCL will not consider any modifications (tower extensions etc) on existing tower/span.

2.8.2 The circuit on which the existing ASCR conductor is strung shall be kept under charged condition during the execution. The installation & stringing of the offered HTLS conductor for the above transmission line shall be carried out by the transmission line contractor under supervision of the HTLS conductor supplier or Qualified Bidder is self shall string the circuit with the HTLS conductor section by section and restore the line in original conditions as per program finalized in co-ordination with site. The bidder's engineers are to supervise whether appropriate safety measures along with necessary safety tools and equipment 's to carry out stringing operations under the above conditions including mechanical/structural safety of the towers, are maintained or not.

2.8.3 Necessary calculations shall be carried out by the bidder to ensure that by replacing the existing ASCR conductor with the HTLS conductor, the loadings on the towers due to conductor tensions as well as loads on account of the re-conductoring activities shall be within specified limits. These calculations shall be submitted by the bidder along with bid.

2.8.4 The Contractor should deploy hotline stringing/installation experts during erection of the offered HTLS conductor.

2.9 Tests and Standards

2.9.1 Type Tests

Type Tests on Stranded Conductor/Stranded wire

The following tests shall be conducted once on sample/samples of conductor from each manufacturing facility:

(i)	On complete Conductor	
a)	DC resistance test on stranded conductor	:As per Annexure-A
b)	UTS test on stranded conductor	:As per Annexure-A
c)	Stress-Strain test on stranded conductor and core at Room temperature	:IEC1089
d)	Stress-strain test on stranded conductor and core at Elevated temperature	:As per Annexure-A
e)	High temperature endurance & creep test on Stranded conductor	:As per Annexure-A & :IEC1089
f)	Sheaves Test	As per Annexure-A
g)	Axial Impact Test	:As per Annexure-A
h)	Radial Crush Test	:As per Annexure-A
i)	Torsional Ductility Test	:As per Annexure-A
j)	Aeolian Vibration Test`	:As per Annexure-A
k)	Temperature Cycle Test	:As per Annexure-A
l)	Corona Extinction Voltage Test	:As per Annexure-A
m)	Radio Interference Voltage Test	:As per Annexure-A
(ii)	On Conductor Strand/core	
a)	Heat resistance test on Aluminium Alloy strands or core	:As per Annexure-A
b)	Bending test on composite core	As per ASTM B987

c)	Compression test on core	:As per Annexure-A
d)	Coefficient of linear expansion on core/core strands	:As per Annexure-A
e)	Strand Brittle fracture test for Carbon fibre Composite core only.	:As per Annexure-A

Type tests specified under clause no.2.9.1 shall not be required to be carried out if a valid test certificate is available for the offered design, i.e., tests conducted earlier (not more than 5 years old at the time of bid opening) should have been conducted in accredited laboratory (accredited based on ISO/IEC guide 25/17025 or EN 45001 by the National Accreditation body of the country where laboratory is located) or witnessed by the representative (s) of CTU or State Transmission Utility

Type test of Panther equivalent HTLS conductors of minimum 1049A shall only be accepted for this project.

In the case of composite core conductors, the tests specified under clause 2.9.1 shall be carried out before stranding on as manufactured sample.

In the event of any discrepancy in the test report (i.e., any test report not applicable due to any design/material/manufacturing process change including substitution of components or due to non - compliance with the requirement stipulated in the Technical Specification) the tests shall be conducted by the Contractor at no extra cost to the Employer.

2.9.2 Acceptance Tests (Which ever applicable to Annealed Al. HTLS Conductor)

a)	Visual and dimensional check on drum	:As per Annexure-A
b)	Visual check for joints scratches etc. and length Measurement of conductor by rewinding	:As per Annexure-A
c)	Dimensional check on core strands and Aluminium Alloy strands	:As per Annexure-A
d)	Check for lay-ratios of various layers	:As per Annexure-A
e)	Thickness of aluminum on aluminium clad wires	:As per Annexure-A
f)	Torsion and Elongation tests on composite core	:As per Annexure-A
g)	Breaking load test on core strands and Aluminium/Aluminium Alloy strands	:As per Annexure-A
h)	Minimum conductivity test on Aluminium/thermal resistant Aluminium Alloy strands	:As per IEC:889
i)	Procedure qualification test on welded joint of Aluminium/Aluminium Alloy strands	:As per Annexure-A
j)	Heat resistance test on Aluminium Alloy strands	:As per Annexure-A
k)	Ageing test on filler (if applicable)	:As per Annexure-A
l)	Minimum conductivity test on aluminium clad core Wires (if applicable)	:As per Annexure-A
m)	Glass transition temperature test (For Carbon fibre Composite core only) before stranding.	:As per Annexure-A
n)	Flexural Strength test (For Polymer Composites only) before stranding.	:As per Annexure-A
o)	Galvanic Layer thickness test (For Polymer Composites only) before stranding.	:As per ASTM B987
Note:	All the above tests shall be carried out on Aluminium/Aluminium Alloy and core as specified.	

2.9.3 Routine Test

a)	Check to ensure that the joints are as per Specification
b)	Check that there are no cuts, fins etc. on the strands.
c)	Check that drums are as per Specification
d)	All acceptance tests as mentioned above to be carried out on 10% of drums

2.9.4 Tests during Manufacture

a)	Chemical analysis of zinc used for galvanizing	:As per Annexure-A
b)	Chemical analysis of Aluminium alloy used for making Aluminium Alloy strands	:As per Annexure-A
c)	Chemical analysis of core strands/composite core	:As per Annexure-A

As indicated in Clause no 2.9.1, no type test charges shall be payable to the supplier.

The entire cost of testing for the acceptance and routine tests and Tests during manufacture as well as type tests, if required, specified herein shall be treated as included in the quoted unit price of conductor, except for the expenses of the inspector/Owner's representative.

The Supplier shall intimate the Employer about carrying out of the type tests along with detailed testing program at least 2 weeks in advance of the schedule date of testing during which the Owner will arrange to depute his representative to be present at the time of carrying out the tests.

2.10 Additional Tests

2.10.1. The Owner reserves the right of having at his own expenses any other test(s) of reasonable nature carried out at Supplier's premises, at site or in any other place in addition to the aforesaid type, acceptance, and routine tests to satisfy himself that the materials comply with the Specifications.

2.10.2. The Owner also reserves the right to conduct all the tests mentioned in this specification at his own expense on the samples drawn from the site at Supplier's premises or at any other test centre. In case of evidence of non compliance, it shall be binding on the part of Supplier to prove the compliance of the items to the technical specifications by repeat tests, or correction of deficiencies, or replacement of defective items all without any extra cost to the Owner.

2.11 Test Reports

Record of routine test reports shall be maintained by the Supplier at his works for periodic inspection by the Employer's representative.

Test Certificates of tests during manufacture shall be maintained by the Supplier. These shall be produced for verification as and when desired by the Employer.

2.12 Inspection

The Employer's representative shall at all times be entitled to have access to the works and all places of manufacture, where conductor shall be manufactured and representative shall have full facilities for unrestricted inspection of the Supplier's works, raw materials and process of manufacture for conducting necessary tests as detailed herein.

The Supplier shall keep the Employer informed in advance of the time of starting and of the progress of manufacture of conductor in its various stages so that arrangements can be made for inspection.

No material shall be dispatched from its point of manufacture before it has been satisfactorily inspected and tested, unless the inspection is waived off by the Employer in writing. In the latter case also, the conductor shall be dispatched only after satisfactory testing for all tests specified here in have been completed.

The acceptance of any quantity of material shall in no way relieve the Supplier of any of his responsibilities for meeting all requirements of the Specification, and shall not prevent subsequent rejection if such material is later found to be defective.

2.13 Test Facilities

The following additional test facilities shall be available at the Supplier's works:

1. Calibration of various testing and measuring equipment including tensile testing machine, resistance measurement facilities, burette, thermometer, barometer etc.
2. Standard resistance for calibration of resistance bridges.
3. Finished conductor shall be checked for length verification and surface finish on separate rewinding machine at reduced speed (variable from 8 to 16 meters per minute). The rewinding facilities shall have appropriate clutch system and free of vibrations, jerks etc. with traverse laying facilities.

2.14 Packing

The conductor shall be supplied in non-returnable, strong, wooden/painted steel/hybrid (painted steel cum wood) drums provided with lagging of adequate strength, constructed to protect the conductor against all damage and displacement during transit, storage and subsequent handling and stringing operations in the field. The Supplier shall select suitable drums for supply of conductor and shall be responsible for any loss or damage to conductor and/or drum during transportation handling and storage due to improper selection of drum or packing.

The Bidder should submit their proposed drum drawings along with the Bid.

- a. One conductor length only shall be wound on each drum.
- b. The conductor ends shall be properly sealed and secured on the side of one of the flanges to avoid loosening of the conductor layers during transit and handling.

2.15 Marking

Each drum shall have the following information stenciled on it in indelible ink along with other essential data:

- a. Contract/Award letter number.
- b. Name and address of consignee.
- c. Manufacturer's name and address.
- d. Drum number
- e. Size of conductor
- f. Length of conductor in meters
- g. Arrow marking for unwinding
- h. Position of the conductor ends
- i. Distance between outer-most layer of conductor and the inner surface of lagging.
- j. Barrel diameter at three locations & a narrow marking at the location of the measurement.
- k. Number of turns in the outer most layer.
- l. Gross weight of drum after putting lagging.
- m. Tear weight of the drum without lagging.
- n. Net weight of the conductor in the drum.

The above should be indicated in the packing list also.

2.16 Service centre in India: If any manufacturer is from outside INDIA, they must have their service centre and calibration facilities in India.

2.17 Verification of Conductor Length

The Employer reserves the right to verify the length of conductor after unreeling at least ten (10) percent of the drums in a lot offered for inspection.

2.18 Standards (Whichever applicable to Annealed Al. non-metallic solid core HTLS Conductor)

The conductor shall conform to the following Indian/International Standards, which shall mean latest revisions, with amendments/changes adopted and published, unless specifically stated otherwise in the Specification. In the event of the supply of conductor conforming to standards other than specified, the Bidder shall confirm in his bid that these standards are equivalent to those specified. In case of award, salient features of comparison between the standards proposed by the Supplier and those specified in this document will be provided by the Supplier to establish their equivalence.

Sl.No	Indian Standard	Title	International Standard
1.	IS:209-1992	Specification for zinc	BS:3436-1986
2.	IS:398-1982	Specification for Aluminium Conductors for	IEC:1089-1991
		Overhead Transmission Purposes	BS:215-1970
3.	IS:398-1990	Aluminum Conductor Galvanised Steel	BS:215-1970
	Part-II	Reinforced	IEC:1089-1991
4.	IS:398-1992	Aluminum Conductor Galvanised Steel-	
	Part-V	Reinforced for Extra High Voltage (400KV)	IEC:1089-1991
		And above	BS:215-1970
5.	IS:1778-1980	Reels and Drums for Bare Conductors	BS:1559-1949
6.	IS:1521-1991	Method of Tensile Testing of Steel Wire	ISO 6892-1984
7.	IS:2629-1990	Recommended Practice for Hot Dip	
		Galvanising of Iron and Steel	
8.		Method of Testing Uniformity of	
	IS:2633-1992	Coating on Zinc Coated Articles	
9.	IS:4826-1992	Galvanised Coating on Round Steel	IEC:888-1987
		Wires	BS:443-1969
10.	IS:6745-1990	Methods of Determination of Weight of Zinc	BS:433-1969ISO
		Coating of Zinc Coated Iron and	1460-1973
		Steel Articles	
11.		Method of Radio Interference Tests on	IEC:437-1973
	IS:8263-1990	High Voltage Insulators	NEMA:107-1964
			CISPR
12.	IS:9997-1988	Aluminium Alloy Redraw Rods	IEC104-1987
13.		Zinc Coated steel wires for stranded	
		Conductors	IEC:888-1987
14.		Hard drawn Aluminium wire for overhead	
		Line conductors	IEC:889-1987
			IEC:208-1966
15.	IS:398(Part-IV)	Aluminium Alloy stranded conductor	BS-3242-1970
16.		Aluminium clad steel wires	IEC:1232
		Method of measurement of resistivity of	
17.		Metallic materials	IEC:468
18.		Ampacity	IEEE738
19.		Design Validation Tests on Composite Core/other core	ASTMB987/relevant
			IEC standards

SCHEDULE—1(A)

Tower Schedule enclosed

ANNEXURE–A

Tests on Conductors

1. Tests on Conductor (Which ever applicable to Annealed Al. non-metallic solid core HTLS Conductor)

1.1 UTS Test on Stranded Conductor

Circles perpendicular to the axis of the conductor shall be marked at two places on a sample of conductor of minimum 5 m length between fixing arrangement suitably fixed by appropriate fittings on a tensile testing machine. The load shall be increased at a steady rate upto 50% of minimum specified UTS and held for one minute. The circles drawn shall not be distorted due to relative movement of strands. There after the load shall be increased at steady rate to minimum UTS and held for one minute. The Conductor sample shall not fail during this period. The applied load shall then be increased until the failing load is reached and the value recorded.

1.2 Corona Extinction Voltage Test

The sample when subjected to power frequency voltage shall have a corona extinction voltage of not less than 154 kV rms line to ground under dry condition. There shall be no evidence of corona on any part of the sample. The atmospheric condition during testing shall be recorded and the test results shall be accordingly corrected with suitable correction factor as stipulated in IS:731-1971

1.3 Radio Interference Voltage Test

Under the conditions as specified under (1.2) above, the sample shall have a radio interference voltage level below 1000 microvolts at one MHz when subjected to 50 Hz AC voltage of 154 kV rms line to ground under dry condition. The test procedure shall be in accordance with IS:8263.

1.4 D.C. Resistance Test on Stranded Conductor

On a conductor sample of minimum 5m length two contact-clamps shall be fixed with a predetermined bolt torque. The resistance shall be measured by a Kelvin double bridge or using micro-ohm meter of suitable accuracy by placing the clamps initially zero metre and subsequently one metre apart. The test shall be repeated at least five times and the average value recorded. The value obtained shall be corrected to the value at 20deg C as per IS:398- (Part- IV)/(Part-V). The resistance corrected at 20deg C shall conform to the requirements of this Specification.

1.5 Stress-strain test at elevated temperature

Stress-strain test as per IEC-1089 shall be conducted keeping conductor temperature at designed maximum temperature.

1.6 High Temperature endurance & creep test

Two conductor samples of length equal to at least $100 \times d + 2 \times a$ (where, d is the conductor diameter and a is the distance between the end fitting and the gauge length) shall be strung at tension equal to 25 % of conductor UTS. The distance, a, shall be at least 25 % of the gauge length or 2 m whichever is the smaller. The conductor samples shall be subjected to tests as indicated below:

On one of the conductor samples, the conductor temperature shall be maintained at 20 deg C for 1000 hours. The elongation/creep strain of the conductor during this period shall be measured and recorded at end of 1 hour, 10-hour, 100 hour and subsequently every 100-hour upto 1000 hours time period. (On other conductor sample, the conductor temperature shall be increased to design maximum

temperature in steps of 20 deg. C and thermal elongation of the conductor sample shall be measured & recorded at each step. The temperature shall be held at each step for sufficient duration for stabilization of temperature. Further, the temperature of the conductor shall be maintained at maximum continuous operating temperature (+10 Deg. C) for 1000 hours. The elongation/creep strain of the conductor during this period shall be measured and recorded at end of 1 hour, 10-hour, 100 hour and subsequently every 100-hour upto 1000 hours period. After completion of the above, the core of the conductor sample shall be subjected to UTS test as mentioned above at clause 1.1 of Annexure-A. The conductor core shall withstand a load equivalent to 95 % of UTS. In case of polymer composite core conductor, the flexural strength & glass transition temperature of the core shall also be evaluated and the same shall not be degraded by more than 10 % over the initial value. The supplier shall plot the thermal elongation with temperature. The supplier shall furnish details of creep characteristic in respect of the conductor based on laboratory test and other laboratory investigations/ experimental conducted on similar type of conductor and shall indicate creep strain values corresponding to 1 month, 6-month, 1 year, 10 years & 20-year creep at everyday tension & continuous designed temperature as well as room temperature.

1.7 Sheaves Test

The conductor sample of minimum length of 35 meter shall be tensioned at 22 % of the UTS and shall be passed through pulleys having diameter of 32 times that of the conductor with angle of 20 deg. between the pulleys. The conductor shall be passed over the pulleys 36 times at a speed of 2 m/sec. After this test UTS test on the conductor shall be carried out. The core shall be inspected for any sign of damage or cracking through dye penetration test as per ASTM D5117.

1.8 Axial Impact Test

The conductor sample shall be suspended vertically and load applied by dropping a 650 Kg from an elevation of 4 meters above the sample. The impact velocity shall be not less than 8 m/sec. with an initial pre-tension of 200kg. The curve for load vs time shall be recorded and recorded load of failure for core shall not be less than UTS of core.

1.9 Radial Crush Test

A section of conductor is to be crushed between two six-inch steel plates. Load shall be held at 350 Kg for 1 minute and then released. Core/ core strands shall be subsequently disassembled and tensile tested. Core/ core strands shall exhibit full strength retention

1.10 Torsional Ductility Test

The conductor sample of 10-15 m shall be loaded to 25% of UTS and then rotated in increasing steps of +/-180deg. In case of composite core conductors, after 4 rotations or after separation of aluminium strands, the aluminium wires shall be cut and removed from the conductor and the exposed core shall be twisted and shall withstand upto 16 rotations.

1.11 Aeolian Vibration Test

The conductor and supporting hardware shall be loaded to 25% of RTS. A dynamometer, load cell, calibrated beam or other device shall be used to measure the conductor tension. Some means should be provided to maintain constant tension to allow for temperature fluctuations during the testing. The overall span between system terminations shall be a minimum of 30 m. The span shall be supported at a height such that the static sag angle of the cable to horizontal is (1.5 + 0.5) deg in the active span. Means shall be provided for measuring and monitoring the mid-loop (antinode) vibration amplitude

at a free loop, not a support loop. An electronically controlled shaker shall be used to excite the conductor in the vertical plane. The shaker armature shall be securely fastened to the conductor so it is perpendicular to the conductor in the vertical plane. The shaker should be located in the span to allow for a minimum of six vibration loops between the suspension assembly and the shaker. The test shall be carried out at one or more resonance frequencies (more than 10 Hz). The amplitude at the antinode point shall be one third of conductor diameter. The assembly shall be vibrated for not less than 10 million cycles without any failure. After the test, the conductor should not exhibit any damage (broken strands). The conductor shall be tested to demonstrate that it retains at least 95% RTS.

1.12 Temperature Cycle Test

The purpose of this test is verification of degradation characteristics of metallic and non-metallic material when subjected to thermal cycling temperature cycling can create large internal stresses due to thermal expansion Mismatch between constituents. Test Methods: -

- Mechanical tension, 20% RBS, marks on the conductor at the edge of the conductor.
- 100 cycles from room temperature upto maximum temperature. Hold at design maximum temperature $\pm 2.5^{\circ}\text{C}$ for 5 minutes.
- After the above mentioned 100 cycles, the mechanical tension shall be increased upto 70% RBS at room temperature and kept at this tension for 24H. There after release to 20% RBS.
- This cycling test shall be repeated 5 times.
- During the test, temperature of connectors, conductor and resistance are recorded according to ANSIC119.
- A breaking load test is applied at the end of the test. Conductor strength has to be higher than 95% RBS.

In case of polymer composites, the flexural strength should not degrade by more than 10 % and the Glass Transition temperature shall not degrade by more than 10 % after thermal cycling. Flexural strength shall be obtained based on test procedure indicated at 1.32 below

1.13 Heat Resistance test on Aluminium Alloy wire

Breaking load test as per clause 1.12 above shall be carried out before and after heating the sample in uniform heat furnace at following temperature for one hour. The breaking strength of the wire after heating shall not be less than the 90% of the breaking strength before heating: -

Maximum continuous operating temperature of The conductor	Test Temperature
Upto 150°C	$230^{\circ}\text{C} (+5/-3^{\circ}\text{C})$
More than 150°C & upto 210°C	$280^{\circ}\text{C} (+5/-3^{\circ}\text{C})$
More than 210°C & upto 230°C	$400^{\circ}\text{C} (+5/-3^{\circ}\text{C})$

1.14 Bending test on aluminium clad core wire (if applicable)

A sample of aluminium clad invar strand measuring 30 cm in length shall be subject to bending with help of a vise. The vised length of wire should be 5 cm and radius of bend 4.8 mm. The bending should

be first 90 degrees left and 90-degree right. After this operation the strand should cut at the bending point. There should be no separation of core and aluminium at the bending point after this operation.

1.15 Compression test on aluminium clad wires (if applicable)

A sample of aluminium clad core strand 10 mm in length is to be compressed by a plate with a load of 3600kgs. The aluminium and core strand should not break.

1.16 Coefficient of linear expansion for core/core wires

The temperature and elongation on a sample shall be continuously measured and recorded at interval of approximately 15 degree C from 15 degree C to maximum continuous operating temperature corresponding to rated current (875 for 132kV & 1200 A for 220kV) by changing the temperature by suitable means. Coefficient of linear expansion shall be determined from the measured results.

1.17 Strand Brittle fracture test (for polymer composite core only)

The sample shall be tensioned to approx. 25 % of UTS with simultaneous application of 1NHNO₃ acid directly in contact with naked polymer composite core for 96 hrs. The contact length of acid shall not be less than 40mm and thickness around the core not less than 10mm. The rod shall withstand UTS test after 96 hours.

1.18 Visual and Dimensional Check on Drums

The drums shall be visually and dimensionally checked to ensure that they conform to the approved drawings.

1.19 Visual Check for Joints, Scratches etc.

Conductor drums shall be rewound in the presence of the Employer. The Employer shall visually check for scratches, joints etc. and that the conductor generally conform to the requirements of this Specification. Ten percent (10%) drums from each lot shall be rewound in the presence of the Employer's representative.

1.20 Dimensional Check on Core Wires and Aluminium/Aluminium Alloy Wires

The individual strands shall be dimensionally checked to ensure that they conform to the requirement of this Specification.

1.21 Check for Lay-ratios of Various Layers

The lay-ratios of various layers shall be checked to ensure that they conform to the guaranteed values furnished by the Contractor.

1.22 Galvanizing Test

The test procedure shall be as specified in IEC: 888. The material shall conform to the requirements of this Specification. The adherence of zinc shall be checked by wrapping around a mandrel four times the diameter of steel wire.

1.23 Aluminium thickness on aluminium clad wires (if applicable)

The thickness of aluminium of the specimen shall be determined by using suitable electrical indicating instruments operating on the direct measurement. Measurements shall be read to three decimal places, and number rounded to two decimal places is considered as measured thickness. For reference

purposes, direct measurement shall be used to determine aluminium thickness on specimens taken from the end of the coils.

1.24 Torsion and Elongation Tests on Composite Core

In case of composite core HTLS conductor, the following procedure shall be applicable:-

Elongation Test: - The elongation of the composite core sample shall be determined using extensometer. The load along the core shall be gradually increased. The elongation achieved on reaching the tensile strength of the core shall not be less than the value guaranteed in the GTP.

Torsion Test: The purpose of the test is to determine the resilience of the composite core to twisting and to show that after the composite core has experienced the prescribed twisting, it will not crack or have a loss in tensile strength due to the twisting. A sample length that is 170 times the diameter of the composite core being tested is mounted in the gripping fixtures. One grip shall then be fixed so that it does not twist and the other end shall be twisted a full 360 degrees and then fixed in this position for 2 minutes. Once the twist time is completed, the core is untwisted and inspected for any crazing or other damage. If no damage is observed, the composite core is then tensile tested to failure and the

final load recorded. For the test to be accepted, the composite core must withstand at least 100% of its rated tensile strength. Two samples need to be completed to satisfy the testing requirement.

1.25 Breaking load test on Aluminium/Aluminium Alloy & Composite core and D.C Resistance test on Aluminium/Aluminium Alloy wire

The above tests shall be carried out as per IEC:888/889 and the results shall meet the requirements of the specification.

1.26 Wrap test on Core wires (Applicable for steel/Al clad Steel/invar core only)

The wrap test on core strands shall be meet the requirements of IEC: 888. In case of aluminium clad core wire, the same shall be wrapped around a Mandrel of diameter of five times that of the strand to form a helix of eight turns. The strand shall be unwrapped. No breakage of strand shall occur

1.27 Minimum conductivity test on thermal resistant aluminium alloy wire

Resistivity test as per IEC-468/IEC 889 shall be conducted to confirm minimum conductivity as per specification requirement

1.28 Procedure Qualification test on welded Aluminium/Aluminium Alloy wire.

Two Aluminium/Aluminium Alloy wire shall be welded as per the approved quality plan and shall be subjected to tensile load. The breaking strength of the welded joint of the wire shall not be less than the guaranteed breaking strength of individual strands.

1.29 Ageing Test on Filler (if applicable)

The test shall be done in accordance with Grease drop point test method. The specimen should be drop as a droplet when kept at a temperature 45 deg. C above designed maximum operating temperature of the conductor for 30minutes. The temperature shall then be increase till one droplet drops and the temperature recorded.

1.30 Aluminium conductivity test on aluminium clad wire (if applicable)

Resistivity test as per IEC-468 shall be conducted to confirm minimum conductivity as per specification requirement.

1.31 Glass Transition Temperature Test (for polymer composite core only)

Test method shall be as per ASTM D7028, A Standard Test Method for Glass Transition Temperature of Polymer Matrix Composites by Dynamic Mechanical Analysis. The glass transition temperature shall be greater than the maximum continuous operating temperature of the offered Composite Carbon Core HTLS Conductor +35degC.

1.32 Flexural Strength Test (for polymer composite core only)

Test method shall be as per ASTM D7264, ASTM D4475 or ISO 14125.

1.33 Bending Test on Composite Core:

A composite core sample shall be wrapped 180 degree around a cylindrical mandrel, and the specimen brought to 15 % of the rated tensile strength of the composite core and held for 1 min. The mandrel diameter shall be not more than 50 times the dia of composite core. After completion of the test, the core shall withstand UTS test and dye penetration test.

1.34 Chemical Analysis of Aluminium/Aluminium Alloy and Composite core/INVAR Core Wires

Samples taken from the Aluminium/Aluminium Alloy and core coils/strands shall be chemically/spectrographically analyzed. The same shall be in conformity to the particulars guaranteed by the bidder so as to meet the requirements stated in this Specification.

1.35 Chemical Analysis of Zinc

Samples taken from the zinc ingots shall be chemically/spectrographically analyzed. The same shall be in conformity to the requirements stated in the Specification.