



Bharat Sanchar Nigam Limited
(Electrical Wing)

O/o. The Executive Engineer (E)
BSNL Electrical Division-III
CHENNAI

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E-TENDER DOCUMENT

I-TECHNICAL BID

Name of work: Providing Electrical Infra structure works for Cable Landing Stations in Chennai and A&N Islands including Operation & Comprehensive AMC.

NIT No: 39 / CEE / TNEZ / CH / 2018-19

This tender document contains 274 pages (Two hundred and seventy four only)

**For E Tender Helpdesk Pls Contact M/s ITI LTD:Ph:91-80-40482000 &
Mail Id:twhelpdesk399@gmail.com, bsnlthelpdesk@gmail.com**

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IMPORTANT INSTRUCTIONS TO THE BIDDERS

- This Technical bid consists of two parts,
 1. **PART-I**
 - i) For Supplying, Installing, Testing & Commissioning, Two years warranty and 5 years AMC of ENGINE ALTERNATOR SET, AIR CONDITIONING AND IBMS.
 - ii) Operation of all equipments (24x7) for 7 years including warranty period.
 2. **Part-II**
 - i) For Supplying, Installation & Commissioning, Two years warranty and 5 years AMC of SMPS POWER PLANT, LITHIUM ION BATTERY AND INVERTOR.
- In case a bidder quote only one part of Schedule of Quantities (Part-I or Part-II), it will be considered as an invalid tender and summarily rejected.
- E-tender Processing fee, Tender Fee, EMD, Performance Guarantee are common for both Part-I and Part-II.
- Performance Guarantee : The bidder is required to furnish Performance guarantee for an amount equal to 5% of the total contract value which shall be valid for 95 months from the date of award of work.
- The Bidder shall quote the individual supply item inclusive of Installation, testing, commissioning and comprehensive AMC for 7 years including 2 years warranty.
- Tender evaluation is based on the total net cost of both Part- I & Part-II items excluding Taxes allowable under Input Tax Credit. The total Net Cost is inclusive of cost of Supply, Installation, Testing & Commissioning, AMC for 7years including two years warranty of Part-I and Part-II and Operation of all services under Part-I & Part-II for 7years.

**INFORMATION AND INSTRUCTIONS FOR BIDDERS FOR E-TENDERING FORMING PART OF NIT
AND TO BE POSTED ON WEBSITE**

The Executive Engineer (Elect), BSNL, **ED-III Chennai** on behalf of the CMD, BSNL invites online Item rate bids from eligible bidders in **SINGLE STAGE BIDDING & TWO STAGE OPENING SYSTEM** for the following work:

1	Name of work	Providing Electrical Infrastructure works for Cable Landing Stations in Chennai and A&N Islands including Operation & Comprehensive AMC.
2	Estimated cost put to tender.	Rs. 30,69,71,222/-
3	Earnest Money	Rs. 40,69,712/-
4	Period of completion	Part-I:-For Chennai - 86 months (SITC-2months; Operation & CAMC-84 months) For A&N Island (7 stations) - 88 months (SITC-4 months; Operation & CAMC-84 months) For Port Blair- 84 months (Operation & CAMC only) Part-II: For Chennai and Port Blair - 88 months (Supply-3months; Installation-1month; Operation & CAMC-84months) For other A&N Islands (7 stations) - 89 months (Supply-3months; Installation-2months; Operation & CAMC-84months)
	Tender Fee(Non-refundable)	Rs. 4000/- + 18% GST
6	Queries from Bidders received upto	30/03/2019
7	Pre Bid meeting on	02/04/2019
8	BSNL clarifications to Bidders queries by	05/04/2019
9	Last date & time for online and physical submission of tender	Up to : 11 00 Hrs on 12/04/2019
10	Date and time for opening of Technical bid	11 30Hrs. on 12/04/2019
11	Date and time for opening of Price bid	To be notified separately
121	E-tender Processing fee (Non-refundable)	0.05% of estimate cost subject to the minimum of Rs.500/- and Maximum of Rs. 5000/- plus GST as applicable.

ELIGIBILITY CRITERIA

The bidders satisfying the following conditions:

1. Average annual turnover during the last 3 years, ending 31st March 2018, should be at least Rs. 3.94Cr.

AND

2.a) Experience of having successfully completed similar works in Central Government /State Government /Central Autonomous Body/ Central Public sector Undertaking during last 7 years ending 28 February-2019 should be either of the following :-

- Three similar successfully completed works each costing not less than Rs.5.25Crores.
- OR
- Two similar successfully completed works each costing not less than Rs. 7.88Crores.
- OR
- One similar successfully completed work costing not less than Rs. 10.5 Crores.

Note:

- i. **SIMILAR WORK means** “Engine Alternator set / Internal Electrical Installation / Indoor Transformer Substation and High Precision Package AC units and / or UPS & Battery and / SMPS & Li-ion Battery or DG set and /or FAFD system and /or IBMS (Integrated Building Management system & Fire Alarm & Fire Detection works)
- ii. The testimonials regarding the list of works satisfactorily completed (at least for the requisite magnitude) should be obtained from an **Officer not below the rank of Executive Engineer** in the organization concerned.

OR

2(b) Any vendor who has experience of implementing Submarine Cable Project or their authorised/associated/subsidiary company with a specific letter of authorisation from them to participate.

Note:

1) Any Bidder not having experience for the full complement of items, shall have teaming agreement as defined in **Annexure –AA** with OEMs as mentioned below, for the items for which the vendor is not having experience. The agreement shall cover the entire period of supply, installation, warranty and AMC.

2) **For EMS (part I) part of works (AC, DG set, IBMS):-** The firm has to associate agency(s) for EM works conforming to eligibility criteria as defined in **Annexure –AB** and has to submit details of such agency(s) to Engineer – In - charge within a period of 30 days from the date of award.

3) **For SMPS, Invertors and Battery (part II) component of work:-**The firm shall himself or shall associate with the company as detailed below and a copy of MOU / agreement shall be submitted within 30 days of issue of PO which is under:

- (i) The bidder/the OEM should have obtained valid TAC (Type Approval Certificate) from Telecom Engineering Centre, DOT or TSEC (Technical Specification Evaluation Certificate) from QA wing of BSNL for the **SMPS Power Plants** against GR No: BSNL / Specification / SMP – 001/01/Rev-1/September.2015 at the time of tender opening.
- (OR)
- (ii) The bidder/ the OEM should have applied to TSEC for registration for the **SMPS Power Plants** against GR No: TEC/GR/FA/SMP-001/07 MAR-17. Proof for having applied with payment receipts viz. QF-103 from BSNL QA shall be submitted in the Bid. However, they will be considered for placement of order subject to submission of valid TSEC within

60(Sixty) days from the date of opening of tender or any further extension granted by Tendering Authority.”

- (iii) The Bidder / the OEM should comply the applicable TEC GR in respect of **Li-Ion Batteries**. (TEC /GR /TX / LIB-001/01/MAR /2016 and subsequent amendments, if any). Self-certification is to be submitted by the bidder.
- (iv) The Bidder / the OEM should comply the applicable TEC GR in respect of **(1+1) 3 KVA Invertors**. (TEC/GR/INV-01/04 MAY 2005 and subsequent amendments, if any). Self-certification is to be submitted by the bidder.
- (v) The Bidder / the OEM should have successfully supplied the following quantity of same make and model as being offered in the bid to any TSP / PSU / Government Organization in India.

SMPS Power Plant of 100 A / 48 V or higher capacity	20 nos.
Li-Ion Batteries of 100 AH modules	40 nos.
Invertors (3 KVA and above)	05 Nos.

End user certificate or copy of PO along with delivery challans are to be submitted as a proof of supply record.

- (vi) Public Procurement (Preference to Make in India) (PP-MII) Policy of Government of India is applicable for this tender. Minimum Local Content for this tender shall be 50% for this tender. A bidder seeking benefit of PPP-MII Policy, shall provide a declaration in the Format attached in Section-6 Annexure B of the tender document that the item offered meets the minimum local content as specified in tender and details of the location(s) at which the local value addition is made.

IMPORTANT NOTE:

1. The self-attested copies of the following documents shall be scanned and uploaded to the e-tendering website within the period of tender submission. Online bid documents submitted by intending bidders shall be opened only of those bidders, who have deposited e-Tender Processing Fee with M/s ITI Limited, and have scanned and uploaded the following documents (and whose uploaded documents are found to be in order), otherwise the bid will not be opened and shall lead to disqualification.
 - a. Tender Fee in the prescribed format
 - b. EMD in the prescribed format
 - c. Certificate of Financial Turnover from Chartered Accountant.
 - d. Documents fulfilling Eligibility criteria (Please note that in case the bidder is authorised by the manufacturer, the original authorisation letter is to be scanned and uploaded)
 - e. Enlistment certificate issued by BSNL, if applicable.
 - f. Electrical license issued by competent authority , if applicable
 - g. GST Registration Number details, if applicable.
 - h. PAN Card.
 - i. EPF and ESI Registration certificate , if applicable
 - j. Undertaking to abide by EW-6 and EW-8 (Form 'A')
 - k. Undertaking regarding EPF and ESI provisions (Form 'B')
 - l. Certificate of work experience issued by client department (Form 'C') , if applicable

- m. Undertaking regarding No Near relative working certificate (Form 'D').
- n. Teaming agreement with OEMs, if applicable (Annexure AA)
- o. Power of Attorney & authorization for executing the power of Attorney in accordance with clause 14.3 of Section 4 Part A [Part-II]
- p. Bidder's Profile & Questionnaire duly filled & signed as per section-8 [Part-II]
- q. Tender/ Bid form- Section 9 Part A [Part-II]
- r. Not Black listed certificate-as per eligibility clause 4 (c) and 4 (f) in the format given in Sec-6 (C) and 6(D) [Part-II]

2. The Physical Tender Fee and EMD shall be deposited in the tender box available in the office of tender opening authority, by the bidder before the time specified for tender submission, failing which the tender shall not be opened.

ANNEXURE-AA

Proforma for Teaming Agreement /Support Certificate

(To be given by all partners/vendors/OEMs/database vendors)

(On the Bidder's Letter Head)

To,

Tendering Authority

BSNL

Subject:

Sir,

It is to certify that the following hardware, for which M/s is the OEM, has been quoted in our (M/sname of the bidder.....) bid.

S.N.	All Hardware/ Network/ Software System	Model/ Version
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1		
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2		
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3		
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...		
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We undertake to provide the following:

1. Full Professional Service Support for turnkey implementation of the project covering all the above hardware/network/ software components, their Design, Planning, Supply, Installation, customization, commissioning, integration with other components of the project, training, Operation of system and project completion within the time schedules specified in the tender document.
2. Preparation of all the documentation pertaining to planning, design, engineering, customization, integration, installation, operations and maintenance.
3. Support for operation, maintenance and upgrades is available as per terms and conditions of Operation during warranty (..... year) and AMC (..... years) on 24x7 basis from the date of commissioning.
4. Applications shall be supported on the given platform for the next years with effect from the date of project completion,.
5. It has been agreed that in his capacity as Bidder, M/s..... will interact with BSNL for all obligations; however all the Teaming Partners together shall be jointly and severally responsible for the execution of the Project.

We also certify that the agreement in the above respect has already been signed with the OEM.

Signature of Authorized signatory of Bidder

Name & Designation

Signature of Authorized signatory of OEM/ Country Manager of OEM

Name & Designation

ANNEXURE- AB

ELIGIBILITY CRITERIA FOR PARTICIPATION IN TENDERS FOR ELECTRICAL / ELECTRO - MECHANICAL WORKS - BSNL ELECTRICAL WING

1.0 EI & FANS AND OTHER MISC. WORKS:

The following eligibility criteria shall be adopted for the works like EI & Fans, Compound Lighting, Lightning Conductor, Pumps, Cabling, installation of Splits/ WACs, LT Panels, shifting of DG sets, I.T.C. of AVR's, other miscellaneous petty works and any other work authorized by PCEs/Sr.CEs/CEs(Elect.):-

- 1.1 BSNL enlisted contractors in Electrical category of respective class as per their tendering limits.

2.0 SPECIALIZED WORKS:

2.2 DG SETS:-

The Contractors satisfying the following conditions:

- 2.2.1 Average annual turnover during the last 3 years, ending 31st March of the previous financial year, should be at least 30% of the estimated cost put to tender.

AND

- 2.2.2 BSNL enlisted contractors in Electrical category of respective class as per their tendering limits.

OR

- 2.2.3 BSNL CO (Electrical) approved Engine manufacturer with the approved capacity of engine not less than the DG set capacity proposed in the NIT.

OR

- 2.2.4 OEM authorized by BSNL CO (Electrical) approved Engine manufacturer with the approved capacity of engine not less than the DG set capacity proposed in the NIT. The letter of Authorization in Original from the Engine manufacturer will have to be produced by the OEMs.

OR

- 2.2.5 Experience of having successfully completed similar works in Central Government /State Government /Central Autonomous Body/Central Public sector Undertaking during last 7 years ending last day of month previous to the one in which applications are invited should be either of the following :-

- Three similar successfully completed works costing not less than the amount equal to 40% of the estimated cost put to tender with DG set capacity not less than 80% of individual capacity of the DG set proposed in the NIT.

OR

- Two similar successfully completed works costing not less than the amount equal to 60% of the estimated cost put to tender with DG set capacity not less than 80% of individual capacity of the DG set proposed in the NIT.

OR

- One similar successfully completed work costing not less than the amount equal to 80% of the estimated cost put to tender with DG set capacity not less than 80% of individual capacity of the DG set proposed in the NIT.

✓
2.3 HVAC AND PACKAGE (HIGH SENSIBLE/PRECISION) AC UNITS :

The Contractors satisfying the following conditions:

2.3.1 Average annual turnover during the last 3 years, ending 31st March of the previous financial year, should be at least 30% of the estimated cost put to tender.

AND

2.3.2 BSNL CO (Electrical) approved Package AC Manufacturer.

OR

2.3.3 The dealer authorized by BSNL CO (Electrical) approved Package AC Manufacturers. The letter of Authorization in Original from the manufacturer will have to be produced by the dealers.

OR

2.3.4 Experience of having successfully completed similar works in Central Government/State Government /Central Autonomous Body/Central Public sector Undertaking during last 7 years ending last day of month previous to the one in which applications are invited should be either of the following :-

- Three similar successfully completed works costing not less than the amount equal to 40% of the estimated cost put to tender with Central/Package AC Plant with equipment Module not less than 80% of individual capacity of the Central/Package AC Plant proposed in the NIT.

OR

- Two similar successfully completed works costing not less than the amount equal to 60% of the estimated cost put to tender with Central/Package AC Plant with equipment Module not less than 80% of individual capacity of the Central/Package AC Plant proposed in the NIT.

OR

- One similar successfully completed work costing not less than the amount equal to 80% of the estimated cost put to tender with Central/Package AC Plant with equipment Module not less than 80% of individual capacity of the Central/Package AC Plant proposed in the NIT.

✓ 2.4 **AUTOMATIC FIRE DETECTION /ALARM/SUPPRESSION/FIRE FIGHTING SYSTEMS :**

The Contractors satisfying the following conditions:

2.4.1 Average annual turnover during the last 3 years, ending 31st March of the previous financial year, should be at least 30% of the estimated cost put to tender.

AND

2.4.2 Experience of having successfully completed similar works in Central Government /State Government /Central Autonomous Body/Central Public sector Undertaking during last 7 years ending last day of month previous to the one in which applications are invited ,should be either of the following :

➤ Three similar successfully completed works costing not less than the amount equal to 40% of the estimated cost put to tender.

OR

➤ Two similar successfully completed works costing not less than the amount equal to 60% of the estimated cost put to tender.

OR

➤ One similar successfully completed work costing not less than the amount equal to 80% of the estimated cost put to tender.

✓ 3.0 **COMPREHENSIVE MAINTENANCE AND OPERATION OF EMS:**

The Contractors satisfying the following conditions:

3.1 Average annual turnover during the last 3 years, ending 31st March of the previous financial year, should be at least 30% of the estimated cost put to tender.

AND

3.2 BSNL enlisted contractors in Electrical category of respective class as per their tendering limits.

OR

3.3 Experience of having successfully completed similar works in BSNL comprising of either substation or airconditioning service as part of scope of work during last 7 years ending last day of month previous to the one in which applications are invited, should be either of the following :

- Three similar successfully completed works costing not less than the amount equal to 40% of the estimated cost put to tender.
- OR
- Two similar successfully completed works costing not less than the amount equal to 60% of the estimated cost put to tender.
- OR
- One similar successfully completed work costing not less than the amount equal to 80% of the estimated cost put to tender.

NOTE: The estimated cost of one year shall be considered to evaluate the eligibility criteria.

4.0 COMPREHENSIVE MAINTENANCE/AMC/REPAIRS OF SPECIALISED SERVICES:

The Contractors satisfying the following conditions:

- 4.1 Average annual turnover during the last 3 years, ending 31st March of the previous financial year, should be at least 30% of the estimated cost put to tender.
- AND
- 4.2 The manufacturer or their authorized service dealer. The letter of authorization in original from the manufacturer will be produced by the dealer.
- OR
- 4.3 Experience of having successfully completed similar works in BSNL during last 7 years ending last day of month previous to the one in which applications are invited, should be either of the following :
 - Three similar successfully completed works costing not less than the amount equal to 40% of the estimated cost put to tender.
 - OR
 - Two similar successfully completed works costing not less than the amount equal to 60% of the estimated cost put to tender.
 - OR
 - One similar successfully completed work costing not less than the amount equal to 80% of the estimated cost put to tender.

NOTE: The estimated cost of one year shall be considered to evaluate the eligibility criteria.

SINGLE STAGE BIDDING & TWO STAGE OPENING SYSTEM

The tender will be submitted on line in two parts:

- 1) TECHNICAL BID (Part-I& Part-II)**
- 2) PRICE BID**

- The technical bid (Part-I& Part-II) will be opened on line at the first instance and evaluated by the Committee. At the second stage price bids of only the technical & commercially accepted offer will be opened for further evaluation and ranking before awarding the contract. The price bid shall be opened subsequently on a date and time to be notified by BSNL.
- The Physical Tender cost, EMD, technical brochure and technical deviation if any shall be deposited by all the bidders before 11 00 Hrs on the tender opening date, failing which the tender shall not be opened.
- **The DATA sheet in Page Nos. 29-32 of Part-I tender document and shall be downloaded, filled up, scanned and uploaded along with the Technical bid in the e-Tendering website.**
- The technical bid shall be evaluated by the tender evaluation committee and if necessary clarifications / confirmation, for deviations (if any) shall be taken from the eligible bidders so as to evaluate their bids as per terms and conditions of the tender documents to decide the technically responsive / non responsive bidder.
- **The bidders shall not be at any stage allowed to revise / modify the price bid after the opening of Technical Bid.**

BSNL EW-6
Bharat Sanchar Nigam Limited
Electrical Wing

Electrical Division: **ED-III, Chennai.**

Sub Division:

1. Item rate tenders on **SINGLE STAGE BIDDING & TWO STAGE OPENING SYSTEM** are invited on behalf of CMD, BSNL for the work “**Providing Electrical Infrastructure works for Cable Landing Stations in Chennai and A&N Islands including Operation & Comprehensive AMC** from the eligible bidders as per NIT notification. ~~The enlistment of the bidders should be valid on the opening date of tender. In case the date of opening of tender is extended, the enlistment of bidder should be valid on the original date of opening of tender.~~
2. Intending bidder is eligible to submit the bid provided that he has definite proof from the appropriate authority, which shall be to the satisfaction of the competent authority as per the eligibility conditions mentioned in the NIT notification page.
3. The work is estimated to cost **Rs. 30,69,71,222/- [NET COST]**
4. Agreement shall be drawn with the successful bidder on prescribed form as amended up to the date of opening of tender. Bidder shall quote his rates as per various terms and conditions of the said form which will form part of the agreement.
5. The time allowed for carrying out the work will be from the 10th day after the date of written order to commence the work.
Part-I:- For Chennai - 86 months (SITC-2months; CAMC-84 months)
For A&N Island (7 stations) - 88 months (SITC-4 months; CAMC & Operation-84 months)
For Port Blair- 84 months (CAMC & Operation only)
Part-II: For Chennai and Port Blair - 88 months (Supply-3months; Installation-1month; CAMC & Operation -84months)
For other A&N Islands (7 stations) - 89 months (Supply-3months; Installation-2months; CAMC & Operation-84months)
6. The site for the work is available / or the site for the works shall be made available in parts. The successful bidder shall execute the work in coordination with other agencies working in the campus.
7. The bid documents consisting of plans, specifications, the schedule of quantities of various types of items to be executed and the set of terms and conditions of the contract to be complied with and other necessary documents can be seen and downloaded from website **www.tenderwizard.com/BSNL** at free of cost. The BSNL EW-8 document can be seen from the web site **www.tamilnadu.bsnl.co.in/** **www.chennai.bsnl.co.in** at free of cost.
8. After submission of the bid, the bidder can re-submit revised bid any number of times but before last time and date of submission of tender as notified. While submitting the revised bid, bidder can revise the rate of one or more item(s) any number of times (he need not re-enter rate of all the items) but before last time and date of submission of tender as notified.
9. The Tender Fee **Rs. 4000+ 18% GST** in the form of Demand Draft issued by the Nationalized / Scheduled bank authorized by the Reserve Bank of India, drawn in favour of **ACCOUNTS OFFICER(Cash), BSNL, STP, CHENNAI-28** payable at **CHENNAI** shall be scanned & uploaded in the e-tendering website within the period of tender submission. The validity of the tender cost in the form of DD shall be **60 days** from the date of opening.
10. The Earnest money deposit (EMD) for **Rs.40,69,712/-** in the form of Demand Draft / FDR / CDR of a nationalized / scheduled bank authorized by the Reserve Bank of India, drawn in favour of **ACCOUNTS OFFICER(Cash), BSNL, STP, CHENNAI-28** payable at **CHENNAI** shall be

scanned & uploaded in the e-tendering website within the period of tender submission. The validity of the EMD in the form of DD shall be **60 days** from the date of opening. If the EMD is in the form of CDR/FDR/BG, the validity shall be **150 days** from the date of opening. In case of L1 bidder, the validity of CDR/FDR/BG is to be extended up to the observation period as that of the Performance guarantee / Security deposit. Exemption from payment of Tender Fee, Earnest Money and Security Deposit by any other unit/ department shall not hold good for BSNL.

11. Interested bidder who wishes to participate in the bid shall pay the e-tender processing fee to M/s. ITI Limited through their e-gateway by credit/debit card/ internet banking/ RTGS/NEFT facility.
12. All the documents as specified in the tender document shall be scanned and uploaded to the e-Tendering website within the period of bid submission.
13. The last date for online submission of bid is **12/04/2019** up to **11:00** Hrs and the Technical Bid submitted shall be opened at **11:30** Hrs on the same day, **12/04/2019**. However the price bid will not be opened on the same day. The opening of price bid shall be notified by BSNL after Technical bid is finalized. If a holiday is declared on the tender opening day, the tender will be opened on the next working day.
14. The e-Tender processing fee and tender cost are non-refundable.
15. **Performance Guarantee:** For Part-I: The bidder is required to furnish Performance guarantee for an amount equal to 5% of the total contract value in the form of bank guarantee/CDR/FDR/DD (of a Nationalized/ Scheduled Bank in a standard format) within two weeks from the date of issue of award letter. This period can be further extended by the Engineer-in-charge up to a maximum period of two weeks on written request of Bidder. The validity period of the performance security in the form of **performance bank guarantee shall be 95 months from the date of award of work.**
In case the bidder fails to deposit the said performance guarantee within the stipulated period, including the extended period if any, the Earnest Money deposited by the bidder shall be forfeited automatically without any notice to the bidder and the bidder will not be allowed to participate in the re tendering for the same work.
16. **Security Deposit:** In addition to Performance guarantee stated above, a sum @ 10% of the gross amount of the bill shall be deducted from each running bill of the contractor till the sum be deducted with the sum already deposited as earnest money, will amount to security deposit of 5% of the contract value of the work. **The security deposit for shall be released after an observation period of Six Months from the date of actual completion of work.**
17. In case any discrepancy is noticed in the documents as uploaded at the time of submission of the bid online and physical submission, then the bid submitted shall become invalid and the BSNL shall, without prejudice to any other right or remedy, be at liberty to forfeit 50% of the said earnest money as aforesaid. Further, the bidder shall not be allowed to participate in the retendering process of the work.
18. Intending bidders are advised to inspect and examine the site and its surroundings and satisfy themselves before submitting their tenders, the form and nature of the site, the means of access to the site, the accommodation they may require and in general shall themselves obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their tender. A bidder shall be deemed to have full knowledge of the site whether he inspects it or not and no extra charge consequent on any misunderstanding or otherwise shall be allowed. The bidder shall be responsible for arranging and maintaining at his own cost all materials, tools & plants, water, electricity access, facilities for workers and all other services required for executing the work unless otherwise specifically provided for in the contract documents. Submission of a tender by a bidder implies that he has read this notice and all other contract documents and has made himself aware of the scope and specifications of the work to

be done and of conditions and rates at which stores, tools and plant, etc. will be issued to him by the BSNL and local conditions and other factors having a bearing on the execution of the work.

19. The competent authority on behalf of the CMD does not bind himself to accept the lowest or any other tender and reserves to himself the authority to reject any or all the tenders received without the assignment of any reason. All tenders in which any of the prescribed condition is not fulfilled or any condition including that of conditional rebate is put forth by the bidder shall be summarily rejected. The competent authority on behalf of CMD reserves to himself the right of accepting the whole or any part of the tender and the bidder shall be bound to perform the same at the rate quoted.
20. Canvassing whether directly or indirectly, in connection with tenders is strictly prohibited and the tenders submitted by the bidders who resort to canvassing will be liable to rejection.
21. Agreement shall be drawn with the successful bidder on prescribed form. Bidder shall quote his rates as per various terms and conditions of the said form, which will form part of the agreement.
22. The bidder should give a certificate as per the following that none of his/her relative is employed in BSNL units as per **Form 'D'**. In case of proprietorship firm, certificate will be given by the proprietor and for partnership firm certificate will be given by all the Directors of the company.
 - a. Near relatives of all BSNL employees either directly recruited or on deputation are prohibited from participation in tenders and execution of works in the different units of BSNL. The near relatives for this purpose are defined as:
 - i. Members of a Hindu Undivided family.
 - ii. They are husband and wife.
 - iii. The one is related to the other in the manner as father, mother, son(s) & son's wife(daughter-in-law), Daughter(s) & daughter's husband(son-in-law), brother(s) & brother's wife, sister(s) & sister's husband(brother-in-law).
 - b. The company or firm or any other person is not permitted to tender for works in BSNL unit in which his near relative(s) is(are) posted. The unit is defined as SSA/Circle/Chief Engineer/Chief Archt./Corporate office for non-executive employees and all SSA in a circle including circle office/Chief Eng./Chief Archt./Corporate office for executive employees (including those called as Gazetted officers at present). The bidder should give a certificate that none of his/her such near relative is working in the units as defined above where he is going to apply for tender/work, for proprietorship, partnership firms and limited company certificate shall be given by the authorized signatory of the firm. Any breach of these conditions by the company or firm or any other person, the tender/work will be cancelled and earnest money/performance guarantee will be forfeited at any stage whenever it is so noticed. BSNL will not pay any damages to the company or firm or the concerned person. The company or firm or the person will also be debarred for further participation in the concerned unit.
 - c. No employee in BSNL/ Govt. of India is allowed to work as a contractor for a period of two years of his retirement from service without the prior permission. The contract is liable to be cancelled if either the bidder or any of his employees is found at any time to be such a person who had not obtained the permission as aforesaid before submission of tender and engagement in the bidders service.
23. The tender for the work shall remain open for acceptance for a period of **One hundred and twenty (120) days** from the date of opening of tenders. If any bidder withdraws his tender before the said period or issue of letter of acceptance, whichever is earlier, or makes any modifications in the terms and conditions of the tender which are not acceptable to the BSNL, then the BSNL shall, without prejudice to any other right or remedy, be at liberty to forfeit 50% of the said earnest money as aforesaid. Further the tenderer shall not be allowed to participate in the retendering process of the work.

24. The agency has to comply with the provisions of EPF and miscellaneous provisions Act-1952 and employees provident fund scheme-1952 as amended up to date in respect of labours/employees engaged by them for this work. Any consequence arising due to non-complying of provisions as specified above shall be the sole responsibility of the firm only. The agency shall give an undertaking to this effect as per **Form 'B'**.
25. **Extension of Validity of tender:** In case, where the letter of award of work cannot be placed within the validity period of the tender, the BSNL can request the bidder to extend the validity of their respective tenders and the Earnest Money deposit by a reasonable period. In such cases, extension of validity of Earnest Money deposit by 30 days beyond the extended validity date of tender should also be asked for. While BSNL can make the request for extension, the tenderer is free to either extend the validity or refuse the request to extend the validity.
26. Rates quoted by the contractor shall be firm and shall be valid for the currency of contract. No cost escalation shall be permitted during the currency of contract.
27. This notice inviting tender shall form a part of the contract document. The successful bidder, on acceptance of his tender by the Accepting Authority shall within 15 days from the stipulated date of start of the work, sign the contract consisting of:-
- a. The Notice Inviting Tender, all the documents including additional conditions, specifications and drawings, if any, forming part of the tender as uploaded at the time of invitation of tender, subsequent amendments issued and the rates quoted online at the time of submission of bid and acceptance thereof together with any correspondence leading thereto.
 - b. Standard BSNL EW-8 form.

General Instructions to the Bidders

1. The intending bidder must read the terms and conditions of BSNL-EW 6 carefully. He should only submit his bid, if he considers himself eligible and he is in possession of all the documents required.
2. Information and instructions for bidders posted on website shall form part of bid document.
3. Applicants are advised to keep visiting the above mentioned website from time to time (till the deadline for bid submission) for any updates in respect of the tender documents, if any. Failure to do so shall not absolve the applicant of his liabilities to submit the applications complete in all respect including updates thereof, if any. An incomplete application may be liable for rejection.
4. Those bidders not registered on the website mentioned above, are required to get registered themselves beforehand. The intending bidder must have valid class-III digital signature to submit the bid.
5. Tender Bidding Methodology: - "Single Stage Bidding and Two stage opening system". In this system Technical Bid (Techno-commercial NIT document) and Price Bid shall be submitted by the bidder at the same time.
6. On opening date, the bidder can login and see the bid opening process. After opening of bids he will receive the competitor bid sheets.
7. Bidder can upload documents in the form of JPG format or / and PDF format.
8. Bidder must ensure to quote rate of each item. The column meant for quoting rate in figures appears in yellow colour. In addition to this, while selecting any of the cells a warning appears that if any cell is left blank the same shall be treated as "0". Therefore, if any cell is left blank and no rate is quoted by the bidder, rate of such item shall be treated as "0" (ZERO)
9. Even though any bidder may satisfy the above requirements, he would be liable to disqualification if he has:
 - a. Made misleading or false representation or deliberately suppressed the information in the forms, statements and enclosures required in the eligibility criteria document.
 - b. Record of poor performance such as abandoning work, not properly completing the contract, or financial failures / weaknesses etc.
10. If any information furnished by the bidder is found incorrect at a later stage, he shall be liable to be debarred from tendering/taking up of works in BSNL. The BSNL reserves the right to verify the particulars furnished by the applicant independently.
11. GST and any other tax applicable in respect of this contract shall be borne by the bidder himself. The bidder shall quote his rates considering all such taxes. The TDS as per the Govt. regulations will be recovered from the contractor.
12. **Tender Evaluation :**
 - (a) The evaluation and comparison of responsive bids shall be done on the basis of Net cost to BSNL on the prices offered inclusive of packing, forwarding, freight and insurance charges etc., but excluding Taxes allowable under Input Tax Credit. The bid with lowest net cost as elaborated above will be the L1 bidder.
 - (b) Vendors should furnish the correct GST Rate in the price schedule. If the Input Tax Credit is found to be not admissible at any stage subsequently owing to wrong furnishing of GST Rate,

(c) then the vendors will be liable to refund such non-admissible amount, if already paid, along with penalty if charged by the concerned authority.

13. However, pursuant to the constitution (Forty-sixth amendment) act, 1982, if any further tax or levy is imposed by statute, after the last date of receipt of tenders, and the contractors there upon necessarily and properly pays such taxes/ levies, the contractor shall be reimbursed the amount so paid, provided such payment, if any, is not in the opinion of Superintending engineer (whose decision shall be final and binding) be attributable to delay in execution of work within the control of contractor.

14. The Contractor shall, within a period of 30 days of imposition of any further tax or levy in pursuant to the constitution of (Forty sixth amendment) act 1982 give a written notice thereof to the Engineer-in-charge that the same is given pursuant to this condition, together with all necessary information relating thereto.

15. Bye laws Indemnity against liabilities:

- a. The bidder shall comply with all bylaws and regulations of the local and statutory authorities having jurisdiction over the works and shall be responsible for payment of all fees and other charges and giving and receiving all necessary notices and keep the Engineer –in-charge informed about the notices issued and received.
- b. The bidder shall indemnify the department against all claims in respect of patent rights design, trademark or name of other protected rights in respect of any plant, machine, work or materials used for or in connection with the works or temporary works and from and against all claims demands, proceedings, costs, charges and expenses whatsoever in respect of or in relation thereto.
- c. The bidder shall defend all actions arising from such claims and shall himself pay all royalties, License fees, damages, costs and charges of all and every sort that may be legally incurred in respect hereof shall be borne by the bidder.
- d. All liabilities / penal recoveries on matters arising out of tax /levies such as incorrect deductions, discrepancies in the filing of returns, revised assessments by the concerned authorities etc., shall be borne by the bidder.

16. Termination of contract on death of contractor :

Without prejudice of any of the rights or remedies under this contract, if the contractor dies, the Engineer in charge on behalf of the BSNL shall have the option of terminating the contract without compensation to the contractor.

17. Indulging of contractor in criminal /antisocial activities and cases under investigation/charge sheeted by CBI or any other government agencies etc. :

If the CBI/Independent External Monitor (IEM) /Income tax/ Sales Tax /GST/ Central Excise/Custom Departments recommend such a course - Action will be taken as per the directions of CBI or concerned department.

18. As a general notion, the terms and conditions/instructions contained in various pages of this document are addressed assuming the bidder as 'Male'. However, the same shall remain and assumed to be addressed in case of 'Female' bidder also, except for the gender centric words, which shall be 'female' centric at appropriate places.

Payment Terms and Conditions:

SI No	Description of Item (Rates in Rupees) (A)	1st payment at the end of completion of work as per agreement (Rates in Rupees) (B)	Payment at the end of I, II, III, IV, V, VI and VII year of Operation (Rates in Rupees) (C)
1	A1= DG set + 2 years warranty + 5 years AMC	B1=58% of A1 60% of B1 on supply 30% of B1 on ITC & trial run. 10% of B1 after completion of AT as per BSNL norms.	C1=6% of A1 at the end of each year of completion of work & start of operation.
2	A2=HPAC /3TR duct able AC / 1.5TR Inverter AC + 2 years warranty + 5 years AMC	B2=51% of A2 60% of B2 on supply 30% of B2 on ITC & trial run. 10% of B2 after completion of AT as per BSNL norms.	C2= 7% of A2 at the end of each year of completion of work & start of operation
3	A3= SMPS+ Battery + Invertor + 2 years warranty + 5 years AMC	B3=79% of A3 60% of B3 on supply of material after QA clearance 30% of B3 on ITC & trial run. 10% of B3 after completion of AT as per BSNL norms.	C3= 3% of A3 at the end of each year of completion of work & start of operation
4	A4=IBMS components + 2 years warranty + 5 years AMC	B4= 72% of A4 60% of B4 on supply 30% of B3 on ITC & trial run. 10% of B4 after completion of AT as per BSNL norms.	C4= 4% of A4 at the end of each year of completion of work & start of operation
5	Operation & General maintenance	--	Quarterly
6	Comprehensive AMC for Items not covered under supply	--	Yearly on prorata basis
7	Release of BG	06 months after successful completion of 7 years AMC period.	

FORM 'A'

Undertaking to abide by EW 6 & EW 8

"I.....Son/Daughter of
.....Resident of
..... hereby give an undertaking that I have read the complete bid
document and I am aware of all the clauses and sub clauses of BSNL EW 6 & 8 forms and I confirm
that I will abide by all the terms and conditions available in BSNL EW 6 & 8 forms.

(Seal of the firm)

(Signature of Bidder)

Undertaking regarding EPF provisions

"I..... Son/daughter of
Resident of
 hereby give an undertaking that

* I/We have employed only ----- persons in our establishment and hence the EPF and Miscellaneous provisions Act, 1952 is not applicable to my / our establishment.

* I/ We have registered as per the EPF and Miscellaneous provisions Act, 1952 and our registration no. ** is ----- . We undertake to keep it valid during the currency of contract.

In case at any stage, it is found that the information given by me is false / incorrect, BSNL shall have the absolute right to take any action as deemed fit/without any prior intimation to me".

* strike out whichever is not applicable

**Attach a self-attested photo copy of the above said EPF registration certificate.

(Seal of the firm)

(Signature of Bidder)

Undertaking regarding ESI provisions

"I..... Son of
Resident of
 hereby give an undertaking that

* I/We have employed only ----- persons in our establishment and hence the ESI and Miscellaneous provisions Act, 1948 is not applicable to my / our establishment.

* I/ We have registered as per the ESI and Miscellaneous provisions Act, 1948 and our registration no. ** is ----- . We undertake to keep it valid during the currency of contract.

In case at any stage, it is found that the information given by me is false / incorrect, BSNL shall have the absolute right to take any action as deemed fit/without any prior intimation to me".

* strike out whichever is not applicable

**Attach a self-attested photo copy of the above said ESI registration certificate.

(Seal of the firm)

(Signature of Bidder)

Performance report of works

1. Name of Agency
2. Name of work
3. Agreement no.
4. Final Value of Work Done
5. Date of start of work
6. Actual date of completion
7. Performance: Satisfactory / Not Satisfactory

Dated:

Executive Engineer or Equivalent

FORM 'D'

No Near relative working certificate

I..... Son /daughter of Shri/ Smt.....Resident
of..... hereby certify that none of my relative(s) as defined in the tender document
is/are employed in BSNL unit as per details given in tender document. In case at any stage, it is
found that the information given by me is false/incorrect, BSNL shall have the absolute right to take
any action as deemed fit/without any prior intimation to me.

(Seal of the firm)

(Signature of Bidder)

Annexure I
MODEL FORM OF BANK GUARANTEE FOR EMD

Whereas _____ (hereinafter called "the bidder(s)") has submitted its Tender dated _____ for the work _____ KNOW ALL MEN by these presents that WE _____ OF _____ having our registered office at _____ (hereinafter called "the Bank") are bound unto _____ (hereinafter called "the BSNL") in the sum of _____ for which payment will and truly to be made of the said BSNL, the Bank binds itself, its successors and assigns by these presents.

THE CONDITIONS of the obligation are:

1. If the Bidder(s) withdraws its Tender during the period of Tender validity specified on the Tender Form: or
2. If the Bidder(s) having been notified of the acceptance of its Tender by the BSNL during the period of Tender validity.
 - (a) Fails or refuses to execute the Contract.
 - (b) Fails or refuses to furnish security Deposit in accordance with the conditions of Tender document.

We undertake to pay to the BSNL up to the above amount upon receipt of its first written demand, without the BSNL having to substantiate its demand, provided that in its demand, the BSNL will note that the amount claimed by it is due to it owing to the occurrence of one or both of the two conditions, specifying the occurred condition or conditions.

This guarantee will remain in force as specified in the Tender Document up to and including Thirty (30) days after the period of the Tender validity and any demand in respect thereof should reach the Bank not later than the specified date/dates.

Signature of the Bank

Signature of the Witness
Name of Witness

Address of Witness:

ANNEXURE II

PERFORMANCE SECURITY GUARANTEE BOND

In consideration of the CMD, BSNL (hereinafter called 'BSNL') having agreed to exempt _____ (hereinafter called 'the said bidder(s)') from the demand under the terms and conditions of an agreement/Advance Purchase Order No _____ dated _____ made between _____ and _____ for the supply of _____ (hereinafter called "the said agreement"), of security deposit for the due fulfilment by the said bidder (s) of the terms and conditions contained in the said Agreement, on production of the bank guarantee for _____ we, (name of the bank) _____ (hereinafter refer to as "the bank") at the request of _____ (bidder(s)) do hereby undertake to pay to the BSNL an amount not exceeding _____ against any loss or damage caused to or suffered or would be caused to or suffered by BSNL by reason of any breach by the said Bidder(s) of any of the terms or conditions contained in the said Agreement.

2. We (name of the bank) _____ do hereby undertake to pay the amounts due and payable under this guarantee without any demur, merely on a demand from the BSNL by reason of breach by the said bidder(s)' of any of the terms or conditions contained in the said Agreement or by reason of the bidders(s)' failure to perform the said Agreement. Any such demand made on the bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee where the decision of BSNL in these counts shall be final and binding on the bank. However, our liability under this guarantee shall be restricted to an amount not exceeding _____.

3. We undertake to pay to the BSNL any money so demanded notwithstanding any dispute or disputes raised by the bidder(s)/supplier(s) in any suit or proceeding pending before any court or tribunal relating thereto our liability under this present being absolute and unequivocal. The payment so made by us under this bond shall be valid discharge of our liability for payment there under and the bidder(s)/supplier(s) shall have no claim against us for making such payment.

4. We(name of the bank) _____ further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said agreement and that it shall continue to be enforceable till all the dues of the BSNL under or by virtue of the said Agreement have been fully paid and its claims satisfied or discharged or till _____ (office/BSNL) BSNL certifies that the terms and conditions of the said Agreement have been fully or properly carried out by the said bidder(s) and accordingly discharges this guarantee. Unless a demand or claim under this guarantee is made on us in writing on or before the expiry of TWO/TWO AND HALF/THREE YEARS (as specified in P.O) from the date hereof, we shall be discharged from all liabilities under this guarantee thereafter.

5. We (name of the bank) _____ further agree with the BSNL that the BSNL shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Agreement or to extend time of performance by the said bidder(s) from time to time or to postpone for any time or from time to time any of the powers exercisable by the BSNL against the said Bidder(s) and to forbear or enforce any of the terms and conditions relating to the said agreement and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Bidder(s) or for any forbearance, act or omission on the part of the BSNL or any indulgence by the BSNL to the said Bidder(s) or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect of so relieving us.

6. This guarantee will not be discharged due to the change in the constitution of the Bank or the Bidder(s)/supplier(s).

7. We (name of the bank) _____ lastly undertake not to revoke this guarantee during its currency except with the previous consent of the BSNL in writing.

Dated the _____ day of _____
for _____ (indicate the name of bank)

PART-I

ENGINE ALTERNATOR SET, AIR CONDITIONING AND IBMS

TECHNICAL DATA TO BE SUBMITTED BY THE FIRM

[To be downloaded, filled up, scanned & uploaded along with Technical Bid]

[Items covered under schedule of work]

1. ENGINE ALTERNATOR SET

1	BSNL Approved Engine Make: Ashok Leyland / Cummins Ltd / Cater pillar / Kirloskar Oil Engine Limited / Volvo Penta				
	Engine with standard scope of supply (1500 RPM)				
	Engine Capacity	Make offered	Model	BHP	ANY OTHER INFORMATION
a)	160KVA				
b)	125KVA				
c)	100KVA				
2	BSNL Approved Alternator Make: Crompton Greaves (AL. series) / KEC/ Leroy Somer/ Stamford / Jothi				
	Alternator	Make offered	Capacity		
a)	Suitable for 160KVA Engine				
b)	Suitable for 125KVA Engine				
c)	Suitable for 100KVA Engine				
	Note: For the above items 1 & 2, the make mentioned above and any subsequent approval by the Corporate office of BSNL till the last date of sale of tender shall be accepted. If approval for the above offered model is not available on date of tender opening, the same model will not be accepted.				

2. AIR CONDITIONING

1. HPAC unit

BSNL approved make 7TR HPAC unit	Make offered by the firm
Stulz /Schneider / Sidwal	

Note: For the above item, the make mentioned above and any subsequent approval by the Corporate office of BSNL till the last date of sale of tender shall be accepted. If approval for the above offered model is not available on date of tender opening, the same model will not be accepted.

2) 1.5TR & 3.0 TR Air conditioners				
S.No.	Details	Unit	1.5TR	3.0TR
	TYPE		INVERTER	DUCTABLE
1	Name of the Manufacturer			
1.1	Model No.			
1.2	Nominal cooling capacity	Kcal/hr (KW)		
1.3	Type of Refrigerant			
1.4	Rated Power Supply	Volts/ Phase/ Hz		
2.0	ISEER Star Rating			
3.0	COMPRESSOR			
3.1	Type of Compressor			
3.2	Name of the Compressor Manufacturer			
3.3	Rating of Compressor Motor	KW		
3.4	Guarantee period of compressor	Years		
4	INDOOR UNIT			
4.1	Overall Dimensions of Indoor Unit	(LxWxD) mm		
4.2	Tube Material, Outer diameter	mm		
4.3	External surface area of Evaporative coil	Sq.m		
4.4	Max input of Fan Motor (Indoor unit)	Amp/Watt		
5	OUTDOOR UNIT			
5.1	Overall Dimensions of Outdoor Unit	(LxWxD) mm		
5.2	Face Area of Condenser	Sq.m		
5.3	Tube Material of condenser/ Outer diameter	mm		
5.4	Max input of Fan Motor (Condenser)	Amp/Watt		
6	FILTER			
6.1	Material of Filter			
7	Drip Tray	Yes / No		
8	Electrical Wiring Required	No. of cores/ Sq.mm		

3) MICRO INVENTORY FOR IBMS

Sl. No	Description of Items	Make of item offered by firm	Compliance as per NIT (Yes/No)	Comments on deviation (if any)
	IBMS:			
1a	Server			
1b	Work Station			
1c	IBMS Software (access+BMS)			
2.0	DDC controller			
3.0	Temperature humidity sensor			
4.0	Integrator Switch			
5.0	Layer II 24 port Switch			
	Access control system			
1	Main access control panel			
2	Smart card reader			
3	Biometric finger print reader			
	CCTV surveillance system			
1	Varifocal dome camera			
2	Server machine / Network Video recorder			
3	LED TV			
	Addressable fire alarm system			
1	Main fire alarm panel			
2	Multi sensor detector			
3	Heat detector			
4	Control module			
5	Monitoring module			
	Fire suppression system			
1	NOVEC 1230			

	WLD system:			
1	WLD panel			
2	Zone module			
3	Sensing Cable			
	Rodent Repellant System			
1	Rodent Panel			
2	Rodent transducers			
	VESDA			
1	VESDA Panel			
2	Capillary tubes/sampling tubes			

SPECIFICATION FOR ENGINE ALTERNATOR SET WITH ACOUSTIC ENCLOSURE

1. **SCOPE :** The offer should cover complete supply, installation, testing, and commissioning of ready to use diesel engine alternator sets in acoustic enclosure. All minor civil works, electrical and other works associated with installation and commissioning of the set shall be carried out by the tenderer. The tenderer would quote for complete lot to be executed under works contract.
2. **REQUIREMENT:** The Engine Alternator supplied should be of ready –to –use type (RTU), the BHP of engine may be suitably enhanced as per site conditions in order to deliver the minimum required KVA at site, in case of water cooled engine it should be supplied with first filling of coolant and water mixture as per the manufacturer recommendation. The Engine shall be equipped with all standard fittings, flexible pipe, suitable capacity of low maintenance lead acid battery for automotive / cranking duty fixed between base frame as per manufacturer's recommendation, one fuel tank of minimum **285 litres for 160KVA EA set / 225litres for 125/100KVA EA set** inside canopy with fuel pipe, silencer, MS exhaust pipe of suitable size and length as per original manufacturer's standard, instrument panel equipped with necessary instruments, directly coupled with alternator of suitable capacity on a suitable length of common base frame, channel fixed on necessary AVN pads required length of suitable size of copper conductor cable with glands and lugs for inter connection between alternator and control panel, providing tools for normal maintenance and all other accessories complete as required and as per detailed specifications attached. The Engine and the Enclosure shall conform to the Environment (Protection) Act 1986 (29 of 1986), and Environment (Protection) Rules, 1986, latest as amended from time to time, of Ministry of Environment and forest, and the agency shall provide all the relevant certification (including, but not exclusively, certificate of adhering to latest applicable noise limit; and certificate for type approval and COP (Conformity of Production) as per the latest applicable emission norms) to establish conformance of the DG Set as required by this act, and these rules, latest as amended from time to time. The make and model no. of Engine and alternator shall be as per BSNL approved product directory. The battery shall be fixed between the base frame on a suitable angle iron frame / MS sheet including providing suitable rubber pads below the battery.

3. OPERATING CONDITIONS

The engine alternator shall be capable of working at any ambient temperature between 0°C to 50° C and relative humidity up to 95% condition. However for calculation of the capacity these operating conditions will not apply. For calculation of the capacity the condition shall be **Chennai** for 160KVA EA set and **A&N Islands for 125/100 KVA EA set**.

4. PERFORMANCEREQUIREMENT

- The working KVA rating at site condition after accounting for de-rating shall be obtained at 0.8 power factor.
- When there is an electrical main supply failure it will be required to work continuously for a period which may even exceed 24 hour at a time.
- The set shall be capable of taking 10% overload for a period of one hour during every 12 hours period while operating continuously at full load.
- The set may be idle for a long period except for routine test periodically.

5. OUT PUT VOLTAGE FREQUENCY AND WAVE FORM

Nominal output voltage shall be 415 volt with $\pm 5\%$ manual adjustment at all conditions of the load. Frequency shall be 50 cycle per second $\pm 3\%$ in output waveform.

6. DIESEL ENGINE

The Engine shall be multi cylinder, reciprocating compression ignition engine as per manufacturer standard design and conforming to relevant IS specifications. **The emission limits for diesel engine up to 800 kW generator set shall be as per the new emission norms released by the Ministry of Environment and forest notification with effect from 1st July , 2014 and amended up to date.**

7. LUBRICATION

Lubrication shall be positive pressure type lubricating all moving parts. No moving parts shall require lubrication by hand either prior to the starting of the engine or while it is in operation. Temperature and pressure gauge

shall be fitted to the lubrication system. Lubrication oil shall conform to relevant IS amended up to date. Necessary lubricating oil filter shall be provided for operation at normal conditions for a period of 250 hours.

8. FUEL TANK

Fuel tank shall be suitably provided between base frames or separately installed in case of installation in a canopy. Tank shall be made of CRCA sheet steel. The tank shall have fuel level indicators, filling inlet, drain plug, air vent and necessary piping, hand pump for pumping the fuel into the service tank with necessary pipe or tube shall be provided. The outlet of the hand pump shall be provided with 3-meter long reinforced hosepipe with suitable filters.

9. FUEL PIPING

Fuel pipe shall be hydraulically compressed type of superior quality.

10. SPEED AND GOVERNING

The engine shall operate on 1500 RPM, and be able to meet site conditions with regard to Voltage, Speed, Frequency and regulation and shall be equipped with governor suitably to give the desired output.

11. ENGINE START

Engine shall be cold and self-starting type. The starter battery shall have suitable copper connecting lead, sufficient to meet engine starting and control gear requirement as per manufacturer specification.

12. BATTERY CHARGING

The battery charging shall be done through alternator in running condition and through battery charger when EA set is in off condition. The changeover from battery charger to alternator and vice-versa shall be automatic. The solid state 24V/12V, suitable capacity/rating of battery charger provided in Control Panel.

13. The Engine shall have following accessories: -

- (i) Fly wheel.
- (ii) Coupling with guard.
- (iii) Fuel Pump suitable for lifting the fuel from fuel tank provided below E/A sets.
- (iv) Governor.
- (v) Pre filter.
- (vi) Fuel Filter.
- (vii) Pre-filter in lift pump/button filter.
- (viii) Lubricating oil filter.
- (ix) Residential exhaust silencer.
- (x) Starter.
- (xi) Blower fan / radiator fan
- (xii) Battery charging Alternator.
- (xiii) Electronic / Mechanical type hour meter and RPM meter (As per manufacturer's standards)

14. The control panel shall comprise of the following: -

- (i) Starting switch with key/push button. (As per manufacturer's standards)
- (ii) Lubricating oil temperature gauge for air cooled engine and water temp gauge for water cooled engines
- (iii) Lubricating oil pressure gauge.
- (iv) Battery charging ammeter.
- (v) Emergency STOP push button.

15. ALTERNATOR

- a) The alternator shall be three phase copper wound brushless and totally enclosed for screen protected class-F/H insulation, designed and constructed to withstand tropical condition. Voltage regulation shall be $\pm 1\%$ and shall be conforming to relevant IS specifications.
- b) The winding shall be of standard and neutral shall be brought out to the terminal box suitable for earth connection to two independent earths. The terminal of the alternator output shall be enclosed in the terminal box. The AC/DC wiring shall be separated from each other.

16. AMF CONTROL PANEL separately for each EA set

16.1 Cubicle type, compartmentalized, free standing, front operated, totally enclosed vermin proof, Control panel shall be fabricated out of minimum 1.6 mm thick CRCA M.S sheet steel, powder coated with easy

accessibility to all control wiring from front. Panel shall have provision for termination of UG cable for incoming/ outgoing and necessary gland plates shall be provided at bottom of the panel, suitable for 415V, 3 phase, 50Hz, 4 wire system including installation, testing and commissioning. The interconnecting bus bars shall be minimum 300 Amps capacity and shall be aluminium bus bars of adequate dimensions (current density not exceeding 130A/sq.cm) with superior quality epoxy insulators. MCBs shall be provided for instrument and control circuits.

16.2 Control wiring shall be provided using 1.5 Sq.mm multi-strand PVC insulated copper conductor cable, screw less type connectors and identification ferrules on both ends. AC and DC wiring shall be separated and clearly identified. Necessary wiring shall be provided for power and control circuits. Earth studs shall be provided at both sides of the panel and shall be interconnected with tinned copper earth bus of 20 x 5 mm size.

16.3 The panel shall have necessary sign writing/labeling of important parts and provided with metallic danger notice board. The panel shall have base frame and shall be mounted inside the canopy with suitable mounting arrangements and anti vibration pads.

16.4 Each module (cubicle) shall have sufficient working space for making connections and shall be with individual dust proof hinged door provided with insulated thumb screw at two ends.

16.5 The interconnection between alternator terminals and AMF panel shall be with suitable size copper conductor flexible cable shall be provided.

16.6 The AMF Control panel consists of the following items:

- 1 No. 250 A, 4 pole 50 KA MCCB (100% Icu = 100% Ics) with suitable thermal overload range, SC and Shunt trip and door interlock for Engine alternator set supply.
- 2 Nos. 250 A, 4 pole Power contactor with contactor coil for E/A set supply (Electrically interlocked with EB Supply).
- Standard factory built generator controller and monitoring module with the following functions. The microprocessor controlled AMF logic unit shall be suitable for either automatic or manual controlled operation of the Engine alternator set with suitable audio visual alarms and indicators.
- Engine mode selection switches for AUTO/ MANUAL/ TEST/ OFF.
- Suitable sensing switchgear shall be provided for the AMF to operate on Mains Fail, **however provision shall be there to extend the EB supply directly in case of AMF panel faulty.**

16.7. The following features shall be provided in AMF panel:

- a) Two EA sets are to be provided **per site**, so there shall be co-ordination in operation of both the EA AMF control panels. One Engine will be on Auto mode and other will be on manual mode and will be interchanged every fortnight.
- b) Control cable between engine control panel and substation MV panel/BMS Panel is within the scope of this work.
- c) AMF relay should have facility for integrating with BMS provided for the building with necessary RS485 or better communication interface with Modbus / BACnet / LON / DDC (Direct Digital Control) protocol Interface, which shall be initially got approved from the Engineer-In-Charge so as to be compatible with the BMS.
- d) DG Set supplied by vendor should have provision of integration with IBMS and should provide with ModBus over RS-485 of BACnet/IP, BACnet/Lontalk or any standard industrial open protocol.
- e) The following audio visual alarms, acknowledgement and reset push buttons with EA contactor trip and engine shutdown are to be made available in AMF control panel /controller through LED/LCD display:
 - (i) LLOP.
 - (ii) High cylinder /Water Temperature.
 - (iii) Over/Under speed
 - (iv) Lack of fuel.
- f) Audio visual alarm, acknowledgement and reset push buttons for
 - (i) Engine fails to start.
 - (ii) Engine fails to stop.
 - (iii) Low fuel level
 - (iv) Battery charger failure.

16.8 The following shall also be provided.

- (i) Engine Start push button on manual mode.
- (ii) Stop push button on manual mode.
- (iii) SP MCB of suitable rating for AC control circuit
- (iv) SP/DP MCB of suitable rating for DC control circuit.

16.9 Metering Devices

- (i) AC Digital type intelligent multifunction meter with CT of suitable rating for measurement of Voltage, Current, Frequency, KVA, KW, KWH with RS 485 or better port facility.
- (ii) DC Ammeter for measuring battery charging of suitable range.
- (iii) DC Voltmeter for measuring battery charging of suitable range.

16.10 Indicating Lamps (Series resistance type LED lamp)

- (i) DG set ON
- (ii) Load on DG
- (iii) Mains ON
- (iv) Load on Mains
- (v) Battery Charger ON

16.11 Functional Requirements:-

All the functional requirements in Auto mode are to be achieved through microprocessor based AMF Controller. The AMF panel should be able to be integrated with the IBMS, selection of EA set starting through IBMS shall be made available. The logic for starting & stopping shall be:-

1. If the mains fail, or one or more phase of mains is not available.
2. If any phase voltage of mains is out of preset limits however there should be a provision to set the limits of higher and lower phase voltages as per the site requirement. The mains supply within this range shall be considered as healthy so as to avoid continuous running of Engine Alternator Set.
3. The system should measure 48V battery of the telecom equipment. In case the battery voltage is above a settable limit & server room temperature as measured in the BMS system logic is below a preset max room temperature, the engine should not start unless one of the conditions fails.
4. Two level sensor for fuel should be provided at 50% & 25% respectively.

16.12. System should provide following settable features:-

- (a) Mains failure time - to initiate automatic EA start after 0 to 300 seconds of mains failure.
- (b) Mains restore time - to initiate automatic stop of EA after 0 to 300 seconds of mains in stable conditions.
- (c) Low oil pressure delay time - 0 to 99 seconds delay of the low pressure oil input alarm from engine start.
- (d) Stop solenoid time - 10 to 99 seconds enabling time for "stop solenoid".
- (e) Cranking up time - 0 to 99 seconds enabling time for starter. The Timer is reset if the engine starts before the programmed time.
- (f) Start attempts - 1 to 3 numbers of automatic attempts during automatic start cycle.
- (g) Attempts interval - 1 to 99 seconds time interval between starting pulse attempts.
- (h) Cooling down time - 0 to 300 seconds engine cooling time before stopping. During this time the engine runs without load.
- (i) Generator voltage time - time of stable generator voltage to close EA contactor to load (0 to 300 seconds).

NOTE: The AMF logic should be compatible with the IBMS system. For the same, contractor has to submit details & seek approval before manufacturing/ supplying the EA set.

(SOFT INTEGRATION with IBMS)

Status monitoring ON, OFF, Voltage, Current, KW and Other required parameters etc.:-

- ➡ DG Set supplied by vendor should have provision of integration with IBMS and should provide with ModBus over RS-485 or BACnet/IP, BACnet/Lontalk or any standard industrial open protocol.

(HARDWIRED INTEGRATION)

- i) Diesel level monitoring – tanks

- a) Minimum level.
- b) 50% level.
- c) Maximum level.

- ii) External Breaker –MCCB/ACB -
DG control-
On/off/trip

➔ (Suitable potential free contact should be provided by vendor at one common point. Further extension to DDC/BMS PC by BMS vendor.)

16.13. Battery charger

SCR/SMPS controlled type Static Battery charger of suitable rating shall be provided for charging the battery from mains. The Battery charger shall have automatic trickle and boost charging facility, means to avoid over charging, short circuit, reverse polarity protection and auto cut off facility. It is provided in addition to the Battery charging alternator supplied as standard accessory with the engine.

(HARDWIRED INTEGRATION)

BATTERY CHARGER - Mains on/ DC supply on/fails

BATTERY VOLTAGE -THROUGH PULSE OUTPUT METER

Suitable potential free contact should be provided by vendor at one common point of Main panel. All internal wiring to be done by vendor. Further extension to DDC/BMS PC by BMS. Vendor.

17. SAFETY CONTROL TRIP

- (i) Low lubricating oil pressure.
- (ii) High cylinder / water temp.
- (iii) Lack of Fuel
- (iv) Over speed/ Over frequency tripping device.

18. SOUND PROOF ENCLOSURE

- (i) The canopy should be sound proof, weather proof & environment friendly. The Engine and the Enclosure shall conform to the Environment (Protection) Act 1986 (29 of 1986), and Environment (Protection) Rules, 1986, latest as amended from time to time, of Ministry of Environment and forest, and the agency shall provide all the relevant certification (including, but not exclusively, certificate of adhering to latest applicable noise limit; and certificate for type approval and COP (Conformity of Production) as per the latest applicable emission norms) to establish conformance of the DG Set as required by this act, and these rules, latest as amended from time to time.
- (ii) The canopy shall be in modular construction with the provision of assembly at site. The acoustic panels shall be fabricated by not less than 1.6 mm thick CRCA sheet. The finished sheet metal component shall undergo seven tank treatment process for degreasing, derusting, Phosphatising etc. for longer life and should Polly polyester based coated inside & outside. The nuts bolts and other hardware shall be Zinc coated. The door shall be provided with high quality EPDM gaskets to avoid leakage of sound. The door handles and hinges shall be Zinc plated & lockable type.
- (iii) The Radiator fan of the water cooled Engine shall be used for ventilation. A pusher fan (for air cooled Engines) or in addition to Radiator fan, if required shall also be provided. The motor of this fan shall be of BSNL approved make.
- (iv) Adequate ventilation shall be provided to meet the air requirement for combustion & also to expel heat to maintain temperature inside the enclosure within 7 degree Celsius above ambient at 10% overload with tripping arrangement between (50 – 60) degree Celsius.
- (v) Lighting inside the canopy shall be provided with minimum 2 nos. LED fitting including lamp. 5 Amps switch & socket outlet for connecting battery charger inside the enclosure shall be provided. The lighting and 5 Amps socket shall be powered from the control panel by suitable wiring / cabling arrangement.
- (vi) Separate door with locking arrangement for easy access to D.G. set during operation & maintenance should be provided.

- (vii) Small see through window for reading meters etc. made of transparent polymer sheet of suitable thickness shall be provided.
- (viii) Radiator bellows/sealing arrangement to be provided in cases of water cooled engines to avoid hot air leakage inside canopy.
- (ix) Fuel Tank and Control Panel shall be incorporated inside the canopy. If it is / they are kept outside, the same may be installed in a kiosk. The kiosk shall be of the material of same specifications as used for canopy but without acoustic treatment. The colour of the kiosk shall match with the colour of the canopy. All fuel piping connections, electrical connections etc. shall be done as per standards,
- (x) Four point lifting arrangement.
- (xi) Main base frame size and thickness of MS sheet welded for bolting arrangement will be as per manufacturer's recommendation complete as required.
- (xii) Insulation on enclosure will be provided & fixed of Mineral rock wool Slabs of density not less than 96 kg/M3 of 75mm thickness, covered with 22 gauge GI sheet having 3mm perforation fitted with strips of AL by hydraulic riveting to support the whole insulation rigidly complete as required (OR) Polyurethane foam / PUF of minimum 26Kg / m³ density acoustic foam of dark grey / black colour, fire retardant and not less than 20 mm thickness.
- (xiii) The canopy shall be provided with emergency stop button easily approachable from outside.
- (xiv) The canopy shall be provided with following meters (visible from outside):
 - (a) Lub. Oil pressure gauge. (When part of controller of engine, not reqd.)
 - (b) Water temperature gauge (for water cooled engines only).(when part of controller of engine, not reqd.)
 - ©Fuel gauge with sensing arrangement. (or as per manufacturer standards)

The enclosure shall be guaranteed for a period of 12 months from the date of completion of work against defective materials & rust, welding, painting, smooth functioning of doors, inspection window etc. minor civil work is to be carried out without any extra cost. However the bidder has to maintain the entire system for a period of 7 years.

(xv)

19. GENERAL REQUIREMENT

- (i) The set shall have minimum vibration and noise under all conditions of load. The set shall be properly dynamically balanced. Anti vibration mounting shall be provided for supporting the set.
- (ii) The set shall be fitted with radio interference suppressers in case of slip ring type alternator.
- (iii) The size of EA Set base frame channels shall be as per manufacturer's recommendations.
- (iv) Control wiring shall be done with not less than 1.5 Sq.mm multi strand PVC insulated copper conductor cable.
- (v) Earthing provision should be made for earthing all current carrying metal parts of the equipment. Earth lugs of suitable size shall be provided.
- (vi) All the exposed moving parts like coupling etc. shall be provided with suitable guards covering.
- (vii) All exposed metal parts shall be suitably finished to prohibit corrosion.
- (viii) All the important and major parts should bear their catalogue number make of the parts etc. All the control wiring shall be provided with letter number ferules at both ends. Three sets of manual giving the details about design, specifications, special features of the equipment schematic and wiring diagram instructions regarding installation and maintenance etc. should be supplied. A laminated control wiring diagram should be pasted inside the control panel.

ix) OVERLOAD

The set shall be capable of taking 10% overload for a period of one hour during every 12 hours period while operating continuously at full rated load. In case of marginal deficit in overloading, allowable up to maximum of 5% load). Pro Rata recovery based on originally declared KVA rating shall be levied.

20. TESTING AND A/T

The firm shall test the set itself as per the BSNL schedule and practice before offering for acceptance test by B.S.N.L. All the relevant tests to check the performance of the set shall be conducted (A/T) by T&D Circle at

site after installation as per the decision of the Engineer-in-charge. Diesel and lubricant oil shall be supplied by the contractor for 8 hours successful Acceptance testing of the set. The necessary artificial load and any other necessary manpower material consumables etc. will be provided free of cost by the contractor at the time of testing/A/T.

- (i) Initial testing for 2 hours at full load, one hour at 10% overload and one hour at no load prior to fixing up of regular A/T.
- (ii) A/T in presence of representative of T&D circle as per A/T Schedule ie. For 6 Hours on full load and One hour on 10% over load.
- (iii) Resistive load, Fuel and lube oil for testing shall be arranged by the firm without any extra cost. The test shall be with artificial resistive load only and non-linear load will not be arranged for A/T purpose. Lub. oil sump shall be topped up to full level after successful completion of the acceptance testing. Extra fuel sufficient for the operation of the set on full load for 2 hours shall be left in the fuel tank after the successful completion of the Acceptance testing.
Nothing extra will be paid for the subsequent A/Ts in case of failure of first A/T.

20.1 INSULATION TEST:

Immediately after the load test, the insulation resistance between stationary coil and the frame is tested with 500 Volts meggar.

20.2 ACCURACY OF METERS

The accuracy of meters shall confirm to relevant IS.

20.3 FUNCTIONAL TEST:

Performance of incoming switch/circuit breaker, starting arrangement for the engine, safety features, instruments and control panel etc shall be verified. The battery shall be tested as per the general method.

20.4. Completion Reports:

The contractor after successful installation, testing and commissioning of the Engine Alternator sets including all the accessories like AMF control panel, shall submit a self-certification to the BSNL that the work has been completed successfully as per specifications drawings and other terms and conditions of the agreement and tender document.

The following details should be submitted along with the above certificate.

1.1.1.1.1.1 Self-Certification details of Engine Alternator

- a. Rated capacity of Engine Alternator
- b. Make of Engine/Alternator
- c. Serial number of Engine/Alternator
- d. Year of Manufacture
- e. Supplied by:
- f. Proof of purchase (Invoice/Bill)
- g. Details of other components provided
- h. Testing and commissioning report
- i. Date of commissioning.

21. GUARANTEE ETC:

The entire installation system shall be guaranteed against any inherent defect of faulty workmanship and for its perfect functioning for a period of two years from the date of successful AT of entire system. However the bidder has to maintain the entire system for a period of 7 years. (including guarantee period)

- I. Free services as per manufacturer's standard practice and norms will be provided free of cost.
- II. The contractor shall impart training to the operator deputed by the department for operation and attending the minor fault free of cost.
- III. All work will be executed as per CPWD (Internal / External) specification, relevant IE rules.

TECHNICAL SPECIFICATIONS FOR PRECISION AC UNIT

INTRODUCTION

SCOPE/ (EXPLANATORY NOTE):

The scope of the contract viz. the supply, installation, testing and commissioning of Precision Air Conditioning plant consists of the following:

The Precision package AC units which will have to work in a group upto max of 6 units and shall be interconnected to work in a single zone providing sequence changeover, standby duties and cascade facility for extra load with single point access for alarm reporting and system connectivity.

1 CONFORMITY TO INDIAN STANDARDS:

The air conditioning plant equipment and installation shall conform to various IS standards amended up to date wherever applicable.

2 GENERAL REQUIREMENTS AND SAFETY STANDARDS:

- 2.1 The air conditioning plant shall be designed for Precision Air Conditioning with a higher coefficient of performance with overall low power consumption and continuous operation for the normal life of the plant.
- 2.2 The components shall be suitable for operation under tropical conditions. The design and installation of the plant shall generally conform to the safety standards
- 2.3 The plant room and air-conditioned space shall be free from objectionable noise and / or vibrations due to the working of the plant. The air-conditioned space shall also be free from any objectionable odour.

GENERAL DESCRIPTION OF WORK

1. Station :
2. Name of Building :
3. Drawings: The Executive Engineer (E) shall give necessary drawings & details regarding the areas to be air conditioned, location of precision air -conditioning plant, proposed routes and location of condenser, pipes and other relevant particulars.

4. Design Data:

The salient design and other relevant data is given below:

1. Particulars of temperature and relative humidity.

(i) Outside design conditions:

DB °C WB °C RH (%)

Summer:

Monsoon:

Winter:

ii) Inside design conditions:

Summer :	Temp. 23 ± 3 °C, RH 45 % ± 15 %
Monsoon:	
Winter:	

1. Areas to be air-conditionedSq. mtr
2. Plant operation: 24 hours continuously.
3. Peak heat load: -----kcal/Hr
4. Features of A/C Plant : As per schedule of work attached
5. Roof Insulation : Not applicable

SPECIFICATIONS FOR 7TR CAPACITY HIGH PRECISION AIR CONDITIONERS (HPACs)

If there is any difference between the following specification / Bill of material and that of the proto type approved one, then specification / Bill of material of the proto type approved will prevail.

1.0 SCOPE :

- 1.1 These specifications describe the specific requirements of microprocessor based High Precision Air conditioners (HPACs). The HPAC unit shall consist of indoor and outdoor unit.
- 1.2 The indoor unit shall be floor mounted type comprising of hermetic sealed scroll compressor(s), filter section, controller, electrical power system , multi-rows deep copper cooling coil with aluminium fins, dehumidification cycle, modular panel cabinet construction, cabinet insulation, statically & dynamically balanced blower section, humidifier, refrigeration controls etc. The unit shall be suitable for Top/Bottom discharge.
- 1.3 The outdoor unit shall comprise of air-cooled condenser with fans.
- 1.4 These specifications set out the basis of design of self contained HPACs to meet the environmental needs of telecom equipments.
- 1.5 The firms willing to supply such units, shall get their prototype unit approved from BSNL.

2.0 DESIGN :

The unit shall be designed to meet the following conditions:

1	Rated capacity	7TR / 14 TR (sensible cooling capacity)
2	Flow direction	Upward / Downward flow
3	Return Air inlet Temp.	25 °C (DB) & 50% RH.
4	Saturated Suction Temp.	Between 9 °C and 10 °C
5	Minimum Super heat	2 °C
6	Saturated Discharge Temperature	Maximum 53 °C (at 43 °C ambient)
7	Ambient air design temperature (Entering condenser)	43 °C. However, the unit shall be able to work for ambient up to 50 °C)
8	Air Quantity	Not less than 550 CFM/TR
9	Filters	Having 95% efficiency down to 5 microns.
10	Face velocity across the cooling coil.	Not exceeding 2.5m/sec
11	Type of load	The load shall be High sensible type having Sensible Heat factor not less than 0.90
12	EER of the unit	Not less than 2.90 Watt/watt

3.0 CABINET :

- 3.1 The Cabinet shall be constructed from best quality GI sheet steel /CRCA sheet of thickness not less than 1.6mm for top, bottom and side panels & 0.9mm for front and back panels suitably treated for weather protection, corrosion and shall be powder coated. Alternatively, double skin panels with overall thickness not less than the thickness specified herein above, can also be provided .
- 3.2 Coil and blower sections shall be insulated internally for both acoustics and thermal purposes. The insulation material shall be polyurethane foam of thickness not less than 15 mm complying to the class-B according to DIN 4102 with self extinguishing and sound absorbing properties.

4.0 COMPRESSOR :

- 4.1 The compressor(s) shall be of scroll hermetic sealed type of COPELAND–ZR108C/DANFOSS make having independent refrigerant circuit.
- 4.2 Compressor(s) shall be suitable for R-22/R407C/R410A refrigerants.
- 4.3 Compressor(s) shall be suitable for operation on 3-phase, 415± 10% volts, 50 Hz, AC supply.
- 4.4 The compressors shall be located in such a way that removal of one compressor shall not affect the operation of the other compressor.
- 4.5 Compressors shall be mounted on vibration isolation pads or any other mounting approved by manufacturer.
- 4.6 The compressor(s) shall be provided with built in overload protection.
- 4.7 The Compressor(s) shall be fitted with electrically operated oil heaters. The heaters shall be “ON” when compressor is in “OFF” position and vice-versa. It shall be possible to disconnect power supply to the heater during extended periods of shut down.

5.0 EVAPORATOR SECTION :

- 5.1 The Evaporator Coil shall be provided separately for each refrigerant circuit.
- 5.2 Evaporator coil shall be constructed out of copper tubes not less than 0.28 mm thickness with expanded aluminium fins to give a good mechanical bond for maximum heat transfer. The number of fins shall not be less than 12 fins per inch. Fins thickness shall not be less than 0.1 mm and provided with hydrophilic treatment.
- 5.3 Face area of coil shall be selected corresponding to air velocity not exceeding 2.5 m/sec.
- 5.4 The condensate drain tray shall be of stainless steel of thickness not less than 1.2mm shall be provided to cover full projected area of cooling coil to collect all the condensed water. The PVC threaded water pipe shall be provided to drain the condensed water.
- 5.5 The Blower fans shall be statically and dynamically balanced.
- 5.6 Backward curved fan directly driven by electronically Commutated (EC) motor with integrated electronics suitable for operation on 3-phase AC supply. The fan speed shall be controlled by sensing return air temperature/pressure/controller logic for energy saving.
- 5.7 Energy efficient motors of EBMPAPST/ROSSENBERG/ZEIHLABEGG make shall be used.

6.0 REFRIGERANT PIPING :

- 6.1 Separate piping shall be provided for each refrigerant circuit.
- 6.2 Each refrigerant circuit shall be suitable for operation on R-22/R-407C/R 410A and shall consist of the following items :-
 - i) Electronic Expansion Valve (EEV) controlled by the microprocessor with special software to enable the adjustment of flow of refrigerant fluid through the evaporator. At the same time, it should not allow liquid flood back into compressor.
 - ii) Removable liquid line filter drier with hand shut off valves.
 - iii) Liquid Line sight Glass with Moisture indicator.
 - iv) Charging valves.
 - v) Liquid receiver with safety plug. However, the provision of liquid receiver may not be required if the oversized condenser is provided to cater the function of liquid receiver.
- 6.3 Serviceable/removable components for easy removal & assembling.

- 6.4 The piping shall be carried with refrigerant quality copper tubes of thickness not less than 18 SWG (1.2mm). The proper bending tool shall be used for bending of the pipes. Heavy gauge radius fittings shall be provided wherever, bending of pipes is not feasible.

7.0 ELECTRICAL SYSTEM :

The electrical system shall conform to relevant I.S. standard. The panel shall be accessible from front. The main incomer MCCB of suitable rating and having a rupturing capacity of not less than 25 kA shall be provided along with Single Phasing Preventer (SPP), Electronic overload protection, phase loss and reverse phase sequence and sensing negative sequence current to meet the total power requirements.

- 7.1 The load shall be distributed equally on 3-phase, 4-wire supply.
- 7.2 All control wires shall be provided with not less than 1.5 sq. mm. Multi-strand copper conductor. The control wiring shall be properly colour coded and shall be numbered/ ferruled at their point of termination to facilitate servicing/identification.
- 7.3 The power and control wiring shall be provided in separate casing capping/conduit.
- 7.4 Heaters shall be provided with insulators, with safety thermostats and contactors of suitable ratings.
- 7.5 Isolator of suitable rating having rupturing capacity of not less than 10 kA shall be provided for each equipment/ motor/ heater etc. However, the isolation arrangement for condenser fan motor shall be achieved through suitable rating MCB mounted on condenser unit.
- 7.6 Contactor of suitable rating shall be provided with over load protection for motors and compressors.
- 7.7 The laminated power and control wiring diagram shall be provided on HPAC unit.

8.0 AIR COOLED CONDENSER :

- 8.1 Separate condenser unit shall be provided for each refrigerant circuit.
- 8.2 A heat rejecting coil block shall be constructed out of copper tubes not less than 0.28 mm thickness with expanded aluminium fins to give a good mechanical bond for maximum heat transfer. The number of fins shall not be less than 12 fins per inch.
- 8.3 Fins thickness shall not be less than 0.1 mm and shall be provided with epoxy /suitable weather proof coating.
- 8.4 A minimum of two numbers axial flow fan directly driven by variable speed drive shall be provided for each condenser unit.
- 8.5 The condenser unit shall suitably design for noise level ≤ 75 dB at a distance of 1 meter away from outdoor unit.
- 8.6 The Condenser unit shall be suitable for round-the-clock operation.
- 8.7 The body of the condenser unit shall be made out of 16 SWG (1.6 mm) corrosion resistant G.I. Sheet. The entire assembly shall be supported by epoxy coated frame.

9.0 CONTROLS :

- 9.1 High pressure trip – Manual/Auto reset (for each compressor)
- 9.2 Low pressure trip – Auto reset (for each compressor)
- The unit shall trip in the event of 03(Three) consecutive HP/LP trip.

10.0 SAFETY INTERLOCKS :

- 10.1 Normally the compressor shall start with condenser fan in "ON" condition. However, the compressor may start/run without condenser fan in operation in case of low ambient.

- 10.2 Provision shall also be made to operate the evaporator fan without operation of condenser and compressor.

11.0 **CONTROLLER :**

11.1 **SCOPE :**

Each unit shall have individual controller as per the manufacturer's design to maintain the desired temperature and humidity. The controller shall be intelligent type with microprocessor capable of communicating with other units in same room and control the desired condition with group action. The controller shall operate the units in Master-Slave configuration, However, each controller shall act as Master, if required, in emergency situations.

The controller shall be provided with a backlit LCD/LEDscreen and control keys for user inputs mounted in an ergonomic, aesthetically pleasing housing. The controls shall be menu driven. The display & housing shall be viewable while the unit panels are open or closed.

The controller shall fullycompliantwithEECdirectivesforelectromagneticcompatibility possessing followingbroadfeatures:

- i) Operates andmonitorssothatthetemperatureandhumidity in the conditioned areaarekeptat $23\pm 3^{\circ}\text{C}$ & $40\pm 20\%$ RHrespectively. However, theparametersshallbesitesettable.
- ii) The controller shall be password protectedfor preventing un-authorized access.
- iii) The display shall be organized into following three main sections:

User Menu	Service Menu	Advanced Menu
Active alarms, event log, numeric/ graphic data, unit view/ status overview (including the monitoring of room conditions, operational status in % of each function, date and time) , total run hours, various sensors etc.	Set points, standby settings (lead/lag), timers/ sleep mode, alarm setup, sensor calibration, maintenance/ wellness settings, and repair /service mode etc.	Factory Settings, Configuration settings shall be factory-set based on the pre-defined component operation etc.

11.2 **USER MENU :**

The user menu shall be defined as follows:

- i) **Active Alarms :**
Unit memory shall hold the 100 most recent alarms with time and date stamp for each alarm.
- ii) **Event Log :**
Unit memory shall hold minimum of 100 most recent events with id number, time and date stamp for each event. The conditioned area temperature, humidity etc. are saved at regular intervals.
- iii) **Numeric/Graphic Data View :**
The numeric/ graphic records shall be available for supply air temperature, return air temperature and return air humidity.
- iv) **Unit View - Status Overview :**
Numeric or Graphical unit view summary displays shall include temperature, humidity, active functions and any alarms of the units.
- v) **Total Run Hours :**Menu shall display accumulative component operating hours for Unit and compressors.

11.3 SERVICE MENU :

The service menu shall be defined as follows: -

i) Set Points :

The controller shall allow programming of the following conditions:

- | | | |
|--------------------------------------|---|-------------|
| a) Temperature Set Point | - | 18-29°C |
| b) Adjustable Temperature Hysteresis | - | 0.5-5°C |
| c) Humidity Set Point | - | 20-80% RH |
| d) Adjustable Humidity Hysteresis | - | 1-10% RH |
| e) Low/High Temperature Alarm | - | 2-32°C |
| f) Low/High Humidity Alarm | - | 15-85% RH |
| g) High Pressure Alarm | - | 320-340 psi |

The controller may be set within these ranges, however, the unit may not be able to control to extreme combinations of temperature and humidity. Factory set HP Alarm at fixed point within the specified range herein above, can also be provided.

The controller shall include the following settable features:

- a) Unit identification number.
- b) Start-up delay, cold start delay and Fan run on timers
- c) Remote shutdown & general alarm management
- d) Compressor sequencing.
- e) Return temperature control.

ii) Repair/Service Mode :

Control input and output values and status shall be displayed to aid in unit diagnostics and troubleshooting. Control inputs shall indicate on or off at the front display and shall be able to turn on or off from the front display without using jumpers or a service terminal. Each control output shall be indicated by an LED on a circuit board.

11.4 ADVANCED MENU :

Factory Settings:

Configuration settings shall be factory-set based on the pre-defined component operation.

11.5 The Controller shall also have following features:

- i) Allow adjustment to temperature, humidity setpoints, range of control, alarm setpoint etc.
- ii) Arrow/control buttons for navigation and value adjustment.
- iii) Status indicators like Power, Cool, humidity etc.
- iv) The controller shall be provided with power backup unit to operate during mains power failure.
- v) Programming of unit shall be based on :
 - (a) Equal run hours per 24 hours in a day and
 - (b) Turn on next unit in case the designated unit is unhealthy.

11.6 GROUP OPERATION :

The optimum number of units shall be made operational in order to maintain the necessary temperature and humidity in the conditioned area. All units can work as a single system and shall communicate with each other to maintain desired values in the conditioned area.

11.7 CASCADING EFFECTS:

If the values exceed beyond the set points, the standby units will operate to maintain the desired condition and after maintaining the set points, unit will return back to standby mode. In case, the standby unit(s) are not in a position to maintain the set values, all the units shall operate collectively to maintain the desired condition.

The Controller shall have the feature of grouping/ zoning of units, if required.

11.8 SYSTEM AUTO RESTART :

The controller shall have auto restart facility to start unit sequentially after restoration of power supply with suitable programmable time delay to minimize total inrush current.

11.9 PREDICTIVE HUMIDITY CONTROL :

The controller shall calculate the moisture content in the room and prevents unnecessary humidification and dehumidification cycles by responding to changes in dew point temperature.

11.10 ALARM MANAGEMENT :

Display Status Indication :

The unit shall display the following :

- a. Temperature .
- b. Blower fan-working status.
- c. Compressor working status.
- d. Electric heaters working status.
- e. Temperature set point.
- f. Working hours of main component i.e. Compressor, fan, heater.
- g. Unit working hours.
- h. Real time and date.
- i. Type of alarm.

i) Audio-Visual alarms:

- a. High Temperature
- b. Low Temperature
- c. Compressor Overload (Provisional)
- d. Evaporator Fan Overload/Air loss/ No air
- e. High Pressure
- f. Low Pressure
- g. Clogged Filter
- h. Condenser Fan overload (Provisional)
- i. Unit OFF

11.11 The controller shall be suitable to be integrated with fire system and should switch off the unit in event of receiving signal from the fire panel.

11.12 The Controller shall be equipped with Modbus/BACnet/LonWorks/open protocols connectivity facility for enabling data transfer to a IBMS system, wherever IBMS is available.

11.13 The log data shall be downloadable printable in sequence of date & time. The necessary provision shall be available to connect the laptop /flash drive through TCP/IP protocols, wherever IBMS is not available.

11.14 The firm shall provide one software free of cost.

12.0 MICRO INVENTORY :

Sl. No.	Description of Items	7 TR HPAC	14 TR HPAC
1.0	COMPRESSOR:		
1.1	Make	COPELAND-ZR108C/ ZR108 KCE-TFD-52E/ DANFOSS	COPELAND-ZR108C/ ZR108 KCE-TFD-52E/ DANFOSS
1.2	Type	Hermetic scroll	Hermetic scroll
1.3	No of Compressor	1	2
1.4	Power supply V / Ph / Hz	415±10%/3/50	415±10%/3/50
1.5	Oil Heater	Yes	Yes
2.0	EVAPORATOR COIL:		
2.1	Tube	not less than 0.28 mm Cu	not less than 0.28 mm Cu
2.2	Fins	not less than 0.1 mm Al.	not less than 0.1 mm Al.
2.3	Fins per Inch nos.	not less than 12	not less than 12
2.4	Coating	Hydrophilic	Hydrophilic
3.0	EVAPORATOR FAN:		
3.1	Make	EBMPAPST/ROSSENBERG /ZEIHLABEGG	EBMPAPST/ROSSENBERG /ZEIHLABEGG
3.2	Type of Fan	Electronically Commutated with backward Curved	Electronically Commutated with backward Curved
3.3	Type of Drive	Direct driven	Direct driven
3.4	Speed control	Variable	Variable
3.5	No of Fan	1	2
3.6	Power supply V / Ph / Hz	415±10%/3/50	415±10%/3/50
4.0	EXPANSION VALVE:		
4.1	Type	Electronic	Electronic
4.2	Number	1	2
5.0	FILTERS:		
5.1	efficiency	95% down to 5 microns	95% down to 5 microns
6.0	HUMIDIFIER:		
6.1	Type	Immersed electrode/ Infra Red	Immersed electrode/ Infra Red
6.2	Power supply V / Ph / Hz	415±10%/3/50	415±10%/3/50
7.0	ELECTRICAL HEATER:		
7.1	Type	steel fin tubular	steel fin tubular
7.2	ON/OFF/ Safety arrangement	Contactora, Thermostat	Contactora, Thermostat

7.3	KW	6 KW	9 KW
7.4	Power supply V / Ph / Hz	415±10%/3/50	415±10%/3/50
8.0	CONDENSER:		
8.1	Type	Air cooled	Air cooled
8.2	Number of Units	1	2
8.3	Tube	not less than 0.28 mm Cu	not less than 0.28 mm Cu
8.4	Fins	not less than 0.1 mm Al.	not less than 0.1 mm Al.
8.5	Fins per Inch nos.	not less than 12	not less than 12
8.6	Number of fans	not less than 2	not less than 4
9.0	CONDENSER FAN:		
9.1	Type of Fan	Axial Flow	Axial Flow
9.2	Type of Drive	Direct driven	Direct driven
9.3	Power supply V / Ph / Hz	230±10%/1/50	230±10%/1/50
9.4	Speed control	Variable	Variable
10.0	NUMBER OF CIRCUITS	1	2
11.0	ELECTRICAL SYSTEM:		
11.1	MAIN INCOMER:	1	1
i)	Type	4-pole MCCB	4-pole MCCB
ii)	Rating	63A	80A
iii)	Breaking Capacity	not less than 25 kA	not less than 25 kA
iv)	SPP	1 No.	1 No.
11.2	ISOLATOR	5 Nos.	8 Nos.
11.3	MCB	1 No.	2 Nos.
11.3	CONTROL WIRING	1.5 Sq. mm. multi strand Cu. Wire	1.5 Sq. mm. multi strand Cu. Wire

SPECIFICATIONS FOR 3TR DUCTABLE & 1.5TR INVERTER AC UNITS

FOR 3TR DUCTABLE AC UNIT:

Cooling capacity	36000 Btu/hr [9000Kcal/Hr]
Indoor unit air flow at maximum speed	Not less than 1900 m3/hr
Compressor	Rotary / Scroll / Reciprocating
Refrigerant	R-22 / 410A / R32
Rated Power Supply	415V, 3Ph, 50Hz (OR) 230V, 1Ph, 50Hz

FOR 1.5TR INVERTER AC UNIT OF 5 STAR RATED:

Technology	Variable speed compressor motor
Cooling capacity	4500 Kcal/hr (5.2 KW) as per IS 1391 (part 2)
Minimum Room air Flow	Not less than 700 m3/hr
Energy Efficiency as per ISEER	Not less than 4.5
Star Rating Plan – Mandatory Phase	5 Star
Compressor	Rotary
Refrigerant	R 410A / R32

1 CONSTRUCTION

1.1 General:

- 1.1.1 The Air conditioner and its parts shall be constructed with the strength and rigidity adequate for normal conditions of handling, transport and usage.
- 1.1.2 There shall be no sharp edges or corners liable to cause injury under normal conditions of use and all moving parts which constitute accident hazards shall be effectively guarded.
- 1.1.3 Parts which require periodic servicing shall be readily accessible.

1.2 Material:

- 1.2.1 Materials used in the construction of cabinet, front panel etc. shall comply with the corresponding Indian Standards wherever applicable except where such requirements are modified.
- 1.2.2 The material shall be free from defects which are liable to cause undue deterioration or failure.
- 1.2.3 Under normal conditions of use and maintenance, the materials used shall not shrink, deteriorate, warp or cause mould or odours and shall be resistant to attack of vermin and destructive pests.
- 1.2.4 Sealing and insulating material shall not lose their essential properties such as adhesion, moisture and heat resistance.
- 1.2.5 Internal and external finishes shall be capable of being cleaned effectively without undue deterioration and shall be such as to afford protection against climatic action in all seasons under normal use. All metal parts which are exposed to moisture or ambient conditions shall be corrosion resistant or adequately protected against corrosion.

2.0 REFRIGERANT CIRCUIT:

- 2.1 The refrigerant pipes and fittings shall be of approved quality and shall withstand normal working pressure of air conditioners and should conform to IS 10773:1983 or equivalent national /international standard.
- 2.2 The refrigerant uses shall be chemically pure, free from moisture or any other chemical contamination.

3.0 Electrical Ratings

- 3.1 Ratings in watts for the air conditioners shall be based on standard voltage which shall be 230V, single phase, 50 Hz (OR) 415V, three phase, 50Hz. The units, however, shall be capable of working at any voltage within ± 10 percent of the standard voltage.

4. Rating and Test Conditions

4.1 Capacity and test conditions:

The split air conditioner shall have name plate rating determined by tests conducted as per the standard procedures prescribed for the purpose.

Notes:

1. If rated frequency is not available, the capacity measured shall be corrected by a correction factor depending upon frequency actually measured during the testing.
2. Percentage drop in frequency shall be applied as percentage drop in voltage for power consumption.

4.2 Maximum Operating Test conditions

The maximum Operating test conditions shall be as specified below:

Room air temperature

a) Dry bulb - 35° C

b) Wet bulb - 24° C

Outside air temperature

a) Dry bulb - 46° C

b) Wet bulb - 27° C

Test voltage - Rated Voltage.

Test frequency - 90 percent and 110 percent of name plate rating.

5. Air conditioners shall be capable of performing the functions as cooling, dehumidifying, air circulating and filtering. The Air conditioners shall be provided with adjustable step less type electronic thermostat.
6. Outdoor unit of the air conditioners shall be fitted with the following discharge cooled type compressor with overload protection and shall be mounted on resilient mountings for quiet operation. The compressor shall be of Matsushita/ Hitachi/Toshiba/ GMCC / Emerson /LG/ Tecumseh/ Danfoss/ Panasonic make and shall be covered by manufacturers test certificate and Type Test Certificate according to JIS or ASHRAE.
 - (a) Rotary/ Scroll / reciprocating compressor operating at RFC refrigerant R-22 / 410A / R32 with suitable rated motor for 3TR ductable AC unit.
 - (b) Rotary compressor operating at RFC refrigerant 410A / R-32 with suitably rated variable speed motor for 1.5TR Inverter AC unit.

7. Tripping condition of 3TR ductable AC unit: Unit shall trip on any of the following conditions:

(a) HP/LP of refrigerant (b) Condenser fan trip (c) Blower fan trip and (d) Single phasing or phase reversal (in case of 3ph).

8. 1.5 TR Inverter Air conditioners shall be provided with standard 3mtrs refrigerant Copper pipe, electrical wire and drain pipe.

9. Remote cordless control with LCD/LED Display shall be provided with one On/Off timer, selecting fan speed (three speed) and setting up of temperature. Display shall be provided on indoor unit or on handset or on both.

10. Type Test Certificate for two samples of each type/ model of air conditioners from any NABL/ILAC Accredited lab shall be submitted by the firm. The type test results shall include capacity test at standard rating test conditions and maximum operating test as specified in IS:1391(Part-2)-1992.

11. **Servicing:** Free servicing shall be provided for 15 months from the date of supply or 12 months from the date of installation of air conditioner whichever is earlier. Firm is also required to send service engineer at least 3 times during the warranty period, whenever required.

12. **Manufacturer's Guarantee:** Compressor shall have minimum 7 years warranty for 1.5 TR Inverter AC unit and one year for 3TR ductable AC unit from the date of supply. This is only for manufacturer. However the bidder has to maintain the AC unit including compressor for a period of 7 years.

13. Installation: The installation charges shall include the following work: -

- i) Mounting/Fitting indoor and outdoor units at the respective locations.
- ii) Laying refrigerant piping of required length and connecting both the units after drilling hole/holes in the wall, if required, and making them good.
- iii) Leak testing of the entire system.
- iv) Charging Refrigerant gas in the unit.
- v) Suitable electric wiring between indoors and outdoors units of required length up to switch at location of indoor unit. Switches/Sockets/Plugs are not included in the scope of supply.

14. Inspection:

Quality inspection certificate/Routine test certificate of the AC units shall be submitted at the time of supply.

15. **Factory Testing:** BSNL reserves the right to ask for the inspection / testing the proto type unit at factory within 10 days of award of work.

BMS

BSNL - BMS INPUT OUTPUT POINT SUMMARY

Sl. No.	Description	I/O required					Remarks
		AI	AO	DI	D O	Soft point	
I	DIGITAL DIRECT CONTROLLER.						
1.	Temperature Monitoring	3					
2	Relative Humidity Monitoring	3					
3	Pressure Switch Gas Flow Status			2			Pressure Switch Should Have the PFC to monitor the status on BMS.
4	AC ON / OFF Status			2	2		AC Machine Should Have the PFC for on/off to monitor the status on BMS.
5	AC Trip Status			2			AC Machine Should Have the PFC for Trip to monitor the status on BMS.
6	Electrical Breakers On/off Status			5			Electrical Vendor Should Provide PFC contact to connect with BMS.
7	Electrical Breakers Trip Status			5			Electrical Vendor Should Provide PFC contact to connect with BMS.
	Soft Link Integration						
II	Energy Meters - 5 Nos					150	Each Energy meter 30 soft point have considered. Energy meter should have Modbus RS 485 connectivity and Electrical vendor shall share the Modbus mapping register detail and they have to set parameter in the meters also they have shown parameter values in the Modscan software.
III	DG-2 Nos. a) Minimum level b) 50% level c) Maximum level	6				60	Each DG 30 soft point have considered. DG should have Modbus RS 485 Connectivity and DG vendor shall share the Modbus mapping register detail and they have to set parameter in the machine also they have shown parameter values in the Modscan software.
IV	UPS – 2 Nos.					60	Each UPS 30 soft point have considered. UPS

						Machine should have Modbus RS 485 connectivity and UPS vendor shall share the Modbus mapping register detail and they have to set parameter in the machine also they have shown parameter values in the Modscan software.
V	7TR High Precision AC unit – 3 Nos 3TR Ductable AC-5 Nos. 1.5TR Inverter AC-10 Nos.				100	Each HPAC – 10 soft pts & other AC- 5 soft point have been considered. Air condition unit should have Modbus RS 485 Connectivity and AC vendor shall share the Modbus mapping register detail and they have to set parameter in the machine also they have shown parameter values in the Modscan software.
VI	Fire Alarm				400	200 Nos of soft point considered for detector and devices fire and fault status monitoring. Fire alarm panel should have Modbus RS 485 / BACNet TCP connectivity and Fire Alarm vendor shall share the Modbus/BACNet mapping register detail and they have to set parameter in the Panel also they have shown parameter values in the Modscan / BACNet software.
VII	Water Leak Detection-2 Nos				20	Each panel 10 soft point have considered. Water leak panel should have Modbus RS 485 connectivity and vendor shall share the Modbus mapping register detail and they have to set parameter in the machine also they have shown parameter values in the Modscan software.
VIII	Rodent Repellent-3 Nos				30	Each panel 10 soft point have considered. Rodent Panel should have Modbus RS 485 connectivity and Rodent vendor shall share the Modbus mapping register

							detail and they have to set parameter in the machine also they have shown parameter values in the Modscan software.
	Sub Total	12	0	16	2	820	
	Spare points	8	2	4	8	180	
	Total minimum points required.	20	4	20	10	1000	

Note: The above are the tentative points that may increase as per requirement, if required. For DG, AC & other devices other parameters may be asked to extend.

SPECIFICATION FOR IBMS

1 Scope of Work

The bidder shall Supply, Installation, Testing & Commissioning of Integrated Building Management System (IBMS), Access Control system, IP CCTV System, Fire alarm system & Fire Suppression System, Aspiration Smoke Detection System, Water Leak Detection System and Rodent Repellent System for Cable Landing Stations including cameras, Network video recorder system, Management servers, applications/software, access control system equipment, Fire Alarm panel, Detectors/ Devices, DDC controllers, BMS Field devices, cables, switches, WLDS, ASDS and any other items/accessories required for a fully functional system.

The number of cameras and their placement shall be decided in such a way that most critical areas can be monitored. Biometric cum card reader devices shall be placed at the entry points of Cable landing station. Multi-criteria detectors at cable landing station shall be placed in such a way all the areas to be covered.

The operator can easily analyse the operation of the building's system by viewing the important parameters viz. temperature, humidity, equipment status etc. Information is presented on the screen with full colour diagrams of the equipment so it is easy to understand.

The state-of-the-art Integrated Building Management System would support the open protocol and not limited to any proprietary language. The IBMS shall cover all the major electro-mechanical equipment designed in this building viz:

1. Monitoring of critical Room Parameters like Temperature & RH and CSUs
2. Monitoring of UPS parameters.
3. Monitoring the Fire Alarm System
4. Seamless integration with Access controllers
5. Seamless Integration with IP CCTV system
6. Monitoring and control of DG, UPS, Energy Meters Set Parameters.

Building Management

Integrated Building Management Software platform shall meet building management system needs by providing interfaces to leading open system solutions and devices.

Security Management

Integrated Building Management Software platform shall collect information from security, access control and surveillance devices, ensuring protection of people, assets and intellectual property.

Life Safety Management

Integrated Building Management Software platform must allow monitoring and control of fire alarm systems for fire protection and smoke control.

System Architecture

Integrated Building Management Software platform shall be on a scalable system that can accommodate configurations ranging from a small single-node system to an extended system with multiple nodes.

2 Functional Requirements

2.1 Integrated Building Management System

The BMS shall perform the following general functions

- Building Management & Control
- Data Collection & Historian
- Alarm and Event Management
- Access Control Management
- Trending, Reports & MIS Generation
- Maintenance & Complaint Management
- Network Integration

The IBMS contractor shall integrate with different system through RS485 over Modbus / LON/ BACnet protocol and through DDC controller for system of electrical equipments, UPS, DG set, Air-conditioning works and Hardwired Alarm and notifications of Fire Alarm Control Panel and Access Control Panel & IP CCTV System etc., Battery, power plant and Invertors.

The system will make a log of the measured parameter and it will raise an alarm if it goes above/below the set point as per required control logic. The system will monitor the critical alarms of the critical services. The system has the User interface that shows the status of the facilities at a glance.

The proposed system shall be based on Distributed Networkable Intelligent system on Ethernet. The network switch shall be provided in enclosure with proper patch panel, media converters and cable managements. Bidder shall select appropriate model and configuration of switch as per demand of application. The BMS system architecture shall be modular, utilizing industry standard open protocols. The system shall allow distribution of system functions such as monitoring and control along with graphical user interface etc. through Ethernet LAN, to allow maximum flexibility and performance. It shall also have a capability of remote monitoring through dial up modem or internet or through WEB Browser.

The architecture shall support various third party systems using standard hardware or software to link various functional nodes into a single integrated system. The system shall be compatible to industrial standard protocols like MODBUS, BACnet, LON works, etc., for any third party system integration is they can communicate on these open/universal protocols. In case of non-compatibility, gateways can be utilized. It is deemed that either open protocol software is included or the required gateway and necessary software are included for this purpose.

Total coordination and compatibility between any third party system supplier and IBMS supplier and respective system is extremely important and deemed to have been taken care of and all related cost included for this.

The IBMS operator control station shall allow the user to monitor and control the entire system with various user definable access levels.

System shall be capable of generating alarms, operator transactions and system reports. The system shall have provision for connecting to dedicated serial printer interface or through BMS control station.

2.2 Ceiling Suspended Units (CSU)

The CSU Cooling System shall be integrated with the BMS through **BACNET/IP** protocol provided by them. From the BMS PC, the following features shall be provided:

- Display of all the parameters, status of ancillaries.
- Data Acquisition and Logging.
- Alarms and information of all important parameters on the central BMS monitor.

The parameters shall be shared by the CSU Vendor through BACnet/IP. The bidder shall take the necessary software & hardware interfaces on the AC & BMS side for achieving above integration.

2.3 UPS

The UPS shall be integrated with the BMS through **Modbus protocol over RS485** provided by them.

From the BMS PC, the following features shall be provided:

- Display of all the parameters, status of ancillaries.
- Data Acquisition and Logging.
- Alarms and information of all important parameters on the central BMS monitor.

The parameters shall be shared by the UPS Vendor through ModBus over RS-485 of BACnet/IP, BACnet/Lontalk or any standard industrial open protocol.

The bidder shall take the necessary software & hardware interfaces on the UPS & BMS side for achieving above integration.

2.4 DG Set

The DG Set shall be integrated with the BMS through **Modbus protocol over RS485** provided by them.

From the BMS PC, the following features shall be provided:

- Display of all the parameters, status of ancillaries.
- Data Acquisition and Logging.

- Alarms and information of all important parameters on the central BMS monitor.

The parameters shall be shared by the DG Vendor through ModBus over RS-485 of BACnet/IP, BACnet/Lontalk or any standard industrial open protocol.

The bidder shall take the necessary software & hardware interfaces on the UPS & BMS side for achieving above integration.

2.5 Integrated Security System

2.5.1 Access Control System

Control and monitoring for security applies to all entry/exit doors and related areas. Access to buildings, gates, doors is restricted for unauthorized users. Biometric and card access can offer facility managers the flexibility to control these access points.

Fingerprint Identification cum keypad reader shall be installed at entry to Equipment, Bandwidth and battery room & Smart Card reader at other entry/exit. The Biometric Finger print reader shall be used for enrolment purpose also. Each door shall have a door locking mechanism, and a door status indicator. Allexit gates shall be operated through push button switches.

The IP CCTV system shall be seamlessly integrated with access control system to ensure cameras start recording as soon there is entry to secured area and also in case of any unauthorised / forced entry. All alarms & events shall be recorded in control station.

In case of fire, the FAS, using addressable outputs shall directly release the door locks controlled by the Access control system.

- 2.5.2** The system shall provide a mean to control access through nominated doors having electric locking door status monitoring and access control readers. Access rights associated with a presented access card or biometric identifier shall be checked for validity based on card or identifier, access area, access time and any other access management function defined in this specification; as stored in access controllers. Access shall be granted or denied, dependant on the access privilege. Access rights shall be programmed in a variety of ways to allow flexibility as defined elsewhere in this specification.
- 2.5.3** The system shall provide an integrated software facility for the design and production of photo ID cards.
- 2.5.4** All system communications must be totally integrated with either existing or new LAN/WAN networks. Bidder must make themselves familiar with the specific requirements for this project.
- 2.5.5** Connection to Access Controllers shall be achieved using cabling supporting Ethernet and TCP/IP protocols.
- 2.5.6** All data communication internal to the system between Access Controller and the Server shall be on TCP/IP Network and should be encrypted and an industry-standard encryption algorithm to a minimum of 128 bit AES.
- 2.5.7** The system shall report all events to the operator(s) as configured and shall produce and maintain a log of all system events and alarms.
- 2.5.8** The system shall provide a means for an operator to extract information relative to the event log and system configuration and produce this information in the form of printed reports, screen displays.
- 2.5.9** The system shall provide for a Windows based User Interface with Site Plans and interactive icons representing the location and real-time status of Access Control, and Alarm Monitoring equipment.
- 2.5.10** Comprehensive backup and archiving facilities shall be incorporated as an integral part of the system software.
- 2.5.11** Access Controllers must support peer to peer communications for input and output communications between Access Controllers.
- 2.5.12** The Access Controller shall have the any of the following approvals:

UL294 Access control

2.6 IP CCTV System

IP CCTV system shall enable centralized online surveillance of various selected areas and to generate a record for post event analysis. The camera shall be a high resolution, visible at low light capability. The recording shall be in real time motion i.e. 15 frames per second at HD resolution for each camera. Recording videos shall be kept for 60 days with minimum 8TB usable space after RAID 5 has been configured. The camera shall be ONVIF S and G compliant.

One Network Video recorder with required client license shall be used to record & playback the camera videos and have the remote viewing facility on the network. All the live view or recorded videos of cameras shall be displayed through client software on proposed workstation.

As an application, the video surveillance will do the following:

- Providing real-time monitoring of a facility's environment, people and assets.
- Recording in case there is a motion in the room
- Recording events for subsequent investigation, proof of compliance / audit purposes
- Shall facilitate motion search on recorded video

2.7 Fire Alarm System

The proposed Fire Alarm System will be one loop intelligent addressable panel. The loop will consist of detectors & devices making it a total capacity of detectors / devices per panel. The fire alarm panel has a large display. The proposed panel is networkable for future expansion if expansion is required. The proposed panel will be UL/Vds listed. We have proposed intelligent Multi-criteria detectors on ceiling, on false ceiling wherever applicable & below false flooring. Addressable relay module & monitor modules are proposed in the system for monitoring as well as control requirement respectively. The fire alarm system shall use monitor modules / relay modules / control modules and gas release modules which will operate based on cross-zoning of detectors.

The monitoring of the status of various detectors/devices should be possible at the PC level (Main Operator station)

In the event of fire, FAS using addressable relay outputs should directly trip the CSUs.

The supervisory controllers/gateways shall simultaneously convey the fire alarm data to the operator station terminals.

2.8 Fire Suppression System

NOVEC 1230 fire suppression works hand-in-hand with state-of-the-art detection to identify and extinguish a fire hazard, long before substantial fire damage can occur. **NOVEC 1230** does not leave harmful or messy residues that could damage delicate electronic and data processing equipment.

NOVEC1230 reacts quickly at low concentrations to eliminate a fire. In normally occupied areas, people can breathe **NOVEC 1230** at extinguishing concentrations without fear as it is used as a propellant in inhalers for asthmatic patients.

NOVEC 1230 is designed such that a detection system sees the fire and causes the suppression system to actuate and extinguishes or suppresses the fire.

The Fire Suppression System should comply to **Vds/UL Standards**.

2.9 Digital Water Leak Detection (WLD) System

The system shall be based on linear sensing cables, connected to a SIM (Sensor Interface Module) unit, allowing the localization of any abnormal presence of liquid. Each SIM Shall be connected master panel in the BMS Room. The Master Panel shall be able to manage information of all leaks relating to the number of sense cables installed. (E.g. 8 sense cables installed, 8 leaks displayed separately). Each SIM shall be connected with maximum 15m of sensing cable length. The water leak system comprises of a digital water leak Master panel, sensor interface module & sensor cable. The water leak panel shall be located as shown in drawing and all alarms shall be extended to premises as required and the system shall have ample provision for this.

This specification shall be the guideline for supplying, installing, testing and commissioning complete water leak detection system as per Approved drawings, specifications and relevant standards all complete, including necessary hardware and software for integration with IBMS.

Testing procedure shall involve physical application of a wet cloth to the cable, to test the relay operation. The Panel should sound the Alarms, and notify the IBMS system with zone name or as applicable for each sensing cable.

2.10 Aspiration Smoke Detection System.

A high performance aspirating smoke detection system shall be supplied, installed and commissioned by the specialist agency/ subcontractor in accordance with the requirements detailed in the NFPA – 72, Aspirating Detection Systems including necessary hardware and software for integration with BMS. The panels shall be mounted inside the risk protected and there shall be a network of air sampling pipe work.

The Aspiration Smoke detection consist of highly sensitive Laser-based Smoke Detectors with aspirators connected to networks of sampling pipes. The alarms are generated once the laser sensor receives smoke at a predetermined obscuration level to activate and alert, Fire 1, Fire 2 and alert signal. The signal is extended to the Fire Alarm monitor Modules / BMS through Volt free contacts for further investigation.

Provision for connecting to open protocol using an interface card to BMS system for online monitoring and software level integration

The system shall have provision to connect remote Display unit shall be provided to monitor each detector, and a Programmer shall be supplied to configure the system. The protected area(s) shall be installed with one zone pipe inlet aspiration smoke detection panel with network of piping to draw air samples through flow program calculated through sampling holes. The system shall achieve highest level of sensitivity varying between 0.005 % per foot obscuration to 20%. The system comprises of a panel with inbuilt power supply with laser chamber and suction fan. The panel shall be connected to network of pipe work which is designed and installed in accordance to approved pipe cad flow program with sampling holes at specific locations.

The system shall be designed to provide Primary & Secondary Sampling of the protected area. The system sensitivity shall be normal/ enhanced/ very high.

The system shall be designed to sample air through sampling method wherein the sampling of air is done in the room void/ false ceiling/ false floor of the room under consideration.

The piping here runs along the ceiling with sampling holes at the location of point detectors. The system shall incorporate a high performance laser based particle detection system based on the principal of forward light scatter, a high efficiency aspirator and a sampling pipe system designed to sample air from within the protected area(s).

The system shall incorporate a facility to desensitize detector alarm thresholds by a pre-programmed percentage to accommodate planned occurrences that may cause unwanted alarms. The system shall interface with the main building Fire Alarm system for remote monitoring of multiple alarm levels and faults.

CODES AND STANDARDS

The entire installation shall be installed to comply with one or more of the following codes or Standards:

- NBC of India, 2005
- IS 2189.
- AS 1670, AS1603 NZ Part 2, 4, 8, ASNZS 3000
- British Fire Protection Systems Association, Code of Practice for Category 1, Aspiring Detection Systems
- British Standards, BS 5839 Part 1 or BS 6266
- NFPA 72 Standards, US.

PRODUCT / MATERIAL SPECIFICATIONS

The Aspiration smoke detection system shall consist of a highly sensitive detector assembly consisting of LASER-based smoke detector, aspirator, and filter. It shall be modular, with each detector optionally monitored by a Display featuring LEDs and a sounder. The system shall be configured by a Programmer that is either integral to the system, portable or PC based.

The system shall allow programming of:

- ☐ Four smoke threshold alarm levels;
- ☐ time delays;
- ☐ faults including airflow, detector, power, filter and network as well as an indication of the urgency of the fault;
- ☐ Seven or more configurable relay outputs for remote indication of alarm and fault conditions.

It shall consist of an air sampling pipe network to transport air to the detection system, supported by calculations from a computer -based design modelling tool.

Equipment may include intelligent remote displays and/or a high level interface with the building fire alarm system, or a dedicated ASD System Management graphics package.

Performance Requirements

To the system shall provide very early smoke detection and provide four output levels corresponding to Alert, Action, Fire 1 and Fire 2. These levels shall be programmable and able to be set at sensitivities ranging from 0.005 – 20% obs/m.

The system shall report any fault on the unit by using configurable fault output relays. The system shall be self-monitoring for filter contamination. The system shall incorporate a flow sensor in each pipe and provide staged airflow faults.

Detector Assembly

The Detector, Filter, Aspirator and Relay Outputs shall be housed in a mounting box and shall be arranged in such a way that air is drawn from the fire risk and a sample passed through the Dual Stage Filter and Detector by the Aspirator.

The Detector shall be LASER-based type and shall have an obscuration sensitivity range of 0.005 – 20% obs/m. The Detector shall have four independent field programmable smoke alarm thresholds across its

sensitivity range with adjustable time delays for each threshold between 0-60 seconds. The Detector shall also incorporate facilities to transmit the following faults

Detector

Air flow

Filter

System

Zone

Network

Power

Urgent and Minor faults: Minor faults shall be considered as servicing or maintenance signals. Urgent faults indicate the unit may not be able to detect smoke. The detector shall have four in-line sample pipe inlets and must contain a flow sensor for each pipe inlet. Both Minor and Urgent flow faults shall; be reported.

The filter must be a two-stage disposable filter cartridge. The first stage shall be capable of filtering particles in excess of 20 microns from the air sample. The second stage shall be ultrafine, removing more than 99% of contaminant particles of 0.3microns or larger, to provide a clean air barrier around the detector's optics to prevent contamination and increase service life.

The aspirator shall be a purpose-designed rotary vane air pump. It shall be capable of allowing for multiple sampling pipe runs up to 200m in total, (4 pipe runs per detector) with a transport time of less than 90 seconds or as appropriate codes dictate.

The Assembly must contain relays for alarm and fault conditions. The relays shall be software programmable to the required functions. The relays must be rated at 2 AMP at 30 VDC. Remote relays shall be offered as an option and either configured to replicate those on the detector or programmed differently.

The Assembly shall be able to be surface mounted to a wall or recessed in the wall cavity (the unit may be inverted in either option). The assembly shall have built-in event and smoke logging. It shall store smoke levels, alarm conditions, operator actions and faults. The date and time of each even shall be recorded.

Each detector (zone) shall be capable of storing up to 18,000 events and does not require the presence of a display in order to do so.

Detection Alarm Levels

The laser based aspirating detection system shall have four (4) independently programmable alarm thresholds. The four alarm levels may be used as follows, or as decided by the Consultant / client:-

Alarm Level 1 (Alert)

Activate a visual and audible alarm in the fire risk area.

Alarm Level 2 (Action)

Activate the electrical/electronic equipment shutdown relay and activate visual and audible alarms in the Security Office or other appropriate location.

Alarm Level 3 (Fire 1)

Activate an alarm condition in the Fire Alarm Control Panel to call the Fire Brigade and activate all warning systems.

Alarm Level 4 (Fire 2)

Activate a suppression system and/or other suitable countermeasures (e.g. evacuation action or shut down of systems).

The alarm level functions as listed are possible scenarios. Consideration should be given to the best utilization of these facilities for each application and the requirements of local codes.

Initial Detection Alarm Settings

Initial settings for the alarm levels shall be determined by the requirements of the fire zone. However, the setting for Fire 1 (Alarm Level 3) shall always appear as 100% on the bar graph scale. Default settings of the unit shall be:

Alarm Level 1 (Alert) 0.08% Obs/m

Alarm Level 2 (Action) 0.14% Obs/m

Alarm Level 3 (Fire 1) 0.2% Obs/m

Alarm Level 4 (Fire 2) 2.0% Obs/m.

1. Technical Specifications

1.1 Integrated Building Management System

The IBMS system shall be easily configurable to suit the user specific requirements. There shall be no restrictions on usage of the controllers to specific requirement. All DDC and access controllers shall thus be

seamlessly integrated to the network and systems that require software drivers to be developed for shall not be accepted.

All configurations shall be permissible while the system is on-line without interruption to monitoring and control on other controllers. Systems that require going off line for programming/configuration shall not be acceptable. Specifically, IBMS nodes must not require "re-starting" to implement database changes.

1.1.1 Integrator Module

1. Equip each router with an Modbus Receiver on one side and a LonTalk/Bacnet transceiver on the other side.
2. The network router shall be designed to route messages from a segment, sub-net, or domain in full duplex communication mode.
3. The integrator shall transport, network, session layers to transparently route messages bound for a node address in another sub-net or domain.
4. Integrator shall be fully programmable and permit a systems integrator to define message traffic, destination, and other network management functions utilizing software tool.
5. The integrator shall be capable of DIN rail or panel mounting and be equipped with status LED lights for Network traffic and power.

1.1.2 BACnet / Modbus / Lonworks Router

1. Equip each router with an Ethernet IP communication on one side and a LonTalk/Bacnet transceiver on the other side.
2. The network router shall be designed to route messages from a segment, sub-net, or domain in full duplex communication mode.
3. On Ethernet IP side, the router shall utilize Ethernet IP protocol transport to route messages.
4. The routers shall transport, network, session layers to transparently route messages bound for a node address in another sub-net or domain.
5. Routers shall be fully programmable and permit a systems integrator to define message traffic, destination, and other network management functions utilizing software tool.
6. The routers shall be capable of DIN rail or panel mounting and be equipped with status LED lights for Network traffic and power.
7. The routers if built-in into the IP based Direct Digital Controllers shall be acceptable.

1.1.3 Direct Digital Controller

A. DDC CONTROLLER

- IP based DDC controllers should be UL Listed 32 bit microprocessor based with real time operation system
- IP DDC controllers should have inbuilt Real Time Clock with an inbuilt battery backup life span of 10 years and should be able to work in total stand alone as well as networked conditions.
- IP DDC controller should support Modbus RTU over RS232/RS485, BACnet IP/Ethernet/MSTP/PTP, All provisions / ports should be inbuilt. This facility shall be used for seamless integration of Third Party Systems with open standard protocols.
- All IP DDC in network should support inbuilt peer – to peer network communication without any need for external programming / System Integrator Unit/ Gateway Controller/ Supervisory Network Controller and redundancy
- All IP DDC controllers should have minimum of 2 GB - SD memory card for internal and external data, program memory and history backup.
- Power failure safety data, set points, schedule and programs should be secured on a DDC onboard memory card.

- The Input Output modules shall have the option of providing with manual over-ride controls for Analog & Digital output commands. All IOs should also have configurable LED indicators inbuilt.
- In addition to the hard points stated above, the same DDC controller shall integrate the Soft points of the particular equipment / group of equipment / third party integration with open standard protocols. (eg. UPS, DG, PAC, VRF and Electrical Meters with DDC for Electrical Panels etc).
- DDCs should be able to communicate at a network of 10/100 Base T.

B. Schedules

1. Each DDC controller shall support a minimum of 100 BACnet Schedule Objects and 100 BACnet Calendar Objects.
2. Each schedule object (Weekly or Exception) shall be capable of performing an optimum start. Optimum start calculation shall be based on outside air temperature, zone air temperature deviation from zones daytime cooling set points, and individual zone adaptive cooling coefficients that are adjusted each day based on performance parameters of the individual zone.

C. Logging Capabilities

1. Each DDC Controller shall log as a minimum 150 user selectable objects types with a minimum of 100 samples per object type with standard memory configuration. Logging shall be expandable, (user defined) with additional memory in DDC controller. Any object type in the system (real or calculated) may be logged. Sample time interval shall be adjustable at the operator's terminal.

Start of sampling may be by one of the following:

2. Logs may be viewed both on-site or off-site via remote communication / download programs.
3. DDC controller shall periodically upload trended data to operator's terminal for long term archiving as desired.
4. Archived data stored in database format shall be available for use in third-party spreadsheet or database programs.

D. Alarm Generation

1. Object type change of values and change of states may be identified as alarm conditions. This summary of active alarms (Event State property value not equal to NORMAL) is presented to and displayed at the operator's terminal for system user action.
 - a. Alarm may be generated within the system for any object type change of value or state either real or calculated. This includes things such as analog object type value changes, binary object type state changes, and various controller communication failures.
2. Alarm log shall be provided for viewing of alarms. Log may be viewed in-site at the operator's terminal/ controller or off-site remote communications.
 - i. The Controllers shall have a self-analysis feature and shall transmit any malfunction messages to the Control Station. For any failed chip the diagnostic tests, printout shall include identification of each and every chip on the board with the chip number/location and whether the chip "Passed" or "Failed" the diagnostic test. This is a desired requirement as it would facilitate troubleshooting and ensure the shortest possible down time of any failed controller. Controllers without such safety feature shall be provided with custom software diagnostic resident in the EEPROM. The bidder shall confirm in writing that all controllers are provided with this diagnostic requirement.
 - ii. Operating system (O.S.) software for controllers shall be EPROM resident.
 - iii. Controllers shall have resident in its memory and available to the programs, a relevant library of algorithms, intrinsic control operators, arithmetic, logic and relational operators for implementation of control sequences.
 - iv. In the event of failure of communication between the controllers and/or Control Station terminal, alarms, reports and logs shall be stored at the controllers and transmitted to the terminal on restoration of communication.
 - v. In the event of memory loss of a Controller or the expiration of back-up power, on start-up of the unit the necessary data-base shall be downloaded automatically and without operator instruction. Controllers requiring a manual intervention for the re-boot of software are not desired.

- vi. Where information is required to be transmitted between controllers for the sharing of data such as outside air temperature, it shall be possible for global points to be allocated such that information may be transmitted either on change of incremental value or at specific time intervals.
- vii. Controllers must be able to perform the following energy management functions as a minimum.
 - a. Time & Event programs
 - b. Holiday Scheduling
 - c. Maximum and Distributed power demand
 - d. Optimum start and stop program
 - e. Night purge
 - f. Load reset
 - g. Zero energy band
 - h. Duty cycle
 - i. Enthalpy analysis and control
 - j. Run Time Totalization
 - k. Sequencing and Optimization
 - l. Exception scheduling

Detailed description of software features and operating sequence of all available energy management software shall be submitted with the tender for evaluation by the Consultant.

- viii. The DDC Controllers shall have Adaptive Control capability whereby the control software measures response time and adjusts control parameters accordingly to provide optimum control. The software shall allow self-tuning of the variable control loops (all or any of P, P+I, P+I+D) of the Precision AC system so as to provide the most efficient and optimised controls at different load conditions. The energy management programs shall update their parameters based on past experience and current operating conditions.
- ix. Alarm Lockout shall be provided to prevent nuisance alarms. On the initial start up of air handler and other mechanical equipment a "timed lockout" period shall be assigned to analog points to allow them to reach a stable condition before activating an alarm comparison logic.
- x. Run time shall be accumulated based on the status of a digital input point. It shall be possible to total either ON time or OFF time. Run time counts shall be resident in non-volatile memory.
- xi. It shall be possible to accommodate Holiday and other planned exceptions to the normal time programs. Exception schedules shall be operator programmable up to one year in advance.
- xii. The Controllers should have on-board Lon/BACnet port for communications. However the communication with BMS server will be IP based.

1.1.4 Central Station Software

The system shall have a flexible software package to allow an operator with minimal knowledge of software programming to construct programmes for plant control and management information. All system software shall be field proven Perpetual Licensed software for IBMS system. Bidder shall not quote for untested and unproven software.

1.1.4.a Technical Specifications:

- 1) All programming shall be done in clear English language.
- 2) The system shall hold a complete set of instructions in the software which can be viewed by the operator whilst in the operating mode.
- 3) The system shall provide run simulation of the programmes to allow operator verification before the programme is down loaded to the controllers.
- 4) It shall be possible to assign alarm functions to any programmes created as required.
- 5) Full arithmetic operators shall be available for use in the programmes as required eg: +, -, /, *, ().
- 6) Programmes shall permit the use of comparison statements such as: =, >, <, <= etc.

- 7) Programmes shall permit logical operators to be used such as: NOT, AND, OR, AND MASK.
- 8) Direct reference to any point shall be available to obtain its current value. Such references shall be using standard language such as, ON, OFF, MANUAL, SETPOINT, EXPIRED TIME, PRIORITY, ALARM.
- 9) It shall be possible to refer to time and calendar functions directly, so that DATE, TIME, HOUR, MINUTE functions may be used.
- 10) It shall be possible to set timers so that a timed delay may be introduced before an action is carried out.

The following user programmes must be processed by the Control Station

i. **Operating functions:**

- Via graphic management schematics with dynamic display of actual status information.
- Manual control of parameters and status variables of the electrical and mechanical plant.
- Manual switch of programs which are not part of progress routines.

ii. **Monitoring functions:**

- automatic monitoring of connected plant and equipment
- automatic monitoring of the system (idle or operation)

iii. **Data Visualization functions:**

- Individual processing of operating data for Building Management.
- comfort chart data for temperature / humidity using psychometric charts

iv. **In standardised form for:**

- trend reports
- consumer statistics
- fault statistics
- maintenance management

v. **Display functions:**

- For the representation and display of operating data and management information in alphanumeric and graphic form.

vi. **Management functions:**

- For optimization of energy consumption.
- for rational use of personnel

vii. **Access control functions:**

- Different operating levels for all information and all data by way of code word or user key.

viii. **Commissioning functions:**

- For system specific software of the field stations and the management system
- Downloading the system specific software to the DDC units.
- Testing of the software in connection with electrical and mechanical plant.
- Automatic and periodic storage of all system data.

ix. **Test functions:**

- Automatic and continuously running test functions for system tests (hardware and operating software) and management system configuration (communication) Test tools for individual hardware and software components which can be activated manually. Self test functions for individual system components which can be activated manually.

1.1.4.b Operator Interface

All communications between the operator and the system shall be in clear language, without reference to special code or codes. Generation and editing of software shall be via clear English language menus.

1.1.4.c Password Access

- 1) None of the features of the Operators Panel shall be accessible without the user first being required to log on by entering a password.
- 2) The System should support some definable level of operator security to have better security.
- 3) Alpha numeric passwords of up to 15 characters shall be available and definable by individual operators.
- 4) It shall be possible to grant or deny access to any terminal and/or functions for individual user. The ability to use this feature itself shall also be definable.
- 5) It shall also be possible to grant or deny access to individual points or groups of points by function or type.
- 6) It shall also be possible to define a timeout value for individual user. Automatic log-off of the operator shall occur if no keyboard or mouse activity is detected during this timeout period. It shall also be possible to allocate an infinite timeout.
- 7) A log of at least previous 100 users shall be available at each control station. A record of the user's name, the time and date of log ON and log OFF shall be available from this file.
- 8) Password summary shall be available to the operators with the highest level of access. The summary shall display all passwords and their associated parameters.

1.1.4.d Control Station Graphics Capabilities

The work stations shall have Web Based Graphics as the basis of operation. The software shall have following advanced techniques for ease of operation:

- 1) Colour banding of screen displays shall be provided for display and differentiation of normal and abnormal signals. This shall allow operator instant recognition and response to critical building operation.
- 2) To provide instantaneous confirmation to system operator of equipment status, graphic screen animation shall be provided. This shall allow full color animated displays of equipment in site layouts, building floor plans, and other system configurations. All graphic displays shall be online programmable via keyboard or mouse selection of graphic library stored symbols and system profiles. Fully implemented graphic displays are to be provided for all systems so identified in the Input/ Output Summary section of this document.
- 3) Split screens capability shall be provided to allow operator to observe multiple dynamic graphic screens at the same time to enable operator to manage several separate building operation tasks concurrently.
- 4) To enable operator to "find" his way in and out of the system, a stacked display of windows shall be included to provide orderly reference. Operator option of enlarged full screen display at any penetration level shall also be included.
- 5) Alarm class differentiation shall define coloration, and storage requirements for different alarms.
- 6) Graphic driven point identification and selection shall be provided to allow operator to select a point by "clicking on" the graphic symbol representing the point type. Consequently display will appear to enable the operator to select the desired command.
- 7) The system shall be capable of running programs in both the foreground mode and background mode simultaneously. The system running only foreground "window" while keeping the other programs dormant in the background "window" shall not be acceptable as this slows down the availability of control and essential information to be made available to the operator in the system.
- 8) Capability of on-line graphics generation shall be a major requirement i.e. the operator shall have the ability to create new graphics on-site from a menu of symbols.

- 9) Historical system trouble, fault, false alarms shall be stored on line in the hard disk for trouble analysis.
- 10) It shall be possible to define upto 12 functional categories in the plant schematic each of which shall be removable from the screen individually. This shall allow the operator to delete temporarily any equipment and have a better overview of the other sections of the system.
- 11) Data Base Manager shall manage all data on an integrated and non-redundant basis. It shall allow addition and deletions to the data base without any detriment to the existing data. Cross linkages shall be provided such that no data required by a software program can be deleted by the operator until that data has been deleted from its respective programs.
- 12) Dynamic data such as temperature and humidity values, fans and motor status, alarm point condition, etc. shall be embedded in the graphics as the sensing location. Points in alarm condition shall be animated by colour changes and flashing/blinking icon, symbol, or value.
- 13) Commandable points shall be uniquely identified by colour and/or discrete symbol and shall be directly addressable and commandable from the graphic display. It shall not be necessary for an operator to type in command request or point names. Direct entry of commandable point address or positioning of the cursor to the point shall cause a display of associated command states for digitals, the set point value and valid range for analogs. Cursor positioning shall be via a "mouse".
- 14) In order to allow the operators to view graphics in greater detail, zoom /pan display feature shall be provided to return zoomed/panned graphics to their original status. A "return to original" feature shall also be provided. The mouse shall be used to pan in all directions in real time, and to jump, from any section of the plant schematic directly to another section or to another level.

1.1.4.e User Interface

The operator panel on a terminal shall provide the primary interface for operator access to the BAS while also providing a vehicle for the annunciation of alarms and the reporting function. The operator shall have the option of switching between a text based and graphic based user interface at any time. In particular following standard functions shall be provided.

- 1) It shall be possible to carry out the following commands by use of dedicated function keys on the keyboard and by the mouse :
 - a. ON - digital points
 - b. OFF - digital points
 - c. AUTO - analogue and digital points
 - d. SET TO VALUE - analogue points
 - e. ALARM REVIEW
 - f. POINT TYPE REVIEW
 - g. POINT GROUP REVIEW
 - h. HOURS RUN REVIEW
 - i. REVIEW CANCEL
 - j. GRAPHICS ENABLE
 - k. HELP
 - l. ALARM ACKNOWLEDGE
- 2) It shall be possible to add new points, and reconfigure or modify existing points without taking any part of the system off-line. It shall be possible to change designation of operator passwords, access levels, point segregation and auto sign off, designation of backup consoles and printers. It shall also be possible to add/change descriptors for points, segregation groups and access levels, and action messages for alarms and trouble condition, system/point enable/disable, input or output value, and assignment of alarm/warning limits. All additions and modifications shall be on-line programmable via operators keyboard and then down the line loaded to distributed processing units.
- 3) It shall be possible to address plant, zones, points etc., and using clear language descriptors. Each individual point may also be identified by a unique alpha-numeric mnemonic address entry. Simple

key names may be assigned to points to allow direct display. These key names shall be fully operator assignable and depending on how frequently they have to be accessed, they may be as simple as one, two or three characters or as lengthy as 20 characters.

- 4) The operator shall be able to access any point on any graphic without going through the penetration path. Graphics shall be menu-driven. Direct access to graphics shall be menu selectable wherein the operator may select optionally by entering the name of the graphic system desired or by selecting the desired graphic via cursor positioning.
- 5) It should be possible to identify some points which are frequently addressed as "frequent access" points. This listing shall be selectable from a screen top menu bar drop down menu item with a user address, descriptor and value/status of each "frequent access" point displayed.
- 6) A wild card search utility should be provided which shall be operated by a partial data entry. For example, by listing chiller 1, all chiller no. 1 points shall be listed.
- 7) The information displayed for individual points during a review shall be:
 - its unique mnemonic address
 - its current state or value (in Engineering units)
 - its type of point (analog/digital, input/ output)
 - any secondary or tertiary value
 - reason for state, if applicable
- 8) An Electronic message facility shall be provided on the operator station for any operator to enter a message to another operator of the same station or different station, by selecting the receiving operator's ID and entering the message. When the operator with a queued message, signs onto the operator station, a "mail message waiting" prompt shall be issued. Upon displaying a mail message, the display shall prompt the operator with three message options to execute, delete, print, and save. Messages shall also include the senders personal ID and a brief title or subject description.
- 9) Dynamic data shall be automatically updated on the central station. Manual update shall also be provided via a screen update key.
- 10) It shall be possible to enter any of the subroutines such as the editor functions, or the Data Manipulation function from the central station without closing down the terminal or the programs currently running.
- 11) The operator shall be provided with the facility to override the use of portable operator's terminal.

1.1.4.f Help Facility

Software shall be provided to facilitate programming and storage of the system operation manuals in the hard-disk. The operation manual shall be retrieved by On Line Help mode so as to enable the operator to self learn the system operation, command, or function as and when needed.

This 'help' facility shall be made available to the operator by use of a dedicated key or a single key click on the mouse. A minimum help shall be available for every menu item and dialogue box.

The facility shall contain both text and graphics to provide information about the selected function directly.

The information provided shall be in simple clear language and shall be capable of being added to or modified by an authorized operator.

1.1.4.g Alarms

Multiple priority levels of alarm shall be made available. Priority levels shall be deemed Critical Alarms and Non-critical (general) Alarms. Normally, critical alarms shall take precedence over non-critical alarms and high priority over low priority.

Each analog point shall have the following limits defined; wherever required

- High priority critical alarm limit
- Low priority critical alarm warning limit
- Low priority warning limit
- Low general alarm limit

When an analog point goes outside the low priority critical alarm limit or Low priority warning limit, a user defined warning message shall be directed to the appropriate alarm printers at the control station.

The Warning limits shall be used to monitor controllability, not comfort conditions. The alarm limits shall be used to monitor comfort conditions. When a set point is changed, the warning limits shall automatically change while the alarm limits shall not change.

When an analog point goes outside any of the limits defined, a user defined alarm message for that level shall be directed to the appropriate alarm printer and to respective operator workstation. Alarm message shall require operator acknowledgement.

When a digital point goes into alarm, a user defined alarm message shall be output to the appropriate alarm printer and to respective control station. Alarm messages shall require operator acknowledgement.

When a point is overridden by operator command from an operator workstation or a local workstation, an alarm message shall be output to the appropriate alarm printer and to respective operator workstation. Alarm messages shall require operator acknowledgement.

When a point returns to normal, the event shall be recorded in control stations as 'Return to Normal'.

The Operator workstations shall be capable of displaying a list of all points in alarm for the building in a single summary. Systems which require the operator to make a separate summary for alarms shall not be acceptable.

1. **Annunciation:** Alarms shall be annunciated at a terminal by an audible tone and icon. Critical alarms shall be defined by a different colour than non-critical alarms.
2. **Printing:** Alarms shall automatically be printed on the defined alarm printer. The printout shall contain the address, state or nature of the alarm, alarm priority, and time and date of occurrence.

It shall be possible to route alarms to any printer on the system, in case the allotted printer fails.

3. It shall be possible to produce a user definable full text message to accompany the annunciation of any alarm. This shall provide further information about the alarm and any action required to be taken by the operator or indicate that action is automatically programmed in the system. These messages shall be automatically printed on a designated printer. There shall be no practical limit to the length of messages created.
4. **Acknowledgement:** It shall be necessary for all alarms to be acknowledged by an authorized operator. The facility shall exist for an additional message to be appended at the time of acknowledgement to provide further information as to any action taken.

Acknowledgement of alarms shall be automatically printed and will indicate the time, date, and any message generated by the operator.

Alarm silencing shall be by the authorized operators by pressing the silence key.

5. **Alarm Clear:** When alarms are cleared, then a message shall be produced to indicate the description of the alarm point, its current state, and the time and date.
6. **Disk Records:** With the exception of extended text messages, all the information produced above, alarm annunciation, acknowledgement, and clearing, shall be automatically recorded on the fixed disk for historical purposes.
7. **Alarm Inhibits:** It shall be possible to inhibit the transmission of alarms in the following ways :

(i) Operational Inhibits - to allow time for stabilization of power after the normal power is restored.

(ii) Transient Inhibit - to make allowance for fluttering contacts or allow internal responses.

It shall be possible to select time periods for inhibits (i) and (ii) and may be applied when entering into alarm, out of alarm, or both.

8. **Point lockout:** It shall be possible for the operator to lockout the control for any point, to force it to remain in its current state.

A summary showing locked out points shall be available. Systems which require the operator to make a separate lockout summary shall not be acceptable.

9. **Alarm Review:** Points in alarm shall be displayed on the operators panel using the alarm review function.

1.1.4.h Logging

1. It shall be possible to log the status or value of system points at regular intervals or on change of state and store this on hard-disk at any of the central station.
2. It shall be possible to archive this information for future reference.
3. In the case of timed interval logs, it shall be possible to specify a time interval (in minutes) and the points which are required to be logged.
4. Storage of logged information shall be able to be carried out in any of three ways, single-shot, roll-over, or split. These are defined as follows :-
 - 4.1 Single-shot: In this type of file, logging shall be carried out only during a pre-defined period for which the start and finish time and date shall be configurable.
 - 4.2 Roll-over: This file shall be wrap-around where oldest data shall continuously be overwritten by new incoming data. It shall be possible to configure the number of records to be stored or the duration in hours, days or months before wrap around occurs.
 - 4.3 Split: Data shall be continuously stored in a series of files automatically created. The change-over or creation of subsequent files shall be created by splits at user-defined boundaries. The boundaries shall be able to be defined by duration (hours, days, months) and by time and day of the first split.
5. Logging files shall be terminal based not system based, to provide true multi-terminal capability.
6. Data produced by the logging facility must be able to be used by standard spread-sheet package for the analysis of information and the preparation of management report.
7. In addition to the above, the data may be presented in a simplified customised package. The package should have the following features as minimum :
 - Charting of logged data on disk in line graph, bar graph or pie format.
 - Presentation of logged data on disk in tabular format.
 - Charting of dynamic data (up to 8 points) in real time.
 - Presentation of dynamic data in tabular format in real time.
 - Selection of Auto/ manual scaling of X (time) axis and Y (variable) axis.
 - Tailoring of charts by selection of line width and background colours.
 - Optional grid overlays (full and dotted lines).
 - Selection of horizontal/ vertical arrangement of windows or a 'cascade' presentation.
 - Multiple Windows.
 - Printing of completed presentations.
 - User configurable data selections.
 - Optional display of point titles.

- Selection of primary or secondary values for display.
Presentation of both analog and digital values (ON/OFF etc.).

1.1.4.i Report Generation:

Standard reports shall be provided, which shall be operator selectable to appear on the operator station, any selected printer or both. A "terminate report" command shall be available to allow the operator to stop any report in the process of being printed. Standard pre-formatted reports to be provided shall include:

1. Point summary reports may be requested at any penetration level. Point summary reports shall include the current value/status and condition, point descriptors and all relevant information. Point summary reports shall be selectable for all points.

All reports shall be capable of being scheduled to run at a specific time and/or interval via an operator function supported by necessary data entry templates and interactive prompts.

2. As a minimum, the system shall provide the following summaries:

- Point summary
- Alarm summary
- Limits summary
- Lockout summary
- Off-line summary
- Override summary
- Utility summary
- Point status (alarm, locked out, off-line, override)
- Point name
- Point status/value (automatically updating)
- Engineering units.

The alarm summary shall list all points in alarm in the selected system. It shall be possible to print on a single summary, all points in alarm in the building. As a minimum, the alarm summary shall include:

- Point name
- Point status/value (when alarm occurred)
- Alarm message
- Date and time of alarm occurrence

The limits summary shall list all the alarm limits, and warning limits.

The lockout summary shall display points in the selected system which has either reporting or triggering locked out.

The off-line summary shall display points in the selected system which has lost communication with the system.

The override summary shall display points in the selected system which have been overridden by operator command.

The utility profile shall display the total consumption, measured peak for the current period and the previous period.

3. Trend reports shall allow the operator to randomly select logical group of points to be recorded at selectable time intervals. It shall be possible to assign up to ten variables to each trend report. The format, headers, footers, and calculations shall be selectable by the operator. The trend report shall be stored to disk and shall be subsequently capable of being displayed, and/or printed by the operator.
4. Dynamic trends shall provide upto eight points and show real time activity of the associated points. This information shall be printed and/or displayed in numeric, bar chart, curve plot, pie chart, etc., as selected by the operator. Graphic plots shall allow a unique color for each point. Sample interval

of points selected for dynamic trend shall be user selectable. 3-Dimensional dynamic trending must be provided in the system.

5. Alarm and run time reports shall be automatically issued to assigned printers immediately upon occurrence, and shall consist of the point with engineering unit, the time, and the date, and the alarm message.

DDC Panels:

The panel housing the DDC controllers shall be located inside the conditioned area. Proper care shall be taken to ensure that there is no induction problem between the control and power cables. These panels shall be IP54, 16 gauge & powder coated and supplied by the specialist controls supplier.

1.1.5 Server hardware for IBMS

The Minimum specification for Server shall be as follows:

1. Intel® Xeon® Processor 3.06 GHz or more with 512K Cache
2. 533MHz FSB
3. Motherboard Chipset: OEM Motherboard
4. Chassis Type: Rack type
5. SAS 10K rpm or higher hot swappable Hard Disk in 500 GB or more.
6. A Super VGA graphics card having video resolution of 1280x1024 pixels or better.
7. NIC - Two numbers of Gigabit Ethernet ports (10/100/1000 Mbps)
8. Free at least 2 x PCI express I/O slots, multiple USB ports.
9. DVD RW Drive.
10. 19" TFT monitor.
11. Multimedia speaker
12. Hot Swappable dual redundant power supply.
13. Inbuilt cooling system.
14. Rack mounts with rapid rail.

1.1.6 Access Controller

The above IBMS & Access control software shall be capable of monitoring, control and reporting facilities of the system shall be powerful enough to enable security managers to manage their site's overall security. The Access Control System (ACS) shall be capable of integrating multiple building functions including access control, alarm management, intrusion detection.

The system shall be modular in nature, and shall permit expansion of both capacity and functionality through the addition of control panels, card readers, and sensors.

The system shall incorporate the necessary hardware, software, and firmware to collect, transmit, and process alarm, tamper and trouble conditions, access requests, and advisories in accordance with the security procedures of the facility. The system shall control the flow of authorized personnel traffic through the secured areas of the facility. The user interface at the host computer (server) and at the OWT (operator workstation terminal computers) shall be a mouse driven graphical user interface (GUI) allowing the user to open and work on multiple windows simultaneously.

- a) The Controllers shall be UL certified and conform to UL standards.
- b) Up to 8 readers and four doors per controller for flexible configurations
- c) Flash memory for easy online software updates
- d) The controller should have capacity for 95000 card holders
- e) The controller shall have capacity to store 95000 messages
- f) Supports two-man rule and escorted access for increased security
- g) The controller shall have 31 personal schedules per door containing a seven-day week, seven special days and two temporary schedules. Each schedule contains seven intervals with user-defined begin and end times.
- h) The controller should have 14 inputs and 8 outputs
- i) Configurable audio tones to indicate valid card read, invalid card read, and other types of events.

- j) Large alarm buffer protects integrity of alarm data
- k) Dynamic memory management allows maximum storage of card holders and transactions

1.1.7 Biometric Fingerprint Card Reader & Enrolment Biometric Reader

Reading element	: Optic sensor
Verification Algorithm	: 1:1 or 1: N
False Acceptance Rate (FAR)	: < 0.01%,
False rejection rate (FRR)	: < 0.01%
Users	: 500
Templates	: 2 templates per user (template on card)
Timing	: Card read < 0.5 sec Fingerprint capture < 2 sec, typical 1 sec Verification of captured finger < 1 sec
Card compatibility	: iCLASS 15693 & 14443B
Output	: Same card data as in the Input in case of validation. No data in case of no validation

Access decisions shall be made at each controller.

Access criteria changes shall be downloaded from the controller automatically, according to a pre-programmed schedule.

The IP Video Management System shall be seamlessly integrated with IBMS system at software level.

All card readers shall unlock the controlled door within 0.2 seconds of the completion of the access attempt. The completion of the access attempt is defined as the end of the card shown for card only entry. This time delay shall never be exceeded, regardless of system loading.

Each access attempt shall be converted into a message and transmitted to the site controller and central management system. The following fields shall be transmitted:

- Time of entry or exit
- Point of entry or exit
- Access granted or denied
- Card number
- Cardholder's name

Each card reader shall be capable of automatically switching the current access criteria at a door at different times of the day, based on access control data received from the site controller.

The following access criteria modes are required:

Free access - door is unlocked, no card entry is required

Secure access - door is locked (secure). A successful card attempt is required for valid entry. Door unlocks after access attempt.

Pending access - door is locked (secure). Door switches automatically to unlock (free) upon first successful access attempt during pending mode period, or vice versa (see next clause). Within pending mode, two options shall exist:

The card reader is operating in secure access mode. When the first valid entry occurs, the card reader shall automatically set the access criteria for this reader to free (public) access.

The card reader is operating in free (public) access mode. When the first valid "access attempt" occurs, the card reader shall automatically set the access criteria for this reader to secure (card-required) access.

1.1.7.1 Database management:

The system shall create and maintain a master database of all cardholder records and all system activity for all connected to IBMS points as per IO summary. The System shall support various databases – Microsoft SQL, MySQL and Oracle.

1.1.7.2 Audit trail:

The IBMS shall maintain an audit trail file of operator activity, and provide the ability to generate a report by operator, time and date, and type of activity (audit code). The system shall allow the operator to direct the audit trail report to screen, printer, or file. The audit trail feature shall record the following system events at a minimum:

- Site parameters modified.
- System login or logout.
- System restart.
- Cardholder added, deleted, or changed.
- Event added, deleted, changed, or executed.
- Alarm message added, deleted, or changed.
- Communications initiated or terminated.
- Field device/points added, deleted, or changed.
- Access privileges added, deleted, or changed.
- Input point monitoring:
 - Collect and process status information from all monitored points.
-

1.1.7.3 Alarm annunciation:

Audibly and visually annunciate all alarm, tamper and trouble conditions, and advisories.

Input point supervision:

The system shall electrically supervise all 2-state and 4-state input point circuits as specified or shown on the drawings.

1.1.7.4 Reports:

User definable reports that can be saved and re-run as required without redefining the report fields and format each time the report is run.

The predefined reports shall include the following at a minimum:

- Cardholder Report
- Input Point Report
- Alarm Response Message Report
- Alarm Instruction Text Report
- Output Point Report
- Time Zone Report
- Event Trigger Report
- Event Action Report
- Panel Report
- Field Device Report
- Card Transaction History Report
- Access Reports
- Reader Group Report
- Alarm History Report
- Transaction History Report with the ability to filter by any one or more of the following parameters:

- Reader name
- Start date
- Start time
- End date
- End time
- Transaction type:

Operator Menu Access: The operator password shall control which menu items that the individual operator may access. It shall also be possible to restrict operators such that certain specified menu commands do not appear on the screen, or are greyed-out (disabled) for a given operator. All user passwords are fully encrypted, even while being stored and transmitted across the network.

Alarm Input Point Reporting Delay: The ACS shall allow the operator to apply an input point reporting delay period from 0-60 seconds for each input point terminal. The default setting for each input point reporting delay shall be 0 seconds.

Alarm Input Point Suppression: The ACS shall provide an alarm input point suppression facility such that the operator may define a time zone suppression period for each individual input point. Alarm conditions for suppressed input points shall not be recorded or archived by the system, however, trouble conditions will be recorded.

Alarm graphics (maps): The alarm-graphics portion of the system shall provide dynamic color alarm graphic maps with the following functions: User definable graphic maps to depict input and output point conditions, reader status, and sub-map attachments in the ACS.

The ACS shall support the importing of most bitmap file format graphics produced with any graphic drawing program such as TIF, BMP or JPG file format. Vector file formats are not acceptable.

The ACS map program shall support the importing of most bitmap file format graphics to produce custom icons for all map attachments (input, output, reader, etc.). The ACS software shall be capable of storing a number of graphic maps.

The ACS shall provide a palette that includes six categories of pre-defined alarm map icons:

Input: representing a user-defined alarm input point located anywhere in the system. The input point icon shall flash, change color, and the computer's internal sounder shall beep when an alarm condition exists. It shall be possible to click on the icon to respond to the alarm condition or move directly to the alarm queue window to respond to the alarm. Each alarm-input icon shall have a pop-up box that indicates the point's current state (open, short, alarm/active, secure).

Output: representing a user defined output point located anywhere in the ACS. It shall be possible to click on the icon to set or reset the output point. In addition, it can display the set or reset status of point.

Map layer: representing that lower level maps associated with the top layer map exist in the system. It shall be possible to navigate through the map layers by clicking on the map layer (up and down) icons.

Reader Terminals: reader icons shall have the capability of displaying: held open, forced open, locked, unlocked, unknown, override, up and down. Panels: representing a system panel controlled by the ACS. Panel icons shall have the capability of displaying the up or down status of the panel.

I/O Terminals: I/O terminal icons shall have the capability of displaying the up or down status.

Alarm handling: The alarm handling portion of the system, which consists of the point contacts, and the Alarm monitoring Window shall provide the following functions:

The Alarm Monitoring Window shall be capable of being sorted by any column. It shall also have displayed the total number of alarms in the queue and the number that are pending. The Alarm Monitoring Window shall have the capability to bring up the map to the input, which is highlighted in the window.

User definable alarm message/instructions description: The system shall provide the ability to assign alarm message/instructions to each state of an input point ('Open', 'Short', 'Alarm/Active', and 'Secure.')

Alarm message "pick list": all alarm message names and associated descriptions shall appear in the form of a pick list from which the operator may select an appropriate alarm name and message from all alarm messages defined in the database by the operator.

1.1.7.5 Event processing:

Panel card events: the ACS shall provide the capability for the user to define a panel card event, which may be executed by a cardholder at a reader equipped with a keypad. For each 'card event' the following data may be defined by the User:

- Alphanumeric event name
- Access code to control the triggering of the event (card activated event)
- Event triggers type (card only, card + PIN, card + PIN + code, card + code, void card)
- Event Privilege level (0-7)
- Duration of the event execution (0-1440 minutes)
- Input point group to be suppressed or not
- Output point group to be activated or not
- Door strike operation enabled/disable
- Reset panel alarm relay

Host events:

Triggers: the ACS shall provide the operator with a scrolling list of the following event sequence triggers as a minimum that may be combined with the event sequence logical operators listed below to program a custom sequence of events. The ACS shall be delivered with this entire list functional whether or not these features are implemented by the User upon initial installation.

Actions: the ACS shall be provide a scrolling list of the following event sequence actions as a minimum, and allow the user to attach one or more actions to one or more of the event sequence triggers listed above to program a custom sequence of events.

- Enable anti-passback
- Disable anti-passback
- Unlock door control relay
- Lock door control relay
- Enable timed override of door control relay
- Set time zone for PIN code suppression
- Set time zone for reader
- Set time zone for reader override
- Enable reader override
- Disable reader override
- Enable soft In-X-It
- Disable soft In-X-It
- Enable local timed override
- Disable local timed override
- Lock all doors
- Unlock all doors
- Enable history upload
- Disable history upload
- Include time zone in access decision
- Ignore time zone in access decision
- Set controller relay
- Reset controller relay
- Enable input point group
- Disable input point group
- Set output point group
- Reset output point group
- Display a user defined message in a pop-up window
- Print user defined message on any printer

- System Database backup
- System Panel Download
- Display map
- Event Counters

Time zones: The ACS shall provide the capability for the user to define time zones with the following identification and configuration parameters.

1.1.7.6 Alphanumeric name

Alphanumeric description Allowance for up to eight periods, four active and four inactive, during each day of the week and each of three different holiday types. Any day of the year may be designated as a holiday; each defined as one of three holiday types.

1.1.7.7 Communications:

Pertaining to network-based communications between the Host and the door controllers:

Communications between the server (Host) and the door controller panels can optionally support a redundant network path. Thus the loss of Communications on the primary network path automatically causes Communications to be established via the other path without operator.

Intervention should the controller(s) lose communications with the Host, the controllers shall continue to control access and monitor inputs for all connected points. Local history of all transactions shall be buffered at the sub controller and automatically uploaded to the Host for alarm reporting and long-term historical storage once communications is re-established.

The bidder shall be responsible for the design of a system that will compensate for all signal level losses in the trunk wiring. This shall include any power supplies for the field devices and any signal level converters or repeaters for the proper amplification of electrical signals.

1.1.7.8 Other Features:

User defined cardholder database fields: The system shall support up to an unlimited number of user defined data fields, which may be used to store information for each cardholder. Each field may be of a type: alphanumeric text, numeric, date, toggle (Yes/No). The ACS shall provide standard menu items, which shall allow the operator to define these cardholder database fields at anytime. The system shall remain on-line while user defined cardholder database fields are added or edited

The System shall support the capturing of high quality finger prints and encoding the finger print into the card during enrolment process that is native of System.

Also the System shall allow operators to capture and store the fingerprint to the System database. The fingerprints shall be captured using a biometric reader and an enrolment reader shall be used for fingerprint encoding.

Event and Transaction History: The ACS shall maintain a record of all alarm, card transaction, and system exceptions, which take place, and provide a means for a user to access this information. It shall be possible to print information in the log in real-time or by a report.

Anti-Passback Control: The ACS shall provide the capability to prevent more than one person from gaining access to a controlled area by recognizing when a cardholder who is granted access is passing back the card to another person to use the same card to gain access. If so programmed, an alarm may be generated if the anti-passback rules are violated by the cardholder. It shall be possible to define on a reader by reader basis, which readers are subject to anti-passback rules.

Duress Processing: The ACS shall permit cardholders to indicate that they are requesting access to an area under some forced or duress situation. An alarm may be generated if a duress condition occurs, and the cardholder will be granted access.

Cardholder Definition: The ACS shall provide the capability for the user to define Cardholders with the

following identification and operating parameters.

- Cardholder name (first, middle, last)
- Cardholder address
- Cardholder phone number and extension number
- Validation period using start and void dates
- Department and Company fields from selection list of user defined departments and companies
- Unlimited number of user defined cardholder fields. The ACS shall provide the capability to use these fields in filtering reports.

Badge Definition: The ACS shall provide the capability for the user to define Cardholders with the following Badge identification and operating parameters on a per badge basis.

- Badge number assignment
- Issue level (0-7), only (1) per badge
- Validation period using start and void date and time
- Globally disable badges in all partitions
- Executive privilege enabled or disabled
- Active/Disable badge toggle button
- Trace enabled or disabled
- Override enabled or disabled
- PIN code (4 or 5 digits)
- Badge event privilege level
- Assign eight Access Groups and Time zones per Badge

System Status Display: The ACS shall provide a dynamic system status summary display that graphically indicates the following status information, filtered by panel or terminal. All status display information shall be summarized in a single window.

Alarm routing: The ACS shall provide the ability for the user to define which input points or groups of input points are displayed on each ACS Operator Workstation Terminal (OWT) computer. The system shall provide a report showing which input points are routed to each OWT.

Control points: The ACS shall provide the ability to define input points as control points to be used in input/output linking and event processing sequences of operation. Control points shall not enter the alarm queue and shall not require that an operator acknowledge them when they change state. The control point activity will however, be automatically logged to the history file.

Real Time Printer: The ACS shall be capable of printing to a network accessible printer as well as printing from an LPT port. The ACS shall be capable of printing with the following parameters:

Be able to specify printing of the following items, independent from each other:

- Input Point Alarms
- System Exception and Event Messages
- Access Trace
- Access Deny
- Access Grant
- Entry/Exit Central
- Audit Trail.

1.2 IP CCTV System

1.2.1 System Description

The system shall include all network video cameras, network switch, server hardware, video management software, cabling, supports, hardware, software and interfaces to provide complete system. The system shall seamlessly integrate with the access control system and security management control system. The system shall be expandable to encompass the entire site.

A network camera combines a camera and computer in one unit, which includes the digitization and compression of the video, as well as a network connector. The video is transported over an IP-based network, via network switches, and recorded to a standard PC with video management software. This represents a true network video system, and is also a fully digital system, where no analog components are used.

A network video system using network cameras adds the following advantages:

- High resolution cameras (megapixel)
- Consistent image quality
- Power over Ethernet
- Full flexibility and scalability

The CCTV system shall comprise minimum of the following equipments (components) along with CAT6 cables, cable containment and associated accessories, hardware to provide a complete and operational CCTV system for alarm assessment and general surveillance purposes. Provide following minimum operational features:

- Network camera,
- Network switch with patch panel and necessary converters (if required)
- Server hardware and video management software
- Viewing Station

1.2.2 Indoor/outdoor High Definition Resolution IP Network Dome Camera

	Video:	
i.	Video standards	Dual H.264 & MJPEG stream
ii.	Sensor	1/3" 3MP progressive CMOS image sensor
iii.	Sensor matrix	PAL : 1920 (H) x 1080 (V)
	Resolutions and frame rates:	PAL
iv.	Resolution	1280 X 1024
	Video out	
v.	Signal	ONVIF S and G
vi.	Connector	RJ-45 10BaseT / 100BaseTX
vii	Video S/N	> 50 dB
viii	Sensitivity:	
	Day/Night	Yes
	Color	0.12lux
	Night Sens	0.03 ux
ix	Wide Dynamic Range	60 dB
x	White balance	Yes
	Electronic shutter	
xi	PAL	1/5 – 1/100000 s
	Optical	
xii	Lens	Varifocal 3 mm (W) – 12 mm (T)
xiii	Iris control	Automatic

	Camera Tampering	
xiv	Camera Sabotage	Alarm should be generated
	Software Control	
xv	Unit configuration	Via web browser or Configuration Manager
xvi	Motion detection	Yes
	Alarm	Yes; 1x Alarm In & 1x Alarm Out
	Network	
xvii	Protocols (Any of the following)	TCP/IP, UDP, HTTP, HTTPS, SMTP, SNMP, DNS, DHCP, NTP, FTP, RTSP (RTP), IGMP v3, UpnP, CIFS, NFS, IEC802.1x, ONVIF
xviii	Ethernet	10/100 Base-T, auto-sensing, half/full duplex, RJ45
xix	POE	IEEE 802.3af compliant
xx	Operating Temperature	0°C to 50°C
xxi	Operating Humidity	0% to 80% (Non Condensing)
	CERTIFICATES & APPROVAL	
xxii	Safety	UL
xxiii	Ingress protection and Vandal	IP66, IK10

1.2.3 VIDEO RECORDING SERVER

The software shall consist of the following modules:

- ☐ Data base management & recording Utility
- ☐ Monitoring
- ☐ Video Player
- ☐ Backup & Archival Utility

The Video Recording Server has to be located as per client requirements. Recording server shall have capable to load video analytics software and provide a visual interface for users to Video Streamer Transmitters, IP Cameras and other devices. Each camera shall be configured to have its own unique set of pre and post-alarm time marks. The software shall allow for the central administration, monitoring, and archiving of digital video and the associated cameras.

The Recording server shall also allow drag and drop camera selection from maps to display monitors, on-screen mouse-controlled PTZ functions, and the ability to import maps directly from graphic programs. The Network Recorder shall allow for automatic configuration of data ports and video buses. Alarm responses automatically active preset, sequences and macros. The system shall allow for image capture manually or automatically.

The Recorder software shall integrate live video into custom displays, enabling one operator to view many parts of a building thro multiple monitors. Operators shall have the facility to select and control PTZ cameras using display.

The Network video Recorder shall be capable to seamlessly integrate to the video analytic software, if and when added to the system.

SI No	Specification	Minimum requirement
1	Type	Rack-mountable, Dedicated Network Video Recorder with suitable hardware to connect up to 64 IP cameras (i), offered storage is not an externally attached device to NVR, the total recording storage requirement shall be met through internally installed HDD itself. The bidder to submit the storage analysis for required no of cameras for a period of 60 days @15fps on minimum 1080P resolution. All channels must support recording resolution of 1080p@15fps. (ii) Additional hardware/ software/ license, if any required by the bidder to meet its offered solution, should be considered accordingly by the bidder in its offer.

2	Storage capacity	Each NVR storage unit should be provided with usable 8 SATA HDD slots with provision of future expansion of HDD Slots using eSATA
3	Operating system	Linux or Embedded or Microsoft
4	Video compression	H.265, H.264, MJPEG/MPEG
5	Recording support	The offered NVR must be able to support simultaneous recording of 64 IP cameras at 1080p resolution at 25/30 fps
6	No. of playback streams.	Bidder to specify (minimum 128)
7	Throughput	Suitable for meeting the intended recording and simultaneous 128 camera playback requirements
8	Recording Resolution	4K, 5MP, 3MP, 1080P, 720P, 960H, D1 15
9	Network Protocol Support	HTTP/HTTPS, TCP/IP, RTSP, UDP, NTP, DHCP, IPC Search
10	On-board diagnostics	Web based support for system configuration & Diagnostics
11	Documentation	Installation guide, Operation & Maintenance Manuals, Installation CD/DVD for licensed software
12	Input Voltage	100~240 V AC, 50/60 Hz.
13	Compatibility	The supplied NVR must be compatible in all respects to the cameras being supplied at the locations
14	Operating temperature	10°C ~ 40°C or better
15	Operating Humidity	20% to 80% RH, non-condensing
16	HDD	HDD Hot swap, 8 bays SATA HDD, up to 64TB storage.
17	Product Safety	To comply with CE, FCC, UL
18	Details Required with offer	Bidder to submit the details of complete offered solution (Item make, model/part code, block diagram etc.) as stated above along with the offer.

1.2.4 MONITOR STATIONS

The software shall be supplied with at least 3 PC monitoring station licenses apart from the central video recorder station. The station shall enable setting up of user name password and user priority.

The monitor station software shall have the same functionality when connected remotely as it does when it is run locally on the same computer as the server software. The software shall manage the video it has been configured to monitor. Loss of video signal shall be configured to annunciate on the viewing station by an on screen visual indication alerting operators of video loss

The Monitoring Station software shall allow following methods to be available to controlling a PTZ camera

- 1) Keyboard control
- 2) PTZ presets
- 3) Digital PTZ
- 4) USB joystick to control PTZ.

The Client Monitoring Station shall compliance the following specifications:

SL No	Specification	Minimum requirement
1	Processor	Intel® Xeon R core i5 Processor
2		Memory DDR4 4GB RAM
3	Network	RJ45 100/1000 Base-T, Gigabit Ethernet
4	PCIe	PCIe3.0,
5	Storage Minimum	1TB HDD
6	Graphics Card	Onboard and 2GB Graphics Card
7	ODD	DVD Drive
8	Operating System	Windows 7 /10 Pro
9	Serial Port	2+4 Port USB 3.0
10	Display	1 Port VGA, 1 Port HDMI
11	Input	USB Keyboard, Mouse

12	Monitor	32" HD (1080P) LED
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1.2.5 LED HD TV

The flat panel LED TV shall have a HD resolution and shall allow for on-screen display for setup and adjustment of tv parameters. The flat panel LED TV shall allow for multiple video inputs (front panel switchable), PC-compatible inputs, video and audio inputs and outputs, and built-in automatic input scanning. The flat panel HD TV shall meet or exceed the following design and performance specifications.

SL No	Specification	Minimum requirement
1	Resolution	1920 x 1080P
2	Contrast Ratio	5000 : 1
3	Viewing Angle	Horizontal 178°/Vertical 178°
4	Display Colours	16M
5	Source Input	VGA, HDMI, AV, DVI, RGB
6	Size	32" & 40"
7	Power	100 – 240V, 50/60HZ

1.2.6. 27U" FLOOR MOUNT RACK

The Network shall be accommodate to storage server, core switch, network switch, light interface modules, patch panel etc. Shall also be a provision to add more switch and server. Network Rack shall Compliance the following specification

SL No	Specification	Minimum requirement
1	Size	Min 27U
2	Type	Network
3	Mount	Floor
4	Caster Wheel	4 No's with Lockable
5	Mounting Size	19"
6	Cable Manager	As Required
7	Shelves	Min 4
8	Doors	Front and Rear Lockable Glass Door
9	Power Strip	Min 10 No's of 5/15A
10	Cooling Fan	4 No's on Top

1.3 Cables & Conduits

Cat 6 cables shall be used for connection to the switch from the camera/ access controller / DDC Controller.

The 2 Core 1.0 Sq mm cable connecting the Field devices to DDCs shall be PVC insulated copper, multi strand, Shielded, ATC cables shall be 650V grades.

The 2 Core 1.5 Sq mm cable connecting the Detectors/ Field devices to Fire alarm Panel shall be PVC insulated copper, multi strand, FRLS cables shall be 1100V grades.

The 8 Core 1.0 Sq mm cable connecting the Readers to Access Controller shall be PVC insulated copper, multi strand, Shielded, ATC cables.

The 6 Core 1.0 Sq mm cable connecting the EM Lock/ Push Button Switch to Access Controller and DDCs to Communication Controller/Router/Gateway and for the RS 485 MODBUS Interface shall be PVC insulated copper, multi strand, Shielded, ATC cables.

Cables/wiring shall be laid down in metallic flexible conduits. MS Conduits shall be used only in concealed spaces.

Cables connected to devices shall be given 'S' loop on both the sides of the devices which shall be properly clamped to the ceiling. Loop shall also be left where cables connect sounders, panels, dampers, etc. Appropriate glands shall be provided where the cable enters the junction box.

All the cables and wires shall be tagged for proper identification. Wires shall be identified by ferrules at junction and cables by colour bands.

1.3.1 Cat 6 Cable

i.	Conductors	23 AWG solid bare copper or better
ii.	Insulation	Polyethylene
iii.	Jacket	Sheath Fire retardant PVC Compound (FRPVC) Flame Rating : 60 deg. C As per UL 1685 CM/CMR
iv.	Pair Separator	Cross-member fluted member
v.	Approvals	UL tested for TIA/EIA-568C.2
vi.	Frequency tested up to	Minimum 600 MHz
vii.	Delay Skew	35ns MAX.
viii.	Impedance	100 Ohms + / - 6 ohms, 1 to 300 MHz.

1.4 Fire alarm System

1.4.1 Fire Alarm Panel

The control panel shall be a microprocessor based fully Analogue Addressable, Analogue Control Unit which shall control all Analogue Addressable Detectors, Manual Call Stations and Switching Systems (for disconnecting PAC and power supply) connected to it, single loop addressable unit, designed and manufactured to the requirements of UL for the control and indicating component and UL for the internal power supply.

A loop shall mean a 2-wire circuit connecting 125 addressable detectors/devices. The loop card shall have built-in circuit isolator to accommodate Class 'A' wiring. The loop cards shall be of modular construction.

It shall be possible to trip from the Fire Alarm Panel through the use of Addressable Output Modules, individual PAC activated by the fire signal of specified detectors.

All wiring shall be done using 2 x 1.5 mm² PVC insulated armoured FRLS copper cable.

1. All controls of the system shall be via the control panel only.
2. All site-specific data shall be field programmable and stored in an integral EEPROM.
3. All internal components of the control panel shall be fully monitored.
4. The control panel shall be capable of supporting a multi device, multi zone 2-wire detection loop. Removal of 1 or more detection devices on the loop shall not render the remaining devices on the loop inoperable.
5. All addressable units shall be connected to the Fire alarm control panel through the Loop Cards and shall be addressed through individual numbers. The Fire alarm control panel shall be able to obtain analogue value for all detectors in the circuit through a pulsed digitalized current data. The Fire alarm control panel shall be able to analyses all analogue inputs from all addressable units, and through its own software and ambient level screening the Fire alarm control panel shall be able to identify fire, possible fire or fault conditions. The unit supervision shall be dynamic and continuous.
6. The Fire alarm control panel shall also give adequate warning signal whenever there is dust accumulation in detectors. It should be possible to change the level of ambient alarm calibration condition by the use of software program.
7. Short / Open circuit fault shall also be reported at the Fire alarm control panel. In such cases, the system through the use of fault isolators shall be able to isolate that segment. The missing Detectors/Devices shall also be reported at the Fire alarm control panel with identification of the location.
8. When an alarm condition is sensed at the Fire alarm control panel from a smoke or heat detector, a delay time/alarm verification period shall be started. If the detector is still in alarm after the delay time expires, an alarm condition is reported. The delay time shall be adjustable from 0 to 990 sec's.
9. The Fire alarm control panel shall have the facility to perform walk test. In the walk test mode, the performance of each device is checked out by initiating the device. As each device is placed into

alarm the Fire alarm control panel shall print the condition and automatically reset the device. Audible devices shall be initiated, if required at a pre-programmed time. If a zone is inadvertently left in walk test mode, it shall automatically reset to normal after the idle time is exceeded. During the walk test the zones other than the programmed zones shall perform continuous supervision (normal mode). In case of any alarm initiated by detector/devices the walk test shall get terminated automatically.

10. The Fire alarm control panel shall also be able to carry out continuous self-monitoring when in normal condition.
11. The Fire alarm control panel shall also be able to discriminate between false alarms and fire conditions.
12. The Fire alarm control panel shall carry out priority selection of alarm in case alarm activities in two or more remotely located units simultaneously. In such cases, the manual call stations shall have the highest priority.
13. The Fire alarm control panel shall also be able to actuate switches automatically in case of Fire condition that of PACs and power supply or other systems such as Access control doors.
14. The System shall be fail safe and adequate safe guards should be ensured that in the event of a failure of a part of the System it shall not handicap the complete System.
15. The system status shall be made available via panel mounted LEDs and a backlit 4 line or 168-character alphanumeric liquid crystal display.
16. All user primary controls shall be password protected over 4 access levels in accordance with UL. Essential controls, such as Start / Stop sounders and Cancel fault buzzer, etc. will be clearly marked.
17. Cancel fault and display test functions shall be configurable to be accessed from level 1 or level 2.
18. All system controls and programming will be accessed via PC/Laptop / alphanumeric keypad. The control panel will incorporate form fill menu driven fields for data entry and retrieval.
19. The control panel shall log a minimum of 700 events comprising of 100 event fire log and 200 event fault, disablement and historic logs, giving time, date, device reference and status of indication.
20. Fire, fault and disablement events shall be logged as they occur. Visual and audible conformation shall be given on an array of LEDs, the Liquid Crystal Display and the internal supervisory buzzer.
21. The control panel shall have an integral automatic power supply and maintenance free sealed battery, providing a standby capacity of a minimum (48 Hrs) hours and further 30 minutes under full alarm load conditions. The system shall be capable of full re-charge within 24 hours following full system discharge. The performance of the power supply and batteries shall be monitored and alarm rose, should a fault be detected. The system shall protect the batteries from deep discharge.
22. The Software shall be user friendly. The system shall have the ability to be upgraded so as to incorporate more features at a later date. The system shall be designed such that it shall have the add-on feature.
23. The Fire alarm control panel shall be capable of being networked (future expansion) with other similar Fire alarm control panel's located at different part of the premises through a single RS485 bus.
24. The Fire alarm control panel shall have provision for interfacing with the Public Address System.
25. The panel should have the facility to interface with an automatic two channel programmable speech dialler for verbal reporting of fire. Fire alarm control panel shall be able to call four telephone numbers per channel. The programmable speech dialler shall have two alarm inputs and shall provide listen-in capabilities through the built in microphone. The dialler shall have a built-in keypad for easy operation, programming and voice recording.

1.4.2 ADDRESSABLE DETECTORS

MULTISENSOR DETECTOR

- a) All detectors shall be plug-in type, from the maintenance and compatibility point of view.
- b) An alarm condition should not affect a detector's good functioning.
- c) After resetting the alarm, the detector shall resume normal operations without readjustment of any kind.
- d) The detector shall have a Multi-sensor type integrated photoelectric smoke and fixed temperature heat sensing technology.
- e) It shall be possible to use a single detector type for both above and below false ceiling applications.
- f) The detector shall be capable of detecting fast flaming fires and slow smouldering fires equally well.

- g) The detector shall therefore be a multi technology detector or shall be of unique design whereby a single type/model can be used in applications where either ISD/OSD would be normally used.
- h) The sensitivity of the detector shall not vary with change in ambient temperature, humidity, pressure or voltage variation, and should not trigger the false alarm due to the above condition.
- i) The detector shall be suitably protected against dust accumulation/ ingress of moisture. The detector shall be free from maintenance and functionally tested at periodic intervals. All detectors shall be identical in construction design and characteristic to facilitate easy replacement and interchangeably by suitable programming.
- j) Devices shall be compatible with the CIE conforming to the requirements of UL Listed and be UL approved.
- k) Secondary response indicators shall be provided for all the Above False Ceiling Detectors.
- l) The detector shall have twin LED's/Single LED for 360/180 degree viewing angle. LED on the detector shall blink each time the sensor is scanned by the Fire alarm control panel.
- m) Detectors shall fit a common addressable base.

1.4.3 Manual call points (MCP)

- a) MCP's shall be addressable and of the Pull type / steady pressure break glass type shall be provided to allow the routine testing of the unit.
- b) The device shall be red in colour and suitable for surface or flush mounting.
- c) Manual stations shall be interfaced to an addressable input module. The manual station shall have normally open fire alarm and annunciator contacts and these contacts shall close on activation. Contacts shall remain closed until station is manually reset.

1.4.4 SOUNDER

- b) Electronic sounders shall be colour red with adjustable sound outputs and at least 3 sound signals. The sounders should be suitable for operation with a 24V DC supply providing a sound output of at least 92 dBA at 1 meter and 75 dBA min, for a bed head or sounder base type device.
- c) The sounder shall be addressable electronic type and shall give discontinuous/ intermittent audible alarm whenever any detector or MCP operates.
- d) The sounder shall be powered from Main Fire alarm control panel through separate 2 wire cable.

1.4.5 FIRE ALARM SYSTEM TESTING

1. FACP:

- a) The FACP shall be visually checked for input voltage and ampere. All zones one by one shall be de wired to check for fault signal indication in the FACP.
- b) The Power Source shall be cut off and checked for stand by Supply from the Batteries. After six hours the FACP Source shall be switched on to check for auto switch over to the Mains mode.
- c) Tests shall be conducted for AC fail, charger fail, DC fail, Battery Disconnect or Battery fail. In all such cases the relevant L E D should glow and the piezo sound shall also give sound output.
- d) Low battery indication, fault indication should be made available at the panel.

2. MULTISENSOR DETECTOR

- a) The testing shall be carried out for each loop / zone,
- b) Initially one detector in a zone and subsequently 2 or more disassociated detectors in each zone shall be tested for Alarm Priority, Alarm Queuing and Call Logging with time lapse between detectors.
- c) An identified detector shall be subject to smoke aspiration from burning paper/cigarette puffs, rubber and other materials which give dense smoke held at 0.3 M distance from the detector.
- d) The FACP should indicate increased analogue output for that address and after the programmed delay time, a fire alarm signal shall be indicated. This delay shall be utilized for alarm verification.

3. ADDITIONAL TEST:

- a) One detector of each type will be disconnected and subjected to slow dust build up by means as desired by the Engineers in charge and again connected in the circuit.
- b) Any part of the Loop shall be short circuited. The FACP shall indicate the communication failure of all the devices connected in the short circuited segment.

- c) After the short circuit is corrected, the Fault Isolator shall return to its normal status automatically, this being reflected in the FACP.
- d) The Loop shall then be in normal operation again. Any part of the Loop shall be de wired and tested as given above for open fault.
- e) All other tests as required by the client at the time of handing over shall also to be conducted.

1.5 Fire Suppression System

The scope shall include, design, supply, installation, testing and commissioning of Automatic & Gas flooding, fire suppression system for all the critical areas.

Fire suppression shall have following specifications:

1. The suppression system used shall NOVEC 1230 based fire suppression system with cross-zoned detector systems for all locations. These detectors should be arranged in a manner that they activate the suppression system zone wise to cater to only the affected area.
2. The critical area shall be divided into number of zones, whenever fire is detected or sensed in any of the zones, annunciation should be available on the Fire
3. There should be a fail-safe alarm system to prevent false discharge or tampering.
4. Additionally, Portable Extinguishers (CO2 or Halon based Extinguishers are not acceptable) shall be placed at strategic stations.
5. Alarm Control Panel (FACP), and the suppression system in that particular zone shall be automatically activated.
6. The flooding of the gas is considered in the area above false ceiling, below false ceiling and false floor.
7. The server room shall be protected with the gas based fire protection system.
8. Design calculation for the Suppression system shall be done on Vds / UL listed, FM approved software.
9. Design of the system shall be in accordance with NFPA 2001-2012 edition
10. The scope shall include design, supply, installation, testing and commissioning of piping system & manifold required for the gas based suppression system.
- 11. The Bidder should prepare & submit the piping Isometric drawing, datasheets of the hardware used in the system.**
12. The Bidder shall also submit copy of (CCE) PESO approval letter for the cylinder proposed to be used. These documents shall be submitted along with the supply of cylinders after the award of contract.
- 13. The Bidder shall also submit calculations to evidence the qty of agent considered for the system.**
14. The Bidder should provide, as part of handing over, the as-built drawing, operation manual, training material and maintenance manual.
15. The as-built drawing shall exactly match the Isometric drawing submitted with the flow calculation prior to commencement of work.
16. Scope includes laying of required pipes, Electric Actuator, Pneumatic Actuator, Discharge Nozzles, Manual Actuator, Flexible discharge Hose and other relevant accessories of the system.

SCOPE OF WORK

The scope of work envisaged under this MR covers the Clean Agent system protection for the DCU control room as per the minimum requirements of total flooding fire extinguishing Clean Agent system as per NFPA-2001 and having design concentration as specified at 70° F (21 °C) for the single largest risk area of control room.

The system design shall be total flooding and Clean Agent requirement shall correspond to the single largest risk area of building.

No deviation from specification will be acceptable.

System supplied and design calculation shall be approved by UL/FM/Vds/LPC .specifications, drawings, codes, standards and good engineering practice etc. complete. The contractor shall be responsible to complete the entire work in all respects and any other work necessary to complete the job whether specifically mentioned or not in the scope of work. In general, scope of work covers the following but not limited to:-

Design, supply of all materials, installation, fabrication, testing and commissioning, puff test, performance guaranteeing of total flooding (main room + below false flooring + above false ceiling) centralized Clean Agent Fire Extinguishing System for Fire Protection of various risks. Clean Agent to be Novec 1230 as per NFPA-2001 for Fire Protection of various risks as listed below:

1. Equipment Room
2. Battery Room

The actual net volume of the risk shall be calculated based on the Architectural & Structural Drawing of the building, higher % /quantity of volume as specified by Clean Agent manufacturer for Clean Agent system. (However the maximum discharge concentration shall not exceed NOAEL. as per NFPA-2001 2012 edition)

All equipments shall be approved by UL/FM/Vds/LPC and cylinders along with cylinder valve assemblies shall be seamless and PESO/CCE approved.

It shall be noted that Clean Agent system to be provided shall meet the requirements of NFPA-2001 (2012 edition). Hence anything specified as "Mandatory" in NFPA-2001, although not specifically mentioned in this specification, shall form part of this specification.

The system shall be designed based on the single largest risk area of the control room building. The system shall include electrically actuated automatic Clean Agent Fire Extinguishing System complete with filled up Clean Agent cylinders, cylinder rack, manifolds, pressure reducing devices, cylinder valves, directional valves, pipes, discharge nozzles, bracket supports, hangers and such other fittings as necessary for complete installation of the system.

RCC/ brick walls/ cutting of steel plates etc. or removal & re-fixing of false ceiling and floor of risk areas, fixing fasteners and other activities required to install the system.

The system shall also comprise of the different modes of operation, actuation and cancellation facility etc. with necessary local control panel as per specification.

The design requirements and material of construction shall be as per specification. Physical properties of clean Agent shall meet the requirements as per NFPA-2001 (2012 edition)

System shall be designed for No Adverse Effect Level (NOEL)

They shall be installed in rack room, UPS room./ As recommended by NFPA-2001 2012 edition) Automatic release shall be initiated via smoke detection system, located in cross- zone pattern (different loops). The system could be set on manual mode or auto mode. The discharge piping & nozzles shall be designed in order to allow discharge of 95% of minimum design concentration of clean agent gas **as per NFPA 2001 (2012 edition)**.

CODES AND STANDARDS

The latest editions of the following codes, specification and regulations has been used for the detailed design and specification of Clean Agent system

NFPA 2001: National Fire Protection Association, (Standard on Clean Agent fire extinguishing system)

ESO/CCE Nagpur (For storage cylinders)

Clean Agent manufacturer's recommendations

NFPA 72

System Operation

The system shall comprise of the following mode of operation and actuation and cancellation facility etc. with necessary control panel:

System operation shall be possible by the following means:

- ☐Automatically due to fire detection in the protected area.
- ☐Operation of manual release push button located adjacent to protected area.
- ☐By operating manual lever provided on electrical/ manual control head on pilot cylinder
- ☐By push button actuation at Clean Agent control panel, in manual mode

The Clean Agent shall be discharged / actuated automatically after an adjustable time delay based on the detection signal received. The delay shall be minimum 30 seconds; however it shall be adjustable from 30 to 120 seconds. In the local control panel of Clean Agent system, there shall be one hooter, which shall operate once the gas is released. During time delay, there shall be a pre-discharge alarm (audio + visual). Hooter shall follow the alarm once the gas is discharged.

Clean Agent Gas & its grouping/distribution

The quantity of Clean Agent gas provided shall be sufficient to protect the single largest risk. The system for every individual risk shall have its own distribution piping, nozzles, alarm, and actuation system, etc. Cylinders shall be permanently connected to the distribution piping through manifold. Since the system is designed for the largest risk and there are several risk areas varying in size in a particular building, the system shall permit the

use of required number of cylinders for any individual risk involved so that the **concentration of gas in that risk area does not exceed the NOAEL specified as per NFPA 2001 (2012 edition).**

Gas properties & its discharge characteristics

Physical properties of Clean Agent shall meet the requirements of NFPA-2001. The agent discharge shall be substantially completed within the time frame as per **NFPA 2001 (2012 edition)**. The minimum oxygen concentration shall be as per NFPA-2001 to have NOAEL.

System Flow Calculations

System flow calculations shall be performed using A CALCULATION METHOD LISTED OR APPROVED BY THE AUTHORITY HAVING JURISDICTION (i.e. UL/FM/Vds/LPC) . The system design shall be within the manufacturers listed limitations.

CONTRACTOR shall also provide sufficient measure (like properly designed louvers etc.) facilities in the risk areas to dissipate over pressurization due to release of Clean Agent and also provide calculation in support of same for each protected area. Approval certificate of software from the UL/FM/Vds/LPC shall be submitted along with the offer.

Clean Agent Quantity

Minimum design concentration of Clean Agent gas shall be as per NFPA-2001 by volume for Clean Agent fire extinguishing system based on approved / listed flow calculation method.

Clean Agent concentration requirement shall be computed considering the volume of the hazard as specified. The BIDDER, as per NFPA-2001, shall work out the quantity of Clean Agent. However, BIDDER shall quote minimum quantity of agent for the volume as given in the scope. Suitable margins of 20% for leakage etc. shall be kept over & above the calculated quantities.

However in any case the minimum design concentration of Clean Agent gas shall not be less as specified in relevant **NFPA 2001 (2012 edition)** unless otherwise specified by the agent manufacturer for clean agent fire extinguishing system based on approved/listed flow calculation method.

Clean Agent Storage Cylinders

The Clean Agent storage cylinders shall be designed to hold Clean Agent at ambient temperatures. Cylinder shall be of approved type and freshly imported. Minimum design level pressure of storage cylinder shall be as per NFPA-2001.

The capacity of the cylinder shall be standardized for better placement & inter-changeability. The design pressure for cylinder shall be suitable for the maximum pressure developed at 1300 F (550 C).

The cylinders shall be charged to a fill density or super pressurization (super pressurization means the addition of a gas to fire suppression agent cylinder necessary to achieve the pressure required for proper system operation) within the range specified in the manufacturers listed manual.

BIDDER shall select the capacity of cylinder based on the storage space available and for better replacement and inter changeability. The BIDDER shall preferably select the capacity of cylinder keeping in view the filling ratio as per NFPA 2001.

The cylinder shall be **seamless**, brand new (date of manufacturing of cylinders shall not be older than 1 year from the date of bid opening) never retested and month & year of manufacture shall be latest (or as specified in the requisition).

Each cylinder shall have a permanent name plate, specifying the agent, tare and gross weight in addition to the pressurization level, nominal agent volume. Cylinder shall bear the mark of manufacturer, serial number, single test certificate issued by authority having jurisdiction and shall be duly approved by competent authority of the country of origin (FM/UL/Vds/LPC/EEC) in addition to approval by PESO/CCE Nagpur, (India). Cylinders without approval will not be accepted. A reliable means of indication shall be provided to determine the pressure in refillable cylinders. **PESO/CCE Approval of the cylinders is a must.** Cylinder shall conform to the requirement of NFPA 2001 and shall be compatible with the engineered system being provided along with design analysis. Each cylinder shall have pressure relief valve to protect the cylinders against excess pressure conditions.

Pressure gauges with isolation valves on manifold shall be provided. Automatic means such as check valve shall be provided to prevent agent loss if the system is operated when any cylinders are removed for maintenance.

Layout of Cylinders:

Clean Agent cylinders shall be arranged in the following manner:

The cylinder storage racks shall be provided for cylinders.

The manifold, containers referred to above shall be securely mounted on the floor and suitably supported in a rack with provision for convenient individual servicing and content weighing according to manufacturer's installation manual. Such servicing or weighing shall be possible without shutting down the system.

A space marked as Clean Agent room on the drawing will be made available to the BIDDER for placing Clean Agent Cylinders and Piping Manifold. BIDDER shall accommodate the storage of Gas Cylinders and Manifold Piping in the space provided and confirm the adequacy of space (along with technical bid).

Piping, Fittings and Discharge Nozzles

1) Piping & Fittings

a) Pipe shall be provided as per the requirements as specified in NFPA-2001.

- b) Pipe fittings shall be provided as per NFPA-2001.
- c) All CS Studs, Bolts and Nuts shall be Hot Dip Galvanized as per ANSI A153 for corrosion resistance.
- d) The Pressure Reduction device shall be easily identifiable.
- e) The Clean Agent piping layout shall be such that the pipes of one risk shall not pass through that of another risk.
- f) All Valves shall be approved for intended use. The Gaskets, O-Rings and other Valve material shall be compatible to the Clean Agent.
- g) The Clean Agent piping and nozzles shall have to planned clearing following facilities coming on its route, in the areas where protection is being envisaged:
The beams and ribs which criss-cross the ceiling. The Clean Agent piping shall be routed considering clearing structural beams / columns or any other facilities coming in the areas where Clean Agent system is being envisaged. All necessary civil works including taking support from Structural steel members, blast resistant RCC walls or breaking brick walls for routing the piping and making them good, shall be in the scope of work of bidder.
- h) If required, the exposed piping works shall be camouflaged to match with the interior of the protected room

Discharge Nozzles

Discharge nozzles shall conform to Cl.4.2.5 of NFPA 2001 and shall be of Brass and shall be FM/UL approved. Discharge nozzles used in the system shall be listed for the use intended for discharge characteristics. The selection of nozzle orifice shall be such discharge time required to achieve 95% of the minimum design concentration for flame extinguishment based on 20% safety factor shall not exceed the time specified in NFPA-2001. Each nozzle shall be permanently marked to identify the manufacturer as well as type and size of the orifice along with tag / part number, orifice code, or other suitable marking as specified by the authority having jurisdiction.

Painting

Painting shall be carried out as per Job Specification for Shop and Field Painting. Painting and colour scheme of pipelines, Clean Agent storage cylinders, supports etc. shall be as per shade No. 536 of IS: 5.

Local Control Panel for Clean Agent System

The local control panel shall be free standing/ floor / wall mounted type and shall be suitable for both auto and manual operation. The panel shall be made out of minimum 16 gauge CRCA sheets. Doors and covers shall be made out of 14 gauge CRCA sheets. The panel shall be naturally ventilated, totally enclosed, dust and vermin proof, with IP-42 enclosure as a minimum.

The Clean Agent system shall be actuated automatically by the signal received from the fire alarm and detection panel. Fire alarm and detection panel, after detecting the fire in the protected area/ zone, shall provide an actuating signal to Clean Agent control panel, which in turn shall energise the solenoid valve to trigger the dumping operation in the respective protected area / zone. Necessary control / interlock cabling between Fire Alarm and Detection Panel and Clean Agent system panel, using multi-core Cu conductor PVC insulated flame retardant cable, shall be provided.

The control panel shall be located inside the clean agent cylinder room or any other place as decided by owner at the time of detailed engineering.

However, control panel shall be equipped with adequate rating battery charger and VRLA battery with 24 hour back up, for efficient operation of the system during mains power failure.

(i) Control panel shall be provided with all alarms, indicators, caution/sign board and relays/ control switches meeting all the requirements of NFPA-2001 and shall include but not be limited to the following:

Two alarms and one fault indicator lamp for each zone to be protected

Combination of alarm silence and alarm off switch.

Combination of fault silence and trouble lamp switches/ Alarm test switch

Alarm re-set switch.

ii) The system shall have a positive warning device by sounding alarm to alert personnel of the impending discharge and also a positive indication to show that the system has actuated. Two numbers potential free contacts shall be provided for owner's use, one contact for indication of start of dumping operation and other contact for indication of end of dumping operation.

Alarm indicating failure of supervised devices of equipment shall give prompt and positive indication of any failure and shall be distinctive from alarm indicating operation of hazardous conditions.

iii) All indication lamps shall be LED type.

iv) Warning and instruction signs at entrance to and inside protection areas shall be provided.

v) A Control Box /Clean Agent Release Panel shall be provided for manual control at the exit doors of each risk area, comprising of selector switches for selection of Main/Reserve and Auto/Manual Push buttons for Clean Agent release. Potential free contacts shall be provided from the Clean Agent Control Panel to shut off the fire dampers / louvers and Air Conditioning System.

- vi) Supervision of automatic systems shall be provided and shall include electrical supervision of the actuating device and the wiring connecting the actuation device and the detection system.
- vii) Operating instructions shall be displayed on a name plate fitted permanently on the Clean Agent skid.
- viii) Clean Agent extinguishing system shall incorporate a pre-discharge alarm with a time delay, sufficient to allow personnel evacuation prior to discharge. The delay shall be minimum 30 seconds. However it shall be adjustable from 0 to 180 seconds.
- ix) Solenoid valves shall be direct acting type with SS body, Intrinsically Safe, 24V DC with insulation Class- F.
- x) Abort switch shall be provided outside each risk area and on the main gas release panel.

Important Inter-locks for Cable Station:

1. The PIR sensor will detect motion or will be 'ARM' state only when there are no persons as per access controller. This alarm will be sent via email by the IBMS system.
2. In case of Fire Alarm, the access doors will operate in 'Fail-Safe' mode and open all the doors; shut down the AC systems, the specific fire device address will be sent via email by the IBMS system to concerned Engineer.
3. In case of Fire alarm in battery or equipment room, and any two detectors are activated in this zone, it has to activate the Gas Release Panel, the detected alarm will activate the actuator after a time delay of 120s. The gas release panel status will be monitored by IBMS and will send an email in case it is activated.
4. Access based events to be recorded in case of door forced open, Access Denied and door open too long (DOTL).
5. DOTL alarms will be monitored by IBMS and the alarm will be sent via email
6. UPS fluctuation alarms (LOW and HIGH) to be sent via email
7. ASDS alarm detected will shut down AC systems to localize smoke and same ASDS will be sent via email alert.
8. WLD alarms to be sent via email through IBMS indicating specific sensing cable.

NOTE: Internet access will be provided by BSNL for email alerts as per requirement.

1.6 RODENT REPELLENT SYSTEMS

1. GENERAL

- 1.1. This section covers rodent repellent system with controller, transducers & alarm sounders.
- 1.2. The manufacturer shall have an IDEM & CFTRI certification.
- 1.3. Proposed system shall be provided at all locations including room void areas of battery, UPS & MDF rooms.

2. CONTROLLER

- 2.1. Manufacturer shall have an IDEM & CFTRI certification.
- 2.2. Controller shall support 12 Transducers & shall come with a pair of stands & brackets. The controller is installed in the control room, service corridors & the transducers in the problematic areas i.e. room voids & below false flooring. Controllers supporting 10 transducers shall be used in smaller areas/zones.
- 2.3. Each controller shall cover 7200 Sq feet of area with 20 transducers covering 300sft coverage each (considering room void areas of 10ft high).
- 2.4. Controller shall have LCD display with on-board controls for changing the following parameters like wave speed, wave density, frequency testing, transducer testing.
- 2.5. Controller shall automatically operate at minimum 3 different frequency bands & the time of operation of each band can be set at controller.
- 2.6. Controller shall provide 5 different values for the wave speed parameter which is an indicator for the number of frequency sweeps per minute. The 5 wave speed values shall be 90, 100, 110, 120 and 130/ frequency sweeps per minute.
- 2.7. Controller shall have RS/ EIA 485 feature to transfer the controller data to the serial port of IBMS computer up to a kilometer apart.
- 2.8. Controller shall be password protected.
- 2.9. Controller shall be equipped with a 3 pin power supply cord of 1.5meters and each controller shall be provided with of 5A electrical plug points.
- 2.10. Standard 2core, flexible (14/40) SWG multi-stranded CT wires of 275 meters shall be used for connectivity between the transducers and the master console.

3. TRANSDUCERS

- 3.1. The Transducers shall be circular ceiling mounted low profile units that produce high decibel sound waves at very high frequency not less than 20 KHz.
 - 3.2. These transducers shall cover an area not less than 300 Sq. ft for Room void application, & 200 Sq. Ft for ceiling Voids & floor void applications.
 - 3.3. These shall be powered thru main Controller to 10 satellites in parallel.
 - 3.4. Transducers shall have pre-tuned operating frequency band of > 20 KHz and <60 KHz.
 - 3.5. Power output per transducer shall be 800mW.
-

SPECIAL CONDITIONS OF THE TENDER

[In case of any difference between any clause of any section of NIT and that of the “special conditions of contract,” then the “special conditions of contract” shall prevail]

The firm shall read carefully the following conditions and shall quote accordingly confirming all the points in their offer.

GENERAL CONDITIONS

Please note that the offers, which do not comply with the following, will not be considered and will be totally rejected. These instructions supersede the BSNL / EW6 and EW 8 clauses, or any other clauses/conditions appearing elsewhere in the tender, in case of any Disparity.

- 1) Tenders with any condition including that of conditional rebates shall be rejected forthwith summarily.
- 2) Insurance, loading, unloading, transportation etc. should be included on works contract basis. The rates shall be firm and final.
- 3) The price shall be firm and fixed during the currency of the contract. No cost escalation is permitted. Clause 10CC is not applicable.
- 4) The Extension of time for completion of the works is governed by clause 2 of EW8.
- 5) No advance payments can be made. The payment is governed by the normal department practice and stipulations like levy of interest if payment is not made in a specified time are not acceptable.
- 6) The firm should deposit EMD before submission of their offer. The EMD of other works returnable to them cannot be adjusted against this work. The firm's offer shall be liable for rejection without fresh EMD for this particular work.

1. DRAWING TO BE SUBMITTED FOR APPROVAL:

The contractor shall get following drawings approved before the start of the work.

- (a) A dimensional drawing giving complete details of the erection of the equipment in plant room (including condensers, electrical panels and refrigerant piping & details of foundations). While deciding layout, future expansion, if any, has to be taken in to consideration.
- (b) Electric wiring diagrams for all Electrical equipment including controls showing cable sizes and equipment capacities.
- (c) Layout drawing for EA set / HPAC / Ductable AC/ Inverter AC / Integrated Management system and all associated systems.

1(i) INCREASE /DECREASE OF TENDERED QUANTITY

a) BSNL will have the right to increase or decrease up to 50% of the quantity of goods and services specified in the schedule of items without any change in the unit price or other terms and conditions at the time of award of contract.

b) In exceptional and unavoidable cases BSNL can increase the quantity of goods and services beyond 50% of the tendered quantity without any change in tendered and accepted unit price and also other terms and conditions as applicable at the time of award of contract.

1(ii) CURTAILMENT OF QUANTITY:-

BSNL reserves the right to enforce curtailment in the assigned quantum of work for any contractor on the grounds of defaults/delay in regard to execution of the individual work assigned.

2. COMPLETION OF WORK:-

At the time of issuing NIT for a particular work, the time allowed for completion of work consistent with magnitude and urgency of work is specified. The time allowed for carrying out the work as entered in the contract is reckoned from the tenth day after the date on which the orders to commence the work are given to the Contractor. To ensure good progress of the work during the execution, the contractor is bound in all cases in which the time allowed for any work exceeds one month (except special jobs) to complete 1/8th of the whole of the work before 1/8th of the time allowed under the contract has elapsed, 3/8th of the work before half of the time has elapsed and 3/4th of the work before 3/4th of such time has elapsed. However, for special jobs, if a time schedule has been submitted by the Contractor and the same has been accepted by the Engineer-in-

charge, the contractor shall comply with such time schedule.

Completion of work for each station for each service in a particular station to be recorded independently and warranty for that service starts from either 3 months after completion of individual service or completion of all the services in that station whichever is earlier. The completion of work for individual stations shall be independent of each other.

i) **For EA sets work :-** Date of successful Acceptance testing [performance testing] of the EA set by BSNL shall be taken as date of completion of the work.

ii) **For AC work,** the work shall be deemed to have been completed after the fulfilment of the following:

- (a) Physical completion of installation of A.C. system including balancing of air and water circuits (wherever applicable) and successful trial run of the A.C. system by the contractor for a period of 7 days subject to a minimum of 120 hours of running during that period in the presence of representative of Engineer-in-Charge.
- (b) **Successful completion of the initial Acceptance Testing** as per the departmental standards in the presence of representatives of Engineer-in-Charge, T & D circle and user.

iii) **For IBMS:** The work shall be deemed to have been completed after the fulfilment of the following:

- a) Physical completion of installation of Integrated Building management system along with, Access Control system, CCTV system, Addressable Fire Alarm & Fire Suppression system, Aspiration Smoke Detection system, Water leak Detection system and Rodent Repellent System and successful testing by the contractor in the presence of the Engineer-in-Charge or his authorized representative.
- b) Successful completion of the Acceptance Testing as per departmental standards in the presence of departmental officers.

3) EPF PROVISIONS:-

The agency has to comply with the provisions of EPF and miscellaneous provisions Act-1952 and employees provident fund scheme-1952 as amended up to date in respect of labours /employees engaged by them for this work. Any consequence arising due to non-complying of provisions as specified above shall be the sole responsibility of the firm only.

Agency has to observe all the labour rules & regulation in force. Agency shall be fully responsible for any violation observed at any time.

4) EARNEST MONEY DEPOSIT

The firm should deposit EMD in proper form. The EMD of other works refundable to them cannot be adjusted against this work. The firm's offer shall be liable for rejection without EMD for this particular work. Firm has option to deposit earnest money in the form of Bank guarantee in BSNL's attached format and manner.

5) PROGRAMME FOR EXECUTION

The firm shall supply detailed programme to Engineer in charge for execution of contract within 15 days of award of work. The programme shall contain the details about submission of drawing, supply of materials. The tentative dates for installation, testing, commissioning and A/T of E/A set / AC unit / IBMS shall also be submitted.

6) STORES AND SAFETY

All the stores and materials required for the satisfactory completion of the work shall be arranged at work site by the contractor from his own source. Space for storing the same materials may be provided on request from the contractor. However safe custody of the material stores at site will be responsibility of the contractor.

7) CO-ORDINATION AT SITE

At the site of work more than one agency may be working. Full cooperation shall be extended to other agencies during the progress of work. Further work shall be carried out in such a way so that it may not cause abnormal noise and hindrance to the officers of the BSNL engaged in erection as well as to normal routine work.

8). COMPLETION DRAWINGS

The firm shall supply three sets of drawings/documents after completion of the work but before the proposed date of completion of work.

i) EA Set:

- Schematic diagram of control wiring.
- Operation and maintenance manual of Engine & Alternator with
 - Maintenance recommendations & procedures.
 - Maintenance intervals.
 - Generator running hours.
 - Logbooks.

ii) AC Unit:

- (a) The contractor on completion of the work shall submit three sets of following drawings.
- (b) Plant installation drawing giving complete details of the entire equipment including foundations.
- (c) Electrical drawings showing cable sizes, equipment capacity, control components and control outlet.
- (d) Schematic control drawing giving detailed sequence of operation and notes to explain the operation of the control circuit.
- (e) Piping drawing showing all pipes size, valves and fittings.
- (f) Three sets of service manuals of air conditioning plant including salient features of the plant.

iii) For IBMS: -

a) Following drawings shall be submitted by the contractor after physical completion of the work but before the proposed date of acceptance testing.

- i. Three sets of Equipment installation drawing giving complete details of the entire equipment.
- ii. Three sets of Schematic drawings giving detailed sequence or operation and notes to explain the operation or the control circuit.

b. One set of technical and service manuals.

9. GUARANTEE & DEFECT LIABILITY

(a) The Guarantee shall be valid for a period of **twenty four months** from the date of completion. However the bidder has to maintain the entire system for a period of 7 years. The contractor shall guarantee that all equipments shall be free from any defect due to the defective materials and bad workmanship and that equipment shall work satisfactory and that the performance and the efficiencies of the equipments shall be not less than guaranteed values. Any parts found defective during the guarantee period shall be replaced without any charge whatsoever. The services of the contractor's personnel, if requisitioned during this period for such work, shall be made available free of any cost to the department.

(b) The contractor shall depute his representative to the site within **24hrs** of notification of defects by the department.

(c) A joint inspection report will be made by the departmental representative and representative of the firm regarding the nature of defects and remedial action required in time schedule for the rectification/remedial action.

(d) In case the contractor fails to depute his representative within **24hrs** of notification of defect(s) or fails to cause remedial action within a reasonable time as decided in the joint inspection, the Department may proceed to do so at the contractors' risk and expenses without prejudice to any other rights.

(e) Supply of consumables like refrigerant gas due to leakage, oil etc., shall be the responsibility of the firm.

(f) The following aspects are, however, not covered under the purview of guarantee:-

- i) Consequential losses and damages.

10. CHANGES IN SPECIFICATIONS

The BSNL reserves the right to make changes in respect of specifications of work if in its opinion same is found necessary. However such alterations shall be made after mutual discussions and agreement between the BSNL and the contractor. Any price implications in this regard shall be mutually discussed and agreed upon in terms of clause 12 of EW 8 form. The BSNL as matter of principle will not permit modifications by the contractor in design /specifications of any document /material. However the same can be agreed upon by the BSNL under exceptional circumstances where

- a) The same is necessitated due to non-availability of material / components of certain specifications / make.

Or

- b) Such alterations constitute an improvement in the opinion of BSNL.

Prior approval is necessary before undertaking any alteration/modification in the specifications of the equipment.

11. Packing, Forwarding, Storage at site.

Before dispatch to the site, the equipment /components/materials shall be properly packed so as to afford protection against transit damages and damage against storage in open areas either at transporters premises or at work site. Special care shall be taken in respect of sensitive items like heat transfer surface of cooling coils, air-cooled condenser etc. When storage in open areas is inevitable, proper water proof covering shall be provided to protect damages on account of rain water etc. However damaged items should be replaced as per the directions of the Engineer –in-charge.

12 Inspection Of Site & Contract Documents

For the purpose of inspection of site and relevant documents, the contractor is required to contact E.E.(Elect) concerned who shall give reasonable facilities for inspection of the same. The contractor shall inspect and examine the site and its surroundings and shall satisfy himself commencement of work as to the form and nature of the site, the quantities and nature of work, materials necessary for completion of the works, the means of access to the site, the accommodation he may require and in general shall himself obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect his work. No extra charges consequent on any misunderstanding or otherwise shall be allowed.

13) I.S. Standards:

The entire system shall conform to relevant BIS including safety standards as amended up to date. Where IS standards are not available the British standard(s) shall be followed. In case of conflict, the requirements of these specifications shall be given over-riding priority. The electrical and earthing work shall be carried out as per CPWD specifications for electrical works (internal) and electrical works (external) as amended up to date. A list of relevant standards, approved makes of equipment is furnished and forms part of the tender document. The Air Conditioning equipment and installation shall conform to various standards amended up to date wherever applicable.

14) SUFFICIENCY OF TENDER

The contractor shall be deemed to have satisfied himself before entering into the contract as the correctness and sufficiency of his offer for the work and of the rates and prices quoted in the schedule of works and items/quantities or in bills of quantities for the contract period. These rates and prices shall except as otherwise provided, cover all his obligations under the contract and all matters and things necessary for proper completion of works.

No additional conditions shall be stipulated by the tenderer.

15) Test Certificate

The firm shall submit following test certificates on supply of the material at site:

- Technical catalogues of Engine & alternator
- Manufacturer's Original test certificates for Engine, Alternator, E/A set, control panel
- Routine test certificates for individual items.

Department may test each unit at factory without any extra payment.

16) Inspection & Testing of EA set:

The EA sets shall be tested at factory for routine /normal load before dispatch to site(s) and the necessary test certificate shall be furnished along with the EA set. The EA sets shall be offered for physical Inspection/Testing to BSNL team at factory before despatch. However BSNL reserves the right to waive off the inspection.

17. Testing of HPAC unit:

- (i) Routine tests certificate for package unit shall be furnished along with supply of equipment.

- (ii) The units supplied should be the same as approved by BSNL, and the bill of material should be same as approved by BSNL.
- (iii) For Micro-vee filters and motors etc only routine test certificate from manufacturers shall be furnished.
- (iv) The contractor shall operate, test and adjust all air conditioning system units, fans, motors, all air handling appliances provided in connection with this installation and shall make all necessary adjustments of all regulating damper for the purpose of equalization of the flow of air to each and every outlet and inlet.
- (v) A carefully recorded detailed record of the results of these adjustments shall be furnished by the contractor for approval of the Engineer-in-Charge.
- (vi) Following tests at site shall be conducted after completion of the plant.

(A) TRIAL RUN

After installation is complete physically and all adjustments as listed above are carried out, the plant shall be subjected to trial run. The trial run is to be conducted for a period of **7days** subject to minimum running of **120hours** in the presence of representative of the Department. During this test performance, all the equipment and control system shall be checked. Inside conditions shall also be recorded in this trial run. A record of this test shall be submitted to the Engineer-in-Charge who shall arrange for capacity testing thereafter.

(B) INITIAL ACCEPTANCE TESTING

After completion of trial run, the plant shall be subjected to initial acceptance testing as per standards of the department. This testing shall be conducted jointly by the representative of the Engineer-in-Charge, T&D circle and user. A list of all defects and discrepancies shall be prepared during the test.

(C) FINAL PERFORMANCE TEST CUM SEASONAL TESTS

This test shall be conducted jointly by the representative of the Engineer-in-Charge, T&D Circle and user as per standards of the Department. The test shall be conducted normally between **1st April to 30th September**.

- (D) The Department shall have the right to operate all equipment in operating Condition whether or not such equipment has been accepted as complete and satisfactory. Repairs and alteration shall be made at such time as directed by the Engineer-in-charge.

(E) In special circumstances, the department may have to use the plant to air Condition some areas even before the completion of whole work. The firm shall cooperate fully under such circumstances.

- (F) Wherever relaxations are required, these should be obtained from Superintending Engineer (Electrical) well before the final performance-cum-capacity test.

- (G) All test equipment, the operating personnel, oil and refrigerant required for Testing shall be supplied by the contractor.

18. TESTING OF IBMS SYSTEM AT SITE: -

a) TRIAL RUN

After installation is complete physically, the System shall be subjected to trial run. The trial run of all the system in the tender is to be conducted in the presence of representative of the BSNL. During this test performance of all the equipments and systems shall be checked as per NIT specifications. A record of this test shall be submitted to the Engineer-in-Charge who shall arrange for Acceptance Testing thereafter.

b) ACCEPTANCE TESTING.

After completion of trial run the System shall be subjected to acceptance testing as per standards of the BSNL. This testing shall be conducted jointly as per departmental standards in the presence of departmental officers. A list of all defects and discrepancies shall be prepared during the test, which shall be rectified by the agency within a period of 15 days.

19. REJECTION OF DEFECTIVE PLANTS If the completed plant or any portion thereof, before it is taken over, be found defective or fails to fulfill the intent of the specifications, the contractor shall on receipt of a written notice from the Engineer-in –Charge, forthwith make good the defective plant.

- (a) Should the contractor fail to rectify the defects and or make good the defective plant within a stipulated time mentioned in the written notice or replace the plant at no extra cost, department

- may make good, reject and or replace at the risk and expenses of the contractor, the whole or any portion of the plant which is defective or fails to fulfill the requirements of the contract.
- (b) All equipment shall be tested as per tender specifications. Where test results indicate capacity less than specified in the equipment schedule, the contractor shall pay to the Department pro-rata compensation against each item.

20. Set off clause: Only those payments due to Government against a particular contract agreement shall be deducted from the bills of the same work and not deductible from other works.

21. Inspection at Contractor's Premises

The Department's authorized representative shall have full powers to inspect drawings of any portion of the work or examine the materials and workmanship of the plant at the contractor's works or at any other place from where material of equipment is obtained. Acceptance of any materials or equipment shall in no way, relieve the contractor of his responsibility for meeting the requirement of the specifications but shall have to be replaced free of cost by the contractor in case the equipment of work is found defective or of inferior quality.

22. The Department / BSNL also reserve the right to enforce curtailment in the quantities of work, if the contractor defaults in regard to works contract execution.

23. TRAINING OF BSNL/DOT PERSONNEL:

The contractor shall arrange to impart the training to the BSNL/DOT personnel on the following aspects prior to provisional takeover:-

a. AC Plant:

- (a) Operation of Plant.
- (b) Gas charging and pumping down of the system.
- (c) Adjustments of settings for microprocessor controls and protection devices.
- (d) Preventive maintenance.

b) IBMS:

- a) Operation of individual systems
- b) Fault diagnoses and rectification.
- c) Operator training on IBMS software.
- d) Preventive maintenance.

24. MISCELLANEOUS

- The workers engaged by firm should maintain proper discipline and good behaviour with occupants. The firm shall not depute such workers at the site, whose behaviour is found improper.
- The agency will provide the workers with necessary Tools & Plant, Testing and safety equipments.
- Agency has to observe all the labour rules and regulations in force and indemnify BSNL against any claims whatsoever, either from this clause or any other clause in the contract.
- Firm shall issue ID card to their workforce whenever they enter premises for bonafide work. Nobody shall be allowed entry without work and nobody will be allowed overnight stay without work.
- Dismantled materials shall be returned to the BSNL except those items for which the replacement is supplied by the agency.
- The contractor has to keep all the units, neat and clean to avoid any accident and / or fire hazards.
- Firm should have round the clock contact telephone number. In case of Emergency, contractor and authorized engineer supervisor shall be available at site on short notice from engineer-in-charge and make all efforts to make the situation normal at the earliest.
- Firm is responsible to keep workable spares and consumables for due performance of the contract. For critical spare parts, firm shall have arrangement with dealers for prompt supply.

GENERAL CONDITIONS OF CONTRACT FOR OPERATION & MAINTENANCE

1.0 Scope of Operation & Maintenance

- 1.1 The Operation Contract for individual stations shall start immediately after the commissioning of any of a particular Service viz., DG set, Package/ Split AC units, IBMS, Electrical Installation, Substation, Power plant, Battery, Inverter etc., or as per site requirement. The contractor shall carry out the Operation for seven years. The contractor shall carry out the operation of any additional services during the contract period in a particular station without extra cost.
- 1.2 Electrical Maintenance of the Technical/ Administrative/ Residential Building(s) as applicable in this contract means that all Electro Mechanical Services in the schedule of work are kept in healthy clean and working condition. Specific details of maintenance activities required with regard to each service are detailed under sections pertaining to that service.
- 1.3 Watch and ward of the installation under Operation & Maintenance shall be the responsibility of the contractor during contract period.
- 1.4 After the ongoing contract period is over the installation has to be duly handed over to the new agency along with the record of test results of equipments & associated items like oil etc. under supervision of SDE (E)/JTO (E) in charge. However installation is to be taken over by the new agency for O & M within 15 days of award of work.

2.0 METHODOLOGY

- 2.1 It is presumed that contractor will provide qualified staff at the site to perform routine maintenance and operational functions. For optimum utilization one person can be responsible for number of services. Also O&M staff has to be available round the clock, round the year even holidays.
- 2.2 In case of faults beyond the capacity of the staff provided as above, contractor shall immediately provide extra-specialized work force so as to attend to the fault in minimum reasonable time without any extra cost.
- 2.3 At the start of work, firm shall prepare an inventory of all Electro-Mechanical services jointly with J.T.O (E)/SDE (E), concerned.
- 2.4 **Before start of the work complete equipments/services under scope of maintenance shall be thoroughly examined by the agency jointly with SDE(E)/JTO(E) concerned. All Defects/discrepancies should be brought to the notice of the SDE(E)/JTO(E) in writing within first 15 days of award of work. Defects/discrepancies agreed upon by BSNL shall be got attended by the outgoing agency before handing over the site to the new agency. If the outgoing agency fails to correct the defects/discrepancies within 15 days, the same shall be got done by BSNL at the risk and cost of the outgoing agency.**

However any defect pointed out beyond 15 days, the agency is responsible for attending to the defects/discrepancies.

- 2.5 A complaint Register as per **Annexure- III** shall be kept up-to-date at site by the firm and the same shall be available for checking & verification.
- 2.6 Firm shall maintain logbooks/ registers as per the proforma decided by the engineer in charge
- 2.7 At the start of each month, the firm in consultation with the SDE (E) concerned shall prepare a Program for preventive maintenance to be carried out during the month. The actual maintenance carried out shall be recorded in **Annexure-IV** at the end of each month.
- 2.8 If during the period of contract, any of the electromechanical services are added/ altered, comprehensive maintenance of the same shall be done by the firm, the rates will be regularized **as per Clause -12 of EW 8**. However in case of deletion of any major services similar recovery shall be made from the bill of the contractor. Shifting of existing arrangement to another location is not within the scope of the contractor.
- 2.9 The details in the section are approximate to give an idea of services to be maintained. Any variation on higher or lower side shall be deemed to be included. However the tenderers are advised to inspect the site (s) and make them acquainted before quoting.

3.0 QUALIFICATION

- 3.1 Minimum staff required.
 - To perform round the clock operation and minimum maintenance, Semi-Skilled labours should be available in three shifts on all working days including Sundays and holidays.
 - One Highly Skilled labour stationed at Port Blair should be available on all six working days

(excluding Sundays & holidays) to manage all services and staff provided in all seven Cable Landing Stations in Andaman & Nicobar Islands and coordinate with different agencies,

3.2 Qualification/ experience of staff:

Persons attending special maintenance/ repair work such as on HT Side should possess certificate of competency issued/ recognized by State Government for carrying out such tasks.

(a) Qualification of Highly Skilled Workman:

Must have a minimum qualification of a Degree in Electrical or Electrical & Electronics Engineering or Mechanical Engineering with atleast two years of experience in works relevant to the contract.

(b) Qualification of Semi-Skilled Workmen:

Must have adequate knowledge of works like Electrical wiring or Electrical maintenance or Switch board operation or AC Plant operation or DG set operation or Fire fighting system having hands-on experience of atleast 6 years in the relevant field. The firm shall remove such workers from the site in case he is found to be not fit for the job. Engineer in Charge's decision in this matter shall be final. Since the firm will be doing the maintenance of critical services like Sub-station, Standby power etc, responsible & trained person(s) placed at site, should be able to take initial steps under emergency situation.

3.3 During the change of charge between shifts the workers shall handover/ takeover in the staff duty logbook as given in **Annexure- V**

4.0 COMMERCIAL

- 4.1 The workers engaged by firm should maintain proper punctuality and discipline.
- 4.2 The workers should maintain good customer relations and desist from doing anything which tarnishes the image of BSNL. The firm shall remove such workers from the site whose behavior is found improper in this regard. Engineer in Charge's decision in this matter shall be final.
- 4.3 The contractor shall provide each of his workmen with 2 Nos. of uniform shirts or T-shirts every year with a unique marking as approved by the Engineer-in charge and one pair of safety shoes. The workmen shall be on duty/ service hours in their uniform T-shirts along with the safety shoes only. The employees of the contractor shall always display their photo ID cards duly issued and signed by the contractor while on duty in the premises.
- 4.4 Except for reasons beyond the control of the Contractor, the staff deployed should not be changed frequently so as to avoid disruption/ dis-continuity in services.
- 4.5 Further, such staff has no right to claim employment in BSNL.
- 4.6 Any damage to the installation (s) / building during the maintenance period due to the carelessness on the part of maintenance staff shall be the responsibility of firm & be replaced / rectified without any extra cost.
- 4.7 Any accident or damage during maintenance / operation will be the responsibility of agency & BSNL will not entertain any claim, compensation, penalty etc. on this account or on account of non-observance of law to the work.
- 4.8 The agency has to supply the details of all the workers likely to be engaged by it as per **Annexure-IV**, before start of the work and get it approved by the Executive Engineer.
- 4.9 The BSNL reserves the right to carry out any work at the risk and cost of the agency, if the agency fails to perform any duty as per the contract.
- 4.10 The tenderer must obtain himself at his own expense all the information necessary for the purpose of execution, before tendering.
- 4.11 The agency should inspect the site & acquaint itself with all the local condition, means of access to work & nature of work etc. No claim shall be entertained on this account.
- 4.12 The contractor shall not sublet the work or part thereof. However, services of specialized agencies for specified work can be obtained.
- 4.13 The location of the seats of maintenance staff shall be decided by BSNL. Any furniture or storage cabinets if required shall be provided by the contractor. However, water & electricity shall be made available by the BSNL, free of cost.
- 4.14 The contractor has to keep all the Electro mechanical equipment at site neat and clean to avoid any accident and fire hazard.
- 4.15 Firm should have the round the clock contact number. In case of emergency contractor and authorized engineer shall be available at the site on short notice from engineer-in-charge and make efforts to take situation to normal at the earliest.
- 4.16 Once the installation is handed over to the contractor, it is the responsibility of the contractor to attend whatever defects / damages arising after the date of handing over i/c replacement of defective components etc.
- 4.17 After the contract period is over, the installation has to be duly handed over to the department with all the services in good, healthy, neat, working condition. The contractor shall be responsible for any

discrepancies Vis-a-vis, the status of installation at the start of work plus any modification carried out during the currency of the contract.

- 4.18 The proforma of Log sheets for recording the schedule Maintenance can be obtained from the Engineer-in-charge.**
- 4.19 BSNL will not be responsible for any lapse on the part of the Contractor in enforcing of provisions of any Labour Acts / Laws, viz., Payment of Wages Act, 1936, Employees Provident Fund & Miscellaneous Provisions Act 1952, Minimum Wages Act 1948, Contract Labour (R&A) Act 1970, Employer's Liability Act 1938, Workmen Compensation Act 1923, Industrial Disputes Act 1947, Employess State Insurance Act 1948, Child Labour (P&R) Act 1986, Maternity Benefit Act 1961, Payment of Bonus Act, 1965 or any other law relating thereto and rules made there under from time to time in respect of any person employed by it in carrying out the contract. It will be the contractor's responsibility to abide by all Statutory Laws/ Regulations applicable to the contract labour engaged by him on the Contract Work. It is expressly understood that the manpower deployed by the contractor are not on the rolls of BSNL and no legal relationship of whatsoever subsists between BSNL and such personnel employed by the contractor.
- 4.20 Wages of the staff deployed should not be less than as that mentioned in Minimum Wage Act applicable to the respective category/ experience, as on date. All statutory dues towards ESI, PF etc. as applicable should also be met by the contractor and maintenance of records should be strictly adhered to. Accordingly, the workers may be issued with EPF contribution card and ESI Pehchan Card. BSNL shall not be liable for any default/ penalty paid by contractor in this regard.
- 4.21 The payment of wages to workers shall be made before 7th of the succeeding month only through account payee cheque in the presence of authorized representative of BSNL or online to the employees' bank account.
- 4.22 The firm shall also coordinate with the JTO (E) / SDE (E) for carrying out energy audit/capacity test at site with respect to all Electromechanical Services whenever required.
- 4.23 The Firm/Contractor will provide the workers with necessary Testing and Safety Equipment.
- 4.24 BSNL is having the right to curtail the quantity according to the requirement.

5.0 MATERIALS AND TOOLS & PLANTS

5.1 Material

- 5.1.1. The contract is for the comprehensive onsite maintenance inclusive of all kinds of Routine (preventive) & Breakdown (corrective) Maintenance and will be inclusive of all materials ,consumables, spare-parts, labour, Tools & Plants, arranging testing instruments, transportation, octroi, insurance etc. unless specified otherwise. The released spares will be the property of contractor shall make his own arrangement for further disposal.
- Only replacement of major equipments which is required to be replaced as a whole after due scrapping shall be the responsibility of the BSNL. Till such time firm has to maintain the life expired equipment.
- 5.1.2 The faulty parts of the equipments shall be replaced with new one of the Original Equipment Manufacturer (OEM) make only. In case a particular item has become obsolete or changed its brand name due to a strategic partnership/ merger with another firm or the product is out of the manufacturing range etc. the same shall be brought to the notice of Engineer-in-charge. The alternate makes can be approved by the Engineer-in-charge and the proposed item should be of equivalent or higher configuration which is compatible with the system
- 5.1.3 The replacement of material shall be with the same rating and make as that of the original. The firm may also replace an item with energy efficient item wherever the same is available, upon intimation to JTO (E). However, in case of non-availability of a particular make, Engineer-in-charge will approve the alternate make.
- 5.1.4 Dismantled and unserviceable items for which a replacement is supplied shall be removed from the site under intimation to the JTO (E).
- 5.1.5 All materials shall be of approved make, model and capacity and shall be matching to the system.
- 5.1.6 Supplier Invoice/ Bill / Purchase particulars shall be produced in case of all major items such as Pumps, MCCBs, ACBs etc. as a proof of genuineness.
- 5.1.7 The contractor shall maintain minimum inventories of items/ spares as decided by the Engineer in charge the quantity shall be replenished on a monthly basis. The inventory shall be from approved makes only.

5.2 TOOLS & PLANTS: All tools and plants, testing & safety equipments required for carrying out various tasks relevant to operation and maintenance have to be arranged by firm at its own cost.

- i. Insulated Screw Driver(s)
- ii. Insulated Cutting Plier(s)
- iii. Torch Light
- iv. Waste Cloth/ Cotton waste/ insulation tapes

- v. Drilling Machine
- vi. Ring/ Double end Spanner Set
- vii. Insulated Hand gloves
- viii. Test Lamps/ Line tester
- ix. Petroleum Jelly/ Distilled water
- x. Multimeter
- xi. Tong Tester
- xii. Hammer
- xiii. Sling Psychrometer.

5.2.2 In addition to the above, the firm shall generally possess the following T & P at their maintenance office according to the services covered under the scope.

- i. Crimping tool.
- ii. HT & LT meggar.
- iii. Earth tester
- iv. Pipe wrench set.
- v. Blower for cleaning.

5.2.3 The above list is general and any other requirements for smooth O&M of installation shall be contractor's responsibility and he shall not claim anything extra on this account.

6.0.PENALTY CLAUSE:

6.1 Any accident or damage during maintenance /operation will be the responsibility of the agency & BSNL will not entertain any claim, compensation, penalty etc on this account or on account of non observance of law to his work

6.2 If the agency fails to rectify any fault within reasonable time, the BSNL reserves the right to carry out any work at the risk and cost of the agency. In case the fault is of emergency nature which may affect the normal functioning of services and the firm fails to take immediate necessary action, the work shall be carried out at the risk and cost of the firm without giving any notice. The decision of EE(E) shall be final.

6.3 The mechanic/ technician should attend the site immediately and minor faults may be cleared then and there.

6.4 However, in case of certain non-stocked spare parts not available locally or to be imported or for works beyond the control of the contractor, he can give technical justification and ask for extra time for approval of Engineer in charge who will have power to grant such extra time depending upon the correct technical justification and a reasonability of time scheduling for such extension.

6.5 The contractor shall ensure to provide manpower in all shifts or replace with a standby in case any of the regular staff deployed is absent or on authorized leave. If the worker(s) remain absent from their duty and/ or if the contractor fails to provide a suitable substitute for a shift, then a penalty of Rs. 1600/- per Highly Skilled Labour per shift and Rs.1200/- per Semi-skilled Labour per shift shall be imposed.

In addition to the various penalty provisions mentioned in the elsewhere in the tender document, the following additional conditions shall also be applied.

Sl No	ACTIVITY	RECOVERY ON EACH DEFAULT	ACTION FOR RESTORATION BY CONTRACTOR/DEPTT.
	(A) E/A SET		
1	Main E/A set faulty	Rs. 2000/- per day after 3 days.	Engineer-in -Charge shall make arrangement at the risk and cost of the contractor without any further notice.

2	Main and standby by E/A set faulty.	Rs. 1000/- per hr after 4 hrs from breakdown.	Contractor will also arrange required capacity of E/A set within 4 hours to meet the load of exchange. Failing which Engineer-in -Charge shall make such arrangements at the risk & cost of contractor without any further notice.
	(B) SUB- STATION		
3	If EB supply is not available through main source.	Rs. 2000/- per day after 48 Hrs.	Engineer-in -Charge shall take necessary action after 48 Hrs.
4	If EB supply is not available through main and standby source.	The contractor shall make necessary arrangement with in 4 Hrs from the alternative arrangement failing which recovery for the corresponding amount for running the DG set shall be recovered.	Beyond 4 hrs Engineer-in -Charge shall make arrangement at the risk and cost of the contractor without any further notice.
	(C) AUTOMATIC FIRE DETECTION SYSTEM		
5	Fire Detection system faulty.	Rs. 5000/- per hrs beyond 12 hrs	Engineer-in -Charge shall make arrangement at the risk and cost of the contractor without any further notice.
6	Fire extinguishers	Recovery of Rs.500/- per cylinder per day.	Engineer-in -Charge shall make arrangement at the risk and cost of the contractor without any further notice.
	(D) Ductable A.C.'s /SPLIT A.C.'s/ PACKAGE A.C.'s		
7	Ductable / Inverter AC unit	Rs. 1000/- per day beyond 24 hrs.	Engineer-in-Charge shall rectify the defect at the risk and cost of agency without further notice.
8	Package AC units	Rs. 2000/- per day beyond 24 hrs for standby AC unit. Rs 5000/- per day for subsequent package units.	In case of failure to attend fault and /or doesn't make alternative arrangements, the same shall be done by Engineer-in Charge at the risk & cost of contractor without further notice.
9.	BMS / Access control system / CCTV/ Fire suppression / Aspiration smoke detection system / water leak detection / Rodent repellent system faulty	Rs. 1000/- per day beyond 24 hrs.	Engineer-in-Charge shall rectify the defect at the risk and cost of agency without further notice.
10	Any Faults other than specified above shall be cleared within 48 hours. In case the contractor fails to rectify within the specified time, then a penalty of Rs. 100/- per day will be levied for each fault.		
	(G) GENERAL DESCRIPTION		
1	Safe custody of all documents will be responsibility of the firm. If any officer takes any document. He will give the acknowledgement with date.		
2	The agency has to take action as desired within permissible time period and in case of any delay because of the gravity or seriousness of fault, necessary evidence will be available.		
3	If the complaint/fault occurs in forenoon, the same day will be counted and likewise if complaint attended or repair done afternoon, that day will also be counted for determining the penalty.		

4	Fault referred above in any equipment/electromechanical services includes any defect, shortcoming, keeping the equipment in un cleaned condition, non - existence of any component pertaining to metering, protection system, component safety, controls, covers, grills, knobs and other allied parts .This is in addition to any fault resulting in stoppage/complete or partial failure of equipment or feeder.
5	Any damage, spoilage, rusting of the material and sheet metal parts or other parts etc. etc. is to be replaced/repared by the agency.
6	In case of non-availability of the similar material/component which is faulty or damaged etc., necessary alternative arrangement by means of special fabrication arrangement keeping in view the aesthetics of same shall be made by the agency. Replacement of the fittings i.e. compound lights, gate lights, indoor fittings, special fittings shall be done in case of failure to make alternative arrangement. Decision of Engineer-in-Charge shall be final in this regard.

POWER AVAILABILITY / SERVICE ASSURANCE:

Apart from the penalties mentioned, in case if the Cable Landing Station equipment is switched OFF due to fault or non-availability of any of the services under Part-A like EA set / Power plant / Battery / Invertor / Air Conditioning etc., and under Part-B like Power plant / Battery / Invertor etc., penalty will be imposed as follows:

- (1) The successful bidder should maintain 99.9% uptime for the power availability for the satisfactory operations of the equipment for that Cable Landing Stations.
- (2) Uptime percentage shall be calculated on quarterly basis as $(\text{Total Time} - \text{Down Time}) \div \text{Total Time} \times 100\%$
- (3) Appropriate penalties shall be imposed from the quarterly payment if the required target level is not maintained as mentioned below:
- (4) The downtime will be counted from the time leading to switching OFF CLS equipment till its restoration, either recorded manually or electronically and which is periodically reviewed to the satisfaction of users/ Engineer-in-Charge.
- (5) However, this penalty shall not be applicable in case of problems arising out of damages not attributable to the contractor but arise due to fire, riots, earthquakes, storm and any other such natural calamities.

Sl.No.	Service	Target	Penalty (To be measured on Quarterly basis)
1	Power availability to Equipments of CLS	99.9% uptime	> OR = to 99.9% - Nil
			< 99. 9% and up to 99.8 % 0.2% of the Quarterly bill for AMC of all components (under Part-A and Part-B) + Operation cost for that station.
			< 99. 8% and up to 99.7 % 0.4% of the Quarterly bill for AMC of all components (under Part-A and Part-B) + Operation cost for that station.
			< 99. 7% and up to 99.6 % 0.6% of the Quarterly bill for AMC of all components (under Part-A and Part-B) + Operation cost for that station .
			< 99. 6% and up to 99.5 % 0.8% of the Quarterly bill for AMC of all components (under Part-A and Part-B) + Operation cost for that station .
			< 99. 5% and up to 99.4 % 1% of the Quarterly bill for AMC of all components (under Part-A and Part-B) + Operation cost for that station .
			< 99. 4% and up to 99.3%

			2% of the Quarterly bill for AMC of all components (under Part-A and Part-B) + Operation cost for that station .
			< 99. 3% and up to 99.2% 4% of the Quarterly bill for AMC of all components (under Part-A and Part-B) + Operation cost for that station .
			< 99. 2% and up to 99.1% 6% of the Quarterly bill for AMC of all components (under Part-A and Part-B) + Operation cost for that station .
			< 99. 1% and up to 99.0% 8% of the Quarterly bill for AMC of all components (under Part-A and Part-B) + Operation cost for that station .

Note :- Below 99 % the work of the contractor shall be considered as non performing and Engineer – In- charge can proceed for forfeiture of BG.

7.0. CURRENCY OF CONTRACT

- 7.1 The currency of contract shall be 89 months. (3+2+84)(supply + installation and commissioning + Comp.AMC and operation + observation period)
- 7.2 The BSNL reserves the right to terminate the contract by giving show cause notice of one-month duration at any time during the currency of the contract.

8.0. Method of payment for Operation & AMC

- 8.1 Quarterly payment shall be made after completion of satisfactory Operation & general maintenance period.
- 8.2. With each bill, monthly certificates as per **Annexure-VII** should be enclosed. This certificate has to be countersigned by JTO(E)/ SDE (E).

9.0. IMPORTANT NOTE: BSNL reserves the right to make supplementary agreement(s) either for Chennai or for one or two or more Islands separately or services separately to monitor quality, speeding up of work, and facilitate timely payment. In such a scenario BSNL will ask for proportionate performance Bank Guarantee for the supplementary agreement(s) separately. Similarly Part of services shall be monitored and executed by various offices of BSNL under Sr. CE(E) / CGM-STP / CGM A&N either collectively or separately or any other office as decided by the competent authority.

MAINTENANCE SCHEDULE TO BE FOLLOWED

OPERATION CONTRACT

Part – I : Scope of Operation:

1. To perform round the clock operation and monitoring of all Electro Mechanical items that may include broadly the following services as applicable to the respective premises/ building:
 - (a) EA set(s)
 - (b) Package / Split Air conditioners
 - (c) Integrated Building management system comprising of Access Control system, Closed Circuit Television, Addressable Fire Alarm System, Fire Suppression System, Aspiration Smoke Detection System, Water Leak Detection System and Rodent Repellant System.
 - (d) Electrical Installation that includes internal electrification, Pump(s), Lighting, LT panels and compound lights.
 - (e) Indoor Transformer Substation.
 - (f) Power plant, Battery & Inverter/UPS.
 - (g) Any additional services as per site requirement.
2. Recording/ maintaining all related log books, performing daily checks, the minimum routine/ preventive maintenance, acknowledging alarms/ faults, taking suitable remedial actions of minor in nature and reporting of faults to the authorized AMC firm/ Officers-in-charge.

Part – II : Tasks to be performed within first 30 days.

1. The agency shall familiarize with the installation available in the premises/ building and inspect all aspects of the complete system(s) to be operated.
2. All format of the log books required for the operation shall be obtained from the Engineer in charge and opened.

COMPREHENSIVE MAINTENANCE CONTRACT

Sub Section - I (Engine Alternator Sets)

Part – I : Scope of Maintenance,

1. Ensuring that the EA set(s), AMF panel along with all its accessories and the acoustic enclosure are well maintained in healthy working condition and any fault arising in these is attended promptly.
2. Performing daily checks as per manufacturer's recommendations.
3. Maintaining EA log book and diesel consumption registers
4. Ensuring availability of adequate diesel for engine operation. The cost of diesel will be paid on the basis of KWh generated as detailed below: The cost for unit generation by EA set has been arrived based on the Specific Fuel consumption at 50% load stipulated by the manufacturer. However, this may be modified every six months, if necessary, by Engineer-in-charge by conducting test of the engine at working load of the site. However if any load is added or removed, the firm shall

bring it to the knowledge of Engineer-in-Charge and shall be re-calculated within one month time.

Sl. No	Name of station	Cost per unit (KWh) generated	Diesel price per litre
1	R K Mutt Road, Chennai	₹ 24.21	₹ 70.54
2	Hut Bay	₹ 21.87	₹ 62.15
3	Have Lock	₹ 21.87	₹ 62.15
4	Long Island	₹ 21.87	₹ 62.15
5	Kamorta	₹ 21.87	₹ 62.15
6	Car Nicobar	₹ 21.87	₹ 62.15
7	Rangat	₹ 21.80	₹ 62.15
8	Campbell Bay	₹ 21.80	₹ 62.15
9	Port Blair	₹ 21.33	₹ 62.15

Due to the variation of diesel price, the unit rate shall be reviewed considering the average sale price of diesel on 8th, 18th & 28th of every month and paid accordingly or any other method prescribed by the Engineer in Charge.

5. Periodical checks/ servicing as stated in Part-III

Part – II : Tasks to be performed within first 30 days.

1. Familiarize with the EA Set(s) and their responsibility in consultation with Maintenance-in-charge.
2. Inspect the set(s) for proper functioning and healthiness. Any shortcoming noticed should be recorded and brought to the notice of Engineer-in-charge.

Part – III : Maintenance schedule to be followed.

1. Periodical servicing of EA set(s) like A/ B/ C/ D checks at equal intervals on the basis of run hours or at the fixed time schedule complete as per the recommendations of the OEM including all material with the exceptions of : (a) Replacement of complete set of Engine, Alternator, Canopy and AMF control panel. (b) Top overhaul and Major overhaul respectively after 7000 and 10000 hours of run (or as recommended by the manufacturer). However, the responsibility of arranging this service with the dealer rests with the maintenance contractor.

Sub Section –II (Package/ Split Air conditioners)

Part – I : Scope of Maintenance.

1. The Contractor shall keep all the AC units (Package/ Split) complete along with their accessories and electrical connections/ switchgears in healthy working condition
2. The contractor shall attend minor faults promptly so as to bring the units to satisfactory working condition and service report shall be submitted.

Part – II : Tasks to be performed within first 30 days.

- 1) A system shall be organized with the approval of Engineer-in-charge so that complaints can be received and attended properly.

- 2) All registers shall be opened as per proforma decided by the Engineer in charge

Part – III : Maintenance schedule to be followed.

1. Cleaning of filters and condensers – every month
2. Monthly check of controls, electrical contacts and tightening them.
3. Checking of electrical connections – quarterly.
4. Lubrication of all bearings etc. every quarter
5. Package/ Split AC shall be got serviced before the onset of summer (i/c change of compressor oil, cleaning of valves and condensers.)

Part – IV : Materials

1. All materials such as refrigerant piping, refrigerant, condenser, cooling coil, evaporator coil, fan motors, fan blades, capacitors, relays, connectors, wires, thermostats, starters, indicating lamps, HRC fuses, MCBs, metal clad plug and sockets, etc., required shall be arranged by the contractor at his own cost **except** replacement of Package/ split AC unit as a whole including main electrical panel of AC plant.
2. Wherever capacitors are replaced, it shall be of metal body type only.
3. Refrigerant lost during the operation, oil, fan belt, & filter shall be firm's responsibility.
4. The compressor replacement wherever carried out, it should be from original manufacturers with initial filling of gas and oil. The firm should furnish the original invoice & guarantee card of the new compressor replaced.
5. Proper working of thermostat of the AC units may be ensured to reduce Power consumption

Sub Section – III : INTEGRATED BUILDING MANAGEMENT SYSTEM

Part – I : Scope of Maintenance.

1. To ensure that the maintenance of Integrated Building management system comprising of Access Control system, Closed Circuit Television, Addressable Fire Alarm System, Fire Suppression System, Aspiration Smoke Detection System, Water Leak Detection System and Rodent Repellant System as included in the schedule of work are to be carried out on comprehensive basis and in healthy working condition.
2. Perform periodical check/ preventive maintenance as per Part – III.

Part – II : Tasks to be performed within first 30 days.

1. To familiarize with the whole package installed in the building, their distribution arrangement/ location and working of various equipments/ field devices/ sensors and method of responding to various alarms.
2. To inspect the complete Integrated Building Management System and all its associated constituents like Access Control system, Closed Circuit Television, Addressable Fire Alarm System, Fire Suppression System, Aspiration Smoke Detection System, Water Leak Detection System and Rodent Repellant System for any shortcoming that may come in the way of proper operation which are to be recorded and brought to the notice of Engineer in charge.
3. Finalize method of documentation, proforma of log book/ register in consultation with the Engineer in charge.

Part – III : Maintenance schedule to be followed.

1. General:
 - (a) Periodical maintenance of all shall be done as per manufacturer's recommendation.
 - (b) Cleaning of equipments of all systems
 - (c) Visual check all equipments for any physical damage, loose connection, improper alignment and take suitable remedial action
 - (d) The firm has to repair all defective parts or replace with same/ superior make at no extra cost subject to exceptions mentioned in Part-IV hereunder and submit necessary service reports. In case same make is not available, Engineer in-charge shall approve an alternate make.
2. Integrated Building Management, Access Control & CCTV:
 - (a) Periodical check and upkeep of Hardware/ Software of Operator workstations, status of all Access readers, Cameras, Monitors/ TVs, field devices, DDC, sensors etc and the communication between associated services
 - (b) Check of Archives database and making back-up copies of ACS/ CCTV etc whenever required.
3. Addressable Fire Alarm System:
 - (a) Check status of the FAS panel and its associated devices like addressable multi sensor detectors, smoke detectors, etc. and set right faults.
 - (b) Carry out periodical Fire alarm tests including check the functioning of hooters, response indicators, manual call points etc.
 - (c) Ensure healthiness of batteries of FAP for proper charge, water level and clean the terminals if required.
4. Fire Suppression System:
 - (a) Only professionally competent personnel shall be engaged for the maintenance.
 - (b) Monthly visual check of all system components such as main control/ gas release panel, cylinder pressure, actuating mechanisms, manual release/ abort switches etc. and correct all deficiencies.
 - (c) Semi-annually (i) examine all nozzles, pipes /joints / supports for corrosion/ looseness/ damage and repair or replace if necessary. (ii) Check the discharge nozzle orifice(s) to see if they are clear with no obstructions. (iii) Perform functional test of all components including nozzles.
 - i) Every six months check the quantity of liquid and pressure in the cylinder. The gas shall be replaced or refilled (i) in case there is a loss in net weight of more than 5% or a loss in pressure of more than 10%. (Since pressure varies with temperature this must be taken into account). (ii) Moll functioning of the system.
5. Aspiration Smoke detection System:
 - (a) Monthly perform functional smoke test on test mode, check, alarm and fault forwarding.
 - (b) Monthly inspection of aspiration sampling pipe for block and blow out the nozzles.
 - (c) Ensure healthiness of power supply and batteries.
 - (d) Check the functioning of Electronic hooters.
6. Water leak detection System:
 - (a) Monthly perform functional test using wet cloth on the sensing tape, check alarm and fault forwarding.
7. Examine all connections to be secure.
8. Rodent Repellant System:
 - (a) Periodically test/ ensure that the main console and transducers are in operation.

Part – IV : Materials

1. All the materials required for carrying out maintenance shall be arranged by the contractor at his own cost.

Sub Section - IV (Electrical Installation)

Part – I : Scope of Maintenance,

1. Ensuring that E.I. installation is always kept in clean, healthy working condition.
2. Attending day to day routine complaints in a prompt and satisfactory manner.
3. Ensuring that no breakdown in power supply takes place and in case it happens, to take all required steps including contacting supply co. for earliest restoration.
4. Maintaining the installation including light fitting, fans, light and power point wiring, circuit wiring, compound light, SDB, MDB , LT Cable, Sub Main wiring and Earthing complete as per the work covered by this contract or as per the inventory of items wherever applicable.
5. Carrying out minor additions and alterations ordered by Engineer-in-charge.
6. Carrying out various maintenance routines and tests as stated in Part-III
7. Maintaining registers for complaints and test results.

Part – II : Tasks to be performed within first 30 days.

1. Establish an enquiry office and organize a system with the approval of Engineer-in-charge so that complaints can be received and attended properly.
2. Measurement of the resistance of Earth Stations of EI System and checking of the continuity of earth conductor. Results to be recorded.
3. Preparing in inventory of materials to be kept at site for prompt maintenance in consultation with Engineer-in-charge. Materials for all the services to be considered for preparation of inventory.
5. General inspection of EI system to identify shortcoming. Also any other relevant aspect which may come in the way of proper maintenance should be recorded in register and also brought to the notice of Engineer-in-charge.
6. Insulation test.

Part – III : Maintenance schedule to be followed.

1. Testing of earthing system (including that lightning conductor) for earth resistance and continuity : **Six Monthly** of initial testing
2. Inspection of MB & SDB : **Every Three Months** after initial testing.
3. Insulation test of MB & SDB : **Every Year** of initial testing.
4. Periodical check of water leakage/ abnormal noise/ heating in pump(s) and arresting it.
5. Inspection of Main Board & SDBs every quarter for following :
 - a. Any loose / improper connection
 - b. Improper rating of switches / fuse (c) cleanliness.
6. Painting of Compound light poles / Pumps i/c base frame once every two years or as decided by the Engineer in charge
7. Periodical Maintenance shall be done as per Manufacturers Recommendation.

Part – IV : Materials

1. All the materials required for carrying out maintenance shall be arranged by the contractor at his own cost with the **exception** of following: (a) Replacement of complete Fans, Fittings and lamp posts (b) Replacement of cables. However, burning in the end

terminations or faults at joints, etc. are to be attended by the firm without any extra payment

Sub Section –V: (Indoor Transformer Substation)

Part – I : Scope of Maintenance.

1. To ensure that H.T. Panel, Dry type Transformer, LT panels and HT structure as well as connecting cables/ducts, constituting the substation are maintained in healthy & clean conditions
2. To monitor power factor & peak load and ensuring that necessary equipments are maintained in working conditions to avoid penalty.
3. Carrying out various maintenance routines and tests as stated in Part-III
4. To ensure continuous power supply and in case of break down take steps to ensure restoration at the earliest.

Part – II : Tasks to be performed within first 30 days.

1. To familiarize with the substation equipments such as transformers, HT panel, Main MV panel and its distribution arrangement, cable route etc.
2. Finalize method of documentation, proforma of log book/ register in consultation with the Engineer in charge.

Part – III : Maintenance schedule to be followed.

1. Check daily all the equipments installed in the Sub-station for any abnormal heating /smell /noise/ breakage.
2. Any inflammable materials like oil, broken furniture, packing etc. are stored in the sub-station. If fire hazardous material stored it has to be removed immediately.
3. Record periodically various readings of electrical parameters.
4. Check all meters including power factor and maximum demand meters to ensure that the values are within permissible limit. Ensure that the capacitor panel is in working order. Any penalty on account of power factor/ Maximum demand shall be made up by the firm.
5. Ensure that only one transformer works at a time (in case the transformer is consistently loaded below 60%). The transformers shall be loaded alternately every 10 days.
6. Testing of earthing system for earth resistance and continuity annually.
7. The electricity bill for the premises shall be borne by BSNL and will be issued in the form of Cheque or Demand Draft. However, collection of monthly electricity bills from the supply company office on the stipulated date, producing to BSNL and remitting the payment cheque/ DD at the appropriate counter shall be firm's responsibility.

Important Note: 1) The replacement of material in all services shall be with the same rating and make as that of the original. However, in case of non-availability of a particular make, the Engineer-in-charge shall approve the alternate make.

2) For the supply items which are not covered under this Tender are having one year warranty, the bidder has to maintain those systems and before starting the AMC period, they have to co-ordinate with the original vendor to complete the work.

ANNEXURE – III**COMPLAINT REGISTER****Location:**

Complaint No.	Date & Time of complaint	Floor/ Location / Wing	Complaint Lodged by	Nature of complaint reported	Time & Date of attending complaint vide service report no.	Cause of fault	Dated Signature of Firm's Representative	Dated Signature of SDE/ JTO	Remarks
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)

ANNEXURE- IV

ACTUAL PERIODICAL MAINTENANCE CARRIED OUT IN THE MONTH OF _____

Name of work:

Agreement No.....

S. no	Service	Activity as per quarterly plan	Date on which actual activity carried out	Result of the activity	Remarks

Certified that we have carried out maintenance properly as per schedule of work and as per terms and condition of the agreement and testing/ drills etc. required during the period has been performed.

Signature of Supervisor

Signature of Contractor

Counter signed by:

JTO (E)

ANNEXURE – V**STAFF DUTY LOG BOOK****Location:**

Date	Taking over details			Handing over details		Remarks
	Time	Signature	Shift	Time	Signature	

Annexure-VI

DETAILS TO BE SUPPLIED BEFORE STARTING WORK WITHIN 30 DAYS

a) The following information to be displayed in the Maintenance Section:

THE MAINTENANCE OF ALL SERVICES OF THIS BUILDING IS UNDER :			
1.	Name of the Agency		
2	Address (of maintenance office)		
	Telephone No.		
3.	Person(s) to contact in case of fault:	Name	Mobile No.
4	In case of no response the person to be contacted		
SAVE ENERGY IN THE INTEREST OF YOU, BSNL AND THE NATION			

b) Details of staff to be deputed to site: To be furnished to JTO (E) along with proof of qualification and a copy of any Govt. ID (Aadhaar card/ Passport/ PAN/ Voter's ID)

Sl.no.	Name & Address	Qualification/ Experience	Category (Unskilled/ Semiskilled/ Skilled/ Highly skilled)	To be stationed at
1				
2				
3				
4				

a) List of T&P:

b) List of Inventory:

c) Test details of the equipments taken over for maintenance and defects discrepancies noticed if any.

ANNEXURE - VII**CERTIFICATE TO BE SUBMITTED ALONG WITH EACH BILL**
(For Each Month)

Bill for the Month of :

Name of work:

Agreement No.....

1. Certified that (a) we have carried out promptly the comprehensive Maintenance of

(i) (ii) (iii) (iv)

(v)

(b) we have carried out satisfactorily round the clock/ need based operation of the following Electro-Mechanical services: (i)(ii).....

(iii) (iv) (v) (vi)

All the services have been under satisfactory working condition except the following due to the reasons mentioned against the respective item:

Sl.No	DESCRIPTION OF THE ITEM/ SERVICE	REASONS FOR NON OPERATION	PERIOD OF NON OPERATION	
			FROM	TO

2. Certified that the equipments for which the energy efficiency parameters have been prescribed were maintained within the prescribed benchmark.

3. Certified that required inventory has been replenished by us.

4. Certified that ESI contribution relating to workers have been paid.

5. Certified that EPF contribution relating to workers have been paid.

6. Wages for workers disbursed on

DATE:

SIGNATURE OF CONTRACTOR

Counter signed by:

JTO (E)

SDE (E)

LIST OF APPROVED MAKES

SNo.	Item	Makes
1	Engine	Ashok Leyland /Cummins/ Cater pillar /KOEL/ Volvo Penta / Mahindra & Mahindra (up to 200 KVA) /Escorts (up to 30 KVA)/ Eicher (up to 35 KVA)
2	Alternator(Brushless)	Crompton Greaves (AL. series) / KEC / Leroy Somer / Stamford/Jyoti Ltd
3	Battery (Lead Acid / Mntc. Free)	Amara Raja / AMCO / Farukawa / Hitachi / Exide/ Prestolite / Standard
4	HV Switchgear (Vacuum Circuit Breaker/SF6)	Biecco Lawrie / Crompton / Kirloskar / MEI / Jyoti Ltd
5	Transformer (Oil filled / Dry type) a) Above 400 KVA	ABB / Schneider Electric /Andrew Yule / Bharat Bijlee / Crompton / EMCO /Kirloskar / Siemens
	b) Up to 400 KVA	In addition to above makes, Uttam/ Patson /Rajasthan Transformer and Switchgear
6	Air Circuit Breaker	L&T/ Schneider Electric / Siemens
7	MCCB(lcs=lcu)	L&T/ Schneider Electric / Siemens
8	SDF units	L&T/ Schneider Electric / Siemens/HPL/Havells
9	Power Contactors	L&T/ Schneider Electric / Siemens/ Lakshmi(LECS)
10	Change Over Switch	HPL / Havells / H-H Elcon
11	Intelligent APFC Relay	L&T/EPCOS(Siemens)/ Schneider Electric / Neptune Ducati/Syntron/ABB
12	Bus Bar Trunking/ Sandwiched Bus Duct	Moeller/L&T/Schneider Electric/ABB/ Legrand /Zeta
13	Power Capacitors (MPP/APP)	L&T/EPCOS(Siemens)/ABB/Crompton/ Schneider Electric / Neptune Ducati
14	Digital/ KWHr meter	Schneider Electric/ AE/ Digitron / IMP/Meco / Rishabh /Universal/HPL/L&T/ABB/Yokins
15	Cold shrink HT/LT Cable Joint	Denson / 3M(M-Seal)/ Raychem
16	Rubber Matting	ISI mark
17	MCB/ Isolator /ELCB/RCCB/ Distribution Board	Crompton / Havells / Indokopp / MDS Legrand / L&T / Schneider Electric/ Siemens / Standard/ABB/HPL
18	MS/ PVC Conduit	ISI mark
19	Cable Tray	MEM/Bharti/Ratan/Slotco/Profab
20	HT/LT Cables	ISI mark
21	PVC insulated copper conductor wire	ISI mark
22	Centrifugal Pump	Amrut / BE / Beacon / Batliboi /Crompton / Jyoti / Kirloskar / KSB / Mather &platt / WASP/Grundfos
23	Submersible Pump	Crompton/Amrut / BE / Calama / Kirloskar / KSB
24	Motors	ABB/ Bharat Bijlee / Crompton Greaves / Schneider Electric / HBB / KEC / Siemens/Jyoti Ltd
25	Fresh Air Fans	GE / Khaitan/Almonard/Crompton
26	Starter	ABB / BCH / Schneider Electric / L&T / Siemens /
27	Single Phase Preventer	L&T / Minilec / Siemens / Zerotrip
28	GI/MS Pipe	ATC / ATL / BST / GSI / ITC / ITS / IIA / JST / Jindal /TTA / Tata/Zenith
29	Foot Valve	ISI mark

30	Gate Valve	Advance/Audco/Johnson Controls / Zoloto/ Annapurna / Fountain /Kirloskar / Leader / Sant / Trishul
31	Compressors	Carrier/Emerson copeland/York/Danfoss (for chillers only)
32	Resin Bonded Glass wool	Fibre Glass / Pilkington / UP Twiga
33	Expanded Polystyrene	BASF(India) Ltd.
34	Gauge	Feibig / H.Guru / Pricol
35	Controls	FLICA / Honeywell / Indfoss / Penn- Danfoss / Ranco / Ranutrol / Sporland
36	Fine Filters	Anfiltra Effluent / ARW / Athlete/ Airtake / Dyna / Kirsloskar/ Puromatic/ Purafill/ Purolator / Tenacity
37	GI Sheet	HSU Jindal / National / Nippon Denro / Sail / Tata
38	Heat Detector	Appollo / Chemtron/ Edward / Fenwal/ Hochiki / Nitton /System Sensor/ Wormald/Honeywell / Essar/Notifier/Siemens
39	Ionization Detector	Appollo / Cerebrus / Edward/ /Fenwal / Hochiki / Nitton / System Sensor /Wormald/ Honeywell / Essar/Notifier/Siemens
40	Photo Electric Smoke Detector	Appollo / Cerebrus / Edward / Fenwal/ Hochiki / Nitton / Wormald /System Sensor / Honeywell / Essar/Notifier/Siemens
41	Fire Panel (Microprocessor based)	Agni Instruments / Agni Devices/ Aruna Agencies / Carmel Sensor / Ravel Elect. / Honeywell /Essar / Notifier / Navin Systems/ Siemens
42	Sprinkler/ Hose Reel & Hose Pipe	ISI mark
43	Fire Extinguisher	ISI mark
44	Lift	OTIS, Kone, Mitsubishi , Schindler, Johnson, Thyssenkrupp Elevator(India)

NOTE:

- 1. In case of External / PMC works, the list of approved makes may be modified as per client's requirement.**
- 2. The accessories such as CT/PT/measuring instrument/relays provided by approved make in respect of Transformer/HT Panel/DG /AC Package Units as supplied by approved manufacturer along with the equipments are also acceptable in addition.**
- 3. Any additional makes may be approved by concerned PCEs/Sr CEs/CEs(Elect) for the work under his jurisdiction as already accorded vide letter no. 3-2-5/EW/VEP-1/2007 dated 05-07-2007.**

2 List of Approved makes for IBMS

Sr. No.	System	Approved Make
1	Server	DELL / HP / LENOVO/WIPRO/IBM
2	Monitor	HP, Dell, Samsung, LG
3	Integrated Building Management System	Siemens Desigo, Schneider TAC, L&T Atmos, Honeywell/ Sauter Race /Tyco
4	BMS Field Devices	Siemens Desigo, Schneider TAC, Greystone, Honeywell / Sauter Race /Tyco
5	DDC Controller	Honeywell / Schneider /Siemens /L&T Atmos / Sauter Race/Tyco
6	Network Switch	CISCO, HP, Netgear
	Room temperature Humidity sensor	Sauter Race/Tyco / Honeywell
7	Access Control Panel	Honeywell / Schneider /Siemens/ DDS/ Prowatch /Lenel /GE
8	Smart Card Reader	HID iClass
9	Biometric Finger Print Reader	HID/L1 identity/Honeywell
10	EM-LOCK For Door	EBELCO / ALGATEC /INSYIN/Faradays /BEL
11	Indoor Dome Camera	Honeywell / Axis / Bosch
12	Access Control	AXIS / Honeywell / Milestone /Prowatch/Lenel/GE
13	IP Camera	Bosch / Axis / Honeywell
14	Video Network Recorder	Bosch / Axis / Honeywell
15	Floor Mount Rack	MRS / Valrack / Netrack
16	Fire Alarm Control Panel (FACP)	Honeywell / Edwards / Bosch / Schneider/Notifier/GE
17	Addressable MultiSensor Detector	Honeywell / Edwards / Bosch / Schneider/Notifier/GE
18	Addressable Heat Detector	Honeywell / Edwards / Bosch / Schneider/Notifier/GE
19	Addressable control modules	Honeywell / Edwards / Bosch / Schneider/Notifier/GE
20	Addressable monitoring modules	Honeywell / Edwards / Bosch / Schneider/Notifier/GE
21	Manual Call Point	Honeywell / Edwards / Bosch / Schneider/Notifier/ GE
22	Electronic Hooter Cum Strobe	Honeywell / Edwards / Bosch / Schneider/Notifier/GE/System sensor
23	Fault Isolator Module	Honeywell / Edwards / Bosch / Schneider/Notifier/GE
24	Response Indicator	Agni / Ravel
25	Portable Fire Extinguisher 4.5-Kg	Minimax / Safex / CeaseFire/Similar Superior
26	Novec 1230 Cylinders	Kidde/Ansul(Tyco)/Rama/EKC
27	Valve assembly	Siemens / Kidde / Ansul(Tyco)/Honeywell
28	Electric Control Head	Siemens / Kidde / Ansul(Tyco) /Honeywell
29	Discharge Nozzle	Siemens / Kidde / Ansul(Tyco) /Honeywell
30	Manual Actuator	Siemens / Kidde / Ansul(Tyco) /Honeywell
31	Flexible Discharge Hose	Siemens / Kidde / Ansul(Tyco) /Honeywell
32	Actuation Hose	Siemens / Kidde / Ansul(Tyco) /Honeywell
33	Manual Release Switch	Ravel/Siemens/Safeway/ Alert
34	Manual Abort Switch	Ravel/Siemens Safeway/ Alert
35	Seamless Pipe	Maharashtra/ Tata/ Jindal/BHEL

36	Digital Water Leak Detection	TTK / ELSA / DSC Sontay/ C system / Star Electronics / Sontay
37	Sensor Interface Module	TTK / ELSA / Sontay
38	Sensing Cable	TTK / ELSA / Star / C system / Master
39	ASDS Panel	FAAST/Xtralis/Airsense/System Sensor/ Xtralis /Securiton
40	Rodent Repellant System	RSCAT / Maser/ Star/C system
41	Cable	VARSHA / Finolex / Polycab / ISI mark
42	CAT-6 Cable	D-link / Molex / Finolex/Netgear / TP link

Tentative Inventory for CAMC other than the items covered in this NIT

SI No	Description of Inventory	Chennai	Port Blair	Hut bay	Have lock	Long Island	Kamorta	Car Nicobar	Rangat	Campbell Bay
1) EA set & its standard accessories										
1	500 KVA EA set with MCP	..	1No	..	..	..	..	..	..	..
2	160 KVA EA set with MCP	..	1No	..	..	..	..	..	..	..
2) AC unit & its accessories										
1	3TR ductable AC unit	..	10Nos	..	..	..	..	..	..	..
2	1.5TR Inverter AC unit	..	5Nos	..	..	..	..	..	..	..
3) IBMS including all the following systems along with associated items & cabling										
	IBMS, ACS, CCTV, AFAS, FSS, ASDS, WLDS & RRS.		1 job	..	..	..	..	..	..	..
4) EI & Fans										
1	Light/ Fan Points	228 pts	60pts	124pts	114pts	113pts	118pts	131pts	114pts	117pts
2	8 way TPN Double Door vertical DB	3 Nos	1No	2Nos	2Nos	2Nos	2Nos	2Nos	2Nos	2Nos
3	8 way TPN Double Door Horizontal DB	2 Nos	..	..	..	..	..	..	..	..
	4way TPN Double Door vertical DB	2Nos	2Nos	3Nos	3Nos	3Nos	3Nos	3Nos	3Nos	3Nos
4	Copper Plate Earthing	10 Nos	4Nos	2Nos	2Nos	2Nos	2Nos	2Nos	2Nos	2Nos
	GI Earthing	..	..	4Nos	4Nos	4Nos	4Nos	4Nos	4Nos	4Nos
5	LED 36 W 2 x2 Panel Luminaire	74 Nos	48Nos	54Nos	48Nos	45Nos	44Nos	51Nos	48Nos	48Nos
6	LED 18 W 2 x2 Panel Luminaire	17 Nos	6Nos	24Nos	22Nos	23Nos	33Nos	32Nos	22Nos	25Nos
7	LED 18 W Round Down Lighter	82 Nos	..	..	..	..	..	..	..	..
8	LED 20 W 4 Ft Batten	11 Nos	..	..	..	..	..	..	..	..
9	LED 12W Round Fitting	8 Nos	..	..	..	..	..	..	..	..
10	400mm Wall Mounting Fan	5 Nos	..	..	..	..	..	..	..	..
11	1200 mm Ceiling Fan	15 Nos	4 Nos	21 Nos	20 Nos	21 Nos	20 Nos	24 Nos	20 Nos	17 Nos
12	300mm Exhaust fan	5 Nos	..	10 Nos	10 Nos	10 Nos	9 Nos	9 Nos	10 Nos	8 Nos

SI No	Description of Inventory	Chennai	Port Blair	Hut bay	Have lock	Long Island	Kamorata	Car Nicobar	Rangatt	Campbell Bay
13	450mm Exhaust Fan	1 No.	..	..	..	..	..	..	..	..
14	LT Panel	1 Nos	4job	1job	1job	1job	1job	1job	1job	1job
15	Compound Lights i/c gate light	12Nos	2 Nos	2 Nos	2 Nos	2 Nos	2 Nos	2 Nos	2 Nos	2 Nos
16	Water pumps 3HP	3Nos	2 Nos	2 Nos	2 Nos	2 Nos	2 Nos	2 Nos	2 Nos	2 Nos
17	Service connection Board.	1No	1No	1No	1No	1No	1No	1No	1No	1No
5) Substation										
1	11KV/433V, 2x500KVA Indoor dry type transformer along with standard accessories.	..	1 job	..	..	..	..	..	..	..
2	HT Panel with 3 Nos. (1 i/c+2o/g) 11KV/ 630A, VCB with protection /measuring instruments, CT/PT along with all accessories.	..	1 job	..	..	..	..	..	..	..
3	XLPE insulated 11 KV grade earthed system, 3core185sq.mm Aluminium armoured conductor cable& its cable end terminations	..	200 mts	..	..	..	..	..	..	..
4	XLPE insulated 1.1 KV grade, 31/2 core Aluminium armoured conductor cable of various sizes& its cable end terminations.	1 lot	1 lot	1 lot	1 lot	1 lot	1 lot	1 lot	1 lot	1 lot

PART-II

**SMPS POWER PLANT, LITHIUM ION BATTERY AND
INVERTOR**

INDEX

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9	Bid Form & Price Schedule & Format for calculation of Local Content	81-92

Read, understood and complied with-Signature of the bidder

SECTION-1



HKKJR LAPAKJ FUXE FYFEVSMS

Bharat Sanchar Nigam Limited

(HKKJR

LJDKJ DK M|E)(A Government of IndiaEnterprise)

Connecting India

DK;KZY; EQ[; EKGIZCA/KD NF{K.K NWJLAPKJ IFJ;KSTUK IFJE.MY PSUUSS600 028

O/o Chief General Manager, Southern Telecom Projects, 25,Greenways Lane, Raja Annamalaipuram, Chennai-600 028

Ph.044-2495 2203

MM CELL

FAX. 044-2495 9798 email: stpmm@bsnl.co.in

From
AGM (MM)
O/o CGM Projects,
25 Greenways Lane,
Chennai-28

To
.....
.....
.....
.....

No. CGMP/CHI/MM/NIT-6/ PP&BTY/ 2018-19/ Dated at Chennai the 01.01.2019

Sub: - E-Tender Notice for Supply, Installation, Testing & Commissioning of SMPS Power Plants, Lithium Ion Batteries and (1+1) 3 KVA Invertors for CANI (Chennai and A&N Islands) Project with Warranty for 2 years and AMC for 5 years after Warranty-reg.,

Ref: - TE.No. CGMP/CHI/MM/NIT-6/ PP&BTY/ 2018-19/ Dated 01.01.2019

Please find enclosed the tender document in respect of above mentioned

tender which contains the following

Section	Item	Page No
1.Part A	Detailed NIT	4-8
1.Part B	Publishment of NIT	9
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6	Undertaking & declaration	67-69
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7	Proforma (s) for EMD, PBG & Extns	72-78
8	Bidder's profile & Questionnaire.	79-80
9	Bid Form & Price Schedule & Format for calculation of Local Content	81-92

Interested Bidders, kindly submit your bid to AGM (MM) O/o CGM Projects, Chennai-28 on or before date & time specified in Clause 6 of detailed NIT. Details of this tender is available in www.stp.bsnl.co.in and www.tenderwizard.com/STPBSNL

Assistant General Manager (MM)
O/o CGM Projects, Chennai-28

Read, understood and complied with-Signature of the bidder

Section-1 Part-A
Detailed Notice Inviting Tender (DNIT)

NIT No. CGMP/CHI/MM/NIT-6/PP&BTY/2018-19/ dt.01-01-2019

e-Tender Notice for Supply, Installation, Testing & Commissioning of SMPS Power Plants, Lithium Ion Batteries and (1+1) 3 KVA Invertors for CANI (Chennai and A&N Islands) Project with Warranty for 2 years and AMC for 5 years after Warranty

On behalf of Chief General Manager, Southern Telecom Projects, Bharat Sanchar Nigam Limited BSNL digitally sealed online tenders, on rupee payment basis, are invited in Single Stage Bidding and Two Stage Opening using two Electronic Envelops (Techno-commercial bid & Financial bid) from the experienced & eligible bidders for the following:

Sl No	Description of work	Estimated Quantity (in Nos)	Estimated Cost (in Rs.)	Bid Security (in Rs.)
1	Supply and installation of 100 Amps SMPS modules with (N+2) redundancy with Lightning & Surge Protection		5,59,68,876/-	11,50,000/-
a	100A (7+2)	2		
b	100A(11+2)	4		
c	100A(14+2)	10		
d	100A(18+2)	2		
2	Supply and installation of 48V 100AH Li-on Battery Banks			
a	2*900 AH	2		
b	2*1200 AH	5		
c	2*1300 AH	1		
d	2*400 AH	1		
3	Supply and installation of (1+1) 3 KVA Inverter	7		

Note 1: The quantity stated above are estimated and BSNL reserves the right to vary the quantity to the extent of -25 % to +25% of specified quantity at the time of award of the contract i.e. APO without any change in unit price or other terms & conditions.

Note 2: 20 % of the Estimated Quantity/requirement in this tender Enquiry is earmarked for procurement from the eligible Micro & Small Enterprises (MSEs). However, in case eligible Micro & Small Enterprises (MSEs) bidder(s) are not available then this quantity would be de-reserved & procured from participating bidders - Not applicable for this tender

Note 3: There is a separate bid form in the tender document, which should be filled and uploaded in the e-portal.

Note-4: The tendered items are to be supplied for CANI Project at Chennai and other 8 A & N Islands viz Port Blair, Hut Bay, Car Nicobar, Kamorta, Campbel Bay, Havelock, Long and Rangat.

Note-5: The materials are to be offered for BSNL QA Inspection before delivery to the consignee locations.

The SMPS Power Plants to be supplied should comply with TSEC GR No. TEC/GR/FA/SMP-001/07 MAR-17with latest Amendments /Corrigendum if any and TSEC GR No. TEC/GR/FLA/LSP-001/01/June 2010) for Lightning & Surge Protection.

Read, understood and complied with-Signature of the bidder

Li-ion Battery supplied should comply with GR specification TEC GR No. TEC /GR / TX / LIB-001/01/MAR /2016 and subsequent amendments, if any

(1+1) 3 KVA Inverter supplied should comply with GR specification TEC GR No. GR/INV-01/04 MAY 2005 and subsequent amendments, if any

Note 6: The Evaluation of the tender shall be done as a single Package for all the items

2. **Purchase of Tender Document:** Tender document can be obtained by downloading it from the website www.tenderwizard.com/STPBNSL and select the circle "STP" to view/download the document.
3. The bidders downloading the tender document are required to submit the tender fee Rs. 2,360/- (inclusive of 18% GST) amount through DD/ Banker's cheque along with their Bid Security in original to AGM (MM) before the submission date failing which the tender bid shall be left archived unopened/ rejected.

The DD/ banker's cheque shall be drawn from any Nationalized/ Scheduled Bank in favour of "AO(Cash), BSNL, Southern Telecom Projects, Chennai-28" and payable at Chennai.

MSE bidders are exempted from payment of tender document cost and Bid Security provided they submit requisite proof in respect of valid certification from MSME for the tendered item.

3. **Availability of Tender Document:** The tender document shall be available for downloading from 01-Jan-2019 in the website

- 3.1 Hard copy of the tender document will not be available for sale.

Note 6: The Tender document shall not be available for download after the submission/closing date.

4. Eligibility Criteria: -

4.1 The Bidder Company shall be registered & incorporated in India under the Companies Act, 1956 /2013

4.2 The Bidder Company shall be an OEM of SMPS Power Plant

or

The Bidder Company shall be authorized distributor / distributor of the OEM being an Indian registered Company of SMPS power plants. In addition the bidder company shall have a MoU / teaming agreement with the OEM of SMPS power plants for bidding the product of the OEM and for providing support for Installation, warranty and AMC as per tender requirement.

- 4.3 The bidder company shall be an OEM of Li-Ion battery or shall have a MoU / teaming agreement with the OEM of Li-Ion battery for bidding the product of the OEM and for providing support for Installation, warranty and AMC as per tender requirement.

- 4.4 The Bidder Company shall be authorized distributor / distributor of the OEM of an Indian registered Company of Inverters.

Read, understood and complied with-Signature of the bidder

4.5 They should have applied for TSEC for registration for the SMPS Power Plants against GR No: TEC/GR/FA/SMP-001/07 MAR-17. Proof for having applied with payment receipts viz. QF-103 from BSNL QA shall be submitted in the Bid. However, they will be considered for placement of order subject to submission of valid TSEC within 60(Sixty) days from the date of opening of tender or any further extension granted by Tendering Authority.

4.6 The Bidder Company should comply the applicable TEC GR in respect of Li-Ion Batteries. (TEC /GR /TX / LIB-001/01/MAR /2016 and subsequent amendments, if any). Self-certification is to be submitted by the bidder.

4.7 The Bidder Company should comply the applicable TEC GR in respect of **(1+1) 3 KVA Invertors**. (TEC

/ GR/INV-01/04 MAY 2005 and subsequent amendments, if any). Self-certification is to be submitted by the bidder.

4.8 The Bidder Company should have successfully supplied the following quantity of same make and model as being offered in the bid to any TSP / PSU / Government Organization in India.

SMPS Power Plant of 100 A / 48 V or higher capacity	20 nos.
Li-Ion Batteries of 100 AH modules	40 nos.
Invertors (3 KVA and above)	05 Nos.

End user certificate or copy of PO along with delivery challans are to be submitted as a proof of supply record.

4.9 The Bidder Company shall have a minimum average annual turnover of INR 2 Cr. Each year during the last three financial years i.e. 2015-16, 2016-17 & 2017-18. The Cumulative Turn over should be Rs 6 Cr. minimum during these 3 years. In support of this the bidder shall enclose a Certificate from the company auditor and Annual Reports showing Profit and Loss Account for these three years.

4.10 Public Procurement (Preference to Make in India) (PP-MII) Policy of Government of India is applicable for this tender. Minimum Local Content for this tender shall be 50% for this tender. A bidder seeking benefit of PPP-MII Policy, shall provide a declaration in the Format attached in Section-6 Annexure B of the tender document that the item offered meets the minimum local content as specified in tender and details of the location(s) at which the local value addition is made.

4.11 The bidder shall have a Valid PAN No.

4.12 The bidder shall have a Valid Goods and Services Tax Registration Certificate No(s).

4.13 In case of multiple GST numbers, all the numbers can be provided as Annexure

4.14 The bidder shall submit a self-declaration along with the evidence that the bidder is not black listed by GST authorities.

4.15 The bidder should attach a self-certificate that bidder hasn't been blacklisted by BSNL HQ or any unit of BSNL in the past three years. In case supplier gets black listed during the tenure of BSNL contract, then supplier must indemnify BSNL to ensure that no loss of input tax credit is borne by BSNL due to default of supplier.

read, understood and complied with-Signature of the bidder

4.16 The bidders shall submit necessary documentary proof showing that they meet the eligibility criteria along with their tender bid. All documents submitted will also be self-attested by the bidder and to be uploaded in the e portal.

5. **Bid Security/EMD:**

The bidder shall furnish the bid EMD/Bid Security as given above in one of the following ways:-

5.1 The bidder shall furnish the bid EMD in one of the following ways:-

- (a) Demand Draft/ Banker's cheque drawn in favour of "AO(Cash), BSNL, Southern Telecom Projects, Chennai-28" and payable at Chennai.
- (b) Bank Guarantee from a scheduled bank, drawn in favour of Chief General Manager, Southern Telecom Projects, Bharat Sanchar Nigam Limited, Chennai which should be valid for 210 days (i.e. one month above the offer validity period from the tender opening date).

Details of Beneficiary Bank given below:

Name of the Bank: Union Bank of India, Adyar Branch, Chennai- 600 020

IFSC: UBIN0552844

5.2 The MSE units shall be exempted from submission of Bid Security deposit on production of requisite proof in respect of valid certification from MSME for the tendered item before the due date of submission of the tender.

6. **Date & Time of Submission of Tender bids:** on or before
13.00 hrs of 29-Jan-2019

1	DNIT dated	01-Jan-2019
2	DNIT published in e portal	01-Jan-2019
3	Tender Document available for downloading from	01-Jan-2019
4	Queries from Bidders received upto	08-Jan-2019
5	BSNL clarifications to Bidders queries by	22-Jan-2019
6	Date of submission Bids by 13.00Hrs of	29-Jan-2019
7	Date of opening of Technical Bids at 15.00Hrs of	29-Jan-2019

Note 7: In case the date of submission (opening) of bid is declared to be a holiday, the date of submission (opening) of bid will get shifted automatically to next working day at the same scheduled time. Any change in bid opening date due to any other unavoidable reason will be intimated to all the bidders separately.

7. **Opening of Tender Bids(Technical Bid):**

At **15.00** Hours of this tender submission/closing date.

8. **Place of opening of Tender bids:**

8.1 This e-tender shall be opened through 'Public Online Tender Opening Event (POTOE)'. BSNL's Tender Opening Officers as well as authorized representatives of bidders can attend the Public Online Tender Opening Event (TOE) from the comfort of their offices. Kindly refer clauses of Section-4 Part C of Tender document for further instructions.

Read, understood and complied with-Signature of the bidder

Opening Officers would be conducting Public Online or manual Tender Opening Event (TOE).

9. E-portal will not allow submission of tender after due date/ time.
10. Incomplete, ambiguous, Conditional, unsealed tender bids are liable to be rejected.
11. CGM STP reserves the right to accept or reject any or all tender bids without assigning any reason. He is not bound to accept the lowest tender.
12. The bidder shall furnish a declaration in his tender bid that no addition / deletion / corrections have been made in the downloaded tender document being submitted and it is identical to the tender document appearing on the website.
- 12.1 In case of any correction/ addition/ alteration/ omission in the tender document, the tender bid shall be treated as non-responsive and shall be rejected summarily.

Note 8: All documents submitted in the bid offer should be preferably in English. In case the certificate viz. experience, registration etc. is issued in any other language other than English, the bidder shall attach an English translation of the same duly attested by the bidder & the translator to be true copy in addition to the relevant certificate.

Note 9: All computer generated documents should be duly signed/ attested by the bidder/ vendor organization and to be uploaded in the e-portal

Contact Details for e tendering:

Shri. Gunaseelan
Support Team,
e-Tendering System
Cell No: 9943277499

Fees to be paid:

1. Registration Fee for Rs. **2,360/-** (inclusive of 18% GST)- in the Name of ITI LIMITED payable at Chennai.
2. E-Tender Processing Fee of **Rs.5,900/-** (inclusive of 18% GST) in the Name of ITI LIMITED Payable at Chennai.
3. Regarding e-tendering instructions to Bidders kindly refer Section-4 Part C of the tender document.

Assistant General Manager (MM)
O/o CGM Projects, Chennai-28

Read, understood and complied with-Signature of the bidder

Section-1 Part-B

The NIT and tender document can be downloaded from

www.tenderwizard.com/STPBSNL

www.tender.bsnl.co.in(select the circle as STP)

WWW.EPROCURE.GOV.IN

Assistant General Manager (MM)
O/o CGM STP, Chennai-28

Read, understood and complied with-Signature of the bidder

SECTION- 2

Tender Information

1. Type of tender- :

- a) No. of Bid Submission Stages for tender: Single Stage.

Two stage bid opening. Technical bids will be opened first and Financial bids of technically qualified bids will be opened subsequently.

2. Bid Validity Period / Validity of bid Offer: 180120 days from the tender opening date.

3. The bidder shall upload the following documents in the e-portal

a) Techno-commercial documents:-

- i) Bid Security/EMD in the form of DD or Bank Guarantee
- ii) Cost of the tender document i.e. tender fee in the form of DD.
- iii) Documents showing fulfillment of the eligibility criteria stated in Clause 4 of the DNIT
- iv) Power of Attorney & authorization for executing the power of Attorney in accordance with clause 14.3 of Section 4 Part A
- v) Clause by clause compliance as per clause 11.2 of Section-4A
- vi) Bidder's Profile & Questionnaire duly filled & signed.
- vii) Near-Relationship Certificate duly filled & signed
- viii) Undertaking & declaration duly filled & signed
- ix) Documents stated in clause 10 of Section-4 Part A.
- x) Tender document duly signed at the bottom of each page for having read, understood and complied with & accepted it and the same has to be uploaded in the e-portal.
- xi) Tender/ Bid form- Section 9 Part A
- xii) Not Black listed certificate-as per eligibility clause 4 (c) and 4 (f) in the format given in Sec-6 (C) and 6(D)

b) Financial Bid:

Price Schedule Section 9 Part –B (I, II, III & IV) should be duly filled and submitted in the e-format (spreadsheet) provided.

4. e-documents pertaining to technical bid will be opened at the time mentioned in the tender document.

Read, understood and complied with-Signature of the bidder

5. Payment Terms

(I) Deliverables

a) SMPS Power Plant

S. No.	Mile Stone	Payment Percentage
1)	Completion of supplies / deliveries of equipments at all 9 CLS (Cable Landing Stations) locations	50% of the cost of the Equipment
2)	Installation, Acceptance Testing & Commissioning	40% of the cost of the equipment
3)	Last Mile stone Payment (After warranty)	10% of the cost of the equipment on expiry of warranty period Or On submission of ABG equivalent to 10% of the cost of the equipment valid upto two and a half years from the date of commissioning.

b) Lithium Ion Batteries and (1+1) 3 KVA Invertors

S. No.	Mile Stone	Payment Percentage
1)	Completion of supplies / deliveries of equipments at all 9 CLS (Cable Landing Stations) locations for Lithium Ion Batteries and at all 7 CLS locations for (1+1) 3 KVA Invertors	50% of the cost of the Equipment
2)	Validation testing	20% of the cost of the equipment
3)	Installation , Acceptance Testing & Commissioning	20% of the cost of the equipment
4)	Last Mile stone Payment (After warranty)	10% of the cost of the equipment on expiry of warranty period Or On submission of ABG equivalent to 10% of the cost of the equipment valid upto two and a half years from the date of commissioning.

(II) Installation and Commissioning

a) SMPS Power Plant

100% of I&C Charges on completion of Installation and commissioning at all 9 CLS (Cable Landing Stations) locations

b) Lithium Ion Batteries and (1+1) 3 KVA Invertors

100% of I&C Charges on completion of Installation and commissioning at all CLS (Cable Landing Stations) locations and after successful validation testing.

Read, understood and complied with-Signature of the bidder

6. Delivery Schedule:

The delivery of the goods shall be completed within **THREE months** from the date of issue of Purchase Order. The actual delivery schedule will be given in purchase order.

7. Installation and Commissioning including Validation testing:

(i) SMPS Power Plant

The ordered sets to be installed and commissioned within **FOUR months for Chennai and Port Blair and FIVE months for other 7 Islands** from the date of Purchase order.

(ii) Lithium Ion Batteries and (1+1) 3 KVA Invertors

The ordered sets to be installed and commissioned (including Validation testing) within **FOUR months for Chennai and Port Blair and FIVE months for other 7 Islands** from the date of Purchase order.

8. Consignee:

The materials are to be supplied to following CLS Locations as given below:

a) SMPS Power Plant and Lithium Ion Batteries

Sl No	Station
1	Chennai
2	Port Blair
3	Little Andaman (Hut-Bay)
4	Car Nicobar
5	Kamorta
6	Great Nicobar (Campbel Bay)
7	Havelock
8	Long Island
9	Rangat

b) (1+1) 3 KVA Invertors

1	Little Andaman (Hut-Bay)
2	Car Nicobar
3	Kamorta
4	Great Nicobar (Campbel Bay)
5	Havelock
6	Long Island
7	Rangat

SECTION- 3 Part A

SCOPE OF WORK

A. General:

This e-tender is for Supply, Installation, Testing & Commissioning of SMPS Power Plants, Lithium Ion Batteries at 9 Cable Landing Stations (Chennai and 8 in A & N Islands) and Supply, Installation, Testing & Commissioning of (1+1) 3 KVA Invertors at 7 CLS (In A & N Islands)- with Warranty for 2 years and AMC for 5 years after Warranty.

B. Scope of Work:

The scope of this tender is for

- Supply, delivery of SMPS Power Plant, Lithium Ion Batteries and (1+1) 3 KVA Invertors as per the specifications given in Section-3 Part B of this tender document and supply of installation materials such as Racks, connectors, cables, leads, distribution boxes, Battery Stands and any other items required for commissioning of SMPS PP's & Batteries as per the SOR given in Section-3 Part C of this tender document at Chennai and other 8 A & N Islands viz Port Blair, Hut Bay, Car Nicobar, Kamorta, Campbell Bay, Havelock, Long and Rangat
- Installation, Testing and Commissioning of the above equipments at all the Cable Landing Stations(CLS) locations
- Provisioning of a Managed Network Feature for management of PP & Batteries as per the requirement of Cable Landing Stations (CLS) and Submarine Cable System. Should also have provision for connecting to the EMS of the Cable system.
- Warranty for 2years from the date of commissioning and AMC support for a period of 5 years after warranty.

B. BSNL's Role and Responsibilities are as below:

- i) Making the Battery & PP room available for installation and Commissioning.
- ii) Making availability of AC Power supply of appropriate Capacity at all 9 CLS Locations.
- iii) To conduct Validation testing for Lithium Ion Batteries and (1+1) 3 KVA Invertors

C. Bidder's role and responsibilities

- i) All works including but not limited to Supply, installation, testing and commissioning of SMPS Power Plants and Lithium Ion Batteries at all 9 CLS locations as per SOR and making power available to CLS equipment and Supply,

installation, testing and commissioning of Inverters at all 7 (Seven) CLS locations.

- ii) To provide the draft Validation / AT test schedule within one month from the date of PO for Li-Ion batteries and (1+1) 3KVA Invertors.
- iii) Provisioning of a Managed Network for all supplied items & integrating with EMSs of CANI Cable System.
- iv) Installation, acceptance testing and commissioning of the entire items at all 9 CLS locations.
- v) Warranty support for 2 years from the date of commissioning and AMC support for a period of 5 years after warranty ~~on submission of AMC BG, two months before expiry of warranty period, equivalent to 5% of the average AMC value for 5 years valid upto five and a half years from the date of expiry of warranty period.~~
- vi) The bidder should have Repair facility in India.

SECTION- 3 Part B
TECHNICAL SPECIFICATIONS/ REQUIREMENTS

Sl.No.	Item	Technical Specifications (BSNL TSEC / TEC GR)
1.a	SMPS Power Plants	TSEC GR No. TEC/GR/FA/SMP-001/07 MAR-17with latest Amendments /Corrigendum if any.
1.b	Lightning & Surge Protection	TSEC GR No. TEC/GR/FLA/LSP-001/01/June 2010). <i>(The SMPS Power Plants should contain Stage-II protective device for protection against low voltage surges of voltage up to 1.5 KV)</i>
2	Li-ion Battery	TEC GR No. TEC /GR / TX / LIB-001/01/MAR /2016 and subsequent amendments, if any
3	(1+1) 3 KVA Inverter	TEC GR No. GR/INV-01/04 MAY 2005 and subsequent amendments, if any

The materials conforming to the above specifications are to be supplied.All the above items should have the facility of software and hardware integration with the Integrated Building Management System.

SECTION -3 Part C

SCHEDULE OF REQUIREMENTS (SOR)

Sl No	Name of the Item	Quantity(in Nos)
1	100 Amps SMPS modules with (N+2) redundancy with Lightning & Surge Protection	
a	100A (7+2)	2
b	100A(11+2)	4
c	100A(14+2)	10
d	100A(18+2)	2
2	48V 100AH Li-on Battery Banks	
a	2*900 AH	2
b	2*1200 AH	5
c	2*1300 AH	1
d	2*400 AH	1
3	(1+1) 3 KVA Inverter	7

SECTION-4 Part A

GENERAL INSTRUCTIONS TO BIDDERS (GIB)

1.0 DEFINITIONS

- (a) "The Purchaser" means the Bharat Sanchar Nigam Ltd. (BSNL), ~~STP Chennai-28~~.
- (b) "The Bidder" means the individual or firm who participates in this tender and submits its bid.
- (c) "The Supplier" or "The Vendor" means the individual or firm supplying the goods under the contract.
- (d) "The Goods" means all the equipment, machinery, and/or other materials which the Supplier is required to supply to the Purchaser under the contract.
- (e) "The Advance Purchase Order" or "Letter of Intent" means the intention of Purchaser to place the Purchase Order on the bidder.
- (f) "The Purchase Order" means the order placed by the Purchaser on the Supplier signed by the Purchaser including all attachments and appendices thereto and all documents incorporated by reference therein. The purchase order shall be deemed as "Contract" appearing in the document.
- (g) "The Contract Price" means the price payable to the Supplier under the purchase order for the full and proper performance of its contractual obligations.
- (h) "Validation" is a process of testing the equipment as per the Generic Requirements in the specifications for use in BSNL network. Validation is carried out in simulated field environment and includes stability, reliability and environmental tests.
- (i) "Telecom Service Provider" means any Telecom operator in India, who is licensed by the Department of Telecommunications (DOT), Government of India to provide telecom services to the general public or to the other DOT licensed Telecom operators. "Telecom Service Provider" also refers to any Telecom operator in other countries providing telecom services to general public of that country or to other telecom operators of the same country.
- (j) "Successful Bidder(s)" means the bidder(s) to whom work in this tender is awarded.

2.0 ELIGIBILITY CONDITIONS:

2.1 Kindly refer to clause 4 of Section - 1 i.e. Detailed NIT.

3.0 COST OF BIDDING

3.1 The bidder shall bear all costs associated with the preparation and submission of the bid. The Purchaser will, in no case, be responsible or liable for these costs, regardless of the conduct or outcome of the bidding process.

4.0 DOCUMENTS REQUIRED

4.1 The goods required to be supplied; bidding procedures and contract terms and conditions are prescribed in the Bid Documents. The contents of the Bid documents are specified in the covering letter.

4.2 The Bidder is expected to examine all instructions, forms, terms and specifications in the Bid Documents and clarifications/amendments/addenda, if any. Failure to furnish all information required as per the Bid Documents or submission of the bids not substantially responsive to the Bid Documents in every respect will be at the bidder's risk and may result in rejection of the bid.

5.0 CLARIFICATION OF BID DOCUMENTS

5.1. A prospective bidder, requiring any clarification on the Bid Documents shall notify the Purchaser in writing by FAX or by Email of the Purchaser as indicated in the invitation of Bid. The Purchaser shall respond to any request for the clarification of the Bid Documents, which it receives within the due the date mentioned in the DNIT for receipt of queries. Copies of the query (without identifying the source) and clarifications by the Purchaser shall be made available in the BSNL STP website. Bidders have to download the clarifications and compliance to clarification has to be enclosed and submitted along with the bid documents.

5.2 Any clarification issued by BSNL in response to query raised by prospective bidders shall form an integral part of bid documents and shall amount to an amendment of the relevant clauses of the bid documents.

6.0 AMENDMENT OF BID DOCUMENTS

6.1 The Purchaser may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective bidder, may modify bid documents by amendments prior to the date of submission of Bids with due notification in the BSNL STP web site.

6.2 These amendments will be binding on the bidders.

6.3 In order to afford prospective bidders a reasonable time to take the amendment into account in preparing their bids, the purchaser may, at its discretion, extend the deadline for the submission of bids suitably.

7.0 DOCUMENTS COMPRISING THE BID

The bid prepared by the bidder shall ensure availability of the following components:

- (a) Documentary evidence establishing that the bidder is eligible to bid and is qualified to perform the contract if its bid is accepted in accordance with the clause 2 & 10.
- (b) Bid Security furnished in accordance with clause 12.
- (c) A Clause by Clause compliance as per clause 11.2 (c)
- (d) A Bid form and price schedule completed in accordance with clause 8 & 9.

8.0 BID FORM

- 8.1 The bidder shall complete the bid form and appropriate Price Schedule furnished in the Bid Documents, indicating the goods to be supplied, brief description of the goods, quantity and prices as per section- 9.

9.0 BID PRICES

- 9.1 The bidder shall give the total composite price inclusive of all Levies & Taxes i.e. Custom Duty, Goods & Services Tax on packing, forwarding, freight and insurance etc. The basic unit price and all other components of the price need to be individually indicated up to two decimal points only against the goods it proposes to supply under the contract as per the price schedule given in Section 9 Part B (I,II, ~~III & IV~~). Prices of incidental services should also be quoted. The offer shall be firm in Indian Rupees. No Foreign exchange will be made available by the purchaser.
- 9.2 Prices indicated in the Price Schedule shall be entered in the following manner:
 - (a) The Basic Unit price (Ex-Factory Price) of the goods, CIF, BCD, Cesses, IGST, Freight, Forwarding, Packing, Insurance, GST(CGST, SGST, IGST) on Freight already paid or payable by the supplier shall be quoted separately item wise.
 - (b) The supplier shall quote as per price schedule given in Section 9 Part B (Table A or B, ~~C & D~~) for all the items given in schedule of requirement at Section 3 part C.
- 9.3 A bid submitted with an adjustable price quotation will be treated as non-responsive and rejected.
- 9.4 The prices quoted by the bidder shall be in sufficient detail to enable the Purchaser to arrive at the price of equipment/ system offered.
- 9.5 "DISCOUNT if any, offered by the bidders shall not be considered unless specifically indicated in the price schedule. Bidders desiring to offer discount shall therefore modify their offers suitably while quoting and shall quote clearly net price taking all such factors like Discount, free supply, etc. into account". **This clause is deleted**

9.6 The price approved by BSNL for procurement will be inclusive of levies and taxes, packing, forwarding, freight and insurance as mentioned in clause 9.1 subject to other terms and condition as stipulated in clause 22.2 of Section 4 Part A. and clause 11 of Sec-5 Part A of Bid-document.

9.7 The freight by sea for transportation of equipment/Stores from the nearest port in the main land to Andaman & Nicobar Islands will be reimbursed to the supplier at the concessional rates levied by Ministry of Water and Surface Transport on production of proof.

10. DOCUMENTS ESTABLISHING BIDDER'S ELIGIBILITY AND QUALIFICATION

10.1. The bidder shall furnish, as part of the bid documents establishing the bidder's eligibility, the following documents or whichever is required as per terms and conditions of Bid Documents.

~~a) Valid MSE Certificate, if applicable. In case the ownership of such MSE Entrepreneurs happens to be from SC/ST category, proof in this regard also need to be submitted.~~

b) End user Certificate as per Clause 4.7 of Sec-I Part - A

c) Additional documents to establish the eligibility and qualification of bidder as specified in Section-I and Section-4 Part B.

d) Power of Attorney as per clause 14.3 (a) and (d) and authorization for executing the power of Attorney as per clause 14.3 (b) or (c).

e) Documentary proof of GST registration.

~~f) Deleted~~

g) Certificates from all Directors of the bidder stating that none of their near relatives is working in BSNL in accordance with clause 34.

h) Certificate of incorporation.

i) Article or Memorandum of Association or partnership deed or proprietorship deed as the case may be.

j) List of all Directors including their name(s), Director Identification Number(s) (DIN) and address (es) along with contact telephone numbers of office and residence.

k) Registration certificate from State Director of Industries or from Secretariat for Industrial Assistance (SIA), Ministry of Industries, Government of India.

l) Approval from Reserve Bank of India/ SIA in case of foreign collaboration.

Note 1: Documents at S. No 10.1(g), (k), (l) are applicable in case of tenders with estimated cost more than Rs. ONE CRORE only.

10.2 Documentary evidence for financial and technical capability

a) The bidder shall furnish audited Annual Report for the years as per NIT, and a certificate from its bankers to assess its solvency/financial capability.

b) The bidder shall furnish documentary evidence about technical and production capability necessary to perform the contract.

10.3 In order to enable the Purchaser to assess the proven-ness of the system Offered, the bidder shall provide documentary evidence regarding the system being offered by him.

10.4 The offered product has to be type approved. For this purpose, the supplier shall submit a sample type for evaluation. The sample would be evaluated for its ability to meet the technical specifications, manufacturability, reliability, testability, ease of installation, maintainability etc. Necessary documents to substantiate these attributes will have to be submitted at the time of application for approval by the supplier for obtaining type approval. Or In case goods offered have already been type approved/ validated by the Purchaser, documentary evidence to this effect shall be submitted by the bidder.- Not applicable for this tender

11.0 DOCUMENTS ESTABLISHING GOODS' CONFORMITY TO BID DOCUMENTS

11.1 Pursuant to clause 7, the bidder shall furnish, as part of its bid, documents establishing the conformity of its bid to the Bid Documents of all goods and services which he proposes to supply under the contract.

11.2 The documentary evidences of the "goods and services" conformity to the Bid Documents may be, in the form of literature, drawings, data etc. and the bidder shall furnish:

- (a) a detailed description of goods with essential technical and performance characteristics;
- (b) a list, giving full particulars including available sources and current prices of all spare parts, special tools, etc., necessary for the proper and continuous functioning of the goods for a period of three years following commencement of use of the goods by the purchaser, and
- (c) a clause-by-clause compliance (As enclosed in Annexure A) on the purchaser's Technical Specifications and Commercial Conditions demonstrating substantial responsiveness to the Technical Specifications and Commercial Conditions. In case of deviations, a statement of the deviations and exception to the provision of the Technical Specifications and Commercial Conditions shall be given by the bidder. A bid without clause-by-clause compliance of the Scope of Work, Technical Specifications, SOR (Section-3 Part A, B & C), General Instructions to Bidders, Special Instructions to Bidders (Section-4 Part A & B), General (Commercial) Conditions & Special (Commercial) Conditions (Section- 5 Part A & B) shall not be considered.

11.3 For the purpose of compliance to be furnished pursuant to the clause 11.2(c) above, the bidder shall note that the standards for the workmanship, material and equipment and reference to the brand names or catalogue number, designated by the Purchaser in its Technical specifications are intended to be descriptive only and not restrictive.

12.0 BID SECURITY / EMD

12.1 The bidder shall furnish, as part of its bid, a bid security as mentioned in Section-1 (DNIT).

12.2 The MSE bidders are exempted from payment of bid security:

- a) A proof regarding valid registration with body specified by Ministry of Micro, Small & Medium Enterprise for the tendered items will have to be attached along with the bid.
- b) The enlistment certificate issued by MSME should be valid on the date of opening of tender.
- c) MSE unit is required to submit its monthly delivery schedule.
- d) If a vender registered with body specified by Ministry of Micro, Small & Medium Enterprise claiming concessional benefits is awarded work by BSNL and subsequently fails to obey any of the contractual obligations; he will be debarred from any further work/ contract by BSNL for one year from the date of issue of such order.

12.3 The bid security is required to protect the purchaser against the risk of bidder's conduct, which would warrant the forfeiture of bid security pursuant to Para 12.7.

12.4. A bid not secured in accordance with Para 12.1 & ~~12.2~~ shall be rejected by the Purchaser being non-responsive at the bid opening stage

12.5 The bid security of the unsuccessful bidder will be discharged/ returned as promptly as possible and within 30 days of finalization of the tender or expiry of the period of the bid validity period prescribed by the purchaser pursuant to clause 13.

12.6 The successful bidder's bid security will be discharged upon the bidder's acceptance of the advance purchase order satisfactorily in accordance with clause 27 and furnishing the performance security, except in case of L-1 bidder, whose EMBG/EMD shall be released only after the finalization of ordering of complete tendered quantity in pursuance to clause no. 24.4 & 27.3 of this section.

12.7 The bid security may be forfeited:

- a) If the bidder withdraws or amends its bid or impairs or derogates from the bid in any respect during the period of bid validity specified by the bidder in the bid form or extended subsequently; or
- b) If the bidder does not accept the APO/ AWO and/ or does not submit PBG & sign the contract/ agreement in accordance with clause 28.

13.0 PERIOD OF VALIDITY OF BIDS

13.1 Bid shall remain valid for period specified in clause 2 of Section II. A bid valid for a shorter period shall be rejected by the purchaser being non-responsive.

13.2 In exceptional circumstances, the purchaser may request the consent of the bidder for an extension to the period of bid validity. The request and the response thereto shall be made in writing. The bid security provided

under clause 12 shall also be suitably extended. The bidder may refuse the request without forfeiting its bid security. A bidder accepting the request and granting extension will not be permitted to modify its bid.

14.0 FORMAT AND SIGNING OF BID

14.1. The bidder shall submit his bid through e-portal complying with all eligibility conditions, other terms and conditions of tender document to be read along with the clarifications and amendments issued in this respect. All the documents must be authenticated by Digital signatures by the authorized person and uploaded in the e-portal. The letter of authorization shall be indicated by written power-of-attorney accompanying the bid and also to be uploaded.

~~14.2 Deleted~~

14.3 Power of Attorney

- (a) The power of Attorney should be submitted and executed on the non-judicial stamp paper of appropriate value as prevailing in the concerned states(s) and the same be attested by a Notary public or registered before Sub-registrar of the state(s) concerned.
- (b) The power of Attorney be executed by a person who has been authorized by the Board of Directors of the bidder in this regard, on behalf of the Company/ institution/ Body corporate.
- (c) In case of the bidder being a firm, the said Power of Attorney should be executed by all the partner(s) in favour of the said Attorney.
- (d) Attestation of the specimen signatures of authorized signatory by the Company's/ firm's bankers shall be furnished. Name, designation, Phone number, mobile number, email address and postal address of the authorized signatory shall be provided.

15.0 SEALING AND MARKING OF BIDS

15.1 The bid should be submitted as per Clause 3 of Section II.

15.1.1 The bids are called under Single Stage Bidding and Two stage opening

~~15.1.2 Deleted~~

15.1.3 In Single stage bidding & two stage opening system, the bidders shall submit their bid in two parts

The First part will contain documents of bidder's satisfying the eligibility / Technical & commercial conditions as per clause 2 & 10 with Bid Security as per Clause 12. Second part will contain Financial bid containing Price Schedules as per Section 9 Part B (I,II , III & IV)

15.2 a) The bidder is requested to submit the following documents offline to ~~AGM (MM), O/o CGM Projects, Chennai 28~~ The Executive Engineer (E) , Electrical Division-III , Chennai - 10 on or before the date & time of submission of bids specified in covering letter of this tender document, in a Sealed Envelope.

The envelope shall bear (name of the tender), the tender number and the words 'DO NOT OPEN BEFORE' (due date & time) & shall contain the following documents.

1. EMD-Bid Security in Original.
2. DD/ Bankers cheque against payment of tender fee.
3. Power of attorney in accordance with clause 14.3 of Section-4 Part A.
4. ~~End user Certificate as per Clause 4.7 of Sec-I Part-A~~

Address:

~~Asst.General Manager (MM),
Bharat Sanchar Nigam Limited
Southern Telecom Projects,
25, Greenways Lane, Raja Annamalaipuram,
Chennai-600 028.~~

~~b) Deleted~~

~~c) Deleted~~

~~d) Deleted~~

~~e) Deleted~~

~~f) Venue of Tender Opening shall be:~~

~~(i) Conference Hall, Ground Floor, O/o CGM Projects
25, Greenways Lane, Raja Annamalaipuram, Chennai-600 028.~~

~~(ii) If due to administrative reasons, the venue of Bid opening is it will changed,
be displayed prominently in the Conference Hall, O/o CGM Projects,
Chennai-28~~

~~15.3 Deleted~~

16.0 SUBMISSION OF BIDS

16.1. Bids must be submitted by the bidders on or before the specified date & time indicated in Clause 6 of Section-I i.e. DNIT.

16.2 The Purchaser may, at its discretion, extend this deadline for the submission of bids by amending the Bid Documents in accordance with clause 6 in which case all rights and obligations of the purchaser and bidders previously subject to the deadline will thereafter be subjected to the extended deadline.

16.3 The bidder shall submit its bid offer against a set of bid documents as per requirement of the Bid Documents.

17.0 LATE BIDS

17.1 E-Tender portal will not accept online any bid after the specified deadline for submission of bids prescribed by the purchaser.

18 MODIFICATION AND WITHDRAWAL OF BIDS

1 The bidder may modify, revise his bid but prior to deadline prescribed for submission of bid.

18.2 The bidder's modification, revision or withdrawal shall have to be online and digitally authenticated.

18.3 Subject to clause 20, no bid shall be modified subsequent to the deadline for submission of bids.

19.0 OPENING OF BIDS BY PURCHASER

19.1 The purchaser shall open bids electronically in the presence of the authorized representatives of bidders physically present who may choose to attend, at time & date specified in ~~Clause 7 of D-NIT (Section 1) on due date.~~

The bidder's representatives, who are present, shall sign in an attendance register. Authority letter to this effect shall be submitted by the authorized

representatives of bidders before they are allowed to participate in bid opening

(A Format is given in enclosed in Section-7 C).

19.2 One representative of any bidder shall be authorized and permitted to attend the bid opening.

19.3 Name of envelopes to be opened & information to be read out by Bid Opening Committee

~~19.4 Not applicable.~~

19.5 In Single stage bidding & two stage opening system; the bids will be opened in 2 stages i.e. the techno-commercial bid shall be opened on the date of tender

opening given in NIT. The financial bid will not be opened on the Date of opening of techno commercial bids.

Thereafter the CET will evaluate Techno-commercial bids & the report of CET will be approved by competent authority.

The financial bids of those bidders, who are approved to be techno-commercially compliant by the competent authority, will be opened by TOC, on a subsequent date, in front of techno commercially eligible bidders/ authorized representatives by sending them a suitable notice.

19.6 The following information should be read out at the time of Techno-commercial bid opening:-

- a) Name of the Bidder
- b) Name of the item
- c) EMD amount & validity and acceptability
- d) Information in respect of eligibility of the bidder.
- e) Details of bid modification/ withdrawal, if applicable.

19.7 The following information should be read out at the time of Financial bid opening:-

- a) Name of the Bidder
- b) Name of the item
- c) Quantities/prices quoted in the bid
- d) Taxes & levies

19.8 The date fixed for opening of bids, if subsequently declared as holiday by the BSNL, the revised date of schedule will be notified. However, in absence of such notification, the bids will be opened on next working day, time and venue remaining unaltered.

20.0 CLARIFICATION OF BIDS

20.1 To assist in the examination, evaluation and comparison of bids, the purchaser may, at its discretion ask the bidder for the clarification of its bid. The request for the clarification and the response shall be in writing. However, no post bid clarification at the initiative of the bidder shall be entertained.

20.2 If any of the documents, required to be submitted along with the technical bid is found wanting, the offer is liable to be rejected at that stage. However the purchaser at its discretion may call for any clarification regarding the bid document within a stipulated time period. In case of non compliance to such queries, the bid will be out rightly rejected without entertaining further correspondence in this regard.

21.0 PRELIMINARY EVALUATION

- 21.1 Purchaser shall evaluate the bids to determine whether they are complete, whether any computational errors have been made, whether required sureties have been furnished, whether the documents have been properly signed and whether the bids are generally in order.
- 21.2 Arithmetical errors shall be rectified on the following basis. Based on the quoted percentage of duties and taxes, Freight etc. the amounts quoted thereof shall be worked out and rounded off to 2 decimal points. If there is a discrepancy between the unit price and total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected by the purchaser.
- 21.3 If there is a discrepancy between words and figures, the amount in words shall prevail. If the supplier does not accept the correction of the errors, its bid shall be rejected.
- 21.4 Prior to the detailed evaluation pursuant to clause 22, the Purchaser will determine the substantial responsiveness of each bid to the Bid Document. For purposes of these clauses, a substantially responsive bid is one which conforms to all the terms and conditions of the Bid Documents without material deviations. The purchaser's determination of bid's responsiveness shall be based on the contents of the bid itself without recourse to extrinsic evidence.
- 21.5 A bid, determined as substantially non-responsive will be rejected by the purchaser and shall not subsequent to the bid opening be made responsive by the bidder by correction of the non-conformity.
- 21.6 The Purchaser may waive any minor infirmity or non-conformity in a bid which doesn't constitute a material deviation, provided such waiver doesn't prejudice or affect the relative ranking of any bidder.

22 EVALUATION AND COMPARISON OF SUBSTANTIALLY RESPONSIVE BIDS

- 22.1 The Purchaser shall evaluate in detail and compare the bids previously determined to be substantially responsive pursuant to clause 21.
- 22.2 The evaluation and comparison of responsive bids shall be done as follows
- Sec-9 Part-B:
- | Part-I Table-A=Indigenous | Price quoted |
|-------------------------------|------------------|
| Part-II Table-B=Imported | Price Bid |
| Part-III Table-C= I&C | |
| Part-IV Table-D=AMC Year wise | Year-1 to Year-5 |
- Evaluated Cost shall be:
- $$[\{ \text{Col.16 of Table A or Col.22 of Table-B} \} + \text{Col.16 at Table-C} + \text{Col.16 of Table-D (Year-1+2+3+4+5)}]$$
- The Lowest Bid will be decided upon the lowest price quoted by the particular Bidder by the above mentioned procedure.

- (a) Duties ,taxes & Cesses for which the firm has to furnish Challans / Tax Invoices will be indicated separately in the PO / APO.
- (b) Suppliers should furnish the correct HSN / SAC classification / Customs tariff Head in the price Schedule. If the credit for the Duties ,Taxes and Cesses under provision/ rules under GST law is found to be not admissible at any stage subsequently owing to wrong furnishing of Tariff Head, then the suppliers will be liable to refund such non-admissible amount, if already paid, along with penalty and interest if charged by the concerned authority.
- (c) In case the Duties ,Taxes and Cesses which are not eligible for input tax credit as per the quotes indicated in the price schedule by the suppliers and subsequently at any stage it is found that Credit for such Duties ,Taxes and Cesses is admissible as per provision of GST law, then the suppliers will be liable to refund the amount equivalent of such Duties ,Taxes and Cesses if already paid to them provided the credit can be claimed within the time prescribed under the applicable legislation and BSNL has all documents to claim such credit. The refund is also subject to the bidder performing necessary act for enabling BSNL to claim the credit viz. upload the information on GSTN. However, the purchaser may allow the supplier to submit necessary documents in this regard which may enable the purchaser to avail the input tax credit provided such credit is still available for the amount so paid as per provision of GST law.
- (d) The purchaser reserves the right to ask the bidders to submit documentary proof confirming the correct HSN or SAC classification/ Customs Tariff Head from the CGST/SGST/IGST officer or Customs authority where the HSN or SAC classification/ Customs Tariff Head furnished against the particular tendered item by different bidders, differs from each other or the same is found apparently not furnished in accordance with GST Act/Customs Tariff notifications.
- (e) If the supplier fails to furnish necessary supporting documents i.e. Tax invoices / Customs invoices etc. in respect of the Duties ,Taxes and Cesses which are eligible for input tax credit, the amount pertaining to such Duties ,Taxes and Cesses will be deducted from the payment due to the firm
- (f) If the supplier fails to perform necessary compliances which would any manner restrict BSNL to claim input tax credit, then the amount pertaining to such Duties ,Taxes and Cesses will be deducted from the payment due to the supplier.
- (g) If the supplier does not disclose the correct details on the invoice or on the GSTN viz. GSTIN, Place of Supply, etc. which restricts BSNL to claim input tax credit, then the amount pertaining to such Duties ,Taxes and Cesses will be deducted from the payment due to the supplier.

23.0 CONTACTING THE PURCHASER

- 23.1 Subject to Clause 20, no bidder shall try to influence the Purchaser on any matter relating to its bid, from the time of the bid opening till the time the contract is awarded.
- 23.2 Any effort by a bidder to modify its bid or influence the purchaser in the purchaser's bid evaluation, bid comparison or contract award decision shall result in the rejection of the bid.

24.0 PLACEMENT OF ORDER

- 24.1. The Purchaser shall consider placement of orders for commercial supplies only on those eligible bidders whose offers has been found technically, commercially and financially acceptable and whose goods have been type approved/ validated by the purchaser. The Purchaser reserves the right to counter offer price(s) against price(s) quoted by any bidder.
- 24.2 The ordering price of any bidder shall not exceed the lowest evaluated price. However, at a later stage if there is any increase in Govt. duties/taxes within scheduled delivery date (SDD), the unit prices with applicable revised duties/taxes will be paid to suppliers
- 24.3. The purchaser reserves the right for the placement of order of entire tendered quantity on the bidder with the lowest evaluated price.
- 24.4 In the event of L2 and so on bidders refusing to accept its item de rated to the price of L1 bidder, BSNL reserves the right to place the order for entire quantity to the L1 bidder. It is mandatory for the L1 bidder to accept such an offer (second APO) at evaluated L-1 price and shall perform the whole contract as envisaged in the tender document. The additional quantity, due to non-acceptance of respective quantity by L2 and/or L3 and so on bidders, as envisaged in clause 3 (Distribution of Quantity) in section 4 Part B, shall be supplied by the L-1 bidder as part of whole contract. **.-Not applicable to this tender**
- 24.5 *Calculation of rates to be offered to L2 and other lower ranking bidders, if any, shall be made by applying a derating factor [L1 approved rate excluding Cenvatable Taxes & Duties / L2 or other lower ranking bidders' (as the case may be) quoted rates excluding Cenvatable Taxes & Duties] On column 15 or 21 of the price schedule of indigenous and imported items respectively.-*
Not applicable to this tender.

25. PURCHASER'S RIGHT TO VARY QUANTITIES

- (a) BSNL reserves the right to increase or decrease up to 25% of the quantity of goods and services specified in the schedule of requirements without any change in the unit price or other terms and conditions at the time of award of contract.
- (b) BSNL also reserves the right for placement of additional order or up to 50% of the additional quantities of goods and services contained in the running tender/ contract within a period of twelve months from the date of acceptance of first APO in the tender at the same rate or a rate negotiated (downwardly) with the existing vendors considering the reasonability of rates based on prevailing market conditions and the

impact of reduction in duties and taxes etc and supplies to be obtained within delivery period scheduled afresh.

- c) In exceptional situation where the requirement is of an emergent nature and it is necessary to ensure continued supplies from the existing vendors, the purchaser reserves the right to place repeat order up to 100% of the quantities of goods and services contained in the running tender /contract within a period of twelve months from the date of acceptance of first APO in the tender at the same rate or a rate negotiated (downwardly) with the existing vendors considering the reasonability of rates based on prevailing market conditions and the impact of reduction in duties and taxes etc. Exceptional situation and emergent nature should be spelt out clearly detailing the justification as well as benefits accrued out of it and loss incurred in case this provision is not invoked and approved by the authority competent to accord administrative and financial approval for the procurement calculated on the basis of total procurement i.e. initial and proposed add-on quantity.

26. PURCHASER'S RIGHT TO ACCEPT ANY BID AND TO REJECT ANY OR ALL BIDS

The Purchaser reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids, at any time prior to award of contract without assigning any reason whatsoever and without thereby incurring any liability to the affected bidder or bidders on the grounds of purchaser's action.

27. ISSUE OF ADVANCE PURCHASE ORDER

- 27.1. The issue of an Advance Purchase Order shall constitute the intention of the Purchaser to enter into contract with the bidder.
- 27.2 The bidder shall within 14 days of issue of the advance purchase order, give its acceptance along with performance security in conformity with the proforma provided with the bid document at Section-7B.
- 27.3 L-1 bidder may be issued Advanced Purchase Order (APO) in two stages. The first APO shall be issued for L-1 quantity as defined in clause above. The second APO may be issued to L-1 bidder only when the Purchaser exercises the right for placement of order on balance tendered quantity on the bidder with the lowest evaluated price in conformity to Clause 24.3 & 24.4 of Section 4 Part A.
- 27.4 The bidder must ensure before acceptance of purchase order that enough number of ordered items are available in stock to supply. In no circumstances different make & model other than ordered in purchase order/amendment order will be accepted.

28. SIGNING OF CONTRACT

- 28.1 The issue of Purchase order shall constitute the award of contract on the bidder.
- 28.2 Upon the successful bidder furnishing performance security pursuant to clause 27, the Purchaser shall discharge the bid security in pursuant

to clause 12, except in case of L-1 bidder, whose EMBG/ EMD shall be released only after finalization of ordering of complete tendered quantity in pursuance to clause no. 24.4 & 27.3 of this section.

29. ANNULMENT OF AWARD

Failure of the successful bidder to comply with the requirement of clause 27

& 28 shall constitute sufficient ground for the annulment of the award and the forfeiture of the bid security in which event the Purchaser may make the award to any other bidder at the discretion of the purchaser or and call for new bids.

30. QUALITY ASSURANCE REQUIREMENTS

The supplier shall have Quality Management System supported and evidenced by the following:

- a) A Quality Policy.
- b) A management representative with authority and responsibility for fulfilling QA requirements and for interacting with purchaser in the matters of Quality.
 - c) Procedure for controlling design/ production engineering, materials, choice of components/vendors, manufacturing and packaging process for supplying quality products.
- d) System of Inward Good Inspection.
- e) System to calibrate and maintain required measuring and test equipment.
- f) System for tracing the cause for non-conformance (traceability) and segregating product which don't conform to specifications.
- g) Configuration management and change-control mechanism.
- h) A quality plan for the product.
- i) Periodical internal quality audits.
- j) A 'Quality Manual' detailing the above Or infrastructure assessment certificate and Type Approval Certificate (TAC)/ Technical Specifications Evaluation Certificate (TSEC) issued by "BSNL QA Circle" shall be furnished (as defined in eligibility criteria if any)

31. REJECTION OF BIDS

31.1 While all the conditions specified in the Bid documents are critical and are to be complied, special attention of bidder is invited to the following clauses of the bid documents. Non-compliance of any one of these shall result in outright rejection of the bid.

- a) Clauses 12.1, 12.2 & 13.1 of Section- 4 Part A: The bids will be rejected at opening stage if Bid security is not submitted as per Clauses 12.1 & 12.2 and bid validity is less than the period prescribed in Clause 13.1 mentioned above.
- b) Clause 2 & 10 of Section-4Part A: If the eligibility condition as per clause 2 of Section 4 Part A is not met and/ or documents prescribed to establish the eligibility as per Clause 10 of section 4 Part A are not enclosed, the bids will be rejected without further evaluation.

- c) Clause 11.2 (c) of Section-4 Part A: If clause-by-clause compliance as well as deviation statements as prescribed are not given, the bid will be rejected at the stage of primary evaluation.
- d) While giving compliance to (Section-5 Part A)-General Commercial conditions, (Section-4 Part B)-Special Instructions to Bidders, (Section-5 Part B)- Special (Commercial) Conditions of Contract and (Section-3)-Technical Specifications ambiguous words like "Noted", "Understood", "Noted & Understood" shall not be accepted as complied. Mere "Complied" will also be not sufficient, reference to the enclosed documents showing compliances must be given.
- e) Section-9 Price Schedule: Prices are not filled in as prescribed in price schedule.
- f) Firms which have been black listed by BSNL HQ or any unit of BSNL are NOT eligible to participate in this tender.

31.2 Before outright rejection of the Bid by Bid-opening team for non-compliance of any of the provisions mentioned in clause 31.1(a), 31.1(b) of Section-4 PartA, the bidder company is given opportunity to explain their position, however if the person representing the company is not satisfied with the decision of the Bid opening team, he/they can submit the representation to the Bid opening team immediately but in no case after closing of the tender process with full justification quoting specifically the violation of tender condition if any.

31.3 Bid opening team will not return the bids submitted by the bidders on the date of tender opening even if it is liable for rejection and will preserve the bids in sealed cover as submitted by taking the signatures of some of the desirous representatives of the participating bidder/companies present on the occasion.

31.4 The in-charge of Bid opening team will mention the number of bids with the name of the bidder found unsuitable for further processing on the date of tender opening and number of representations received in Bid opening Minutes and if Bid opening team is satisfied with the argument of the bidder mentioned in their representation and feel that there is prima-facie fact for consideration, the in-charge of the bid opening team will submit the case for review to Officer competent to approve the tender as early as possible preferably on next working day and decision to this effect should be communicated to the bidder company within a week positively. Bids found liable for rejection and kept preserved on the date of tender opening will be returned to the bidders after issue of P.O. against the instant tender.

31.5 If the reviewing officer finds it fit to open the bid of the petitioner, this should be done by giving three (working) days notice to all the participating bidders to give opportunity to participants desirous to be present on the occasion.

32. ACTION BY PURCHASER AGAINST BIDDER(S)/ VENDOR(S) IN CASE OF DEFAULT.

In case of default by Bidder(s)/ Vendor(s) such as

- a) Does not supply the equipment in time;

- b) Equipment does not perform satisfactory in the field in accordance with the specifications;
- c) Or any other default whose complete list is enclosed in Appendix-1. Purchaser will take action as specified in Appendix-1 of this section.

33. Clause deleted.

34. ~~NEAR-RELATIONSHIP CERTIFICATE~~

~~34.1. The bidder should give a certificate that none of his/ her near relative, as defined below, is working in the units where he is going to apply for the tender. In case of proprietorship firm certificate will be given by the proprietor. For partnership firm certificate will be given by all the partners and in case of limited company by all the Directors of the company excluding Government of India/ Financial institution nominees and independent non-Official part time Directors appointed by Govt. of India or the Governor of the state and full time Directors of PSUs both State and Central. Due to any breach of these conditions by the company or firm or any other person the tender will be cancelled and Bid Security will be forfeited at any stage whenever it is noticed and BSNL will not pay any damage to the company or firm or the concerned person.~~

~~34.2. The Company or firm or the person will also be debarred for further participation in the concerned unit.~~

~~34.3 The near relatives for this purpose are defined as:-~~

- ~~(a) ——— Members of a Hindu undivided family.~~
- ~~(b) ——— They are husband and wife.~~
- ~~(c) ——— The one is related to the other in the manner as father, mother, son(s)~~

~~& — Son's wife (daughter in law), Daughter(s) and daughter's husband (son in law), brother(s) and brother's wife, sister(s) and sister's husband (brother in law).~~

~~34.4. The format of the certificate is given in Section 6 (B).~~

35. VERIFICATION OF DOCUMENTS AND CERTIFICATES

The bidder will ensure that all the documents and certificates, including experience/ performance and self certificates submitted by him are correct and genuine before enclosing them in the bid. The onus of proving genuineness of the submitted documents would rest with the bidder.

If any document/ paper/ certificate submitted by the participant bidder is found / discovered to be false / fabricated / tempered / manipulated either during bid evaluation or during award of contract or thereafter, then the Purchaser will take action as per Clause-1 of Appendix-1 of this section.

36. Security Clause as per latest guidelines and requirement

Clause Not applicable to this tender and hence **deleted**

- 37. Reservation/ Procurement from MSE units:** The guidelines / instructions

/ laws issued vide D.O. no 21(1) -2011-M.A..April 25th, 2012 from Ministry of Micro, Small & Medium Enterprise (MSME) with respect to provisions for Micro & Small Enterprises (MSEs) shall be followed. –

Not applicable for thistender

38. Reservation/ Procurement from MII

The guidelines/instructions issued vide Notification No: P-45021/2/2017-PP (BE-II) dated 28-05-18 issued by Ministry of Commerce and Industry with respect to Public Procurement (Preference to Make in India) on Telecom Products, Services or works shall be followed.

If procurement value is in excess of Rs. 10 Crores , the local supplier shall provide certificate from the statutory auditor or cost auditor of the company(in case of Companies) or from practicing cost accountant or practicing chartered accountant (in respect of suppliers other than companies) giving the percentage of Local content.

Format for calculation of Local Content in Goods/Services is given in Section-9 Part B Part V. The same may be uploaded at the time of uploading the financial bid of the tender.

Appendix-1 to Section 4 Part A of Chapter 4 (Standard Tender Enquiry Document)

Sl.No	Default of the Bidder/Vendor	Action to be taken
A	B	C
1(a)	Submitting fake/forged	
	a) Bank Instruments with the bid to meet terms & condition of tender in respect of tender fee and/ or EMD;	i) Rejection of tender bid of respective Vendor. ii) Banning of business for 3 years which implies barring further dealing with the vendor for procurement of Goods & Services including participation in future tenders invited by BSNL for 3 years from date of issue of banning order.
	b) Certificate for claiming exemption in respect of tender fee and/ or EMD;	
	and detection of default at any stage from receipt of bids till award of APO/ issue of PO/WO.	iii) Termination/ Short Closure of PO/WO, if issued. This implies non-acceptance of further supplies /work & services except to make the already received material work/complete work in hand.
	Note-1: However, in this case the performance guarantee if alright will not be forfeited.	
	Note-2: Payment for already received supplies/ completed work shall be made as per terms & conditions of PO/ WO.	
	Submitting fake / forged documents towards meeting eligibility criteria such as experience capability, supply proof, registration with Goods and Services Tax, Income Tax departments etc and as supporting documents towards other terms & conditions with the bid to meet terms & condition of tender :	
	(i) If detection of default is prior to award of APO	i) Rejection of Bid & ii) Forfeiture of EMD.

1(b)	(ii) If detection of default after issue of APO but before receipt of PG/ SD (DD,BG etc.)	i) Cancellation of APO , ii) Rejection of Bid & iii) Forfeiture of EMD.
	(iii) If detection of default after receipt of PG/ SD (DD,BG etc.) .	i) Cancellation of APO ii) Rejection of Bid & iii) Forfeiture of PG/ SD. However on realization of PG/ SD amount, EMD, if not already released shall be returned.
	iv) If detection of default after issue of PO/ WO	i) Termination/ Short Closure of PO/WO and Cancellation of APO ii) Rejection of Bid & iii) Forfeiture of PG/ SD. However on realization of PG/ SD amount, EMD, if not released shall be returned

Sl.No	Default of the Bidder/Vendor	Action to be taken
A	B	C
	Note-3: However, settle bills for the material received in correct quantity and quality if pending items do not affect working or use of supplied items.	
	Note-4: No further supplies are to be accepted except that required to make the already supplied items work.	
2	If vendor or his representative uses violent/ coercive means viz. Physical / Verbal means to threatens BSNL Executive / employees and/ or obstruct him from functioning in discharge of his duties & responsibilities for the following : a) Obstructing functioning of tender opening executives of BSNL in receipt/ opening of tender bids from prospective Bidders, suppliers/ Contractors. b) Obstructing/ Threatening other prospective bidders i.e. suppliers/Contractors from entering the tender venue and/ or submitting their tender bid freely.	Banning of business for 3 years which implies Barring further dealing with the vendor for procurement of Goods & Services including participation in future tenders invited by BSNL for 3 years from date of issue of banning order.
3	Non-receipt of acceptance of APO/ AWO and SD/ PG by L-1 bidder within time period specified in APO/ AWO.	Forfeiture of EMD.
4.1	Failure to supply and/ or Commission the equipment and /or execution of the work at all even in extended delivery Schedules, if granted against PO/WO.	i) Termination of PO/ WO. ii) Under take purchase/ work at the risk & cost of defaulting vendor. iii) Recover the excess charges if incurred from the PG/ SD and outstanding bills of the defaulting Vendor.
4.2	Failure to supply and/ or Commission the equipment and /or execution of the Work in full even in extended delivery schedules, if granted against PO/WO.	i) Short Closure of PO/ WO to the quantity already received by and/ or commissioned in BSNL and/ or in pipeline provided the same is usable and/or the Vendor promises to make it usable. ii) Under take purchase/ work for balance quantity at the risk & cost of defaulting vendor. iii) Recover the excess charges if incurred from the PG/ SD and outstanding bills of the defaulting Vendor.
5.1	The supplied equipment does not perform satisfactory in the field in accordance with the specifications mentioned in the PO/WO/Contract.	i) If the material is not at all acceptable, then return the non-acceptable material (or its part) & recover its cost, if paid, from the o/s bills/ PG/ SD.

Sl.No	Default of the Bidder/Vendor	Action to be taken
A	B	C
		OR ii) If the material is inducted in network & it is not possible to return it and/ or material is acceptable with degraded performance, the purchaser may determine the price for degraded equipment (Financial penalty = Price – price determined for degraded equipment) himself and/ or through a committee. Undertake recovery of financial penalty from outstanding dues of vendor including PG/ SD.
5.2	Major quality problems (as established by a joint team / committee of User unit(s) and QA Circle) / performance problems and non-rectification of defects (based on reports of field units and QA circle).	i) If the material is not at all acceptable, then return the non-acceptable material (or its part) & recover its cost, if paid, from the o/s bills/ PG/ SD; OR ii) If the material is inducted in network & it is not possible to return it and/ or material is acceptable with degraded performance, the purchaser may determine the price for degraded equipment (Financial penalty = Price – price determined for degraded equipment) himself and/ or through a committee. Undertake recovery of financial penalty from outstanding dues of vendor including PG/ SD; and iii) Withdrawal of TSEC/ IA issued by QA Circle.
6	Submission of claims to BSNL against a contract (a) for amount already paid by BSNL . (b) for Quantity in excess of that supplied by Vendor to BSNL. c) for unit rate and/ or amount higher than that approved by BSNL for that purchase.	i) Recovery of over payment from the outstanding dues of Vendor including EMD/ PG & SD etc. and by invoking 'Set off' clause 21 of Section 5 Part A or by any other legal tenable manner. ii) Banning of Business for 3 years from date of issue of banning order or till the date of recovery of over payment in full, whichever is later
	Note-5: The claims may be submitted with or without collusion of BSNL Executive/ employees.	

Sl.No	Default of the Bidder/Vendor	Action to be taken
A	B	C
	Note-6: This penalty will be imposed irrespective of the fact that payment is disbursed by BSNL or not.	
7	Network Security/ Safety/ Privacy:- a. If the vendor tampers with the hardware, software /firmware or in any other way that a) Adversely affects the normal working of BSNL equipment(s) and/ or any other TSP through BSNL.	i) Termination of PO/ WO. ii) Banning of business for 3 years which implies barring further dealing with the vendor for procurement of Goods & Services including participation in future tenders invited by BSNL for 3 years from date of issue of banning order. iii) Recovery of any loss incurred on this account from the Vendor from its PG/ SD/ O/s bills etc. iv) Legal action will be initiated by BSNL against the Vendor if required
	b) Disrupts/ Sabotages functioning of the BSNL network equipments such as exchanges, BTS, BSC/ MSC, Control equipment including IN etc., transmission equipments but not limited to these elements and/ or any other TSP through BSNL.	
	c) tampers with the billing related data/ invoicing/ account of the Customer/ User(s) of BSNL and/ or any other TSP(s).	
	d) hacks the account of BSNL Customer for unauthorized use i.e. to threaten others/ spread improper news etc.	
	e) undertakes any action that affects/ endangers the security of India.	
8	If the vendor is declared bankrupt or insolvent or its financial position has become unsound and in case of a limited company, if it is wound up or it is liquidated.	i) Termination/ Short Closure of the PO/ WO. ii) Settle bills for the quantity received in correct quantity and quality if pending items do not affect working or use of supplied items. iii) No further supplies are to be accepted except that required to make the already supplied items work. iv) In case of turnkey projects, If the material is commissioned and is usable without any degradation of performance, then settle bills for the acceptable equipment/ material (or its part). v) In case of turnkey projects, if the material is inducted in network & it is not possible to return it and/ or material is acceptable with degraded performance, the purchaser may determine the price

Sl.No	Default of the Bidder/Vendor	Action to be taken
A	B	C
		for degraded equipment (Financial penalty = Price – price determined for degraded equipment) himself and/ or through a committee. Undertake recovery of financial penalty from outstanding dues of vendor including PG/ SD.
9	In the event of the vendor, its proprietor, Director(s), partner(s) is / are convicted by a Court of Law following prosecution for offences involving moral turpitude in relation to the business dealings.	i) Termination/ Short Closure of the PO/ WO. ii) Settle bills for the material received in correct quantity and quality if pending items do not affect working or use of supplied items. iii) No further supplies are to be accepted except that required to make the already supplied items work. iv) In case of turnkey projects, If the material is commissioned and is usable without any degradation of performance, then settle bills for the acceptable equipment/ material (or its part). v) In case of turnkey projects, If the material is inducted in network & it is not possible to return it and/ or material is acceptable with degraded performance, the purchaser may determine the price for degraded equipment (Financial penalty = Price – price determined for degraded equipment) himself and/ or through a committee. Undertake recovery of financial penalty from outstanding dues of vendor including PG/ SD.
10	If the vendor does not return/ refuses to return BSNL's dues: a) in spite of order of Arbitrator.	i) Take action to appoint Arbitrator to adjudicate the dispute. ii) Termination of contract, if any. ii) Banning of business for 3 years which implies barring further dealing with the vendor for procurement of Goods & Services including participation in future tenders invited by BSNL from date of issue of banning order or till the date by which vendor clears the BSNL's dues, whichever is later. iii) Take legal recourse i.e. filing

Sl.No	Default of the Bidder/Vendor	Action to be taken
A	B	C
		recovery suite in appropriate court
	b) in spite of Court Orders.	i) Termination of contract, if any. ii) Banning of business for 3 years which implies barring further dealing with the vendor for procurement of Goods & Services including participation in future tenders invited by BSNL from date of issue of banning order or till the date by which vendor clears the BSNL's dues, whichever is later.
11	If the Central Bureau of Investigation/ Independent External Monitor (IEM) / Income Tax/Goods and Services Tax / Custom Departments recommends such a course	Take Action as per the directions of CBI or concerned department.
12	The following cases may also be considered for Banning of business: (a) If there is strong justification for believing that the proprietor, manager, MD, Director, partner, employee or representative of the vendor/ supplier has been guilty of malpractices such as bribery, corruption, fraud, substitution of tenders, interpolation, misrepresentation with respect to the contract in question. (b) If the vendor/ supplier fails to execute a contract or fails to execute it satisfactorily beyond the provisions of Para 4.1 & 4.2. (c) If the vendor/ supplier fails to submit required documents/ information, where required. (d) Any other ground which in the opinion of BSNL is just and proper to order for banning of business dealing with a vendor/ supplier.	Banning of business for 3 years which implies Barring further dealing with the vendor for procurement of Goods & Services including participation in future tenders invited by BSNL for 3 years from date of issue of banning order.

Note 7: The above penalties will be imposed provided it does not clash with the provision of the respective tender.

Note 8: In case of clash between these guidelines & provision of invited tender, the provision in the respective tender shall prevail over these guidelines.

Note 9: Banning of Business dealing order shall not have any effect on the existing/ ongoing works/ AMC / CAMC which will continue along with settlement of Bills

SECTION-4 Part B
SPECIAL INSTRUCTIONS TO BIDDERS

The Special Instructions to Bidders shall supplement the 'Instructions to Bidders' and in case of any conflict with those in Section-4 Part A i.e. **GENERALINSTRUCTIONS TO BIDDERS** (GIB), the provisions herein shall prevail.

1. Eligibility Criteria: -

As per Clause 4 of Section-1 Part-A Detailed Notice Inviting Tender (DNIT)

2 . ~~Bid Security~~

~~As per Clause 5 of Section-1 Part A Detailed Notice Inviting Tender (DNIT)~~

3. Distribution of Quantity

3.1 The purchaser intends to limit the number of technically and commercially responsive bidders to **ONE** from amongst bidders arranged in the increasing order of their evaluated prices starting from the lowest for the purpose of ordering against this tender.

3.2 The L1 bidder with the lowest evaluated price will be considered for 100% of the tendered quantity.

Note-1: The above quantity distribution will be subject to Public Procurement (Preference to Make in India) (PPP-MII) Policy of Government, as PPP-MII Policy of Government of India is applicable for this tender.

Section- 4 Part C
E-tendering Instructions to Bidders

General

These Special Instructions (for e-Tendering) supplement 'Instruction to Bidders', as enclosed in Sec 4 Part A of the Tender Documents. Submission of Bids only through online process is mandatory for this Tender.

1. Tender Bidding Methodology:

For participating in this e-tender the following steps are to be followed [Gotowww.tenderwizard.com/STPBSNL](http://www.tenderwizard.com/STPBSNL)

Click "TenderFreeView" to view and download the tender notifications

and corrigendum free of cost.

Step-1

Registration Process & Digital Signature Process

Goto address: www.tenderwizard.com/STPBSNL

- ☐ Click "Register Me".
- ☐ Fill all the details in the form provided. Click "Submit" to obtain your

User Id and password. Log in with your user id and password

Note:

- 1) That during registration process do not type certain special characters

like ~ ` ' # \$ % & * () ; \ / ? : < > + - { } [] which are not allowed in the company id or any key attributes.
- 2) Contractor should submit a "Registration DD" for amount of Rs..... - in favour of ITI Ltd, payable at Chennai and the Registration DD with a Covering Letter should be submitted to the

following eTender Helpdesk Address to enable the user id and password to Log in.

3)

Address Details: Antares Systems Limited
#24, 1st Floor, Sudha Complex,
3rd Stage, 4th Block, Basaveshwara Nagar
Bangalore - 560 079 Ph : 080 408 2000

Digital signature Process:- To Participate in Tender Submission process, its Mandatory to get Valid Class II or above Digital Signature and also give the details while registering in website.

To obtain Digital Signature, in the Home Page on right hand side in down loads click on "Digital Signature Icon" to download the Application Form. Fill up Application Form with the Authorized Person Details for

Tender opening &. also get a "DD" for amount of Rs.364...../- in favour of ANTARES SYSTEMS LTD, payable at Bangalore and the DD with Application Form should be submitted to the above same Address to get Valid Digital Signature for Tender Submission.

Step-2:
Participation

1. Vendor should login with his USER ID and PASSWORD
 - ☐ Click "Un Applied" to view the latest tenders which are due for request along with the other relevant details.
 - ☐ Click "Edit attachment" to view all the documents attached. Download the documents and go through the same
 - To download the tender documents, click "Request Tender Form".
 - Click "In Progress" to view the status of requested tenders. Note:- You will be issued the forms (Electronic bid sheets) only after

Department receives the Demand Draft of the Tender Form Fee

For two cover tenders, you will receive two excel files "Technical

bid.xls" and "Cost bid.xls" along with the other documents.

Click "Click here to Download Empty Document" to download these documents. Save these files with the same file name and upload the filled files.

Important Note:-

- 1) You should not change the file name of any given Excel file. You should feed the values in blue colour cells only

Vendor should prepare the scanned copy of EMD

☐ EMD Submission: Click "Click here to enter EMD Details and Attach

Scanned Copy of EMD". Fill all the details and press "Scan" button

to attach the scanned copy of the EMD.

- ☐ Form Fee Submission: Click "Click here to enter Form Fee Details".

Fill all the DD Details &. Click on Submit button.

Price Sheet/Schedule B submission: Vendor should fill values in the blue cells only, provided in the sheets. Upload the filled file by clicking "Click here to upload filled File

Reminder:

- ☐ Technical bid and Cost bid should be uploaded by using "[Click here](#) to upload filled File ", All other supporting documents should be uploaded using link "[Click here to Attach General Documents](#)".
- ☐ Please do not change the name of the file as system will not accept any other file name except the name given by the officials.

Steps to upload the general / additional documents:

1. On the left side menu click :General Document.
2. Click "Upload new file" to upload new documents.
3. Select the file to be uploaded, enter the description and attachment name.
4. Click "Upload file".

Repeat step 2 and 3 to upload more files

To change the description and attachment name for the uploaded file click "Update" which is in line with the file

Note: This option can be used to alter the description and attachment name only.

Attachment of a general document to a particular tender:

Click and go to Tender Documents screen of the particular tender

1. Click [Click here to Attach General Documents](#).
2. On the "General Document Summary" screen, select the file you need to attach and make necessary changes for Tender Stage and click "Attach" to proceed with the attachment.
3. If you need to attach more files, repeat the steps 2 and 3.

Other files can be scanned and uploaded but ensure that the file is less than 1mb in size for faster process. The ".doc, .jpg, .gif, .xls, .bmp, .pdf" files can be uploaded in the website

- ☐ The server time will be displayed at the right side of every page. All the events are please follow this time, and all the events i.e., (Requesting, Submitting, Opening etc.,) takes place according to this time only.
- ☐ You will see all the red coloured links changing to black colour, when you have uploaded

STEP 4

Acknowledgement

Once you submit the tender, you will be provided an acknowledgement token number along with date and time. Preserve

Read, understood and complied with-Signature of the bidder

the print out of that sheet, and then click "OK". Now your status will be "Submitted" in the "Tender Summary Page".

STEP 5 OPENING

- ☐ After the tender opening, the details can be accessed in the OPENED/ AWARDED stage.
- ☐ In the "Opened/Awarded" section, click edit form "to view successful competitors bid sheets.

For any further queries, please contact AGM (MM) O/o CGMP Chennai and if required, training can also be availed.

Contact Details for e tendering:

Shri. Gunaseelan
Support Team,
e-Tendering System
Cell No: 9943277499

Fees to be paid:

- ~~1. Registration Fee for Rs.2,360/- (inclusive of 18% GST) in the Name of ITI LIMITED payable at Chennai.~~
- ~~2. E Tender Processing Fee of Rs.5,900/- (inclusive of 18% GST) in the Name of ITI LIMITED Payable at Chennai.~~

SECTION-5 Part A

GENERAL (COMMERCIAL) CONDITIONS OF CONTRACT

1. APPLICATION

The general condition shall apply in contracts made by the purchaser for the procurement of goods.

2. STANDARDS

The goods supplied under this contract shall conform to the standards prescribed in the Technical Specifications mentioned in section -3.

3. PATENT RIGHTS

The supplier shall indemnify the purchaser against all third-party claims of infringement of patent, trademark or industrial design rights arising from use of the goods or any part thereof in Indian Telecom Network.

4. PERFORMANCE SECURITY

4.1 All suppliers shall furnish performance security to the purchaser for an amount equal to 5% of the value of Advance purchase order immediately on receipt of Advance Purchase Order valid for a period of three years.

4.2 The proceeds of the performance security shall be payable to the Purchaser as compensation for any loss resulting from the supplier's failure to complete its obligations under the contract.

4.3 The performance security Bond shall be in the form of Bank Guarantee issued by a scheduled Bank and in the proforma provided in 'Section-7B of this Bid Document.

4.4 The performance security Bond will be discharged by the Purchaser after completion of the supplier's performance obligations including any warranty obligations under the contract.

5. INSPECTION AND TESTS

5.1 The materials shall be supplied to BSNL. The Purchaser or its representative shall have the right to inspect and test the goods as per prescribed test schedules for their conformity to the specifications. Where the Purchaser decides to conduct such tests on the premises of the supplier or its subcontractor(s), all reasonable facilities and assistance like Testing instruments and other test gadgets including access to drawings and production data shall be furnished to the inspectors at no charge to the purchaser.

5.2 Should any inspected or tested goods fail to conform to the specifications the purchaser 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 purchaser.

- 5.3 Notwithstanding the pre-supply tests and inspections prescribed in clause 5.1 & 5.2 above, the equipment and accessories on receipt in the Purchaser's premises will also be tested during and after installation before "take over" and if any equipment or part thereof is found defective, the same shall be replaced free of all cost to the purchaser as laid down in clause 5.4 below.
- 5.4 If any equipment or any part thereof, before it is taken over under clause 5.5, is found defective or fails to fulfill the requirements of the contract, the inspector shall give the Supplier notice setting forth details of such defects or failure and the supplier shall make the defective equipment good, or alter the same to make it comply with the requirements of the contract forthwith and in any case within a period not exceeding three months of the initial report. These replacements shall be made by the supplier free of all charges at site. Should it fail to do so within this time, the purchaser reserves the discretion to reject and replace at the cost of the supplier the whole or any portion of equipment as the case may be, which is defective or fails to fulfill the requirements of the contract. The cost of any such replacement made by the purchaser shall be deducted from the amount payable to the supplier.
- 5.5 When the performance tests called for have been successfully carried out, the inspector / ultimate consignee will forthwith issue a Taking Over Certificate. The inspector / ultimate consignee shall not delay the issue of any "taking Over Certificate" contemplated by this clause on account of minor defects in the equipment which do not materially affect the commercial use thereof provided that the supplier shall undertake to make good the same in a time period not exceeding six months. The Taking Over Certificate shall be issued by the ultimate consignee within six weeks of successful completion of tests. In this case, BCPC (Bills Copy Payable Challan) shall be equivalent to "Taking Over Certificate", issuance of which shall certify receipt of goods in safe and sound condition. However, they shall not discharge the supplier of their warranty obligation. BCPC in respect of last consignment against the purchase order will be equivalent to "Taking Over Certificate".
- 5.6 Nothing in clause 5 shall in any way release the Supplier from any warranty or other obligations under this contract.

6. DELIVERY AND DOCUMENTS

- 6.1 Delivery of the goods and documents shall be made by the supplier in accordance with the terms specified by the purchaser in its schedule of requirements and special conditions of contracts, and the goods shall remain at the risk of the supplier until delivery has been completed. The delivery of the equipment shall be to the ultimate consignee as given in the Purchaseorder
- 6.2 The delivery of the goods and documents shall be completed within timeframe stated in Clause 6 of Section-2 (Tender information).
- 6.3 Deleted

6.4 The extension of delivery period against the purchase order, if any, should be granted subject to the condition that BSNL shall have the absolute right to revise the price(s) and also to levy penalty for the delayed supplies.

6.5 All aspects of safe delivery shall be the exclusive responsibility of the Bidder.

6.6 The delivery of the goods shall be completed within **THREE months** from the date of issue of Purchase Order. The actual delivery schedule will be given in purchase order.

The delivery of the materials shall be to the ultimate consignee as given in the purchase order.

7. TRAINING -NOT Applicable to this tender

8. INCIDENTAL SERVICES

The supplier may be required to provide any or all of the following services:

- (a) Performance or supervision of on-site assembly and/or start-up of the supplied Goods;
- (b) Furnishing of tools required for assembly and/or maintenance of supplied Goods;
- (c) Performance of supervision or maintenance and/or repair of the supplied Goods, for a period of time agreed by the parties provided that this service shall not relieve the supplier of any warranty obligations under this contract.

9. SPARES-NOT Applicable to this Tender

10. WARRANTY

10.1 The supplier shall warrant that the stores to be supplied shall be new and free from all defects and faults in materials used, workmanship and manufacture and shall be of the highest grade and consistent with the established and generally accepted standards for materials of the type ordered and shall perform in full conformity with the specifications and drawings. The supplier shall be responsible for any defect that may develop under the conditions provided by the contract and under proper use, arising from faulty material, design or workmanship such as corrosion of the equipment, inadequate quantity of material to meet equipment requirements, inadequate contact protection, deficiencies in circuit design and/ or otherwise and shall remedy such defects at its own cost when called upon to do so by the Purchaser who shall state in writing in what respect the

stores are faulty. This warranty shall survive inspection or payment for/ and acceptance of goods, but shall expire (except in respect of complaints notified prior to such date) **TWO YEARS** after the stores have been taken over under clause 5.5 above.

10.2 If it becomes necessary for the Supplier to replace or renew any defective portion(s) of the equipment under this clause, the provisions of the clause 10.1 shall apply to the portion(s) of the equipment so replaced or renewed

or until the end of the above mentioned period of twelve months, whichever may be later. If any defect is not remedied by the supplier within a reasonable time, the Purchaser may proceed to get the defects remedied from other supplier etc., at the supplier's risk and expenses, but without prejudice to any other rights which the purchaser may have against the supplier in respect of such defects.

10.3 Replacement under warranty clause shall be made by the supplier free of all charges at site including freight, insurance and other incidental charges.

10.4 Warranty includes free of cost on-site replacement of all faulty modules and other equipment parts.

11 PAYMENT TERMS

Payment of specified percentage of the price as stated in clause 5 of Section -2 (Tender Information) shall be made on receipt of goods by consignee.

11.1 For Supply of Goods (Deliverables) :

a) SMPS Power Plant

11.1.1 For claiming 50% payment the following documents are to be submitted to the paying authority.

(a) Invoice clearly indicating break up details of composite price i.e. Basic, Goods and Services Tax (GST), any other Duties and Taxes, Freight/Packing Charges, etc.

(b) Acknowledged Delivery Challan in original (Consignee Receipt) to be submitted from all 9 CLS locations.

(c) Inspection Certificate of QA (Payable copy in original)

(d) The sea freight receipt as per the rates approved by the Ministry of Water and Surface Transport, if applicable.

(e) E-way bill as prescribed in the GST law in case of movement of goods

(f) Proof of payment of GST

(g) Timely uploading of correct and necessary information on GSTN portal is mandatory as prescribed in GST compliances.

11.1.2 Payment of 40% shall be issued after completion of installation , Acceptance Testing and commissioning and on submission of copy of I&C certificate

11.1.3 The balance 10% payment shall be made on expiry of warranty period to ensure availability of input tax credit (ITC) & subject to condition that there are no damage/shortages. In those cases where such shortages/damages are intimated to the supplier in writing, the balance payment shall be released only after the cases are settled in accordance with the provision of the P.O.

11.1.4 100% Payment (in place of Payment 90% specified in clause 11.1.1 and 11.1.2 above) may be made on delivery, Acceptance Testing, installation and commissioning provided that an additional Bank Guarantee for an amount equal to Balance Payment 10% of the value of supplies [specified in clause 11.1.3 above] valid for a minimum period of two and a half years is furnished by the supplier along with an undertaking that the equipment/stores supplied shall be free from damages/shortages. In case purchaser intimates shortages/ damages in received stores to the supplier in writing, the Bank Guarantee shall be extended without fail by the supplier for a suitable period as requested by the purchaser in writing. Failure to do so shall result in forfeiture of Bank Guarantee. The Bank Guarantee shall be accepted at Circle Head Quarter and shall be released only after the cases are settled in accordance with the provisions available in the Purchase Order/ Tender document.

b) Lithium Ion Batteries and (1+1) 3 KVA Invertors

11.1.5 For claiming 50% payment the following documents are to be submitted to the paying authority.

(a) Invoice clearly indicating break up details of composite price i.e. Basic, Goods and Services Tax (GST), any other Duties and Taxes, Freight/Packing Charges, etc.

(b) Acknowledged Delivery Challan in original (Consignee Receipt) to be submitted from all 9 CLS locations for Lithium Ion Batteries and from all 7 CLS locations for (1+1) 3 KVA Invertors .

(c) Inspection Certificate of QA (Payable copy in original)

(d) The sea freight receipt as per the rates approved by the Ministry of Water and Surface Transport, if applicable.

(e) E-way bill as prescribed in the GST law in case of movement of goods

(f) Proof of payment of GST

(g) Timely uploading of correct and necessary information on GSTN portal is mandatory as prescribed in GST compliances.

11.1.6 Payment of 20% shall be issued after completion of Validation Testing and submission of Validation certificate from BSNL

11.1.7 Payment of 20% shall be issued after completion of installation, Acceptance Testing and commissioning and submission of copy of I&C certificate from the consignee

Read, understood and complied with-Signature of the bidder

- 11.1.8 The balance 10% payment shall be made on expiry of warranty period to ensure availability of input tax credit (ITC) & subject to condition that there are no damage/shortages. In those cases where such shortages/damages are intimated to the supplier in writing, the balance payment shall be released only after the cases are settled in accordance with the provision of the P.O.
- 11.1.9 100% Payment (in place of Payment 90% specified in clause 11.1.5, 11.1.6 and 11.1.7) above may be made on delivery, Validation testing, Acceptance Testing, installation and commissioning provided that an additional Bank Guarantee for an amount equal to Balance Payment 10% of the value of supplies [specified in clause 11.1.8 above] valid for a minimum period of two and a half years is furnished by the supplier along with an undertaking that the equipment/stores supplied shall be free from damages/shortages. In case purchaser intimates shortages/damages in received stores to the supplier in writing, the Bank Guarantee shall be extended without fail by the supplier for a suitable period as requested by the purchaser in writing. Failure to do so shall result in forfeiture of Bank Guarantee. The Bank Guarantee shall be accepted at Circle Head Quarter and shall be released only after the cases are settled in accordance with the provisions available in the Purchase Order/ Tender document.
- 11.1.10 *Kindly refer clause 27 of this section regarding "GST Invoice and Compliances" for submitting the bills.*

Note :- 1) If the supplier fails to furnish necessary supporting documents i.e. GST invoice / Customs invoices etc. and also fails to upload the information on GSTN in respect of the Duties/taxes for which input tax credit is available, the amount pertaining to such Duties/Taxes will be withhold/deducted from the payment due to the supplier.

2) Tax amount will be paid to the supplier only after supplier declares the details of the invoices in its return in GSTR 1 and GSTR-3 uploaded by the supplier and the same is reflected in GSTR-2A of BSNL on GSTN portal .

Note: However BSNL will make payment (excluding GST) to supplier only after the invoice is uploaded by supplier in GST outward return i.e., GSTR 1 and it is to be ensured that balance GST amount is paid within 180 days from the date of invoice, to comply condition of Input tax credit. This condition is applicable till the technical problems faced while working on GST network are resolved.

3) TDS/ TCS shall be deducted at the prescribed rate, if any (as the case may be).

4) TDS at the prescribed rate shall be made wherever applicable in pursuance of notification No: 50/2018- Central Tax dated 13-09-2018

5) BSNL can adjust/ forfeit Bank Guarantee obtained from the supplier against any loss of input tax credit to BSNL on account of supplier's default.

6) In case BSNL has to pay GST on reverse charge basis, the supplier would not

Read, understood and complied with-Signature of the bidder

charge GST on its invoices. Further, the supplier undertakes to comply with the provisions of GST law as may be applicable.

Further, in case of any dispute on the payment to be made to the supplier, the same shall be settled on or before the month of September following the end of financial year to which the invoice pertains.

Additionally, in case the dispute is not settled due to any act of the supplier and input credit on the said invoice is lost by BSNL, the same shall be recovered from the supplier.

11.2 For Installation & Commissioning :

11.2.1 For claiming 100% payment the following documents are to be submitted to the paying authority.

a) SMPS Power Plant

(a) Invoice clearly indicating break up details of composite price i.e. Basic, Goods and Services Tax (GST), any other Duties and Taxes etc.

(b) I&C certificate from the consignee of all 9 CLS locations

b) Lithium Ion Batteries and (1+1) 3 KVA Invertors

(a) Invoice clearly indicating break up details of composite price i.e. Basic, Goods and Services Tax (GST), any other Duties and Taxes etc.

(b) I&C certificate from the consignee of all CLS locations

(c) Copy of Validation certificate from all 9 CLS locations for Lithium Ion Batteries and from all 7 CLS locations for (1+1) 3 KVA Invertors.

Timely uploading of correct and necessary information on GSTN portal is mandatory as prescribed in GST compliances.

11.3. No payment will be made for goods rejected at the site on testing.

11.4. The bidder has to give the mandate for receiving payment costing Rs.5 lakhs and above electronically and the charges, if any, levied by bank has to be borne by the bidder/ contractor/supplier. The bidder company is required to give the following information for this purpose:-

- (a) Beneficiary Bank Name:
- (b) Beneficiary branch Name:
- (c) IFSC code of beneficiary Branch
- (d) Beneficiary account No.:
- (e) Branch Serial No. (MICR No.):
- (f) GSTIN No :

Read, understood and complied with-Signature of the bidder

12. PRICES

- 12.1 Prices charged by the supplier for goods delivered and services performed under the contract shall not be higher than the prices quoted by the Supplier in its Bid except for variation caused by change in taxes/ duties as specified in Clause-12.2 mentioned below.
- 12.2 For changes in taxes/ duties during the scheduled delivery period, the unit price shall be regulated as under:
- (a) Prices will be fixed at the time of issue of purchase order as per taxes and statutory duties applicable at that time
 - (b) In case of reduction of taxes and other statutory duties during the scheduled delivery period, purchaser shall take the benefit of decrease in these taxes/ duties for the supplies made from the date of enactment of revised duties/taxes.
 - (c) In case of increase in duties/taxes during the scheduled delivery period, the purchaser shall revise the prices as per new duties/ taxes for the supplies, to be made during the remaining delivery period as per terms and conditions of the purchase order.
- 12.3 Any increase in taxes and other statutory duties/ levies, after the expiry of the delivery date shall be to the supplier's account. However, benefit of any decrease in these taxes/duties shall be passed on to the Purchaser by the supplier. The total price is to be adjusted (by reducing the basic price) with increased duties and taxes as per price mentioned in PO.

13. CHANGES IN PURCHASE ORDERS

- 13.1 The purchaser may, at any time, by a written order given to a supplier, make changes within the general scope of the contract in any one or more of the following:
- (a) drawings, designs or specifications, where Goods to be supplied under the contract are to be specifically manufactured for the Purchaser;
 - (b) the method of transportation or packing;
 - (c) the place of delivery; or
 - (d) the services to be provided by the supplier.
- 13.2 ~~If any such change causes an increase or decrease in the cost of, or the time required for the execution of the contract an equitable adjustment shall be made in the contract price or delivery schedule, or both, and the contract shall accordingly be amended. Any proposal by the supplier for adjustment under this clause must be made within thirty days from the date of the receipt of the change in order.~~

14. SUBCONTRACTS

The Supplier shall notify the Purchaser in writing of all subcontracts awarded under this contract if not already specified in its bid. Such notification, in its original bid or later shall not relieve the supplier from any liability or obligation under the Contract.

15. DELAYS IN THE SUPPLIER'S PERFORMANCE

- 15.1 Delivery of the Goods and performance of the services shall be made by the Supplier in accordance with the time schedule specified by the purchaser in its purchase order. In case the supply is not completed in the stipulated delivery period, as indicated in the Purchase Order, purchaser reserves the right to short-close/ cancel this purchase order

and/ or recover liquidated damage charges. The cancellation/ short-closing of the order shall be at the risk and responsibility of the supplier and purchaser reserves the right to purchase balance unsupplied item at the risk and cost of the defaulting vendors.

15.2 Delay by the Supplier in the performance of its delivery obligations shall render the Supplier liable to any or all of the following sanctions:

- (a) forfeiture of its performance security,
- (b) imposition of liquidated damages, and/ or
- (c) Short closure of the contract in part or full and/ or termination of the contract for default.

15.3 If at any time during the performance of the contract, the supplier encounters condition impending timely delivery of the goods and performance of service, the supplier shall:

- (a) Promptly notify to the Purchaser in writing the fact of the delay, its likely duration and its cause(s). As soon as practicable after receipt of the supplier's notice, the purchaser shall evaluate the situation and may at its discretion extend the period for performance of the contract (by not more than 20 weeks or as per provisions of clause 16.2 Section-5A as per provision given below :
- (b) The vendor has to submit their request for extension along with the undertaking as per clause 24 Section-5A (Fall Clause) The vendor shall also submit unconditional acceptance of the conditions for delivery period extension i.e. applicability of liquidated damages, prices to be provisional and to be regulated as per clauses 12.3 and 24 of section-5A and submission of additional BG, wherever applicable. The decision regarding extension shall be communicated within two weeks of the receipt of request and after receipt of the unconditional acceptance and the undertaking mentioned above.
- (c) In case extension is being granted beyond 20 weeks then the vendor shall submit additional BG while seeking extension. For piecemeal items the amount of additional BG shall be 5% of the value of balance quantity of items to be supplied for which extension in delivery period has been sought. In case of infrastructure/turnkey projects other than as stated above, 1% of the total project value shall be the value for additional BG. The additional BG shall be valid for six months beyond extension of delivery period sought and shall be discharged after the full ordered quantity has been supplied to the ultimate consignee within the last extended delivery period and consignee receipt without prejudice to the other remedies available to the purchaser.
- (d) If the vendor fails to deliver the full ordered quantity even during extended delivery period then the PO shall be short-closed and the Performance Bank Guarantee as well as additional BG shall be forfeited.
- (e) Format of (i) letters conveying conditions of DP extension and (ii) DP extension letter are at Section 7 Part A & Part B. .

15.4 If the supplies are not completed in the extended delivery period, the purchase order shall be short-closed and both the Performance securities shall be forfeited.

16. LIQUIDATED DAMAGES

16.1 The date of delivery of the stores stipulated in the acceptance of the tender should be deemed to be the essence of the contract and delivery must be completed not later than

the dates specified therein. Extension will not be given except in exceptional circumstances. Should, however, deliveries be made after expiry of the contracted delivery period, without prior concurrence of the purchaser and be accepted by the consignee, such delivery will not deprive the purchaser of its right to recover liquidated damage under clause 16.2 below. However, when supply is made within 21 days of the contracted original delivery period, the consignee may accept the stores and in such cases the provision of clause 16.2 will not apply. Further, DP extension for this grace period of 21 days shall not be necessary.

16.2 While granting extension of delivery period as per clause 15.3, the liquidated damages shall be levied as follows:

- (a) Should the supplier fail to deliver the store or any consignment thereof within the period prescribed and agreed for delivery, the purchaser, without prejudice to other remedies available to the purchaser shall be entitled to recover, as agreed liquidated damages for breach of contract, a sum equivalent to 0.5% of the value of the delayed supply and/ or undelivered material/ supply for each week of delay or part thereof for a period up to 10 (TEN) weeks, and thereafter at the rate of 0.7% of the value of the delayed supply and/ or undelivered material/ supply for each week of delay or part thereof for another TEN weeks of delay.
- (b) DP extension beyond 20 weeks would not be generally allowed. The extension beyond 20 weeks may be decided in most exceptional circumstances on case to case basis, by the CGM stating reasons and justifications for grant of extension of delivery period beyond 20 weeks.
- (c) In the case of package supply/ turnkey projects when the delayed portion of the supply materially hampers installation and commissioning of the systems, LD charges shall be levied as above on the total value of the concerned package of the Purchase Order
- (d) Quantum of liquidated damages assessed and levied by the purchaser and decision of the purchaser thereon shall be final and binding on the supplier, further the same shall not be challenged by the supplier either before Arbitration tribunal or before the court. The same shall stand specifically excluded from the purview of the arbitration clause, as such shall not be

referable to arbitration.

- (e) The total value of the liquidated damages as per above sub-clauses shall be limited to a maximum of 12% (Twelve percent) i.e. LD shall be levied up to 20 weeks only as per provision at Para (a).

16.3 In cases where the scheduled delivery period is distributed month-wise or is in installments, the liquidated damages shall be imposed for delay in each scheduled month/ installment. Liquidated damages shall be calculated separately for quantities to be supplied in every month/ installment and the corresponding delay. If the supplier supplies full quantity before the expiry of the scheduled delivery period of the last month/ installment but there is delay in month-wise/ installment-wise supply, then also liquidated damages shall be levied on the supplies against the earlier months/ installments that have been delayed. Twenty (20) weeks for the purpose of additional BG and grant of DP extension shall be counted from the last month/ installment.

16.4 Wherever Clause of grace period of 21 days exists in the Purchase Order as well as in the Tender document against which the Purchase Order has been released, applicability of the grace period shall be subject to:

- (a) The Store has been offered to 'QA' by the Supplier for Inspection/Testing within the contracted original delivery period.
 - (b) 'QA' has cleared the equipment for dispatch within the contracted original delivery period.
 - (c) The Supplier has carried out dispatch/ dispatched the equipment within the contracted original delivery period. For claiming benefit of grace period, the supplier shall have to satisfy the Paying Authority by furnishing documents of dispatch confirming that it has actually dispatched the equipment within contracted original delivery period.
 - (d) The Store has been received by the ultimate consignee within 21 days of the expiry of contracted original delivery period.
 - (e) The grace period of 21 days shall be allowed only in those cases which fulfill all the conditions given in Para (a) to (d) above. During grace period no LD charges shall be levied
- 16.5 Liquidated damages shall also be levied on the Installation and Commissioning part of the Purchase order at the above rates if such delays are attributable to the supplier.
- 16.6 GST on account of liquidated damages due to delay in supply of goods would be borne by supplier.

17. FORCE MAJEURE

- 17.1 If, at any time, during the continuance of this contract, the performance in whole or in part by either party of any obligation under this contract is prevented or delayed by reasons of any war or hostility, acts of the public enemy, civil commotion, sabotage, fires, floods, explosions, epidemics, quarantine restrictions, strikes, lockouts or act of God (hereinafter referred to as events) provided notice of happenings of any such eventuality is given by either party to the other within 21 days from the date of occurrence thereof, neither party shall by reason of such event be entitled to terminate this contract nor shall either party have any claim for damages against other in respect of such non-performance or delay in performance, and deliveries under the contract shall be resumed as soon as practicable after such an event comes to an end or ceases to exist, and the decision of the Purchaser as to whether the deliveries have been so resumed or not shall be final and conclusive. Further that if the performance in whole or part of any obligation under this contract is prevented or delayed by reasons of any such event for a period exceeding 60 days, either party may, at its option, terminate the contract.
- 17.2 Provided, also that if the contract is terminated under this clause, the Purchaser shall be at liberty to take over from the Supplier at a price to be fixed by the purchaser, which shall be final, all unused, undamaged and acceptable materials, bought out components and stores in course of manufacture which may be in possession of the Supplier at the time of such termination or such portion thereof as the purchaser may deem fit, except such materials, bought out components and stores as the Supplier may with the concurrence of the purchaser elect to retain.

18. ACTION BY PURCHASER AGAINST BIDDER(S)/ VENDOR(S) IN CASE OF DEFAULT.

- 18.1 In case of default by Bidder(s)/ Vendor(s) such as

- (a) Failure to deliver and/ or commission any or all of the goods within the time period(s) specified in the contract, or any extension thereof granted by the purchaser pursuant to clause 15 of this section;
- (b) Failure to perform any other obligation(s) under the Contract; and
- (c) Equipment does not perform satisfactory in the field in accordance with the specifications;
- (d) Or any other default whose complete list is enclosed in Appendix-1 of Section-4, Part-A;

Purchaser will take action as specified in Appendix-1 of Section-4, Part-A.

19. Tax Indemnity clause:

BSNL has the right to recover Input Tax Credit loss suffered by it due to any wrong declaration on invoice by the supplier

20. ARBITRATION

I. ARBITRATION (Applicable in case of supply orders/Contracts with firms, other than Public Sector Enterprise) (Not applicable in cases valuing less than Rs. 5 lakhs)

Except as otherwise provided elsewhere in the contract, if any dispute, difference, question or disagreement arises between the parties hereto or their respective representatives or assignees, in connection with construction, meaning, operation effect. Interpretation of the contract or breach thereof which parties unable to settle mutually, the same shall be referred to Arbitration as provided hereunder: party wishing to commence arbitration proceeding shall revoke Arbitration Clause by giving 60 days' notice to the designated officer of the other party. The notice invoking arbitration shall specify all the points of disputes with details of the amount claimed to be referred to arbitration at the time of invocation of arbitration and not thereafter. If the claim is in foreign currency, the claimant shall indicate its value in Indian Rupee for the purpose of constitution of the arbitral tribunal.

(2) The number of the arbitrators and the appointing authority will be as under:

Claim amount (excluding claim for counter claim, if any)	Number of arbitrator	Appointing Authority
Above Rs. 5 lakhs to Rs. 5 crores	Sole Arbitrator to be appointed from a panel of arbitrators of BSNL.	BSNL (Note: BSNL will forward a list containing names of three empanelled arbitrators to the other party for selecting one from the list who will be appointed as sole arbitrator by BSNL)
		One arbitrator by each party and the 3rd arbitrator, who

Above Rs. 5 crores	3 Arbitrators	shall be the presiding arbitrator, by the two arbitrators. BSNL will appoint its arbitrator from its panel.
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3. Neither party shall appoint its serving employee as arbitrator.

4. If any of the Arbitrators so appointed dies, resigns, becomes incapacitated or withdraws for any reason from the proceedings, it shall be lawful for the concerned party/arbitrators to appoint another person in his place in the same manner as aforesaid. Such person shall proceed with the reference from the stage where his predecessor had left if both parties consent for the same; otherwise, he shall proceed de novo.

5. Parties agree that neither party shall be entitled for any pre-reference or pendentelite interest on its claims. Parties agree that any claim for such interest made by any party shall be void.

6. Unless otherwise decided by the parties, Fast Track procedure as prescribed in Section 29 B of the Arbitration Conciliation Act, 1996 for resolution of all disputes shall be followed, where the claim amount is upto Rs. 5 crores,

[29B. Fast track procedure - (1) Not Withstanding anything contained in this Act, the parties to an arbitration agreement, may, at any stage either before or at the time of appointment of the arbitral tribunal, agree in writing to have their dispute resolved by fast track procedure specified in sub-section (3).

(2) The parties to the arbitration agreement, while agreeing for resolution of dispute by fast track procedure, may agree that the arbitral tribunal shall consist of a sole arbitrator who shall be chosen by the parties.

(3) The arbitral tribunal shall follow the following procedure while conducting arbitration proceedings under Sub-section (1):-

(a) The arbitral tribunal shall decide the dispute on the basis of written pleadings, documents and submissions filed by the parties without oral hearing;

(b) The arbitral tribunal shall have power to call for any further information or clarification from the parties in addition to the pleadings and documents filed by them;

(c) An oral hearing may be held only, if, all the parties make a request or if the arbitral tribunal considers it necessary to have oral hearing for clarifying certain issues;

(d) The arbitral tribunal may dispense with any technical formalities, if an oral hearing is held, and adopt such procedure as deemed appropriate for expeditious disposal of the case.

(4) The award under this section shall be made within a period of six months from the date the arbitral tribunal enters upon the reference.

(5) If the award is not made within the period specified in sub-section (4), the provisions of sub- sections (3) to (9) of Section 29 A shall apply to the proceedings.

(6) The fees payable to the arbitrator and the manner of payment of the fees shall be such as may be agreed between the arbitrator and the parties.]

7. The arbitral tribunal shall make and publish the award within time stipulated as under:

Amount of Claims and Counter Claims	Period for making and publishing of the Award (counted from the date the tribunal enters upon the reference)
UptoRs. 5 crores	Within 6 months (Fast Track procedure)
Above Rs. 5 crores	Within 12 months

However the above time limit can be extended by the Arbitrator for reasons to be recorded in writing with the consent of parties and in terms of provisions of the Act.

8. In case of arbitral tribunal of 3 arbitrators, each party shall be responsible to make arrangements for the travel and stay, etc. of the arbitrator appointed by it. Claimant shall also be responsible for making arrangements for travel/stay arrangements for the Presiding Arbitrator and the expenses incurred shall be shared equally by the parties.

In case of sole arbitrator, BSNL shall make all necessary arrangements for his travel/stay and the expenses incurred shall be shared equally by the parties.

9.The Arbitration proceeding shall be held at Chennai only.

10. Subject to the aforesaid conditions, provisions of the Arbitration and Conciliation Act, 1996 and any statutory modifications or re-enactment thereof shall apply to the arbitration proceedings under this clause.

II. ARBITRATION CLAUSE (Applicable in case of Contracts POs, APOs, Tenders, EOLs etc between BSNL and other CPSEs / Central/ State Government (s)/ as the case may be in terms of DPE guidelines for settlement of commercial disputes between Public Sector Enterprises inter-se and Public Sector Enterprise(s) and Government Department(s) through AMRCD (Administrative Mechanism for Resolution of CPSEs disputes) in the Department Of Public Enterprises.

“In the event of any dispute or difference relating to interpretation and application of the provisions of commercial contracts between Central Public Sector Enterprises (CPSEs)/ Port Trusts inter se and also between CPSEs and Government Departments/ Organizations (excluding disputes concerning Railways, Income Tax, Customs & Excise Departments), such

dispute or difference shall be taken up by either party for resolution through AMRCD as mentioned in DPE OM No. 4(1)/2013 (GM)/FTS-1835 dated 22-05-2018”.

The said OM explains the Applicability of the clause, structure of committee, procedure to be adopted for resolution of the dispute etc. in detail.

21. SET OFF

Any sum of money due and payable to the supplier (including security deposit refundable to him) under this contract may be appropriated by the purchaser or the BSNL or any other person(s) contracting through the BSNL and set off the same against any claim of the Purchaser or BSNL or such other person or person(s) for payment of a sum of money arising out of this contract or under any other contract made by the supplier with the Purchaser or BSNL or such

other person(s) contracting through the BSNL. In case of set off of the security deposit against any claim of the purchaser or BSNL or such other person or person(s) for payment of a sum of money arising out of this contract or under any other contract made by the supplier with the Purchaser or BSNL or such other person(s) contracting through the BSNL, the

supplier

GST on such set off will be borne by the .
GST would not be liable on security deposit. But if supplier set off the security deposit against any claim of the purchaser or BSNL or such other person or person(s) for payment of a sum of money arising out of this contract or under any other contract made by the supplier with the Purchaser or BSNL or such other person(s) contracting through the BSNL, then GST would be levied.

22. INTIMATION OF SUPPLY STATUS

The bidders, who are given Purchase Orders, must give the details of the supplies made against all the Purchase Orders every month on the first working day of the following month to MM section, O/o CGM, STP, Chennai

23. DETAILS OF THE PRODUCT

The bidder should furnish the name of its collaborator (if applicable), brand name, model number, type of the products and HSN classification under GST and Customs law offered in this tender. The technical literatures of the products should also be submitted. No change in either technology or product shall be permitted after opening of bids.

24. FALL CLAUSE

24.1 The prices once fixed will remain valid during the scheduled delivery period except for the provisions in clause 12.1 of Section-5A. Further, if at any time during the contract

- (a) It comes to the notice of purchaser regarding reduction of price for the same or similar equipment/ service; And / or
- (b) The prices received in a new tender for the same or similar equipment/ service are less than the prices chargeable under the contract.

24.2 The purchaser, for the purpose of delivery period extension, if any, will determine and intimate the new price, taking into account various related aspects such as quantity, geographical location etc., and the date of its effect for the balance quantity/ service to the vendor. In case the vendor does not accept the new price to be made applicable during the extended delivery period and the date of its effect, the purchaser shall have the right to terminate the contract without accepting any further supplies. This termination of the contract shall be at the risk and responsibility of the supplier and the purchaser reserves the right to purchase the balance unsupplied quantity/ service at the risk and cost of the defaulting vendor besides considering the forfeiture of its performance security.

24.3 The vendor while applying for extension of time for delivery of equipment, if any, shall have to provide an undertaking as "We have not reduced the sale price, and/ or offered to sell the same or similar equipment/ service to any person/ organization including Department of central/state Government or any Central/ State PSU at a price lower than the price chargeable under the contract for scheduled delivery period."

24.4 In case under taking as in Clause 24.3 is not applicable, the vendor will give the details of prices, the name(s) of purchaser, quantity etc. to the purchaser, while applying extension of delivery period.

25. COURT JURISDICTION

25.1 Any dispute arising out of the tender/ bid document/ evaluation of bids/ issue of APO shall be subject to the jurisdiction of the competent court at the place from where the NIT/ tender has been issued.

25.2 Where a contractor has not agreed to arbitration, the dispute/ claims arising out of the Contract/ PO entered with him shall be subject to the jurisdiction of the competent Court at the place from where Contract/ PO has been issued. Accordingly, a stipulation shall be made in the contract as under.

"This Contract/ PO is subject to jurisdiction of Court at Chennai only".

26. General Guidelines:-

"The General guidelines as contained in Chapter 5, 6 and 8 of General Financial Rules as amended from time to time on works, procurement of goods and services and contract management respectively may also be referred to as guiding principles".

27. GST Invoice and Compliances

27.1 All the details of supplier (name, address, GSTIN, place of supply, SAC/ HSN code etc.) and other mandatory details shall be mentioned on the invoice.

27.2 Invoice/Supplementary invoice/Debit Note/Credit Note/Receipt Voucher need to be issued in compliant format and timely within the time prescribed under GST law.

27.3 In case of any deficient/incomplete/rejected supply, BSNL shall convey the same in a reasonable time to enable the supplier to issue credit note and take tax adjustment.

27.4 It would be the responsibility of the supplier to declare correct information on invoice and GSTN viz. the amount, the place of supply, rate of tax etc. In case, the eligibility of input tax credit is questioned or denied to BSNL on account of default by the supplier, the same would be recovered by BSNL from the supplier.

27.5. Registered location of the both the parties i.e. BSNL and supplier should be mentioned in the agreement with GSTIN No. Further, supplier should raise invoices at the registered premises of BSNL for availing of credit and ensure that the place of supply as per GST law is same as registered premises

27.6. BSNL could at any time instruct the supplier to raise its invoices at a particular location of BSNL

27.7. It is the responsibility of the supplier to ensure that place of supply and the GSTN of BSNL are in the same state. If for any reason they are not in the same state, the supplier shall intimate to BSNL and give adequate time before raising of the invoice.

27.8. E-waybill number should be mentioned on the invoices.

27.9. Supplier shall be responsible for timely issuance and delivery of invoice/ DN/ CN to enable BSNL to claim tax benefit on or before the stipulated time period provided by the GST law.

(a) It is the responsibility of the supplier to ensure that outward supply return (GSTR-1) would be filed correctly. If not, then cost would be borne by supplier.

(b) Reporting of correct outward supply by supplier in the outward return (GSTR-1) is the responsibility of the supplier. In case of mismatch because of supplier's fault, prompt amendments must be made by the supplier else supplier would be required to indemnify BSNL of the loss of credit due to mis-match. The compliances to be adhered by supplier includes (but is not limited to) the following:

(i) Uploading appropriate invoice details on the GSTN within the stipulated time;

(ii) Issuing GST compliant invoice / CN/ DN. PO issued by BSNL should be referred by supplier for capturing information on the invoice.

(iii) Supplier needs to pay the entire self-assessed tax on timely basis. (iv) Where invoice is not uploaded or incorrect upload of invoice detail of GSTN by supplier then credit on such invoice will be given provisionally subject to matching. So, acceptance of changes made by BSNL on GSTN on account of non-upload or incorrect upload of invoice details on GSTN is to be submitted by supplier. Such changes w.r.t. the mismatch are required to be accepted by supplier within the time limit prescribed under the GST law. It should be noted that in case supplier does not accept such changes within the time limit prescribed under GST law, the loss of input tax credit (if any) would be recovered from the supplier. In case of mismatch because of Supplier's fault, prompt amendments must be made by the supplier else supplier would be required to indemnify BSNL for the losses of credit and interest paid due to mismatch.

a. Supplier to issue all necessary documentation and perform all necessary compliances for BSNL to be eligible to claim the input tax credit of GST tax to them. In case BSNL is unable to claim the input tax credit, the amount w.r.t. GST charged by the supplier would be recovered from the supplier.

b. A self-declaration along with evidence that the bidder is not black listed by GST authorities. In case supplier gets black listed during the tenure of BSNL contract, then supplier must indemnify BSNL to ensure that no loss of input tax credit is borne by BSNL due to default of supplier.

27.10 Refer Annexure below(placed as Annexure- A1) for clause stating that all the details of supplier (name, address, GSTN/ unregistered supplier, place of supply, SAC/ HSN code etc.) and other mandatory details shall be mentioned on the invoice

27.11. Where the location agreed are more than one state, then separate

invoice state wise to claim input tax credit in a particular state (typically happens in a bill to-ship to scenario) shall have to be submitted.

27.12 It shall be the responsibility of the supplier to mention State of place of supply of goods/services in the invoice issued to BSNL.

27.13) TDS/ TCS shall be deducted at the prescribed rate, if any (as the case may be). TDS at the prescribed rate shall be made wherever applicable in pursuance to notification No: 50/2018- Central Tax dated 13-09-2018

Annexure-A1

Sr.No	Particulars for Input Invoice	Sr.No	Particulars for Receipt Voucher
1	Name and registered address of the supplier	1	Name and registered address of the supplier
2	GST registration number of supplier	2	GST registration number of supplier
3	Name of BSNL entity	3	Name of BSNL entity
4	Bill to' and 'Ship to' address of BSNL	4	Bill to' and 'Ship to' address of BSNL
5	GST registration number of BSNL	5	GST registration number of BSNL
6	Date of invoice	6	Date of document issued
7	Invoice number	7	Document Number
8	Place of supply (including state)	8	Place of supply (including state)
9	Type of Tax (CGST, SGST and IGST)	9	Amount of advance taken
10	Rate of Tax	10	Type of Tax (CGST, SGST and IGST)
11	Value of goods / service and type / rate / amount of Tax should be separately mentioned	11	Rate of Tax
12	Quantity of goods	12	Quantity of goods
13	Total value of invoice	13	In case invoice has more than one tax rates, rate of tax and amount of tax for each supply should be mentioned separately
14	Description of Supply of goods / service	Note: Invoice issued at a later stage against receipt voucher to mention this document number. Refund Voucher to be issued against the advances received if no supply is made and no invoice is raised	
15	HSN Code in case of goods		
16	Accounting code in case of service		
17	In case invoice has more than one tax rates, rate of tax and amount of tax for each supply should be mentioned separately		

Read, understood and complied with-Signature of the bidder

SECTION -5 Part B

SPECIAL (COMMERCIAL) CONDITIONS OF CONTRACT (SCC)

The Special (Commercial) Conditions of Contract (SCC) shall supplement General (Commercial) Conditions of Contract (GCC) as contained in Section 5 Part A and wherever there is a conflict, the provisions herein shall prevail over those in Section 5 Part A i.e. General (Commercial) Conditions of Contract (GCC)

1. Quality Assurance and Testing:

- a) The supply will be accepted only after quality assurance tests are carried out by the Quality Assurance Wing of BSNL as per prescribed schedule and material passing the test successfully
- b) The QA units of BSNL while clearing the equipment/ stores will strictly adhere to the package discipline as described in Purchase Order. Supplies made in full, as per Purchase Order, of all the packages during delivery period only will be deemed to have been supplied within the scheduled delivery period.

2. Deleted

3. Loading:

In case any item is not quoted by a Bidder mentioned in the SOR of the tender document or the price of any item is not available in its own bid, then the bid shall be loaded by the highest price quoted by any of the bidders for that item. The loaded item shall be supplied at lowest cost quoted by any of the bidder. – Duplicate to Clause no. **General Instructions to the Bidders No. 8** On page No. 19 so can be deleted.

- (a) Cases in which the bidder has quoted for less quantity for any of the items than that indicated in the SoR of the tender document, then the price bid shall be loaded to the extent of the difference in quantity of the item to meet the full requirement of the SoR on a pro-rata basis for the purpose of evaluation & ordering.
- (b) No de-loading of the bid is envisaged, if the quoted quantity in the bid is higher than that requested in the tender for the purpose of evaluation.
- (c) Deleted
- (e) Offer to the L1 bidder after correcting the arithmetical errors and effecting change in unit prices due to loading shall not tantamount to counter offer. If not accepted by the bidder, then he/ she shall be liable to be barred from participating in future tenders/ EOIs/ RFPs of BSNL for a period of two years.

4. Comprehensive AMC

- a. The Supplier shall quote for ~~year-wise comprehensive Annual Maintenance Contract for five years along with Supply and ITC which shall become effective at the~~

~~end of the warranty period.~~ The cost shall be including visits of the engineers, etc.

- b. No separate charges shall be paid for visit of engineers or attending to faults and repairs or supply of spare parts.
- c. The payment of AMC shall be made only when the bidder submits the agreement for the AMC with its back-end OEM / technology partners.
- d. During the warranty the bidder shall perform all the functions as enunciated under the AMC at no extra cost to the Purchaser. All the penalty clauses shall be applicable during the period of warranty in case of failure on part of supplier.
- e. ~~The selected bidder shall submit a bank guarantee against AMC, valid for a period of five and half years, two months before the expiry date of the original PBG submitted against the PO. Purchaser reserves the right to forfeit the PBG if the BG against AMC is not submitted in time. Amount of Bank Guarantee shall be the average of the sum of AMC charges for five years.~~
- f. Penalties
 - ☐ If the equipment remains faulty beyond 10 days from the date of lodging complaint with vendor, penalty at the rate of Rs 1000 (One thousand only) per day will be recovered from vendor ~~out of the withheld amount towards warranty maintenance or from security deposit or by raising bills.~~ Maximum penalty/year will be 1 % of the order value. Beyond which BSNL has the right to get the work done from alternate sources at the vendors risk and cost.
 - ☐ The penalty shall be deducted from the ~~quarterly~~ yearly bills. The maximum value of penalty for fault shall not exceed 5% of AMC amount in that ~~quarter~~ year. The overall cap for the penalties shall be 5% of the total ~~quarterly~~ yearly AMC amount.
- g. AMC charges shall be paid at the end of ~~each quarter~~ every year.
 - i. No advance payment for AMC shall be made.
 - ii. ~~The entire AMC duration for a year will be divided into a period of four quarters.~~
 - iii. After successful completion of the AMC period of each ~~quarter~~ year ~~period~~, payment will be made as per the payment terms & conditions after making due adjustment towards penalties shall be made based on the bills submitted.

SECTION-6

6 (A).UNDERTAKING & DECLARATION

6(A) - For understanding the terms & condition of Tender & Spec. of work

a) Certified that:

1. I/ We have read, understood and agree with all the terms and conditions, specifications included in the tender documents & offer to execute the work at the rates quoted by us in the tender form.
2. I/we declare that that there is no addition / deletion /corrections have been made in the downloaded tender document being submitted and it is identical to the tender document appearing on the website.
3. If I/ We fail to enter into the agreement & commence the work in time,the EMD/ SD deposited by us will stand forfeited to the BSNL.

b) The tenderer hereby covenants and declares that:

1. All the information, Documents, Photo copies of the Documents/Certificates enclosed along with the Tender offer are correct.
2. If anything is found false and/or incorrect and/or reveals any suppression of fact at any time, BSNL reserves the right to debar our tender offer/ cancel the LOA/ Purchase/ work order if issued and forfeit the EMD/ SD/ Bill amount pending with BSNL. In addition, BSNL may debar the contractor from participation in its future tenders.

Date:

Signature of Tenderer

Place:

Name of Tenderer.

Along with date & Seal

Read, understood and complied with-Signature of the bidder

6 (B) - NEAR-RELATIONSHIP CERTIFICATE:

(Format of the Certificate to be given as per the clause 34.4 of Section-4 Part-A by the bidder in respect of status of employment of his/ her near relation in BSNL)

The format of the certificate to be given is

"I.....s/o.....r/o.....
.....

.....hereby certify that none of my relative(s)
as

defined in the tender document is/are employed in BSNL unit as per details given in tender document. In case at any stage, it is found that the information given by me is false/ incorrect, BSNL shall have the absolute right to take any action as deemed fit/without any prior intimation to me."

Signature of the
Tenderer
With date and seal

Read, understood and complied with-Signature of the bidder

6 (C)–Declaration for not being black listed by BSNL:

(Format of the Certificate to be given as per the clause 4(e) Section-1 Part A & clause (xii) of Section-2 by the bidder in respect of not being black listed by BSNL)

“ I declare that we M/s..... is not being black listed by BSNL HQ or any unit of BSNL in the past three years.

In case at any stage, it is found that the information given above is false or incorrect, BSNL shall have the absolute right to take any action as deemed fit/ without any prior intimation.”

Signature of the
Authorised
Representative of the
Tenderer
With date and seal

6 (D)–Declaration for not being black listed by GST Authorities:

(Format of the Certificate to be given as per the clause 4(h) Section-1 Part A & clause 27.9(vi) of Section-5 Part A by the bidder in respect of bidder not being black listed by GST authorities)

“Ideclare that we M/s..... is not being black listed by GST authorities

and that in case we get black listed during the tenure of BSNL contract, we will indemnify BSNL any loss that may arise on account of non-compliance to the provisions under the GST Act, 2017.”

Signature of the
Authorised
Representative of the
Tenderer
With date and seal

Read, understood and complied with-Signature of the bidder

ANNEXURE-A

CLAUSE BY CLAUSE COMPLIANCE

Sl. No	Section No	Details	Remark for compliance (All clauses of this section are complied)
1	3 Part A	Scope of work	All clauses of this section are complied
2	3 Part B	TECHNICAL SPECIFICATIONS/ REQUIREMENTS	All clauses of this section are complied
3	3 Part C	Schedule of Requirement (SOR)	All clauses of this section are complied
4	4 Part A	General Instructions to Bidders(GIB)	All clauses of this section are complied
5	4 Part B	Special Instructions to Bidders(SIB)	All clauses of this section are complied
6	4 Part C	E-Tendering Instructions to Bidders	All clauses of this section are complied
7	5 Part A	General (Commercial) Conditions of Contract (GCC)	All clauses of this section are complied
8	5 Part B	Special (Commercial) Conditions of Contract (SCC)	All clauses of this section are complied

Note :

In case of deviations, a statement of the deviations and exception to the provision of the Technical Specifications and Commercial Conditions shall be given by the bidder.

Signature of the Tenderer
With date and seal

Read, understood and complied with-Signature of the bidder

Annexure-B

Form 1

Format for Self Certification regarding Local Content (LC) for Telecom Product, Services or Works

Date: _____

I _____ S/o, D/o, W/o _____ Resident of _____

hereby solemnly affirm and declare as under:

1. That I agree to abide by the terms and conditions of Department of Telecommunications, Government of India issued vide Notification No: 18-10/2017-IP dated 29.08.2018 and Notification No: P-45021/2/2017-PP (BE-II) dated 28-05-18 issued by Ministry of Commerce and Industry.
2. That the information furnished hereinafter is correct to best of my knowledge and belief and I undertake to produce relevant records before the procuring entity or any other authority so nominated by the Department of Telecommunications, Government of India for the purpose of assessing the LC.
3. That the LC for all inputs which constitute the said Telecom Product/Services/Works has been verified by me and I am responsible for the correctness of the claims made therein.
4. That in the event of the LC of the Telecom Product/Services/Works mentioned herein is found to be incorrect and not meeting the prescribed LC norms, based on the assessment of an authority so nominated by the Department of Telecommunications, Government of India and I will be liable for action as per provision under clause 9 (f) of Public Procurement (Preference to Make in India) Order 2017.
5. That I agree to maintain all information regarding my claim for LC in the Company's record for a period of 2 years and shall make this available for verification to any statutory authorities.
 - i) Name and details of the Local supplier (Registered Office, Manufacturing unit location, nature of legal entity)
 - ii) Date on which this certificate is issued
 - iii) Telecom Product/Services/Works for which the certificate is produced
 - iv) Procuring agency to whom the certificate is furnished
 - v) Percentage of LC claimed
 - vi) Name and contact details of the unit of the manufacturer
 - vii) Sale Price of the product
 - viii) Ex-Factory Price of the product
 - ix) Freight, insurance and handling
 - x) Total Bill of Material
 - xi) List and total cost value of inputs used for manufacture of the Telecom Product / Services/ Works
 - xii) List and total cost of inputs which are locally sourced. Please attach LC certificates from local suppliers, if the input is not in-house.
 - xiii) List and cost of inputs which are imported , directly or indirectly

For and on behalf of _____ *(Name of firm/entity)*

Authorized signatory (To be duly authorized by the Board of Directors)
Name, Designation and Contact No. and date

Read, understood and complied with-Signature of the bidder

SECTION- 7
PROFORMA

7(A) For the BIDSECURITY/ EMD Guarantee
(To be typed on Rs.100/- non-judicial stamp paper)

Sub: Bid Security/EMD guarantee.

Whereas M/s.....R/o
..... (Hereafter referred to as Bidder) has approached us
for giving Bank Guarantee of Rs./- (hereafter known as the "B.
G. Amount") valid up to / / 20.... (here after known as the "Validity date") in favour
of CGM BSNL STP CHENNAI (Hereafter referred to as BSNL, STP) for participation in the tender
of work of..... vide tender no.....
.....

Now at the request of the Bidder, WeBank.....
.....Branch having
..... (Address) and Regd. office address as
(Hereinafter called "the Bank") agrees to give this guarantee as hereinafter contained:

2. We the Bank do hereby undertake to pay the amounts due and payable under this guarantee without any demur, merely on a demand from the BSNL STP stating that the amount claimed is due by way of loss or damage caused to or would be caused to or suffered by the BSNL, STP by reason of breach by the said bidder(s) of any of terms or conditions contained in the said Agreement or by reason of the bidder (s) failure to perform the said Agreement. Any such demand made on the bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee where the decision of the BSNL, STP in these counts shall be final and binding on the bank. However, our liability under this guarantee shall be restricted to an amount not exceeding the "B. G. Amount".

3. We undertake to pay to the BSNL, STP any money so demanded notwithstanding any dispute or disputes raised by the bidder(s) in any suit or proceeding before any court or tribunal relating thereto our liability under this present being absolute and unequivocal. The Payment so made by us under this bond shall be valid discharge of our liability for payment there under and the bidder(s) shall have no claim against us for making such payment.

4. We the Bank further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said agreement and that it shall continue to be enforceable till all the dues of the BSNL, STP under or by virtue of the said Agreement have been fully paid and its claims satisfied or discharged or till BSNL, STP Certifies that the terms and conditions of the said Agreement have been fully and properly carried out by the said bidder(s) and accordingly discharge this guarantee. Unless a demand or claim under this guarantee is made on us in writing or before the

Read, understood and complied with-Signature of the bidder

expiry of Validity date from the date hereof, we shall be discharged from all liability under this guarantee thereafter.

5. We the Bank further agree with the BSNL, STP that the BSNL, STP shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Agreement or to extend time of performance by the said bidder(s) from time to time or to postpone for any time or from time to time any of the powers exercisable by the BSNL, STP against the said bidder(s) and to forbear or enforce any of the terms and conditions relating to the said agreement and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Bidder(s) or for any forbearance, act or omission on the part of the BSNL, STP or any indulgence by the BSNL, STP to the said bidder(s) or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect of so relieving us.

6. Notwithstanding anything herein contained;

(a) The liability of the Bank under this guarantee is restricted to the "B.G. Amount" and it will remain in force up to its Validity date specified above.

(b) The guarantee shall stand completely discharged and all rights of the BSNL, STP under this Guarantee shall be extinguished if no claim or demand is made on us in writing on or before its validity date.

7. In case BSNL, STP demands for any money under this bank guarantee, the same shall be paid through banker's Cheque in favour of "AO (Cash) BSNL STP" payable at Chennai.

8. The Bank guarantees that the below mentioned officer who have signed it on behalf of the Bank have authority to give this guarantee under its delegated power.

Place:

Date:

(Signature of the Bank Officer)
Rubber stamp of the bank

Authorized Power of Attorney Number:

Name of the Bank officer:

Designation:

Complete Postal address of Bank:

.....

Telephone Numbers

Fax numbers

Read, understood and complied with-Signature of the bidder

7(B) For the Performance Guarantee
(To be typed on Rs.100/- non-judicial stamp paper)

Dated:.....

Sub: Performance guarantee.

Whereas CGM STP Chennai R/o(hereafter referred to as BSNL, STP) has issued an APO/PO no.Dated.... /...../20.... awarding the work of to M/s.....R/o (hereafter referred to as "Bidder") and BSNL, STP has asked him to submit a performance guarantee in favour of CGM STP Chennai of Rs./- (hereafter referred to as "P.G. Amount") valid up to/...../20.....(hereafter referred to as "Validity Date")

Now at the request of the Bidder, WeBank.....Branch havingAddress) and
Regd. office address as
.....
(Hereinafter called 'the Bank') agreed to give this guarantee as hereinafter contained:

2. We, "the Bank" do hereby undertake and assure to the BSNL, STP that if in the opinion of the BSNL, STP, the Bidder has in any way failed to observe or perform the terms and conditions of the said agreement or has committed any breach of its obligations there-under, the Bank shall on demand and without any objection or demur pay to the BSNL, STP the said sum limited to P.G. Amount or such lesser amount as BSNL, STP may demand without requiring BSNL, STP to have recourse to any legal remedy that may be available to it to compel the Bank to pay the same.

3. Any such demand from the BSNL, STP shall be conclusive as regards the liability of Bidder to pay to BSNL, STP or as regards the amount payable by the Bank under this guarantee. The Bank shall not be entitled to withhold payment on the ground that the Bidder had disputed its liability to pay or has disputed the quantum of the amount or that any arbitration proceeding or legal proceeding is pending between Bidder and BSNL, STP regarding the claim.

4. We, the Bank further agree that the guarantee shall come into force from the date of its issue and shall remain in full force and effect up to its Validity date

5. The Bank further agrees that the BSNL, STP shall have the fullest liberty without the consent of the Bank and without affecting in any way the obligations hereunder to vary any of the terms and conditions of the said agreement or to extend the time for performance of the said agreement from any of the powers exercisable by BSNL, STP against the Bidder and to forebear to enforce any of the terms and conditions relating to the said agreement and the Bank shall not be relieved from its liability by reason of such failure or extension

Read, understood and complied with-Signature of the bidder

being granted to Bidder or through any forbearance, act or omission on the part of BSNL, STP or any indulgence by BSNL, STP to Bidder or any other matter or thing whatsoever which under the law relating to sureties would but for this provision have the effect of relieving or discharging the guarantor.

6. Notwithstanding anything herein contained ;

(a) The liability of the Bank under this guarantee is restricted to the B.G. Amount and it will remain in force up to its Validity date.

(b) The guarantee shall stand completely discharged and all rights of the BSNL, STP under this Guarantee shall be extinguished if no claim or demand is made on us in writing on or before its validity date.

7. In case BSNL, STP demands for any money under this bank guarantee, the same shall be paid through banker's Cheque in favour of "AO (Cash) BSNL , STP" payable at Chennai.

8. The Bank guarantees that the below mentioned officer who have signed it on behalf of the Bank have authority to give this guarantee under its delegated power.

Place:

Date:.....

(Signature of the Bank Officer)

With seal and stamp of the Bank

Authorized Power of Attorney Number:

Name of the Bank officer:

Designation:

Complete Postal address of Bank:

Telephone Numbers

Fax numbers.....

Read, understood and complied with-Signature of the bidder

7 (C) For Letter of Authorization for attending Bid Opening Event.

(To be typed preferably on letter head of the company)

Subject: Authorization for attending Bid opening

I/ We Mr. /Ms. have submitted our bid for
the tender no..... in respect of
..... (Item of work) which is due to
open on (date) in the Conference Hall O/o CGM Projects,
Chennai-28,

We hereby authorize Mr. / Ms.& Mr. /
Ms..... (alternative) whose signatures are attested below to
,
attend the bid opening for the tender mentioned above on our behalf.

.....
Signature of the Representative:

.....

Signature of Bidder/ Officer authorized to sign

Name of the Representative:

Signature of the alternative Representative:

Name of the alternative Representative:

Above Signatures Attested

Note 1: Only one representative will be permitted to attend the Bid opening

2. Permission for entry to the hall where bids are opened may be refused in case authorization as prescribed above is not received.

7(D) Model Amendment Letter Intimating Conditions for Extension of Delivery Period
(Refer to Appendix (i) to clause 15.3 of Section-5 Part A)

Registered A Due
Address of the purchaser

To

M/s

.....

Sub: This office contract no..... dated placed on you for supply of

.....

Ref :Your letter no..... dated

We are in receipt of your letter, wherein you have asked for extension/ further extension of time for delivery/ execution/ installation/ commissioning.

In view of the circumstances stated in your above referred letter, the time of delivery can be extended from _____ (original/ last delivery period) to _____ (presently agreed delivery period) subject to your unconditional acceptance of the following terms and conditions:

1. That, liquidated damages shall be levied in accordance with agreed clause 16.2 & 16.3 Section-5 Part A of terms and conditions of the tender/ PO.
2. That, notwithstanding any stipulation in the contract for increase in price on any ground, no such increase, whatsoever, which takes place after current last date of Delivery shall be admissible on such of the said goods as are delivered after the said date as per clause 12 Section-5 Part A.
3. That, the prices during this extended delivery period shall be provisional and shall be governed as per agreed clauses 12 and 24 of Section 5 Part A and shall be finalized in accordance with the current PO price or the current PO price with latest budget/ duty impact or the prices in the new tender (T.E. no.) from the date of its opening, on whichever is lower basis.

4. An additional BG of Rs. _____ in accordance with clause 15.3, Section- 5PartA of the contract with validity up to _____.
5. An undertaking as required vide clause 24.3, Section-5A. Otherwise furnish the details as requisite in clause 24.4 section 5 Part A”

Please intimate your acceptance of this letter alongwith the additional BG within ten days of the issue of this letter failing which the contract will be cancelled at your risk and expense without any further reference to you. This letter shall form part and parcel of the agreement/ contract/ APO/ PO and all other terms & conditions of the contract remain unaltered.

Yours faithfully,

(.....)

for and on behalf of.....

Note : The entries which are not applicable for the case under consideration are to be deleted.

Read, understood and complied with-Signature of the bidder

Model Amendment Letter for Extension of Delivery Period

Appendix (ii) to clause 15.3 of Section-5 Part A

Registered Acknowledgement Due

Address of the purchaser

To

M/s

.....

Sub: **This** office contract no..... dated placed on you for supply of

Ref : 1. Your letter no.....dated requesting DP extension

2. This office letter no.dated intimating conditions for DP extension

3. Your letter no..... dated accepting the conditions for DP extension

In your above letter under reference (1), you have asked for extension/ further extension of time for delivery/ execution/ installation/ commissioning. The terms and conditions for extension of delivery period were conveyed to you vide this office letter under reference (2).

In view of the circumstances stated in your above referred letter, and upon your unconditional acceptance of the terms and conditions of this extension vide your letter under reference (3), the time of delivery is hereby extended from _____ (last delivery period) to _____ (presently agreed delivery period) on the terms and conditions in letter under reference (2) above and agreed by you vide letter under reference (3) i.e.:

(a) Liquidated damages shall be levied in accordance with agreed clause 16.2 & 16.3 Section-5 Part A of terms and conditions of the tender/ PO.

(b) Notwithstanding any stipulation in the contract for increase in price on any ground, no such increase, whatsoever, which takes place after current last date of Delivery/ completion of work shall be admissible on such of the said goods as are delivered after the said date as per clause 12 Section- 5 Part A.

(c) The prices during this extended delivery period shall be governed as per clauses 12 and 24 of Section-5 Part A and shall be finalized in accordance with current PO price or the current PO price with latest budget/ duty impact or the prices in the new tender (T.E. no.) from the date of its opening, on whichever is lower basis.

The letters under reference above and this letter shall form part and parcel of agreement/ contract/ APO/ PO and all other terms & conditions of the contract remain unaltered.

Yours faithfully,

(.....)
for and on behalf of.....

Copy to :

.....

.....

(All concerned)

Note:- The entries which are not applicable for the case under consideration are to be deleted.

Read, understood and complied with-Signature of the bidder

SECTION- 8

Bidder's profile & Questionnaire.
Tenderer / Bidder's Profile & Questionnaire
(To be filled in and submitted by the bidder)

A) Tenderer's Profile

1. Name of the Individual/ Firm:

2. Present Correspondence Address

.....
.....
.....

Telephone No. Mobile No.

FAX No.

3. Address of place of Works/Manufacture

.....
.....

Telephone No. Mobile No.

4. State the Type of Firm: Sole proprietor-ship/partnership firm/
Private limited company.
(Tick the correct choice):

5. Name of the sole proprietor/ partners/ Director(s) of Pvt. Ltd Co.:

S. No.	Name	Father's Name	Designation
1			
2			
3			
4			
5			

6. Name of the person authorized to enter into and execute contract/agreement and the capacity in which he is authorized (in case of partnership/ private Ltd company):

.....
.....
.....

7. A. Permanent Account No. :.....

8. Details of the Bidder's Bank for effecting e-payments

Read, understood and complied with-Signature of the bidder

- (a) Beneficiary Bank Name:.....
 (b) Beneficiary branch Name:.....
 (c) IFSC code of beneficiary Branch.....
 (d) Beneficiary account No.:.....
 (e) Branch Serial No. (MICR No.):.....
9. Whether the firm has Office/ works (i.e. manufacture of the tendered item)in Delhi? If so state its Address

10. GSTN Registration Number(s) of all units/business places of the bidder vide which he intends to execute the contract, if awarded.
GSTN 1.....
GSTN 2.....
GSTN 3..... and so on

B) Questionnaire

1. Do you think any other detail/ material is required to complete the work specified in the specification? Yes/ No.
 1.1 If Yes, Give details

2. Do you think any other item of work need be included in tender form to complete the work specified in the specification? Yes/ No.
 2.1 If Yes, Give details

3. Kindly indicate the maximum Quantity of tendered material which you are capable of supplying within the scheduled delivery period

Name of the tendered Item	Qty that can be supplied by the firm within scheduled delivery period.

4. Suggestion for improvement of the tender document

Place.....

Signature of contractor

Date

Name of Contractor

Read, understood and complied with-Signature of the bidder

SECTION-9 Part-A

BID FORM

To

From,

.....

.....

<complete address of the purchaser><complete address of the Bidder>

.....

.....

.....

.....

Bidder's Reference No:.....Dated.....

Ref: Your Tender Enquiry No.dated

1. Having examined the above mentioned tender enquiry document including

amendment/clarification/ addenda Nos. datedthe receipt of which is hereby duly acknowledged, we, the undersigned, offer to supply and deliver in conformity with the

said drawings, conditions of contract and specifications for the sum shown in the schedule of prices attached herewith and made part of the financial Bid.

2. Bid submitted by us is properly sealed and prepared so as to prevent any subsequent alteration and replacement.

3. We agree to abide by this Bid for a period ofdays from the date fixed for Bid

opening or for subsequently extended period, if any, agreed to by us. This bid shall remain binding upon us up to the aforesaid period.

4. We understand that you are not bound to accept the lowest or any bid, you may receive.

5. If our Bid is accepted, we will provide you with a performance guarantee from a Scheduled Bank for a sum @ 5% of the contract value for the due performance of the contract.

6. If our Bid is accepted, we undertake to complete delivery of all the items and perform all the services specified in the contract in accordance with the delivery schedule specified in the Section-2 (Tender Information).

7. Until a formal Purchase Order of Contract is prepared and executed, this Bid together with your written acceptance thereof in your notification of award shall constitute a binding contract between us.

Dated: day of..... 20.....

Signature

Witness

Name

Signature.....

In the capacity of

.....

Name

Duly authorized to sign the

bid for and on

Address

behalf of

Read, understood and complied with-Signature of the bidder

SECTION-9 Part -B

Part I - Price Schedule for Indigenous category for Supply, Installation, Testing, Commissioning, Comprehensive AMC for 7years including 2 years warranty.

TABLE-A

S. No	SoR Item Description	Total quantity (in Sets)	Basic Unit Price excluding all taxes & charges	FF& packing		GST						All inclusive Unit cost 13=4+6+[(8+ 10) or 12]	Amount of Input tax Credit (ITC) to be available by BSNL 14=(8+10) or 12	Unit price excluding ITC amount (net unit cost to BSNL) 15=13-14	Total price inclusive of all levies & charges but excluding ITC (net cost) 16=3x15	HSN for goods and SAC for services 17
						CGST		SGST		IGST						
				Rate *	Amt	Rate	Amt	Rate	Amt	Rate	Amt					
1	2	3	4	5	6=5x4	7	8=7x (4+6)	9	10=9x (4+6)	11	12=11x (4+6)					
1	100 Amps SMPS modules with (N+2) redundancy with Lightning & Surge Protection															
a	100A (7+2)	2														
b	100A(11+2)	4														
c	100A(14+2)	10														
d	100A(18+2)	2														
2	48V 100AH Li-on Battery Banks															
a	2*900 AH	2														
b	2*1200 AH	5														
c	2*1300 AH	1														
d	2*400 AH	1														
3	(1+1) 3 KVA Inverter	7														
	Total-A															

Notes for bidder:

- Bidder must mandatorily quote for all GST components (CGST, SGST, IGST) as required
 - If Annual maintenance Contract charges are required to be quoted as per SOR, basic charges should be shown in column- 4 & the Goods and Services Tax (GST) in column 7 to 12
 - %age Rate of FF & packing should be shown of Basic Unit Price excluding all taxes & charges (i.e as %age of Col.4)
 - The FF & packing amount quoted shall not be subject to change after bid evaluation/ ordering on account of change of Copper, Lead base price, changes in duties & taxes of item,etc.
 - Bidder must mandatorily mention HSN & SAC numbers.
 - The Evaluation of the tender shall be done as a single Package for all the items
- Declaration by bidder

1. We hereby declare that in quoting the above prices, we have taken into account the entire credit on inputs available under the GST Act introduced w.e.f. 1 July 2017 and further extended on more items till date”.
2. “We hereby certify that HSN/ SAC shown in column 17 are correct & credit of GST for the amount shown in column 14 above are admissible as per GST Laws.

Note to Bidders: The financial Bid should be filled only in the e tenderSECTIONportal-9asPartper-Bthe format furnished. The Price schedule in the tender document should not be filled and uploaded.

Read, understood and complied with-Signature of the bidder

Part II - Price Schedule for items to be supplied under Imported Category for Supply, Installation, Testing, Commissioning, Comprehensive AMC for 7years including 2 years warranty.

TABLE-B

Sl. No.	Description	3	4a	4b	Custom Duty								GST on FF & packing						19=4b+6+8 +10+12+[(14 +16) or 18]	20=10+[(14 +16) or 18]	21= 19-20	22=3*21	23	24	
					Rate BCD	Rate EC and SHEC	Rate IGST	Rate* FF & packing	Rate	Rate	Rate														
1	2	3	4a	4b	5	6=5 x4b	7	8=6 x7	9	10 = (4b+6 +8)x9	11	12=11 x4b	13	14=1 3x12	15	16=1 5x12	17	18= 17x12	19=4b+6+8 +10+12+[(14 +16) or 18]	20=10+[(14 +16) or 18]	21= 19-20	22=3*21	23	24	
1	100 Amps SMPS modules with (N+2) redundancy with Lightning & Surge Protection																								
a	100A (7+2)	2																							
b	100A(11+2)	4																							
c	100A(14+2)	10																							
d	100A(18+2)	2																							
2	48V 100AH Li-on Battery Banks																								
a	2*900 AH	2																							
b	2*1200 AH	5																							
c	2*1300 AH	1																							
d	2*400 AH	1																							
3	(1+1) 3 KVA Inverter	7																							
	Total-B																								

Notes for bidder:

- Bidder must mandatorily quote for all GST components (CGST, SGST, IGST) as required
 - If Annual maintenance Contract charges are required to be quoted as per SOR, basic charges should be shown in column-4b & the Goods and Services Tax (GST) in column 13 to 18 with calculations based on basic AMC cost quoted in Col. 4b.
 - % age Rate of FF & packing should be shown on Per unit CIF cost value (i.e as %age of Col.4b)
 - The FF & packing amount quoted shall not be subject to change after bid evaluation/ ordering on account of change of Copper, Lead base price, changes in duties & taxes of item, etc.
 - Bidder must mandatorily mention HSN & SAC numbers.
 - The Evaluation of the tender shall be done as a single Package for all the items
1. We hereby declare that in quoting the above prices, we have taken into account the entire credit on inputs available under the GST Act introduced w.e.f. 1 July 2017 and further extended on more items till date".

2. "We hereby certify that CTH shown in Col 23 and HSN/ SAC shown in column 24 are correct & credit of GST for the amount shown in column 20 above are admissible as per GST Laws.

SECTION-9 Part-B

Note to Bidders: The financial Bid should be filled only in the e tender portal as per the format furnished. The Price schedule in the tender document should not be filled and uploaded.

Read, understood and complied with-Signature of the bidder

Part III- Price Schedule for Installation & Commissioning.
TABLE-C

NIT				I&C Charges		GST										
						CGST		SGST		IGST						
				Rate in %	Amt	Rate in %	Amt	Rate in %	Amt	Rate in %	Amt					
1	2	3	4	5	6	7	8=7x6	9	10=9x6	11	12=6x11	13=6+ [(8+ 10) or 12]	14=[(8+ 10) or 12]	15=13-14	16=3x15	17
1	100 Amps SMPS modules with (N+2) redundancy with Lightning & Surge Protection															
a	100A (7+2)	2														
b	100A(11+2)	4														
c	100A(14+2)	10														
d	100A(18+2)	2														
2	48V 100AH Li-on Battery Banks															
a	2*900 AH	2														
b	2*1200 AH	5														
c	2*1300 AH	1														
d	2*400 AH	1														
3	(1+1) 3 KVA Inverter	7														
	Total-I&C															

Read, understood and complied with-Signature of the bidder

SECTION-9 Part-B
Part IV- Price Schedule for 5 Years AMC
TABLE-D

Year-1

Sl. No. of entry		Tender entry no.	Bidding entry no.	AMC Charges		% GST						All India entry no.				
						CGST		SGST		IGST						
				Rate in	Amt	Rate in	Amt	Rate in	Amt	Rate in	Amt					
1	2	3	4	5	6	7	8=7x6	9	10=9x6	11	12=6x11	13=6+ [(8+ 10) or 12]	14=[(8+ 10) or 12]	15=13- 14	16=3x15	17
1	100 Amps SMPS modules with (N+2) redundancy with Lightning & Surge Protection															
a	100A (7+2)	2														
b	100A(11+2)	4														
c	100A(14+2)	10														
d	100A(18+2)	2														
2	48V 100AH Li-on Battery Banks															
a	2*900 AH	2														
b	2*1200 AH	5														
c	2*1300 AH	1														
d	2*400 AH	1														
3	(1+1) 3 KVA Inverter	7														
	Total-Year 1															

Read, understood and complied with-Signature of the bidder

Year-2

Sl. No. of Item		Quantity Required	Description of Item	% AMC Charges		% GST						Material Cost				
						CGST		SGST		IGST						
				Rate in	Amt	Rate in	Amt	Rate in	Amt	Rate in	Amt					
1	2	3	4	5	6	7	8=7x6	9	10=9x6	11	12=6x11	13=6+ [(8+ 10) or 12]	14=[(8+ 10) or 12]	15=13- 14	16=3x15	17
1	100 Amps SMPS modules with (N+2) redundancy with Lightning & Surge Protection															
a	100A (7+2)	2														
b	100A(11+2)	4														
c	100A(14+2)	10														
d	100A(18+2)	2														
2	48V 100AH Li-on Battery Banks															
a	2*900 AH	2														
b	2*1200 AH	5														
c	2*1300 AH	1														
d	2*400 AH	1														
3	(1+1) 3 KVA Inverter	7														
	Total-Year 2															

Read, understood and complied with-Signature of the bidder

Year-3

Sl. No.	Description of Work	Quantity	Unit	% AMC Charges		% GST						Material Cost	Labor Cost	Overhead & Profit	Total	
						CGST		SGST		IGST						
				Rate in	Amt	Rate in	Amt	Rate in	Amt	Rate in	Amt					
1	2	3	4	5	6	7	8=7x6	9	10=9x6	11	12=6x11	13=6+ [(8+ 10) or 12]	14=[(8+ 10) or 12]	15=13-14	16=3x15	17
1	100 Amps SMPS modules with (N+2) redundancy with Lightning & Surge Protection															
a	100A (7+2)	2														
b	100A(11+2)	4														
c	100A(14+2)	10														
d	100A(18+2)	2														
2	48V 100AH Li-on Battery Banks															
a	2*900 AH	2														
b	2*1200 AH	5														
c	2*1300 AH	1														
d	2*400 AH	1														
3	(1+1) 3 KVA Inverter	7														
	Total-Year 3															

Read, understood and complied with-Signature of the bidder

Year-4

Sl. No. of Item		Tender Qty (N+2)	Bid Amount (Rs.)	%		% GST						13=6+ [(8+ 10) or 12]	14=[(8+ 10) or 12]	15=13- 14	16=3x15	17	
						AMC Charges		CGST		SGST							IGST
				Rate in	Amt	Rate in	Amt	Rate in	Amt	Rate in	Amt						
1	2	3	4	5	6	7	8=7x6	9	10=9x6	11	12=6x11						
1	100 Amps SMPS modules with (N+2) redundancy with Lightning & Surge Protection																
a	100A (7+2)	2															
b	100A(11+2)	4															
c	100A(14+2)	10															
d	100A(18+2)	2															
2	48V 100AH Li-on Battery Banks																
a	2*900 AH	2															
b	2*1200 AH	5															
c	2*1300 AH	1															
d	2*400 AH	1															
3	(1+1) 3 KVA Inverter	7															
														Total-Year 4			

Read, understood and complied with-Signature of the bidder

Year-5

Sl. No. of AMT			Tender particular description	Bidding particular description	%		% GST						%	Amount in Rs.				
							AMC Charges		CGST		SGST							
					Rate in	Amt	Rate in	Amt	Rate in	Amt	Rate in	Amt						
1	2	3	4	5	6	7	8=7x6	9	10=9x6	11	12=6x11	13=6+ [(8+ 10) or 12]	14=[(8+ 10) or 12]	15=13- 14	16=3x15	17		
1	100 Amps SMPS modules with (N+2) redundancy with Lightning & Surge Protection																	
a	100A (7+2)	2																
b	100A(11+2)	4																
c	100A(14+2)	10																
d	100A(18+2)	2																
2	48V 100AH Li-on Battery Banks																	
a	2*900 AH	2																
b	2*1200 AH	5																
c	2*1300 AH	1																
d	2*400 AH	1																
3	(1+1) 3 KVA Inverter	7																
	Total-Year 5																	

Evaluation Procedure: Total cost quoted at

[{ Col.16 of Table A or Col.22 of Table-B} +Col.16 at Table-C+Col.16 of Table-D (Year-1+2+3+4+5)]

Read, understood and complied with-Signature of the bidder

Section-9 Part B Part-V

Format for calculation of Local Content in Goods/Services

Calculation of Local Content- Goods

Name of Manufacturer	Calculation by manufacturer Cost per unit of product			
Cost Component	Cost (Domestic Component) a	Cost (Imported Component) b	Cost Total Rs. (To be specified by the manufacturer) c=a+b	% Domestic Component d=a/c
I. Direct material Cost				
II. Direct Labour Cost				
III. Factory Overhead				
IV. Total Production Cost				

Note:

$$\%LC \text{ goods} = \frac{\text{Total cost (IV.c) - Total imported component cost (IV.b)}}{\text{Total Cost (IV.c)}} \times 100$$

Read, understood and complied with-Signature of the bidder

सहायक महाप्रबंधक (सा.प्र.) का. मुख्य महाप्रबंधक,
दक्षिण दूरसंचार परियोजना, 25 ग्रीन्वेज लेन, चेन्नै 600 028
Assistant General Manager (MM), O/o Chief General Manager,
Southern Telecom Projects, 25 Greenways Lane, Chennai-600028
दू.भा. Ph: 044-2495 2203 फैक्स FAX: 044-2495 9798



भारत संचार निगम लिमिटेड
(भारत सरकार का उपक्रम)
BHARAT SANCHAR NIGAM LIMITED
(A Govt. of India Enterprise)

To
The Bidders

CGMP/CHI/MM/CANI-PP&BTY/2018-19/20

Dated @ CNI, the 8th Feb 2019

Sub: Amendments/ Clarifications -reg.,

Ref: 1) TE NO: CGMP/CHI/MM/NIT-6/PP&BTY/2018-19 Dt 01-01-2019

2) CGMP/CHI/MM/CANI-PP&BTY/2018-19/18 Dt 06-02-2019

With reference to the tender cited above, for Supply, Installation, Testing & Commissioning of SMPS Power Plants, Lithium Ion Batteries and (1+1) 3 KVA Invertors for CANI (Chennai and A&N Islands) Project with Warranty for 2 years and AMC for 5 years after Warranty, amendments and clarifications are enclosed in Annexure 1 to 5.

The amendments and clarifications issued form an integral part of the tender document.

The bidders are requested to sign on all pages for having Read, understood and complied with all the amendments and clarifications issued and submit the same along with the tender document.

All other terms and conditions of the tender remain the same.


**Assistant General Manager (MM),
O/o CGMP, Chennai-28.**

**Assistant General Manager (MM)
O/o. CGMP, BSNL, Chennai-28.**

Encl:

Annexure-1 : 03 pages
Annexure-2 : 03 pages
Annexure-3 : 01 page
Annexure-4 : 01 page
Annexure-5 : 04 pages

Annexure-1
Amendment vide CGMP/CHI/MM/CANI-PP&BTY/2018-19/20 Dated @ CNI, the 8th Feb 2019
TE NO: CGMP/CHI/MM/NIT-6/PP&BTY/2018-19 Dt 01-01-2019

Sl No	Clause No	Existing	Amended as
1	Clause 4.5 of Section 1 Part A	They should have applied for TSEC for registration for the SMPS Power Plants against GR No: TEC/GR/FA/SMP-001/07 MAR-17. Proof for having applied with payment receipts viz. QF-103 from BSNL QA shall be submitted in the Bid. However, they will be considered for placement of order subject to submission of valid TSEC within 60(Sixty) days from the date of opening of tender or any further extension granted by Tendering Authority.	a) The bidder Company should have obtained valid TAC (Type Approval Certificate) from Telecom Engineering Centre, DOT or TSEC (Technical Specification Evaluation Certificate) from QA wing of BSNL for the SMPS Power Plants against GR No: BSNL / Specification / SMP – 001/01/Rev-1/September.2015 at the time of tender opening. (or) b) The bidder should have applied to TSEC for registration for the SMPS Power Plants against GR No: TEC/GR/FA/SMP-001/07 MAR-17. Proof for having applied with payment receipts viz. QF-103 from BSNL QA shall be submitted in the Bid. However, they will be considered for placement of order subject to submission of valid TSEC within 60(Sixty) days from the date of opening of tender or any further extension granted by Tendering Authority.
2	Section 3 Part B SI No 1(b)	Lightning & Surge Protection-TSEC GR No. TEC/GR/FLA/LSP-001/01/June 2010). (The SMPS Power Plants should contain Stage-II protective device for protection against low voltage surges of voltage up to 1.5 KV)	Lightning & Surge Protection - "TSEC for GR No. TEC/GR/FLA/LSP-001/01/June 2010 or GR No. TEC/GR/TX/LSP-001/02/June 2017" (The SMPS Power Plants should contain Stage-II protective device for protection against low voltage surges of voltage up to 1.5 KVA


Assistant General Manager (MM)
O/o. CGMP, BSNL, Chennai-28.

Annexure-1
Amendment vide CGMP/CHI/MM/CANI-PP&BTY/2018-19/20 Dated @ CNI, the 8th Feb 2019
TE NO: CGMP/CHI/MM/NIT-6/PP&BTY/2018-19 Dt 01-01-2019

Sl No	Clause No	Existing	Amended as
3	Clause 7 of Section 2	Installation and Commissioning including Validation testing: (i) SMPS Power Plant The ordered sets to be installed and commissioned within FIVE months from the date of Purchase order. (ii) Lithium Ion Batteries and (1+1) 3 KVA Invertors The ordered sets to be installed and commissioned (including Validation testing) within FIVE months from the date of Purchase order.	7. Installation and Commissioning including Validation testing: For Chennai and Port Blair: (i) SMPS Power Plant The ordered sets to be installed and commissioned within FIVE months from the date of Purchase order. (ii) Lithium Ion Batteries and (1+1) 3 KVA Invertors The ordered sets to be installed and commissioned (including Validation testing) within FIVE months from the date of Purchase order. For other 7 Islands: i) SMPS Power Plant The ordered sets are to be installed and commissioned within SIX months from the date of Purchase order. ii) Lithium Ion Batteries and (1+1) 3 KVA Invertors The ordered sets are to be installed and commissioned (including Validation testing) within SIX months from the date of Purchase order.
3	Clause 10.1(b) of Section 4 Part A	End user Certificate as per Clause 4.7 of Sec-I Part - A	End user Certificate as per Clause 4.8 of Sec-I Part - A
4	SECTION-9 Part-B Part I - Price Schedule for Indigenous Supply TABLE-A and Part II - Price Schedule for items to be supplied under Imported Category TABLE-B	Section-9 Part-B Part-I Price Schedule for Indigenous supply TABLE - A & Part-II Price schedule for items to be supplied under Imported Category TABLE -B	Amended Price Schedule with inclusion of line item for Installation material is given in Annexure-5


 Assistant General Manager (MM)
 O/o. CGMP, BSNL, Chennai-28.

Annexure-1
Amendment vide CGMP/CHI/MM/CANI-PP&BTY/2018-19/20 Dated @ CNI, the 8th Feb 2019
TE NO: CGMP/CHI/MM/NIT-6/PP&BTY/2018-19 Dt 01-01-2019

Sl No	Clause No	Existing	Amended as
5	11.1.5 (c) of Section 5 A, For claiming 50% payment terms of Lithium Ion Batteries and (1+1) 3 KVA Invertors	11.1.5 (c) of Section 5 A: Inspection Certificate of QA (Payable copy in original)	11.1.5 (c) of Section 5 A: Factory test reports in original


 Assistant General Manager (MM)
 O/o. CGMP, BSNL, Chennai-28.

Annexure-2
Clarifications vide CGMP/CHI/MM/CANI-PP&BTY/2018-19/20 Dated @ CNI, the 8th Feb 2019
TE NO: CGMP/CHI/MM/NIT-6/PP&BTY/2018-19 Dt 01-01-2019

Sl No	Clause Details	Bidders Query	BSNL Clarifications
1	Clause 4.6 of Section 1 Part A The Bidder Company should comply the applicable TEC GR in respect of Li-Ion Batteries. (TEC /GR / TX / LIB-001/01/MAR /2016 and subsequent amendments, if any). Self-certification is to be submitted by the bidder.	As no vendor is having Li-ion Battery TSEC, so please allow GR complied Li-ion Battery to be supplied	Refer clause 4.6 of Section 1A of the tender. The bidder can submit Self-certification for compliance of GR spec of Li-ion battery.
2	Clause 4.7 of Section 1 Part A The Bidder Company should comply the applicable TEC GR in respect of (1+1) 3 KVA Invertors. (TEC / GR/INV-01/04 MAY 2005 and subsequent amendments, if any). Self-certification is to be submitted by the bidder.	As no vendor is having 3KVA Inverter TSEC, so please allow GR complied 3 KVA inverter to be supplied	Refer clause 4.7 of Section 1A of the tender. The bidder can submit Self-certification for compliance of GR spec of (1+1) 3 KVA Invertors.
3	Clause 5 of Section 2	Payment term shall be standard as previous BSNL tenders i.e. 95% after supply or 5% against PBG	Not agreed
4	Clause C of Section 3 Part A- iii) To conduct Validation testing for Lithium Ion Batteries and (1+1) 3 KVA Invertors	Whether validation shall be done at site or at their Factory and also requested to confirm whether validation will be carried out by QA or any other team.	One number each of Li-ion Battery and (1+1) 3 KVA Inverter shall be validated by BSNL team separately nominated for this purpose other than the QA team. The validation is to be done for Li-ion Battery at Port Blair and for (1+1) 3 KVA Invertors at Havelock. After validation, all the installed equipment are to be acceptance tested by the A/T team.

[Signature]
08/02/19

Assistant General Manager (MM)
O/o. CGMP, BSNL, Chennai-28. Page 1 of 3

Annexure-2
Clarifications vide CGMP/CHI/MM/CANI-PP&BTY/2018-19/20 Dated @ CNI, the 8th Feb 2019
TE NO: CGMP/CHI/MM/NIT-6/PP&BTY/2018-19 Dt 01-01-2019

Sl No	Clause Details	Bidders Query	BSNL Clarifications
5	Clause 4.9 of Section 1 Part A 4.9 The Bidder Company shall have a minimum average annual turnover of INR 2 Cr. Each year during the last three financial years i.e. 2015-16, 2016-17 & 2017-18. The Cumulative Turn over should be Rs 6 Cr. minimum during these 3 years.	Being a MSME bidder, it is requested for relaxation of turnover from Rs. 6 Crores to Rs. 4 Crores	Not agreed
6		Installation & commissioning Price needs to be quoted separately apart from equipment Supply	Separate price schedule for Installation & commissioning charges is provided in Section 9 Part B- Part III- Table-C
7		Timeline for equipment supply /Delivery & Installation shall be separate	Refer clause 6 and 7 of Section 2
8		There are difficulties involved in carrying the load to remote location for load testing and hence exemption from on Site load testing be given and allow bidders to carry out load testing at their own factory.	Not agreed
9		Please confirm Li-ion Battery configuration is (1+1) with respect to SMPS.	schematic diagram for Li-ion configuration given in Annexure-3
10		There are two rack sizes available, with one accommodating SMPS upto 1500 Amps and the other accommodating SMPS upto 3000 Amps. Hence the ultimate capacity of SMPS may be provided to decide the choice of rack.	The ultimate capacity of SMPS station wise is given in Annexure-4


Assistant General Manager (MM)
O/o. CGMP, BSNL, Chennai-28.

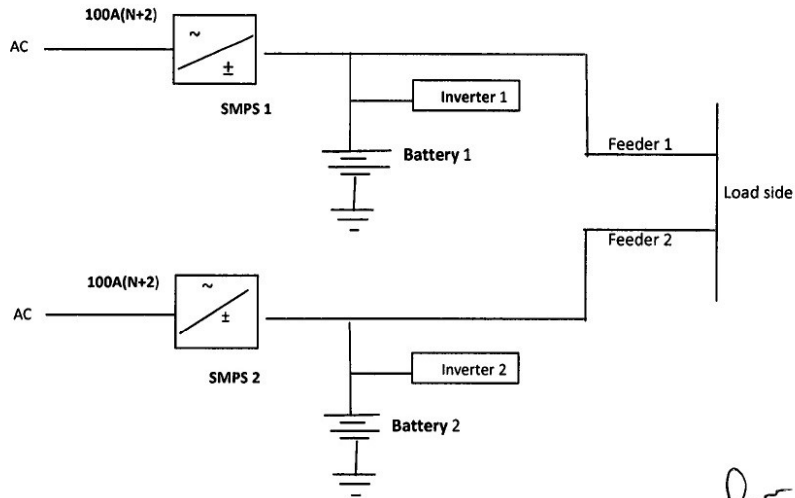
Annexure-2
Clarifications vide CGMP/CHI/MM/CANI-PP&BTY/2018-19/20 Dated @ CNI, the 8th Feb 2019
TE NO: CGMP/CHI/MM/NIT-6/PP&BTY/2018-19 Dt 01-01-2019

Sl No	Clause Details	Bidders Query	BSNL Clarifications
11		To confirm if Battery cabinet is a part of Li-ion Battery supply.	Yes, Battery cabinet is a part of Li-ion Battery
12		Whether installation material for SMPS, Li-ion Battery and Inverter in vendor scope. If so the Input & Output Cable Length with Rating may be provided.	The installation material for SMPS, Li-ion Battery and Inverter are in the scope of vendor. The station wise Battery and power room dimensions along with the length of cables and rating are given in Annexure-4.
13		Installation & Commissioning Scope of Work (SOW) required for SMPS, Li-ion Battery, and Inverter.	Scope of work defined in Section-3 Part A of the tender document
14		For Higher rating Li-Ion Battery Bank, Please confirm its arrangement.	Please Refer Annexure-3
15		Please confirm for 3KVA inverter configuration (1+1) and its parity with SMPS.	Please Refer Annexure-3
16		We assume at one Site in 1+1 configuration we are going to install 1 SMPS +1 Battery +1 Inverter. Please clarify if the understanding is correct	Please Refer Annexure-3


Assistant General Manager (MM)
O/o. CGMP, BSNL, Chennai-28.

Annexure-3

Clarifications vide CGMP/CHI/MM/CANI-PP&BTY/2018-19/20 Dated @ CNI, the 8th Feb 2019
TE NO: CGMP/CHI/MM/NIT-6/PP&BTY/2018-19 Dt 01-01-2019



[Signature]
08/02/19
Assistant General Manager (MM)
O/o. CGMP, BSNL, Chennai-28.

Annexure-4

Clarifications vide CGMP/CHI/MM/CANI-PP&BTY/2018-19/20 Dated @ CNI, the 8th Feb 2019

TE NO: CGMP/CHI/MM/NIT-6/PP&BTY/2018-19 Dt 01-01-2019

Stationwise details in respect of Power/Battery room dimensions and input and output cable lengths

Sl.No.	Name of the Station	100AH Li-ion Battery modules required	100Amps SMPS Modules required	Inverter requirement	Dimensions of BTY & PP room in Mtrs	Length of Input Copper cable to SMPS (Max), in Mtrs	Power Rating of the Input Cable to SMPS	Output Cable Length of SMPS, in Mtrs	Rating of the cable between SMPS and Battery
1	Chennai (Including NOC)	2*400 AH	100A(7+2) - 2sets UC 1500A	-	6 x 6	15			
2	Port Blair(Including NOC)	2*1300 AH	100A(18+2)- 2sets UC 3000A	-	3.45 x 11.46	20			
3	Little Andaman	2*1200 AH	100A(14+2)- 2sets UC 3000A	3 KVA (1+1)	6.3 x 8.1	20	Based on the ultimate capacity of the SMPS, the right size of cable has to be supplied by the vendor		Based on the Battery charging current for Li-ion Batteries with 0.5C Rate, the vendor has to supply the right size and length of connecting cable. Battery bank will be co-located in the same room, adjacent to SMPS rack
4	Car Nicobar	2*1200 AH	100A(14+2)- 2sets UC 3000A	3 KVA (1+1)	6.3 x 8.1	20			
5	Kamorta	2*1200 AH	100A(14+2)- 2sets UC 3000A	3 KVA (1+1)	6.3 x 8.1	20			
6	Great Nicobar	2* 900 AH	100A(11+2) - 2sets UC 1500A	3 KVA (1+1)	6.3 x 8.1	20			
7	Havelock	2*1200 AH	100A(14+2)- 2sets UC 3000A	3 KVA (1+1)	6.3 x 8.1	20			
8	Long Island	2*1200 AH	100A(14+2)- 2sets UC 3000A	3 KVA (1+1)	6.3 x 8.1	20			
9	Rangat	2* 900 AH	100A(11+2)- 2sets UC 1500A	3 KVA (1+1)	7.7 x 8	20			

[Signature]
08/02/19

**Assistant General Manager (MM)
O/o. CGMP, BSNL, Chennai-28.**

தென் ஆந்திரப் பிரதேசம், திரு. சூர்யா கிருஷ்ணா,

தென் ஆந்திரப் பிரதேசம், திரு. சூர்யா கிருஷ்ணா, 25 கிரீன்வேய் லேன், சென்னை 600 028

தென் ஆந்திரப் பிரதேசம், திரு. சூர்யா கிருஷ்ணா, 25 கிரீன்வேய் லேன், சென்னை 600 028

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भारत संचार निगम लिमिटेड
(भारत सरकार का उपक्रम)

BHARAT SANCHAR NIGAM LIMITED
(A Govt. of India Enterprise)

Annexure-5
Amended Price Schedule
SECTION-9 Part-B
Part I - Price Schedule for Indigenous Supply
TABLE-A

S.No	S.R Item Description	Total quantity (in Sets)	Basic Unit Price excluding all taxes & charges		FF& packing		GST				All inclusive Unit cost	Amount of Input tax Credit (ITC) to be availed by BSNL	Unit price excluding ITC amount (net unit cost to BSNL)	Total price inclusive of all levies and charges but excluding ITC (net total cost)	HSN for goods and SAC for services
			Rat e	Amt	Rat e	Amt	CGST	Rat e	Amt	SGST	Rat e	Amt			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	17
1	100 Amps SMPS modules with (N+2) redundancy with Lightning & Surge Protection	2													
a	100A (7+2)	2													
b	100A (11+2)	4													
c	100A (14+2)	1													
d	100A (18+2)	2													
2	48V 100AH Li-ion Battery Banks														
a	2*900 AH	2													
b	2*1200 AH	5													
c	2*1300 AH	1													
d	2*400 AH	1													
3	(1+1) 3 KVA Inverter	7													
4	The installation material for SMPS, Li-ion Battery and Inverter (1(a) to 1(d), 2 (a) to (d) and 3)														
	Total-A														

[Signature]

1. Bidder must mandatorily quote for all GST components (CGST, SGST, IGST) as required
2. If Annual maintenance Contract charges are required to be quoted as per SOR, basic charges should be shown in column-4 & the Goods and Services Tax (GST) in column 7 to 12
3. %age Rate of FF & packing should be shown of Basic Unit Price excluding all taxes & charges (i.e as %age of Col.4)
4. The FF & packing amount quoted shall not be subject to change after bid evaluation/ ordering on account of change of Copper, Lead base price, changes in duties & taxes of item,etc.
5. Bidder must mandatorily mention HSN & SAC numbers.
6. The Evaluation of the tender shall be done as a single Package for all the items

Declaration by bidder

1. We hereby declare that in quoting the above prices, we have taken into account the entire credit on inputs available under the GST Act introduced w.e.f. 1 July 2017 and further extended on more items till date".
2. "We hereby certify that HSN/ SAC shown in column 17 are correct & credit of GST for the amount shown in column 14 above are admissible as per GST Laws.

Note to Bidders: The financial Bid should be filled only in the e tender portal as per the format furnished. The Price schedule in the tender document should not be filled and uploaded.

Assistant General Manager (MM)
O/o. CGMP, BSNL, Chennai-28.

डॉ. भा. Ph: 044-2495 2203 फैक्स FAX: 044-2495 9798



भारत संचार निगम लिमिटेड
(भारत सरकार का उपक्रम)

BHARAT SANCHAR NIGAM LIMITED
(A Govt. of India Enterprise)

**Amended Price Schedule
SECTION-9 Part-B
Part II - Price Schedule for items to be supplied under Imported Category
TABLE-B**

[illegible]

Total-B

Page 3 of 4
Assistant General Manager (MM)
O/o. QGMP, BSNL, Chennai-28.

தெலிங்காப் பிரதேசம், இந்தியா

தெலிங்காப் தூர்தொலைபேசி, 25 கிரீன்வேய் லேன், சென்னை 600 028

தலைவர் பொது இயக்குநர் (MM), O/o Chief General Manager,

Southern Telecom Projects, 25 Greenways Lane, Chennai-600028

தலைவர் தொலைபேசி: 044-2495 2203 ஃபாக்ஸ்: 044-2495 9798



भारत संचार निगम लिमिटेड
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BHARAT SANCHAR NIGAM LIMITED
(A Govt. of India Enterprise)

Notes for bidder:

1. Bidder must mandatorily quote for all GST components (CGST, SGST, IGST) as required
 2. If Annual maintenance Contract charges are required to be quoted as per SOR, basic charges should be shown in column-4b & the Goods and Services Tax (GST) in column 13 to 18 with calculations based on basic AMC cost quoted in Col. 4b.
 3. % age Rate of FF & packing should be shown on Per unit CIF cost value (i.e as %age of Col.4b)
 4. The FF & packing amount quoted shall not be subject to change after bid evaluation/ ordering on account of change of Copper, Lead base price, changes in duties & taxes of item, etc.
 5. Bidder must mandatorily mention HSN & SAC numbers.
 6. The Evaluation of the tender shall be done as a single Package for all the items
- Declaration by bidder
1. We hereby declare that in quoting the above prices, we have taken into account the entire credit on inputs available under the GST Act introduced w.e.f. 1 July 2017 and further extended on more items till date".
 2. "We hereby certify that CTH shown in Col 23 and HSN/ SAC shown in column 24 are correct & credit of GST for the amount shown in column 20 above are admissible as per GST Laws.

Note to Bidders: The financial Bid should be filled only in the e tender portal as per the format furnished. The Price schedule in the tender document should not be filled and uploaded.

Assistant General Manager (MM)
O/o. CGMP, BSNL, Chennai-28.

PROFORMA OF SCHEDULES

(Operative Schedules to be supplied separately to each intending tenderer)

SCHEDULE 'A'

Schedule of quantities : Attached

SCHEDULE 'B'

Schedule of materials to be issued to the bidder: Nil

SCHEDULE 'C'

Tools and plants to be hired to the bidder: Nil

SCHEDULE 'D'

Extra schedule for specific requirements/documents for the work, if any: Nil

SCHEDULE 'E'

Schedule of components of Materials, Labour etc. for escalation: Nil

SCHEDULE 'F'

Reference to General Conditions of contract:

Name of work:	As per NIT notification page
Estimated cost of work:	
Earnest money:	
Security Deposit and performance Guarantee	

General Rules & Directions:

Officer inviting tender: Executive Engineer (E)
Electrical Division-III Chennai.

Definitions:

2(v) Engineer-in-Charge:

Executive Engineer (E),
ED-III Chennai / Port Blair.

2(vi) Accepting Authority:

CMD / Director / Management committee/
Board of BSNL as applicable.

CLAUSE 5

Time allowed for execution:

Part-I:-For Chennai – (2+84) 86 months
For A&N Island (7 stations) – (4+84) 88 months
For Port Blair- 84 months (AMC only)
Part-II: For Chennai and Portblair – (3+1+84)
88 months
For other A&N Island (7 stations) – (3+2+84) 89

months Authority to give fair and reasonable
extension of time for completion of work:

SE (E),EC-I, Chennai.

Competent Authority for deciding reduced rates:

CE (E), TNEZ, Chennai.

Clause 25

Competent authority for conciliation:

SE (E) not in-charge of the work.

BSNL EW-8
Bharat Sanchar Nigam Limited

Electrical Wing

Electrical Division: **ED-III, Chennai.**

Sub Division:

1. I/we have read and examined the notice inviting tender, schedule, specifications applicable, Drawings & Designs, General Rules and Directions, Conditions of Contract, clauses of contract, special conditions, Schedule of Rates and other documents and Rules referred to in the conditions of contract and all other contents in the tender document for the work.
2. I/We hereby tender for the execution of the work specified for BSNL within the time specified, schedule of quantities and in accordance in all respects with the specifications, designs, drawings and instructions and other documents and Rules referred to in the conditions of contract and all other contents in the tender document for the work.
3. I/We agree to keep the tender open for One hundred and twenty (120) days from the due date of submission thereof and not to make any modifications in its terms and conditions.
4. If I/We, fail to commence the work specified, I/We agree that the said BSNL shall without prejudice to any other right or remedy, be at liberty to forfeit the said earnest money absolutely and the same may at the option of the competent authority on behalf of BSNL be recovered without prejudice to any other right or remedy available in law out of the deposit in so far as the same may extend in terms of the said bond and in the event of deficiency out of any other money due to me/us under this contract or otherwise.
5. Should this tender be accepted, I/We agree to execute all the works referred to in the tender documents upon the terms and conditions contained or referred to therein and to carry out such deviations as may be ordered up to maximum of percentage mentioned in clause 12.3 of the tender form and those in excess of that limit at rates to be determined in accordance with provisions contained in clause 12.2.
6. I/we agree to furnish to BSNL, Deposit at Call receipt/FDR/ Bank guarantee of a Nationalized/ Scheduled Bank for an amount equal to 5% of the contract value in a standard format within two weeks from the date of issue of award letter. I/We agree to keep the performance bank guarantee valid as per the BSNL terms and conditions.
7. I/We hereby declare that I/We shall treat the tender documents drawings and other records connected with the work as secret/confidential documents and shall not communicate information/derived there from to any person other than to whom I/We am/are authorized to communicate the same or use the information in any manner prejudicial to the safety or interest of BSNL.

Signature of Witness (required in the case of bidder's thumb impression is given by the bidder in place of signature) Occupation of Witness :	(Signature of bidder) (Name & Postal address) Seal of Bidder Date:
--	--

Acceptance of Tender

The above tender (as modified by you as provided in the letters mentioned hereunder) is accepted by me for and on behalf of BSNL for a sum of Rs. _____
(Rupees_____)

The letters referred to below shall form part of this contract Agreement

- a)
- b)

For & on behalf of BSNL

Dated

Signature:
Designation:

II. PRICE BID

O/o The Executive Engineer (E)
BSNL Electrical Division-III, CHENNAI
NIT NO: - 39 /CEE/TNEZ/CH/2018-19

Name of Contractor				
Name of Work:- Providing Electrical Infra structure works for Cable Landing Stations in Chennai and A&N Islands including Operation & Comprehensive AMC.				
CONSOLIDATED ABSTRACT OF COST				
Sl. no	Description	Net Total Amount	Total Amount i/c ITC	
	PART-I			
1	SITC & CAMC of Engine Alternator set			
2	SITC & CAMC of Air Conditioning			
3	SITC & CAMC of IBMS			
4	Comprehensive AMC for Items not covered under supply			
5	Operation & General Maintenance of all services			
	Total for PART-I			
	PART-II			
	SITC & CAMC of SMPS power plant, Li-on Battery Banks and Invertor			
	GRAND TOTAL for Part-I + Part-II			

ABSTRACT OF COST Part-I & Part-II				
Sl. no.	Description	Net Total Amount	Total Amount i/c ITC	
PART-I : SITC & CAMC OF ENGINE ALTERNATOR SET, AIR CONDITIONING, IBMS AND OPERATION				
1	R K Mutt Road, Chennai			
1	SITC & CAMC of Engine Alternator set			
2	SITC & CAMC of Air Conditioning			
3	SITC & CAMC of IBMS			
4	Comprehensive AMC for EI & Fans			
5	Operation & General Maintenance of all services			
	Total for R K mutt Road, Chennai			
2	A & N Islands			
1	SITC & CAMC of Engine Alternator set for 7 Islands			
2	SITC & CAMC of Air Conditioning for 7 Islands			
3	SITC & CAMC of IBMS for 7 Islands			
4.1	Comprehensive AMC for EI & Fans for 7 Islands			
4.2	Comprehensive AMC for EI & Fans, EA sets, AC & IBMS for Port Blair			
5.1	Operation & General Maintenance of all services for 7 Islands			
5.2	Operation & General Maintenance of all services for Port Blair			
	Total for A&N Islands			
PART-II : SITC & CAMC OF SMPS POWER PLANT, LITHIUM ION BATTERY AND INVERTOR				
1	SITC & CAMC of SMPS power plant, Li-on Battery Banks and Invertor for all 9 CLSs			

Name of Work:- Providing Electrical Infra structure works for Cable Landing Stations in Chennai and A&N Islands including Operation & Comprehensive AMC.														
SCHEDULE OF QUANTITIES PART-I														
SITC & CAMC OF ENGINE ALTERNATOR SET, AIR CONDITIONING, IBMS AND OPERATION														
I.	R K Mutt Road, Chennai													
Sl. No	Description of Item	Qty	Unit	Rate per unit excluding Input Tax Credit (ITC)	CGST		SGST		IGST		Rate per unit including ITC	Total Amount excluding ITC (Net cost)	Total Amount i/c ITC	HSN / SAC code
					%	Rate	%	Rate	%	Rate				
1	2	3	4	5	6	7 = 6x5	8	9 = 8x5	11 = 10x5	12=5+(7+9) or (11)		13 = 3 x 5	14 = 3 x 12	15
I	Engine Alternator set:													
1	Supplying Installing Testing and Commissioning and Comprehensive AMC for 7 years including 2 years warranty of Multi cylinder Electric start/close coupled ready to use (RTU) type, water cooled diesel EA set in an acoustic enclosure conforming to the latest CPCB Norms along with AMF control panel capable of generating three phase, 415 V, 50 HZ, full load capacity of 160KVA / 128 KW at site conditions with diesel engine of 1500 RPM complete with all accessories on the existing cement concrete floor / foundation including supplying consumables like lub oil, fuel and providing artificial resistive load with cabling, switching arrangements. etc. for pre acceptance testing													

UNPRICED SCHEDULE

	(i.e., 2 hours full load, 1 hour 10% overload and 1 hour at no load) and final Acceptance Testing of E/A set (i.e. running of E/A set on full load for 6 hours and running on 10% overload for 1 hour) including topping up of lub. oil upto full mark and filling of extra fuel up to a level suitable for 2 hours full load working etc., and Comprehensive AMC for 7 years including 2 years warranty as per specifications as required. Note: 1) The make of Engine/Alternator shall be BSNL approved as per product list attached. 2) Minor civil works such as cutting of floor or breaking of wall for laying of fuel pipes / making supports to exhaust pipes shall be within the scope of the contractor without any extra cost. [Total for Engine Alternator set for R K Nagar]	2 Nos	each											
2	Air Conditioning:													
2.1	HPAC unit: [All items covered under this sub head includes Comprehensive AMC for 7 years including 2 years warranty]													

[illegible]

b)	Liquid Line, 5/8" dia. (NB: If higher size of Cu piping applicable, the same has to be supplied at same cost as 5/8")	30 mts	mt															
c)	4 core 2.5 Sq.mm PVC insulated PVC sheathed copper conductor armoured UG cable including cable gland end termination etc.	30 mts	mt															
3	Supply, installation, balancing and commissioning of fabricated at site GSS sheet metal rectangular/round ducting complete with neoprene rubber gaskets, elbows, splitter dampers, vanes, hangers, supports etc. as per approved drawings and specifications of following sheet thickness complete as required.																	
a)	1.00mm(20Gauge)	10sqm	sqm															
b)	.80 mm(22 Gauge)	20sqm	sqm															
c)	0.63 mm (24 gauge)	10sqm	Sqm															
4	Supplying and laying following sizes of XLPE insulated PVC sheathed copper conductor armoured U/G cable of 1.1KV grade, conforming to relevant IS on the wall/existing trench, existing cable trays i/c interconnections, end termination, gland earthing complete etc. as required																	
a	4 core 10 sq.mm	120 mts	mt															
5	Providing condensate drain line using 50 mm dia PVC pipe with pressure rating of 6 KGf/Sq.cm along with accessories, Water tight sealing, fixing on floor/wall i/c providing flexible pipe connections etc as required.	10 mts	mt															

UNPRICED SCHEDULE

6	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required.	25 mts	mt											
7	Providing and fixing 6 SWG dia G.I. wire on surface or in recess for loop earthing along with existing surface/ recessed conduit/ submain wiring/ cable as required	25 mts	mt											
8	Providing MS frame work/extension to existing frame work/supports/ hangers/cable tray/ piping tray/roofing frame work etc fabricated with the following members i/c cutting, welding, drilling holes, threading the rods, required machine shop work, painting etc as required.													
a	75 mm x 40 mm x 6mm ISMC channel	30 mts	mt											
b	25 X 25 X 3 mm MS Angle	60 mts	mt											
c	25 x 3 mm MS Flat	60 mts	mt											
9	SITC of cubicle type floor mounting LT panel made up of 16SWG CRCA sheet suitable for 3 phase 4 wire system, with Aluminium Busbar arrangements of 200Amps capacity, Powdercoating with the following switch gears. a) 2 Nos 125A, Four Pole MCCB with extended rotary operating mechanism and having breaking capacity of 25KA at 415V, thermal release range of 100-125A with UV release, auxiliary contacts for electrical interlocking with suitable short circuit and overload thermal release range. Both the MCCBs shall be mechanically and electrically interlocked so that only one at a time can be switched on. (Make: L&T DN0-125D or similar superior)													

UNPRICED SCHEDULE

	b) 2sets of 0-150A Ammeter with necessary CTs & selector switches, 2 sets of 0-500V voltmeter with phase selector switches and protection fuses, 2sets of RYB LED type indication lamps with fuses and switches. c) 63A TPN SDFU with 32A HRC fuses for package AC units. Each SDFU shall be provided with (0 to 40A) range of Ammeter and CT (for one Phase) and ON /OFF LED type indication lamps.- 4 Sets (All the above items comprise One Job)	1job	job																
10	Supplying and installing following size of perforated painted with powder coating M.S. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc as required. a 300 mm width X 50 mm depth X 1.6 mm thickness	10 mts	mt																
11	Supplying and fixing of 18 SWG MS powder coated cover of width 300mm for the above cable tray etc. as required.	10 mts	mt																
12	Providing and fixing powder coated supply air grills made of extruded aluminium construction having a free area not less than 60% with aluminium volume control dampers in the supply air system etc. as required.	1sqm	sqm																
	Sub Total for HPAC																		
2.2	1.5TR Inverter AC unit: [All items covered under this sub head includes Comprehensive AMC for 7 years including 2 years warranty]																		

1	Supplying Installation, Testing and commissioning of 1.5 TR inverter type split AC unit 5 star as per BEE star rating having nominal cooling capacity of 4500 Kcal/hr (5.2 KW), minimum room air flow of 700 cub.mtr/hr and minimum Indian Seasonal Energy Efficient Ratio (ISEER) of 4.5 along with the copper pipe, suitable size of PVC insulated cord wire and PVC drain pipe up to the length of 3 mtrs including transportation, gas charging, insulation and making opening in wall and making good the damages etc.,etc., complete as per specifications, terms and conditions attached as required. (Make: Panasonic / Universal comfort (Voltas) /Hitachi / LG / Carrier / Daikin / Mitsubishi / O-General/ Blue star)	16 Nos	each																
2	Providing and fixing the following additional items suitable for the above AC units, over and above 3 mtrs length where ever required .	60 Mts	mt																
a)	Suitable size of Copper pipes (hot gas and liquid line) including insulation etc., as required.																		
b)	Suitable size of PVC insulated cord wire.	60 Mts	mt																
c)	Suitable size of PVC drain pipe.	100 Mts	mt																
3	Providing and fixing of Ready made Condensor stand suitable for outdoor unit, etc as required.	16 Nos	Each																
	Sub Total for Inverter AC																		
	Total for Air Conditioning for R K Nagar																		

3	IBMS:														
SH-1	IBMS Software, Server Machine and Operator Workstation. [All items covered under this sub head includes Comprehensive AMC for 7 years including 2 years warranty]														
1.a	Server Machine to Install IBMS Software: SITC of Server to accommodate Intelligent Building Management software. The server should be minimum of Intel® Xeon® Processor 3.06 GHz, 512K Cache, 533 MHz FSB or better, Minimum Windows <u>2012</u> server OS, <u>8GB RAM, 1TB HDD</u> , video resolution of 1280x1024 pixels or better, <u>21" LED monitor</u> DVD Writer, 1Gbit/sec or greater on-board network card, rack mountable, redundant power supply units complete as required. All OS required as per OEM and other accessories required to complete the system shall be provided. Work station shall be pre loaded with requisite MS Windows Licensed software compatible with the IBMS platform etc. complete as required, along with licensed anti-virus for 5 years. *	1 No	Each												
b	Workstation Machine: SITC of Workstation Machine with PC i-7 processor, 500GB HDD, 4 GB RAM, DVD R/W Drive, optical Mouse, 106 keys key board, 8 serial and one parallel ports with 10/100 Mbps Ethernet card & internal modem. The system should be supplied with 21" LED monitor, etc. complete as required, along with licensed anti-virus for 5 years*	1 No	Each												

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c	Integrated Building Management System Software: SITC of web based GUI IBMS Software to be installed at server with unlimited client viewing license for recording 3years data or more. The IBMS software should have provision for seamless integration of Precision Air-Conditioning Units, DDC Controllers, Electrical Panel, DGs, UPS, Energy Meters, Fire Alarm System (BACNET/IP), Security System alarm etc. The alarms in integrated system should flow to IBMS with point names and give a pop up visual indication into BMS Workstation .The alarms as indicated in IO summary should be available in IBMS system. The license shall be priced for 1000 points and unlimited client station licenses for viewing the IBMS from Lon/Modbus / BACnet Interface.													
	The Software point /Hardwired point integration will include the services as detailed in IO Summary.The firms offering soft integration for hardwired points is also acceptable without extra cost. The IBMS software will be highly scalable and later act as a master to all the smaller stations in future. The uplink will be provided by BSNL. [*licensed anti-virus for 5 years after completion of work]	1 No	Each											

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2	DDC CONTROLLER:SITC of standalone Intelligent UL Listed, BTL certified onboard TCP/IP freely programmable DDC with latest 32 bit microprocessor technology having built-in Lon/Modbus / BACnet gateway for connecting third party devices, with peer to peer communication, input or output relays, terminal block, real time clock, networking and inbuilt data buffer. The controller shall have a minimum of 32 MB of Non-volatile Flash memory for control applications and 32 MB non-volatile flash memory for storage with Minimum 12 input/ outputs. Each standalone controller should be able to store minimum 45 days data. The controller shall be fixed in the suitable size powder coated MS box with suitable power supply unit. Earthing bolt shall be provided for body earthing also.														
a)	DDC for Monitoring & control as per IO summary														
b)	DDC for Monitoring status of energy meter, UPS & other devices etc. Complete as required														
	Total of a&b comprising of 1 lot	1 lot	Lot												
3	Field Instruments / Devices:Supplying and installing of the following Sensors as per the detailed specification. The Sensors shall be two wire type.														
a)	Temperature cum Humidity Sensor of Resistance Temperature Detection Type of PT 1000 / NI 1000/ NTC 20k with builtin LCD display for Temperature & RH.The accuracy of the temperature sensor shall be $\pm 1^{\circ}\text{C}$ over the range. Relative Humidity sensors shall capacitance type with an effective sensing range of 10% to 90%. The accuracy shall be $\pm 5\%$ or better.	3Nos	Each												

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b)	Hydrogen Sensor (0-100% LEL)	1 No	Each												
4	INTEGRATOR & SWITCH: SITC of Integration Module with Lon/BACnet/IP output to integrate third Party Devices working on Modbus RTU, BACnet, over RS 485/IP, Open protocol over RS 485/IP to Building Management Station etc. complete as required. The Points for soft integration is to be considered as per IO summary. (Note : If Integrator is a part of the DDC Controller, the rate need not be quoted for this item, instead same shall be covered in Item 2 - DDC controller)	1 lot	Lot												
5	SITC of standalone 3 KVA, 3phase, on line UPS for all the IBMS systems with a backup of upto 20 minutes i/c providing bypass arrangement etc as required.	1 No	Each												
6	SITC of Layer II managed 24 ports POE switch with RJ45 ports 10/1000 mbps ports and two uplink gigabit ports etc as required.	2Nos	Each												
7	27U Floor Mount Rack with caster wheel, required shelves, 4 no's of cooling fans, 5/15A power strips and required accessories etc as required.	1 No	Each												
Sub-Total of SH-1: (BMS)															
SH-II	ACS (ACCESS CONTROL SYSTEM): [All items covered under this sub head includes Comprehensive AMC for 7 years including 2 years warranty]														

	be capable of both enrolment purpose and access control purpose.																	
4	SMART CARDS: Supplying of Smart Cards, double side card holder and lanyard including printing on lanyard etc as required.	50 Nos	Each			-	-	-	-	-	-			-	-			
5	EM-LOCK FOR DOORS: SITC of Electromagnetic Locks of 600 lbs holding force suitable for operating with 12/24V DC power supply i/c providing Green /Red LED indication with built-in door monitor status as per the specification																	
a)	For single leaf doors	1Nos	Each															
b)	For double leaf doors	2 Nos	Each															
6	SITC of Emergency door release /exit switch inside the room for Doors etc as required.	3 Nos	Each															
7	SITC of master switch for opening all access control doors in case of Emergency.	1 No	Each															
8	Access Management software Including Attendance Software as per the detailed specification attached.	1set	Set															
Sub total of SH-2- (ACS)																		
SH-3	IP CCTV surveillance system: [All items covered under this sub head includes Comprehensive AMC for 7 years including 2 years warranty]																	

UNPRICED SCHEDULE

1	SITC of Indoor/outdoor Fixed Dome IR Camera having Full HD resolution (2304 x 1296) 3MP or better Low light colour cameras with sensitivity of minimum 0.12 lux in color mode & 0.03 lux in B/W mode along with power supply unit. The cameras shall use the 1/3 inch format CMOS/CCD imager and shall have a 3 to 12 mm varifocal lens. Electronic Shutter range of 1/5 - 1/10,000. The cameras shall have digital wide dynamic range (WDR) of upto 60 db. The Cameras shall be POE (IEEE 802.3af class 3). The Cameras shall be ONVIF and UL compliant and complete as per detailed specification attached.	6 Nos	Each															
2	Supply, Installation, Testing and Commissioning of 16 channel Network video recorder with 8 SATA interface, not less than 8TB usable storage, H.264 Compression format and Including the harddisk for redundant to Record @ D1 resolution, 15FPS for 60 days etc as per specification attached.	1 No	Each															
3	SITC 32" diagonal, 1920 x 1080 pixels LED monitoring screen with all mounting bracket, connection chord wire, remote control , with suitable ports etc as per the specification attached.	2 Nos	Each															
4	Cat6 IO modules with single shutter faceplate and Back Box etc as required.	6 Nos	Each															
Sub Total of SH-3 (IP CCTV)																		

SH-4	AFAS (ADDRESSABLE FIRE ALARM SYSTEM): [All items covered under this sub head includes Comprehensive AMC for 7 years including 2 years warranty]														
1	Fire Alarm Control Panel (FACP): SITC of Analogue addressable micro Processor - controlled , Standalone , Main Fire Alarm Control Panel 2 loop (1 Loop Card) (with minimum 125 detectors /125 devices capacity per loop card) with LCD display , capable of being networked to the central monitoring System, to monitor and integrate other panels such as Access control System and accessories like detectors, LCP's, hooters, control modules, monitor modules Fault Isolation Modules, response indicators, fire/fault indicators, audio-visual signals, central processing units, complete with LCD display, zone indicating LEDs, having multiple access levels, event history file in non-volatile memory (EEPROM) as per the detailed specification, complete with PSU, Battery backup along with charger for 24 hours in non-alarm condition and 30 minutes in alarm condition etc. as required. The panel shall be UL & FM listed.														
	NB: - The alarm from Fire Alarm Panel should flow to IBMS (as per IO Summary) for soft integration and should give a Pop-Up Visual indication at IBMS work station. Cross Zoning shall be considered for NOVEC FSS triggering in respective zones only.	1 No	Each												

UNPRICED SCHEDULE

2	Addressable MultiSensor Detector: SITC of Addressable analogue / MULTISENSOR / MULTICRITERIA type, UL Listed photo cum thermal detectors with solid state design, indicating LED, mounting base, mounting bracket etc. base box, loop in and loop out gland as per requirement and detailed specification attached.														
a)	On Real Ceiling (Base Box is to be Used)	35Nos	Each												
b)	On False Ceiling	20Nos	Each												
3	Addressable Heat Detector: SITC of UL Listed Intelligent Analogue addressable ROR Heat detector with junction box etc. as required as per specification attached.	6Nos	Each												
4	Addressable control modules: SITC of UL Listed Addressable control module complete with junction box etc. for control options of Hooters & other control options like Access Doors opening, the package Air Conditioners trip, <u>Novec suppression</u> etc. in case of emergency, as required.		Each												
5	Manual Call Point: SITC of UL Listed Manual call points slim type with NO/NC contacts, Pull type/break glass, reset Lock & Key arrangement etc suitable for addressable function as required.	4Nos	Each												
6	Electronic Hooter Cum Strobe: SITC of Hooter having three distinct sounds with addressable relay module and strob light with minimum 85 db from 1Mtr distance etc. as required.	6Nos	Each												

UNPRICED SCHEDULE

7	Fault Isolator Module: SITC of UL Listed Fault isolation module to electrically isolate different sections of detector loops (for every 20 detectors / devices) as per detailed specifications.etc. as required.	2Nos	Each												
8	Response Indicator: SITC of Response indicator having twin LEDs for mounting on false ceiling / wall at the entries of the cabin for indicating the operation of detectors in the above false ceiling / below false flooring detectors etc. as required.	20Nos	Each												
9	Input Module: SITC of UL Listed Input Module with junction box etc. For monitoring the status of Vesda, WLD, Novac 1230 etc., as required.	10Nos	Each												
10	24VDC PSU : SITC of suitable power supply unit with sufficient battery backup to activating the Hooters in alarm conditions. etc as required.	2Nos	Each												
Sub-Total of SH-4 (AFAS)															
SH-5	WLD (WATER LEAK DETECTION SYSTEM): [All items covered under this sub head includes Comprehensive AMC for 7 years including 2 years warranty]														
1	SITC of 4 Zones Non-Locating Water leak detection system with Suitable length of leader cable -MODBUS communication -NC/NO for relay or as per solution with LCD keypad etc., as required.	1 Nos	Each												

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2	Supply, Installation, Testing and Commissioning of Water Leak Sensing Tape i/c providing adhesive to fix sensing cable etc as required as per technical specifications attached.	50 mts	Mtr																
	Sub-Total of SH-5 (WLDS)																		
	-																		
SH-6	RODENT REPELLENT SYSTEM: [All items covered under this sub head includes Comprehensive AMC for 7 years including 2 years warranty]																		
1	Supply, installation, testing and commissioning of Microprocessor based Master Digital Controller Console with auto tuning capability of connecting 12 Satellites per console in individual cable to transducer, LCD display, with on-board controls for generating frequencies from 20Khz to 60 Khz, including all accessories such as stand/rack etc., as required.	3 Nos	Each																
2	Supply, installation, testing and commissioning of Transducer Satellite Stations, capable of Emitting Ultrasonic sound of frequencies 20 Khz and higher, including all accessories complete as per specifications / relevant standards etc., as required.	36 Nos	Each																
3	Supplying & Laying Standard 2 core, flexible (14/40) SWG multi-stranded CT wires for rodent, for connectivity between the transducers and the master console suitable for rodent repellent system. Including supplying & laying necessary FRLS PVC Conduit of 25mm dia, couplers, bends etc complete as required.	500 mts	Mtr																
	Sub-Total of SH-6 - (RRS)																		

SH-7	Cabling: [All items covered under this sub head includes Comprehensive AMC for 7 years including 2 years warranty]																		
1	S/L of following type and size of cable etc. complete as required																		
a)	S/L of 2-Core, 1 sq. mm copper conductor Shielded FRLS armoured cable Gray Color for Communication etc as required.	750 mts	Mtr																
b)	S/L of 2-Core, 1 sq. mm copper conductor Shielded FRLS unarmoured cable for Communication as required.	750 mts	Mtr																
c)	S/L 4-C x 1.0 Sq mm, copper conductor, Twisted Pair, multi strand, ATC shielded, armoured cable in recess/on surface/ cable tray (Gray Color) etc as required.	750 mts	Mtr																
d)	S/L of 8-Core, 1 sq. mm ,copper conductor, Shielded, FRLS ,unarmoured cable for Communication etc as required.	750 mts	Mtr																
e)	S/L of 2 Core, 1.5 sq. mm, copper conductor, FRLS, armoured cable etc as required.(RED Colour)	750 mts	Mtr																
f)	S/L of 6Core, 1 sq. mm, copper conductor, ATC shielded,unarmoured cable etc as required.	700 mts	Mtr																
g)	S/F 25mm dia PVC FRLS Conduit with all its accessories on surface of wall/in recess etc as required..	1000 mts	Mtr																
h)	S/L Cat6 4Pair UTP Cable etc as required.	1200 mts	Mtr																

i)	Supplying of Cat6 Factory precrimped patch chords of length of 1 meter etc as required.	40 Nos	Each											
j)	Supply and Laying of 3 Run x 2.5 sq.mm flexible Wire in existing conduit etc as required.	300 mts	Mtr											
k)	Supply and Laying of 3 Run x 1.5 sq.mm flexible Wire in existing conduit etc as required.	500 mts	Mtr											
l)	Supply and Erection of 5/15Amps, 3 Pin universal Socket with Switch, Back box and Cover Plate etc as required.	40 Nos	Each											
m)	S/F 20mm dia PVC FRLS Conduit with all its accessories on surface of wall/in recess etc as required..	500 mts	Mtr											
	Sub-Total of SH-7 (CABLING)													
SH-8	FIRE SUPPRESSION SYSTEM: [All items covered under this sub head includes Comprehensive AMC for 7 years including 2 years warranty]													
1	Designing and SITC of Vds/UL approved NOVEC 1230, fire suppression system, design for highest degree of protection and minimum extinguishing time for Server Room at uniform extinguishing concentration comprising of following components and related accessories, connections etc. as per specifications and approved makes as required.													

a)	SITC of 120 Ltrs. Capacity NOVEC 1230 seamless cylinder complete with Cylinder Valve, Pressure gauge, safety outlet and port for low pressure switch connection and cylinder strap including Manual actuator, Actuation Hose etc complete as required.	3Nos	Each															
b)	SITC of NOVEC 1230 Agent in the existing cylinders.	320Kg	Kg															
c)	Centralised Master Cylinder Kit Comprising Below Items: Low Pr. Supervisory Switch	2Nos	Each															
d)	Electromagnetic Actuator	2Nos	Each															
e)	Pneumatic Actuator	2Nos	Each															
f)	* Flexible Discharge Hose	2Nos	Each															
g)	Warning Sign Board	2Nos	Each															
h)	Centralised Slave Cylinder Kit Comprising Below Items: Low Pr. Supervisory Switch	1Nos	Each															
i)	Pneumatic Actuator	1Nos	Each															
j)	* Flexible Discharge Hose	1Nos	Each															
k)	Check Valve	1 Nos	Each															
l)	Nozzles	8 Nos	Each															
m)	Wall Mount Cylinder Bracket	6 Nos	Each															
n)	Discharge Pressure Switch	2 Nos	Each															
o)	SITC of Gas Release Panel with PSU	2 Nos	Each															

p)	SITC of Manual Release Switch (Green)	2 Nos	Each															
q)	SITC of Manual Abort Switch (Yellow)	2 Nos	Each															
2	SITC of suitable size M. S. Seamless pipes as per ASTM 106 Gr. B, Schedule-40 according to design consideration complete with necessary fittings including cutting, welding and clamping and shall be painted with two coats of primer and two coats of red enamelled paint as per fire norms etc. complete as required.	2 lot	Lot															
Sub-Total of SH-8 - (FSS)																		
SH-9	ASDS (ASPIRATION SMOKE DETECTION SYSTEM): [All items covered under this sub head includes Comprehensive AMC for 7 years including 2 years warranty]																	
1	Supply, installation, Testing & commissioning of Air sampling type Networkable 1 Zone HSSD System, Auxiliary Programmable relays for Alert / Action / Fire on board for FAS system.																	
	a) Equipment room & Battery room	2 Nos	Each															
2	Supply, installation, Testing & commissioning of suitable power supply unit with sufficient Battery backup etc as required.	2 Nos	Each															
3	Supply and Installation of Air termination Nozzles with Capillary set and accessories including end caps etc as required.	8 Nos	Each															
4	Aspiration 25mm OD, heavy duty, PVC Sampling Pipes with accessories etc as required.	120mts	Mtr															

5	Electronic Hooter with mounting arrangement etc as required.	2 Nos	Each											
	Sub-Total of SH-9 - (ASDS)													
	Total for IBMS for R K Nagar													
4	Comprehensive AMC :													
	Comprehensive/ Preventive/ Breakdown Maintenance for Electrical Installation, pump sets including LT panel, compound lighting, lightning conductor etc., by deploying specialized man power, supplying & fixing required spares, tools and plant etc., to keep all the equipments healthy & operational as per the specification attached.													
	Total for CAMC for R K Nagar	7 Yrs	yr											
5	SH-III: Operation & General Maintenance													
	Round the clock operation and minimum maintenance of all Electro Mechanical services etc., as per standard procedures/ maintenance schedule, by deploying semi skilled labour manpower in three shifts, by arranging tools & plants, co-ordinating with the central location in case of emergency and breakdown cases, persuing with AMC agency for corrective action in case of failure of equipment, acting as security guard also for protecting services from any mis happening and to keep all the equipments clean & healthy, all services operational including holidays & sundays as per the detailed specification and conditions specified etc., as required.													
1	1st Year	12months	month											
2	2 nd Year	12months	month											
3	3 rd Year	12months	month											
4	4 th Year	12months	month											

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5	5 th Year	12months	month												
6	6th year	12months	month												
7	7 th Year	12months	month												
	Total for Operation & General Mtce. for R K Nagar														
	Grand Total for RK Mutt Road CHENNAI														
II	A&N ISLANDS														
Sl. No	Description of Item	Qty	Unit	Rate per unit excluding Input Tax Credit (ITC)	CGST	SGST	IGST	Rate per unit including ITC	Total Amount excluding ITC (Net cost)	Total Amount i/c ITC	HSN / SAC code				
					%	Rate	%	Rate		Rate					
1	2	3	4	5	6	8	9 = 8x5	13 = 3 x 5	11 = 10x5	12=5+(7+9) or (11)	13 = 3 x 5	14 = 3 x 12	15		
I	Engine Alternator set:														
1	Supplying Installing Testing and Commissioning and Comprehensive AMC for 7 years including 2 years warranty of Multi cylinder Electric start/close coupled ready to use (RTU) type, water cooled diesel EA set of following capacity in an acoustic enclosure conforming to the latest CPCB Norms along with AMF control panel capable of generating three phase, 415 V, 50 HZ, full load capacity at site conditions with diesel engine of 1500 RPM complete with all accessories on the existing cement concrete floor / foundation / elevated platform including supplying consumables like lub oil, fuel and providing artificial resistive load with cabling, switching arrangements etc., for pre acceptance testing														

	(i.e., 2 hours full load, 1 hour 10% overload and 1 hour at no load) and final Acceptance Testing of E/A set (i.e. running of E/A set on full load for 6 hours and running on 10% overload for 1 hour) including topping up of lub. oil upto full mark and filling of extra fuel up to a level suitable for 2 hours full load working etc., and Comprehensive AMC for 7 years including 2 years warranty as per specifications as required. Note: 1) The make of Engine/Alternator shall be BSNL approved as per product list attached. 2) Minor civil works such as cutting of floor or breaking of wall for laying of fuel pipes / making supports to exhaust pipes shall be within the scope of the contractor without any extra cost.														
a)	125 KVA /100KW	10 sets	set												
b)	100 KVA /80KW	4 sets	set												
	Total for EA set for 7 Islands:														
2	Air Conditioning: [[All items covered under this sub head includes Comprehensive AMC for 7 years including 2 years warranty]														

UNPRICED SCHEDULE

1	Supplying Installation, Testing and commissioning of ceiling mounted ductable type split A/C Units 3.0TR cooling capacity (9000 Kcal/hr), operating of 230V/415V, 50 Hz, A.C.supply, and nominal air flow not less than 1900 Cub. mtr/hr, with temperature control thermistor, remote control unit, filters, rotary / scroll type compressor including mounting of indoor unit with suitable arrangements and outdoor units on existing frame work, pressure testing, vacuumisation, charging the refrigerant system, installation of all hardware items, making opening in wall and making good the damages etc., complete as required. Make: Panasonic / Universal comfort (Voltas) /Hitachi / LG / Carrier / Daikin / Mitsubishi / O-General/ Blue star)	5 Nos	each															
2	Supplying Installation, Testing and commissioning of 1.5 TR inverter type split AC unit 5 star as per BEE star rating having nominal cooling capacity of 4500 Kcal/hr (5.2 KW), minimum room air flow of 700 cub.mtr/hr and minimum Indian Seasonal Energy Efficient Ratio (ISEER) of 4.5 along with the copper pipe, suitable size of PVC insulated cord wire and PVC drain pipe up to the length of 3 mtrs including transportation, gas charging, insulation and making opening in wall and making good the damages etc.,etc., complete as per specifications, terms and conditions attached as required. (Make: Panasonic / Universal comfort (Voltas) /Hitachi / LG / Carrier / Daikin / Mitsubishi / O-General/ Blue star)	10 Nos	each															

UNPRICED SCHEDULE

3	Steel work welded in built up sections/ framed work including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer using structural steel etc. as required.																	
	(a) In gratings, frames, guard bar, ladder, railings, brackets, gates and similar works.	150 Kg	Kg															
4	Supplying and fixing of refrigerant pipe line (for Item No.1) consist of suitable size of copper suction line, copper liquid line, expanded polythylene foam insulation tubing for copper pipe, suitable capacity 3 core /5 core PVC insulated copper wire to electrically connect both the units with each other, flexible PVC covering pipe of suitable dia for enclosing the above as required.	40 mts	mt															
5	Supplying and fixing the following additional items suitable for the AC units (under Item.No.2), over and above 3 mtrs length where ever required .																	
a)	Suitable size of Copper pipes (hot gas and liquid line) including insulation etc., as required.	20 mts	mt															
b)	Suitable size of PVC insulated 3 core 2.5 sq.mm copper cord wire.	20 mts	mt															
6	P/F 25mm dia PVC heavy guage pipe for draining condensate water from evaporator unit including fixing on surface/recess with necessary accessories like bends, couplers, Tees, etc., as required.	30 mts	mt															
7	Supplying and fixing the following size of PVC trunking with all accessories to cover the refrigerant pipes etc., as required. (a) 100mmx50mm	10 mts	mt															

	(b) 150mmx50mm	5 mts	mt											
	Total for Air Conditioning for 1 Island													
	Total for Air Conditioning for 7 Islands													
3	IBMS:													
SH-I	IBMS Software, Server Machine and Operator Workstation. [All items covered under this sub head includes Comprehensive AMC for 7 years including 2 years warranty]													
1.a	Server Machine to Install IBMS Software: SITC of Server to accommodate Intelligent Building Management software. The server should be minimum of Intel® Xeon® Processor 3.06 GHz, 512K Cache, 533 MHz FSB or better, Minimum Windows <u>2012</u> server OS, <u>8GB RAM, 1TB HDD</u> , video resolution of 1280x1024 pixels or better, <u>21" LED monitor</u> DVD Writer, 1Gbit/sec or greater on-board network card, rack mountable, redundant power supply units complete as required. All OS required as per OEM and other accessories required to complete the system shall be provided. Work station shall be pre loaded with requisite MS Windows Licensed software compatible with the IBMS platform etc. complete as required, along with licensed anti-virus for 5 years. *	1 No	Each											
b	Workstation Machine: SITC of Workstation Machine with PC i-7 processor, 500GB HDD, 4 GB RAM, DVD R/W Drive, optical Mouse, 106 keys key board, 8 serial and one parallel ports with 10/100 Mbps Ethernet card & internal modem. The system should be supplied with 21" LED monitor, etc. complete as required, along with	1 No	Each											

UNPRICED SCHEDULE

	licensed anti-virus for 5 years*																		
c	Integrated Building Management System Software: SITC of <u>web based</u> GUI IBMS Software to be installed at server with unlimited client viewing license for recording 3years data or more. The IBMS software should have provision for seamless integration of Precision Air-Conditioning Units, DDC Controllers, Electrical Panel, DGs, UPS, Energy Meters, Fire Alarm System (BACNET/IP), Security System alarm etc. The alarms in integrated system should flow to IBMS with point names and give a pop up visual indication into BMS Workstation .The alarms as indicated in IO summary should be available in IBMS system. The license shall be priced for 1000 points and unlimited client station licenses for viewing the IBMS from Lon/Modbus / BACnet Interface.																		
	The Software point /Hardwired point integration will include the services as detailed in IO Summary.The firms offering soft integration for hardwired points is also acceptable without extra cost. The IBMS software will be highly scalable and later act as a master to all the smaller stations in future. The uplink will be provided by BSNL. [*licensed anti-virus for 5 years after completion of work]	1 No	Each																

UNPRICED SCHEDULE

2	DDC CONTROLLER:SITC of standalone Intelligent UL Listed, BTL certified onboard TCP/IP freely programmable DDC with latest 32 bit microprocessor technology having built-in Lon/Modbus / BACnet gateway for connecting third party devices, with peer to peer communication, input or output relays, terminal block, real time clock, networking and inbuilt data buffer. The controller shall have a minimum of 32 MB of Non-volatile Flash memory for control applications and 32 MB non-volatile flash memory for storage with Minimum 12 input/ outputs. Each standalone controller should be able to store minimum 45 days data. The controller shall be fixed in the suitable size powder coated MS box with suitable power supply unit. Earthing bolt shall be provided for body earthing also.														
a)	DDC for Monitoring & control as per IO summary														
b)	DDC for Monitoring status of energy meter, UPS & other devices etc. Complete as required														
	Total of a&b comprising of 1 lot	1 lot	Lot												
3	Field Instruments / Devices:Supplying and installing of the following Sensors as per the detailed specification. The Sensors shall be two wire type.														
a)	Temperature cum Humidity Sensor of Resistance Temperature Detection Type of PT 1000 / NI 1000/ NTC 20k with builtin LCD display for Temperature & RH.The accuracy of the temperature sensor shall be $\pm 1^{\circ}\text{C}$ over the range. Relative Humidity sensors shall capacitance type with an effective sensing range of 10% to 90%. The	2Nos	Each												

	accuracy shall be $\pm 5\%$ or better.																		
b)	Hydrogen Sensor (0-100% LEL)	1 No	Each																
4	INTEGRATOR & SWITCH: SITC of Integration Module with Lon/BACnet/IP output to integrate third Party Devices working on Modbus RTU, BACnet, over RS 485/IP, Open protocol over RS 485/IP to Building Management Station etc. complete as required. The Points for soft integration is to be considered as per IO summary. (Note : If Integrator is a part of the DDC Controller, the rate need not be quoted for this item, instead same shall be covered in Item 2 - DDC controller)	1 lot	Lot																
5	SITC of standalone 3 KVA, 3phase, on line UPS for all the IBMS systems with a backup of upto 20 minutes i/c providing bypass arrangement etc as required.	1 No	Each																
6	SITC of Layer II managed 24 ports POE switch with RJ45 ports 10/1000 mbps ports and two uplink gigabit ports etc as required.	2Nos	Each																
7	27U Floor Mount Rack with caster wheel, required shelves, 4 no's of cooling fans, 5/15A power strips and required accessories etc as required.	1 No	Each																
	Sub-Total of SH-1- (BMS)																		
SH-2	ACS (ACCESS CONTROL SYSTEM): [All items covered under this sub head includes Comprehensive AMC for 7 years including 2 years warranty]																		

	time basis. The reader should be capable of both enrolment purpose and access control purpose.																	
4	SMART CARDS: Supplying of Smart Cards, double side card holder and lanyard including printing on lanyard etc as required.	50 Nos	Each															
5	EM-LOCK FOR DOORS: SITC of Electromagnetic Locks of 600 lbs holding force suitable for operating with 12/24V DC power supply i/c providing Green /Red LED indication with built-in door monitor status as per the specification																	
a)	For single leaf doors	1Nos	Each															
b)	For double leaf doors	3 Nos	Each															
6	SITC of Emergency door release /exit switch inside the room for Doors etc as required.	4 Nos	Each															
7	SITC of master switch for opening all access control doors in case of Emergency.	1 No	Each															
8	Access Management software Including Attendance Software as per the detailed specification attached.	1set	Set															
Sub total of SH-2- (ACS)																		
SH-3	IP CCTV surveillance system : [All items covered under this sub head includes Comprehensive AMC for 7 years including 2 years warranty]																	

UNPRICED SCHEDULE

1	SITC of Indoor/outdoor Fixed Dome IR Camera having Full HD resolution (2304 x 1296) 3MP or better Low light colour cameras with sensitivity of minimum 0.12 lux in color mode & 0.03 lux in B/W mode along with power supply unit. The cameras shall use the 1/3 inch format CMOS/CCD imager and shall have a 3 to 12 mm varifocal lens. Electronic Shutter range of 1/5 - 1/10,000. The cameras shall have digital wide dynamic range (WDR) of upto 60 db. The Cameras shall be POE (IEEE 802.3af class 3). The Cameras shall be ONVIF and UL compliant and complete as per detailed specification attached.	4 Nos	Each															
2	Supply, Installation, Testing and Commissioning of 16 channel Network video recorder with 8 SATA interface, not less than 8TB usable storage, H.264 Compression format and Including the harddisk for redundant to Record @ D1 resolution, 15FPS for 60 days etc as per specification attached.	1 No	Each															
3	SITC 32" diagonal, 1920 x 1080 pixels LED monitoring screen with all mounting bracket, connection chord wire,remote control , with suitable ports etc as per the specification attached.	2 Nos	Each															
4	Cat6 IO modules with single shutter faceplate and Back Box etc as required.	8 Nos	Each															
Sub Total of SH-3 - (IP CCTV)																		

SH-4	AFAS (ADDRESSABLE FIRE ALARM SYSTEM): [All items covered under this sub head includes Comprehensive AMC for 7 years including 2 years warranty]															
1	Fire Alarm Control Panel (FACP): SITC of Analogue addressable micro Processor - controlled , Standalone , Main Fire Alarm Control Panel 2 loop (1 Loop Card) (with minimum 125 detectors /125 devices capacity per loop card) with LCD display , capable of being networked to the central monitoring System, to monitor and integrate other panels such as Access control System and accessories like detectors, LCP's, hooters, control modules, monitor modules Fault Isolation Modules, response indicators, fire/fault indicators, audio-visual signals, central processing units, complete with LCD display, zone indicating LEDs, having multiple access levels, event history file in non-volatile memory (EEPROM) as per the detailed specification, complete with PSU, Battery backup along with charger for 24 hours in non-alarm condition and 30 minutes in alarm condition etc. as required. The panel shall be UL & FM listed.															
	NB: - The alarm from Fire Alarm Panel should flow to IBMS (as per IO Summary) for soft integration and should give a Pop-Up Visual indication at IBMS work station. Cross Zoning shall be considered for NOVEC FSS triggering in respective zones only.	1 No	Each													

UNPRICED SCHEDULE

2	Addressable MultiSensor Detector: SITC of Addressable analogue / MULTISENSOR / MULTICRITERIA type, UL Listed photo cum thermal detectors with solid state design, indicating LED, mounting base, mounting bracket etc. base box, loop in and loop out gland as per requirement and detailed specification attached.														
a)	On Real Ceiling (Base Box is to be Used)	20Nos	Each												
b)	On False Ceiling	5Nos	Each												
3	Addressable Heat Detector: SITC of UL Listed Intelligent Analogue addressable ROR Heat detector with junction box etc. as required as per specification attached.	1Nos	Each												
4	Addressable control modules: SITC of UL Listed Addressable control module complete with junction box etc. for control options of Hooters & other control options like Access Doors opening, the package Air Conditioners trip, <u>Novec suppression</u> etc. in case of emergency, as required.	5Nos	Each												
5	Manual Call Point: SITC of UL Listed Manual call points slim type with NO/NC contacts, Pull type/break glass, reset Lock & Key arrangement etc suitable for addressable function as required.	3Nos	Each												
6	Electronic Hooter Cum Strobe: SITC of Hooter having three distinct sounds with addressable relay module and strob light with minimum 85 db from 1Mtr distance etc. as required.	2Nos	Each												

UNPRICED SCHEDULE

7	Fault Isolator Module: SITC of UL Listed Fault isolation module to electrically isolate different sections of detector loops (for every 20 detectors / devices) as per detailed specifications.etc. as required.	2Nos	Each														
8	Response Indicator: SITC of Response indicator having twin LEDs for mounting on false ceiling / wall at the entries of the cabin for indicating the operation of detectors in the above false ceiling / below false flooring detectors etc. as required.	10Nos	Each														
9	Input Module: SITC of UL Listed Input Module with junction box etc. For monitoring the status of Vesda, WLD, Novac 1230 etc., as required.	4Nos	Each														
10	24VDC PSU : SITC of suitable power supply unit with sufficient battery backup to activating the Hooters in alarm conditions. etc as required.	1Nos	Each														
Sub-Total of SH-4 - (AFAS)																	
SH-5	WLD (WATER LEAK DETECTION SYSTEM): [All items covered under this sub head includes Comprehensive AMC for 7 years including 2 years warranty]																
1	SITC of 4 Zones Non-Locating Water leak detection system with Suitable length of leader cable -MODBUS communication -NC/NO for relay or as per solution with LCD keypad etc., as required.	2 Nos	Each														

UNPRICED SCHEDULE

2	Supply, Installation, Testing and Commissioning of Water Leak Sensing Tape i/c providing adhesive to fix sensing cable etc as required as per technical specifications attached.	30 mts	Mtr															
	Sub-Total of SH-5 - (WLDS)																	
	-																	
SH-6	RODENT REPELLENT SYSTEM): [All items covered under this sub head includes Comprehensive AMC for 7 years including 2 years warranty]																	
1	Supply, installation, testing and commissioning of Microprocessor based Master Digital Controller Console with auto tuning capability of connecting 12 Satellites per console in individual cable to transducer, LCD display, with on-board controls for generating frequencies from 20Khz to 60 Khz, including all accessories such as stand/rack etc., as required.	3 Nos	Each															
2	Supply, installation, testing and commissioning of Transducer Satellite Stations, capable of Emitting Ultrasonic sound of frequencies 20 Khz and higher, including all accessories complete as per specifications / relevant standards etc., as required.	36 Nos	Each															
3	Supplying & Laying Standard 2 core, flexible (14/40) SWG multi-stranded CT wires for rodent, for connectivity between the transducers and the master console suitable for rodent repellent system. Including supplying & laying necessary FRLS PVC Conduit of 25mm dia, couplers, bends etc complete as required.	900 mts	Mtr															
	Sub-Total of SH-6 - (RRS)																	

UNPRICED SCHEDULE

SH-7	Cabling: [All items covered under this sub head includes Comprehensive AMC for 7 years including 2 years warranty]																		
1	S/L of following type and size of cable etc. complete as required																		
a)	S/L of 2-Core, 1 sq. mm copper conductor Shielded FRLS armoured cable Gray Color for Communication etc as required.	1000 mts	Mtr																
b)	S/L of 2-Core, 1 sq. mm copper conductor Shielded FRLS unarmoured cable for Communication as required.	500 mts	Mtr																
c)	S/L 4-C x 1.0 Sq mm, copper conductor, Twisted Pair, multi strand, ATC shielded, armoured cable in recess/on surface/ cable tray (Gray Color) etc as required.	1000 mts	Mtr																
d)	S/L of 8-Core, 1 sq. mm ,copper conductor, Shielded, FRLS ,unarmoured cable for Communication etc as required.	650 mts	Mtr																
e)	S/L of 2 Core, 1.5 sq. mm, copper conductor, FRLS, armoured cable etc as required.(RED Colour)	1000 mts	Mtr																
f)	S/L of 4Core, 1.5 sq. mm, copper conductor, ATC shielded,unarmoured cable etc as required.	650 mts	Mtr																
g)	S/F 25mm dia PVC FRLS Conduit with all its accessories on surface of wall/in recess etc as required..	2270 mts	Mtr																
h)	S/L Cat6 4Pair UTP Cable etc as required.	1620 mts	Mtr																

UNPRICED SCHEDULE

i)	Supplying of Cat6 Factory precrimped patch chords of length of 1 meter etc as required.	40 Nos	Each															
j)	Supply and Laying of 3 Run x 2.0sq.mm flexible Wire in existing conduit etc as required.	300 mts	Mtr															
k)	Supply and Laying of 3 Run x 1.5 sq.mm flexible Wire in existing conduit etc as required.	500 mts	Mtr															
l)	Supply and Erection of 5/15Amps, 3 Pin universal Socket with Switch, Back box and Cover Plate etc as required.	40 Nos	Each															
	Sub-Total of SH-7 - (CABLING)																	
	Total for IBMS for 1 Island																	
	Total for IBMS for 7 Islands																	
4	Comprehensive AMC : (For Islands)																	
	Comprehensive/ Preventive/ Breakdown Maintenance for Electrical Installation, pump sets including LT panel, compound lighting, lightning conductor etc., by deploying specialized man power, supplying & fixing required spares, tools and plant etc., to keep all the equipments healthy & operational as per the specification attached.																	
4.1	For 1 Island	7 Yrs	yr															
	Total for CAMC for 7 Islands																	
4.2	For PORT BLAIR (CLS portion only)																	

UNPRICED SCHEDULE

	Comprehensive/ Preventive/ Breakdown Maintenance for 2x500KVA Indoor Transformer Substation, 1 No. 500 KVA EA set, 1 No. 160 KVA EA set , 10 nos. 3 TR ductable AC, 5Nos. 1.5TR Inverter AC, IBMS (all systems), Electrical Installation, pump sets including LT panels, compound lighting etc., by deploying specialized man power, supplying & fixing required spares, refrigerant, tools and plant etc., to keep all the equipments healthy & operational as per the specification attached.														
	Total for CAMC for Port Blair	7 Yrs	yr												
5	Operation & General Maintenance														
	Round the clock operation and minimum maintenance of all Electro Mechanical services etc., as per standard procedures/ maintenance schedule, by deploying semi skilled labour manpower in three shifts, by arranging tools & plants, co-ordinating with the central location in case of emergency and breakdown cases, persuing with AMC agency for corrective action in case of failure of equipment, acting as security guard also for protecting services from any mis happening and to keep all the equipments clean & healthy, all services operational including holidays & sundays as per the detailed specification and conditions specified etc., as required.														
5.1	For Islands														
1	1st Year	12months	month												
2	2 nd Year	12months	month												
3	3 rd Year	12months	month												
4	4 th Year	12months	month												

5	5 th Year	12months	month															
6	6th year	12months	month															
7	7 th Year	12months	month															
	Total for Operation & General Mtce for 1 Island																	
	Total for Operation & General Mtce for 7 Islands																	
5.2	PORT BLAIR (CLS portion)																	
a)	Operation & General Maintenance																	
1	1st Year	12months	month															
2	2 nd Year	12months	month															
3	3 rd Year	12months	month															
4	4 th Year	12months	month															
5	5 th Year	12months	month															
6	6th year	12months	month															
7	7 th Year	12months	month															
	Sub Total for Opn. & Genl. Mtce for Port Blair																	
b)	Providing one Engineer / Manager on general shift at CLS Port Blair to manage services & staff provided at other 7 cable landing stations in A&N Islands and to co-ordinate with different agencies.																	
1	1st Year	12months	month															
2	2 nd Year	12months	month															
3	3 rd Year	12months	month															
4	4 th Year	12months	month															
5	5 th Year	12months	month															
6	6th year	12months	month															
7	7 th Year	12months	month															
	Sub Total for Enginner / Manager for Port Blair																	
	Total for Operation for PORT BLAIR																	

PART-II SCHEDULE OF QUANTITIES SITC & CAMC OF SMPS POWER PLANT, LITHIUM ION BATTERY AND INVERTOR														
Price Schedule for Indigenous Supply														
TABLE-A														
Sl. No	Description of Item	Qty	Unit	Rate per unit excluding Input Tax Credit (ITC)	CGST		SGST		IGST		Rate per unit including ITC	Total Amount excluding ITC (Net cost)	Total Amount i/c ITC	HSN / SAC code
					%	Rate	%	Rate	%	Rate				
1	2	3	4	5	6	7 = 6 x 5	8	9 = 8 x 5	10	11 = 10x5	12=5+(7+9) or (11)	13 = 3 x 5	14 = 3 x 12	15
I	Supplying Installing Testing Commissioning and Comprehensive AMC for 7 years including 2 years warranty for the following													
1	100 Amps SMPS modules with (N+2) redundancy with Lightning & Surge Protection													
a	100A (7+2)	2	each											
b	100A(11+2)	4	each											
c	100A(14+2)	10	each											
d	100A(18+2)	2	each											
2	48V 100AH Li-on Battery Banks													
a	2*900 AH	2	each											
b	2*1200 AH	5	each											
c	2*1300 AH	1	each											
d	2*400 AH	1	each											
3	(1+1)3 KVA Inverter	7	each											
4	The installation material for SMPS, Li-ion battery and Invertor[1(a) to 1(d), 2(a) to 2(d) and 3]	9	job											
	Total for Part-II													

IMPORTANT NOTES:

1	The firm shall be responsible to ensure that GST shown in the above columns is correct & Input Tax Credit for the amount shown above is admissible as per GST Act as amended up to date.
2	Tax Invoice /Bill of supply should be pre-printed with all the details as per the requirement under GST Act.
3	The evaluation and comparison of responsive bids shall be done on the basis of Net cost to BSNL on the prices offered inclusive of packing, forwarding, freight and insurance charges etc., but excluding ITC.(Input Tax Credit)
4	The rates for all items of work shall, unless clearly specified otherwise, include cost of all labour, materials and other inputs involved in the execution of the terms as specified in the scope of work.
5	No advance payments can be made. Stipulations like levy of interest if payment is not made in a specified time are also not acceptable and the payment is governed by the normal BSNL practice.
6	Bidders must mandatorily quote for all GST components (CGST, SGST, IGST) as applicable.
7	Bidders must mandatorily mention correct HSN / SAC codes.

Part II - Price Schedule for items to be supplied under Imported Category

TABLE-B

S No	SoR Item Description	Total quantity (in Sets)	Basic Unit Price excluding all taxes & charges	Per unit CIF cost	Custom Duty												All inclusive Unit cost	Amount of Input tax Credit (ITC) to be availed by BSNL	Unit price excluding ITC amount (net unit cost to BSNL)	Total price inclusive of all levies and charges but excluding ITC (net total cost)	Customs tariff head	HSN for goods and SAC for services		
					Rate	Amt	Rate	Amt	Rate	Amt	Rate*	Amt	Rate	Amt	Rate	Amt								
					BCD		EC and SHEC		IGST		FF & packing		GST on FF & packing											
													CGST		SGST								IGST	
1	2	3	4a	4b	5	6=5x4b	7	8=6x7	9	10 = (4b+6+8)x9	11	12=11x4b	13	14=13x12	15	16=15x12	17	18=17x12	19=4b+6+8+10+12+14+16+18	20=10*[(14+16) or 18]	21=19-20	22=1*21	23	24
1	Supplying Installing Testing Commissioning and Comprehensive AMC for 7 years including 2 years warranty for the following:																							
1	100 Amps SMPS modules with (N+2) redundancy with Lightning & Surge Protection																							
a	100A (7+2)	2																						
b	100A(11+2)	4																						
c	100A(14+2)	10																						
d	100A(18+2)	2																						
2	4SV 100AH Li-ion Battery Banks																							
a	2*900 AH	2																						
b	2*1200 AH	5																						
c	2*1300 AH	1																						
d	2*400 AH	1																						
3	(1+1) 3 KVA Inverter	7																						
4	The installation material for smps, Li-ion battery and Inverter[1(a) to 1(d), 2(a) to 2(d) and 3]	9	job																					
Total B																								

Notes for bidder:

- Bidder must mandatorily quote for all GST components (CGST, SGST, IGST) as required
- Bidder has to quote the basic rate inclusive of supply, ITC and comprehensive AMC for 7 years including 2 years warranty
- If Annual maintenance Contract charges are required to be quoted as per BOR, basic charges should be shown in column-4b & the Goods and Services Tax (GST) in calculations based on basic AMC cost quoted in Col-4b.
- The % age Rate of FF & packing should be shown on Per unit CIF cost value (i.e as %age of Col 4b)
- Bidder must mandatorily mention HSN & SAC numbers
- The Evaluation of the tender shall be done as a single Package for all the items