



BHARAT HEAVY ELECTRICALS LIMITED

TRANSMISSION BUSINESS ENGINEERING MANAGEMENT

NOIDA

DOCUMENT No.	TB-363-316-029A	Rev	00		Prepared	Checked	Approved
CUSTOMER Doc. No.				NAME	SK	DM	RS
TYPE OF DOC.	TECHNICAL SPECIFICATION			SIGN	<i>Ch</i>	<i>[Signature]</i>	
TITLE	Maintenance Instruments			DATE	03.05.17		
				GROUP	TBEM		
				W.O. No	83003 & 83006		
CUSTOMER	TAMIL NADU TRANSMISSION CORPORATION LIMITED						
PROJECT	400/110 KV Substation at Thappagundu & 400/230-110 KV Substation at Anikadavu						

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Rev.	Date	Altered	Checked	Approved	REVISION DETAILS		
Distribution				CUSTOMER	TBMM	O/C	
				-			

CHECKLIST FOR OFFER

Along with the Technical Bids of the offers, the Bidder should submit this checklist confirming the inclusion of the enclosures as listed below. (Shall tick as ✓)

Sr No	Documents to be enclosed	Bidder to check & confirm
1	Copy of Unpriced BOQ as enclosed in the Technical Specification to confirm that bidder has quoted in the same format	
2.	Schedule of Technical Deviation format duly signed.	
3.	Supporting documents as asked in the Technical PQR	
4.	Checklist of Technical parameters as per Section-4 duly filled and signed.	

NOTE:- If the Bidder fails to submit any of the documents as asked in the above check list, their bid is likely to be rejected / not evaluated.

The above checklist is verified for:-

NIT Ref No. :

Name of Equipment :

Name of Project :

Name of Bidder :

Signed with Seal of Bidder.

Date

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 Technical specification for Testing Instruments No. TB-363-316-029A Rev. 00

SECTION - I

Scope, Quantities and Specific Technical Requirements

1.1 Scope

This specification is intended to specify the requirements for Supply of operation & maintenance test equipment & tools required at the sites as mentioned in subsequent clause. The scope of work shall encompass at least the following:

- Detailed design of all the equipment
- Inspection and testing before supply
- Packing, Loading & Transportation to site
- Providing engineering data, drawings, Brochures and O & M manuals for BHEL/TANTRANSCO review, approval and records.

1.2 The instruments are required for the following Projects.

Project title:	400/110kV Substation at Thappagundu and 400/230-110 KV Substation at Anikadavu
Owner/ Employer:	M/s Tamil Nadu Transmission Corporation Limited
Contractor:	Bharat Heavy Electricals Limited (BHEL)

1.3 Bill of quantities

S. No.	Item Description	Unit	Quantity	
			Anikadavu	Thappagundu
1.	High accuracy AC/DC Digital Clamp Meter	Nos.	2	2
2.	Transformer Oil Testing Kit	No	1	1
3.	CT Analyser Kit	No	1	1
4.	Primary Injection Kit 2000 A	No	1	1
5.	Optical Power Meter	No	1	1
6.	Optical source	No	1	1

Note:

- The supplier shall have to demonstrate the function of the above equipment's at both the sites. Necessary standard tests shall be done at sites during the commissioning of the equipment. Separate **Charges to be quoted** for this service.
- All the above listed equipments shall be supplied with standard accessories & any other accessory required to meet the complete function of the supplied instrument.
- The Make and model of instruments shall be as per enclosed Annexure-A only.

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4. Following documents should be submitted along with the offer:

- i) Catalogue and Data sheet of offered instrument.
- ii) List of Past supplies in India & abroad.
- iii) Tests Certificates
- iv) Deviations if any in Technical Deviation schedule.

1.4 Specific Technical Requirements

1. The Test equipment shall be delivered to the Employer in new/ fresh condition.
2. Supplier shall provide valid calibration certificate, test certificate & warranty certificate for the quoted test equipments (As applicable), in the event of order.
3. Supplier should have adequate "**after sales service facility**" in India.
4. Supplier is required to give an undertaking "to address issue of warranty / after sales services from the respective manufacturer of the equipment".
5. Bidder should provide "Authorised Distributor Certificate" from Manufacturer/OEM of the offered test equipment.
6. The instrument is intended for use in Extra high-voltage substation (up to 400kV) and industrial environment. The testing equipments are generally meant for carrying out testing at site and movement from one place to another is unavoidable. Therefore equipment shall be robust in design so that it gives desired performance even in adverse site conditions. Necessary transport packing arrangement shall be provided along with the equipment.

1.5 INSPECTION & TESTING

All the equipments shall be inspected prior to dispatch in line with relevant IS, approved GTP/ drawing/Catalogue and technical specification, BHEL/ TANTRANSCO approved QAP.

Annexure-A
Make and Model of Testing equipment's
Project - TANTRANSCO- Thappagundu & Anikadavu

Sl.no	Instrument	Make	Model	Remarks
1.	CT Analyser Kit	OMICRON	(Order code: VE000654)	To be inclusive of : - "CT SB2 switch box" for Automated testing of multi-tap CTs without the need for rewiring.
2.	Primary Injection Kit 2000 A	Megger	ODEN AT/3S	(1) Should be operable with either 230V AC Mains, 50HZ or 3 PHASE 400V , 50 HZ (2) The equipment should support ranges of output to test the relevant substation equipment's. End user certificate from power utilities for product performance should be furnished for TANTRANSCO approval. (3) All necessary accessories with MCB box and power cable for auxiliary AC supply should be provided. The contractor should ensure the equipment for the intended application.
		EuroSMC	Raptor-C-25 /	
			Raptor-C-35 / Raptor-C-45 /	
3.	High accuracy AC/DC Digital Clamp Meter	Fluke	345	Approval subject to Confirmation of service support in Tamilnadu.
		Amprobe	ACDC 54NAV 1000A	
4.	Optical Power Meter	JDSU	OLP-55	Order no.BN2277/03 with USB data storage is required.
5.	Optical source	JDSU	OLS-55	Order no.BN2279/02 with USB cable, Visual fault locator is required.
			OLS-85	Optical source (OLS-85) may be accepted subject to the condition that the output power range shall be 0 to -7 dBm instead of 0 to -3 dBm.
6.	Transformer oil testing kit	Megger	OTS100AF	

General Remarks applicable for all instruments:

- Vendor should provide local service support and guarantee support preferably in Tamilnadu.
- All instruments should be supplied with:
 - A valid calibration certificate issued from a NABL recognised Lab. The validity shall not be earlier than 3 months as on date of delivery.
 - Rugged carry case.
 - Necessary accessories for the application.
 - User manual
 - Optical instruments should also be provided with all tools and tackles.
- All test equipment's should be demonstrated to the field P&C engineers at site.

Signature

SECTION – 2**EQUIPMENT SPECIFICATION****2.1 High accuracy AC/DC Digital Clamp Meter****General Requirements:**

1000 A AC, 1000 A DC with a feature of measuring different order harmonics; Accuracy of the instrument shall be 1.5% of the range. Resolution 100 mA upto 200 A and 1A for higher.

2.2 Transformer Oil Testing Kit

- i) The equipment shall be suitable for determination of electrical strength (break down voltage) of insulating oil confirming to IS-335 up to 100 kV when measured in accordance with IS:6792. The equipment shall be used in laboratory.
- ii) The test cell shall be as per IS:6792 and IEC-156-1995 suitable for BDV up to 100kV without external flash over.
- iii) HV chamber interlocking and zero start interlocking shall be provided.
- iv) The unit shall have motorized drive to increase voltage linearly as per the rate specified in IS: 6792. Provision shall also be available for manual increase of voltage.
- v) The unit shall be complete with motorised test cell stirrer, calibrator and necessary gauges for adjusting the gap.
- vi) It shall be suitable for 230V, single phase, AC, 50Hz supply with variations of +10% and +/- 5% in voltage and frequency respectively.
- vii) Kit shall be supplied along with all accessories operating manual, spare fuses indication lamps, power supply chord etc all that is required for carrying out measurements. It should offer repeatability of test results.
- viii) It should have overload and short-circuit protection

2.3 CT Analyser Kit

Sr. No.	Requirement
1.	Equipment should be able to perform following test manually and automatically both.
1.1	Ratio Accuracy :ratio 1 ... 2000 0.02 % :ratio 2000 ... 5000 0.03 % :ratio 5000 ... 10000 0.05 %

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1.2	Saturation Test The saturation test can be performed at frequency of 50 Hz up to 2,000 volts as required by IEC regulations it should calculates the rated knee point.
1.3	Phase measurement 3 Digits Range -0 to 360 degree Resolution 1 min Accuracy : +/- 1 min (typical) +/- 6 min (max)
1.4	CT winding resistance measurement (primary and secondary) Accuracy (at 20° C) +/-1%, 0 - 30 Q
1.5	CT excitation curve The CT Analyzer measures the excitation curve and determines the knee point and other important CT data. Depending on the value of the knee point voltage the CT Analyser identifies the test object as either a Measurement CT or a protection CT
1.6	Polarity check
1.7	Secondary burden measurement The Burden Test Card allows the measurement of a current transformer's secondary burden by injecting AC current into the load (up to 5 A).
1.8	Knee-point voltage Upto 5 kV can be measured
2.0	The equipment must have following features:
2.1	Automatic demagnetization of the CT after the test System can automatically demagnetize the CT under test
2.2	Power supply: Input voltage 220V +/- 10% ; 50 Hz; 15A (Max)
2.3	Display: full color, high resolution, LCD touch screen
2.4	Environment conditions: Operating temperature: -10 °C ... + 50 °C / 14 °F ... 122 °F
2.5	Automatic assessment according to IEEE C57.13, IEC 60044-1 or IEC 60044-6.
2.6	Remote control Interface:- Full access to all functions of the CT Analyser via a laptop with software, software shall be provided on free of cost basis. Data can be export into Excel TM and Word TM, Customizable testing and reports

2.7	Data handling and reporting:- Test reports can be saved/store on the Compact Flash Card and transferred to a PC, Data and protocols can be shown on a PC via the Excel TM file loader program, Customizable report templates available for Different standards, classes and applications, Single, multi-core and multi-tap CTs, Three-phase testing, Core testing.
2.8	Weight Volume of products should be less than 0.025m ³ and weight less than 20kg otherwise suitable trolley of plastic body with stainless steel wheels shall be supplied by supplier on free of cost basis.
2.9	Safety : As per standard EN60950 and EN61010

2.4 Primary Injection Kit 2000 A

- i) Ranges
 - a) 0 – 500
 - b) 0 – 2000
- ii) Open circuit Voltage- 0 to 6 Volts (minimum) at 2000 Amp
- iii) Current measurement by Ammeter of accuracy 1%
- iv) Input Power Supply 230 V $\pm$ 10% ac 50 $\pm$ 5%Hz
- v) Provided with metallic enclosure.
- vi) Mobility — Kit should be sturdy and mobile on metal surface in switchyard.
- vii) Kit shall be supplied along with all accessories and cable set (15 mtr length), clamps ,connectors, spare fuses ,indication lamps, power supply cable, etc. all that is required for carrying out measurement for one unit.
- viii) Kit shall have safety features like fuses/MCBs,ON indications etc
- ix) Unit shall be rated to 20kVA and through a loading unit be able to out put range 0 to 2000 Amps in series connection and 0-4000A in parallel connection. For continuous ratings, it should be rated to 10kVA, and output 0 to 1000A in series and 0-2000 A in parallel connection mode. Input power supply of the test unit should be single phase 50 Hz AC.

TEST INSTRUEMNTS:

The following shall apply for the Test Instruments.

All accessories shall be procured and supplied from the respective test equipment manufacturer, including necessary, interfaces, connectors, cables, patch cords, jumpers, batteries, adapters, spares, lamps, fuses, carrying cases etc., which shall be supplied along with each instrument as a single package from each test instrument manufacturer.

These test instruments shall be suitable for the telecommunication system offered for this project and shall include factory testing. The quotation shall contain make and model & detailed specifications for each instrument.

The test instruments shall operate on 230V, 50 cycles per second AC power supply and/or built-in rechargeable batteries.

The built-in battery operated hand-held test instruments should be capable of working in the field for 2 Hour minimum.

Bidder shall provide requisite charger (charging at 230 VAC) along with respective test instruments and one spare set of batteries along-with respective hand-held instruments. Calibration certificates shall be provided for each test

instrument conforming to its traceability. All test instruments shall meet rigorous environmental tests including shock & vibration.

2.5 Optical source:

Basic requirement of optical laser source:

The optical source will be applied for loss/attenuation measurements during installation, operation and maintenance of fiber optic networks. It will be operating in conjunction with an appropriate power meter.

The source has to simulate the system parameters, so laser sources are preferred operating at 1310 and 1550 nm, coupling the output power into a SM-fiber 9/125 μm .

The instrument has to withstand all practical environmental conditions like temperature, shock, bumps etc. The instruments shall use standard AA batteries –dry cells and it should be easy to replace the batteries in the field.

The optical ports shall have an universal optical adapter system which allows to change between different connector types. For the optical ports a robust protection cap against dust and shock should be included.

The output power of the lasers shall be adjustable between -7 and 0dBm.

Instrument specification

S. No.	Parameters	Particulars
1.	Nominal wavelength	1310 $\pm$ 20 nm and 1550 $\pm$ 20 nm
2.	Spectral width (RMS)	5 nm
3.	Laser classification	laser class 1 according to IEC 825
4.	Number of Ports	Single Port
5.	Fibre Type	9/125 μm
6.	Optical Connector	FC-PC
7.	Power Supply	Rechargeable Battery and 230V AC Mains through adapter.
8.	Operating temperature	-10...+55 C
9.	Storage temperature	-40...+70 C
10.	Rel. humidity	up to 90 %

2.6 Optical power meter

The power meter shall be an easy operable, lightweight, rugged and water resistant handheld instrument withstanding all practical environmental conditions like temperature, shock, bumps etc. The instruments shall use standard AA batteries –dry cells.

The instrument must cover the whole wavelength range between 800 and 1700 nm. The operation wavelength could be set to every value between 800 and 1700 nm in 1 nm increments. Automatic wavelength detection must be there.

The instrument must have no warm up time and it must use auto zeroing with no need for manual zeroing.

The optical port must have an universal optical adapter system which would allow to change between different connector types. For the optical ports a robust protection cap should be provided.

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Instrument specification

S. No.	Parameters	Particulars
1.	Wavelength range	800...1700 nm
2.	Switchable standard	800...1700 nm in 1 nm steps
3.	Display range	-80...+15 dBm
4.	Display resolution	0.01 dB/0.001 μ W
5.	Max. power level	+ 15 dBm
6.	Measurement uncertainty	$\pm 0,13$ dB, (± 3 %)
7.	Type of fibre : SM, MM 850 nm or 1300 nm	9/125 μ m, 50/125 μ m respectively 100/140 μ m
8.	Display units	dB, dBm, mW, μ W
9.	Optical interface / Connector easy to clean, universal push pull	one adapter should fit all 2.5 mm connectors (e.g. SC-, DIN-, FC-, E2000,
10.	Power Supply	Rechargeable Battery and 230V AC Mains through adapter.
11.	Operating temperature	-10...+55 C
12.	Storage temperature	-40...+70 C
13.	Electromagnetic Compatibility	CE-conformance acc. to EN 50081-1 / EN 50082-1

SECTION – 3**GENERAL TECHNICAL REQUIREMENTS****3.0 Foreword**

The provision under this section is intended to supplement general requirements for the materials, equipment and services covered under other sections.

3.1 PROJECT INFORMATION AND SYSTEM PARAMETERS

- a) Customer : M/s Tamil Nadu Transmission Corporation Limited
 b) Project Title : 400/110 KV Substation at Thappagundu & 400/230/110 KV Substation at Anikadavu
 c) Transport facilities : Road/Rail
 d) Site location : THAPPAGUNDU IN THENI DISTRICT, MADURAI REGION & ANIKADAVU IN TIRUPPUR DISTRICT, COIMBATORE REGION

The following system parameters shall prevail:

Nominal system voltage	400 kV	230kV	110 kV
Highest system voltage	420 kV	245kV	132 kV
Frequency	50 Hz	50 Hz	50 Hz
Minimum creepage	25mm/kV	25mm/kV	25mm/kV
System Earthing	Effectively Earthed	Effectively Earthed	Effectively Earthed

SITE CONDITIONS**3.1.1 Ambient Temperature**

- a) Ambient air temp. (max.) : 50 deg C
 B) Max Temp. for design : 50 deg C
 b) Ambient air temp. (min.) : 20 deg C
 c) Max, Daily average ambient air temp. : 45 deg C
 d) Max. yearly average ambient air temp. : 32 deg C

3.1.2 Max. humidity : 100% Max.

3.1.3 Average thunder storm days per annum : 50

3.1.4 Average rainy days per annum : 90

3.1.5 Average Annual rainfall : 1000 mm

- 3.1.6 No. of months during which tropical monsoon condition prevail: 5
3.1.7 Max, wind Pressure : 150kg/sqmm
3.1.8 Max wind speed : 39m/s
3.1.8 Altitude above MSL : 1000 m

However for design purpose, ambient temperature should be considered as 50° C and relative humidity as 100%.

AUXILIARY POWER SUPPLY

3 phase AC Supply	415V, 3 phase 4 wire 50 Hz, neutral grounded AC supply -15% to +10%
1 phase AC supply	240V, single phase, 50 Hz neutral grounded AC supply
DC supply	220, 2 wire DC supply + 10% to -15% 48V, 2 wire DC supply

3.2 GENERAL REQUIREMENT

3.2.0 ALL THE EQUIPMENTS /MATERIALS TO BE SUPPLIED SHOULD BE IN ACCORDANCE WITH RELEVANT LATEST / AMMENDED ISS /IEC, WHETHER IT HAS BEEN SPECIFICALLY MENTIONED IN THE SPECIFICATION OR NOT".

3.2.1 The supplier shall also furnish drawings for the following:

All EQUIPMENTS and type of clamps, fitting hardware, insulators, bus bar. These designs/ drawing shall be got approved by the BHEL/TANTRANSCO before commencing the manufacture / construction / erection and are to be as per latest IS.

3.2.1 GENERAL:

- 3.2.1.1 The bidders shall be fully responsible for providing all equipment, materials system and services specified or otherwise which are required to complete the construction and successful commissioning of the substation in all respects.
- 3.2.1.2 Any other items not specifically mentioned in the specification but which are required for erection of materials/equipments under the scope of work, testing and commissioning are deemed to be included in the scope of the specification unless specifically excluded.
- 3.2.1.3 All items shall be supplied as per schedule and as specified in the relevant Indian standard of latest revision. The Technical specification of the main materials/equipments is furnished. The Technical specification contained herein for the materials are for the guidance of the tenderer.

- 3.2.1.4 The Tenderers are requested to procure the equipments/materials/component only from reputed /qualified manufacturer as per Technical requirement stipulated in Section - I of Technical specifications. Approval of make of item shall be taken up by vendor from TANTRANSCO himself.

3.3 SPECIFIC REQUIREMENT

- 3.3.1 The Supplier shall furnish make/manufacturer, catalogues, engineering data, and technical information, design documents, drawings etc., fully in conformity with the technical specification and get approval from competent authority before commencement of any work.

- 3.3.2 All steel materials, other than materials for earthing should be of galvanized if not specified.

3.4 SPECIFIC TECHNICAL REQUIREMENTS: / Drawing submission

The successful bidder shall submit all drawings and documents as per clause no. 3.15 along with the list of drawings within 7 days after placement of order to BHEL.

3.5 STANDARD:

The goods supplied under this contract shall conform to the standards mentioned in the Technical Specifications and when no applicable standard is mentioned, to the standard specified by the Institution of Central / State Government or internationally recognized Institutions shall be applicable and such standards shall be the latest issued by the concerned institution.

3.6 TEST CERTIFICATE:

Copies of all test certificates relating to material to be procured by the Supplier for the works shall be forwarded to BHEL.

3.7 Inspection clause :

- 3.7.1 The BHEL/TANTRANSCO or his representative shall have the right to inspect and/or test the goods /works to confirm their conformity to the supplier. BHEL/TANTRANSCO shall notify the supplier in writing of the identity of any representatives authorized for these purposes.

The inspections and tests may be conducted on the premises of the supplier or his Sub vendor at the point of delivery and /or at the goods' final destination. Where tests are conducted in the premises of Supplier, all reasonable facility and assistance including access to drawings and production data shall be furnished at no charge to the BHEL.

Should any inspected or tested goods fail to conform to specifications, the BHEL/TANTRANSCO may reject them and the supplier shall either replace the rejected goods or make all alterations necessary to meet specification requirements free of cost to the BHEL/TANTRANSCO within one week of intimation.

The BHEL/TANTRANSCO's right to inspect, test and where necessary reject the goods after the goods; arrival at the site, shall in no way be limited or waived by reason of the goods having been previously inspected. Tested and passed by the BHEL/TANTRANSCO or his representative prior to the goods dispatch.

- 3.7.2** Not less than 15 (Fifteen) days advance intimation shall be given about the quantity of materials that will be ready for inspection by the officers of TANTRANSCO/ BHEL/Third agency authorized by the Corporation. The materials should not be dispatched without instruction from the Corporation.

3.8 GUARANTEE:

- 3.8.1** The supplier shall guarantee that the goods under the Contract are new, unused of the most recent or current models and incorporated all recent improvements in design and materials unless provided otherwise in the Contract. The supplier shall further guarantee that the goods supplied under this Contract shall have no defects arising from design, materials or workmanship, installation and erection, if that may develop under normal use of the supplied goods. The supplier shall also guarantee the performance of the works executed by him including the performance of all the materials/goods supplied by him.
- 3.8.2** BHEL shall promptly notify supplier in writing of any claims arising under guarantee in respect of goods. Upon receipt of such notice, the supplier shall, with all reasonable speed, repair or replace the defective works or parts thereof, free of cost at site. All the expenses towards transportation of defective parts to supplier's works and of repaired/replaced parts to site shall be borne by the Supplier.
- 3.8.3** If the Supplier, having been notified, fails to remedy the defects within 14 days, the BHEL will proceed to take such remedial action as may be necessary, at the supplier's risk and expenses. All expenses in this regard will be recovered from Supplier.

3.9 PRE COMMISSIONING TESTING :(if applicable)

On completion of erection of equipments and before charging each item of equipments shall be thoroughly cleaned and inspected jointly by the TANTRANSCO and the BHEL for correctness and completeness of installation and acceptability for charging leading to initial pre commissioning test. The pre commissioning testing to be carried all equipments in the presence of Board Engineers. Necessary tools, testing kits are to be arranged by the Supplier.

3.10 PACKING:

3.10.1 The supplier shall provide such packing of the goods as is required to prevent their damage or deterioration during transit to their final destination as indicated in the Contract. The packing shall be sufficient to withstand, without limitation, rough handling during transit to their final destination as indicated in the Contract and exposure to extreme temperatures, salt and precipitation etc., during transport and open storage. Packing case size and weights shall be taken into consideration wherever appropriate, the remoteness of the 'goods' final destination and absence of heavy mechanized handling facilities, at all points in transit.

3.10.2 The packing, marking and documentation within and outside the package shall comply strictly with such special requirements as shall be expressly provided for in the Contract or in any subsequent instructions issued by BHEL.

3.11 DISCREPANCIES BETWEEN DRAWING AND SPECIFICATION:

Should there be any discrepancy between the specifications and/or schedule of prices and/or drawings or any inconsistency, error or omission in either of them, reference must be made to the BHEL/TANTRANSCO for an explanation and the Supplier will be held responsible for any errors that may occur in the work through neglect of this precaution. The explanation of the BHEL/TANTRANSCO shall be final and binding on the Supplier.

3.12 APPROVAL PROCEDURE

The scheduled dates for the submission of drawings as well as for, any data/information to be furnished by the Employer would be as per the following schedule. The supplier shall also submit required no. of copies as mentioned in this specification of all drawings/design documents/test reports for approval by the Employer. The following schedule shall be followed generally for approval.

i.	First Submission	7 days after LOI/PO
ii.	Approval/comments/by employer on Initial submission	Reasonable time
iii.	Resubmission	Within 7 days (whenever from date of comments required) Including both ways postal time.
iv.	Approval or comments	Within 2 weeks of receipt of resubmission.
v.	Furnishing of distribution copies	2 weeks from the date of last approval.

Note: The supplier may please note that all resubmissions must incorporate, all comments given in the submission by the Employer failing which the submission of documents is

likely to be returned. Every revision shall be a revision number, date and subject, in a revision block provided in the drawing, clearly marking the changes incorporated.

The title block of drawings shall contain the following information incorporated in all contract drawings. Please refer enclosed sheet for details of Title block.

3.13 TITLE BLOCK

Following Title Blocks to be used in drawings at the time of drawing approvals

For Thappagundu

Customer	M/s Tamil Nadu Transmission Corporation Limited
Project:	400/110 KV Substation at Thappagundu
Contractor	BHEL

For Anikadavu

Customer	M/s Tamil Nadu Transmission Corporation Limited
Project:	400/230-110 KV Substation at Anikadavu
Contractor	BHEL

3.14 DOCUMENTS TO BE SUBMITTED ALONGWITH OFFER

- 1) Drawings
- 2) Guaranteed Technical Particulars
- 3) Type Test Reports
- 4) List of Part Supplies with rating

Drawings & Documents submitted at the time of offer shall be subject to review at contract stage.

3.15 DOCUMENTATION SCHEDULE

Following Documentation schedule to be followed per project.

S. No.	DESCRIPTION	TENDER STAGE	CONTRACT STAGE FOR APPROVAL	FINAL DOCUMENTATION	
				Prints	CDs
1	Drawings and Data Sheets	1	7	10	5
2	Drawings "As Built "	-	-	10	
3	Type Test Reports	1	7	10	

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4	Erection Manuals	-	7	10	
5	Operation and Maintenance Manuals	-	7	10	
6	Manufacturing Quality Plan	-	7	10	
7	Field Quality Plan	-	7	10	
8	Inspection Test Reports	-	7	10	

Note: Drawings will also be submitted in CD/DVD in Latest AUTOCAD-2004 or Later version or any other CAD package along with conversion files for all major items.

Final Documentation shall be submitted in bound volumes with details of Customer & Project etc. written on top.

APPENDIX-A**SCHEDULE OF TECHNICAL DEVIATION**

The following are the deviations/variations/exceptions from the specification:

SECTION	CLAUSE NO. / PAGE NO.	STATEMENT OF DEVIATION / VARIATIONS / EXCEPTIONS

In case, this schedule is not submitted, it will be presumed that the equipment /material to be supplied under this contract is deemed to be in compliance with the specification.

If there is NIL deviation, even then the format to be filled as **NIL DEVIATION**

Note: Continuation sheets of like size and format may be used as per the Bidder's Requirement and shall be annexed to this schedule.

Place

Signature of the authorized representative of

Date

Bidder's name

Designation

Company seal

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SECTION - 4**CHECK LIST FOR TESTING EQUIPMENTS**

Check list to be filled for each items quoted

Put a tick mark (√) in 'YES/NO' Column if the specified requirement is met, or put a (X) mark, if the specified requirement is not met and give comments in the "Remarks" column.

S. No.	Parameters	Yes/No	Remarks
1.	Name of instrument		
2.	Name of manufactures & address		
3.	Supply and training at site quoted		
4.	Following Document to be enclosed		
4.1	Authorized Distributor Certificate from Manufacturer/OEM		
4.2	After sales service facility in India will be available		
4.3	Undertaking to address issue of warranty / after sales services from OEM		
4.4	Catalogue and data sheet and test certificates(if any)		
4.5	List of Past supplies in India & abroad		
4.6	List of Deviations if any in Deviation schedule.		
5	Make and model of offered equipment's as per Annexure-A of section-1		