

Bidding Document

Selection of System Integrator (SI) for supply, installation, testing and commissioning of Early Warning Dissemination System (EWDS) and Emergency Operations Centers as well as Operation and Maintenance and Annual Maintenance Contract Services

Under

National Cyclone Risk Mitigation Project (NCRMP) Phase-II

National Competitive Bidding

(Two envelope Bidding Process with e-Procurement)

IN-GSDMA-115480-RFB

**GUJARAT STATE DISASTER MANAGEMENT AUTHORITY,
GANDHINAGAR
GOVERNMENT OF GUJARAT.**

**National Competitive Bidding
(Two-Envelope Bidding Process with e-Procurement)
Design, Supply and Installation of Infrastructure and services**

IMPORTANT INFORMATION / DATES

Contract title:	Selection of System Integrator (SI) for supply, installation, commissioning, & services for Early Warning Dissemination System (EWDS) and Emergency Operations Centers
Period of sale of bidding document	From: 19/08/2019 1700 hours To: 18/09/2019 1500 hours
Time and date of pre-bid meeting	Date: 03/09/2019 Time: 1200 hours
Last date and time for receipt of bids	Date: 18/09/2019 Time: 1500 hours
Time and date of opening bids-technical part	Date: 18/09/2019 Time: 1530 hours
Place of opening of bids	Gujarat State Disaster Management Authority (GSDMA)
Officer inviting bids	Principal Secretary (R&R) and Chief Executive Officer, Gujarat State Disaster Management Authority (GSDMA)

INVITATION FOR BIDS(IFB)
GUJARAT STATE DISASTER MANAGEMENT AUTHORITY,
GANDHINAGAR,
GOVERNMENT OF GUJARAT
NATIONAL CYCLONE RISK MITIGATION PROJECT PHASE-II

E-Procurement Notice
(Two Envelope Bidding Process with e-Procurement)
Design, Supply and Installation of Infrastructure

NATIONAL COMPETITIVE BIDDING

Employer:Gujarat State Disaster Management Authority (GSDMA)

Contract Title: Selection of System Integrator (SI) for Supply, Installation, testing and commissioning of Early Warning Dissemination System (EWDS) & Emergency Operations Centres as well as Operation and Maintenance and Annual Maintenance Contract Services

Loan No./Credit No./ Grant No.: P144726

Bid No.:IN-GSDMA-115480-CW-RFB

Date:

1. The Government of India has received financing from the World Bank toward the cost of National Cyclone Risk Mitigation Project (NCRMP) phase –II and intends to apply a part of the proceeds toward payments under the contract for Selection of System Integrator (SI) for supply, installation, commissioning, & services for Early Warning Dissemination System (EWDS) and Emergency Operations Centers.
2. The early warning system installations would cover approximately 284 locations across Gujarat. Bidders are advised to note the clauses on eligibility (Section I Clause 4) and minimum qualification criteria (Section III – Evaluation and Qualification Criteria), to qualify for the award of the contract. In addition, please refer to paragraphs 1.6 and 1.7 of the World Bank's Guidelines setting forth the World Bank's policy on conflict of interest.
3. Bidding will be conducted through National Competitive Bidding procedures agreed with the World Bank. Bidding is open to all eligible bidders as defined in the World Bank's Guidelines:
4. Bidders from India should, however, be registered with the Government of Gujarat or other State Governments/ Government of India, or State/ Central Government

Undertakings. Bidders from India, who are not registered as above, on the date of bidding, can also participate provided they get themselves registered by the time of contract signing, if they become successful bidders. Interested bidders may obtain further information and inspect the bidding document at the address given below during office hours.

5. Bidding document is available online on www.nprocure.com from **19/08/2019 to 18/09/2019** for a non-refundable fee as indicated in the table, in the form of Demand Draft (DD) on any Nationalized Bank in India payable at Gandhinagar in favour of Gujarat State Disaster Management Authority (Demand draft is to be submitted subsequently as per the procedure described in paragraph 9 below). Bidders will be required to register on the www.nprocure.com website, which is free of cost. The bidders would be responsible for ensuring that any addenda/corrigendum in respect of available on the website are also downloaded and necessary changes if any, required due to addenda/corrigendum in respect of this IFB are incorporated in their bidding document.
6. For submission of the bid, the bidder is required to have Digital Signature Certificate (DSC) from one of the Certifying Authorities authorised by Government of India for issuing DSC. Aspiring bidders who have not obtained the user ID and password for participating in e-procurement in this Project, may obtain the same from the website: www.nprocure.com. A non-refundable fee of Rs 15,000 (inclusive of tax) is required to be paid (to be submitted along with other documents listed in paragraph 9 below) before the bid submission deadline. The mode of payment shall be in the form of DD drawn in favour of Gujarat State Disaster Management Authority payable at Gandhinagar, from any Nationalized Bank in India.
7. Bids must be submitted online on www.nprocure.com on or **before 1500 hours on 18/09/2019** and the 'Technical Part' of the bids will be opened online on the same day at **1530 hours**. The "Financial Part" shall remain unopened in the e-procurement system until the second public Bid opening for the financial part of only those bidders whose bids are declared as technically qualified. Any bid or modifications to bid (including discount) received outside e-procurement system will not be considered. If the office happens to be closed on the date of opening of the bids as specified, the bids will be opened on the next working day at the same time and venue. The electronic bidding system would not allow any late submission of bids.
8. All Bids must be accompanied by a bid security of the amount specified for the contract in the table below, drawn in favour of Gujarat State Disaster Management Authority, Gandhinagar. Bid security will have to be in any one of the forms as specified in the bidding document and shall have to be valid for 45 days beyond the validity of the bid.
9. The bidders are required to submit documents listed below, with **Miss. Ekta Thaman, Deputy Director**, Gujarat State Disaster Management Authority, 5th Floor, Block 11, Udyog Bhavan, Sector 11, Gandhinagar-382011 before the bid submission deadline, either by registered post/speed post/courier or by hand, failing which the bids will be declared non-responsive and will not be opened.

Required documents include:

- a) original demand draft (for Rs. 15,000) towards the cost of bid document and registration on e-procurement website (if not previously registered);
- b) original bid security in the name of Gujarat State Disaster Management Authority, Gandhinagar, in approved form
- c) power of attorney to sign the bid document in the name of the person who signs the bid
- d) original affidavit regarding correctness of information furnished with bid document
- e) Technical Bid in hardcopy which is uploaded on e-procurement website. Financial bid is not to be submitted in hardcopy.

10. A pre-bid meeting will be held on **03/09/2019 at 1200hours** at the office of Gujarat State Disaster Management Authority to clarify the issues and to answer questions on any matter that may be raised at that stage as stated in ITB Clause 7.4 of 'Instructions to Bidders' of the bidding document. Bidders are advised to download and go through the bidding document prior to the pre-bid meeting in order for bidders to have a good understanding of the scope of the requirements under this contract for discussion and clarification at the pre-bid meeting.

11. Other details can be seen in the bidding document. The Employer shall not be held liable for any delays due to system failure beyond its control. Even though the system will attempt to notify the bidders of any bid updates, the Employer shall not be liable for any information not received by the bidder. It is the bidders' responsibility to verify the ***www.nprocure.com*** website for the latest information related to this bid.

12. Details of the Infrastructures requirements (*including facilities, location, delivery period, etc.*) are shown in the table below:

Contract No	Contract Title and brief description	Bid Security (Rs.)	Cost of tender Document (Rs.)	Period of Completion
1	2	3	4	5
IN-GSDMA-115480-CW-RFB	Selection of System Integrator (SI) for supply, installation, testing and commissioning of Early Warning Dissemination System (EWDS) and Emergency Operations Centers as well as Operation and Maintenance and Annual Maintenance Contract Services	Rs. 1,20,00,000.00 (Rs. One crore Twenty Lakhs only)	Rs. 15,000.00 (Rs. Fifteen thousand only)	9 months (270 days) from the date of contract for Supply, Installation, Testing and Commissioning, 2 years Operation and Maintenance, and 3 years Annual Maintenance

				Contract
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13. The address for communication is as under:

Miss. Ekta Thaman,

Deputy Director

Gujarat State Disaster Management Authority (GSDMA)

5th floor, Block 11, Udyog Bhavan,

Sector 11, Gandhinagar – 382011

Gujarat, India

Phone: 079 23259279

Email: ektathaman.gsdma@gmail.com

Website: www.gsdma.org

Section I. Instruction to Bidders

Table of Contents

Section I. Instructions to Bidders	9
General	9
1. Scope of Bid	9
2. Source of Funds	9
3. Fraud and Corruption	10
4. Eligible Bidders	11
5. Eligible Infrastructure and Installation Services	15
Contents of Bidding Document	15
6. Sections of Bidding Document	15
7. Clarification of Bidding Document, Site Visit, Pre-Bid Meeting	16
8. Amendment of Bidding Document	18
Preparation of Bids	18
9. Cost of Bidding	18
10. Language of Bid	18
11. Documents Comprising the Bid	19
12. Letter of Bid and Schedules	20
13. Alternative Bids	20
14. Documents Establishing the Eligibility of the Infrastructure and Installation Services	21
15. Documents Establishing the Eligibility and Qualifications of the Bidder	21
16. Documents establishing conformity of the Infrastructure and Installation Services	22
17. Bid Prices and Discounts	22
18. Currencies of Bid and Payment	28
19. Period of Validity of Bids	28
20. Bid Security	29
21. Format and Signing of Bid	30
Online Submission and Opening of Bids	32
22. Online Submission, Sealing and Marking of Bids	32
23. Deadline for Submission of Bids	32
24. Late Bids	32
25. Withdrawal, Substitution, and Modification of Bids	32
Public Opening of Technical Parts of Bid	33
26. Public Opening of Technical Parts of Bids	33

Evaluation of Bids – General Provisions	34
27. Confidentiality	34
28. Clarification of Bids.....	34
29. Deviations, Reservations, and Omissions	34
30. Nonmaterial Nonconformities	35
Evaluation of Technical Parts of Bids	36
31. Evaluation of Technical Parts of Bids	36
32. Determination of Responsiveness.....	37
33. Qualification of the Bidders.....	37
Public Opening of Financial Parts of Bids.....	39
34. Public Opening of Financial Parts	39
Evaluation of Financial Parts of Bids	40
35. Evaluation of Financial Parts	40
36. Correction of Arithmetical Errors	41
37. Conversion to Single Currency	41
39. Comparison Financial Parts	42
40. Unbalanced or Front Loaded Bids	42
41. Employer’s Right to Accept Any Bid, and to Reject Any or All Bids	42
Award of Contract.....	43
42. Award Criteria	43
43. Notification of Award	43
44. Signing of Contract	44
45. Performance Security.....	44
38. Margin of Preference	41
46. Adjudicator	45

Section I. Instructions to Bidders

General

1. Scope of Bid

- 1.1 In connection with the Invitation for Bids indicated in the Bid Data Sheet (BDS), the Employer, as indicated in the BDS, issues this Bidding Document for the procurement of Infrastructure and Installation Services as specified in Section VI, Employer's Requirements. The name, identification, and number of lots (contracts) of the National Competitive Bidding (NCB) are provided in the BDS.
- 1.2 Unless otherwise stated, throughout this Bidding Document definitions and interpretations shall be as prescribed in the General Conditions, Section VII.

2. Source of Funds

- 2.1 The Borrower or Recipient (hereinafter called "Borrower") indicated in the BDS has applied for or received financing (hereinafter called "funds") from the World Bank (hereinafter called "the Bank") toward the cost of the project named in the BDS. The Borrower intends to apply a portion of the funds to eligible payments under the contract(s) for which this Bidding Document is issued.
- 2.2 Payments by the Bank will be made only at the request of the Borrower and upon approval by the Bank in accordance with the terms and conditions of the financing agreement between the Borrower and the Bank (hereinafter called the Loan Agreement), and will be subject in all respects to the terms and conditions of that Loan Agreement. No party other than the Borrower shall derive any rights from the Loan Agreement or have any claim to the funds.
- 2.3 The Loan Agreement prohibits a withdrawal from the loan account for the purpose of any payment to persons or entities, or for any import of equipment, infrastructure, or materials, if such payment or import is prohibited by a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations.

3. Fraud and Corruption

3.1

The Bank requires that Borrowers (including beneficiaries of Bank loans), as well as Bidders, Suppliers, Contractors and their agents (whether declared or not), personnel, subcontractors, sub-consultants, service providers and suppliers, under Bank-financed contracts, observe the highest standard of ethics during the procurement and execution of such contracts. In pursuit of this policy, the Bank:

(a) Defines, for the purposes of this provision, the terms set forth below as follows:

(i) “corrupt practice” is the offering, giving, receiving or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party;

(ii) “fraudulent practice” is any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation ;

(iii) “collusive practice” is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party;

(iv) “coercive practice” is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;

(v) “obstructive practice” is

(aa) deliberately destroying, falsifying, altering or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede a Bank investigation into allegations of a corrupt, fraudulent, coercive or collusive practice; and/or threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation

or from pursuing the investigation,
or

(bb) acts intended to materially impede the exercise of the Bank's inspection and audit rights provided for under sub-clause 3.2 below.

- (b) will reject a proposal for award if it determines that the Bidder recommended for award has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive or obstructive practices in competing for the contract in question;
- (c) will cancel the portion of the loan allocated to a contract if it determines at any time that representatives of the Borrower or of a beneficiary of the loan engaged in corrupt, fraudulent, collusive, or coercive practices during the procurement or the execution of that contract, without the Borrower having taken timely and appropriate action satisfactory to the Bank to remedy the situation; and
- (d) will sanction a firm or an individual, at any time, in accordance with prevailing Bank's sanctions procedures, including by publicly declaring such firm or individual ineligible, either indefinitely or for a stated period of time:
 - (i) to be awarded a Bank-financed contract; and
 - (ii) to be a nominated sub-contractor, consultant, manufacturer or supplier, or service provider of an otherwise eligible firm being awarded a Bank-financed contract.

3.2 In further pursuance of this policy, Bidders shall permit the Bank to inspect any accounts and records and other documents relating to the Bid submission and contract performance, and to have them audited by auditors appointed by the Bank.

3.3 Furthermore, Bidders shall be aware of the provision stated in the General Conditions (GC 42.2.1(c)).

4. Eligible Bidders

4.1 A Bidder may be a private entity or a government-owned entity—subject to ITB 4.5—or any combination of such entities in the form of a joint venture (JV / CONSORTIUM) or Consortium

under an existing agreement or with the intent to enter into such an agreement supported by a letter of intent, unless otherwise specified in the BDS. In the case of a joint venture when permitted:

- (a) unless otherwise specified in the BDS, all partners shall be jointly and severally liable for the execution of the Contract in accordance with the Contract terms, and
- (b) the JV / Consortium shall nominate a Representative who shall have the authority to conduct all business for and on behalf of any and all the partners of the JV / Consortium during the bidding process and, in the event the JV / Consortium is awarded the Contract, during contract execution. This authorization shall be evidenced by submitting a power of attorney signed by legally authorized signatories of all partners.
- (c) the joint venture agreement should be registered in the place specified in BDS so as to be legally valid and binding on all partners. Unless specified in the BDS, there is no limit on the number of partners in a JV / Consortium.

4.2 A Bidder, and all partners constituting the Bidder, shall have a nationality of an eligible country as defined in Guidelines: Procurement under IBRD Loans and IDA Credits, January 2011 Revised July 2014, (hereinafter referred to as the Guidelines), in accordance with Section V, Eligible Countries. A Bidder shall be deemed to have the nationality of a country if the Bidder is a national or is constituted, incorporated, or registered and operates in conformity with the provisions of the laws of that country. This criterion shall also apply to the determination of the nationality of proposed subcontractors or suppliers for any part of the Contract including related services.

4.3 A Bidder shall not have a conflict of interest. All Bidders found to have a conflict of interest shall be disqualified. A Bidder may be considered to have a conflict of interest with one or more parties in this bidding process, if :

- (a) they have a controlling partner in common;
or
- (b) they receive or have received any direct or indirect subsidy from any of them; or
- (c) they have the same legal representative for purposes of this bid; or
- (d) they have a relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or influence on the bid of another Bidder, or influence the decisions of the Employer regarding this bidding process; or
- (e) a Bidder submits more than one bid in this bidding process, either individually or as a partner in a joint venture, except for alternative offers permitted under ITB Clause 13. This will result in the disqualification of all such bids. However, this does not limit the participation of a Bidder as a subcontractor in another bid or of a firm as a subcontractor in more than one bid. or
- (f) a Bidder or any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the Infrastructure and Installation Services that are the subject of the bid.
- (g) a Bidder or any of its affiliates has been hired (or is proposed to be hired) by the Employer or the Borrower as Project Manager for the contract.
- (h) a Bidder would be providing goods, works, or non-consulting services resulting from or directly related to consulting services for the preparation or implementation of the project specified in the BDS ITB 2.1 that it provided or were provided by any affiliate that directly or indirectly controls, is controlled by, or is under common control with that firm.
- (i) a Bidder has a close business or family relationship with a professional staff of the Borrower (or of the project implementing agency, or of a recipient of a part of the loan) who: (i) are directly or indirectly

involved in the preparation of the bidding documents or specifications of the contract, and/or the bid evaluation process of such contract; or (ii) would be involved in the implementation or supervision of such contract unless the conflict stemming from such relationship has been resolved in a manner acceptable to the Bank throughout the procurement process and execution of the contract.

- 4.4 A Bidder that has been sanctioned by the Bank in accordance with the above ITB 3.1 (d), or in accordance with the Bank's Guidelines on Preventing and Combating Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants, shall be ineligible to be awarded a Bank-financed contract, or benefit from a Bank-financed contract, financially or otherwise, during such period of time as the Bank shall determine. The list of debarred firms and individuals is available at the electronic address specified in the BDS.
- 4.5 Government-owned entities in the Borrower's country shall be eligible only if they can establish that they (i) are legally and financially autonomous, (ii) operate under the principles of commercial law, and (iii) are not dependent agencies of the Employer or the Borrower.
- 4.6 Bidders shall provide such evidence of their eligibility satisfactory to the Employer, as the Employer shall reasonably request.
- 4.7 Deleted.
- 4.8 Firms shall be excluded if:
 - (a) as a matter of law or official regulation, the Borrower's country prohibits commercial relations with that country, provided that the Bank is satisfied that such exclusion does not preclude effective competition for the supply of goods or related services required; or
 - (b) by an act of compliance with a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations, the Borrower's country prohibits any import of goods or contracting of works or services from that

country or any payments to persons or entities in that country.

5. Eligible Infrastructure and Installation Services

- 5.1 The Infrastructure and Installation Services to be supplied under the Contract shall have their origin in eligible source countries as defined in ITB 4.2 above and all expenditures under the Contract will be limited to such Infrastructure and Installation Services.
- 5.2 For purposes of ITB 5.1 above, “origin” means the place where the infrastructure, or component parts thereof are mined, grown, produced or manufactured, and from which the services are provided. Infrastructure components are produced when, through manufacturing, processing, or substantial or major assembling of components, a commercially recognized product results that is substantially different in its basic characteristics or in purpose or utility from its components.

Contents of Bidding Document

6. Sections of Bidding Document

- 6.1 The Bidding Document consists of Parts 1, 2, and 3, which include all the Sections indicated below, and should be read in conjunction with any Addenda issued in accordance with ITB 8.

PART 1 Bidding Procedures

- Section I. Instructions to Bidders (ITB)
- Section II. Bid Data Sheet (BDS)
- Section III. Evaluation and Qualification Criteria
- Section IV. Bidding Forms

- Section V. Eligible Countries

PART 2 Employer's Requirements

- Section VI. Employer's Requirements

PART 3 Conditions of Contract and Contract Forms

- Section VII. General Conditions (GC)
- Section VIII. Particular Conditions (PC)
- Section IX. Contract Forms

- 6.2 The Invitation for Bids issued by the Employer is not part of the Bidding Document.
- 6.3 The Employer is not responsible for the completeness of the Bidding Document and its addenda, if they were not obtained directly from the source stated by the Employer in the Invitation for Bids.
- 6.4 The Bidder is expected to examine all instructions, forms, terms, and specifications in the Bidding Document. Failure to furnish all information or documentation required by the Bidding Document may result in the rejection of the bid.

7. Clarification of Bidding Document, Site Visit, Pre-Bid Meeting

- 7.1 A prospective Bidder requiring any clarification of the Bidding Document shall notify the Employer online through the e-procurement portal specified in the BDS or raise his enquiries during the pre-bid meeting, if provided for in accordance with ITB 7.4. Clarifications requested through any other mode shall not be considered by the Employer. The Employer will respond to any request for clarification, provided that such request is received prior to the deadline for submission of bids within a period specified in the BDS. Description of clarification sought and the response of the Employer will be uploaded on the e-procurement portal for information of all Bidders without identifying the source of request for clarification. Should the Employer deem it necessary to amend

the Bidding Document as a result of a request for clarification, it shall do so following the procedure under ITB 8 and ITB 23.2.

- 7.2 The Bidder is advised to visit and examine the site where the infrastructure is to be installed and its surroundings and obtain for itself on its own responsibility all information that may be necessary for preparing the bid and entering into a contract for the provision of Infrastructure and Installation Services. The costs of visiting the site shall be at the Bidder's own expense.
- 7.3 The Bidder and any of its personnel or agents will be granted permission by the Employer to enter upon its premises and lands for the purpose of such visit, but only upon the express condition that the Bidder, its personnel, and agents will release and indemnify the Employer and its personnel and agents from and against all liability in respect thereof, and will be responsible for death or personal injury, loss of or damage to property, and any other loss, damage, costs, and expenses incurred as a result of the inspection.
- 7.4 The Bidder's designated representative is invited to attend a pre-bid meeting, if provided for in the BDS. The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage.
- 7.5 The Bidder is requested, to submit any questions only through the e-procurement portal, not later than one week before the meeting. Clarifications requested through any other mode shall not be considered by the Employer.
- 7.6 Minutes of the pre-bid meeting, including the text of the questions raised without identifying the source, and the responses given, together with any responses prepared after the meeting, will be uploaded on e-procurement portal. Any modification to the Bidding Document that may become necessary as a result of the pre-bid meeting shall be made by the Employer exclusively through the issue of an Addendum pursuant to ITB 8 and not through the minutes of the pre-bid meeting. It is the bidder's responsibility to check on the e-procurement system, for any addendum/ amendment/ corrigendum to the bidding document.

- 7.7 Nonattendance at the pre-bid meeting will not be a cause for disqualification of a Bidder.

8. Amendment of Bidding Document

- 8.1 At any time prior to the deadline for submission of bids, the Employer may amend the Bidding Document by issuing addenda. The addendum will appear on the e-procurement system under “Latest Corrigendum” and email notification is also automatically sent to those bidders who have started working on the tender, or as otherwise specified in BDS.
- 8.2 Any addendum issued shall be part of the Bidding Document and shall be deemed to have been communicated to all bidders.
- 8.3 To give prospective Bidders reasonable time in which to take an addendum into account in preparing their bids, the Employer may, at its discretion, extend the deadline for the submission of bids, pursuant to ITB 23.2 by issuing a notification in the e-procurement portal.

Preparation of Bids

9. Cost of Bidding

- 9.1 The Bidder shall bear all costs associated with the preparation and submission of its Bid, and the Employer shall not be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.

10. Language of Bid

- 10.1 The Bid, as well as all correspondence and documents relating to the bid exchanged by the Bidder and the Employer, shall be written in English. Supporting documents and printed literature that are part of the Bid may be in another language provided they are accompanied by an accurate translation of the relevant passages in English, in which case, for purposes of

interpretation of the Bid, such translation shall govern.

11.Documents Comprising the Bid

- 11.1 The Bid submitted by the Bidder shall comprise two Parts, namely the Technical Part and the Financial Part. These two Parts shall be submitted simultaneously. Further the bid consists of hard copy original Technical Part and online submission of Technical and Financial Part.
- 11.2 The Technical Part shall contain the following:
 - (a) Letter of Bid – Technical Part
 - (b) Bid Security, in accordance with ITB 20;
 - (c) alternative bids – technical part, if permissible, in accordance with ITB 13;
 - (d) written confirmation authorizing the signatory of the Bid to commit the Bidder, in accordance with ITB 21.2;
 - (e) documentary evidence established in accordance with ITB 14.1 that the Infrastructure and Installation Services offered by the Bidder in its bid or in any alternative bid, if permitted, are eligible;
 - (f) documentary evidence in accordance with ITB 15 establishing the Bidder's eligibility and qualifications to perform the contract if its Bid is accepted;
 - (g) documentary evidence established in accordance with ITB 16 that the Infrastructure and Installation Services offered by the Bidder conform to the Bidding Document;
 - (h) in the case of a bid submitted by a JV / Consortium (where permitted), JV / Consortium agreement, or letter of intent to enter into a JV / Consortium including a draft agreement signed by all partners, indicating at least the parts of the Infrastructure to be executed by the respective partners;
 - (i) List of subcontractors, in accordance with ITB 16.2, and a letter of intent between the parties confirming their participation; and
 - (j) any other document required in the BDS 11.2 (j).
- 11.3 The Financial Part shall contain the following:

- (a) Letter of Bid – Financial Part: prepared in accordance with ITB 12 and ITB 17;
 - (b) Completed schedules as required, including Price Schedules, in accordance with ITB 12 and 17;
 - (c) Alternative Bid - Financial Part: if permissible in accordance with ITB 13; and
 - (d) any other document required in the BDS.
- 11.4 The Technical Part shall not include any information related to the Bid price. Where material financial information related to the Bid price is contained in the Technical Part, the Bid shall be declared non-responsive.
- 11.5 The Bidder shall furnish in the Letter of Bid – Financial Part information on commissions and gratuities, if any, paid or to be paid to agents or any other party relating to this Bid, and to contract execution if the Bidder is awarded the contract.

12. Letter of Bid and Schedules

- 12.1 The Bidder shall complete the Letter of Bid – Technical Part and Letter of Bid – Financial Part, including the appropriate Price Schedules, using the relevant forms furnished in Section IV, Bidding Forms. The forms must be completed as instructed in each form. The bidders shall fill up online, the forms that are available for online filling on the e-portal. The rest of the forms shall be download by the bidders and filled up

13. Alternative Bids

- 13.1 The BDS indicates whether alternative bids are allowed. If they are allowed, the BDS will also indicate whether they are permitted in accordance with ITB 13.3, or invited in accordance with ITB13.2 and/or ITB 13.4.
- 13.2 When alternatives to the Time Schedule are explicitly invited, a statement to that effect will be included in the BDS, and the method of evaluating different time schedules will be described in Section III, Evaluation and Qualification Criteria.
- 13.3 Except as provided under ITB 13.4 below, Bidders wishing to offer technical alternatives to the Employer's requirements as described in the bidding document must also provide: (i) a price at

which they are prepared to offer the infrastructure meeting the Employer's requirements; and (ii) all information necessary for a complete evaluation of the alternatives by the Employer, including drawings, design calculations, technical specifications, breakdown of prices, and proposed installation methodology and other relevant details. Only the technical alternatives, if any, of the lowest evaluated Bidder conforming to the basic technical requirements shall be considered by the Employer.

- 13.4 When bidders are invited in the BDS to submit alternative technical solutions for specified parts of the facilities, such parts shall be described in Section VI, Employer's Requirements. Technical alternatives that comply with the performance and technical criteria specified for the Infrastructure and Installation Services shall be considered by the Employer on their own merits, pursuant to ITB 31. The method for their evaluation will be stipulated in Section III. Evaluation and Qualification Criteria.

14. Documents Establishing the Eligibility of the Infrastructure and Installation Services

- 14.1 To establish the eligibility of the Infrastructure and Installation Services in accordance with ITB Clause 5, Bidders shall complete in the Technical Part of the Bid, the country of origin declarations in the declaration Forms, included in Section IV, Bidding Forms.

15. Documents Establishing the Eligibility and Qualifications of the Bidder

- 15.1 To establish its eligibility and qualifications to perform the Contract in accordance with Section III, Evaluation and Qualification Criteria, the Bidder shall provide the information requested in the corresponding information sheets included in Section IV, Bidding Forms.
- 15.2 Deleted.

16. Documents establishing conformity of the Infrastructure and Installation Services

- 16.1 The Bidder shall furnish the information stipulated in Section IV, in sufficient detail to demonstrate substantial responsiveness of the Bidders' proposal to the work requirements and the completion time.
- 16.2 For major items of Infrastructure and Installation Services as listed by the Employer in Section III, Evaluation and Qualification Criteria, which the Bidder intends to purchase or subcontract, the Bidder shall give details of the name and nationality of the proposed Subcontractors, including manufacturers, for each of those items. In addition, the Bidder shall include in the Technical Part of its bid information establishing compliance with the requirements specified by the Employer for these items. Quoted rates and prices in the Financial Part of the Bids will be deemed to apply to whichever Subcontractor is appointed, and no adjustment of the rates and prices will be permitted.
- 16.3 The Bidder shall be responsible for ensuring that any Subcontractor proposed complies with the requirements of ITB 4, and that any infrastructure, or services to be provided by the Subcontractor comply with the requirements of ITB 5 and ITB 15.1

17. Bid Prices and Discounts

- 17.1 The prices and discounts quoted by the Bidder in the Letter of Bid –Financial Part and in the Price Schedules shall conform to the requirements specified below:
Unless otherwise specified in the BDS, bidders shall quote for the entire Emergency Warning Dissemination System (EWDS) and Emergency Operations Center (EOC) henceforth termed as "Infrastructure" in this document and Installation Services on a "single responsibility" basis such that the total bid price covers all the Contractor's obligations mentioned in or to be reasonably inferred from the bidding document in respect of

the design, manufacture, including procurement and subcontracting (if any), supply, delivery, construction, installation and completion of the infrastructure including supply of mandatory spares (if any). This includes all requirements under the Contractor's responsibilities for testing, pre-commissioning and commissioning of the infrastructure and, where so required by the bidding document, the acquisition of all permits, approvals and licenses, etc.; the operation, maintenance and training services and such other items and services as may be specified in the Bidding Document, all in accordance with the requirements of the General Conditions. Items against which no price is entered by the Bidder will not be paid for by the Employer when executed and shall be deemed to be covered by the prices for other items. Corrections if any in the bid can be carried out by editing the information in the forms if available online, before electronic submission on e-procurement portal.

17.2 Bidders are required to quote the price for the commercial, contractual and technical obligations outlined in the bidding document.

17.3 Bidders shall give a breakdown of the prices in the manner and detail called for in the Price Schedules included in Section IV, Bidding Forms.

17.4 Depending on the scope of the Contract, the Price Schedules may comprise up to the six (6) schedules listed below. Separate numbered Schedules included in Section IV, Bidding Forms, from those numbered 1-4 below, shall be used for each of the elements of the Infrastructure and Installation Services. The total amount from each Schedule corresponding to an element of the Infrastructure and Installation Services shall be summarized in the schedule titled Grand Summary, (Schedule 5), giving the total bid price(s) to be entered in the Letter of Bid.

Schedule No. 1 Infrastructure (including
Mandatory Spare Parts)
Supplied from Abroad – not
used

Schedule No. 2 Infrastructure (including
Mandatory Spare Parts if any)

Schedule No. 3 Design Services

Schedule No. 4 Installation, testing and commissioning Services

Schedule No. 5 Charges towards providing Operations and Maintenance staff of the infrastructure and operating expenses for initial 24 months post commissioning of the project

Schedule No.6 All-inclusive Annual Maintenance Contract charges / year for 3 years post initial 24 months of operations after commissioning of project (3RD, 4TH and 5TH of operation)

Schedule no. 7 Grand Summary (Schedule Nos. 1 to 6)

Schedule no. 8 Recommended Spare Parts for operations and maintenance beyond 60 months up to 120 months from commissioning of the infrastructure

Bidders shall note that the infrastructure and equipment included in Schedule Nos. 1 and 2 above exclude materials used for civil, building and other construction works. All such materials shall be included and priced under Schedule No. 4, Installation Services.

17.5 In the Schedules, bidders shall give the required details and a breakdown of their prices as follows:

- (a) Infrastructure to be supplied from abroad (Schedule No. 1): Not used
- (b) Infrastructure manufactured within the Employer's country (Schedule No. 2):
 - (i) The price of the infrastructure shall be quoted on an EXW Incoterm basis (such as "ex-works," "ex-factory," "ex-warehouse" or "off-the-shelf," as applicable),
 - (ii) Sales tax / GST and all other taxes payable in the Employer's country on the infrastructure if the contract is awarded to the Bidder.
- (c) Design Services (Schedule No. 3) should include charges for design of towers, poles, VSATs and any other physical installations so as to meet survival

requirements in windspeeds up to 200 Kilometers / hour. Charges should also include design of power supply and any other infrastructure for efficient operations of all subsystems

- (d) Installation Services shall be quoted separately (Schedule No. 4) and shall include rates or prices for local transportation to named place of final destination as specified in the BDS, insurance and other services incidental to delivery of the infrastructure, all labor, contractor's equipment, temporary works, materials, consumables during testing and commissioning and all matters and things of whatsoever nature required to complete installation, testing and commissioning.
- (e) Operations and Maintenance services (Schedule 5) shall include charges for providing qualified and experienced staff for efficient operations and maintenance of infrastructure, provision of operations and maintenance manuals, training, etc., where identified in the Bidding Document, as necessary for the proper execution of the installation and other services, including all taxes, duties, levies and charges payable in the Employer's country as of twenty-eight (28) days prior to the deadline for submission of bids. These charges should also include cost of consumables (fuel, electricity, stationary etc.) during 24 months of responsibility. The charges should also include maintenance staff, spares necessary, transportation and other incidental expenses to ensure availability (Up-time) requirements specified in the bid document.
- (f) All-inclusive Annual Maintenance Contract (Schedule-6) should include charges / year for 3 years post initial 24 months of operations after commissioning of project (3RD, 4TH and 5TH of operation). AMC should

include cost maintenance staff, spares necessary, transportation and other incidental expenses to ensure availability (Up-time) requirements specified in the bid document.

- (g) Grand Summary (Schedule Nos. 7) should be summary of schedules 1 to 6 detailed above.
- (h) Recommended spare parts (Schedule 8) should include specifications, quantities and prices including applicable taxes for reliable operation for operation during 6th 10th year so as to meet required up-time performance and shall be quoted separately as specified in subparagraph (b) above in accordance with the origin of the spare parts.

17.6 The current edition of Incoterms, published by the International Chamber of Commerce shall govern.

17.7 The prices shall be either fixed or adjustable as specified in the BDS.

17.8 In the case of Fixed Price, prices quoted by the Bidder shall be fixed during the Bidder's performance of the contract and not subject to variation on any account. A bid submitted with an adjustable price quotation will be treated as non-responsive and rejected.

17.9 In the case of Adjustable Price, prices quoted by the Bidder shall be subject to adjustment during performance of the contract to reflect changes in the cost elements such as labor, material, transport and contractor's equipment in accordance with the procedures specified in the corresponding Appendix to the Contract Agreement. A bid submitted with a fixed price quotation will not be rejected, but the price adjustment will be treated as zero.

17.10 If so indicated in ITB 1.1, bids are being invited for individual lots (contracts) or for any combination of lots (packages). Bidders wishing to offer any price reduction (discount) for the award of more than one Contract shall specify in their Letter of Bid – Financial Part, the price reductions applicable to each package, or alternatively, to individual Contracts within the

package, and the manner in which the price reductions will apply.

17.11 Bidders wishing to offer any unconditional discount shall specify in their Letter of Bid – Financial Part the offered discounts and the manner in which price discounts will apply.

17.12 Bidders may like to ascertain availability of tax/duty exemption benefits available in India to the contracts financed under World Bank loan/credits. They are solely responsible for obtaining such benefits which they have considered in their bid and in case of failure to receive such benefits for reasons whatsoever, the Employer will not compensate the bidder (Contractor). The bidder shall furnish along with his bid a declaration to this effect in the Declaration Format provided in Section IV of the bidding documents.

Where the bidder has quoted taking into account such benefits, it must give all information required for issue of certificates in terms of the Government of India's relevant Notifications as per the declaration format. In case the bidder has not provided the required information or has indicated to be furnished later on in the Declaration Format, the same shall be construed that the infrastructure/ goods/ equipment for which certificate is required is Nil.

To the extent the Employer determines the quantities indicated therein are reasonable keeping in view the Employer's Requirements, construction program and methodology, the certificates will be issued within 60 days of signing of the contract and no subsequent changes will be permitted. In case of materials pertaining to Variation items and quantities the certificate shall be issued only on request from the Contractor when in need and duly certified by the Project Manager.

No certificate will be issued for items where no quantity/capacity of equipment is indicated in the statement.

If the bidder has considered the tax/duty exemption for infrastructure/ goods/ equipment to be bought for the work, the bidder shall confirm and certify that the Employer will not be required to undertake any responsibilities of the Government of India

Scheme or the said exemptions being available during the contract execution, except issuing the required certificate. The bids which do not conform to the above provisions or any condition by the bidder which makes the bid subject to availability of tax/duty exemption for infrastructure/ goods/ equipment or compensation on withdrawal of any variations to the said exemptions will be treated as non-responsive and rejected.

Any delay in procurement of the infrastructure/ goods/ equipment as a result of the above shall not be a cause for granting any extension of time.

18.Currencies of Bid and Payment

- 18.1 The currency of the bid and the currency of payments shall be Indian Rupees only.
- 18.2 Deleted.

19.Period of Validity of Bids

- 19.1 Bids shall remain valid for the period specified in the BDS after the bid submission deadline date prescribed by the Employer. A bid valid for a shorter period shall be rejected by the Employer as non-responsive.
- 19.2 In exceptional circumstances, prior to the expiration of the bid validity period, the Employer may request Bidders to extend the period of validity of their bids. The request and the responses shall be made in writing. If a bid security is requested in accordance with ITB 20, the Bidder granting the request shall also extend the bid security for forty-five (45) days beyond the deadline of the extended validity period. A Bidder may refuse the request without forfeiting its bid security. A Bidder granting the request shall not be required or permitted to modify its bid, except as provided in ITB 19.3.
- 19.3 In the case of fixed price contracts, if the award is delayed by a period exceeding fifty-six (56) days beyond the expiry of the initial bid validity, the Contract price shall be adjusted by a factor or factors specified in the BDS. Bid evaluation shall be based on the Bid Price without taking into consideration the above correction.

20. Bid Security

- 20.1 The Bidder shall furnish as part of the Technical Part of its bid, a bid security as specified in the BDS, in original form and in the amount specified in the BDS.
- 20.2 Deleted.
- 20.3 If a bid security is specified pursuant to ITB 20.1, the bid security shall be a demand guarantee in any of the following forms at the Bidder's option:
- (a) an unconditional guarantee issued by a Nationalized bank located in India;
 - (b) an irrevocable letter of credit issued by a Nationalized bank located in India;
 - (c) a cashier's or certified check or demand draft issued by a Nationalized bank located in India; or
 - (d) another security indicated in the BDS,
- In the case of a bank guarantee, the bid security shall be submitted using the Bid Security Form included in Section IV, Bidding Forms. The form must include the complete name of the Bidder. The bid security shall be valid for forty-five days (45) beyond the original validity period of the bid, or beyond any period of extension if requested under ITB 19.2.
- 20.4 If a bid security is specified pursuant to ITB 20.1, any bid not accompanied by a substantially responsive bid security shall be rejected by the Employer as non-responsive.
- 20.5 If a bid security is specified pursuant to ITB 20.1, the bid security of unsuccessful Bidders shall be returned as promptly as possible upon the successful Bidder's signing the Contract and furnishing the performance security and if required in the BDS, the Environmental, Social, Health and Safety (ESHS) Performance Security pursuant to ITB 45.
- 20.6 The bid security of the successful Bidder shall be returned as promptly as possible once the successful Bidder has signed the Contract and furnished the required performance security and if required in the BDS, the Environmental, Social, Health and Safety (ESHS) Performance Security.
- 20.7 The bid security may be forfeited:

- (a) if a Bidder withdraws its bid during the period of bid validity specified by the Bidder on the Letter of Bid – Technical Part and repeated in the Letter of Bid - Financial Part, or any extension thereto provided by the Bidder in accordance with ITB 19.2; or
- (b) if the Bidder does not accept the correction of its Bid Price pursuant to ITB 36; or
- (c) if the successful Bidder fails to:
 - (i) sign the Contract in accordance with ITB 44; or
 - (ii) furnish a performance security and if required in the BDS, the Environmental, Social, Health and Safety (ESHS) Performance Security in accordance with ITB 45.

20.8 The Bid Security of a JV / Consortium shall be in the name of the JV / Consortium that submits the bid. If the JV / Consortium has not been legally constituted into a legally enforceable JV / Consortium at the time of bidding, the Bid Security shall be in the names of all future partners as named in the letter of intent referred to in ITB 4.1.

21.Format and Signing of Bid

21.1 The Bidder shall prepare the documents comprising the bid as described in ITB 11 and upload the scanned copies in the e-procurement portal along with scanned copies of requisite certificates as are mentioned in different sections in the bidding document. In addition, the Bidder shall submit original documents, in the manner specified in the BDS. In the event of any discrepancy between the original and the uploaded documents, the original shall prevail.

21.2 The bid shall be signed by a person duly authorized to sign on behalf of the Bidder. This authorization shall consist of a written confirmation as specified in the BDS and shall be uploaded along with the bid. The name and position held by each person signing the authorization must be typed or printed below the signature. All pages of the bid where entries or amendments have been made shall be signed or initialed by the person signing the bid.

- 21.3 A bid submitted by a JV / Consortium where permitted, shall comply with the following requirements:
- (a) Unless not required in accordance with ITB 4.1 (a), be signed so as to be legally binding on all partners and
 - (b) Include the Representative's authorization referred to in ITB 4.1 (b), consisting of a power of attorney signed by those legally authorized to sign on behalf of the JV / Consortium. Documents establishing authority to sign the bid on behalf of the JV / Consortium shall be uploaded along with the bid.
- 21.4 Any interlineations, erasures, or overwriting shall be valid only if they are signed or initialed by the person signing the bid.

Online Submission and Opening of Bids

22. Online Submission, Sealing and Marking of Bids

- 22.1 Bidders shall submit their bids, both Technical and Financial Parts, electronically, including alternative bids, if permitted in accordance with ITB 13, through the e-procurement portal. Any document submitted through any other means will not be considered as part of the Bid except for the Originals specified in ITB 21.1 should be submitted before the last date. The electronic bid submission procedure is specified in the BDS.
- 22.2 Physical, E-mail, Telex, Cable or Facsimile bids will be rejected as non-responsive.

23. Deadline for Submission of Bids

- 23.1 Bids, both Technical and Financial Parts, must be submitted in the e-procurement portal no later than the date and time indicated in the BDS.
- 23.2 The Employer may, at its discretion, extend the deadline for the submission of bids by amending the Bidding Document in accordance with ITB 8, in which case all rights and obligations of the Employer and Bidders previously subject to the deadline shall thereafter be subject to the deadline as extended.

24. Late Bids

- 24.1 The e-Procurement system would not allow any late submission of bids after due date & time as per server system.

25. Withdrawal, Substitution, and Modification of Bids

- 25.1 A Bidder may withdraw, substitute, or modify its bid on the e-portal, in accordance with the process defined in the BDS.
- 25.2 Bids requested to be withdrawn in accordance with ITB 25.1 shall not be opened.

- 25.3 No bid may be withdrawn, substituted, or modified in the interval between the deadline for submission of bids and the expiration of the period of bid validity specified by the Bidder on the Letter of Bid – Technical Part and repeated in the Letter of Bid - Financial Part or any extension thereof. This will result in the forfeiture of the Bid Security pursuant to ITB 20.7.

Public Opening of Technical Parts of Bid

26.Public Opening of Technical Parts of Bids

- 26.1 The Employer shall conduct the bid opening of technical parts of all bids in public, as per electronic bid opening procedure, in the presence of Bidders` designated representatives and anyone who choose to attend, and at the address, date and time specified in the BDS. Specific electronic bid opening procedures shall be as specified in the BDS. Bidders can also view the bid opening by logging on to the e-procurement system. The Financial Parts of the bids shall remain unopened in the e-procurement system, until the subsequent public opening, following the evaluation of the Technical Parts of the Bids. In all cases, original documents submitted as specified in ITB 21 shall be first scrutinized, and Bids that do not comply with these provisions will be declared non-responsive and will not be opened.
- In the event of the specified date of bid opening being declared a holiday for the Employer, the bids will be opened at the appointed time and location on the next working day.
- 26.2 The Bidder's names, details of original bid security, if applicable Alternative Bids – Technical Part, and any other details as the Employer may consider appropriate will be notified, online by the Employer at the time of bid opening.
- 26.3 The Employer shall prepare a record of the bid opening, including the information disclosed and upload the same for viewing online. A copy of the record shall be made available on the e-procurement system. Only technical parts of bids and alternative bids-technical part that are opened

and read out at bid opening shall be considered further for evaluation.

Evaluation of Bids – General Provisions

27. Confidentiality

- 27.1 Information relating to the evaluation of bids and recommendation of contract award, shall not be disclosed to Bidders or any other persons not officially concerned with such process until information on Contract award is communicated to all Bidders.
- 27.2 Any attempt by a Bidder to influence the Employer in the evaluation of the bids or Contract award decisions may result in the rejection of its bid.
- 27.3 Notwithstanding ITB 27.2, from the time of bid opening to the time of Contract award, if any Bidder wishes to contact the Employer on any matter related to the bidding process, it should do so in writing.

28. Clarification of Bids

- 28.1 To assist in the examination, evaluation, and comparison of the bids, and qualification of the Bidders, the Employer may, at its discretion, ask any Bidder for a clarification of its bid. Any clarification submitted by a Bidder that is not in response to a request by the Employer shall not be considered. The Employer's request for clarification and the response shall be in writing. No change in the prices or substance of the bid shall be sought, offered, or permitted, except to confirm the correction of arithmetic errors discovered by the Employer in the evaluation of the bids, in accordance with ITB 36.
- 28.2 If a Bidder does not provide clarifications of its bid by the date and time set in the Employer's request for clarification, its bid may be rejected.

29. Deviations, Reservations, and Omissions

- 29.1 During the evaluation of bids, the following definitions apply:

- (a) “Deviation” is a departure from the requirements specified in the Bidding Document;
- (b) “Reservation” is the setting of limiting conditions or withholding from complete acceptance of the requirements specified in the Bidding Document; and
- (c) “Omission” is the failure to submit part or all of the information or documentation required in the Bidding Document.

30.Nonmaterial Nonconformities

- 30.1 Provided that a bid is substantially responsive, the Employer may waive any nonconformity in the bid that does not constitute a material deviation, reservation or omission.
- 30.2 Provided that a bid is substantially responsive, the Employer may request that the Bidder submit the necessary information or documentation, within a reasonable period of time, to rectify nonmaterial nonconformities in the bid related to documentation requirements. Requesting information or documentation on such nonconformities shall not be related to any aspect of the price or substance of the bid. Failure of the Bidder to comply with the request may result in the rejection of its bid.
- 30.3 Provided that a bid is substantially responsive, the Employer shall rectify quantifiable nonmaterial nonconformities related to the Bid Price. To this effect, the Bid Price shall be adjusted, for comparison purposes only, to reflect the price of a missing or non-conforming item or component in the manner specified in the BDS.

Evaluation of Technical Parts of Bids

31.Evaluation of Technical Parts of Bids

- 31.1 The Employer shall use the criteria and methodologies listed in this ITB and Section III, Evaluation and Qualification criteria. No other evaluation criteria or methodologies shall be permitted.
- 31.2 Technical Evaluation. The Employer will carry out a detailed technical evaluation of the Bids not previously rejected to determine whether the technical aspects are in compliance with the bidding document. The Bid that does not meet minimum acceptable standards of completeness, consistency and detail, and the specified minimum (or maximum, as the case may be) requirements for specified functional guarantees, will be rejected for non-responsiveness. In order to reach its determination, the Employer will examine and compare the technical aspects of the Bids on the basis of the information supplied by the Bidders, taking into account the following:
 - (a) overall completeness and compliance with the Employer's Requirements; conformity of the Infrastructure and Installation Services offered with specified performance criteria, including conformity with the specified minimum (or maximum, as the case may be) requirement corresponding to each functional guarantee, as indicated in the Specification and in Section III, Evaluation and Qualification Criteria; suitability of the Infrastructure and Installation Services offered in relation to the environmental and climatic conditions prevailing at the site; and quality, function and operation of any process control concept included in the Bid;
 - (b) type, quantity and long-term availability of mandatory and recommended spare parts and maintenance services; and
 - (c) other relevant factors, if any, listed in Section III, Evaluation and Qualification Criteria.
- 31.3 Where alternative technical solutions have been allowed in accordance with ITB 13, and offered by

the Bidder, the Employer will make a similar evaluation of the alternatives. Where alternatives have not been allowed but have been offered, they shall be ignored.

32. Determination of Responsiveness

- 32.1 The Employer's determination of a bid's responsiveness is to be based on the contents of the bid itself, as defined in ITB11.
- 32.2 A substantially responsive bid is one that meets the requirements of the Bidding Document without material deviation, reservation, or omission. A material deviation, reservation, or omission is one that,
 - (a) if accepted, would:
 - (i) affect in any substantial way the scope, quality, or performance of the Infrastructure and Installation Services specified in the Contract; or
 - (ii) limit in any substantial way, inconsistent with the Bidding Document, the Employer's rights or the Bidder's obligations under the proposed Contract; or
 - (b) if rectified, would unfairly affect the competitive position of other Bidders presenting substantially responsive bids.
- 32.3 The Employer shall examine the technical aspects of the bid in particular, to confirm that all requirements of Section VI, Employer's Requirements have been met without any material deviation, reservation, or omission.
- 32.4 If a bid is not substantially responsive to the requirements of the Bidding Document, it shall be rejected by the Employer and may not subsequently be made responsive by correction of the material deviation, reservation, or omission.

33. Qualification of the Bidders

- 33.1 The Employer shall determine to its satisfaction whether the Bidder that is selected as having submitted the lowest evaluated and substantially responsive bid is eligible and meets the qualifying

criteria specified in Section III, Evaluation and Qualification Criteria.

- 33.2 The determination shall be based upon an examination of the documentary evidence of the Bidder's qualifications submitted by the Bidder, pursuant to ITB 15. The determination shall not take into consideration the qualifications of other firms such as the Bidder's subsidiaries, parent entities, affiliates, subcontractors (other than Specialized Subcontractors if permitted in the bidding document), or any other firm different from the Bidder.
- 33.3 The capabilities of the manufacturers and subcontractors proposed by the Bidders for identified major items of supply or services will also be evaluated for acceptability in accordance with Section III, Evaluation and Qualification Criteria. Their participation should be confirmed with a letter of intent between the parties, as needed.
- 33.4 If a Bidder does not meet the qualifying criteria specified in Section III, Evaluation and Qualification Criteria, its Bid shall be rejected by the Employer and may not subsequently be made responsive by correction of the material deviation, reservation, or omission.
- 33.5 Only Bids that are both substantially responsive to the bidding document, and meet all Qualification Criteria shall have the Financial Parts of their Bids opened at the second public opening.

Public Opening of Financial Parts of Bids

34. Public Opening of Financial Parts

- 34.1 Following the completion of the evaluation of the Technical Parts of the Bids, and the Bank has issued its no objection (if applicable), the Employer shall notify in writing those Bidders whose Bids were considered non-responsive to the bidding document or failed to meet the Qualification Criteria, advising them of the following information:
- (a) the grounds on which their Technical Part of Bid failed to meet the requirements of the bidding document;
 - (b) their Financial Part of Bid shall not be opened; and
 - (c) notify them of the date, time, and place of the second public opening of Financial Parts of the Bids.
- 34.2 The Employer shall, simultaneously, notify in writing those Bidders whose Technical Part have been evaluated as substantially responsive to the bidding document and met all Qualifying Criteria, advising them of the following information:
- (a) their Bid has been evaluated as substantially responsive to the bidding document and met the Qualification Criteria;
 - (b) their Financial Part of Bid will be opened at the public opening of the Financial Parts; and
 - (c) notify them of the date, time, and place of the second public opening of the Financial Parts of the Bids, as specified in the BDS.
- 34.3 The opening date should allow Bidders sufficient time to make arrangements for attending the opening. The Financial Part of the Bids shall be opened publicly in the presence of Bidders' designated representatives and anyone who chooses to attend, and this could also be viewed by the bidders online. The bidder's names, the Bid prices, the total amount of each bid, per lot (contract) if applicable, including any discounts, and such other details as the Employer may

consider appropriate, will be notified online by the Employer at the time of bid opening.

In the event of the specified date of bid opening being declared a holiday for the Employer, the bids will be opened at the appointed time and location on the next working day.

- 34.4 The electronic summary of the bid opening will be generated and uploaded online. The Employer will also prepare minutes of the Bid opening, including the information disclosed and upload the same for viewing online. Only Financial Parts of Bids and discounts that are opened at Bid opening shall be considered further for evaluation.

Evaluation of Financial Parts of Bids

35.Evaluation of Financial Parts

- 35.1 To evaluate the Financial Part, the Employer shall consider the following:
- (a) the Bid price, excluding Provisional Sums and the provision, if any, for contingencies in the Price Schedules;
 - (b) price adjustment for correction of arithmetic errors in accordance with ITB 36.1;
 - (c) price adjustment due to discounts offered in accordance with ITB 17.10 and ITB 17.11;
 - (d) price adjustment due to quantifiable nonmaterial nonconformities in accordance with ITB 30.3;
 - (e) not used; and
 - (f) the evaluation factors specified in Section III, Evaluation and Qualification Criteria.
- 35.2 If price adjustment is allowed in accordance with ITB 17.7, the estimated effect of the price adjustment provisions of the Conditions of Contract, applied over the period of execution of the Contract, shall not be taken into account in Bid evaluation.
- 35.3 If this bidding document allows Bidders to quote separate prices for different lots (contracts), and the award to a single Bidder of multiple lots

(contracts), the methodology to determine the lowest evaluated cost of the lot (contract) combinations, including any discounts offered in the Letter of Bid – Financial Part, is specified in Section III, Evaluation and Qualification Criteria

36. Correction of Arithmetical Errors

- 36.1 Provided that the bid is substantially responsive, the Employer shall correct arithmetical errors on the following basis:
- (a) where there are errors between the total of the amounts given under the column for the price breakdown and the amount given under the Total Price, the former shall prevail and the latter will be corrected accordingly;
 - (b) where there are errors between the total of the amounts of Schedule Nos. 1 to 6 and the amount given in Schedule No. 7 (Grand Summary), the former shall prevail and the latter will be corrected accordingly; and
 - (c) if there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to (a) and (b) above.
- 36.2 Bidders shall be requested to accept correction of arithmetical errors. Failure to accept the correction in accordance with ITB 36.1, shall result in the rejection of the Bid, and the Bid Security may be forfeited in accordance with ITB Sub-Clause 20.7.

37. Conversion to Single Currency

- 37.1 Deleted.

38. Margin of Preference

- 38.1 Deleted.

39.Comparison Financial Parts

- 39.1 The Employer shall compare all substantially responsive bids in accordance with ITB 35.1 to determine the lowest evaluated bid.

40.Unbalanced or Front Loaded Bids

- 40.1 If the bid, which results in the lowest Evaluated Bid Price, is seriously unbalanced or front loaded in the opinion of the Employer, the Employer may require the Bidder to produce detailed price analyses for any or all items of the Price Schedules, to demonstrate the internal consistency of those prices with the methods and time schedule proposed. After evaluation of the price analyses, taking into consideration the terms of payments, the Employer may require that the amount of the performance security be increased at the expense of the Bidder to a level sufficient to protect the Employer against financial loss in the event of default of the successful Bidder under the Contract.

41.Employer's Right to Accept Any Bid, and to Reject Any or All Bids

- 41.1 The Employer reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids at any time prior to contract award, without thereby incurring any liability to Bidders. In case of annulment, all documents submitted and specifically, bid securities, shall be promptly returned to the Bidders.

Award of Contract

42.Award Criteria

- 42.1 Subject to ITB 41.1, the Employer shall award the Contract to the Bidder whose offer has been determined to be the lowest evaluated bid and is substantially responsive to the Bidding Document, provided further that the Bidder is determined to be eligible and qualified to perform the Contract satisfactorily.

43.Notification of Award

- 43.1 Prior to the expiration of the period of bid validity, the Employer shall notify the successful Bidder, in writing, that its bid has been accepted. The notification letter (hereinafter and in the Conditions of Contract and Contract Forms called the "Letter of Acceptance") shall specify the sum that the Employer will pay the Contractor in consideration of the execution and completion of the Infrastructure and Installation Services (hereinafter and in the Conditions of Contract and Contract Forms called "the Contract Price").
- 43.2 At the same time, the Employer shall also publish the results and notify all other Bidders of the results of the bidding on the Employer's website, on the National website (<http://tenders.gov.in>) or on Gujarat Government e- procurement Portal ([www://nprocure.com](http://www.nprocure.com)), identifying the bid and lot numbers and the following information: (i) name of each Bidder who submitted a Bid; (ii) bid prices as read out at Bid Opening; (iii) name and evaluated prices of each Bid that was evaluated; (iv) name of bidders whose bids were rejected and the reasons for their rejection; and (v) name of the winning Bidder, and the Price it offered, as well as the duration and summary scope of the contract awarded.
- 43.3 Until a formal contract is prepared and executed, the notification of award shall constitute a binding Contract.
- 43.4 The Employer shall promptly respond in writing to any unsuccessful Bidder who, after notification of

award in accordance with ITB 43.2, requests in writing the grounds on which its bid was not selected.

44. Signing of Contract

- 44.1 Promptly upon notification, the Employer shall prepare the Contract Agreement, and keep it ready in the office of the Employer for the signature of the Employer and the successful Bidder, within 28 days following the date of Letter of Acceptance. The Contract Agreement shall incorporate all agreements between the Employer and the successful Bidder.
- 44.2 Within twenty-eight (28) days of receipt of the Letter of Acceptance, the successful Bidder shall (a) furnish the performance security in accordance with ITB Clause 45 and if required, the Environmental, Social, Health and Safety (ESHS) Performance Security; (b) if the successful bidder is a JV / Consortium, it shall also furnish the JV / Consortium agreement duly signed by all the partners, if it had submitted only a letter of intent to execute the JV / Consortium agreement along with the bid; and (c) shall sign, date, and return the Agreement to the Employer along with the documents stated at (a) and (b) above.
- 44.3 Deleted.

45. Performance Security

- 45.1 Within twenty-eight (28) days of the receipt of notification of award from the Employer, the successful Bidder shall furnish the performance security and if required in the BDS, the Environmental, Social, Health and Safety (ESHS) Performance Security in accordance with the General Conditions, subject to ITB 40, using for that purpose the Performance Security and ESHS Performance Security Forms included in Section IX, Contract Forms, or another form acceptable to the Employer.
- 45.2 Failure of the successful Bidder to submit the above-mentioned Performance Security and if required in the BDS, the Environmental, Social, Health and Safety (ESHS) Performance Security or sign the Contract shall constitute sufficient grounds for the annulment of the award and forfeiture of

the bid security. In that event the Employer may award the Contract to the next lowest evaluated Bidder whose offer is substantially responsive and is determined by the Employer to be qualified to perform the Contract satisfactorily.

- 45.3 Upon the successful Bidder's signing the Agreement and furnishing of the Performance Security and if required the Environmental, Social, Health and Safety (ESHS) Performance Security pursuant to ITB Clause 45.1, the Employer shall promptly notify the name of the winning bidder to each unsuccessful bidder and shall discharge the Bid Securities of the bidders pursuant to ITB Clause 20.5 and 20.6.

46. Adjudicator

- 46.1 The Employer proposes the person named in the BDS to be appointed as Adjudicator under the Contract, at the daily fee specified in the BDS, plus reimbursable expenses (actual boarding, lodging, travel and other incidental expenses). If the Bidder disagrees with this proposal, the Bidder should so state in his Bid. If, in the Letter of Acceptance, the Employer does not agree on the appointment of the Adjudicator, the Employer will request the Appointing Authority designated in the Particular Conditions of Contract (PC) pursuant to Clause 46.1 of the General Conditions of Contract (GC), to appoint the Adjudicator.

Section II – Bid Data Sheet (BDS)

The following specific data for the Facilities to be procured shall complement, supplement, or amend the provisions in the Instructions to Bidders (ITB). Whenever there is a conflict, the provisions herein shall prevail over those in ITB.

Introduction	
ITB 1.1	The number of the Invitation for Bids is: ONE
ITB 1.1	The Employer is: Gujarat State Disaster Management Authority (GSDMA), Gandhinagar, Gujarat
ITB 1.1	<p>The name of the NCB is: Selection of System Integrator (SI) for supply, installation, commissioning, & services for Early Warning Dissemination System (EWDS) and Emergency Operations Centers.</p> <p>The identification number of the NCB is: IN-GSDMA-115480-CW-RFB</p> <p>The number and identification of lots (contracts) comprising this NCB is: The work is not divided into lots</p>
ITB 2.1	<p>The Borrower is: Government of India.</p> <p>The Sub-Borrower is: Government of Gujarat</p>
ITB 2.1	The name of the Project is: National Cyclone Risk Mitigation Project (NCRMP-II)
ITB 4.1	<p>Bids from Joint ventures / Consortiums are acceptable.</p> <p>Where Joint Ventures / Consortiums are permitted:</p> <ol style="list-style-type: none"> 1. Place where the agreement to form JV / Consortium to be registered is within the state of Gujarat 2. Maximum number of partners in the Joint Venture (JV / Consortium) shall be: 4 (Lead partner + 3) 3. The joint venture agreement should define precisely the division of assignments to each partner of JV / Consortium. All partners of JV / Consortium should have active participation in the execution during the currency of the contract. This should not be varied/ modified subsequently without prior approval of the Employer. 4. One of the partners shall be nominated as lead partner, and this authorization shall be evidenced by submitting a Power of Attorney signed by legally authorized signatories of all the partners 5. The lead partner shall be authorized to incur liabilities and receive instructions for and on behalf of any and all partners of the joint venture, and the entire execution of the Contract shall be done with the lead partner and payment under the Contract shall be received by the lead partner on behalf of the Joint Venture / Consortium, as per power conferred to him in the Power of Attorney.
ITB 4.4	<p>The electronic address of firms and individuals debarred by the Bank is:</p> <p>http://www.worldbank.org/debarr.</p>
Bidding Document	
ITB 7.1	<p>Electronic – Procurement System</p> <p>The Employer shall use the following electronic-procurement system to manage this Bidding process:</p> <p>www.nprocure.com</p> <p>Requests for clarification should be received by the Employer no later than 14 days</p>

	prior to deadline for submission of bids. The Queries should be emailed to ektathaman.gsdma@gmail.com. The Employer will also upload its response on the Employer's website i.e. www.gsdma.org without identifying the source.
ITB 7.4	A Pre-Bid meeting shall take place at the following date, time and place: Date: 03/09/2019 Time: 1500 Hours Place: Gujarat State Disaster Management Authority (GSDMA), 5 th floor, Block No.11, Udyog Bhavan, Sector 11, Gandhinagar, Gujarat State, 382011 Employer shall not organize site visit.
ITB 7.6	Minutes of pre-bid meeting and Addendum to Bidding Documents will also be hosted on the Employer's website specified in BDS ITB 7.1.
ITB 8.1	The addendum will appear on the e-procurement system www.nprocure.com
ITB 8.3	Notification regarding extension of deadline for submission of Bids will also be hosted on the website specified in BDS ITB 7.1.
Preparation of Bids	
ITB 11.2 (j)	<ul style="list-style-type: none"> • The Bidder shall submit with its bid the following additional documents: • Code of Conduct (ESHS) • The Bidder shall submit its Code of Conduct that will apply to its employees and subcontractors, to ensure compliance with its Environmental, Social, Health and Safety (ESHS) obligations under the contract. • In addition, the Bidder shall detail how this Code of Conduct will be implemented. This will include: how it will be introduced into conditions of employment/engagement, what training will be provided, how it will be monitored and how the Contractor proposes to deal with any breaches. • The Bidder shall be required to implement the agreed Code of Conduct upon contract award. • Management Strategies and Implementation Plans (MSIP) to manage the (ESHS) risks • The Bidder shall submit Management Strategies and Implementation Plans (MSIP) to manage the following key Environmental, Social, Health and Safety (ESHS) risks. • The Contractor (Lead Partner) shall be required to submit for approval, and subsequently implement, the Contractor's Environment and Social Management Plan (C-ESMP), in accordance with the Particular Conditions Sub-Clause 8.3, that includes the agreed Management Strategies and Implementation Plans described here. • Contractor Registration certificate. • Manufacturer's authorization for major items of supply under the contract that the Bidder did not manufacture or otherwise produce. • Subcontractor agreement or a letter of intent between the parties to enter into a subcontractor agreement for major items of services under the contract that the Bidder did not otherwise provide. • A certified copy of the JV / Consortium agreement, signed by all partners of the JV / Consortium, Valid Memorandum of Understanding (MOU)/Agreement. • The written confirmation of authorization to sign on behalf of the Bidder shall

	<p>consist of Legally valid Power of Attorney to demonstrate the authority of the signatory to sign the Bid; and</p> <ul style="list-style-type: none"> • In the case of Bids submitted by an existing or intended JV / Consortium, the authorization shall be evidenced by a Power of Attorney signed by legally authorized signatories of all the partners. • All requirements mentioned in Section VI of the bid document • Technical Proposal as per requirements mentioned in Section VI, Section III and IV. • Evidence of paying towards Bid Security as mentioned in IFB. • Professional Tax certificate/ paid challan; • Copy of GST Registration certificate (GSTIN No.) • Copy of Firm/ Company Registration; • The PAN No. & IT return certificate from Income Tax Department. • Valid certificate of ongoing/ completed works • Declaration by the Bidder that their Company has not been Black listed/Debarred. This should be certified on Rs 100 stamp paper. • EPF Registration certificates
ITB 13.1	Alternative bids are not permitted.
ITB 13.2	Alternatives to the Time Schedule shall not be permitted.
ITB 13.4	Alternative technical solutions shall be permitted for the following parts of the Infrastructure and Installation Services: NA
ITB 17.5 (d)	Names of places of final destination are at Attachment 4 and 5 to section VI Employers requirements
ITB 17.7	The prices quoted by the Bidder shall not be subject to adjustment during the performance of the Contract.
ITB 19.1	The bid validity period shall be: 180 days from the last date of submission of bids
ITB 19.3	The Bid price shall be adjusted by the factor: 8.0 (% per annum) or State Bank of India's prime lending rate, whichever is lower
ITB 20.1	A bid security is required; the amount of the bid security shall be INR 1,20,00,000.00 (INR One Crore and twenty lakhs only). The bid security shall be Bank Guarantees from Nationalized Bank located in India for equivalent or higher values are acceptable provided it is pledged in favour of Gujarat State Disaster Management Authority, Gandhinagar and such pledging has been noted and suitably endorsed by the bank issuing the certificate. Bidders must upload a scan of the BG and submit original BG along with other originals.
ITB 20.3 (d)	Other types of acceptable securities are: NA
ITB 21.1	<p>Only the originals of Power of Attorney and the Original Affidavit vouching for the correctness of the information furnished shall be delivered <u>before the bid submission deadline</u> in person / by post / courier to the address of Purchaser/Employer's representative -</p> <p><i>Miss. Ekta Thaman, Deputy Director Gujarat State Disaster Management Authority 5th floor, Block 11, Udyog Bhavan Sector 11, Gandhinagar – 382011 Gujarat, India</i></p>

	<p>Detailed guidelines for viewing bids and submission of online bids are given on the website. The Invitation for Bids under this Project is published on this website. Any citizen or prospective bidder can logon to this website and view the Invitation for Bids and can view the details of works for which bids are invited. The prospective bidder can submit bids online; however, the bidder is required to have enrolment/registration in the website and should have valid Digital Signature Certificate (DSC) in the form of smart card/e-token. The DSC can be obtained from any authorized certifying agency authorized by the Government of India. The bidder should register in the web site https://nprocure.com using the relevant option available.</p> <p>Bidders have to submit the bids on the e-procurement portal along with the relevant required documents. For this purpose, the bidders shall fill up online, the forms that are available for online filling on the e-portal. The rest of the forms shall be downloaded by the bidders and filled up. The filled-up pages shall then be scanned and uploaded on the e-procurement portal along with the scanned copies of the supporting documents. Bidders shall have only the option of submitting their bids electronically.</p>
ITB 21.2 and 21.3	<p>(a) The written confirmation of authorization to sign on behalf of the Bidder shall consist of Legally valid Power of Attorney to demonstrate the authority of the signatory to sign the Bid; and</p> <p>(b) In the case of Bids submitted by an existing or intended JV / Consortium, the authorization shall be evidenced by a Power of Attorney signed by legally authorized signatories of all the partners.</p>
Online Submission and Opening of Bids	
ITB 22.1	The documents comprising the Bid shall be digitally signed by the person duly authorized to sign on behalf of the Bidder. The documents comprising the Bid shall then be uploaded on the e-procurement portal. After electronic on line bid submission, the system generates a unique bid identification number which is time stamped as per server time. This shall be treated as acknowledgement of bid submission.
ITB 23.1	<p>The deadline for uploading the bids:</p> <p>Date: 18/09/2019</p> <p>Time: 1500 hours</p>
ITB 25.1	Bidders may modify their bids by uploading their request for modification before the deadline for submission of bids on the e-procurement portal given in BDS ITB 7.1. For this the bidder need not make any additional payment towards the cost of tender document. For bid modification and consequential re-submission, the bidder is not required to withdraw his bid submitted earlier. The last modified bid submitted by the bidder within the bid submission time shall be considered as the bid. For this purpose, modification/withdrawal by other means will not be accepted. In on line system of bid submission, the modification and consequential re-submission of bids is allowed any number of times. However, if the bid is withdrawn, the re-submission of the bid is not allowed.
Public Opening of Technical Parts of Bid	

ITB 26.1	<p>The online bid opening shall take place at: <i>Gujarat State Disaster Management Authority</i> <i>5th floor, Block 11, Udyog Bhavan</i> <i>Sector 11, Gandhinagar – 382011</i> <i>Gujarat, India</i></p> <p>Bid (technical part) will be publicly opened on 18/09/2019 at 1530 hours, in the presence of the bidders designated representatives who wish to attend. If the office happens to be closed on the date of opening of the bids as specified, the bids will be opened on the next working day at the same time and venue. The bid will be opened through https://nprocure.com.in and online processes will be followed to open the bid and this could also be viewed by the bidders online.</p>
Evaluation of Bids – General Provisions	
ITB 30.3	<p>The adjustment shall be based on the highest price of the item or component as quoted in other substantially responsive Bids, subject to a maximum of the estimated price of the item. If the price of the item or component cannot be derived from the price of other substantially responsive Bids, the Employer shall use its best estimate.</p>
Public Opening of Financial Parts of Bids	
ITB 34.2 (c)	<p>Following the completion of the evaluation of the Technical Parts of the Bids, the Employer will notify all Bidders of the date, time, and place of the public opening of Financial Parts.</p> <p>The online bid opening of Financial Parts of Bids shall take place on: Place: <i>Gujarat State Disaster Management Authority</i> <i>5th floor, Block 11, Udyog Bhavan</i> <i>Sector 11, Gandhinagar – 382011</i> <i>Gujarat, India</i></p> <p>Date: To be decided and informed later Time: To be decided and informed later [Note: The Financial Parts of the bids shall not be opened earlier than seven (7) days from the communication of technical evaluation results to the bidders] In addition to the above the Employer shall publish a notice of the public opening of the Financial Parts of the Bid on its website www.nprocure.com</p>
Award of Contract	
ITB 45.1	<p>(a) The successful Bidder shall be required to submit a Performance Security of 8% of contract value as specified in in Section-VIII (Particular Conditions).</p> <p>(b) The successful Bidder shall be required to submit an Environmental, Social, Health and Safety (ESHS) Performance Security of 2% of contract value as specified in Section-VIII (Particular Conditions).</p>
ITB 46	<p>The Adjudicator proposed by the Employer is: Shri. Pawan Kumar Garg. (Ex-Wireless Adviser to Government of India)</p> <p>The daily fee for this proposed Adjudicator shall be: INR 10,000. INR 10,000 excluding transportation, boarding and lodging</p>

CV of Adjudicator Shri Pawan Garg

1. **Name:** **Pawan K. Garg (Mr)**
2. **Date of Birth** **21st April 1948**
3. **Nationality:** **Indian**
4. **Education** Bachelor of Engineering (Electronics & Communications)
5. **Summary of Experience** Almost 50 years of experience in various aspects of national & international radio regulations, satellite and terrestrial radio-communications; planning of RF spectrum for various terrestrial and satellite based radio communication services. Also gained detailed insight into planning of national Broadband network, comprising of all media – OFC, wireless and satellite components.

Wireless Adviser to the Government of India (Head of national spectrum management organization) during 2002 – 2008. Exponential growth of Indian cellular network during this period, Indian network achieved the second highest position globally, by subscriber numbers.

Internationally elected Member of the Radio Regulations Board (RRB) of International Telecommunication Union (ITU), Geneva (Jan 2007 – Dec 2014). Chairman of the Board for 2013. The RRB, resolves, among others, disputes if any, between countries, relating to the use of radio frequency spectrum, as per international Radio Regulations.

Widely traveled since 1980, represented India on the ITU Governing Council. Chaired and spoke at large number of national & international conferences & seminars in related fields.

Senior ITU / UN Expert in Spectrum Management and radio monitoring during 2000 – 2002

Published large number of Articles, besides speaking at / chairing numerous national / international conferences, seminars, etc.

- | | |
|--|---|
| 6. Membership in Professional Associations: | <ul style="list-style-type: none"> i. Principal Adviser (Hon'y), Broadband India Forum; i. Vice-President, ITU-APT Foundation of India; i. Member of National Telecom & Broadband Committee, Confederation of Indian Industries 7. Fellow, IETE - Institution of Electronics & Telecommunication Engineers (India). "Eminent Engineer" of 2004 award by the Institution of Engineers, Delhi State Center; 7. Member, Digital Communication (India) Forum; i. Fellow, NGN forum, India; i. Member, Infocomm. Think Tank i. Member, CII Telecom & Broadband Committee, since 2008 |
| 7. Training Courses | <ul style="list-style-type: none"> (i) Advanced Satellite Communications Course at KDD, Tokyo (1984); (ii) UNDP Study Tour to FCC, USA (1988); (iii) UNDP Study Tour to Deptt. of Communications, Canada – now Industry Canada (1988); (iv) APT Study Tour in Spectrum Management to Ministry of Communications, Japan (1984) (v) International Communications, at OCS, India (later VSNL), now Tata Communications Ltd. (1970); (vi) Satellite Communications Course, Advanced Level Telecom Training Center, Deptt of Telecom, Ghaziabad, Delhi (1978); (vii) Large number of national & international Seminars on Telecom, Broadband, Radiocommunications as well as RF spectrum regulations; |
| 8. Countries of Work Experience | India, ITU Geneva, Saudi Arabia, Seychelles, |
| 9. Languages | English, Hindi, Punjabi, Working knowledge of French |

10. Employment / Experience Record

- Member, Radio Regulations Board (RRB), ITU, Geneva (8 Years, 01 Jan 2007 – 31 Dec 2014).
- Wireless Adviser to the Govt. of India (Head of RF Spectrum Management Organisation), February 2002 – April 2008;
- ITU Senior Expert in Spectrum Management and Radio Monitoring in Saudi Arabia, April 2000 – January 2002;
- Various positions of increasing responsibility in Wireless Planning & Coordination Wing, Ministry of Communications & IT (India's national spectrum management Organization) from August 1971 – April 2000
- Expert in Radiocommunications to Seychelles under ITEC (Indian Technical & Economic Cooperation) program during 1990 & 1992;
- Technical Staff for Operation & Maintenance of India's first commercial earth station & other international communication facilities, March 1970 – August 1971

11. Details of Tasks Undertaken

- All aspects of planning and coordination of various telecom networks of different national agencies – both terrestrial and satellite based.
- Various aspects of national & international regulation of RF spectrum as well as radiocommunications – both terrestrial and satellite based;
- Interpretation of ITU Radio Regulations and approval of 'Rules of Procedure', as Member, RRB ITU
- Associated with India's satellite system - INSAT – since its inception in 1970s - satellite filings, coordination and all ITU Regulatory process, led Indian delegations to many bilateral and multi-lateral coordination meetings;
- Preparation of National Frequency Allocation Plans and spectrum management for Govt. and private sectors in the liberalized economic environment;
- Re-farming of spectrum to enable massive growth of cellular mobile services in India during 2002 – 2008, along with growth of other radiocommunication services;
- Planning and monitoring of World Bank aided project for Automation of Spectrum Management functions and Modernization of Radio Monitoring facilities in India (2002 – 2007);
- Preparing plans for modernization and augmentation of Radio Monitoring facilities in Saudi Arabia (2001);
- Review of radiocommunication facilities in Seychelles

and planning for their modernization & augmentation.

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Section III Evaluation and Qualification Criteria

Table of Contents

Section III. Evaluation and Qualification Criteria	56
1. Evaluation of Technical Part.....	57
1.1. Technical Evaluation	57
1.2. Additional factors:	57
1.3. Factors and methods:	57
1.4. Functional Guarantees of the facilities – technical aspects	57
1.5. Technical alternatives- technical aspects	63
1.6. Specific additional criteria	63
2. Qualification	66
2.1. Eligibility	66
2.2. Historical Contract Non-Performance	67
2.3. Financial Situation	69
2.4. Experience.....	71
2.5. Personnel.....	73
2.6. Equipment	75
2.7. Subcontractors.....	76
3. Evaluation – Financial Part	77

Section III. Evaluation and Qualification Criteria

This Section contains all the criteria that the Employer shall use to evaluate bids and qualify Bidders. No other factors, methods or criteria shall be used. The Bidder shall provide all the information requested in the forms included in Section IV, Bidding Forms.

1. Evaluation of Technical Part

1.1. Technical Evaluation

The Employer will carry out a detailed technical evaluation of the bids not previously rejected to determine whether the technical aspects are in compliance with the Bidding Document. The bid that does not meet minimum acceptable standards of completeness, consistency and detail, and the specified minimum (or maximum, as the case may be) requirements for specified functional guarantees, will be rejected for non-responsiveness. Where alternative technical solutions have been allowed in accordance with ITB 13, and offered by the Bidder, the Employer will make a similar evaluation of the alternatives. Where alternatives have not been allowed but have been offered, they shall be ignored.

1.2. Additional factors:

In addition to the criteria listed in ITB 31.2 (a) – (c) the following factors shall apply: NA

1.3. Factors and methods:

During technical evaluation, the Employer shall only determine whether the bid meets the specified minimum acceptable standards. A negative determination shall result in rejection of the bid.

1.4. Functional Guarantees of the facilities – Technical aspects

The minimum requirements stated in the Specification for functional guarantees are

Parameter	To be committed in the bid document along with justification for performance	Minimum (or Maximum, as appropriate) Requirement
Audio warning system coverage area	Audio power output and speaker horn system output efficiency to meet specifications	Coverage area should be a circle of 1.5 Kilometer radius.
Group messaging system	Reliability of the system at SEOC and maximum message delivery time up to recipient	Better than 99.9 % ($\geq 99.9\%$) Maximum delivery time less than 5.0 minutes (<5.0) when cell phone network is up and running
Up time	System design to ensure resultant uptime of all redundant systems and networks (when at least one of the systems/ links for	Better than 99.5 % ($\geq 99.5\%$)

	voice and data connectivity is available)	
Implementation period	Planned implementation period for: <ul style="list-style-type: none"> • Setting-up all IT, communications (GSWAN, Internet links and VSAT nodes) and display systems at all EOCs, • Group messaging system and connectivity with 3 TSPs in Gujarat state, • Warning system & control stations at SEOC and TEOCs • RTUs at venerable locations 	Commissioning of facilities after acceptance testing within Maximum 270 days from the date of signing of contract and handing over possession of location free of any incumbencies
Fault rectification period	Rectification of faults, replacement of faulty equipment identified during acceptance testing and commissioning process	Within 3 working days from the date of fault identification
	Mean Time To Repair (MTTR) during operations and maintenance period	1. Within 48 hours at SEOC and 72 hours at DEOC and TEOC 2. Within 168 hours in case of all remote installations
Operational staff replacement	Replacement of technical support and operational staff with persons with equivalent qualifications and experience to the satisfaction of employer should be guaranteed	Within 30 days from the date, earlier staff has left the job

Functional performance requirements and penalty calculations:

Fault rectification service support system:

The contractor has to set-up fault rectification service support call centre at his premise at his own expenses. The call centre shall record each service call along with time stamp in his ticketing system. Action for rectification of the fault should be initiated as soon as possible to meet to ensure that system is restored within specified maximum time period (clause 1.4 in Section-III). However, it may be noted that downtime will be calculated from the time fault is reported till the system functioning is satisfactorily restored. The contractor has to provide appropriate reports monthly basis to employer against each ticket for service call.

The call centre should record time taken for fault rectification and inform GSDMA staff regarding restoration of system. The record of all fault rectification periods during the month should be submitted to GSDMA within one week of end of each month.

The response and resolution service levels will be subject to the following terms and conditions:

- Firstly, all the indicators are measured / calculated every month; thereafter consolidation will be done for each Quarter.
- Service calls also include the calls that require escalation to vendors like hardware call, application related calls.
- The contractor needs to resolve 98% of faults within defined time limits. This will be the criterion of FM (fault management) Performance. However, repeated calls (more than 4 in a quarter) of similar nature shall attract penalty for downtime at the same location.
- Breached time lines shall be treated as downtime.

Information and Communications Technology infrastructure availability:

The ICT infrastructure has to be made available 24 x 7 x 365 (round the clock). The service window for staff support during 5 years of contract (including 2 (two) years of Operations and Maintenance support and 3 (three) years of Annual Maintenance Contract (AMC) shall be as per the Service window defined in table below:

Table: During Normal Period (Steady State)

Facility / Node	Days	Timing details
SEOC	365	Round the clock
DEOC	Working days	1000-1800
TEOC	Working days	1000-1800

Table: During Disaster Situation

Facility / Node	Days	Timing details
SEOC	365	Round the clock
DEOC	Till disaster situation exists	Round the clock
TEOC	Till disaster situation exists	Round the clock

Infrastructure performance targets

a. Network and systems availability:

The required Network and systems Availability target levels calculated over each quarter (3 months) period are:

Component / System	Availability Target	Remarks
ICT Network including Satellite Links and equipment	99.5%	Up time (availability) to be achieved by required level of technology and physical redundancy
SMS based Warning system control stations including software	99.9%	Up time (availability) to be achieved by required level of hardware / software redundancy
Remotely monitored and controlled audio Early Warning Dissemination System (EWDS)	98%	Up time (availability) to be achieved by required level of hardware/software redundancy

b. Calculation of system availability:

Network availability will be calculated based on available connectivity for all nodes

For example:

- In case of failure of connectivity between SEOC and all EOCs (total 41 excluding SEOC) for 1 day, then % up time will be

$$= \{1 - [(Downtime \text{ in hours} / \text{total hours in a month} \times \text{number of EOCs other than SEOC})]\} \times 100$$

$$= \{1 - [(1 \times 24 \times 41) / (24 \times 30 \times 41)]\} \times 100$$

$$= \{1 - [984/29520]\} \times 100$$

$$= \mathbf{96.67\%}$$

- In case of failure of connectivity between SEOC and one EOC for 2 days overall % up time for network for the month will be

$$= \{1 - (\text{Downtime in hours} / \text{total hours in a month} \times \text{number of EOCs other than SEOC})\} \times 100$$

$$= \{1 - [(2 \times 24) / (24 \times 30 \times 41)]\} \times 100$$

$$= \{1 - [48/29520]\} \times 100$$

$$= \mathbf{99.84\%}$$

Payment during project stage:

1. Payment terms during project stage will be on project per mile stone achieved in the implementation as mentioned in RFB document.
2. Payment during O&M services and AMC period (post operationalization of infrastructure) will be as mentioned in the RFB document. These payments will equated quarterly payments calculated based on accepted service charges during O&M and AMC stages.

Payment during all stages of the contract will be subject to deduction of penalties for short comings in performance observed by GSDMA / Third Party Audit agency.

Penalties (Liquidated damage) during implementation stage:

Penalties during implementation stage will be calculated based on delay in completion of the work as per contract terms.

Sr. No.	Delay in weeks from the date of completion as per contract	Penalty (liquidated damage) as % of contract value for project	Remarks
1	Per week delay of up to 4 weeks	1% per week part thereof of delay	
2	Per week delay	1.5% per week or part thereof of	

	from 5 weeks to 8 weeks	delay	
3	Beyond 8 weeks	10% flat	Other conditions for termination of contract may apply

Calculation Procedure for Actual Quarterly Revenue (AQR)

The payment to the Operator for Services rendered to GSDMA under this Agreement shall be in quarterly installments, hereinafter referred to as 'AQR'.

For the purpose of calculation and evaluation, entitlement to Operator will be worked out on a monthly basis (hereinafter referred to as “**Actual Monthly Entitlement**” (“AME”). AME would be calculated based on the Uptime achieved by the Operator for the service (including network and other services during the month).

- QGR = Quarterly Guaranteed Revenue (equal to charges per annum divided by 4)
- Maximum Monthly Entitlement (MME) = QGR / 3
- Actual Monthly Entitlement (AME) = MME – the penalties levied by GSDMA under the agreement.
- Total AQR payable = Sum of the AME payable for each of the 3 months in the relevant quarter.

It is clarified that the Operator would be paid at least 90% of the QGR for every subsystem per quarter during the term of the Agreement, as mentioned herein. Further, while entitlements are calculated on a monthly basis, payment of AQR to the Operator would be made only on quarterly basis.

Penalties during the Operation and Maintenance and AMC Phases:

Infrastructure / systems have to be made available round the clock and throughout the term of the Agreement. The following table provides the calculation of penalty and entitlement of AME based on the different components of the Project. The Uptime and penalty relationship is shown in the table below.

Sr. No.	Sub-system / facility	Penalty for Uptime up to $\geq 99.5\%$	Penalty for Uptime $\geq 98.0\%$	Penalty for Uptime $\geq 97\%$	Penalty for Uptime $< 97.0\%$

1	ICTS Network Equipment SEOC /DEOC/TEOC	0%	4% penalty for 1% reduction in Uptime from 99.5 % or part thereof	4% penalty for 1% reduction in Uptime from 98% or part thereof	Flat 10% of MME for each subsystem / facility
2	SMS based warning message system	0%	4% penalty for 1% reduction in Uptime from 99.9% or part thereof	4% penalty for 1% reduction in Uptime from 98% or part thereof	
3	Audio based remote dissemination system	0%	0%	10% penalty for 1% reduction in Uptime from 98% or part thereof	

Total Quarterly Payment will be:

= AME (ICTS) + AME (SMS) + AME (EWDS.)

For example: In case of AME-ICTS up time at 98% and other systems up time is at 100%

Quarterly payment = MME (1.0-0.06) + MME (SMS) + MMS (EWDS)

1.5. Technical alternatives- technical aspects

The acceptability of alternative technical solutions for parts of the facilities, if invited in accordance with ITB 13.4, will be evaluated as follows:

-Not applicable

1.6. Specific additional criteria

The relevant evaluation method, if any, shall be as follows:

- The Lead Partner should be established IT / Telecom / System Integrator Company registered under Companies Act 1956 of Government of India. The Lead Partner should have been in operation for a period of at least 5 years as on bid submission date.
- The Lead Partner should have minimum 50 regular professional employees (B.E / B.Tech / equivalent) on its payroll as on bid submission date. Certificate from company secretary / authorized signatory required to be submitted.
- OEM/ Authorized Partner/ Distributor should provide an undertaking towards support to the Employer for essential spares after sales support of the offered product for a period of 10 years from the date of operational acceptance of the project.

- d) The Lead Partner should have own registered office presence in Gujarat state to ensure prompt technical and human resource support the team responsible during implementation of the project and during operational phase for 60 months from the date of commissioning. Such establishment should be set-up, if not already existing, within Gujarat, not later than 90 days from the date of signing of contract.
- e) OEM/Service Provider – Qualification conditions (refer Form EXP-2.4.2(b))

Offered product OEM/Authorized Partner/ Service Provider – (All)	He should have own registered office presence in India to ensure prompt service warranty support after sales. If not registered, they will be required to get registered not later than 90 days from the date of signing of contract.	Submit relevant proofs
Offered product OEM/Authorized Partner/ Service Provider – (VSAT)	<p>i. He should have been implemented of at least two (2) nos. satellite solutions (VSAT/ Sat Phone etc.) in last 5 years which could be any kind of satellite technology and services costing not less than the amount equal to INR 15 Cr each / per annum. Successful completion certificate /purchase order with delivery or shipping document or payment as a proof from competent authority required to be submitted.</p> <p>ii. He should have spectrum capacity of at least two satellites.</p>	Submit relevant proofs
Offered product OEM/Authorized Partner/ Service Provider – (Alert and Warning System)	He should have implemented of at least two (2) nos. Alert Siren System with minimum 50 locations each for Mass Notification in last 5 years. Successful completion certificate /purchase order with delivery or shipping document or payment as a proof from competent authority required to be submitted.	Submit relevant proofs
Offered product OEM/Authorized Partner/ Service Provider – (Network)	Implementation of at least one (1) project related to: Emergency Operation Centre or Network Operation Centre, LAN, WAN, Internet Services with over 100 WAN Nodes. Successful completion certificate /purchase order with delivery or shipping document or	Submit relevant proofs

	payment as a proof from competent authority required to be submitted	
Offered product OEM/Authorized Partner/ Service Provider – (Internet Link)	He should have at least 100GB of total bandwidth with automated network monitoring system in place.	Submit relevant proofs

Note –The bidder has to submit documentary proof of agreement with OEM / Distributor for supply of equipment and systems that will meet specifications of the employer as described in Section IV. The agreement between the bidder and OEM / Authorized Partner should include terms and conditions to:

- i. Guarantee supply of equipment / software / services that meet specifications included in technical requirements of employer under Section VI.
- ii. Extend continued technical support services for fault rectification during operation and maintenance period and
- iii. Ensure guaranteed supply of spares during operations and maintenance phases
- iv. Condition that OEM/ Authorized Partner will extend same level of technical support and supply of spares to GSDMA even after contract between bidder and GSDMA expires or is terminated for any reason

2. Qualification

2.1. Eligibility

Factor	Eligibility						
Sub-Factor	Requirement	Criteria					Documentation Required
		Single Entity	Bidder				
			Joint Venture / Consortium				
			All partners combined	Each partner	At least one partner		
2.1.1 Nationality	Nationality in accordance with ITB 4.2.	Must meet requirement	Existing or intended JV / Consortium must meet requirement	Must meet requirement	N / A	Form ELI –1.1 and 1.2, with attachments	
2.1.2 Conflict of Interest	No- conflicts of interests as described in ITB 4.3.	Must meet requirement	Existing or intended JV / Consortium must meet requirement	Must meet requirement	N / A	Letter of Bid	
2.1.3 Bank Ineligibility	Not having been declared ineligible by the Bank as described in ITB 4.4.	Must meet requirement	Existing JV / Consortium must meet requirement	Must meet requirement	N / A	Letter of Bid	
2.1.4 Government Owned Entity	Compliance with conditions of ITB 4.5	Must meet requirement	Existing JV / Consortium must meet requirement	Must meet requirement	N / A	Form ELI –1.1 and 1.2, with attachments	
2.1.5 Ineligibility based on a United Nations resolution or Borrower’s country law	Not having been excluded as a result of the Borrower’s country laws or official regulations, or by an act of compliance with UN Security Council resolution, in accordance with ITB 4.8	Must meet requirement	Existing JV / Consortium must meet requirement	Must meet requirement	N / A	Letter of Bid	

2.2. Historical Contract Non-Performance

Factor	Historical Contract Non-Performance					
Sub-Factor	Criteria					Documentation Required
	Requirement	Bidder				
		Single Entity	Joint Venture			
			All partners combined	Each partner	At least one partner	
History of non-performing contracts	Non-performance of a contract did not occur within the last 5 years prior to the deadline for application submission, based on all information on fully settled disputes or litigation. A fully settled dispute or litigation is one that has been resolved in accordance with the Dispute Resolution Mechanism under the respective contract, and where all appeal instances available to the bidder have been exhausted.	Must meet requirement by itself or as partner to past or existing JV / Consortium	N / A	Must meet requirement by itself or as partner to past or existing JV / Consortium	N / A	Form CON - 2
Pending Litigation	All pending litigation shall in total not represent more than 50% of the Bidder’s net worth and shall be treated as resolved against the Bidder.	Must meet requirement by itself or as partner to past or existing JV / Consortium	N / A	Must meet requirement by itself or as partner to past or existing JV / Consortium	N / A	Form CON – 2

Factor	Historical Contract Non-Performance					
Sub-Factor	Criteria					Documentation Required
	Requirement	Bidder				
		Single Entity	Joint Venture			
			All partners combined	Each partner	At least one partner	
Declaration: Environmental, Social, Health, and Safety (ESHS) past performance	Declare any contracts that have been suspended or terminated and/or performance security called by an employer for reasons related to the non-compliance of any environmental, or social, (including Sexual Exploitation and Abuse (SEA) and Gender-Based Violence (GBV)), or health or safety requirements or safeguard in the past five years.	Must make the declaration. Where there are Specialized Sub-contractor/s, the Specialized Sub-contractor/s must also make the declaration.	N/A	Each must make the declaration. Where there are Specialized Sub-contractor/s, the Specialized Sub-contractor/s must also make the declaration.	N/A	Form CON-3 ESHS Performance Declaration

2.3. Financial Situation

Factor	Financial Situation						
Sub-Factor	Criteria					Documentation Required	
	Requirement	Bidder					
		Single Entity	Joint Venture				
			All partners combined	Each partner			
2.3.1 Historical Financial Performance	Submission of audited balance sheets or if not required by the law of the bidder's country, other financial statements acceptable to the Employer, for the last 3 financial years to demonstrate the current soundness of the bidders' financial position and its prospective long-term profitability.	Must meet requirement	N / A	Must meet requirement	N / A	Form FIN – 3.1 with attachments	
2.3.2 Average Annual Turnover	Minimum average annual turnover in IT/ Telecom infrastructure services / Disaster management services businesses of INR 200 Cr calculated as total certified payments received for contracts in progress or completed, within the last 3 financial years.	Must meet requirement	Must meet requirement	Must meet Twenty five percent (25%) of the requirement	Must meet fifty percent (50%) of the requirement	Form FIN –3.2	

Factor	Financial Situation					
Sub-Factor	Criteria					Documentation Required
	Requirement	Bidder				
		Single Entity	Joint Venture			
			All partners combined	Each partner	At least one partner	
Note: Financial turnover of previous years shall be given weightage @5% per year based on rupee value to bring them to the price level of the financial year in which bids are received.						
2.3.3 Financial Resources	The Bidder must demonstrate access to, or availability of, financial resources such as liquid assets, unencumbered real assets, lines of credit, and other financial means, other than any contractual advance payments to meet: (i) the following cash-flow requirement: a. INR 36 Cr. for this contract; and in addition to overall cash flow requirements for its current commitments. (ii) The bidder and all J.V or consortium partners (where applicable) should be firms with no negative net worth in last three years. Certificate from the Chartered Accountant confirming the same shall be enclosed.	Must meet requirement	Must meet requirement	Must meet Twenty five percent (25%) of the requirement	Must meet Fifty percent (50%) of the requirement	Form FIN –3.3

2.4. Experience

Factor	Experience					
Sub-Factor	Criteria					Documentation Required
	Requirement	Bidder				
		Single Entity	Joint Venture		Each partner	
All partners combined						
2.4.1 –a. General Experience	Experience and proven record in implementing heterogeneous system integration projects, WAN connectivity, network operations center, telecom projects, early warning dissemination system, etc. for at least the last 5 years on the date of submission deadline, and with activity in at least last 1 year. Successful completion certificate /purchase order with delivery or shipping document or payment as a proof from competent authority required to be submitted.	Must meet requirement	N / A	N / A	Must meet requirement	Form EXP-2.4.1
2.4.1 –b. General Experience	Should possess ISO 9001:2008 or later certification. Valid ISO 9001:2008 or later certificate/s required to be submitted.	Must meet requirement	N / A	N / A	Must meet requirement	Valid ISO 9001:2008 or later certificate/s.
2.4.2 Specific Experience	(a) Participation as contractor, joint venture partner ¹ , management contractor, or subcontractor, within the last 5 years in (i) two turnkey contracts each of value at least INR 50 Cr. or (ii) one turnkey contract of value of at least	Must meet requirement	Must meet requirement ³	N / A	N / A	Form EXP 2.4.2(a)

¹ For contracts under which the Bidder participated as a joint venture member or sub-contractor, only the Bidder's share, by value, shall be considered to meet this requirement.

Factor	Experience					
Sub-Factor	Criteria					Documentation Required
	Requirement	Bidder				
		Single Entity	Joint Venture		Each partner	
		All partners combined				
	INR 80 Cr, that have been successfully and substantially ² completed and that are similar to the proposed requirements of this project. The similarity shall be based on the physical size, complexity, methods/ technology or other characteristics as described in Section VI, Employer’s Requirements or Similar ICT Projects.					

Note to Bidder: The bidder's technical solution must comply with the terms, requirements and specifications specified in the section VI to be considered as responsive. The decision taken in this regard by the technical committee of GSDMA will be final.

³ In the case of JV, the value of contracts completed by its members shall not be aggregated to determine whether the requirement of the minimum value of a single contract has been met. Instead, each contract performed by each member shall satisfy the minimum value of a single contract as required for single entity. In determining whether the JV meets the requirement of total number of contracts, only the number of contracts completed by all members each of value equal or more than the minimum value required shall be aggregated.

² Substantial completion shall be based on 80% or more works completed under the contract.

2.5. Personnel

The Bidder must demonstrate that it will have the personnel for the key positions that meet the following requirements:

Tier	Resource	Shift	Min. Qualification	Location	Qty
ImplementationPhase					
All	Project Manager	1	Minimum experience of 20 years Project management experience of 5 years MBA, B.E. / B. Tech PMP/ Prince2	SEOC and in the field during supervision	1
All	Environment Specialist	1	Post Graduate in Environmental Science or B. Tech in civil/ related field Minimum 5 years of experience in handling the environmental issues of infrastructure projects preferably for externally funded projects Proficiency in computer skills including experience of MS Word, Excel, Project, and GIS Fluency in both oral and written English and Hindi/State language Priority will be given to candidates with experience in disaster risk management	SEOC and in the field during supervision	1
All	Social Management Specialist	1	Post graduate in Social Work/ Rural Management/ Development Studies. At least 8 years' experience in community development, community mobilization, resettlement, disaster management, gender and rural development. Experience in disaster management will be a plus Conversant with the participatory tools such as PRA, micro-planning, participative monitoring and evaluation in community development, public building and watsan and rehabilitation activities. The candidate should be well versed with the socio-economic conditions of beneficiaries and should be able to communicate in the local language	SEOC and in the field during supervision	1

Tier	Resource	Shift	Min. Qualification	Location	Qty
			Previous professional work experience in the state and work in the World Bank/ADB assisted projects shall be considered favorably. Fluency in both oral and written English and Hindi/State language		
All	Health and Safety Expert	1	Must be a Graduate with minimum 5 years' experience in Disaster management. Must have certificate in Public safety and security domain. The Health and Safety officer will be responsible to focus their attention and efforts on the everyday issues and surprises, such as accident prevention and investigations, legal compliance, and a growing role in environmental compliance and employee health. They will be responsible for public assistance during or immediately after a disaster in order to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the people affected.	SEOC and in the field during supervision	1
All	Civil Works Expert	1	B. Tech in civil/ related field with minimum 5 years of experience in designing and construction supervision of public infrastructure works/self - supporting towers.	SEOC and in the field during supervision	
Operations and Management Phase					
1	Supervisor cum telecom specialist	1	Experience of managing EOC for 10 years. MBA, B. Tech (ECE)	SEOC	1
	Warning control staff	3	Experience of working in disaster management for min. 7 years Total years of experience should be min. 10 years B.Tech / B.Sc. IT	SEOC	12
	GIS expert	1	Experience of working in GIS domain for min. 5 years Total years of experience should be min. 7 years B.Tech / B.Sc. IT	SEOC	1

Tier	Resource	Shift	Min. Qualification	Location	Qty
2	Supervisor cum telecom specialist	1	Experience of telecommunication for min 7 years of Experience of working in disaster management for min. 5 years Diploma in IT or Communications / B.Sc. IT	DEOC	15
3	IT equipment operations and Warning control staff	1	Experience of working in disaster management for min. 3 years Diploma in IT or Communications / B.Sc. IT	TEOC	26

Note –

- 1. Warning control staff at SEOC will work in 3 shifts for 24X7 operations. Other staff at SEOC will work during day time but will be available round the clock during disaster situations*
- 2. Staff at TEOC and DEOC will work during day shift during normal time and round the clock during disaster period. Additional staff should be made available during emergency conditions (normally not lasting more than one week)*

The bidder needs to deploy the mentioned minimum personnel for implementation period as mentioned in the above table and no additional cost will be paid by GSDMA. For O&M period, the minimum mentioned manpower will need to be deployed and cost of the same will be as per the financial bid submitted by the SI.

The Bidder must not have in his employment:

- The near relations (defined as first blood relations, and their spouses, of the bidder or the bidder's spouse) of persons of the following Government Departments.
Department of Disaster Management and Civil Defence
- Without Government permission, any person who retired as gazetted officer within the last two years.

The Bidder shall provide details of the proposed personnel and their experience records in the relevant Forms included in Section IV, Bidding Forms.

2.6. Equipment

The Bidder must demonstrate that it will have access to the key Contractor's equipment listed hereafter:

Sr No	Equipment type
-------	----------------

1	Sufficient quantity of mechanical equipment for erection of towers/poles
2	Sufficient numbers of Tool and testing equipment for IT Network Systems
3	Sufficient numbers of Tool and testing equipment for Siren Systems
4	Sufficient numbers of Tool and testing equipment for VSAT Systems

2.7. Subcontractors

Subcontractors/manufacturers for the major items of supply or services ('Specialized Subcontractors') must meet the minimum criteria as per clause 1.6 and 2: Please refer to "Appendix to Technical Part - Proposed Subcontractors for Major Items of Infrastructure and Installation Services"

Failure to comply with this requirement will result in rejection of the subcontractor.

In the case of a Bidder who offers to supply and install major items of supply under the contract that the Bidder did not manufacture or otherwise produce, the Bidder shall provide the manufacturer's authorization, using the form provided in Section IV, showing that the Bidder has been duly authorized by the manufacturer or producer of the related infrastructure and equipment or component to supply and install that item in the Employer's country. The Bidder is responsible for ensuring that the manufacturer or producer complies with the requirements of ITB 4 and 5 and meets the minimum criteria listed above for that item.

3. Evaluation – Financial Part

Factors and methods

(a) Time Schedule

Time to complete the Infrastructure and Installation Services from the effective date specified in Article 3 of the Contract Agreement for determining time for completion is: 9 Months. No credit will be given for earlier completion.

(b) Operating and Maintenance Costs

Since the operating and maintenance costs of the facilities being procured form a major part of the life cycle cost of the facilities, these costs will be evaluated according to the principles given hereafter, including the cost of spare parts for the initial period of operation stated below and based on prices furnished by each Bidder in Price Schedule Nos. 1 and 2, as well as on past experience of the Employer or other employers similarly placed. Such costs shall be added to the Bid price for evaluation.

Option 1:

The operating and maintenance costs factors for calculation of the life cycle cost are:

- (i) number of years for life cycle: 10 Years (5 years beyond contract period)
- (ii) operating costs [as per the cost determined for the operating costs from the Price Schedule no. 4]
- (iii) maintenance costs, including the cost of spare parts for the initial period of operation [as per the cost determined for the maintenance costs from the Price Schedule no. 4], and
- (iv) rate in percent: NA [insert discount rate in percent] to be used to discount to present value all annual future costs calculated under (ii) and (iii) above for the period specified in (i).

The price of recommended spare parts quoted in Price Schedule shall not be considered for evaluation.

(c) Functional Guarantees of the Facilities – financial aspects

The minimum requirements stated in the Specification for functional guarantees required in the Specification are: Please refer to the section “Functional Guarantees of the facilities – technical aspects”

(d) Work, services, facilities etc., to be provided by the Employer

NA

(e) Specific additional criteria

The relevant evaluation method, if any, shall be as follows: NA

(f) Technical Alternative – financial aspects

Technical alternatives, if invited in accordance with ITB 13.4, will be evaluated as follows: NA

(g) Multiple Contracts (ITB 35.3) - NA

Section IV. Bidding Forms

Contents

Section IV. Bidding Forms	81
Letter of Bid – Technical Part.....	81
Appendix to Technical Part -Technical Proposal	83
Appendix to Technical Part -1- Site Organization.....	85
Appendix to Technical Part -2- Method Statement	86
Appendix to Technical Part -3 Mobilization Schedule.....	87
Appendix to Technical Part - 4 Construction Schedule.....	88
Appendix to Technical Part - 5 ESHS MSIP	89
Appendix to Technical Part - 6 Code of Conduct: ESHS	90
Appendix to Technical Part - 7 Checklist for compliance of ESHS requirements	91
Appendix to Technical Part - 8 Infrastructure	91
Appendix to Technical Part- 9 Contractor’s Equipment Form EQU.....	93
Appendix to Technical Part - 10 Functional Guarantees Form FUNC.....	94
Appendix to Technical Part - 11 Proposed Personnel	95
Appendix to Technical Part – 12 Resume of Proposed Personnel.....	96
Appendix to Technical Part - 13 Proposed Subcontractors for Major Items	97
Appendix to Technical Part – 14 Country of Origin Declaration Form	99
Appendix to Technical Part – 15 Others - Time Schedule	100
*Appendix to Technical Part – 16 Bidders Qualification	101
Appendix to Technical Part - 17 Bidder Information Sheet	102
Appendix to Technical Part - 18 Party to JV / CONSORTIUM Information Sheet.....	104
Appendix to Technical Part – 19 Details of Participation in the Joint Venture / CONSORTIUM	106
Appendix to Technical Part – 20 Historical Contract Non-Performance	108
Appendix to Technical Part - 21 Environmental, Social, Health, and Safety Performance Declaration	110
Appendix to Technical Part – 22 Form CCC Current Contract Commitments / Works in Progress.....	112
Appendix to Technical Part – 23 Form FIN – 3.1 Financial Situation - Historical Financial Performance	113
Appendix to Technical Part - 24 Average Annual Turnover	116
Appendix to Technical Part - 25 Financial Resources	116
FORMAT FOR EVIDENCE OF ACCESS TO OR AVAILABILITY OF CASH FLOW	117
Appendix to Technical Part - 26 Experience - General Experience	119

Appendix to Technical Part - 27 Specific Experience	123
Appendix to Technical Part - 28 Specific Experience (cont.)	125
Appendix to Technical Part - 29 Specific Experience in Key Activities.....	126
Appendix to Technical Part - 30 Specific Experience in Key Activities (cont.)	127
Appendix to Technical Part - 31 Form of Bid Security (Bank Guarantee)	128
Appendix to Technical Part- 32 Manufacturer's Authorization	130
Appendix to Technical Part - 33 Declaration regarding tax/duty exemption	132
Letter of Bid – Financial Part.....	134
Appendix to Financial Part	136
Appendix to Financial Part Schedule No. 1.....	137
Appendix to Financial Part Schedule No 2.....	139
Appendix to Financial Part Schedule No 3.....	151
Appendix to Financial Part Schedule No 4.....	153
Appendix to Financial Part Schedule No 5.....	154
Appendix to Financial Part Schedule No 6.....	165
Appendix to Financial Part Schedule No 7.....	170
Appendix to Financial Part Schedule No 8.....	172

Section IV. Bidding Forms

Letter of Bid – Technical Part

Date: _____

NCB No.: _____

Invitation for Bid No.: _____

Alternative No⁴: _____

To: _____

We, the undersigned, hereby submit our Bid, in two parts, namely:

- (a) the Technical Part, and
- (b) the Financial Part

In submitting our Bid, we make the following declarations:

- (a) We have examined and have no reservations to the Bidding Document, including Addenda issued in accordance with Instructions to Bidders (ITB) 8 _____;
- (b) We offer to _____, in conformity with the Bidding Document, the following Infrastructure and Installation Services: _____
- (c) Our bid shall be valid for a period of _____ days from the date fixed for the bid submission deadline in accordance with the Bidding Document, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
- (d) If our bid is accepted, we commit to obtain a performance security [*and an Environmental, Social, Health and Safety (ESHS) Performance Security, Delete if not applicable*] in accordance with the Bidding Document;
- (e) We, including any subcontractors or manufacturers for any part of the contract, have or will have nationalities from eligible countries, in accordance with ITB-4.2;
- (f) We, including any subcontractors or manufacturers for any part of the contract, do not have any conflict of interest in accordance with ITB-4.3;

⁴insert identification No. if this is a Bid for an alternative

- (g) We are not submitting more than one bid in this bidding process as a Bidder, either individually or as a partner in a joint venture, in accordance with ITB-4.3, except for alternative offers permitted under ITB Clause 13;
- (h) We, along with any of our subcontractors, suppliers, consultants, manufacturers, or service providers for any part of the contract, are not subject to, and not controlled by any entity or individual that is subject to, a temporary suspension or a debarment imposed by a member of the World Bank Group or a debarment imposed by the World Bank Group in accordance with the Agreement for Mutual Enforcement of Debarment Decisions between the World Bank and other development banks. Further, we are not ineligible under the Employer's country laws or official regulations or pursuant to a decision of the United Nations Security Council;
- (i) We are not a government owned entity/ We are a government owned entity but meet the requirements of ITB-4.5;⁵
- (j) We understand that this bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal contract is prepared and executed;
- (k) We understand that you are not bound to accept the lowest evaluated bid or any other bid that you may receive;
- (l) We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf engages in any type of Fraud and Corruption; and
- (m) **Adjudicator:** We accept the appointment of [insert name proposed in Bid Data Sheet] as the Adjudicator.

[or]

We do not accept the appointment of [insert name proposed in Bid Data Sheet] as the Adjudicator, and propose instead that [insert name] be appointed⁶ as Adjudicator, whose daily fees and biographical data are attached.

Name _____ In the capacity of _____

⁵*Bidder to use as appropriate*

⁶ In case appointment of Adjudicator was proposed from the list provided by an Institution in ITB 43, the replacement should also be proposed from the list of same institution.

Signed _____

Duly authorized to sign** the bid for and on behalf of _____

Dated on _____ day of _____, _____

** : Person signing the Bid shall have the power of attorney given by the Bidder to be attached with the Bid. In the case of the Bid submitted by joint venture specify the name of the Joint Venture as Bidder.

Appendix to Technical Part -Technical Proposal

- Site Organization
- Method Statement
- Mobilization Schedule
- Construction Schedule
- ESHS Management Strategies and Implementation Plans
- Code of Conduct (ESHS)
- Checklist for compliance of ESHS requirements
- Infrastructure
- Contractor's Equipment
- Functional Guarantees
- Personnel
- Proposed Subcontractors for Major Items of Infrastructure and Installation Services
- Country of Origin Declaration Form
- Others

Appendix to Technical Part -1- Site Organization

[Insert Site Organization Information]

Appendix to Technical Part -2- Method Statement

[insert Method Statement - A detailed note should be submitted outlining bidders proposed methodology and program for the provision of Infrastructure and Installation Services, backed with equipment, materials and manpower planning and deployment, and quality control procedures proposed to be adopted, justifying Bidder's capability for execution and timely completion of the work as per technical specifications, and achieve Commissioning and Acceptance of the Facilities within the specified Times for Completion].

Appendix to Technical Part -3 Mobilization Schedule

[Insert Mobilization Schedule]

Appendix to Technical Part - 4 Construction Schedule

[Insert Construction Schedule - a detailed note should be submitted outlining bidder's proposed construction schedule showing the sequence and time schedules for successive parts of the specified Infrastructure and Installation Services, and achieve Commissioning and Acceptance of the Facilities within the stipulated time frame]

Appendix to Technical Part - 5 ESHS MSIP**(ESHMS-MSIP)**

The Bidder shall submit comprehensive and concise Environmental, Social, Health and Safety Management Strategies and Implementation Plans (ESHMS-MSIP) as required by ITB 11.2 (j) of the Bid Data Sheet. These strategies and plans shall describe in detail the actions, materials, equipment, management processes etc. that will be implemented by the Contractor, and its subcontractors.

In developing these strategies and plans, the Bidder shall have regard to the ESHS provisions of the contract including those as may be more fully described in the Employer's Requirements described in Section VI.

Appendix to Technical Part - 6 Code of Conduct: ESHS

The Bidder shall submit the Code of Conduct that will apply to the Contractor's employees and subcontractors as required by ITB 11.2 (j) of the Bid Data Sheet. The Code of Conduct shall ensure compliance with the ESHS provisions of the contract, including those as may be more fully described in the Employer's Requirements described in Section VI.

In addition, the Bidder shall submit an outline of how this Code of Conduct will be implemented. This will include: how it will be introduced into conditions of employment/engagement, what training will be provided, how it will be monitored and how the Contractor proposes to deal with any breaches.

Appendix to Technical Part - 7 Checklist for compliance of ESHS requirements

The bidder shall submit the checklist for compliance to ESHS requirements as required by ITB 11.2 (j) of the Bid Data Sheet and Section-VI (Employer's Requirements).

Appendix to Technical Part - 8 Infrastructure

Appendix to Technical Part- 9 Contractor's Equipment Form EQU

The Bidder shall provide adequate information to demonstrate clearly that it has the capability to meet the requirements for the key Contractor's equipment listed in Section III, Evaluation and Qualification Criteria. A separate Form shall be prepared for each item of equipment listed, or for alternative equipment proposed by the Bidder.

Item of equipment		
Equipment information	Name of manufacturer	Model and power rating
	Capacity	Year of manufacture
Current status	Current location	
	Details of current commitments	
Source	Indicate source of the equipment <input type="checkbox"/> Owned <input type="checkbox"/> Rented <input type="checkbox"/> Leased <input type="checkbox"/> Specially manufactured	

Omit the following information for equipment owned by the Bidder.

Owner	Name of owner	
	Address of owner	
	Telephone	Contact name and title
	Fax	Telex
Agreements	Details of rental / lease / manufacture agreements specific to the project	

Appendix to Technical Part - 10 Functional Guarantees Form FUNC

The Bidder shall copy in the left column of the table below, the identification of each functional guarantee required in the Specification and stated by the Employer in para. 1.2 (c) of Section III. Evaluation and Qualification Criteria, and in the right column, provide the corresponding value for each functional guarantee of the proposed infrastructure and equipment.

Required Functional Guarantee	Value of Functional Guarantee of the Proposed Infrastructure and Equipment
1.	
2.	
3.	
...	

Appendix to Technical Part - 11 Proposed Personnel Personnel Form PER -1

Bidders should provide the names of suitably qualified personnel to meet the specified requirements stated in Section III. The data on their experience should be supplied using the Form below for each candidate.

1.	Title of position*
	Name
2.	Title of position* <i>[Environmental Specialist]</i>
	Name
3.	Title of position* <i>[Health and Safety Specialist]</i>
	Name
4.	Title of position* <i>[Social Specialist]</i>
	Name
5.	
6.	

*As listed in Section III.

Appendix to Technical Part – 12 Resume of Proposed Personnel

Name of Bidder

Position		
Personnel information	Name	Date of birth
	Professional qualifications	
Present employment	Name of employer	
	Address of employer	
	Telephone	Contact (manager / personnel officer)
	Fax	E-mail
	Job title	Years with present employer

Summarize professional experience over the last 20 years, in reverse chronological order. Indicate particular technical and managerial experience relevant to the project.

[illegible]

Appendix to Technical Part - 13 Proposed Subcontractors for Major Items

A list of major items of Infrastructure and Installation Services is provided below.

The following Subcontractors and/or manufacturers are proposed for carrying out the item of the facilities indicated. Bidders are free to propose more than one for each item

Major Items of Infrastructure and Installation Services	Proposed Subcontractors / Manufacturers (Provide for individual equipment separately)	Nationality
Group Messaging System		
Alert and warning System		
Network Monitoring System		
ICT Equipment		
Office Equipment		
VSAT network		
Internet Links		
RTUs		
Associated Civil Works		
All other Components		

[Note: Reference ITB 11, (a) Manufacturer's Authorization; and (b) Subcontractor Agreement or a letter of intent between the parties to enter into a Subcontractor Agreement are to be submitted along with the bid for major items of supply and services]

Sample -

Major Items of Infrastructure and Installation Services	Proposed Subcontractors / Manufacturers	Nationality
L2 Switch (with 2 years warranty) for SEOC		
WAN Router (with 2 years warranty) for SEOC		
Workstations (PC) (with 2 years warranty) for SEOC		
UPS (Online) with 1.0- hour backup (with 2 years warranty) for SEOC		
Satellite Handheld Terminals (with 1.0- year warranty) for SEOC		
VSAT Terminal (C Band) (with 1.0-year warranty) for DEOC		
L2 Switch (with 2 years warranty) for DEOC		
WAN Router (with 2 years warranty) for DEOC		
Workstations (with 2 years warranty) for DEOC		
LED TV Screen (with 2 years warranty) for DEOC		
UPS (Online) with 1.0-hour backup (with 2 years warranty) for DEOC		
Satellite Handheld Terminals (with 1.0-year warranty) for DEOC		
VSAT Terminal (C Band) (with 1.0-year warranty) for BEOC		
L2 Switch (with 2 years warranty) for BEOC		
WAN Router (with 2 years warranty) for BEOC		
Workstation (with 2 years warranty) for BEOC		
UPS (online) with 1.0- hour backup (with 2 years warranty) for BEOC		
Satellite Handheld Terminals (with 1.0- year warranty) for BEOC		
Alert Siren System with Galvanized Steel Pole & accessories (15 mtrs) on blank soil (with 1.0- year		

warranty)		
Dual SIM - GSM (one- time cost)		
VSAT Terminal (C Band) (with 1.0-year warranty) for 326 last mile locations		

Appendix to Technical Part – 14 Country of Origin Declaration Form

Item	Description	Country Code	Country
------	-------------	--------------	---------

--	--	--	--

[Note: Bidders shall enter the full name or code representing the country of origin of all imported infrastructure, equipment, and spares]

Appendix to Technical Part – 15 Others - Time Schedule
 (to be used by Bidder when alternative Time for Completion is invited in ITB 13.2)

***Appendix to Technical Part – 16 Bidders Qualification**

To establish its qualifications to perform the contract in accordance with Section III, Evaluation and Qualification Criteria the Bidder shall provide the information requested in the corresponding Information Sheets included hereunder.

Appendix to Technical Part - 17 Bidder Information Sheet
Form ELI 1.1

Date: _____

NCB No.: _____

Invitation for Bid No.: _____

Page _____ of _____ pages

1. Bidder's Legal Name
2. In case of JV / Consortium, legal name of each party:
3. Bidder's actual or intended Country of Registration:
4. Bidder's Year of Registration:
5. Bidder's Legal Address in Country of Registration:
6. Bidder's Authorized Representative Information Name: Address: Telephone/Fax numbers: Email Address:
7. Attached are copies of original documents of: <input type="checkbox"/> Articles of Incorporation or Registration of firm named in 1, above, in accordance with ITB Sub-Clauses 4.1 and 4.2. <input type="checkbox"/> In case of JV / Consortium, letter of intent to form JV / Consortium including a draft agreement, or JV / Consortium agreement, in accordance with ITB Sub-Clauses 4.1 and 11.2(h). <input type="checkbox"/> In case of government owned entity from the Employer's country, documents establishing legal and financial autonomy and compliance with the principles of commercial law, in accordance with ITB Sub-Clause 4.5.

Please note that a written authorization needs to be attached to this sheet as required by ITB 21.2.

**Appendix to Technical Part - 18 Party to JV / CONSORTIUM Information
Sheet
Form ELI 1.2
(Where permitted as per BDS ITB 4.1)**

Each partner of a JV / CONSORTIUM must fill in this form

Date: _____

NCB No.: _____

Invitation for Bid No.: _____

Page _____ of _____ pages

1. Bidder's Legal Name:
2. JV / Consortium's Party legal name:
3. JV / Consortium's Party Country of Registration:
4. JV / Consortium's Party Year of Registration:
5. JV / Consortium's Party Legal Address in Country of Registration:
6. JV / Consortium's Party Authorized Representative Information Name: Address: Telephone/Fax numbers: Email Address:
7. Attached are copies of original documents of: <input type="checkbox"/> <input type="checkbox"/> Articles of Incorporation or Registration of firm named in 1, above, in accordance with ITB Sub-Clauses 4.1 and 4.2. <input type="checkbox"/> In case of government owned entity from the Purchaser's country, documents establishing legal and financial autonomy and compliance with the principles of commercial law, in accordance with ITB Sub-Clause 4.5.

**Appendix to Technical Part – 19 Details of Participation in the Joint Venture /
CONSORTIUM**

PARTICIPATION DETAILS	FIRM 'A' (Lead Partner)	FIRM 'B'	FIRM 'C'
Financial			
Name of the Banker(s)			
Planning			
Construction Equipment			
Key Personnel			

Execution of Work (Give details on contribution of each)			

The Joint Venture / Consortium should indicate the details of participation as above.

**Appendix to Technical Part – 20 Historical Contract Non-Performance
Form CON – 2**

[The following table shall be filled in for the Bidder and if JV / CONSORTIUM, for each partner of the Joint Venture]

Bidder's Legal Name: _____

Date: _____

JV / CONSORTIUM Partner Legal Name: _____

NCB No.: _____

Page _____ of _____ pages

Non-Performing Contracts in accordance with Section III, Evaluation Criteria			
<input type="checkbox"/> <input type="checkbox"/> Contract non-performance did not occur during the stipulated period, in accordance with Sub-Factor 2.2.1 of Section III, Evaluation Criteria <input type="checkbox"/> Contract(s) not performed since 1 st January <i>[insert year]</i> specified in Section III, Evaluation and Qualification Criteria, requirement 2.2.1			
Year	Non- performed portion of contract	Contract Identification	Total Contract Amount (Rs. million)
<i>[insert year]</i>	<i>[insert amount and percentage]</i>	Contract Identification: <i>[indicate complete contract name/ number, and any other identification]</i> Name of Employer: <i>[insert full name]</i> Address of Employer: <i>[insert street/city/country]</i> Reason(s) for nonperformance: <i>[indicate main reason(s)]</i>	<i>[insert amount]</i>

Pending Litigation, in accordance with Section III, Evaluation Criteria			
<input type="checkbox"/> <input type="checkbox"/> No pending litigation in accordance with Sub-Factor 2.2.2 of Section III, Evaluation Criteria			
<input type="checkbox"/> Pending litigation in accordance with Sub-Factor 2.2.2 of Section III, Evaluation Criteria, as indicated below			
Year	Amount in Dispute (Rs. million)	Contract Identification	Total Contract Amount (Rs. million)
_____	_____	Contract Identification: Name of Employer: Address of Employer: Matter in dispute: Party who initiated the dispute: ____ Status of dispute: _____	_____
_____	_____	Contract Identification: Name of Employer: Address of Employer: Matter in dispute: Party who initiated the dispute: ____ Status of dispute: _____	_____

**Appendix to Technical Part - 21 Environmental, Social, Health, and Safety
Performance Declaration
Form CON – 3:**

*[The following table shall be filled in for the Bidder, each partner of a Joint Venture and each
Specialized Subcontractor]*

Bidder's Name: *[insert full name]*

Date: *[insert day, month, year]*

Joint Venture Partner's or Specialized Subcontractor's Name: *[insert full name]*

NCB No. and title: *[insert ICB number and title]*

Page *[insert page number]* of *[insert total number]* pages

Environmental, Social, Health, and Safety Performance Declaration			
in accordance with Section III, Qualification Criteria, and Requirements			
<input type="checkbox"/> No suspension or termination of contract: An employer has not suspended or terminated a contract and/or called the performance security for a contract for reasons related to Environmental, Social, Health, or Safety (ESHS) performance since the date specified in Section III, Qualification Criteria, and Requirements, Sub-Factor 2.2.3.			
<input type="checkbox"/> Declaration of suspension or termination of contract: The following contract(s) has/have been suspended or terminated and/or Performance Security called by an employer(s) for reasons related to Environmental, Social, Health, or Safety (ESHS) performance since the date specified in Section III, Qualification Criteria, and Requirements, Sub-Factor 2.2.3. Details are described below:			
Year	Suspended or terminated portion of contract	Contract Identification	Total Contract Amount (current value, in Rs. million)
<i>[insert year]</i>	<i>[insert amount and percentage]</i>	Contract Identification: <i>[indicate complete contract name/ number, and any other identification]</i> Name of Employer: <i>[insert full name]</i> Address of Employer: <i>[insert street/city/country]</i> Reason(s) for suspension or termination: <i>[indicate</i>	<i>[insert amount]</i>

		<i>main reason(s) e.g. for GBV/ SEA breaches]</i>	
<i>[insert year]</i>	<i>[insert amount and percentage]</i>	Contract Identification: <i>[indicate complete contract name/ number, and any other identification]</i> Name of Employer: <i>[insert full name]</i> Address of Employer: <i>[insert street/city/country]</i> Reason(s) for suspension or termination: <i>[indicate main reason(s)]</i>	<i>[insert amount]</i>
...	...	<i>[list all applicable contracts]</i>	...
Performance Security called by an employer(s) for reasons related to ESHS performance			
Year	Contract Identification		Total Contract Amount (current value, in Rs. million)
<i>[insert year]</i>	Contract Identification: <i>[indicate complete contract name/ number, and any other identification]</i> Name of Employer: <i>[insert full name]</i> Address of Employer: <i>[insert street/city/country]</i> Reason(s) for calling of performance security: <i>[indicate main reason(s) e.g. for GBV/ SEA breaches]</i>		<i>[insert amount]</i>

Appendix to Technical Part – 22 Form CCC Current Contract Commitments / Works in Progress

Bidders and each partner to a JV / CONSORTIUM should provide information on their current commitments on all contracts that have been awarded, or for which a letter of intent or acceptance has been received, or for contracts approaching completion, but for which an unqualified, full completion certificate has yet to be issued.

Name of contract	Employer, contact address/ telephone /fax	Value of outstanding work (Rs. million)	Estimated completion date	Average monthly invoicing over last six months (Rs. million/month)
1.				
2.				
3.				
4.				
5.				
etc.				

Appendix to Technical Part – 23 Form FIN – 3.1 Financial Situation - Historical Financial Performance

Bidder's Legal Name: _____ Date: _____

JV / CONSORTIUM Partner Legal Name: _____ NCB No.: _____

Page _____ of _____ pages

To be completed by the Bidder and, if JV / CONSORTIUM, by each partner

Financial information in Rs.	Historic information for previous _____ (____) years (in Rs. million)						
	Year 1	Year 2	Year 3	Year ...	Year n	Avg.	Avg. Ratio
Information from Balance Sheet							
Total Assets (TA)							
Total Liabilities (TL)							
Net Worth (NW)							
Current Assets (CA)							
Current Liabilities (CL)							

Shareholder's Funds (Net Worth) = (Paid up equity +Reserves)- (revaluation reserves + Miscellaneou s expenditure not written off)							
Depreciation							
Information from Income Statement							
Total Revenue (TR)							
Profits Before Taxes (PBT)							
Cash Flow Information							
Cash Flow from Operating Activities							
Net cash accruals= Profit after Tax + depreciation							

This information should be extracted from the Annual Financial Statements/ Balance sheets, which should be enclosed. Year 1 will be the latest year for which audited financial statements are available. Year 2 shall be the year immediately preceding year 1 and year 3 shall be the year immediately preceding Year 2.

Attached are copies of financial statements (balance sheets, including all related notes, and income statements) for the years required above complying with the following conditions:

Must reflect the financial situation of the Bidder or partner to a JV / CONSORTIUM, and not sister or parent companies

Historic financial statements must be audited by a certified accountant

Historic financial statements must be complete, including all notes to the financial statements

Historic financial statements must correspond to accounting periods already completed and audited (no statements for partial periods shall be requested or accepted)

Appendix to Technical Part - 24 Average Annual Turnover
Form FIN – 3.2

[The following table shall be filled in for the Bidder and if JV / CONSORTIUM, for each partner of the Joint Venture]

Bidder's Legal Name: _____ Date: _____

JV / CONSORTIUM Partner Legal Name: _____ NCB No.: _____

Page _____ of _____ pages

Annual turnover data (construction only) **	
Year	Rs. million
*Average Annual Construction Turnover	

*Average annual turnover calculated as total certified payments received for work in progress or completed, divided by the number of years specified in Section III, Evaluation Criteria, Sub-Factor 2.3.2.

** This should be certified by a Chartered Accountant.

Appendix to Technical Part - 25 Financial Resources

Form FIN 3.3

Specify proposed sources of financing, such as liquid assets, unencumbered real assets, lines of credit, and other financial means, net of current commitments, available to meet the total construction cash flow demands of the subject contract or contracts as indicated in Section III, Evaluation and Qualification Criteria

Source of financing	Amount (Rs. million)
1.	
2.	
3.	
4.	

Format for Evidence of Access to or Availability of Cash Flow

[To be given from a Nationalized Bank in India-No substitute other than this will be acceptable)]

Clause 2.3.3(ii) of Section III – Qualification Criteria**(1) AVAILABILITY OF CASH FLOW (WORKING CAPITAL)**

This is to certify that M/s. _____ is a reputed company with a good financial standing.

If the contract for the works, namely _____ [funded by the World Bank] is awarded to the above firm, we shall be able to provide overdraft/credit facilities to the extent of Rs. _____ to meet their capital requirements for executing the above contract.

-- Sd. --

Name of Bank Manager

Senior Bank Manager

Address of the Bank

*** Change the text as follows for Joint venture:**

This is to certify that M/s. who has formed a JV / CONSORTIUM with M/s. and M/s. for participating in this bid, is a reputed company with a good financial standing.

If the contract for the work, namely [funded by the World Bank] is awarded to the above Joint Venture, we shall be able to provide overdraft/credit facilities to the extent of Rs. to meet the working capital

requirements for executing the above contract.

[This should be given by the JV / CONSORTIUM partners in proportion to their financial participation.]

Appendix to Technical Part - 26 Experience - General Experience
Form EXP 2.4.1

[The following table shall be filled for the Bidder and if JV / CONSORTIUM, for each partner of the Joint Venture. Identify contracts that demonstrate continuous construction

work over the past [5⁷] years pursuant to Section III, Qualification Criteria and Requirements, Sub-Factor 2.4.1. List contracts chronologically, according to their commencement (starting) dates]

Bidder's Legal Name: _____ Date: _____

JV / CONSORTIUM Partner Legal Name: _____ NCB No.: _____

Page _____ of _____ pages

Starting Month / Year	Ending Month / Year	Years *	Contract Identification	Role of Bidder [“Contract or” or “Subcontra ctor” or “Contract Manager”]
_____	_____		Contract name: Brief Description of the Works performed by the Bidder: Name of Employer: Amount of Contract Actual Completion Value Address:	_____
_____	_____		Contract name: Brief Description of the Works performed by the Bidder: Name of Employer: Amount of Contract Actual Completion Value Address:	_____

⁷ Modify to the number of years specified in Section III, Qualification Criteria and Requirements, Sub-Factor 2.4.1, if different from 5.

Starting Month / Year	Ending Month / Year	Years *	Contract Identification	Role of Bidder [“Contract or” or “Subcontra ctor” or “Contract Manager”]
_____	_____		Contract name: Brief Description of the Works performed by the Bidder: Name of Employer: Amount of Contract Actual Completion Value Address:	_____
_____	_____		Contract name: Brief Description of the Works performed by the Bidder: Name of Employer: Amount of Contract Actual Completion Value Address:	_____
_____	_____		Contract name: Brief Description of the Works performed by the Bidder: Name of Employer: Amount of Contract Actual Completion Value Address:	_____

Starting Month / Year	Ending Month / Year	Years *	Contract Identification	Role of Bidder <i>[“Contract or” or “Subcontra ctor” or “Contract Manager”]</i>
_____	_____		Contract name: Brief Description of the Works performed by the Bidder: Name of Employer: Amount of Contract Actual Completion Value Address:	_____

*List calendar year for years with contracts with at least nine (9) months activity per year starting with the earliest year

Appendix to Technical Part - 27 Specific Experience

Form EXP – 2.4.2(a)

[The following table shall be filled in for contracts performed by the Bidder, each partner of a Joint Venture where permitted, and specialist sub-contractors]

Bidder's Legal Name: _____ Date: _____

JV / CONSORTIUM Partner Legal Name: _____ NCB No.: _____

Page _____ of _____ pages

Similar Contract Number: ____ of ____ required.	Information		
Contract Identification	_____		
Award date	_____		
Stipulated Completion date	_____		
Actual Completion date (provide explanation in case of delayed completion)	_____		
Role in Contract	<input type="checkbox"/> Contractor	<input type="checkbox"/> Management Contractor	<input type="checkbox"/> Subcontractor or
Total contract amount	_____		Rs. million _____
If partner in a JV / CONSORTIUM or subcontractor, specify participation of total contract amount	_____ %	_____	Rs. million _____
Total contract amount on completion (if over original contract amount, provide explanation)			Rs. Million _____

Similar Contract Number: ____ of ____ required.	Information
Employer's Name:	_____
Address:	_____ _____ _____
Telephone/fax number:	_____
E-mail:	_____

Appendix to Technical Part - 28 Specific Experience (cont.)

Form EXP – 2.4.2(a) (cont.)

Bidder's Legal Name: _____ Page _____ of _____ pages

JV / CONSORTIUM Partner Legal Name: _____

Similar Contract No. __[insert specific number] of [total number of contracts] __ required	Information
Description of the similarity in accordance with Sub-Factor 2.4.2(a) of Section III:	
Amount	Rs. million _____
Physical size	_____
Complexity	_____
Methods/Technology	_____
Physical Production Rate	_____

Appendix to Technical Part - 29 Specific Experience in Key Activities

Form EXP – 2.4.2(b)

Bidder's Legal Name: _____ Date: _____

JV / CONSORTIUM Partner Legal Name: _____ NCB No.: _____

Subcontractor's Legal Name: _____ Page _____ of _____ pages

	Information		
Contract Identification			
Award date			
Completion date			
Role in Contract	<input type="checkbox"/> Contractor	<input type="checkbox"/> Management Contractor	<input type="checkbox"/> Subcontract or
Total contract amount			Rs. Million _____
If partner in a JV / CONSORTIUM or subcontractor, specify participation of total contract amount	_____ %		Rs. Million _____
Employer's Name:			
Address:			
Telephone/fax number:			
E-mail:			

Appendix to Technical Part - 30 Specific Experience in Key Activities (cont.)

Form EXP – 2.4.2 (b)(cont.)

Bidder's Legal Name: _____ Page _____ of _____ pages

JV / CONSORTIUM Partner Legal Name: _____

Subcontractor's Legal Name: _____

	Information
Description of the key activities in accordance with Sub-Factor 2.4.2(b) of Section III:	

Appendix to Technical Part - 31 Form of Bid Security (Bank Guarantee)

[Guarantor letterhead or SWIFT identifier code]

Bid Guarantee No.....[insert guarantee reference number]

Date.....[insert date of issue of the guarantee]

WHEREAS, _____ [name of Bidder]⁸ (hereinafter called "the Bidder") has submitted his Bid dated _____ [date] or will submit his Bid for the execution of _____ [name of Contract] (hereinafter called "the Bid") under Invitations for Bids No.....[insert number] (hereinafter called "the IFB")

KNOW ALL PEOPLE by these presents that We _____ [name of bank] of _____ [name of country] having our registered office at _____ (hereinafter called "the Bank") are bound unto _____ [name of Employer] (hereinafter called "the Employer") in the sum of _____⁹ for which payment well and truly to be made to the said Employer the Bank binds itself, his successors and assigns by these presents.

SEALED with the Common Seal of the said Bank this _____ day of _____ 20____.

THE CONDITIONS of this obligation are:

⁸Insert name of the Bidder, which in the case of a joint venture shall be (a) the name of the joint venture that submits the bid if the JV has been constituted into a legally enforceable JV, or (b) the names of all future partners of the JV as named in the letter of intent to execute the JV Agreement submitted by the bidder alongwith its bid.

⁹The Bidder should insert the amount of the guarantee in words and figures denominated in Indian Rupees. This figure should be the same as shown in Clause 20.1 of the Instructions to Bidders.

- (1) If after Bid opening the Bidder (a) withdraws his bid during the period of Bid validity specified in the Letter of Bid; or (b) does not accept the correction of the Bid Price pursuant to ITB 36;

or

- (2) If the Bidder having been notified of the acceptance of his bid by the Employer during the period of Bid validity:
- (a) fails or refuses to execute the Contract Agreement in accordance with the Instructions to Bidders, if required; or
 - (b) fails or refuses to furnish the Performance Security and the Environmental, Social, Health and Safety (ESHS) Performance Security, in accordance with the Instruction to Bidders.

we undertake to pay to the Employer up to the above amount upon receipt of his first written demand, without the Employer having to substantiate his demand, provided that in his demand the Employer will note that the amount claimed by him is due to him owing to the occurrence of one or any of the four conditions, specifying the occurred condition or conditions.

This Guarantee will remain in force up to and including the date _____¹⁰ days after the deadline for submission of Bids as such deadline is stated in the Instructions to Bidders or as it may be extended by the Employer, notice of which extension(s) to the Bank is hereby waived. Any demand in respect of this guarantee should reach the Bank not later than the above date.

DATE _____ SIGNATURE OF THE BANK

WITNESS _____ SEAL _____

[signature, name, and address]

¹⁰45 days after the end of the validity period of the Bid.

[Note: All italicized text (including footnotes) is for use in preparing this form and shall be deleted from the final product.]

Appendix to Technical Part- 32 Manufacturer's Authorization

*[The Bidder shall require the Manufacturer to fill in this Form in accordance with the instructions indicated. This letter of authorization should be on the letterhead of the Manufacturer, should be signed by a person competent and having Power of Attorney to sign documents that are binding on the Manufacturer, and shall be registered or notarized so as to be legally enforceable. The Bidder shall include it in its Bid, if so, indicated in the **BDS**.]*

Date: _____

NCB No.: _____

To: _____

WHEREAS

We _____ *[insert: name of Manufacturer]*, who are official manufacturers of _____ *[insert: name and/or description of the infrastructure & equipment]*, having factories at _____ *[insert: address of factory]*, do hereby authorize _____ *[insert: name & address of Bidder]* to submit a bid the purpose of which is to provide the following goods, manufactured by us _____ *[list: items for which the Manufacturer's Authorization applies]*, and to subsequently negotiate and sign the Contract against IFB *[insert: title and reference number of Invitation for Bids]*.

We hereby extend our full guarantee and warranty in accordance with Clause 27 of the General Conditions, with respect to the goods offered by the above firm.

We also hereby declare that we and, *[insert: name of the Bidder]* have entered into a formal relationship in which, during the duration of the Contract (including warranty /

defects liability) we, the Manufacturer or Producer, will make our technical and engineering staff fully available to the technical and engineering staff of the successful Bidder to assist that Bidder, on a reasonable and best effort basis, in the performance of all its obligations to the Purchaser under the Contract.

For and on behalf of the Manufacturer

Signed: _____

Name: _____

Title: _____

Duly authorized to sign this Authorization on behalf of:

Dated on _____ day of _____, _____

Appendix to Technical Part - 33 Declaration regarding tax/duty exemption

Form.....

(Name of the Project)

(Declaration regarding tax/duty exemption for Infrastructure/ Goods/ Equipment bought for the work)

(Bidder's Name and Address)

To:

(Name of the Employer & address)

Dear Sir:

Re: [Name of Work]

Certificate for Import/Procurement of Infrastructure/ Goods/ Equipment

Government Order/Circular Number under which tax/duty Exemption is being sought: ...

1. We confirm that we are solely responsible for obtaining tax/duty waivers which we have considered in our bid and in case of failure to receive such waivers for reasons whatsoever, the Employer will not compensate us.
2. We are furnishing below the information required by the Employer for issue of the necessary certificates in terms of the Government of India's relevant Notifications.
3. The Infrastructure/ Goods/ Equipment for which certificates are required are as under:

Items (modify the list suitably for each specific work)*	Make/ Brand Name	Capacity [where applicable]	Quantity	Value	State whether it will be procured locally or imported [if so from which country]	Remarks regarding justification for the quantity and their usage in works.

Infrastructure						
[a] _____						
[b] _____						
[c] _____						
Goods						
Equipment						

4. We agree that no modification to the above list is permitted after bids are opened.
5. We agree that the certificate will be issued only to the extent considered reasonable by the Employer for the work, based on the Employer's Requirements and the construction program and methodology as furnished by us along with the bid.
6. We confirm that the above infrastructure, goods and equipment will be exclusively used for the construction of the above work and the construction equipment will not be sold or otherwise disposed of in any manner for a period of five years from the date of acquisition.

Date: _____

(Signature)_____

Place:_____

(Printed Name)_____

(Designation)_____

(Common Seal) _____

[This certificate will be issued within 60 days of signing of contract and no subsequent changes will be permitted.]

** Modify the above to suit the requirements given in Government of India's Notifications as current of date of bidding.*

Letter of Bid – Financial Part

Date: _____

NCB No.: _____

Invitation for Bid No.: _____

Alternative No¹¹.: _____

To: _____

We, the undersigned, hereby submit the second part of our Bid, the Bid Price and Price Schedules. This accompanies the Letter of Bid - Technical Part.

In submitting our Bid, we make the following additional declarations:

- (a) Our bid shall be valid for a period of _____ days from the date fixed for the bid submission deadline in accordance with the Bidding Document, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
- (b) The price of our Bid, excluding any discounts offered in item (d) below is the sum of: _____, (_____), **and** _____, (_____) _____
- (c) The discounts offered and the methodology for their application are:

- (d) We have paid, or will pay the following commissions, gratuities, or fees with respect to the Bidding process or execution of the Contract: *[insert complete name of each Recipient, its full address, the reason for which each commission or gratuity was paid or will be paid and the amount of each such commission or gratuity]*

Name of Recipient	Address	Reason	Amount

(If none has been paid or is to be paid, indicate "none.")

Name _____ In the capacity of _____

Signed _____

¹¹insert identification No. if this is a Bid for an alternative

Duly authorized to sign** the bid for and on behalf of _____

Dated on _____ day of _____, _____

** : Person signing the Bid shall have the power of attorney given by the Bidder to be attached with the Bid. In the case of the Bid submitted by joint venture specify the name of the Joint Venture as Bidder.

Appendix to Financial Part

Schedules of Rates and Prices

For schedule of rates and prices please refer to the BoQ available from the <https://nprocure.com> The rates in the respective schedules to be filled online by the bidders in the BoQ format. No rates are to be quoted in the technical bid.

Appendix to Financial Part Schedule No. 1.

Item Number	Description of Equipment	Quantity estimated but may be more or less	Unit	Location	Unit Rate At Site in Rs.	Total amount according to estimated quantities	GST		Other Applicable Taxes and Duties			Total Amount with Taxes and Duties In INR
							Applicable Percentage	Amount in INR	Description	Applicable Percentage	Amount in INR	
3	Audio amplifier and Horn Speaker to provide coverage area of -1.5 Km radius i.e. 3.0 km Diameter	284	Nos	Vulnerable villages-168 Tourist Beaches-13 Salt pans-4 FLCs-99								
4	Communication Interface Cards	284	Nos	Vulnerable villages-168 Tourist Beaches-13 Salt pans-4 FLCs-99								
5	Cell Phone Modems	284	Nos	Vulnerable villages-168 Tourist Beaches-13 Salt pans-4 FLCs-99								
6	Solar System Controller / Hybrid Inverter	284	Nos	Vulnerable villages-168 Tourist Beaches-13 Salt pans-4 FLCs-99								

Item Number	Description of Equipment	Quantity estimated but may be more or less	Unit	Location	Unit Rate At Site in Rs.	Total amount according to estimated quantities	GST		Other Applicable Taxes and Duties			Total Amount with Taxes and Duties In INR
							Applicable Percentage	Amount in INR	Description	Applicable Percentage	Amount in INR	
7	Battery Back-up	284	Nos	Vulnerable villages-168 Tourist Beaches-13 Salt pans-4 FLCs-99								
8	Solar Panel	284	Nos	Vulnerable villages-168 Tourist Beaches-13 Salt pans-4 FLCs-99								
9	Power Distribution Board	284	Nos	Vulnerable villages-168 Tourist Beaches-13 Salt pans-4 FLCs-99								
10	IP 65 enclosure	284	Nos	Vulnerable villages-168 Tourist Beaches-13 Salt pans-4 FLCs-99								
11	7.0-meter Poles	142	Nos	Identified vulnerable								

Item Number	Description of Equipment	Quantity estimated but may be more or less	Unit	Location	Unit Rate At Site in Rs.	Total amount according to estimated quantities	GST		Other Applicable Taxes and Duties			Total Amount with Taxes and Duties In INR
							Applicable Percentage	Amount in INR	Description	Applicable Percentage	Amount in INR	
				locations								
12	15.0-meter self-supporting towers	142	Nos	Identified vulnerable locations								
13	Security fencing around towers, poles and VSAT	326	Nos	Vulnerable villages-168 Tourist Beaches-13 Salt pans-4 FLCs-99 SEOC-1 DEOC-15 TEOC-26								
14	Antenna Lightning Strike Protector	284	Nos	Vulnerable villages-168 Tourist Beaches-13 Salt pans-4 FLCs-99								
15	RTU Voltage Stabilizer	284	Nos	Vulnerable villages-168 Tourist Beaches-13 Salt pans-4 FLCs-99								

Item Number	Description of Equipment	Quantity estimated but may be more or less	Unit	Location	Unit Rate At Site in Rs.	Total amount according to estimated quantities	GST		Other Applicable Taxes and Duties			Total Amount with Taxes and Duties In INR
							Applicable Percentage	Amount in INR	Description	Applicable Percentage	Amount in INR	
16	Aviation obstruction lamps	50	Nos	As per requirements								
ALERT SIREN MESSAGE GENERATION SYSTEM												
17	Integrated Emergency Warning System with Hardware	1	Nos	SEOC and all TEOCs								
GROUP MESSAGING SYSTEM												
18	Group messaging system	2	Nos	SEOC + Back up at 1 DEOC								
INFORMATION COMMUNICATION TECHNOLOGY INFRASTRUCTURE SYSTEM												
19	NMS System	1	Nos	SEOC								
20	Call Complaint management System with Toll Free Support Centre Nos.	1	Nos	SEOC-1								
21	42 U 19" Server Rack	17	Nos	SEOC- 2 DEOC -15								
22	6U Wall Mountable 19" Server Rack	26	Nos	TEOC - 26								
23	24 port L2 switch	17	Nos	SEOC - 2 DEOC - 15								

Item Number	Description of Equipment	Quantity estimated but may be more or less	Unit	Location	Unit Rate At Site in Rs.	Total amount according to estimated quantities	GST		Other Applicable Taxes and Duties			Total Amount with Taxes and Duties In INR
							Applicable Percentage	Amount in INR	Description	Applicable Percentage	Amount in INR	
24	12 port L2 switch	26	Nos	TEOC - 26								
25	CAT 6 UTP Cable, Patch Panel, CAT 6 UTP Patch Cord (1 mtr. & 2mtr), Face Plate and adequate telecommunication outlets	42	Lots	SEOC - 1 DEOC - 15 TEOC - 26								
26	Server for Logs	1	Nos	SEOC								
27	24 Port FODP (Fiber Optic Distribution Panel) with Pigtail	1	Nos	SEOC								
28	Firewall and IPS	1	Nos	SEOC								
29	WAN Router with 8 FE Port , 2 GE WAN Port and with 2 Fiber Port 10/100/1000	42	Nos	SEOC- 1 DEOC-15 TEOC-26								
30	Work Stations with 19 " LED Monitor	137	Sets	2 SEOC + 1 back up DEOC - 3 SEOC-10 3 per DEOC-45								

Item Number	Description of Equipment	Quantity estimated but may be more or less	Unit	Location	Unit Rate At Site in Rs.	Total amount according to estimated quantities	GST		Other Applicable Taxes and Duties			Total Amount with Taxes and Duties In INR
							Applicable Percentage	Amount in INR	Description	Applicable Percentage	Amount in INR	
				3 per TEOC-78								
31	42" LED TV Screen with HDMI cable	103	Nos	SEOC + 1 back up DEOC - 2 SEOC for news feed - 4 3 per DEOC - 45 2 per TEOC - 52								
32	Laser All-in-One Printer (Printer, Scanner, Photocopier)	43	Nos	SEOC - 2 DEOC - 15 TEOC - 26								
33	Fax Machine	43	Nos	SEOC - 2 DEOC - 15 TEOC - 26								
34	Set-top Box	45	Nos	SEOC - 4 DEOC - 15 TEOC - 26								
35	Communication Control system which controls Alert Siren functionality	27	Nos	SEOC -1 TEOC - 26								

Item Number	Description of Equipment	Quantity estimated but may be more or less	Unit	Location	Unit Rate At Site in Rs.	Total amount according to estimated quantities	GST		Other Applicable Taxes and Duties			Total Amount with Taxes and Duties In INR
							Applicable Percentage	Amount in INR	Description	Applicable Percentage	Amount in INR	
36	Advanced Communication Board-Interface board that allows the CCU to communicate over VSAT and via GSM - Two are required for each CCU, one for the VSAT and the second for the GSM modem.	54	Nos	SEOC + Back up at 1 DEOC - 2 2 per TEOC - 52								
37	GSM Modem with Dual-SIM Card	28	Nos	SEOC - 2 TEOC - 26								
38	Microphone, Digitized Pre-Recorded Voice Messages / Pre-Recorded Digital Messages – (up to 15 pre-recorded messages) with an average length of 30 seconds of recording time per message,	27	Nos	SEOC -1+1 TEOC - 26								

Item Number	Description of Equipment	Quantity estimated but may be more or less	Unit	Location	Unit Rate At Site in Rs.	Total amount according to estimated quantities	GST		Other Applicable Taxes and Duties			Total Amount with Taxes and Duties In INR
							Applicable Percentage	Amount in INR	Description	Applicable Percentage	Amount in INR	
	audio splitter, voice logger etc.											
39	Portable Projector with screen	2	Nos	SEOC - 2								
ELECTRICAL EQUIPMENT & SYSTEMS												
40	Mains supply servo stabilizers	43	Nos	At all EOCs (Redundant at SEOC and standalone at other EOCs)								
41	Mains Supply RTUs	284	Nos	All the RTUs								
42	Mains distribution switches	43	Nos	At all EOCs (Redundant at SEOC and standalone at other EOCs)								
43	Redundant DG Set 100 KVA with Platform base	2	Nos	SEOC - 2								
43	DG SET-30 KVA with Platform base	16	Nos	DEOC -15 + Back up at 1 DEOC								

Item Number	Description of Equipment	Quantity estimated but may be more or less	Unit	Location	Unit Rate At Site in Rs.	Total amount according to estimated quantities	GST		Other Applicable Taxes and Duties			Total Amount with Taxes and Duties In INR
							Applicable Percentage	Amount in INR	Description	Applicable Percentage	Amount in INR	
44	DG SET-15 KVA with Platform base	26	Nos	TEOC - 26								
45	UPS-20 KVA (2 in Hot standby configuration) With Batteries for 4 Hr. Backup	2	Nos	SEOC - 2								
46	UPS 10 KVA With Batteries for 4 Hr. Backup	15	Nos	DEOC -15								
47	UPS 5 KVA With Batteries for 4 Hr. Backup	26	Nos	TEOC - 26								
48	POWER Cables, distributions board, PVC Duct etc. at SEOC (1+1)	2	Nos	SEOC - 2								
49	POWER Cables, distributions board, PVC Duct etc. at DEOC (15)	15	Nos	DEOC - 15								
50	POWER Cables, distributions board, PVC Duct etc. at TEOC (26)	26	Nos	TEOC - 26								

Item Number	Description of Equipment	Quantity estimated but may be more or less	Unit	Location	Unit Rate At Site in Rs.	Total amount according to estimated quantities	GST		Other Applicable Taxes and Duties			Total Amount with Taxes and Duties In INR
							Applicable Percentage	Amount in INR	Description	Applicable Percentage	Amount in INR	
51	POWER Cables, distributions board, PVC Duct etc. at RTU (168+99+13+4)	284	Nos	RTU - 284								
52	Exhaust fan	41		DEOC-15 TEOC-26								
53	Air-conditioner units (4+30+26)	60	Nos	SEOC - 4 DEOC - 30 TEOC - 26								
MISCELLANEOUS ITEMS												
54	Earthing/Pit for all equipment & appliances as per SoW.	326	Nos	Vulnerable villages-168 Tourist Beaches-13 Salt pans-4 FLCs-99 SEOC-1 DEOC-15 TEOC-26								

Item Number	Description of Equipment	Quantity estimated but may be more or less	Unit	Location	Unit Rate At Site in Rs.	Total amount according to estimated quantities	GST		Other Applicable Taxes and Duties			Total Amount with Taxes and Duties In INR
							Applicable Percentage	Amount in INR	Description	Applicable Percentage	Amount in INR	
55	Fire Extinguisher	326	Nos	Vulnerable villages-168 Tourist Beaches-13 Salt pans-4 FLCs-99 SEOC-1 DEOC-15 TEOC-26								
56	Modular Furniture set tables + Chairs	42	Lot	SEOC - 1 DEOC - 15 TEOC - 26								
Total						0	0	0			0	0

NOTE: The equipment & quantities mentioned in the table are indicative and meant for bid evaluation purposes only. The System Integrator is required to provide complete solution with all necessary materials & accessories to meet the functional requirements. Price bid equipment & quantities are based on the employer's estimation, these quantities are the basis of financial evaluation and finalizing the contract amount, however at the time of implementation of contract if any variation is required, variation may be approved by GSDMA.

Appendix to Financial Part Schedule No 3
Schedule No. 3. Design services

S. No.	Design Parameters	Associated Cost	GST		Total Amount with Taxes and Duties In INR
		In Rs.	Applicable Percentage (%)	Amount in INR	
		1	2	3=(1)x(2)	4=1+3
1	15 meter Tower and 7 Meter Pole & its mountings structure on side walls, terrace and building parapet wall including clamping, base plates and supporting structure has to be designed as per desired specification.				
2	Design shall included all mechanical structure, gauges, RCC foundation design for Poles & Siren tower, base plates etc.				
3	Design for protection cage mesh around 15ft.x15ft. (for both VSAT & Siren tower) on ground & protection cage on building terrace for VSAT only.				
4	Interior design layout for all wall mounted flat TV, Monitor screens, Office layout for table chair sitting arrangement, Notice boards, Activity chart board, Audio-video equipment & meeting room Infrastructure, Network Monitoring, EWDS system monitoring shall be designed & Separate design layout for SEOC,DEOC, & TEOC				
5	VSAT Ground mounted RCC platform of sufficient elevation to be designed taking precaution of water logging at the ground level during monsoon and near coastal areas.				

S. No.	Design Parameters	Associated Cost	GST		Total Amount with Taxes and Duties In INR
		In Rs.	Applicable Percentage (%)	Amount in INR	
		1	2	3=(1)x(2)	4=1+3
6	All cables for ICT equipment & power system inside the building premises of SEOC, DEOC and TEOC shall be marked and tagged with proper cable schematic tray with covered trenches shall be designed for aesthetic layout in the monitoring rooms of SEOC, DEOC & TEOC. All the cables should be concealed in PVC duct.				
7	Civil foundation for DG Sets under SoW should be above Flood water Level in water logging prone areas				
Total Amount for Schedule-3 without Taxes			Total Amount for Schedule-3 including Taxes		
	Total Amount for Schedule No. 3 (without Taxes) in words				
	Total Amount for Schedule No. 3 (including taxes) in words				
Name of Bidder Signature of Bidder					

All rates and prices shall be specified in Rs. only in accordance with ITB 18.1.

Appendix to Financial Part Schedule No 4
Schedule No. 4. Installation, Testing and Other Services

Item Number	Description of Equipment	Quantity estimated but may be more or less	Unit	Estimated Rate in Rs.	GST		Total amount according to estimated quantities
				In Fig	Applicable Percentage (%)	Amount in INR	
				1	2	3=(1)x(2)	4=1+3
1	All Charges for Installation, testing, commissioning & Training Services for all equipment & systems including software, power supply, earthing and integration with VSAT & EWDS systems (entire IT Infrastructure set-up) with civil construction/foundations for SEOC, DEOC, TEOC and RTUs. This includes the cost of all Personnel used at the time of implementation.	1	Lot				
Total Amount for Schedule-4 without Taxes				0.00	Total Amount for Schedule-2 Including Taxes		0.00
	Total Amount for Schedule No. 2 (without Taxes) in words						
	Total Amount for Schedule No. 2 (including taxes) in words						
Name of Bidder							
Signature of Bidder							

All rates and prices shall be specified in Rs. only in accordance with ITB 18.1.

Note: Please refer to the BoQ format in www.nprocure-com

Appendix to Financial Part Schedule No 5

Schedule No. 5. : Charges towards providing operations and maintenance staff of the infrastructure and operating expenses for initial 24 months post commissioning of the project

Item Number	Description of Equipment	Quantity estimated but may be more or less	Unit	Location	Estimated Rate in Rs.	GST		Total amount according to estimated quantities	
						Applicable Percentage (%)	Amount in INR	In Fig	In Words
1	ICT Equipment including EWDS & VSAT				1	2	3=(1)x(2)	4=1+3	
1.01	As per items given under Schedule No.2, BOQ shall cover the total charges for operations and maintenance of all equipment ,VSAT & Siren systems , Software systems , entire ICT Infrastructure, Electrical Infrastructure, Civil works & Mechanical Pole, Tower Structures post commissioning of the Project for Year 1	1	Lot	Vulnerabl e villages- 168 Tourist Beaches- 13 Salt pans- 4 FLCs-99 SEOC-1 DEOC-15 TEOC-26			0	0	

Item Number	Description of Equipment	Quantity estimated but may be more or less	Unit	Location	Estimated Rate in Rs.	GST		Total amount according to estimated quantities	
						Applicable Percentage (%)	Amount in INR	In Fig	In Words
1.02	As per items given under Schedule No.2, BOQ shall cover the total charges for operations and maintenance of all equipment ,VSAT & Siren systems , Software systems , entire ICT Infrastructure, Electrical Infrastructure, Civil works & Mechanical Pole, Tower Structures post commissioning of the Project for Year 2	1	Lot	Vulnerable villages-168 Tourist Beaches-13 Salt pans-4 FLCs-99 SEOC-1 DEOC-15 TEOC-26			0	0	
2	BANDWIDTH								
2.01	Dedicated 10 Mbps Internet bandwidth for Year 1.	1	Nos	SEOC					
2.02	Dedicated 20 Mbps Internet bandwidth for Year 1.	1	Nos	SEOC					

Item Number	Description of Equipment	Quantity estimated but may be more or less	Unit	Location	Estimated Rate in Rs.	GST		Total amount according to estimated quantities	
						Applicable Percentage (%)	Amount in INR	In Fig	In Words
2.03	Dedicated 2 Mbps Internet bandwidth for Year 1.	15	Nos	DEOC					
2.04	Dedicated 4 Mbps Internet bandwidth for Year 1.	15	Nos	DEOC					
2.05	Dedicated 1 Mbps Internet bandwidth for Year 1.	26	Nos	TEOC					
2.06	Dedicated 2 Mbps Internet bandwidth for Year 1.	26	Nos	TEOC					
2.07	VSAT Network Annual Satellite bandwidth charges for 3.0 Mbps data rate for Year 1.	1	Nos	Vulnerable villages-168 Tourist Beaches-13 Salt pans-					

Item Number	Description of Equipment	Quantity estimated but may be more or less	Unit	Location	Estimated Rate in Rs.	GST		Total amount according to estimated quantities	
						Applicable Percentage (%)	Amount in INR	In Fig	In Words
				4 FLCs-99 SEOC-1 DEOC-15 TEOC-26					
2.08	VSAT Network Annual lease rental for 2.0 Mbps data link between SEOC and VSAT hub for Year 1.	1	Nos	SEOC					
2.09	Dedicated 10 Mbps Internet bandwidth for Year 2.	1	Nos	SEOC					
2.1	Dedicated 20 Mbps Internet bandwidth for Year 2.	1	Nos	SEOC					

Item Number	Description of Equipment	Quantity estimated but may be more or less	Unit	Location	Estimated Rate in Rs.	GST		Total amount according to estimated quantities	
						Applicable Percentage (%)	Amount in INR	In Fig	In Words
2.11	Dedicated 2 Mbps Internet bandwidth for Year 2.	15	Nos	DEOC					
2.12	Dedicated 4 Mbps Internet bandwidth for Year 2.	15	Nos	DEOC					
2.13	Dedicated 1 Mbps Internet bandwidth for Year 2.	26	Nos	TEOC					
2.14	Dedicated 2 Mbps Internet bandwidth for Year 2.	26	Nos	TEOC					
2.15	VSAT Network Annual Satellite bandwidth charges for 3.0 Mbps data rate for year 2	1	Nos	Vulnerable villages-168 Tourist Beaches-13 Salt pans-4 FLCs-99					

Item Number	Description of Equipment	Quantity estimated but may be more or less	Unit	Location	Estimated Rate in Rs.	GST		Total amount according to estimated quantities	
						Applicable Percentage (%)	Amount in INR	In Fig	In Words
				SEOC-1 DEOC-15 TEOC-26					
2.16	VSAT Network Annual lease rental for 2.0 Mbps data link between SEOC and VSAT hub for 2 Years	1	Nos	SEOC					
3	Other Office work under O&M								
3.01	Group SMS Charges The cost of sending up to 100,000 text SMS (group -based SMS) and 25,000 Voice SMS per annum, For Year 1	1	Nos	SEOC					
3.02	Group SMS Charges The cost of sending up to 100,000 text SMS (group -based SMS) and 25,000 Voice SMS per annum, For Year 2	1	Nos	SEOC					

Item Number	Description of Equipment	Quantity estimated but may be more or less	Unit	Location	Estimated Rate in Rs.	GST		Total amount according to estimated quantities	
						Applicable Percentage (%)	Amount in INR	In Fig	In Words
3.03	SEOC: Diesel Charges for DG set (3 liter per hour) say 2 hrs Power cut per day = 3 liter x 2 hrs x 30 days = 180 Liters per month for Year 1	180	Liter/Month	SEOC			0	0	
3.04	SEOC: Diesel Charges for DG set (3 Liter per hour) say 2 hrs Power cut per day = 3 liter x 2 hrs x 30 days = 180 Litres per month for Year 2	180	Liter/Month	SEOC			0	0	
3.05	DEOC: Diesel Charges for DG set (2 Liter per hour) say 4 hrs Power cut per day = 2 liter x 4hrs x30 days= 240 liter per month x 11 Districts; for Year 1	2640	Liter/Month	DEOC			0	0	
3.06	DEOC: Diesel Charges for DG set (2 Liter per hour) say 4 hrs Power cut per day = 2 liter x 4hrs x30 days= 240 liter per month x 11 Districts; for Year 2	2640	Liter/Month	DEOC			0	0	

Item Number	Description of Equipment	Quantity estimated but may be more or less	Unit	Location	Estimated Rate in Rs.	GST		Total amount according to estimated quantities	
						Applicable Percentage (%)	Amount in INR	In Fig	In Words
3.07	TEOC: Diesel Charges for DG set (2 Liter per hour) say 8 hrs Power cut per day = 2 liter x 8 hrs x 30 days x 1 month= 480 liter per month x 20 Talukas; for Year 1	9600	Liter/Month	TEOC			0	0	
3.08	TEOC: Diesel Charges for DG set (2 Liter per hour) say 8 hrs Power cut per day = 2 liter x 8 hrs x 30 days x 1 month= 480 Liter per month x 20 Talukas; for Year 2	9600	Liter/Month	TEOC			0	0	
3.09	All EOCs: paper, ink cartridges, lamps and tube lights etc. painting of towers etc. as per requirement for Year 1	1	Lot	SEOC DEOC TEOC			0	0	
3.10	All EOCs: paper, ink cartridges, lamps and tube lights etc. painting of towers etc. as per requirement for Year 2	1	Lot	SEOC DEOC TEOC			0	0	
3.11	Cell Phone Charges for two years.	284	Nos	Vulnerable villages-168					

Item Number	Description of Equipment	Quantity estimated but may be more or less	Unit	Location	Estimated Rate in Rs.	GST		Total amount according to estimated quantities	
						Applicable Percentage (%)	Amount in INR	In Fig	In Words
				Tourist Beaches-13 Salt pans-4 FLCs-99					
3.12	Set-top Box subscription Fee/charges for two years.	45	Nos	SEOC DEOC TEOC					
3.13	ISAT-2 phones subscription and utilization charges for two years.	60	Nos	SEOC DEOC TEOC					
3.14	Charges towards Toll Free Number for two Years.	1	Nos	SEOC					
4	Manpower at SEOC, DEOCs & TEOCs								
3.01	Supervisor cum telecom specialist at SEOC for Year 1	1	Nos	SEOC			0	0	
3.02	Supervisor cum telecom specialist at SEOC for Year 2	1	Nos	SEOC			0	0	

Item Number	Description of Equipment	Quantity estimated but may be more or less	Unit	Location	Estimated Rate in Rs.	GST		Total amount according to estimated quantities	
						Applicable Percentage (%)	Amount in INR	In Fig	In Words
3.03	Warning control staff at SEOC for year 1	12	Nos	SEOC			0	0	
3.04	Warning control staff at SEOC for year 2	12	Nos	SEOC			0	0	
3.05	GIS expert at SEOC for Year 1	1	Nos	SEOC			0	0	
3.06	GIS expert at SEOC for Year 2	1	Nos	SEOC			0	0	
3.07	Supervisor cum telecom specialist at DEOC for Year 1	15	Nos	DEOC			0	0	
3.08	Supervisor cum telecom specialist at DEOC for Year 2	15	Nos	DEOC			0	0	
3.09	IT equipment operations and Warning control staff at TEOC for Year 1	26	Nos	TEOC			0	0	
3.1	IT equipment operations and Warning control staff at TEOC for Year 2	26	Nos	TEOC			0	0	
	Total Amount for Schedule-5 without Taxes				0.00	Total Amount for Schedule-5 Including Taxes			0.00
	Total Amount for Schedule No. 5 (without Taxes) in words								
	Total Amount for Schedule No. 5 (including								

Item Number	Description of Equipment	Quantity estimated but may be more or less	Unit	Location	Estimated Rate in Rs.	GST		Total amount according to estimated quantities	
						Applicable Percentage (%)	Amount in INR	In Fig	In Words
	taxes) in words								
		Name of Bidder							
		Signature of Bidder							
	All rates and prices shall be specified in Rs. only in accordance with ITB 18.1.								

Note: Please refer to the BoQ format in www.nprocure.com

Appendix to Financial Part Schedule No 6

Schedule No. 6. All-inclusive Annual Maintenance Contract charges / year for 3 years post initial 24 months of operations after commissioning of project (3RD, 4TH and 5TH of operation)

Item Number	Description of Equipment	Quantity estimated but may be more or less	Unit	Estimated Rate in Rs.	GST		Total amount according to estimated quantities	
					Applicable Percentage (%)	Amount in INR	In Fig	In Words
1	ICT Equipment including EWDS & VSAT			1	2	3=(1)x(2)	4=1+3	
1.01	As per items given under Schedule No.2, BOQ shall cover the total charges for Annual Maintenance Contract of all equipment ,VSAT & Siren systems , Software systems , entire ICT Infrastructure, Electrical Infrastructure, Civil works & Mechanical Pole, Tower Structures post commissioning of the Project for Year 3	1	Lot			0	0	
1.02	As per items given under Schedule No.2, BOQ shall cover the total charges for Annual Maintenance Contract of all equipment ,VSAT & Siren systems , Software systems , entire ICT Infrastructure, Electrical Infrastructure, Civil works & Mechanical Pole, Tower Structures post commissioning of the Project for Year 4	1	Lot			0	0	

Item Number	Description of Equipment	Quantity estimated but may be more or less	Unit	Estimated Rate in Rs.	GST		Total amount according to estimated quantities	
					Applicable Percentage (%)	Amount in INR	In Fig	In Words
1.03	As per items given under Schedule No.2, BOQ shall cover the total charges for Annual Maintenance Contract of all equipment ,VSAT & Siren systems , Software systems , entire ICT Infrastructure, Electrical Infrastructure, Civil works & Mechanical Pole, Tower Structures post commissioning of the Project for Year 5	1	Lot			0	0	
2	Other Office work under AMC					0	0	
2.01	Group SMS Charges The cost of sending up to 100,000 text SMS (group -based SMS) and 25,000 Voice SMS per annum, For Year 3							
2.02	Group SMS Charges The cost of sending up to 100,000 text SMS (group -based SMS) and 25,000 Voice SMS per annum, For Year 4							
2.03	Group SMS Charges The cost of sending up to 100,000 text SMS (group -based SMS) and 25,000 Voice SMS per annum, For Year 5							
2.04	SEOC: Diesel Charges for DG set (3 Liter per hour) say 2 hrs Power cut per day = 3 liter x 2 hrs x30 days = 180 Liters per month for Year 3	180	Liter/Month			0	0	

Item Number	Description of Equipment	Quantity estimated but may be more or less	Unit	Estimated Rate in Rs.	GST		Total amount according to estimated quantities	
					Applicable Percentage (%)	Amount in INR	In Fig	In Words
2.05	SEOC: Diesel Charges for DG set (3 Liter per hour) say 2 hrs Power cut per day = 3 liter x 2 hrs x30 days = 180 Liters per month for Year 4	180	Liter/Month			0	0	
2.06	SEOC: Diesel Charges for DG set (3 Liter per hour) say 2 hrs Power cut per day = 3 liter x 2 hrs x30 days = 180 Liters per month for Year 5	180	Liter/Month			0	0	
2.07	DEOC: Diesel Charges for DG set (2 Liter per hour)say 4 hrs Power cut per day = 2 liter x 4hrs x30 days= 240 Liter per month x 11 Districts; for Year 3	2640	Liter/Month			0	0	
2.08	DEOC: Diesel Charges for DG set (2 Liter per hour) say 4 hrs Power cut per day = 2 liter x 4hrs x30 days= 240 Liter per month x 11 Districts; for Year 4	2640	Liter/Month			0	0	
2.09	DEOC: Diesel Charges for DG set (2 Liter per hour) say 4 hrs Power cut per day = 2 liter x 4hrs x30 days= 240 Liter per month x 11 Districts; for Year 5	2640	Liter/Month			0	0	

Item Number	Description of Equipment	Quantity estimated but may be more or less	Unit	Estimated Rate in Rs.	GST		Total amount according to estimated quantities	
					Applicable Percentage (%)	Amount in INR	In Fig	In Words
2.1	TEOC: Diesel Charges for DG set (2 Liter per hour) say 8 hrs Power cut per day = 2 liter x 8 hrs x30 days x 1 month= 480 Liter per month x 20 Talukas; for Year 3	9600	Liter/Month			0	0	
2.11	TEOC: Diesel Charges for DG set (2 Liter per hour) say 8 hrs Power cut per day = 2 liter x 8 hrs x30 days x 1 month= 480 Liter per month x 20 Talukas; for Year 4	9600	Liter/Month			0	0	
2.12	TEOC: Diesel Charges for DG set (2 Liter per hour) say 8 hrs Power cut per day = 2 liter x 8 hrs x30 days x 1 month= 480 Liter per month x 20 Talukas; for Year 5	9600	Liter/Month			0	0	
2.13	All EOCs: paper, ink cartridges, lamps and tube lights etc. painting of towers etc. as per requirements for Year 3	1	Lot			0	0	
2.14	All EOCs: paper, ink cartridges, lamps and tube lights etc. painting of towers etc. as per requirements for Year 4	1	Lot			0	0	
2.15	All EOCs: paper, ink cartridges, lamps and tube lights etc. painting of towers etc. as per requirements for Year 5	1	Lot			0	0	
3	Manpower at SEOC, DEOCs & TEOCs							

Item Number	Description of Equipment	Quantity estimated but may be more or less	Unit	Estimated Rate in Rs.	GST		Total amount according to estimated quantities	
					Applicable Percentage (%)	Amount in INR	In Fig	In Words
3.01	Communications expert at SEOC for Year 3	1	Nos			0	0	
3.02	Communications expert at SEOC for Year 4	1	Nos			0	0	
3.03	Communications expert at SEOC for Year 5	1	Nos			0	0	
3.04	IT expert at SEOC for Year 3	1	Nos			0	0	
3.05	IT expert at SEOC for Year 4	1	Nos			0	0	
3.06	IT expert at SEOC for Year 5	1	Nos			0	0	
3.07	Warning control staff at SEOC for Year 3	1	Nos			0	0	
3.08	Warning control staff at SEOC for Year 4	1	Nos			0	0	
3.09	Warning control staff at SEOC for Year 5	1	Nos			0	0	
3.1	Communications and IT support staff at DEOC for year 3	15	Nos			0	0	
3.11	Communications and IT support staff at DEOC for year 4	15	Nos			0	0	
3.12	Communications and IT support staff at DEOC for year 5	15	Nos			0	0	
3.13	Communications and IT support staff at TEOC for Year 3	26	Nos			0	0	
3.14	Communications and IT support staff at TEOC for Year 4	26	Nos			0	0	
3.15	Communications and IT support staff at TEOC for Year 5	26	Nos			0	0	
Total Amount for Schedule-6 without Taxes				0.00	Total Amount for Schedule-6 Including Taxes			0.00
	Total Amount for Schedule No. 6 (without							

Item Number	Description of Equipment	Quantity estimated but may be more or less	Unit	Estimated Rate in Rs.	GST		Total amount according to estimated quantities	
					Applicable Percentage (%)	Amount in INR	In Fig	In Words
	Taxes) in words							
	Total Amount for Schedule No. 6 (including taxes) in words							
	Name of Bidder							
	Signature of Bidder							

All rates and prices shall be specified in Rs. only in accordance with ITB 18.1.

Appendix to Financial Part Schedule No 7
Schedule No. 7. Grand summary of schedules 1 to 6

Schedule no. 7 Grand Summary (Schedule Nos. 1 to 6)			
S. No.	Individual Schedule Cost	Total amount according to estimated quantities (In Fig)	
		without Taxes	Including Taxes
1	Schedule No.1 Total amount according to estimated quantities	NA	NA
2	Schedule No.2	0.00	0.00

	Total amount according to estimated quantities		
3	Schedule No.3 Total amount according to estimated quantities	0.00	0.00
4	Schedule No.4 Total amount according to estimated quantities	0.00	0.00
5	Schedule No.5 Total amount according to estimated quantities	0.00	0.00
6	Schedule No.6 Total amount according to estimated quantities	0.00	0.00
	Grand Total	0.00	0.00
	Grand Total (without Taxes) in words		
	Grand Total (including taxes) in words		
	Name of Bidder Signature of Bidder		

All rates and prices shall be specified in Rs. only in accordance with ITB 18.1.

Appendix to Financial Part Schedule No 8

Schedule No. 8. Recommended spare parts for operations beyond first 60 months of operations post commissioning of infrastructure

Item Number	Description of Equipment / Spare parts (Beyond 5 years & Up to 10 years from commissioning of the infrastructure)	Estimated Quantity (Nos.)	Unit Cost	Estimated Rate in Rs.	GST		Total amount according to estimated quantities
					Applicable Percentage (%)	Amount in INR	In Fig
		1	2	3=(1)x(2)	4	5= (3)x(4)	6= (3)+(5)
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							

Item Number	Description of Equipment / Spare parts (Beyond 5 years & Up to 10 years from commissioning of the infrastructure)	Estimated Quantity (Nos.)	Unit Cost	Estimated Rate in Rs.	GST		Total amount according to estimated quantities
					Applicable Percentage (%)	Amount in INR	In Fig
		1	2	3=(1)x(2)	4	5= (3)x(4)	6= (3)+(5)
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
Total Amount for Schedule-8 without Taxes				0.00	Total Amount for Schedule-5 Including Taxes		0.00
	Total Amount for Schedule No. 8 (without Taxes) in words						

Item Number	Description of Equipment / Spare parts (Beyond 5 years & Up to 10 years from commissioning of the infrastructure)	Estimated Quantity (Nos.)	Unit Cost	Estimated Rate in Rs.	GST		Total amount according to estimated quantities
					Applicable Percentage (%)	Amount in INR	In Fig
		1	2	3=(1)x(2)	4	5= (3)x(4)	6= (3)+(5)
	Total Amount for Schedule No. 8 (including taxes) in words						
	Name of Bidder Signature of Bidder						

All rates and prices shall be specified in Rs. only in accordance with ITB 18.1.

Section V. Eligible Countries

Eligibility for the Provision of Goods, Works and Non-Consulting Services in Bank-Financed Procurement

In reference to ITB 4.8 and 5.1, for the information of the Bidders, at the present time firms, goods and services from the following countries are excluded from this Bidding process:

Under ITB 4.8 (a) and 5.1: *None*

Under ITB 4.8 (b) and 5.1: *None*

Section VI. Employer's Requirements

**Technical Requirements of The Early Warning Dissemination System (EWDS) and
Emergency Operations Centres (together titled as Infrastructure)**

**(Including Technical Requirements, Implementation Schedule, System Inventory Tables,
Background and Informational Materials)**

TECHNICAL REQUIREMENTS

Background

1. The Purchaser

Gujarat State Disaster Management Authority (GSDMA), Block No. 11, 5th Floor, Udyog Bhavan, Gandhinagar- 382011, Gujarat, India

2. PMU NCRMP, NDMA, New Delhi and Government of Gujarat

NDMA, as the apex body, is mandated to lay down the policies, plans and guidelines for Disaster Management to ensure timely and effective response to disasters. For Implementation of the NCRMP, a Project Management Unit (PMU) has been set up at NDMA, headed by Project Director and supported by expert and specialist with relevant experience and administrative staff.

The Department of Revenue (Disaster Management), Government of Gujarat is the administrative department for management of disasters at the state level. At the district level, Collector is the District Relief Officer and Disaster Manager. Taluka is the lowest unit of relief administration. Taluka Revenue Officer monitors the relief administration at this level.

3. Business Objectives of the Purchaser

- The objective is to implement Last Mile Connectivity components under NCRMP Phase II, in the state of Gujarat. The Project is to be rolled out in 26 Coastal Talukas spread over 15 districts of the state.
- To reduce the vulnerability of coastal communities by addressing the existing gap in dissemination of warning (s) to the communities in Coastal Districts of Gujarat
- Installation and operation of disaster Early Warning Dissemination System (EWDS) facilitating the state and/or taluka level control centers to send alert and warning messages directly to the vulnerable people in coastal villages, tourist beaches, salt panes and fish landing centers
- To provide, reliable, responsive and dedicated Communication links at State, District and Taluka level Emergency Operations Center (EOC) for effective disaster management.

The EWDS that will be based on reliable and cost-effective and redundant Communication Technologies, shall cover all vulnerable locations in coastal talukas for mass alert notification to people living in the area, in the coastal belt extending up to 10 Kms from Sea shore. However, the State, District and Taluka EOC(s) could fall beyond 10 kms from Sea shore line.

4. Demographic Details-Gujarat

Gujarat is one of the 29 states of India and is situated on the western coast of the Indian Peninsula. The state is bound by the Arabian Sea on the west, Pakistan and Rajasthan in the

north and northeast, Madhya Pradesh in the southeast and Maharashtra in the south. Based on physiology and culture, Gujarat can be divided into several regions like Kutch, Saurashtra, Kathiawad, and Northeast Gujarat etc. The capital, Gandhinagar is a planned city. Gujarat has an area of 196,030 km² (75,686 sq. miles) with the longest coast line amongst all Indian states (24% of Indian sea coast) 1,600 kilometers (990 mi), dotted with 41 ports consisting of one major, 11 intermediate and 29 minor ports. The Population of the state, as per Census (2011), is over 60 Million.

5. Geographic location Map of Gujarat in India

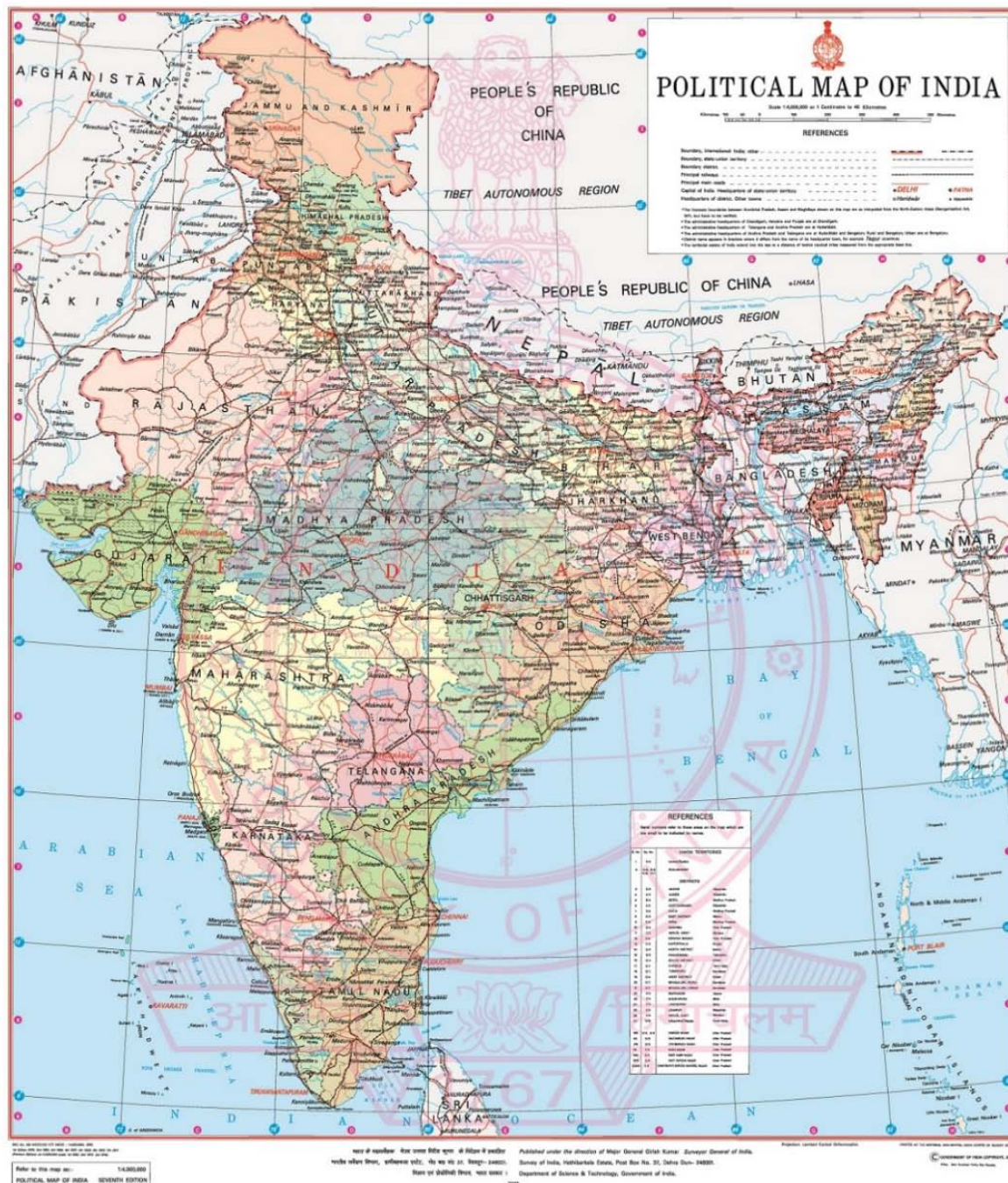


Figure-1: Map of India showing location of Gujarat state

The following map depicts the Districts and Blocks in Gujarat state:

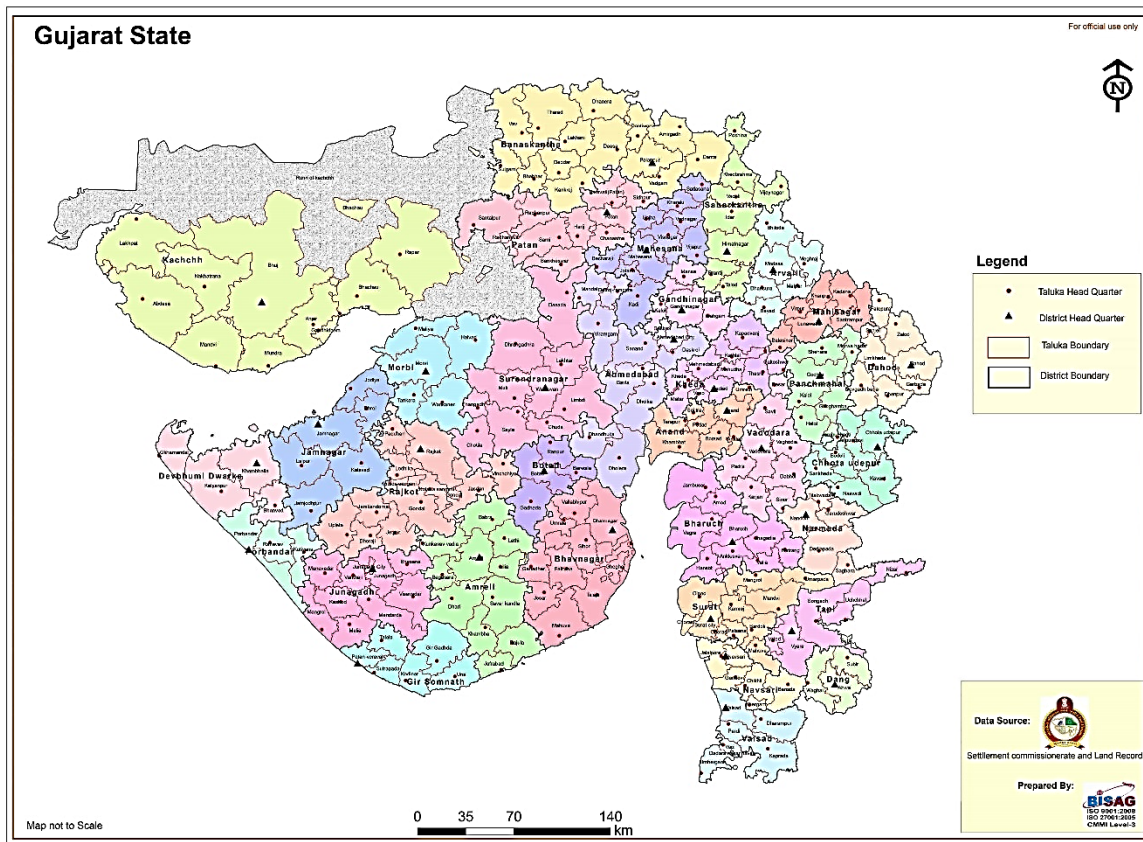


Figure-2: Gujarat state showing Taluka and District boundaries and headquarter towns/cities

Locations where Emergency Operations Centers (EOC) are to be set-up:

EOCs are to be set-up / upgraded at:

- 1 (One) State EOC at Gandhinagar
- 15 (fifteen) coastal districts and
- 26 (twenty-six) vulnerable coastal talukas

Location details of all above mentioned sites are given in Attachment 5

6. Expansion of Acronyms and explanation of terms used in technical requirements

Sr. No.	Acronym / Technical terms	Expansion / information
1	GSDMA	Gujarat State Disaster Management Association.
2	GSWAN	Gujarat State Wide Area Network
3	BLOCK	State is divided into districts and districts are divided in to Blocks (Taluka)
4	CAP	Common Alerting Protocol
5	CDMA	Code Division Multiple Access
6	CS	Cyclone Shelter
7	CPE	Customer Premises Equipment
8	DEOC	District Emergency Operation Center
9	EOC	Emergency Operations Center
10	ETSI	European Telecommunications Standards Institute
11	EWDS	Early Warning Dissemination System
12	FLC	Fish Landing Center
13	GSM	Global System for Mobiles
14	GPRS	General Packet Radio Switching
15	GIS	Geographic Information system
16	HF	High Frequency
17	HTTP	Hyper Text Transfer Protocol
18	ICT	Information and Communication Technologies
19	IEEE	Institute of Electrical and Electronics Engineers
20	IMD	Indian Meteorological Department
21	INMARSATAT	International Maritime Satellite Organization
22	INSAT	Indian National Satellite
23	IP	Internet Protocol
24	ISP	Internet Service Provider
25	IT	Information Technology
26	KVA	Kilo Volt Ampere
27	LAN	Local Area Network

28	LCD	Liquid Crystal Display
29	LMC	Last Mile Connectivity
30	MPCS	Multi-Purpose Cyclone Shelters
31	MPLS	Multi-Protocol Label Switching
32	NCRMP	National Cyclone Risk Mitigation Project
33	NDMA	National Disaster Management Authority
34	NDCN	National Disaster Communication Network
35	NIC	Network Interface Card / National Informatics Centre
36	PSTN	Public Switched Telephone Network
37	PMU	Project Monitoring Unit
38	RF	Radio Frequency
39	RTU	Remote Terminal Unit
40	SBMVDT	Satellite Based Mobile Voice and Data Terminal
41	SCADA	Supervisory Control And Data Acquisition
42	SIM	Subscriber Identity Module
43	SMS	Short Message Service
44	SEOC	State Emergency Operation Center
45	SWAN	State Wide Area Network
46	TCP/IP	Transmission Control Protocol / Internet Protocol
47	TEOC	Taluka Emergency Operation Center
48	TSP	Telecom Service Provider
49	UCI	Universal Communication Interface
50	UMTS	Universal Mobile Telecommunication System
51	VPN	Virtual Private Network
52	VSAT	Very Small Aperture Terminal
53	WMO	World Meteorological Organization

Business Function and Performance Requirements

7. Business requirements to be met by the system

Component A of the NCRMP project i.e. EWDS, addresses a key part in relation to the issuing disaster early warning dissemination to vulnerable communities residing in Coastal areas. The benefits from the EWDS would be realized only if it leads to connectivity up to the Last Mile (up to locations of people living / working in coastal region). The ability to reach all vulnerable Citizens would enable dissemination of warnings to everyone and this information would result in minimizing the loss of human lives due to Cyclones and other meteorological disasters.

The Last Mile Connectivity aims at information dissemination from the State, and Taluka Level Emergency Operations Centers (EOC) to vulnerable Communities and similarly to establish a response link from communities to State, District and Taluka level EOCs, ensuring that the Last Man living nearest to the sea is well informed of actions to be taken to save themselves from approaching Cyclone and EOCs are aware of ground situation in vulnerable areas.

It is envisaged that connectivity amongst EOCs will be achieved by using different Information and Communications Technologies (ICT) viz.:

- a. Cell phones and land line telephones (fixed telephones)
- b. State Wide Area Network (SWAN) based on Multi-Protocol Label Switching (MPLS) technology
- c. Satellite-communications based handheld phones
- d. Satellite communications based Very Small Aperture Terminal (VSAT)
- e. Group Messaging system using cell phone networks, and

Last mile connectivity with people in vulnerable locations using:

- a. Cell phones and land line telephones (fixed telephones)
- b. Satellite-communications based handheld phones (carried by Government officials to disaster locations)
- c. Satellite communications based Very Small Aperture Terminal (VSAT)
- d. Remotely controlled alert tower siren / audio warning Systems

Use of above technologies will ensure that the warnings about the upcoming cyclones can be disseminated to Coastal Communities of Gujarat in an effective manner. VSATs are proposed at all EOCs for voice and data communications. VSATs planned at EWDS locations including tourist sea beaches, Fish Landing Centers (FLC) and salt panes will be used mainly to monitor control RTUs and will also provide last mile voice and data links. Warning messages will be used to further disseminate to fishermen at sea using existing analogue / digital Very High Frequency (VHF) radio links between FLCs / Coast Guard stations and fishing boats.

Satellite Based handheld phones will provide voice connectivity from disaster locations with State, District and Taluka level EOCs as well as with responsible senior government officers, when normal communication links are affected (damaged) due to cyclonic winds.

The Alert Sirens are to be installed at vulnerable villages, tourist beach locations, FLCs and

salt panes. Sirens will be preferably installed on 7-meter-high poles, on suitable Govt. buildings if available near proposed sites and on self-supporting towers of 15-meter height, at all other locations. Alert sirens and audio warning systems shall be activated from the State Emergency Operation center (SEOC) as well as from concerned TEOC locations (only in respect of EWDS installed within the respective Taluka boundaries), as a back-up facility.

8. Functional Performance Requirements of the System

The communication strategy of this NCRMP aims to cover the early warning dissemination applicable to cyclone and other hydro metrological disasters. Main aim of setting-up of communication infrastructure facility is to save the human and cattle lives and minimize the damages to movable property by the mitigation process of Early Warning Dissemination System (EWDS). An integrated technical approach is proposed for EWDS and ICT based systems at EOCs at State, District and Taluka levels which are necessary for remote monitoring and control of EWDS as well as to facilitate communications amongst stake holders during all stages (pre, during and post) of disasters situations. All the modern communication technologies were evaluated, and suitable ones are proposed in this RFB. The selected technologies are robust and will operate in redundancy mode and are proposed for necessary disaster response activities and use of all stake holders.

Proposed network architecture (as shown in figure-3 below) is based on use of redundant network resources and technologies and will utilize:

- a. Fixed line Telephones (landline) for voice communications amongst all stake holders
- b. Cell phone network for voice connectivity, text messaging amongst all stake holders as well as to monitor and control operation of alert and warning towers
- c. Gujarat State Wide Area Network (GSWAN) to support voice and data connectivity (including E-mail and Videoconferencing) between state, district and taluka level EOCs as well as other state government departments, responsible to support disaster management activities
- d. Broadband Internet links as back-up to GSWAN
- e. Inmarsat satellite communications network to support voice and very low speed data connectivity using handheld satellite phones to operate from any location within the state or other parts of India. These phones will operate, even in case of public telecommunications networks is non-functional, due to effect of disasters
- f. VSAT based satellite communications network for voice and data connectivity from all remote locations and for monitoring and control of alert and warning towers. VSAT links will also provide videoconferencing facility between EOCs
- g. Group messaging system at state EOC based on cell phone network. These messages will be sent to first responders, other important government functionaries and stake holders such as registered Non-Governmental Organisations (NGO) etc.
- h. Alert and siren tower monitoring and control system at state EOC and Taluka EOCs

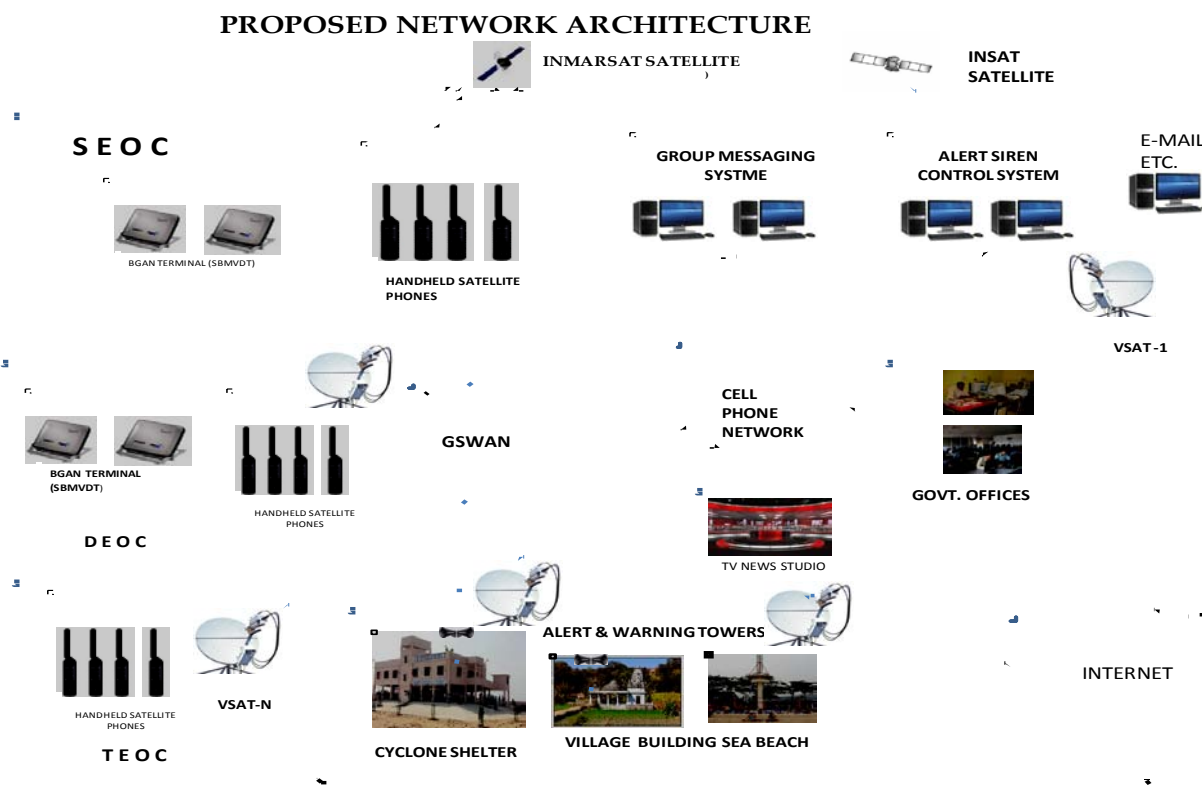


Figure-3: Communications Network architecture

Connectivity matrix for communication facilities with proposed technological and physical redundancies will be as given in following table. Reliability levels for voice and data connectivity better than 99.5 % are likely to be achieved

Sr. No.	Communications facility	Primary network resource	First Back-up	Second Back-up	Additional Back-up
1	Voice	Land line and cell phone network	GSWAN in case of Government offices / EOCs	Voice over IP using Internet links / VSAT based Virtual Private Network	Inmarsat handheld phones
2	Data / e-mails/ Videoconferencing	GSWAN	Internet links	VSAT	
3	Text messages	Cell phones	Inmarsat phones		

4	Video-conferencing	GSWAN	Internet links	VSAT	
5	Group alerts / Warning message delivery	SMS sent to cell phones	Inmarsat handheld phones		
6	Warning dissemination system monitoring / control	Cell phone network	VSAT		
7	Warning message delivery to siren / audio system	Cell phone network	VSAT		

Functional Guarantees mentioned in the Section III clause 1.4 must be referred.

9. Communications systems and data network resources

9.1 Telephones and cell phones:

Landline (fixed) telephones and cell phones for use in EOCs and by government departments, will be procured by respective government agencies. Similarly, alert and warning messages will be sent to government officials / other responsible stake holders for disaster response activities on their cell phones from State EOC, using group messaging system. The public cell phone network will also be useful for monitoring and control of alert siren and audio warning system.

9.2 Satellite based handheld phones

Inmarsat satellite based handheld phones (Isat-2) are made available in India by Bharat Sanchar Nigam Limited (BSNL) and the company also offers voice and data services for satellite phone users. The license for use of these phones will be in the name of GSDMA. However, the contractor will take all necessary action to get the license from Department of Telecommunications. The contractor will also procure, and supply required number of handsets for use of state government staff.

9.3 Bandwidth on GSWAN & Internet

Introduction

The required Bandwidth for voice and data intercommunications between different EOCs at SEOC, DEOCs is already provided by GSWAN at State, District and Taluka levels. The Bidder is required to do the necessary cabling for interconnection between respective EOC from the nearest GSWAN Point of Presence (PoP).

To have back bone IP connectivity for SEOC, DEOC and TEOC, the following Bandwidth requirements are proposed at State, District and Taluka levels. The bidder needs to procure the bandwidth with Internet Service Provider. GSDMA will sign the contract with ISP for the

bandwidth. Bidder shall ensure Internet bandwidth as specified in following table at SEOC and DEOC.

Internet Bandwidth requirement:

S.No	Location	Number of Locations	IP Bandwidth requirement
1	SEOC	1	Dedicated 10 Mbps expandable to 20 Mbps
2	DEOC	15	Dedicated 2 Mbps expandable to 4 Mbps
3	TEOC	26	Dedicated 1 Mbps expandable to 2 Mbps

Scope of Work in respect of Internet bandwidth links:

- a. Supply, installation, testing, commissioning and maintenance from the date of Successful Operational Acceptance of Bandwidth required at State Level, District Level and at Taluka Level.
- b. Internet shall be used to send/ receive Emails to/from responsible Officers, other stake holders, Media Channels TV/ Radio stations.
- c. Internet may also be used for audio and video conferencing in case of failure of GSWAN links
- d. The bidder shall provide an NMS tool to allow monitoring of status of all the links. The firewall and Intrusion Prevention System (IPS) shall be required only at SEOC. The bidder is required to connect with the nearest GSWAN Point of Presence (POP) at State HQ, District HQ and Taluka HQ.
- e. The bidder shall provide the complete details about the last mile connectivity being offered for the identified above locations
- f. The bidder shall propose fully resilient and self-healing network architecture for all the above-mentioned links including last mile connectivity.
- g. The price quoted shall include all the necessary equipment viz., routers, switches, firewall, modems MUX, NMS and any other equipment for successful operation of the network and to achieve the desired SLA parameters (Network Service availability of 99.5%)
- h. The bidder shall give the list of items with their configurations and specifications, make and model No. along with quantity that are being proposed in the network.
- i. The Modem bank, Router and other network elements shall be securely installed in a Standard 19" rack.
- j. Any item not specified in the BOQ but essential for successful operation of the network indicated in the scope of work shall be supplied by the bidder

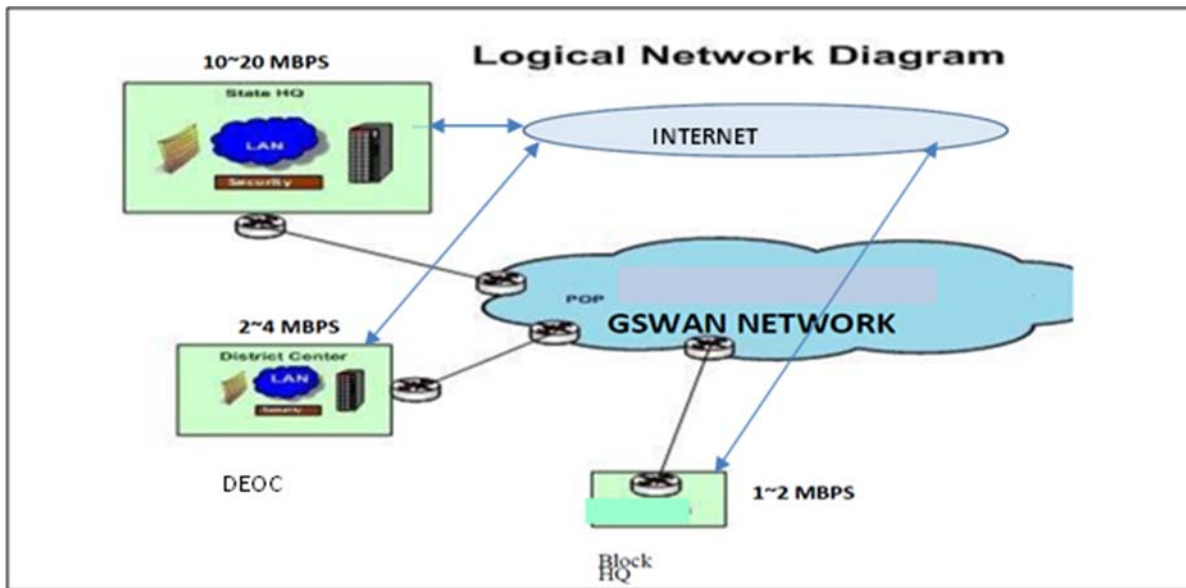


Figure-4: GSWAN and Internet network (links) with EOCs

k. Network Management System (NMS):

The Telecom Service Provider shall do proactive monitoring and fault management of the network on an End-to-End basis remotely from its own Network Operations Center (NOC) and provide the following link wise report on monthly basis:

- Link downtime / Uptime analysis report.
- Traffic monitoring, bandwidth utilization report with committed information rate for all links and all ports
- Network availability reports as per Service Level Parameters defined.
- Throughput, Latency, Jitter for all the locations
- The Service Provider shall allocate to NDMA/GSDMA/SEOC, one User-id & Password for web access to monitor in real time all network statistics and reports as mentioned above.

l. Security on Network

- The network should be fully secured and should fulfill the security requirements as per the IT-Act applicable at the time of implementation
- The Network should have safeguards and security against unauthorized access, tapping and sniffing of data on the WAN.
- The operation & configuration of routers, last mile equipment etc. will be responsibility of service provider at all locations

9.4 Group Messaging:

Group Messaging is a warning and alerting system based on text or voice messaging via cell phone network, for effective communication with first responders and senior government functionaries responsible for disaster management in an emergency or

disaster situation. Group Messaging system will provide advance intimation to government officials to initiate preventive actions to minimise likely of human lives due to impending disaster.

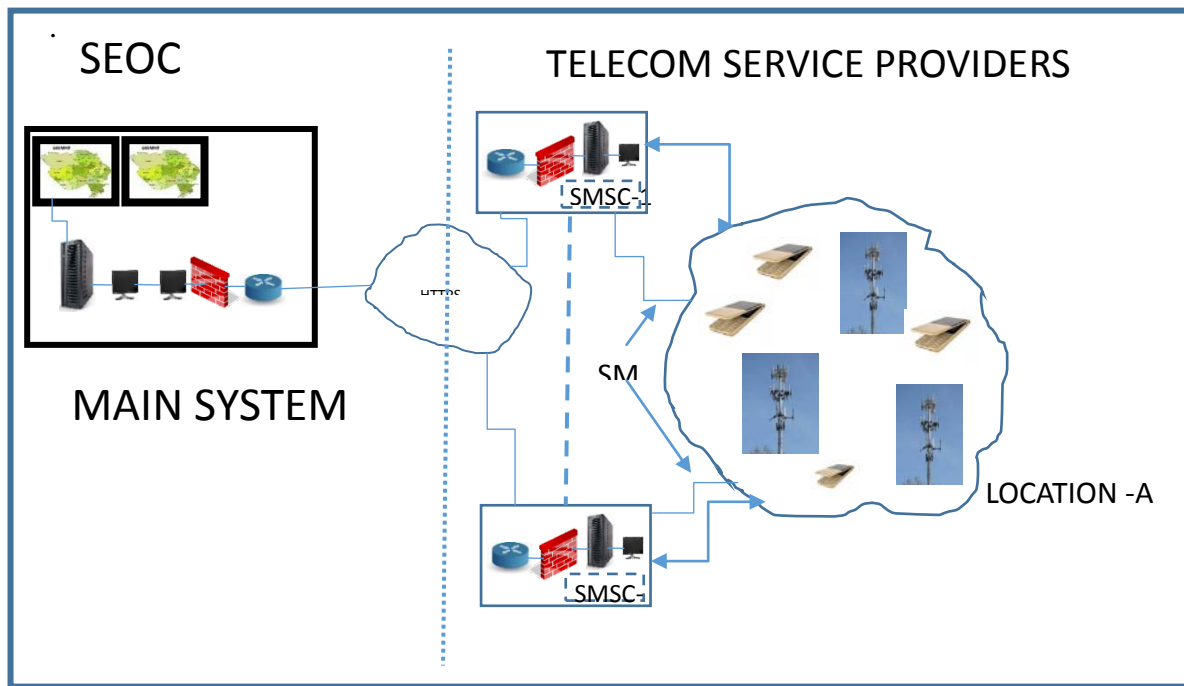


Figure-5: Message dissemination network architecture

Group Alert-based Message Solution sends messages in the form of text SMS / Voice messages to pre-determined set of phone numbers. SMS and Voice messages will be sent in 3 languages Gujarati, English and Hindi so that the all members of the community in vulnerable areas can understand the same. Such messages will also be sent to Media Broadcast Stations (TV and radio) which will broadcast the said warnings on the AM/FM Radios & TV. Such a System will encompass Alerting / Notifying known individuals, simply by sending to a group database. In addition, a native mobile app must be made available for iPhone Operating System (iOS) and Android platform to send Group alerts.

Choice of channel to send messages will be determined by time to impact of the event. The system has to ensure effective communication before, during and after an emergency.

The Group messaging system shall be a Web based solution and shall be provided as one-time supply of redundant hardware and software with perpetual operating license. All components of the package shall be accessible through standard Web browser without any need of extra Client software. The web-based application Software shall be hosted centrally on a redundant server system at SEOC (with option for installation of redundant system at another secure location). The system software should also be stored on a cloud and it shall be possible to accessed through a secured Web Interface from SEOC or any other location for sending Group based alerts messages. In addition, a native mobile app must be made available for IOS and Android platform

The system shall be GUI based and able to send SMS and Voice messages to the predefined Mobile Nos. Such a System will encompass Alerting / Notifying known individuals, simply by sending to a group database.

It should also be possible to forward warning messages via alert Towers. The Media Broadcast Stations will be included in a dedicated group and will receive alert messages for dissemination via the AM / FM Radio stations, TV stations etc.

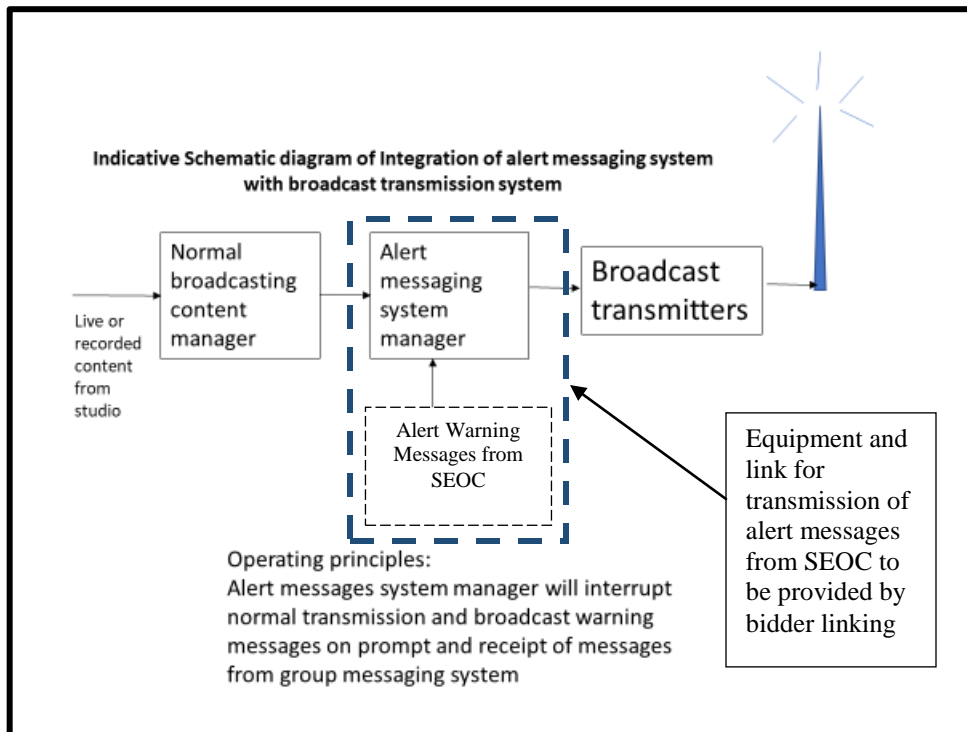
The bidder needs to tie up with Telecom Service providers for requirements for dissemination of group based alert messages.

Scope of Work for Group Messaging system:

- a) The Bidder shall submit a complete proposal for the supply, delivery, installation, commissioning and maintenance (2 years under warranty and 3 years under AMC from the date of Successful Operational Acceptance) of the Group Messaging system on a Web based Software
- b) The Bidder shall ensure the setting up of required IT infrastructure and integration at bidder's Data Center and TSP premises to work the solution on.
- c) The Bidder shall need to submit letter of agreement from TSP specifying compliance with the relevant functionality related to Group Messaging Solution
- d) Requirement Study, Customization and deployment of Web based Mass Messaging Application for sending the Group Based Messages
- e) The bidder shall update the mobile data of government officials, villagers, fishermen, tourist hotels etc. for Group Based Text & Voice SMS in consultation with the Purchaser on monthly basis.
- f) Integration with multiple channels systems: The proposed applications shall have capability to be integrated with the following:
 - ✓ Facebook/Twitter
 - ✓ CAP Compliant systems
 - ✓ SMS service providers
 - ✓ Mobile Apps
 - ✓ Sirens/PA systems

Note: Integration with transmission systems of organizations engaged in public Broadcast Radio operators in the region, DTH operators or similar other facilities, may be required in the future for direct transmission of alert messages. The bidder should clearly indicate whether the proposed system can subsequently be upgraded for this application and indicate budgetary costs for such a facility.

This functionality may be integrated as shown in following schematic diagram:



Note: The above Schematic diagram describes the main functionality of Alert messaging system for Public broadcast TV & Radio operators which are indicative in nature. The Bidder shall include an Interface card within the functionality of Alert messaging system manager for dissemination of alert messages via the AM / FM Radio stations, TV stations (Media Broadcast Stations).

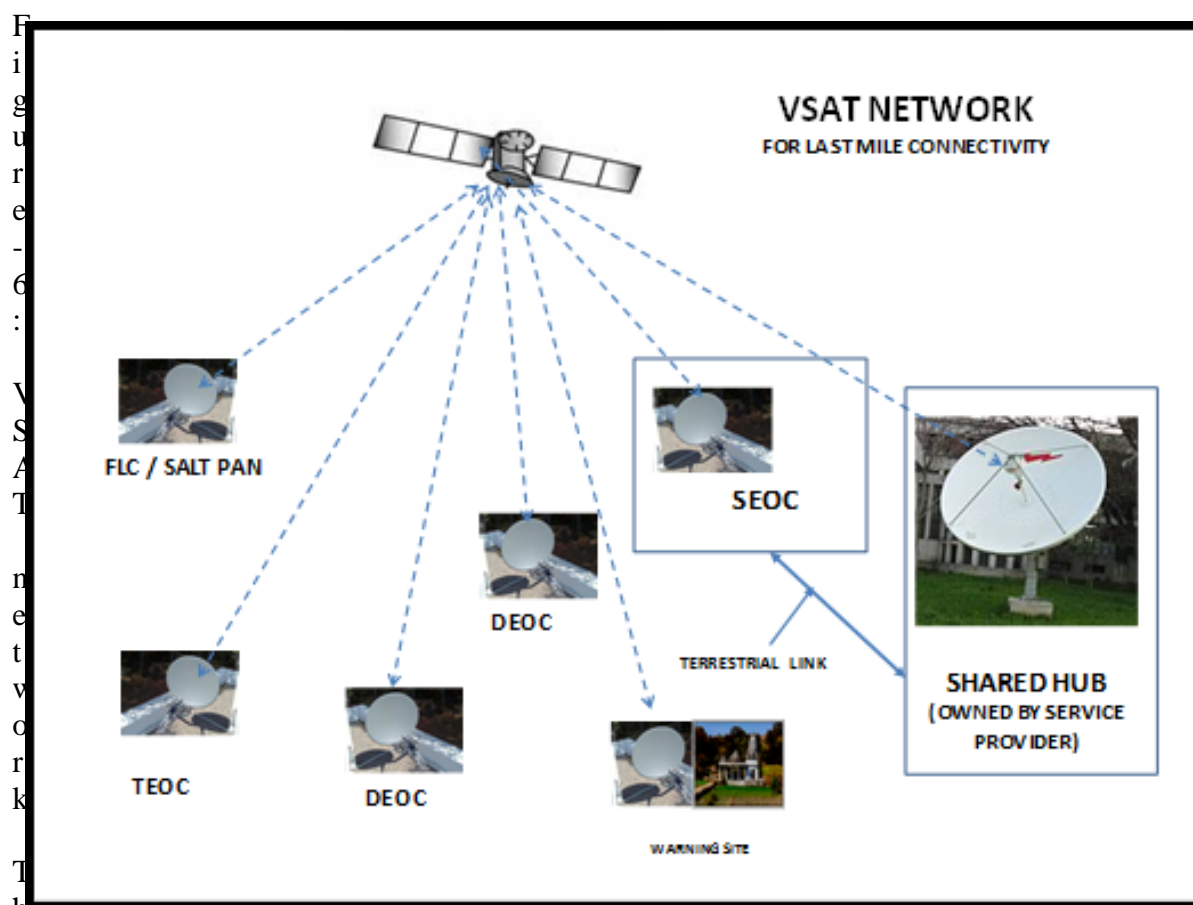
- g) The Bidder shall also highlight the required annual recurrent costs (e.g. software license renewal cost (if any), connectivity cost, additional cost from Telecom Operators and maintenance cost).
- h) Reliability and timeliness:
- ✓ The messaging Platform must support transmission of large-scale messages to multiple users in multiple mobile networks.
 - ✓ The messaging Platform must support acknowledgement based mobile messaging with guaranteed message delivery information.
 - ✓ The messaging Platform must give commitment to service levels with guaranteed delivery times
 - ✓ Secured & trusted environment:
 - ✓ All the above components must be delivered with redundant hardware and software (of the centrally located system) to ensure an uptime of 99.9%
- i) As part of the Transition-Out at the end of the term of the Contract (after operation period of 60 months from the date of commissioning), the Bidder will need to provide:
- ✓ All system information, data and content including message templates, archival data and distribution lists in a format suitable and approved by GSDMA.
 - ✓ Support for the migration of the complete solution to a new environment, if required.
 - ✓ It is the Bidder's responsibility to remove all the confidential information,

data and content owned by GSDMA / Gujarat State Government from bidder's infrastructure if any, integrated during installation, testing and commissioning stages in a secure way before commissioning of the Group Messaging System and all the cost for this activity will be borne by the Bidder

9.5 VSAT network

VSAT based voice and data network operating on Indian satellite will be leased from a licensed Telecom Service Provider (TSP). The network will operate in C or Extended C band frequencies for reliable operations even during heavy rains normally associated with cyclonic conditions.

VSATs will be installed at all EOCs, Multi-Purpose Cyclone Shelters (MPCS) and other locations where alert and warning towers are to be installed. VSAT links will be used for monitoring and control (SCADA) of systems installed at alert and warning towers. This network will also be used for transmission of warning audio messages from State and Taluka EOCs.



The contractor will select VSAT service operator for the project and will work out contract terms with the operators for supply, installation and maintenance of VSAT equipment as well as lease of necessary satellite spectrum. GSDMA will enter into contract with the service provider as per licensing conditions of VSAT services in India. However, the contractor will be responsible to ensure timely commissioning of VSAT network as well as satisfactory operations during initial 5 (five) years of operation of the network.

9.6 Alert Siren System:

The alert sirens will be installed at all vulnerable locations including:

1. Cyclone shelters,
2. Vulnerable villages and habitats,
3. Fish Landing centers,
4. Salt pans and
5. Popular Tourist Sea beaches.

It shall be possible to monitor and activate all sirens from SEOC as well as from selected Taluka HQ (TEOCs) as a redundancy path if State to Taluka communication back bone link fails.

The alert Sirens shall have interface for GSM / VSAT/ Internet Protocol (IP) etc., for activation from SEOC / TEOC. It should be possible to easily integrate Central Command Terminals at SEOC and TEOC of Early Warning Dissemination System (EWDS) with VSAT based National Disaster Communications Network (NDCN) planned by NDMA/ MHA as and when it is available in future.

The warning system will be in 3 tiers.

- a. Tier 1 is the State Emergency Operations Center- SEOC. It is the main command and control center located at an area of the state with least probability of an occurrence of a cyclone. There is only one SEOC (now) in the state. A back-up SEOC may be set-up in near future.
- b. Tier 2 is the Block (Taluka) Emergency Operations Center – TEOC. One TEOC is situated in each Taluka which monitors and controls RTUs only within its boundaries.
- c. Tier 3 is the Remote Terminal Unit (RTU) with Horn Speakers. These endpoints in the system are to be installed in areas vulnerable to cyclones. Presently these are proposed at vulnerable villages / towns, tourist locations/Sea Beaches, Fish Landing Centers (FLC) and salt pan locations.

The speaker Horns of Remote Terminal Unit (RTU) are to be installed on:

- a. A Galvanised Iron pipe of 7.0- meter height and suitable thickness to be installed on suitable government buildings wherever these are available at proposed locations. The pipe should be of suitable quality to carry load of horn speakers and should survive without any damage due to wind load of wind speed gusting 200.0 Kilometers/hour. Bidder should design the size of the pipe and its mounting structure to meet stability requirements under above mentioned wind conditions.
- b. 15.0-Meter-high self-supporting towers are to be erected on the ground at all other alert siren locations including tourist beaches where suitable government buildings are not available. These towers should be constructed using triangular tower sections of suitable dimensions or Spun Concrete material as specified with suitable foundation designed to meet survival criteria for the tower will be wind speed gusting up to 200.0 Kilometers/ hour

- c. The speaker system power output of Remote Terminal Unit (RTU) should be of 600 watts or more.
- d. The proposed Siren Pole and Tower shall be suitable to carry load of 100 KG weight of Horn speakers and associated equipment mounted over them

An alert will be in the form of:

- a. A siren sound
- b. A prerecorded announcement
- c. A live announcement

As already mentioned above, the SEOC controls all the RTUs whereas the TEOC will control only Remote Terminal Unit (RTU) in the same Taluka.

The SEOC shall be connected to all the TEOCs via VSAT based IP backbone and Gujarat State Wide Area Network (GSWAN) as back-up and to all the RTUs via the public cellular network and VSAT links. The TEOCs shall be connected to the RTU via the public cellular network and via VSAT link.

The SEOC can initiate an alert on an individual RTU, a group of RTUs, all RTU in a Taluka or all the RTUs in the state. To initiate an alert the SEOC can send the alert signal directly to the RTUs over the public cellular network and over the VSAT network.

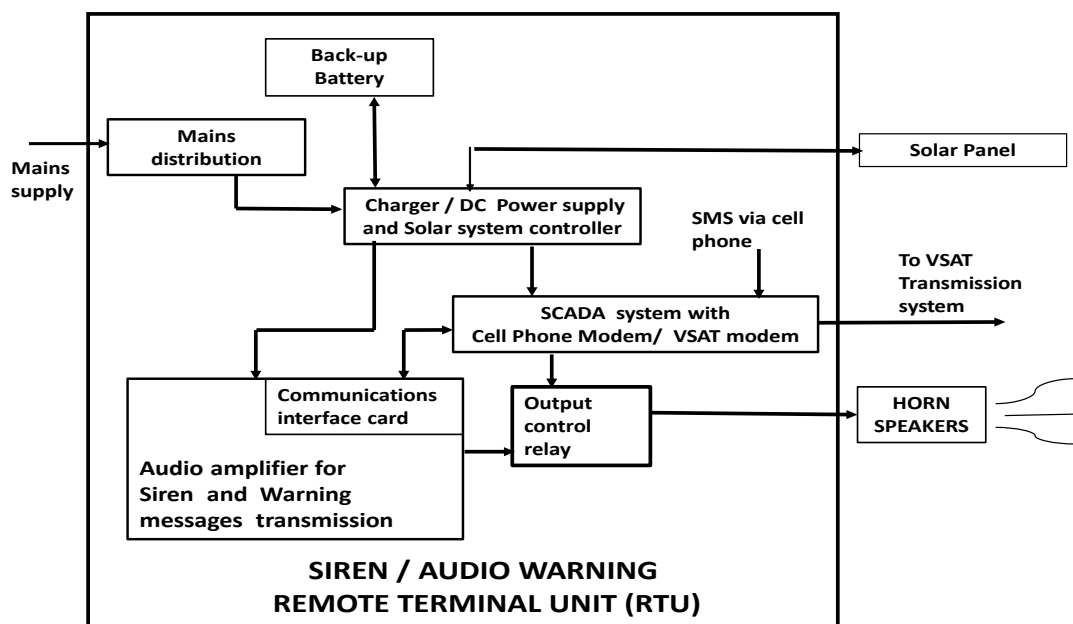
The TEOC can initiate an alert on an individual RTU, a group of RTUs in the Taluka or all the RTUs of the Taluka. To initiate an alert the TEOC can send the alert signal to the RTUs over the public cellular network and over the VSAT network. The SEOC will use existing GSWAN links for connection with TEOC. In addition, SEOC will also use Internet link for connectivity with TEOCs as first back-up and 512 Kbps symmetrical VSAT link as second back-up for control of RTUs. The bandwidth requirements at TEOC shall be Downlink – 512 Kbps Uplink – 512 Kbps on both Internet and VSAT network.

The operator can send alert and warning signals to the desired locations using a GIS based GUI software. At SEOC the software system is installed in hot-standby mode so that in the event of one computer being non-operational the other computer can be used.

The appropriate configuration of servers shall be supplied by the implementing agency to run the Group Messaging System, Alert and Warning System, NMS and other software Components smoothly.

9.7 Remote Terminal Unit (RTU)

Remote Terminal Unit (RTU) with Horn Speakers are to be installed in areas vulnerable to cyclones. Presently these are proposed at vulnerable villages / towns, tourist locations/Sea Beaches, Fish Landing Centers (FLC) and salt pan locations. There are 284 RTU units to be deployed in the vulnerable locations. RTU and Horn Speaker shall be capable of providing Audio Coverage in area of 1.5 Km radius. The schematic diagram of RTU as shown below:



The RTU should receive and decode warning instructions sent from SEOC or TEOC via the cellular Network (GSM/GPRS) or the VSAT network to either live or by activating prerecorded message and initiate broadcast of warning messages through the audio system. On receipt of a valid warning signal the RTU will play the alert message via high powered speakers for a pre- determined duration. The RTU to Control Station medium can be Cellular Network (GSM/ GPRS) and the VSAT network. As already explained in IFB document the Control Station will be more than one and these can be located anywhere e.g. SEOC and TEOC.

The SEOC controls all the RTUs whereas the TEOC will control only Remote Terminal Unit (RTU) in the same Taluka.

RTU should include high powered audio amplifier compatible to work with the Speaker Horn Array.

All the electronic unit housed within RTU shall consists of Communication Interface Card, VSAT & GSM modem, Solar power controller /Solar Hybrid Inverter and Loudspeaker Audio Power Amplifier with back-up battery should be housed in an IP 65 Stainless Steel Outdoor Cabinet with lock & key arrangement.

The RTU shall be robust & build to operate under all kinds of weather conditions, namely, high temperature, high humidity, Rain and salty environment.

This cabinet can be kept safely inside nearest government or public building such as the Cyclone Shelter Building or should be mounted sufficiently high from the ground level on 15-meter tower or 7- meter Pole planned at sea beaches & other vulnerable locations etc. so that they are out of reach of mischief makers.

The RTU shall consist of the following subsystem, namely:

- Input to RTU as Main Power Distribution, Back-up Battery (DC), Solar panel
- Power system controller/Solar Hybrid Inverter, (Main Power, Battery DC power & Solar Power)

- VSAT Modem & GSM Modem with SIM Card, which can be controlled remotely through SCADA
- Communication Interface card
- Audio amplifier
- Output of RTU—siren / audio warning through Horn speakers and to VSAT Network

The system should be capable of monitoring the RTU functionality remotely and provide automated reports for uptime and fault detection. Individual components of RTU should be monitored and faults should be detected and reported. System should also maintain logs of functionality checks and past uptime and downtime. A consolidated view of all the RTUs with uptime/ Fault – Performance parameters should be provided at SEOC.

10. Power supply system

Power supply system is the most critical component of the EWDS infrastructure. The system will have built in redundancy for high reliability. The system will include three power supply sources:

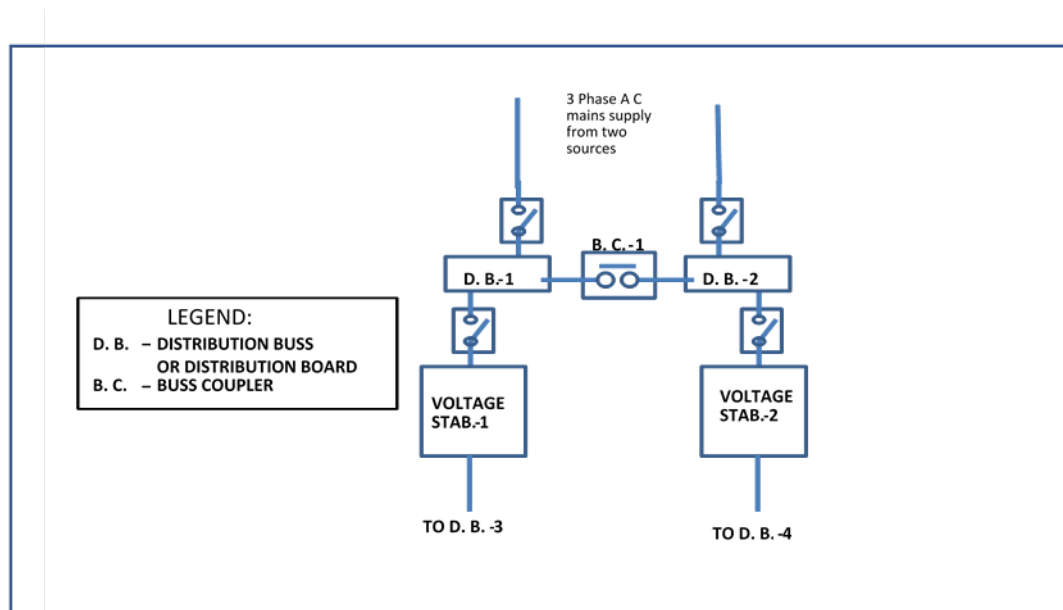


Figure-7: Mains stabilization and primary power distribution at SEOC

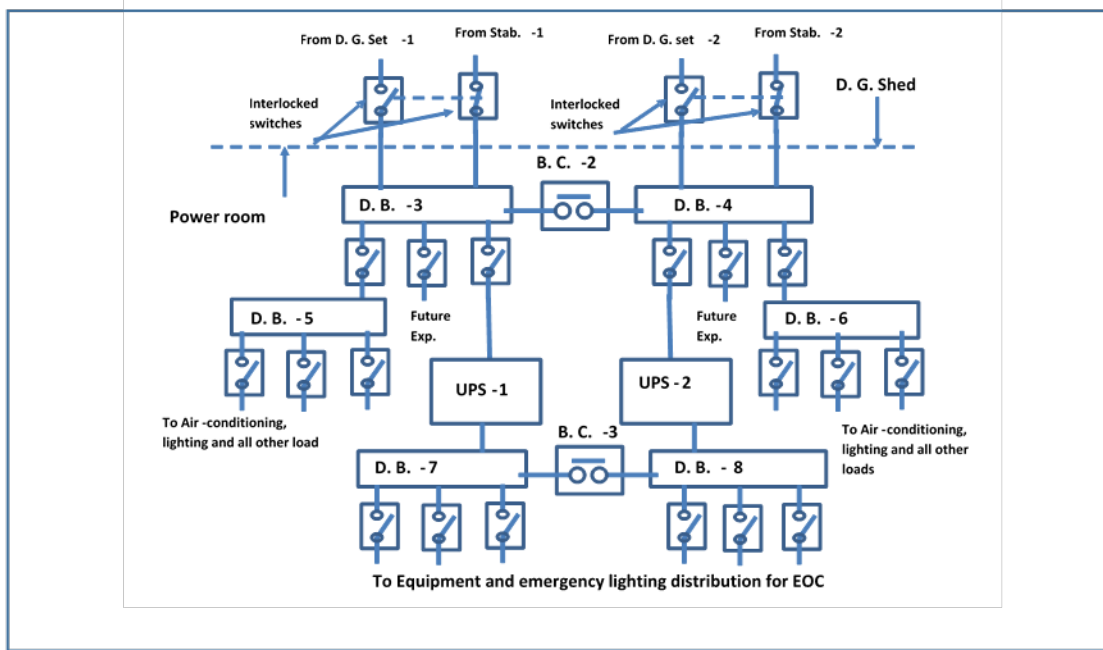


Figure-8: Redundant power supply distribution at SEOC

Sr. No.	Power supply source	Purpose
1	Commercial mains supply	Main power resource
2	Voltage stabilizers and Distribution switch boards	Regulation of mains voltage against input variations and distribution of mains as well as back-up power supplies to electrical and electronic equipments
3	Diesel Generator (DG) set	To provide power during extended mains failure (normally more than ½ hour to 8 days)
4	Uninterruptible Power System (UPS) consisting of Inverter and back-up batteries	Uninterrupted power source for all essential loads (IT and communication subsystems) to provide power during short periods of power failure (maximum up to 4 hours) such as time between mains failure and coming on line of power from DG set

The purchaser will provide mains supply sources at all EOCs as well as siren locations. However, the SI will have to provide last mile extension to EOC and Siren locations from nearest mains supply point. Power supply system at SEOC will be designed for very high reliability with redundant DG sets and UPS units. Suggested power distribution system at SEOC will be as shown in following schematic diagrams (figure-7 and 8) above.

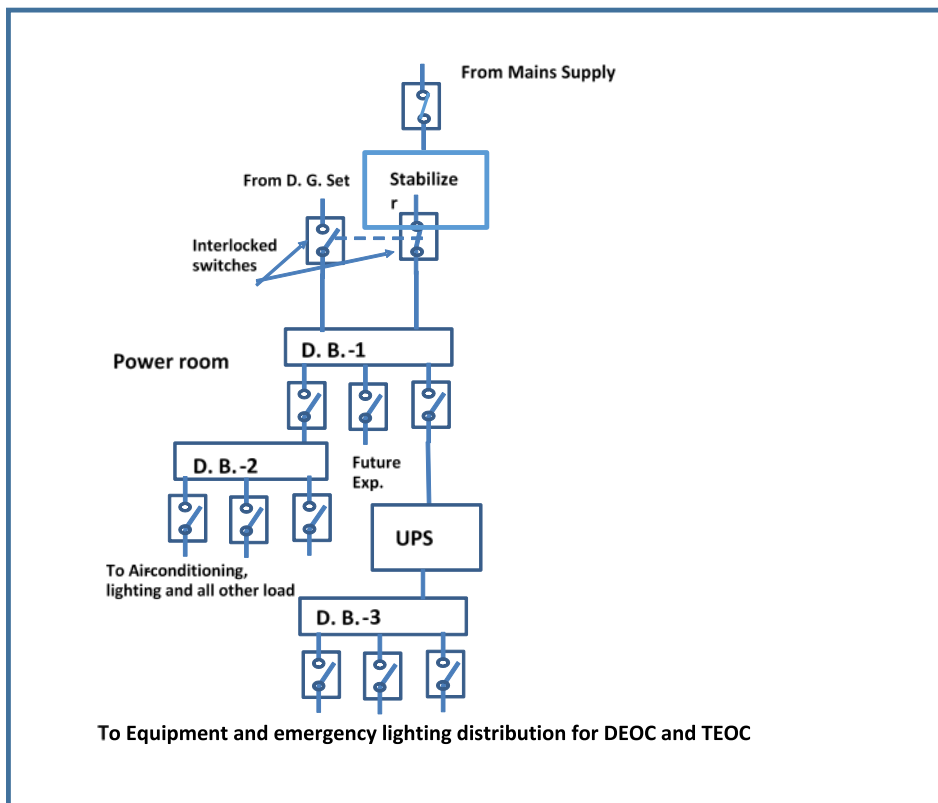


Figure-9: Power supply distribution at DEOC and TEOC

Power distribution system at DEOC and TEOC will be modified to work on single mains source, DG set and UPS (Figure-9 above). All essential loads such as ICT equipment, alert and warning systems as well as lighting in the operations rooms of all EOCs will be operating on UPS, which in turn will derive input from batteries for short period and or DG sets when mains supply fails and for majority of time from mains supply.

General Technical Specifications

11. General Technical Requirements

The Products/equipment must be brand new; industry-grade of state-of-the art technology and the service should guard against technology obsolescence for at least 5 years after the complete contract period. The Products /equipment supplied under this contract shall conform to the Technical Specifications given in this tender

11.1 Electrical Power:

All active (powered) equipment must operate on, e.g., 220 v +/- 20 v, 50 Hz +/- 2Hz] All active equipment must also include power plugs standard in India.

11.2 Environmental:

a. Specifications for Environmental Conditions

The purpose of this section is to describe the minimum general equipment characteristics and specifications for environmental conditions, source power conditioning and backup, equipment construction, and installation. The section also highlights the Electro Magnetic Compatibility (EMC) guidelines for equipment that will be operated under the Electro Magnetic Interference (EMI) and Electro Static Discharge (ESD) conditions expected in an High Voltage (EHV) power system environment.

b. Environmental Conditions

Equipment and their components provided under this specification shall operate reliably under the following environmental conditions.

i. Temperature and Humidity

Most of the equipment will not be installed in environmentally controlled shelters. Therefore, equipment shall operate in accordance with the limits shown below:

The Contractor is responsible to offer equipment that can meet above environmental conditions. The Contractor is responsible for all necessary enclosure, rack, cooling / heating facility if necessary or equipment upgrades to ensure the proper operation of the installed equipment in above mentioned ambient conditions.

Sr. No.	Parameter / Specifications	Range of specification
1	Elevation of the location where equipment is to be located	
a	Operating within specifications	Up to 3,500 Meters
b	Non-operating (storage)	Up to 10,000 Meters
2	Ambient Temperature in Celsius	
a	Operating within specifications	0 to + 45 Degrees
b	Non-operating (storage)	-10 to +55 Degrees
c	Shipping Storage (without damage to equipment performance)	-40 to +60. Degrees
3	Relative humidity	
	RelativeHumidity, (non-condensing)	Up to95%

ii. EMI (Electro Magnetic Interference) and Electrostatic Interference

At each location, the Contractor shall assess the need for shielding against radiated emissions and shall provide recommended solutions for any EMI problem found at each location.

iii. Tropicalization

Communications equipment will often be stored and operated in uncontrolled environment areas and will be subject to mold, growth of fungus, corrosion and oxidation. The equipment and components shall be suitably tropicalized during manufacture through commissioning, as necessary.

iv. Contaminants

Communications equipment may be located in areas of poor air quality with the main contaminant being dust and sea salt. Cabinets shall be tight fitting utilizing filtered ventilation openings only

12. Safe practices:

12.1 Safety Precautions:

All personnel need to be issued necessary PPE (Personnel Protection Equipment) and suppose to wear all times on site. Special PPE is proposed to be issued to personnel in the field as necessary in hazardous locations following site instructions. All care should be taken to ensure there are no open supply wires to avoid instances of electrical shock to workers / persons in installation areas

It is proposed that all staff in the field area must wear following safety equipment at the minimum in field area-

- Safety helmet
- Eye protection
- Protective clothing
- Safety shoes

It is proposed that all personnel will be made aware of the client's site safety rules regarding safety, accident reporting, and site emergency procedures. These safety precautions need to be followed in strict compliance by personnel in the field area.

Warning and restricted area notices (e.g. - "Deep Excavation," "Exit", "Restricted area" etc.) will be positioned at all the working points in the field. All routes will be designated for the entry and exit points and emergency exits will be clearly shown.

Unless otherwise specified, all equipment must operate at noise levels no greater than 55 decibels.

12.2 Equipment Environment Safety

All electronic equipment that emits electromagnetic energy must be certified as meeting EN 55022 and EN 50082-1 or equivalent, emission standards

Successes full bidder is expected to set-up a state-of the art disaster response facility for quick and efficient response in cases of disaster situations. The interconnecting infrastructure should be based on multiple communication technology and tools necessary for a highly reliable network.

An integrated Network Monitoring and Control System (“NMS”) with a user- friendly Graphical User Interface (“GUI”) based operation shall be provided to monitor and manage various nodes / elements / components that can be integrated into any other Internet Protocol (IP) based Virtual Private Networks (VPN) in future.

The successful bidder is required to carry out the adequate field survey and GIS mapping of EOCs, VSAT and siren tower locations at District, Taluka, vulnerable villages, salt pans, Fish Landing Centers (FLC), Cyclone Shelters beach locations in order to ensure there are no last-minute hold ups due to infrastructural inadequacies. Bidder is required to liaison with DOT and other Wireless Agencies for acquiring the License and other approvals before installation of wireless equipment that requires license for operations.

Specifications of equipment, networks and systems

All the equipment to be supplied, should be new and should not be have a purchase 4 months prior to the award of contract through this bid.

13. Satellite Communication Equipment & System

13.1 Handheld Satellite Phone (ISAT-2)

Sl. No	Particulars	Specification
1	Usage	The phone should provide voice connectivity and very low speed data up to 2.4 kbps. It can be used for sending Text messages, and to access the internet or send email
2	Global coverage	The phone should access satellite from nearly any location of the globe, except for the extreme polar regions.
3	Reliable network	The phone services shall be delivered via the Inmarsat group of satellite network, with better than 99.5 per cent satellite and ground network availability.
4	Operating frequency band	Satellite Link shall be in L band for highly reliable connectivity even during extreme environmental conditions such as cyclonic weather or seismic activity.
5	Construction and Operating conditions	It shall be of robust construction and shall operate in dusty, humid atmosphere and over a temperature range of -20 degrees to +55 degrees Celsius. Suitable for comfortably holding in hand while in operation and light weight (weighs around 350 grams)
6	Security	Communication links should meet government requirements for security using encryption.
7	Flexibility in interfacing with other telecom networks	Supporting the IP services, as well as traditional circuit-switched voice and low speed data,
8	Cellular failover	The phone shall work as a dependable back-up solution to cellular bonding
9	Easy to use	No technical expertise or training is needed to set up and use the phone. To establish a voice / data connection within minutes.
10	Interfaces	Blue tooth & USB host interface
11	Charging and normal battery capacity	It should be possible to charge battery from mains supply as well as from car charger and shall normally support 8 hours of talk time and one week of standby time.
12	Facilities and Applications	<ul style="list-style-type: none"> · Telephone call · Low speed Internet access · Email and file transfer · Text messaging

14	Other features	
i	GPS capability	The phone shall provide GPS location data which can be sent as text/email.
ii	Cell phone functionality	It shall support nearly all functions available on cell phone such as speed dial, call history, caller ID, call waiting / call divert, call holding and conferencing etc..
iii	Data capabilities	2.4 Kbps IP
iv	Voice capabilities	Standard voice: 2.4 kbps
v	SMS Text capabilities	160characters

13.2 VSAT Network

Sl. No.	Particulars	Specifications
1	General	VSATs will be installed at all EOCs and EWDS (siren) locations.
2	Data capabilities and transmission delay	<p>VSAT at SEOC will operate with Single Channel Per Carrier (SCPC) access technology and will operate at 1.0 Mbps data rate. SEOC will also be connected with 2.0 Mbps data rate terrestrial link up to hub of the VSAT network operator and will act as primary link. SCPC carrier will provide back-up in case of failure of terrestrial link. Such an arrangement will provide high quality network linkage and minimise satellite link delay to around 400 Milli Seconds which will be half of normal delay in case of two hop linkage (VSAT to satellite to Hub as one hop and Hub to satellite to VSAT as another hop) causing the signal delay of the order of 700 Milli Seconds.</p> <p>All other VSATs will operate at 512 Kbps link. This will be shared link by a large number of VSATs (each operational VSAT working at around 24 Kbps average data rate) so that bandwidth requirements of whole network will be in the range of 3.0 Mbps (1.0 Mbps for SCPC link and 2.0 Mbps for F-TDMA link)</p>
3	VSAT equipment	Appropriate size of antenna, RF equipment and modem should be designed by VSAT service provider, keeping in view very high reliability (better than 99.5%) requirement of the network. Structure of VSAT antenna and foundation should be designed to withstand peak wind speed of 200 Kilometres/ hour.

4	Installation sites	VSAT equipment may have to be installed on the ground or rooftop of government building as availability at each location. All VSAT antennas and RF equipment should be enclosed in wire mesh of suitable strength to prevent damage to equipment from monkeys or other mischief makers. The design of mesh should be optimized to minimize loss of satellite signals while simultaneously ensuring required level of safety for the VSAT equipment. VSATLink will be used for remote monitoring and control of audio warning systems normally mounted on towers of appropriate height at vulnerable locations, FLCs, salt pans and tourist beaches. Similarly, same link will be used to transmit warning message (audio) from SEOC or TEOC as the case may be.
Detailed specifications for VSAT Terminal		
Sr. No.	Item	Specifications
1	Antenna Radio Frequency Features	
a	Band of operation	The antenna should operate in C band
b	Frequencies	The antenna should operate at C band (3.625–4.200 GHz Rx and 5.850-6.425 GHz Tx) or Insat C band also known as extended C band (4.500–4.800 GHz RX and 6.725–7.025 GHz Tx),
c	Mid-band gain	The mid-band gain shall be 35.50 dBi (Rx) and 39.50 dBi (Tx) at C band
d	Polarization	The antenna shall support both circular and linear polarization
e	Feed mechanical interface	The feed interface shall be WR137 for Tx and WR229 Rx or Type N to suit input flange of Low Noise Block Converter (LNBC)
f	Cross polarization	The cross-polarization isolation shall be better than -30 dB within 1.0 dB beam width of antenna
g	Axis ratio	The axis ration shall be better than 1.3 VAR (2.28 dB)
h	VSWR	The VSWR shall be 1.3:1 Max
i	Ruggedized Outdoor Satellite modem	<ul style="list-style-type: none"> ▪ Operating Temp. 0° to +55°C ▪ Dust & Rain – IP 65 ▪ Relative Humidity Max 95% non-condensing humidity ▪ Input Voltage +24V or +48V DC ▪ Power Supply 150W AC/DC Supply – 24V or 48V ▪ LAN Port RJ45 - At least One or more preferred ▪ Preferred one FXS 2-wire RJ-11 telephone ports ▪ TX Out: Type-F, 950–1450 MHz, RX In: Type-F, 950–1450MHz ▪ Weather resistant LAN cable ▪ Weather resistant RF Cable
2	Mechanical and environmental features	
a	Reflector material	The Reflector Material of the antenna shall be Glass Fiber Reinforced Polyester SMC or similar material
b	Feed location	The Antenna Optics shall support the Offset Fed

c	Wind speed operation / survival	The mechanical structure should be suitable to operate within specifications in windspeed up to 70 Kilometres/ hour and survive up to 200 Km / hour
d	Azimuth angle adjustment range	The antenna azimuth adjustment range shall be 360° Continuous Coarse adjustment
e	Elevation angle adjustment range	The elevation adjustment range shall be 15° - 80° continuous fine adjustment
f	Temperature range	The antenna must operate within a temperature range of 0° to 50°C
g	Climate condition	The antenna shall not corrode due to effect of Salt, Pollutants and Contaminants as encountered in coastal or industrial areas
3	Power	
a	Power consumption	The input power requirement of the VSAT system shall not be more than 200 Watts
b	Input Voltage range	The system should work with nominal A/C 230 volts single phase in put or nominal 12 volts DC

14. Alert Siren Message System

14.1 Integrated Emergency Warning Software Including Customization

Sl. No.	Particulars	Specifications
1	Functionality	The Control Station will provide a centralized location for activating, controlling, and monitoring all system equipment. The Control Station should have the ability to broadcast live public address, pre-recorded messages and siren tones. The Control Station shall be placed at SEOC and all TEOCs.
2	Operating system	The Control station should have Windows Operating System (OS) based software which is user friendly with, Graphical User Interface (GUI) for overall control and status monitoring of all RTUs
3	Display	Should be equipped to display the location map of all RTUS & colour coded icons for status of RTU / Alert and Warning Terminal (AWT) locations/sirens. It should also support the ability to display an unlimited number of different map views.

4	Capabilities	The operator from Control Station should be able to alert/annunciate any RTU within the state by using GUI. The Control station software should have graphical representation of entire population of RTUs in the state. The software should have complete storage of all RTU status and alarm data. System should be able to group the RTUs and TEOCs should be able to control the RTUs from their region only. SEOC should be able to configure the system as per its requirement assigning groups and responsibilities.
5	Redundant hardware	The software system has to be installed in hot-standby mode at SEOC so that in the event of one computer being non-operational, the other computer can be used. Computer with 19.0inch size monitor shall be provided for ease of operation of the Controller
6	Controller	The controller must support the ability to initiate concurrent or sequential activations including the ability to simultaneously send activations to different targets
7	Software security	The software should be password protected or have adequate security to avoid any unauthorized access to the system. The operator can send alert and warning signals to the desired locations using a GIS based GUI software.
8	Supporting hardware	Microphone, SIM Card, and associated hardware etc. as needed which are integral part of the system, shall be provided.
9	Software configuration	The Control Station software must be capable reconfiguring alarm records of the Sirens remotely over available communication path without requiring onsite visit except in case of catastrophic failure of concerned RTU(s) or power supply failure. It must support the ability to report faults or trouble alarms via email and SMS text to maintenance personnel. It should also generate a weekly report of status of each RTU component and report any Fault or Degradation of Quality in any of the component. Maintenance engineer sitting at SEOC should be able to see number and location of operational RTUs at any given instance of time.
10	Cost of software	The Cost of the Control station software will be paid one time (up front), which shall include the user license fees for all TEOCs without any additional cost. The bid should include all the associated hardware components for smooth operation of the system.
11	Recording of messages	The facility to record the live voice messages and to broad cast the recorded voice messages as well as to broad cast real time voice messages shall be available at SEOC and TEOC. Associated Hardware including Microphone, control equipment and storage should also be provided. A record of live stream message should be stored in the system and can be utilized a pre-recorded message in future.
12	Standalone hardware at TEOC	Hot Standby mode for TEOC Control Station is not required and only one Computer with 19-inch monitor or dedicated specialized hardware with inbuilt display should be enough. But other systems should be installed in TEOC.

NOTES TO THE BIDDER

01	The customized Software should be handed over to the purchaser for perpetual usage without any additional payment towards user license
02	Contractor will be responsible to pay & obtain all necessary WPC/SACFA Clearances for the VSAT system. Purchaser shall facilitate with only an authorization letter
03	Offered product OEM/Indian distributor should have own registered office presence in India to ensure prompt service warranty support after sales.
04	Remote monitoring of RTUs is an important aspect of the overall system and contractor has to ensure that the system is capable of monitoring each sub equipment of the RTU including solar panel / power generation and battery backup. All the faults to be reported with alerts and calls are logged for repair. All the status and fault reports are provided on weekly basis.

14.2 Remote Terminal Unit with Ip65 Steel Cabinet

Sl. No	Particulars	Specification
1	Functionality	The RTU should receive and decode warning instructions sent from SEOC or TEOC via the cellular Network (GSM/GPRS) or the VSAT network to either live or by activating pre-recorded message and initiate broadcast of warning messages through the audio system. On receipt of a valid warning signal the RTU will play the alert message via high powered speakers for a pre-determined duration. The RTU to Control Station medium can be Cellular Network (GSM/ GPRS) and the VSAT network. As already explained in IFB document the Control Station will be more than one and these can be located anywhere e.g. SEOC and TEOC.
2	Mains automatic voltage stabilizer to safeguard RTU from extreme mains voltage variations likely to be experienced at remote locations	Mains automatic Voltage stabilizer will be relay type (similar to common stabilizers used for home appliances). The equipment will be industrial grade to operate in ambient temperature and should be enclosed in IP-65 compliant enclosure for protection from rains. Brief specifications will be: 1 Power capability: 1.00 (One) KVA 2. Input voltage range: 170 to 270 Volts single phase 50 C/S 3. Output voltage range: 230 Volts +/- 10 % 4. Auto output cut-off: When output voltage is outside 230 +/- range 5. Auto cut in: when output voltage is within acceptable range

3	GSM phones and VSAT installation	The bidder will have to install GSM phones and GSM modems as well as VSATs at all EOCs and RTU Locations. VSAT should also be installed at Fish Landing Centers (FLC) and salt pans. The contractor will be responsible to obtain WPC licenses and SACFA clearance for all VSAT locations.
4	RTU	RTU should include high powered audio amplifier compatible to work with the Speaker Horn Array. All the electronic unit i. e. RTU, Communication Interface Card, VSAT modem, Solar power controller and Loudspeaker Audio Power Amplifier with back-up battery should be housed in a IP 65 Stainless Steel Outdoor Cabinet with lock & key arrangement. This cabinet can be kept safely inside nearest government or public building such as the Cyclone Shelter Building or should be mounted sufficiently high from the ground level on 15-meter tower planned at sea beach etc. so that they are out of reach of mischief makers.
5	Responsibility of SI	Contractor should be responsible for proper installations of all units at the remote area on Cyclone Shelter or Sea Beaches of Coastal districts as per preferred specified locations. All cost of local transportation of goods including any charge of foreign and local engineer of the supplier, their accommodation in the field, Daily Sustenance Allowance (DSA), local transport costs etc. and charges towards any extra accessories, equipment, goods, engineering and installation, labour cost, fitting or any other ground work/earthwork or construction materials cost, any modification of existing power supply cables, ground earthing etc. will be borne by the contractor.
6	Horn speakers	<p>Horn speakers 4 units or more per location are to be mounted on towers as specified earlier in this document. Mounting Fixtures are to be provided by the contractor. The audio output power should be at least 300 watts RMS continuous per amplifier (or 600 Watts peak per Siren) or more.</p> <p>Direct-Single-Horn-Replacement must be possible at any time. Horns should be light weight, rugged, weather proof and compact in size and shape. They should be moulded in metallic aluminium finish for long lasting and rust proof even under saline weather conditions. Total weight of horn assembly should normally not exceed 80 kgs. Horns should preferably in rectangular shape and comply with low voltage directive standard EN 60065. Degree of protection for the horns should meet IP 65 specifications for protection against foreign particles such as dust and jets of water. In short, these installations should be ideal for outdoor use.</p>

		The Loudspeaker cable should be double insulated to connect with the speaker amplifier. All Speaker cable must be routed inside the mounting pole or covered by metal tube (pipe).in case these are routed outside the tower. The installation must follow best practice and should be away from any potential source of interference such as mains cable, data cable & telecom cable. The horn must also have a “netted” cover to protect against flying insects entering the horn and thereby damaging the horn/ driver.
7	Horn Speaker Audio Coverage-	The minimum coverage of warning broadcast should be 1.5 Km radius i.e. 3.0 km diameter and transmission should be Omni directional. The system audio output must be sufficiently high quality to be clearly audible at not less than 1.5 Kilometers (radius) from location of alert system. Expected audio level at 1.5 Kilometer from the amplifier locations should be at least 70 dB i.e. minimum 5 dB above ambient noise of 65 db.
8	Mounting of speaker horns	The speaker horn arrays should have minimum 4 horns at 90 degrees to each other (the angle will be different in case more horns) to achieve 360 degrees (Omni directional) coverage are to be mounted on 15.0 meters self-supporting towers assembled from triangular structures or spun concrete towers should be used in at all other locations including tourist beaches.
9	Solar panel	<p>The Solar Panel shall be rated for 12V and 150-Watt output and should be roof mountable on selected Building for mounting of warning message amplifier / horn system.</p> <p>It shall be responsibility of the bidder to replace the solar panel system at free of cost in case of damage due to natural forces during warranty and AMC period. The Solar Panel should be IEC 61215 Ed. 2 and IEC 61730 Safety Class II UL 1703 & 4703 compliant</p>
10	Solar battery bank	<p>The Alert Tower Siren System shall operate from 12 V (nominal) DC obtained from normal 230 V AC mains power Supply or from back-up battery of 12 volts, 150 AH capacity. The storage batteries shall be sealed maintenance free Tubular GEL Vent Regulated Lead Acid (VRLA) type suitable for solar application</p> <ul style="list-style-type: none"> ▪ Tubular GEL VRLA Batteries shall be used. ▪ Explosion-proof vent plug shall be provided at the upper part of the container. ▪ The batteries shall be designed for operation in ambient temperature of –15 to +55 deg. Celsius ▪ Connectors- Lead Plated Solid Copper Connectors ▪ Capacity: 150 A H @ C-10 to 1.75 Volts per Cell at 27° C(Ah) ▪ Nominal DC Voltage (V): 12 V DC ▪ Should meet IS 15549, IEC 61227, IEC 60896- 21822, BS 6290 Part IV, IEEE – 1188/1189, Euro bat Guide 1999 – Classified as “Long Life” ▪ Supplied in factory charged condition – ensures optimal quality and ready to use

11	Battery performance	<ul style="list-style-type: none"> ▪ Cycle Life: 1800 cycles at 80% DOD at 27 Deg. C ▪ Self-Discharge: <2% per Month at 27 Deg. C AH ▪ Efficiency: >95% ▪ The container shall be strong enough to withstand rough handling. ▪ Versatile in mounting arrangement: Both Horizontal and Vertical orientation.
12	Other requirements for battery installation	<p>The batteries shall be provided with, necessary connectors, name plate and battery transparent cover, etc. Layout of batteries shall be such that it permits easy access and sufficient flexibility at the time of cell unit replacement, and easy to check the status.</p> <p>The detected conditions of the decrease in battery capacity shall be indicated by visual and audible alarm indicators. These alarms shall be extended to the Network Operation Centre (NOC) using supervisory and control system.</p> <p>PVC insulated flexible 3 core power cables shall be used for 230 V AC power supply wirings conforming to IS: 694: 1990 reaffirmed 1995 or latest and shall have minimum cross-sectional area of 2.5 sq. mm copper conductors with insulation thickness 0.7 mm, sheath thickness of 1.0 mm and overall diameter 9 mm or more to withstand power load.</p>

15. Group Messaging System

15.1 Group Messaging (SMS) System

Sl. No	Particulars	Specification
1	Transmission port and security	System shall use standard HTTPS port for sending alerts. For high security service provider must also support SSL layer for transferring information
2	Languages for messages and response handling	The text messages/ Voice SMS will be sent in 3 languages (Gujarati, Hindi, and English), 6 times a day, starting from 3 days in advance, before arrival of the cyclone. Voice SMS means pre-recorded voice message of fixed duration which the system should be able to trigger for selected groups. System should be able to capture DTMF responses if any by recipients, to this voice alerts. These responses will then need to be collated and displayed in the reports.
3	Message library	The system shall have capability to save pre-defined messages in a message library. These messages can be pulled into the alert sending screen, during the alert send process.
4	Addressing multiple groups	It must be possible send an alert to one or several groups / sub-groups at the same time.
5	Alerts over voice channels	It must now be possible to automatically send alerts over voice channel to mobile phones and fixed phones.
6	Access to message library	The alert message for voice calls should be possible to pull from the message library (pre-defined messages).
7	Text to voice capability	It must be possible to voice play (over the phone call) a written text message using text to speech function.
8	Retransmission of message	If a receiver misses a voice call, he may call back the number from which the call came. In such an event the system must playback the message meant for the user, when the call is received by the system
9	Load balancing	It is vital that system has load balance and congestion control ability within the PSTN (Public Switched Telephone Network). Congestion control system monitors the fixed phone network to check if there are any indications of overload or congestion during alert sending and optimize the delivery accordingly.
10	Reporting facilities	It should be possible to report all kind of technical statuses back to the user like: call complete, line busy, call failed etc..
11	Retries	It must be possible to configure the number of retries (in case of no response) that should be attempted for a contact for a voice call.
12	Status of messages	It must be possible to retrieve technical status of all SMS deliveries: delivered / not delivered / pending / queued etc..
13	Retransmission in case receiver busy	It must be possible to resend an alert to all recipients that have a status. For e.g. Resend an alert to all people that had the status of line busy

14	Publishing on social media	Facility to publish messages to pre-defined Face book pages and twitter handles, using the web-based system, without having to login to twitter or Face book.
15	Live and simulation modes	The system must have a live and simulation mode. Simulation mode must simulate an alert send process without actually sending an alert. This could be used for training and demo purposes
16	Alert cancellation	It must be possible to configure the time line for alert cancellation (e.g. If the calls do not get completed in one hour, terminate the process and free up the lines
17	Language support	The text to speech function must support English, Hindi and local language. Different configuration will be required for the three languages
18	Storage	The alert message is converted in to SMS and shall be stored in Database for future usage
19	Database of recipients	The list of recipients' (government / non-governmental organisations responsible for disaster response) Mobile numbers shall be stored in Database on department wise.
20	Transmission on supporting network	Shall be able to Send SMS to any SMS capable mobile phone on supporting networks
21	Customization of address book	Customize address book by adding important contacts and saving recently used numbers. The system should be capable of creating a group database in which unlimited number of groups and sub-groups of personnel can be created with their contact information.
22	Transmission to multiple numbers	Send one SMS to multiple mobile numbers or address-book contacts
23	Report	Get delivery or failure reports for each alert message with Date and Time Stamp
24	Message modification	Create, Edit, Reply, Forward, Export, Delete or Send SMS messages
25	Status reports	System shall maintain a log of who received the message/ not received/ failed etc. when message was sent. The status of log to be displayed in the TV screen on GIS platform in green /orange /red for the SMS read/received/not read etc.
26	Priority	System shall be able to send SMSs on priority bases
27	MIS reports	The MIS will have the following features: View the message text, time stamp, 'from' alphanumeric field and 'destination' number for any specific User id or time duration. All MIS reports can be downloaded in .CSV format that can be read in MS Excel

28	QoS	Quality of Service: Service provider will ensure a high quality of service. Servers deployed should have inbuilt redundancy and auto change over mechanism to back-up system in case of failure of operating system
29	Documentation	
i	User manual	Service provider will provide NDMA/GSDMA with documentation in the form of User Manual
ii	Installation guide	Installation Guide that will help install the software in local desktops and use the same with ease.
iii	Soft copies of mobile data	The softcopy of the updated list of Mobile data for group Based Text and Voice SMS shall be handed over to the Purchaser on monthly basis.
30	Confidentiality	Service Provider will undertake that it shall not disclose, divulge or reveal any information, including the mobile number and the text of SMS sent, that it may have gained or otherwise acquired from NDMA/ State Govt. by virtue of or because of the Implementation of the aforementioned SMS services and shall ensure that the same is kept secret and confidential at all times
31	Service provider responsibility	
i	Support on all days	Service provider would provide technical support on all working days over the phone and email. For the same, bidder/ Service provider would be provided with a contact number and a contact mail id at which the contact person can get in touch in case of any problems regarding the service of sending/receiving SMS
ii	Integrity and certification of SMS	The service provider shall forward all SMS in the same form as is received by it from NDMA. Further, NDMA takes responsibility for content of all SMS sent and shall not send any unlawful or unsolicited SMS contents from any of the user accounts. However, the service provider on its part will ensure that all requisite certifications and processes are in place which ensures that data integrity is maintained at all the times at its premises. In case of any breach, the Service Provider will intimate NDMA of such a breach along with the actions taken and extent of data compromised.
Iii	System Integration with major Telecom Service Providers	Group based Message System Integration with major Three (At least) Telecom Service Provider available in Gujarat

NOTES TO THE BIDDER

01	The customized Software should be handed over to the purchaser.
02	The softcopy of updated Data Backup Storage for Logs, mobile data of Government officials, villagers, fishermen, tourist hotels etc.. For Group Based Text & Voice SMS shall be handed over to the Purchaser on monthly basis. The system should allow purchaser to download the reports from the system at will.
03	<p>Bidder shall furnish the clause by clause compliance statement. In case there is any Deviation the same should be clearly brought out in the offer.</p> <p>Technical Specification of various systems and as mentioned in Section VI are to be complied or justification may be given for Non-Compliance if any.</p>
04	The Bidder shall integrate the System at SEOC at Gandhinagar, Gujarat.
05	<p>Bidder shall include cost of the activation charges for the SIM card inside SEOC for GSM Connectivity for two years after successful commissioning and acceptance of the system. The bidder shall separately quote for:</p> <ul style="list-style-type: none"> • The cost of sending up to 100,000 text SMS (group -based SMS) and • 25,000 Voice SMS per annum, <p>The purchaser shall bear the actual usage charges to settle the invoice of each telecom service provider as per existing government regulations.</p>

16. Network Monitoring System (NMS)**16.1 VSAT Link Network Monitoring**

The Telecom Service Provider shall do proactive monitoring and fault management of the network on an End-to-End basis remotely from its own Network Operations Center (NOC) and provide the following link wise report on monthly basis:

- Link downtime / Uptime analysis report.
- Traffic monitoring, bandwidth utilization report with committed information rate for all links and all ports
- Network availability reports as per Service Level Parameters defined.
- Throughput, Latency, Jitter for all the locations
- The Service Provider shall allocate to NDMA/GSDMA/SEOC, one User-id & Password for web access to monitor in real time all network statistics and reports as mentioned above.

16.2 Other ICT Devices Monitoring

System Integrator should provide a Network Monitoring System at SEOC for monitoring all the housed ICT equipment including routers, switches and should also monitor the internet links. The system should provide all the reports necessary to calculate uptime of the whole system and each device individually. Associated Hardware including server and storage is to be provided and configured accordingly.

17. Information Communication Technology Infrastructure Equipment

17.1 42 U 19" Floor standing RACK

Rack should be with all requisite accessories and parts

- ✓ RACK 19 Inch 42 U to house Network Router/Switch and Fiber link termination
- ✓ Dimension 2200x800x1000 (H x W x D)
- ✓ Door Glass Ip 41
- ✓ Colour: Light Grey Powder Coated
- ✓ Cable Entry From: - Top and Bottom of The Rack
- ✓ Both Front and Rear Doors Can Be Locked.
- ✓ Vented, Fan Housing Unit S35
- ✓ 4/6 Fan on Top
- ✓ Window molding, 2u Cable Storage
- ✓ Mounting on floor with Nuts and Bolts
- ✓ Shelf/Cable Guide
- ✓ Two Powerbar 230V, 2KW 12 ways with Indian Plug

17.2 6U Wall Mountable 19" Server Rack

Wall mounted 19 inches 6 U Rack

Rack should be with all requisite accessories and parts

- ✓ RACK 19 Inch 6 U to house Network Router/Switch and Fiber link termination
- ✓ Dimension 300*600*600* (H x W x D)
- ✓ Door Glass Ip 41
- ✓ Colour: Light Grey Powder Coated
- ✓ Cable Entry From: - Top and Bottom of The Rack
- ✓ Front Door Can Be Locked.
- ✓ Vented, Fan Housing Unit S35
- ✓ 4/6 Fan on Top
- ✓ Window molding, 2u Cable Storage
- ✓ Mounting on wall with Nuts and Bolts
- ✓ Shelf/Cable Guide
- ✓ One Powerbar 230V, 600 Watts, 4 ways with Indian Plug

17.3 Servers

The appropriate configuration of servers shall be supplied by the implementing agency to run the NMS and other software components smoothly. The same shall be reviewed and approved by GSDMA before supply & delivery. The Products shall be of standard Server Family based on proven technologies, design and compatibility to high-end and low-end future technologies.

17.4 24 Port L2 Switch

S. No.	Feature	Specifications
1	Interfaces	24 Ethernet 10/100 ports and 2 fixed
		Ethernet 10/100/1000 uplink ports
2	Switching Capacity	Should Support up to 16 Gbps switching fabric
3	Forwarding Rate	Should support Forwarding rate up to 6 Mbps
4	DRAM	Should have minimum 64 MB DRAM However, the Bidder to ensure the completeness of the functionality requirements.
5	Flash Memory	Should have minimum 32 MB Flash memory. However, the Bidder to ensure the completeness of the functionality requirements.
6	MAC Addresses	Should be Configurable up to 8000 MAC addresses
7	Power Supply	The switch should have external/ internal RPS- Deleted
8	VLAN	
a.	Minimum number	Should Support Up to 255 VLANs per Switch and more than 2000 VLAN ID's.
b.	VLAN trunks	Capability of creating VLAN trunks on any port using standards-based
c.	Tagging	IEEE 802.1q tagging.
9	Features to be supported	
a.	Flow control	IEEE 802.3x Flow Control
b.	Snooping	IGMP snooping
c.	Spanning tree	IEEE 802.1D Spanning Tree
d.	Rapid spanning protocol	Should support IEEE 802.1w Rapid Spanning Tree Protocol
e.		Should support IEEE 802.1s Multiple Spanning Tree Protocol
f.	Link aggregation	IEEE 802.3ad Link Aggregation
g.	Protocol	IEEE 802.1 ab
h.	Mirroring	Port mirroring-(one-to-one)
i.	Filtering	MAC Address-based filtering
j.	Transmission protocol	IEEE 802.1p support
k.	Number of Queues per Port	4
l.	Class of Service (CoS)	Based on Switch Port

m.	Terminal access controller	Should provide Terminal Access Controller System (TACACS+) / Remote Authentication Dial-In User Service (RADIUS)
n.	IPv6 management	Should support IPv6 address scheme
o.	Support for SSH	Secure Shell (SSH) Protocol
p.	Protection against	Broadcast, multicast, and unicast storm
q.	Port-based Access Control	IEEE 802.1x
10	Network Management	
a.	Management	Web based Management
b.	Interface	Command-Line Interface or Command Language Interpreter (CLI)
c.	Simple Network Management Protocol (SNMP)	V1, V2 and V3 support
d.	Telnet support	Console and Telnet support
e.	Groups of Remote Network Monitoring (RMON) supported	At least 4

17.5 12 Port L2 Switch

S. No.	Feature	Details
1	Ports	12 10/100 Mbps ports, Managed 10/100 Mbps switch
2	Performance	8.8-Gbps switching fabric
3	Forwarding Bandwidth	2.4 Gbps maximum forwarding bandwidth or higher
4	Digital RAM	Minimum 16 MB DRAM
5	Flash memory	Min 8 MB flash memory
6	MAC address	Should support 8K MAC address
7	RPS	The switch should have external/ internal RPS. In case it is not feasible to provide such a switch, the bidder shall provide two switches to ensure redundancy.
8	L2 Features to be supported	
a	Supporting ports	The switch must support Port Mirroring, Port Trunking and 802.3ad LACP Link Aggregation port trunks
b	Snooping	Internet Group Management Protocol (IGMP) snooping
c	Protocol	IEEE 802.1D Spanning-Tree Protocol
d	Spanning	IEEE 802.1w Rapid Spanning Tree

e	Port capability	Per-port broadcast, multicast, and unicast storm control
f	STP	IEEE 802.1s Multiple STP
9	Virtual LAN Support	
a	Dynamic assignment	Support for dynamic VLAN assignment through implementation of VLAN Membership
b	VLAN	IEEE 802.1Q VLAN
c	VLAN registration	The switch must support dynamic VLAN Registration
10	Layer 2 Quality of Service (QoS)	
	Priority queues number:	4
	Support	802.1p
	Scheduling	Strict Priority
	Scheduling	Weighted Round Robin
11	Network Access/Security management and ACL (Access Control List)	
a	Security	Port Security function
b	Switch features	Switch should have 802.1x features to enable user authentication for each attempt of network access.
c	Network access	802.1x Port-based network Access Control
d	Access control	802.1x MAC-based Access Control
e	Authentication	RADIUS /TACACS+ Authentication
f	Secure network protocol	SSH
g	Table Maintenance support	Switch should support MAC table maintenance to limit the “aging time”.
12	Other features to be supported	
a	Recovery	Should Ensures quick fail-over recovery
b	Support	Switch should support STP/ RSTP to avoid loops in switched networks
c	Ping test function	Switch should provide Ping Test function to detect that if the target device is alive(available) or not

d	TFTP	Should support TFTP
e	Management	Switch should be manageable through Console port, Telnet, SNMP, HTTP (WEB) or RMON

17.6 LAN Cabling and adequate telecommunication outlets for equipment shall be provided at all EOCs

Sl. No	Specification
1	The solution shall also define the method(s) of flexible patching for the telecommunications services to enable simple Moves, Adds & Changes, (MAC's) without frequent rewiring of locations and re-training of staff and to provide easy to follow trouble shooting steps and procedures.
2	All Passive components except PVC Conduits, bends, Racks shall be of same make.
3	Each equipment, panel and outgoing cable from the patch panels shall be labeled. Proper labeling and numbering shall be provided on the outlets.
4	The supplied UTP cable and components shall have approval and certification from third parties such as ETL, CSA, UL etc.. (Provide documentary proof in this regard).
5	Conformity to Standard: The following standards are to be complied with unless otherwise specified:
a.	ISO/IEC 11801:2002: International Standard for generic cabling for customer premises.
b.	TIA/EIA 568B: Commercial Building Telecommunications Cabling Standard (2002).
c.	TIA/EIA 568B.2-1: Commercial Building Telecommunication Cabling Standard (2002). Addendum no.1: Transmission Performance Specifications for 4 Pairs 100 Ω Category 6 Cabling
d.	Shall meet all the requirements for the gigabit Ethernet
e.	UL Safety Standards

17.7 Face Plate

Sl. No	Specification
1.	It shall have shutter to prevent dust and dirt getting into the outlet for single port faceplate. Springs shutter with front access.
2.	It shall have clear and separate label for application identification.
3.	The faceplate of appropriate dimensions. (1 port faceplate).

17.8 Telecommunication Outlet

Sl. No	Specification
1.	It shall be universal RJ45 type, accepting most of the Ip phone and data plugs

2.	It shall meet or exceed ISO/IEC 11801:2002 class E, TIA/EIA 568-B.2.1 Category 6 Component Specifications.
3.	It shall be UL and ETL Certified to meet TIA/EIA 568-B.2-1 Category 6 Standard.
4.	It shall be IDC (Insulation Displacement Contact) type. IDC termination must have a 45 angular configuration when connected to the cable conductor to reduce the effect of metal fatigue
5.	It shall have dust cap to prevent dirt entry.

17.9 CAT 6 UTP Cable

Sl. No	Specification
1.	The Cat6, UTP cable shall be 4-pair unshielded twisted pair (UTP) tested till 550 MHz
2.	It shall be ETL certified to meet TIA/EIA 568-B.2-1 Category 6 specifications
3.	The cable shall be of 4 twisted pairs of 22 to 24 AWG solid conductor with a PVC jacket.
4.	The cable shall be run using a star topology format from the Rack Room to every work area outlet. Each run of cable from
5.	the Rack Room to every work area outlet shall be continuous without any joints or splices except for the open office design, when a consolidation point (CP), is proposed.
6.	The cable shall have a Star fill separator to separate critical conductor pairs.
7.	Cable to be made available in Rust-Free boxes of 305mts ensuring continuous pull of the cable.
8.	Cable marking to be printed after each and every meter length (e.g. manufacture date, sequential meter lengths).
9.	Cable performance must be certified by any one Third Party agency UL/UTL etc..

17.10 Patch Panel

Sl. No	Specification
1.	It shall be available in 24 ports fitting on 19" Rack with cable manager
2.	It shall be a loaded Patch Panel.
3.	It shall be ETL certified to meet TIA/EIA 568-B.2-1 Category 6 specifications.

4.	PatchPanel must have a Rear cable manager and this shall occupy the same area as the panel.
5.	PatchPanel must be supplied with paper labels for station identification and ID tabs for individual port identification.
6.	It shall be fitted with RJ45 jacks.
7.	RJ45 Jacks shall have same specification as mentioned at
8.	PatchPanel must be with 45-degree silver-plated IDCs

17.11 CAT 6 UTP Patch Cord (1 Mtr. & 2 Mtr. Length)

Sl. No	Specification
1.	The patch cord shall provide air-tight connection for cross-connection and shall meet or exceed ISO/IEC 11801:2002 Category 6 Component Specifications.
2.	It shall be ETL certified to meet TIA/EIA 568-B.2-1 Category 6 specifications.
3.	The patch cord shall be factory assembled plug-ended. The patch cord shall be available in 4 pair versions with a flexible boot to prevent harsh minimum bending radius and integrated wire manager to maintain precision wire position of the patch cord RJ45 Cat6 plug.
4.	The Patch Cord shall have factory fitted boots to maintain the bend radius at both ends.

17.12 Internet Link

Sl. No.	Scope of Work / Characteristics	Specifications
1	Interconnectivity with GSWAN	Contractor to lay optical fiber/LAN cable with protection connecting from existing GSWAN port at District HQ to DEOC and with existing GSWAN port at Taluka HQ to TEOC within the same premises / building
2	Source of Internet bandwidth and last mile connectivity	Internet bandwidth shall be obtained from licensed Telecom Service Provider. Contractor will be responsible last mile connectivity and Internetworking requirements for Internet links at State, District and Taluka Emergency Operation Centre
3	Equipment Rack and facilities / accessories for installation	19" 42- U Racks: Specifications mentioned at 2.10.4 under Technical requirements in this document for installation in SEOC and 9U Wall Mountable Rack : 19- inch 9 U rack, with FAN, Power distribution channel, front glass door with lock and key, Cable Management Channel of renowned brand for installation in DEOCs and TEOCs.

4	Power distribution	Power Strip: 5-way distribution of 230 V AC supply to equipment in the rack
5	Installation, configuration and maintenance of modems etc.	Contractor will be responsible Supply, Installation, Configuration, Commissioning and Maintenance of last mile, modems, last mile equipment etc. for GSWAN and Internet connectivity during contract period
6	Network security	The network should be fully secured and should fulfil the security requirement as IT – ACT applicable during contract period.
7	Configuration of CPE	Configuration Management: Service Provider shall take regular backup of configuration of all the Customer Premise Equipment (CPE) devices. Proper configuration management should be implemented. Any configuration change shall be undertaken after advance intimation to and consultation with GSDMA / NDMA as the case may be, after analyzing the impact of the change.
8	IPV 6 compliance	IPv6 Compliance: The network should be fully IPV4/ Ipv6 compliant. So that if required in future GSDMA / NDMA will procure IPV6 addresses on the Internet lines. It should be possible to run both Ipv4 & Ipv6 concurrently on the network. Internet IP Addresses for both IPV4 & IPV6 are to be provided (if required)
9	Voice over IP	The proposed network should support voice over IP/ Video Conferencing applications. For better scalability, flexibility & inter-operability, the service provider shall run Dynamic routing protocol in the network.
		The network should offer Quality of Service (QoS) for various applications running on the network. It should also be possible to prioritize certain traffic on these links.
10	Quality of Service	The QoS required by NDMA/GSDMA will be communicated at the time of implementation as per their application.
11	Logging of complaints	The Service Provider should provide facility of single toll-free no. across whole of India for logging complaints/service requests.
12	Scalability and obsolescence	The solution should be scalable to meet future requirement of State Government as and when required and other features pertinent to minimizing overall system obsolescence during contract period.
13	Provision of mains power	State Govt. will provide space & AC power supply points at a common place for end equipment like router, modem, DLC, RF equipment, etc., at all locations.

17.13 Work Stations with 19 " LED Monitor

Sr. No.	Component	Specification
1	Processor	Intel processor Core i-7 or better
2	RAM	8 GB DDR4 SDRAM 1066MHz or better
3	Hard Disk	1TB HDD Minimum
4	Video	VGA and/or HDMI
5	Removable Drive	DVD Read / Write
6	Monitor	19" LED flat monitor
7	Ports	1 Serial Minimum 4 USB 2.0(min. 2 at front),
8	Audio	Microphone, Headphone, 2 speakers
9	Mouse	PS2/USB
10	Keyboard and Webcam	1&1
11	Network ports	1 RJ-45, 10/100/1000 Gigabit onboard Ethernet
12	Operating system	Pre-Loaded Microsoft Windows 10 with latest updates
13	Pre-installed Software	MS-Office , Adobe Reader , Antivirus
13	Restore / recovery	Software CD

17.14 LED TV 42 Inch (Wall Mountable) with HDMI Cable

Sl. No	Particulars	Specification
1	Display	Full HD
2	Colour System supported	: PAL, SECAM, NTSC 3.58, NTSC 4.43
3	Video Signal	1080/24p (HDMI only), 1080/60i, 1080/60p (HDMI Component), 1080/50i, 1080/50p (HDMI / Component), 480/60i, 480/60p, 576/50i, 576/50p, 720/60p, 576/50p, 1080/30p (HDMI only), 720/30p (HDMI only), 720/24p (HDMI only)
4	Black Lit Module	LED
6	Mirroring display	One-touch mirroring to display smartphone's screen on the TV
7	Internet access	Quick & Easy Internet Access with Wi-fi Built in Feature
8	Audio	Clear audio, Dolby Digital etc.
9	Speakers	2 Channel full range
11	USB Ports	2 or more, USB PLAY with different formats
13	HDMI connections	2 or more
12	Ethernet connection	1
15	Composite Video inputs	2
16	Analog Audio Input(s)	2 (at rear)

17	Digital Audio Output(s)	1 (at rear)
18	Audio Out	1 (Side/Hybrid w/Audio Out)
19	Built in features	Other standard built-in features

NOTES TO THE BIDDER

01	The bidder to install TV on the wall suitably or on stand as specified by GSDMA
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17.15 Laser All-in-One Printer (Printer, Scanner, Photocopier)

Sl. No.	Particulars	Specifications
1	General	
a	Functions	Print, copy, scan, fax
b	Duty cycle (monthly)	Upto 15,000 pages
c	Print technology	Laser
d	Print Speed Black	Normal: up to 20 ppm
e	Printing quality Black	Upto 1200x1200 dpi
f	Recommended monthly page volume	500 to 2000
g	Display	3.0" touchscreen, LCD (colour graphics)
2	Print Functions	
a	Duplex printing	Automatic (standard)
b	Print speed black (normal, letter)	Upto 22 ppm
c	Print speed black (normal, A4)	Upto 25 ppm
3	Processor	
A	Processor speed	600 MHz
B	Mobile printing capability	Wireless direct printing, Mobile Apps
4	CONNECTIVITY	
a	Wireless capability	built-in Wi-Fi 802.11b/g/n
b	USB	Hi-Speed USB 2.0 port (host/device)
c	Ethernet	built-in Fast Ethernet 10/100 Base-TX network port

d	Phoneline port	Phoneline port(in/out)
e	Networkready	Standard(built-inEthernet, Wi-Fi802.11b/g/n)
3	Scan Functions	
a	Scannertype	Flatbed,ADF
b	Scanresolution,optical	Upto1200dpi
c	Scannerfileformat	WindowsScanSoftwaresupportsfileformat: JPG, RAW(BMP),PDF, TIFF,PNG Mac ScanSoftwaresupportsfileformat:TIFF, PNG, JPEG,JPEG-2000,PDF, PDF- Searchable, RTF, TXT
d	Scansize(flatbed),maximum	216x297mm
e	Colourscanning	Yes
f	Scantechnology	ContactImageSensor(CIS)
g	Bitdepth	24-bit
h	Levelsofgrayscale	256

17.16 Fax Machine

G3FaxwithFaxModemSpeedof33.6Kbps/V.34 Standardisrequired.

17.17 Set-top Box

SetTopBox:HD withrecording facilitywithHardDiskcapacityof500GB.

NOTE TO THE BIDDER

01	ThebiddertoinstallSetTopBoxsuitablyonthewalloronstand aspecifiedby Purchaserand tobeintegratedwiththe42inchTVs. Allthepowercablesand TV inputcables shouldbe concealedinPVC Duct.
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18. Electrical Equipment & Systems

18.1 Mains supply servo stabilizers

Sl. No.	Particulars or characteristics	Specifications / Value
1	Output Capacity	200.0 KVA at SEOC
		50.0 KVA at DEOC
		30 KVA at TEOC
2	Input voltage range	300 V TO 470 V (Three Phase) /170 v to 270 v

		(single phase) in case 3 phase supply is not available
3	Output voltage	230 v / 240 v single phase (adjustable)
		400 V TO 415 V three phase (adjustable)
4	Regulation	$\pm 1\%$ or better
5	Supply frequency	47 Hz - 53 Hz
6	Efficiency	> 98.6%
7	Effect of load power factor	nil
8	Wave form distortion	nil
9	Rate of correction	Better than 20 v/sec.
10	Duty cycle	100% continuous
11	Response time	less than 10 milli seconds
12	Cooling	air or oil cooled as per capacity
13	Overload capabilities	up to 200% momentarily
14	No load losses	less than 0.8% over entire range
15	Suitability	suitable for 3 phase unbalanced/balanced supply & unbalanced / balanced load
16	Mounting	On wheels
17	Earthing	Two numbers of earthing terminals
18	Cable termination box	Input/output connections
19	Ambient temperature	-10 ⁰ C TO 50 ⁰ C
20	Relative humidity	UP TO 95% (non-condensing)

18.2 Mains distribution switches

AC Distribution Panel consists of:

- ✓ MCB/MCCB for UPS
- ✓ MCB for UPS Output Distribution (6 Nos)
- ✓ The rating of the above are to be calculated as per the actual load requirements.

18.3 Common Specifications for DG Set 100 KVA, DG SET-30 KVA, DG SET-15 KVA with Platform Base

Sl. No	Particulars / Characteristics	Specifications / Value
1	Engine	Shall be vertical multi cylinder 4 stroke type in accordance with IS10002-1981 with latest amendments
2	Type:	Multi cylinder
3	Method of starting:	Electric start 12 V DC
4	Type of cooling:	Water cooled /Air cooled to work within specifications at full ambient temperature range
5	Type of speed	Mechanical/Electronic
6	Type of fuel:	High speed diesel
7	Rating:	Continuous
8	Output:	Suitable Horse Power (HP) rated to match the alternator capacity
9	Nominal rated speed:	1500 RPM
10	Over load capacity:	10% overload – minimum 1 hour, 50% overload – minimum 1 minute
11	Pollution and noise level	It shall be compliant with the latest applicable Central Pollution Control Board (CPCB) emission & noise regulations (less than 75db at 1meter distance).
12	Accessories	
a		Flywheel of suitable diameter and fuel injection equipment
b		Air cleaner
c		Lubricating oil cooler
d		Electric motor starting equipment like motor, battery, charging generator with voltage regulator etc.
e		Heavy duty radiator with fan
f		Residential grade silencer with exhaust piping with vibration isolator
g		Fuel tank suitable for 8 Hrs. of continuous running with necessary piping and fuel gauge, drain valve, inlet and outlet connections.
h		Antivibration mounting pads (Dunlop make or equivalent)
i		Speed controlling governor
j		Suitable coupling system to the Alternator
k		Tachometer
l		Lubricating oil pressure gauge
m		Sound proofing canopy

Common Specifications for alternator:

Sl.No	Particulars / Characteristics	Specifications / Value
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1	Output rating	15 / 30 / 100 KVA
2	AC output	3 Phase 400 / 230 Volts adjustable up to - 10% (nominal 380 / 220 Volts)
3	Power Factor	0.8 (lagging)
4	Waveform harmonics	>3%
5	Maximum Current / phase	21.0 Amperes
6	Nominal Supply frequency	50.0 Hz +/- 2 Hz

18.4 Common specifications for UPS 20 KVA, 10 KVA,5 KVA

Sl.	Description	Specification
1	O/P Power Capacity	5000VA / 10000VA / 20000 VA
2	Nominal Output Voltage	<input type="checkbox"/> 230V AC single phase for 5 and 10 KVA UPS <input type="checkbox"/> 400V AC 3 Phase for 20.0 KVA UPS
3	Output Frequency	50 Hz \pm 3 Hz
4	Output Wave form	Sine wave
5	Output Voltage Distortion	< 3 %
6	Crest Factor	03:01
7	Efficiency at full load	\geq 92%
8	Nominal output should be configurable	220, 230 or 240 V (exact voltage requirements to be intimated later)
9	Nominal Input Voltage	3 Phase with 230 V AC per phase
10	Input voltage range	160V to 240 V per phase
11	Input Frequency	50 Hz \pm 5 Hz
12	Battery	External Battery for 4 Hrs. backup on full load
13	Audible alarm should be provided for following conditions	Alarm when on battery <ul style="list-style-type: none"> • Low Battery • Over load
12	LED indication	<ul style="list-style-type: none"> • Working on Battery • Over load • Bypass mode • Battery faulty
13	Communication	System should have the facility to interface the computer through RS232 port (DB9 connector).
14	Operating ambient temperature	0 to 50°C
15	Operating Relative Humidity	0 -95 %
16	Should confirm to following	CE, EN 50091-1, EN 50091-2, EN 55022 Class A

UPS system must be high frequency microprocessor based with four hours battery backup. The online UPS should be a composite product with suitable rectifier cum charger and inverter along with suitable circuitry for input power stability, filtering PFC (Power factor correction), etc. to meet the detailed technical specs given above.

Battery backup for UPS:

- a) The Batteries should be of SMF VRLA type designed for 4 hrs. backup. Battery must be installed in two strings for the above specified power back for the equipment at 100% load.
- b) UPS should offer protection for battery from deep discharge and over charging of the batteries. The battery bank should have the Fuse / Circuit Breaker for the protection.
- c) High/Low Voltage Disconnecter & Surge protection for power line:
- d) The UPS system shall be adequately protected against Lightning and Surge Protection shall be provided at the distribution panel for the UPS system. Technical specific at ion mentioned below
- e) High/Low Voltage Disconnecter: High/Low Voltage disconnecter must be provided at the input of UPS to protect from continuous high/low voltages to protect the UPS system. High/Low voltage disconnecter will have voltage monitoring to sense all the single / three phases of the incoming AC mains and will disconnect the mains supply to UPS as their will be abnormality as per below parameter using 4 pole AC Contactor.
 - i. High Voltage Disconnection at : 250 V DC
 - ii. Re-connection as voltage will resume (at higher side): 230 V DC
 - iii. Low Voltage Disconnection at : 160V
 - iv. Re-connection as voltage will resume (at lower side): 170V
 - v. Disconnection time of AC contactor : 100ms
 - vi. Reconnection time delay: 20 – 30 sec.
 - vii. Input MCB must be provided at the input.

Note:

Capacity of contactor will be calculated for at least 30% higher load than UPS capacity.

- High/Low voltage disconnecter with surge protector is required of single Phase type for 5KVA and 10KVA capacity UPS.
- High/Low voltage disconnecter must have manual-bypass facility in case of failure.

19. Miscellaneous Items


19.1 Self-Supporting Towers - Design, Fabrication and Erection of 15.0 Meter Angular Tower

Sl · N o	Particulars	Specification
1	Requirements	All towers should survive wind velocity up to 200 Km peak / hour. Maximum permissible deflection of top of self- supporting towers in case of peak wind speed should not exceed 3.0 (three) Degrees from mean position and foundation should sustain stress generated during maximum deviation of the tower during peak wind speed
2	Design	The bidder shall work out detailed design of the civil foundation for 15-meter Self- Supporting Tower using triangular steel sections or 15 M Spun Concrete Monopole type tower from all aspects, keeping in view the effects of local metrological conditions like wind velocity up to 200 Km / hour, seismicity, temperature etc. to ensure the safety of the pole. The civil foundation design should be approved by Civil engineering wing (department) of any of the IIT (Indian Institute of Technology). Bidder shall submit the detailed specifications along with the approved certificate by IIT.
3	Approximate guidelines for Design, of Tower	<ol style="list-style-type: none"> 1) Tower members shall be of structural steel grade 'A' conforming to IS 222, IS 2062 and IS 7215 with latest amendments or Spun Concrete tower shall be casted with minimum M-60 grade of concrete. 2) All steel used shall be galvanized conforming to relevant IS specification i.e. IS 2229 for tower members, IS 5358 for fasteners and IS 1573 for washers. Spray galvanizing is permitted whenever hot dip galvanization is not possible, or all end plates used in spun concrete tower shall be galvanized conforming to relevant IS Standard. 3) Assembly of tower members and other structures on tower shall be by means of nuts and bolts with locking nuts. Riveting and welding may be done if the design demands and it shall conform to relevant IS specifications. No tower member shall have thickness less than 6 mm. 4) The quality of steel used for nuts & bolts should conform to IS No. 6639-1972 and mechanical properties as per IS 1367/67. Dimensionally it shall conform to IS 1363, washer should be as per IS 2016-1967. The heads being forged out of solid, truly concentric with the shank and shall be perfectly straight. All bolts shall have hexagonal heads and nuts. The bolts shall be treated with standard threads to take the full depth of the nut. All nuts shall fit hand tight to the bolts. No appreciable fillet shall exist at the point where shank of the bolt connects to the head. Lock nuts and washers shall be provided to all bolts and nuts. The bidder shall include sufficient spare bolts and nuts to compensate for loss in the field during erection. The cost of bolts and nuts shall be included in the cost of tower.

		<p>5) For designing of the tower load of mounting equipment load of maximum 100kg may be kept into considerations. In addition to above the other forces acting on the tower may be considered as per latest IS Codes relevant to designing of towers. For the purpose of design and calculations, the wind speed shall be taken at 200 Km / hour. Soil Bearing Capacity at all the sites is assumed as at least 10 tons / sq. m. The total number of cables to be installed on tower is as below. Wind loading due to these may also be taken into consideration for power, earthing and audio cables.</p>
4	Other factors	<p>1) The overall force coefficients for wind load on towers shall be taken from the latest standards prescribed by the bureau of Indian Standards for self-supporting steel towers, or spun concrete tower, loads and permissible stresses. For calculating the solidity ratio actual obstruction area of towers shall be considered. Separate wind obstruction area shall be taken for ladder, cable rack and platform etc.</p> <p>2) The basic dynamic wind pressure at different heights for different zones shall be taken from the prescribed Standard. The basic wind velocity for the site is to be taken from the latest BIS Code No. IS 875. The permissible stresses in the various structural members of towers shall be adopted from the relevant clauses and tables of IS 800 amended up to date and spun concrete towers shall comply IS 875:1987 (part III). 3) Loading effect of seismic forces as per IS 1893 and cyclic winds etc. if any may also be taken into consideration.</p>
5	Foundations (general guidelines)	<p>1) Concrete grade for RCC shall be M 20 and for PCC, M 10. Reinforcement steel grade high yield deformed bars as per IS: 1786 Fe 415 Gr. & stirrups as per IS: 432 or IS: 222. Bending of bars shall be according IS: 2502</p> <p>2) Clear cover to reinforcement bars IS 50 mm. All bolts and nuts shall be according to IS: 2502.</p> <p>3) Reinforcement bars to be tied at each junction with a binding wire of grade not exceeding 18 where exact length of bars is not available. Splicing shall be done as per IS: 456-1978.</p> <p>4) Formwork concrete and concrete workmanship etc. shall be as per IS: 456, 1978.</p> <p>5) Maximum size of aggregates is 20 mm. Suitable chairs of 16mm. shall be provided to hold the top reinforcement at the base during concreting as per the direction of the site Engineer.</p> <p>6) All grade of weld material shall be of Fe 415 and thickness not less than 6mm unless otherwise specified.</p> <p>7) The cement, sand and concrete used shall be best grade and the concrete shall preferably be mixed in a mechanical mixer in the standard ratio. The foundation shall be watered and cured for at</p>

		<p>least 12 days and the erection of the towers shall be commenced only after the foundations are thoroughly cured.</p> <p>8) Left out item if any shall be covered as per relevant IS codes.</p>
6	Vertical deflection and twist	<p>a) Under Still Air Conditions (mean wind speed Zero Kilo Meters) The towers shall be vertical after erection and no straining shall be permitted to achieve this. This erection tolerance of verticality shall be within permissible limits.</p> <p>b) Under Maximum Wind Load Conditions: The average slope of the axis of the towers shall not affect functioning of equipment mounted on it. The tower structure should not be permanently deformed due to peak wind load. The successful Bidder will have to submit structural calculations to prove that verticality will be maintained at not more than $\pm 3.0^\circ$. Even at the maximum wind load conditions.</p>
7	Protection against lightning	<p>The tower shall be provided with a suitable designed complete system of lightning protection in accordance with the provision of IS-2309-1969 including necessary earthing based on the specific resistivity of the soil and sub-soil water level. Two lightning discharge rods of height approximately 2.4 meters shall be securely fixed to the top of each tower on diagonally opposite corners. Each rod shall consist of a steel tube with four 13mm diameter rods of length 0.5 meter (approximately) welded to the top of the tube, disposed equally around the tube and splayed upwards at 45°. The lightning protective system shall be got approved, before execution.</p>
8	Painting	<p>1) The towers shall be given two coats of paint in addition to primer coats after erection. The towers shall be painted to have equal alternate bands of international orange and white colours with top and bottom bands painted in orange as per civil aviation regulations.</p> <p>2) The paints used in paintings shall be in accordance with IS-2074/62, 2932 & 2933/75. Before applying coats of primer, the surfaces shall be given a coat of Pickling agent's to avoid the flaking of painting. The Bidder should furnish the details about the pickling intended to be applied.</p> <p>3) The Bidder shall indicate the brand of the paints proposed to be used by him for painting of the tower.</p>
9	Earthing	<p>All the tower legs shall be grounded properly, following the standard practice of earthing of such structures in level ground and mountainous regions. An earthing system, generally to the provisions of internationally accepted standard shall be provided at each tower. All the tower legs shall be grounded properly, following the standard practice of earthing of such structures in level ground and mountainous regions.</p>

		<p>This shall consist of at least one radial earth strap extending from each tower leg, one loop encircling the tower.</p> <ul style="list-style-type: none"> • Particular attention shall be paid to the bonding of earthling strap to tower, runway, Gantry and building steelwork. • Earthing strap shall consist of pure copper of nominal dimensions 3mm x 2.5mm x 60m long. • The completed earth system shall have a resistance of less than 2 ohms, when measured with a specific earth resistance-measuring instrument. At least two earths at adequate distance apart but interconnected shall be provided. • Length of 25 X 3mm copper strip shall be 60M per site.
10	Aviation obstruction lamps	<p>Twin lamp fitting equipped with appropriate colour prismatic globe shall be provided as per latest civil aviation regulation for marking and lighting of obstacles at locations where it is essential to install such lights .</p> <ol style="list-style-type: none"> 1) The globes and their housings shall be strong, weatherproof and of approved manufacture. Each globe shall house a 250-volt bulb of appropriate wattage to yield specified illumination. The bulb should be of bayonet cap type and not of screw type. 2) Power supply cable for the lights and power sockets shall conform to IS-1554 (part-I) of 1976. Lighting cables and power shall be terminated in T.P.N. switch fuse units in the control room at the site. 3) Distribution of supply to aviation obstruction lights shall be through 4-way weatherproof junction boxes. The power socket with switch shall be provided at the platform levels. 4) The Bidders shall provide temporary aviation obstruction lights during erection of tower as soon as the tower reaches the minimum height to be lighted as prescribed in civil aviation regulation. 5) The coaxial cable shall also be terminated in control room.
11	Other Facilities on tower	<p>Platform Provision of one working platform about 1.0 meter below the top, extended in all the sides about 1.0 meter for access to cables, lightning protection systems and loud speaker horns cable is to be made. 1.5-meter high handrails would be provided at platform level with expanded metal net for additional safety. Platform flooring will consist of checker plate conforming to IS 3502 and shall be designed to take stationery and moving load of 1 person plus equipment weighing about 100 Kg. At platform - "Top-plates", as a form of protection against accidental dislodging of small tools, are to be provided.</p> <p>An internal ladder of width not less than 300mm starting from about 3.0 meter level of the tower from the ground and going up to the top with openings at the</p>

		<p>platform shall be provided. In case of spun concrete tower external ladders shall be applicable.</p> <p>Anti-climbing shield as shown in the figure below should be installed on all three faces of triangular tower up to 3.0 meters from the ground up to prevent mischief makers from easily climbing on the tower and pilfer equipment installed on the tower. Other methods such as winding of barbed wire or other suitable method should be installed in case of spun concrete tower up to 3.0 meters above ground.</p> <p>.</p>  <p><i>Anti-Climb Shield</i></p>
12	Cable runway supporting ladder	<p>The vertical cable rack for supporting audio power cable starting from the base of the tower and going up to the junction box position shall be routed along the tower face. Provision for fixing the supporting pipe of suitable diameter for hoisting microwave antenna shall be made on the tower.</p> <p>The fitting and fixtures along with the antenna and the feeder cables shall be assembled by the bidder to the entire satisfaction of the Purchaser. Horizontal feeder rack to support the cables on the ground from tower base to the control room shall also be fabricated as per relevant IS Codes and shall be supplied by the Bidder. The approximate length of cable rack required is up to 30m which may be included in the quote. The maximum spacing between the vertical supports of the cable rack shall be 4.0 meter. The cable rack shall be provided with a G.I. sheet cover so that falling object shall not damage the cable. The height of the cable rack will be about 3.0 to 4.0 meter from ground level.</p>
13	Factory inspection and Trial Erection for Steel	<p>In-shop inspection report of finished products shall be submitted to the Purchaser for approval. The products shall be inspected by the Purchaser after the in-shop inspection by the manufacturer. Faulty portions shall be promptly rectified.</p> <p>Where deemed necessary by the Contractor or wanted by the customer, at least one (or more units as per decision of the customer/ third part auditor) tower (s)</p>

	Tower	of each type shall be erected on trial basis in the factory or any nearest site at the contractor's cost before transportation in order to confirm accuracy and other requirements of the fabrication.
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NOTE TO THE BIDDER

01	The bidder to install warning systems at all vulnerable locations and selected beaches on 15 Meter tower as per specification mentioned above.
02	Bidder to include cost and fabrication of maximum up to 30 meters horizontal runway from tower to the main power supply source

19.2 RTU Poles

A Galvanised Iron pipe of 7.0- meter height and suitable thickness to be installed on suitable government buildings wherever these are available at proposed locations. The pipe should be of suitable quality to carry load of horn speakers and should survive without any damage due to wind load of wind speed gusting 200.0 Kilometers/hour. Bidder should design the size of the pipe and its mounting structure to meet stability requirements under above mentioned wind conditions.

19.3 Lightning Protection & Aviation Obstruction Lamps

Class B Lightning Protection

- ✓ To be installed at the input of High/Low Voltage disconnecter with 63A inductor coil:
- ✓ Line to Neutral 50KA @ 10/350 μ s.
- ✓ Neutral to Ground 100KA @ 10/350 μ s.
- ✓ Response Time: ≤ 25 ns
- ✓ Protection level at Iimp: < 1.5 KV
- ✓ One/ Single pole MCB must be provided along with Class B protector to trip-off in case of failure of Class B protector.

Class C surge protection

- ✓ To be installed after AC contactor inside the High/Low Voltage disconnecter:
- ✓ Line to Neutral 20KA 8/20 μ s.
- ✓ Neutral to Ground 20KA @ 8/20 μ s.
- ✓ Response Time: ≤ 25 ns
- ✓ Protection level at Iimp: < 1.6 KV.
- ✓ Alarm: Potential free contact must be provided.
- ✓ One MCB must be provided along with Class C protector to trip-off, in case of failure of Class C protector.

19.4 Aviation Obstruction Lamps

- ✓ Twin lamp fitting equipped with appropriate colour prismatic globes shall be provided as per latest civil aviation regulation for marking and lighting of obstacles at locations where it is essential to install such lights.

- ✓ The globes and their housings shall be strong, weather proof and of approved manufacture. Each globe shall house a 250-volt bulb of appropriate wattage to yield specified illumination. The bulb should be of bayonet cap type and not of screw type.
- ✓ Power supply cable for the lights and power sockets shall conform to IS-1554 (part-I) of 1976. Lighting cables and power shall be terminated in T.P.N. switch fuse units in the control room at the site.
- ✓ Distribution of supply to aviation obstruction light shall be through 4-way weatherproof junction boxes. The power socket with switch shall be provided at the platform levels.
- ✓ The Bidder shall provide temporary aviation obstruction lights during erection of tower as soon as the tower reaches the minimum height to be lighted as prescribed in civil aviation regulation.
- ✓ The coaxial cable shall also be terminated in control room.

19.5 Fire Extinguisher

Dry chemical powder type Fire Extinguisher (ABC class) of 2 kg capacity, fitted with squeeze grip type discharge control valve assembly, inside CO₂ gas cartridge of 120 gms as per IS: 4947 with ISI mark and DCP powder as per IS: 12209 (for ABC class) with ISI mark packed in 2 kgs HDPE bags, with discharge hose and open nozzle and supplied complete with initial charge overall conforming to IS: 15683 with ISI mark and wall bracket. Fire Rating 34B.

19.6 Earthing/Pit for all equipment & appliances as per SoW.

Sl. No	Particulars	Specification
1	Earth pit	There shall be two earth pits, one pit is for Equipment earthing and one pit for Power Infrastructure. The earth pit shall have following specification; 25mm x 3mm Copper electrode strip is laid inside the ground to a depth of about 1.65 meters vertically down from the stiff soil level and is brazed to the Copper Plate x 600 mm 600mm x 3mm laid horizontally at a depth of 1.65 meters from the stiff soil level.
2	Earthing for telecom equipment	The earth grid is extended to the equipment room by a copper strip (25mm x 1mm) and shall be terminated on a grounding copper plate bus bar by nut & bolt arrangement of brass. <ul style="list-style-type: none"> • The Telecom equipment are connected to the copper plate bus bar by a ground conductor Yellow Green 16 sq. mm copper mesh wire / conductor. • A near the electrode system with a maximum resistance of 2 ohms shall be installed. • The electrode strip is bolted to the copper strip at the top with brass nut and bolts. The copper plate is laid in layers of charcoal, salt and mud. For watering these layers, a perforated GI pipe 65mm diameter fixed with funnel at the top

		and bolted with copper plate of size 250mm x 1mm is laid vertically as per the drawing. The dimension of the earth pit shall be 1000mm (length) x 1000mm (breadth) x 2000mm (depth).
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NOTE TO THE BIDDER

01	The bidder to install Earth Bus bar at SEOC, DEOC, TEOC, FLC, Salt Pans and Tourist Beaches where telecom equipment, rack earthing shall be terminated. All the cables should be concealed in PVC Duct.
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19.7 Modular Furniture set tables + Chairs

All the Computer Tables shall be of

- ✓ Size 1500mm x 750mm x 750mm (L x W x H)
- ✓ Should have Brown Colour Laminated Top
- ✓ Inbuilt CPU Stand with footrest
- ✓ Inbuilt space for small UPS (future requirement)
- ✓ Should have minimum two drawer with lock & key facility
- ✓ Should be fitted with Electrical Power point
- ✓ Should have one revolving office Chair (with adjustable height)
- ✓ Chair should have Armrests

Bidder shall also provide two units of equipment table in each EOC, of size 2000mm x 1000mm x 750 mm (L x W x H) with built in storage for keeping office material such as paper, ink cartridges etc.

Manpower Requirement, Training etc.

20. Technical support manpower requirements:

Bidder is required to deploy the following manpower for day to day operations for a period of two years after successful commissioning of the project. Bidder is required to also quote for manpower for following 3 years (3 to 5 years after commissioning) for support. Staff requirement will be as given in table below:

Sr. No.	Location	Designation	Responsibilities	Number of persons	Qualifications and experience
1	SEOC	Communications expert	overall supervision of statewide communications network operations	1	B.Tech (ECE) with 5 years of communications network operations and maintenance experience
2	SEOC	IT expert	Maintenance of IT and display systems at SEOC	1	B. Tech (IT) with 3 years of IT equipment maintenance experience
3	SEOC	Warning control staff	Operation and maintenance of warning equipment including SMS	1	Diploma (IT) with 3 years of operational experience in GSM networks
4	DEOC	Communications and IT support staff	Maintenance of IT and display systems	1	Diploma in Communications or IT with 3 years of experience in operations and maintenance of Comm. And IT equipment
5	TEOC	Communications and IT support staff	Maintenance of IT and display systems	1	Diploma in Communications or IT with 3 years of experience in operations

					and maintenance of Comm. And IT equipment
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Bidder to provide sufficient Manpower to ensure the successful operation of the system and to assist the State Government Officials.

All personnel will work during day time (1000- to 1800 hrs.) 6 days in a week and will be available on call duty during any time of the day/night during disaster situations. EWDS-EOC Service Window will be as follows:

EWDS-EOC Network has to be made available 24 x 365. The service window for EWDS-EOC Network Links and other services attached to it shall be as per the Service window defined in table below:

- **Operations Window:**
 - 24 x7 at SEOC
 - 10 AM x 6 PM at DEOC (on call 24X7) and 24 x 7 at selected DEOCs not exceeding 5 DEOCs at a given time
- **Support Window:**
 - 24 x 7 at SEOC
 - 10 AM x 6 PM at DEOC (on-call24X7) and 24 x 7 at selected DEOCs not exceeding 5 DEOCs at a given time
- **Helpdesk Team:**
 - 10 AM to 6 PM and on call basis 24 hours during normal days
 - 24 x 7 during emergency operations

Note: Operation support at TEOC will be similar to that specified for DEOC

21. Training Requirements

21.1 General

The main concept of the Training Program is to impart thorough and effective training so that the trainees shall get adequate knowledge of the network components including:

- SMS based warning system
- VSAT network
- Internet network,
- Voice over Internet Protocol,
- EWDS Equipment & network.

The trainees will be exposed to the constructional features of different components of EWDS equipment.

The Bidder shall provide training for installation and maintenance of the EWDS Equipment & network at SEOC, DEOC and TEOC.

21.2 On-The-Job and /or On-Site Training

This training program will be organized once in every six months up to five years beyond the supply & Installation of completion period. This will give the trainee a confidence & awareness of the actual site condition.

The required training materials and handbooks in respect of operation & maintenance of the EWDS Equipment & network shall be supplied to each participant.

The Bidder shall specify in his bid the number of trainees, quantum of proposed training, pre-training qualifications required of the trainees and the duration of the proposed training required.

21.3 Training Objectives

The training shall consist of:

- Class room training
- On-The-Job and /or onsite training

21.4 Training Target

For the Installation, commissioning, operation & maintenance of the EWDS Equipment & network, training shall be imparted as per Training Manual. The Training program shall cover the following:

- Terminology
- Introduction to various types of sub-systems and equipment being used for
- EWDS installations & network
- The various parameters & their operating standard values e.g. power
- Specifications required for Safe & proper functioning, visual indications, physical specifications etc.
- Integration of EWDS Equipment & network
- Network maintenance at various levels

21.5 On-The-Job and /or onsite Training

This training program will be organized in conjunction with the class room training. This will give the trainee a confidence & awareness of the actual site condition.

21.6 Assessment during Training Program

The performance of the trainees shall be assessed progressively throughout the length of course. This shall be done by periodic tests during the training course this assessment shall be regarded as integral part of the teaching and practical training program.

21.7 Certification

The trainees shall be trained to standards required to efficiently operate and maintain the EWDS Equipment & network. After successful training the trainees shall be awarded the training certificate.

The Bidder shall specify in his offer the number of trainees, quantum of proposed training, pre-training qualifications required of the trainees and the duration of the proposed training required.

The Bidder shall provide all training materials and documents and aids.

Conduct of training of the Purchaser's personnel shall be at the Suppliers' infrastructure and/or onsite in assembly start-up operation, maintenance and/or repair of the supplied goods.

22. Testing and Quality Assurance Requirements

22.1 Acceptance Tests and Procedure

i. Introduction

- a. Acceptance Tests will be carried out on all subsystems. Additional test will include checking of interfaces with other subsystems which work in tandem. Finally, overall system performance will be checked as a whole to ensure that there are no glitches in the design / implementation.
- b. Suggested tests and procedures are included in this section as indicative in nature and no inference should be drawn that these are exhaustive. Final list of tests as well as ATP will be worked out in coordination with System Integrator and Third-Party Auditor (TPA) who will be responsible to supervise test procedures and certify acceptance of test results.
- c. GSDMA may opt for factory acceptance tests in case certain important tests can't be conducted in the field.
- d. The Contractor may work out test plan to demonstrate that offered systems meet requirements of the RFP as well as there is sufficient margin to take care of deterioration of the system over its working life (end of life performance).

ii. Systems and Subsystems to Be Tested

The following systems and sub-systems shall be required to be tested:

- a. Connectivity with GSWAN
- b. Internet links
- c. Network Monitoring System (NMS) at SEOC
- d. Satellite phones
- e. VSAT network
- f. IT equipment installed at SEOC, DEOC and TEOC in standalone modes and in network mode
- g. Group messaging system
- h. Audio / video and Multimedia systems at SEOC
- i. Alert and warning control system
- j. Remote monitoring and control of siren and audio warning units established at vulnerable locations
- k. Power supply systems and back-up capacity

22.2 Inspections

i. Factory Inspections:

Factory Inspection of sample items shall be carried out by the purchaser prior to the shipment of the major items like Alert Tower Siren System, to check the specifications as per the technical requirements of the Tender. It is made obligatory that Factory Inspection Test (FIT) reports shall be a part the documents for release of payments

ii. Inspections following delivery:

The Bidder shall carryout Post Delivery inspection of goods at Site in consultation with the Purchaser

iii. Results

Bidder is to submit the results of Factory Acceptance Tests (FAT) carried out prior to dispatch by the manufacturers in respect of: sample of VSAT equipment, Satellite phones, SBMVDT, siren and audio system on the parameter mentioned in technical specifications. The random sample test results must be enclosed with technical bid. In case offer is received without test results then, same will be rejected.

iv. Samples:

The purchaser also reserves the right to carry out the lab test of the samples submitted by the Bidder at any stage.

Tender Sample should have cards affixed on it duly signed and stamped by the firm indicating the following:-

- a. Name and address of the firm.
- b. Tender No. with date of opening
- c. Name of item, item No & size

Tender sample should have card affixed duly signed and stamped by concerned lab issued the Lab Test Report of the intended tender sample otherwise the offer is liable for rejection

Samples Sent on Basis "Freight to Pay" Will not be Accepted: Samples submitted by the bidder whose offers are not accepted may be collected by their authorized representatives on requisition or hearing from this Date. In case samples are not collected within given time, the samples will be disposed of.

v. Dispatch instructions and documentation

Dispatch Instructions and Documentation: The seller shall intimate to the purchaser, by Mail, telex or fax and speed post seven working days in advance, the mode of transport and probable date of delivery of consignment.

vi. Pre-commissioning Tests:

In addition to the Supplier's standard check-out and set-up tests, the Supplier (with the assistance of the Purchaser) must perform the following tests on the System and its Subsystems before Installation will be deemed to have occurred and the Purchaser will issue the Installation Certificate(s) (pursuant to GCC Clause 22 and related SCC clauses).

Details of pre-commissioning tests

- a. Functioning of VSAT network
- b. Functioning of Internet link
- c. Functioning of NMS
- d. Functioning of Group Messaging
- e. Operation of satellite handheld phones
- f. Alert Siren parameters monitoring and activation of EWDS sites from Control Center at SEOC as well as from back-up TEOC

22.3 Operational Acceptance Tests

Pursuant to GCC Clause 27 and related SCC clauses, the Purchaser (with the assistance of the Supplier) will perform the following tests on the System and its Subsystems following Installation to determine whether the System and the Subsystems meet all the requirements mandated for Operational Acceptance.

After installation and configuration of each and every subsystem, integrating various systems and providing various services, tests shall be conducted for system performance as a whole. Commissioning shall mean end-to-end commissioning of the network with applications running to the fullest capability. Test parameters, commitments etc. shall be submitted along with the bid, which shall be acceptable to the Purchaser. In the event, the test parameters, commitments are not submitted or not accepted explicitly in writing/minutes by the bidder, the Test parameters, commitments etc. as decided by the bidder will be final and binding. Following is a general guideline to be followed in the case of testing and certification.

Upon Self-testing, Commissioning and two weeks of continuous trouble-free operation, the system shall be offered for inspection by the bidder. The successful Bidder shall prepare an inspection and acceptance schedule with details of each activity in consultation and approval of project Consultant and Purchaser.

A detailed acceptance testing as per approved acceptance testing plan ("ATP") will be carried out before commissioning of the EWDS System. Bidder shall submit the Acceptance Test Procedures and get it approved by Purchaser.

i. Third Party Audit

The Third-Party Auditor shall be appointed by GSDMA. The Third-Party Auditor or officials as nominated by GSDMA shall be responsible for acceptance testing of the EWDS System supplied, installed, commissioned and during operation. Parameters for acceptance testing shall be prepared by bidder, finalized by the project Consultant while taking approval of the competent authority. The Consultant before approval will also oversee the acceptance testing procedures as prepared by the Bidder so that there should not be in any gaps. Cost of The Third-Party Auditor shall be borne by NCRMP, NDMA.

The Bidder will provide full support to the client for the smooth execution of the Third-Party Acceptance testing. The Third-Party Auditor shall scrutinize and submit the testing reports /SLA parameters on monthly or as required.

ii. Detailed Acceptance testing plan:

Sr. No.	Name of the system / sub-system	Proposed test	Purpose / procedure
1	GSWAN nodes		
a		Quality of local extension and Bandwidth	Checking quality of local extension from GWSAN PoP and network node at respective EOC to ensure that allotted bandwidth at respective EOC nodes
b		Bit Error Rate (BER)	BER is as per guaranteed rate for GSWAN
c		Quality of available voice, data and video services on the network	Voice, data connectivity with other EOCs and Government offices across the state Quality of Video conferencing with other GSWAN users
2	Internet links		
a		Bandwidth	Committed bandwidth at SEOC and will be at least 10,0 Mbps with capacity up-gradation up-to 20.0 Mbps on demand Committed bandwidth between DEOC will be at least 2,0 Mbps with capacity up-gradation up-to 4.0 Mbps on demand Committed bandwidth at TEOC will be at least 1.0 Mbps with capacity up-gradation up-to 2.0 Mbps on demand
b		Network interfaces	All interfaces at link nodes match the equipment supplied by the Contractor
c		Network switch over operations	Network can take over the transmission in case of failure of corresponding GSWAN node
d		Security	The system security doesn't permit intrusion by unauthorized sources
e		Setting-up priority of services	To check that it is possible to set-up priority of messages (voice over data or video over voice etc.) over the network
f		The system BER	BER for data transmission is less than 10^{-7}

3	VSAT network		
a		Operating mode	SCPC link between SEOC and VSAT Hub STAR network operating in DVB-S2 / FTDMA mode
b		Frequency Band	C or Extended C (Insat band)
c		SCPC link Data rates	SCPC link at 1.0 Mbps rate
d		Shared Hub data rate	Hub to remote up link rate should be higher than 45.0 Mbps Remote to Hub up link rate should be 512 Kbps expandable to nominal 1.0 Mbps if permitted by regulator
e		BER	Better than 10^{-6} for data transmission and 10^{-3} for voice transmission with 3 dB C/N margin
f		Maximum end to end delay for transmission	700 Milliseconds
g		Protocols support	TCP, UDP, ICMP, NAT, DHCP, DNS Caching, IGMP, Static Routes
h		Monitor & Control Protocol	SNMP-based via LAN Interface
i		Antennas and RF equipment	Tests to check performance criteria as per TEC guidelines for VSAT networks in India such as antenna pattern, cross pol isolation, output power, spurious radiation etc.
4	Network Monitoring System (NMS) at SEOC		
a		Network control	Tests to check capability of the system: To change in-route and out-route data rates Adding or switching of new VSATs in the network Monitoring of link performance of remote sites Downloading new network parameters remotely to all VSATs Setting-up audio as well as videoconference calls among VSATs Setting-up and tearing down of VoIP telephone calls between nodes
b		Monitoring	Tests to check capability of the system: Monitor data rates of each link Measure bandwidth utilisation for various applications Display working or faulty VSATs with change of status indication including its identification number and location
5	Set-up and systems installed in Operations room in SEOC		
a		Flexibility to display	Capacity to accept Video inputs from various sources

		various video inputs	received from remote sites for display screens and Desktop PC / Laptop units and switching capabilities to different sources on command from central control station
b		Connectivity	GSWAN, Internet, VSAT and public telecom connectivity
c		Interconnectivity amongst different networks	Interconnectivity and conversation between VHF Wireless hand held / base station sets, VoIP PAX (Private Automatic Exchange) telephones, VoIP calls originated on VSAT network
d		Monitoring and control of Alert system	Access to Alert and warning system for issuing of warning messages both recorded and live
e		Group messaging	Capability to send simultaneous messages to various groups, generate new groups, send messages in multiple languages
6	Equipment installed at DEOC and TEOC in standalone modes and in network mode		
		Operational capabilities	<p>Tests will be conducted to verify</p> <p>Connectivity with GSWAN and Internet</p> <p>Operation of VSAT node</p> <p>Satellite phone voice and data transmission</p> <p>Videoconferencing</p> <p>Data transmission including emails</p> <p>Group messaging system from back-up DEOC</p> <p>Remote monitoring and control of siren and alert warning units installed at vulnerable locations from TEOC</p> <p>Display systems</p> <p>DTH reception at DEOCs</p>
7	Alert and warning system		
		Testing of remote equipment	Remote testing of public address system mounted on towers by operating at low power
		Dissemination of warning messages	Check capability of the system to record large number of pre-determined messages
			Check capability to switch On of message relay using signaling system based on GSM phones / satellite equipment (Inmarsat M2M)
8	Power supply systems and back-up capacity		
a		UPS Capacity rating	The system rating as indicated in the bid document will be tested to ensure back-up for all systems including lighting for at least 1 hour in absence of mains power
b		Diesel Generator rating	The system rating as indicated in the bid document

			will be tested to ensure back-up for all systems for 24 hours with 10% overload for 1 hour
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23. Implementation Schedule Table

The Bidder must prepare a Preliminary Project Plan and Implementation Schedule describing, among other things, the methods and human and material resources that the Bidder proposes to employ in the design, management, coordination, and execution of all its responsibilities, if awarded the Contract, as well as the estimated duration and completion date for each major activity. The bidder should indicate detailed schedules for various activities, as indicated in the table below.

Bidder is required to complete the installation and commissioning of the entire system within 9 months from the date of the award of work order.

Sr. No.	Subsystem/ Item	Configuration Table No.	Site / Site code	Delivery Schedule	Installation Schedule	Acceptance testing schedule
A	Communications Network resources and monitoring					
A.1	Last mile linkages with nearest GSWAN PoP		SEOC, DEOC and TEOC			
A.2	Internet links		SEOC, DEOC and TEOC			
A.3	VSAT network nodes		SEOC, DEOC and TEOC and all siren tower locations			
A.4	Network Monitoring System		SEOC			
B	Communications equipment					
B.1	ISATHandHeld Terminals		SEOC, all DEOC, and TEOC			
C	Group -based SMS alert message system					
C.1	Group SMS dissemination system		SEOC, and one of the selected			

	hardware and software		DEOC as back-up			
C.2	Group based SMS dissemination System Integration with at least 3 (three) licensed TelecomService Providers		SEOC, and one of the selected DEOC and SMSC of telecom service providers			
C.3	DataBackup Storagefor activity Logs					
D	Remote siren and audio warning system					
D.1	Remote monitoring and control siren and audio warning system in (1+1 hot standby) mode		SEOC			
D.2	Remote siren warning system monitoring and control which will control all warning locations within same Taluka		All TEOC			
D.3	Microphone, DigitizedPre-Recorded Voice Messages / Pre-Recorded Digital Messages – (upto15 pre-recorded messages)with an average lengthof 30secondsof recording time per message, audiosplitter, voice loggeretc.		SEOC, TEOC			
D.4	GSM Modem, SIM card		SEOC, TEOC			

D.5	7.0- meter high GI poles of 12cms diameter with concrete foundation and / or supporting guy ropes		Alert siren locations indicated in the list of sites			
D.6	15.0Meter high self - supporting tower with all fixtures as per specifications including lightning protection		All siren locations where suitable government / public buildings are not available. List of sites are indicated in the table			
D.7	Poles/Tower and VSAT earthing		All siren locations			
D.8	Security fencing around tower and VSAT		All locations where towers are erected on the ground			
D.9	Monkey cages over VSAT installation		All VSAT locations			
D.10	RTU and Horn Speaker capable of providing audio Coverage in area of 1.5Kmradius		All siren locations			
D.11	SolarPanel and hybrid inverter		All siren locations			
D.12	Solar Hybrid Inverter Power cabling		All siren locations			
D.13	SolarBatteryBank		All siren locations			

D.14	Extension Power cable from local source up to VSAT and tower		All siren locations			
E	I T, Display and office Equipment					
E.1	Desktop Work stations		SEOC, all DEOC, and TEOC			
E.2	WAN Router with 8 FE Port , 2 GE WAN Port and with 2 Fiber Port 10/100/1000 Mbps		SEOC,DEOC, TEOC			
E.3	Firewall and IPS		SEOC,			
E.4	24PortFODP(FiberOptic DistributionPanel) with PigtailandCopperPatch		SEOC,DEOC, TEOC			
E.5	42UServerRack		SEOC, DEOC, TEOC			
E.6	24 port L-2 switch		SEOC, DEOC, TEOC			
E.7	LED TVScreen42" with HDMI cable to connect to set top box		SEOC, DEOC			
E.8	Portable DLP Projectorwith screen		SEOC,DEOC			
E.9	All-in-OnePrinter (Printer, Scanner, Photocopier)		SEOC,DEOC and TEOC			
E.10	FaxMachine		SEOC,DEOC and TEOC			
E.11	Set-topBoxesand annual TV channel		SEOC,DEOC			

	ConnectionCharges					
E.12	Equipment Power distribution boards and power cabling for ICT equipment		SEOC,DEOC and TEOC			
E.13	Equipment Earthing		SEOC,DEOC,TEOC and all siren locations			
E.14	Furniture, tables with storage and working tables and Chairs for operational staff at EOCs		SEOC,DEOC,TEOC			
F	MAINS AND BACK-UP POWER SUPPLY					
F.1	200 KVA rating 3 phase A C Voltage stabilizer in 1+1 redundant mode		SEOC			
F.2	50 KVA rating 3 phase AC Voltage stabilizer in standalone mode		DEOC			
F.3	30 KVA rating 3 phase AC Voltage stabilizer in standalone mode		TEOC			
F4	DGSet100KVA in 1+1 redundant mode with AMF panel and sound reducing canopy		SEOC			
F5	DGSet30KVAwith AMF panel and sound reducing canopy for installation in open air		DEOC			
F6	DGSet15KVAwith AMF		TEOC			

	panel and sound reducing canopy for installation in open air					
F7	UPS-20KVA(1+1in Hotstandbyconfiguration)		SEOC			
F8	UPS10KVA in standalone mode		DEOC			
F9	UPS5KVA in stand-alone mode		TEOC			
F10	Power distribution boards / MCB switches and Cabling		SEOC, DEOC, and TEOC			

24. EOC Configuration

The Systems & Equipment Installed & Commission at different EOCs with Indicative Layouts are as follows:

24.1 State Emergency Operation Centre (SEOC)

i. List of Systems & Equipment at SEOC

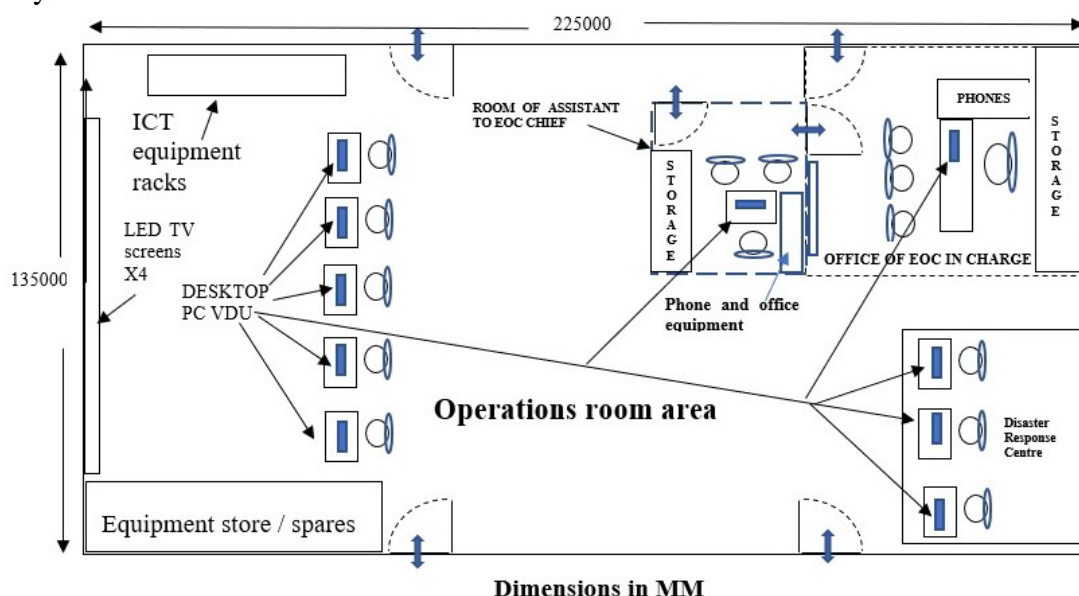
Item Number	Description of Equipment & Systems	Estimated Quantity	Unit	Remarks (If Any)
SATELLITE COMMUNICATION EQUIPMENT & SYSTEM				
1	ISAT-2 phones terminal with Fees (WPC License/renewal, Royalty)	4	Nos	
2	VSAT terminal	1	Nos	2 Mbps SCPC Link Between VSAT HUB & SEOC
3.	2 Mbps Backup Link between VSAT HUB & SEOC	1	Nos	
ALERT SIREN MESSAGE GENERATION SYSTEM				
4	Integrated Emergency Warning System with Hardware	1	Nos	
GROUP MESSAGING SYSTEM				
5	Group messaging system	2	Nos	For Redundancy One System at One of the selected DEOC which will work as Back-up of SEOC
INFORMATION COMMUNICATION TECHNOLOGY INFRASTRUCTURE SYSTEM				
6	NMS System	1	Nos	To Monitor Entire Networks and Systems
7	Call Complaint management System with Toll Free Support Centre Nos.	1	Nos	
8	42 U 19" Server Rack	2	Nos	
9	24 port L2 switch	2	Nos	
10	CAT 6 UTP Cable, Patch Panel, CAT 6 UTP Patch Cord (1 mtr. & 2mtr), Face Plate and adequate telecommunication outlets	1	Lots	
11	Server for Logs	1	Nos	

12	24 Port FODP (Fiber Optic Distribution Panel) with Pigtail	1	Nos	
13	Firewall and IPS	1	Nos	
14	WAN Router with 8 FE Port , 2 GE WAN Port and with 2 Fiber Port 10/100/1000	1	Nos	
15	Work Stations with 19 " LED Monitor (Windows 7/10, MS Office and Anti-Virus) with Head Phone, Webcam, Microphone, Keyboard, Mouse)	13	Nos	For Redundancy One System at One of selected DEOC which work as Back-up of SEOC
16	42" LED TV Screen with HDMI cable	6	Nos	2 For GIS 4 for news feed
17	Laser All-in-One Printer (Printer, Scanner, Photocopier)	2	Nos	
18	Fax Machine	2	Nos	
19	Set-top Box System	4	Nos	
20	Portable Projector with screen	2	Nos	One System at One of selected DEOC which work as Back-up of SEOC
21	Communication Control system which controls Alert Siren functionality	1	Nos	
22	Advanced Communication Board-Interface board that allows the CCU to communicate over VSAT and via GSM - Two are required for each CCU, one for the VSAT and the second for the GSM modem.	2	Nos	One System at One of selected DEOC which work as Back-up of SEOC
23	GSM Modem with Dual-SIM Card	2	Nos	
24	Microphone based live audio message OR Digitized Pre-Recorded Voice Messages and Pre-Recorded Digital Messages - Includes up to 15 pre-recorded messages with an average length of 30 seconds of recording time per message	1	Nos	
25	Internet Link	1	Nos	As per sow
ELECTRICAL EQUIPMENT & SYSTEMS				
26	Mains supply servo stabilizers	2	Nos	Redundant at SEOC
27	Mains distribution switches	2	Nos	

28	Redundant DG Set 100 KVA with Platform base	2	Nos	Redundant at SEOC
29	UPS-20 KVA (2 in Hot standby configuration) With Batteries for 4 Hr. Backup	2	Nos	Redundant at SEOC
30	POWER Cables, distributions board, PVC Duct etc.	2	Nos	
31	Air-conditioner units	4	Nos	
MISCELLANEOUS ITEMS				
32	Earthing/Pit for all equipment & appliances as per SoW.	1	Nos	As per SOW
33	Modular Furniture set tables + Chairs	1	Lot	Indicative Layout Shown below
34	Fire Extinguisher	1	Nos	
35	Monkey cage for VSAT	1	Nos	

ii. Indicative Layout of SEOC

A space of Approx. 280 Sq. mtr. will be available for setup of SEOC. The proposed layout for systems is as follows:



iii. General Works to be carried out at SEOC are as follows:

▪ Civil Infrastructure Work

- Flooring, False Ceiling, Lighting work
- Wall Paper / Painting work
- Partition & architectural work as per approved drawing
- Foundation for DG Sets if required etc.
- Any other civil work if required.

- **ICT Infrastructure Work**
 - Structural LAN Cabling
 - Server Racks Installation
 - Systems, Equipment Installation & Commissioning
 - LED TV Mounting etc.
- **Electrical Infrastructure Work**
 - DG Sets, UPS Installation & Commissioning
 - Battery Placing & Installation
 - Power Distribution Panels Mounting
 - Structural Power Cabling for Systems & Equipment
 - Air Conditioner Installation
- **Other Miscellaneous Work**
 - Furnitures & Storage as per requirement
 - Earthing work etc.

24.2 District Emergency Operation Centre (DEOC)

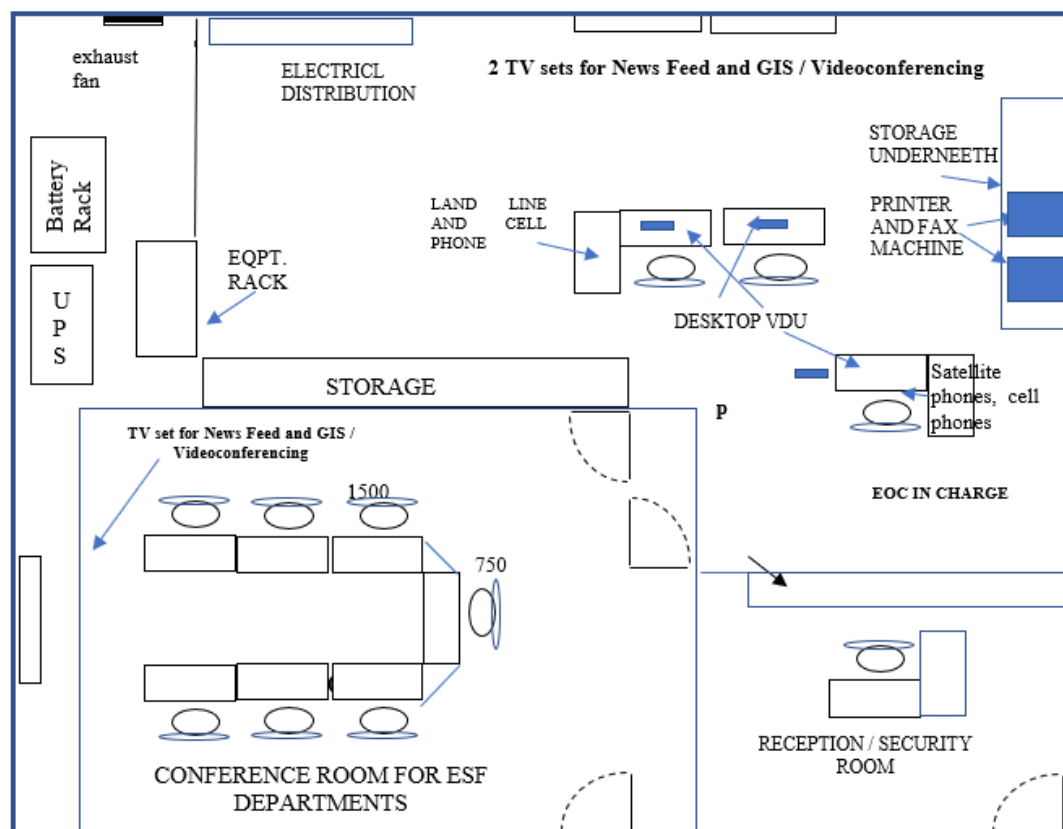
i. List of Systems & Equipment at 15 DEOCs are as follows:

Item Number	Description of Equipment & Systems	Estimated Quantity	Unit	Remarks (If Any)
SATELLITE COMMUNICATION EQUIPMENT & SYSTEM				
1	ISAT-2 phones terminal with Fees (WPC License/renewal, Royalty)	30	Nos	
2	VSAT terminals	15	Nos	
INFORMATION COMMUNICATION TECHNOLOGY INFRASTRUCTURE SYSTEM				
3	42 U 19" Server Rack	15	Nos	
4	24 port L2 switch	15	Nos	
5	CAT 6 UTP Cable, Patch Panel, CAT 6 UTP Patch Cord (1 mtr. & 2mtr), Face Plate and adequate telecommunication outlets	15	Lots	
6	WAN Router with 8 FE Port, 2 GE WAN Port and with 2 Fiber Port 10/100/1000	15	Nos	
7	Work Stations with 19 " LED Monitor (Windows 7/10, MS Office and Anti-Virus with Head Phone, Webcam, Microphone, Keyboard, Mouse)	45	Sets	3 Per DEOC
8	Laser All-in-One Printer (Printer, Scanner, Photocopier)	15	Nos	
9	Fax Machine	15	Nos	
10	Set-top Box	15	Nos	
11	42" LED TV Screen with HDMI cable	45	Nos	3 Per DEOC
12	Internet Link	15		As per SoW

ELECTRICAL EQUIPMENT & SYSTEMS				
13	Mains supply servo stabilizers	15	Nos	
14	Mains distribution switches	15	Nos	
15	DG SET-30 KVA with Platform base	16	Nos	One Redundant System at One of selected DEOC which work as Back-up of SEOC
16	UPS 10 KVA With Batteries for 4 Hr. Backup	15	Nos	
17	POWER Cables, distributions board, PVC Duct etc.	15	Nos	
18	Exhaust fan	15		
19	Air-conditioner units	30	Nos	2 per DEOC
MISCELLANEOUS ITEMS				
20	Earthing/Pit for all equipment & appliances as per SoW.	15	Nos	As per SoW
21	Fire Extinguisher	15	Nos	
22	Modular Furniture set tables + Chairs	15	Lot	
23	Monkey cage for VSAT	15	Nos	

ii. Indicative Layout of DEOC

An Indicative space of Approx. 50 Sq. mtr. will be available for setup of DEOC. The proposed layout for systems is as follows:



iii. General Works to be carried out at DEOC are as follows:

- **Civil Infrastructure Work**
 - Flooring, False Ceiling, Lighting work
 - Wall Paper / Painting work
 - Partition & architectural work as per approved drawing
 - Foundation for DG Sets if required etc.
 - Any other civil work if required.
- **ICT Infrastructure Work**
 - Structural LAN Cabling
 - Server Racks Installation
 - Systems, Equipment Installation & Commissioning
 - LED TV Mounting etc.
- **Electrical Infrastructure Work**
 - DG Sets, UPS Installation & Commissioning
 - Battery Placing & Installation
 - Power Distribution Panels Mounting
 - Structural Power Cabling for Systems & Equipment
 - Air Conditioner Installation
- **Other Miscellaneous Work**
 - Furnitures & Storage as per requirement
 - Earthing work etc.

24.3 Taluk Emergency Operation Centre (TEOC)

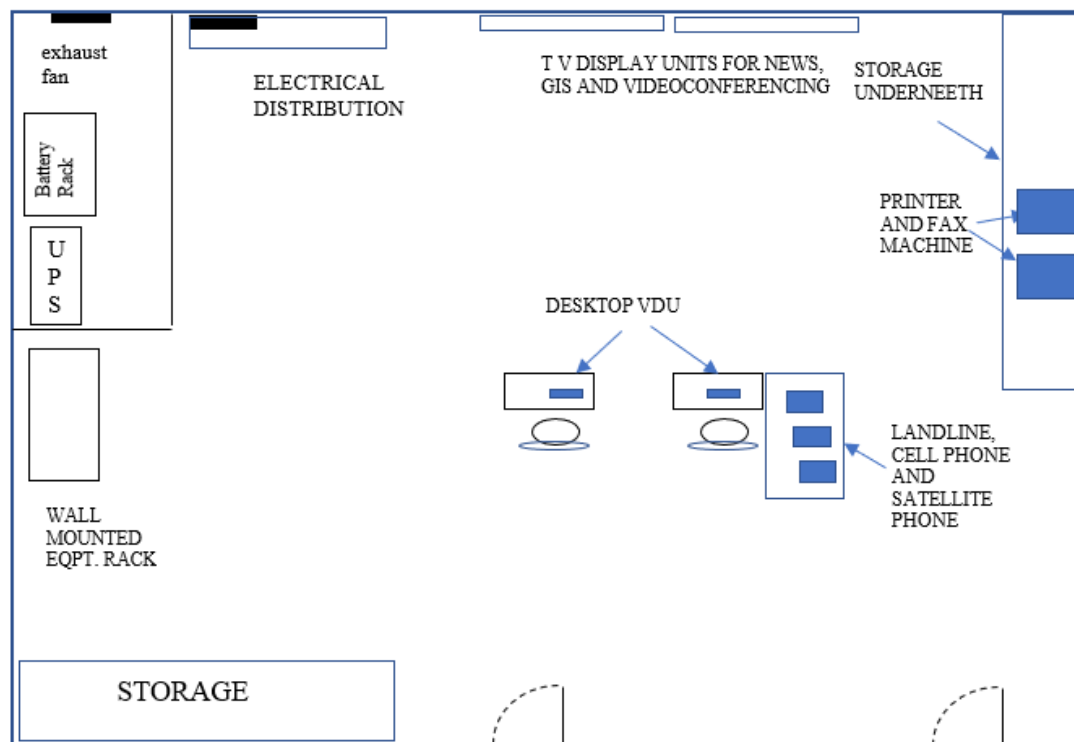
i. List of Systems & Equipment at 26 TEOCs are as follows:

Item Number	Description of Equipment & Systems	Estimated Quantity	Unit	Remarks (If Any)
SATELLITE COMMUNICATION EQUIPMENT & SYSTEM				
1	ISAT-2 phones terminal with Fees (WPC License/renewal, Royalty)	26	Nos	
2	VSAT terminals	26	Nos	
ALERT SIREN MESSAGE GENERATION SYSTEM				
3	Integrated Emergency Warning System with Hardware	26	Nos	SEOC and all TEOCs
INFORMATION COMMUNICATION TECHNOLOGY INFRASTRUCTURE SYSTEM				
4	Work Stations with 19 " LED Monitor	78	Sets	3 per TEOC-78
5	42" LED TV Screen with HDMI cable	52	Nos	2 per TEOC
6	6U Wall Mountable 19" Server Rack	26	Nos	
7	12 port L2 switch	26	Nos	
8	Laser All-in-One Printer (Printer, Scanner, Photocopier)	26	Nos	

9	Fax Machine	26	Nos	
10	Set-top Box	26	Nos	
11	CAT 6 UTP Cable,Patch Panel, CAT 6 UTP Patch Cord (1 mtr. & 2mtr), Face Plate and adequate telecommunication outlets	26	Lots	
12	WAN Router with 8 FE Port , 2 GE WAN Port and with 2 Fiber Port 10/100/1000	26	Nos	
13	Communication Control system which controls Alert Siren functionality	26	Nos	
14	Advanced Communication Board-Interface board that allows the CCU to communicate over VSAT and via GSM - Two are required for each CCU, one for the VSAT and the second for the GSM modem.	52	Nos	2 per TEOC - 52
15	GSM Modem with Dual-SIM Card	26	Nos	
16	Microphone based live audio messages OR Digitized Pre-Recorded Voice Messages and Pre-Recorded Digital Messages - Includes up to 15 pre- recorded messages with an average length of 30 seconds of recording time per message	26	Nos	
17	Internet Link	26	Nos	As per Sow
ELECTRICAL EQUIPMENT & SYSTEMS				
18	Mains supply servo stabilizers	26	Nos	
19	Mains distribution switches	26	Nos	
20	DG SET-15 KVA with Platform base	26	Nos	
21	UPS 5 KVA With Batteries for 4 Hr. Backup	26	Nos	
22	POWER Cables, distributions board, PVC Duct etc.	26	Nos	
23	Exhaust fan	26	Nos	
24	Air-conditioner units	26	Nos	
MISCELLANEOUS ITEMS				
25	Earthing/Pit for all equipment & appliances as per SoW.	26	Nos	
26	Fire Extinguisher	26	Nos	
27	Modular Furniture set tables + Chairs	26	Lot	
28	Monkey cage for VSAT	26	Nos	

ii. Indicative Layout of TEOC

An Indicative space of Approx. 15 Sq. mtr. will be available for setup of TEOC. The proposed layout for systems is as follows:



iii. General Works to be carried out at TEOC are as follows:

- **Civil Infrastructure Work**
 - Flooring, False Ceiling, Lighting work
 - Wall Paper / Painting work
 - Partition & architectural work as per approved drawing
 - Foundation for DG Sets if required etc.
 - Any other civil work if required.
- **ICT Infrastructure Work**
 - Structural LAN Cabling
 - Server Racks Installation
 - ICT Systems, Equipment Installation & Commissioning
 - LED TV Mounting etc.
- **Electrical Infrastructure Work**
 - DG Sets, UPS Installation & Commissioning
 - Battery Placing & Installation
 - Power Distribution Panels Mounting
 - Structural Power Cabling for Systems & Equipment
 - Air Conditioner Installation
- **Other Miscellaneous Work**
 - Furnitures & Storage as per requirement
 - Earthing work etc.

24.4 Vulnerable village location

i. List of Systems & Equipment at 284 vulnerable village locations are as follows:

Item Number	Description of Equipment & Systems	Estimated Quantity	Unit	Remarks (If Any)
SATELLITE COMMUNICATION EQUIPMENT & SYSTEM				
1	VSAT terminals	284	Nos	
REMOTE TERMINAL UNIT (RTU)				
2	Audio amplifier and Horn Speaker to provide coverage area of -1.5 Km radius i.e. 3.0 km Diameter	284	Nos	Vulnerable villages-168 Tourist Beaches-13 Salt pans-4 FLCs-99
3	Communication Interface Cards	284	Nos	
4	Cell Phone Modems	284	Nos	
5	Solar System Controller / Hybrid Inverter	284	Nos	
6	Battery Back-up	284	Nos	
7	Solar Panel	284	Nos	
8	Power Distribution Board	284	Nos	
9	IP 65 enclosure	284	Nos	
10	7.0-meter Poles	142	Nos	Identified vulnerable locations
11	15.0-meter self-supporting towers	142	Nos	Identified vulnerable locations
12	Security fencing around towers, poles and Monkey cage for VSAT	284	Nos	
13	Antenna Lightning Strike Protector and Aviation obstruction lamps	284	Nos	
ELECTRICAL EQUIPMENT & SYSTEMS				
14	POWER Cables, distributions board, PVC Duct etc. at RTU	284	Nos	
15	Voltage Stabilizer	284	Nos	
MISCELLANEOUS ITEMS				
16	Earthing/Pit for all equipment & appliances as per SoW.	326	Nos	
17	Fire Extinguisher	326	Nos	

ii. General Works to be carried out at vulnerable village location are as follows:

- **Civil Infrastructure Work**
 - Civil/Foundation work for Tower/Pole erection including SBC.
 - Any other civil work if required.
- **ICT Infrastructure Work**
 - Installation & Commissioning VSAT & RTU
 - Integration of RTU with VSAT Network.
 - Structural IFL & LAN Cabling.
- **Electrical Infrastructure Work**
 - Installation of Power Distribution Board near RTU.
 - Solar Panel I&C
 - Structural Power Cabling.
- **Other Miscellaneous Work**
 - Security fencing around towers, poles and Monkey cage for VSAT.
 - Earthing work etc.

25.Site Tables

Site Code	Site	City/Town/Region(To be provided by states disaster management authorities)	Primary Street Address (To be provided by disaster management authorities)	Drawing Reference No.(If any)(To be specified in the Preliminary Project Plan)
SEOC	State Emergency Operation	Included in IFB document	Included in IFB document	
DEOC	District Emergency Operation Center			
TEOC	Taluka Emergency Operation Center			
EWDS	All vulnerable villages, Cyclone Shelters, Fish Landing Station, Salt Pans, Tourist Sea Beaches			

26. System Inventory Table (Supply and Installation Cost Items)

ICT and EWDS System Inventory Table (This is indicative Bidder to prepare)

Sr. No.	Equipment	Quantity	Location
A	Satellitebased communications equipment		
A.1	ISAT phoneterminal(one per EOC)	60	SEOC, DEOC and TEOC
A.2	VSAT terminals	326	SEOC, DEOC, TEOC, MPCS and all siren locations
B	Groupmessaging		
B.1	WorkStations with19" LEDMonitor (1+1) redundant mode	2 Sets	SEOC and one of the selected DEOC for back-up
B.2	IntegratedEmergencyWarningSoftware includingCustomization	1	SEOC and one of the selected DEOC for back-up
B.3	LED TVScreen42" HDMIcableforGIS	2	SEOC and one of the selected DEOC for back-up
B.4	Group based Message System Integrationwith at least 3 majorTelecomService Provider available in Gujarat	3	SEOC and one of the selected DEOC for back-up and SMS centers of TSP
B.5	DataBackupStorageforLogs	1	
B.6	Installationof the system	2	SEOC and one of the selected DEOC for back-up
B.7	PowerCabling	2	SEOC and one of the selected DEOC for back-up
C	Internet Bandwidth and equipment		
C.1	10 Mbps bandwidth (expandable to 20 Mbps)	1	SEOC

C.2	2MbpsBandwidth (expandableto4Mbps)	15	DEOC
C.3	1MbpsBandwidth (expandableto 2 Mbps)	26	TEOC
C.4	42U19”ServerRack	2	SEOC
C.5	Network Monitoring System with associated hardware including server and storage	1	
C.6	24PortFODP(FiberOpticDistributionPanel) with Pigtail	1	
C.7	24portL2switch	2	
C.8	FirewallandIPS	1	
C.9	WANRouter with8FEPort,2GEWANPortand with 2FiberPort10/100/1000	1	
C.10	42U19”ServerRack	15	DEOC
C.11	24portL2switch	15	
C.12	WANRouter with8FEPort,2GEWANPortand with 2FiberPort10/100/1000	15	
C.13	9UWall Mountable19”ServerRack (oneper Talukax26 Talukas)	26	TEOC
C.14	12portL2switch (oneperTalukax26Talukas)	26	
C.15	WANRouter with8FEPort,2GEWANPortand with 2FiberPort10/100/1000	26	
D	Alert siren and warning control system hardware and software		
D.1	CommunicationControl systemwhichcontrols AlertSirenfunctionality	1	SEOC
D.2	CommunicationControl systemwhichcontrols functionality of all AlertSirens within boundary of concerned TEOC	26	TEOC
D.3	AdvancedCommunicationBoard-Interfaceboardthat allows theCCUtocommunicateover VSATand viaGSM - TwoarerequiredforeachCCU,onefortheVSAT andthesecondfortheGSMmodem.	2	SEOC
D.4	AdvancedCommunicationBoard-Interfaceboardthat allows theCCUtocommunicateover VSATand viaGSM - TwoarerequiredforeachCCU,onefortheVSAT andthesecondfortheGSMmodem. Two at each TEOC	52	SEOC
D.5	Mass AlertSoftware one at SEOC and one copy at each TEOC	1 Lot	SEOC and TEOC
D.6	ComputerStation(1+1Hotstandby)	1	SEOC
D.7	Standalone computer station one at each TEOC	26	TEOC
D.8	GSM Modem,SIM Card	2	SEOC
D.9	GSM Modem,SIM Card one at each TEOC	26	TEOC
D.10	Microphone,DigitizedPre-RecordedVoiceMessages and Pre-RecordedDigital Messages-Includes upto15pre-recorded messages withanaveragelengthhof30seconds of	1	SEOC

	recordingtimeper message		
D,11	Microphone,DigitizedPre-RecordedVoiceMessages and Pre-RecordedDigital Messages-Includes upto15pre-recorded messages withanaveragelengthof30seconds of recordingtimeper message one lot at each TEOC	26	TEOC
E	Remote Terminal Unit warning system		
E.1	Audio amplifier and HornSpeakerto provide coverage area of -1.5Kmradiusi.e.3.0 km Diameter	284	
E.2	Remote Terminal Unit	284	
E.3	Antenna LightningStrikeProtector	284	
E.4	SolarPanel	284	
E.5	Solar HybridInverterandPower cabling	284	
E.6	SolarBatteryBank	284	
E.7	Voltage Stabilizer	284	
F	7.0-meter Poles for sirens and 15.0-meter self- supporting towers		
F,1	7.0-meter Poles	142	Siren locations where suitable government / public buildings are available for mounting poles
F.2	15.0-meter self-supporting towers	142	Siren locations where towers are to be installed on ground
F.3	Security fencing around towers and poles	284	
G.	IT , TV reception, office equipment and display systems		
G.1	WorkStationswith19" LEDMonitor(Windows 7/10,MSOfficeand Anti-Virus) withHead Phone,Webcam,Microphone,Keyboard, Mouse	10	SEOC
G.2	PortableProjectorwithscreen	2	
G.3	Laser All-in-OnePrinter(Printer, Scanner, Photocopier)	2	
G.4	FaxMachine	2	
G.5	LED TVScreen42" HDMICablefornewsfeed	4	
G.6	Set-topBoxwith TV-ConnectionCharges	4	
G.7	ModularFurniture settables +Chairs	1 Lot	
G.8	WorkStationswith19" LEDMonitor(Windows 7/10 ,MSOfficeand Anti-Virus) withHeadPhone,Webcam,Microphone,Keyboard,Mouse(3 unitsperDEOC)	45	DEOC

G.9	Laser All-in-OnePrinter(Printer, Scanner, Photocopier)- One unit in each DEOC	15	
G.10	FaxMachine (One unit in each DEOC)	15	
G.11	LED TVScreen42" HDMICablefornewsfeed (3 units in each DEOC)	45	
G.12	Set-topBoxwith TV-ConnectionCharges	15	
G.13	ModularFurniture settables + Chairs	15 Lots	
G.14	WorkStationswith19" LEDMonitor(Windows 7/10 ,MSOfficeand Anti-Virus) withHeadPhone,Webcam,Microphone,Keyboard,Mouse(2 unitsper TEOC)	52	TEOC
G.15	Laser All-in-OnePrinter(Printer, Scanner, Photocopier)- One unit in each TEOC	26	
G.16	FaxMachine (One unit in each TEOC)	26	
G.17	LED TVScreen42" HDMICablefornewsfeed (2 units in each DEOC)	52	
G.18	Set-topBoxwith TV-ConnectionCharges	26	
G.19	ModularFurniture settables + Chairs	26 Lots	
H	LAN Cabling and power supply wiring for equipment		
H.1	Shall be provided at all EOCs	42 lots	SEOC, DEOC AND TEOC
I	Mains and back-up power supply		
I.1	Mains supply servo stabilizers at all EOCs (Redundant at SEOC and standalone at other EOCs	3 Lots	SEOC, DEOC AND TEOC
I.2	Mains distribution switches at all EOCs (Redundant at SEOC and DEOCs and standalone at TEOCs)	3 Lots	SEOC, DEOC AND TEOC
I.3	Redundant DGSet100KVA (2)withPlatformbase	2	SEOC
I.4	UPS-20KVAatSEOC(2inHot standbyconfiguration)	2	
I.5	POWER Cabling	1	
I.6	UPS10KVA(1per District)	15	DEOC
I.7	DGSET-30KVA(1per District)	15	
I.8	PowerCabling(1per District)	15	
I.9	UPS5KVA (oneperTaluka)	26	TEOC
I.10	DGSET-15KVA(oneperTaluka)	26	
I.11	PowerCabling (oneperTaluka)	26	

27. System Inventory Table (Recurrent Cost Items)

System Inventory Table (Recurrent Cost Items) from Year- 1 to Year- 5. (Year – 1 and Year -2 are for O&M period and year 3-5 are for AMC).

Component
1. ICT Equipment including EWDS
AMC for IT equipment at all EOCs
AMC for EWDS equipment at 284 sites
AMC for office equipment at all EOCs
2. Internet bandwidth
SEOC- 10 Mbps and 20 Mbps dedication Internet Charges per Year
DEOC- 2 Mbps and 4 Mbps dedicated Internet - Charges per Year
TEOC- 1 Mbps and 2 Mbps dedicated Internet Charges per Year
3. Handheld Phones
WPC License & Royalty fee for all ISAT-2 phones
SEOC- Yearly subscription and utilization charges for 4 unit of ISAT-2
DEOC- Yearly subscription and utilization charges for 30 units ISAT-2
TEOC- Yearly subscription and utilization charges for 26 units of ISAT-2
4. VSAT Network
Annual Satellite bandwidth charges for 3.0 Mbps data rate
AMC for 326 VSATs
Annual lease rental for 2.0 Mbps data link between SEOC and VSAT hub
5. Back-up power generators
SEOC- Diesel Charges for DG set operating average 30 hours/month
DEOC- Diesel Charges for DG set 30 hours / month
TEOC- Diesel Charges for DG set for operating 60 hours / month (30 days x 1 month= 480 Litters per month x 20 Talukas)
ALL EOCs- AMC for mains voltage stabilizers
ALL EOCs- AMC for all UPS equipment
6. SET TOP BOX
SEOC- Yearly connection charges for News feed (4- No of news channels selected by GSDMA)
DEOC- Yearly connection charges for News feed (1no x 15 Districts)
TEOC- Yearly connection charges for News feed (1no x 26 number of Talukas)
7. APPLICATION SOFTWARE
SEOC- AMC for ICT equipment
SEOC- AMC for Alert and warning system
SEOC- AMC for Group based Message
SEOC- AMC for NMS
8. Consumable materials and Hardware Maintenance
Paper, ink cartridges, lamps and tube lights etc. painting of towers etc. as per requirement
9. All EOCs and EWDS towers and poles
Estimated Annual expenses
10. Any other expenses felt necessary by bidder

Table of Holidays and Other Non-Working Days

[Specify: The days for each month for each year that are non-working days, due to Holidays or other business reasons (other than weekends).]

Month	20xy	20xy+1	20xy+2	20zz
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

28. Generic Activity-specific Environment Social Management Plans (GESMP) & ESHS Plan

28.1 Instructions & Compliance on ESHS / GESMP

The System Integrator will abide by the Environmental, Health and Safety (EHS) measures listed in the Environment Social Management Plan (ESMP) given in table below. The System Integrator shall include the ESMP requirements in the Programme of Works and the Bill of Quantities. The requirements stated in the ESMP should therefore be studied properly and the bid should be priced accordingly. All items shall be deemed incidental to work unless otherwise provided for in the price schedule.

The System Integrator is free to adopt any similar or superior environment, health and safety management practices with the caveat that the process should meet the basic minimum requirements as stated in the ESMP provided in this section. Adverse impact/s on the environment caused due to non-adherence of legal and/or ESMP requirements during pre-construction stage and/or during execution of civil and electrical works shall be made good at System Integrator's own expenses. The Environment and Social Management Framework (ESMF) for the project (NCRMP II) from which these conditions have been derived/listed is available with the State Project Implementation Unit for reference and the same can also be downloaded from the website

Performance review of the System Integrator with regard to EMP compliance in accordance with requirements in GCC will be conducted by the employer or his agent specifically appointed for this purpose.

28.2 ESMP /ESHs Plan for construction/ erection of Siren Towers and upgradation of EOC:

Sl. No	Activity	Measures to be Implemented by the System Integrator of Siren Towers
1	Work Plan for ESMP implementation	The System Integrator's Project Manager shall be responsible for implementation of ESMP provisions and will coordinate the over-all implementation of the said plan. Along with the Work Programme, the System Integrator shall submit a plan including method statement and timeline about specific actions that will be taken by him to implement the provisions laid out in the ESMP.
2	Regulatory Permissions and Consents	The System Integrator shall obtain all requisite statutory clearances prior to commencement of civil and or electrical works, which includes obtaining permissions/consents for setting-up construction camp; plants and equipment; borrow areas if necessary. The System Integrator shall abide by all conditions laid out in the said clearances. This includes: Aviation Authority for erection of Lightning Mast which comes in the vicinity of flying zone. (Where necessary) Consents for establishment and operation of plants (electrical power generator sets) from State Pollution Control Board (If necessary) PUC certification for all vehicles/equipment used for transportation (of personnel and materials) and construction. Permission/consent of the District Administration/Mining Department/other agencies for quarrying and/or borrowing operations for materials like sand and earth
3	Consultation and Community	The System Integrator shall consult and obtain written consents of landowners (individual/panchayat/govt. agency) for temporary use of

Sl. No	Activity	Measures to be Implemented by the System Integrator of Siren Towers
	Consent	land for all construction related activities including: Erection of towers Setting-up and operation of construction and labour camps; Borrow areas and Disposal of debris and other waste material.
4	Construction/ Labour Camp	<p>Location: The location of camp and plant site/s shall be as per the environmental siting criteria given in the ESMF. Consent of the land owner/local authorities shall be required and needs to be submitted to the Employer for approval. Construction camp sites (including plant sites, and material stock yards) shall be located (preferably in the downwind direction) at least 500 mts. from the nearest settlement and at least 1000 mts. away from designated/protected natural habitats (such as National Parks, Sanctuaries, Biosphere Reserves, Reserve Forests and Ramsar Sites).</p> <p>Accommodation and Basic Amenities: All weather shelter with the required tenement size and toilets shall be provided, as per provisions of Labour Laws. Separate toilet facilities shall be provided for women workers. If a common mess is not provided/operated, additional space for cooking shall be provided. The System Integrator shall ensure that hygienic conditions are maintained during the operation of such camps/facilities.</p> <p>Fuel for Cooking: The System Integrator shall ensure that fuel wood is not used as a cooking medium in the construction/labour camp.</p> <p>Potable water supply: Drinking water supply of at least 40 LPCD with the required supply points shall be provided.</p> <p>Fire Safety: Adequate fire safety precautions shall be taken and the required fire safety equipment (such as fire extinguishers) shall be provided by the System Integrator.</p>
5	Site Clearance	<p>All required precautions/measures to prevent damage to tower side vegetation outside the formation cutting and filling areas shall be taken. No tree cutting is to carried out without the written instruction from the Employer, who in turn will ensure that relevant regulatory permission/s</p> <p>The non-timber grade trees are to be stacked and possession is to be given to Employer/concerned Govt. Department.</p> <p>The System Integrator shall strip, store, preserve and reinstate top soil in work fronts.</p>
6	Protection of Properties and Resources	<p>The System Integrator shall take due care to protect and prevent damages to the following resources during preparatory and construction work:</p> <p>Water supply lines Irrigation canals Cart, cattle and/or foot trail/tracks Cultural properties and sites/structures of religious importance Houses, Farmlands, Pastures, Orchards and/or Trees</p> <p>In case of damage due to construction activity, the restoration/repairs shall be carried out by the System Integrator at his own cost.</p>
7	Slope Stability	The System Integrator shall ensure that civil work and related activities such as clearing and grubbing, stacking of materials and debris disposal

Sl. No	Activity	Measures to be Implemented by the System Integrator of Siren Towers
		are carried out in a manner that minimizes slope instabilities of near-by water bodies.
8	Quarry Establishment and/or Operations	<p>The System Integrator shall procure material from quarries that have been approved/licensed by the State Govt. A copy of such an approval shall be submitted to the employer prior to procuring material.</p> <p>All requirements for ensuring health and safety of workers, including use of effective dust suppression arrangements at crusher sites and on haul roads; safety precautions prior to blasting operations; provision and enforcement of Personal Protective Equipment use and proper storage of blasting and</p> <p>Other inflammable materials shall be followed by the System Integrator.</p> <p>(c) First-aid and Emergency Response Arrangements: First-aid facility and emergency response arrangements shall be maintained at the quarry and</p> <p>In the event of System Integrator opening a new quarry for the project, the following additional conditions shall apply –</p> <p>Location: Location of quarry site shall be at least 1000 mts. from the nearest settlement; archeologically/culturally protected/locally important sites; designated/ protected natural habitats (such as National Parks, Sanctuaries, Biosphere Reserves, Reserved Forests and Ramsar Sites); other ecologically rich sites with Forest and/or areas with Wildlife presence and; water supply sources. Other location selection criteria as defined under Govt. regulations/rules will also apply.</p> <p>Site preparation. Area shall be demarcated as approved in the permit and shall be reconfirmed by the employer. Site clearance shall take place only within the demarcated area. Top soil, if any, shall be stripped, stacked and preserved for re-use.</p> <p>Operation: The quarry shall be operated by adopting/implementing environmental, health and safety measures as specified in the permit conditions.</p> <p>Closing and restoration. Proper drainage provisions shall be provided prior to closure of the quarry. Restoration shall be done as per the permit conditions</p>

Sl. No	Activity	Measures to be Implemented by the System Integrator of Siren Towers
9	Borrow Areas	<p>Borrow areas for the project will be selected by the System Integrator following the stipulations given below. The finalization of all such locations shall be dependent on the approval of the employer on technical and environmental grounds. This includes on-site verification to cross-check the accuracy of details provided by the System Integrator. Only after receipt of the written approval from the employer, the System Integrator shall enter into a formal agreement with landowner.</p> <p>The System Integrator shall not procure any kind of construction material (such as aggregates, sand and earth) from ecologically protected areas.</p> <p>Identification and Selection</p> <p>The borrow area should not be located in agriculture field/s unless unavoidable i.e. barren land is not available. In case borrowing needs to be done on an agricultural land, top-soil stripping, stacking and preservation is a must. Damage to productive and fertile areas has to be minimal and this includes appropriate planning of haul roads.</p> <p>Borrow pits shall not be located within a distance of 100 mts. from any NH, SH or other roads.</p> <p>Borrow pits shall be preferably located 500 mts. away from settlements/habitations.</p> <p>No borrow pits shall be located within 500 mts. from schools, colleges, playgrounds, religious structures and health centers.</p> <p>No borrow area shall be opened within 500 mts. from a reserved or protected forest area, protected sites, wildlife movement zone and cultural heritage site.</p> <p>No tree cutting shall be undertaken.</p> <p>Borrow area near any surface water body will be at least 100mts. away.</p> <p>Operation</p> <p>Area up to which material will be extracted shall be clearly demarcated on ground.</p> <p>A 15 cm topsoil layer will be stripped and preserved in stockpiles.</p> <p>Borrowing of earth should be preferably limited to a depth of 1.5 mtr from the existing ground level.</p> <p>Slope at the edges will be maintained not steeper</p> <p>Rehabilitation of Borrow Areas</p> <p>Rehabilitation shall be satisfactorily undertaken immediately after the use has ceased and at least three weeks prior to monsoon.</p> <p>Preserved top soil has be spread uniformly over land (except in cases where borrow area is developed as a water body) used as a borrow area</p>
10	Water Extraction/ Use	<p>Water for construction and for use at construction camps (including labour camps) is to be extracted with prior written permission of The individual owner, in case the source is private well/tube well; Gram Panchayat in case the source belongs to community; and Irrigation Department in case the source is an river canal etc.</p>
11	Traffic Safety and Management	<p>In areas where traffic is to be diverted during construction, the traffic detour shall be planned and publicized to the local people. Necessary</p>

Sl. No	Activity	Measures to be Implemented by the System Integrator of Siren Towers
		<p>information signage shall be erected to inform the road users.</p> <p>Traffic safety arrangements (including provision of warning signage, barricades and delineation) shall be made by the System Integrator to ensure safety of road users, local people and workers.</p> <p>Material shall be covered during transportation to prevent spillage, accidents and pollution.</p>
12	Worker's Safety	<p>All measures required for ensuring safety and health of the workers shall be taken up by the System Integrator. This includes provision and enforcement of appropriate personal protective equipment; first aid facilities at camp, plant sites and work zones; emergency response arrangements; proper storage of hazardous/toxic and polluting materials and; measures for ensuring fire, electrical and mechanical safety arrangements in camps and in work fronts.</p> <p>Material safety data sheet record of fuel and other inflammable chemicals shall be maintained at the site.</p>
13	Air Pollution	<p>Wind barriers or screens shall be provided in the downwind direction at air pollution causing sources like plant sites and fine material storage stock yards.</p> <p>Fugitive dust emissions have to be eliminated or at least reduced by providing dust suppression/control measures, based on activity and site conditions.</p> <p>All plants and equipment shall comply with pollution control norms.</p> <p>Water shall be sprinkled at least twice during dry day on haulage roads passing through or near settlements (including at least 100 m before and after the settlement).</p>
14	Water pollution	<p>All measures (including provision of temporary silt fencing to control sediment run-off) required for avoiding adverse impacts to water bodies (such as ponds, streams, canals and rivers), water sources (such as hand pumps and wells) and adjacent farmland shall be undertaken by the System Integrator.</p> <p>Storage of materials like fuel, chemicals, cement and bitumen shall be done in a manner (with impervious layer on bottom and a covered shed on top) that does not contaminate land and ground/surface water.</p>
15	Noise Pollution	<p>All noise causing activities within 1km radius of settlements shall be stopped during night time (9:00 PM to 6:00 AM).</p> <p>Ear plugs shall be provided to the labour facing risk from high noise pollution (such as plant sites, blasting zones and those working near generators, heavy equipment/machinery) in construction zone.</p>
16	Disposal of Debris and Wastes	<p>All debris and spoils generated during construction works are to be reused to the extent feasible (technically and economically). Residual debris and spoils, if any, shall be disposed in locations preapproved by the employer in a manner that it does not contaminate the environment.</p> <p>Location of Debris Disposal Sites: Debris disposal sites shall be located preferably away from farmlands, water sources and water bodies. In no case, debris shall be disposed within 500 mts. of ecologically sensitive areas, including forests, wetlands and protected natural habitats.</p> <p>Site preparation and disposal method: Site will be prepared by stripping and storage of top-soil. The disposal shall be carried out as per the</p>

Sl. No	Activity	Measures to be Implemented by the System Integrator of Siren Towers
		employer's approval. Closure: Disposal sites shall be properly dressed up with top-soil re-laid on site surface; drainage provision to divert run-off water away from the site and; vegetation (grass/shrub) plantation, based on site conditions.
17	Restoration and Rehabilitation of Sites	All work sites and areas under temporary use (including construction and labour camps, plant sites, haul roads and borrow areas) shall be restored/ rehabilitated to a better condition (if not at least to its original condition) and to the satisfaction of the employer and land owner upon completion of construction work by the System Integrator. Completion of work will also include completion of rehabilitation and clean-up of the work sites including camps, plants, in and along road and structure construction sites; disposal of debris/construction wastes at pre-approved locations and; restoration of borrow areas and other sites/locations used for material sourcing.
18	Liabilities	Any liability arising out of System Integrator's agreement with landowners/ local people/gram panchayat (including those related to temporary use of land, water extraction and disposal of debris) shall be settled by the System Integrator.

28.3 Safety checklist of ESHS Plan for erection of Siren Towers, electrical and communications equipment:

a. During Tower or VSAT Antenna Foundation:

S. N.	Description of Activity	Feed back	Remarks
I.	EXCAVATION:		
1.	Dumping of Excavated soil. (Minimum 1.5 Mts. or half the depth of the pit whichever is more)	Yes / No.	
2.	Whether angle of repose of soil as per design in the foundation is maintained or not.	Yes / No.	
3.	De-watering arrangement is available (If necessary)	Yes / No.	
4.	Working area has been protected properly to avoid against fall of passerby or animal in the excavated pit.	Yes / No.	
5	Shoring & Shuttering to protect the loose rock / soil against fall exists.	Yes / No.	
6	Arrangement of illumination at construction site is available. (if required)	Yes / No.	

S. N.	Description of Activity	Feed back	Remarks
7	Check proper/adequate arrangement is made for extension of electric supply. (Proper size of cable, Use of fuse, No loose connection for De-watering Pumps/ Illumination / Electric compressors etc. if applicable).	Yes / No.	
8	Check for damage / Uneven settlement of foundation.	Yes / No.	
9	Ensure Life saver arrangements have been made during construction of well foundation in river bed. (Where necessary)	Yes / No.	
10	Check that the adequate arrangement is made for the storage of blasting material at safe place. (if required)	Yes / No.	
11	Check that the blasting materials is handled with due care at site. (If required)	Yes / No.	
12	Check that during blasting operation, Labour / Workmen / Passerby are at safe places and arrangement is made to inform public by caution markings (Red Flag) / Public Notices.	Yes / No	
13	Check that the length of the fuse wire used during blasting operation is adequate.	Yes / No.	
14	Ensure Laying of temporary cable used for operation of Machines used during construction should not cause any danger for electrocution of workmen.	Yes / No.	
15	Check that PPEs i.e. Safety helmets, Safety Shoes, is used by blaster and their gang members during blasting.	Yes / No.	
16	Ensure that Shuttering and timbering has been made as detailed in I:S: 3764.	Yes / No.	
17	The positions of underground installations such as sewers, water pipes and electrical cables have been verified and in case of their existence, they must be isolated.	Yes / No.	
18	Arrangement shall be made to prevent external vibrations due to rail / road traffic (If required).	Yes / No.	
19	Safety is ensured during the construction of Tr. Lines for buildings, structures etc. which are coming in the vicinity of the excavated area from collapse. (If required)	Yes / No.	
20	Check that sufficient strong ladder of suitable length is available for ingress / outgress of persons in the pit	Yes / No.	

S. N.	Description of Activity	Feed back	Remarks
21	Lone worker should not be allowed to work in the excavated area beyond shoulder level.	Yes / No.	
22	Check for any possibility of seepage of water from nearby pond / river should be estimated and taken care of.	Yes / No.	
23	After excavation the work has been completed speedily and back filling done at the earliest.	Yes / No.	
II.	CASTING OF FOUNDATION/CONCRETING :		
1	Check construction materials are stacked at safe place and also does not cause any danger. (Away from pit by 1.5 Mtrs. Or half the depth of pit, whichever is more.)	Yes / No.	
2	Check arrangement of illumination at Construction Site. (If required).	Yes / No.	
3	Ensure life saver arrangements have been made during construction of Well foundation in River Bed.	Yes / No.	
4	Check that the Concreting Mixer machine is placed at a safe place. (Not very near to pit.)	Yes / No.	
5	Check proper / adequate arrangement is made for extension of electric supply. (Proper size of cable, Use of fuse, No loose connection for De-watering Pumps / Illumination / Electric compressors etc. if applicable).	Yes / No.	
6	Check that laying of temporary cables used during construction activities should not cause any danger for electrocution to workmen.	Yes / No.	
7	Inspection of excavations shall be made by a Competent Person every day. In case, possible cave in or slide is apparent, all working in the excavation shall be seized until the necessary precautions have been taken to safeguard the possible cave in or slide.	Yes / No.	
8	Jacks and vertical supports shall be positioned in such a manner that the vertical loads are distributed equally and do not exceed the capacity of the jacks and the jacks are placed away from pit edge etc.	Yes / No.	
9	Proper Jacking arrangement is made to take the entire load of template.	Yes / No.	

S. N.	Description of Activity	Feed back	Remarks
10	In case of long template in stub setting, more jacks have been provided and check that the Jacks are placed on levelled and hard surface to avoid the unbalancing and fallen.	Yes / No.	
11	Wire mesh rolls shall be secured in order to prevent dangerous recoiling action.	Yes / No.	
12	Lone worker should not be allowed to work in the excavated area.	Yes / No.	
13	Check that sufficient strong ladder of suitable length is available for ingress / outgress of persons in the pit	Yes / No.	

b. Tower / VSAT Antenna Erection:

S. N.	Description of Activity	Feed back	Remarks
1	Check proper communication facility is available at site during Tower erection.	Yes/No.	
2.	Check damages or uneven settlement of foundation.	Yes/No.	
3.	Ensure the derrick used before tower erection has been checked for adequate strength/size. Ensure for copy of test certificate for all the lifting machines and tackles.	Yes/No.	
4.	Ensure that the pulleys used before tower erection have been checked for adequate strength/ proper size (diameter). Also, in case of open type pulleys proper locking arrangements like providing of Safety Pin is made. Ensure for copy of test certificate for all the lifting machines and tackles.	Yes / No.	
5.	Ensure that the ropes used before tower erection have been checked for adequate strength/ physical condition (Free from break of strands and knot etc).	Yes/No.	
6.	Check that the lifting tools and tackles i.e. Winch Machine, Chain Pulley Block, Trifor, D-Shackle etc. are in healthy condition and have been tested periodically. (Attach copy of test certificate).	Yes/No.	
7.	Ensure that permission has been obtained from Aviation Authority for erection of special towers. (Where necessary).	Yes/No.	
8.	Ensure that permission has been obtained from Aviation Authority for erection of towers which come in the vicinity of flying zone. (Where necessary)	Yes/No.	
9.	Check that the safety measures have been taken before undertaking for the Road/Rail/River Xing jobs involving likewise stretches.	Yes/No.	
10.	For rail or road crossing check whether written working plan is available at site with specific reference to safety e.g. local earthing, skilled & experienced manpower, proper T&P, strength and height of scaffolding to maintain the required clearance etc.	Yes/No.	
11.	Ensure that all the members and proper size of Nuts and Bolts of lower section are fitted properly before erection of the upper section of tower is taken up.	Yes/No.	
12.	Check that the anti-climbing devices are provided in the tower after erection job.	Yes/No.	
13.	Check that the danger plates have been provided.	Yes/No.	
14.	Check that only erection team members are allowed to stand near the tower while erection is in process and should wear the safety helmet/ Safety Shoes.	Yes/No.	
15.	Working area of the tower has been demarcated during erection.	Yes/No.	

S. N.	Description of Activity	Feed back	Remarks
16	Check that proper guying arrangement has been made. And also to see that proper size of the crow bar has been used which has been fixed at hard surface in case of sandy soil or loose soil.	Yes/No.	
17	Check that proper arrangement is made while lifting the tower members and fixing them at the height i.e. Proper size and strength of the hook used for lifting the tower members.	Yes/No.	
18	Check sufficient numbers of guys are made while lifting the assembled cross arm and also avoid use of single sheave pulleys while lifting the assembled cross arm/heavy load.	Yes/No.	

c. Battery, Conductor, Installation of Siren & Misc.

S. N.	Description of Activity	Feed back	Remarks
III. EXCAVATION:			
1.	All drivers and plant operators are holding the valid driving license.	Yes/No.	
2.	Check that the permit has been obtained from the Competent Authority (Where necessary)	Yes/No.	
3.	Check that required painting has been made on tower falling in the vicinity of aviation zones. (Where necessary.)	Yes/No.	
4.	Check that all safety measures have been taken during power supply lines (Earthing of existing lines etc.)	Yes/No.	
5.	Ensure that proper size of Nuts and Bolts is rigidly tightened and punching/tacking/tack welding is done in towers.	Yes/No.	
6.	Ensure that proper scaffolding arrangements are made during erection of towers & power supply of siren.	Yes/No.	
7.	Check that the backfilling of the foundation has been done as per specification.	Yes/No.	
8.	Ensure that the pulleys used before conductor stringing have been checked for adequate strength/ proper size (diameter), also in case of open type pulleys proper locking arrangements like providing of Safety Pin is made. Ensure for copy of test certificate for all the lifting machines and	Yes/No.	
9.	Ensure the ropes used for power supply connection have been checked for adequate strength/ physical condition (Free from break of strands and knot etc).	Yes/No.	
10.	Whether the tower has been permanently earthed.	Yes/No.	
11.	Check that Sag Board is provided at two locations.	Yes/No.	

S. N.	Description of Activity	Feed back	Remarks
12.	Check that the Sag Board arrangement is made by the experienced/ trained persons.	Yes/No.	
13.	Check approved Sag tension chart is available and followed at site.	Yes/No.	
14.	While clamping of conductor/EW to be done, check for earthing.	Yes/No.	
15.	During erection of towers start check that the villagers do not come underneath the job of the concerned section.	Yes / No.	
16.	Only nylon or polypropylene rope should be used during power supply in vicinity of live overhead lines.	Yes/No.	
17	Check whether the System Integrator had procured required quantity of PPEs considering maximum numbers of erection gangs deployed at one time.	Yes/No.	
18	Supervisors/ Workmen have been provided with required healthy PPEs, like Safety helmet/ Safety Belts/ Safety Shoes/ Gum Boot etc. as applicable.	Yes/No.	
19	Availability of First Aid Box with required medicines at site.	Yes/No.	
20	Instruction register is available at site.	Yes/No.	
21	All driver and plant operators are holding valid driving license.	Yes/No.	
22	Check the vehicle for rescue is available at site.	Yes/No.	
23	Ensure engaged labour are aware of the job.	Yes/No.	
24	Check that the unskilled labourers are not engaged in skilled job.	Yes/No.	
25	Ensure that supervisor/workmen engaged in the field are aware of First Aid Techniques (Such as in case of Electric Shock, Fall from the height, Snake bite and the person rescued from buried under the debris etc).	Yes/No.	
26	Check for nearby Hospital / Doctor in case of emergencies arises.	Yes/No.	
27	While transporting heavy consignment to site by the use of Cranes, Truck, and Tractor. The safety aspect for construction and failure of brake system of moving machinery is to be checked.	Yes/No.	
28	Ensure that supervisor/workmen engaged in the field are aware of First Aid Techniques (Such as in case of Electric Shock, Fall from the height, Snake bite and the person rescued from buried under the debris etc).	Yes/No.	
29	Check the competence (Qualification/Experience) of supervisor / gang leader of System Integrator.	Yes/No.	
30	Check permission has been obtained from Aviation Authority for erection of Lightning Mast which comes in the vicinity of flying zone. (Where necessary)	Yes/No.	
31	Storing of equipments is to be made properly to avoid any accident during handling.	Yes/No.	

S. N.	Description of Activity	Feed back	Remarks
32	Check those who have sufficient knowledge of steel structural job have been employed in steel structural works only.	Yes/No.	
33	Check that necessary instruction has been communicated by supervisor before start of the day's work to workmen under his control.	Yes/No.	
34	Check loose materials which are not required for use shall not be placed or left so as dangerously to obstruct work places or passageways.	Yes/No.	
35	Check all projected nails have been removed or bent over to prevent injury.	Yes/No.	
36	Check scrap, waste and rubbish has not been allowed to accommodate on the site or the scrap material has been stored at the isolated place.	Yes/No.	
37	Check that each worker while working at height scaffold materials, waste materials and tools are not being thrown by them to cause injury to any person.	Yes/No.	
38	Check the worker is under constant surveillance by the other person while working at height.	Yes/No.	
39	Check construction site has been barricaded for unauthorized persons/animals.	Yes/No.	
40	Check portable ladders shall not exceed 9 Mts. in length, otherwise may cause danger while climbing of person and back leg shall be equally braced.	Yes/No.	
41	Check unskilled labour are not utilized for skilled jobs and only experience persons are deployed for erection.	Yes/No.	
42	Check portable ladders shall not exceed 9 Mts. in length, otherwise may cause danger while climbing of person and back leg shall be equally braced.	Yes/No.	
43	Check no metallic measuring tapes are being used during expansion of charged bays.	Yes/No.	
44	Check metal ladders are not being used in the vicinity of exposed live electrical equipment.	Yes/No.	
45	Check one bore well is available for water supply in case Gram Panchayat/ Municipal Construction supply is not available	Yes/No.	
46	Check ladders/lengthy articles/lengthy equipment etc. should always be carried in horizontal position.	Yes/No.	
47	Check insurance by System Integrator for the labour to provide adequate coverage for any accident etc.	Yes/No.	

28.4 General Health, Safety Guidelines during construction/Erection of siren towers and other ICT systems

The following checklists may help us & take steps to avoid hazards that cause injuries, illnesses and fatalities. As always, be cautious and seek help if you are concerned about a potential hazard.

A. Basic Safety Compliance

- All measures required for ensuring safety and health of the workers shall be taken up by the System Integrator. This includes provision and enforcement of appropriate personal protective equipment; first aid facilities at camp, plant site and work zones; emergency response arrangements; proper storage of hazardous/ toxic and/or polluting materials; measures for ensuring electrical, fire and mechanical safety arrangements.
- Proper barricading of the construction site with traffic management plans. All operational areas shall be access controlled with fixed entry and exit points. Watch and ward facilities at all times will be provided by the System Integrator. The separate entry and exit to the construction zone shall be maintained properly at all times. No Entry without PPE, including Helmet, Safety Jacket, Safety glasses or face shields, Safety Shoes in the construction site.
- Trained Supervisor/safety staff & guards should be deployed for close supervision of construction site
- First Aid Box with list of medicines & purpose of medicine along with signboard indicators for easy access. Expiry date of the medicines to be checked frequently. Trained first aid personal will be available at the construction site. Including Emergency numbers will be displayed prominently at camp and construction site and availability of suitable transport at all times to take injured or sick person(s) to the nearest hospital in case of Emergency. Designated vehicle, which can be used as ambulance, will be available at construction site. No cost shall be recovered from them on this account.
- Smoking should be prohibited in inflammable areas like dumping of diesel, petrol kerosene, gas cylinder etc.
- Licensed & appropriate trained driver should be allowed to operate the vehicle like Crane, Derricks & Forklift etc
- Health Checkup camps for staff & labour and follow-up for preventive action/referral services in convergence with CHC/PHC.
- Preventive measure for soil contamination during storage of Diesel/Petrol/Oil/Greece/Other oil/Inflammable items.
- Preventive measure for fire safety equipment's.
- Provide garbage bins in construction site and it will be ensured that these are regularly emptied and waste is disposed-of in a hygienic manner as per the Solid Waste (Handling and Management) Rules, 2016.
- Ensure that civil work and related activities such as clearing and grubbing, stacking of materials and debris disposal are carried out in a manner that avoids water logging.

B. Labour Law Compliances:

- All workforces on the construction site shall be provided with identity cards.
- Obtain Labour License from the Labour Commissioner's Office and required insurance as specified in the contract conditions.
- No Child labour/employee under 14 years old is allowed to enter in the construction site.
- Labour presence and payment register to be maintained at site
- Display of minimum wage details, emergency contact nos of key person at site, emergency contact no of local health centre, Police, Ambulance.
- Workman Compensation Policy to be available at site
- Labour License to be available at site. Labour license should be taken of peak labour strength available at site
- Separate Toilets for Male & Female marked in local language with arrangements of septic tank, hand washing material, toilet cleaning material. Open defecation not allowed in nearby surrounding area.
- Proper Drinking water facility for all staff & labour along with uncontaminated clean water is available cooking, bathing and washing if residing in labour camp.
- Consult and obtain written consent/s of landowners (individual/panchayat/govt. agency) for temporary use of land for all construction related activities.
- The System Integrator preferably will use unskilled/semi-skilled labour from the surrounding area to give the maximum benefit to the local community whenever this is possible.

Requirement of First Aid Box as per BOCW Act:

Sr No	Item	Qty
1	A sufficient number of eye wash bottles filled with distilled water or suitable liquid clearly Indicated by a distinctive sign which shall be visible at all times.	1
2	4% xylocaine eye drops, and A sufficient number of eye wash bottles filled with distilled water or suitable liquid clearly Indicated by a distinctive sign which shall be visible at all times, boric acid eye drops and soda by carbonate eye drops.	1
3	Small sterilized dressings.	24
4	Medium size sterilized dressings.	12
5	Large size sterilized dressings	12
6	Large size sterilized burn dressings	12
7	Sterilized cotton wool. (15 cm.)	12
8	(Two hundred ml.) bottle of cetrimide solution (1%) or suitable antiseptic solution	1
9	(Two hundred ml.) bottle of mercurochrome (2%) solution in water.	1
10	(One hundred twenty ml.) bottle of Sal-volatile having the doses and mode of administration indicated on the label.	1
11	Pair of scissors.	1
12	Roll of adhesive plaster (six cm. x one mtr)	1
13	Rolls of adhesive plaster (two cms. x one mtr.)	2
14	Sterilized eye pads in separate sealed packets.	12
15	Bottle containing hundred tablets (each of three hundred twenty-five	1

	mg) of aspirin or any other analgesic	
16	Roller bandages ten cms. Wide	12
17	Roller bandages five cms. Wide	12
18	Tourniquet	1
19	Splints	1
20	Safety pins	3 Packet
21	Kidney tray	1
22	Snake bite lancet	1
23	(Thirty ml.) bottle containing potassium permanganate crystals.	1
24	First-aid leaflet issued by the Directorate General.	1
25	Triangular bandages	6
26	Pairs of suitable, sterilized, latex hand gloves.	2

C. Guidelines during construction & erection of Siren Towers

a. Personal Protective Equipment (PPE)

i. Eye and Face Protection

- Safety glasses or face shields are worn anytime work operations can cause foreign objects getting into the eye such as during welding, cutting, grinding, nailing (or when working with concrete and/or harmful chemicals or when exposed to flying particles).
- Welding glass for protection of radiation during welding.
- Eye and face protectors are selected based on anticipated hazards.
- Safety glasses or face shields are worn when exposed to any electrical hazards including work on energized electrical systems.

b. Foot Protection

- Construction workers should wear work shoes or boots with slip-resistant and puncture-resistant soles.
- Safety-toed footwear is worn to prevent crushed toes when working around heavy equipment or falling objects.

c. Hand Protection

- Gloves should fit snugly.
- Workers wear the right gloves for the job (for example, heavy-duty rubber gloves for concrete work, welding gloves for welding, insulated gloves and sleeves when exposed to electrical hazards).

d. Head Protection

- Workers shall wear hard hats where there is a potential for objects falling from above, bumps to their heads from fixed objects, or of accidental head contact with electrical hazards.
- Hard hats are routinely inspected for dents, cracks or deterioration & expiry date.
- Hard hats are replaced after a heavy blow or electrical shock.
- Hard hats are maintained in good condition.

D. Scaffolding and Ladders

- Scaffolds / Ladders should be set on sound footing.
- Damaged parts that affect the strength of the scaffold or ladder are taken out of service.
- Scaffolds are not altered.
- All scaffolds should be fully planked.

- Scaffolds / ladders are not moved horizontally while workers are on them unless they are designed to be mobile and workers have been trained in the proper procedures.
- Employees are not permitted to work on scaffolds or ladders when covered with oil, grease or other slippery materials.
- Scaffolds / ladders are not erected or moved within 10 feet of power lines.
- Employees are not permitted to work on scaffolds / ladders in bad weather or high winds unless a competent person has determined that it is safe to do so.
- Ladders, boxes, barrels, buckets or other makeshift platforms are not used to raise work height.
- Extra material is not allowed to build up on scaffold platforms.
- Scaffolds should not be loaded with more weight than they were designed to support.

E. Electrical Safety

- Work on new and existing energized (hot) electrical circuits is prohibited until all power is shut off and grounds are attached.
- An effective Lockout/Tagout system is in place.
- Frayed, damaged or worn electrical cords or cables are promptly replaced.
- All extension cords have grounding prongs.
- Protect flexible cords and cables from damage. Sharp corners and projections should be avoided.
- Use extension cord sets used with portable electric tools and appliances that are the three-wire type and designed for hard or extra-hard service. (Take precaution imprinted on the casing of item)
- All electrical tools and equipment are maintained in safe condition and checked regularly for defects and taken out of service if a defect is found.
- Do not bypass any protective system or device designed to protect employees from contact with electrical energy.
- Overhead electrical power lines are located and identified.
- Ensure that ladders, scaffolds, equipment or materials never come within 10 feet of electrical power lines.
- All electrical tools must be properly grounded unless they are of the double insulated type.
- Multiple plug adapters are prohibited.

F. Floor and Wall Openings

- Floor openings (12 inches or more) are guarded by a secured cover, a guardrail or equivalent on all sides (except at entrances to stairways).
- Toe boards are installed around the edges of permanent floor openings (where persons may pass below the opening).

G. Elevated Surfaces

- Signs are posted, when appropriate, showing the elevated surface load capacity.
- Surfaces elevated more than 48 inches above the floor or ground have standard guardrails.
- All elevated surfaces (beneath which people or machinery could be exposed to falling objects) have standard 4-inch toe boards.
- A permanent means of entry and exit with handrails is provided to elevated storage and work surfaces.
- Material is piled, stacked or racked in a way that prevents it from tipping, falling, collapsing, rolling or spreading.

H. Hazard Communication

- A list of hazardous substances used in the workplace is maintained and readily available at the worksite.
- There is a written hazard communication program addressing Material Safety Data Sheets (MSDS), labeling and employee training.
- Each container of a hazardous substance (vats, bottles, storage tanks) is labeled with product identity and a hazard warning(s) (communicating the specific health hazards and physical hazards).
- Material Safety Data Sheets are readily available at all times for each hazardous substance used.
- There is an effective employee training program for hazardous substances.

I. Crane Safety

- Cranes and derricks are restricted from operating within 10 feet of any electrical power line.
- The upper rotating structure supporting the boom and materials being handled is provided with an electrical ground while working near energized transmitter towers.
- Rated load capacities, operating speed and instructions are posted and visible to the operator.
- Cranes are equipped with a load chart.
- The operator understands and uses the load chart.
- The operator can determine the angle and length of the crane boom at all times.
- Crane machinery and other rigging equipment is inspected daily prior to use to make sure that it is in good condition.
- Accessible areas within the crane's swing radius are barricaded.
- Tag lines are used to prevent dangerous swing or spin of materials when raised or lowered by a crane or derrick.
- Illustrations of hand signals to crane and derrick operators are posted on the job site.
- The signal person uses correct signals for the crane operator to follow.
- Crane outriggers are extended when required.
- Crane platforms and walkways have antiskid surfaces.
- Broken, worn or damaged wire rope is removed from service.
- Guardrails, hand holds and steps are provided for safe and easy access to and from all areas of the crane.
- Load testing reports/certifications are available.
- Tower crane mast bolts are properly torqued to the manufacturer's specifications.
- Overload limits are tested and correctly set.
- The maximum acceptable load and the last test results are posted on the crane.
- Initial and annual inspections of all hoisting and rigging equipment are performed and reports are maintained.
- Only properly trained and qualified operators are allowed to work with hoisting and rigging equipment.
- Back gear Horn and Back Light should be properly work during operation of Crane or Derricks in reverse gear.

J. Forklifts

- Forklift truck operators are competent to operate these vehicles safely as demonstrated by their successful completion of training and evaluation.
- No employee under 18 years old is allowed to operate a forklift.
- Forklifts are inspected daily for proper condition of brakes, horns, steering, forks and tires.
- Powered industrial trucks (forklifts) meet the design and construction requirements.
- Written approval from the truck manufacturer is obtained for any modification or additions which affect capacity and safe operation of the vehicle.
- Capacity, operation and maintenance instruction plates, tags or decals are changed to indicate any modifications or additions to the vehicle.
- Battery charging is conducted in areas specifically designated for that purpose.
- Material handling equipment is provided for handling batteries, including conveyors, overhead hoists or equivalent devices.
- Reinstalled batteries are properly positioned and secured in the truck.
- Smoking is prohibited in battery charging areas.
- Precautions are taken to prevent open flames, sparks or electric arcs in battery charging areas.
- Refresher training is provided and an evaluation is conducted whenever a forklift operator has been observed operating the vehicle in an unsafe manner and when an operator is assigned to drive a different type of truck.
- Load and forks are fully lowered, controls neutralized, power shut off and brakes set when a powered industrial truck is left unattended.
- There is sufficient headroom for the forklift and operator under overhead installations, lights, pipes, sprinkler systems, etc.
- Overhead guards are in place to protect the operator against falling objects.
- Trucks are operated at a safe speed.
- All loads are kept stable, safely arranged and fit within the rated capacity of the truck.
- Unsafe and defective trucks are removed from service.

Generic Activity-specific Environment Social Management Plans (GESMP) & ESHS Plan for Setting-up of Early Warning Dissemination System (EWDS) and up-gradation of Emergency Operations Centers (EOC)

A. Instructions & Compliance on ESHS / GESMP

The System Integrator will abide by the Environmental, Health and Safety (EHS) measures listed in the Environment Social Management Plan (ESMP) given in table below. The System Integrator shall include the ESMP requirements in the Programme of Works and the Bill of Quantities. The requirements stated in the ESMP should therefore be studied properly and the bid should be priced accordingly. All items shall be deemed incidental to work unless otherwise provided for in the price schedule.

The System Integrator is free to adopt any similar or superior environment, health and safety management practices with the caveat that the process should meet the basic minimum requirements as stated in the ESMP provided in this section. Adverse impact/s on the environment caused due to non-adherence of legal and/or ESMP requirements during pre-construction stage

and/or during execution of civil and electrical works shall be made good at System Integrator's own expenses. The Environment and Social Management Framework (ESMF) for the project (NCRMP II) from which these conditions have been derived/listed is available with the State Project Implementation Unit for reference and the same can also be downloaded from the website

Performance review of the System Integrator with regard to EMP compliance in accordance with requirements in GCC will be conducted by the employer or his agent specifically appointed for this purpose.

B. ESMP /ESHS Plan for construction/ erection of Siren Towers and upgradation of EOC:

Sl. No	Activity	Measures to be Implemented by the System Integrator of Siren Towers
1	Work Plan for ESMP implementation	The System Integrator's Project Manager shall be responsible for implementation of ESMP provisions and will coordinate the over-all implementation of the said plan. Along with the Work Programme, the System Integrator shall submit a plan including method statement and timeline about specific actions that will be taken by him to implement the provisions laid out in the ESMP.
2	Regulatory Permissions and Consents	<p>The System Integrator shall obtain all requisite statutory clearances prior to commencement of civil and or electrical works, which includes obtaining permissions/consents for setting-up construction camp; plants and equipment; borrow areas if necessary. The System Integrator shall abide by all conditions laid out in the said clearances. This includes:</p> <ul style="list-style-type: none"> ▪ Aviation Authority for erection of Lightning Mast which comes in the vicinity of flying zone. (Where necessary) ▪ Consents for establishment and operation of plants (electrical power generator sets) from State Pollution Control Board (If necessary) ▪ PUC certification for all vehicles/equipment used for transportation (of personnel and materials) and construction. ▪ Permission/consent of the District Administration/Mining Department/other agencies for quarrying and/or borrowing operations for materials like sand and earth
3	Consultation and Community Consent	<p>The System Integrator shall consult and obtain written consents of landowners (individual/panchayat/govt. agency) for temporary use of land for all construction related activities including:</p> <ul style="list-style-type: none"> ▪ Erection of towers ▪ Setting-up and operation of construction and labour camps; ▪ Borrow areas and ▪ Disposal of debris and other waste material.

Sl. No	Activity	Measures to be Implemented by the System Integrator of Siren Towers
4	Construction/ Labour Camp	<ul style="list-style-type: none"> ▪ Location: The location of camp and plant site/s shall be as per the environmental siting criteria given in the ESMF. Consent of the land owner/local authorities shall be required and needs to be submitted to the Employer for approval. Construction camp sites (including plant sites, and material stock yards) shall be located (preferably in the downwind direction) at least 500 mts. from the nearest settlement and at least 1000 mts. away from designated/protected natural habitats (such as National Parks, Sanctuaries, Biosphere Reserves, Reserve Forests and Ramsar Sites). ▪ Accommodation and Basic Amenities: All weather shelter with the required tenement size and toilets shall be provided, as per provisions of Labour Laws. Separate toilet facilities shall be provided for women workers. If a common mess is not provided/operated, additional space for cooking shall be provided. The System Integrator shall ensure that hygienic conditions are maintained during the operation of such camps/facilities. ▪ Fuel for Cooking: The System Integrator shall ensure that fuel wood is not used as a cooking medium in the construction/labour camp. ▪ Potable water supply: Drinking water supply of at least 40 LPCD with the required supply points shall be provided. ▪ Fire Safety: Adequate fire safety precautions shall be taken and the required fire safety equipment (such as fire extinguishers) shall be provided by the System Integrator.
5	Site Clearance	<ul style="list-style-type: none"> ▪ All required precautions/measures to prevent damage to tower side vegetation outside the formation cutting and filling areas shall be taken. No tree cutting is to be carried out without the written instruction from the Employer, who in turn will ensure that relevant regulatory permission/s ▪ The non-timber grade trees are to be stacked and possession is to be given to Employer/concerned Govt. Department. ▪ The System Integrator shall strip, store, preserve and reinstate top soil in work fronts.
6	Protection of Properties and Resources	<p>The System Integrator shall take due care to protect and prevent damages to the following resources during preparatory and construction work:</p> <ul style="list-style-type: none"> ▪ Water supply lines

Sl. No	Activity	Measures to be Implemented by the System Integrator of Siren Towers
		<ul style="list-style-type: none"> ▪ Irrigation canals ▪ Cart, cattle and/or foot trail/tracks ▪ Cultural properties and sites/structures of religious importance ▪ Houses, Farmlands, Pastures, Orchards and/or Trees <p>In case of damage due to construction activity, the restoration/repairs shall be carried out by the System Integrator at his own cost.</p>
7	Slope Stability	The System Integrator shall ensure that civil work and related activities such as clearing and grubbing, stacking of materials and debris disposal are carried out in a manner that minimizes slope instabilities of near-by water bodies.
8	Quarry Establishment and/or Operations	<p>a) The System Integrator shall procure material from quarries that have been approved/licensed by the State Govt. A copy of such an approval shall be submitted to the employer prior to procuring material.</p> <p>b) All requirements for ensuring health and safety of workers, including use of effective dust suppression arrangements at crusher sites and on haul roads; safety precautions prior to blasting operations; provision and enforcement of Personal Protective Equipment use and proper storage of blasting and</p> <p>c) Other inflammable materials shall be followed by the System Integrator. (c) First-aid and Emergency Response Arrangements: First-aid facility and emergency response arrangements shall be maintained at the quarry and</p> <p>d) In the event of System Integrator opening a new quarry for the project, the following additional conditions shall apply –</p> <ul style="list-style-type: none"> ▪ Location: Location of quarry site shall be at least 1000 mts. from the nearest settlement; archeologically/culturally protected/locally important sites; designated/ protected natural habitats (such as National Parks, Sanctuaries, Biosphere Reserves, Reserved Forests and Ramsar Sites); other ecologically rich sites with Forest and/or areas with Wildlife presence and; water supply sources. Other location selection criteria as defined under Govt. regulations/rules will also apply. ▪ Site preparation. Area shall be demarcated as approved in the permit and shall be reconfirmed by the employer. Site clearance shall take place only within the demarcated area. Top soil, if any,

Sl. No	Activity	Measures to be Implemented by the System Integrator of Siren Towers
		<p>shall be stripped, stacked and preserved for re-use.</p> <ul style="list-style-type: none"> ▪ Operation: The quarry shall be operated by adopting/implementing environmental, health and safety measures as specified in the permit conditions. ▪ Closing and restoration. Proper drainage provisions shall be provided prior to closure of the quarry. Restoration shall be done as per the permit conditions
9	Borrow Areas	<p>a) Borrow areas for the project will be selected by the System Integrator following the stipulations given below. The finalization of all such locations shall be dependent on the approval of the employer on technical and environmental grounds. This includes on-site verification to cross-check the accuracy of details provided by the System Integrator. Only after receipt of the written approval from the employer, the System Integrator shall enter into a formal agreement with landowner.</p> <p>b) The System Integrator shall not procure any kind of construction material (such as aggregates, sand and earth) from ecologically protected areas.</p> <p>c) <u>Identification and Selection</u></p> <ul style="list-style-type: none"> ▪ The borrow area should not be located in agriculture field/s unless unavoidable i.e. barren land is not available. In case borrowing needs to be done on an agricultural land, top-soil stripping, stacking and preservation is a must. Damage to productive and fertile areas has to be minimal and this includes appropriate planning of haul roads. ▪ Borrow pits shall not be located within a distance of 100 mts. from any NH, SH or other roads. ▪ Borrow pits shall be preferably located 500 mts. away from settlements/ habitations. ▪ No borrow pits shall be located within 500 mts. from schools, colleges, playgrounds, religious structures and health centers. ▪ No borrow area shall be opened within 500 mts. from a reserved or protected forest area, protected sites, wildlife movement zone and cultural heritage site. ▪ No tree cutting shall be undertaken. ▪ Borrow area near any surface water body will be at least 100mts. away. <p>d) <u>Operation</u></p>

Sl. No	Activity	Measures to be Implemented by the System Integrator of Siren Towers
		<ul style="list-style-type: none"> ▪ Area up to which material will be extracted shall be clearly demarcated on ground. ▪ A 15 cm topsoil layer will be stripped and preserved in stockpiles. ▪ Borrowing of earth should be preferably limited to a depth of 1.5 mtr from the existing ground level. ▪ Slope at the edges will be maintained not steeper <p>e) <u>Rehabilitation of Borrow Areas</u></p> <ul style="list-style-type: none"> ▪ Rehabilitation shall be satisfactorily undertaken immediately after the use has ceased and at least three weeks prior to monsoon. ▪ Preserved top soil has be spread uniformly over land (except in cases where borrow area is developed as a water body) used as a borrow area
10	Water Extraction/ Use	<p>Water for construction and for use at construction camps (including labour camps) is to be extracted with prior written permission of</p> <ul style="list-style-type: none"> ▪ The individual owner, in case the source is private well/tube well; ▪ Gram Panchayat in case the source belongs to community; and ▪ Irrigation Department in case the source is an river canal etc.
11	Traffic Safety and Management	<ul style="list-style-type: none"> ▪ In areas where traffic is to be diverted during construction, the traffic detour shall be planned and publicized to the local people. Necessary information signage shall be erected to inform the road users. ▪ Traffic safety arrangements (including provision of warning signage, barricades and delineation) shall be made by the System Integrator to ensure safety of road users, local people and workers. ▪ Material shall be covered during transportation to prevent spillage, accidents and pollution.
12	Worker's Safety	<ul style="list-style-type: none"> ▪ All measures required for ensuring safety and health of the workers shall be taken up by the System Integrator. This includes provision and enforcement of appropriate personal protective equipment; first aid facilities at camp, plant sites and work zones; emergency response arrangements; proper storage of hazardous/toxic and polluting materials and; measures for ensuring fire, electrical and mechanical safety arrangements in camps and in work fronts. ▪ Material safety data sheet record of fuel and other inflammable chemicals shall be maintained at the site.
13	Air Pollution	<ul style="list-style-type: none"> ▪ Wind barriers or screens shall be provided in the downwind

Sl. No	Activity	Measures to be Implemented by the System Integrator of Siren Towers
		<p>direction at air pollution causing sources like plant sites and fine material storage stock yards.</p> <ul style="list-style-type: none"> ▪ Fugitive dust emissions have to be eliminated or at least reduced by providing dust suppression/control measures, based on activity and site conditions. ▪ All plants and equipment shall comply with pollution control norms. ▪ Water shall be sprinkled at least twice during dry day on haulage roads passing through or near settlements (including at least 100 m before and after the settlement).
14	Water pollution	<ul style="list-style-type: none"> ▪ All measures (including provision of temporary silt fencing to control sediment run-off) required for avoiding adverse impacts to water bodies (such as ponds, streams, canals and rivers), water sources (such as hand pumps and wells) and adjacent farmland shall be undertaken by the System Integrator. ▪ Storage of materials like fuel, chemicals, cement and bitumen shall be done in a manner (with impervious layer on bottom and a covered shed on top) that does not contaminate land and ground/surface water.
15	Noise Pollution	<ul style="list-style-type: none"> ▪ All noise causing activities within 1km radius of settlements shall be stopped during night time (9:00 PM to 6:00 AM). ▪ Ear plugs shall be provided to the labour facing risk from high noise pollution (such as plant sites, blasting zones and those working near generators, heavy equipment/machinery) in construction zone.
16	Disposal of Debris and Wastes	<p>All debris and spoils generated during construction works are to be reused to the extent feasible (technically and economically). Residual debris and spoils, if any, shall be disposed in locations preapproved by the employer in a manner that it does not contaminate the environment.</p> <ul style="list-style-type: none"> ▪ Location of Debris Disposal Sites: Debris disposal sites shall be located preferably away from farmlands, water sources and water bodies. In no case, debris shall be disposed within 500 mts. of ecologically sensitive areas, including forests, wetlands and protected natural habitats. ▪ Site preparation and disposal method: Site will be prepared by stripping and storage of top-soil. The disposal shall be carried out as per the employer's approval.

Sl. No	Activity	Measures to be Implemented by the System Integrator of Siren Towers
		<ul style="list-style-type: none"> ▪ Closure: Disposal sites shall be properly dressed up with top-soil re-laid on site surface; drainage provision to divert run-off water away from the site and; vegetation (grass/shrub) plantation, based on site conditions.
17	Restoration and Rehabilitation of Sites	<ul style="list-style-type: none"> ▪ All work sites and areas under temporary use (including construction and labour camps, plant sites, haul roads and borrow areas) shall be restored/ rehabilitated to a better condition (if not at least to its original condition) and to the satisfaction of the employer and land owner upon completion of construction work by the System Integrator. ▪ Completion of work will also include completion of rehabilitation and clean-up of the work sites including camps, plants, in and along road and structure construction sites; disposal of debris/construction wastes at pre-approved locations and; restoration of borrow areas and other sites/locations used for material sourcing.
18	Liabilities	Any liability arising out of System Integrator's agreement with landowners/ local people/gram panchayat (including those related to temporary use of land, water extraction and disposal of debris) shall be settled by the System Integrator.

C. Safety checklist of ESHS Plan for erection of Siren Towers, electrical and communications equipment:

a. DURING TOWER OR VSAT ANTENNA FOUNDATION:

S. N.	Description of Activity	Feed back	Remarks
IV. EXCAVATION:			
1.	Dumping of Excavated soil. (Minimum 1.5 Mts. or half the depth of the pit whichever is more)	Yes / No.	
2.	Whether angle of repose of soil as per design in the foundation is maintained or not.	Yes / No.	
3.	De-watering arrangement is available (If necessary)	Yes / No.	
4.	Working area has been protected properly to avoid against fall of passerby or animal in the excavated pit.	Yes / No.	
5	Shoring & Shuttering to protect the loose rock / soil against fall exists.	Yes / No.	
6	Arrangement of illumination at construction site is available. (if required)	Yes / No.	

S. N.	Description of Activity	Feed back	Remarks
7	Check proper/adequate arrangement is made for extension of electric supply. (Proper size of cable, Use of fuse, No loose connection for De-watering Pumps/ Illumination / Electric compressors etc. if applicable).	Yes / No.	
8	Check for damage / Uneven settlement of foundation.	Yes / No.	
9	Ensure Life saver arrangements have been made during construction of well foundation in river bed. (Where necessary)	Yes / No.	
10	Check that the adequate arrangement is made for the storage of blasting material at safe place. (if required)	Yes / No.	
11	Check that the blasting materials is handled with due care at site. (If required)	Yes / No.	
12	Check that during blasting operation, Labour / Workmen / Passerby are at safe places and arrangement is made to inform public by caution markings (Red Flag) / Public Notices.	Yes / No	
13	Check that the length of the fuse wire used during blasting operation is adequate.	Yes / No.	
14	Ensure Laying of temporary cable used for operation of Machines used during construction should not cause any danger for electrocution of	Yes / No.	
15	Check that PPEs i.e. Safety helmets, Safety Shoes, is used by blaster and their gang members during blasting.	Yes / No.	
16	Ensure that Shuttering and timbering has been made as detailed in I:S: 3764.	Yes / No.	
17	The positions of underground installations such as sewers, water pipes and electrical cables have been verified and in case of their existence, they must be isolated.	Yes / No.	
18	Arrangement shall be made to prevent external vibrations due to rail / road traffic (If required).	Yes / No.	
19	Safety is ensured during the construction of Tr. Lines for buildings, structures etc. which are coming in the vicinity of the excavated area from collapse. (If required)	Yes / No.	
20	Check that sufficient strong ladder of suitable length is available for ingress / outgress of persons in the pit	Yes / No.	
21	Lone worker should not be allowed to work in the excavated area beyond shoulder level.	Yes / No.	
22	Check for any possibility of seepage of water from nearby pond / river should be estimated and taken care of.	Yes / No.	
23	After excavation the work has been completed speedily and back filling done at the earliest.	Yes / No.	

S. N.	Description of Activity	Feed back	Remarks
V. CASTING OF FOUNDATION/CONCRETING:			
1	Check construction materials are stacked at safe place and also does not cause any danger. (Away from pit by 1.5 Mtrs. Or half the depth of pit, whichever is more.)	Yes / No.	
2	Check arrangement of illumination at Construction Site. (If required).	Yes / No.	
3	Ensure life saver arrangements have been made during construction of Well foundation in River Bed.	Yes / No.	
4	Check that the Concreting Mixer machine is placed at a safe place. (Not very near to pit.)	Yes / No.	
5	Check proper / adequate arrangement is made for extension of electric supply. (Proper size of cable, Use of fuse, No loose connection for De-watering Pumps / Illumination / Electric compressors etc. if applicable).	Yes / No.	
6	Check that laying of temporary cables used during construction activities should not cause any danger for electrocution to workmen.	Yes / No.	
7	Inspection of excavations shall be made by a Competent Person every day. In case, possible cave in or slide is apparent, all working in the excavation shall be seized until the necessary precautions have been taken to safeguard the possible cave in or slide.	Yes / No.	
8	Jacks and vertical supports shall be positioned in such a manner that the vertical loads are distributed equally and do not exceed the capacity of the jacks and the jacks are placed away from pit edge etc.	Yes / No.	
9	Proper Jacking arrangement is made to take the entire load of template.	Yes / No.	
10	In case of long template in stub setting, more jacks have been provided and check that the Jacks are placed on levelled and hard surface to avoid the unbalancing and fallen.	Yes / No.	
11	Wire mesh rolls shall be secured in order to prevent dangerous recoiling action.	Yes / No.	
12	Lone worker should not be allowed to work in the excavated area.	Yes / No.	
13	Check that sufficient strong ladder of suitable length is available for ingress / outgress of persons in the pit	Yes / No.	

b. TOWER / VSAT ANTENNA ERECTION:

S. N.	Description of Activity	Feed back	Remarks
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S. N.	Description of Activity	Feed back	Remarks
1	Check proper communication facility is available at site during Tower erection.	Yes/No.	
2.	Check damages or uneven settlement of foundation.	Yes/No.	
3.	Ensure the derrick used before tower erection has been checked for adequate strength/size. Ensure for copy of test certificate for all the lifting machines and tackles.	Yes/No.	
4.	Ensure that the pulleys used before tower erection has been checked for adequate strength/ proper size (diameter). Also, in case of open type pulleys proper locking arrangements like providing of Safety Pin is made. Ensure for copy of test certificate for all the lifting machines and tackles.	Yes / No.	
5.	Ensure that the ropes used before tower erection has been checked for adequate strength/ physical condition (Free from break of strands and knot etc).	Yes/No.	
6.	Check that the lifting tools and tackles i.e. Winch Machine, Chain Pulley Block, Trifor, D-Shackle etc. are in healthy condition and has been tested periodically. (Attach copy of test certificate).	Yes/No.	
7.	Ensure that permission has been obtained from Aviation Authority for erection of special towers. (Where necessary).	Yes/No.	
8.	Ensure that permission has been obtained from Aviation Authority for erection of towers which comes in the vicinity of flying zone. (Where necessary)	Yes/No.	
9.	Check that the safety measures have been taken before undertaking for the Road/Rail/River Crossing jobs involving likewise stretches.	Yes/No.	
10.	For rail or road crossing check whether written working plan is available at site with specific reference to safety e.g. local earthing, skilled & experienced manpower, proper T&P, strength and height of scaffolding to maintain the required clearance etc.	Yes/No.	
11.	Ensure that all the members and proper size of Nuts and Bolts of lower section are fitted properly before erection of the upper section of tower is taken up.	Yes/No.	
12.	Check that the anti-climbing devices are provided in the tower after erection job.	Yes/No.	
13.	Check that the danger plates have been provided.	Yes/No.	
14.	Check that only erection team members are allowed to stand near the tower while erection is in process and should wear the safety helmet/ Safety Shoes.	Yes/No.	
15.	Working area of the tower has been demarcated during erection.	Yes/No.	
16	Check that proper guying arrangement has been made. And also to see that proper size of the crow bar has been used which has been fixed at hard surface in case of sandy soil or loose soil.	Yes/No.	

S. N.	Description of Activity	Feed back	Remarks
17	Check that proper arrangement is made while lifting the tower members and fixing them at height i.e. Proper size and strength of the hook used for lifting the tower members.	Yes/No.	
18	Check sufficient numbers of guys are made while lifting the assembled cross arm and also avoid use of single sheave pulleys while lifting the assembled cross arm/heavy load.	Yes/No.	

c. Battery, Conductor, Installation of Siren & Misc.

S. N.	Description of Activity	Feed back	Remarks
VI. EXCAVATION:			
1.	All drivers and plant operators are holding the valid driving license.	Yes/No.	
2.	Check that the permit has been obtained from the Competent Authority (Where necessary)	Yes/No.	
3.	Check that required painting has been made on tower falling in the vicinity of aviation zones. (Where necessary.)	Yes/No.	
4.	Check that all safety measures have been taken during power supply lines (Earthing of existing lines etc.)	Yes/No.	
5.	Ensure that proper size of Nuts and Bolts is rigidly tightened and punching/tacking/tack welding is done in towers.	Yes/No.	
6.	Ensure that proper scaffolding arrangements are made during erection of towers & power supply of siren.	Yes/No.	
7.	Check that the backfilling of the foundation has been done as per specification.	Yes/No.	
8.	Ensure that the pulleys used before conductor stringing have been checked for adequate strength/ proper size (diameter), also in case of open type pulleys proper locking arrangements like providing of Safety Pin is made. Ensure for copy of test certificate for all the lifting machines and	Yes/No.	
9.	Ensure the ropes used for power supply connection have been checked for adequate strength/ physical condition (Free from break of strands and knot etc.)	Yes/No.	
10.	Whether the tower has been permanently earthed.	Yes/No.	
11.	Check that Sag Board is provided at two locations.	Yes/No.	
12.	Check that the Sag Board arrangement is made by the experienced/ trained persons.	Yes/No.	

S. N.	Description of Activity	Feed back	Remarks
13.	Check approved Sag tension chart is available and followed at site.	Yes/No.	
14.	While clamping of conductor/EW to be done, check for earthing.	Yes/No.	
15.	During erection of towers start check that the villagers do not come underneath the job of the concerned section.	Yes / No.	
16.	Only nylon or polypropylene rope should be used during power supply in vicinity of live overhead lines.	Yes/No.	
17	Check whether the System Integrator had procured required quantity of PPEs considering maximum numbers of erection gangs deployed at one time.	Yes/No.	
18	Supervisors/ Workmen have been provided with required healthy PPEs, like Safety helmet/Safety Belts/Safety Shoes/Gum Boot etc. as applicable.	Yes/No.	
19	Availability of First Aid Box with required medicines at site.	Yes/No.	
20	Instruction register is available at site.	Yes/No.	
21	All driver and plant operators are holding valid driving license.	Yes/No.	
22	Check the vehicle for rescue is available at site.	Yes/No.	
23	Ensure engaged labour are aware of the job.	Yes/No.	
24	Check that the unskilled labourers are not engaged in skilled job.	Yes/No.	
25	Ensure that supervisor/workmen engaged in the field are aware of First Aid Techniques (Such as in case of Electric Shock, Fall from the height, Snake bite and the person rescued from buried under the debris etc.	Yes/No.	
26	Check for nearby Hospital / Doctor in case of emergencies arises.	Yes/No.	
27	While transporting heavy consignment to site by the use of Cranes, Truck, and Tractor. The safety aspect for construction and failure of brake system of moving machinery is to be checked.	Yes/No.	
28	Ensure that supervisor/workmen engaged in the field are aware of First Aid Techniques (Such as in case of Electric Shock, Fall from the height, Snake bite and the person rescued from buried under the debris etc.	Yes/No.	
29	Check the competence (Qualification/Experience) of supervisor / gang leader of System Integrator.	Yes/No.	
30	Check permission has been obtained from Aviation Authority for the erection of Lightning Mast which comes in the vicinity of flying zone. (Where necessary)	Yes/No.	
31	Storing of equipments is to be made properly to avoid any accident during handling.	Yes/No.	
32	Check those who have sufficient knowledge of steel structural job have been employed in steel structural works only.	Yes/No.	

S. N.	Description of Activity	Feed back	Remarks
33	Check necessary instruction has been communicated by supervisor before start of the day's work to workmen under his control.	Yes/No.	
34	Check loose materials which are not required for use shall not be placed or left so as dangerously to obstruct work places or passageways.	Yes/No.	
35	Check all projected nail has been removed or bent over to prevent injury.	Yes/No.	
36	Check scrap, waste and rubbish has not been allowed to accommodate on the site or the scrap material has been stored at the isolated place.	Yes/No.	
37	Check that the worker while working at height scaffold materials, waste materials and tools are not being thrown by them to cause injury to any person.	Yes/No.	
38	Check the worker is under constant surveillance by the other person while working at height.	Yes/No.	
39	Check construction site has been barricaded for unauthorized persons/animals.	Yes/No.	
40	Check portable ladders shall not exceed 9 Mts. in length, otherwise may cause danger while climbing of person and back legs shall be equally braced.	Yes/No.	
41	Check unskilled labour are not utilized for skilled jobs and only experience persons are deployed for erection.	Yes/No.	
42	Check portable ladders shall not exceed 9 Mts. in length, otherwise may cause danger while climbing of person and back legs shall be equally braced.	Yes/No.	
43	Check no metallic measuring tapes are being used during expansion of charged bays.	Yes/No.	
44	Check metal ladders are not being used in the vicinity of exposed live electrical equipment.	Yes/No.	
45	Check one bore well is available for water supply in case Gram Panchayat/ Municipal Construction supply is not available	Yes/No.	
46	Check ladders/lengthy articles/lengthy equipment etc. should always be carried in horizontal position.	Yes/No.	
47	Check insurance by System Integrator for the labour to provide adequate coverage for any accident etc.	Yes/No.	

29. Required Format of Technical Bids

29.1 Description of Information Technologies, Materials, Other Goods, and Services

- The Bidder must provide detailed descriptions of the essential technical, performance, or other relevant characteristics of all key Information Technologies, Materials, other Goods, and Services offered in the bid (e.g., version, release, and model numbers). Without providing sufficient clear detail, Bidders run the risk of their bids being declared non-responsive.
- To assist in the bid evaluation, the detailed descriptions should be organized and cross referenced in the same manner as the Bidder's item-by-item commentary on the Technical Requirements described in Section 5.2 below. All information provided by cross reference must, at a minimum, include clear titles and page numbers.

29.2 Item-by-Item Commentary on the Technical Requirements

- The Bidder must provide an item-by-item commentary on the Purchaser's Technical Requirements, demonstrating the substantial responsiveness of the overall design of the System and the individual Information Technologies, Goods, and Services offered to those Requirements, see ITB Clause 16.2 (b) (ITB Clause 14.2 (b) in the two-stage SBD).
- In demonstrating the responsiveness of its bid, the Bidder is strongly urged to use the Technical Responsiveness Checklist provided in Section G of the Technical Requirements. Failure to do so, increases significantly the risk that the Bidder's Technical Bid will be declared technically non-responsive. Among other things, the checklist should contain explicit cross references to the relevant pages in the Bidder's Technical Bid.

29.3 Preliminary Project Plan

- The Bidder must prepare a Preliminary Project Plan describing, among other things, the methods and human and material resources that the Bidder proposes to employ in the design, management, coordination, and execution of all its responsibilities, if awarded the Contract, as well as the estimated duration and completion date for each major activity. The Preliminary Project Plan must also address the topics and points of emphasis specified in [*state: "SCC Clause 19" including any additional items stated in the Bid Data Sheet for ITB Clause 16.2 (c) (ITB Clause 14.2 (c) in the two-stage SBD)*]. The Preliminary Project Plan should also state the Bidder's assessment of the major responsibilities of the Purchaser and any other involved third parties in System supply and installation, as well as the Bidder's proposed means for coordinating activities by each of the involved parties to avoid delays or interference.
- In addition to the topics and points of emphasis, the Preliminary Project Plan **MUST** clearly address the Milestones.

29.4 Confirmation of Responsibility for Integration and Interoperability of Information Technologies

- The Bidder must submit a written confirmation that, if awarded the Contract, it shall accept responsibility for successful integration and interoperability of all the proposed Information Technologies included in the System, as further specified in the Bidding Document.

30. Technical Responsiveness Checklist

This section deals with the Performa for queries, Compliance statement, and deviation statement. Bidder must submit a compliance statement for each Technical Specification.

No waiver/deviation shall be permitted after award of contract. All waiver/deviations after placement of order pertaining to design and engineering or manufacture and supply shall be addressed to the purchaser under very special circumstances.

31. Queries to be submitted in Doc/x Format

BiddingNo.:

NameofProject: Selection of System Integrator (SI) for supply, installation, commissioning, & services for Early Warning Dissemination System (EWDS) and Emergency Operations Centers under National Cyclone Risk Mitigation Project (NCRMP) Phase-II

NameoftheBidder:

ContactTel/Mb/Email:

AddressoftheBidder:

Sr. No.	Section No, Clause No PageNo	Description	Query/Suggestion

Signature:

Nameoftheauthorizedsignatory:

Companyseal:

32. Compliance Statement

BiddingNo.:

NameofProject: Selection of System Integrator (SI) for supply, installation, commissioning, & services for Early Warning Dissemination System (EWDS) and Emergency Operations Centers under National Cyclone Risk Mitigation Project (NCRMP) Phase-II

S. No	Section No.	RFP Clause No.	Specifications/ Paragraph	Complied / Not complied	Cross Reference pagenumbe r in Bid submitted	Comments

Note:

1. Bidders shall not use any other word except **complied** or **not complied**. The words like noted, seen, partially complied etc. will not be acceptable.
2. Failure to provide documentary evidence in the prescribed format may result in rejection of bid. (As this clause is very important, bidder may clarify this clause, if required, during the pre-bid meeting).

*Bidders to provide documentary proof/reference for each and every clause mentioned in the tender document. All the documentary proof/reference pages should be numbered, and only the relevant statement in the documents should be highlighted indicating the corresponding clause no. In addition, the original tender document countersigned in all pages should be submitted along with the bid.

33. Deviation Statement

BiddingNo.:

NameofProject: Selection of System Integrator (SI) for supply, installation, commissioning, & services for Early Warning Dissemination System (EWDS) and Emergency Operations Centers under National Cyclone Risk Mitigation Project (NCRMP) Phase-II

A) Terms &Conditions,Specialterms&Conditions

B) Technical(ScheduleofRequirement)

Sr. No.	SectionNo.	Clause No.	Page No.	Deviation	Remarks

Signature:

Nameoftheauthorizedsignatory:

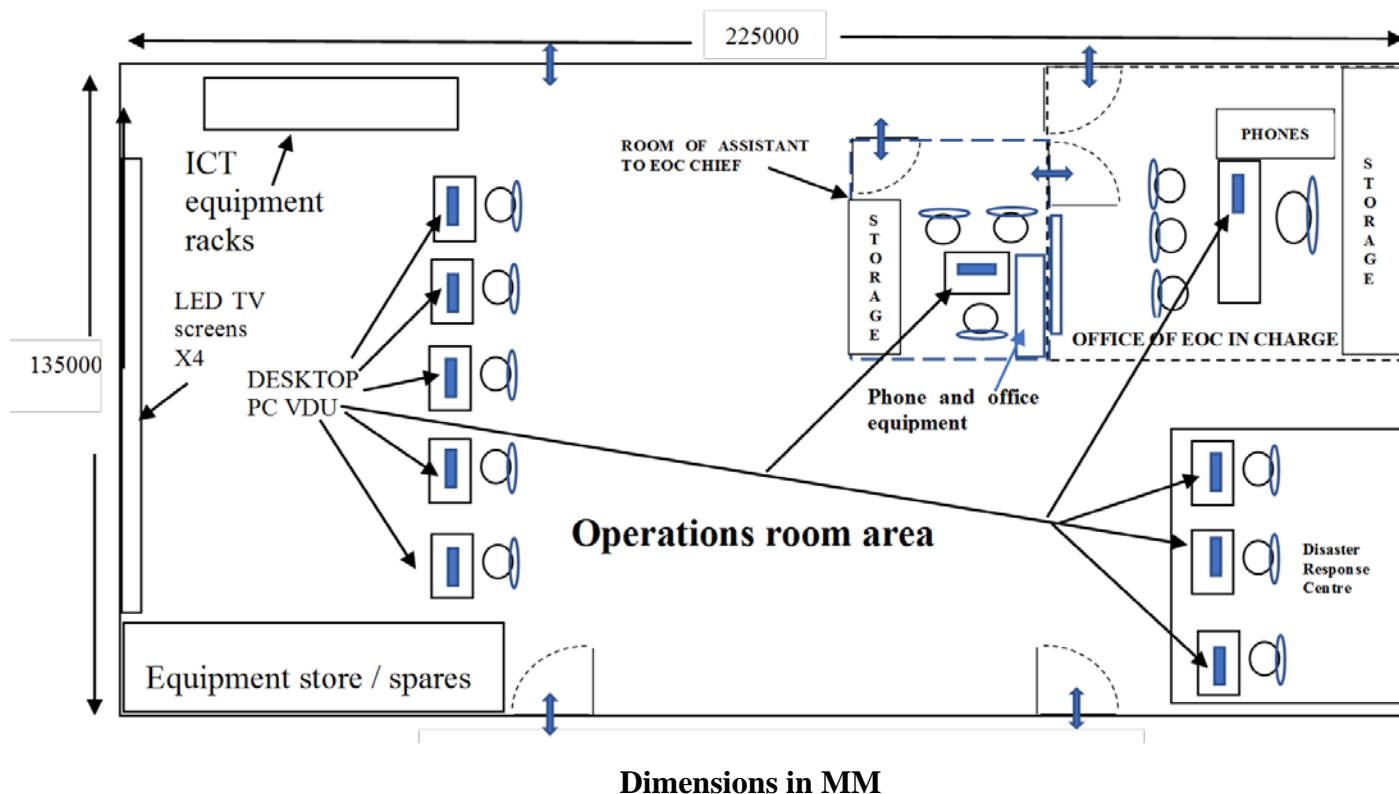
Companyseal:

34. Attachments

34.1 Attachment 1

INDICATIVE SITE LAYOUTS OF SEOC, DEOC AND TEOC

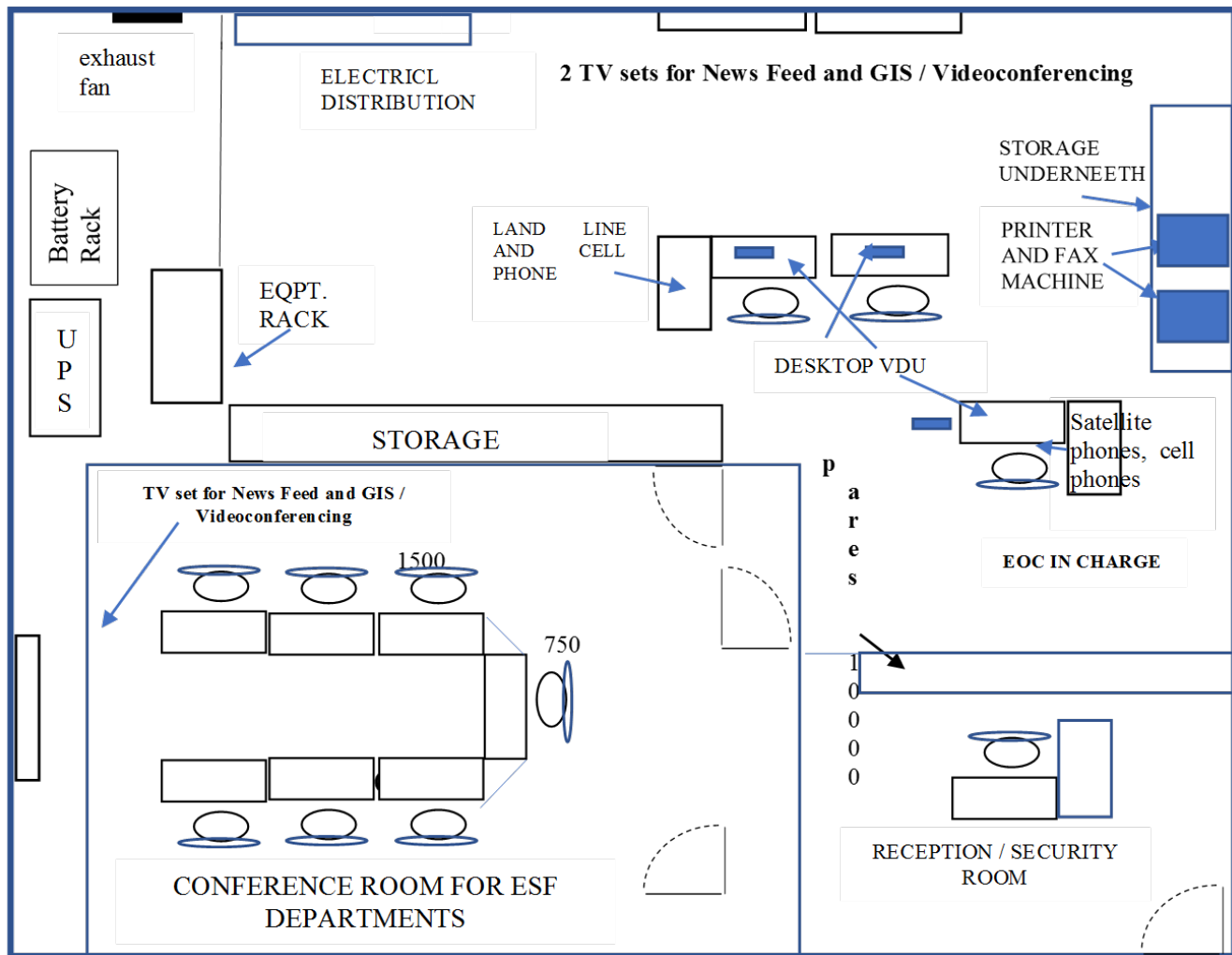
Indicative layout of SEOC at Gandhinagar



NOTE: DG set room and UPS rooms are outside operations room but within SEOC complex

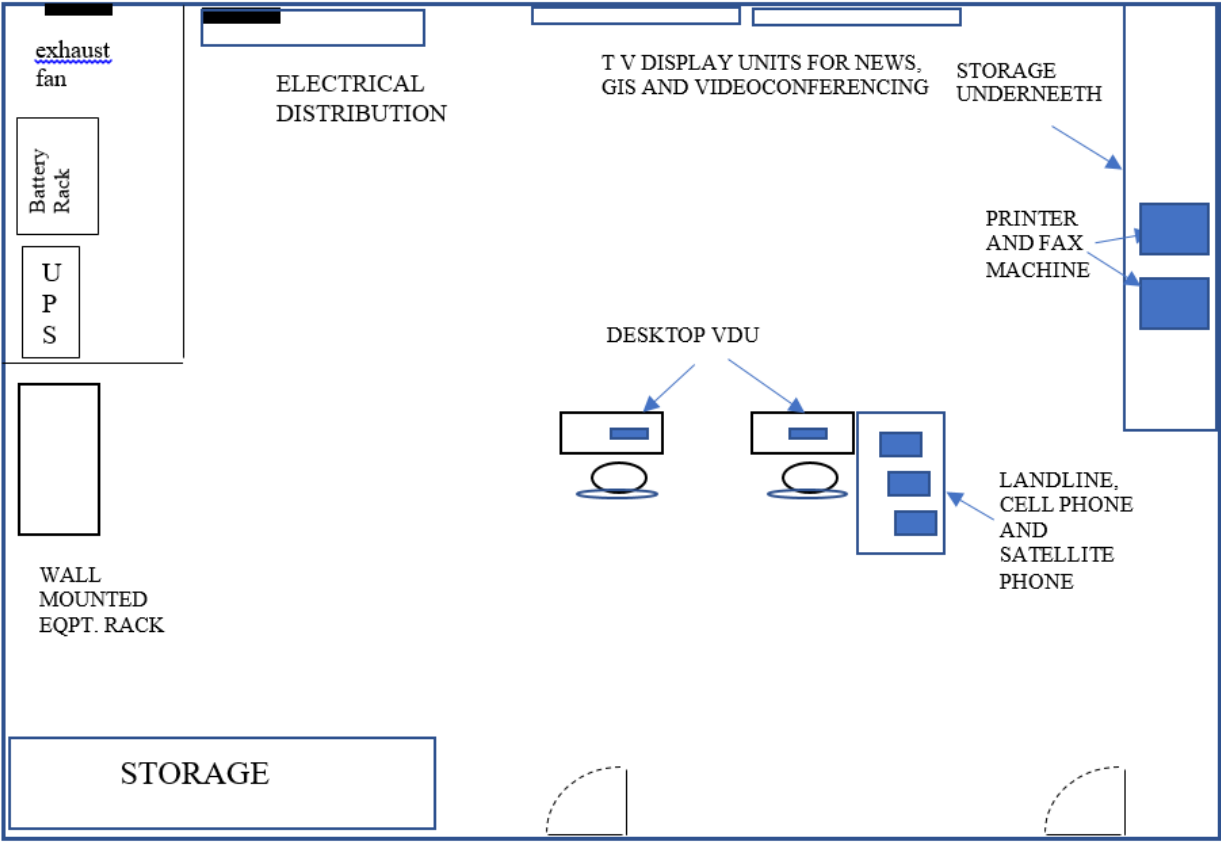
District Emergency Operations Centre (DEOC) (Space around 8x8 Meter)

INDICATIVE LAYOUT



COASTAL TALUKA EOC (TEOC)
(Approximate area (5x4Meter))

INDICATIVE LAYOUT



34.2 Attachment 2

LICENSING REQUIREMENTS

LICENSING is required to be obtained from Department of Telecommunications (DOT) for Satellite Phones and VSATs

i. Satellite Based Handheld phones,

- Contractor has to extend help to Employer to apply for No Objection Certificate (NOC) from DOT
- Subsequently the contractor will help Employer to apply for WPC (Wireless Planning & Coordination wing) for grant /operating license.
- Contractor can buy the hardware, i.e. satellite handheld phone from domestic or international Hardware vendor
- Hardware vendor supplies the equipment & Service Provider shares the ISN / ID with customer.
- Employer will apply and obtain Operating license and frequency clearance in pre-specified format is required to be obtained from Wireless Adviser to the Government of India or Dy. Wireless Advisor (Satellite).from WPC and
- Based on operating license from WPC, the Service provider (BSNL) will activates the phone.

ii. VSAT license:

Selected Telcom Service Provider (TSP) shall take care of getting applicable DOT and WPC license for operation of VSAT network.

Details of locations of VSATs will be provided by Employer so that clearance for transmission from the VSAT terminal from Standing Advisory Committee for Frequency Allocation (SACFA) can be obtained by TSP.

34.3 Attachment 3

i. Tentative List of SEOC , DEOC,TEOC and BEACHES

SEOC:

SEOC for Gujarat shall be located at Gandhinagar – State Emergency Operation Centre, Sector 18, Gandhinagar

DEOCs:

Sr. No.	Name of the coastal district	Address of DEOC
1	Ahmedabad	District Collector Office 313, Ashram Road, Subhash Bridge Circle, Hridaya Kunj, Near R.T.O Office, Old Wadaj, Ahmedabad, Gujarat 380027
2	Amreli	Office of The Collector, Jilla Seva Sadan, Collector Office, Raajmahal Campus, Amreli, Gujarat 365601
3	Anand	District Emergency Operation Center Near Amul Dairy, Opp. Circuit House, Anand, Gujarat State 388001
4	Bharuch	District Collector Office Railway Colony, Bharuch, Gujarat - 392001
5	Bhavnagar	District Collector Office Opposite Galaxy Cinema, Kala nala, Bhavnagar Gujarat - 364001
6	Devbhumi Dwarka	District Seva Sadan, 1st Floor, Lalpur Bypass Road, Dharampur, Khambhalia,Gujarat - 361305
7	Gir Somnath	District Collector Office, Veraval, District : Gir Somnath, Gujarat - 362265
8	Jamnagar	Office of The Collector, District Collector Office, Jilla Seva Sadan, Sharu Section Road, Jamnagar, Gujarat - 361002
9	Junagadh	District Collector Office, Jilla Seva Sadan, Opp. Shashikunj, Junagadh, Gujarat - 362001
10	Kutch	District Collector Office, Near Circuit House, Mandvi Road, Near Mota Bandh,

		Bhuj, Gujarat - 370001
11	Morbi	District Collector Office, Jilla Seva Sadan, Shobeshwar Road, Morbi- 2, Gujarat - 363641
12	Navsari	District Collector Office, Kaliyawadi, Navsari, Gujarat - 396427
13	Porbandar	District Collector Office, Jilla Seva Sadan-1, Opposite Air Port , Sandipani Road, Porbandar. Gujarat - 360577
14	Surat	District Collector Office, Jilla Seva Sadan -2, B- Block, 5th Floor Athwalines, Surat, Gujarat 395001
15	Valsad	District Collector Office, Jilla Seva Sadan, Opp. Kotak Mahindra Bank, Dharampur Road Valsad, Gujarat - 396001

Coastal Talukas

Sr. No.	Name of Coastal Taluka	Address of Taluka headquarters
1	Dholera	Mamlatdar Office, Dholera
2	Jafrabad	Mamlatdar Office, Jafrabad
3	Hansot	
4	Jambusar	
5	Vagra	Mamlatdar & Executive Magistrate Office, Vagra Gujarat 392140
6	Ghogha	
7	Kalyanpur	
8	Khambhalia	
9	Okhamandal	
10	Kodinar	
11	Patan Veraval	Mamlatdar Office, Chopati, Veraval, Gujarat 362265
12	Sutrapada	
13	Una	Mamlatdar Office, Dayanand Society, Una, Gujarat 362560
14	Lalpur	Mamlatdar Office, Lalpur, Gujarat 361170
15	Malia	
16	Mangrol	Mamlatdar office, Mangrol,

		Junagadh, Gujarat 362225
17	Bhachau	Mamlatdar Office, Ramwadi, Bhachau, Gujarat 370140
18	Gandhidham	
19	Mandvi	
20	Maliya	
21	Jalalpore	
22	Porbandar	
23	Chorasi	
24	Olpad	
25	Umbergaon	Mamlatdar Office, Umbergaon Club Rd, GIDC Umbergaon, Umargam, Gujarat 396170
26	Valsad	

List of Beaches for installation of alert siren under component -A of NCRMP
(Exact locations of Alert siren towers shall be finalized after site survey)

Sr. No.	District	Taluka	Name of the beach
1	Bhavnagar	Mahuva	Mahuva Beach
2	Bhavnagar	Talaja	Gopnath Mahadev Temple and Beach
3	Devbhumi Dwarka	Dwarka	Dwarka Beach
4	Devbhumi Dwarka	Okhamandal	Okha Madhi
5	Gir Somnath	Diu (UT)	Ahmedpur Mandvi
6	Gir Somnath	Patan-Veraval	Somnath Beach
7	Jamnagar	Jodiya	Jamnagar Beaches (Balachadi)
8	Junagadh	Mangrol	Madhavpur Beach
9	Kutch	Mandvi	Pingleswar Beach
10	Porbandar	Porbandar	Porbandar Beach
11	Surat	Surat	Dumas Beach
12	Valsad	Umbergaon	Nargol
13	Valsad	Valsad	Tithal Beach

34.4 Attachment- 4

ii. List Of FLC and Vulnerable Villages

1. Tentative List of Fish Landing Centres (FLC)

SR. NO	NAME OF THE DISTRICT	TALUKA	FISH LANDING CENTER	LATTITUDE	LONGITUDE
1	AMRELI	JAFRABAD	JAFRABAD-1	20 51 57.515	71 22 15.833
2	AMRELI	JAFRABAD	JAFRABAD-2	20 51 26.486	71 22 58.449
3	BHARUCH	JAMBUSAR	ASHARSHA	21 56 59.389	72 35 27.327
4	BHARUCH	JAMBUSAR	BHADBHUT	21 40 50.074	72 50 41.247
5	BHARUCH	JAMBUSAR	KAVI	22 11 55.460	72 38 11.816
6	BHARUCH	JAMBUSAR	LUVARA	21 39 35.321	72 33 42.513
7	BHARUCH	JAMBUSAR	MAHEGAM	21 40 25.248	72 45 12.131
8	BHARUCH	JAMBUSAR	ZAMDI	22 6 34.641	72 34 57.794
9	BHAVNAGAR	BHAVNAGAR	BHAVNAGAR	21 46 8.349	72 8 31.721
10	BHAVNAGAR	GHOCHA	GHOCHA	21 39 59.933	72 16 24.351
11	BHAVNAGAR	MAHUA	MAHUA BANDAR	21 5 12.730	71 45 54.765
12	BHAVNAGAR	TALAJA	SARTANPAR	21 18 16.532	72 5 47.662
13	DEVBHOO MI DWARKA	KALYANPUR	BHOGAD	21 58 51.711	69 11 59.440
14	DEVBHOO MI DWARKA	KALYANPUR	HARSHAD	21 50 4.703	69 22 0.922
15	DEVBHOO MI DWARKA	KALYANPUR	NAVADRA	21 56 5.342	69 14 38.933
16	DEVBHOO MI DWARKA	KHAMBHALIYA	SALAYA	22 18 33.417	69 36 13.110
17	DEVBHOO MI DWARKA	OKHA	BETBALAPUR	22 27 13.427	69 8 37.689
18	DEVBHOO MI DWARKA	OKHA	NANA AMBLA	22 21 7.943	69 39 27.604
19	DEVBHOO MI DWARKA	OKHA	OKHA	22 27 17.011	69 4 23.041
20	DEVBHOO MI DWARKA	OKHA	RUPEN	22 15 41.320	68 57 25.522
21	GIR SOMNATH	KODINAR	MADHVAD	20 41 55.400	70 50 0.538
22	GIR SOMNATH	KODINAR	MULDWARKA	20 45 33.448	70 39 37.662
23	GIR SOMNATH	SUTRAPADA	DHAMLEJ	20 46 20.323	70 36 44.710
24	GIR SOMNATH	SUTRAPADA	HIRACOT	20 51 17.097	70 26 32.313
25	GIR SOMNATH	SUTRAPADA	SUTRAPADA	20 50 7.370	70 29 9.950
26	GIR SOMNATH	UNA	NAVA BANDAR	20 44 34.122	71 4 54.543
27	GIR SOMNATH	UNA	RAJPARA	20 46 33.705	71 4 36.050
28	GIR SOMNATH	UNA	SHIMAR	20 45 51.618	71 8 56.221
29	GIR SOMNATH	VERAVAL	VERAVAL-1	20 54 8.564	70 22 9.060
30	GIR SOMNATH	VERAVAL	VERAVAL-2	20 53 59.116	70 22 40.477
31	GIR SOMNATH	VERAVAL	VERAVAL-3	20 53 54.694	70 22 7.511
32	GIR SOMNATH	VERAVAL	VERAVAL-4	20 54 50.923	70 20 47.659
33	JAMNAGAR	JAMNAGAR	BADI	22 30 52.329	70 1 44.133

SR. NO	NAME OF THE DISTRICT	TALUKA	FISH LANDING CENTER	LATTITUDE	LONGITUDE
34	JAMNAGAR	JAMNAGAR	BAD	22 25 54.385	69 54 4.039
35	JAMNAGAR	JAMNAGAR	JODIYA	22 41 39.013	70 18 16.423
36	JAMNAGAR	JAMNAGAR	SACHANA	22 34 0.053	70 10 59.651
37	JAMNAGAR	JAMNAGAR	SARMAT	22 28 9.719	69 57 3.600
38	JAMNAGAR	JAMNAGAR	SHIKKA	22 26 22.245	69 51 8.351
39	JUNAGADH	HATINA-MALIA	BARA	21 4 36.265	70 8 15.834
40	JUNAGADH	HATINA-MALIA	CHORVAD	20 59 48.280	70 15 6.791
41	JUNAGADH	HATINA-MALIA	MANGROL-1	21 6 16.973	70 6 16.634
42	JUNAGADH	HATINA-MALIA	MANGROL-2	21 6 24.509	70 5 54.238
43	JUNAGADH	HATINA-MALIA	MANGROL-3	21 7 1.116	70 5 12.024
44	KUTCHH	ABDASHA	GUNAV	23 24 26.663	68 34 13.948
45	KUTCHH	ABDASHA	JAKHAU	23 14 21.958	68 36 19.696
46	KUTCHH	ABDASHA	MANDVI	22 49 28.33	69 21 4.9
47	KUTCHH	ABDASHA	MODHVA	22 47 6.250	69 26 12.100
48	KUTCHH	ABDASHA	MOVADI	23 21 6.378	68 40 10.985
49	KUTCHH	ABDASHA	NANA LAYJA	22 50 0.466	69 14 2.151
50	KUTCHH	ABDASHA	TRAGDI	22 47 45.637	69 28 47.980
51	KUTCHH	ANJAR	MITHAPORT	23 9 51.525	70 13 40.786
52	KUTCHH	ANJAR	SANGHAD	22 58 53.122	70 2 12.106
53	KUTCHH	ANJAR	TUNAVANDI	22 59 11.214	70 4 48.950
54	KUTCHH	BHACHAU	SHURAJBARI	23 11 54.517	70 42 58.980
55	KUTCHH	LAKHPAT	LAKHAPAT	23 49 21.021	68 45 8.347
56	KUTCHH	MUNDRA	BHADRESWAR	22 52 4.190	69 53 18.641
57	KUTCHH	MUNDRA	LUNI	22 51 26.580	69 49 38.298
58	KUTCHH	MUNDRA	MUNDRA	22 50 19.466	69 43 24.334
59	KUTCHH	MUNDRA	NAVINAR	22 49 58.299	69 35 57.787
60	KUTCHH	LAKHPAT	NARAYAN SAROVAR	23 40 25.938	68 32 15.698
61	KUTCHH	MUNDRA	THERMAL BANNA	23 1 25.329	70 13 14.810
62	KUTCHH	MUNDRA	ZARPARA	22 50 14.141	69 39 5.145
63	KUTCHH	MUNDRA	SHEKHADIYA	22 50 29.420	69 47 23.988
64	MORBI	MALIA MIYANI	HANJIYASAR	22 48 43.1604	70 49 25.0176
65	MORBI	MALIA MIYANI	NAVLAKEHI	22 57 26.100	70 26 57.000
66	NAVSARI	GANDEVI	BHATT	20 46 36.056	72 57 20.926
67	NAVSARI	GANDEVI	DHOLAI	20 47 32.887	72 53 17.183
68	NAVSARI	JALALPOR	BANSI BORSHI	20 57 3.791	72 45 12.275
69	NAVSARI	JALALPOR	KRISHNAPUR	20 48 23.505	72 51 53.181
70	NAVSARI	JALALPOR	ONJAL MASIVAD	20 49 46.639	72 50 19.986
71	PORBANDAR	PORBANDAR	MADHAVPUR	21 15 1.746	69 57 40.501
72	PORBANDAR	PORBANDAR	NAVIBANDAR	21 27 3.120	69 47 13.500
73	PORBANDAR	PORBANDAR	PORBANDAR-1	21 38 28.680	69 35 30.720
74	PORBANDAR	PORBANDAR	PORBANDAR-2	21 38 11.404	69 35 21.210
75	SURAT	CHORYASHI	BHIMPOR	21 4 48.946	72 43 46.289
76	SURAT	CHORYASHI	DUMASH	21 5 59.209	72 42 17.284
77	SURAT	CHORYASHI	HAJIRA	21 5 54.605	72 37 22.959
78	SURAT	CHORYASHI	MAGADALLA	21 8 30.849	72 45 15.520
79	SURAT	CHORYASHI	MOR	21 10 27.292	72 39 35.155

SR. NO	NAME OF THE DISTRICT	TALUKA	FISH LANDING CENTER	LATTITUDE	LONGITUDE
80	VALSAD	PARDI	KOLAK	20 28 1.078	72 51 53.888
81	VALSAD	PARDI	UMARSADI (MAN.VAD)	20 30 41.429	72 53 59.245
82	VALSAD	PARDI	UMARSADI (M.V.)	20 30 44.744	72 53 58.992
83	VALSAD	UMARGAON	DANDI (MAROLI)	20 17 35.859	72 45 26.175
84	VALSAD	UMARGAON	FANSA	20 20 18.151	72 47 27.561
85	VALSAD	UMARGAON	KALAI	20 21 17.354	72 49 30.137
86	VALSAD	UMARGAON	KHATALWADA	20 12 57.039	72 47 40.753
87	VALSAD	UMARGAON	NARGOL	20 12 16.111	72 44 59.037
88	VALSAD	UMARGAON	UMARGAON	20 11 51.306	72 45 4.053
89	VALSAD	VALSAD	BHADELI JAGALALA	20 39 7.588	72 54 48.646
90	VALSAD	VALSAD	BHAGAL	20 41 3.405	72 52 36.168
91	VALSAD	VALSAD	KAKWADI	20 42 56.173	72 52 25.936
92	VALSAD	VALSAD	KOSAMBA	20 37 12.390	72 53 24.064
93	VALSAD	VALSAD	KOSAMBA	20 37 42.616	72 53 16.695
94	VALSAD	VALSAD	MAGOD DUNGRI	20 32 37.021	72 53 20.019
95	VALSAD	VALSAD	MAROLI	20 17 47.627	72 46 34.356
96	VALSAD	VALSAD	MATI DANTI	20 41 43.698	72 54 49.265
97	VALSAD	VALSAD	METHIYA	20 43 21.106	72 52 44.146
98	VALSAD	VALSAD	NANI DANTI	20 35 57.240	72 56 3.282
99	VALSAD	VALSAD	SURWADA	20 33 51.016	72 54 6.258

2. List of Vulnerable Villages for Installation of Sirens

(Exact locations of Alert siren towers shall be finalized after site survey)

Sr.N O	District	Taluka	Village	Latitude	Longitude
1	Gir Somnath	Una	Saiyad_Rajpara	20° 47' 35.523" N	71° 12' 13.986" E
2	Bharuch	Vagra	Kaladara	21° 41' 23.733" N	72° 44' 29.660" E
3	Gir Somnath	Una	Manekpur	20° 48' 43.283" N	71° 11' 53.995" E
4	Surat	Olpad	Kundiyana	21° 18' 56.402" N	72° 40' 9.695" E
5	Gir Somnath	Una	Navabandar	20° 44' 29.040" N	71° 4' 21.233" E
6	Surat	Olpad	Kuvad	21° 19' 46.547" N	72° 41' 18.399" E
7	Porbandar	Porbandar	Miyani	21° 50' 17.673" N	69° 22' 54.198" E
8	Amreli	Jafrabad	Shiyalbet	20° 54' 38.148" N	71° 30' 50.660" E
9	Surat	Olpad	Dandi	21° 19' 40.308" N	72° 37' 30.266" E
10	Surat	Olpad	Tena	21° 13' 31.596" N	72° 40' 20.296" E
11	Valsad	Valsad	Dandi	20° 42' 0.078" N	72° 52' 14.169" E
12	Devbhumi Dwarka	Okhamandal	Beyt	22° 27' 17.750" N	69° 6' 25.652" E
13	Devbhumi Dwarka	Kalyanpur	Gandhvi	21° 50' 41.704" N	69° 21' 55.389" E
14	Gir Somnath	Una	Bhingrana	20° 44' 55.801" N	70° 55' 2.758" E
15	Gir Somnath	Una	Senjaliya	20° 46' 15.131" N	71° 6' 28.072" E
16	Navsari	Jalalpore	Borsi	20° 56' 42.472" N	72° 45' 21.355" E
17	Gir Somnath	Una	Kheda	20° 45' 33.786" N	71° 7' 35.424" E
18	Valsad	Umbergaon	Tadgam	20° 16' 2.554" N	72° 45' 30.198" E
19	Devbhumi Dwarka	Okhamandal	Hamusar	22° 22' 54.252" N	69° 3' 16.922" E
20	Devbhumi Dwarka	Khambhalia	Salaya_M	22° 18' 32.543" N	69° 36' 7.178" E
21	Gir Somnath	Sutrapada	Kadvar	20° 51' 9.409" N	70° 26' 58.065" E
22	Amreli	Jafrabad	Babarkot	20° 52' 17.622" N	71° 24' 19.904" E
23	Navsari	Jalalpore	Krushnapur	20° 48' 24.352" N	72° 51' 52.963" E
24	Devbhumi Dwarka	Khambhalia	Parodiya	22° 20' 13.327" N	69° 37' 56.307" E
25	Kachchh	Gandhidham	Kandla (CT)	23° 1' 3.872" N	70° 12' 34.256" E
26	Gir Somnath	Kodinar	Mul_Dwarka	20° 46' 3.099" N	70° 39' 26.887" E
27	Bharuch	Vagra	Jageshwar	21° 40' 19.467" N	72° 34' 23.740" E
28	Devbhumi Dwarka	Khambhalia	Nana_Mandha	22° 19' 42.415" N	69° 40' 21.870" E
29	Amreli	Jafrabad	Jafrabad_M	20° 51' 58.438" N	71° 21' 57.898" E
30	Surat	Olpad	Jinod	21° 23' 19.110" N	72° 40' 34.880" E

Sr.N O	District	Taluka	Village	Latitude	Longitude
31	Gir Somnath	Una	Paldi	20° 44' 58.369" N	70° 57' 48.227" E
32	Kachchh	Mandvi	Mandvi (M)	22° 49' 51.724" N	69° 21' 7.250" E
33	Devbhumi Dwarka	Okhamandal	Dwarka_M	22° 14' 28.630" N	68° 57' 47.260" E
34	Ahmedabad	Dholera	Rahtalav	22° 12' 12.959" N	72° 14' 57.964" E
35	Porbandar	Porbandar	Tukda Gosa	21° 31' 34.081" N	69° 43' 16.274" E
36	Gir Somnath	Una	Jhankharvada	20° 45' 37.614" N	71° 3' 43.258" E
37	Surat	Olpad	Karanj	21° 24' 56.743" N	72° 40' 51.917" E
38	Bhavnagar	Ghogha	Kuda	21° 37' 39.796" N	72° 17' 50.296" E
39	Gir Somnath	Kodinar	Velan	20° 42' 56.554" N	70° 49' 33.439" E
40	Devbhumi Dwarka	Okhamandal	Okha Port	22° 27' 25.590" N	69° 4' 4.869" E
41	Amreli	Jafrabad	Mitiyala	20° 53' 59.232" N	71° 23' 27.742" E
42	Bharuch	Jambusar	Khanpor Deh	21° 59' 11.033" N	72° 46' 17.707" E
43	Surat	Surat city	Abhva	21° 6' 54.964" N	72° 46' 17.695" E
44	Devbhumi Dwarka	Okhamandal	Arambhada_CT	22° 25' 48.005" N	69° 2' 6.067" E
45	Gir Somnath	Una	Olvan	20° 45' 5.874" N	70° 58' 47.671" E
46	Surat	Olpad	Admor	21° 17' 56.552" N	72° 39' 37.087" E
47	Gir Somnath	Una	Tad	20° 45' 10.239" N	70° 56' 15.674" E
48	Porbandar	Porbandar	Ratiya	21° 24' 55.703" N	69° 49' 26.000" E
49	Devbhumi Dwarka	Khambhalia	Goinj	22° 18' 26.302" N	69° 33' 35.655" E
50	Devbhumi Dwarka	Khambhalia	Nana_Ambala	22° 21' 3.963" N	69° 40' 5.161" E
51	Gir Somnath	Una	Kalapan	20° 46' 9.597" N	71° 4' 20.783" E
52	Surat	Surat city	HAJIRA INA (INA)	21° 5' 39.534" N	72° 38' 49.850" E
53	Navsari	Jalalpore	Onjal	20° 49' 46.796" N	72° 50' 21.260" E
54	Devbhumi Dwarka	Khambhalia	Bharana	22° 22' 24.051" N	69° 42' 24.120" E
55	Amreli	Jafrabad	Kadiyali	20° 52' 2.591" N	71° 17' 53.460" E
56	Gir Somnath	Sutrapada	Vadodra_Jhala	20° 49' 7.209" N	70° 31' 27.466" E
57	Porbandar	Porbandar	Untada	21° 23' 26.773" N	69° 50' 48.819" E
58	Gir Somnath	Una	Dudhala	20° 48' 38.232" N	71° 9' 37.978" E
59	Bharuch	Vagra	Suva	21° 41' 17.621" N	72° 39' 22.431" E
60	Amreli	Jafrabad	Vadhera	20° 51' 0.856" N	71° 18' 44.828" E
61	Bharuch	Hansot	Katpor	21° 31' 7.926" N	72° 43' 14.236" E
62	Devbhumi Dwarka	Khambhalia	Chudeshvar	22° 20' 12.640" N	69° 32' 17.935" E
63	Gir Somnath	Una	Khatriwada	20° 50' 2.942" N	71° 12' 12.053" E

Sr.N O	District	Taluka	Village	Latitude	Longitude
64	Porbandar	Porbandar	Pata	21° 17' 27.243" N	69° 56' 16.669" E
65	Morbi	Maliya	Bodki	22° 55' 19.159" N	70° 33' 55.709" E
66	Junagadh	Malia	Jhunjharpur	21° 1' 54.816" N	70° 12' 8.705" E
67	Gir Somnath	Una	Nandan	20° 44' 49.197" N	71° 2' 35.172" E
68	Junagadh	Mangrol	Antroli	21° 13' 22.021" N	69° 59' 57.543" E
69	Surat	Surat city	Bhimrad	21° 7' 40.742" N	72° 48' 10.133" E
70	Porbandar	Porbandar	Gorsar	21° 19' 56.902" N	69° 54' 9.209" E
71	Junagadh	Mangrol	Sangavada	21° 11' 34.101" N	70° 1' 41.854" E
72	Jamnagar	Lalpur	Singach	22° 23' 17.914" N	69° 44' 35.270" E
73	Devbhumi Dwarka	Khambhalia	Vadinar	22° 24' 2.212" N	69° 43' 27.793" E
74	Gir Somnath	Patan- veraval	Adri	20° 57' 52.452" N	70° 17' 22.375" E
75	Gir Somnath	Kodinar	Sarkhadi	20° 44' 31.470" N	70° 45' 17.374" E
76	Junagadh	Mangrol	Sheriyaj	21° 5' 25.270" N	70° 9' 7.378" E
77	Gir Somnath	Una	Naliya_Mandvi	20° 44' 59.748" N	71° 1' 31.426" E
78	Junagadh	Malia	Khambhaliya	21° 2' 42.715" N	70° 11' 19.293" E
79	Gir Somnath	Una	Kob	20° 45' 14.557" N	70° 53' 13.958" E
80	Junagadh	Mangrol	Divasa	21° 12' 18.051" N	70° 1' 11.148" E
81	Gir Somnath	Una	Simar	20° 47' 6.828" N	71° 8' 45.329" E
82	Amreli	Jafrabad	Bhankodar	20° 53' 40.908" N	71° 27' 3.925" E
83	Gir Somnath	Kodinar	Kaj	20° 45' 0.408" N	70° 47' 27.216" E
84	Devbhumi Dwarka	Okhamandal	Positra	22° 23' 39.873" N	69° 10' 24.454" E
85	Gir Somnath	Patan- veraval	Bhalpara	20° 54' 47.597" N	70° 23' 44.395" E
86	Gir Somnath	Kodinar	Panadar	20° 45' 58.463" N	70° 41' 19.137" E
87	Amreli	Jafrabad	Rohisa	20° 49' 45.970" N	71° 15' 0.501" E
88	Junagadh	Mangrol	Rahij	21° 8' 54.694" N	70° 4' 46.089" E
89	Gir Somnath	Kodinar	Malsaram	20° 45' 17.339" N	70° 46' 48.443" E
90	Junagadh	Mangrol	Khodada	21° 3' 42.168" N	70° 10' 27.740" E
91	Devbhumi Dwarka	Kalyanpur	Pindara	22° 14' 34.388" N	69° 15' 24.837" E
92	Devbhumi Dwarka	Khambhalia	Sodasala	22° 17' 21.821" N	69° 36' 32.267" E
93	Porbandar	Porbandar	Balej	21° 22' 35.395" N	69° 52' 13.219" E
94	Gir Somnath	Kodinar	Chhara	20° 44' 22.427" N	70° 44' 23.905" E
95	Gir Somnath	Sutrapada	Singsar	20° 48' 29.848" N	70° 36' 51.134" E
96	Jamnagar	Lalpur	Zankhar	22° 21' 37.596" N	69° 46' 15.604" E
97	Amreli	Jafrabad	Balana	20° 50' 51.321" N	71° 17' 11.282" E
98	Bharuch	Vagra	Rahiad	21° 42' 8.450" N	72° 40' 17.651" E

Sr.N O	District	Taluka	Village	Latitude	Longitude
99	Junagadh	Mangrol	Shapur	21° 6' 2.483" N	70° 7' 56.013" E
100	Devbhumi Dwarka	Okhamandal	Mithapur	22° 25' 35.623" N	69° 1' 23.331" E
101	Gir Somnath	Sutrapada	Lati	20° 52' 14.925" N	70° 26' 33.911" E
102	Devbhumi Dwarka	Okhamandal	Varavala	22° 17' 18.555" N	68° 57' 47.696" E
103	Gir Somnath	Sutrapada	Lodhva	20° 49' 50.117" N	70° 34' 13.989" E
104	Bharuch	Vagra	Lakhigam	21° 41' 20.848" N	72° 33' 13.194" E
105	Devbhumi Dwarka	Khambhalia	Mota_Mandha	22° 18' 49.355" N	69° 40' 15.372" E
106	Devbhumi Dwarka	Okhamandal	Mojap	22° 21' 41.499" N	68° 58' 42.359" E
107	Gir Somnath	Patan- veraval	Vadodra_Dodiy a	20° 59' 3.476" N	70° 16' 19.505" E
108	Junagadh	Mangrol	Maktupur	21° 8' 3.223" N	70° 5' 40.982" E
109	Devbhumi Dwarka	Okhamandal	Surajkaradi_CT	22° 25' 1.125" N	69° 0' 57.838" E
110	Gir Somnath	Patan- veraval	Kajli	20° 53' 28.273" N	70° 25' 41.589" E
111	Devbhumi Dwarka	Okhamandal	Baradia	22° 11' 50.526" N	69° 1' 10.933" E
112	Junagadh	Mangrol	Shil	21° 11' 13.910" N	70° 2' 45.982" E
113	Devbhumi Dwarka	Okhamandal	Gorinja	22° 9' 40.991" N	69° 3' 31.384" E
114	Gir Somnath	Sutrapada	Prashnavda	20° 50' 14.485" N	70° 33' 19.819" E
115	Gir Somnath	Una	Delwada	20° 46' 31.987" N	71° 2' 51.062" E
116	Junagadh	Mangrol	Lohej	21° 10' 0.776" N	70° 4' 3.598" E
117	Gir Somnath	Una	Khan	20° 47' 6.672" N	71° 4' 9.033" E
118	Kachchh	Gandhidham	Chudva	23° 7' 46.648" N	70° 11' 15.815" E
119	Surat	Surat city	Kavas	21° 10' 23.290" N	72° 43' 7.067" E
120	Gir Somnath	Patan- veraval	Dabhor	20° 56' 27.463" N	70° 21' 45.468" E
121	Amreli	Jafrabad	Vandh	20° 54' 25.509" N	71° 24' 33.477" E
122	Gir Somnath	Kodinar	Chauhan_ni_kha n	20° 47' 7.963" N	70° 40' 28.034" E
123	Kachchh	Gandhidham	Bharapar	23° 0' 22.675" N	70° 5' 59.545" E
124	Kachchh	Mandvi	Maska	22° 51' 16.710" N	69° 22' 29.893" E
125	Gir Somnath	Kodinar	Nanavada	20° 45' 48.620" N	70° 48' 28.385" E
126	Gir Somnath	Sutrapada	Kanjotar	20° 47' 16.281" N	70° 39' 0.503" E
127	Porbandar	Porbandar	Palkhada	21° 45' 32.497" N	69° 29' 10.348" E
128	Surat	Olpad	Kamroli	21° 24' 17.771" N	72° 42' 38.585" E
129	Gir Somnath	Una	Khajudra	20° 47' 42.196" N	71° 7' 4.189" E

Sr.N O	District	Taluka	Village	Latitude	Longitude
130	Gir Somnath	Kodinar	Pipli	20° 45' 59.193" N	70° 42' 21.139" E
131	Gir Somnath	Patan-veraval	Mithapur	20° 54' 21.741" N	70° 25' 18.685" E
132	Gir Somnath	Patan-veraval	Simar	21° 0' 42.308" N	70° 16' 22.973" E
133	Junagadh	Malia	Chorvad_M	21° 1' 42.920" N	70° 13' 55.270" E
134	Gir Somnath	Una	Anjar	20° 47' 26.625" N	71° 3' 52.599" E
135	Kachchh	Mandvi	Shirva	22° 51' 34.231" N	69° 17' 16.738" E
136	Kachchh	Mandvi	Bada	22° 54' 9.831" N	69° 8' 57.939" E
137	Junagadh	Mangrol	Arena	21° 4' 51.202" N	70° 10' 40.161" E
138	Junagadh	Mangrol	Husenabad	21° 5' 59.121" N	70° 10' 8.352" E
139	Gir Somnath	Patan-veraval	Sidokar	20° 58' 34.914" N	70° 18' 16.963" E
140	Gir Somnath	Patan-veraval	Badalpara	20° 53' 20.858" N	70° 26' 38.682" E
141	Gir Somnath	Patan-veraval	Chhatroda	20° 57' 7.399" N	70° 20' 38.641" E
142	Devbhumi Dwarka	Khambhalia	Kotha_Visotri	22° 16' 28.826" N	69° 35' 0.057" E
143	Gir Somnath	Sutrapada	Vavdi_Sutra	20° 50' 48.638" N	70° 31' 27.175" E
144	Amreli	Jafrabad	Chitrasar	20° 51' 20.966" N	71° 14' 51.431" E
145	Porbandar	Porbandar	Kadachh	21° 21' 4.059" N	69° 54' 59.050" E
146	Kachchh	Bhachau	Chirai Moti	23° 13' 3.259" N	70° 15' 25.037" E
147	Devbhumi Dwarka	Okhamandal	Gadhechi	22° 21' 15.658" N	69° 2' 38.515" E
148	Devbhumi Dwarka	Okhamandal	Goriyali	22° 20' 47.661" N	69° 5' 6.109" E
149	Kachchh	Mandvi	Gundiya	22° 50' 6.731" N	69° 25' 14.367" E
150	Gir Somnath	Kodinar	Damli	20° 46' 10.896" N	70° 43' 18.487" E
151	Junagadh	Malia	Kukasvada	21° 3' 28.485" N	70° 12' 34.492" E
152	Gir Somnath	Sutrapada	Rakhej	20° 47' 55.499" N	70° 39' 29.344" E
153	Gir Somnath	Patan-veraval	Sonariya	20° 54' 3.134" N	70° 26' 35.242" E
154	Junagadh	Malia	Visanvel	21° 1' 46.111" N	70° 16' 0.513" E
155	Porbandar	Porbandar	Mander	21° 19' 22.767" N	69° 56' 40.087" E
156	Junagadh	Mangrol	Zariyavada	21° 12' 14.955" N	70° 3' 13.084" E
157	Junagadh	Mangrol	Ajak	21° 13' 53.823" N	70° 1' 39.673" E
158	Junagadh	Mangrol	Kankasa	21° 10' 18.721" N	70° 5' 8.275" E
159	Gir Somnath	Sutrapada	Morasa	20° 51' 30.749" N	70° 32' 55.342" E
160	Gir Somnath	Kodinar	Kodinar_M	20° 47' 37.756" N	70° 42' 9.436" E
161	Devbhumi Dwarka	Okhamandal	Vasai	22° 19' 5.702" N	68° 59' 54.001" E

Sr.N O	District	Taluka	Village	Latitude	Longitude
162	Junagadh	Mangrol	Talodra	21° 11' 48.248" N	70° 4' 12.951" E
163	Gir Somnath	Kodinar	Kadodara	20° 46' 29.232" N	70° 43' 51.895" E
164	Devbhumi Dwarka	Kalyanpur	Gangdi	21° 53' 31.342" N	69° 21' 34.548" E
165	Gir Somnath	Kodinar	Devli	20° 47' 1.771" N	70° 42' 58.688" E
166	Gir Somnath	Patan- veraval	Bij	20° 53' 28.454" N	70° 28' 3.741" E
167	Gir Somnath	Patan- veraval	Ajotha	20° 53' 36.583" N	70° 27' 52.677" E
168	Junagadh	Mangrol	Farangta	21° 12' 9.916" N	70° 4' 8.208" E

3. Tentative List of Salt pans

Sr. No.	District	Salt pans
1	Kutch	Adesar
2	Kutch	Vandhiya
3	Kutch	Jangi
4	Kutch	Joganinaar

35. Forms and Procedures

35.1 Form of Completion Certificate

Date:

Loan/Credit N^o: _____
IFB N^o: _____

To: _____

Dear Ladies and/or Gentlemen,

Pursuant to GC Clause 24 (Completion of the Facilities) of the General Conditions of the Contract entered into between yourselves and the Employer dated _____, relating to the _____, we hereby notify you that the following part(s) of the Facilities was (were) complete on the date specified below, and that, in accordance with the terms of the Contract, the Employer hereby takes over the said part(s) of the Facilities, together with the responsibility for care and custody and the risk of loss thereof on the date mentioned below.

1. Description of the Facilities or part thereof: _____
2. Date of Completion: _____

However, you are required to complete the outstanding items listed in the attachment hereto as soon as practicable.

This letter does not relieve you of your obligation to complete the execution of the Facilities in accordance with the Contract nor of your obligations during the Defect Liability Period.

Very truly yours,

Title

(Project Manager)

35.2 Form of Operational Acceptance Certificate

Date: _____
 Loan/Credit N^o: _____
 IFB N^o: _____

To: _____

Dear Ladies and/or Gentlemen,

Pursuant to GC Sub-Clause 25.3 (Operational Acceptance) of the General Conditions of the Contract entered into between yourselves and the Employer dated _____, relating to the _____, we hereby notify you that the Functional Guarantees of the following part(s) of the Facilities were satisfactorily attained on the date specified below.

1. Description of the Facilities or part thereof: _____
2. Date of Operational Acceptance: _____

This letter does not relieve you of your obligation to complete the execution of the Facilities in accordance with the Contract nor of your obligations during the Defect Liability Period.

Very truly yours,

Title

(Project Manager)

36.Change Order Procedure and Forms

Date: _____
 Loan/Credit N^o: _____
 IFB N^o: _____

CONTENTS

1. General
2. Change Order Log
3. References for Changes

ANNEXES

- Annex 1 Request for Change Proposal
- Annex 2 Estimate for Change Proposal
- Annex 3 Acceptance of Estimate
- Annex 4 Change Proposal
- Annex 5 Change Order
- Annex 6 Pending Agreement Change Order
- Annex 7 Application for Change Proposal
- Annex 9 Sample clauses [*delete if not used*]

36.1 Change Order Procedure

1. General

This section provides samples of procedures and forms for implementing changes in the Facilities during the performance of the Contract in accordance with GC Clause 39 (Change in the Facilities) of the General Conditions.

2. Change Order Log

The Contractor shall keep an up-to-date Change Order Log to show the current status of Requests for Change and Changes authorized or pending, as Annex 8. Entries of the Changes in the Change Order Log shall be made to ensure that the log is up-to-date. The Contractor shall attach a copy of the current Change Order Log in the monthly progress report to be submitted to the Employer.

3. References for Changes

- (1) Request for Change as referred to in GC Clause 39 shall be serially numbered CR-X-nnn.
- (2) Estimate for Change Proposal as referred to in GC Clause 39 shall be serially numbered CN-X-nnn.
- (3) Acceptance of Estimate as referred to in GC Clause 39 shall be serially numbered CA-X-nnn.
- (4) Change Proposal as referred to in GC Clause 39 shall be serially numbered CP-X-nnn.
- (5) Change Order as referred to in GC Clause 39 shall be serially numbered CO-X-nnn.

Note: (a) Requests for Change issued from the Employer's Home Office and the Site representatives of the Employer shall have the following respective references:

Home Office	CR-H-nnn
Site	CR-S-nnn

- (b) The above number "nnn" is the same for Request for Change, Estimate for Change Proposal, Acceptance of Estimate, Change Proposal and Change Order.

i. Annex 1. Request for Change Proposal

(Employer's Letterhead)

To: _____ [*Contractor's name and address*]

Date: _____

Attention: _____ [*Name and title*]

Contract Name: _____

Contract Number: _____

Dear Ladies and/or Gentlemen:

With reference to the captioned Contract, you are requested to prepare and submit a Change Proposal for the Change noted below in accordance with the following instructions within _____ days of the date of this letter _____.

1. Title of Change: _____
2. Change Request No. _____
3. Originator of Change: Employer: _____
Contractor (by Application for Change Proposal No. _____¹²:
4. Brief Description of Change: _____
5. Facilities and/or Item No. of equipment related to the requested Change: _____
6. Reference drawings and/or technical documents for the request of Change:

<u>Drawing No./Document No.</u>	<u>Description</u>
---------------------------------	--------------------

7. Detailed conditions or special requirements on the requested Change: _____
8. General Terms and Conditions:
 - (a) Please submit your estimate to us showing what effect the requested Change will have on the Contract Price.
 - (b) Your estimate shall include your claim for the additional time, if any, for completion of the requested Change.

¹²Refer to Annex 7

- (c) If you have any opinion negative to the adoption of the requested Change in connection with the conformability to the other provisions of the Contract or the safety of the Infrastructure or Facilities, please inform us of your opinion in your proposal of revised provisions.
- (d) Any increase or decrease in the work of the Contractor relating to the services of its personnel shall be calculated.
- (e) You shall not proceed with the execution of the work for the requested Change until we have accepted and confirmed the amount and nature in writing.

(Employer's Name)

(Signature)

(Name of signatory)

(Title of signatory)

ii. Annex 2. Estimate for Change Proposal

(Contractor's Letterhead)

To: _____ [*Employer's name and address*]

Date: _____

Attention: _____ [*Name and title*]

Contract Name: _____

Contract Number: _____

Dear Ladies and/or Gentlemen:

With reference to your Request for Change Proposal, we are pleased to notify you of the approximate cost of preparing the below-referenced Change Proposal in accordance with GC Sub-Clause 39.2.1 of the General Conditions. We acknowledge that your agreement to the cost of preparing the Change Proposal, in accordance with GC Sub-Clause 39.2.2, is required before estimating the cost for change work.

1. Title of Change: _____
2. Change Request No./Rev.: _____
3. Brief Description of Change: _____
4. Scheduled Impact of Change: _____
5. Cost for Preparation of Change Proposal: _____¹³

(a) Engineering (Amount)

(i) Engineer	_____ hrs x _____ rate/hr = _____
(ii) Draftsperson	_____ hrs x _____ rate/hr = _____
Sub-total	_____ hrs _____

Total Engineering Cost _____

(b) Other Cost _____

Total Cost (a) + (b) _____

¹³ Costs shall be in Rs.

(Contractor's Name)

(Signature)

(Name of signatory)

(Title of signatory)

iii. Annex 3. Acceptance of Estimate

(Employer's Letterhead)

To: _____ [*Contractor's name and address*]

Date: _____

Attention: _____ [*Name and title*]

Contract Name: _____

Contract Number: _____

Dear Ladies and/or Gentlemen:

We hereby accept your Estimate for Change Proposal and agree that you should proceed with the preparation of the Change Proposal.

1. Title of Change: _____
2. Change Request No./Rev.: _____
3. Estimate for Change Proposal No./Rev.: _____
4. Acceptance of Estimate No./Rev.: _____
5. Brief Description of Change: _____
6. Other Terms and Conditions: In the event that we decide not to order the Change accepted, you shall be entitled to compensation for the cost of preparation of Change Proposal described in your Estimate for Change Proposal mentioned in para. 3 above in accordance with GC Clause 39 of the General Conditions.

(Employer's Name)

(Signature)

(Name and Title of signatory)

iv. Annex 4. Change Proposal

(Contractor's Letterhead)

To: _____ [Employer's name and address]

Date: _____

Attention: _____ [Name and title]

Contract Name: _____

Contract Number: _____

Dear Ladies and/or Gentlemen:

In response to your Request for Change Proposal No. _____, we hereby submit our proposal as follows:

1. Title of Change: _____
2. Change Proposal No./Rev.: _____
3. Originator of Change: Employer: _____
Contractor: _____
4. Brief Description of Change: _____
5. Reasons for Change: _____
6. Facilities and/or Item No. of Equipment related to the requested Change:

7. Reference drawings and/or technical documents for the requested Change:

<u>Drawing/Document No.</u>	<u>Description</u>
8. Estimate of increase/decrease to the Contract Price resulting from Change Proposal:¹⁴

	<u>(Amount)</u>
(a) Direct material	_____
(b) Major construction equipment	_____
(c) Direct field labor (Total ____ hrs)	_____

¹⁴ Costs shall be in Rs.

- (d) Subcontracts _____
- (e) Indirect material and labor _____
- (f) Site supervision _____
- (g) Head office technical staff salaries

Process engineer	_____ hrs @ _____ rate/hr	_____
Project engineer	_____ hrs @ _____ rate/hr	_____
Equipment engineer	_____ hrs @ _____ rate/hr	_____
Procurement	_____ hrs @ _____ rate/hr	_____
Draftsperson	_____ hrs @ _____ rate/hr	_____
Total	_____ hrs	_____

- (h) Extraordinary costs (computer, travel, etc.) _____
- (i) Fee for general administration, _____ % of Items _____
- (j) Taxes and customs duties _____

Total lump sum cost of Change Proposal _____
(Sum of items (a) to (j))

Cost to prepare Estimate for Change Proposal _____
(Amount payable if Change is not accepted)

9. Additional time for Completion required due to Change Proposal
10. Effect on the Functional Guarantees
11. Effect on the other terms and conditions of the Contract
12. Validity of this Proposal: within [Number] days after receipt of this Proposal by the Employer
13. Other terms and conditions of this Change Proposal:
- You are requested to notify us of your acceptance, comments or rejection of this detailed Change Proposal within _____ days from your receipt of this Proposal.
 - The amount of any increase and/or decrease shall be taken into account in the adjustment of the Contract Price.

(c) Contractor's cost for preparation of this Change Proposal:²

[Note: This cost shall be reimbursed by the Employer in case of Employer's withdrawal or rejection of this Change Proposal without default of the Contractor in accordance with GC Clause 39 of the General Conditions of Contract.]

(Contractor's Name)

(Signature)

(Name of signatory)

(Title of signatory)

² Specify where necessary.

v. Annex 5. Change Order

(Employer's Letterhead)

To: _____ [*Contractor's name and address*]

Date: _____

Attention: _____ [*Name and title*]

Contract Name: _____

Contract Number: _____

Dear Ladies and/or Gentlemen:

We approve the Change Order for the work specified in the Change Proposal (No. _____), and agree to adjust the Contract Price, Time for Completion and/or other conditions of the Contract in accordance with GC Clause 39 of the General Conditions.

1. Title of Change: _____

2. Change Request No./Rev.: _____

3. Change Order No./Rev.: _____

4. Originator of Change: Employer: _____
Contractor: _____

5. Authorized Price:

Ref. No.: _____
Rs. _____

Date: _____

6. Adjustment of Time for Completion

None

Increase _____ days

Decrease _____ days

7. Other effects, if any

Authorized by: _____
(Employer)

Date: _____

Accepted by: _____
(Contractor)

Date: _____

vi. Annex 6. Pending Agreement Change Order
(Employer's Letterhead)

To: _____ [*Contractor's name and address*]

Date: _____

Attention: _____ [*Name and title*]

Contract Name: _____

Contract Number: _____

Dear Ladies and/or Gentlemen:

We instruct you to carry out the work in the Change Order detailed below in accordance with GC Clause 39 of the General Conditions.

1. Title of Change: _____
2. Employer's Request for Change Proposal No./Rev.: _____
dated: _____
3. Contractor's Change Proposal No./Rev.: _____ dated:

4. Brief Description of Change: _____
5. Facilities and/or Item No. of equipment related to the requested Change:

6. Reference Drawings and/or technical documents for the requested Change:

<u>Drawing/Document No.</u>	<u>Description</u>
7. Adjustment of Time for Completion:
8. Other change in the Contract terms:
9. Other terms and conditions:

(Employer's Name)

(Signature)

(Name of signatory)

(Title of signatory)

vii. Annex 7. Application for Change Proposal

(Contractor's Letterhead)

To: _____ [*Employer's name and address*]

Date: _____

Attention: _____ [*Name and title*]

Contract Name: _____

Contract Number: _____

Dear Ladies and/or Gentlemen:

We hereby propose that the below-mentioned work be treated as a Change in the Facilities.

1. Title of Change: _____
2. Application for Change Proposal No./Rev.: _____ dated:

3. Brief Description of Change: _____
4. Reasons for Change:
5. Order of Magnitude Estimation (in the currencies of the Contract):
6. Scheduled Impact of Change:
7. Effect on Functional Guarantees, if any:
8. Appendix:

(Contractor's Name)

(Signature)

(Name of signatory)

(Title of signatory)

SAMPLE

Annex 9. Sample Formats from a Project for Guidance- NA

SAMPLE**Annex 9.1 Form of Trust Receipt for Infrastructure, Equipment and Materials Received**

We M/s (*Contractor's Name*).....having our
Principal place of business athaving been awarded a Contract
No..... Dated.....for (*Contract Name*).....by
(*Name of Employer*)

We do hereby acknowledge the receipt of the Infrastructure, Equipment and Materials as are fully described and mentioned under Documents of Title/RR/LR¹⁵ etc. and in the schedule annexed hereto, which shall form an integral part of this receipt as “Trustee” of (*Name of Employer*). The aforesaid materials etc. so received by us shall be exclusively used in the successful performance of the aforesaid Contract and for no other purpose whatsoever. We undertake not to create any charge, lien or encumbrance over the aforesaid materials etc. in favour of any other person/institution(s)/ Banks.

For M/s
(Contractor's Name)

Dated:

(AUTHORISED SIGNATORY)

Place:

SEAL OF COMPANY

¹⁵ RR – Railway Receipt; LR – Lorry Receipt

SAMPLE**Annex 9.2 Form of Indemnity Bond to be Executed by the Contractor for the Equipment
Handed Over by the Employer for Performance of its Contract**

**(Entire Equipment Consignment in one Lot)
(On non-Judicial stamp paper of appropriate value)**

INDEMNITY BOND

THIS INDEMNITY BOND is made this Day of 19
..... by(*Contractor's Name*) a Company registered under the
Companies Act, 1956/Partnership-firm/Proprietary concern having its Registered Office at
..... (Hereinafter called as 'Contractor' or "Obligor" which expression shall include
its successors and permitted assigns) in favour of(*Name of Employer*), a
Company incorporated under the Companies Act, 1956 having its Registered Office at
..... and its project at(hereinafter called
"....."....{*Abbreviated name of the Employer*} which expression shall include its
successors and assigns) :

WHEREAS@..... has awarded to the Contractor a Contract for
.....vide its Notification of Award/Contract No.....dated..... and its
Amendment No. and Amendment No. (*Applicable
when amendments have been issued*) hereinafter called the Contract) in terms of which
.....@..... is required to hand over various Equipments to the Contractor for execution of
the Contract.

And WHEREAS by virtue of Clause No..... of the said Contract, the Contractor is
required to execute an Indemnity Bond in favour of@.....for the Equipments handed
over to it by@..... for the purpose of performance of the Contract/ Erection portion
of the contract (hereinafter called the "Equipments")

AND THEREFORE, This Indemnity Bond witnesseth as follows:

1. That in consideration of various Equipments as mentioned in the Contract, valued at
(*Currency and amount in Figures*)..... *currency
and amount in words*)..... handed over to
the Contractor for the purpose of performance of the Contract, the Contractor hereby
undertakes to indemnify and shall keep@..... indemnified, for the full
value of the Equipments. The Contractor hereby acknowledges actual receipt of the
Equipment etc. as pre despatch title documents handed over to the Contractor as detailed
in the Schedule appended hereto. The Contractor shall hold such Equipment etc. in trust
as a "Trustee" for and on behalf of@.....
2. That the Contractor is obliged and shall remain absolutely responsible for the safe
transit/protection and custody of the Equipment at@..... Project site against

all risks whatsoever till the equipments are duly used/erected in accordance with the terms of the Contract and the infrastructure/package duly erected and commissioned in accordance with the terms of the Contract is taken over by@..... . The Contractor undertakes to keep@..... harmless against any loss or damage that may be caused to the Equipments.

3. The Contractor undertakes that the Equipments shall be used exclusively for the performance/execution of the Contract strictly in accordance with its terms and conditions and no part of the equipment shall be utilized for any other work of purpose whatsoever. It is clearly understood by the Contractor that non-observance of the obligations under this Indemnity Bond by the Contractor shall inter-alia constitute a criminal breach of trust on the part of the Contractor for all intents and purpose including legal/penal consequences.
4. That@..... is and shall remain the exclusive owner of the Equipments free from all encumbrances, charges or liens of any kind, whatsoever. The Equipments shall at all times be open to inspection and checking by the Project Manager or other employees/agents authorized by him in this regard. Further,@..... shall always be free at all times to take possession of the Equipments in whatever form the Equipments may be, if in its opinion, the Equipments are likely to be endangered, mis-utilized or converted to uses other than those specified in the Contract, by any acts or omission or commission on the part of the Contractor or any other person or on account of any reason whatsoever and the contractor binds himself and undertakes to comply with the directions of demand of@..... to return the Equipments without any demur or reservation.
5. That this Indemnity Bond is irrevocable. If at any time any loss or damage occurs to the Equipments or the same or any part thereof is mis-utilized in any manner whatsoever, than the Contractor hereby agrees that the decision of the project manager of@..... as to assessment of loss or damage to the Equipment shall be final and binding on the Contractor. The Contractor binds itself and undertakes to replace the lost and/or damaged Equipments at its own cost and/or shall pay the amount of loss to@..... without any demur, reservation or protest. This is without prejudice to any other right or remedy that may be available to@..... against the Contractor under the Contract and under this Indemnity Bond.
6. NOW THE CONDITION of this Bond is that if the Contractor shall duly and punctually comply with the terms and conditions of this Bond to the satisfaction of@..... then the above shall be void, but otherwise, it shall remain in full force and virtue.

@ *Fill in abbreviated name of the Employer*

IN WITNES WHEREOF, the Contractor has hereunto set its hand through its authorized representative under the common seal of the Company, the day, month and year first above mentioned.

SAMPLE**SCHEDULE 1**

Particulars of the Equipments handed over	Quantity	Particulars of Despatch title Documents		Value of the Equipments	Signature of Attorney in token of receipt
		RR/GR/ Bill of lading No & Date	Carrier		

For and on behalf of

.....
(Contractor's Name)

WITNESS

- | | | | |
|----|----|-----------------|---|
| 1. | 1. | Signature | Signature |
| | 2. | Name | Name |
| | 3. | Address | Designation of
Authorized representative * |
| 2. | 1. | Signature | (Common Seal) |
| | 2. | Name | (In case of Company) |
| | 3. | Address | |

 * Indemnity Bond is to be executed by the authorized person and (i) in case of contracting Company under common seal of the Company or (ii) having the Power of Attorney issued under common seal of the Company with authority to execute Indemnity Bond, (iii) in case of (ii), the original Power of Attorney if it is specifically for this Contract or photostat copy of the Power of Attorney if it is General Power of Attorney and such documents should be attached to Indemnity Bond.

SAMPLE

Annex 9.3 Form of Indemnity Bond to be Executed by the Contractor for the Equipment Handed Over in Instalments by the Employer for Performance of its Contract

(On non-Judicial stamp paper of appropriate value)

INDEMNITY BOND

THIS INDEMNITY BOND is made this day of 19 by (*Contractor's Name*) a Company registered under the Companies Act, 1956/Partnership firm/Proprietary concern having its Registered Office at (Hereinafter called as 'Contractor' or "Obligor" which expression shall include its successors and permitted assigns) in favour of (*Name of Employer*), a Company incorporated under the Companies Act, 1956 having its Registered Office at and its project at (hereinafter called "....." ...{*Abbreviated name of the Employer*} which expression shall include its successors and assigns) :

WHEREAS@..... has awarded to the Contractor a Contract forvide its Notification of Award/Contract No.....dated..... and its Amendment No. and Amendment No. (*Applicable when amendments have been issued*) hereinafter called the Contract) in terms of which@..... is required to hand over various Equipments to the Contractor for execution of the Contract.

And WHEREAS by virtue of Clause No..... of the said Contract, the Contractor is required to execute an Indemnity Bond in favour of@.....for the Equipments handed over to it by@..... for the purpose of performance of the Contract/ Erection portion of the contract (hereinafter called the "Equipments")

AND THEREFORE, This Indemnity Bond witnesseth as follows:

1. That in consideration of various Equipments as mentioned in the Contract, valued at (*Currency and amount in Figures*)..... *currency and amount in words*)..... to be handed over to the Contractor in installments from time to time for the purpose of performance of the Contract, the Contractor hereby undertakes to indemnify and shall keep@..... indemnified, for the full value of the Equipments. The Contractor hereby acknowledges actual receipt of the initial installment of the Equipment etc. as per details in the Schedule appended hereto. Further, the Contractor agrees to acknowledge actual receipt of the subsequent installments of the Equipments etc. as required by@..... in the form of Schedules consecutively numbered which shall be attached to this Indemnity Bond so as to form an integral parts of this Bond. The Contractor shall hold such Equipment etc. in trust as a "Trustee" for and on behalf of@..... .
2. That the Contractor is obliged and shall remain absolutely responsible for the safe transit/protection and custody of the Equipment at@..... Project site against all risks whatsoever till the equipments are duly used/erected in accordance with the terms of the Contract and the infrastructure/package duly erected and commissioned in accordance with

the terms of the Contract is taken over by@..... . The Contractor undertakes to keep@..... harmless against any loss or damage that may be caused to the Equipments.

3. The Contractor undertakes that the Equipments shall be used exclusively for the performance/execution of the Contract strictly in accordance with its terms and conditions and no part of the equipment shall be utilized for any other work of purpose whatsoever. It is clearly understood by the Contractor that non-observance of the obligations under this Indemnity Bond by the Contractor shall inter-alia constitute a criminal breach of trust on the part of the Contractor for all intents and purpose including legal/penal consequences.
4. That@..... is and shall remain the exclusive owner of the Equipments free from all encumbrances, charges or liens of any kind, whatsoever. The Equipments shall at all times be open to inspection and checking by the Project Manager or other employees/agents authorized by him in this regard. Further,@..... shall always be free at all times to take possession of the Equipments in whatever form the Equipments may be, if in its opinion, the equipments are likely to be endangered, mis-utilized or converted to uses other than those specified in the Contract, by any acts or omission or commission on the part of Contractor or any other person on account of any reason whatsoever and the contractor binds himself and undertakes to comply with the directions of demand of@..... to return the Equipments without any demur or reservation.
5. That this Indemnity Bond is irrevocable. If at any time any loss or damage occurs to the Equipments or the same or any part thereof is mis-utilized in any manner whatsoever, than the Contractor hereby agrees that the decision of the project manager of@..... as to assessment of loss or damage to the Equipment shall be final and binding on the Contractor. The Contractor binds itself and undertakes to replace the lost and/or damaged Equipments at its own cost and/or shall pay the amount of loss to@..... without any demur, reservation or protest. This is without prejudice to any other right or remedy that may be available to@..... against the Contractor under the Contract and under this Indemnity Bond.
6. NOW THE CONDITION of this Bond is that if the Contractor shall duly and punctually comply with the terms and conditions of this Bond to the satisfaction of@..... then the above bond shall be void, but otherwise, it shall remain in full force and virtue.

@ *Fill in abbreviated name of the Employer*

IN WITNES WHEREOF, the Contractor has hereunto set its hand through its authorized representative under the common seal of the Company, the day, month and year first above mentioned.

SAMPLE**SCHEDULE NO. 1**

Particulars of the Equipments handed over	Quantity	Particulars of Despatch title Documents		Value of the Equipments	Signature of Attorney in token of receipt
		RR/GR/ Bill of lading No & Date	Carrier		

For and on behalf of.....
(Contractor's Name)**WITNESS**

- | | | | |
|----|----|-----------------|---|
| 1. | 1. | Signature | Signature |
| | 2. | Name | Name |
| | 3. | Address | Designation of
Authorized representative * |
| 2. | 1. | Signature | (Common Seal) |
| | 2. | Name | (In case of Company) |
| | 3. | Address | |

* Indemnity Bond is to be executed by the authorized person and (i) in case of contracting Company under common seal of the Company or (ii) having the Power of Attorney issued under common seal of the Company with authority to execute Indemnity Bond, (iii) in case of (ii), the original Power of Attorney if it is specifically for this Contract or photostat copy of the Power of Attorney if it is General Power of Attorney and such documents should be attached to Indemnity Bond.

SAMPLE
Annex 9.4 Form of Authorization Letter

(NAME OF EMPLOYER)

(PROJECT)

REF. NO. :

DATE :

To,

M/s (*Contractor's Name*)

Ref: Contract No..... Dated.....
 For Awarded by (*Name of Employer*)

Dear Sirs,

Kindly refer to Contract No..... Dated For(*Contract Name*) You are hereby authorized on behalf of(*Name of Employer*) having its registered office at And its Project at to take physical delivery of materials/equipments covered under despatch Document/ Consignment Note No..... * Dated and as detailed in the enclosed Schedule for the sole purpose of successful performance of the aforesaid contract and for no other purposes, whatsoever.

(Signature of Project Authority)

Designation:

Date

ENCL: as above

* Mention LR/RR No.

SAMPLE**SCHEDULE OF MATERIAL/EQUIPMENT COVERED UNDER
DESPATCH TITLE DOCUMENT (RR NO./LR NO.....)**

Sl. No.	Contract Name	NOA No./ Contract Agreement No.	Description of Materials/ Equipments	Spec. No.	Qty.	Value	Remarks

(SIGNATURE OF THE PROJECT AUTHORITY)

(DESIGNATION)

(DATE)

Drawings-NA

Supplementary Information-NA

37.Documents required from System Integrator by Employer

The following documents are to be submitted by the bidder within 30 days of commissioning of the System and Facilities in two sets of hard copy as well as soft copy (CD/Pen Drive).

- Technical Write up of Network design and functioning, System and Network Architecture Diagram, Active Components Configuration Details, Security Implementation
- Manufacturers' technical documentation on all devices used in the system including user manuals for configuring of switches, routers etc
- Site Layout Diagram
- Site Connection Diagram
- Site Detailed Inventory of all equipment and systems installed with make, model, serial number.
- Complete cabling and electrical system layouts (as installed) including cable routing, telecommunication closets and telecommunication outlet, connector designations
- The layout must detail location of all equipment and indicate all wiring pathways
- Site Certification and Acceptance Test Reports, Performance Test Reports of Networking Components, Servers and other components, scanning test reports
- Original manuals of software packages supplied
- Software delivery report
- IP Addressing policy and scheme
- Change in configuration, maintenance logs patches, carried out etc
- Original Manuals of all Hardwares supplied
- As built network configuration details with IP addresses, subnet, VLAN, port description etc for all active components
- Detailed manual on facility management for each and every facility (including security, operations, monitoring, configuring, availability and service continuity management, capacity management, incident and problem management, SLA management, preventive maintenance plan, corrective maintenance plan, role of each management personnel etc.
- All reports on manpower deployment schedules
- Network Monitoring System Reports
- Any other documents required by GSDMA

Section VII. General Conditions (GC)

Table of contents

Section VII. General Conditions (GC).....	353
Contract and Interpretation	353
1. Definitions.....	353
2. Contract Documents.....	356
3. Interpretation.....	357
4. Communications	359
5. Law and Language.....	359
6. Fraud and Corruption.....	359
Subject Matter of Contract.....	362
7. Scope of Facilities.....	362
8. Time for Commencement and Completion.....	363
9. Contractor's Responsibilities	363
10. Employer's Responsibilities	365
Payment.....	367
11. Contract Price.....	367
12. Terms of Payment	367
13. Securities.....	369
14. Taxes and Duties.....	370
Intellectual Property.....	371
15. License/Use of Technical Information.....	372
16. Confidential Information	372
Execution of the Facilities	373
17. Representatives	373
18. Work Program.....	376
19. Subcontracting	378
20. Design and Engineering.....	379
21. Procurement	382
22. Installation.....	384
23. Test and Inspection	394

24.	Completion of the Facilities	396
25.	Commissioning and Operational Acceptance	398
	Guarantees and Liabilities	402
26.	Completion Time Guarantee	402
27.	Defect Liability	403
28.	Functional Guarantees	406
29.	Patent Indemnity	407
30.	Limitation of Liability	408
	Risk Distribution	409
31.	Transfer of Ownership	409
32.	Care of Facilities	409
33.	Loss of or Damage to Property; Accident or Injury to Workers; Indemnification	411
34.	Insurance	412
35.	Unforeseen Conditions	415
36.	Change in Laws and Regulations	416
37.	Force Majeure	417
38.	War Risks	419
39.	Change in Contract Elements	421
40.	Extension of Time for Completion	425
41.	Suspension	426
42.	Termination	428
43.	Assignment	436
44.	Export Restrictions	436
	Claims, Disputes and Arbitration	437
45.	Contractor's Claims	437
46.	Disputes and Arbitration	439
	APPENDIX A to General Conditions	441
	Appointment of Adjudicator	445
	Salient Features of Labour & Environment Protection Laws	450

Section VII. General Conditions (GC)

Contract and Interpretation

1. Definitions

46.2 The following words and expressions shall have the meanings hereby assigned to them:

“Contract” means the Contract Agreement entered into between the Employer and the Contractor, together with the Contract Documents referred to therein; they shall constitute the Contract, and the term “the Contract” shall in all such documents be construed accordingly.

“Contract Documents” means the documents listed in Article 1.1 (Contract Documents) of the Contract Agreement (including any amendments thereto).

“GC” means the General Conditions hereof.

“PC” means the Particular Conditions.

“day” means calendar day.

“year” means 365 days.

“month” means calendar month.

“Party” means the Employer or the Contractor, as the context requires, and “Parties” means both of them.

“Employer” means the person named as such in the PC and includes the legal successors or permitted assigns of the Employer.

“Project Manager” means the person appointed by the Employer in the manner provided in GC Sub-Clause 17.1 (Project Manager) hereof and named as such in the PC to perform the duties delegated by the Employer.

“Contractor” means the person(s) whose bid to perform the Contract has been accepted by the Employer and is named as Contractor in the Contract Agreement, and includes the legal successors or permitted assigns of the Contractor.

“Contractor’s Representative” means any person nominated by the Contractor and approved by the Employer in the manner provided in GC Sub-Clause 17.2 (Contractor’s Representative and Construction

Manager) hereof to perform the duties delegated by the Contractor.

“Construction Manager” means the person appointed by the Contractor’s Representative in the manner provided in GC Sub-Clause 17.2.4.

“Subcontractor,” including manufacturers, means any person to whom execution of any part of the Facilities, including preparation of any design or supply of any Infrastructure, is sub-contracted directly or indirectly by the Contractor, and includes its legal successors or permitted assigns.

“The Adjudicator” is the person appointed jointly by the Employer and the Contractor to resolve disputes in the first instance, as provided for in GC 46.

“The Bank” means the financing institution named in the PC.

“Contract Price” means the sum specified in Article 2.1 (Contract Price) of the Contract Agreement, subject to such additions and adjustments thereto or deductions therefrom, as may be made pursuant to the Contract.

“Facilities” means the Infrastructure to be supplied and installed, as well as all the Installation Services to be carried out by the Contractor under the Contract.

“Infrastructure” means permanent infrastructure, equipment, machinery, apparatus, materials, articles and things of all kinds to be provided and incorporated in the Facilities by the Contractor under the Contract (including the spare parts to be supplied by the Contractor under GC Sub-Clause 7.3 hereof), but does not include Contractor’s Equipment.

“Installation Services” means all those services ancillary to the supply of the Infrastructure for the Facilities, to be provided by the Contractor under the Contract, such as transportation and provision of marine or other similar insurance, inspection, expediting, site preparation works (including the provision and use of Contractor’s Equipment and the supply of all construction materials required), installation, testing,

pre-commissioning, commissioning, operations, maintenance, the provision of operations and maintenance manuals, training, etc... as the case may require.

“Contractor’s Equipment” means all facilities, equipment, machinery, tools, apparatus, appliances or things of every kind required in or for installation, completion and maintenance of Facilities that are to be provided by the Contractor, but does not include Infrastructure, or other things intended to form or forming part of the Facilities.

“Country of Origin” means the countries and territories eligible under the rules of the Bank as further elaborated in the PC.

“Site” means the land and other places upon which the Facilities are to be installed, and such other land or places as may be specified in the Contract as forming part of the Site.

“Effective Date” means the date of fulfillment of all conditions stated in Article 3 (Effective Date) of the Contract Agreement, from which the Time for Completion shall be counted.

“Time for Completion” means the time within which Completion of the Facilities as a whole (or of a part of the Facilities where a separate Time for Completion of such part has been prescribed) is to be attained, as referred to in GC Clause 8 and in accordance with the relevant provisions of the Contract.

“Completion” means that the Facilities (or a specific part thereof where specific parts are specified in the Contract) have been completed operationally and structurally and put in a tight and clean condition, that all work in respect of Pre-commissioning of the Facilities or such specific part thereof has been completed, and that the Facilities or specific part thereof are ready for Commissioning as provided in GC Clause 24 (Completion) hereof.

“Pre-commissioning” means the testing, checking and other requirements specified in the Employer’s

Requirements that are to be carried out by the Contractor in preparation for Commissioning as provided in GC Clause 24 (Completion) hereof.

“Commissioning” means operation of the Facilities or any part thereof by the Contractor following Completion, which operation is to be carried out by the Contractor as provided in GC Sub-Clause 25.1 (Commissioning) hereof, for the purpose of carrying out Guarantee Test(s).

“Guarantee Test(s)” means the test(s) specified in the Employer’s Requirements to be carried out to ascertain whether the Facilities or a specified part thereof is able to attain the Functional Guarantees specified in the Appendix to the Contract Agreement titled Functional Guarantees, in accordance with the provisions of GC Sub-Clause 25.2 (Guarantee Test) hereof.

“Operational Acceptance” means the acceptance by the Employer of the Facilities (or any part of the Facilities where the Contract provides for acceptance of the Facilities in parts), which certifies the Contractor’s fulfillment of the Contract in respect of Functional Guarantees of the Facilities (or the relevant part thereof) in accordance with the provisions of GC Clause 28 (Functional Guarantees) hereof and shall include deemed acceptance in accordance with GC Clause 25 (Commissioning and Operational Acceptance) hereof.

“Defect Liability Period” means the period of validity of the warranties given by the Contractor commencing at Completion of the Facilities or a part thereof, during which the Contractor is responsible for defects with respect to the Facilities (or the relevant part thereof) as provided in GC Clause 27 (Defect Liability) hereof.

“ESHS” means environmental, social (including sexual exploitation and abuse (SEA) and gender based violence (GBV), health and safety.

2. Contract Documents

- 47.1 Subject to Article 1.2 (Order of Precedence) of the Contract Agreement, all documents forming part of the Contract (and all parts thereof) are intended to be

correlative, complementary and mutually explanatory. The Contract shall be read as a whole.

3. Interpretation

48.1 In the Contract, except where the context requires otherwise:

(a) words indicating one gender include all genders;

(b) words indicating the singular also include the plural and words indicating the plural also include the singular;

(c) provisions including the word “agree,” “agreed,” or “agreement” require the agreement to be recorded in writing;

(d) the word “tender” is synonymous with “bid,” “tenderer,” with “bidder,” and “tender documents” with “bidding documents,” and

(e) “written” or “in writing” means hand-written, type-written, printed or electronically made, and resulting in a permanent record.

The marginal words and other headings shall not be taken into consideration in the interpretation of these Conditions.

48.2 Incoterms

Unless inconsistent with any provision of the Contract, the meaning of any trade term and the rights and obligations of Parties thereunder shall be as prescribed by Incoterms.

Incoterms means international rules for interpreting trade terms published by the International Chamber of Commerce (latest edition), 38 Cours Albert 1er, 75008 Paris, France.

48.3 Entire Agreement

Subject to GC Sub-Clause 16.4 hereof, the Contract constitutes the entire agreement between the Employer and Contractor with respect to the subject matter of Contract and supersedes all communications, negotiations and agreements (whether written or oral) of Parties with respect thereto made prior to the date of Contract.

48.4 Amendment

No amendment or other variation of the Contract shall be effective unless it is in writing, is dated, expressly refers to the Contract, and is signed by a duly authorized representative of each Party hereto.

48.5 Independent Contractor

The Contractor shall be an independent contractor performing the Contract. The Contract does not create any agency, partnership, joint venture or other joint relationship between the Parties hereto. Subject to the provisions of the Contract, the Contractor shall be solely responsible for the manner in which the Contract is performed. All employees, representatives or Subcontractors engaged by the Contractor in connection with the performance of the Contract shall be under the complete control of the Contractor and shall not be deemed to be employees of the Employer, and nothing contained in the Contract or in any subcontract awarded by the Contractor shall be construed to create any contractual relationship between any such employees, representatives or Subcontractors and the Employer.

48.6 Non-Waiver

3.6.1 Subject to GC Sub-Clause 3.7.2 below, no relaxation, forbearance, delay or indulgence by either Party in enforcing any of the terms and conditions of the Contract or the granting of time by either Party to the other shall prejudice, affect or restrict the rights of that Party under the Contract, nor shall any waiver by either Party of any breach of Contract operate as waiver of any subsequent or continuing breach of Contract.

3.6.2 Any waiver of a Party's rights, powers or remedies under the Contract must be in writing, must be dated and signed by an authorized representative of the Party granting such waiver, and must specify the right and the extent to which it is being waived.

48.7 Severability

If any provision or condition of the Contract is prohibited or rendered invalid or unenforceable, such prohibition, invalidity or unenforceability shall not affect the validity or enforceability of any other provisions and conditions of the Contract.

48.8 Country of Origin

“Origin” means the place where the infrastructure and component parts thereof are mined, grown, produced or manufactured, and from which the services are provided. Infrastructure components are produced when, through manufacturing, processing, or substantial or major assembling of components, a commercially recognized product results that is substantially in its basic characteristics or in purpose or utility from its components.

4. Communications

49.1 Wherever these Conditions provide for the giving or issuing of approvals, certificates, consents, determinations, notices, requests and discharges, these communications shall be:

- (a) in writing and delivered against receipt; and
- (b) delivered, sent or transmitted to the address for the recipient’s communications as stated in the Contract Agreement.

When a certificate is issued to a Party, the certifier shall send a copy to the other Party. When a notice is issued to a Party, by the other Party or the Project Manager, a copy shall be sent to the Project Manager or the other Party, as the case may be.

5. Law and Language

50.1 The Contract shall be governed by and interpreted in accordance with laws of the country specified in the PC.

50.2 The ruling language of the Contract shall be that stated in the PC.

50.3 The language for communications shall be the ruling language unless otherwise stated in the PC

6. Fraud and Corruption

51.1 If the Employer determines that the Contractor and/or any of its personnel, or its agents, or its Subcontractors, subconsultants, services providers, suppliers and/or their employees has engaged in corrupt, fraudulent, collusive coercive, or obstructive practices, in competing for or in executing the Contract, then the Employer may, after giving 14 days notice to the Contractor, terminate the Contractor's employment under the Contract and expel him from the Site, and the provisions of Clause 42 shall apply as if such expulsion had been made under Sub-Clause 42.2.1 (c).

For the purposes of this Sub-Clause,

- (i) “corrupt practice” is the offering, giving, receiving or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party ;
- (ii) “fraudulent practice” is any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation ;
- (iii) “collusive practice” is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party;
- (iv) “coercive practice” is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;
- (v) “obstructive practice” is
 - (aa) deliberately destroying, falsifying, altering or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede a Bank investigation into allegations of a corrupt, fraudulent, coercive or collusive practice; and/or threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation, or
 - (bb) acts intended to materially impede the exercise of the Bank’s inspection and audit rights provided for under Sub-Clause 9.8. threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation, or
 - (bb) acts intended to materially impede the exercise of the Bank’s

inspection and audit rights provided
for under Sub-Clause 9.8

Subject Matter of Contract

7. Scope of Facilities

- 52.1 Unless otherwise expressly limited in the Employer's Requirements, the Contractor's obligations cover the provision of all Infrastructure and the performance of all Installation Services required for the design, and the manufacture (including procurement, quality assurance, construction, installation, associated civil works, Pre-commissioning and delivery) of the Infrastructure, and the installation, completion and commissioning of the Facilities in accordance with the plans, procedures, specifications, drawings, codes and any other documents as specified in the Section, Employer's Requirements. Such specifications include, but are not limited to, the provision of supervision and engineering services; the supply of labour, materials, equipment, spare parts (as specified in GC Sub-Clause 7.3 below) and accessories; Contractor's Equipment; construction utilities and supplies; temporary materials, structures and facilities; transportation (including, without limitation, unloading and hauling to, from and at the Site); and storage, except for those supplies, works and services that will be provided or performed by the Employer, as set forth in the Appendix to the Contract Agreement titled Scope of Works and Supply by the Employer.
- 52.2 The Contractor shall, unless specifically excluded in the Contract, perform all such work and/or supply all such items and materials not specifically mentioned in the Contract but that can be reasonably inferred from the Contract as being required for attaining Completion of the Facilities as if such work and/or items and materials were expressly mentioned in the Contract.
- 52.3 In addition to the supply of Mandatory Spare Parts included in the Contract, the Contractor agrees to supply spare parts required for the operation and maintenance of the Facilities for the period specified in the PC and the provisions, if any, specified in the PC. However, the identity, specifications and quantities of such spare parts and the terms and conditions relating to the supply thereof are to be agreed between the Employer and the Contractor, and the price of such spare parts shall be that given in Price Schedule No. 6, which shall be added to the Contract Price. The price

of such spare parts shall include the purchase price therefor and other costs and expenses (including the Contractor's fees) relating to the supply of spare parts.

8. Time for Commencement and Completion

- 53.1 The Contractor shall commence work on the Facilities within the period specified in the PC and without prejudice to GC Sub-Clause 26.2 hereof, the Contractor shall thereafter proceed with the Facilities in accordance with the time schedule specified in the Appendix to the Contract Agreement titled Time Schedule.
- 53.2 The Contractor shall attain Completion of the Facilities or of a part where a separate time for Completion of such part is specified in the Contract, within the time stated in the PC or within such extended time to which the Contractor shall be entitled under GC Clause 40 hereof.
- 53.3 The Contractor shall not carry out any work, including mobilization and/or pre-construction activities, unless the Project Manager is satisfied that appropriate measures are in place to address environmental, social, health and safety risks and impacts. At a minimum, the Contractor shall apply the Management Strategies and Implementation Plans and Code of Conduct, submitted as part of the Bid and agreed as part of the Contract. The Contractor shall submit, on a continuing basis, for the Project Manager's prior approval, such supplementary Management Strategies and Implementation Plans as are necessary to manage the ESHS risks and impacts of ongoing works. These Management Strategies and Implementation Plans collectively comprise the Contractor's Environmental and Social Management Plan (C-ESMP). The C-ESMP shall be approved prior to the commencement of construction activities. The approved C-ESMP shall be reviewed, periodically (but not less than every six (6) months), and updated in a timely manner, as required, by the Contractor to ensure that it contains measures appropriate to the Works activities to be undertaken. The updated C-ESMP shall be subject to prior approval by the Project Manager."

9. Contractor's Responsibilities

- 54.1 The Contractor shall design, manufacture including associated purchases and/or subcontracting, install and

complete the Facilities in accordance with the Contract. When completed, the Facilities should be fit for the purposes for which they are intended as defined in the Contract.

- 54.2 The Contractor confirms that it has entered into this Contract on the basis of a proper examination of the data relating to the Facilities including any data as to boring tests provided by the Employer, and on the basis of information that the Contractor could have obtained from a visual inspection of the Site if access thereto was available and of other data readily available to it relating to the Facilities as of the date twenty-eight (28) days prior to bid submission. The Contractor acknowledges that any failure to acquaint itself with all such data and information shall not relieve its responsibility for properly estimating the difficulty or cost of successfully performing the Facilities.
- 54.3 The Contractor shall acquire and pay for all permits, approvals and/or licenses from all local, state or national government authorities or public service undertakings in the country where the Site is located which such authorities or undertakings require the Contractor to obtain in its name and which are necessary for the performance of the Contract, including, without limitation, visas for the Contractor's and Subcontractor's personnel and entry permits for all imported Contractor's Equipment. The Contractor shall acquire all other permits, approvals and/or licenses that are not the responsibility of the Employer under GC Sub-Clause 10.3 hereof and that are necessary for the performance of the Contract.
- 54.4 The Contractor shall comply with all laws in force in the country where the Facilities are to be implemented. The laws will include all local, state, national or other laws that affect the performance of the Contract and bind upon the Contractor. The Contractor shall indemnify and hold harmless the Employer from and against any and all liabilities, damages, claims, fines, penalties and expenses of whatever nature arising or resulting from the violation of such laws by the Contractor or its personnel, including the Subcontractors and their personnel, but without prejudice to GC Sub-Clause 10.1 hereof.
- 54.5 Any Infrastructure and Installation Services that will be incorporated in or be required for the Facilities and

other supplies shall have their origin as specified under GC Clause 1 (Country of Origin). Any subcontractors retained by the Contractor shall be from a country as specified in GC Clause 1 (Country of Origin).

54.6 The Contractor shall permit the Bank to inspect the Contractor's accounts and records relating to the performance of the Contractor and to have them audited by auditors appointed by the Bank, if so required by the Bank.

54.7 If the Contractor is a joint venture (JV) of two or more persons, all such persons shall be jointly and severally bound to the Employer for the fulfillment of the provisions of the Contract, unless otherwise specified in the PC, and shall designate one of such persons to act as a leader with authority to bind the JV. The composition or the constitution of the JV shall not be altered without the prior consent of the Employer.

54.8 The Contractor shall permit, and shall cause its Subcontractors and subconsultants to permit, the Bank and/or persons appointed by the Bank to inspect the Site and all accounts and records relating to the performance of the Contract and the submission of the Bid, and to have such accounts and records audited by auditors appointed by the Bank if requested by the Bank. The Contractor's and its Subcontractors' and subconsultants' attention is drawn to Sub-Clause 6.1 [Fraud and Corruption] which provides, inter alia, that acts intended to materially impede the exercise of the Bank's inspection and audit rights provided for under Sub-Clause 9.8 constitute a prohibited practice subject to contract termination (as well as to a determination of ineligibility pursuant to the Bank's prevailing sanctions procedures).

54.9 The Contractor shall comply with the specified Environmental, Social, Health, and Safety requirements, including ESHS Code of Conduct that will apply to its employees and subcontractors.

10. Employer's Responsibilities

55.1 All information and/or data to be supplied by the Employer as described in the Appendix to the Contract Agreement titled Scope of Works and Supply by the Employer, shall be deemed to be accurate, except when the Employer expressly states otherwise.

55.2 The Employer shall be responsible for acquiring and providing legal and physical possession of the Site and

access thereto, and for providing possession of and access to all other areas reasonably required for the proper execution of the Contract, including all requisite rights of way, as specified in the Appendix to the Contract Agreement titled Scope of Works and Supply by the Employer. The Employer shall give full possession of and accord all rights of access thereto on or before the date(s) specified in that Appendix.

55.3 The Employer shall acquire and pay for all permits, approvals and/or licenses from all local, state or national government authorities or public service undertakings in the country where the Site is located which (a) such authorities or undertakings require the Employer to obtain in the Employer's name, (b) are necessary for the execution of the Contract, including those required for the performance by both the Contractor and the Employer of their respective obligations under the Contract, and (c) are specified in the Appendix (Scope of Works and Supply by the Employer).

55.4 If requested by the Contractor, the Employer shall use its best endeavors to assist the Contractor in obtaining in a timely and expeditious manner all permits, approvals and/or licenses necessary for the execution of the Contract from all local, state or national government authorities or public service undertakings that such authorities or undertakings require the Contractor or Subcontractors or the personnel of the Contractor or Subcontractors, as the case may be, to obtain.

55.5 Unless otherwise specified in the Contract or agreed upon by the Employer and the Contractor, the Employer shall provide sufficient, properly qualified operating and maintenance personnel; shall supply and make available all raw materials, utilities, lubricants, chemicals, catalysts, other materials and facilities; and shall perform all work and services of whatsoever nature, including those required by the Contractor to properly carry out Pre-commissioning, Commissioning and Guarantee Tests, all in accordance with the provisions of the Appendix to the Contract Agreement titled Scope of Works and Supply by the Employer, at or before the time specified in the program furnished by the Contractor under GC Sub-Clause 18.2 hereof and in the manner thereupon specified or as otherwise agreed upon by the Employer and the Contractor.

- 55.6 The Employer shall be responsible for the continued operation of the Facilities after Completion, in accordance with GC Sub-Clause 24.8, and shall be responsible for facilitating the Guarantee Test(s) for the Facilities, in accordance with GC Sub-Clause 25.2.
- 55.7 All costs and expenses involved in the performance of the obligations under this GC Clause 10 shall be the responsibility of the Employer, save those to be incurred by the Contractor with respect to the performance of Guarantee Tests, in accordance with GC Sub-Clause 25.2.
- 55.8 In the event that the Employer shall be in breach of any of his obligations under this Clause, the additional cost incurred by the Contractor in consequence thereof shall be determined by the Project Manager and added to the Contract Price.

Payment

11.Contract Price

- 56.1 The Contract Price shall be as specified in Article 2 (Contract Price and Terms of Payment) of the Contract Agreement.
- 56.2 Unless an adjustment clause is provided for in the PC, the Contract Price shall be a firm lump sum not subject to any alteration, except in the event of a Change in the Facilities or as otherwise provided in the Contract.
- 56.3 Subject to GC Sub-Clauses 9.2, 10.1 and 35 hereof, the Contractor shall be deemed to have satisfied itself as to the correctness and sufficiency of the Contract Price, which shall, except as otherwise provided for in the Contract, cover all its obligations under the Contract.

12.Terms of Payment

- 57.1 The Contract Price shall be paid as specified in Article 2 (Contract Price and Terms of Payment) of the Contract Agreement and in the Appendix to the Contract Agreement titled Terms and Procedures of Payment, which also outlines the procedures to be followed in making application for and processing payments.
- 57.2 No payment made by the Employer herein shall be deemed to constitute acceptance by the Employer of the Facilities or any part(s) thereof.

- 57.3 In the event that the Employer fails to make any payment by its respective due date or within the period set forth in the Contract, the Employer shall pay to the Contractor interest on the amount of such delayed payment at the rate(s) shown in the Appendix to the Contract Agreement titled Terms and Procedures of Payment, for the period of delay until payment has been made in full, whether before or after judgment or arbitration award.
- 57.4 The currency or currencies in which payments are made to the Contractor under this Contract shall be specified in the Appendix to the Contract Agreement titled Terms and Procedures of Payment, subject to the general principle that payments will be made in the currency or currencies in which the Contract Price has been stated in the Contractor's bid.
- 57.5 If the Contractor was, or is, failing to perform any ESHS obligations or work under the Contract, the value of this work or obligation, as determined by the Project Manager, may be withheld until the work or obligation has been performed, and/or the cost of rectification or replacement, as determined by the Project Manager, may be withheld until rectification or replacement has been completed. Failure to perform includes, but is not limited to the following:
- (i) failure to comply with any ESHS obligations or work described in the Employer's Requirements which may include: working outside site boundaries, excessive dust, failure to keep public roads in a safe usable condition, damage to offsite vegetation, pollution of water courses from oils or sedimentation, contamination of land e.g. from oils, human waste, damage to archeology or cultural heritage features, air pollution as a result of unauthorized and/or inefficient combustion;
 - (ii) failure to regularly review C-ESMP and/or update it in a timely manner to address emerging ESHS issues, or anticipated risks or impacts;
 - (iii) failure to implement the C-ESMP e.g. failure to provide required training or sensitization;
 - (iv) failing to have appropriate consents/permits prior to undertaking Works or related activities;

- (v) failure to submit ESHS report/s (as described in Appendix A), or failure to submit such reports in a timely manner;
- (vi) failure to implement remediation as instructed by the Project Manager within the specified timeframe (e.g. remediation addressing non-compliance/s).

13. Securities

- 58.1 Issuance of Securities
The Contractor shall provide the securities specified below in favor of the Employer at the times, and in the amount, manner and form specified below.
- 58.2 Advance Payment Security
 - 13.2.1 The Contractor shall, within twenty-eight (28) days of the notification of contract award, provide a security in an amount equal to the advance payment calculated in accordance with the Appendix to the Contract Agreement titled Terms and Procedures of Payment, and in the same currency or currencies.
 - 13.2.2 The security shall be in the form provided in the bidding documents or in another form acceptable to the Employer. The amount of the security shall be reduced in proportion to the value of the Facilities executed by and paid to the Contractor from time to time, and shall automatically become null and void when the full amount of the advance payment has been recovered by the Employer. The security shall be returned to the Contractor immediately after its expiration.
- 58.3 Performance Security
 - 13.3.1 The Contractor shall, within twenty-eight (28) days of the notification of contract award, provide security for the due performance of the Contract in the amount specified in the PC.
 - 13.3.2 The performance security and if required in the BDS, the Environmental, Social, Health and Safety (ESHS) Performance Security, shall be denominated in the currency or currencies of the Contract, or in a freely convertible currency acceptable to the Employer, and shall be

in the forms provided in Section IX, Contract Forms, corresponding to the type of bank guarantee stipulated by the Employer in the PC, or in another form acceptable to the Employer.

13.3.3 Unless otherwise specified in the PC, the security shall be reduced by half on the date of the Operational Acceptance. The Security shall become null and void, or shall be reduced pro rata to the Contract Price of a part of the Facilities for which a separate Time for Completion is provided, five hundred and forty (540) days after Completion of the Facilities or three hundred and sixty five (365) days after Operational Acceptance of the Facilities, whichever occurs first; provided, however, that if the Defects Liability Period has been extended on any part of the Facilities pursuant to GC Sub-Clause 27.8 hereof, the Contractor shall issue an additional security in an amount proportionate to the Contract Price of that part. The security shall be returned to the Contractor immediately after its expiration, provided, however, that if the Contractor, pursuant to GC Sub-Clause 27.10, is liable for an extended defect liability obligation, the performance security shall be extended for the period specified in the PC pursuant to GC Sub-Clause 27.10 and up to the amount specified in the PC.

13.3.4 The Employer shall not make a claim under the Performance Security, except for amounts to which the Employer is entitled under the Contract. The Employer shall indemnify and hold the Contractor harmless against and from all damages, losses and expenses (including legal fees and expenses) resulting from a claim under the Performance Security to the extent to which the Employer was not entitled to make the claim.

14. Taxes and Duties

- 59.1 Except as otherwise specifically provided in the Contract, the Contractor shall bear and pay all taxes, duties, levies and charges assessed on the Contractor, its Subcontractors or their employees by all municipal, state or national government authorities in connection with the Facilities in and outside of the country where the Site is located.
- 59.2 Notwithstanding GC Sub-Clause 14.1 above, the Employer shall bear and promptly pay
- (a) all customs and import duties for the Infrastructure specified in Price Schedule No. 1; and
 - (b) other domestic taxes such as, sales tax and value added tax (VAT) on the Infrastructure specified in Price Schedules No. 1 and No. 2 and that is to be incorporated into the Facilities, and on the finished goods, imposed by the law of the country where the Site is located.
- 59.3 If any tax exemptions, reductions, allowances or privileges may be available to the Contractor in the country where the Site is located, the Employer shall use its best endeavors to enable the Contractor to benefit from any such tax savings to the maximum allowable extent.
- 59.4 For the purpose of the Contract, it is agreed that the Contract Price specified in Article 2 (Contract Price and Terms of Payment) of the Contract Agreement is based on the taxes, duties, levies and charges prevailing at the date twenty-eight (28) days prior to the date of bid submission in the country where the Site is located (hereinafter called "Tax" in this GC Sub-Clause 14.4). If any rates of Tax are increased or decreased, a new Tax is introduced, an existing Tax is abolished, or any change in interpretation or application of any Tax occurs in the course of the performance of Contract, which was or will be assessed on the Contractor, Subcontractors or their employees in connection with performance of the Contract, an equitable adjustment of the Contract Price shall be made to fully take into account any such change by addition to the Contract Price or deduction therefrom, as the case may be, in accordance with GC Clause 36 hereof.

Intellectual Property

15. License/Use of Technical Information

- 60.1 For the operation and maintenance of the Infrastructure, the Contractor hereby grants a non-exclusive and non-transferable license (without the right to sub-license) to the Employer under the patents, utility models or other industrial property rights owned by the Contractor or by a third Party from whom the Contractor has received the right to grant licenses thereunder, and shall also grant to the Employer a non-exclusive and non-transferable right (without the right to sub-license) to use the know-how and other technical information disclosed to the Employer under the Contract. Nothing contained herein shall be construed as transferring ownership of any patent, utility model, trademark, design, copyright, know-how or other intellectual property right from the Contractor or any third Party to the Employer.
- 60.2 The copyright in all drawings, documents and other materials containing data and information furnished to the Employer by the Contractor herein shall remain vested in the Contractor or, if they are furnished to the Employer directly or through the Contractor by any third Party, including suppliers of materials, the copyright in such materials shall remain vested in such third Party.

16. Confidential Information

- 61.1 The Employer and the Contractor shall keep confidential and shall not, without the written consent of the other Party hereto, divulge to any third Party any documents, data or other information furnished directly or indirectly by the other Party hereto in connection with the Contract, whether such information has been furnished prior to, during or following termination of the Contract. Notwithstanding the above, the Contractor may furnish to its Subcontractor(s) such documents, data and other information it receives from the Employer to the extent required for the Subcontractor(s) to perform its work under the Contract, in which event the Contractor shall obtain from such Subcontractor(s) an undertaking of confidentiality similar to that imposed on the Contractor under this GC Clause 16.

- 61.2 The Employer shall not use such documents, data and other information received from the Contractor for any purpose other than the operation and maintenance of the Facilities. Similarly, the Contractor shall not use such documents, data and other information received from the Employer for any purpose other than the design, procurement of Infrastructure, construction or such other work and services as are required for the performance of the Contract.
- 61.3 The obligation of a Party under GC Sub-Clauses 16.1 and 16.2 above, however, shall not apply to that information which
- (a) now or hereafter enters the public domain through no fault of that Party
 - (b) can be proven to have been possessed by that Party at the time of disclosure and which was not previously obtained, directly or indirectly, from the other Party hereto
 - (c) otherwise lawfully becomes available to that Party from a third Party that has no obligation of confidentiality.
- 61.4 The above provisions of this GC Clause 16 shall not in any way modify any undertaking of confidentiality given by either of the Parties hereto prior to the date of the Contract in respect of the Facilities or any part thereof.
- 61.5 The provisions of this GC Clause 16 shall survive termination, for whatever reason, of the Contract.

Execution of the Facilities

17.Representatives

- 62.1 Project Manager
- If the Project Manager is not named in the Contract, then within fourteen (14) days of the Effective Date, the Employer shall appoint and notify the Contractor in writing of the name of the Project Manager. The Employer may from time to time appoint some other person as the Project Manager in place of the person previously so appointed, and shall give a notice of the name of such other person to the Contractor without delay. No such appointment shall be made at such a time or in such a manner as to impede the progress of work on the Facilities. Such appointment shall only take effect upon receipt of such notice by the Contractor. The Project Manager shall represent and act for the Employer at all times during the

performance of the Contract. All notices, instructions, orders, certificates, approvals and all other communications under the Contract shall be given by the Project Manager, except as herein otherwise provided.

All notices, instructions, information and other communications given by the Contractor to the Employer under the Contract shall be given to the Project Manager, except as herein otherwise provided.

62.2 Contractor's Representative & Construction Manager

17.2.1 If the Contractor's Representative is not named in the Contract, then within fourteen (14) days of the Effective Date, the Contractor shall appoint the Contractor's Representative and shall request the Employer in writing to approve the person so appointed. If the Employer makes no objection to the appointment within fourteen (14) days, the Contractor's Representative shall be deemed to have been approved. If the Employer objects to the appointment within fourteen (14) days giving the reason therefor, then the Contractor shall appoint a replacement within fourteen (14) days of such objection, and the foregoing provisions of this GC Sub-Clause 17.2.1 shall apply thereto.

17.2.2 The Contractor's Representative shall represent and act for the Contractor at all times during the performance of the Contract and shall give to the Project Manager all the Contractor's notices, instructions, information and all other communications under the Contract.

All notices, instructions, information and all other communications given by the Employer or the Project Manager to the Contractor under the Contract shall be given to the Contractor's Representative or, in its absence, its deputy, except as herein otherwise provided.

The Contractor shall not revoke the appointment of the Contractor's Representative without the Employer's prior written consent, which shall not be unreasonably

withheld. If the Employer consents thereto, the Contractor shall appoint some other person as the Contractor's Representative, pursuant to the procedure set out in GC Sub-Clause 17.2.1.

- 17.2.3 The Contractor's Representative may, subject to the approval of the Employer which shall not be unreasonably withheld, at any time delegate to any person any of the powers, functions and authorities vested in him or her. Any such delegation may be revoked at any time. Any such delegation or revocation shall be subject to a prior notice signed by the Contractor's Representative, and shall specify the powers, functions and authorities thereby delegated or revoked. No such delegation or revocation shall take effect unless and until a copy thereof has been delivered to the Employer and the Project Manager.

Any act or exercise by any person of powers, functions and authorities so delegated to him or her in accordance with this GC Sub-Clause 17.2.3 shall be deemed to be an act or exercise by the Contractor's Representative.

- 17.2.4 From the commencement of installation of the Facilities at the Site until Completion, the Contractor's Representative shall appoint a suitable person as the Construction Manager. The Construction Manager shall supervise all work done at the Site by the Contractor and shall be present at the Site throughout normal working hours except when on leave, sick or absent for reasons connected with the proper performance of the Contract. Whenever the Construction Manager is absent from the Site, a suitable person shall be appointed to act as the Construction Manager's deputy.

- 17.2.5 The Employer may by notice to the Contractor object to any representative

or person employed by the Contractor in the execution of the Contract who, in the reasonable opinion of the Employer, may behave inappropriately, undertakes behavior which breaches the Code of Conduct (ESHS) (e.g. spreading communicable diseases, sexual harassment, gender-based violence (GBV), sexual exploitation or abuse, illicit activity or crime, may be incompetent or negligent, or may commit a serious breach of the Site regulations provided under GC Sub-Clause 22.3. The Employer shall provide evidence of the same, whereupon the Contractor shall remove such person from the Facilities.

17.2.6 If any representative or person employed by the Contractor is removed in accordance with GC Sub-Clause 17.2.5, the Contractor shall, where required, promptly appoint a replacement.

18. Work Program

63.1 Contractor's Organization

The Contractor shall supply to the Employer and the Project Manager a chart showing the proposed organization to be established by the Contractor for carrying out work on the Facilities within twenty-one (21) days of the Effective Date. The chart shall include the identities of the key personnel and the curricula vitae of such key personnel to be employed shall be supplied together with the chart. The Contractor shall promptly inform the Employer and the Project Manager in writing of any revision or alteration of such an organization chart.

63.2 Program of Performance

Within twenty-eight (28) days after the Effective Date, the Contractor shall submit to the Project Manager a detailed program of performance of the Contract, made in a form acceptable to the Project Manager and showing the sequence in which it proposes to design, manufacture, transport, assemble, install and pre-commission the Facilities, as well as the date by which the Contractor reasonably requires that the Employer shall have fulfilled its obligations under the Contract so as to enable the Contractor to execute the Contract

in accordance with the program and to achieve Completion, Commissioning and Acceptance of the Facilities in accordance with the Contract. The program so submitted by the Contractor shall accord with the Time Schedule included in the Appendix to the Contract Agreement titled Time Schedule, and any other dates and periods specified in the Contract. The Contractor shall update and revise the program as and when appropriate or when required by the Project Manager, but without modification in the Times for Completion specified in the PC pursuant to Sub-Clause 8.2 and any extension granted in accordance with GC Clause 40, and shall submit all such revisions to the Project Manager.

63.3

Progress Report

The Contractor shall monitor progress of all the activities specified in the program referred to in GC Sub-Clause 18.2 above, and supply a progress report to the Project Manager every month.

The progress report shall be in a form acceptable to the Project Manager and shall indicate: (a) percentage completion achieved compared with the planned percentage completion for each activity; and (b) where any activity is behind the program, giving comments and likely consequences and stating the corrective action being taken.

In addition to the progress report the Contractor shall also provide a report on the Environmental, Social, Health and Safety (ESHS) metrics set out in Appendix A. In addition to Appendix A reports, the Contractor shall also provide immediate notification to the Project Manager of incidents in the following categories. Full details of such incidents shall be provided to the Project Manager within the timeframe agreed with the Project Manager.

- (a) confirmed or likely violation of any law or international agreement;
 - (b) any fatality or serious (lost time) injury;
 - (c) significant adverse effects or damage to private property (e.g. vehicle accident, damage from fly rock, working beyond the boundary)
 - (d) major pollution of drinking water aquifer or damage or destruction of rare or endangered habitat (including protected areas) or species;
- or

- (e) any allegation of gender based violence (GBV), sexual exploitation or abuse, sexual harassment or sexual misbehavior, rape, sexual assault, child abuse, or defilement, or other violations involving children.

63.4

Progress of Performance

If at any time the Contractor's actual progress falls behind the program referred to in GC Sub-Clause 18.2, or it becomes apparent that it will so fall behind, the Contractor shall, at the request of the Employer or the Project Manager, prepare and submit to the Project Manager a revised program, taking into account the prevailing circumstances, and shall notify the Project Manager of the steps being taken to expedite progress so as to attain Completion of the Facilities within the Time for Completion under GC Sub-Clause 8.2, any extension thereof entitled under GC Sub-Clause 40.1, or any extended period as may otherwise be agreed upon between the Employer and the Contractor.

63.5

Procedures

The Contract shall be executed in accordance with the Contract Documents including the procedures given in the Forms and Procedures of the Employer's Requirements.

The Contractor may execute the Contract in accordance with its own standard project execution plans and procedures to the extent that they do not conflict with the provisions contained in the Contract.

19.Subcontracting

64.1

The Appendix to the Contract Agreement titled List of Major Items of Infrastructure and Installation Services and List of Approved Subcontractors, specifies major items of supply or services and a list of approved Subcontractors against each item, including manufacturers. Insofar as no Subcontractors are listed against any such item, the Contractor shall prepare a list of Subcontractors for such item for inclusion in such list. The Contractor may from time to time propose any addition to or deletion from any such list. The Contractor shall submit any such list or any modification thereto to the Employer for its approval in sufficient time so as not to impede the progress of work on the Facilities. Such approval by the Employer for any of the Subcontractors shall not relieve the

- Contractor from any of its obligations, duties or responsibilities under the Contract.
- 64.2 The Contractor shall select and employ its Subcontractors for such major items from those listed in the lists referred to in GC Sub-Clause 19.1.
- 64.3 For items or parts of the Facilities not specified in the Appendix to the Contract Agreement titled List of Major Items of Infrastructure and Installation Services and List of Approved Subcontractors, the Contractor may employ such Subcontractors as it may select, at its discretion.
- 64.4 Each sub-contract shall include provisions which would entitle the Employer to require the sub-contract to be assigned to the Employer under GC 19.5 (if and when applicable), or in event of termination by the Employer under GC 42.2.
- 64.5 If a sub-contractor's obligations extend beyond the expiry date of the relevant Defects Liability Period and the Project Manager, prior to that date, instructs the Contractor to assign the benefits of such obligations to the Employer, then the Contractor shall do so.

20.Design and Engineering

- 65.1 Specifications and Drawings
- 20.1.1 The Contractor shall execute the basic and detailed design and the engineering work in compliance with the provisions of the Contract, or where not so specified, in accordance with good engineering practice.
- The Contractor shall be responsible for any discrepancies, errors or omissions in the specifications, drawings and other technical documents that it has prepared, whether such specifications, drawings and other documents have been approved by the Project Manager or not, provided that such discrepancies, errors or omissions are not because of inaccurate information furnished in writing to the Contractor by or on behalf of the Employer.
- 20.1.2 The Contractor shall be entitled to disclaim responsibility for any design, data, drawing, specification or other document, or any modification thereof provided or designated by or on behalf of the Employer, by giving a notice of such disclaimer to the Project Manager.
- 65.2 Codes and Standards

Wherever references are made in the Contract to codes and standards in accordance with which the Contract shall be executed, the edition or the revised version of such codes and standards current at the date twenty-eight (28) days prior to date of bid submission shall apply unless otherwise specified. During Contract execution, any changes in such codes and standards shall be applied subject to approval by the Employer and shall be treated in accordance with GC Clause 39.

65.3 Approval/Review of Technical Documents by Project Manager

20.3.1 The Contractor shall prepare or cause its Subcontractors to prepare, and furnish to the Project Manager the documents listed in the Appendix to the Contract Agreement titled List of Documents for Approval or Review, for its approval or review as specified and in accordance with the requirements of GC Sub-Clause 18.2 (Program of Performance).

Any part of the Facilities covered by or related to the documents to be approved by the Project Manager shall be executed only after the Project Manager's approval thereof.

GC Sub-Clauses 20.3.2 through 20.3.7 shall apply to those documents requiring the Project Manager's approval, but not to those furnished to the Project Manager for its review only.

20.3.2 Within fourteen (14) days after receipt by the Project Manager of any document requiring the Project Manager's approval in accordance with GC Sub-Clause 20.3.1, the Project Manager shall either return one copy thereof to the Contractor with its approval endorsed thereon or shall notify the Contractor in writing of its disapproval thereof and the reasons therefor and the modifications that the Project Manager proposes.

If the Project Manager fails to take such action within the said fourteen (14) days, then the said document shall be deemed to have been approved by the Project Manager.

- 20.3.3 The Project Manager shall not disapprove any document, except on the grounds that the document does not comply with the Contract or that it is contrary to good engineering practice.
- 20.3.4 If the Project Manager disapproves the document, the Contractor shall modify the document and resubmit it for the Project Manager's approval in accordance with GC Sub-Clause 20.3.2. If the Project Manager approves the document subject to modification(s), the Contractor shall make the required modification(s), whereupon the document shall be deemed to have been approved.
- 20.3.5 If any dispute or difference occurs between the Employer and the Contractor in connection with or arising out of the disapproval by the Project Manager of any document and/or any modification(s) thereto that cannot be settled between the Parties within a reasonable period, then such dispute or difference may be referred to an Adjudicator for determination in accordance with GC Sub-Clause 46.3 hereof. If such dispute or difference is referred to an Adjudicator, the Project Manager shall give instructions as to whether and if so, how, performance of the Contract is to proceed.
- 20.3.6 The Project Manager's approval, with or without modification of the document furnished by the Contractor, shall not relieve the Contractor of any responsibility or liability imposed upon it by any provisions of the Contract except to the extent that any subsequent failure results from modifications required by the Project Manager.
- 20.3.7 The Contractor shall not depart from any approved document unless the Contractor has first submitted to the Project Manager an amended document and obtained the Project Manager's approval thereof, pursuant to the provisions of this GC Sub-Clause 20.3.

If the Project Manager requests any change in any already approved document and/or in any document based thereon, the provisions of GC Clause 39 shall apply to such request.

21.Procurement

- 66.1 Infrastructure
Subject to GC Sub-Clause 14.2, the Contractor shall procure and transport all Infrastructure in an expeditious and orderly manner to the Site.
- 66.2 Employer-Supplied Infrastructure
If the Appendix to the Contract Agreement titled Scope of Works and Supply by the Employer, provides that the Employer shall furnish any specific items to the Contractor, the following provisions shall apply:
 - 21.2.1 The Employer shall, at its own risk and expense, transport each item to the place on or near the Site as agreed upon by the Parties and make such item available to the Contractor at the time specified in the program furnished by the Contractor, pursuant to GC Sub-Clause 18.2, unless otherwise mutually agreed.
 - 21.2.2 Upon receipt of such item, the Contractor shall inspect the same visually and notify the Project Manager of any detected shortage, defect or default. The Employer shall immediately remedy any shortage, defect or default, or the Contractor shall, if practicable and possible, at the request of the Employer, remedy such shortage, defect or default at the Employer's cost and expense. After inspection, such item shall fall under the care, custody and control of the Contractor. The provision of this GC Sub-Clause 21.2.2 shall apply to any item supplied to remedy any such shortage or default or to substitute for any defective item, or shall apply to defective items that have been repaired.
 - 21.2.3 The foregoing responsibilities of the Contractor and its obligations of care,

custody and control shall not relieve the Employer of liability for any undetected shortage, defect or default, nor place the Contractor under any liability for any such shortage, defect or default whether under GC Clause 27 or under any other provision of Contract.

66.3 Transportation

21.3.1 The Contractor shall at its own risk and expense transport all the materials and the Contractor's Equipment to the Site by the mode of transport that the Contractor judges most suitable under all the circumstances.

21.3.2 Unless otherwise provided in the Contract, the Contractor shall be entitled to select any safe mode of transport operated by any person to carry the materials and the Contractor's Equipment.

21.3.3 Upon dispatch of each shipment of materials and the Contractor's Equipment, the Contractor shall notify the Employer by telex, cable, facsimile or electronic means, of the description of the materials and of the Contractor's Equipment, the point and means of dispatch, and the estimated time and point of arrival in the country where the Site is located, if applicable, and at the Site. The Contractor shall furnish the Employer with relevant shipping documents to be agreed upon between the Parties.

21.3.4 The Contractor shall be responsible for obtaining, if necessary, approvals from the authorities for transportation of the materials and the Contractor's Equipment to the Site. The Employer shall use its best endeavors in a timely and expeditious manner to assist the Contractor in obtaining such approvals, if requested by the Contractor. The Contractor shall indemnify and hold harmless the Employer from and against any claim for damage to roads,

bridges or any other traffic facilities that may be caused by the transport of the materials and the Contractor's Equipment to the Site.

66.4

Customs Clearance

The Contractor shall, at its own expense, handle all imported materials and Contractor's Equipment at the point(s) of import and shall handle any formalities for customs clearance, subject to the Employer's obligations under GC Sub-Clause 14.2, provided that if applicable laws or regulations require any application or act to be made by or in the name of the Employer, the Employer shall take all necessary steps to comply with such laws or regulations. In the event of delays in customs clearance that are not the fault of the Contractor, the Contractor shall be entitled to an extension in the Time for Completion, pursuant to GC Clause 40.

22. Installation

67.1

Setting Out/Supervision

22.1.1 Bench Mark: The Contractor shall be responsible for the true and proper setting-out of the Facilities in relation to bench marks, reference marks and lines provided to it in writing by or on behalf of the Employer.

If, at any time during the progress of installation of the Facilities, any error shall appear in the position, level or alignment of the Facilities, the Contractor shall forthwith notify the Project Manager of such error and, at its own expense, immediately rectify such error to the reasonable satisfaction of the Project Manager. If such error is based on incorrect data provided in writing by or on behalf of the Employer, the expense of rectifying the same shall be borne by the Employer.

22.1.2 Contractor's Supervision: The Contractor shall give or provide all necessary superintendence during the installation of the Facilities, and the Construction Manager or its deputy shall be constantly on the Site to provide full-

time superintendence of the installation. The Contractor shall provide and employ only technical personnel who are skilled and experienced in their respective callings and supervisory staff who are competent to adequately supervise the work at hand.

67.2 Labour:

22.2.1 Engagement of Staff and Labour

Except as otherwise stated in the Specification, the Contractor shall make arrangements for the engagement of all staff and labour, local or otherwise, and for their payment, housing, feeding and transport.

The Contractor shall provide and employ on the Site in the installation of the Facilities such skilled, semi-skilled and unskilled labour as is necessary for the proper and timely execution of the Contract. The Contractor is encouraged to use local labour that has the necessary skills.

The Contractor shall be responsible for obtaining all necessary permit(s) and/or visa(s) from the appropriate authorities for the entry of all labour and personnel to be employed on the Site into the country where the Site is located. The Employer will, if requested by the Contractor, use his best endeavors in a timely and expeditious manner to assist the Contractor in obtaining any local, state, national or government permission required for bringing in the Contractor's personnel.

The Contractor shall at its own expense provide the means of repatriation to all of its and its Subcontractor's personnel employed on the Contract at the Site to the place where they were recruited or to their domicile. It shall also provide suitable temporary maintenance of all such persons from the cessation of their employment on the Contract to the date programmed for their departure. In the

event that the Contractor defaults in providing such means of transportation and temporary maintenance, the Employer may provide the same to such personnel and recover the cost of doing so from the Contractor.

22.2.2 Persons in the Service of Employer

The Contractor shall not recruit, or attempt to recruit, staff and labour from amongst the Employer's Personnel.

22.2.3 Labour Laws

The Contractor shall comply with all the relevant labour Laws applicable to the Contractor's Personnel, including Laws relating to their employment, health, safety, welfare, immigration and emigration, and shall allow them all their legal rights.

The Contractor shall at all times during the progress of the Contract use its best endeavors to prevent any unlawful, riotous or disorderly conduct or behavior by or amongst its employees and the labour of its Subcontractors.

The Contractor shall, in all dealings with its labour and the labour of its Subcontractors currently employed on or connected with the Contract, pay due regard to all recognized festivals, official holidays, religious or other customs and all local laws and regulations pertaining to the employment of labour.

22.2.4 Rates of Wages and Conditions of Labour

The Contractor shall pay rates of wages, and observe conditions of labour, which are not lower than those established for the trade or industry where the work is carried out. If no established rates or conditions are applicable, the Contractor shall pay rates of wages and observe conditions which are not lower than the general level of wages and conditions observed locally by employers whose trade or industry is similar to that of the Contractor.

The Contractor shall inform the Contractor's Personnel about their liability to pay personal income taxes in the Country in respect of such of their salaries, wages and allowances as are chargeable under the Laws for the time being in force, and the Contractor shall perform such duties in regard to such deductions thereof as may be imposed on him by such Laws.

22.2.5 Working Hours

No work shall be carried out on the Site on locally recognized days of rest, or outside the normal working hours stated in the PC, unless:

- (a) otherwise stated in the Contract,
- (b) the Project Manager gives consent, or
- (c) the work is unavoidable, or necessary for the protection of life or property or for the safety of the Works, in which case the Contractor shall immediately advise the Project Manager.

If and when the Contractor considers it necessary to carry out work at night or on public holidays so as to meet the Time for Completion and requests the Project Manager's consent thereto, the Project Manager shall not unreasonably withhold such consent.

This Sub-Clause shall not apply to any work which is customarily carried out by rotary or double-shifts.

22.2.6 Facilities for Staff and Labour

Except as otherwise stated in the Specification, the Contractor shall provide and maintain all necessary accommodation and welfare facilities for the Contractor's Personnel. The Contractor shall also provide facilities for the Employer's Personnel as stated in the Specification.

The Contractor shall not permit any of the Contractor's Personnel to maintain any temporary or permanent living quarters within the structures forming part of the Permanent Works.

22.2.7 Health and Safety

The Contractor shall at all times take all reasonable precautions to maintain the health and safety of the Contractor's Personnel. In collaboration with local health authorities, the Contractor shall ensure that medical staff, first aid facilities, sick bay and ambulance service are available at all times at the Site and at any accommodation for Contractor's and Employer's Personnel, and that suitable arrangements are made for all necessary welfare and hygiene requirements and for the prevention of epidemics.

The Contractor shall appoint an accident prevention officer at the Site, responsible for maintaining safety and protection against accidents. This person shall be qualified for this responsibility, and shall have the authority to issue instructions and take protective measures to prevent accidents. Throughout the performance of the Contract, the Contractor shall provide whatever is required by this person to exercise this responsibility and authority.

The Contractor shall send to the Project Manager, details of any accident as soon as practicable after its occurrence. The Contractor shall maintain records and make reports concerning health, safety and welfare of persons, and damage to property, as the Project Manager may reasonably require.

The Contractor shall throughout the contract (including the Defects Notification Period): (i) conduct Information, Education and Consultation Communication (IEC) campaigns, at least every other month, addressed to all the Site staff and labour (including all the Contractor's employees, all Sub-

Contractors and Employer's and Project Manager's employees, and all truck drivers and crew making deliveries to Site for construction activities) and to the immediate local communities, concerning the risks, dangers and impact, and appropriate avoidance behavior with respect to Sexually Transmitted Diseases (STD)—or Sexually Transmitted Infections (STI) in general and HIV/AIDS in particular; (ii) provide male or female condoms for all Site staff and labour as appropriate; and (iii) provide for STI and HIV/AIDS screening, diagnosis, counseling and referral to a dedicated national STI and HIV/AIDS program, (unless otherwise agreed) of all Site staff and labour.

The Contractor shall include in the program to be submitted for the execution of the Facilities under Sub-Clause 18.2 an alleviation program for Site staff and labour and their families in respect of Sexually Transmitted Infections (STI) and Sexually Transmitted Diseases (STD) including HIV/AIDS. The STI, STD and HIV/AIDS alleviation program shall indicate when, how and at what cost the Contractor plans to satisfy the requirements of this Sub-Clause and the related specification. For each component, the program shall detail the resources to be provided or utilized and any related sub-contracting proposed. The program shall also include provision of a detailed cost estimate with supporting documentation. Payment to the Contractor for preparation and implementation this program shall not exceed the Provisional Sum dedicated for this purpose.

22.2.8 Funeral Arrangements

In the event of the death of any of the Contractor's personnel or accompanying members of their families, the Contractor shall be responsible for making the

appropriate arrangements for their return or burial, unless otherwise specified in the PC.

22.2.9 Records of Contractor's Personnel

The Contractor shall keep accurate records of the Contractor's personnel, including the number of each class of Contractor's Personnel on the Site and the names, ages, genders, hours worked and wages paid to all workers. These records shall be summarized on a monthly basis in a form approved by the Project Manager and shall be available for inspection by the Project Manager until the Contractor has completed all work.

22.2.10 Supply of Foodstuffs

The Contractor shall arrange for the provision of a sufficient supply of suitable food as may be stated in the Specification at reasonable prices for the Contractor's Personnel for the purposes of or in connection with the Contract.

22.2.11 Supply of Water

The Contractor shall, having regard to local conditions, provide on the Site an adequate supply of drinking and other water for the use of the Contractor's Personnel.

22.2.12 Measures against Insect and Pest Nuisance

The Contractor shall at all times take the necessary precautions to protect the Contractor's Personnel employed on the Site from insect and pest nuisance, and to reduce their danger to health. The Contractor shall comply with all the regulations of the local health authorities, including use of appropriate insecticide.

22.2.13 Alcoholic Liquor or Drugs

The Contractor shall not, otherwise than in accordance with the Laws of the Country, import, sell, give barter or otherwise dispose of any alcoholic liquor or drugs, or permit or allow importation, sale, gift barter or disposal by Contractor's Personnel.

22.2.14 Arms and Ammunition

The Contractor shall not give, barter, or otherwise dispose of, to any person, any arms or ammunition of any kind, or allow Contractor's Personnel to do so.

22.2.15 Prohibition of All Forms of Forced or Compulsory Labour

The contractor shall not employ "forced or compulsory labour" in any form. "Forced or compulsory labour" consists of all work or service, not voluntarily performed, that is extracted from an individual under threat of force or penalty.

22.2.16 Prohibition of Harmful Child Labour

The Contractor shall not employ any child to perform any work that is economically exploitative, or is likely to be hazardous to, or to interfere with, the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral, or social development.

67.3 Contractor's Equipment

22.3.1 All Contractor's Equipment brought by the Contractor onto the Site shall be deemed to be intended to be used exclusively for the execution of the Contract. The Contractor shall not remove the same from the Site without the Project Manager's consent that such Contractor's Equipment is no longer required for the execution of the Contract.

22.3.2 Unless otherwise specified in the Contract, upon completion of the Facilities, the Contractor shall remove from the Site all Equipment brought by the Contractor onto the Site and any surplus materials remaining thereon.

22.3.3 The Employer will, if requested, use its best endeavors to assist the Contractor in obtaining any local, state or national government permission required by the Contractor for the export of the Contractor's Equipment imported by the Contractor for use in the execution of the

Contract that is no longer required for the execution of the Contract.

67.4

Site Regulations and Safety

The Employer and the Contractor shall establish Site regulations setting out the rules to be observed in the execution of the Contract at the Site and shall comply therewith. The Contractor shall prepare and submit to the Employer, with a copy to the Project Manager, proposed Site regulations for the Employer's approval, which approval shall not be unreasonably withheld.

Such Site regulations shall include, but shall not be limited to, rules in respect of security, safety of the Facilities, gate control, sanitation, medical care, and fire prevention.

67.5

Opportunities for Other Contractors

22.5.1 The Contractor shall, upon written request from the Employer or the Project Manager, give all reasonable opportunities for carrying out the work to any other contractors employed by the Employer on or near the Site.

22.5.2 If the Contractor, upon written request from the Employer or the Project Manager, makes available to other contractors any roads or ways the maintenance for which the Contractor is responsible, permits the use by such other contractors of the Contractor's Equipment, or provides any other service of whatsoever nature for such other contractors, the Employer shall fully compensate the Contractor for any loss or damage caused or occasioned by such other contractors in respect of any such use or service, and shall pay to the Contractor reasonable remuneration for the use of such equipment or the provision of such services.

22.5.3 The Contractor shall also so arrange to perform its work as to minimize, to the extent possible, interference with the work of other contractors. The Project Manager shall determine the resolution of any difference or conflict that may arise between the Contractor and other

contractors and the workers of the Employer in regard to their work.

- 22.5.4 The Contractor shall notify the Project Manager promptly of any defects in the other contractors' work that come to its notice, and that could affect the Contractor's work. The Project Manager shall determine the corrective measures, if any, required to rectify the situation after inspection of the Facilities. Decisions made by the Project Manager shall be binding on the Contractor.

67.6 Emergency Work

If, by reason of an emergency arising in connection with and during the execution of the Contract, any protective or remedial work is necessary as a matter of urgency to prevent damage to the Facilities, the Contractor shall immediately carry out such work.

If the Contractor is unable or unwilling to do such work immediately, the Employer may do or cause such work to be done as the Employer may determine is necessary in order to prevent damage to the Facilities. In such event the Employer shall, as soon as practicable after the occurrence of any such emergency, notify the Contractor in writing of such emergency, the work done and the reasons therefor. If the work done or caused to be done by the Employer is work that the Contractor was liable to do at its own expense under the Contract, the reasonable costs incurred by the Employer in connection therewith shall be paid by the Contractor to the Employer. Otherwise, the cost of such remedial work shall be borne by the Employer.

67.7 Site Clearance

- 22.7.1 Site Clearance in Course of Performance: In the course of carrying out the Contract, the Contractor shall keep the Site reasonably free from all unnecessary obstruction, store or remove any surplus materials, clear away any wreckage, rubbish or temporary works from the Site, and remove any Contractor's Equipment no longer required for execution of the Contract.

- 22.7.2 Clearance of Site after Completion: After Completion of all parts of the

Facilities, the Contractor shall clear away and remove all wreckage, rubbish and debris of any kind from the Site, and shall leave the Site and Facilities in a clean and safe condition.

67.8 Watching and Lighting

The Contractor shall provide and maintain at its own expense all lighting, fencing, and watching when and where necessary for the proper execution and the protection of the Facilities, or for the safety of the owners and occupiers of adjacent property and for the safety of the public.

23. Test and Inspection

68.1 The Contractor shall at its own expense carry out at the place of manufacture and/or on the Site all such tests and/or inspections of the Infrastructure and any part of the Facilities as are specified in the Contract.

68.2 The Employer and the Project Manager or their designated representatives shall be entitled to attend the aforesaid test and/or inspection, provided that the Employer shall bear all costs and expenses incurred in connection with such attendance including, but not limited to, all traveling and board and lodging expenses.

68.3 Whenever the Contractor is ready to carry out any such test and/or inspection, the Contractor shall give a reasonable advance notice of such test and/or inspection and of the place and time thereof to the Project Manager. The Contractor shall obtain from any relevant third Party or manufacturer any necessary permission or consent to enable the Employer and the Project Manager or their designated representatives to attend the test and/or inspection.

68.4 The Contractor shall provide the Project Manager with a certified report of the results of any such test and/or inspection.

If the Employer or Project Manager or their designated representatives fails to attend the test and/or inspection, or if it is agreed between the Parties that such persons shall not do so, then the Contractor may proceed with the test and/or inspection in the absence of such persons, and may provide the Project Manager with a certified report of the results thereof.

68.5 The Project Manager may require the Contractor to carry out any test and/or inspection not required by the

Contract, provided that the Contractor's reasonable costs and expenses incurred in the carrying out of such test and/or inspection shall be added to the Contract Price. Further, if such test and/or inspection impede the progress of work on the Facilities and/or the Contractor's performance of its other obligations under the Contract, due allowance will be made in respect of the Time for Completion and the other obligations so affected.

- 68.6 If any Infrastructure or any part of the Facilities fails to pass any test and/or inspection, the Contractor shall either rectify or replace such Infrastructure or part of the Facilities and shall repeat the test and/or inspection upon giving a notice under GC Sub-Clause 23.3.
- 68.7 If any dispute or difference of opinion shall arise between the Parties in connection with or arising out of the test and/or inspection of the Infrastructure or part of the Facilities that cannot be settled between the Parties within a reasonable period of time, it may be referred to an Adjudicator for determination in accordance with GC Sub-Clause 46.1.
- 68.8 The Contractor shall afford the Employer and the Project Manager, at the Employer's expense, access at any reasonable time to any place where the Infrastructure are being manufactured or the Facilities are being installed, in order to inspect the progress and the manner of manufacture or installation, provided that the Project Manager shall give the Contractor a reasonable prior notice.
- 68.9 The Contractor agrees that neither the execution of a test and/or inspection of Infrastructure or any part of the Facilities, nor the attendance by the Employer or the Project Manager, nor the issue of any test certificate pursuant to GC Sub-Clause 23.4, shall release the Contractor from any other responsibilities under the Contract.
- 68.10 No part of the Facilities or foundations shall be covered up on the Site without the Contractor carrying out any test and/or inspection required under the Contract. The Contractor shall give a reasonable notice to the Project Manager whenever any such parts of the Facilities or foundations are ready or about to be ready for test and/or inspection; such test and/or inspection and notice thereof shall be subject to the requirements of the Contract.

- 68.11 The Contractor shall uncover any part of the Facilities or foundations, or shall make openings in or through the same as the Project Manager may from time to time require at the Site, and shall reinstate and make good such part or parts.

If any parts of the Facilities or foundations have been covered up at the Site after compliance with the requirement of GC Sub-Clause 23.10 and are found to be executed in accordance with the Contract, the expenses of uncovering, making openings in or through, reinstating, and making good the same shall be borne by the Employer, and the Time for Completion shall be reasonably adjusted to the extent that the Contractor has thereby been delayed or impeded in the performance of any of its obligations under the Contract.

24.Completion of the Facilities

- 69.1 As soon as the Facilities or any part thereof has, in the opinion of the Contractor, been completed operationally and structurally and put in a tight and clean condition as specified in the Employer's Requirements, excluding minor items not materially affecting the operation or safety of the Facilities, the Contractor shall so notify the Employer in writing.

- 69.2 Within seven (7) days after receipt of the notice from the Contractor under GC Sub-Clause 24.1, the Employer shall supply the operating and maintenance personnel specified in the Appendix to the Contract Agreement titled Scope of Works and Supply by the Employer for Pre-commissioning of the Facilities or any part thereof.

Pursuant to the Appendix to the Contract Agreement titled Scope of Works and Supply by the Employer, the Employer shall also provide, within the said seven (7) day period, the raw materials, utilities, lubricants, chemicals, catalysts, facilities, services and other matters required for Pre-commissioning of the Facilities or any part thereof.

- 69.3 As soon as reasonably practicable after the operating and maintenance personnel have been supplied by the Employer and the raw materials, utilities, lubricants, chemicals, catalysts, facilities, services and other matters have been provided by the Employer in accordance with GC Sub-Clause 24.2, the Contractor shall commence Pre-commissioning of the Facilities or

- the relevant part thereof in preparation for Commissioning, subject to GC Sub-Clause 25.5.
- 69.4 As soon as all works in respect of Pre-commissioning are completed and, in the opinion of the Contractor, the Facilities or any part thereof is ready for Commissioning, the Contractor shall so notify the Project Manager in writing.
- 69.5 The Project Manager shall, within fourteen (14) days after receipt of the Contractor's notice under GC Sub-Clause 24.4, either issue a Completion Certificate in the form specified in the Employer's Requirements (Forms and Procedures), stating that the Facilities or that part thereof have reached Completion as of the date of the Contractor's notice under GC Sub-Clause 24.4, or notify the Contractor in writing of any defects and/or deficiencies.
- If the Project Manager notifies the Contractor of any defects and/or deficiencies, the Contractor shall then correct such defects and/or deficiencies, and shall repeat the procedure described in GC Sub-Clause 24.4. If the Project Manager is satisfied that the Facilities or that part thereof have reached Completion, the Project Manager shall, within seven (7) days after receipt of the Contractor's repeated notice, issue a Completion Certificate stating that the Facilities or that part thereof have reached Completion as of the date of the Contractor's repeated notice.
- If the Project Manager is not so satisfied, then it shall notify the Contractor in writing of any defects and/or deficiencies within seven (7) days after receipt of the Contractor's repeated notice, and the above procedure shall be repeated.
- 69.6 If the Project Manager fails to issue the Completion Certificate and fails to inform the Contractor of any defects and/or deficiencies within fourteen (14) days after receipt of the Contractor's notice under GC Sub-Clause 24.4 or within seven (7) days after receipt of the Contractor's repeated notice under GC Sub-Clause 24.5, or if the Employer makes use of the Facilities or part thereof, then the Facilities or that part thereof shall be deemed to have reached Completion as of the date of the Contractor's notice or repeated notice, or as of the Employer's use of the Facilities, as the case may be.
- 69.7 As soon as possible after Completion, the Contractor shall complete all outstanding minor items so that the

Facilities are fully in accordance with the requirements of the Contract, failing which the Employer will undertake such completion and deduct the costs thereof from any monies owing to the Contractor.

- 69.8 Upon Completion, the Employer shall be responsible for the care and custody of the Facilities or the relevant part thereof, together with the risk of loss or damage thereto, and shall thereafter take over the Facilities or the relevant part thereof.

25.Commissioning and Operational Acceptance

70.1 Commissioning

25.1.1 Commissioning of the Facilities or any part thereof shall be commenced by the Contractor immediately after issue of the Completion Certificate by the Project Manager, pursuant to GC Sub-Clause 24.5, or immediately after the date of the deemed Completion, under GC Sub-Clause 24.6.

25.1.2 The Employer shall supply the operating and maintenance personnel and all raw materials, utilities, lubricants, chemicals, catalysts, facilities, services and other matters required for Commissioning.

25.1.3 In accordance with the requirements of the Contract, the Contractor's and Project Manager's advisory personnel shall attend the Commissioning, including the Guarantee Test, and shall advise and assist the Employer.

70.2 Guarantee Test

25.2.1 Subject to GC Sub-Clause 25.5, the Guarantee Test and repeats thereof shall be conducted by the Contractor during Commissioning of the Facilities or the relevant part thereof to ascertain whether the Facilities or the relevant part can attain the Functional Guarantees specified in the Appendix to the Contract Agreement titled Functional Guarantees. The Employer shall promptly provide the Contractor with such information as the Contractor may reasonably require in relation to the

conduct and results of the Guarantee Test and any repeats thereof.

25.2.2 If for reasons not attributable to the Contractor, the Guarantee Test of the Facilities or the relevant part thereof cannot be successfully completed within the period from the date of Completion specified in the PC or any other period agreed upon by the Employer and the Contractor, the Contractor shall be deemed to have fulfilled its obligations with respect to the Functional Guarantees, and GC Sub-Clauses 28.2 and 28.3 shall not apply.

70.3 Operational Acceptance

25.3.1 Subject to GC Sub-Clause 25.4 below, Operational Acceptance shall occur in respect of the Facilities or any part thereof when

- (a) the Guarantee Test has been successfully completed and the Functional Guarantees are met; or
- (b) the Guarantee Test has not been successfully completed or has not been carried out for reasons not attributable to the Contractor within the period from the date of Completion specified in the PC pursuant to GC Sub-Clause 25.2.2 above or any other period agreed upon by the Employer and the Contractor; or
- (c) the Contractor has paid the liquidated damages specified in GC Sub-Clause 28.3 hereof; and
- (d) any minor items mentioned in GC Sub-Clause 24.7 hereof relevant to the Facilities or that part thereof have been completed.

25.3.2 At any time after any of the events set out in GC Sub-Clause 25.3.1 have occurred, the Contractor may give a notice to the Project Manager requesting the issue of an Operational Acceptance Certificate in the form provided in the Employer's Requirements (Forms and Procedures) in respect of the Facilities or the part thereof

specified in such notice as of the date of such notice.

25.3.3 The Project Manager shall, after consultation with the Employer, and within seven (7) days after receipt of the Contractor's notice, issue an Operational Acceptance Certificate.

25.3.4 If within seven (7) days after receipt of the Contractor's notice, the Project Manager fails to issue the Operational Acceptance Certificate or fails to inform the Contractor in writing of the justifiable reasons why the Project Manager has not issued the Operational Acceptance Certificate, the Facilities or the relevant part thereof shall be deemed to have been accepted as of the date of the Contractor's said notice.

70.4 Partial Acceptance

25.4.1 If the Contract specifies that Completion and Commissioning shall be carried out in respect of parts of the Facilities, the provisions relating to Completion and Commissioning including the Guarantee Test shall apply to each such part of the Facilities individually, and the Operational Acceptance Certificate shall be issued accordingly for each such part of the Facilities.

25.4.2 If a part of the Facilities comprises facilities such as buildings, for which no Commissioning or Guarantee Test is required, then the Project Manager shall issue the Operational Acceptance Certificate for such facility when it attains Completion, provided that the Contractor shall thereafter complete any outstanding minor items that are listed in the Operational Acceptance Certificate.

25.5 Delayed Pre-commissioning and/or Guarantee Test

25.5.1 In the event that the Contractor is unable to proceed with the Pre-commissioning of the Facilities pursuant to Sub-Clause 24.3, or with the Guarantee Test pursuant to Sub-Clause 25.2, for reasons attributable

to the Employer either on account of non availability of other facilities under the responsibilities of other contractor(s), or for reasons beyond the Contractor's control, the provisions leading to "deemed" completion of activities such as Completion, pursuant to GC Sub-Clause 24.6, and Operational Acceptance, pursuant to GC Sub-Clause 25.3.4, and Contractor's obligations regarding Defect Liability Period, pursuant to GC Sub-Clause 27.2, Functional Guarantee, pursuant to GC Clause 28, and Care of Facilities, pursuant to GC Clause 32, and GC Clause 41.1, Suspension, shall not apply. In this case, the following provisions shall apply.

- 25.5.2 When the Contractor is notified by the Project Manager that he will be unable to proceed with the activities and obligations pursuant to above Sub-Clause 13.1, the Contractor shall be entitled to the following:
- (a) the Time of Completion shall be extended for the period of suspension without imposition of liquidated damages pursuant to GC Sub-Clause 26.2;
 - (b) payments due to the Contractor in accordance with the provision specified in the Appendix to the Contract Agreement titled Terms and Procedures of Payment, which would not have been payable in normal circumstances due to non-completion of the subject activities, shall be released to the Contractor against submission of a security in the form of a bank guarantee of equivalent amount acceptable to the Employer, and which shall become null and void when the Contractor will have complied with its obligations regarding those payments, subject to the provision of Sub-Clause 25.5.3 below;
 - (c) the expenses towards the above security and extension of other securities under the contract, of which validity needs to be

- extended, shall be reimbursed to the Contractor by the Employer;
- (d) the additional charges towards the care of the Facilities pursuant to GC Sub-Clause 32.1 shall be reimbursed to the Contractor by the Employer for the period between the notification mentioned above and the notification mentioned in Sub-Clause 25.5.4 below. The provision of GC Sub-Clause 33.2 shall apply to the Facilities during the same period.
- 25.5.3 In the event that the period of suspension under above Sub-Clause 25.5.1 actually exceeds one hundred eighty (180) days, the Employer and Contractor shall mutually agree to any additional compensation payable to the Contractor.
- 25.5.4 When the Contractor is notified by the Project Manager that the infrastructure is ready for Pre-commissioning, the Contractor shall proceed without delay in performing Pre-commissioning in accordance with Clause 24.

Guarantees and Liabilities

26.Completion Time Guarantee

- 71.1 The Contractor guarantees that it shall attain Completion of the Facilities (or a part for which a separate time for completion is specified) within the Time for Completion specified in the PC pursuant to GC Sub-Clause 8.2, or within such extended time to which the Contractor shall be entitled under GC Clause 40 hereof.
- 71.2 If the Contractor fails to attain Completion of the Facilities or any part thereof within the Time for Completion or any extension thereof under GC Clause 40, the Contractor shall pay to the Employer liquidated damages in the amount specified in the PC as a percentage rate of the Contract Price or the relevant part thereof. The aggregate amount of such liquidated damages shall in no event exceed the amount specified as “Maximum” in the PC as a percentage rate of the Contract Price. Once the “Maximum” is reached, the

Employer may consider termination of the Contract, pursuant to GC Sub-Clause 42.2.2.

Such payment shall completely satisfy the Contractor's obligation to attain Completion of the Facilities or the relevant part thereof within the Time for Completion or any extension thereof under GC Clause 40. The Contractor shall have no further liability whatsoever to the Employer in respect thereof.

However, the payment of liquidated damages shall not in any way relieve the Contractor from any of its obligations to complete the Facilities or from any other obligations and liabilities of the Contractor under the Contract.

Save for liquidated damages payable under this GC Sub-Clause 26.2, the failure by the Contractor to attain any milestone or other act, matter or thing by any date specified in the Appendix to the Contract Agreement titled Time Schedule, and/or other program of work prepared pursuant to GC Sub-Clause 18.2 shall not render the Contractor liable for any loss or damage thereby suffered by the Employer.

- 71.3 If the Contractor attains Completion of the Facilities or any part thereof before the Time for Completion or any extension thereof under GC Clause 40, the Employer shall pay to the Contractor a bonus in the amount specified in the PC. The aggregate amount of such bonus shall in no event exceed the amount specified as "Maximum" in the PC.

27. Defect Liability

- 72.1 The Contractor warrants that the Facilities or any part thereof shall be free from defects in the design, engineering, materials and workmanship of the Infrastructure supplied and of the work executed.

- 72.2 The Defect Liability Period shall be five hundred and forty (540) days from the date of Completion of the Facilities (or any part thereof) or one year from the date of Operational Acceptance of the Facilities (or any part thereof), whichever first occurs, unless specified otherwise in the PC pursuant to GC Sub-Clause 27.10.

If during the Defect Liability Period any defect should be found in the design, engineering, materials and workmanship of the Infrastructure supplied or of the work executed by the Contractor, the Contractor shall promptly, in consultation and agreement with the

Employer regarding appropriate remedying of the defects, and at its cost, repair, replace or otherwise make good as the Contractor shall determine at its discretion, such defect as well as any damage to the Facilities caused by such defect. The Contractor shall not be responsible for the repair, replacement or making good of any defect / of any damage to the Facilities arising out of or resulting from any of the following causes:

- (a) improper operation or maintenance of the Facilities by the Employer;
- (b) operation of the Facilities outside specifications provided in the Contract; or
- (c) normal wear and tear.

72.3 The Contractor's obligations under this GC Clause 27 shall not apply to:

- (a) any materials that are supplied by the Employer under GC Sub-Clause 21.2, are normally consumed in operation, or have a normal life shorter than the Defect Liability Period stated herein;
- (b) any designs, specifications or other data designed, supplied or specified by or on behalf of the Employer or any matters for which the Contractor has disclaimed responsibility herein; or
- (c) any other materials supplied or any other work executed by or on behalf of the Employer, except for the work executed by the Employer under GC Sub-Clause 27.7.

72.4 The Employer shall give the Contractor a notice stating the nature of any such defect together with all available evidence thereof, promptly following the discovery thereof. The Employer shall afford all reasonable opportunity for the Contractor to inspect any such defect.

72.5 The Employer shall afford the Contractor all necessary access to the Facilities and the Site to enable the Contractor to perform its obligations under this GC Clause 27.

The Contractor may, with the consent of the Employer, remove from the Site any Infrastructure or any part of the Facilities that are defective if the nature of the defect, and/or any damage to the Facilities caused by the defect, is such that repairs cannot be expeditiously carried out at the Site.

- 72.6 If the repair, replacement or making good is of such a character that it may affect the efficiency of the Facilities or any part thereof, the Employer may give to the Contractor a notice requiring that tests of the defective part of the Facilities shall be made by the Contractor immediately upon completion of such remedial work, whereupon the Contractor shall carry out such tests.
If such part fails the tests, the Contractor shall carry out further repair, replacement or making good, as the case may be, until that part of the Facilities passes such tests. The tests shall be agreed upon by the Employer and the Contractor.
- 72.7 If the Contractor fails to commence the work necessary to remedy such defect or any damage to the Facilities caused by such defect within a reasonable time (which shall in no event be considered to be less than fifteen (15) days), the Employer may, following notice to the Contractor, proceed to do such work, and the reasonable costs incurred by the Employer in connection therewith shall be paid to the Employer by the Contractor or may be deducted by the Employer from any monies due the Contractor or claimed under the Performance Security.
- 72.8 If the Facilities or any part thereof cannot be used by reason of such defect and/or making good of such defect, the Defect Liability Period of the Facilities or such part, as the case may be, shall be extended by a period equal to the period during which the Facilities or such part cannot be used by the Employer because of any of the aforesaid reasons.
- 72.9 Except as provided in GC Clauses 27 and 33, the Contractor shall be under no liability whatsoever and howsoever arising, and whether under the Contract or at law, in respect of defects in the Facilities or any part thereof, the Infrastructure, design or engineering or work executed that appear after Completion of the Facilities or any part thereof, except where such defects are the result of the gross negligence, fraud, or criminal or willful action of the Contractor.
- 72.10 In addition, any such component of the Facilities, and during the period of time as may be specified in the PC, shall be subject to an extended defect liability period. Such obligation of the Contractor shall be in addition to the defect liability period specified under GC Sub-Clause 27.2.

28.Functional Guarantees

- 73.1 The Contractor guarantees that during the Guarantee Test, the Facilities and all parts thereof shall attain the Functional Guarantees specified in the Appendix to the Contract Agreement titled Functional Guarantees, subject to and upon the conditions therein specified.
- 73.2 If, for reasons attributable to the Contractor, the minimum level of the Functional Guarantees specified in the Appendix to the Contract Agreement titled Functional Guarantees, are not met either in whole or in part, the Contractor shall at its cost and expense make such changes, modifications and/or additions to the Infrastructure or any part thereof as may be necessary to meet at least the minimum level of such Guarantees. The Contractor shall notify the Employer upon completion of the necessary changes, modifications and/or additions, and shall request the Employer to repeat the Guarantee Test until the minimum level of the Guarantees has been met. If the Contractor eventually fails to meet the minimum level of Functional Guarantees, the Employer may consider termination of the Contract, pursuant to GC Sub-Clause 42.2.2.
- 73.3 If, for reasons attributable to the Contractor, the Functional Guarantees specified in the Appendix to the Contract Agreement titled Functional Guarantees, are not attained either in whole or in part, but the minimum level of the Functional Guarantees specified in the said Appendix to the Contract Agreement is met, the Contractor shall, at the Contractor's option, either
- (a) make such changes, modifications and/or additions to the Facilities or any part thereof that are necessary to attain the Functional Guarantees at its cost and expense, and shall request the Employer to repeat the Guarantee Test or
 - (b) pay liquidated damages to the Employer in respect of the failure to meet the Functional Guarantees in accordance with the provisions in the Appendix to the Contract Agreement titled Functional Guarantees.
- 73.4 The payment of liquidated damages under GC Sub-Clause 28.3, up to the limitation of liability specified in the Appendix to the Contract Agreement titled Functional Guarantees, shall completely satisfy the

Contractor's guarantees under GC Sub-Clause 28.3, and the Contractor shall have no further liability whatsoever to the Employer in respect thereof. Upon the payment of such liquidated damages by the Contractor, the Project Manager shall issue the Operational Acceptance Certificate for the Facilities or any part thereof in respect of which the liquidated damages have been so paid.

29. Patent Indemnity

- 74.1 The Contractor shall, subject to the Employer's compliance with GC Sub-Clause 29.2, indemnify and hold harmless the Employer and its employees and officers from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of whatsoever nature, including attorney's fees and expenses, which the Employer may suffer as a result of any infringement or alleged infringement of any patent, utility model, registered design, trademark, copyright or other intellectual property right registered or otherwise existing at the date of the Contract by reason of: (a) the installation of the Facilities by the Contractor or the use of the Facilities in the country where the Site is located; and (b) the sale of the products produced by the Facilities in any country.
- Such indemnity shall not cover any use of the Facilities or any part thereof other than for the purpose indicated by or to be reasonably inferred from the Contract, any infringement resulting from the use of the Facilities or any part thereof, or any products produced thereby in association or combination with any other equipment, infrastructure or materials not supplied by the Contractor, pursuant to the Contract Agreement.
- 74.2 If any proceedings are brought or any claim is made against the Employer arising out of the matters referred to in GC Sub-Clause 29.1, the Employer shall promptly give the Contractor a notice thereof, and the Contractor may at its own expense and in the Employer's name conduct such proceedings or claim and any negotiations for the settlement of any such proceedings or claim.
- If the Contractor fails to notify the Employer within twenty-eight (28) days after receipt of such notice that it intends to conduct any such proceedings or claim,

then the Employer shall be free to conduct the same on its own behalf. Unless the Contractor has so failed to notify the Employer within the twenty-eight (28) day period, the Employer shall make no admission that may be prejudicial to the defense of any such proceedings or claim.

The Employer shall, at the Contractor's request, afford all available assistance to the Contractor in conducting such proceedings or claim, and shall be reimbursed by the Contractor for all reasonable expenses incurred in so doing.

- 74.3 The Employer shall indemnify and hold harmless the Contractor and its employees, officers and Subcontractors from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of whatsoever nature, including attorney's fees and expenses, which the Contractor may suffer as a result of any infringement or alleged infringement of any patent, utility model, registered design, trademark, copyright or other intellectual property right registered or otherwise existing at the date of the Contract arising out of or in connection with any design, data, drawing, specification, or other documents or materials provided or designed by or on behalf of the Employer.

30.Limitation of Liability

- 75.1 Except in cases of criminal negligence or willful misconduct,
- (a) neither Party shall be liable to the other Party, whether in contract, tort, or otherwise, for any indirect or consequential loss or damage, loss of use, loss of production, or loss of profits or interest costs, which may be suffered by the other Party in connection with the Contract, other than specifically provided as any obligation of the Party in the Contract, and
 - (b) the aggregate liability of the Contractor to the Employer, whether under the Contract, in tort or otherwise, shall not exceed the amount resulting from the application of the multiplier specified in the PC, to the Contract Price or, if a multiplier is not so specified, the total Contract Price, provided that this limitation shall not apply to the cost of repairing or replacing defective equipment, or to any

obligation of the Contractor to indemnify the Employer with respect to patent infringement.

Risk Distribution

31.Transfer of Ownership

- 76.1 Ownership of the Infrastructure (including spare parts) to be imported into the country where the Site is located shall be transferred to the Employer upon loading on to the mode of transport to be used to convey the Infrastructure from the country of origin to that country.
- 76.2 Ownership of the Infrastructure (including spare parts) procured in the country where the Site is located shall be transferred to the Employer when the Infrastructure are brought on to the Site.
- 76.3 Ownership of the Contractor's Equipment used by the Contractor and its Subcontractors in connection with the Contract shall remain with the Contractor or its Subcontractors.
- 76.4 Ownership of any Infrastructure in excess of the requirements for the Facilities shall revert to the Contractor upon Completion of the Facilities or at such earlier time when the Employer and the Contractor agree that the Infrastructure in question are no longer required for the Facilities.
- 76.5 Notwithstanding the transfer of ownership of the Infrastructure, the responsibility for care and custody thereof together with the risk of loss or damage thereto shall remain with the Contractor pursuant to GC Clause 32 (Care of Facilities) hereof until Completion of the Facilities or the part thereof in which such Infrastructure are incorporated.

32.Care of Facilities

- 77.1 The Contractor shall be responsible for the care and custody of the Facilities or any part thereof until the date of Completion of the Facilities pursuant to GC Clause 24 or, where the Contract provides for Completion of the Facilities in parts, until the date of Completion of the relevant part, and shall make good at its own cost any loss or damage that may occur to the Facilities or the relevant part thereof from any

cause whatsoever during such period. The Contractor shall also be responsible for any loss or damage to the Facilities caused by the Contractor or its Subcontractors in the course of any work carried out, pursuant to GC Clause 27. Notwithstanding the foregoing, the Contractor shall not be liable for any loss or damage to the Facilities or that part thereof caused by reason of any of the matters specified or referred to in paragraphs (a), (b) and (c) of GC Sub-Clauses 32.2 and 38.1.

77.2

If any loss or damage occurs to the Facilities or any part thereof or to the Contractor's temporary facilities by reason of

- (a) insofar as they relate to the country where the Site is located, nuclear reaction, nuclear radiation, radioactive contamination, pressure wave caused by aircraft or other aerial objects, or any other occurrences that an experienced contractor could not reasonably foresee, or if reasonably foreseeable could not reasonably make provision for or insure against, insofar as such risks are not normally insurable on the insurance market and are mentioned in the general exclusions of the policy of insurance, including War Risks and Political Risks, taken out under GC Clause 34 hereof; or
- (b) any use or occupation by the Employer or any third Party other than a Subcontractor, authorized by the Employer of any part of the Facilities; or
- (c) any use of or reliance upon any design, data or specification provided or designated by or on behalf of the Employer, or any such matter for which the Contractor has disclaimed responsibility herein,

the Employer shall pay to the Contractor all sums payable in respect of the Facilities executed, notwithstanding that the same be lost, destroyed or damaged, and will pay to the Contractor the replacement value of all temporary facilities and all parts thereof lost, destroyed or damaged. If the Employer requests the Contractor in writing to make good any loss or damage to the Facilities thereby occasioned, the Contractor shall make good the same at the cost of the Employer in accordance with GC Clause 39. If the Employer does not request the

Contractor in writing to make good any loss or damage to the Facilities thereby occasioned, the Employer shall either request a change in accordance with GC Clause 39, excluding the performance of that part of the Facilities thereby lost, destroyed or damaged, or, where the loss or damage affects a substantial part of the Facilities, the Employer shall terminate the Contract pursuant to GC Sub-Clause 42.1 hereof.

- 77.3 The Contractor shall be liable for any loss of or damage to any Contractor's Equipment, or any other property of the Contractor used or intended to be used for purposes of the Facilities, except (i) as mentioned in GC Sub-Clause 32.2 with respect to the Contractor's temporary facilities, and (ii) where such loss or damage arises by reason of any of the matters specified in GC Sub-Clauses 32.2 (b) and (c) and 38.1.
- 77.4 With respect to any loss or damage caused to the Facilities or any part thereof or to the Contractor's Equipment by reason of any of the matters specified in GC Sub-Clause 38.1, the provisions of GC Sub-Clause 38.3 shall apply.

33. Loss of or Damage to Property; Accident or Injury to Workers; Indemnification

- 78.1 Subject to GC Sub-Clause 33.3, the Contractor shall indemnify and hold harmless the Employer and its employees and officers from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of whatsoever nature, including attorney's fees and expenses, in respect of the death or injury of any person or loss of or damage to any property other than the Facilities whether accepted or not, arising in connection with the supply and installation of the Facilities and by reason of the negligence of the Contractor or its Subcontractors, or their employees, officers or agents, except any injury, death or property damage caused by the negligence of the Employer, its contractors, employees, officers or agents.
- 78.2 If any proceedings are brought or any claim is made against the Employer that might subject the Contractor to liability under GC Sub-Clause 33.1, the Employer

shall promptly give the Contractor a notice thereof and the Contractor may at its own expense and in the Employer's name conduct such proceedings or claim and any negotiations for the settlement of any such proceedings or claim.

If the Contractor fails to notify the Employer within twenty-eight (28) days after receipt of such notice that it intends to conduct any such proceedings or claim, then the Employer shall be free to conduct the same on its own behalf. Unless the Contractor has so failed to notify the Employer within the twenty-eight (28) day period, the Employer shall make no admission that may be prejudicial to the defense of any such proceedings or claim.

The Employer shall, at the Contractor's request, afford all available assistance to the Contractor in conducting such proceedings or claim, and shall be reimbursed by the Contractor for all reasonable expenses incurred in so doing.

78.3 The Employer shall indemnify and hold harmless the Contractor and its employees, officers and Subcontractors from any liability for loss of or damage to property of the Employer, other than the Facilities not yet taken over, that is caused by fire, explosion or any other perils, in excess of the amount recoverable from insurances procured under GC Clause 34, provided that such fire, explosion or other perils were not caused by any act or failure of the Contractor.

78.4 The Party entitled to the benefit of an indemnity under this GC Clause 33 shall take all reasonable measures to mitigate any loss or damage which has occurred. If the Party fails to take such measures, the other Party's liabilities shall be correspondingly reduced.

34. Insurance

79.1 To the extent specified in the Appendix to the Contract Agreement titled Insurance Requirements, the Contractor shall at its expense take out and maintain in effect, or cause to be taken out and maintained in effect, during the performance of the Contract, the insurances set forth below in the sums and with the deductibles and other conditions specified in the said Appendix. The identity of the insurers and the form of the policies shall be subject to the approval of the Employer, who should not unreasonably withhold such approval.

(a) Cargo Insurance During Transport

Covering loss or damage occurring while in transit from the Contractor's or Subcontractor's works or stores until arrival at the Site, to the Infrastructure (including spare parts therefor) and to the Contractor's Equipment.

(b) Installation All Risks Insurance

Covering physical loss or damage to the Facilities at the Site, occurring prior to Completion of the Facilities, with an extended maintenance coverage for the Contractor's liability in respect of any loss or damage occurring during the Defect Liability Period while the Contractor is on the Site for the purpose of performing its obligations during the Defect Liability Period.

(c) Third Party Liability Insurance

Covering bodily injury or death suffered by third Parties including the Employer's personnel, and loss of or damage to property occurring in connection with the supply and installation of the Facilities.

(d) Automobile Liability Insurance

Covering use of all vehicles used by the Contractor or its Subcontractors, whether or not owned by them, in connection with the execution of the Contract.

(e) Workers' Compensation

In accordance with the statutory requirements applicable in any country where the Contract or any part thereof is executed.

(f) Employer's Liability

In accordance with the statutory requirements applicable in any country where the Contract or any part thereof is executed.

(g) Other Insurances

Such other insurances as may be specifically agreed upon by the Parties hereto as listed in the Appendix to the Contract Agreement titled Insurance Requirements.

79.2

The Employer shall be named as co-insured under all insurance policies taken out by the Contractor pursuant to GC Sub-Clause 34.1, except for the Third Party Liability, Workers' Compensation and Employer's Liability Insurances, and the Contractor's Subcontractors shall be named as co-insureds under all

insurance policies taken out by the Contractor pursuant to GC Sub-Clause 34.1 except for the Cargo Insurance During Transport, Workers' Compensation and Employer's Liability Insurances. All insurer's rights of subrogation against such co-insureds for losses or claims arising out of the performance of the Contract shall be waived under such policies.

79.3 The Contractor shall, in accordance with the provisions of the Appendix to the Contract Agreement titled Insurance Requirements, deliver to the Employer certificates of insurance or copies of the insurance policies as evidence that the required policies are in full force and effect. The certificates shall provide that no less than twenty-one (21) days' notice shall be given to the Employer by insurers prior to cancellation or material modification of a policy.

79.4 The Contractor shall ensure that, where applicable, its Subcontractor(s) shall take out and maintain in effect adequate insurance policies for their personnel and vehicles and for work executed by them under the Contract, unless such Subcontractors are covered by the policies taken out by the Contractor.

79.5 The Employer shall at its expense take out and maintain in effect during the performance of the Contract those insurances specified in the Appendix to the Contract Agreement titled Insurance Requirements, in the sums and with the deductibles and other conditions specified in the said Appendix. The Contractor and the Contractor's Subcontractors shall be named as co-insureds under all such policies. All insurers' rights of subrogation against such co-insureds for losses or claims arising out of the performance of the Contract shall be waived under such policies. The Employer shall deliver to the Contractor satisfactory evidence that the required insurances are in full force and effect. The policies shall provide that not less than twenty-one (21) days' notice shall be given to the Contractor by all insurers prior to any cancellation or material modification of the policies. If so requested by the Contractor, the Employer shall provide copies of the policies taken out by the Employer under this GC Sub-Clause 34.5.

79.6 If the Contractor fails to take out and/or maintain in effect the insurances referred to in GC Sub-Clause 34.1, the Employer may take out and maintain in effect any such insurances and may from time to time deduct

from any amount due the Contractor under the Contract any premium that the Employer shall have paid to the insurer, or may otherwise recover such amount as a debt due from the Contractor. If the Employer fails to take out and/or maintain in effect the insurances referred to in GC 34.5, the Contractor may take out and maintain in effect any such insurances and may from time to time deduct from any amount due the Employer under the Contract any premium that the Contractor shall have paid to the insurer, or may otherwise recover such amount as a debt due from the Employer. If the Contractor fails to or is unable to take out and maintain in effect any such insurances, the Contractor shall nevertheless have no liability or responsibility towards the Employer, and the Contractor shall have full recourse against the Employer for any and all liabilities of the Employer herein.

- 79.7 Unless otherwise provided in the Contract, the Contractor shall prepare and conduct all and any claims made under the policies effected by it pursuant to this GC Clause 34, and all monies payable by any insurers shall be paid to the Contractor. The Employer shall give to the Contractor all such reasonable assistance as may be required by the Contractor. With respect to insurance claims in which the Employer's interest is involved, the Contractor shall not give any release or make any compromise with the insurer without the prior written consent of the Employer. With respect to insurance claims in which the Contractor's interest is involved, the Employer shall not give any release or make any compromise with the insurer without the prior written consent of the Contractor.

35.Unforeseen Conditions

- 80.1 If, during the execution of the Contract, the Contractor shall encounter on the Site any physical conditions other than climatic conditions, or artificial obstructions that could not have been reasonably foreseen prior to the date of the Contract Agreement by an experienced contractor on the basis of reasonable examination of the data relating to the Facilities including any data as to boring tests, provided by the Employer, and on the basis of information that it could have obtained from a

visual inspection of the Site if access thereto was available, or other data readily available to it relating to the Facilities, and if the Contractor determines that it will in consequence of such conditions or obstructions incur additional cost and expense or require additional time to perform its obligations under the Contract that would not have been required if such physical conditions or artificial obstructions had not been encountered, the Contractor shall promptly, and before performing additional work or using additional Infrastructure or Contractor's Equipment, notify the Project Manager in writing of

- (a) the physical conditions or artificial obstructions on the Site that could not have been reasonably foreseen;
- (b) the additional work and/or Infrastructure and/or Contractor's Equipment required, including the steps which the Contractor will or proposes to take to overcome such conditions or obstructions;
- (c) the extent of the anticipated delay; and
- (d) the additional cost and expense that the Contractor is likely to incur.

On receiving any notice from the Contractor under this GC Sub-Clause 35.1, the Project Manager shall promptly consult with the Employer and Contractor and decide upon the actions to be taken to overcome the physical conditions or artificial obstructions encountered. Following such consultations, the Project Manager shall instruct the Contractor, with a copy to the Employer, of the actions to be taken.

80.2 Any reasonable additional cost and expense incurred by the Contractor in following the instructions from the Project Manager to overcome such physical conditions or artificial obstructions referred to in GC Sub-Clause 35.1 shall be paid by the Employer to the Contractor as an addition to the Contract Price.

80.3 If the Contractor is delayed or impeded in the performance of the Contract because of any such physical conditions or artificial obstructions referred to in GC Sub-Clause 35.1, the Time for Completion shall be extended in accordance with GC Clause 40.

36.Change in Laws and Regulations

81.1 If, after the date twenty-eight (28) days prior to the date of Bid submission, in the country where the Site

is located, any law, regulation, ordinance, order or by-law having the force of law is enacted, promulgated, abrogated or changed which shall be deemed to include any change in interpretation or application by the competent authorities, that subsequently affects the costs and expenses of the Contractor and/or the Time for Completion, the Contract Price shall be correspondingly increased or decreased, and/or the Time for Completion shall be reasonably adjusted to the extent that the Contractor has thereby been affected in the performance of any of its obligations under the Contract. Notwithstanding the foregoing, such additional or reduced costs shall not be separately paid or credited if the same has already been accounted for in the price adjustment provisions where applicable, in accordance with the PC pursuant to GC Sub-Clause 11.2.

37.Force Majeure

- 82.1 “Force Majeure” shall mean any event beyond the reasonable control of the Employer or of the Contractor, as the case may be, and which is unavoidable notwithstanding the reasonable care of the Party affected, and shall include, without limitation, the following:
- (a) war, hostilities or warlike operations whether a state of war be declared or not, invasion, act of foreign enemy and civil war
 - (b) rebellion, revolution, insurrection, mutiny, usurpation of civil or military government, conspiracy, riot, civil commotion and terrorist acts
 - (c) confiscation, nationalization, mobilization, commandeering or requisition by or under the order of any government or de jure or de facto authority or ruler or any other act or failure to act of any local state or national government authority
 - (d) strike, sabotage, lockout, embargo, import restriction, port congestion, lack of usual means of public transportation and communication, industrial dispute, shipwreck, shortage or restriction of power supply, epidemics, quarantine and plague
 - (e) earthquake, landslide, volcanic activity, fire, flood or inundation, tidal wave, typhoon or

cyclone, hurricane, storm, lightning, or other inclement weather condition, nuclear and pressure waves or other natural or physical disaster

(f) shortage of labour, materials or utilities where caused by circumstances that are themselves Force Majeure.

82.2 If either Party is prevented, hindered or delayed from or in performing any of its obligations under the Contract by an event of Force Majeure, then it shall notify the other in writing of the occurrence of such event and the circumstances thereof within fourteen (14) days after the occurrence of such event.

82.3 The Party who has given such notice shall be excused from the performance or punctual performance of its obligations under the Contract for so long as the relevant event of Force Majeure continues and to the extent that such Party's performance is prevented, hindered or delayed. The Time for Completion shall be extended in accordance with GC Clause 40.

82.4 The Party or Parties affected by the event of Force Majeure shall use reasonable efforts to mitigate the effect thereof upon its or their performance of the Contract and to fulfill its or their obligations under the Contract, but without prejudice to either Party's right to terminate the Contract under GC Sub-Clauses 37.6 and 38.5.

82.5 No delay or nonperformance by either Party hereto caused by the occurrence of any event of Force Majeure shall

(a) constitute a default or breach of the Contract, or

(b) give rise to any claim for damages or additional cost or expense occasioned thereby, subject to GC Sub-Clauses 32.2, 38.3 and 38.4

if and to the extent that such delay or nonperformance is caused by the occurrence of an event of Force Majeure.

82.6 If the performance of the Contract is substantially prevented, hindered or delayed for a single period of more than sixty (60) days or an aggregate period of more than one hundred and twenty (120) days on account of one or more events of Force Majeure during the currency of the Contract, the Parties will attempt to develop a mutually satisfactory solution, failing which either Party may terminate the Contract

by giving a notice to the other, but without prejudice to either Party's right to terminate the Contract under GC Sub-Clause 38.5.

- 82.7 In the event of termination pursuant to GC Sub-Clause 37.6, the rights and obligations of the Employer and the Contractor shall be as specified in GC Sub-Clauses 42.1.2 and 42.1.3.
- 82.8 Notwithstanding GC Sub-Clause 37.5, Force Majeure shall not apply to any obligation of the Employer to make payments to the Contractor herein.

38. War Risks

- 83.1 "War Risks" shall mean any event specified in paragraphs (a) and (b) of GC Sub-Clause 37.1 and any explosion or impact of any mine, bomb, shell, grenade or other projectile, missile, munitions or explosive of war, occurring or existing in or near the country (or countries) where the Site is located.
- 83.2 Notwithstanding anything contained in the Contract, the Contractor shall have no liability whatsoever for or with respect to
- (a) destruction of or damage to Facilities, Infrastructure, or any part thereof;
 - (b) destruction of or damage to property of the Employer or any third Party; or
 - (c) injury or loss of life
- if such destruction, damage, injury or loss of life is caused by any War Risks, and the Employer shall indemnify and hold the Contractor harmless from and against any and all claims, liabilities, actions, lawsuits, damages, costs, charges or expenses arising in consequence of or in connection with the same.
- 83.3 If the Facilities or any Infrastructure or Contractor's Equipment or any other property of the Contractor used or intended to be used for the purposes of the Facilities shall sustain destruction or damage by reason of any War Risks, the Employer shall pay the Contractor for
- (a) any part of the Facilities or the Infrastructure so destroyed or damaged to the extent not already paid for by the Employer and so far as may be required by the Employer, and as may be necessary for completion of the Facilities

(b) replacing or making good any Contractor's Equipment or other property of the Contractor so destroyed or damaged

(c) replacing or making good any such destruction or damage to the Facilities or the Infrastructure or any part thereof.

If the Employer does not require the Contractor to replace or make good any such destruction or damage to the Facilities, the Employer shall either request a change in accordance with GC Clause 39, excluding the performance of that part of the Facilities thereby destroyed or damaged or, where the loss, destruction or damage affects a substantial part of the Facilities, shall terminate the Contract, pursuant to GC Sub-Clause 42.1.

If the Employer requires the Contractor to replace or make good on any such destruction or damage to the Facilities, the Time for Completion shall be extended in accordance with GC 40.

83.4 Notwithstanding anything contained in the Contract, the Employer shall pay the Contractor for any increased costs or incidentals to the execution of the Contract that are in any way attributable to, consequent on, resulting from, or in any way connected with any War Risks, provided that the Contractor shall as soon as practicable notify the Employer in writing of any such increased cost.

83.5 If during the performance of the Contract any War Risks shall occur that financially or otherwise materially affect the execution of the Contract by the Contractor, the Contractor shall use its reasonable efforts to execute the Contract with due and proper consideration given to the safety of its and its Subcontractors' personnel engaged in the work on the Facilities, provided, however, that if the execution of the work on the Facilities becomes impossible or is substantially prevented for a single period of more than sixty (60) days or an aggregate period of more than one hundred and twenty (120) days on account of any War Risks, the Parties will attempt to develop a mutually satisfactory solution, failing which either Party may terminate the Contract by giving a notice to the other.

83.6 In the event of termination pursuant to GC Sub-Clauses 38.3 or 38.5, the rights and obligations of the

Employer and the Contractor shall be specified in GC Sub-Clauses 42.1.2 and 42.1.3.

39.Change in Contract Elements

84.1 Introducing a Change

39.1.1 Subject to GC Sub-Clauses 39.2.5 and 39.2.7, the Employer shall have the right to propose, and subsequently require, that the Project Manager order the Contractor from time to time during the performance of the Contract to make any change, modification, addition or deletion to, in or from the Facilities hereinafter called “Change”, provided that such Change falls within the general scope of the Facilities and does not constitute unrelated work and that it is technically practicable, taking into account both the state of advancement of the Facilities and the technical compatibility of the Change envisaged with the nature of the Facilities as specified in the Contract.

39.1.2 The Contractor may from time to time during its performance of the Contract propose to the Employer with a copy to the Project Manager, any Change that the Contractor considers necessary or desirable to improve the quality, efficiency or safety of the Facilities. The Employer may at its discretion approve or reject any Change proposed by the Contractor, provided that the Employer shall approve any Change proposed by the Contractor to ensure the safety of the Facilities.

39.1.3 Notwithstanding GC Sub-Clauses 39.1.1 and 39.1.2, no change made necessary because of any default of the Contractor in the performance of its obligations under the Contract shall be deemed to be a Change, and such change shall not result in any adjustment of the Contract Price or the Time for Completion.

39.1.4 The procedure on how to proceed with and execute Changes is specified in GC Sub-Clauses 39.2 and 39.3, and further details and forms are provided in the Employer's Requirements (Forms and Procedures).

84.2 Changes Originating from Employer

39.2.1 If the Employer proposes a Change pursuant to GC Sub-Clause 39.1.1, it shall send to the Contractor a "Request for Change Proposal," requiring the Contractor to prepare and furnish to the Project Manager as soon as reasonably practicable a "Change Proposal," which shall include the following:

- (a) brief description of the Change
- (b) effect on the Time for Completion
- (c) estimated cost of the Change
- (d) effect on Functional Guarantees (if any)
- (e) effect on the Facilities
- (f) impact of the change on ESHS risks(f)
- (g) effect on any other provisions of the Contract.

39.2.2 Prior to preparing and submitting the "Change Proposal," the Contractor shall submit to the Project Manager an "Estimate for Change Proposal," which shall be an estimate of the cost of preparing and submitting the Change Proposal.

Upon receipt of the Contractor's Estimate for Change Proposal, the Employer shall do one of the following:

- (a) accept the Contractor's estimate with instructions to the Contractor to proceed with the preparation of the Change Proposal
- (b) advise the Contractor of any part of its Estimate for Change Proposal that is unacceptable and request the Contractor to review its estimate
- (c) advise the Contractor that the Employer does not intend to proceed with the Change.

39.2.3 Upon receipt of the Employer's instruction to proceed under GC Sub-Clause 39.2.2 (a), the Contractor shall,

with proper expedition, proceed with the preparation of the Change Proposal, in accordance with GC Sub-Clause 39.2.1.

39.2.4 The pricing of any Change shall, as far as practicable, be calculated in accordance with the rates and prices included in the Contract. If such rates and prices are inequitable, the Parties thereto shall agree on specific rates for the valuation of the Change.

39.2.5 If before or during the preparation of the Change Proposal it becomes apparent that the aggregate effect of compliance therewith and with all other Change Orders that have already become binding upon the Contractor under this GC Clause 39 would be to increase or decrease the Contract Price as originally set forth in Article 2 (Contract Price) of the Contract Agreement by more than fifteen percent (15%), the Contractor may give a written notice of objection thereto prior to furnishing the Change Proposal as aforesaid. If the Employer accepts the Contractor's objection, the Employer shall withdraw the proposed Change and shall notify the Contractor in writing thereof.

The Contractor's failure to so object shall neither affect its right to object to any subsequent requested Changes or Change Orders herein, nor affect its right to take into account, when making such subsequent objection, the percentage increase or decrease in the Contract Price that any Change not objected to by the Contractor represents.

39.2.6 Upon receipt of the Change Proposal, the Employer and the Contractor shall mutually agree upon all matters therein contained. Within fourteen (14) days after such agreement, the Employer shall, if it intends to proceed with the

Change, issue the Contractor with a Change Order.

If the Employer is unable to reach a decision within fourteen (14) days, it shall notify the Contractor with details of when the Contractor can expect a decision.

If the Employer decides not to proceed with the Change for whatever reason, it shall, within the said period of fourteen (14) days, notify the Contractor accordingly. Under such circumstances, the Contractor shall be entitled to reimbursement of all costs reasonably incurred by it in the preparation of the Change Proposal, provided that these do not exceed the amount given by the Contractor in its Estimate for Change Proposal submitted in accordance with GC Sub-Clause 39.2.2.

39.2.7 If the Employer and the Contractor cannot reach agreement on the price for the Change, an equitable adjustment to the Time for Completion, or any other matters identified in the Change Proposal, the Employer may nevertheless instruct the Contractor to proceed with the Change by issue of a "Pending Agreement Change Order."

Upon receipt of a Pending Agreement Change Order, the Contractor shall immediately proceed with effecting the Changes covered by such Order. The Parties shall thereafter attempt to reach agreement on the outstanding issues under the Change Proposal.

If the Parties cannot reach agreement within sixty (60) days from the date of issue of the Pending Agreement Change Order, then the matter may be referred to the Adjudicator in accordance with the provisions of GC Sub-Clause 46.1.

84.3 Changes Originating from Contractor

39.3.1 If the Contractor proposes a Change pursuant to GC Sub-Clause 39.1.2, the Contractor shall submit to the Project Manager a written “Application for Change Proposal,” giving reasons for the proposed Change and including the information specified in GC Sub-Clause 39.2.1.

Upon receipt of the Application for Change Proposal, the Parties shall follow the procedures outlined in GC Sub-Clauses 39.2.6 and 39.2.7. However, should the Employer choose not to proceed, the Contractor shall not be entitled to recover the costs of preparing the Application for Change Proposal.

40.Extension of Time for Completion

- 85.1 The Time(s) for Completion specified in the PC pursuant to GC Sub-Clause 8.2 shall be extended if the Contractor is delayed or impeded in the performance of any of its obligations under the Contract by reason of any of the following:
- (a) any Change in the Facilities as provided in GC Clause 39
 - (b) any occurrence of Force Majeure as provided in GC Clause 37, unforeseen conditions as provided in GC Clause 35, or other occurrence of any of the matters specified or referred to in paragraphs (a), (b) and (c) of GC Sub-Clause 32.2
 - (c) any suspension order given by the Employer under GC Clause 41 hereof or reduction in the rate of progress pursuant to GC Sub-Clause 41.2 or
 - (d) any changes in laws and regulations as provided in GC Clause 36 or
 - (e) any default or breach of the Contract by the Employer, Appendix to the Contract Agreement titled ,or any activity, act or omission of the Employer, or the Project Manager, or any other contractors employed by the Employer, or
 - (f) any delay on the part of a sub-contractor, provided such delay is due to a cause for which the Contractor himself would have been entitled to an extension of time under this sub-clause, or

(g) delays attributable to the Employer or caused by customs, or

(h) any other matter specifically mentioned in the Contract

by such period as shall be fair and reasonable in all the circumstances and as shall fairly reflect the delay or impediment sustained by the Contractor.

85.2 Except where otherwise specifically provided in the Contract, the Contractor shall submit to the Project Manager a notice of a claim for an extension of the Time for Completion, together with particulars of the event or circumstance justifying such extension as soon as reasonably practicable after the commencement of such event or circumstance. As soon as reasonably practicable after receipt of such notice and supporting particulars of the claim, the Employer and the Contractor shall agree upon the period of such extension. In the event that the Contractor does not accept the Employer's estimate of a fair and reasonable time extension, the Contractor shall be entitled to refer the matter to an Adjudicator, pursuant to GC Sub-Clause 46.1.

The Contractor shall at all times use its reasonable efforts to minimize any delay in the performance of its obligations under the Contract.

In all cases where the Contractor has given a notice of a claim for an extension of time under GC 40.2, the Contractor shall consult with the Project Manager in order to determine the steps (if any) which can be taken to overcome or minimize the actual or anticipated delay. The Contractor shall there after comply with all reasonable instructions which the Project Manager shall give in order to minimize such delay. If compliance with such instructions shall cause the Contractor to incur extra costs and the Contractor is entitled to an extension of time under GC 40.1, the amount of such extra costs shall be added to the Contract Price.

41.Suspension

86.1 The Employer may request the Project Manager, by notice to the Contractor, to order the Contractor to suspend performance of any or all of its obligations under the Contract. Such notice shall specify the obligation of which performance is to be suspended,

the effective date of the suspension and the reasons therefor. The Contractor shall thereupon suspend performance of such obligation, except those obligations necessary for the care or preservation of the Facilities, until ordered in writing to resume such performance by the Project Manager.

If, by virtue of a suspension order given by the Project Manager, other than by reason of the Contractor's default or breach of the Contract, the Contractor's performance of any of its obligations is suspended for an aggregate period of more than ninety (90) days, then at any time thereafter and provided that at that time such performance is still suspended, the Contractor may give a notice to the Project Manager requiring that the Employer shall, within twenty-eight (28) days of receipt of the notice, order the resumption of such performance or request and subsequently order a change in accordance with GC Clause 39, excluding the performance of the suspended obligations from the Contract.

If the Employer fails to do so within such period, the Contractor may, by a further notice to the Project Manager, elect to treat the suspension, where it affects a part only of the Facilities, as a deletion of such part in accordance with GC Clause 39 or, where it affects the whole of the Facilities, as termination of the Contract under GC Sub-Clause 42.1.

86.2 If

- (a) the Employer has failed to pay the Contractor any sum due under the Contract within the specified period, has failed to approve any invoice or supporting documents without just cause pursuant to the Appendix to the Contract Agreement titled Terms and Procedures of Payment, or commits a substantial breach of the Contract, the Contractor may give a notice to the Employer that requires payment of such sum, with interest thereon as stipulated in GC Sub-Clause 12.3, requires approval of such invoice or supporting documents, or specifies the breach and requires the Employer to remedy the same, as the case may be. If the Employer fails to pay such sum together with such interest, fails to approve such invoice or supporting documents or give its reasons for

withholding such approval, or fails to remedy the breach or take steps to remedy the breach within fourteen (14) days after receipt of the Contractor's notice or

- (b) the Contractor is unable to carry out any of its obligations under the Contract for any reason attributable to the Employer, including but not limited to the Employer's failure to provide possession of or access to the Site or other areas in accordance with GC Sub-Clause 10.2, or failure to obtain any governmental permit necessary for the execution and/or completion of the Facilities,

then the Contractor may by fourteen (14) days' notice to the Employer suspend performance of all or any of its obligations under the Contract, or reduce the rate of progress.

86.3 If the Contractor's performance of its obligations is suspended or the rate of progress is reduced pursuant to this GC Clause 41, then the Time for Completion shall be extended in accordance with GC Sub-Clause 40.1, and any and all additional costs or expenses incurred by the Contractor as a result of such suspension or reduction shall be paid by the Employer to the Contractor in addition to the Contract Price, except in the case of suspension order or reduction in the rate of progress by reason of the Contractor's default or breach of the Contract.

86.4 During the period of suspension, the Contractor shall not remove from the Site any Infrastructure, any part of the Facilities or any Contractor's Equipment, without the prior written consent of the Employer.

42. Termination

87.1 Termination for Employer's Convenience

42.1.1 The Employer may at any time terminate the Contract for any reason by giving the Contractor a notice of termination that refers to this GC Sub-Clause 42.1.

42.1.2 Upon receipt of the notice of termination under GC Sub-Clause 42.1.1, the Contractor shall either immediately or upon the date specified in the notice of termination

- (a) cease all further work, except for such work as the Employer may specify in the notice of termination for the sole purpose

of protecting that part of the Facilities already executed, or any work required to leave the Site in a clean and safe condition

- (b) terminate all subcontracts, except those to be assigned to the Employer pursuant to paragraph (d) (ii) below
- (c) remove all Contractor's Equipment from the Site, repatriate the Contractor's and its Subcontractors' personnel from the Site, remove from the Site any wreckage, rubbish and debris of any kind, and leave the whole of the Site in a clean and safe condition, and
- (d) subject to the payment specified in GC Sub-Clause 42.1.3,
 - (i) deliver to the Employer the parts of the Facilities executed by the Contractor up to the date of termination
 - (ii) to the extent legally possible, assign to the Employer all right, title and benefit of the Contractor to the Facilities and to the Infrastructure as of the date of termination, and, as may be required by the Employer, in any subcontracts concluded between the Contractor and its Subcontractors; and
 - (iii) deliver to the Employer all non-proprietary drawings, specifications and other documents prepared by the Contractor or its Subcontractors as at the date of termination in connection with the Facilities.

42.1.3 In the event of termination of the Contract under GC Sub-Clause 42.1.1, the Employer shall pay to the Contractor the following amounts:

- (a) the Contract Price, properly attributable to the parts of the Facilities executed by the Contractor as of the date of termination
- (b) the costs reasonably incurred by the Contractor in the removal of the

Contractor's Equipment from the Site and in the repatriation of the Contractor's and its Subcontractors' personnel

- (c) any amounts to be paid by the Contractor to its Subcontractors in connection with the termination of any subcontracts, including any cancellation charges
- (d) costs incurred by the Contractor in protecting the Facilities and leaving the Site in a clean and safe condition pursuant to paragraph (a) of GC Sub-Clause 42.1.2
- (e) the cost of satisfying all other obligations, commitments and claims that the Contractor may in good faith have undertaken with third Parties in connection with the Contract and that are not covered by paragraphs (a) through (d) above.

87.2 Termination for Contractor's Default

42.2.1 The Employer, without prejudice to any other rights or remedies it may possess, may terminate the Contract forthwith in the following circumstances by giving a notice of termination and its reasons therefor to the Contractor, referring to this GC Sub-Clause 42.2:

- (a) if the Contractor becomes bankrupt or insolvent, has a receiving order issued against it, compounds with its creditors, or, if the Contractor is a corporation, a resolution is passed or order is made for its winding up, other than a voluntary liquidation for the purposes of amalgamation or reconstruction, a receiver is appointed over any part of its undertaking or assets, or if the Contractor takes or suffers any other analogous action in consequence of debt
- (b) if the Contractor assigns or transfers the Contract or any right or interest therein in violation of the provision of GC Clause 43.
- (c) if the Contractor, in the judgment of the Employer has engaged in corrupt, collusive, coercive, or fraudulent

practices, as defined in GC Clause 6, in competing for or in executing the Contract.

42.2.2 If the Contractor

- (a) has abandoned or repudiated the Contract
- (b) has without valid reason failed to commence work on the Facilities promptly or has suspended, other than pursuant to GC Sub-Clause 41.2, the progress of Contract performance for more than twenty-eight (28) days after receiving a written instruction from the Employer to proceed
- (c) persistently fails to execute the Contract in accordance with the Contract or persistently neglects to carry out its obligations under the Contract without just cause
- (d) refuses or is unable to provide sufficient materials, services or labour to execute and complete the Facilities in the manner specified in the program furnished under GC Sub-Clause 18.2 at rates of progress that give reasonable assurance to the Employer that the Contractor can attain Completion of the Facilities by the Time for Completion as extended,

then the Employer may, without prejudice to any other rights it may possess under the Contract, give a notice to the Contractor stating the nature of the default and requiring the Contractor to remedy the same. If the Contractor fails to remedy or to take steps to remedy the same within fourteen (14) days of its receipt of such notice, then the Employer may terminate the Contract forthwith by giving a notice of termination to the Contractor that refers to this GC Sub-Clause 42.2.

42.2.3 Upon receipt of the notice of termination under GC Sub-Clauses 42.2.1 or 42.2.2, the Contractor shall, either immediately or upon such date as is specified in the notice of termination,

- (a) cease all further work, except for such work as the Employer may specify in the notice of termination for the sole purpose of protecting that part of the Facilities already executed, or any work required to

leave the Site in a clean and safe condition

- (b) terminate all subcontracts, except those to be assigned to the Employer pursuant to paragraph (d) below
- (c) deliver to the Employer the parts of the Facilities executed by the Contractor up to the date of termination
- (d) to the extent legally possible, assign to the Employer all right, title and benefit of the Contractor to the Facilities and to the Infrastructure as of the date of termination, and, as may be required by the Employer, in any subcontracts concluded between the Contractor and its Subcontractors
- (e) deliver to the Employer all drawings, specifications and other documents prepared by the Contractor or its Subcontractors as of the date of termination in connection with the Facilities.

42.2.4 The Employer may enter upon the Site, expel the Contractor, and complete the Facilities itself or by employing any third Party. The Employer may, to the exclusion of any right of the Contractor over the same, take over and use with the payment of a fair rental rate to the Contractor, with all the maintenance costs to the account of the Employer and with an indemnification by the Employer for all liability including damage or injury to persons arising out of the Employer's use of such equipment, any Contractor's Equipment owned by the Contractor and on the Site in connection with the Facilities for such reasonable period as the Employer considers expedient for the supply and installation of the Facilities.

Upon completion of the Facilities or at such earlier date as the Employer thinks appropriate, the Employer shall give notice to the Contractor that such Contractor's Equipment will be returned to the Contractor at or near the Site and shall return such Contractor's Equipment to the Contractor in accordance with such

notice. The Contractor shall thereafter without delay and at its cost remove or arrange removal of the same from the Site.

42.2.5 Subject to GC Sub-Clause 42.2.6, the Contractor shall be entitled to be paid the Contract Price attributable to the Facilities executed as of the date of termination, the value of any unused or partially used Infrastructure on the Site, and the costs, if any, incurred in protecting the Facilities and in leaving the Site in a clean and safe condition pursuant to paragraph (a) of GC Sub-Clause 42.2.3. Any sums due the Employer from the Contractor accruing prior to the date of termination shall be deducted from the amount to be paid to the Contractor under this Contract.

42.2.6 If the Employer completes the Facilities, the cost of completing the Facilities by the Employer shall be determined.

If the sum that the Contractor is entitled to be paid, pursuant to GC Sub-Clause 42.2.5, plus the reasonable costs incurred by the Employer in completing the Facilities, exceeds the Contract Price, the Contractor shall be liable for such excess.

If such excess is greater than the sums due the Contractor under GC Sub-Clause 42.2.5, the Contractor shall pay the balance to the Employer, and if such excess is less than the sums due the Contractor under GC Sub-Clause 42.2.5, the Employer shall pay the balance to the Contractor.

The Employer and the Contractor shall agree, in writing, on the computation described above and the manner in which any sums shall be paid.

87.3 Termination by the Contractor

42.3.1 If

(a) the Employer has failed to pay the Contractor any sum due under the Contract within the specified period, has failed to approve any invoice or supporting documents without just cause pursuant to the Appendix to the Contract Agreement titled Terms and Procedures of Payment, or commits a substantial breach of the Contract, the Contractor may give a notice to the Employer that

requires payment of such sum, with interest thereon as stipulated in GC Sub-Clause 12.3, requires approval of such invoice or supporting documents, or specifies the breach and requires the Employer to remedy the same, as the case may be. If the Employer fails to pay such sum together with such interest, fails to approve such invoice or supporting documents or give its reasons for withholding such approval, fails to remedy the breach or take steps to remedy the breach within fourteen (14) days after receipt of the Contractor's notice, or

- (b) the Contractor is unable to carry out any of its obligations under the Contract for any reason attributable to the Employer, including but not limited to the Employer's failure to provide possession of or access to the Site or other areas or failure to obtain any governmental permit necessary for the execution and/or completion of the Facilities,

then the Contractor may give a notice to the Employer thereof, and if the Employer has failed to pay the outstanding sum, to approve the invoice or supporting documents, to give its reasons for withholding such approval, or to remedy the breach within twenty-eight (28) days of such notice, or if the Contractor is still unable to carry out any of its obligations under the Contract for any reason attributable to the Employer within twenty-eight (28) days of the said notice, the Contractor may by a further notice to the Employer referring to this GC Sub-Clause 42.3.1, forthwith terminate the Contract.

42.3.2 The Contractor may terminate the Contract forthwith by giving a notice to the Employer to that effect, referring to this GC Sub-Clause 42.3.2, if the Employer becomes bankrupt or insolvent, has a receiving order issued against it, compounds with its creditors, or, being a corporation, if a resolution is passed or order is made for its winding up (other than a voluntary liquidation for the purposes of amalgamation or reconstruction), a receiver

is appointed over any part of its undertaking or assets, or if the Employer takes or suffers any other analogous action in consequence of debt.

42.3.3 If the Contract is terminated under GC Sub-Clauses 42.3.1 or 42.3.2, then the Contractor shall immediately

- (a) cease all further work, except for such work as may be necessary for the purpose of protecting that part of the Facilities already executed, or any work required to leave the Site in a clean and safe condition
- (b) terminate all subcontracts, except those to be assigned to the Employer pursuant to paragraph (d) (ii)
- (c) remove all Contractor's Equipment from the Site and repatriate the Contractor's and its Subcontractors' personnel from the Site, and
- (d) subject to the payment specified in GC Sub-Clause 42.3.4,
 - (i) deliver to the Employer the parts of the Facilities executed by the Contractor up to the date of termination
 - (ii) to the extent legally possible, assign to the Employer all right, title and benefit of the Contractor to the Facilities and to the Infrastructure as of the date of termination, and, as may be required by the Employer, in any subcontracts concluded between the Contractor and its Subcontractors, and
 - (iii) deliver to the Employer all drawings, specifications and other documents prepared by the Contractor or its Subcontractors as of the date of termination in connection with the Facilities.

42.3.4 If the Contract is terminated under GC Sub-Clauses 42.3.1 or 42.3.2, the Employer shall pay to the Contractor all payments specified in GC Sub-Clause 42.1.3, and reasonable

compensation for all loss, except for loss of profit, or damage sustained by the Contractor arising out of, in connection with or in consequence of such termination.

42.3.5 Termination by the Contractor pursuant to this GC Sub-Clause 42.3 is without prejudice to any other rights or remedies of the Contractor that may be exercised in lieu of or in addition to rights conferred by GC Sub-Clause 42.3.

87.4 In this GC Clause 42, the expression “Facilities executed” shall include all work executed, Installation Services provided, and all Infrastructure acquired, or subject to a legally binding obligation to purchase, by the Contractor and used or intended to be used for the purpose of the Facilities, up to and including the date of termination.

87.5 In this GC Clause 42, in calculating any monies due from the Employer to the Contractor, account shall be taken of any sum previously paid by the Employer to the Contractor under the Contract, including any advance payment paid pursuant to the Appendix to the Contract Agreement titled Terms and Procedures of Payment.

43. Assignment

88.1 Neither the Employer nor the Contractor shall, without the express prior written consent of the other Party, which consent shall not be unreasonably withheld, assign to any third Party the Contract or any part thereof, or any right, benefit, obligation or interest therein or thereunder, except that the Contractor shall be entitled to assign either absolutely or by way of charge any monies due and payable to it or that may become due and payable to it under the Contract.

44. Export Restrictions

89.1 Notwithstanding any obligation under the Contract to complete all export formalities, any export restrictions attributable to the Employer, to the country of the Employer or to the use of the Infrastructure and Installation Services to be supplied which arise from trade regulations from a country supplying those Infrastructure and Installation Services, and which

substantially impede the Contractor from meeting its obligations under the Contract, shall release the Contractor from the obligation to provide deliveries or services, always provided, however, that the Contractor can demonstrate to the satisfaction of the Employer and of the Bank that it has completed all formalities in a timely manner, including applying for permits, authorizations and licenses necessary for the export of the Infrastructure and Installation Services under the terms of the Contract. Termination of the Contract on this basis shall be for the Employer's convenience pursuant to Sub-Clause 42.1.

Claims, Disputes and Arbitration

45. Contractor's Claims

- 90.1 If the Contractor considers himself to be entitled to any extension of the Time for Completion and/or any additional payment, under any Clause of these Conditions or otherwise in connection with the Contract, the Contractor shall submit a notice to the Project Manager, describing the event or circumstance giving rise to the claim. The notice shall be given as soon as practicable, and not later than 28 days after the Contractor became aware, or should have become aware, of the event or circumstance.
- If the Contractor fails to give notice of a claim within such period of 28 days, the Time for Completion shall not be extended, the Contractor shall not be entitled to additional payment, and the Employer shall be discharged from all liability in connection with the claim. Otherwise, the following provisions of this Sub-Clause shall apply.
- The Contractor shall also submit any other notices which are required by the Contract, and supporting particulars for the claim, all as relevant to such event or circumstance.
- The Contractor shall keep such contemporary records as may be necessary to substantiate any claim, either on the Site or at another location acceptable to the Project Manager. Without admitting the Employer's liability, the Project Manager may, after receiving any notice under this Sub-Clause, monitor the record-keeping and/or instruct the Contractor to keep further contemporary records. The Contractor shall permit the Project Manager to inspect all these records, and shall (if instructed) submit copies to the Project Manager.

Within 42 days after the Contractor became aware (or should have become aware) of the event or circumstance giving rise to the claim, or within such other period as may be proposed by the Contractor and approved by the Project Manager, the Contractor shall send to the Project Manager a fully detailed claim which includes full supporting particulars of the basis of the claim and of the extension of time and/or additional payment claimed. If the event or circumstance giving rise to the claim has a continuing effect:

- (a) this fully detailed claim shall be considered as interim;
- (b) the Contractor shall send further interim claims at monthly intervals, giving the accumulated delay and/or amount claimed, and such further particulars as the Project Manager may reasonably require; and
- (c) the Contractor shall send a final claim within 28 days after the end of the effects resulting from the event or circumstance, or within such other period as may be proposed by the Contractor and approved by the Project Manager.

Within 42 days after receiving a claim or any further particulars supporting a previous claim, or within such other period as may be proposed by the Project Manager and approved by the Contractor, the Project Manager shall respond with approval, or with disapproval and detailed comments. He may also request any necessary further particulars, but shall nevertheless give his response on the principles of the claim within such time.

Each Payment Certificate shall include such amounts for any claim as have been reasonably substantiated as due under the relevant provision of the Contract. Unless and until the particulars supplied are sufficient to substantiate the whole of the claim, the Contractor shall only be entitled to payment for such part of the claim as he has been able to substantiate.

The Project Manager shall agree with the Contractor or estimate: (i) the extension (if any) of the Time for Completion (before or after its expiry) in accordance with GC Clause 40, and/or (ii) the additional payment

(if any) to which the Contractor is entitled under the Contract.

The requirements of this Sub-Clause are in addition to those of any other Sub-Clause which may apply to a claim. If the Contractor fails to comply with this or another Sub-Clause in relation to any claim, any extension of time and/or additional payment shall take account of the extent (if any) to which the failure has prevented or prejudiced proper investigation of the claim, unless the claim is excluded under the second paragraph of this Sub-Clause.

In the event that the Contractor and the Employer cannot agree on any matter relating to a claim, either Party may refer the matter to the Adjudicator pursuant to GC 46 hereof.

46. Disputes and Arbitration

91.1

Appointment of the Adjudicator

The Adjudicator shall be appointed jointly by the Employer and the Contractor, at the time of the Employer's issuance of the Letter of Acceptance. If, in the Letter of Acceptance, the Employer does not agree on the appointment of the Adjudicator, the Employer will request the Appointing Authority designated in the PC, to appoint the Adjudicator within 14 days of receipt of such request.

The Adjudicator should be in position before "notice to proceed with work" is issued to the Contractor and an agreement should be signed with the Adjudicator jointly by the Employer and the Contractor in the form attached – Appendix B.

91.2

Should the Adjudicator resign or die, or should the Employer and the Contractor agree that the Adjudicator is not functioning in accordance with the provisions of the Contract, a new Adjudicator shall be jointly appointed by the Employer and the Contractor. In case of disagreement between the Employer and the Contractor, within 30 days, the Adjudicator shall be designated by the Appointing Authority designated in the PC at the request of either party, within 14 days of receipt of such request.

91.3

If the Contractor believes that a decision taken by the Project Manager was either outside the authority given to the Project Manager by the Contract or that the decision was wrongly taken, the decision shall be

referred to the Adjudicator within 14 days of the notification of the Project Manager's decision.

91.4 The Adjudicator shall give a decision in writing within 28 days of receipt of a notification of a dispute.

The Adjudicator shall be paid daily at the rate specified in the PC, together with reimbursable expenses of the types specified in the PC, and the cost shall be divided equally between the Employer and the Contractor. Whatever decision is reached by the Adjudicator, either party may refer a decision of the Adjudicator to an Arbitrator within 28 days of the Adjudicator's written decision. If neither party refers the dispute to arbitration within the above 28 days, the Adjudicator's decision shall be final and binding.

91.5 Arbitration

The arbitration shall be conducted in accordance with the arbitration procedures published by the institution named and in the place specified in the PC.

The Arbitrator(s) shall give a decision in writing within 120 days of start of the proceedings unless otherwise agreed to by the Parties. The Arbitrators shall entertain only those issues which have been earlier referred to the Adjudicator and either party is dissatisfied with the decision given by the Adjudicator. Notwithstanding any reference to the Adjudicator or arbitration herein,

the parties shall continue to perform their respective obligations under the Contract unless they otherwise agree the Employer shall pay the Contractor any monies due the Contractor.

APPENDIX A to General Conditions

Environmental, Social, Health and Safety (ESHS)

Metrics for Progress Reports

[Note to Employer: the following metrics may be amended to reflect the Employer's environmental, social, health and safety policies and/or the ESHS requirements of the project. The metrics that are required should be determined by the ESHS risks of the Works and not necessarily by the scale of the Works]

Metrics for regular reporting:

- a. environmental incidents or non-compliances with contract requirements, including contamination, pollution or damage to ground or water supplies;*
- b. health and safety incidents, accidents, injuries and all fatalities that require treatment;*
- c. interactions with regulators: identify agency, dates, subjects, outcomes (report the negative if none);*
- d. status of all permits and agreements:*

- i. work permits: number required, number received, actions taken for those not received;
- ii. status of permits and consents:
 - *list areas/facilities with permits required (quarries, asphalt & batch infrastructures), dates of application, dates issued (actions to follow up if not issued), dates submitted to resident engineer (or equivalent), status of area (waiting for permits, working, abandoned without reclamation, decommissioning plan being implemented, etc.);*
 - *list areas with landowner agreements required (borrow and spoil areas, camp sites), dates of agreements, dates submitted to resident engineer (or equivalent);*
 - *identify major activities undertaken in each area in the reporting period and highlights of environmental and social protection (land clearing, boundary marking, topsoil salvage, traffic management, decommissioning planning, decommissioning implementation);*
 - *for quarries: status of relocation and compensation (completed, or details of activities and current status in the reporting period).*
- e. *health and safety supervision:*
 - i. safety officer: number days worked, number of full inspections & partial inspections, reports to construction/project management;
 - ii. number of workers, work hours, metric of PPE use (percentage of workers with full personal protection equipment (PPE), partial, etc.), worker violations observed (by type of violation, PPE or otherwise), warnings given, repeat warnings given, follow-up actions taken (if any);
- f. *worker accommodations:*
 - i. number of expats housed in accommodations, number of locals;
 - ii. date of last inspection, and highlights of inspection including status of accommodations' compliance with national and local law and good practice, including sanitation, space, etc.;
 - iii. actions taken to recommend/require improved conditions, or to improve conditions.
- g. *HIV/AIDS: provider of health services, information and/or training, location of clinic, number of non-safety disease or illness treatments and diagnoses (no names to be provided);*
- h. *gender (for expats and locals separately): number of female workers, percentage of workforce, gender issues raised and dealt with (cross-reference grievances or other sections as needed);*
- i. *training:*
 - i. number of new workers, number receiving induction training, dates of induction training;

- ii. number and dates of toolbox talks, number of workers receiving Occupational Health and Safety (OHS), environmental and social training;
- iii. number and dates of HIV/AIDS sensitization and/or training, no. workers receiving training (this reporting period and in the past); same questions for gender sensitization, flag person training.
- iv. number and date of GBV /SEA sensitization and/or training, number of workers receiving training on code of conduct (in the reporting period and in the past), etc.

j. environmental and social supervision:

- i. environmentalist: days worked, areas inspected and numbers of inspections of each (road section, work camp, accommodations, quarries, borrow areas, spoil areas, swamps, forest crossings, etc.), highlights of activities/findings (including violations of environmental and/or social best practices, actions taken), reports to environmental and/or social specialist/construction/site management;
 - ii. sociologist: days worked, number of partial and full site inspections (by area: road section, work camp, accommodations, quarries, borrow areas, spoil areas, clinic, HIV/AIDS center, community centers, etc.), highlights of activities (including violations of environmental and/or social requirements observed, actions taken), reports to environmental and/or social specialist/construction/site management; and
 - iii. community liaison person(s): days worked (hours community center open), number of people met, highlights of activities (issues raised, etc.), reports to environmental and/or social specialist /construction/site management.
- k. *Grievances*: list new grievances (e.g. allegations of GBV / SEA) received in the reporting period and unresolved past grievances by date received, complainant, how received, to whom referred to for action, resolution and date (if completed), data resolution reported to complainant, any required follow-up(Cross-reference other sections as needed):
- i. Worker grievances;
 - ii. Community grievances

l. Traffic and vehicles/equipment:

- i. traffic accidents involving project vehicles & equipment: provide date, location, damage, cause, follow-up;
- ii. accidents involving non-project vehicles or property (also reported under immediate metrics): provide date, location, damage, cause, follow-up;
- iii. overall condition of vehicles/equipment (subjective judgment by environmentalist); non-routine repairs and maintenance needed to improve safety and/or environmental performance (to control smoke, etc.).

m. Environmental mitigations and issues (what has been done):

- i. dust: number of working bowzers, number of waterings/day, number of complaints, warnings given by environmentalist, actions taken to resolve; highlights of quarry dust control (covers, sprays, operational status); % of rock/spoil lorries with covers, actions taken for uncovered vehicles;
 - ii. erosion control: controls implemented by location, status of water crossings, environmentalist inspections and results, actions taken to resolve issues, emergency repairs needed to control erosion/sedimentation;
 - iii. quarries, borrow areas, spoil areas, asphalt infrastructures, batch infrastructures: identify major activities undertaken in the reporting period at each, and highlights of environmental and social protection: land clearing, boundary marking, topsoil salvage, traffic management, decommissioning planning, decommissioning implementation;
 - iv. blasting: number of blasts (and locations), status of implementation of blasting plan (including notices, evacuations, etc.), incidents of off-site damage or complaints (cross-reference other sections as needed);
 - v. spill cleanups, if any: material spilled, location, amount, actions taken, material disposal (report all spills that result in water or soil contamination);
 - vi. waste management: types and quantities generated and managed, including amount taken offsite (and by whom) or reused/recycled/disposed on-site;
 - vii. details of tree infrastructureings and other mitigations required undertaken in the reporting period;
 - viii. details of water and swamp protection mitigations required undertaken in the reporting period.
- n. compliance:*
- i. compliance status for conditions of all relevant consents/permits, for the Work, including quarries, etc.): statement of compliance or listing of issues and actions taken (or to be taken) to reach compliance;
 - ii. compliance status of C-ESMP/ESIP requirements: statement of compliance or listing of issues and actions taken (or to be taken) to reach compliance
 - iii. compliance status of GBV/SEA prevention and response action plan: statement of compliance or listing of issues and actions taken (or to be taken) to reach compliance
 - iv. compliance status of Health and Safety Management Plan re: statement of compliance or listing of issues and actions taken (or to be taken) to reach compliance
 - v. other unresolved issues from previous reporting periods related to environmental and social: continued violations, continued failure of equipment, continued lack of vehicle covers, spills not dealt with, continued compensation or blasting issues, etc. Cross-reference other sections as needed.

APPENDIX B¹⁶

Appointment of Adjudicator

Suggested Draft¹⁷ of Letter of Appointment of Adjudicators

Sub: _____ (Name of the Contract)

To

Name and address of the Adjudicator

We hereby confirm your appointment as Adjudicator for the above contract to carry out the assignment specified in this Letter of Appointment.

For administrative purpose _____ (*name of the officer representing the Employer*) has been assigned to administer the assignment and to provide the Adjudicator with all relevant information needed to carry out the assignment on behalf of both the employer and the contractor. The services will be required during the period of contract for the work of (Name of the Contract). _____.

The Adjudicator shall visit the worksite once in 3 (three) months till the completion of the work indicated above or as specifically requested by Employer/ Contractor for the period upto the end of defects liability period with prior intimation to the Employer and the contractor. The duration of each visit shall ordinarily be for one day only. These durations are approximate and (*Name of the employer and Name of the Contractor*) may find it necessary to postpone or cancel the assignment and/or shorten or extend the duration.

The appointment will become effective upon confirmation of letter by you. The appointment of Adjudicator shall be liable for termination under a 30 (thirty) days written notice from the date of issue of the notice, if both Employer and the Contractor so desire. Also the appointment shall automatically stand terminated 14 days after the defect notice / correction period as stated in Clause 27 of the Conditions of Contract is over.

The Adjudicator will be paid a fee of Rs. _____ (Rupees _____ only) per each day of visit at the worksite. The actual expenses for boarding and traveling in connection with the assignment will be reimbursed to the Adjudicator. The Adjudicator will submit a pre-receipted bill in triplicate to the employer indicating the date of the visit, fees for the visit and a proof in support of the actual expenditure [only for items valued above Rs. 200 each] incurred by him against boarding, lodging and traveling expenses after performing the visit on each occasion. The Employer will make the admissible payment (both the Employer's and the Contractor's share) to the Adjudicator within 30 days of the receipt of the bill. The Contractor's share on this

¹⁶If ITB 46 makes provision of an Adjudicator from list provided by an institution, kindly modify Appendix A to state that the fee and reimbursable payable to the adjudicator shall be as per the rules of the Institution.

¹⁷ The draft letter may be modified as necessary.

account (half the paid amount) will be recovered by the Employer from the Contractor's bills against the work.

In accepting this assignment, the Adjudicator should understand and agree that he is responsible for any liabilities and costs arising out of risks associated with travel to and from the place of emergency repatriation, loss or damage to personal/professional effects and property. The Adjudicator is advised to effect personal insurance cover in respect of such risks if he does not already have such cover in place. In this regard, the Adjudicator shall maintain appropriate medical, travel, accident and third-party liability insurance. The obligation under this paragraph will survive till termination of this appointment.

Procedures for resolution of disputes by the Adjudicator is described in the contract of _____(name of the contract) between the employer and the contractor vide clause no.46 of the General Conditions of Contract. Your recommendation should be given in the format attached, within 28 days of receipt of a notification of dispute.

The Adjudicator will carry out the assignment in accordance with the highest standard of professional and ethical competence and integrity, having due regard to the nature and purpose of the assignment, and will conduct himself in a manner consistent herewith. After visiting the worksite, the Adjudicator will discuss the matter with the Employer and if necessary with the Contractor before arriving at any decision.

The Adjudicator will agree that all knowledge and information not within the public domain, which may be acquired while carrying out this service shall be all time and for all purpose, regarded as strictly confidential and held in confidence, and shall not be directly or indirectly disclosed to any party whatsoever, except with the permission of the employer and the contractor. The Adjudicator's decision should be communicated in the form of a speaking order specifying the reasons.

The Adjudicator will agree that any manufacturing or construction firm with which he might be associated with, will not be eligible to participate in bidding for any goods or works resulting from or associated with the project of which this consulting assignment forms a part.

Read and Agreed

Name of Adjudicator

Signature

Place:

Date:

Name of Employer

Signature of authorized representative of Employer

Name of the Contractor

Signature of authorized representative of Contractor

Attachment: Copy of contract document between the employer and contractor and format for recommendation.

SUMMARY OF ADJUDICATOR'S RESPONSIBILITIES

The Adjudicator has the following principal responsibilities:

1. Visit the site periodically.
2. Keep abreast of job activities and developments.
3. Encourage the resolution of disputes by the parties.
4. When a dispute is referred to it, conduct a hearing (no legal presentation), complete its deliberations, and prepare recommendations in a professional and timely manner (as per sample format)

Sample Format of Adjudicator's Recommendation

[Project Name] Recommendation of Adjudicator

Dispute No. XX [NAME OF DISPUTE]

Hearing Date: _____

Dispute

Description of dispute. A one or two sentence summation of the dispute.

Contractor's Position

A short summation of the contractor's position as understood by the Adjudicator.

Employer's Position

A short summation of the Employer's position as understood by the Adjudicator.

Recommendation

The Adjudicator's specific recommendation for settlement of the dispute. (*The recommended course is consistent with the explanation*).

Explanation

(*This section could also be called Considerations, Rationale, Findings, Discussion, and so on.*)

The Adjudicator's description of how each recommendation was reached.

Respectfully submitted,

Date : _____

Date : _____

Date : _____

Appendix C
(Refer GC 22.2.3)

Salient Features of Labour & Environment Protection Laws¹⁸

**SALIENT FEATURES OF SOME MAJOR LABOUR LAWS
APPLICABLE TO ESTABLISHMENTS ENGAGED IN BUILDING AND
OTHER CONSTRUCTION WORK**

- | | |
|-----|---|
| (a) | <u>Employees Compensation Act 1923</u> : The Act provides for compensation in case of injury, disease or death arising out of and during the course of employment. |
| (b) | <u>Payment of Gratuity Act 1972</u> : gratuity is payable to an employee under the Act on satisfaction of certain conditions on separation if an employee has completed 5 years' service or more or on death at the rate of 15 days wages for every completed year of service. The Act is applicable to all establishments employing 10 or more employees. |
| (c) | <u>Employees P.F. and Miscellaneous Provision Act 1952 (<i>since amended</i>)</u> : The Act provides for monthly contribution by the employer plus workers @ 10% or 8.33%. The benefits payable under the Act are: <div style="margin-left: 20px;"> (i) Pension or family pension on retirement or death, as the case may be.
 (ii) Deposit linked insurance on the death in harness of the worker.
 (iii) Payment of P.F. accumulation on retirement/death etc. </div> |
| (d) | <u>Maternity Benefit Act 1961</u> : The Act provides for leave and some other benefits to women employees in case of confinement or miscarriage etc. |
| (e) | <u>Sexual Harassment of Women at the Workplace (Prevention, Prohibition and Redressal) Act, 2013</u> : This Act defines sexual harassment in the workplace, provides for an enquiry procedure in case of complaints and mandates the setting up of an Internal Complaints Committee or a Local Complaints Committee |
| (f) | <u>Contract Labour (Regulation & Abolition) Act 1970</u> : The Act provides for certain welfare measures to be provided by the Contractor to contract labour and in case the Contractor fails to provide, the same are required to be provided, by the Principal Employer by law. The Principal Employer is required to take Certificate of Registration and the Contractor is required to take license from the designated Officer. The Act is applicable to the establishments or Contractor of Principal Employer if they employ 20 or more contract labour. |

¹⁸This list is only illustrative and not exhaustive. Bidders and Contractors are responsible for checking the correctness and completeness of the list. The law as current on the date of bid opening will apply.

- (g) Minimum Wages Act 1948: The Employer is supposed to pay not less than the Minimum Wages fixed by appropriate Government as per provisions of the Act if the employment is a scheduled employment. Construction of Buildings, Roads, Runways are scheduled employments.
- (h) Payment of Wages Act 1936: It lays down the mode, manner and by what date the wages are to be paid, what deductions can be made from the wages of the workers.
- (i) Equal Remuneration Act 1976: The Act provides for payment of equal wages for work of equal nature to male and female workers and for not making discrimination against Female employees in the matters of transfers, training and promotions etc.
- (j) Payment of Bonus Act 1965: The Act is applicable to all establishments employing 20 or more employees. Some of the State Governments have reduced this requirement from 20 to 10. The Act provides for payments of annual bonus subject to a minimum of 8.33% of the wages drawn in the relevant year. It applies to skilled or unskilled manual, supervisory, managerial, administrative, technical or clerical work for hire or reward to employees who draw a salary of Rs. 10,000/- per month or less. To be eligible for bonus, the employee should have worked in the establishment for not less than 30 working days in the relevant year. The Act does not apply to certain establishments.
- (k) Industrial Disputes Act 1947: the Act lays down the machinery and procedure for resolution of Industrial disputes, in what situations, a strike or lock-out becomes illegal and what are the requirements for laying off or retrenching the employees or closing down the establishment.
- (l) Trade Unions Act 1926: The Act lays down the procedure for registration of trade unions of workmen and employers. The Trade Unions registered under the Act have been given certain immunities from civil and criminal liabilities.
- (m) Child Labour (Prohibition & Regulation) Act 1986: The Act prohibits employment of children below 14 years of age in certain occupations and processes and provides for regulation of employment of children in all other occupations and processes. Employment of Child Labour is prohibited in the Building and Construction Industry.
- (n) Inter-State Migrant workmen's (Regulation of Employment & Conditions of Service) Act 1979: The Act is applicable to an establishment which employs 5 or more inter-state migrant workmen through an intermediary (who has recruited workmen in one state for employment in the establishment situated in another

state). The Inter-State migrant workmen, in an establishment to which this Act becomes applicable, are required to be provided certain facilities such as housing, medical aid, traveling expenses from home upto the establishment and back, etc.

- (o) The Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act 1996 and the Building and Other Construction Workers Welfare Cess Act, 1996 (BOCWW Cess Act): All the establishments who carry on any building or other construction work and employ 10 or more workers are covered under these Acts. All such establishments are required to pay cess at the rate not exceeding 2% of the cost of construction as may be notified by the Government. The Employer of the establishment is required to provide safety measures at the building or construction work and other welfare measures, such as Canteens, First – Aid facilities, Ambulance, Housing accommodations for workers near the work place etc. The Employer to whom the Act applies has to obtain a registration certificate from the Registering Officer appointed by the Government.
- (p) Factories Act 1948: the Act lays down the procedure for approval of plans before setting up a factory engaged in manufacturing processes, health and safety provisions, welfare provisions, working hours, annual earned leave and rendering information regarding accidents or dangerous occurrences to designated authorities. It is applicable to premises employing 10 persons or more with aid of power or 20 or more persons without the aid of power.
- (q) Weekly Holidays Act -1942
- (r) Bonded Labour System (Abolition) Act, 1976: The Act provides for the abolition of bonded labour system with a view to preventing the economic and physical exploitation of weaker sections of society. Bonded labour covers all forms of forced labour, including that arising out of a loan, debt or advance.
- (s) Employer's Liability Act, 1938: This Act protects workmen who bring suits for damages against employers in case of injuries endured in the course of employment. Such injuries could be on account of negligence on the part of the employer or persons employed by them in maintenance of all machinery, equipment etc. in healthy and sound condition.
- (t) Employees State Insurance Act 1948: The Act provides for certain benefits to insured employees and their families in case of sickness, maternity and disablement arising out of an employment injury. The Act applies to all employees in factories (as defined) or establishments which may be so notified by the appropriate Government. The Act provides for the setting up of an Employees' State Insurance Fund, which is to be administered by the Employees State Insurance Corporation. Contributions to the Fund are paid by the employer

and the employee at rates as prescribed by the Central Government. The Act also provides for benefits to dependents of insured persons in case of death as a result of an employment injury.

- (u) The Personal Injuries (Compensation Insurance) Act, 1963: This Act provides for the employer's liability and responsibility to pay compensation to employees where workmen sustain personal injuries in the course of employment.
- (v) Industrial Employment (Standing Order) Act 1946: It is applicable to all establishments employing 100 or more workmen (employment size reduced by some of the States and Central Government to 50). The Act provides for laying down rules governing the conditions of employment by the Employer on matters provided in the Act and get the same certified by the designated Authority.

SALIENT FEATURES OF SOME OF THE MAJOR LAWS THAT ARE APPLICABLE FOR PROTECTION OF ENVIRONMENT.

1. The Environment (Protection) Act, 1986 and as amended: This provides for the protection and improvement of environment and for matters connected therewith, and the prevention of hazards to human beings, other living creatures, infrastructures and property. 'Environment' includes water, air and land and the inter-relationship which exists among and between water, air and land, and human beings, other living creatures, infrastructures, micro-organism and property.
2. The Forest Conservation Act, 1980, as amended, and Forest (Conservation) Rules, 1981 as amended: These provides for protection of forests by restricting conversion of forested areas into non- forested areas and prevention of deforestation, and stipulates the procedures for cutting any trees that might be required by the applicable rules. Permissions under the Act also stipulates the norms and compliance requirements of the employer and any contractor on behalf of the employer.
3. State Tree Preservation Acts as may be in force: These provide for protection of trees of important species. Contractors will be required to obtain prior permission for full or partial cutting, uprooting, or pruning of any such trees.
4. The Wildlife (Protection) Act, 1972, and as amended: This provides for protection of wildlife through notifying National Parks and Sanctuaries and buffer areas around these zones; and to protect individuals of nationally important species listed in the Annex of the Act.
5. The Biological Diversity Act, 2002: This provides for conservation of biological diversity, sustainable use of components of biological diversity, and fair and equitable sharing of the

benefits arising out of the use of biological resources, knowledge and for matters connected therewith or incidental thereto.

6. The Public Liability Insurance Act, 1991 as amended and The Public Liability Insurance Rules, 1991 as amended: These provide for public liability insurance for the purpose of providing immediate relief to the persons affected by accident occurring while handling hazardous substances and for matters connected herewith or incidental thereto. Hazardous substance means any substance or preparation which is defined as hazardous substance under the Environment (Protection) Act 1986, and exceeding such quantity as may be specified by notification by the Central Government.
7. The Ancient Monuments and Archaeological Sites and Remains Act, 1958 and the Ancient Monuments and Archaeological Sites and Remains (Amendment and Validation) Act, 2010, the Ancient Monuments and Archaeological Sites and Remains Rules, 1959 amended 2011, the National Monuments Authority Rules, 2011 and the similar State Acts: These provide for conservation of cultural and historical remains found in India. Accordingly, area within the radii of 100m and 300m from the “protected property” are designated as “protected area” and “controlled area” respectively. No development activity (including building, mining, excavating, blasting) is permitted in the “protected area” and development activities likely to damage the protected property is not permitted in the “controlled area” without prior permission of the Archaeological Survey of India (ASI) or the State Departments of Art and Culture or Archaeology as applicable.
8. The Environmental Impact Assessment Notification, 2006 and as amended: This provides for prior environmental clearance for new, modernization and expansion projects listed in Schedule 1 of the Notification. Contractors will be required to ensure that no work starts until applicable clearances under the Notification is not available. Contractors will be responsible for implementation of any environmental management plan stipulated as per the permission under this Notification; and will be required to prepare and submit to the employer and compliance report stipulated in the permission under the Notification.
9. The Water (Prevention and Control of Pollution) Act, 1974 as amended, and the Water (Prevention and Control of Pollution) Rules, 1975 as amended: These provide for the prevention and control of water pollution and the maintaining and restoring of wholesomeness of water. ‘Pollution’ means such contamination of water or such alteration of the physical, chemical or biological properties of water or such discharge of any sewage or trade effluent or of any other liquid, gaseous or solid substance into water (whether directly or indirectly) as may, or is likely to, create a nuisance or render such water harmful or injurious to public health or safety, or to domestic, commercial, industrial, agricultural or other legitimate uses, or to the life and health of animals or infrastructures or of aquatic organisms. Contractors will need to obtain consent for establishment and consent for operation of any item of work or installation of equipment that generates waste water, and observe the required standards of establishment and operation of these items of work or installations; as well as install and operate all required waste water treatment facilities.

10. The Water (Prevention and Control of Pollution) Cess Act, 1977 and The Water (Prevention and Control of Pollution) Cess Rules, 1978: These provide for the levy and collection of a cess on water consumed by persons carrying on certain industries and by local authorities, with a view to augment the resources of the Central Board and the State Boards for the prevention and control of water pollution under the Water (Prevention and Control of Pollution) Act, 1974.
11. The Air (Prevention and Control of Pollution) Act, 1981 as amended, and the Air (Prevention and Control of Pollution) Rules, 1982: These provides for prevention, control and abatement of air pollution. 'Air Pollution' means the presence in the atmosphere of any 'air pollutant', which means any solid, liquid or gaseous substance (including noise) present in the atmosphere in such concentration as may be or tend to be injurious to human beings or other living creatures or infrastructures or property or environment. Contractors will need to obtain consent for establishment and consent for operation of any item of work or installation of equipment that generates air pollution such as batching infrastructures, hot mix infrastructures, power generators, backup power generation, material handling processes, and observe the required standards of establishment and operation of these items of work or installations.
12. Noise Pollution (Control and Regulation) Rules, 2000, and as amended: This provides for standards for noise for day and night for various land uses and specifies special standards in and around sensitive receptors of noise such as schools and hospitals. Contractors will need to ensure compliance to the applicable standards, and install and operate all required noise control devices as may be required for all infrastructures and work processes.
13. Chemical Accidents (Emergency Planning, Preparedness and Response) Rules, 1996: This provides for Requirement of preparation of on-site and off-site Disaster Management Plans for accident-prone areas.
14. The Explosives Act 1884 and the Explosives Rules, 2008: These provide for safe manufacture, possession, sale, use, transportation and import of explosive materials such as diesel, Oil and lubricants etc.; and also for regulating the use of any explosives used in blasting and/or demolition. All applicable provisions will need compliance by the contractors.
15. The Petroleum Rules, 2002: This provides for safe use and storage of petroleum products, and will need to be complied by the contractors.
16. The Gas Cylinder Rules 2004 and amendments: This provides for regulations related to storage of gas, and possession of gas cylinder more than the exempted quantity. Contractors should comply with all the requirements of this Rule.
17. Manufacture, Storage and Import of Hazardous Chemical Rules of 1989 and as amended: These provide for use and storage of hazardous material such as highly inflammable liquids

like HSD/LPG. Contractors will need to ensure compliance to the Rules; and in the event where the storage quantity exceeds the regulated threshold limit, the contractors will be responsible for regular safety audits and other reporting requirements as prescribed in the Rules.

18. Hazardous & Other Wastes (Management and Transboundary Movement) Rules, 2016: These provide for protection of general public from improper handling storage and disposal of hazardous waste. The rules prescribe the management requirement of hazardous wastes from its generation to final disposal. Contractors will need to obtain permission from the State Pollution Control Boards and other designated authorities for storage and handling of any hazardous material; and will to ensure full compliance to these rules and any conditions imposed in the permit.
19. The Bio Medical Waste Management Rules, 2016: This provides for control, storage, transportation and disposal of bio-medical wastes. As and where the contractor has any first aid facility and dispensaries, established in either temporary or permanent manner, compliance to these Rules are mandatory.
20. Construction and Demolition Waste Management Rules, 2016: This provides for management of construction and demolition waste (such as building materials possible to be reused, rubble and debris or the like); and applies to all those waste resulting from construction, re-modelling, repair or demolition of any civil structure. Contractor will need to prepare a waste disposal plan and obtain required approval from local authorities, if waste generation is more than 20 tons in any day or 300 tons in any month during the contract period; and ensure full compliance to these rules and any conditions imposed in the regulatory approval.
21. The E-Waste (Management) Rules, 2016: This provides for management of E-wastes (but not covering lead acid batteries and radio-active wastes) aiming to enable the recovery and/or reuse of useful material from e-waste, thereby reducing the hazardous wastes destined for disposal and to ensure the environmentally sound management of all types of waste of electrical and electronic equipment. This Rule applies to every manufacturer, producer, consumer, bulk consumer, collection centers, dealers, e-retailer, refurbisher, dismantler and recycler involved in manufacture, sale, transfer, purchase, collection, storage and processing of e-waste or electrical and electronic equipment listed in Schedule I, including their components, consumables, parts and spares which make the product operational.
22. Plastic waste Management Rules, 2016: This provides for control and management of the plastic waste generated from any activity. Contractors will ensure compliance to this Rule.
23. The Batteries (Management and Handling) Rules 2001: This provides for ensuring safe disposal and recycling of discarded lead acid batteries likely to be used in any equipment during construction and operation stage. Rules require proper control and record keeping on the sale or import of lead acid batteries and recollection of the used batteries by registered

recyclers to ensure environmentally sound recycling of used batteries. Contractors will ensure compliance to this Rule.

24. The Ozone Depleting Substances (Regulation and Control) Rules, 2000 and as amended: This provides for regulation of production and consumption of ozone depleting substances in the country, and specifically prohibits export to or import from countries not specified in the Rules, and prohibits unless specifically permitted, any use of ozone depleting substance.
25. The Coastal Regulation Zone Notifications, 1991 and as amended: This provides for regulation of development activities within the 500m of high tide line in coastal zone and 100m of stretches of rivers and estuaries influenced by tides. Contractors will be required to ensure that no work starts until applicable clearances under the Notification is not available. Contractors will be responsible for implementation of any plan stipulated as per the permission under this Notification; and will be required to prepare and submit to the employer and compliance report stipulated in the permission under the Notification.
26. The Motor Vehicle Act 1988 as amended (and State Motor Vehicle Acts as may be in force) and the Motor Vehicle Rules, 1989, and as amended (and State Motor Vehicle Rules as may be in force): To minimize the road accidents, penalizing the guilty, provision of compensation to victim and family and check vehicular air and noise pollution. Contractors will be required to ensure full compliance to these rules.
27. Easement Act, 1882: This provides for the rights of landowners on groundwater. Contractors will need to ensure that other landowners' rights under the Act is not affected by any groundwater abstraction by the contractors.
28. State Groundwater Acts and Rules as may be in force and the Guidelines for Groundwater Abstraction for drinking and domestic purposes in Notified Areas and Industry/Infrastructure project proposals in Non-Notified areas, 2012: These provide for regulating extraction of ground water for construction/industrial and drinking and domestic purposes. Contractors will need to obtain permission from Central/State Groundwater Boards prior to groundwater abstraction through digging any bore well or through any other means; and will to ensure full compliance to these rules and any conditions imposed in the permit.
29. The Mines Act, 1952 as amended; the Minor Mineral and concession Rules as amended; and the State Mineral (Rights and Taxation) Acts as may be in force: These provide for for safe and sound mining activity. The contractors will procure aggregates and other building materials from quarries and borrow areas approved under such Acts. In the event the contractors open any new quarry and/or borrow areas, appropriate prior permission from the State Departments of Minerals and Geology will need to be obtained. Contractors will also need to ensure full compliance to these rules and any conditions imposed in the permit.
30. The Insecticides Act, 1968 and Insecticides Rules, 1971 and as amended: These provide for

regulates the manufacture, sale, transport, distribution, export, import and use of pesticides to prevent risk to human beings or animals, and for matters connected therewith. No one should import or manufacture; sell, stock or exhibit for sale; distribute, transport, use: (i) any misbranded insecticides, (ii) any insecticide the sale, distribution or use of which is for the time being prohibited under the Act; and (iii) any insecticide except in accordance with the condition on which it was registered under the Act.

31. National Building Codes of India, 2005 and as amended: This provides guidelines for regulating the building construction activities in India. The code mainly contains administrative regulations, development control rules and general building requirements; stipulations regarding materials, structural design and construction; and building and plumbing services. Contractors will be required to comply with all Bureau of Indian Standards Codes dealing with: (i) use and disposal of asbestos containing materials in construction; (ii) paints containing lead; (iii) permanent and temporary ventilations in workplace; (iv) safety, and hygiene at the workplace; (v) prevention of fire; (vi) prevention of accidents from faulty electrical gadgets, equipment and accessories; and all other such codes incidental to the Contract.

Section VIII. Particular Conditions

The following Particular Conditions shall supplement the General Conditions in Section VII. Whenever there is a conflict, the provisions herein shall prevail over those in the General Conditions.

Particular Conditions

The following Particular Conditions (PC) shall supplement the General Conditions (GC). Whenever there is a conflict, the provisions herein shall prevail over those in the GC. The clause number of the PC is the corresponding clause number of the GC.

PC 1. Definitions	<p>The Employer is: Gujarat State Disaster Management Authority</p> <p>The Project Manager is: Principal Secretary and Chief Executive Officer, Gujarat State Disaster Management Authority</p> <p>The Bank is: The World Bank</p> <p>Country of Origin: all countries and territories as indicated in Section V of the bidding document, Eligible Countries.</p>
PC 2. Contract Documents	<p>The following documents also form part of the Contract:</p> <ul style="list-style-type: none"> • The ESHS Management Strategies and Implementation Plans; and • Code of Conduct (ESHS). • Checklist for ESHS Compliance
PC 5. Law and Language	<p>PC 5.1 The Contract shall be interpreted in accordance with the laws of: Union of India.</p> <p>PC 5.2 The ruling language is: English</p> <p>PC 5.3 The language for communications is: English</p>
PC 7.1 Scope of Facilities	<p>PC 7.1 Unless otherwise expressly limited in the Employer's Requirements, the Contractor's obligations cover the provision of all Infrastructure and the performance of all Installation Services required for the design, and the manufacture (including procurement, quality assurance, construction, installation, associated civil works, Pre-commissioning and delivery) of the Infrastructure, and the installation, completion, commissioning and performance testing of the Facilities in accordance with the plans, procedures, specifications, drawings, codes and any other documents as specified in the Section, Employer's Requirements. Such specifications include, but are not limited to, the provision of supervision and engineering services; the supply of labour, materials, equipment, spare parts (as specified in GC Sub-Clause 7.3 below) and accessories; Contractor's Equipment; construction utilities and supplies; temporary materials, structures and facilities; transportation</p>

	(including, without limitation, unloading and hauling to, from and at the Site); and storage, except for those supplies, works and services that will be provided or performed by the Employer, as set forth in the Appendix to the Contract Agreement titled Scope of Works and Supply by the Employer.
PC 7. Scope of Facilities [Spare Parts] (GC Clause 7)	<p>PC 7.3 The Contractor agrees to supply spare parts (Schedule 2 and Section VII) for a period of years: 10 years. (Ten Years)</p> <p>In addition to the supply of Mandatory Spare Parts included in the Contract, the Contractor agrees to supply spare parts required for the operation and maintenance of the Facilities for the period specified in the PC and the provisions, if any, specified in the PC. However, the identity, specifications and quantities of such spare parts and the terms and conditions relating to the supply thereof are to be agreed between the Employer and the Contractor, and the price of such spare parts shall be that given in Price Schedule No. 6, which shall be added to the Contract Price. The price of such spare parts shall include the purchase price therefor and other costs and expenses (including the Contractor's fees) relating to the supply of spare parts.</p> <p>The Contractor shall stock sufficient inventories/spare parts to ensure an ex-stock supply of consumable spares for the Infrastructure. The contractor shall stock sufficient number of critical spares to achieve the desired SLA. The bidder shall replace spare equipment for the systems that has been damaged, found in non-operable or substituted for defective equipment with new equipment configured, tested and labelled within 1 week (One Week) of being identified or substituted. In addition, in the event of termination of the production of spare parts, advance notification will be made to the Employer of the pending termination, with sufficient time to permit the Employer to procure the needed requirement. Following such termination, the Contractor will furnish to the extent possible and at no cost to the Employer the blueprints, drawings and specifications of the spare parts, if requested.</p>
PC 8. Time for Commencement and Completion	<p>PC 8.1 The Contractor shall commence work on the Facilities from the Effective Date for determining Time for Completion as specified in the Contract Agreement.</p> <p>PC 8.2 The Time for Completion of the whole of the Facilities shall be 66 months (9 months for supply, installation, testing and commissioning; 24 months for warranty and Operation and Maintenance, 36 months Annual Maintenance Contract period) from the Effective Date as described in the Contract Agreement.</p>
PC 11. Contract	Omitted

Price	
PC 12. Terms of Payment	PC 12.3 In the event that the Employer fails to make any payment, which have become due, by its respective due date or within the period set forth in the Contract, the Employer shall pay to the Contractor interest on the amount of such delayed payment at the rate(s) shown in the Appendix to the Contract Agreement titled Terms and Procedures of Payment, for the period of delay until payment has been made in full.
PC 12. Terms of Payment	PC 12.4 The currency in which payments are made to the Contractor under this Contract shall be Indian Rupees (INR)
PC 13. Securities	<p>PC 13.2.1 The Contractor shall, within twenty-eight (28) days of the notification of contract award, provide a security in an amount equal to the advance payment calculated in accordance with the Appendix to the Contract Agreement titled Terms and Procedures of Payment, and in the same currency or currencies, with a validity of ninety (90) days beyond the day of completion of facilities in accordance with GC Clause 24.</p> <p>PC 13.2.2 The security shall be in the form provided in the bidding document. The amount of the security shall be reduced as per procedures specified in PC. The security shall be discharged after Completion of the Facilities or relevant part thereof".</p> <p>The Advance Payment Security shall be allowed to be reduced every three (3) months after First Running Account Bill/Stage payment under the Contract. The cumulative amount of reduction at any point of time shall not exceed seventy five percent (75%) of the advance corresponding to cumulative value of the Facilities completed as per a certificate to be issued by the project manager. It should be clearly understood that reduction in the value of security for advance should not in any way dilute the Contractor's responsibility and liabilities under the Contract including in respect of the Facilities for which reduction in the value of security is allowed</p> <p>PC 13.3.1 (a) The amount of Performance Security, as a percentage of the Contract Price for the Facility or for the part of the Facility for which a separate Time for Completion is provided, shall be: 8%</p> <p>(b) The amount of Environmental, Social, Safety and Health (ESHS) Performance Security, as a percentage of the Contract Price for the Facility or for the part of the Facility for which a separate Time for Completion is provided, shall be: 2%</p>

	<p>The performance security of a Joint Venture shall be in the name of the Joint Venture so as to commit fully all partners to the Joint Venture.</p> <p>PC 13.3.1 The Contractor shall, within twenty-eight (28) days of the notification of contract award, provide security for the due performance of the Contract in the amount specified in the PC with a validity upto sixty (60) days beyond the Defect Liability period.</p> <p>If the performance security is a bank guarantee, it shall be issued by a Nationalized bank.</p> <p>PC 13.3.2 The Performance Security and if applicable, the Environmental, Social, Health and Safety (ESHS) Performance Security, shall be in the forms of the bank guarantee attached hereto in Section IX, Contract Forms.</p> <p>PC 13.3.3 The Security shall become null and void, or shall be reduced pro rata to the Contract Price of a part of the Facilities for which a separate Time for Completion is provided, five hundred and forty (540) days after Completion of the Facilities or three hundred and sixty five (365) days after Operational Acceptance of the Facilities, whichever occurs first; provided, however, that if the Defects Liability Period has been extended on any part of the Facilities pursuant to GC Sub-Clause 27.8 hereof, the Contractor shall issue an additional security in an amount proportionate to the Contract Price of that part. The security shall be returned to the Contractor immediately after its expiration, provided, however, that if the Contractor, pursuant to GC Sub-Clause 27.10, is liable for an extended defect liability obligation, the performance security shall be extended for the period specified in the PC pursuant to GC Sub-Clause 27.10 and up to the amount specified in the PC.</p> <p>In cases where partial acceptance (GC 25.4) is provided, the performance security shall be reduced pro-rata to the contract price of a part or the facilities for which a separate time for completion is provided for, five hundred and forty (540) days after Completion of the Facilities or three hundred and sixty five (365) days after Operational Acceptance of the Facilities, or relevant part thereof, whichever occurs first; provided, however, that if the Defects Liability Period has been extended on any part of the Facilities pursuant to GC Sub-Clause 27.8 hereof, the Contractor shall issue an additional security in an amount proportionate to the Contract Price of that part. The security shall be returned to the Contractor immediately after its expiration, provided, however, that if the Contractor, pursuant to GC Sub-Clause 27.10, is liable for an extended defect liability obligation, the performance security shall be extended for the period specified in the PC pursuant to GC Sub-Clause 27.10 and up to the amount specified in the PC.</p>
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	PC 13.3.4 Deleted.
PC 14 Taxes and Duties	<p>PC 14.2 – The Employer shall bear and pay/reimburse to the Contractor domestic taxes such as Sales tax and similar other taxes, in respect of direct transaction between the Employer and the Contractor imposed upon, on the Infrastructure and Equipment and mandatory spare parts specified in Price Schedule No.2 to be incorporated into the Facilities, by the Laws of Union of India”.</p> <p>PC 14.3 – Deleted.</p> <p>PC 14.4 For the purpose of the Contract, it is agreed that the Contract Price specified in Article 2 (Contract Price and Terms of Payment) of the Contract Agreement is based on the taxes, duties, levies and charges prevailing at the date twenty-eight (28) days prior to the date of bid submission in the country where the Site is located (hereinafter called “Tax” in this GC Sub-Clause 14.4). If any rates of Tax are increased or decreased, a new Tax is introduced, an existing Tax is abolished, or any change in interpretation or application of any Tax occurs in the course of the performance of Contract, which was or will be assessed on the Contractor, Subcontractors or their employees in connection with performance of the Contract, an equitable adjustment of the Contract Price shall be made to fully take into account any such change by addition to the Contract Price or deduction therefrom, as the case may be, in accordance with GC Clause 36 hereof. However, these adjustments, after ascertaining the facts, would be restricted to direct transactions between the Employer and the Contractor and not on procurement of raw materials, intermediary components etc. by the Contractor. Further, no adjustment of the Contract Price shall be made on account of variation in deemed export benefits.</p>
PC 15.1 License/Use of Technical Information	<p>PC 15.1 For the operation and maintenance of the Infrastructure, the Contractor hereby grants a non-exclusive and non-transferable license (without the right to sub-license) to the Employer under the patents, utility models or other industrial property rights owned by the Contractor or by a third Party from whom the Contractor has received the right to grant licenses thereunder, and shall also grant to the Employer a non-exclusive and non-transferable right (without the right to sub-license) to use the know-how and other technical information disclosed to the Employer under the Contract. Nothing contained herein shall be construed as transferring ownership of any patent, utility model, trademark, design, copyright, know-how or other intellectual</p>

	<p>property right from the Contractor or any third Party to the Employer. The Employer shall however be free to reproduce all drawings, documents and other material furnished to the Employer for the purpose of the Contract including, if required, for operation and maintenance.</p>
PC 17 Representatives	<p>PC 17.1 If the Project Manager is not named in the Contract, then within fourteen (14) days of the Effective Date, the Employer shall appoint and notify the Contractor in writing of the name of the Project Manager. The Employer may from time to time appoint some other person as the Project Manager in place of the person previously so appointed, and shall give a notice of the name of such other person to the Contractor without delay. The Employer shall take all reasonable care to see that no such appointment is made at such a time or in such a manner as to impede the progress of work on the Facilities. The Project Manager shall represent and act for the Employer at all times during the performance of the Contract. All notices, instructions, orders, certificates, approvals and all other communications under the Contract shall be given by the Project Manager, except as herein otherwise provided.</p> <p>All notices, instructions, information and other communications given by the Contractor to the Employer under the Contract shall be given to the Project Manager, except as herein otherwise provided.</p> <p>PC 17.2.4 From the commencement of installation of the Facilities at the Site until Operational Acceptance, the Contractor's Representative shall appoint a suitable person as the Construction Manager. The Construction Manager shall supervise all work done at the Site by the Contractor and shall be present at the Site throughout normal working hours except when on leave, sick or absent for reasons connected with the proper performance of the Contract. Whenever the Construction Manager is absent from the Site, a suitable person shall be appointed to act as the Construction Manager's deputy.</p>
PC 18 Work Program	<p>GC 18.2 Within twenty-eight (28) days after the Notification of Award, the Contractor shall submit to the Project Manager a detailed program of performance of the Contract, made in a form acceptable to the Project Manager and showing the sequence in which it proposes to design, manufacture, transport, assemble, install and pre-commission the Facilities, as well as the date by which the Contractor reasonably requires that the Employer shall have fulfilled its obligations under the Contract so as to enable the Contractor to execute the Contract in accordance with the program and to achieve Completion, Commissioning and Acceptance of the Facilities in accordance with the Contract. The program so submitted by the Contractor shall accord with the Time Schedule included in the Appendix to the</p>

	<p>Contract Agreement titled Time Schedule, and any other dates and periods specified in the Contract. The Contractor shall update and revise the program as and when appropriate or when required by the Project Manager, but without modification in the Times for Completion specified in the PC pursuant to Sub-Clause 8.2 and any extension granted in accordance with GC Clause 40, and shall submit all such revisions to the Project Manager.</p>
PC 20 Design and Engineering	<p>PC 20.3.2 Within fourteen (14) days after receipt by the Project Manager of any document requiring the Project Manager's approval in accordance with GC Sub-Clause 20.3.1, the Project Manager shall either return one copy thereof to the Contractor with its approval endorsed thereon or shall notify the Contractor in writing of its disapproval thereof and the reasons therefor and the modifications that the Project Manager proposes.</p> <p>PC 20.3.4 If the Project Manager disapproves the document, the Contractor shall modify the document and resubmit it for the Project Manager's approval in accordance with GC Sub-Clause 20.3.2. If the Project Manager approves the document subject to modification(s), the Contractor shall make the required modification(s), and upon resubmission with the required modifications, the document shall be deemed to have been approved.</p> <p>The procedure for submission of the documents by the Contractor and their approval by the Project manager shall be discussed and finalized with the Contractor.</p>
PC 21 Procurement	<p>PC 21.4 Customs Clearance</p> <p>The Contractor shall, at its own expense, handle all imported materials and Contractor's Equipment at the point(s) of import and shall handle any formalities for customs clearance.</p>
PC 22 Installation	<p>PC 22.2.3 The Contractor shall comply with all the relevant labour Laws applicable to the Contractor's Personnel, including Laws relating to their employment, health, safety, welfare, immigration and emigration, and shall allow them all their legal rights.</p> <p>The Contractor shall at all times during the progress of the Contract use its best endeavors to prevent any unlawful, riotous or disorderly conduct or behavior by or amongst its employees and the labour of its Subcontractors.</p> <p>The Contractor shall, in all dealings with its labour and the labour of its Subcontractors currently employed on or connected with the Contract, pay due regard to all recognized festivals, official holidays, religious or other customs and all</p>

	<p>local laws and regulations pertaining to the employment of labour.</p> <p>Salient features of major labour and other laws that are applicable to construction industry in India are given as Appendix C to these General Conditions of Contract.”</p> <p>PC22.2.5 Working Hours : Normal working hours are: 9:00 hours to 18:00 hours</p> <p>PC 22.2.8 Funeral Arrangements: In the event of the death of any of the Contractor’s personnel or accompanying members of their families, the Contractor shall be responsible for making the appropriate arrangements for their return or burial.</p>
PC 24 Completion of the Facilities	<p>PC 24.3 As soon as reasonably practicable after the operating and maintenance personnel have been supplied by the Employer and the raw materials, utilities, lubricants, chemicals, catalysts, facilities, services and other matters, if so specified in Appendix 6 (Scope of Works and Supply by the Employer) have been provided by the Employer in accordance with GC Sub-Clause 24.2, the Contractor shall commence Pre-commissioning of the Facilities or the relevant part thereof in preparation for Commissioning, subject to GC Sub-Clause 25.5.</p> <p>PC 24.4 As soon as all works in respect of Pre-commissioning are completed and, in the opinion of the Contractor, the Facilities or any part thereof is ready for Commissioning, the Contractor shall commence Commissioning as per procedures stipulated in Technical Specification, and as soon as Commissioning is satisfactorily completed, the Contractor shall so notify the Project Manager in writing.</p>
PC 24.3 and 25.2	<p>Completion – Guarantee Test – Acceptance</p> <p>[1] <i>Sample Provision for ‘deemed completion of activities’</i></p> <p>In the event that the Contractor is unable to proceed with the Pre-commissioning of the Facilities pursuant to Sub-Clause 24.3, or with the Guarantee Test pursuant to Sub-Clause 25.2, for reasons attributable to the Employer either on account of non-availability of other facilities under the responsibilities of other contractor(s), or for the reasons beyond the Employer’s control, the provisions leading to “deemed” completion of activities such as Completion, pursuant GC Sub-Clause 24.6, and Operational Acceptance, pursuant to GC Sub-Clause 25.3.4, and Contractor’s obligations regarding Defect Liability Period, pursuant to GC Sub-Clause 27.2, Functional Guarantee, pursuant to GC Clause 28, and care of Facilities, pursuant to GC Clause 32, and GC Clause 41.1, Suspension, shall not apply. In this case, the following provisions shall apply.</p>

	<p>[2] When the Contractor is notified by the Project Manager that he will be unable to proceed with the activities and obligations pursuant to the above Sub-Clause 13.1, the Contractor shall be entitled to the following:</p> <ul style="list-style-type: none"> (a) The Time of Completion shall be extended for the period of suspension without imposition of liquidated damages pursuant to GC Sub-Clause 26.2. (b) Payments due to the Contractor in accordance with the provision specified in Appendix 1 (Terms and procedures of Payment) to the Contract Agreement, which would not have been payable in normal circumstances due to non-completion of the subject activities, shall be released to the Contractor against submission of a security in the form of a bank guarantee of equivalent amount acceptable to the Employer, and which shall become null and void when the Contractor will have complied with its obligations regarding these payments, subject to the provision of para 3 below; (c) The expenses towards the security and extension of other securities under the contract, of which validity need to be extended, shall be reimbursed to the Contractor by the Employer; and (d) The additional charges towards the care of the Facilities pursuant to GC Sub-Clause 32.1 shall be reimbursed to the Contractor by the Employer for the period between the notification mentioned above and the notification mentioned in para 4 below. The provision of GC Sub-Clause 33.2 shall apply to the Facilities during the same period. <p>[3] In the event that the period of suspension under the above Sub-Clause 13.1 actually exceeds one hundred eighty (180) days, the Employer and Contractor shall mutually agree to any additional compensation payable to the Contractor.</p> <p>[4] When the Contractor is notified by the project Manager that the infrastructure is ready for Pre-commissioning, the Contractor shall proceed without delay in performing all the specified activities and obligations under the contract.</p>
<p>PC 25. Commissioning and Operational Acceptance</p>	<p>PC 25.1.1 Commissioning of the Facilities or any part thereof shall be completed by the Contractor as per procedures detailed in Technical Specifications in Section VI</p> <p>PC 25.1.2 The Employer shall, unless otherwise specified in Technical Specifications, supply the operating and maintenance personnel and all raw materials, utilities, lubricants, chemicals, catalysts, facilities, services and other matters required for Commissioning.</p>

	<p>PC 25.2.2 The Guarantee Test of the Facilities shall be successfully completed within 30 days from the date of Completion.</p> <p>PC 25.3.1(b) –the Guarantee Test has not been successfully completed or has not been carried out for reasons not attributable to the Contractor within the period from the date of Completion specified in the PC pursuant to GC Sub-Clause 25.2.2 above or any other period agreed upon by the Employer and the Contractor; but successful completion of the Facilities has been achieved.</p> <p>PC 25.3.1(e) – Three sets of as built drawings of and operating and maintenance manuals and CD's (as required) are furnished.</p> <p>PC 25.3.3 - The Project Manager shall, after consultation with the Employer, and within twenty one (21) days after receipt of the Contractor's notice, issue an Operational Acceptance Certificate.</p> <p>PC 25.3.4 - If within twenty one (21) days after receipt of the Contractor's notice, the Project Manager fails to issue the Operational Acceptance Certificate or fails to inform the Contractor in writing of the justifiable reasons why the Project Manager has not issued the Operational Acceptance Certificate, the Facilities or the relevant part thereof shall be deemed to have been accepted as of the date of the Contractor's said notice.</p>
PC 26. Completion Time Guarantee	<p>PC 26.2</p> <p>Applicable rate for liquidated damages: 0.5% of contract price per week</p> <p>The above rate applies to the price of the part of the Facilities, as quoted in the Price Schedule, for that part for which the Contractor fails to achieve Completion within the particular Time for Completion.</p> <p>Maximum deduction for liquidated damages: 10% of Contract Price</p> <p>PC 26.3 No bonus will be given for earlier Completion of the Facilities or part thereof.</p>
PC 27. Defect Liability	<p>PC 27.2 The Defect Liability Period shall be two years from the date of Operational Acceptance of the Facilities (After the issuance of the Operational Acceptance Certificate by the Employer pursuant to PC 25.</p> <p>If during the Defect Liability Period any defect should be found in the design, engineering, materials and workmanship of the Infrastructure supplied or of the work executed by the Contractor, the Contractor shall promptly, in consultation and agreement with the Employer regarding appropriate remedying of the defects, and at its cost, repair, replace or otherwise make good as the Contractor shall determine at its discretion, such defect as well as any damage to the Facilities caused by such defect. The Contractor shall not be responsible for the repair, replacement or making good of any defect / of any damage to the Facilities arising out of</p>

	<p>or resulting from any of the following causes:</p> <ul style="list-style-type: none"> (a) improper operation or maintenance of the Facilities by the Employer; (b) operation of the Facilities outside specifications provided in the Contract; or (c) normal wear and tear. <p>PC 27.6 – If the repair, replacement or making good is of such a character that it may affect the efficiency of the Facilities or any part thereof, the Employer may give to the Contractor a notice requiring that tests of the defective part of the Facilities shall be made by the Contractor immediately upon completion of such remedial work, whereupon the Contractor shall carry out such tests.</p> <p>If such part fails the tests, the Contractor shall carry out further repair, replacement or making good, as the case may be, until that part of the Facilities passes such tests. The tests in character shall in any case be not less than what has already been agreed by the Employer and the Contractor for the original equipment/part of the Facilities</p> <p>PC 27.8 – If the Facilities or any part thereof cannot be used by reason of such defect and/or making good of such defect, the Defect Liability Period of the Facilities or such part, as the case may be, shall be extended by a period equal to the period during which the Facilities or such part cannot be used by the Employer because of any of the aforesaid reasons. Upon correction of the defects in the Facilities or any part thereof by repair/replacement, such repair/replacement shall have the Defect Liability Period extended by a period of twelve (12) months from the time such replacement/repair of the facilities or any part thereof</p> <p>PC 27.8.1 At the end of the Defect Liability Period, the Contractor's liability ceases except for latent defects. The Contractor's liability for latent defects warranty shall be limited to period of three (3) years from the end of Defect Liability Period. For the purpose of this clause, the latent defects shall be the defects inherently lying within the material or arising out of design deficiency which do not manifest themselves during the Defect Liability Period defined in this GC Clause 27, but later.</p> <p>PC 27.9 – Except as provided in GC Clauses 27 and 33, the Contractor shall be under no liability whatsoever and howsoever arising, and whether under the Contract or at law, in respect of defects in the</p>
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	Facilities or any part thereof, the Infrastructure, design or engineering or work executed that appear after operational acceptance or any part thereof, except where such defects are the result of the gross negligence, fraud, or criminal or willful action of the Contractor.
PC 28 Functional Guarantees	<p>PC 28.2 If, for reasons attributable to the Contractor, the minimum level of the Functional Guarantees specified in the Appendix to the Contract Agreement titled Functional Guarantees, are not met either in whole or in part, the Contractor shall at its cost and expense make such changes, modifications and/or additions to the Infrastructure or any part thereof as may be necessary to meet at least the minimum level of such Guarantees. The Contractor shall notify the Employer upon completion of the necessary changes, modifications and/or additions, and shall request the Employer to repeat the Guarantee Test until the minimum level of the Guarantees has been met. If the Contractor eventually fails to meet the minimum level of Functional Guarantees, the Employer may consider termination of the Contract, pursuant to GC Sub-Clause 42.2.2. and recover the payments already made to the Contractor</p> <p>PC 28.3 (a) make such changes, modifications and/or additions to the Facilities or any part thereof that are necessary to attain the Functional Guarantees at its cost and expense, within a mutually agreed time, and shall request the Employer to repeat the Guarantee Test</p> <p>PC 28.4 – In case the employer exercises its option to accept the equipment after levy of liquidated damages, the payment of liquidated damages under GC Sub-Clause 28.3, up to the limitation of liability specified in the Appendix to the Contract Agreement titled Functional Guarantees, shall completely satisfy the Contractor's guarantees under GC Sub-Clause 28.3, and the Contractor shall have no further liability whatsoever to the Employer in respect thereof. Upon the payment of such liquidated damages by the Contractor, the Project Manager shall issue the Operational Acceptance Certificate for the Facilities or any part thereof in respect of which the liquidated damages have been so paid.</p>
PC 30. Limitation of Liability	Omitted
PC 31 Transfer of Ownership	<p>PC 31.1 – deleted</p> <p>PC 31.2 - Ownership of the Infrastructure (including spare parts) procured in the country where the Site is located shall be transferred to the Employer when the Infrastructure are brought on to the Site.</p> <p>PC 31.4 - Ownership of any Infrastructure in excess of the requirements for the Facilities shall revert to the Contractor upon Completion of the Facilities or at such earlier time when the Employer and the Contractor</p>

	agree that the Infrastructure in question are no longer required for the Facilities, provided quantity of any Infrastructure and Equipment specifically stipulated in the Contract shall be the property of the Employer whether or not incorporated in the Facilities.
PC 34 Insurance	<p>PC 34.7 Unless otherwise provided in the Contract, the Contractor shall prepare and conduct all and any claims made under the policies effected by it pursuant to this GC Clause 34, and all monies payable by any insurers shall be paid to the Contractor, as per the procedure laid out in the PC. The Employer shall give to the Contractor all such reasonable assistance as may be required by the Contractor. With respect to insurance claims in which the Employer's interest is involved, the Contractor shall not give any release or make any compromise with the insurer without the prior written consent of the Employer. With respect to insurance claims in which the Contractor's interest is involved, the Employer shall not give any release or make any compromise with the insurer without the prior written consent of the Contractor.</p> <p>PC 34.8 – Appropriation of Insurance Proceeds</p> <p>Should any loss or damage occur, the Supplier shall:</p> <ol style="list-style-type: none"> initiate and pursue claim till settlement; and promptly make arrangements for repair and/or replacement of the damaged or lost item/s and ensure supply/commissioning in terms of the contract, irrespective of settlement of claim by the insurance company. <p>Keeping in view the above the Employer shall give, from time to time, written authorization to the insurance company to directly pay monies payable by the insurer to the supplier after excluding any payment including advances already paid by the employer in respect of those items. Such excluded payments will be payable to the Employer only and insurer will accordingly make the payment as advised by the employer from time to time. All subsequent payments, if any, due under the Contract, shall be regulated by the relevant terms of payment.</p>
PC 36 Change in Laws and Regulations	<p>PC 36.1 – If, after the date twenty-eight (28) days prior to the date of Bid submission, in the country where the Site is located, any law, regulation, ordinance, order or by-law having the force of law is enacted, promulgated, abrogated or changed which shall be deemed to include any change in interpretation or application by the competent authorities, that subsequently affects the costs and expenses of the Contractor and/or the Time for Completion, the Contract Price shall be correspondingly increased or decreased, and/or the Time for Completion shall be reasonably adjusted to the extent that the Contractor has thereby been affected in the performance of any of its obligations under the Contract.</p>

	<p>However, these adjustments, after ascertaining the facts, would be restricted to direct transactions between the Employer and the Contractor and not on procurement of raw materials, intermediary components etc. by the Contractor. Further, no adjustment of the Contract price shall be made on account of variation in deemed export benefits. Notwithstanding the foregoing, such additional or reduced costs shall not be separately paid or credited if the same has already been accounted for in the price adjustment provisions where applicable, in accordance with the PC pursuant to GC Sub-Clause 11.2.</p>
PC 37 Force Majeure	<p>PC 37.6 – If the performance of the Contract is substantially prevented, hindered or delayed for a single period of more than sixty (60) days or an aggregate period of more than one hundred and twenty (120) days on account of one or more events of Force Majeure during the currency of the Contract, the Parties will attempt to develop a mutually satisfactory solution, failing which the dispute will be resolved in accordance with GC Clause 46.</p> <p>PC 37.7 - Deleted</p> <p>PC 37.8 – Renumbered as 37.7</p>
PC 38 War Risks	<p>PC 38.5 – If during the performance of the Contract any War Risks shall occur that financially or otherwise materially affect the execution of the Contract by the Contractor, the Contractor shall use its reasonable efforts to execute the Contract with due and proper consideration given to the safety of its and its Subcontractors' personnel engaged in the work on the Facilities, provided, however, that if the execution of the work on the Facilities becomes impossible or is substantially prevented for a single period of more than sixty (60) days or an aggregate period of more than one hundred and twenty (120) days on account of any War Risks, the Parties will attempt to develop a mutually satisfactory solution, failing which the dispute will be resolved in accordance with GC Clause 46.</p> <p>PC 38.6 - In the event of termination pursuant to GC Sub-Clauses 38.3, the rights and obligations of the Employer and the Contractor shall be specified in GC Sub-Clauses 42.1.2 and 42.1.3.</p>
PC 39. Change in the Facilities	<p>PC 39.2.5 – If before or during the preparation of the Change Proposal it becomes apparent that the aggregate effect of compliance therewith and with all other Change Orders that have already become binding upon the Contractor under this GC Clause 39 would be to increase or decrease the Contract Price as originally set forth in Article 2 (Contract Price) of the Contract Agreement by more than fifteen percent (15%), the Contractor may give a written notice of objection thereto prior to furnishing the Change Proposal as aforesaid. If the Employer accepts the Contractor's</p>

	<p>objection, the Employer and the Contractor shall agree on specific rates for valuation of the Change.</p> <p>The Contractor's failure to so object shall neither affect its right to object to any subsequent requested Changes or Change Orders herein, nor affect its right to take into account, when making such subsequent objection, the percentage increase or decrease in the Contract Price that any Change not objected to by the Contractor represents.</p> <p>PC 39.2.6 – If rates and prices of any change are not available in the Contract, the parties thereto shall agree on specific rates for the valuation of the change, upon receipt of the Change Proposal, the Employer and the Contractor shall mutually agree upon all matters therein contained. Within fourteen (14) days after such agreement, the Employer shall, if it intends to proceed with the Change, issue the Contractor with a Change Order.</p> <p>If the Employer is unable to reach a decision within fourteen (14) days, it shall notify the Contractor with details of when the Contractor can expect a decision.</p> <p>If the Employer decides not to proceed with the Change for whatever reason, it shall, within the said period of fourteen (14) days, notify the Contractor accordingly. Under such circumstances, the Contractor shall be entitled to reimbursement of all costs reasonably incurred by it in the preparation of the Change Proposal, provided that these do not exceed the amount given by the Contractor in its Estimate for Change Proposal submitted in accordance with GC Sub-Clause 39.2.2.</p>
<p>PC 42 Termination</p>	<p>PC 42.3.1(b) – The Contractor is unable to carry out any of its obligations under the Contract for any reason attributable to the Employer, including but not limited to the Employer's failure to provide possession of or access to the Site or other areas or failure to obtain any governmental permit necessary for the execution and/or completion of the Facilities, which the Employer is required to obtain as per provision of the Contract as per relevant applicable laws of the country.</p> <p>then the Contractor may give a notice to the Employer thereof, and if the Employer has failed to pay the outstanding sum, to approve the invoice or supporting documents, to give its reasons for withholding such approval, or to remedy the breach within twenty-eight (28) days of such notice, or if the Contractor is still unable to carry out any of its obligations under the Contract for any reason attributable to the Employer within twenty-eight (28) days of the said notice, the Contractor may by a further notice to the Employer referring to this GC Sub-Clause 42.3.1, forthwith terminate the Contract.</p>

PC 44.1 Export Restrictions	PC 44.1 – deleted.
PC 46. Disputes and Arbitration	<p>PC 46.1 and PC 46.2</p> <p>Name of the agreed Adjudicator Shri P.K. Garg</p> <p>Appointing Authority for the Adjudicator: Gujarat State Disaster Mangagement Authority</p>
	<p>PC 46.4</p> <p>Daily rate and types of reimbursable expenses to be paid to the Adjudicator is Rs. 10,000 per day for boarding/lodging/travel etc.</p>
	<p>PC 46.5</p> <p>The procedure for adhoc arbitration will be as follows:</p> <p>(a) In case of Dispute or difference arising between the Purchaser and a Contractor relating to any matter arising out of or connected with this contract, such disputes or difference shall be settled in accordance with the Arbitration and Conciliation Act, 1996. The arbitral tribunal shall consist of 3 Arbitrators one each to be appointed by the Purchaser and the Contractor. The third Arbitrator shall be chosen by the two Arbitrators so appointed by the Parties and shall act as Presiding Arbitrator. In case of failure of the two Arbitrators appointed by the parties to reach upon a consensus within a period of 30 days from the appointment of the Arbitrator appointed subsequently, the Presiding Arbitrator shall be appointed by the* International Chamber of Commerce India (ICC India)/ Indian Council of Arbitration/ President of the Institution of Engineers (India).</p> <p>(b) If one of the parties fails to appoint its Arbitrator in pursuance of sub-clause (a) above within 30 days after receipt of the notice of the appointment of its Arbitrator by the other party, then the * International Chamber of Commerce India (ICC India)/ Indian Council of Arbitration/ President of the Institution of Engineers (India), both in cases of Foreign Contractor as well as Indian Contractor, shall appoint the Arbitrator. A certified copy of the order of the* International Chamber of Commerce India (ICC India)/ Indian Council of Arbitration/ President of the Institution of Engineers (India), making such an appointment shall be furnished to each of the parties.</p>

	<p>(c) Arbitration may be commenced prior to or after completion of the Works, provided that the obligations of the Employer, the Project Manager, the Contractor and the Adjudicator shall not be altered by reason of the arbitration being conducted during the progress of the Works.</p> <p>(d) Arbitration proceedings shall be held at Gandhinagar, Gujarat, India, and the language of the arbitration proceedings and that of all documents and communications between the parties shall be English.</p> <p>(e) The decision of the majority of Arbitrators shall be final and binding upon both parties. The cost and expenses of Arbitration proceedings will be paid as determined by the arbitral tribunal. However, the expenses incurred by each party in connection with the preparation, presentation, etc. of its proceedings as also the fees and expenses paid to the Arbitrator appointed by such party or on its behalf shall be borne by each party itself.</p> <p>(f) Where the value of the contract is Rs.50 million and below, the disputes or differences arising shall be referred to the Sole Arbitrator. The Sole Arbitrator should be appointed by agreement between the parties; failing such agreement, by the appointing authority, namely the * International Chamber of Commerce India (ICC India)/ Indian Council of Arbitration/ President of the Institution of Engineers (India).</p> <p>(g) The Arbitrator should give final award within 120 days of starting of the proceedings, unless otherwise agreed to by the Parties.</p> <p>(h) Performance under the contract shall continue during the arbitration proceedings and payments due to the Contractor by the Purchaser shall not be withheld, unless they are the subject matter of the arbitration proceedings.</p>
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Section IX. - Contract Forms

Table of Clauses

Section IX. - Contract Forms	477
Notification of Award - Letter of Acceptance	478
Contract Agreement	480
Appendix 1. Terms and Procedures of Payment.....	484
Appendix 2. Price Adjustment- Not applicable	487
Appendix 3. Insurance Requirements	488
Insurances To Be Taken Out By The Employer- Not Applicable	490
Appendix 4. Time Schedule.....	491
Appendix 5. List of Major Items of Infrastructure and Installation Services and List of Approved Subcontractors.....	492
Appendix 6. Scope of Works and Supply by the Employer	493
Appendix 7. List of Documents for Approval or Review.....	494
Appendix 8. Functional Guarantees.....	495
Performance Security - Bank Guarantee.....	497
Environmental, Social, Health and Safety (ESHS).....	499
Performance Security - Bank Guarantee.....	499
Advance Payment Security	501

Notification of Award - Letter of Acceptance

[on letterhead paper of the Employer]

[The Letter of Acceptance shall be the basis for formation of the Contract as described in ITB Clause 43. This Standard Form of Letter of Acceptance shall be filled in and sent to the successful Bidder only after evaluation of bids has been completed, subject to any review by the World Bank required under the Loan Agreement.]

To: _____

This is to notify you that your Bid dated _____ for execution of the _____ for the Contract Price in the aggregate of _____, as corrected and modified¹⁹ in accordance with the Instructions to Bidders is hereby accepted by our Agency.

You are requested to furnish the Performance Security and an Environmental, Social, Health and Safety Performance Security *[Delete ESHS Performance Security if it is not required under the contract]* within 28 days in accordance with the Conditions of Contract, using for that purpose the Performance Security Form and the ESHS Performance Security Form *[Delete ESHS Performance Security if it is not required under the contract]* included in Section IX - Contract Forms, of the Bidding Document

[Choose one of the following statements:]

We accept that _____ *[insert the name of Adjudicator proposed by the Bidder]* be appointed as the Adjudicator²⁰.

[or]

We do not accept that _____ *[insert the name of the Adjudicator proposed by the Bidder]* be appointed as the Adjudicator, and by sending a copy of this Letter

¹⁹Delete "corrected and" or "and modified" if not applicable.

²⁰To be used only if the Contractor disagrees in the Bid with the Adjudicator proposed by the Employer in the Instructions to Bidders, and has accordingly offered another candidate.

of Acceptance to _____ *[insert name of the
Appointing Authority]*, the Appointing Authority, we are hereby requesting such Authority to
appoint the Adjudicator in accordance with ITB 46.1 and GC 46.1²¹.

We have reviewed the Method Statement and Construction Schedule submitted by you along
with the bid (Technical Proposal) and our comments are given in the attachment. You are
requested to submit a revised detailed Program of Performance of the Contract as per Clause
18.2 of General Conditions of Contract within 28 days of this Notification of Award.

Authorized Signature: _____

Name and Title of Signatory: _____

Name of Agency: _____

Attachment: Contract Agreement

²¹*To be used only if the Contractor disagrees in the Bid with the Adjudicator proposed by the Employer in the ITB,
has accordingly offered another candidate, and the Employer does not accept the counterproposal.*

Contract Agreement

THIS AGREEMENT is made the _____ day of _____, _____,

BETWEEN

(1) _____, a corporation incorporated under the laws of _____ and having its principal place of business at _____ (hereinafter called “the Employer”), and (2) _____, a corporation incorporated under the laws of _____ and having its principal place of business at _____ (hereinafter called “the Contractor”).

WHEREAS the Employer desires to engage the Contractor to design, manufacture, test, deliver, install, complete and commission certain Facilities, viz. _____ (“the Facilities”), and the Contractor has agreed to such engagement upon and subject to the terms and conditions hereinafter appearing.

NOW IT IS HEREBY AGREED as follows:

Article 1.

Contract Documents

1.1 Contract Documents (Reference GC Clause 2)

The following documents shall constitute the Contract between the Employer and the Contractor, and each shall be read and construed as an integral part of the Contract:

- (a) This Contract Agreement, Service Level Agreement and the Appendices hereto
- (b) Letter of Bid and Price Schedules submitted by the Contractor
- (c) Particular Conditions
- (d) General Conditions
- (e) Specification
- (f) Drawings
- (g) Other completed bidding forms submitted with the Bid
- (h) Any other documents forming part of the Employer’s Requirements
- (i) Program of Performance, Methodology, Quality Assurance Program and ESHS Environmental Management Strategies and Implementation Plan

(j) Any other documents shall be added here

1.2 Order of Precedence (Reference GC Clause 2)

In the event of any ambiguity or conflict between the Contract Documents listed above, the order of precedence shall be the order in which the Contract Documents are listed in Article 1.1 (Contract Documents) above.

1.3 Definitions (Reference GC Clause 1)

Capitalized words and phrases used herein shall have the same meanings as are ascribed to them in the General Conditions.

Article 2. Contract Price and Terms of Payment

2.1 Contract Price (Reference GC Clause 11)

The Employer hereby agrees to pay to the Contractor the Contract Price in consideration of the performance by the Contractor of its obligations hereunder. The Contract Price shall be the aggregate of: _____, _____ as specified in Price Schedule No. 5 (Grand Summary), and _____, _____, or such other sums as may be determined in accordance with the terms and conditions of the Contract.

2.2 Terms of Payment (Reference GC Clause 12)

The terms and procedures of payment according to which the Employer will reimburse the Contractor are given in the Appendix (Terms and Procedures of Payment) hereto.

The Employer may instruct its bank to issue an irrevocable confirmed documentary credit made available to the Contractor in a bank in the country of the Contractor. The credit shall be for an amount of _____; and shall be subject to the Uniform Customs and Practice for Documentary Credits 1993 Revision, ICC Publication No. 600.

In the event that the amount payable under Schedule No. 1 is adjusted in accordance with GC 11.2 or with any of the other terms of the Contract, the Employer shall arrange for the documentary credit to be amended accordingly.

**Article 3.
Effective Date**

3.1 Effective Date (Reference GC Clause 1)

The Effective Date from which the Time for Completion of the Facilities shall be counted is the date when all of the following conditions have been fulfilled:

- (a) This Contract Agreement has been duly executed for and on behalf of the Employer and the Contractor;
- (b) The Contractor has submitted to the Employer the performance security and the advance payment guarantee;
- (c) The Employer has paid the Contractor the advance payment
- (d) The Contractor has been advised that the documentary credit referred to in Article 2.2 above has been issued in its favor.

Each party shall use its best efforts to fulfill the above conditions for which it is responsible as soon as practicable.

- 3.2 If the conditions listed under 3.1 are not fulfilled within two (2) months from the date of this Contract notification because of reasons not attributable to the Contractor, the Parties shall discuss and agree on an equitable adjustment to the Contract Price and the Time for Completion and/or other relevant conditions of the Contract.

**Article 4.
Communications**

- 4.1 The address of the Employer for notice purposes, pursuant to GC 4.1 is: _____.
- 4.2 The address of the Contractor for notice purposes, pursuant to GC 4.1 is: _____.

**Article 5.
Appendices**

- 5.1 The Appendices listed in the attached List of Appendices shall be deemed to form an integral part of this Contract Agreement.
- 5.2 Reference in the Contract to any Appendix shall mean the Appendices attached hereto, and the Contract shall be read and construed accordingly.

IN WITNESS WHEREOF the Employer and the Contractor have caused this Agreement to be duly executed by their duly authorized representatives the day and year first above written.

Signed by, for and on behalf of the Employer

[Signature]

[Title]

in the presence of _____

Signed by, for and on behalf of the Contractor

[Signature]

[Title]

in the presence of _____

APPENDICES

- Appendix 1 Terms and Procedures of Payment
- Appendix 2 Price Adjustment
- Appendix 3 Insurance Requirements
- Appendix 4 Time Schedule
- Appendix 5 List of Major Items of Infrastructure and Installation Services and List of Approved Subcontractors
- Appendix 6 Scope of Works and Supply by the Employer
- Appendix 7 List of Documents for Approval or Review
- Appendix 8 Functional Guarantees

[Note: Sample Forms of Appendices are provided herein. However, since the provisions of Appendices would be contract specific, these may be finalized by the Employer on a case-to-case basis.]

Appendix 1. Terms and Procedures of Payment

In accordance with the provisions of GC Clause 12 (Terms of Payment), the Employer shall pay the Contractor in the following manner and at the following times, on the basis of the Price Breakdown given in the section on Price Schedules. Payments will be made in the currencies quoted by the Bidder unless otherwise agreed between the Parties. Applications for payment in respect of part deliveries may be made by the Contractor as work proceeds.

TERMS OF PAYMENT

Schedule No. 1. Infrastructure and Equipment Supplied from Abroad – Not used

Acceptance Certificate, within forty-five (45) days after receipt of invoice.

Schedule No. 2. Infrastructure and Equipment Supplied from within the Employer's Country

In respect of infrastructure and equipment (including Mandatory Spare Parts), the following payments shall be made in INR. In the following manner:

Ten percent (10%) of the total EXW amount as an advance payment against receipt of invoice, and an irrevocable advance payment security for the equivalent amount made out in favor of the Employer. The advance payment will be adjusted at the time of each invoice processing as mentioned below. Accordingly advance payment security will be reduced in proportion as mentioned below

Forty percent (40%) of the total or pro rata EXW amount upon Incoterm “Ex-Works,” upon delivery to the carrier within forty-five (45) days after receipt of invoice and documents.

Forty percent (40%) of the total or pro rata EXW amount upon issue of the Completion Certificate, within forty-five (45) days after receipt of invoice.

Twenty percent (20%) of the total or pro rata EXW amount upon issue of the Operational Acceptance Certificate, within forty-five (45) days after receipt of invoice after receipt of equivalent Bank Guarantee from Nationalized bank valid till end of warrantee period of 2 years from the date of operational acceptance.

Schedule No. 3. Design Services

In respect of design services, payments shall be made in INR, in the following manner:

Ten percent (10%) of the total design services amount as an advance payment against receipt of invoice, and an irrevocable advance payment security for the equivalent amount made out in favor of the Employer. The advance payment will be adjusted at the time of invoice processing.

Hundred percent(100%) of the total or pro rata design services amount upon acceptance of design in accordance with GC Clause 20 by the Project Manager within forty-five (45) days after receipt of invoice.

Schedule No. 4. Installation Services

In respect of installation services, payments shall be made in INR in the following manner:

Ten percent (10%) of the total installation services amount as an advance payment against receipt of invoice, and an irrevocable advance payment security for the equivalent amount made out in favor of the Employer. The advance payment will be adjusted at the time of each invoice processing as mentioned below. Accordingly advance payment security will be reduced in proportion to the value of work performed by the Contractor as evidenced by the invoices for installation services.

Eighty percent (80%) of the measured value of work performed by the Contractor, as identified in the said Program of Performance, during the preceding month, as evidenced by the Employer's authorization of the Contractor's application, will be made monthly within forty-five (45) days after receipt of invoice.

Ten percent (10%) of the total or pro rata value of installation services performed by the Contractor as evidenced by the Employer's authorization of the Contractor's monthly applications, upon issue of the Completion Certificate, within forty-five (45) days after receipt of invoice.

Ten percent (10%) of the total or pro rata value of installation services performed by the Contractor as evidenced by the Employer's authorization of the Contractor's monthly applications, upon issue of the Operational Acceptance Certificate, within forty-five (45) days after receipt of invoice.

Applicable Sales and similar other taxes and duties will be reimbursed on submission of bill with documentary evidence of payment within forty-five [45] days of receipt of documents.

In the event that the Employer fails to make any payment on its respective due date, the Employer shall pay to the Contractor interest on the amount of such delayed payment at the rate of eight]percent (8%) per year or SBI PLR whichever is lower for the period of delay until payment has been made in full.

Schedule no.5. Operation and maintenance services for 24 months post operational readiness:

Equated Quarterly payment of accepted total charges for O&M services for 24 months, subject to performance certification by Third Party Audit (TPA). Deductions if any will be

based on penalty charges as per terms of SLA, will be effected within 45 days of submission of invoice certified by TPA

Schedule no. 6 All in one Annual Maintenance Contract (AMC) for 36 months post completion of O&M period of initial 24 months of operations

Equated Quarterly payment of accepted total charges for AMC services for 36 months, subject to performance certification by Third Party Audit (TPA). Deductions if any will be based on penalty charges as per terms of SLA, will be effected within 45 days of submission of invoice certified by TPA

PAYMENT PROCEDURES

The due and certified payment subject to conditions mentioned above in Appendix-1, will made by the employer through bank transfer/cheque to the bank account of sole or lead contractor subject to receipt of defined deliverables.

Appendix 2. Price Adjustment- Not applicable

Appendix 3. Insurance Requirements

Details to be completed by the Employer prior to issuing the bidding documents. In the event that the Employer provides any insurances under the Contract, appropriate details must be given.

Insurances to be Taken Out by the Contractor

In accordance with the provisions of GC Clause 34, the Contractor shall at its expense take out and maintain in effect, or cause to be taken out and maintained in effect, during the performance of the Contract, the insurances²² set forth below in the sums and with the deductibles and other conditions specified. The identity of the insurers and the form of the policies shall be subject to the approval of the Employer, such approval not to be unreasonably withheld.

The Contractors are required to take out and maintain Contractor's All Risks (CAR) Insurance policies, provided the policy covers all risks listed under this appendix

Amount	Deductible limits	Parties to be insured	From	To
100% of contract price, covering all risks mentioned under this appendix till the end of O&M period	1% of the contract price	Insured- Contractor Co-insured- Employer	Start date of agreement	End date of O&M period

(a) Cargo Insurance

Covering loss or damage occurring, while in transit from the supplier's or manufacturer's works or stores until arrival at the Site, to the Facilities (including spare parts therefor) and to the construction equipment to be provided by the Contractor or its Subcontractors.

<u>Amount</u>	<u>Deductible limits</u>	<u>Parties insured</u>	<u>From</u>	<u>To</u>
---------------	--------------------------	------------------------	-------------	-----------

(b) Installation All Risks Insurance

Covering physical loss or damage to the Facilities at the Site, occurring prior to completion of the Facilities, with an extended maintenance coverage for the Contractor's liability in respect of any loss or damage occurring during the defect liability period while the Contractor is on the Site for the purpose of performing its obligations during the defect liability period.

²²Contractors' may also take out and maintain Contractor's All Risks (CAR) Insurance policies, provided the policy covers all risks listed herein.

<u>Amount</u>	<u>Deductible limits</u>	<u>Parties insured</u>	<u>From</u>	<u>To</u>
---------------	--------------------------	------------------------	-------------	-----------

(c) Third Party Liability Insurance

Covering bodily injury or death suffered by third parties (including the Employer's personnel) and loss of or damage to property (including the Employer's property and any parts of the Facilities that have been accepted by the Employer) occurring in connection with the supply and installation of the Facilities.

<u>Amount</u>	<u>Deductible limits</u>	<u>Parties insured</u>	<u>From</u>	<u>To</u>
---------------	--------------------------	------------------------	-------------	-----------

(d) Automobile Liability Insurance

Covering use of all vehicles used by the Contractor or its Subcontractors (whether or not owned by them) in connection with the supply and installation of the Facilities. Comprehensive insurance in accordance with statutory requirements.

(e) Workers' Compensation

In accordance with the statutory requirements applicable in any country where the Facilities or any part thereof is executed.

(f) Employer's Liability

In accordance with the statutory requirements applicable in any country where the Facilities or any part thereof is executed.

(g) Other Insurances

The Contractor is also required to take out and maintain at its own cost the following insurances:

Details:

<u>Amount</u>	<u>Deductible limits</u>	<u>Parties insured</u>	<u>From</u>	<u>To</u>
---------------	--------------------------	------------------------	-------------	-----------

The Employer shall be named as co-insured under all insurance policies taken out by the Contractor pursuant to GC Sub-Clause 34.1, except for the Third Party Liability, Workers' Compensation and Employer's Liability Insurances, and the Contractor's Subcontractors shall be named as co-insureds under all insurance policies taken out by the Contractor pursuant to GC Sub-Clause 34.1, except for the Cargo, Workers' Compensation and Employer's Liability Insurances. All insurer's rights of subrogation against such co-insureds for losses or claims arising out of the performance of the Contract shall be waived under such policies.

Insurances To Be Taken Out By The Employer- Not Applicable

Appendix 4. Time Schedule

- Nine (9) months for project implementation (installation, commissioning and testing)
- Two (2) years O&M and warranty after project implementation
- Three (3) years AMC
- The bidders are required to submit his own proposed implementation schedule, however the total implementation time must not exceed 9 months from start date.

Appendix 5. List of Major Items of Infrastructure and Installation Services and List of Approved Subcontractors

A list of major items of Infrastructure and Installation Services is provided below.

The following Subcontractors and/or manufacturers are approved for carrying out the items of the Facilities indicated below. Where more than one Subcontractor is listed, the Contractor is free to choose between them, but it must notify the Employer of its choice in good time prior to appointing any selected Subcontractor. In accordance with GC Sub-Clause 19.1, the Contractor is free to submit proposals for Subcontractors for additional items from time to time. No Subcontracts shall be placed with any such Subcontractors for additional items until the Subcontractors have been approved in writing by the Employer and their names have been added to this list of Approved Subcontractors.

Major Items of Infrastructure and Installation Services	Proposed Subcontractors / Manufacturers (Provide for individual equipment separately)	Nationality
Group Messaging System		
Alert and warning System		
Network Monitoring System		
ICT Equipment		
Office Equipment		
VSAT network		
Internet Links		
RTUs		
Associated Civil Works		
All other Components		

Appendix 6. Scope of Works and Supply by the Employer

The following personnel, facilities, works and supplies will be provided/supplied by the Employer, and the provisions of GC Clauses 10, 21 and 24 shall apply as appropriate.

All personnel, facilities, works and supplies will be provided by the Employer in good time so as not to delay the performance of the Contractor, in accordance with the approved Time Schedule and Program of Performance pursuant to GC Sub-Clause 18.2.

Unless otherwise indicated, all personnel, facilities, works and supplies will be provided free of charge to the Contractor.

Personnel

Charge to Contractor (if any)

Facilities

Charge to Contractor (if any)

Works

Charge to Contractor (if any)

Supplies

Charge to Contractor (if any)

Appendix 7. List of Documents for Approval or Review

Pursuant to GC Sub-Clause 20.3.1, the Contractor shall prepare, or cause its Subcontractor to prepare, and present to the Project Manager in accordance with the requirements of GC Sub-Clause 18.2 (Program of Performance), the following documents for

- 1) Detailed Survey Reports
- 2) Final Design Reports for all solutions
- 3) Implementation documents for each solution
 - VSAT and Satellite Network Solution
 - Siren Systems Solution
 - IT Network Solution
 - Poles and Towers
 - SEOC, DEOC, TEOC set up
- 4) Acceptance testing formats
- 5) As built drawings/diagram

Appendix 8. Functional Guarantees

1. General

This Appendix sets out

- (a) the functional guarantees referred to in GC Clause 28 (Functional Guarantees) and Section III – Evaluation and Qualification Criteria Clause 1.4.
- (b) the preconditions to the validity of the functional guarantees, either in production and/or consumption, set forth below
- (c) the minimum level of the functional guarantees
- (d) the formula for calculation of liquidated damages for failure to attain the functional guarantees.

2. Preconditions

The Contractor gives the functional guarantees (specified herein) for the facilities, subject to the following preconditions being fully satisfied: *[List any conditions for the carrying out of the Guarantee Test referred to in GC Sub-Clause 25*

NIL

3. Functional Guarantees

Subject to compliance with the foregoing preconditions, the Contractor guarantees as follows:

3.1 ProductionCapacity

NIL

and/or

3.2 Raw Materials and Utilities Consumption

NIL

4. Failure in Guarantees and Liquidated Damages

4.1 Failure to Attain Guaranteed Production Capacity

If the production capacity of the facilities attained in the guarantee test, pursuant to GC Sub-Clause 25.2, is less than the guaranteed figure specified in para. 3.1 above, but the actual production capacity attained in the guarantee test is not less than the minimum level specified in para. 4.3 below, and the Contractor elects to pay liquidated damages to the Employer in lieu of making changes, modifications and/or

additions to the Facilities, pursuant to GC Sub-Clause 28.3, then the Contractor shall pay liquidated damages at the rate of 0.5% per week or part thereof for every complete one percent (1%) of the deficiency in the production capacity of the Facilities, or at a proportionately reduced rate for any deficiency, or part thereof, of less than a complete one percent (1%).

4.2 Raw Materials and Utilities Consumption in Excess of Guaranteed Level

If the actual measured figure of specified raw materials and utilities consumed per unit (or their average total cost of consumption) exceeds the guaranteed figure specified in para. 3.2 above (or their specified average total cost of consumption), but the actual consumption attained in the guarantee test, pursuant to GC Sub-Clause 25.2, is not more than the maximum level specified in para. 4.3 below, and the Contractor elects to pay liquidated damages to the Employer in lieu of making changes, modifications and/or additions to the Facilities pursuant to GC Sub-Clause 28.3, then the Contractor shall pay liquidated damages at the rate of *[amount in the contract currency]* for every complete one percent (1%) of the excess consumption of the Facilities, or part thereof, of less than a complete one percent (1%).

[The rate of liquidated damages specified in paras. 4.1 and 4.2 above shall be at least equivalent to the rate specified in Section III Evaluation and Qualification Criteria, for the comparison of functional guarantees provided by the bidders.]

4.3 Minimum Levels

Notwithstanding the provisions of this paragraph, if as a result of the guarantee test(s), the following minimum levels of performance guarantees (and consumption guarantees) are not attained by the Contractor, the Contractor shall at its own cost make good any deficiencies until the Facilities reach any of such minimum performance levels, pursuant to GC Sub-Clause 28.2:

- (a) production capacity of the Facilities attained in the guarantee test: ninety-five percent (95%) of the guaranteed production capacity (the values offered by the Contractor in its bid for functional guarantees represents 100%).

and/or

- (b) average total cost of consumption of all the raw materials and utilities of the Facilities: one hundred and five percent (105%) of the guaranteed figures (the figures offered by the Contractor in its bid for functional guarantees represents 100%).

4.4 Limitation of Liability

Subject to para. 4.3 above, the Contractor's aggregate liability to pay liquidated damages for failure to attain the functional guarantees shall not exceed ten percent (10%) of the Contract price.

Performance Security - Bank Guarantee
[including Additional Performance Security for unbalanced bids]
[Guarantor letterhead or SWIFT identifier code]

Performance Guarantee No..... *[insert guarantee reference number]*

Date..... *[insert date of issue of the guarantee]*

To: _____ *[name of Employer]*

_____ *[address of Employer]*

WHEREAS _____ *[name and address of Contractor²³]* (hereinafter called "the Applicant") has undertaken, in pursuance of Contract No. _____ dated _____ to execute _____ *[name of Contract and brief description of Facilities]* (hereinafter called "the Contract");

AND WHEREAS it has been stipulated by you in the said Contract that the Applicant shall furnish you with a Bank Guarantee by a recognized bank²⁴ for the sum specified therein as security for compliance with his obligations in accordance with the Contract;

AND WHEREAS we have agreed to give the Applicant such a Bank Guarantee;

NOW THEREFORE we hereby affirm that we are the Guarantor and responsible to you, on behalf of the Applicant, up to a total of _____ *[amount of guarantee²⁵]* _____ *[in words]*, and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of _____ *[amount of guarantee]* as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the Applicant before presenting us with the demand.

²³In the case of a JV, insert the name of the Joint Venture

²⁴The Bank Guarantee from a Scheduled Bank in India is acceptable to the Employer.

²⁵An amount shall be inserted by the Guarantor, representing the percentage of the Contract Price specified in the Contract less provisional sums, if any, and denominated in Indian Rupees.

We further agree that no change or addition to or other modification of the terms of the Contract or of the Works to be performed thereunder or of any of the Contract documents which may be made between you and the Applicant shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

This guarantee shall (a) be reduced by half upon our receipt of a copy of the Operational Acceptance Certificate; and (b) expire no later than the earlier of:²⁶ (i) twelve months after our receipt of either (a) above; or (ii) eighteen months after our receipt of a copy of the Completion Certificate; or (iii) the ____ day of ____, 2____.²⁷

Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date.

Signature and seal of the guarantor _____

Name of Bank _____

Address _____

Date _____

[Note: All italicized text (including footnotes) is for use in preparing this form and shall be deleted from the final product.]

²⁶ This text shall be revised as and where necessary to take into account (i) partial acceptance of the Facilities in accordance with Sub-Clause 25.4 of the GC; and (ii) extension of the performance security when the Contractor is liable for an extended warranty obligation pursuant to Sub-Clause 27.10 of the GC (although in this latter case the Employer might want to consider an extended warranty security in lieu of the extension of the performance security).

²⁷ Insert the date twenty-eight days after the expected expiration date of the Defect Liability Period. The Employer should note that in the event of an extension of the time for completion of the Contract, the Employer would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee. In preparing this guarantee, the Employer might consider adding the following text to the form, at the end of the penultimate paragraph: "The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed [six months][one year], in response to the Employer's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee."

Environmental, Social, Health and Safety (ESHS)
Performance Security - Bank Guarantee
[Guarantor letterhead or SWIFT identifier code]

ESHS Performance Guarantee No.....*[insert guarantee reference number]*
 Date.....*[insert date of issue of the guarantee]*

To: _____ *[name of Employer]*
 _____ *[address of Employer]*

WHEREAS _____ *[name and address of Contractor²⁸]*
 (hereinafter called "the Contractor") has undertaken, in pursuance of Contract No. _____ dated
 _____ to execute _____ *[name of Contract and brief*
description of Facilities] (hereinafter called "the Contract");

AND WHEREAS it has been stipulated by you in the said Contract that the Contractor shall furnish you with a Bank Guarantee by a recognized bank²⁹ for the sum specified therein as security for compliance with Environmental, Social, Health and/or Safety (ESHS) obligations in accordance with the Contract;

AND WHEREAS we have agreed to give the Contractor such a Bank Guarantee;

NOW THEREFORE we hereby affirm that we are the Guarantor and responsible to you, on behalf of the Contractor, up to a total of _____ *[amount of guarantee³⁰]*
 _____ *[in words]*, such sum being payable in the types and proportions of currencies in which the Contract Price is payable, and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of _____ *[amount of guarantee]* as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the Contractor before presenting us with the demand.

²⁸In the case of a JV, insert the name of the Joint Venture

²⁹ The Bank Guarantee from a Nationalized Bank in India is acceptable to the Employer.

³⁰ An amount shall be inserted by the Guarantor, representing the percentage of the Contract Price specified in the Contract less provisional sum if any, and denominated in Indian Rupees.

We further agree that no change or addition to or other modification of the terms of the Contract or of the Works to be performed thereunder or of any of the Contract documents which may be made between you and the Contractor shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

This guarantee shall be valid until³¹, and consequently any demand for payment under it must be received by us at this office on or before that date.

Signature and seal of the guarantor _____

Name of Bank _____

Address _____

Date _____

Note: All italicized text (including footnotes) is for use in preparing this form and shall be deleted from the final product.

³¹Insert the date twenty-eight days after the expected expiration date of the Defect Liability Period. The Employer should note that in the event of an extension of the time for completion of the Contract, the Employer would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee. In preparing this guarantee, the Employer might consider adding the following text to the form, at the end of the penultimate paragraph: "The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed [six months][one year], in response to the Employer's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee."

**Advance Payment Security
Demand Guarantee**
[Guarantor letterhead or SWIFT identifier code]

Advance Payment Guarantee No..... *[insert guarantee reference number]*
Date..... *[insert date of issue of the guarantee]*

To: _____ *[name of Employer]*
_____ *[address of Employer]*
_____ *[name of Contract]*

Gentlemen:

In accordance with the provisions of the Conditions of Contract, Sub-clause 13.2 ("Advance Payment Security") of the above-mentioned Contract, _____ *[name and address of Contractor³²]* (hereinafter called "the Applicant") shall deposit with _____ *[name of Employer]* a bank guarantee³³ to guarantee his proper and faithful performance under the said Clause of the Contract in an amount of _____ *[amount of guarantee³⁴]* _____ *[in words]*.

We, the _____ *[bank]*, as instructed by the Applicant, agree unconditionally and irrevocably to guarantee as primary obligator and not as Surety merely, the payment to _____ *[name of Employer]* on his first demand without whatsoever right of objection on our part and without his first claim to the Applicant, in the amount not exceeding _____ *[amount of guarantee]* _____ *[in words]*.

We further agree that no change or addition to or other modification of the terms of the Contract or of work to be performed thereunder or of any of the Contract documents which may be made between _____ *[name of Employer]* and the Applicant, shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

³²In the case of a JV, insert the name of the Joint Venture.

³³The Bank Guarantee from a Nationalized Bank in India is acceptable to the Employer.

³⁴An amount shall be inserted by the bank representing the amount of the Advance Payment, and denominated in Indian Rupees.

The maximum amount of this guarantee shall be progressively reduced by the amount of the advance payment repaid by the Applicant as indicated in copies of interim statements or payment certificates which shall be presented to us. This guarantee shall remain valid and in full effect from the date of the advance payment under the Contract until _____ *[name of Employer]* receives full repayment of the same amount from the Applicant. Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date.

Yours truly,

Signature and seal: _____

Name of Bank: _____

Address: _____

Date: _____

-----End of Document-----