BIDDING DOCUMENT

FOR

"Turnkey Construction 132kV Feeder Bays at both ends including associated Works for 132KV IOCL BGR 2nd Circuit Line from 132KV Dhaligaon GSS to IOCL Bongaigaon Refinery."

FUND: "Deposit Work"

(E-Tender)

https://assamtenders.gov.in

VOLUME-2 TECHNICAL SPECIFICATION

BID IDENTIFICATION NO:
AEGCL/MD/Tech-392/O&M(LAR)/IOCL(BGR)/132KV BAY/2026/BID

Assam Electricity Grid Corporation Limited

VOLUME-2 TECHNICAL SPECIFICATION

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Section-1
SCOPE AND GENERAL TECHNICAL CONDITIONS

1.1.0 INTENT OF THESPECIFICATION

1.1.1 This volume of the specification deals with the general technical information & criteria for design, manufacture, supply & delivery of equipment/material, erection, testing & commissioning and setting to work of construction of new132Kv Bays on "Design, Supply and Install" basis as defined in Volume-1.

1.1.2 The provisions of this section shall supplement all the detailed Technical Specifications and requirements brought out herein. The CONTRACTOR's proposal shall be based on the use of materials complying fully with the requirements specified herein.

1.2.0 SCOPE

1.2.1 The work involves design, engineering, manufacture, assembly, inspection, testing at manufacturer's works before dispatch, packing, supply, including insurance during transit, delivery at site subsequent storage and erection & commissioning at site of various equipment and materials including substation steel structures and civil foundations for equipment as specified in subsequent Clauses and Sections.

1.2.2 It is not the intent to specify completely herein all details of design and construction of the equipment and accessories. However, the equipment and accessories shall conform in all respects to high standards of engineering, design and workmanship and be capable of performing in continuous operation up to the bidder's guarantees in a manner acceptable to the Purchaser. The Purchaser will interpret the meaning of drawings and specifications and shall be entitled to reject any work or material, which in his judgement is not in full accordance there with.

1.2.3 The major items of works included in the scope of this specification are listed below: -

i) Design, manufacturing, testing & supply of all substation switchgears and protection equipment as per this bidding document specification and Bill of Materials (BoQ)

ii) Erection, testing and commissioning of all switch & control gears such as circuit breakers, isolators, current transformers, relay & control panels, Lightning Arresters etc. as specified in Bill of Materials at 132KV Dhaligaon GSS and IOCL Bongaigaon Refinery end.

iii) Supply and erection of substation/ equipment mounting steel structures as per BoQ and bid specification at 132KV Dhaligaon GSS and IOCL Bongaigaon Refinery end.

iv) Construction of cable trenches and earth mat including supply of all materials as per BoQ and bid specification

v) Bus Extension at 132KV Dhaligoan GSS as per BoQ and bid specification.

vi) Other works includes site development, construction of equipment and structure foundations, dismantling, other associated civil work, Design and installation of illumination system for switchyard (for the 132kV bay under construction vide this BID) etc. as brought out in the Specification and as per BoQ and bid specification.

vii) Integration of all switch & control gears of the bay including control and relay panel along with the ABT metering module into the existing Substation Automation System at Dhaligaon GSS and IOCL Bongaigaon Refinery end.

viii) The integration of supplied CRP to the existing SAS (SAS Make: Hitachi) of AEGCL and IOCL switchyard (SAS Make: Schneider Electric) has to be done by authorized representatives of the OEM only. Also, if the OEM of the C&R Panel is different from the OEM of the existing SAS then the integration of the C&R Panel with the existing SAS has to be done by the authorized representatives of both the OEM.

ix) Any upgradation of hardware and software for above integration shall be in the scope of contractor including license upgradation (if any). The validity of the license upgraded should be minimum for 10years.

1.2.4 The various items of supply are described very briefly in the schedule of Bid Form, Prices & Other

Schedules and annexure. The various items as defined in these schedules shall be read in conjunction with the corresponding section in the technical specifications including amendments and, additions if any.

1.2.5 The tentative Bill of Quantities is furnished in Section 2: BIDDING FORMS of Vol-1 of this Bidding Document.

1.3.0 CONTRACTOR TO INFORM HIMSELFFULLY

1.3.1 The Contractor should ensure that he has examined the General Conditions, qualifying criteria, Specifications and Schedules as brought out in Volume-1 and this Volume and has satisfied himself as to all the conditions and circumstances affecting the contract price and fixed his price according to his own views on these matters and acknowledge that no additional allowances except as otherwise provided therein will belevied.

1.3.2 The Purchaser shall not be responsible for any misunderstanding or incorrect information obtained by the CONTRACTOR other than information given to the CONTRACTOR in writing by the Purchaser

1.4.0 SERVICECONDITIONS

1.4.1 The plant and materials supplied shall be suitable for operation under the following climatic and other conditions:

a)	Peak ambient day temperature in still air		45°C
b)	Minimum night temperatures		0°C
c)	Reference ambient day temperature		45°C
d)	Relative Humidity	(a)Maximum	100 %
		(b)Minimum	10 %
e)	Altitude		Below1000 M above MSL
f)	Maximum wind pressure:		As per IS: 802 latest code
g)	Other Data		Refer Meteorological data pertaining to the locations
h)	Seismic Intensity		ZONE-V as per IS 1893.

1.5.0 **CONFORMITY WITH INDIAN ELECTRICITY RULES & OTHER LOCALREGULATIONS**:

1.5.1 The CONTRACTOR shall note that all substation works shall comply with the latest provisions of Indian Electricity Rules and with any other regulations. Local authorities concerned in the administration of the rules and regulation relating to such works shall be consulted, if necessary, in regard to the rules and regulations that may be applicable.

1.6.0 STANDARDS

1.6.1 The equipment covered by this specification shall, unless otherwise stated be designed, constructed and tested in accordance with the latest revisions of relevant Indian Standards and shall conform to the regulations of local statutory authorities.

1.6.2 In case of any conflict between the standards and this specification, this specification shall govern.

1.6.2.1 Equipment conforming to other international or authoritative Standards which ensure equivalent or better performance than that specified under Clause 1.6.1 above shall also be accepted. In that case relevant extracts of the same shall be forwarded with the bid.

1.7.0 CONTRACTOR'SREQUIREMENT

1.7.1 **The Contractor should be in possession of a valid E.H.V. Electrical Licence issued by the Chief Electrical Inspector, Govt. of Assam, as per the provision of Law.** An attested copy of the aforementioned Licence must be handed over to the Employer for his record prior to handing/ taking over of sites.

1.7.2 All the works shall also be inspected by the Chief Electrical Inspector, Govt. of Assam or his authorized representatives. It is the responsibility of the Contractor to obtain pre-requisite commissioning clearance of any equipment from the said Inspectorate. The Contractor will pay necessary fees to the Inspectorate, which it maylevy.

1.8.0 ENGINEERINGDATA

1.8.1 The furnishing of engineering data by the CONTRACTOR shall be in. accordance with the Bidding Document. The review of these data by the Purchaser will cover only general conformance of the data to the specifications and not a thorough review of all dimensions, quantities and details of the materials, or items indicated or the accuracy of the information submitted. This review by the Purchaser shall not be considered by the CONTRACTOR, as limiting any of his responsibilities and liabilities for mistakes and deviations from the requirements, specified under these specifications.

1.8.2 All engineering data submitted by the CONTRACTOR after review by the Purchaser shall or part of the contract document.

1.9.0 DRAWINGS AND DOCUMENTS FORAPPROVAL

1.9.1 In addition to those stipulated in clause regarding drawings in GENERAL CONDITIONS OF CONTRACT (Vol-1), the following sub clauses shall also apply in respect of Contract Drawings.

1.9.2 All drawings submitted by the CONTRACTOR including those submitted at the time of Bid shall be with sufficient detail to indicate the type, size, arrangement, dimensions, material description, Bill of Materials, weight of each component break-up for packing and shipment, fixing arrangement required, the dimensions required for installation and any other information specifically requested in these specifications.

1.9.3 Each drawing submitted by the CONTRACTOR shall be clearly marked with the name of the Purchaser, the specification title, the specification number and the name of the Project. All titles, noting, markings and writings on the drawing shall be in English. All the dimensions should be to the scale and in S.I. units.

1.9.4 The drawings submitted for approval to the Purchaser shall be in quadruplicate. One print of such drawings shall be returned to the CONTRACTOR by the Purchaser marked "approved/approved with corrections", if found generally in accordance with the specifications.

1.9.5 Initial submitted drawings may be in soft copies forwarded through emails. However, in this case drawings must be in Auto-CAD.
The CONTRACTOR shall there upon furnish the Purchaser additional prints as may be required along with one reproducible in original of the drawings after incorporating all corrections.
The Contractor shall perform the work strictly in accordance with these drawings and no deviation shall be permitted without the written approval of the Employer, if so required.

1.9.6 All manufacturing, fabrication and erection work under the scope of Contractor prior to the approval of the drawings shall be at the Contractor's risk. The contractor may make any changes in the design which are necessary to conform to the provisions and intent of the contractor and such changes will again be subject to approval by the Employer.

1.9.7 The approval of the documents and drawings by the Employer shall mean that the Employer is satisfied that:
a) The Contractor has completed the part of the Works covered by the subject document (i.e. confirmation of progress of work).
b) The Works appear to comply with requirements of Specifications.
In no case the approval by the Employer of any document does imply compliance with neither all technical requirements nor the absence of errors in such documents. If errors are discovered any time during the validity of the contract, then the Contractor shall be responsible of their consequences.

1.9.8 All drawings shall be prepared using AutoCAD software version 2000 or later only. Drawings, which are not compatible to AutoCAD software version 2000 or later, shall not be acceptable.
After final approval all the drawings shall be submitted to the Employer in readable CD's.

1.9.9 The following is the general list of the documents and drawings that are to be approved by the **Employer**:

1.9.10 All Designs / Drawings / Calculations/ Data submitted by the contractor, from time to time shall become the property of the Employer and Employer has the right to use or replicate such designs for future contracts / works without the permission of the Contractor. The Employer has all rights to use/ offer above designs/drawings/data sheets to any other authority without prior Permission of the Contractor.

1.10.0 FINAL DRAWINGS AND DOCUMENTS

1.10.1 The successful Contractor shall require to provide following drawings and documents for each substation in printed form and as well as in soft copies. All soft copies of drawings must be in 'AutoCAD' file format.

(a) All approved drawings (AS BUILD) of equipment and works related to a particular substation in three (3)copies.

(b) Instruction manuals of all equipment related to a particular substation in three (3)copies. These instruction manuals shall generally consist of
(i) Operation Manuals, (ii) Maintenance Manuals and (iii) Spare Parts Bulletins.

(c) Copies of routine test reports (in triplicate) of relevant equipment.
(d) Final Guaranteed and Other technical particulars of relevant equipment (in triplicate).

1.10.2 In addition to the above, the Contractor shall provide five (5) sets of all the printed drawings and documents including the soft copies to Employer for his reference and record.

1.11.0 APPLICATION AND SYSTEMSOFTWARE

1.11.1 Contractor shall provide copies of licenced copies application software / configuration &system software in the form of CD (in duplicate) for all IEDs, meters, SASetc.

1.12.0 DESIGNIMPROVEMENTS

1.12.1 The Employer or the Contractor may propose changes in the specification and if the parties agree upon any such changes and the cost implication, the specification shall be modifiedaccordingly.

1.13.0 DESIGNCO-ORDINATION

1.13.1 Wherever, the design is in the scope of Contractor, the Contractor shall be responsible for the selection and design of appropriate material/item to provide the best co-ordinated performance of the entire system. The basic design requirements are detailed out in this Specification. The design of various components, sub-assemblies and assemblies shall be so done that it facilitates easy field assembly and maintenance.

1.14.0 DESIGN REVIEWMEETING

1.14.1 The contractor will be called upon to attend design review meetings with the Employer, and the

consultants of the Employer during the period of Contract. The contractor shall attend such meetings at his own cost at Assam or at mutually agreed venue as and when required. Such review meeting will be heldgenerallyminimumonceamonthorthefrequencyofthesemeetingshallbemutuallyagreed between the Employer and the Contractor. Frequency of Design Review Meetings shall depend upon the project requirement to ensure project implementation as per the MasterProgramme.

1.15.0 QUALITY ASSURANCE, INSPECTION &TESTING

1.15.1 QualityAssurance

To ensure that the supply and services under the scope of this Contract whether manufactured or performed within the Contractor's works or at his Sub Contractor's premises or at site or at any other place of work are in, accordance with the specifications, the Contractor shall adopt suitable quality assurance programme to control such activities at all points necessary. Such programme shall be outlined by the Contractor and shall be finally accepted by the Employer after discussions before the award of Contract. A quality assurance programme of the Contractor shall generally cover but not limited to thefollowing:

a) His organization structure for the management and implementation of the proposed quality assurance programme
b) Documentation controlSystem.
c) Qualification data for Contractors keypersonnel.
d) The procedure for purchases of materials, parts components and selection of sub-contractors services including vendor analysis, source inspection, incoming raw material inspection, verification of material purchasesetc.
e) System for shop manufacturing including process controls and fabrication and assemblycontrols.
f) Control of non-conforming items and system for correctiveaction.
g) Control of calibration and testing of measuring and testingequipment.
h) Inspection and test procedure formanufacture.
i) System for indication and appraisal of inspectionstatus.
j) System for qualityaudits.
k) System for authorizing release of manufactured product to theEmployer.
l) System for maintenance ofrecords.
m) System for handling storage and deliveryand
n) A quality plan detailing out the specific quality control procedure adopted for controlling the quality characteristics relevant to each item ofsupply.

The Quality plan shall! be mutually discussed and approved by the Employer after incorporating necessary corrections by the Contractor as may be required.

1.15.2 Quality AssuranceDocuments

The Contractor shall be required to submit all the Quality Assurance Documents as stipulated in the Quality Plan at the time of Employers inspection of equipment/material.
The Employer or his duly authorized representatives reserves the right to carry out Quality Audit and quality surveillance of the systems and procedures of the Contractors/his vendors Quality Management and Control Activities.

1.16.0 EMPLOYER'SSUPERVISION

1.16.1 To eliminate delays and avoid disputes and litigation it is agreed between the parties to the Contract thatallmattersandquestionsshallberesolvedinaccordancewiththeprovisionsofthisdocument.

1.16.2 The manufacturing of the product shall be carried out in accordance with the specifications. The scope of the duties of the Employer, pursuant to the contract, will include but not be limited to the following.

(a) Interpretation of all the terms and conditions of these Documents andSpecifications.
(b) Review and interpretation of all the Contractors drawings, engineering dataetc.

(c) Witness or authorize his representative to witness tests at the manufacturer's works or at site, or at any place where work is performed under thecontract.
(d) Inspect, accept or reject any equipment, material and work under the Contract, in accordance with theSpecifications.
(e) Issue certificate of acceptance and/or progressive payment and final paymentcertificate.
(f) Review and suggest modification and improvement in completion schedules from time to time, and
(g) Supervise the Quality Assurance Programme implementation at all stages of theworks.

1.17.0 INSPECTION & INSPECTIONCERTIFICATE

1.17.1 The Purchaser, his duly authorized representative and/or outside inspection agency acting on behalf of the Purchaser shall have, at all reasonable times, access to the premises and works of the CONTRACTOR and their sub-CONTRACTOR(s)/sub-vendors and shall have the right, at the reasonable times, to inspect and examine the materials and workmanship of the product during its manufacture.

1.17.1.1 All routine and acceptance tests whether at the premises or works of, the CONTRACTOR or of any Sub-CONTRACTOR, the CONTRACTOR except where otherwise specified shall carry out such tests free of charge. Items such as labour, materials, electricity, fuel, water, stores apparatus and instruments as may be reasonably demanded by the Purchaser/inspector or his authorized representative to carry out effectively such tests in accordance with the Contract shall be provided by the CONTRACTOR free ofcharge.

1.17.1.2 If desired by the Purchaser, the CONTRACTOR shall also carry out type tests as per applicable Standards for which Purchaser shall bear the expenses except in cases where such tests have to be carried out in pursuance to ***Clause 1.18.3***. The CONTRACTOR is required to quote unit rates of type test charges in a separate Schedule (if such schedule is provided in the Bidding Document) in pursuance to this Clause. However, these type test charges shall not be taken into account in comparing PriceBid.

1.17.1.3 The inspection by Purchaser and issue of Inspection Certificate thereon shall in no way limit the liabilities and responsibilities of the CONTRACTOR in respect of the agreed Quality Assurance Programme forming a part of theContract.

1.17.1.4 The inspection by Employer and issue of Inspection Certificate thereon shall in no way limit the liabilities and responsibilities of the Contractor in respect of the agreed Quality Assurance Programme forming a part of theContract.

1.18.0 Tests

The type, acceptance and routine tests and tests during manufacture to be carried-out on the material and equipment shall mean as follows:

i) Type Tests shall mean those tests, which are to be carried out to prove the process of manufacture and general conformity of the material to this Specification. These tests shall be carried out on samples prior to Commencement of commercial production against the order. The Bidder shall indicate his schedule for carrying out thesetests.

ii) Acceptance Tests shall mean those tests, which are to be carried out on samples taken from each lot offered for pre-dispatch inspection, for the purposes of acceptance of thatlot.

iii) Routine Tests shall mean those tests, which are to be carried out on the material to check requirements, which are likely to vary duringproduction.

iv) Tests during Manufacture shall mean those tests, which are to be carried out during the process of manufacture and end inspection by the CONTRACTOR to ensure the desired

quality of the end product to be supplied byhim.

v) The norms and procedure of sampling for these tests will be as per the Quality Assurance Programme to be mutually agreed to by the CONTRACTOR and thePurchaser.

1.18.1 The standards and norms to which these tests will be carried out are specified in subsequent Sections of this Specification. Where a particular test is a specific requirement of this Specification, the norms and procedure of the test shall be as specified or as mutually agreed to between the CONTRACTOR and the Purchaser in the Quality AssuranceProgramme.

1.18.2 For all type and acceptance tests, the acceptance values shall be the values specified in this Specification or guaranteed by the Bidder or applicable Standards, asapplicable.

1.19.0 GUARANTEED TECHNICALPARTICULARS

1.19.1 The Guaranteed Technical Particulars of the various items shall be furnished by the Bidders in the prescribed schedules of this Specification with the Technical Bid. The Bidder shall also furnish any other information's as in their opinion is needed to give full description and details to judge the item(s) offered by them.

1.19.2 The data furnished in Guaranteed Technical Particulars should be the minimum or maximum value (as per the requirement of the specification) required. A Bidder may guarantee a value more stringent than the specification requirement. However, for testing purpose or from performance point of view, the material shall be considered performed successfully if it achieves the minimum/maximum value required as per the technical specification. No preference what *so* ever shall be given to the bidder offering better/morestringentvaluesthanthoserequiredasperspecificationexceptwherestatedotherwise.

1.20.0 PACKING

1.20.1 All the materials shall be suitably protected, coated, covered or boxed and crated to prevent damage or deterioration during transit, handling and storage at Site till the time of erection. The CONTRACTOR shall be responsible for any loss or damage during transportation, handling and storage due to improper packing.

1.20.2 The CONTRACTOR shall include and provide for securely protecting and packing the materials so as to avoid loss or damage during transport by air, sea, rail androad.

1.20.3 All packing shall allow for easy removal and checking at site. Wherever necessary, proper arrangement for attaching slings for lifting shall be provided. All packages shall be clearly marked for with signs showing 'up' and 'down' on the sides of boxes, and handling and unpacking instructions as considered necessary. Special precaution shall be taken to prevent rusting of steel and iron parts during transit by sea.

1.20.4 The cases containing easily damageable material shall be very carefully packed and marked with appropriate caution symbols, i.e., fragile, handle with care, use no hook etc. wherever applicable.

1.20.5 Each package shall be legibly marked by the-CONTRACTOR at his expenses showing the details such as description and quantity of contents, the name of the consignee and address, the gross and net weights of the package, the name of the CONTRACTOR etc.

1.21.0 CONSTRUCTION TOOLS, EQUIPMENTSETC.

1.21.1 The Contractor shall provide all the construction equipment, tools, tackle and scaffoldings required for construction, erection, testing and commissioning of the works covered under the Contract including construction power water supply etc.He shall submit a list of all such materials to the Employer before the commencement of work at site. These tools and tackle shall not be removed from the site without the written permission of theEmployer.

1.22.0 MATERIALS HANDLING ANDSTORAGE

1.22.1 All the supplies under the Contract as well as Employer supplied items (if any) arriving at site shall be promptly received, unloaded and transported and stored in the stores by the Contractor.

1.22.2 Contractor shall be responsible for examining all the shipment and notify the Employer immediately of any damage, shortage, discrepancy etc. for the purpose of Employer's information only. The Contractor shall submit to the Employer every week a report detailing all the receipts during the week. However, the Contractor shall be solely responsible for any shortages or damages in transit, handling and/or in storage and erection at site. Any demurrage, and other such charges claimed by the transporters, railways etc., shall be to the account of the Contractor.

1.22.3 The Contractor shall maintain an accurate and exhaustive record-detailing out the list of all items received by him for the purpose of erection and keep such record open for the inspection of the Employer.

1.22.4 All items shall be handled very carefully to prevent any damage or loss. The materials stored shall be properly protected to prevent damage. The materials from the store shall be moved to the actual location at the appropriate time to avoid damage of such materials at Site.

1.22.5 All the materials stored in the open or dusty location must be covered with suitable weatherproof and flameproof covering material wherever applicable.

1.22.6 The Contractor shall be responsible for making suitable indoor storage facilities, to store all items/materials, which require indoor storage.

1.22.7 The Contractor shall have total responsibility for all equipment and materials in his custody stored, loose, semi-assembled and/or erected by him at site. The contractor shall make suitable security arrangements including employment of security personnel to ensure the protection of all materials, equipment and works from theft, fire, pilferage and any other damages andloss.

1.22.8 The Employer will verify the storage facilities arranged by the contractor and dispatch clearance will be provided only after Employer issatisfied.

1.23.0 CONTRACTOR'S MATERIALS BROUGHT ON TO SITE

1.23.1 The Contractor shall bring to Site all equipment, components, parts, materials, including construction equipment, tools and tackles for the purpose of the work under intimation to the Engineer. All such goods shall, from the time of their being brought vest in the Employer, but may be used for the purpose of the Works only and shall not on any account be removed or taken away by the Contractor without the written permission of the Engineer. The Contractor shall nevertheless be solely liable and responsible for any loss or destruction thereof and damage there to.

1.23.2 The Employers shall have a lien on such goods for any sum or sums, which may at any time, be due or owing to him by the Contractor, under in respect for by reasons of the Contract. After giving a fifteen (15) days' notice in writing of his intention to do so, the Employer shall be at liberty to sell and dispose of any such goods, in such manner, as he shall think fit including public auction or private treaty.

1.23.3 After the completion of the Works, the Contractor shall remove from the Site under the direction of the Engineer the materials such as construction equipment, erection tools and tackles, scaffolding etc. with the written permission of the Engineer. If the Contractor fails to remove such materials within fifteen (15) days of issue of a notice by the Engineer, the Engineer shall have the liberty to dispose of such materials as detailed under clause 1.24.2 above and credit the proceeds thereto to the account of the Contractor.

1.24.0 COMMISSIONINGSPARES

1.24.1 It will be the responsibility of the Contractor to provide all commissioning spares required for initial operation till the Employer declares the equipment as ready for commissioning. All commissioning spares shall be deemed to be included in the scope of the Contract at no extra cost to the Employer.

1.24.2 These spares shall be received and stored by the Contractor at least 3 months prior to the schedule date of commencement of commissioning of the respective equipment and utilized as and when required. The unutilized spares and replaced parts, if any, at the end of successful completion of

performance and guarantee test shall be the property of the Contractor and he will be allowed to take these parts back at his own cost with the permission of Employer's Representative.

SECTION-2

Technical Specification

The Technical Specification for various equipment have been enclosed as

Annexure