

**Bidding Document
for
Procurement of Supply, Installation,
Commissioning and Services for
implementation of Component – A
(EWDS) of Last Mile Connectivity of
NCRMP for Karnataka**

National Competitive Bidding
(Two envelope Bidding Process with e-Procurement)

SEPTEMBER 2019

GOVERNMENT OF INDIA
National Cyclone Risk Mitigation Project (NCRMP-II)

INVITATIONS FOR BIDS (IFB)
E-Procurement Notice
(Two Envelope Bidding Process with e-Procurement)
Supply and Installation of EWDS

NATIONAL COMPETITIVE BIDDING

CONTRACT TITLE	: Procurement of Supply, Installation, Commissioning and Services for implementation of Component–A (EWDS) of Last Mile Connectivity of NCRMP for Karnataka.
PERIOD OF SALE OF BIDDING DOCUMENT	: FROM 16 th Sept. 2019, 05:30 PM TO 31 st Oct. 2019, 10:00 AM
TIME AND DATE OF PRE-BID MEETING ¹	: DATE 03 rd Oct, 2019 TIME 11.30 AM
LAST DATE AND TIME FOR RECEIPT OF BIDS	: DATE 31 st Oct. 2019, 11:00 AM
* TIME AND DATE OF OPENING OF BIDS– Technical Part ²	: DATE 31 st Oct. 2019, 04:30 PM
PLACE OF PRE BID MEETING & OPENING OF BIDS	: Project Director, State Project Implementation Unit (SPIU), Department of Revenue (Disaster Management), M S Building, Government of Karnataka, Bengaluru.
OFFICER INVITING BIDS	: Project Director, State Project Implementation Unit, Department of Revenue (Disaster Management), M S Building, Government of Karnataka, Bengaluru.

** Should be the same as the deadline for submission of bids or promptly thereafter.*

¹ Delete, if a pre-bid meeting is not scheduled for this procurement.

² The firms that qualify technically shall be notified subsequently for opening of the financial part of their bids.

INVITATION FOR BIDS

(IFB)

GOVERNMENT OF INDIA
National Cyclone Risk Mitigation Project (NCRMP-II)

INVITATIONS FOR BIDS (IFB)
E-Procurement Notice
(Two Envelope Bidding Process with e-Procurement)
Supply and Installation of EWDS

NATIONAL COMPETITIVE BIDDING

Employer: Project Director, Department of Revenue (Disaster Management), M S Building, Government of Karnataka, Bengaluru

Contract Title: Procurement of “Supply, Installation, Commissioning and Services for implementation of Early Warning Dissemination System (EWDS), Connectivity to the Last Mile under Component ‘A’ of NCRMP for Karnataka

Loan No./Credit No./ Grant No.: Credit No. 5693-IN

Bid No.: NCRMP II/KARNATAKA/NCB/EWDS/LM-01

Date: 15.09.2019

1. The Government of India has received financing from the World Bank toward the cost of NCRMP II Project and intends to apply a part of the proceeds toward payments under the contract for **Procurement of “Supply, Installation, Commissioning and Services for implementation of Early Warning Dissemination System (EWDS), Connectivity to the Last Mile under Component ‘A’ of NCRMP for Karnataka**
2. The *State Project Implementation Unit, NCRMP-Karnataka, Department of Revenue (Disaster Management), M S Building, GoK* now invites online Bids from eligible Bidders for *[insert brief description of EWDS requirements, including facilities, location, delivery period, etc.]* shown in Table below. 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: Procurement of Goods, Works and Non-Consulting Services under IBRD Loans and IDA Credits & Grants by World Bank Borrowers, January 2011_ Revised July 2014.
4. Bidders must register themselves with the e-tender website and should be in possession of Digital Token issued by an Indian CA. Interested bidder may obtain

further information and inspect the bidding document at the address given below during office hours.

5. Bidding documents are available online on <https://www.eproc.karnataka.gov.in> from 16/09/2019 to 31/10/2019 for a non-refundable fee as indicated in the table 1 below. Bidders will be required to register on the e-tender website. The bidders would be responsible for ensuring that any addenda available on the website is also downloaded and incorporated.
6. For submission of the bid, the bidder is required to have Digital Signature Certificate (DSC Class III) 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: <https://www.eproc.karnataka.gov.in>. A non-refundable fee of Rs. 7,500/- is required to be paid online towards the cost of tender document before the bid submission deadline as per the payment mode instructions given at the Karnataka e-tender web site <https://www.eproc.karnataka.gov.in>
7. Bids must be submitted online on <https://www.eproc.karnataka.gov.in> on or before 11.00 Hours on 31st October, 2019 and the 'Technical Part' of the bids will be opened online on 31st October, 2019 at 16.30 hrs. The "Financial Part" shall remain unopened in the e-procurement system until the second public Bid opening for the financial part. 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 1 below (column 3) drawn in favour of Project Director, NCRMP II, Department of Revenue (Disaster Management), M S Building, Govt. of Karnataka, Bengaluru, India. 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. Procedure and instructions for submission of bid security and tender cost etc is indicated at our e-tendering site <https://www.eproc.karnataka.gov.in>.
9. The bidders are required to submit the following documents in original to 'The Project Director, NCRMP II, Department of Revenue (Disaster Management), M S Building, Govt. of Karnataka, Bengaluru, India, India 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.
 - a. Original payment document towards the cost of bid document
 - b. Original bid security in approved form
 - c. Power of attorney to sign the bid document
 - d. Original affidavit regarding correctness of information furnished with bid document

10. A pre-bid meeting³ will be held on 03rd October, 2019 at 11.30 hours at Office of Project Director, State Project Implementation Unit (SPIU), Department of Revenue (Disaster Management), M S Building, Government of Karnataka, Bengaluru 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 website for the latest information related to this bid.
12. Details of the EWDSs requirements⁴ are shown in the table below:

Contract No.	Contract Title	Bid Security* (Rs.)	Cost of Document (Rs.) ⁵	Period of Completion
1	2	3	4	5
	Karnataka State – Procurement of “Supply, Installation, Commissioning and Services for implementation of Early Warning Dissemination System (EWDS), Connectivity to the Last Mile under Component ‘A’ of NCRMP for Karnataka	INR 20 Lacs	7,500.00	12 months

13. The address for communication is as under:
- (a) Name & Designation of Officer: Project Director, NCRMP-II.
- (b) Official Address: Project Director, NCRMP II, Department of Revenue (Disaster Management), Room No.: 547, 5th Floor, 2nd Gate, M S Building, Govt. of Karnataka, Bengaluru, India.
- (c) Email: pdncrmprkar@gmail.com
- (d) Telephone 080-22340676

**Note * - The values should be rounded off to the nearest ten thousands of rupees.
The IFB should be identical to that which appeared in the press/ website.**

³ Delete this para, if a pre-bid meeting is not scheduled for this procurement.

⁴ A brief description of the EWDS requirements should be provided, including facilities, location, delivery period etc. and other information necessary to enable potential Bidders to decide whether or not to respond to the Invitation for Bids. The information shall be in line with that provided in any other para of the IFB.

⁵ Insert amount in Rs. The fee chargeable should only be nominal to defray the reproduction and mailing costs.

PART 1 – Bidding Procedures

Section I. Instructions to Bidders

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 EWDS 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, EWDS, 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 party⁶;
 - (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 obligation⁷;
 - (iii) “collusive practice” is an arrangement between two or more parties⁸ 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 party⁹ 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

⁶ “Another party” refers to a public official acting in relation to the procurement process or contract execution. In this context, “public official” includes World Bank staff and employees of other organizations taking or reviewing procurement decisions.

⁷ “Party” refers to a public official; the terms “benefit” and “obligation” relate to the procurement process or contract execution; and the “act or omission” is intended to influence the procurement process or contract execution.

⁸ “Parties” refers to participants in the procurement process (including public officials) attempting to establish bid prices at artificial, non competitive levels.

⁹ “Party” refers to a participant in the procurement process or contract execution.

- (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^a, 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^b 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)).

^a A firm or an individual may be declared ineligible to be awarded a Bank-financed contract upon completion of the Bank's sanctions proceedings as per its sanctions procedures, including inter alia: (i) temporary suspension in connection with an ongoing sanctions proceeding; (ii) cross-debarment as agreed with other International Financial Institutions, including Multilateral Development Banks; and (iii) the World Bank Group corporate administrative procurement sanctions procedures for fraud and corruption.

^b A nominated sub-contractor, consultant, manufacturer or supplier, or service provider (different names are used depending on the particular bidding document) is one which either has been: (i) included by the bidder in its pre-qualification application or bid because it brings specific and critical experience and know-how that are accounted for in the evaluation of the bidder's pre-qualification application or the bid; or (ii) appointed by the Borrower.

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- 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) 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 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 during the bidding process and, in the event the JV 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.
- 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 EWDS 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 EWDS and Installation Services

- 5.1 The EWDS 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 EWDS and Installation Services.
- 5.2 For purposes of ITB 5.1 above, "origin" means the place where the EWDS, or component parts thereof are mined, grown, produced or manufactured, and from which the services are provided. EWDS 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 EWDS 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 EWDS 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.
- 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 EWDS 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 EWDS and Installation Services offered by the Bidder conform to the Bidding Document;
- (h) in the case of a bid submitted by a JV (where permitted), JV agreement, or letter of intent to enter into a JV including a draft agreement signed by all partners, indicating at least the parts of the EWDS 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.**

11.3 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 a EWDS 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 EWDS 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 EWDS and**
- 14.1 To establish the eligibility of the EWDS 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

Installation Services	Section IV, Bidding Forms.
15. Documents Establishing the Eligibility and Qualifications of the Bidder	<p>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.</p> <p>15.2 Deleted.</p>
16. Documents establishing conformity of the EWDS and Installation Services	<p>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.</p> <p>16.2 For major items of EWDS 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.</p> <p>16.3 The Bidder shall be responsible for ensuring that any Subcontractor proposed complies with the requirements of ITB 4, and that any EWDS, or services to be provided by the Subcontractor comply with the requirements of ITB 5 and ITB 15.1</p>
17. Bid Prices and Discounts	<p>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:</p> <p>Unless otherwise specified in the BDS, bidders shall quote for the entire EWDS 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), delivery, construction, installation and completion of the EWDS including supply of mandatory spares (if any). This includes all requirements under the Contractor's responsibilities for testing, pre-commissioning and</p>

commissioning of the EWDS 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 EWDS and Installation Services. The total amount from each Schedule corresponding to an element of the EWDS 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 EWDS (including Mandatory Spare Parts)
Supplied from Abroad – not used

Schedule No. 2 EWDS (including Mandatory Spare Parts)

Schedule No. 3 Design Services

Schedule No. 4 Installation Services

Schedule No. 5 Grand Summary (Schedule Nos. 1 to 4)

Schedule No. 6 Recommended Spare Parts

Bidders shall note that the EWDS 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) EWDS to be supplied from abroad (Schedule No. 1):
Not used
- (b) EWDS manufactured within the Employer's country (Schedule No. 2):
 - (i) The price of the EWDS 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 and all other taxes payable in the Employer's country on the EWDS if the contract is awarded to the Bidder.
- (c) Design Services (Schedule No. 3).
- (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 EWDS, all labor, contractor's equipment, temporary works, materials, consumables and all matters and things of whatsoever nature, including operations and maintenance services, the 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.
- (e) Recommended spare parts shall be quoted separately (Schedule 6) as specified in either subparagraph (a) or (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 EWDS/ 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 EWDS/ 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 EWDS/ 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 EWDS/ 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 the following two forms:

- (a) A nominal online payment of Rs. 1,000/- through NEFT/RTGS/CREDIT CARD/DEBIT CARD/;
- (b) Balance amount of Bid Security amount through an unconditional Bank Guarantee (BG) issued by Nationalized or Scheduled Bank located in India;
- (c) Or another security indicated in the BDS

The Bank Guarantee which is uploaded to the Portal need to be submitted to the SPIU by hand on or before 11:00 a.m. of 04.11.2019, for verification by the SPIU.

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 i.e. 225 days, 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 shall be in the name of the JV that submits the bid. If the JV has not been legally constituted into a legally enforceable JV 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 originals 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 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. Documents establishing authority to sign the bid on behalf of the JV 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. 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 EWDS 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 EWDS 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.
- 31.1 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 EWDS 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 4 and the amount given in Schedule No. 5 (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.

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| 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. |
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Award of Contract

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|----------------------------------|--|
| 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 | <div>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 EWDS and Installation Services (hereinafter and in the Conditions of Contract and Contract Forms called "the Contract Price").</div> <div>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 GoI Central Public Procurement Portal (https://eprocure.gov.in/cppp/) or in the official gazette, and on e-procurement system, 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.</div> |

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, it shall also furnish the JV agreement duly signed by all the partners, if it had submitted only a letter of intent to execute the JV 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

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: NCRMP II/KARNATAKA/NCB/EWDS/LM-01
ITB 1.1	The Employer is: <i>State Project Implementation Unit.</i> <i>Project Director, Department of Revenue (Disaster Management), Room No. 546, 5th Floor, 2nd Gate, M S Building, Govt. of Karnataka, Bengaluru, India.</i>
ITB 1.1	The name of the NCB is: Procurement of Supply, Installation, Commissioning and Services for implementation of Component – A (EWDS) of Last Mile Connectivity of NCRMP Karnataka The identification number of the NCB is: NCRMP II/KARNATAKA/NCB/EWDS/LM-01.
ITB 2.1	The Borrower is Government of India. The Sub-Borrower is: <i>Project Director, Department of Revenue (Disaster Management), M S Building, Govt. of Karnataka, Bengaluru, India</i>
ITB 2.1	The name of the Project is: <u>National Cyclone Risk Mitigation Project (NCRMP-II)</u>
ITB 4.1	(State here whether Joint Ventures are acceptable or not) Bids from Joint ventures are/are not acceptable. NOT ACCEPTABLE Where Joint Ventures are permitted: N. A (a) The individuals or firms in a joint venture shall be jointly and severally liable. (b) Place where the agreement to form JV to be registered is: (c) Maximum number of partners in the Joint Venture (JV) shall be: <i>[insert a number]</i> (d) The joint venture agreement should define precisely the division of assignments to each partner of JV. All partners of JV 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.

ITB 4.2	Applicable edition of Procurement Guidelines is: January 2011_Revised July 2014
ITB 4.4	The electronic address of firms and individuals debarred by the Bank is: http://www.worldbank.org/debarr .
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>https://eproc.karnataka.gov.in</p> <p>Requests for clarification should be received by the Employer no later than 14 days prior to deadline for submission of bids. The Employer will also upload its response on the Employer’s website i.e. https://eproc.karnataka.gov.in without identifying the source.</p>
ITB 7.4	<p>A Pre-Bid meeting will take place at the following date, time and place:</p> <p>Date: 03rd October, 2019</p> <p>Time: At 11:30 hours</p> <p>Place: At the office of Project Director, State Project Implementation Unit (SPIU), Department of Revenue (Disaster Management), M S Building, Government of Karnataka, Bengaluru.</p>
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 under https://eproc.karnataka.gov.in and email notification is also automatically sent to those bidders who have started working on this tender.
ITB 8.3	Notification regarding extension of deadline for submission of Bids will also be hosted on the Employer’s website specified in BDS ITB 7.1.
Preparation of Bids	
ITB 11.2 (j)	<p>The Bidder shall submit with its bid the following additional documents: <i>[list any additional document not already listed in ITB 11.2 that must be submitted with the Bid. The list of additional documents should include the following:]</i></p> <p>(i) Code of Conduct (ESHS)</p> <p>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</p>

	<p>contract. <i>[Note: Complete and include the risks to be addressed by the Code in accordance with Section VI-Employer's Requirements, e.g. Risks associated with: labor influx, spread of communicable diseases, sexual harassment, gender based violence, sexual exploitation and abuse, illicit behavior and crime, and maintaining a safe environment etc.]</i></p> <p>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.</p> <p>The Contractor shall be required to implement the agreed Code of Conduct upon contract award.</p> <p>(ii) Management Strategies and Implementation Plans (MSIP) to manage the (ESHS) risks</p> <p>The Bidder shall submit Management Strategies and Implementation Plans (MSIP) to manage the following key Environmental, Social, Health and Safety (ESHS) risks.</p> <ul style="list-style-type: none"> • Traffic Management Plan to accommodate various site and location related requirements; • All major project systems shall not create any traffic issues and must be transported as per the local administrative and traffic needs. • Gender based violence and sexual exploitation and abuse (GBV/SEA) prevention and response action plan. • Tower foundation which includes excavation and Tower erection works to ensure Safety. • Safety of personnel and security of equipment and devices • Safety in tower climbing & fall protection • Trenching works for laying of Cables at Tower location sites and at EOC offices if any • Site Safety plan at Tower site to restrict the Public entering the site. • Positioning antenna and other instruments on towers • Site Office Safety, Prevention of Fire and protection • Green norms. Vendor plans to limit power, space, heat and sound in
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	<p>their installations and deliverables.</p> <p>The Contractor 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.</p> <p>(iii) Contractor Registration certificate if specified (as per IFB);</p> <p>(iv) Manufacturer's authorization for major items of supply under the contract, that the Bidder did not manufacture or otherwise produce;</p> <p>(v) 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.</p>
ITB 13.1	Alternative bids are not permitted.
ITB 13.2	<p>Alternatives to the Time Schedule "<i>shall not be</i>" permitted.</p> <p>If alternatives to the Time Schedule are permitted, the evaluation method will be as specified in Section III, Evaluation and Qualification Criteria.</p>
ITB 13.4	Alternative technical solutions shall be permitted for the following parts of the EWDS and Installation Services: ' <i>Not applicable</i> '
ITB 17.5 (d)	Named place of final destination is: as per BOQ Plan
ITB 17.7	The prices quoted by the Bidder " <i>shall not</i> " be subject to adjustment during the performance of the Contract.
ITB 19.1	The bid validity period shall be: 180 days.
ITB 19.3	NA
ITB 20.1	A bid security is required, the amount of the bid security shall be Rs. 20 Lakhs
ITB 20.3 (d)	Other types of acceptable securities are: Nil
ITB 21.1	<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 Class III) in the form of smart card/e-token. The DSC can be obtained from any authorised certifying agency authorised by the Government of India for class III. The bidder should register in the web site https://eproc.karnataka.gov.in using the relevant option available. Then the Digital Signature registration has to be done with the e-token, after logging into the site. After this, the bidder can login the site through the</p>

	<p>secured login by entering the password of the e-token & the user id/ password chosen during registration. After getting the bid schedules, the Bidder should go through them carefully and then submit the documents as asked, along with the bid, otherwise, the bid will be rejected.</p> <p>The e-Procurement system will scan the uploaded documents for virus and if a document uploaded by bidder is found to have virus, the system will reject the uploaded file. Bidders shall take due care to ensure that the documents uploaded by them in e-Procurement system are virus free.</p> <p><u>The original (a) Bid Security, (b) Power of Attorney (s), (c) online payment receipts for cost of bid document and tender participation fee, and (d) affidavit regarding correctness of information furnished with bid document,</u> shall be delivered by the Bidder to the Employer before the bid submission deadline at the Employer's following address:</p> <p>For submission of original documents, the Employer's address is:</p> <p>(a) Attention: Project Director, NCRMP-II. Official Address: Department of Revenue (Disaster Management), M S Building, Bengaluru, Karnataka</p> <p>In case of non-receipt of these original documents, the bid will be declared non-responsive and will not be opened.</p>
ITB 21.2 and 21.3	<p>The written confirmation of authorization to sign on behalf of the Bidder shall consist of:</p> <p>(a) <i>Legally valid Power of Attorney is required to demonstrate the authority of the signatory to sign the Bid; and</i></p> <p>(b) <i>In the case of Bids submitted by an existing or intended JV, if permitted as per ITB 4.1, the authorization shall be evidenced by a Power of Attorney signed by legally authorized signatories of all the partners."</i></p>
Online Submission and Opening of Bids	
ITB 22.1	<p>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.</p>
ITB 23.1	<p>The deadline for uploading the bids:</p> <p>Date: 31st October, 2019</p> <p>Time: 11:00 Hours</p>
ITB 25.1	<p>Bidders may modify their bids by uploading their request for modification before the deadline for submission of bids on the e-procurement portal</p>

	<p>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. Modification (including offering discount)/ withdrawal of Bids by any other means shall not be permitted.</p>
Public Opening of Technical Parts of Bid	
ITB 26.1	<p>The online bid opening of Technical Parts of Bids shall take place at: The Office of Project Director, State Project Implementation Unit (SPIU), Department of Revenue (Disaster Management), M S Building, Government of Karnataka, Bengaluru, India Date: 31st October, 2019 Time: 16.30 Hours</p> <p>The Employer will open the Technical Parts of Bids online publicly in the presence of authorized representatives of the Bidders and anyone who may choose to attend. The online opening will be done by the Employer's officials/ Authorised representatives. A withdrawn bid will not be available in the system and will therefore not be opened. In case of bid modifications, only the last modified bid shall be available in the system and shall be opened, along with other bids. The particulars such as name of the Bidders, details of original Bid Security, if applicable Alternative Bids – Technical Part, and any other details as considered appropriate will be read out.</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:</p>

	<p>(a) The Office of Project Director.</p> <p>(b) Official Address: Project Director, State Project Implementation Unit (SPIU), Department of Revenue (Disaster Management), M S Building, Government of Karnataka, Bengaluru, India</p> <p>Date: Shall be intimated to the Technically qualified bidders Time: 11.30 Hours</p> <p>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 https://eproc.karnataka.gov.in</p>
Award of Contract	
ITB 45.1	The successful Bidder shall be required to submit an Environmental, Social, Health and Safety (ESHS) Performance Security.
ITB 46	<p>The Adjudicator proposed by the Employer is: _____. The daily fee for this proposed Adjudicator shall be: _____. The biographical data of the proposed Adjudicator is as follows:</p> <p>_____</p>

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.

[The Employer shall select the criteria deemed appropriate for the procurement process, insert the appropriate wording using the samples below or other acceptable wording, and delete the text in italics]

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

1. Prime bidder/ Subcontractor/ OEM/Authorized Partner of OEM /Distributor in India should be in the same business for over 07 years (i.e., IT, Telecom services, System Integration, WAN connectivity). Registration Details with Year of Formation to be submitted.
2. Bidders (Prime &/ Subcontractors) should be Original Equipment Manufacturer (OEM) or authorised partner/ Distributer in India of the OEM to quote the offered products. Prime Bidder can be as System Integrator also.
3. The Prime Bidder/ OEM/Authorized Partner of OEM /Distributor in India must have own registered Office in India to ensure prompt service warranty support after sales. If not registered, they will be required to get registered if they win the contract.
4. Certifications:
 - The Prime bidder/partners/subcontractor must have ISO 9001 quality management system (QMS) certification from competent authority

1.3 The following factors and methods will apply: Nil

1.4 Functional Guarantees of the facilities – technical aspects

The minimum (or maximum) requirements stated in the Specification for functional guarantees required in the Specification are:

Functional Guarantee	Minimum (or Maximum, as appropriate) Requirement
Technical Compliance of Goods	<p>All goods supplied shall meet their technical specifications provided in this tender document.</p> <p>Minor deviations (if any) may be waived off by the technical evaluation committee.</p>

Functional Guarantee after project Commissioning phase (up to 5 years)	Minimum (or Maximum, as appropriate) Requirement
Siren Systems	Minimum uptime of 99% every year
DMR Network	Minimum uptime of 99% every year
SEOC, DEOC, TEOC Equipments	Minimum uptime of 99% every year Minimum uptime of 99% every year
Repair of Faulty equipment's/ parts	Maximum 1 week. Standby equipment's will be provided within 2 hours to restore services
Replacement of Faulty equipment's /parts	Maximum 1 month. Standby equipment's will be provided within 2 hours to restore services

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: NA

1.6 Specific additional criteria

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

2. Qualification

Factor	2.1 Eligibility					
Sub-Factor	Criteria					Documentation Required
	Requirement	Single Entity	Bidder			
			Joint Venture where permitted			
			All partners combined	Each partner	At least one partner	
2.1.1 Nationality	Nationality in accordance with ITB 4.2.	Must meet requirement	N / A	N / A	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	N / A	N / A	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	N / A	N / A	N / A	Letter of Bid
2.1.4 Government Owned Entity	Compliance with conditions of ITB 4.5	Must meet requirement	N / A	N / A	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	N / A	N / A	N / A	Letter of Bid

Factor	2.2 Historical Contract Non-Performance					
Sub-Factor	Criteria					Documentation Required
	Requirement	Bidder				
		Single Entity	Joint Venture			
			All partners combined	Each partner	At least one partner	
2.2.1 History of non-performing contracts	Non-performance ¹⁰ of a contract did not occur within the last five (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	N / A	NA	N / A	Form CON - 2
2.2.2 Pending Litigation	All pending litigation shall in total not represent more than Twenty percent (20%) 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	N / A	NA	N / A	Form CON – 2

¹⁰ Nonperformance, as decided by the Employer, shall include all contracts where (a) nonperformance was not challenged by the contractor, including through referral to the dispute resolution mechanism under the respective contract, and (b) contracts that were so challenged but fully settled against the contractor. Nonperformance shall not include contracts where Employers decision was overruled by the dispute resolution mechanism. Nonperformance must be based on all information on fully settled disputes or litigation, i.e. dispute or litigation 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.

Factor	2.2 Historical Contract Non-Performance					
Sub-Factor	Criteria					Documentation Required
	Requirement	Bidder				
		Single Entity	Joint Venture			
			All partners combined	Each partner	At least one partner	
2.2.3 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 ¹¹ .	Must make the declaration. Where there are Specialized Sub-contractor/s, the Specialized Sub-contractor/s must also make the declaration.	N/A	NA	N/A	Form CON-3 ESHS Performance Declaration

¹¹ The Employer may use this information to seek further information or clarifications in carrying out its due diligence

Factor	2.3 Financial Situation					
Sub-Factor	Criteria					Documentation Required
	Requirement	Bidder				
		Single Entity	Joint Venture			
	All partners combined		Each partner	At least one 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 Three [3] years to demonstrate the current soundness of the bidders’ financial position and its prospective long term profitability. (a) Should not have reported losses under audited Profit-Loss statements for the last three financial years - prior to the deadline for application submission	Must meet requirement	N / A	NA	N / A	Form FIN – 3.1 with attachments
2.3.2 Average Annual Turnover ¹²	Minimum average annual turnover for last three financial years in IT / Telecom services/ System Integration of INR 28 Crores calculated as total	Must meet requirement	NA	NA	NA	Form FIN –3.2

¹² Refer to the 'Sample Qualification Requirements – EWDSs' at the end of Section III for any specific changes, if considered necessary.

Factor	2.3 Financial Situation					
Sub-Factor	Criteria					Documentation Required
	Requirement	Bidder				
		Single Entity	Joint Venture			
	All partners combined		Each partner	At least one partner		
	certified payments , calculated as total certified payments received for contracts in progress or completed, within the last three (3) years					
Note: <i>The amount stated should normally not be less than twice the estimated annual turnover or cash flow in the proposed EWDS and installation work (based on a straight-line projection of the Employer's estimated cost, over the contract duration).</i> 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: 8 Cr and (ii) the overall cash flow requirements for this contract and its current commitments.	Must meet requirement	NA	NA	NA	Form FIN –3.3

Factor	2.4 Experience					
Sub-Factor	Criteria					Documentation Required
	Requirement	Bidder				
		Single Entity	Joint Venture			
	All partners combined		Each partner	At least one partner		
2.4.1 General Experience	Experience in IT /Telecom services/ Heterogeneous System Integration/Network Operation Center under contracts in the role of contractor, subcontractor, or management contractor for at least the last five [5] years Successful completion certificate from Competent authority shall be submitted	Must meet requirement	NA	NA	N A	Form EXP-2.4.1
2.4.2 Specific Experience	(a) Participation as contractor, ¹³ , management contractor, or subcontractor, in at least two (2) contracts ¹⁴ , each with a value of at least Ten crores (10 Cr), that have been successfully and substantially ¹⁵ completed or one (1) Contract of value not less than Fifteen Crores (15 Cr) and that are similar to the proposed EWDS and Installation	Must meet requirement	NA	NA	NA	Form EXP 2.4.2(a)

¹³ For contracts under which the Bidder participated as a joint venture partner or sub-contractor, only the Bidder's share, by value, shall be considered to meet this requirement

¹⁴ Bidder should have completed at least one contract for similar work of value not less than 80% of the estimated contract value of the work for which bids are invited, during the last five years. Cost of completed works of previous years shall be given weightage @5% per year based on rupees value to bring them to the price level of the financial year in which bids are received.

¹⁵ Substantial completion shall be based on 80% or more EWDS and installation completed under the contract.

Factor	2.4 Experience					
Sub-Factor	Criteria					Documentation Required
	Requirement	Bidder				
		Single Entity	Joint Venture			
			All partners combined	Each partner	At least one partner	
	Services within the last Ten (10) years. The similarity shall be based on the physical size, complexity, methods/technology or other characteristics as described in Section VI, Employer’s Requirements. <i>[Indicate, if any, of this key requirements may also be met through a specialized subcontractor].</i>					

Factor	2.4 Experience					
Sub-Factor	Criteria					Documentation Required
	Requirement	Bidder				
		Single Entity	Joint Venture			
	All partners combined		Each partner	At least one partner		
2.4.2 Specific Experience	(b) For the above or other contracts executed during the period stipulated in 2.4.2(a) above, a minimum experience in the following key activities: i. Bidder should have implemented at least one (1) project related to: Emergency Operation Centre/ Network Operation Centre with LAN, WAN, Internet Services, VPN and System Integration with over 30 WAN Nodes. Note: Successful completion certificates and PO shall be submitted from competent authority	Bidder/ Sub Contractor/ OEM/ OEM authorized partner Must meet requirements	Must meet requirements ¹⁶	N / A	Must meet requirements <i>[if applicable, out of the key activities in the first column of this 4.2 b), list key activities (volume, number or rate of production as applicable) and the corresponding minimum requirements that have to be met by one partner]</i>	Form EXP-2.4.2(b)

[Note: For Multiple lots (contracts) specify financial and experience criteria for each lot under Sub-Factors 2.3.1, 2.3.2, 2.4.2(a) and 2.4.2(b)]

¹⁶ In the case of JV, the value of contracts completed by its partners 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 partner 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 partners each of value equal or more than the minimum value required shall be aggregated.

2.4.2 Specific Experience	<p>ii. Bidder should have implemented at least two (2) project related to implementation of GUI based mass alert system consisting of multiple alert method for the activation of siren with min 50 locations together in last Ten years (one should be for Dam/ Tsunami/ cyclone warning)</p> <p>Note: Successful completion certificates and PO shall be submitted from competent authority</p>	Must meet requirements	Must meet requirements ¹⁷	N / A	<p>Must meet requirements <i>[if applicable, out of the key activities in the first column of this 4.2 b), list key activities (volume, number or rate of production as applicable) and the corresponding minimum requirements that have to be met by one partner]</i></p>	Form EXP-2.4.2(b)
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[Note: For Multiple lots (contracts) specify financial and experience criteria for each lot under Sub-Factors 2.3.1, 2.3.2, 2.4.2(a) and 2.4.2(b)]

¹⁷ In the case of JV, the value of contracts completed by its partners 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 partner 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 partners each of value equal or more than the minimum value required shall be aggregated.

2.4.2 Specific Experience	<p>iii. Bidder should have implemented at least two (2) radio communication network comprising of repeaters, hand portable, mobile/ static radio sets in last eight years costing not less than the amount equal to INR 1,00,00,000/- each. Successful completion certificate from competent authority required to be submitted</p>	<p>Bidder/ Sub Contractor/ OEM/ OEM authorized partner Must meet requirements</p>	N / A	N /A	<p>Either Prime bidder or his Partner must meet this requirement</p>	Form EXP-2.4.2(b)
	<p>iv. Bidder should have supplied and maintained at least 10 no. of Satellite Phone solutions in last five years which could be any kind of satellite phones and services . Successful completion certificates and PO shall be submitted</p> <p>v. Bidder should have erected 20 Angular Towers and 10 Spun Concrete Towers of min 15 mts within last 5 years. Successful completion certificates shall be submitted</p>	<p>Bidder/ Sub Contractor/ OEM/ OEM authorized partner Must meet requirements</p>	N / A	N /A	<p>Either Prime bidder or his Partner must meet this requirement</p>	

2.5 Personnel

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

#	Description	Minimum Qualification	# of Staff
A	Project Manager (Overall SEOC incharge)	BE/ B. Tech in IT/ CSC/ ECE. Proficiency in managing NOCs, Data Centers etc.	1
B	Radio Engineer (SEOC)	BE/ B.Tech in ECE/ EEE. Suitable proficiency in various EWDS systems/ Analog/ Digital Radio systems and its management	1
C	Field Engineers (DEOC)	BE/ B.Tech / Diploma Engineers must have demonstrated skills in handling various EWDS, communications systems, NOC and UPS.	2 per DEOC
D	Environmental and Safety Expert	Graduate in Environmental Sciences. with Minimum B.Tech (Env. Engg.) / B.Sc (Env Sc) 2 years of experience in handling the environmental issues in Turnkey infrastructure projects	1

The Bidder must not have in his employment:

- [i] the near relations (defined as first blood relations, and their spouses, of the bidder or the bidder's spouse) of Members / Employees of the following Government Departments.
 - i. Karnataka State Natural Disaster Monitoring Centre (KSNDMC)
 - ii. Dept. of Revenue (Disaster Management), M S Building
 - iii. NDMA/ KSDMA
- [ii] 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:

2.7 Subcontractors

Prime Bidder / Subcontractors / manufacturers for the following major items of supply or services ('Specialized Prime Bidder / Subcontractors') must meet the following minimum criteria, herein listed for that item:

Item No.	Description of Item	Minimum Criteria to be met¹⁸
1	Alert Siren	<ul style="list-style-type: none"> • Certificate/ PO as per Clause no. 2.4.2 (b) ii
2	SBMDVT & Sat phones	<ul style="list-style-type: none"> • Certificate/ PO as per Clause no. 2.4.2 (b) iv
3	DMR Hand sets and Mobile Base station	<ul style="list-style-type: none"> • Certificate/ PO as per Clause no. 2.4.2 (b) iii

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 EWDS 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.

¹⁸ Specify keeping in view the qualifying criteria specified for the Bidder or authorized representative of a manufacturer

3. Evaluation – Financial Part

3.1 The following factors and methods will apply:*[use one or more of the following adjustment factors consistent with ITB 35.1 of the BDS]*

(a) Time Schedule

Time to complete the EWDS and Installation Services from the effective date specified in Article 3 of the Contract Agreement for determining time for completion of pre-commissioning activities is: 12 Months. No credit will be given for earlier completion.

(b) Operating and Maintenance Costs

Reference to the methodology specified in the Specification or elsewhere in the Bidding Document.

The price of recommended spare parts quoted in Price Schedule No. 6 shall not be considered for evaluation.

(c) Functional Guarantees of the Facilities – financial aspects : Not Applicable

The minimum (or maximum) requirements stated in the Specification for functional guarantees required in the Specification are:

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

Where bids include the undertaking of work or the provision of services or facilities by the Employer in excess of the provisions allowed for in the Bidding document, the Employer shall assess the costs of such additional work, services and/or facilities during the duration of the contract. Such costs shall be added to the Bid price for evaluation.

(e) Specific additional criteria

- Not Applicable

(f) Technical Alternative – financial aspects: Not Applicable

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

(g) Multiple Contracts (ITB 35.3)

-Not Applicable

Section IV. Bidding Forms

Letter of Bid – Technical Part

INSTRUCTIONS TO BIDDERS: DELETE THIS BOX ONCE YOU HAVE COMPLETED THE DOCUMENT

The Bidder must prepare this Letter of Bid – Technical Part on stationery with its letterhead clearly showing the Bidder's complete name and business address.

Note: All italicized text is to help Bidders in preparing this form.

Date: _____

NCB No.: _____

Invitation for Bid No.: _____

Alternative No¹⁹.: _____

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 EWDS 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;

¹⁹

- (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;
- (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;²⁰
- (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.

Name _____ In the capacity of _____

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.

²⁰ Bidder to use as appropriate

Appendix to Technical Part

Technical Proposal

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

Appendix to Technical Part

Site Organization

[Insert Site Organization Information]

Appendix to Technical Part

Method Statement

[insert Method Statement - A detailed note should be submitted outlining bidders proposed methodology and program for the provision of EWDS 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].

Chapters shall also address the following subject including Task, Time and resource scheduling.

- (a) Project Organization and Management Plan;
- (b) Delivery and Installation Plan including Task time and resource scheduling
- (c) Overall architecture and design of the offered solution.
- (d) Quality Control and Training Plan
- (e) Pre-commissioning and Operational Acceptance Testing Plan
- (f) Maintenance Plan

Appendix to Technical Part

Mobilization Schedule

(Bidder to propose)

Appendix to Technical Part

Implementation Schedule

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.

Bidder is required to complete the installation and commissioning of the entire system within 12 months from the date of the award of work order.

Appendix to Technical Part

ESHS Management Strategies and Implementation Plans

(ESHS-MSIP)

The Bidder shall submit comprehensive and concise Environmental, Social, Health and Safety Management Strategies and Implementation Plans (ESHS-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

Code of Conduct: Environmental, Social, Health and Safety (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

EWDS

Appendix to Technical Part

Contractor's Equipment

Form EQU - NA

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

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. 1.4 of Section III. Evaluation and Qualification Criteria, and in the right column, provide the corresponding value for each functional guarantee of the proposed EWDS and equipment.

Functional Guarantees	Minimum (or Maximum, as appropriate) Requirement
1.	
2.	
3.	
....	

Appendix to Technical Part

Personnel

Form PER -1

Proposed Personnel

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

Form PER-2

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.

From	To	Company / Project / Position / Relevant technical and management experience

[illegible]

Appendix to Technical Part

Proposed Subcontractors for Major Items of EWDS and Installation Services

Major Items of EWDS and Installation Services	Proposed Subcontractors/Manufacturers	Nationality
Alert Siren System		
SBMDVT & Sat Phones		
Digital Mobile Radio Hand sets and Mobile Base Station		
NMS		
Desktop PCs, Laptops, Workstations		
UPS		
UPS Batteries		
Network Racks		
LED TV Screen		

Appendix to Technical Part

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 EWDS, equipment, and spares]

Appendix to Technical Part

Others - Time Schedule

(to be used by Bidder when alternative Time for **Completion** is invited in ITB 13.2)

Not Applicable

Appendix to Technical Part

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

Form ELI 1.1

Bidder Information Sheet

Date: _____

NCB No.: _____

Invitation for Bid No.: _____

Page _____ of _____ pages

1. Bidder's Legal Name
2. In case of JV, 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: <ul style="list-style-type: none"> <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, letter of intent to form JV including a draft agreement, or JV 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

Form ELI 1.2

Party to JV Information Sheet

(Where permitted as per BDS ITB 4.1)

Each partner of a JV must fill in this form

Date: _____
 NCB No.: _____
 Invitation for Bid No.: _____
 Page _____ of _____ pages

1. Bidder's Legal Name:
2. JV's Party legal name:
3. JV's Party Country of Registration:
4. JV's Party Year of Registration:
5. JV's Party Legal Address in Country of Registration:
6. JV's Party 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 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
Details of Participation in the
Joint Venture (where permitted)

PARTICIPATION DETAILS	FIRM 'A' (Lead Member)	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 should indicate the details of participation as above.

NOT APPLICABLE

Appendix to Technical Part

Form CON – 2

Historical Contract Non-Performance

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

Bidder's Legal Name: _____

Date: _____

JV Partner Legal Name: _____

NCB No.: _____

Page _____ of _____ pages

Non-Performing Contracts in accordance with Section III, Evaluation Criteria			
<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. lakhs)
<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 non-performance: <i>[indicate main reason(s)]</i>	<i>[insert amount]</i>
Pending Litigation, in accordance with Section III, Evaluation Criteria			
<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. lakhs)	Contract Identification	Total Contract Amount (Rs. lakhs)

_____	_____	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

Form CON – 3: Environmental, Social, Health, and Safety

Performance Declaration

[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. lakhs)
<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) e.g. for GBV/ SEA breaches]</i>	<i>[insert amount]</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) e.g. for GBV/ SEA breaches]</i>	<i>[insert amount]</i>

<i>year]</i>	<i>and percentage]</i>	<i>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>[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. lakhs)
<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

Form CCC

Current Contract Commitments / Works in Progress

Bidders and each partner to a JV 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/tel/fax	Value of outstanding work (Rs. lakhs)	Estimated completion date	Average monthly invoicing over last six months (Rs. lakhs/month)
1.				
2.				
3.				
4.				
5.				
etc.				

Appendix to Technical Part

Form FIN – 3.1

Financial Situation

Historical Financial Performance

Bidder's Legal Name: _____

Date: _____

JV Partner Legal Name: _____

NCB No.: _____

Page _____ of _____ pages

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

Financial information in Rs.	Historic information for previous _____ (____) years (in Rs. lakhs)						
	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 + Miscellaneous 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, 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

- (d) 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

Form FIN – 3.2

Average Annual Turnover

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

Bidder's Legal Name: _____ Date: _____
 JV Partner Legal Name: _____ NCB _____ No.: _____

Page _____ of _____ pages

Annual turnover data**	
Year	Rs. lakhs
*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

Form FIN 3.3

Financial Resources

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. lakhs)
1.	
2.	
3.	
4.	

FORMAT FOR EVIDENCE OF ACCESS TO OR AVAILABILITY OF CASH FLOW

[To be given from a Nationalized or Scheduled 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

<i>NA</i>

Appendix to Technical Part

Form EXP 2.4.1

Experience - General Experience

[The following table shall be filled for the Bidder and if JV, for each partner of the Joint Venture. Identify contracts that demonstrate continuous construction work over the past [5²¹] 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 Partner Legal Name: _____ NCB _____ No.: _____

Page _____ of _____ pages

Starting Month / Year	Ending Month / Year	Years *	Contract Identification	Role of Bidder [“Contractor” or “Subcontractor” 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:	_____ —

²¹ 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 [“Contractor” or “Subcontractor” 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:	_____ —
_____	_____		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

Form EXP – 2.4.2(a)

Specific Experience

[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 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"/> Subcontract or
Total contract amount	_____		Rs. lakhs _____
If partner in a JV or subcontractor, specify participation of total contract amount	_____ %	_____	Rs. lakhs _____
Total contract amount on completion (if over original contract amount, provide explanation)	_____		Rs. Lakhs _____
Employer's Name:	_____		

Similar Contract Number: __ of __ required.	Information
Address: Telephone/fax number: E-mail:	_____

Appendix to Technical Part

Form EXP – 2.4.2(a) (cont.)

Specific Experience (cont.)

Bidder's Legal Name: _____ Page _____ of _____ pages
 JV 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. lakhs _____
Physical size	_____
Complexity	_____
Methods/Technology	_____
Physical Production Rate	_____

Appendix to Technical Part

Form EXP – 2.4.2(b)

Specific Experience in Key Activities

Bidder's Legal Name: _____ Date: _____
 JV 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"/> Subcontractor
Total contract amount	_____		Rs. Lakhs _____
If partner in a JV or subcontractor, specify participation of total contract amount	_____ %	_____	Rs. Lakhs _____
Employer's Name:	_____		
Address:	_____ _____		
Telephone/fax number:	_____ _____		
E-mail:	_____ _____		

Appendix to Technical Part

Form EXP – 2.4.2 (b)(cont.)

Specific Experience in Key Activities (cont.)

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

JV 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

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]*²² (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 _____²³ 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:

- (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.

²² Insert 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 along with its bid.

²³ The 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.

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 _____²⁴ 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]

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

²⁴ _____
45 days after the end of the validity period of the Bid.

Appendix to Technical Part

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 each of the major EWDS & 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

Form.....

(Name of the Project)

(Declaration regarding tax/duty exemption for EWDS / 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 EWDS / 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 EWDS / 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.
EWDS						
[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 EWDS , 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: _____

Place: _____

(Signature) _____

(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

INSTRUCTIONS TO BIDDERS: DELETE THIS BOX ONCE YOU HAVE COMPLETED THE DOCUMENT

The Bidder must prepare this Letter of Bid – Financial Part on stationery with its letterhead clearly showing the Bidder's complete name and business address.

Note: All italicized text is to help Bidders in preparing this form.

Date: _____

NCB No.: _____

Invitation for Bid No.: _____

Alternative No²⁵.: _____

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.")

²⁵ insert identification No. if this is a Bid for an alternative

Name _____ In the capacity of _____

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 Financial Part

Schedules of Rates and Prices

Schedule No. 1. EWDS Supplied from India / Abroad

Appendix to Financial Part

Schedule No. 1. EWDS Supplied from India / Abroad

I. DMR Equipments

Sl. No	Item	Qty. (Nos.) (1)	At Site Unit Price (2)	Sales and other taxes payable per line item if Contract is awarded (in accordance with ITB 17.5 (b) (ii) (3)	At site Total price (1) x (2)
1	DMR Equipments				
	SEOC				
	DMR Work Station for Dispatcher with 19" LED Monitor and 32" LED wall mountable Screen, Mic, speakers. Professional Work station for GIS application and Radio Dispatch application Software and Licenses	2			
	Client Software for Remote PC & Mobile Application	1			
	PSTN/VOIP Interface Gateway at SEOC for interfacing with Radio Servers installed at respective DEOC	3			
	24 Port L2 Switch High End	1			
	Equipment Earthing	1			
	6 way charger for Handheld terminal with 10 no of 5A Power Socket	1			
	DMR Hand Held terminals D(VHF Band) including GPS With Spare Battery & Charger Set	67			

	Power Cabling 10 mtrs	1			
	2T Split Inverter Air Conditioner	4			
	Any other item				
	DEOC				
	DMR Work Station for Dispatcher with 19" LED Monitor and 32" LED wall mountable Screen, Mic, speakers. Professional Work station for GIS application and Radio Dispatch application Software and Licenses (2 Professional Work Stations x3 districts)	6			
	Professional Workstation for DMR Radio Server application software including Repeater/GIS/PSTN/ VOIP/ GSM Interface licenses for Server (1 Pack per District x 3 Districts)	3			
	Client Software for Remote PC & Mobile Application (one per district x 3 districts)	3			
	PSTN/VOIP Interface Gateway for Radio Server	3			
	GSM SMS Gateway for Radio Server	3			
	24 Port L2 Switch High End (one per district x 3 districts)	3			
	DMR Fixed Station (one per district x 3 districts)	5			
	Digital Mobile Set (VHF Band) including GPS With Mobile Antenna	5			
	Equipment Earthing (one per district x 3 districts)	3			
	Power Cabling 10 mtrs	3			
	2T Split Inverter Air Conditioner	6			
	Any Other item				
	TEOC				

	DMR Fixed Station (one per TEOC x 8)	14			
	Digital Mobile Set (VHF Band) including GPS With Mobile Antenna	15			
	Power Cabling 10 mtrs (one per TEOC x 8 TEOCs)	08			
	2T Split Inverter Air Conditioner (one set per Block x22 blocks)	08			
	Equipment earthing	08			
	Any Other item				
	FLC				
	DMR Fixed Station (one per FLC x 15)	15			
	Equipment Earthing (one per FLC x 15)	15			
	MPCS				
	DMR Fixed Station (one per FLC x 07)	07			
	Equipment Earthing (one per FLC x 07)	07			
	POLICE, FIRE &CSPF				
	DMR Fixed Station	11			
	Equipment Earthing	11			
	REPEATER STATIONS				
	Digital Repeater (VHF Band) suitable for DMR Operations with all Accessories	07			
	Micro wave Radio with 29dbi Duel PLZ Antenna,PoE,Cat6 STP Cable or equivalent	10			
	Duplex filter with cables	07			
	Low loss cable 1/2" with suitable connectors (70 Mtrs. each)	07			
	High Gain VHF Antenna	07			
	Solar Power System with Inverter Battery back-up for 8 hours	07			
	Equipments Earthing	07			
	Power cabling	07			
	Any other item				
2	SATELLITE PHONES				

	SEOC				
	SBMDV Satellite terminal	02			
	Satellite Phone SEOC	02			
	DEOC				
	SBMDV Satellite terminal (2x 3 districts)	06			
	Satellite Phone DEOC	03			
	TEOC				
	Satellite Phone TEOC	08			
3	Bandwidth& INTERNET				
	SEOC				
	10 Mbps Bandwidth -OFC	01			
	5 Mbps Internet - OFC	01			
	Network Management System	01			
	42 U Server Rack (19 " width) - (one per SEOC)	01			
	24 port L2 switch with 2 Fiber Port 10/100/1000 and 2 GE ports (one per SEOC) and 2 GE ports	01			
	Firewall and IPS	01			
	24 Port FODP (Fibre Optic Distribution Panel) with Pigtail and Copper Patch panel	01			
	WAN Router with 8 FE Port , 2 GE WAN Port and with 2 FiberPort 10/100/1000	01			
	Fiber Optic Structured Cabling upto 2 Kms from SWAN Port	01			
	Any other item				
	DEOC				
	4 Mbps OFC Internet	03			
	27 U Server Rack (19 " width) - (one per district x 3 districts)	03			
	24 port L2 switch with 2 Fiber Port 10/100/1000 (one per district x 3 districts)	03			
	24 Port FODP (Fibre Optic Distribution Panel) with Pigtail and Copper Patch panel	03			

	Fiber Optic Structured Cabling upto 2 Kms from SWAN Port	03			
	WAN Router with 8 FE Port , 2 GE WAN Port and with 2 FiberPort 10/100/1000	03			
	Any other item				
	TEOC				
	4 Mbps internet - OFC	08			
	9 U Wall Mountable 19" Server Rack (one per TEOC x 08)	08			
	12 port L2 switch with 2 FiberPort 10/100/1000 (one per TEOC x 08)	08			
	5 Way 230 V Power Strip	08			
	WAN Router with 4 LAN Ports and with 2 WAN Ports 10/100/1000	08			
	Fiber Optic LAN Structured Cabling within 1000 Meters from SWAN Port	08			
	CAT'6' Copper LAN Structured Cabling within 50 Meters	08			
	12 Port FODP (Fibre Optic Distribution Panel) with Pigtail and Copper Patch panel	08			
	REPEATER STATIONS				
	4 Mbps internet Bandwidth	07			
	9 U Wall Mountable 19" Server Rack (one per Repeater x 7)	07			
	12 port L2 switch with 2 FiberPort 10/100/1000 (one per Repeater) x7	07			
	5 Way 230 V Power Strip	07			
	WAN Router with 4 LAN Ports and with 2 WAN Ports 10/100/1000	07			
	Any other item				
4	ALERT SIREN SYSTEM				
	SEOC				
	GUI based Mass Alert notification Software (with	1			

	license for SEOC and all TEOC's to communicate over GSM and Radio (VHF) network				
	Computer Station with 19 inch monitor (1+1 hot standby)	1			
	GPRS Router with SIM card (1+1)	1			
	Microphone, Digitized Pre-Recorded Voice Messages Pre-Recorded Digital Messages Includes up to 15 pre-recorded messages	1			
	TEOC				
	Communication Control station-Hardware which Control Alert Siren functionality	08			
	Advanced Communication Board-Interface board that allows the CCU to communicate over digital radios and via GSM. Two are required for each CCU, one for the Digital Radio and the second for the GSM Modem.	08			
	GSM (GPRS) Router with SIM (1+1)	08			
	Microphone, Digitized Pre-Recorded Voice Messages, Pre-Recorded Digital Messages - Includes up to 15 pre-recorded messages	08			
	Any other item				
	MULTI-PURPOSE CYCLONE SHELTERS (MPCS) – 07 NOS.				
	Alert Siren (Omni Directional) Range: 1.5 km	07			
	RTU (with GPRS Router with Sim (1+1), in built Voltage Stabilizers etc.,)	07			
	VHF Antenna	07			
	GPRS Antenna	07			

	Solar Panel	07			
	Solar Hybrid Inverter 1500 VA, Power cabling	07			
	Solar Battery Bank	07			
	Any other item				
	TOURIST LOCATIONS (SEA BEACHES) – 18 NOS.				
	Alert Siren (Omni Directional) Range: 1.5 km	18			
	RTU (with GPRS Router with SIM (1+1), in built Voltage Stabilizers etc.,)	18			
	VHF antenna	18			
	GPRS Antenna	18			
	Solar Panel with solar battery bank	18			
	Solar Hybrid Inverter 1500 VA, Power cabling	18			
	Any other item				
	FLC				
	Alert Siren (Omni Directional) Range: 1.5 km	05			
	RTU (with GPRS Router with SIM (1+1), in built Voltage Stabilizers etc.,)	05			
	VHF antenna	05			
	GPRS Antenna	05			
	Solar Panel with solar battery bank	05			
	Solar Hybrid Inverter 1500 VA, Power cabling	05			
	Any other item				
5	ANGULAR TOWERS				
	40 mtr tower including necessary civil work with Lighting Arrester, Aviation Lamp, Earthing	02			
	30 Mtrs. Tower including necessary civil work with Lighting Arrester, Aviation Lamp, Earthing	10			
	24 Mtrs. Tower including necessary civil work with Lighting Arrester, Aviation Lamp, Earthing	03			

	SPUN CONCRETE TOWERS				
	21 Mtrs. Tower including necessary civil work with Lighting Arrester, Aviation Lamp, Earthing	07			
	15 Mtrs. Tower including necessary civil work with Lighting Arrester, Aviation Lamp, Earthing	30			
	POLE				
	5 M Pole on roof top including necessary civil work with Lighting Arrester, Aviation Lamp, Earthing	5			
6	OFFICE AUTOMATION				
	SEOC				
	Work Stations (PC) with 19 " LED Monitor (OS, MS Office & Anti-Virus) with Head Phone, Webcam, Microphone, Keyboard, Mouse	02			
	Portable Projector with screen	01			
	Laserjet All-in-One Printer (Printer, Scanner, Photocopier)	01			
	Fax Machine	01			
	42 inch LED TV Screen with HDMI cable for news feed	04			
	Set-top Box with TV-Connection Charges	04			
	Modular Furniture (tables + Chairs)	07			
	District Emergency Operation Centre (DEOC)				
	Work Stations (PC) with 19 " LED Monitor	06			
	Portable Projector with screen	03			
	Laserjet All-in-One Printer (Printer, Scanner, Photocopier)	03			
	Fax Machine	03			
	42 inch LED TV Screen with	06			

	HDMI cable for news feed				
	Set-top Box with TV-Connection Charges	06			
	Modular Furniture tables + Chairs	09			
	Taluk Emergency Operation Centre (TEOC)				
	Work Stations (PC) with 19 " LED Monitor	08			
	Modular Furniture tables + Chairs	08			
7	POWER				
	SEOC				
	DG Set 15 KVA with platform base	01			
	UPS-10 KVA at SEOC (2 in Hot stand by configuration)	02			
	POWER Cabling	01			
	DEOC				
	DG Set 10 KVA (1 per District	03			
	UPS- 5 KVA (1 per District)	03			
	POWER Cabling	03			
	TEOC				
	DG Set 5 KVA per TEOC	08			
	UPS- 5 KVA (1 per TEOC)	08			
	POWER Cabling	08			
	REPEATER STATIONS				
	2 KVA UPS with 4 hours backup	07			
8	LAN Cabling				
	SEOC				
	Face Plate (Single Port)	15			
	24 Port Patch Panel – loaded	1			
	Cat 6, UTP Patch Cord - 1 mtr.	15			
	Cat 6, UTP Patch Cord –2 mtr	15			
	DEOC				
	Face Plate (Single Port)	30			
	Cat 6 UTP cable (300 mtrs.)	2			
	24 Port Patch Panel – loaded	3			
	Cat 6, UTP Patch Cord -	30			

	1 mtr.				
	Cat 6, UTP Patch Cord - 2 mtr.	30			
	TEOC				
	Face Plate (Single Port)	40			
	12 Port Patch Panel – loaded	8			
	Cat 6, UTP Patch Cord - 1 mtr.	40			
	Cat 6, UTP Patch Cord - 2 mtr.	40			
9	Universal Communication Interface1 (SEOC)	1			
10	WPC LICENSE				
	WPC LICENSE CHARGES FOR DMR (Lumpsum)				
	WPC LICENSE CHARGES FOR SBMDVT (Lumpsum)				
	WPC LICENSE CHARGES FOR Satellite phones				
11	Mandatory SPARES				
i					
ii					
iii					
iv					
v					
vi					

Note : Bidder is required to quote miscellaneous item (if required any) to fulfil the solution requirements

Appendix to Financial Part

Schedule No. 2. Design Services (NA)

[illegible]

Appendix to Financial Part

Schedule No. 3. Installation and Other Services

Item	Description	Qty. (1)	Unit Price ¹ (2)	Total Price ¹ (1) x (2)
1	DMR Equipments			
2	SBMDVT & Satellite Phones			
3	BANDWIDTH & INTERNET			
4	UNIVERSAL COMMUNICATION INTERFACE (UCI)			
5	ALERT SIREN SYSTEM			
6	TOWERS			
7	OFFICE AUTOMATION			
8	POWER SYSTEMS			
9	SET TOP BOX			
10	LAN Cabling			
	Any other item			
	Training	LOT		
	• Alert Sirens system			
	• DMR			
	• SBMDVT			
	• UCI			
	• Any other item			
TOTAL (to Schedule No. 5. Grand Summary)				
				Name of Bidder _____ Signature of Bidder _____

¹All rates and prices shall be specified in Rs. only in accordance with ITB 18.1.

Appendix to Financial Part

Schedule No. 4. O&M

Item	Description	Year Price (1)	Year Price (2)	Total Price <i>Sum=(1)+ (2)</i>
1	DMR (Including Royalty charges and Yearly WPC expenses)			
2	SBMDVT & Satellite phones (Including Royalty charges, Yearly WPC expenses and initial subscription charges)			
3	BANDWIDTH & INTERNET			
4	UNIVERSAL COMMUNICATION INTERFACE (UCI)			
5	ALERT SIREN SYSTEM			
6	TOWERS			
7	OFFICE AUTOMATION			
8	POWER			
9	SET TOP BOX			
	Total			

Appendix to Financial Part

Schedule No. 5. AMC

		AMC			
Item	Description	Year 3 Price (3)	Year 4 Price (4)	Year 5 Price (5)	Total Price <i>Sum</i> = (3)+ (4)+ (5)
1	DMR Equipments				
2	SBMDVT & Satellite phones				
3	BANDWIDTH & INTERNET				
4	UNIVERSAL COMMUNICATION INTERFACE (UCI)				
5	ALERT SIREN SYSTEM				
6	TOWERS				
7	OFFICE AUTOMATION				
8	POWER				
9	SET TOP BOX				
	Total				

Appendix to Financial Part

Schedule No. 6. Grand Summary

Item	Description	Total Price ¹
	Total Schedule No. 1: EWDS Components supplied from India and Abroad including Mandatory Spares	
	Total Schedule No. 2: Design Services (NA)	
	Total Schedule No. 3: Installation and Other Services	
	Total Schedule No. 4: O&M for two years	
	Total Schedule No. 5: AMC for three years	
TOTAL (to Letter of Bid)		
<div style="text-align: right; margin-bottom: 20px;">Name of Bidder _____</div> <div style="text-align: right;">Signature of Bidder _____</div>		

¹ All rates and prices shall be specified in Rs. only in accordance with ITB 18.1

Appendix to Financial Part
Schedule No. 7. Recommended Spare Parts
(Vendor to Recommend)

Item	Description	Qty.	Unit Price	Total Price
		(1)	EXW (2)	(1) x (2)

Name of Bidder _____

Signature of Bidder _____

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: *[insert a list of the countries following approval by the Bank to apply the restriction or indicate “none”]. NONE*

Under ITB 4.8 (b) and 5.1: *[insert a list of the countries following approval by the Bank to apply the restriction or indicate “none”]. NONE*

PART 2 –Employer’s Requirements

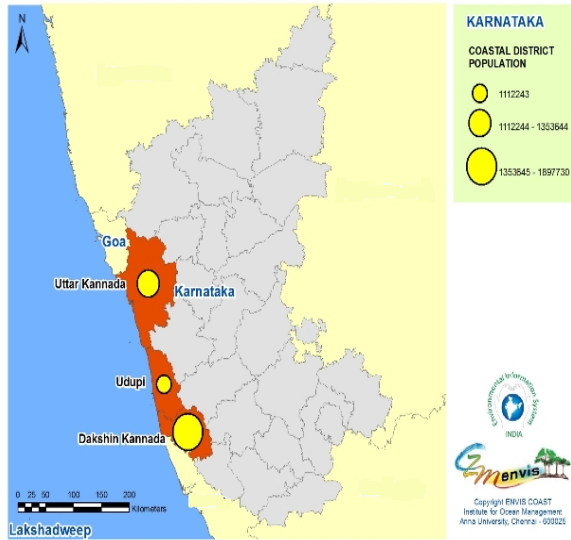
Section VI. Employer's Requirements Specification

1.0 Business Objectives of The Employer (Employer):

The project pertains to Component A of NCRMP that comprises of Development of Last Mile Connectivity and Early Warning Dissemination System (EWDS) and Capacity building for Coastal Communities in order to reduce the vulnerability of coastal communities by addressing the existing gap in dissemination of warning to the communities ensuring that the Last Man living nearest to the sea is well informed of actions to take in case of an upcoming Cyclone or regarding any other disasters.

- The Project is to be rolled out in the 3 coastal districts with a total of 8 Mandals (TEOCs) of Karnataka State. The EWDS system comprising latest Communication Technologies shall be covering all Coastal Mandals for Mass notification especially up to 5 Kms from Sea Coastal Belt. However, the Mandal Head Quarters could fall beyond 10 kms from Sea Coast Line.
- Installation and operation of EWDS (Early Warning Dissemination System) allowing the state and/or district control Centre to send communication directly to the villagers as well as other first respondent stake holders.
- To provide, reliable, responsive and dedicated Communication at Sate, District and Mandals.

2. Demographics of Karnataka:



2. 1 The Coastal Districts and respective Coastal Talukas are given below

Sl. No	District	Coastal Talukas
1.	Uttara Kannada	1. Ankola 2. Bhatkal 3. Honnavar 4. Karwar 5. Kumta
2.	Udupi	1. Kundapura 2. Udupi
3.	Dakshina Kannada	1. Mangalore

3.0 Functional requirements and Specifications

The objective of the EWDS project is to disseminate alert warnings in a timely manner to the Coastal authorities, Communities so that the effective precautionary measures can be taken to save the lives and property. To accomplish the objective, Emergency Operation Centers (EOCs) proposed at State, District and Taluka level with robust integrated and redundant technologies proposed.

4. Business Requirements To Be Met By The System

Component A of the NCRMP project addresses a key part in relation to the Early Warning Dissemination to Coastal Communities. The benefits from the National Network would be realized only if it leads to action on the field in the Last Mile. The ability to reach Citizens would enable dissemination of warnings and information that

would enable minimizing the loss from Cyclones.

The Last Mile Connectivity aims at information dissemination from the state, District and Mandal Levels to Communities and Vice versa, ensuring that the Last Man living nearest to the sea is well informed of actions to take in case of an upcoming Cyclone. It is envisaged that Last Mile Connectivity will be achieved by equipping different Technologies viz. Digital Mobile Radio (DMR), satellite Based Mobile Data voice Terminal (SBMDV), Alert Tower Siren Systems and Universal communication Interface etc such that the warnings about the upcoming cyclones can be disseminated to Coastal Communities of Karnataka in an effective manner. The DMR can be interfaced with the existing VHF systems available at Fish Landing Centre/Shore Centers.

Satellite Based Mobile Data/Voice terminal (SBMDV) shall be able to establish a broadband connection from a remote site to establish instant access to State and District level officials through Voice, Data and Video.

Universal Communication Interface (UCI) is proposed to establish inter technology communication between the available technologies which were not damaged by Cyclone.

The Alert Sirens which are to be installed at cyclone Shelters, Govt. buildings, and Tourist Sea Beaches shall be activated from the State Emergency Operation center (SEOC) as well as from DEOCs.

4.1 Functional Performance Requirements Of The System

The communication strategy of this NCRMP project aims to cover the early warning dissemination applicable to cyclone and other hydro metrological disasters. An attempt has been made to save the lives and minimize the damages by the mitigation process of early warning dissemination system involving the main stake holders. An integrated technical approach has been considered for early warning dissemination system. All the modern communication technologies have been utilized and integrated. The selected technologies are robust, redundant and can be used for different applications and Groups.

4.1.1 DMR Technology:

The DMR standard shall provide Two Slot Time Division Multiple Access

(TDMA) operation, 4 level FSK Modulation and State of the art Forward Error Correction

To procure light weight walkie talkie (digital radio handhelds) with built in GPS, having battery life of minimum 8 hours as per the Bill of Quantity mentioned in RFP.

The system /hand held should enable user to not only communicate securely but also enable the user to select the listener either as one to one basis or for select group of users or broadcast. The user should be able to configure his own group as per the requirement. The same handheld should be capable of being used for GPS based Tracking as well as be able to send up to 50 pre defined messages, which are likely to be revised time to time.

The proposed system should be able to send messages/images along with the position and time stamp of the network that cannot be altered.

As functionality (and not as a design) the proposed system should be able to store the position data along with messages at a predefined interval and transmit the same when data channel is free. This enables better utilization of RF channel

The Dispatch Solution shall perform for calltaking, Radio Dispatch Console functionality and advanced performance tracking and reporting capabilities for all active call takers and dispatchers.

Integrate the existing VHF which are presently used at Shore Stations to communicate with Fisherman at sea.

4.1.2 Bandwidth & Internet

The required Bandwidth at SEOC, DEOC and TEOC's Shall be taken from KSWAN network at State, District and Mandal levels. The Bidder is required to do the necessary cabling from the nearest KSWAN Point of presence. The Bandwidth is required to have backhaul connectivity for the DMR network from the Last mile (Mandal level) to State Head Quarters. The details of Bandwidth requirements are tabulated under Bandwidth requirement section below.

INTERNET: 5 Mbps of seamless Internet shall be provided at SEOC from any Service provider.

4.1.3 SBMDVT (SATELLITE BASED MOBILE DATA VOICE TERMINAL):

SBMDV terminals shall be compact and lightweight. They can be carried as easily as a laptop.

SBMDV shall deliver voice and broadband data connectivity to users wherever they are on the planet. SBMDV services shall be delivered via the Inmarsat-4 network.

A single SBMDV terminal shall provide simultaneous voice and broadband data up to 464 kbps or higher, enabling you to access the internet or send email, and talk on the phone at the same time.

SBMDV supports the latest IP services, as well as traditional circuit-switched voice and data.

Integrating seamlessly with your corporate network, it supports legacy applications while providing a smooth upgrade path to IP

The service is accessed via SBMDV Launch Pad, software. Interface, which is standard across all SBMDV terminals

Satellite Phones:

It is a Global Hand held set built for the most reliable satellite communications network in the world. This phone is designed to work in just about any conditions – in rain storms, dust storms, searing heat to sub-zero cold, tropical humidity or freezing fog

4.1.4 Universal Communication Interface:

The UCI shall enable for communication between different technologies like Analog/VHF/HF/TETRA/HAM Radios/DMR /Sat phones/Mobile Phone Mobile Cellular -CDMA/Landline PSTN Telephone / VoIP Telephone

The UCI shall ensure interoperability and Voice conferencing among the above mentioned devices.

4.1.5 Alert Siren System:

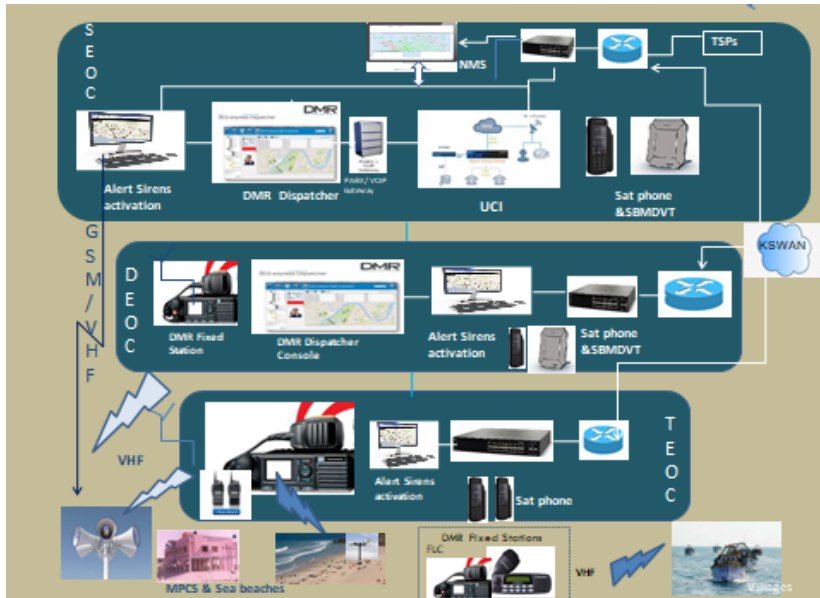
The Alert Sirens which will be installed at Cyclone shelters, and at Tourist Sea

beaches shall be activated from SEOC.

The Alert sirens shall also be activated from DEOCs as a redundancy path if State to Mandal back bone fails.

The alert Sirens shall have interface for GSM/ DMR/ VHF etc., for activation from SEOC through GSM/ VHF etc.

The EWDS Network Architecture is depicted as below:



5. TECHNICAL SPECIFICATIONS

5.1 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 yrs after the complete contract period. The Products /equipment supplied under this contract shall conform to the Technical Specifications given in this tender

5.1.1 Electrical Power:

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

5.1.2 Environmental:

5.1.2.1 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.

5.1.2.231.2

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

5.1.2.3 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:

Temperature Range:	(Un Controlled Environment)
To Specification	0 to +45 ° C
Operation without damage	-10 to +55 °C
Shipping/storage	-40 to +60 ° C
Relative Humidity, non-condensing	Up to 95%

For each location, the Contractor is required to assess the environmental conditions for the equipment to be installed under this specification. The Contractor is responsible for all necessary enclosure, rack or equipment upgrades to ensure the proper operation of the installed equipment.

5.1.2.4 EMI 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.

5.1.2.5 Tropicalization

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

5.1.2.6 Contaminants

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

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

5.2 Digital Mobile Radio

5.2.1 Introduction:

ETSI standard DMR network covering Districts, Mandal, Cyclone Shelters, Fish

Landing centers through Repeaters/ Base stations shall have backbone IP connectivity from Mandal Emergency Operation Center (TEOC) to District Emergency Operation Center (DEOC) and to State Emergency Operation center (SEOC).

The SEOC, DEOC shall be equipped with Dispatcher terminals, GIS Software etc. to allow radio dispatchers to monitor and participate in activities of the subscriber radio units under their operation. Repeaters/ Base stations will be installed at all 8 Mandal Emergency Operation Center (TEOC) and approx 15 nos Fish Landing Centre (FLC) for the entire DMR Coverage of the coastal Mandals. The Repeaters/ Base stations antenna to be installed on angular tower/ Spun concrete monopole Tower. Repeaters shall have Microwave Link 2MBPS connectivity for communication with the Repeaters/ Base stations from TEOC having back haul IP connectivity with DEOC &SEOC.

5.2.2 Scope of Work:

Design, Supply, Installation, testing, commissioning and maintenance (2 years under warranty and 3 years under AMC from the date of Successful Operational Acceptance) of mission critical Digital Mobile Radio system which includes Integrated Dispatch Solution for call taking and Radio Dispatch Console functionality, Repeaters, handheld sets, GPS based Tracking system and application software system for integrated network management, tracking performance statistics and generating management reports.

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 the NDMA network.

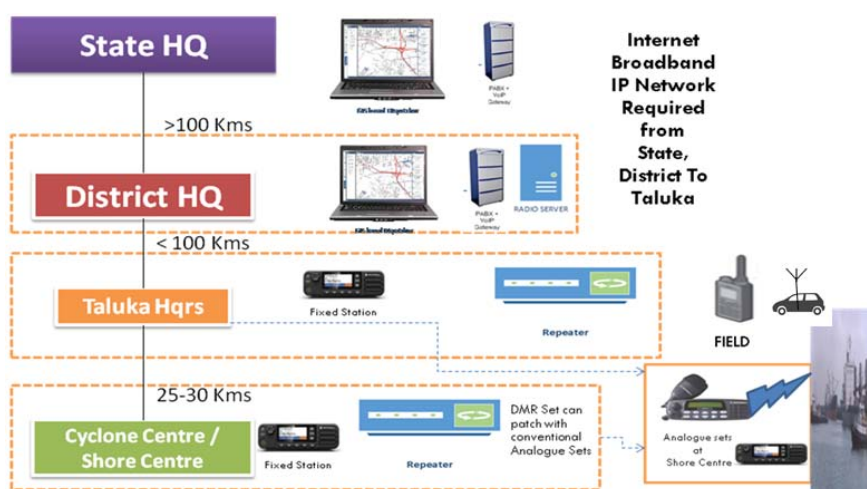
The successful bidder is required to ensure the adequate coverage at District, Village level and at Fish Landing Centers, Cyclone Shelters, Fire and CSPF including Shore Stations through the installation of the Repeater stations. TEOC locations are mandatory but the location of the Fish Landing centers shown in the tender are indicative.

The DMR network shall also be integrated with existing VHF network used by Fisherman at sea.

Karnataka Govt is presently using Analog VHF communications at District and Taluka levels. The Bidder is required to ensure the smooth transition from Analog to Digital network and its integration where ever required.

Bidder is required to liaison with DOT and other Wireless Agencies for acquiring the License and other approvals.

DMR Architecture:



5.2.3 TECHNICAL SPECIFICATIONS

DMR handset (VHF, Tier- II) - Technical Specifications

DMR handset should comply with all the ETSI standards. Below given some of the technical specifications:

i. Digital Repeaters 45 W or more with Antennas and all other Related Accessories

Sl. No	Specification
1.	The repeaters should be of Digital Open Standard and support Digital Open Standard DMR (136-174 MHz) and capable of handling digital radios in the network.
2.	There shall be at two Slots for each RF channel in the system. Transmitter and receiver shall be capable of operating independently and simultaneously with any or all of the other repeaters in the system.

3.	The repeater system shall be capable of working in simulcast / working in same frequency for adjacent sites without any interference in over-lapping areas.
4.	The repeater stations shall be designed for continuous unattended 24 hours of operation. with provision for standby repeater for auto changeover in case of major alarm.
5.	The system shall be based on modular design using manual taking over by standby repeater
6.	Every repeater module/ base radio must be capable of working in AC & DC.
7.	The repeater stations shall be capable of monitoring the integrity of its equipment. Automatic alarm reporting on front panel diagnostic aids for detecting and isolating problems shall be provided.
8.	The Administrator shall shut down or set as last priority to the respective repeater remotely through IP network.
9.	The repeater shall be housed in the free standing in-door cabinets. Every Cabinet shall come with a surge protection.
10.	The bidder shall describe in detail the use of repeater hang time in operation of their proposed system. The description shall focus on the how
11	the proposed system will maximize the efficient use of the channels pool and what flexibility the user has in changing hang time.
12	In case of failure of site IP Network link the repeaters shall as single site operation.
13	The repeater should be capable to be configured to support analog conventional and digital conventional mode of operation.
14	Whenever new Repeater is assigned Main Repeater should automatically communicate to all other sites and Repeaters of the same site.

15	Each repeater site shall be provided with desktop with necessary furniture, mic and speaker with dispatcher client or any other software required such that the operating personnel at the repeater shall answer calls addressed to him
16	Repeater shall meet or may exceed the following specifications:

a. Technical Specifications:

Sl. No	Parameter	Specification
1	Type:	DMR VHF High band synthesized dedicated Repeater set.
2	Frequency Range:	136 – 174 MHz
3	No of Channels:	16 or above
4	Mode of operation :	Analog and Digital
5	Antenna Impedance :	50 Ohms
7	Protocol	Digital TDMA (2 slot)Technology
8	Channel Spacing :	12.5 KHz Analog, 2 Slot TDMA
9	Type of emission :	Analog:11K0F3E Digital: as per digital standards for voice, data and both
10	Working volts:	12 Volts DC
11	Channel Display:	LCD / LED /others
12	Duty Cycle & Built in cooling system :	100%
13	Operating Temperature :	-10 deg. C to + 55 deg. C
14	Frequency Stability :	+/-0.5 PPM or better
15	Built in CTCSS and Digital code	As per standard and compatible to other make radios
16	Digital Vocoder type	ETSI approved
17	Protection Interface	In the case of impedance mismatch the final PA stage should not be damaged
18	Communication Interface	Ethernet port for IP connectivity

19	IP Connectivity	To extend coverage of the communication system, the repeater should be cabled for working with IP network using Microwave Link in unlicensed frequency band
		for voice, data and signaling with all features in digital mode. All necessary hardware software and licenses if any shall be provided
20	Network control	Repeater should support network controlling. All necessary inbuilt hardware software and licenses if any shall be provided.
21	Simulcast	Repeater should be capable to work same frequency/simulcast on adjacent on sites without any interference in overlap areas.
22	Encryption	AES 256 bit encryption
24	Program Kit both software and hardware	Programming Kit (USB) with software for Programming the equipment at free of Cost for every repeater. Repeater must have capability to program through IP network also

b. Transmitter

Sl. No	Parameter	Specification
1.	RF Output:	25 – 45 Watts or above
2.	Digital Modulation	4FSK
3.	Frequency deviation:	+/-2.5KHz @ 12.5KHz spacing for Analog
4.	Spurious& Harmonics :	Better than 60 db
5.	FM Hum and Noise	-40 db or better

c. Receiver

Sl. No	Parameter	Values required
1.	Analog Sensitivity:	0.3 Micro Volt 12 db SINAD or better 0.5 Micro Volt 20 db SINAD or better
2.	Digital Sensitivity:	0.3 micro volt @ 5% BER or better
3.	Selectivity:	60db or better
4.	Spurious & Image Rejection:	70 db or better
5.	Audio distortion:	Less than or Equal to 3%

d. DUPLEXER (ANDREW / DECIBEL/ RFS OR EQUIVALENT)

Sl. No	Parameter	Specification
1.	Frequency Range:	155 - 165 MHz
2.	Power Rating:	50 Watts (Continuous)
3.	Insertion Loss:	Less than 1.2 db
4.	TX RX Isolation:	Better than 80 db
5.	VSWR:	1.5 : 1
6.	TX RX Separation:	4.5 to 5.5 MHz
7.	Impedance:	50 Ohms
8.	Connector:	Suitable
9.	Accessories :	Suitable Short Cable

e. POWERSUPPLY UNIT CUM BATTERY CHARGER

Sl. No	Parameter	Specification
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1.	Type	12-14V/20A Power supply unit cum battery charger for VRLA battery (Linear charger)
2.	Input Volt	170-270V AC/50Hz or better
3.	ON/OFF Switch with indication	Must be provided
4.	AC-DC fuse	Must be provided
5.	Current and Volt meter - On Panel	Must be provided
6.	EMI & RF filter for single phase A.C. Power	Must be provided
7.	Duty Cycle	100%
8.	Radio Terminal	12-14V/0-20A with short circuit protection
9.	Battery terminal	12-14V/0-10A with current limit for limiting the charging.
10.	Accessories	4.0 sq mm DC cable Red & Black each 2 mtrs with suitable eyelets(must be provided)

f. VRLA BATTERY(AMARAJA/EXIDE/ EQUIVALENT)

Sl. No	Parameter	Specification
1.	Type	12V/ 100Ah or above VRLA battery with +ve and –ve terminals with suitable connector and Reputed standardized make.
2.	Standards:	BIS/IS /IEC/JIS/UL or equivalent for quoted make & Model. Test certificate should be produced from recognized test lab.
3.	Battery Stand	Galvanized /Powder Coating or higher suitable stand

4.	Accessories	Power cable connecting clamp and other suitable accessories.
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g. LOW LOSS CABLE

Sl. No	Parameter	Specification
1.	Type	½ inch Foam Di – Electric Low Loss coaxial Cable 100mtrs in one length with N-male connectors at both ends 3.23db at 200 MHz for 100 Meters
2.	Laying	Cable Laying shall be as per standard telecom procedure and withstand wind speed 150km/h.

h. ANTENNA: (ANDREW / DECIBEL/RFS OR EQUIVALENT)

Sl. No	Parameter	Values required
1.	Type:	Exposed di-pole Omni- directional 6db gain or above
2.	Frequency Range:	155 - 165 MHz
3.	Maximum Power:	500 watts
4.	VSWR :	Better than 1.5
5.	Lightning Protection :	Direct Ground
6.	Moisture Resistance :	Moist proof
7.	Termination :	Suitable connector
8.	Rate Wind Velocity :	125 Km/Hr
9.	Polarization:	Vertical
10.	Antenna Impedance :	50 Ohms
11.	Installation	As per Site condition
12.	Accessories for Antenna:	Suitable interconnecting cable with jumper cable and mounting clamps etc.

i. Repeater Rack

Sl. No	Parameter	Values required
1.	Type	Galvanized /Powder Coating or higher suitable Rack.
2.	Size	19 U
		and one Power Supply Unit (20 A Linear charger).

j. Repeater Station Antenna System:

- i. The antenna system installation and cable laying shall be as per standard telecom procedure,
- ii. All antenna systems shall be installed with proper lightening protection. Site must have adequate grounding system, Bidders shall provide details specification of the lightening / surge protection devices used in the antenna systems.
- iii. Necessary arrangements for fixing the antennas in full length above the tower top.
- iv. The antenna shall be able to withstand upto 150 km/hour wind speed.
- v. The bidder shall specify power handling capacity of antenna.
- vi. The bidder shall provide specification sheets of the antennas and any other equipment deemed necessary by the bidder to assure a complete system.
- vii. Inline RF Power Monitoring shall be provided for Tx Antennas.

k. Repeater to Repeater & dispatcher center Link:

- i. Repeater and dispatch console equipment at control room shall be linked by suitable capacity unlicensed microwave band (5.8GHz/2.4GHz) along with required hardware (e.g. Mux, Demux) and having hardware redundancy i.e. 1+1 hot standby configuration.
- ii. There shall be two links one main and one redundant for reaching the location concerned. Both the links shall be always available in the network.

- iii. Provision shall be there such that the redundant link takes over automatically in case of failure of the default link.
- iv. A 2Mbps data throughput shall be provided between any two location site repeaters irrespective of the number of hops involved.

L. Other Parameters:

Sl. No	Parameter	Values required
1.	Power Output	As per WPC approval
2.	Antenna Gain	Suitable antenna will be accepted. The bidder should fulfill the requirement of DMR Project in order to achieve the connectivity between the Repeaters and Dispatcher with constant 2 Mbps throughput.
3.	Operation:	230V AC
4.	Interfacing ports	Inbuilt with minimum 2 Ethernet ports.
5.	Power supply	1KVA UPS with 12 hours battery backup at both ends for each link

m. General Radio Features:

- i. To initiate a call when the radio is on the rest channel mode. The activation of the transmit control (PTT) shall initiate a request for a channel. The request shall include the talk group to which the radio set is designated.
- ii. In the event that the request is not acknowledged by the rest channel the unit shall automatically attempt re-access until the access is accomplished and if no RF voice channel is available an indication of busy shall be presented at the subscriber radio.
- iii. The subscriber radios shall be microprocessor controlled multi channel (minimum 100) synthesized type of radio.

- iv. The subscriber radios shall be able to perform the following task.
 - ✓ Process call request in response to activation of the PTT switch.
 - ✓ Encode and transmit inbound service request to system.
 - ✓ Automatic switching of Rest channel.
 - ✓ Generate alarm alert tones.
- v. The subscriber radios shall include static (desktop mounted), mobile (vehicle mounted) and handheld (portable) radios.
- vi. The radios shall include full keypad type: Full keypad type radios shall support but not be limited to following features.
 - ✓ To initiate a conversation with any subscriber radios operating in the same or multiple site system, on a one to one basis (selective call), regardless of the current group affiliation and locations of the both parties.
 - ✓ To selectively alert any subscriber radio operating in the same multisite system, regardless of the current talk group affiliations and location of the both parties.
 - ✓ To initiate intercom interconnect call to any landline parties by keying in the land line telephone number via the radio keypad.
 - ✓ To initiate short data text messaging for any subscriber radio.
 - ✓ Radio should support encrypted voice call

vii. All subscriber radios shall come with alpha numeric color display. Following information shall be displayed on the display depending on the radio's mode of operation.

- ✓ Min. 12 characters should be displayed regarding called/caller radio ID/ alias.
- ✓ The talk group ID/alias during a talk group calls.
- ✓ Call type with continues displayed caller ID.
- ✓ Battery level indicator, Tx/Rx indicator
- ✓ Received Signal Strength Indicator (RSSI)

viii. All subscriber radios shall be capable of being software programmed, via radio programming software and Over the Air.

ix. Offered radio should be of open standard to operate in other manufacturers Digital Open Standard DMR System.

ii. DMR, 25 watts or more Mobile Radio with 3db gain mobile antenna complete with all accessories and 256 bit AES encryption

a. Technical Parameters:

Sl. No	Parameter	Specification
1.	Type:	DMR VHF Mobile synthesized Transceiver
2.	Frequency Range:	136 MHz – 174 MHz
3.	No of Channels:	255 or above
4.	Protocol	Digital TDMA (2 slot)Technology
5.	Channel Spacing :	12.5 KHz
6.	Frequenc y Stability:	± 1.5 PPM or better
7.	Type of Emission:	Analog:11K0F3E Digital: as per digital stands for voice, data and both
8.	Protection:	Protection for Reverse Polarity.

9.	Display:	LCD colour Display Multifunction alphanumeric
10.	Time out Timer:	The time should be programmed to best suit the application
11.	Scanning with priority	Should be available
12.	Busy Channel Lockout:	Should be available
13.	Automatic Number Identification (ANI) and compatible to other make	Built-in i) Minimum 100 caller name ii) Minimum 6 digit for ANI
14.	Digital Vocoder	ETSI approved
15.	Remote Killing -	Should be available but authority should be programmable
16.	Emergency SOS/Siren	Should be available with guidance to follow
17.	Built in CTCSS and Digital code	As per standard and compatible to other make radio
18.	Type of Antenna:	Omni Directional / Whip Antenna
19.	Antenna Impedance:	50 Ohms
20.	Display:	LCD colour display multifunction alphanumeric.
21.	Warranty :	Three years from the date of acceptance of Stores
22.	Mode of Operations	Analog Conventional, Digital conventional & Support for DMR Tier-III Upgradation. A certificate stating upgrading to DMR tier – III shall be submitted by the bidder from OEM.
23.	GPS capability	<ol style="list-style-type: none"> 1. In built GPS with TTFF <20 sec 2. Horizontal Accuracy < 10 meters 3. GPS Data Access methods <ol style="list-style-type: none"> a. By polling b. By fetching (on request) c. Event based to reduce battery consumption d. Vendor should mention-coordinate file format e. Radio should have provision to send GPS co-ordinates on pre-defined Data Channel <p>Necessary hardware, software shall be provided that is required for making radios “GPS enabled” and for</p>

		receiving and extracting GPS data / information for the use of location tracking purpose.
24.	Roaming	Automatic Roaming should be available
Sl. No	Parameter	Values required
25.	Secrecy	AES 256 bit encryption should be provided
26.	Facility for locking channel or keypad locking	Should be available
27.	Scan with Priority, late	Should be available
28.	Mode of calls	Selective Call, Group Call, inter and intra group call facilities
29.	Remote Radio Kill/, Stun / Revive Facility.	should be available
30.	Mode of operation	Radio should operate in analogue mode and digital mode. (Compatible with all existing all types of VHF analogue radios sets)
31.	Status message and SMS text message Facility	1. Status messaging facility 2. Short and long data message Facility 3. Messaging facility using PCs one to many Radios
32.	Software for text messaging & file transfer Facility (for static installations)	Text messaging facility shall be supported using PCs through accessory connector in following manner One to One One to many (By selection) One to all (Broadcast Mode)
33.	Radio Programming Facility	Over the Air & PC Programmable through USB interface
34.	Front panel key Pad	DTMF Front Panel keypad with backlight
35.	Signal Strength Indicator	Received Signal Strength Indicator or digital read out
36.	Humidity	95% non-condensing(-20 ° C to +60° C)
37.	MIL STD C/D/E or Equivalent from Govt. of India approved test labs/ Recognized laboratory and IP54	Temperature, Dust, Shock, Vibration and Rain
38.	Temperature :-	-10 to 55 degree centigrade

40.	Mounting brackets as additional accessories.	Suitable seat mounting hanger to hold mobile set for installation into various vehicles.
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b. Transmitter:

Sl. No	Parameter	Values required
1.	RF Power Output	5 to 25 Watt +/- 0.5 DB programmable
2.	Type of Emission	Analog :11 K0F3E Digital :as per digital standards for voice, data and both
3.	Digital Modulation	4 FSK
4.	Modulation Limiting	+/- 2.5 KHz
5.	Audio Response	+1,-3dB
6.	FM Hum Noise	-40 db or better
7.	Adjacent Channel Power	60 db or better
8.	Digital Vocoder	ETSI approved

c. Receiver:

Sl. No	Parameter	Specification
1.	Sensitivity	Analog : 0.3 μ V (12 db SINAD) or better Digital : 0.3 μ V @ 5% BER or better

2.	Adjacent Channel Selectivity	60 db or better
3.	Inter-modulation	60db or better
4.	Audio Output	Minimum 3 watts
5.	Audio Distortion	3% or better

d. Other accessories

Sl. No	Parameter	Specification
1.	DTMF Handset with Mic	To be supplied along with each set.
2.	Battery cable with fuse	To be supplied along with each set.
3.	Mounting Brackets with screws	To be supplied along with each set
4.	Suitable accessories	To be supplied along with each set.

e. Antenna

Sl. No	Parameter	Specification
1.	Type	Mobile Antenna with 5mtrs cable and suitable Connectors
2.	Gain	3 db Gain or above
3.	Antenna Impedance:	50 Ohms
4.	V.S.W.R.:	Less than 1.5
5.	Antenna mounting clamp	Suitable clamp for fixing in various vehicle

f. Features

- Alpha numeric List of 256 Users for sending SMS and for Selective Calling
- Alpha numeric Channel Alias
- Alpha numeric PTT ID Alias
- Facility to Assign Network Access code, CTCSS/DCS
- Channel Scan and Priority Channel Scan
- Call Alert
- Talk around
- Transmitter Time Out Timer (TOT) operation
- Emergency Call
- Selective Call, Group Call
- Late entry
- Busy channel lockout
- Capable to kill-un kill, disable-enable
- Externally accessible accessory connector (for Connecting Programming Kit, Repeater Interface, Data Interface etc.)
- Vendor shall provide IOP certificates issued by DMR Association approved laboratories from the Chairman of the DMR Association or OEM.
- Program Kit both software and hardware :

iii. DMR25 watts Static Radios requirements

DMR25 watts or more Static Radios with Yagi or omni antenna complete with all accessories and 256 BIT AES encryption. The static radio shall be installed in fixed location.

a. Technical Parameters

Sl. No	Parameter	Specification
1.	Type:	DMR VHF Mobile synthesized Transceiver
2.	Frequency Range:	136 MHz – 174 MHz
3.	No of Channels:	255 or above
4.	Protocol	Digital TDMA (2 slot)Technology
5.	Channel Spacing :	12.5 KHz
6.	Frequency Stability:	± 1.5 PPM or better
7.	Type of Emission:	Analog:11K0F3E Digital: as per digital stands for voice, data and both
8.	Protection:	a. Protection for Reverse Polarity. b. RF protection against high VSWR (This specification will be tested by removing the

Sl. No	Parameter	Specification
9.	Display:	LCD color Display Multifunction alphanumeric
10.	Time out Timer:	The time should be programmed to best suit the application
11.	Scanning with priority	Should be available
12.	Busy Channel Lockout:	Should be available
13.	Automatic Number Identification (ANI) and compatible to other make	Built-in i) Minimum 100 caller name ii) Minimum 6 digit for ANI
14.	Digital Vocoder	ETSI approved
15.	Remote Killing -	Should be available but authority
		should be programmable
16.	Emergency SOS/Siren	Should be available with guidance to follow
17.	Built in CTCSS and Digital code	As per standard and compatible to other make radio
18.	Type of Antenna:	Yagi or Omni Antenna
19.	Antenna Impedance:	50 Ohms
20.	Display:	LCD/LED Display Multifunction alphanumeric with backlight
21.	Warranty :	Three years from the date of acceptance of stores
22.	Mode of Operations	Analog Conventional, Digital conventional and multisite operations

23.	GPS capability	<ol style="list-style-type: none"> 1. In built GPS with TTFF <20 sec 2. Horizontal Accuracy < 10 meters 3. GPS Data Access methods <ol style="list-style-type: none"> a. By polling b. By fetching (on request) c. Event based to reduce battery consumption d. Vendor should mention-coordinate file format e. Radio should have provision to send GPS co-ordinates on pre-defined Data Channel <p>Necessary hardware, software shall be provided that is required for making radios “GPS enabled” and for receiving and extracting GPS data / information for the use of location tracking purpose.</p>
24.	Roaming	Automatic Roaming should be available
25.	Secrecy	AES 256 bit encryption should be provided
26.	Facility for locking channel or keypad locking	Should be available
27.	Scan with Priority, late	Should be available
28.	Mode of calls	Selective Call, Group Call, inter and intra group call facilities
29.	Remote Radio Kill/, Stun / Revive Facility.	should be available
30.	Mode of operation	Radio should operate in analogue mode and digital mode. (Compatible with all existing all types of VHF analogue radios sets),
31.	Status message and SMS text message Facility	<ol style="list-style-type: none"> 1. Status messaging facility 2. Short and long data message Facility 3. Messaging facility using PCs one to many Radios
32.	Software for text messaging & file transfer Facility (for static installations)	<p>Text messaging facility shall be supported using PCs through accessory connector in following manner</p> <p>One to One</p> <p>One to many (By selection) One to all (Broadcast Mode)</p>

33.	Radio Programming Facility	Over the Air & PC Programmable through USB interface
34.	Front panel key Pad	DTMF Front Panel keypad with Backlight
35.	Signal Strength Indicator	Received Signal Strength Indicator or digital read out
36.	Humidity	95% non-condensing(-20 ° C to +60° C)
37.	MIL STD C/D/E or Equivalent from Govt. of India approved test labs / Recognized laboratory and IP54	Temperature, Dust, Shock, Vibration and Rain
38.	Temperature :-	-10 to 55 degree centigrade

b. Transmitter:

Sl. No	Parameter	Specification
1.	RF Power Output	5 to 25Watt +/- 0.5 DB programmable
2.	Type of Emission	Analog :11 K0F3E Digital :as per digital standards for voice, data and both
3.	Digital Modulation	4 FSK
4.	Modulation Limiting	+/- 2.5 Khz
5.	Audio Response	+1,-3dB
6.	FM Hum Noise	-40 db or better
7.	Adjacent Channel Power	60 db or better
8.	Digital Vocoder	ETSI approved

c. Receiver:

Sl. No	Parameter	Values required
1.	Sensitivity	Analog : 0.3 μ V (12 db SINAD) or better Digital : 0.3 μ V @ 5% BER or better
2.	Adjacent Channel Selectivity	60 db or better
3.	Inter-modulation	60db or better
4.	Audio Output	Minimum 3 watts
5.	Audio Distortion	3% or better

d. OTHER ACCESSORIES

S.No	Parameter	Specification
1.	DTMF Handset with Mic	To be supplied along with each set.
2.	Battery cable with fuse	To be supplied along with each set.
3.	Mounting Brackets with screws	To be supplied along with each set
4.	Suitable accessories	To be supplied along with each set.

e. ANTENNA AND COAXIAL CABLE

Sl. No	Parameter	Specification
1.	Type	Yagi or omni Antenna
2.	Gain	6 dB Gain or above
3.	Antenna Impedance & No of elements	50 Ohms & 5 element or above

4.	V.S.W.R.:	Less than 1.5
5.	Coaxial Cable	30 Mtrs& suitable Connectors both ends at 6 dB loss or better for 100 mtrs at 200 MHz and 50 ohm impedance,
6.	Antenna mounting pipe and clamp	As per site requirement

f. Power supply unit cum battery charger:

Sl. No	Parameter	Values required
1.	Type	12-14V/10A Power supply unit cum battery charger for VRLA battery (Linear charger)
2.	Input Volt	170-270V AC/50Hzor better
3.	ON/OFF Switch with indication	Must be provided
4.	AC-DC fuse	Must be provided
5.	Current and Volt meter - On Panel	Must be provided
6.	EMI & RF filter for single phase A.C. Power	Must be provided
7.	Duty Cycle	100%
8.	Radio Terminal	12-14V/0-10A with short circuit protection

9.	Battery terminal	12-14V/0-10A with current limit for limiting the charging.
10.	Accessories	4.0 sq.mm DC cable Red & Black each 2 mtrs with suitable eyelets(must be provided)

g. VRLA BATTERY (AMARAJA/EXIDE/ EQUIVALENT)

Sl. No	Parameter	Specification
1.	TYPE	12V/ 100Ah or above VRLA battery with +ve and –ve terminals and Reputed standardised make.
2.	Standards	BIS/IS /IEC/JIS/UL or equivalent for quoted make & Model. Test certificate should be produced from recognized test lab.
3.	Accessories	Power cable connecting clamp and other suitable accessories.

h. Features

- Alpha numeric List of 256 Users for sending SMS and for Selective Calling
- Alpha numeric Channel Alias
- Alpha numeric PTT ID Alias
- Facility to Assign Network Access code, CTCSS/DCS
- Channel Scan and Priority Channel Scan
- Call Alert
- Talk around
- Transmitter Time Out Timer (TOT) operation
- Emergency Call
- Selective Call, Group Call
- Late entry
- Busy channel lockout
- Capable to kill-un kill, disable-enable
- Externally accessible accessory connector (for Connecting Programming Kit, Repeater Interface, Data Interface etc.)
- Vendor shall mention other manufacturer models of the radios which are interoperable for voice and data communication to the system offered. Vendor shall provide IOP certificates issued by DMR Association approved laboratories from the Chairman of the DMR Association or OEM.
- Radios shall be upgradable to DMR Tier-III trunking without any hardware requirement.

- **Programming kit, Manuals and Warranty**
- **Programming Kit (both Hardware and Software)**

iv. DMR, 5 watts or more, Portable Radios requirements

DMR 5 watts or more, Portable Radios with Helical antenna, Li-ion batteries 2000MAh or more , Belt clip and Desktop chargers with one spare battery pack with 256 BIT AES Encryption, complete with all accessories .

a. Technical Parameters:

Sl. No	Parameter	Specification
1.	Type:	DMR VHF Handheld synthesized Transceiver
2.	Frequency Range:	136 MHz – 174 MHz
3.	No of Channels:	255 or above through separate button in addition to volume
4.	Protocol	Digital TDMA (2 slot)Technology in simplex &semi duplex operation
5.	Channel Spacing :	12.5 kHz
6.	Frequency Stability:	□□□ 5 PPM or better
7.	Type of Emission:	Analog:11K0F3E Digital: as per digital stands for voice, data and both
8.	Protection:	Protection for Reverse Polarity.
9.	Display:	“Three line or more LCD color Display multifunction alphanumeric”
10.	Time out Timer:	The time should be programmed to best suit the application
11.	Scanning:	Built-in (Both Channel & priority)
12.	Busy Channel Lockout:	Built-in

13.	Automatic Number Identification (ANI) and compatible to other make	Built-in i) Minimum 100 caller name ii) Minimum 6 digit for ANI
14.	Digital Vocoder	ETSI approved
15.	Remote Killing -	Should be available
16.	Emergency SOS/Siren	Should be available
17.	Built in CTCSS and	As per standard and
	Digital code	compatible to other make radio
18.	Type of Antenna:	Helical Antenna
19.	Antenna Impedance:	50 Ohms
20.	Keypad	The portable Radios shall be provided with full keypad (alphanumeric)
21.	Mode of Operations	Analog Conventional, Digital conventional & Digital multi site operation
22.	GPS capability	<ol style="list-style-type: none"> 1. In built GPS with TTFF <20 sec 2. Horizontal Accuracy < 10 meters 3. GPS Data Access methods <ol style="list-style-type: none"> a. By polling b. By fetching (on request) c. Every PTT d. Vendor should mention- coordinate file format. <p>Necessary hardware, software shall be provided that is required for making radios “GPS enabled” and for receiving and extracting GPS data / information for the use of location tracking purpose.</p>

23.	Roaming	Automatic Roaming should be available
24.	Secrecy	AES 256 bit encryption should be provided
25.	Facility for locking channel or keypad locking	Should be available
26.	Scan with Priority, late	Should be available
27.	Mode of calls	Selective Call, Group Call, inter and intra group call facilities
28.	Remote Radio Kill/, Stun / Revive Facility.	should be available
29.	Mode of operation	Radio should operate in analogue mode and digital mode. (Compatible with all existing all types of VHF analogue radios sets),
30.	Status message and SMS text message Facility	<ol style="list-style-type: none"> 1. Status messaging facility 2. Short and long data message Facility 3. Messaging facility using PCs one to many Radios
31.	Software for text messaging & file transfer Facility (for static installations)	Text messaging facility shall be supported using PCs through accessory connector in following manner One to One One to many (By selection) One to all (Broadcast Mode)
32.	Radio Programming Facility	Over the Air & PC Programmable through USB interface
33.	Front panel key Pad	DTMF Front Panel keypad with backlight
34.	Signal Strength Indicator	Received Signal Strength Indicator or digital read out
35.	Humidity	95% non-condensing(-20 ° C to +60° C)

36.	MIL STD C/D/E or Equivalent from Govt. of India approved test labs/ Recognized laboratory and IP57 / IP67	Temperature, Dust, Shock, Vibration and Rain
37.	Temperature :-	-10 to 55 degree centigrade
39.	Warranty :	Two years for set and one year for accessories/As per OEM whichever is higher.

b. Transmitter:

Sl. No	Parameter	Values required
1.	RF Power Output	1 to 5 Watt or better
2.	Type of Emission	Analog :11 K0F3E Digital :as per digital standards for voice, data and both
3.	Digital Modulation	4 FSK
4.	Modulation Limiting	+/- 2.5 KHz
5.	Audio Response	+1,-3dB
6.	FM Hum Noise	-40 db or better
7.	Adjacent Channel Power	60 db or better
8.	Digital Vocoder	ETSI approved
c. Receiver:		
1.	Sensitivity	Analog :0.35 μ V (12 db SINAD) or better Digital :0.3 μ V @ 5% BER or better
2.	Adjacent Channel Selectivity	60 db or better
3.	Inter-modulation	65 db or better
4.	Audio Output	Minimum 500 m watts
5.	Audio Distortion	3% or better
6.	Audio distortion:	Less than 5 % @ 1kHzreference for -53dBm+/- 1.5kHz standard deviation.

d. Accessories

Sl. No	Parameter	Specification
1.	Power Source:	Li-ion 2000 mAh or above battery along with set and one spare battery pack for each set.
2.	Battery Charger (230 V AC):	Suitable Rapid Charger for Charging 2000 mAh or above Li-ion Single Battery.
3.	Helical Antenna	To be supplied along with each set.
4.	Belt clip	To be supplied along with each set.
5.	Suitable Accessories	To be supplied along with each set.

e. Features

- Alpha numeric List of 256 Users for sending SMS and for Selective Calling
- Alpha numeric Channel Alias
- Alpha numeric PTT ID Alias
- Facility to Assign Network Access code, CTCSS/DCS
- Channel Scan and Priority Channel Scan
- Call Alert
- Talk around
- Transmitter Time Out Timer (TOT) operation
- Emergency Call
- Selective Call, Group Call
- Late entry
- Busy channel lockout
- Capable to kill-un kill, disable-enable
- Externally accessible accessory connector (for Connecting Programming Kit, Repeater Interface, Data Interface etc.)
- Program Kit both software and hardware :

f. Radio Programming Kit:

The bidder shall include in his proposal all necessary radio programming kit needed for the purpose of Operating / Programming the Digital Open Standard DMR radio system including radio programming licensed software, interfacing hardware, five laptops and one desktop with licensed OS and required radio terminal cables for

- ✓ Repeater set,
- ✓ Mobile set
- ✓ Portable set (Hand held)
- ✓ Dispatcher to repeater/ Inter-site Link Equipment

v. Dispatcher Architecture And Specifications

Radio Server Architecture	
Client-Server	Multiple dispatch consoles to connect multiple Radio servers via IP. Dispatcher can be located on any distance from Radio server. Radio server should have provision for installing redundant server working in passive mode and tracking primary server presence through the IP connection. If the primary server accidentally goes down, redundant server becomes active and all the dispatch consoles are automatically switched to the redundant server.
	Dispatch console to connect multiple Radio servers simultaneously. System must store events and voice logs at both Server and Dispatcher computers.
	Single Radio server should able to handle multiple different radio networks simultaneously. Dispatcher should have provision for offline operation mode (when Server is not available) to analyze events and voice logs, GPS tracks.
Direct IP connection to Repeaters	Direct IP interface to Repeater for all functionality including voice calls from Dispatcher.
	2-way direct IP connection for interlinking Repeaters through IP Network
	1-way direct IP connection for Multi Repeaters system or stand-alone repeaters.
Control Stations	Should have provision to connect at least 6 Control Stations per Radio server.
	To provide voice functionality through the control stations.
Analog Mode	Analog channels support for:
	Analog Remote radio Patch with Digital Radio Network
	Open channel voice calls
Digital Intercom Patch	MDC signaling
	Should have provision for direct SIP connection to PBX
SMS Gateway	Should have provision to connect SMS-gateway to send test message to GSM-systems

Web client	Web client subscriber for control and monitoring over DMR Radio system from a browser. Should support voice calls with radio subscribers from the browser, GPS tracking, text message.
Event Logging	Voice and event logging at both Dispatcher Consoles and Radio servers
Telemetry Service	Telemetry Command control - minimum 3 remote I/O control to control remote Digital subscriber GPIO contacts for NO/NC operation.
Dispatcher Functionality	
Radio Dispatch	All type of calls (Private, Group and All call)
	Calling Subscriber Identification
	Remote Monitoring
	Emergency Calls
	Voice Calls between dispatchers (Intercom)
	Voice Recording for all channels in connected network
	Radio Check
	Call Alert
	Radio Kill and Unkill
	Flexible sound control - should have provision to select output audio channels for any slot, group, subscriber or dispatcher.
	Customizable Subscriber Call windows
	Subscriber categorization & Profiling with provision of adding photo and other detail
	Configurable profiles to manage access of dispatchers to base radios, groups, services, Digital Radio IP Site time slots
	Black list for Automatic Mandaling of unauthorized radios in the Digital Radio network
	Restriction of monitoring of private calls between subscribers
	Custom dispatch consoles. Visual designer to draw a console specific to the customer needs. Different level access control profile e.g. Admin, Supervisor, Operator.
	Voice announcements: Voice Notifications functionality to allow for recurrent pre-recorded voice announcements over selected channels in case any emergency evacuation.
	Conference calls (Dispatcher can patch different groups, subscribers). It's possible to set the conference calls between several dispatchers, subscribers, telephone subscribers.
	Muting of talk groups. Tune sound level for each connected base radio, mute base radio, Assign only one base radio to have sound turned on.
	Hot keys for quick SMS, private and group calls
	Deferred voice calls and messages - it should be possible to send text and audio messages to radio subscribers even if they are offline or out of network coverage, the deferred message is put on queue and waits until the radio subscriber becomes available.

GPS Tracking, AVL	Real-time subscriber location monitoring
	Should support different types of maps like open vector maps, raster maps, Online Google Maps, INGIT and MapPoint.
	Subscriber location logging
	Track animation for specified period of time
	Subscriber track details
	Geo-fencing
	Route control
	Subscriber stop control
	Subscriber's movement start control
	Display on map all subscribers in selected category
	Automatic location request
	Location request by event
	Manual location request
	Integration with Google Earth and Google Maps (export locations to KML)
	Different speed formats
	Color formatting for subscribers with actual location
PBX Interconnect Data Transmission, Data and Voice Logging	Intercom calls from the dispatcher console
	Intercom and radio subscribers interconnect
	3 types of calls (initiated by PBX subscriber, initiated by radio subscriber, initiated by Dispatcher Console)
	Private and group calls
	Possibility to limit list of authorized radio subscribers
	Voice calls recording in MP3 format
	Text Messaging Service
	Subscriber Status
	Dispatcher Console should have provision to control minimum 3 remote Digital subscriber GPIO contacts for NO/NC operation.
	Event Logging of ALL activity in radio network
	Voice Recording of ALL calls in radio network (even private calls between radio subscribers)
	Additional Information about the repeater used for the subscriber activity (calls, text messages, etc)
	Subscriber Custom Properties
	Rules and Alerts for events
	GPS Rules
	Lone Worker Rules
	Report Wizard
	Subscriber Activity Report
	Database back-up and restore
	Voice and event logging at both Dispatcher Consoles and Radio servers

Real Time Monitoring	Graphical representation of voice, data activity received from Digital repeaters allows watching over the system in real time. Online RSSI level monitoring.
	Graphical representation of radio network scheme
	Information about current state of connected repeaters
	Remote repeater administration and diagnostics in Multi Repeater systems (channel change, power level settings, turning off & on and alarms for over temperature, PA Failure, High VSWR, FAN etc.)
	System infrastructure (UPS, Switches, Routers) monitoring via SNMP
	Hardware failures logging
	Coverage map reproduction based on RSSI level of the received signals from GPS-enabled Digital Radios
	Graphical representation of the collected monitoring data
	Monitoring should work as a stand alone application and as a service of Dispatch Software. Working as the service, monitoring shouldn't utilize any additional network bandwidth sharing the connection used for dispatch operations.
	Detailed reports based on collected monitoring data and filtered by number of criteria
	Should have provision to Route all calls from one network to another
	Should have provision to Route group calls for specified talk groups
	Should have provision to Route private calls for specified subscribers
Radio Network Bridging for IP Site connected Repeaters, Multi Repeaters, Digital and Conventional channels	Should have provision for Dynamic intelligent routing of private and group calls based on the information about the subscriber registration in the network
	Cross Radio server bridging to route voice calls between geographically distributed sites.
DMR Dispatch System Hardware Specifications	
Dispatcher Console minimal configuration	CPU i5, RAM 4GB, HDD 500Gb, embedded or external sound card, Speaker & mic, Windows 7/8 Prof.
Radio server minimal configuration	CPU i5, RAM 4GB, HDD 500GB, Windows 7 / 8 Prof.
	or Windows Server 2003 or 2008
FXO Gateway Specification	
WAN	10/100M Ethernet uplink port
LAN	10/100M Ethernet downlink port
Phone	Min. 1 FXO
VOIP control	H.323/SIP, easy to switch

protocol	
Voice codec	G.711A, G.711U, G.729, G.723, G.722
Analogue telephone feature	Echo cancellation ,VAD, CNG, DTMF detection and generation
Configuration	Through WEB browser, TELNET
SMS Gateway Specification	
Freq. Band	GSM 900/1800/1900MHz with class 10 GPRS
Output Power	Class 4 (2W for GSM 900), Class 1 (1W for GSM 1800)
SMS	Supports Text and PDU mode, Point to Point & Cell Broadcast
Data	Data circuit Asynchronous and non transparent up to 12.4 kbps Auto baud rate (2400, 4800, 9600, 19200, 38400, 57600 bps) fixed baud rate (300, 600, 1200, 9600, 115200 bps)
AT Commands Interface	GSM 07.05 and 07.07
Connectors	RS-232 Serial, DC Power socket, SMA Antenna connector, SIM Card Holder
Antenna	SMA Rubber /WHIP Antenna

5.3 Specification of Point-To-Point Microwave Radio (Unlicensed Band)

Features		Description
Radio	Frequency	Must operate in Unlicensed band (5.825 to 5.875 GHz Band)
	nLOS, NLOS Operation	Must support nLOS deployment
	Modulation	2x2 MIMO-OFDM, BPSK, QPSK, 16QAM, 64QAM
	Adaptive Modulation	Should support adaptive modulation
	Channel Resolution	5 MHz
	Channel Bandwidth	Should support 5/10/20/40 MHz user configurable
	Channel Accuracy	± 50 PPM
	Duplex Technology	TDD
	Asymmetrical TDD	Should support Asymmetrical Bandwidth
	Split Configuration	Separate Indoor Unit and Outdoor Unit
	Spectral Efficiency	Better than or equal to 5 bits / Hz
	Service	Ethernet
	Channel Selection	Automatic channel selection must be supported

	Transmit Power	Transmit Power Control - within allowable EIRP, Max 25 dBm
	Antenna Alignment Tool	Audible Buzzer
	Built-in Scanner / Spectrum Analyzer	Link-oriented Spectrum Analyzer: should show the results of both sites
	Error Correction Method	FEC 1/2,2/3,3/4and 5/6
	IDU to ODU Interface	Outdoor CAT5e STP Cable
Ethernet	Latency	<3 Msec. typical
	Ethernet Port	Should support minimum 2 Ports
	Max Net Data Throughput	up to 25 Mbps Aggregate
	Ethernet Throughput Control	CIR, Configurable in the Radio
	LAN Interface	10/100/1000 BaseT interface with Auto negotiation (IEEE802.3)
	Maximum Frame Size	2048 bytes
	Framing/Coding	IEEE802.3/U
	Bridging	Self-learning up to 2047 MAC addresses IEEE 802.1Q
	Ring Protection	Should support for redundancy without using External switch
	Association of LAN ports	Association amongst LAN1, LAN2 and SFP port – should be Software configurable
Management	Management	a) SNMP based single management application for entire link consisting ODU and IDU b) Installation, Configuration, Fault management through EMS (Local and Remote)
	Software Upgrade	Should have facility to Software Upgrade over the air
	Supported protocols	SNMPv1, Telnet, HTTP web based
	Upgrade Capabilities	a) Support Software backup and restore through EMS b) Multiple sites upgrades through EMS
	Compatibility Alarm	Alarm indication for Software incompatibility
	Performance Monitoring	PM logs, event logs and provision for monitor logs must be available through EMS
	Management VLAN	should support for Management
L2	QoS including 802.1p, TOS/Diff Serve	Should support QoS with at least 4 level queues
	VLANs (Tagged, Untagged), 802.1q	VLAN transparent; Separate VLANs for service traffic and Management traffic; Should support Double tagging

Security	Encryption	AES-128
	MAC Authentication	MAC Address locking between two radios
Power	Power Source	Redundant DC -20 to -60VDC
	Power consumption	< 35 W (IDU + ODU)
Environment	ODU enclosure	IP67
	Operating Temperature	.-35 o C to 60 o C
	Lightning	EN 61000-4-5, Class 3 (2kV)
	Humidity	95 % non-condensing
BAND	Supported Bands	4.390 -5.010 GHz
Safety	FCC/IC (cTUVus)	UL 60950-1, UL 60950-22, CAN/CSA C22.2 60950-1, CAN/CSA C22.2 60950-22
EMC / EMI	FCC	CFR47 Class B, Part15, Subpart B
	ETSI	EN 300 386, EN 301 489-1, EN 301 489-4
	CAN/CSA-CEI/IEC	CISPR 22-04 Class B
	AS/NZS	CISPR 22-2004 Class B
	<p>Microwave radio shall support 4-6 GHz multi band capability, primarily it shall operate in 5.825 – 5.875 Ghz (Un Licensed Band), and shall also operate in nearby Licensed Band (if reqd.)</p> <p>Project should not suffer for some remote site interferences in un licensed band.</p> <p>Multi Band supported equipments are available in the industry</p>	

NOTE TO THE BIDDER

01	The Bidder shall indicate the make/model in their offer.
02	The 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.
03	If above equipments/machine requires specific training for operating them, the Bidder should Ensure that proper training on operations and its maintenance is provided to each consignees.
04	The confirmation that the stores are meeting the specification should be supported by documents/literature etc.
05	These documents of all stores offered be numbered and attached after all appendices and the Numbering may be in continuation.
06	All bidders are directed to submit the required certificate i.e. BIS/ISI Mark to check the standard of items.
07	The Repeaters/ Base stations antenna to be installed on a angular tower/spun concrete tower at specified locations of DEOC, TEOC, Fire, CSPF and FLC or pole on a

08	Bidder to obtain all necessary WPC /SACFA Clearances. Employer shall facilitate with only a authorization letter
09	Bidder is to submit Lab Test Certificate on the parameter mentioned in technical specifications, from the NABL /ILAC approved Lab. The Certificate must be enclosed with technical bid. In case offer is received without Lab Certificate same will be rejected
10	Offered product OEM should have own registered office presence in India to ensure prompt service warranty support after sales.

5.4 Bandwidth requirement:

Karnataka			
S. No	Location	Number of Locations	IP Bandwidth requirement
1	SEOC	1	Dedicated 4 Mbps expandable to 8 mbps
2	DEOC	3	Dedicated 2 Mbps expandable to 4 mbps
3	TEOC	08	Dedicated 2 Mbps expandable to 4 mbps

5.4.1 Scope of Work:

Supply, Installation, testing, commissioning and maintenance from the date of Successful Operational Acceptance of Bandwidth required at State Level, District Level and at Mandal Level. The required Bandwidth at SEOC, DEOC and TEOC shall be provided by State. However, Bidder is required to quote for the Bandwidth.

An Internet Bandwidth of 5 Mbps has to be provided at SEOC in addition to other Bandwidth requirement. Internet shall be used to interface with DMR as well as to send Email to Officers, People, Media Channels TV/ Radio.

The bidder shall provide a NMS tool to allow monitoring of status of all the links. The firewall and IPS shall be required only at SEOC. The bidder is required to connect with the nearest KSWAN Point of Presence (POP) at State HQ, District HQ and Taluka HQ.

The price quoted shall include all the necessary equipments 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 99.9% or agreed mutually)

The bidder shall give the list of items with their configurations and specifications, make and model No. along with qty that are being proposed in the network.

The Modem bank, Router and other network elements shall be securely installed in a Standard suitable rack.

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

5.4.2 Network Management System (NMS) :

The 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:

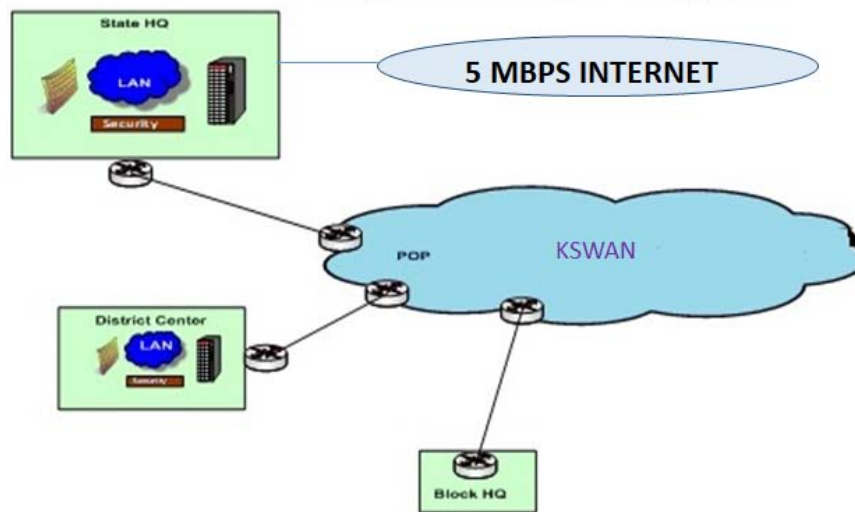
- Link downtime / Uptime analysis report.
- Traffic monitoring, bandwidth utilization report with committed information rate for all links and all ports.
- Network availability reports as per Service Level Parameters defined.
- Throughput, Latency, Jitter for all the locations
- The Service Provider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

5.4.3 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.

Network Architecture

Logical Network Diagram



5.4.4 Detailed technical specifications

Sl. No	Specification
1	Bandwidth shall be provided from KSWAN.
2	Connectivity and Internetworking requirements: Broadband-Internet Connectivity at State, District and Mandal Emergency Operation Centre-IP
3	Supply, Installation, Configuration, Commissioning and Maintenance of last mile, modems, last mile equipments etc. during contract period
4	Provisioning of Last Mile from the EOC location to the KSWAN nearest PoP. This provisioning is under the under bidders scope.
5	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.
6	The Service Provider should provide facility of single toll free no. across country for logging complaints/service requests.
7	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.

5.5 Satellite Based Mobile Voice Data Terminal (SBMDVT):

5.5.1 Introduction:

Satellite Based Mobile Voice Data Terminal (SBMDV) terminals are compact and lightweight. They can be carried as easily as a laptop, with the smallest weighing less than 1.5 kilogram. SBMDV shall be accessible worldwide. It delivers voice and broadband data connectivity to users wherever they are on the planet. SBMDV services shall be delivered via the Inmarsat-4 network. The service is accessed via SBMDV Launch Pad, a software interface, which is standard across all SBMDV terminals. SBMDV is accessible via a range of small, lightweight satellite terminals, which provide performance options to suit different operational needs. They can be used both indoors and outdoors, being robust enough to withstand challenging environments and extremes of temperature.

Integrating seamlessly with your corporate network, it supports legacy applications while providing a smooth upgrade path to IP.

Inmarsat has vast experience in providing secure communications to military and government customers. SBMDV meets these exacting requirements and supports all major VPN products and encryption standards.

Satellite Based Mobile Voice Data Terminal (SBMDV) terminals which can be used in pre disaster and in particular Post disaster scenario when all the existing Communication Networks fail.

5.5.2 Scope of work:

Supply, installation, integration, testing and commissioning of SBMDV Terminals with necessary accessories and maintenance (2 years under warranty and 3 years under AMC from the date of Successful Operational Acceptance).

The bidder shall carry out the liaisoning activities with DOT/ Wireless agencies and assist State govt. in getting the appropriate Approvals/ Licenses from DOT/ Wireless bodies.

The Bidder to ensure the availability of Gate way from any Service provider in India for procuring the services through INMARSAT for Satellite Data Voice Terminals

The bidder shall liaison with the Gateway Service provider to work out for the annual subscription plans.

5.5.3 Detailed technical specifications:

Sl. No	Particulars	Specification
1	Simultaneous voice and data	A single SBMDV terminal provides simultaneous voice and broadband data up to 464 kbps, enabling you to access the internet or send email, and talk on the phone at the same time.
2	Global coverage	SBMDV is available across the globe, with the exception of the extreme polar regions, providing connectivity wherever your business or operations take you.
3	Reliable network	SBMDV services shall be delivered via the Inmarsat network, with 99.9 per cent satellite and ground network availability.
4	Reliable L-band service	SBMDV Link's connection is maintained even during extreme environmental conditions. Its L-band radio technology gives it a high degree of pointing tolerance even during strong winds or seismic activity.
5	Secure	SBMDV meets military and government requirements for security and supports all major VPN products and encryption standards.
6	Totally flexible	Supporting the latest IP services, as well as traditional circuit-switched voice and data, SBMDV integrates seamlessly with corporate networks and legacy applications.
8	Full channel streaming rate	SBMDV will provide a minimum throughput of 464 kbps or more with its full channel option,
10	Cellular failover	SBMDV shall also be used as a dependable back-up solution to cellular bonding
11	Easy to use	No technical expertise or training is needed to set up and use SBMDV. The terminal is plug and play, so you can establish a connection within minutes.
12	INTERFACES	<ul style="list-style-type: none">• Ethernet, USB host interface• SBMDV SIM Card Slot• WLAN 802.11b/g/n
13	Applications	<ul style="list-style-type: none">• Telephone and SMS• Broadband Internet and intranet access• Email and file transfer• Video conferencing

		<ul style="list-style-type: none"> • Live video / audio, broadcasting • Secure VPN • Encryption • WAN • VoIP and remote GSM • FTP • WAN • Time Critical Data Transfer • Store and Forward Video
14	Other features	
	App for IOS and Android	The App shall include a SIP Softphone converting your SmartDevice into a satellite phone, Terminal Access to control your SBMDV and Pointing Assistance.
	LTE Modem for USB	With the LTE Modem one can connect local cellular networks and use the SBMDV as wireless router for all the devices Viz Laptop, Printer Smartphone etc
15	Other parameters	
	Dimensions	Size: (H x W x D) 202 / 202 / 51.8 mm 7.8 / 7.8 / 1.6 inches
	Data capabilities	Standard IP: Up to 464 kbps Streaming IP: 32, 64, 128 kbps
	Voice capabilities	Standard voice: 4 kbps Premium voice: 3.1 kHz audio, 64 kbps
	Text capabilities	160 characters
	Weight	Less than 1.5 kg (incl. battery)
	Global Services	Voice: 4 kbps Premium voice: 3.1 kHz audio, 64 kbps Standard IP: Up to 464 kbps Streaming IP: 32, 64, 128 kbps SMS: Supported
	Operating range	
	Storage range	-40°C to +80°C -40°F to +176°F
	Temperature	Operational (ambient): -25°C to +55°C / -13°F to +131°F Storage (excl. battery): -40°C to +80°C / -40°F to +176°F
	Power Supply	DC input range: 10-32VDC AC/DC power supply: Input: 100-240VAC, 47-63Hz, 65W Output: 19VDC Connector type: 2.5 / 5.5 mm power jack

	Humidity Tolerance	95% non-condensing at +40°C/+104°F
	Battery	Battery: Lithium ion, rechargeable Stand-by time: 36 hours Transmit time, max.: 2h30m @ 128 kbps (25°C / 77°F) Receive time, max.: 3h30m @ 128 kbps Recharge time: Less than 3 hours
	Accessories	<ul style="list-style-type: none"> • Polemount • 100-240VAC power supply • Car Charger cable • 4G USB Modem • USB to Ethernet Converter Cable

NOTE TO THE BIDDER

01	The bidder has to pay the Airtime in prepaid format with minimum recharge of Rs. 10000/- (with 1 year validity per year of operation) ie for two years. The Employer shall reimburse for the extra Airtime utilized to the bidder after one year prepaid/postpaid validity expires / usage whichever is earlier.
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5.6 Satellite phones

This is a Hand held Satellite Phone which establishes communication through satellite. Satellite phones are proposed at State, District and Taluka level officials.

- Dependable connectivity
- High quality voice
- Rugged design
- Assistance button and GPS tracking
- Extended battery capacity
- Incoming call alerts even with antenna stowed

5.6.1 Technical Specifications:

Sl.no	Parameter	Specification
1	Dimensions	Length: 169mm (6.7") Width: 52mm (2") without antenna 75mm (3") with antenna Depth: 29mm (1.1") in hand 36mm (1.4") at deepest point
2	Weight	318g (11.2oz) – including battery
3	Display	High contrast colour screen
4	Interfaces	Micro USB Audio socket Antenna port Bluetooth 2.0

5	Durability	IP65 IK04
6	Operating range	-20°C to +55°C (-4°F to +131°F)
7	Storage range	-20°C to +70°C (-4°F to +158°F) (with battery) Charging range 0°C to +45°C (+32°F to +113°F)
8	BATTERY	Type Lithium-ion, 3.7 volts Talk time Up to 8 hours Standby time Up to 160 hours

5.7 Universal Communication Interface

5.7.1 Introduction

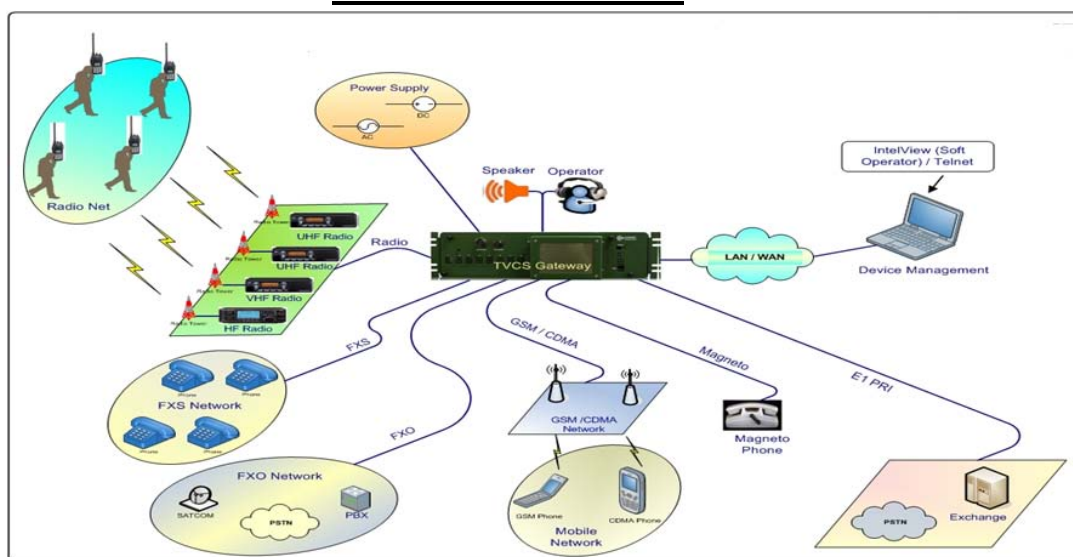
The Universal Communication Interface system utilizes the key concepts of interoperability, reliability, scalability and portability to ensure that personnel from different disciplines, jurisdictions, organizations and agencies are able to communicate with each other instantly. For example, communication between first responders such as police, disaster rescue forces, fire brigades that use wireless communication systems mostly equipment operating in Very High Frequency (“VHF”) band and administrators on Cellular network or terrestrial satellite based Very Small Aperture Terminals (“VSAT”), should be possible with Voice over Internet Protocol (“VoIP”) based Universal communication system.

5.7.2 Scope of Work

Supply, delivery, installation, commissioning and maintenance (2 years under warranty and 3 years under AMC from the date of Operational Acceptance) of Universal Communication Interface at State Emergency Operation Center (SEOC).

The system should include universal communication interface based on common (e.g. VoIP) switching for voice call connectivity across various technology based equipments such as VHF radio, VSAT, VoIP calls on IP-VPN etc. The system should provide facility to interface communication technologies mentioned above for mainly voice intercommunication. The bidder’s system should include Interface conversion cards / software systems to bring different systems on a single VoIP platform and VoIP gateway.

Network Architecture



5.7.3 Detailed technical specifications

Sl. No	Specifications
1	General.
	The radio Inter-portability system should interface with any combination of 2-way radios (HF, VHF and UHF), cellular/landline telephones, SATCOM, SIP/VoIP phones and RoIP users over LAN/WAN networks while allowing multiple simultaneous two-way conversations or conference calls between the above. The system must have 4 universal slots minimum capable of supporting different connections. The system should support E1/PRI interface and VOIP Interface for networking with other systems.
2	Operational Requirements.
	The Inter-portability system should be capable of the following :-
a	Interfacing the various 2-way radios sets in HF, VHF and UHF bands in use.
b	The system should be capable of interconnecting the above radio networks to achieve Local area Interoperability at the level of a Unit/Formation HQ.
c	The system should allow interfacing with remote radios over various transmission media such that leased line, LANs, WANs or the internet.
d	The system should be capable of deployment as a tactical reaction package, a mobile Interoperability platform or a fixed station dispatch solution.
e	The system should be capable of interconnecting with almost any type of radio through a multitude of specially designed radio interface cables for radio sets RS STARS V(5W & 25W, Mk-I and Mk-II), TADIRAN PRC HF SET, TADIRAN CNR VHF SET, HHRS, MSS(Mobile Satellite Station) etc.
f	The system should support Radio over IP (RoIP) in addition to SIP-based VoIP capability to allow use of WAN of above stated radios by transporting digitized audio along with control signals (PTT/COR/DTMF). The RoIP capability shall be

	optimized for radio performance, and be capable of operating transparently over an IP network.
g	The System must allow users to interface a wide array of radios of all types by selecting appropriate cables from an interface cable cache defined during the contingency planning portion of a site survey. The system must be designed to allow interconnection and operation of a newly arrived radio (with appropriate cable available in the cache) in less than fifteen (15) minutes.
h	The Interoperability system should be capable of cross-connecting any or all of the interfaced radios to public telephone network (PSTN), to private access to branch exchanges (PABX), to SATCOM terminals, and to Cellular (GSM/CDMA) circuits.
i	The system should cross-connect an encrypted radio network together seamlessly.
j	The Interoperability system should be capable of interconnecting minimum 8 (8 nets supporting 128 cross connections) communications systems in each chassis. The unit should also support unrestricted number of conference calls involving any and all connected phones/ radios/ terminals/ users.
k	Should be a compact ruggedized unit suitable for tactical use in both static and vehicular role.
l	The system should support 64 SIP/VoIP phones for local and remote commanders and users. The VoIP support must reside on the CPU/controller card
m	The systems must allow configuration of custom dialing plan.
n	The systems must allow support for speed dialing.
o	It must be possible to interconnect multiple CNR Gateway units at different zones over IP WAN network to form a large interoperability domain made up of multiple zones. A user from one zone should be able to call another user in the same zone and a remote zone seamlessly.
p	The Universal Communication Interface should be supplied with the following interfaces :-
i.	2 ports for Radio connections.
ii	2ports for FXO/FXS. The system must be able to configure any of the four ports as FXS or FXO.
iii	2 ports for GSM/CDMA network connectivity with one on the GSM network and one on the CDMA network.
iv	2 E1 PRI ports for connection to ULSB and/or PABX type equipment.
v	64 VOIP connections for supporting VOIP phones and connect other Universal Communication Interface to this Universal Communication Interface
vi	One Operator VOIP Console software license must be bundles with each
vii	Universal Communication Interface unit. This Operator Console VOIP phone must have a graphical Human Machine Interface (HMI) that supports physical switch or Finger-on-Glass PTT methods and shows status of all connected interfaces, shows all connections in progress and displays speed dial numbers to reach various interfaces with minimum touches or clicks.
viii	The Unit must support one copper 10/100 BT Ethernet port as the IP network

	connectivity port.
q	System Operation and Management.
i	The system should perform either as an unmanned gateway or as a manned gateway while providing Interoperability over multiple radios. The system should allow users to form multi-party conferences in the unmanned mode as well as in the manned mode. It should allow remote DTMF control of to add additional users / phones / radio nets / terminals into the conversation to form an ad-hoc multi-party conference without any operator assistance.
ii	The system should have public telephone interface feature should be designed to permit commanders to participate in problem management of an Interoperability solution when not on scene.
iii	The system should allow remote DTMF control of cross-connect over RF links, over phone circuits, over PBX circuits, over SATCOM paths and over cellular channels to establish two-party or multi-party sessions.
	(a)The system should use a software control package compatible with LINUX and latest Windows operating system to provide a user-friendly GUI (Graphical User Interface) depicting system operation and allowing programming of features.
	(b) This Windows-based software control software package shall allow connecting and disconnecting of an Interoperability channel with any other Interoperability channel.
	I The Interoperability system should also include an Ethernet remote control interface allowing the required computer control software to operate from multiple dispatch locations simultaneously.
iv	The System must should be equipped with networking capability to allow control of multiple Universal Communication Interface from multiple computers simultaneously in a wide area Interoperability format.
v	The system should allow the interconnection of multiple radios at one site with multiple radios at another site by simultaneously networking together two or more Universal Communication Interface units.
vi	The system should permit programming of all radio interface features, as well as phone interface features and SATCOM interface features. This software should keep an historic log of all Interoperability transactions referenced to time of day, shall permit password protection of all critical features, and shall allow priority access and rejection relative to individual passwords.
vii	The system should support Built In Test Equipment (BITE) facility.
r	Power Supply.
	Equipment should operate on mains 230V AC / 50 Hz Power input but can be supplied to support either 12 VDC and 24 VDC supply input .
s	The system must be protected against reverse voltage.
t	EMI/EMC Compliance
u	Should perform in noisy EMI/EMC environment and be designed to comply with JSS 55555 Table L2B environmental test parameters.

v	Features.
	The system should have controller software to provide full system status and control from a PC, locally or remotely over an Ethernet network.
w	Radio Interface Cables.
	(i) 4 radio interface cables for customer specified radios with the length of 5m must be provided with each unit.

NOTE TO THE BIDDER

01	The customized Software should be handed over to the Employer .
02	The Bidder shall integrate the System at SEOC at Bengaluru, Karnataka.
03	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.

5.8 Alert Tower Siren System

5.8.1 Introduction

The proposed system is a three tiered system. 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. Tier 2 is the District Emergency Operations Center – DEOC. Tier 3 is the Remote Terminal Unit (RTU) with Horn Speaker at Cyclone Shelter/Tourist Locations.

The endpoints in the system are the Alert Siren with Remote Terminal Unit (RTU) situated in areas vulnerable to cyclones. Presently these are proposed at the Tourist Location/Sea Beach and the Cyclone Shelters (CS). The speaker Horn of Remote Terminal Unit (RTU) to be installed on Spun/ Angular Towers or 5 meter pole on roof-top of a building.

An alert can be in the form of:

1. A siren sound
2. A prerecorded announcement
3. A live announcement
4. TTS (Text to Speech)

The SEOC controls all the TEOCs and all the RTUs. The TEOC controls all the Remote Terminal Unit (RTU) in the same Block.

The SEOC shall be connected to all the DEOCs and TEOCs via an IP backbone and to all the RTUs via the public cellular network. The TEOCs shall be connected to the RTU via

a VHF link.

The SEOC can initiate an alert on an individual RTU of the state , all RTU in Mandal or all the RTUs of 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 VHF network via the DEOCs/TEOCs.

The TEOC can initiate an alert on an individual RTU, a group of RTU in Mandal or all the RTUs of the Mandal. To initiate an alert the TEOC can send the alert signal to the RTUs over the public cellular network and over the VHF network.

The range of the VHF coverage from the RTUs is about 10-25 kms depending on site conditions. Due to this distance limitation the SEOC cannot send the warning signals directly to the RTUs over the VHF network. In case the cellular coverage is not present at the RTUs the SEOC can send the warning signal using the VHF network via the base stations installed at the TEOCs. To reach the TEOCs the SEOC utilizes the IP backbone that connects the SEOC and the DEOCs and TEOCs.

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 so that in the event of one computer being non-operational the other computer can be used.

The TEOC controls all the RTUs in the same District/ Mandal only. The TEOCs are connected to the RTUs via a VHF link and also via the public cellular network.

The system shall be able CAP compliant system.

5.8.2 Control Station

The Control Station provides 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 TEOC. The Control station should have window based software user friendly, graphical user based interface for overall control ,monitoring and to display the map & colour coded icons for status of RTU/AWT locations/sirens. It should also support the ability to display an unlimited number of different map views. 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 RTUs of the state. The software should have complete storage of all RTU status and alarm data. The software system is 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 inch monitor shall be provided for ease of operation by the Controller. The controller must support the ability to initiate concurrent or sequential activations including the ability to simultaneously send activations to different targets. The software should be password protected or 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. Microphone, , SIM Card, and associated hardware etc as needed which are integral part of the system ,shall be provided. The CS software must be capable reconfiguring alarm records of the Sirens remotely over available communication path with out requiring onsite visit. It must support the ability to report faults or trouble alarms via email and SMS text to maintenance personnel.

The Cost of the Control station software shall be paid one time which shall include the user license usage for all TEOC without any additional cost of software. Employer shall pay only the additional cost at TEOC.

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.

The SEOC can initiate an alert on an individual siren automatically or override the automatic activation in the event malfunctions occur or cancel an activated message to all the RTUs in a Mandal or all the RTUs of the state. Remote testing the sirens totally or silent test feature shall be available.

TEOC should have self-supporting Tower, earthing pit, RF cable with surge protection, Omni directional VHF antenna, 45W VHF base radio etc for setting up VHF link with RTU. VHF System signaling method should be FFSK and encrypted for protection from unauthorized usage, .

Bidder shall be paying the rental, usage and activation charges for the SIM card inside Control Station for GSM/ GPRS Connectivity. The bidder shall pay upto 20 hours per SIM card talk-time/ Data usage charges per annum, beyond that Employer shall borne the talktime/ Data usage charges on actual basis.

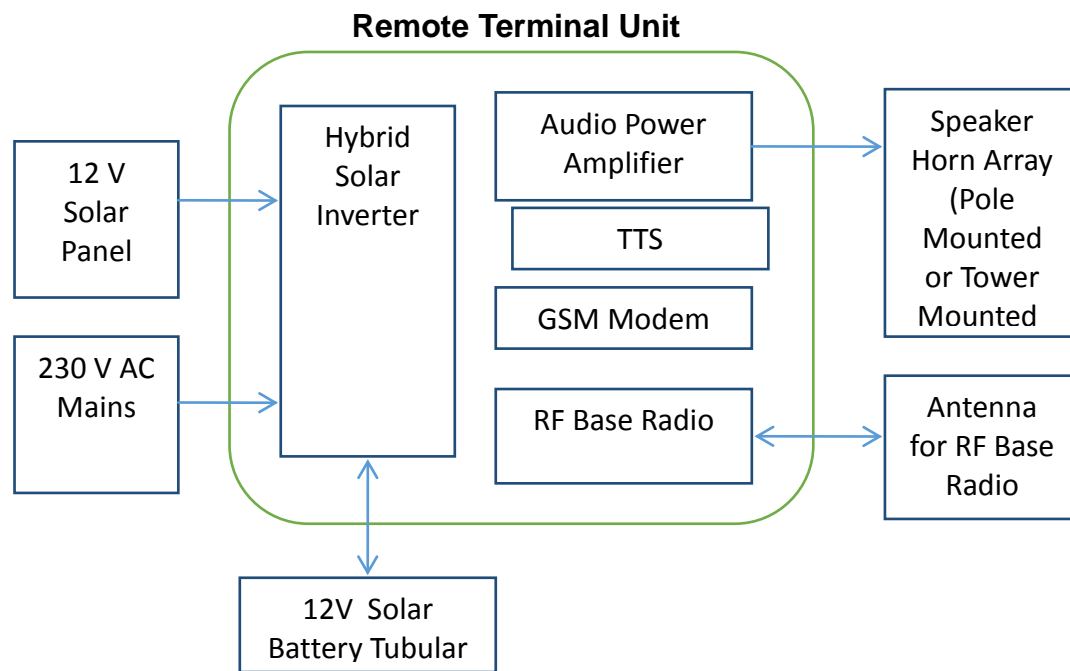
5.8.3 Remote Terminal Unit (RTU)

The RTU should receive and decode warning instructions sent from SEOC or TEOC via the cellular Network (GSM/GPRS) or the VHF network to either directly or by

activating prerecorded message, initiate broadcast of warning messages through the audio system. On receipt of a valid warning signal the RTU plays the alert signal over a high powered speaker for a pre- determined duration. Siren/ Voice Announcement can be initiated through Control Station. The RTU to Control Station medium can be Cellular Network (GSM/ GPRS) and the VHF network. When medium is Cellular Network (GSM/ GPRS) ,the Control Station can be one or more than one and also can be located anywhere eg SEOC and TEOC.

The bidder will have to design VHF radio network at TEOC and RTU Location with VHF radios. Each RTU Siren may work as a VHF repeater. Obtaining VHF band allocated and establishing VHF link shall be bidders responsibility. VHF licensing fees shall be paid by the bidder. Bidder has to obtain the SACFA and WPC Clearances from DOT . Employer (Owner) shall assist in only giving authorization letters .

The communication terminal in the RTU must be tropicalised and should be able to operate under all kinds of weather conditions. The RTU with battery should be housed in IP65 Stainless Steel cabinet with lock & key arrangement. The unit should send encoded information on available communication channel (GSM/GPRS/VHF media) regarding health of equipment at warning tower and quality of performance remotely activated status check of the system to Main Controller at the SEOC. Health Status Check for Alert Sirens shall be included through low volume testing at regular interval. The configurable parameters of the encoder /decoder programming must be possible through an external port (e.g RS -232).Each remote unit shall work off backup battery (maintenance-free) for audio amplifier / driver system .Optional local control should be available for manual operation of warning broadcast for local community. The Standby mode current consumption should be below 200 mA/ 230 V.



Note : RTU shall be Housed in IP 65 steel Cabinet

RTU should have high powered audio amplifier compatible to work with the Speaker Horn Array. All the electronic unit i.e. RTU, Communication Interface Card, RF base radio, TTS, Hybrid Solar Inverter and Loudspeaker Audio Power Amplifier with battery should be housed in a IP 65 Stainless Steel Outdoor Cabinet with lock & key arrangement, which can be kept inside the Cyclone Shelter Building or should be mountable on 30 meter tower for remote locations of Sea beach etc.

Bidder should be responsible for duly installations of all unit 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, DSA, local transport and fooding cost etc and any extra accessories, equipment, goods, engineering and installation charge, labor cost, fitting charge 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 bidder.

Bidder shall be paying the rental, usage and activation charges for the SIM card inside RTU for GSM/GPRS Connectivity. The bidder shall pay upto 20 hours per SIM card talktime/ Data usage charges per annum, beyond that Employer shall borne the talktime usage charges on actual basis.

5.8.4 Sound Horn 4 numbers / Omni Directional Horns

Sound Horns to be mounted on Spun/ Angular Tower or pole on a building. Mounting Fixures to be provided by the bidder. All Speaker cable must be inside the pole or covered by metal structure. The audio coverage of Siren up to o 1.5 kms omnidirectional. The Siren Should be light weight, rugged, weather proof and compact. Should be moulded in metallic aluminum for longer lasting finish. Total weight of horn assembly should not exceed 80 kgs. Should withstand harsh and saline weather condition and should be rustproof. Should be rectangular type and comply with low voltage directive standard EN 60065. Degree of protection IP 65 shall be provided against foreign particles such as dust and jets of water, ideal for outdoor use.

The Loudspeaker cable should be double insulated to connect with the speaker amplifier. All Speaker cable must be inside the pole or covered by metal structure. 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.

The system audio output must be sufficiently high quality audible not less than 1.5 km radius i.e., 3 km Diameter Omni directional at 70 db ambient noise.

5.8.5 Specification for Mounting Pole :

The speaker horn to be mounted on GI Pole on rooftop on the pillar of the suitable building preferably on RCC Structure for which the Engineers of KPWD shall certify in co-ordination with the Vendor. Length of the pole should be minimum 5 (five) meters with outer diameter of 4.5 inch supported by guy wires from three sides to withstand wind velocity(240 Km / hour). SPIU will facilitate the building stability report where the rooftop pole has to be erected.

The bidder shall work out detailed design of the civil foundation for 15 meter ground base Spun Tower from all aspects, keeping in view the effects of local metrological conditions like wind velocity(240 Km / hour), seismicity, temperature etc. to ensure the safety of the pole. The civil foundation design should be approved by a IIT (Indian Institute of Technology). Bidder shall submit the detailed specifications along with the approved certificate by IIT.

5.8.6 Specification for Solar Panel:

The Solar Panel shall be 12V rating 150 Watt roof mountable on Building of Cyclone Shelters and/or tower mountable on sea beaches.

The roof top mounting and tower mounting should be able to withstand the wind speed of 240 km per hour. Where ever damaged shall be responsibility of the

bidder to replace at free of cost during warranty and AMC period.

The Solar Panel should be IEC 61215 Ed.2 and IEC 61730 Safety Class II UL 1703 & 4703 complaint.

5.8.7 Specification for Solar Battery Bank:

5.8.7.1 General Requirement:

The Alert Tower Siren System shall operate from a normal 230V AC mains power Supply or 230V AC Inverter Supply obtained with 12 V (nominal) DC 150 AH battery supply. The storage batteries shall be sealed maintenance free Tubular GEL Vent Regulated Lead Acid (VRLA) type suitable for solar application.

- 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 AH @ C10 to 1.75 v.p.c 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, Eurobat Guide 1999 – Classified as “Long Life”
- Supplied in factory charged condition – ensures optimal quality and ready to use
- Suitable for frequent deep cycles.
- Low rate of self discharge
- No acid stratification

5.8.7.2 Performance:

- Cycle Life: 1800 cycles at 80% DOD at 27 Deg.C
- Self Discharge: <2% per Month at 27 Deg.C AH
- Efficiency: >95%
- Versatile in Mounting arrangement: Both Horizontal and Vertical orientation .
- The container shall be strong enough to withstand rough handling.

5.8.7.3 Other Requirements:

The batteries shall be provided with, necessary connectors, name plate, 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 also easy to check the status.

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.

5.8.8 Specification for Solar Hybrid Inverter 1500VA:

The Solar Hybrid Inverter should have dual charge technology to charge the 12V 150 AH battery direct with input from 150W Solar Panel in the absence of 230 V AC mains power supply saving electricity with inbuilt switch otherwise to charge from 230 V AC mains power supply . Should automatic switch from mains to UPS & from UPS to mains mode.

Capacity of Solar Hybrid Inverter: 1500VA

Normal Input Voltage Range: 180V ~ 225 V AC (wide range 100V~300 V)

Max Solar Panel Current: 30 A

Efficiency should be greater than 80%

Output Voltage on mains mode: same as input

Output Voltage on UPS mode: 220V AC 50 Hz pure sine wave

PVC insulated flexible 3 core power cables shall be used for 230V AC power supply wirings conforming to IS:694:1990 reaffirmed 1995 or latest and shall have sufficient cross sectional area of 2.5 sq mm (minimum) copper conductor with insulation thickness 0.7 mm, sheath thickness of 1.0 mm and overall diameter 9 mm to withstand power load.

NOTE TO THE BIDDER

01	The customized Software should be handed over to the Employer .
02	Bidder shall be paying the rental, usage and activation charges for the SIM card inside RTU for GSM/ GPRS Connectivity. The bidder shall pay up to 20 hours per SIM card talk time/ Data usage charges per annum, beyond that Employer shall reimburse the talk time/ Data usage charges on actual basis.
03	Bidder to pay & obtain all necessary WPC /SACFA Clearances for the VHF radio inside the RTU . Employer shall facilitate with only a authorization letter
04	Offered product OEM/ Indian distributor should have own registered office presence in India to ensure prompt service warranty support after sales.

5.8.9 Angular Towers:

Technical Specifications of Self-Supporting Tower or Spun Concrete Monopole Tower type

5.8.9.1 Introduction

The specifications indicated herein are only to guide the bidder about the requirement of the user. The bidder shall work out detailed design of the tower from all aspects, keeping in view the effects of local metrological conditions like wind velocity(240 Km / hour), seismicity, temperature etc. to ensure the safety of the tower. The design of the tower shall be based on recognized principles of structural design conforming to standard practices followed in the field. Full responsibility regarding soundness of the design and the execution of the work rests with the bidder. If the bidder suggests any deviations in the required specifications, it should be approved by a IIT (Indian Institute of Technology). Bidder shall submit the detailed specifications along with the approved certificate by IIT.

5.8.9.2 Scope of work

Bidder is required to install Angular towers & Spun Concrete Towers as per the required heights given in BoQ at DEOCs, TEOCs, FLCs, Tourist locations and at MPCSSs.

5.8.9.3 Specifications for Fabrication and Design of Angular Tower & Spun Concrete Towers

- 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.
- 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.

5.8.9.3 Other Factors

- 1) The overall force coefficients for wind load on tower shall be taken from the latest standards prescribed by the bureau off Indian Standards for self supporting steel towers, or spun concrete tower, loads and permissible stresses. For calculating the solidity ratio actual obstruction area of tower shall be considered. Separate wind obstruction areas shall be taken for ladder, cable rack and platforms etc.
- 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 tower shall be adopted from the relevant clauses and tables of IS 800 amended upto date and spun concrete tower shall comply IS 875 :1987 (part III).
- 3) Loading effect of seismic forces as per IS 1893 and cyclic winds and conditions of frost etc. if any may also be taken into consideration.

5.8.9.4 Foundations

- 1) Concrete grade for RCC shall be M20 and for PCC, M10. Reinforcement steel grade high yield deformed bar as per IS:1786 Fe 415 Gr. & stirrups as per IS:432 or IS:222. Bending of bars shall be according IS: 2502
- 2) Clear cover to reinforcement bars IS 50mm. All bolts and nuts shall be according to IS: 2502.
- 3) Reinforcement bars to be tied at each junction with a binding wire of grade not exceeding 18. Where exact length of bars are not available. Splicing shall be done as per IS: 456-1978.
- 4) Form work concrete and concrete workmanship etc. shall be as per IS: 456, 1978.
- 5) Maximum size of aggregates is 20mm. Suitable chairs of 16mm.shall be provided to hold the top reinforcement at the base during concreting as per the

directions of the site Engineer.6) All grade of weld material shall be of Fe415 and thickness not less than 6mm unless otherwise specified.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 least 12 days and the erection of the tower shall be commenced only after the foundations are thoroughly cured. 8) Left out item if any shall be covered as per relevant IS codes.

5.8.9.5 Verticality, Deflection & Twist

a) Under Still Air Conditions: The tower shall be vertical after erection and no straining shall be permitted to achieve this. This erection tolerance of verticality shall be within permissible limits. b) Under Maximum Wind Load Conditions: The average slope of the axis of the antenna support column shall not depart from the vertical by more than 1 deg. Under maximum wind load conditions. The successful Bidder will have to satisfy that verticality is maintained at not more than 1 deg. At the maximum wind load conditions.

5.8.9.6 Protection against Lightning

The tower shall be provided with a suitable designed complete system of lightening 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 degrees. The lightening protective system shall be got approved, before execution.

5.8.9.7 Painting

1) The tower shall be given two coats of paint in addition to primer coats after erection. The tower shall be painted to have equal alternate bands of international orange and white colors with top and bottom bands painted in orange as per civil aviation regulations.2) The paints used in painting shall be in accordance with IS-

2074/62,2932 & 2933/75. Before applying coats of primer, the surface shall be given a coat of 'Pickling agent' so as to avoid the flaking of painting. The Bidder should furnish the details about the pickling intended to be applied. 3) The Bidder shall indicate the brand of the paints proposed to be used by him for painting of the tower.

5.8.9.8 Facilities on Tower

a) Platform Provision of one working platform at about 1 meter below the top, extended in all the sides about 1meter and two rest platforms in between the tower at suitable intervals for access to the antenna and cable at different levels 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 checkered plate conforming to IS 3502 and shall be designed as to take stationery and moving load of 2 persons plus equipment weighing about 200Kg. At each platform - "Top-plates", as a form of protection against accidental dislodging of small tools, are to be provided.

b) Ladders An internal ladder of width not less than 300mm starting from about 0.5 meter level of the tower from the ground and going up to the top with openings at all the platforms shall be provided. In case of spun concrete tower external ladder shall be applicable.

5.8.9.9 Aviation Obstruction Light, Power Cable & Coaxial Cable

1) Twin lamp fitting equipped with appropriate colour prismatic globes shall be provided as per latest civil aviation regulation for marking and lighting of obstacles. 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.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 light shall be through 4 way weatherproof junction boxes. The power socket with switch shall be provided at the platform levels. 4) 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.5) The coaxial cable shall also be terminated in control room.

5.8.9.10 Cable Run-Way and Antenna Supporting Ladders:

1) The vertical cable rack for supporting RF feeder cable, power cable starting from the base of the tower and going up to the junction box position shall be routed along the tower face. 2) Provision for fixing the supporting pipe of suitable diameter for hoisting microwave antenna shall be made on the tower. The fitting and fixtures along with the antenna and the feeder cables shall be assembled by the bidder to the entire satisfaction of the indenture.3) 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 30mt 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.

5.8.9.11 Loading due to Antennas, Microwave Dish & RF Feeder Cables etc

1) For designing of 30mt tower load of 200 kgs may be kept into considerations. In addition to above the others forces acting on the tower may be taken into account as per latest IS Codes relevant to designing of towers.2)For the purpose of design and calculations, the wind speed shall be taken at 300 Km / hour 3) Soil Bearing Capacity Soil bearing capacity at all the sites is assumed as at least 10 tons / sq.m.4) The total number of cables to be installed on tower is as below. Wind loading due to these may also be taken into consideration.(i) Power supply cable for AOL.(ii) Co-axial cable for M/W Dish.

5.8.9.12 Trial Erection for Steel Tower/ Spun Concrete Tower

Where deemed necessary by the Contractor or indicated by the Employer, the members fabricated shall be erected on trial basis in the factory at the contractor's cost before transportation in order to confirm accuracy and other requirements of the

fabrication.

5.8.9.13 Product Inspection

In-shop inspection report of finished products shall be submitted to the Employer for approval. The products shall be inspected by the Employer after the in-shop inspection by the manufacturer. Faulty portions shall be promptly rectified.

5.8.9.14 Earthing

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.

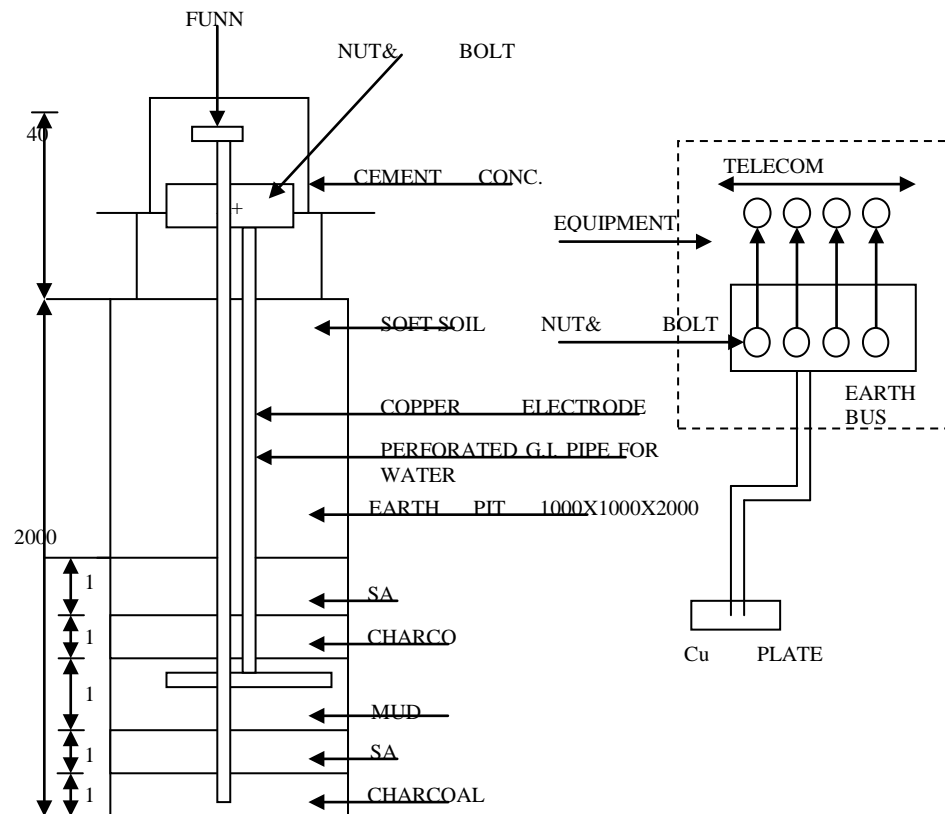
This shall consist of at least one radial earth strap extending from each tower leg, one loop encircling the tower .

- Particular attention shall be paid to the bonding of earthing straps to tower, runway, gantry and building steelwork.
- Earthing strap shall consist of pure copper of nominal dimensions 3mm x 2.5 mm 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 25X3mm copper strip shall be 60M per site.
- For earthing of Spun Concrete tower, two earths for lightening protection and runway to be provided. Tower leg grounding shall not be applicable.

5.8.9.15 Specifications for Earth Pit

General

There shall be two earth pits, one pit is for Equipment earthing and one pit for Power Plant. The earth pits has following specification; 25 mm 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 600mm600 mm x



EARTHING PIT DETAILS

3 mm laid horizontally at a depth of 1.65 meters from the stiff soil level.

5.8.9.16 Earthing of Telecom Equipments

- The earth grid is extended to the equipment room by a copper strip (25 mm x 1 mm) and shall be terminated on a grounding copper plate bus bar by nut & bolt arrangement of brass.
- The Telecom equipment are connected to the copper plate bus bar by a ground conductor Yellow Green 16 sq mm copper mesh wire / cable .
- An earth 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 65 mm dia fixed with funnel at the top and bolted with copper plate of size 250 mm x 1 mm is laid vertically as per the drawing. The dimension of the earth pit shall be 1000 mm (length) x 1000 mm (breadth) x 2000 mm (depth).

NOTE TO THE BIDDER

01	The bidder to install Earth Bus bar at SEOC,DEOC ,TEOC, CS, and FLC where telecom equipment, rack earthings shall be terminated. All the cables should be concealed in PVC Duct.
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5.8.10 Networking Equipments:

5.8.10.1 24 Port L2 Switch

S. No.	Feature	Details
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.		Should Support Up to 255 VLANs per switch and more than 2000 VLAN ID's.

b.		Capability of creating VLAN trunks on any port using standards-based IEEE 802.1q tagging.
9.	Features to be supported	
a.		IEEE 802.3x Flow Control
b.		IGMP snooping
c.		IEEE 802.1D Spanning Tree
d.		Should support IEEE 802.1w Rapid Spanning Tree Protocol
e.		Should support IEEE 802.1s Multiple Spanning Tree Protocol
f.		Support for Spanning Tree Route Guard.-Deleted
g.		IEEE 802.3ad Link Aggregation
h.		IEEE 802.1 ab
i.		Port mirroring-(one-to-one)
j.		MAC Address-based filtering
k.		IEEE 802.1p support
l.		Number of Queues per Port-4
m.		CoS Based on Switch Port
n.		Should provide TACACS+ / RADIUS authentication services.
o.		IPv6 management.
p.		Support for Secure Shell (SSH) Protocol
q.		Protection against Broadcast, multicast, and unicast storm
r.		IEEE 802.1x Port-based Access Control
10.	Network Management	
a.		Web based Management
b.		CLI
c.		SNMP V1,V2 and V3 support
d.		Telnet support
e.		Console and Telnet support
f.		4 Groups of RMON supported

5.8.10.2 12 Port L2 Switch

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	DRAM	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	The switch must support Port Mirroring, Port Trunking and 802.3ad LACP Link Aggregation port trunks	
b	IGMP snooping	
c	IEEE 802.1D Spanning-Tree Protocol	
d	IEEE 802.1w Rapid Spanning Tree	
e	Per-port broadcast, multicast, and unicast storm control	
f	IEEE 802.1s Multiple STP	
9	VLAN Support	
a	Support for dynamic VLAN assignment through implementation of VLAN Membership	
b	IEEE 802.1Q VLAN	
c	The switch must support dynamic VLAN Registration	
10	Layer 2 Quality Of Service	
	Priority queues number :4	
	802.1p support	
	Strict Priority Scheduling	
	Weighted Round Robin scheduling	
11	Network Access/Security management and ACL (Access Control List)	
a	Port Security function	
b	Switch should have 802.1x features to enable user authentication for each attempt of network access.	
c	802.1x Port-based network Access Control	

d	802.1x MAC-based Access Control
e	RADIUS /TACACS+ Authentication
f	SSH
g	Switch should support MAC table maintenance to limit the “aging time”.
12	Other features to be supported
a	Should Ensures quick fail-over recovery
b	Switch should support STP/ RSTP to avoid loops in switched networks.
c	Switch should provide Ping Test function to detect that if the target device is alive (available) or not.
d	Should support TFTP
e	Switch should be manageable through Console port, Telnet, SNMP, HTTP (WEB) or RMON

5.8.11 Office Automation:

5.8.11.1 Multimedia PC with 19” LED Monitor

Component	Specification
Processor	2.5Ghz Intel processor Core i5 or better
RAM	8 GB DDR3 SDRAM 1600MHz or better
Hard Disk	500GB HDD SATA
Video	VGA
Monitor	19" wide view flat LED monitor Full HD
Ports	1 Serial More than 4 USB 2.0(min. 2 at front),
Audio	Microphone, Headphone.
Mouse & Keyboard	USB
Network ports	1 RJ-45, 10/100/1000 Gigabit onboard Ethernet
Operating system	Pre loaded Microsoft Windows 10 with

	latest updates
Restore / recovery	Software CD

5.8.11.2 LED TV 42 Inch (Wall mountable)

Sl. No	Specification
1	Full HD – IPS or VA
2	Operating system - Tizen or WEBOS
3	Colour System: PAL, SECAM, NTSC 3.58, NTSC 4.43
4	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).
5	Black Lit Module: LED
6	Contrast Ratio :Greater than or equal to 4000:1 Static
7	Video processing: Picture or equivalent for the best ever picture quality
8	One-touch mirroring to display your smartphone's screen on the TV
9	Quick & Easy Internet Access with WiFi Built in Feature
11	Audio: Clear audio, Dolby Digital etc.,
13	Speakers: 2 Channel full range
12	USB Ports :2 or more, USB PLAY with different formats
15	HDMI connections : 2 or more
16	Ethernet connection :1
17	Composite Video inputs : 2
18	Analog Audio Input(s): 2 rear
19	Digital Audio Output(s): 1 (Rear)
20	Audio Out: 1 (Side/Hybrid w/Audio Out)
21	Other standard built-in features
22	Wall mount bracket of suitable dimension

NOTE TO THE BIDDER

01	The bidder to install TV on the wall.
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5.8.11.3 All in One Printer

GENERAL	
Functions	Print, copy, scan, fax
Duty cycle (monthly)	Up to 15,000 pages
Print technology	Laser
Print Speed Black	Normal : up to 20 ppm
Printing quality Black	Up to 1200 x 1200 dpi
Recommended monthly page volume	500 to 2000
Display	3.0" touchscreen, LCD (color graphics)
PRINT	
Duplex printing	Automatic (standard)
Print speed black (normal, letter)	Up to 22 ppm
Print speed black (normal, A4)	Up to 25 ppm
PROCESSOR	
Processor speed	600 MHz
Connectivity	e print capability
Mobile printing capability	Wireless direct printing, Mobile Apps
Wireless capability	built-in WiFi 802.11b/g/n
USB	Hi-Speed USB 2.0 port (host/device)
Ethernet	built-in Fast Ethernet 10/100Base-TX network port
Phone line port	Phone line port (in/out)
Network ready	Standard (built-in Ethernet, WiFi 802.11b/g/n)
SCAN	
Scanner type	Flatbed, ADF
Scan resolution, optical	Up to 1200 dpi
Scanner file format	Windows Scan Software supports file format: JPG, RAW(BMP), PDF, TIFF, PNG Mac Scan Software supports file format: TIFF, PNG, JPEG, JPEG-2000, PDF, PDF-Searchable, RTF, TXT

Scan size (flatbed), maximum	216 x 297 mm
Color scanning	Yes
Scan technology	Contact Image Sensor (CIS)
Bit depth	24-bit
Levels of grayscale	256
Scan input modes	Windows: Front control panel, Scanning LaserJet Scan; Macintosh: TWAIN-compliant or WIA-compliant software

5.8.11.4 Server RACKS

a. 42 U Rack

Racks should be with all requisite accessories and parts

- RACK 19 Inch 42U to house IT Router/Switch
- Dimension 2200x800x1000 (HxWxD)
- 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 Moulding, 2u Cable Storage
- Mounting To Floor With Nuts And Bolts
- Shelf/Cable Guide
- Two Power bar 230V 2 KW 12 ways with Indian Plug

b. 27 U Rack

- 27U, 19" RACK to house IT Router/Switch/Patch Panel
- 37.75*23.5*55 in inches (H*W*D)
- Glass Door Glass
- Cable Entry From:- Top And Bottom Of The Rack
- Both Front And Rear Doors Can Be Locked.
- Shelf/Cable Guide
- Easy wall mount provision with accessories
- Two Power bar 230V 2 KW 12 ways with Indian Plug

c. 9 U Rack

- 9 U, 19" RACK to house IT Router/Switch/Patch Panel
- 19 * 24 * 17 in inches (H*W*D)
- Glass Door Glass
- Cable Entry From:- Top And Bottom Of The Rack

- Both Front And Rear Doors Can Be Locked.
- Shelf/Cable Guide
- Easy wall mount provision with accessories
- Two Power bar 230V 2 KW 12 ways with Indian Plug

5.8.11.5 FAX Machine:

G3 Fax with Fax Modem Speed of 33.6 Kpbs/ V.34 Standard is required.

5.8.11.6 SET TOP BOX

Bidder shall provide under his own scope four nos HD-Set Top Box from different Operators (DishTV, Airtel, Videocon, Reliance or local operator) for News feed to be integrated with 42 inch TV at SEOC.

Specifications:

- Set Top Box: HD with recording facility with Hard Disk capacity of 500 GB

NOTE TO THE BIDDER

01	The bidder to install Set Top Box suitably on the wall or on stand as specified by Employer and to be integrated with the 42 inch TVs. All the power cables and TV input cables should be concealed in PVC Duct.
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5.8.12 Furniture & Air Conditioning

All the Computer Tables shall be of

- Size 1500mmx750 mm x 750 mm (LxWxH)
- Should have Brown Color Laminated Top
- Inbuilt CPU Stand with foot rest
- Inbuilt space for small UPS
- 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

5.8.13 LAN Structured Cabling:

Bidder is required to carry out the structured cabling for the Local area network integrating all the IT equipments.

5.8.13.1 General Specifications For Passive Cabling & Components Details

Specification

Sl No	
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

5.8.13.2 Face Plate:

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

5.8.13.3 Telecommunication Outlet

Sl. No	Specification
1.	It shall be universal RJ45 type, accepting most of the 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 568B.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 caps to prevent dirt entry.

5.8.13. 4 CAT 6 UTP Cable:

Sl.No	Specification
1.	The Cat 6, 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 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.
5.	The cable shall have a Star fill separator to separate critical conductor pairs.
6.	Cable to be made available in Rust-Free boxes of 300 mts ensuring continuous pull of the cable.
7.	Cable markings to be printed after each and every meter length (e.g manufactured date, sequential meter lengths).
8.	Cable performance must be certified by any one Third Party agency UL/ UTL etc.

5.8.13.5 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.	Patch Panel must have a Rear cable manager and this shall

	occupy the same area as the panel.
5.	Patch Panel must be supplied with paper labels for station identification and ID tabs for individual port identification.
6.	It shall be fitted with RJ 45 jacks.
7.	RJ 45 Jacks shall have same specification as mentioned at clause 6.6.2.
8.	Patch Panel must be with 45 degree silver-plated IDCs (Insulation Displacement contacts) to provide secure, reliable gas-tight connections

5.8.13.6 Cat6, UTP Patch Cord (1mtr. and 2 mtr.)

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 cords shall be factory assembled plug-ended. The patch cords shall be available in 4 pair versions with a flexible boot to prevent harsh minimum bending radius and integrated wire manager to maintain precision wires positions of the patch cord RJ 45 Cat 6 plug.
4.	The Patch Cord shall have factory fitted boots to maintain the bend radius at both ends.

5.8.13.7 Installation Services to be provided along with the supply:

- Laying of Cat 6, UTP Cable as per structured cabling standards
- Fixing of RJ 45 with Faceplate
- Termination of UTP Cable at Patch Panel
- Termination of UTP Cable on WS side
- Testing, Documentation and Certification of Each Node
- Acceptance Testing
- In the events of Structured Cabling System failure, the supplier shall repair or replace the defective items at its own cost inclusive of the cost of labour to repair or replace any such defective product until the cabling system is set up to support the required applications.

5.8.14 Power Requirements UPS (5 KVA and 10 KVA)

5.8.14.1 Introduction

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 below.

5.8.14.2 Technical Specification for UPS 5 KVA / 10KVA ONLINE (1 Phase)

Sl. No	Description	Specification
1	O/P Power Capacity	5000VA / 10000VA
2	Nominal Output Voltage	230V AC
3	Output Frequency	50 Hz \pm 3 Hz
4	Output Wave form	Sine wave
5	Output Voltage Distortion	< 3 %
6	Crest Factor	3 : 1
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	230 V AC per phase
10	Input voltage range	160V to 220 V
11	Input Frequency	50 Hz \pm 5 Hz
12	Battery	12V, 300Ah SMF
13	Audible alarm should be provided for following conditions	Alarm when on battery Low Battery Over load
12	LED indication	Working on Battery Over load Bypass mode Battery faulty
15	Communication	System should have the facility to interface the computer through RS232 port (DB9 connector) or any other port.
16	Operating Environment	0 to 50°C
17	Operating Relative Humidity	0 - 95 %
18	Should confirm to following	CE, EN 50091-1, EN 50091-2, EN 55022 Class A

5.8.14.3 UPS 2 KVA

Sl.	Description	Specification
1	O/P Power Capacity	2 KVA
2	Nominal Output Voltage	230V AC
3	Output Frequency	50 Hz \pm 3 Hz
4	Output Wave form	Sine wave
5	Output Voltage Distortion	< 3 %
6	Crest Factor	3:01
7	Efficiency at full load	\geq 92%
8	Nominal output	220, 230 or 240 V (should be configurable)
9	Nominal Input Voltage	230 V AC per phase
10	Input voltage range	160V to 220 V
11	Input Frequency	50 Hz \pm 5 Hz
12	Battery	12V, 160Ah
13	Audible alarm	Alarm when On battery, Low Battery, Over loaded
14	LED indication	Working on Battery Over load, Bypass mode, Battery
15	Communication	System should have the facility to interface with the computer
16	Operating Environment	0 to 50°C
17	Operating Relative	0 -95 %
18	Should conform to following	CE, EN 50091-1, EN 50091-2, EN 55022 Class A
19	Power factor	0.8 or more
Sl.	Description	Specification
1	O/P Power Capacity	2 KVA
2	Nominal Output Voltage	230V AC
3	Output Frequency	50 Hz \pm 3 Hz
4	Output Wave form	Sine wave
5	Output Voltage Distortion	< 3 %
6	Crest Factor	3:01
7	Efficiency at full load	\geq 92%
8	Nominal output	220, 230 or 240 V (should be configurable)
9	Nominal Input Voltage	230 V AC per phase
10	Input voltage range	160V to 220 V

5.8.14.4 Battery backup for UPS:

a) The Batteries should be of SMF VRLA type. Battery must be installed in two strings for the above specified power back for the equipments 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.

High/Low Voltage Disconnecter & Surge protection for power line:

The UPS system shall be adequately protected against Lightning and Surge Protection shall be provided at the distribution panel for the UPS system. Technical specification mentioned below

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 there will be abnormality as per below parameter using 4 pole AC Contactor.

- a) High Voltage Disconnection at : 220V
- b) Re-connection as voltage will resume (at higher side) : 250 V
- c) Low Voltage Disconnection at : 160V
- d) Re-connection as voltage will resume (at lower side): 170V
- e) Disconnection time of AC contactor : 100ms
- f) Reconnection time delay : 20 – 30 sec.
- g) 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 5KVAUPS and 10KVAUPS.

High/Low voltage disconnecter must have manual-bypass facility in case of failure.

5.8.14.5 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 I_{imp} : < 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 I_{imp} : < 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.

2.12.6 AC Distribution Panel:

An AC Distribution Panel system shall be provided to distribute the incoming Mains for UPS Power and UPS Output to various equipment

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.

5.8.14.6 Power Requirements DG Set (5 KVA & 10 KVA)

Introduction:

The proposed DG set should be able to support the IT/ network equipments along with AC, in absence of primary power source

Detailed Specifications:

Sl. No	Specification
1	Engine shall be vertical multi cylinder 4 stroke type in accordance with IS 10002-1981 with latest amendments.
2	Type: Multi cylinder
3	Method of starting: Electric start 12 V DC
4	Type of cooling: Water cooled /Air cooled
5	Type of governor: Mechanical/Electronic
6	Type of fuel: High speed diesel
7	Rating: Continuous
8	Output: Suitable HP rated to match the alternator
9	Rated speed: 1500 RPM
10	Over load capacity: 10% overload – minimum 1 hour, 50% overload – minimum 1 minute
11	DG set shall be compliant with the latest CPCB emission & noise norms (less than 75db at 1meter distance).
12	Accessories
13	Flywheel to suitable diameter and fuel injection equipment
12	Air cleaner
15	Lubricating oil cooler
16	Electric motor starting equipment like motor, battery, charging generator with voltage regulator etc.
17	Heavy duty radiator with fan
18	Residential type silencer with exhaust piping with vibration isolator
19	Fuel tank suitable for 8 Hrs of continuous running with necessary piping and fuel gauge, drain valve, inlet and outlet connections.
20	Anti vibration mounting pads (Dunlop)
21	Speed controlling governor
22	Suitable coupling system to the Alternator
23	Tachometer
24	Lubricating oil pressure gauge

5.8.15 Manpower Requirements

Bidder is required to deploy the following manpower for day to day operations for a period of two years. The charges towards hiring the below manpower under O&M services need to be included in the operation and maintenance charges /AMC. The deployed personnel need to be enrolled by the vendor and submitted to the SPIU for approval and monthly technical reviews by the SPIU. Further the vendor needs to take the complete responsibility of the man power so hired and the SPIU shall not be liable for any losses or claims whatsoever of the employee's requirement.

The Hired manpower need to keep the entire system operational on 24*7 basis.

No.	Position	Total Work Similar Experience (years)	In Similar Works Experience (years)
1	Project Manager. (BE/B.Tech) with experience in managing IT System Integration Projects	8 -12	3-5
2	Radio Engineer	5 -8	2-3
3	Site / Field Engineers -L2 Network (BE / B.Tech / Diploma with CCNA / CCNP / CCIP / or its equivalent.	2-5	2-3
4	ESH Officer	2-3	2

5.8.16 Training Requirement

5.8.16.1 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 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.

The required training materials and handbooks w.r.t. 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.

5.8.16.2 Training Objectives

The training shall consist of:

- Class room training
- On the job and /or on site training

5.8.16.3 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 equipments being used for EWDS Equipment & 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.

On-The-Job and /or on site 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.

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.

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

5.8.16.4 Documentation Requirements

Documents as detailed below are to be submitted in two set hardcopy as well as two set softcopy (CD/Pendrive) to Employer within 30days of commissioning / acceptance testing of the systems and facilities:

- Technical write up of the network design and functioning, System and Network architecture diagram, Active components configuration details, Security implementation
- Manufacturer's 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 the equipments and systems installed with make, model, SI No etc. Complete cabling and electrical system layout (as Installed), including cable routing, telecommunication closets and

telecommunication outlet/ connector designations. The layout shall detail locations 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 report.
- Original manuals of software packages supplied
- Software Delivery Report
- IP addressing policy and scheme
- Changes in configuration, maintenance logs, patches carried out etc., Original manuals of all hardware supplied
- As built network configuration details with IP address, 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.

5.8.16.5 Spares

The bidder should set up the support center with sufficient personnel and inventory and mandatory spares within a month in case the Contract is awarded to it and the same should be functional till the period of performance warranty/support and Facility Management of EWDS, whichever is later. The bidder will submit an undertaking in this regard along with the Bid.

Bidder to submit a certificate from OEM that Spares for another five years should be made available.

5.8.17 SLA Agreement

Bidder has to sign a Service Level Agreement as specified in Section VII. The network shall be operational on all days of a year and 24-hours/ day with in the uptime specified in the Service Level Agreement (SLA) with 99.9% or mutually agreed condition. The network is considered as operational when all centers at all tiers/ levels are working, providing all/ specified services as mentioned in full capacity at all locations in the network

5.8.18 Insurance

5.8.18.1 Insurance during the Term of the Agreement

(i) The Bidder shall effect and maintain at its own cost, during the Implementation Phase and the Operation and Maintenance Phase, such insurances for such maximum sums as may be required under the Financing Agreements and the

Applicable Laws, and such insurances as may be necessary or prudent in accordance with good industry practice.

The Bidder shall also effect and maintain such insurances as may be necessary for mitigating the risks that may devolve on the Employer as a consequence of any act or omission of the Bidder during the Implementation Phase or the Operation and Maintenance Phase. The Bidder shall procure that in each insurance policy, the Employer shall be a co-insured and that the insurer shall pay the proceeds of insurance into a bank account designated as the Project Account.

(ii) Without prejudice to the provisions contained in Clause (i) above, the Bidder shall, during the Operation and Maintenance Phase, procure and maintain insurance cover including but not limited to the following:

- (a) Loss, damage or destruction of the Assets, including assets handed over by the Employer to the Bidder, at replacement value;
- (b) comprehensive third party liability insurance including injury to or death of personnel of the bidder or others who may enter the Premises;
- (c) the Bidder's general liability arising out of this Agreement;
- (d) liability to third parties for goods or property damage;
- (e) workmen's compensation insurance; and
- (f) any other insurance that may be necessary to protect the Bidder and its employees, including all Force Majeure Events that are insurable and not otherwise covered in items (a) to (e) above.

5.8.19 Notice to the Employer

No later than 45 (forty five) days prior to commencement of the Implementation Phase or the Operations and Maintenance Phase, as the case may be, the Bidder shall by notice furnish to the Employer, in reasonable detail, information in respect of the insurances that it proposes to effect and maintain in accordance with this Clause. Within 30 (thirty) days of receipt of such notice, the Employer may require the Bidder to effect and maintain such other insurances as may be necessary pursuant hereto, and in the event of any difference or disagreement relating to any such insurance, the provisions of GCC Clause shall apply.

5.8.20 Evidence of Insurance Cover

All insurances obtained by the Bidder in accordance with this Article shall be maintained with insurers on terms consistent with good industry practice. Within 15 (fifteen) days of obtaining any insurance cover, the Bidder shall furnish to the Employer, notarised true copies of the certificate(s) of insurance, copies of insurance policies and premia payment receipts in respect of such insurance, and no such insurance shall be cancelled, modified, or allowed to expire or lapse until the expiration of at least 45 (forty five) days after notice of such proposed cancellation, modification or non-renewal has been delivered by the Bidder to the Employer.

5.8.21 Remedy for failure to insure

If the Bidder shall fail to effect and keep in force all insurances for which it is responsible pursuant hereto, the Employer shall have the option to either keep in force any such insurances, and pay such premia and recover the costs thereof from the Bidder, or in the event of computation of a payment for transfer of Assets upon termination, treat an amount equal to the insurance cover as deemed to have been received by the Bidder.

5.8.22 Waiver of subrogation

All insurance policies in respect of the insurance obtained by the Bidder pursuant to this Clause shall include a waiver of any and all rights of subrogation or recovery of the insurers there under against, inter alia, the Employer, and its assigns, successors, undertakings and their subsidiaries, affiliates, employees, insurers and underwriters, and of any right of the insurers to any set-off or counterclaim or any other deduction, whether by attachment or otherwise, in respect of any liability of any such person insured under any such policy or in any way connected with any loss, liability or obligation covered by such policies of insurance.

5.8.23 Bidder's waiver

The Bidder hereby further releases, assigns and waives any and all rights of subrogation or recovery against, inter alia, The Employer and its assigns, undertakings and their subsidiaries, affiliates, employees, successors, insurers and underwriters, which the Bidder may otherwise have or acquire in or from or in any way connected with any loss, liability or obligation covered by policies of insurance maintained or required to be maintained by the Bidder pursuant to this Agreement (other than third party liability insurance policies) or because of deductible clauses in or inadequacy of limits of any such policies of insurance.

5.8.24 Application of insurance proceeds

The proceeds from all insurance claims, except life and injury, shall be paid to the Bidder by credit to the designated Project Account and it shall, notwithstanding anything to the contrary contained herein, apply such proceeds for any necessary repair, reconstruction, reinstatement, replacement, improvement, delivery or installation of the Assets, and the balance remaining, if any, shall be applied in accordance with the provisions contained in this behalf in the Financing Agreements.

5.8.25 Intellectual Property Rights

The Intellectual Property Rights in any software product or solution, held by the bidder as on the date of the Agreement shall continue to vest with the bidder. In the event of transfer of Assets pursuant to the Exit Management Plan to this Agreement, then the Intellectual Property Rights in the said derivative works (HW/SW) shall stand licensed to Employer and Employer shall retain the perpetual right to use all the Intellectual Property Rights in all the derivative works (HW/SW) which forms part of the Proprietary Information. Additionally, any software that may be acquired from third parties during the Term and/or that

which may have been developed by the Operator during the course of the Agreement specifically for EWDS Project, shall also be considered as licensed to Employer or its nominee for the sole purposes of the EWDS Project.

5.8.26 Right to Reject

The issue of this RFP does not imply that the Employer is bound to select a Bidder or to appoint the Selected Bidder, as the case may be, for the EWDS Project and the Employer reserves the right to reject all or any of the Bids without assigning any reasons whatsoever.

5.8.27 TESTING AND QUALITY ASSURANCE REQUIREMENTS

I. Inspections

- II. Factory Inspections: Factory Inspection shall be carried out by the Employer prior to the shipment of the major items like DMR, Alert Tower Siren System, SBMDVT's etc to check the specifications as per the Technical requirements of the Tender. It is made obligatory that Factory Inspection Test reports shall be a part the documents for release of payments and all the Costs to be borne by successful bidder for at-least three officials.
- III. Inspections following delivery: The Bidder shall carryout Post Delivery inspection of goods at Site in consultation with the Employer
- IV. Bidder is supposed to submit Lab test report on the parameter mentioned in Appx, from the NABL approved Lab. The report must be enclosed with technical bid. In case offer is received without Lab report same will be rejected.
- V. The Lab Test Report should not be older than the date of issue of Tender Notice. The Lab Test Report obtained before issue of Tender Notice will not be considered.
- VI. The Employer also reserves the right to carry out the lab test of the samples submitted by the Bidder at any stage.
- VII. 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
- VIII. 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.

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

IX. Pre-commissioning Tests :

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

- i. Functioning of DMR network with at least two sites
- ii SBMDVT Operation
- iii Alert Siren activation for 2 sites from Control Center at SEOC

X. Operational Acceptance Tests

Pursuant to GCC Clause 25 and related SCC clauses, the Employer (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 Employer. 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, along with Employer, shall prepare an inspection and acceptance schedule with details of each activity.

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 Employer.

5.8.27 Third Party Audit

The Third Party Auditor shall be appointed by State Government. The Third Party Auditor or officials as nominated by State Government 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 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

5.8.2.8 Environmental, social, health and safety requirements

The Employer should use the services of a suitably qualified environmental, social, health and

MINIMUM CONTENT OF ESHS REQUIREMENTS

In preparing detailed specifications for ESHS requirements, the specialists should refer to and consider:

- *project reports e.g. ESIA/ESMP*
- *consent/permit conditions*
- *required standards including World Bank Group EHS Guidelines*
- *relevant international conventions or treaties etc., national legal and/or regulatory requirements and standards (where these represent higher standards than the WBG EHS Guidelines)*
- *relevant international standards e.g. WHO Guidelines for Safe Use of Pesticides*
- *relevant sector standards e.g. EU Council Directive 91/271/EEC Concerning Urban Waste Water Treatment*
- *grievance redress mechanisms.*
- *grievance redress mechanism including types of grievances to be recorded and how to protect confidentiality e.g. of those reporting allegations of GBV/SEA*
- *GBV/SEA prevention and management*

The detail specification for ESHS should, to the extent possible, describe the intended outcome rather than the method of working.

The ESHS requirements should be prepared in manner that does not conflict with the relevant General Conditions and Particular Conditions, and in particular Conditions related to:

General Conditions

Law and Language

Subcontracting

Other Contractors

Contractor's Personnel and Equipment

Contractor's Risks

Contractor to Construct the Works

Safety and Protection of environment

Payments

SUGGESTED CONTENT FOR AN ENVIRONMENTAL AND SOCIAL POLICY (STATEMENT)

The Works' policy goal, as a minimum, should be stated to integrate environmental protection, occupational and community health and safety, gender, equality, child protection, vulnerable people (including those with disabilities), sexual harassment, gender-based violence (GBV), sexual exploitation and abuse (SEA), HIV/AIDS awareness and prevention and wide stakeholder engagement in the planning processes, programs, and activities of the parties involved in the execution of the Works. The Employer is advised to consult with the World Bank to agree the issues to be included which may also address: climate adaptation, land acquisition and resettlement, indigenous people, etc. The policy should set the frame for monitoring, continuously improving processes and activities and for reporting on the compliance with the policy.

As a minimum, the policy is set out to the commitments to:

1. apply good international industry practice to protect and conserve the natural environment and to minimize unavoidable impacts;
2. provide and maintain a healthy and safe work environment and safe systems of work;
3. protect the health and safety of local communities and users, with particular concern for those who are disabled, elderly, or otherwise vulnerable;
4. ensure that terms of employment and working conditions of all workers engaged in the Works meet the requirements of the ILO labor conventions to which the host country is a signatory;
5. be intolerant of, and enforce disciplinary measures for illegal activities. To be intolerant of, and enforce disciplinary measures for GBV, inhumane treatment, sexual activity with children, and sexual harassment;
6. incorporate a gender perspective and provide an enabling environment where women and men have equal opportunity to participate in, and benefit from, planning and development of the Works;
7. work co-operatively, including with end users of the Works, relevant authorities, contractors and local communities;
8. engage with and listen to affected persons and organisations and be responsive to their concerns, with special regard for vulnerable, disabled, and elderly people;
9. provide an environment that fosters the exchange of information, views, and ideas that is free of any fear of retaliation and protects whistleblowers;
10. minimise the risk of HIV transmission and to mitigate the effects of HIV/AIDS associated with the execution of the Works;

The policy should be signed by the senior manager of the Employer. This is to signal the intent that it will be applied rigorously.

The MSIP shall include the following activity wise ESHS requirements:

Sl. No	Activity	Measures to be Implemented by the System Integrator of Outdoor Mass Alert Systems & Devices
1	<i>Work Plan for ESMP implementation</i>	The System Integrator's Project Manager shall be responsible for implementation of ESMP provisions and will coordinate the overall 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	<i>Regulatory Permissions and Consents</i>	<p>The System Integrator shall obtain all requisite statutory and other site 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 Employer shall facilitate in obtaining required permissions to avoid the delay. Bidder shall absorb required additional charges for ROW, if any. 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 ▪ Any other similar regulatory issues as applicable to each site and location.
3	<i>Consultation and Community Consent</i>	<p>The System Integrator shall consult and obtain written consents of land owners (individual/panchayat/village/govt. agency) for 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 Outdoor Mass Alert Systems & Devices
		<ul style="list-style-type: none"> ▪ Movement of associated personnel, materials and vehicles <p>The Employer shall facilitate in obtaining necessary permissions.</p>
4	<i>Construction/ Labour Camp</i>	<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	<i>Site Clearance</i>	<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 & property owner, 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.

Sl. No	Activity	Measures to be Implemented by the System Integrator of Outdoor Mass Alert Systems & Devices
		<ul style="list-style-type: none"> ▪ The System Integrator shall strip, store, preserve and reinstate top soil in work fronts.
6	<i>Protection of Properties and Resources</i>	<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 ▪ 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	<i>Slope Stability</i>	<p>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.</p>
8	<i>Quarry Establishment and/or Operations</i>	<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) 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

Sl. No	Activity	Measures to be Implemented by the System Integrator of Outdoor Mass Alert Systems & Devices
		<p>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> <ul style="list-style-type: none"> ▪ 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. ▪ 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	<i>Borrow Areas</i>	<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.

Sl. No	Activity	Measures to be Implemented by the System Integrator of Outdoor Mass Alert Systems & Devices
		<p>from any NH, SH or other roads.</p> <ul style="list-style-type: none"> ▪ 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> <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	<i>Water Extraction/ Use</i>	<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	<i>Traffic Safety</i>	<ul style="list-style-type: none"> ▪ In areas where traffic is to be diverted during construction, the

Sl. No	Activity	Measures to be Implemented by the System Integrator of Outdoor Mass Alert Systems & Devices
	<i>and Management</i>	<p>traffic detour shall be planned and publicized to the local people. Necessary information signage shall be erected to inform the road users.</p> <ul style="list-style-type: none"> ▪ 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	<i>Worker's Safety</i>	<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	<i>Air Pollution</i>	<ul style="list-style-type: none"> ▪ 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. ▪ 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	<i>Water pollution</i>	<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.

Sl. No	Activity	Measures to be Implemented by the System Integrator of Outdoor Mass Alert Systems & Devices
		<ul style="list-style-type: none"> 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	<i>Noise Pollution</i>	<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	<i>Disposal of Debris and Wastes</i>	<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. 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	<i>Restoration and Rehabilitation of Sites</i>	<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,

Sl. No	Activity	Measures to be Implemented by the System Integrator of Outdoor Mass Alert Systems & Devices
		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 and not by the Employer.

MINIMUM REQUIREMENTS FOR THE BIDDER'S CODE OF CONDUCT

A minimum requirement for the Code of Conduct should be set out, by the Employer taking into consideration the issues, impacts, and mitigation measures identified for example in :

- *project reports e.g. ESIA/ESMP*
- *consent/permit conditions (regulatory authority conditions attached to any permits or approvals for the project)*
- *required standards including World Bank Group EHS Guidelines*
- *relevant international conventions, standards or treaties, etc., national legal and/or regulatory requirements and standards (where these represent higher standards than the WBG EHS Guidelines)*
- *relevant standards e.g. Workers' Accommodation: Process and Standards (IFC and EBRD)*
- *relevant sector standards e.g. workers accommodation*
- *grievance redress mechanisms.*

The types of issues identified could include. risks associated with: labor influx, spread of communicable diseases, sexual harassment, gender based violence, illicit behavior and crime, and maintaining a safe environment etc.

[Amend the following instructions to the Bidder taking into account the above considerations.]

A satisfactory code of conduct will contain obligations on all Contractor's personnel (including sub-contractors and day workers) that are suitable to address the following issues, as a minimum. Additional obligations may be added to respond to particular concerns of the region, the location and the project sector or to specific project requirements. The code of conduct shall contain a statement that the term "child" / "children" means any person(s) under the age of 18 years.

The issues to be addressed include:

1. Compliance with applicable laws, rules, and regulations

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2. Compliance with applicable health and safety requirements to protect the local community (including vulnerable and disadvantaged groups), the Employer's and Project Manager's personnel, and the Contractor's personnel, including sub-contractors and day workers, (including wearing prescribed personal protective equipment, preventing avoidable accidents and a duty to report conditions or practices that pose a safety hazard or threaten the environment)
 3. The use of illegal substances
 4. Non-Discrimination in dealing with the local community (including vulnerable and disadvantaged groups), the Employer's and Project Manager's personnel, and the Contractor's personnel, including sub-contractors and day workers (for example on the basis of family status, ethnicity, race, gender, religion, language, marital status, age, disability (physical and mental), sexual orientation, gender identity, political conviction or social, civic, or health status)
 5. Interactions with the local community(ies), members of the local community (ies), and any affected person(s) (for example to convey an attitude of respect, including to their culture and traditions)
 6. Sexual harassment (for example to prohibit use of language or behaviour, in particular towards women and/or children, that is inappropriate, harassing, abusive, sexually provocative, demeaning or culturally inappropriate)
 7. Violence including sexual and/or gender based violence (for example acts that inflict physical, mental or sexual harm or suffering, threats of such acts, coercion, and deprivation of liberty)
 8. Exploitation including sexual exploitation and abuse (for example the prohibition of the exchange of money, employment, goods, or services for sex, including sexual favors or other forms of humiliating, degrading behaviour, exploitative behaviour or abuse of power)
 9. Protection of children (including prohibitions against sexual activity or abuse, or otherwise unacceptable behaviour towards children, limiting interactions with children, and ensuring their safety in project areas)
 10. Sanitation requirements (for example, to ensure workers use specified sanitary facilities provided by their employer and not open areas)
 11. Avoidance of conflicts of interest (such that benefits, contracts, or employment, or any sort of preferential treatment or favors, are not provided to any person with whom there is a financial, family, or personal connection)
 12. Respecting reasonable work instructions (including regarding environmental and social norms)
 13. Protection and proper use of property (for example, to prohibit theft, carelessness or waste)
 14. Duty to report violations of this Code
 15. Non retaliation against workers who report violations of the Code, if that report is made in good faith.

The Code of Conduct should be written in plain language and signed by each worker to indicate that they have:

- received a copy of the code;
- had the code explained to them;

- acknowledged that adherence to this Code of Conduct is a condition of employment; and
- understood that violations of the Code can result in serious consequences, up to and including dismissal, or referral to legal authorities.

A copy of the code shall be displayed in a location easily accessible to the community and project affected people. It shall be provided in languages comprehensible to the local community, Contractor's personnel (including sub-contractors and day workers), Employer's and Project Manager's personnel, and affected persons.

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/Grease/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.

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- 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.

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.

Other Safety requirements

1. INSTALLATION OF TOWERS

i. SAFETY IN TOWER CLIMBING & FALL PROTECTION.

This provides for the safety of technicians that climb, traverse, move, rest, and work on towers, poles or at elevated work sites regarding safety and health as the primary consideration in any job, and is committed to preventing job-related accidents and illnesses by establishing and adhering to a Tower Climbing and Fall Protection.

a. Fall Prevention/Positioning System

Full body harnesses used by employees shall be certified to meet all standards and regulations. Full body harnesses shall be periodically inspected for cuts, tears, chafing and physical deterioration.

b. Fall Arrest Equipment:

All fall arrest equipment shall have locking-type snap hooks or approved carabineers. This equipment minimizes physical trauma to the worker, comfortably supports the worker after a fall until a rescue can be made, and suspends the worker in a more easily retrievable position for rescuers. Self-retracting lanyards that have shock force indicators should be used & shall be equipped with self-locking snap hooks or carabineers.

Communications Devices – It provides two-way, hands free, voice actuated radio headsets should be worn by the tower climber and ground safety person to provide reliable communications during the work, negating the need for hand signals.

c. Fall Protection Requirements for Elevated Work

During erection and dismantling of towers, hazards exist from accidentally dropping tower sections or having a part of the structure come in contact with overhead electrical power lines. The tower fall zone, the area where all or part of the tower could fall, must be clear of objects or infrastructure. On a busy site, this area should be cordoned off.

Those working on the tower should wear appropriate clothing (no loose clothing), which may include gloves, boots, hard hats, and safety glasses.

d. Roof Top and Miscellaneous Structures

- Any telecommunications work performed by an employee positioned on a horizontal or vertical surface with an unprotected side or edge which is four feet or more above a lower level, shall be protected from falling by use of guardrail systems, safety net systems, or personal fall arrest systems.
- Roof tops are considered elevated working surfaces and require the employee to be tied off to an anchorage point that will withstand 5000 pounds per person or the maximum anticipated impact load times.

2. SAFETY IN USE OF LADDERS AND STEP-LADDERS**a. Responsibility**

The overall in-charge for the control of the ladders and stepladders is the Engineer. Inspections shall be carried out regularly together with HSE Officer to ensure the quality and stability of the ladder and stepladder for intended purpose.

b. Safe Working Practices

Consider the following when using ladder and stepladder:

- Non-conductive ladders/stepladders shall be used when working on or near overhead power lines.
- Before a ladder is used it shall be inspected to ensure that it is sound

and safe to use. Ladders/stepladders shall be examined for cracks or split rails decayed or damaged rungs, splinters, etc.

- Preferably ladder/stepladder that have been repaired or modified shall not be used.
- The ladder selected for the job shall be long enough to be set up correctly, to maintain 76-degrees angle from 1 meter base from the vertical support.
- Ladders shall have extended allowance of 1 meter from the landing place.
- Two short ladders shall not be latched together to obtain a desired length.
- The contractor shall check ladder/stepladder on the flat and level ground condition, so that it has a firm and secure base. It shall have a person to hold the ladder if somebody is working on the top of the ladder/stepladder.
- The upper point of the ladder shall be placed against a firm support on which both rails will rest evenly and securely.
- Use safety harness while working on fixed ladder.
- Ladder/stepladders shall be positioned where there is no obstructions and free from hazards.
- Only one man shall be on the ladder/stepladder at a time.
- No tools/materials shall be carried while climbing or descending ladder. All these shall be carried in a safety harness or special shoulder bag.
- Ladders/stepladders shall be well maintained, clean and free from oil and grease.
- Secure the ladder to prevent it slipping by lashing it firmly at the top. This will prevent it slipping sideways or the foot from slopping outward. If lashing at top is not possible, a man shall stationed at the foot to hold it firmly. Alternatively, the bottom of the ladder may be lashed to a convenient fixture to prevent it slipping outward.

3. POSITIONING ANTENNA AND OTHER INSTRUMENTS ON TOWERS

- The hardware (bolts, tie downs, screws, etc.) may work loose over time and can present a hazard. Ensure that all cables are properly insulated and securely tied to the tower to avoid electrocution dangers from power cords and instrument damage in data cables.

4. SAFETY IN EXCAVATION & TRENCHING

- In context of EWDS project some trenching works are envisaged if electrical or optical fiber cable is to be laid. Excavation works would be required for tower foundations construction.
- Within the restricted area, excavation notification is required for all excavations regardless of depth. Other appropriate work permits shall be obtained prior to start of excavation.
- Depending on the soil type, characteristic, depth of excavation an excavation plan shall be prepared with proper indication of the protective arrangement like sloping / benching/ shoring etc. Proper access & egress/ barricading/ caution notices/ excavated materials stacking shall arranged by the site in charge. Excavated area shall be regularly inspected.

5. WEATHER HAZARDS

- Consult the weather forecast before erecting towers. Do not erect towers in high winds.
- Make note of thunderstorm activity and possible lightning before beginning tower work. Terminate tower work immediately if lightning activity is observed. All personnel shall remain at a safe distance away from towers when lightning is occurring in the vicinity.

6. GENERAL REQUIREMENTS

- It is required that all employees and contractors who perform tower or elevated work must be determined to be medically qualified to perform those jobs, must be trained and qualified to perform those jobs, have the appropriate equipment to do the job and work on structures that are safe.
- Communications towers should be designed to eliminate or minimize the need for climbing.
- Tower climbers shall only climb on towers certified by the manufacturer to meet the Telecommunications Industry for tower construction and anchorages. Towers that do not meet the standards will be red-tagged as "Do Not Climb" until they are retrofitted or replaced with towers that meet the standards.
- Emergency situations in which an imminent threat to human life exists due to the lack of telecommunications services may require expedient performance of tower or elevated work. Any emergency work performed that does not comply with regulations must be clearly documented and reported to the Safety Officer
- The ultimate responsibility for determining whether "to" or "not to" climb a tower or do elevated work lays with the climber/worker

themselves as they are ultimately at risk. The equipment described is utilized to help place the worker in a desirable working position and to reduce the probability of potential fall accident injuries.

- All fall protection equipment shall be periodically inspected and a record of the inspection shall be maintained in the office or site files.
- Manufacturer's instructions and recommendations shall be incorporated into inspection, replacement, and preventive maintenance programs.
- Defective equipment shall be immediately removed from service and tagged "Do Not Use" until repaired. If defective equipment is determined to be non-repairable, it shall be disposed of immediately.
- Two hooks system in the safety harness shall be provided subject to one hook hinged always during the climbing.
- The contractor shall take all precautions to avoid all accidents by exhibiting necessary caution boards, day and night, speed limit boards, red flags, red lights and providing barriers. He shall be responsible for all damages and accidents caused due to negligence on his part.
- No hindrance shall be caused to traffic during the execution of the work. The transportation of materials shall be carried out in non peak hours.
- The Contractor required to put necessary barricades at the Tower erection sites to restrict the area to keep the public off the site.
- The contractor to display warning boards mentioning the guidelines for radiation safety.

7. SITE OFFICE SAFETY

- The most common contributing factors include cluttered working spaces and walkways, improperly grounded office equipment, other electrical hazards, poor ventilation, fire hazards, and poor housekeeping.
- Safety in the office requires recognition of actual and potential hazards, control or elimination of these hazards, and training the employees to work safely.
- Alcohol, drugs & Firearms are strictly prohibited inside Client premises and the site offices of the contractor.
- The contractor shall maintain several approved first aid kits in site office for treating minor illnesses or injuries. Each first aid kit shall be clearly marked for quick visual identification. The contractor shall

ensure that one or more of its employees are certified First Aid responders at all times.

- The contractor shall ensure that there shall be no overloading of office equipments in site such as excessive extension cords, add-on receptacles, etc.
- The electrical system in the office shall be adequately inspected by a qualified electrician who has undergone formal training and having relevant experience and capable enough to perform the job in compliance with National Electrical Code.
- The contractor's primary concern shall be the safety of all the employees on site at all times.
- There are certain risks that could compromise your safety while working after normal working hours, one specific example is criminal element. If working after daylight or after normal hours, it shall be better to ask a co-worker to accompany or to plan a schedule for working overtime. It is a good practice to have a buddy system, leaving the office in pairs or group.

a. Fire prevention & protection

- To provide measures to prevent fires and protect against all their possible harmful effects, in order to avoid injury to personnel and loss of time and materials.
- The contractor shall have a sufficient number of personnel adequately trained in fire prevention and fighting techniques, if required by the activity.
- The contractor shall comply with Client Fire and Safety and the following fire prevention prescriptions:

b. Portable fire extinguishers

Portable fire extinguishers form the first line of defense and are useful only in the initial stages. It is important that all employees knows how to operate fire extinguisher provided in their area. Where more than one type of extinguisher is provided, specific instructions must be given and exhibited for the correct choice.

- To fight fire, take up a position where access to the fire is unrestricted but where a quick and safe retreat is possible.
- In an indoor fire, stay close to the door, outdoors; stay on the upwind side of fire. A crouching posture will minimize the effect of smoke and heat.

- If the fire shows signs of going out of control the fire brigade must be called at the earliest and alarm to be raised. In such uncontrollable fires, it is best not to try to use an extinguisher.

c. Operation of fire extinguishers

- Steps of operating a fire extinguisher are enumerated below:
 - i. Hold the extinguisher upright.
 - ii. Pull the safety pin/ring pin out.
 - iii. Stand back approximately 10 feet away from fire.
 - iv. Direct/aim the nozzle of extinguisher at the fire.
 - v. Squeeze the lever; sweep it across the area of fire.

d. Fire reporting

- In case fire arises in the project sites, immediately report it to concerned authorities and Client emergency numbers.
- The emergency telephone numbers shall always be reminded in safety talks and posted at the contractor's project site office in a visible location.

A satisfactory code of conduct will contain obligations on all Contractor's personnel (including sub-contractors and day workers) that are suitable to address the following issues, as a minimum. Additional obligations may be added to respond to particular concerns of the region, the location and the project sector or to specific project requirements. The code of conduct shall contain a statement that the term "child" / "children" means any person(s) under the age of 18 years.

8. Requirement of First Aid Box:

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	1

	antiseptic solution	
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 mg) of aspirin or any other analgesic	1
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

9. CHECKLIST FOR COMPLIANCE OF ESHS REQUIREMENTS

During construction of foundations for towers/poles:

Excavation

Sl. No.	Description of Activity	Feed back	Remarks
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.	

Sl. No.	Description of Activity	Feed back	Remarks
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.	
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	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	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.	

Sl. No.	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.	
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	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.	

Sl. No.	Description of Activity	Feed back	Remarks
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.	

TOWER / VSAT ANTENNA ERECTION:

Sl. No.	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	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 knots 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	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 has been taken before undertaking for the Road / Rail / River Xing jobs involving	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 & experience 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	Yes / No.	

Sl. No.	Description of Activity	Feed back	Remarks
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	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 bars 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 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 avoiding use of single sheave pulleys while lifting the assembled cross arm / heavy load.	Yes / No.	

Battery, Conductor, Installation of Outdoor Mass Alert Systems & Devices & Misc.

Sl. No.	Description of Activity	Feed back	Remarks
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.	

Sl. No.	Description of Activity	Feed back	Remarks
6.	Ensure that proper scaffolding arrangements made during erection of towers & power supply of siren.	Yes / No.	
7.	Check that the back filling of the foundation has been done as per specification.	Yes / No.	
8.	Ensure that the pulleys used before conductor stringing 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	Yes / No.	
9.	Ensure the ropes used for power supply connection has been checked for adequate strength / physical condition (Free from break of strands and knots 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.	
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 starts check that the villagers do not come underneath the job of the concerned section.	Yes / No.	
16.	Only nylon or polypropylene ropes 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		
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.	

Sl. No.	Description of Activity	Feed back	Remarks
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	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	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	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.	
32	Check those who have sufficient knowledge of steel structural job have been employed in steel structural works only.	Yes/ No.	
33	Check necessary instruction has been communicated by supervisor before start of the day's works 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 passage ways.	Yes / No.	
35	Check all projected nails 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 materials 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.	

Sl. No.	Description of Activity	Feed back	Remarks
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 equipments 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.	

PAYMENT FOR ESHS REQUIREMENTS

There are no separate payment terms for ESHS. The payment for various activities will be made as per payment milestones after ensuring that the ESHS requirements for those activities have been met.

Forms and Procedures

Form of Completion Certificate

Date: _____
Loan/Credit N°: _____
IFB N°: _____

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)

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)

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*]

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.

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. _____²⁶:
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.

²⁶ Refer 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 Plant 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)

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: _____²⁷

(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)	_____
--	----------------------	-------

²⁷ Costs shall be in Rs.

(Contractor's Name)

(Signature)

(Name of signatory)

(Title of signatory)

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)

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:

Drawing/Document No.

Description

8. Estimate of increase/decrease to the Contract Price resulting from Change Proposal:²⁸

(Amount)

(a) Direct material

(b) Major construction equipment

²⁸ Costs shall be in Rs.

-
- (c) Direct field labor (Total _____ hrs) _____
- (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:
- (a) 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.
- (b) 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.

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: _____

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)

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)

SAMPLE²⁹

Annex 9. Sample Formats from a Project for Guidance

[Note: This annex lists some Sample Formats that were used by a Project where Equipment had to be handed over to the contractor for due performance of the Contract. Any of these Formats if required, for a specific contract, should be suitably adapted]

²⁹ These sample clauses, if not required, should be deleted from the final bidding document

SAMPLE

Annex 9.1

Form of Trust Receipt for Plant, 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 Plant, Equipment and Materials as are fully described and mentioned under Documents of Title/RR/LR³⁰ 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

³⁰ 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 equipment are duly used/erected in accordance with the terms of the Contract and the plant/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 plant/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

Supplementary Information

PART 3 – Conditions of Contract and Contract Forms

Section VII. General Conditions (GC)

General Conditions

Contract and Interpretation

1. Definitions

1.1 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 Plant, 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 Plant to be supplied and installed, as well as all the Installation Services to be carried out by the Contractor under the Contract.

“Plant” means permanent plant, 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 Plant 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 Plant, 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 Precommissioning 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.

“Precommissioning” 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 2.1 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 3.1 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.

3.2 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 1^{er}, 75008 Paris, France.

3.4 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.

3.5 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.

3.6 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.

3.7 Non-Waiver

3.7.1 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.

3.7.2 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.

3.8 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.

3.9 Country of Origin

“Origin” means the place where the plant and component parts thereof are mined, grown, produced or manufactured, and from which the services are provided. Plant 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. Communica-
tions**

4.1 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**

5.1 The Contract shall be governed by and interpreted in accordance with laws of the country **specified in the PC.**

5.2 The ruling language of the Contract shall be that **stated in the PC.**

5.3 The language for communications shall be the ruling language unless otherwise **stated in the PC.**

**6. Fraud and
Corruption**

6.1 If the Employer determines that the Contractor and/or any of its personnel, or its agents, or its Subcontractors, sub consultants, 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 party³¹;
- (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 obligation³²;
- (iii) “collusive practice” is an arrangement between two or more parties³³ 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 party³⁴ 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

³¹ “Another party” refers to a public official acting in relation to the procurement process or contract execution]. In this context, “public official” includes World Bank staff and employees of other organizations taking or reviewing procurement decisions.

³² “Party” refers to a public official; the terms “benefit” and “obligation” relate to the procurement process or contract execution; and the “act or omission” is intended to influence the procurement process or contract execution.

³³ “Parties” refers to participants in the procurement process (including public officials) attempting to establish bid prices at artificial, non competitive levels.

³⁴ “Party” refers to a participant in the procurement process or contract execution.

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- (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

- 7.1 Unless otherwise expressly limited in the Employer's Requirements, the Contractor's obligations cover the provision of all Plant and the performance of all Installation Services required for the design, and the manufacture (including procurement, quality assurance, construction, installation, associated civil works, Precommissioning and delivery) of the Plant, 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 labor, 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.
- 7.2 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.
- 7.3 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

8.1 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.

8.2 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.

8.3 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

9.1 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.

9.2 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.

- 9.3 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.
- 9.4 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.
- 9.5 Any Plant 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).
- 9.6 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.
- 9.7 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.

9.8 The Contractor shall permit, and shall cause its Subcontractors and sub consultants 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 sub consultants' 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).

9.9 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

10.1 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.

10.2 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.

10.3 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).

- 10.4 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.
- 10.5 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 Precommissioning, 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.
- 10.6 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.
- 10.7 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.
- 10.8 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**
- 11.1 The Contract Price shall be as specified in Article 2 (Contract Price and Terms of Payment) of the Contract Agreement.
- 11.2 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. Bidder is required to propose if any new item is required for completeness of the solution. However, the prescribed quantities in the BoQ may vary and paid accordingly on unit price basis.
- 11.3 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**
- 12.1 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.
- 12.2 No payment made by the Employer herein shall be deemed to constitute acceptance by the Employer of the Facilities or any part(s) thereof.
- 12.3 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 arbitrage award.
- 12.4 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.
- 12.5 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

13.1 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.

13.2 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.

13.3 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

14.1 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.

14.2 Notwithstanding GC Sub-Clause 14.1 above, the Employer shall bear and promptly pay

- (a) all customs and import duties for the Plant specified in Price Schedule No. 1; and
- (b) other domestic taxes such as, sales tax and value added tax (VAT) on the Plant 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.

14.3 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.

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.

Intellectual Property

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| 15. License/Use of Technical Information | <p>15.1 For the operation and maintenance of the Plant, 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.</p> <p>15.2 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.</p> |
| 16. Confidential Information | <p>16.1 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.</p> <p>16.2 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</p> |

and other information received from the Employer for any purpose other than the design, procurement of Plant, construction or such other work and services as are required for the performance of the Contract.

16.3 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.

16.4 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.

16.5 The provisions of this GC Clause 16 shall survive termination, for whatever reason, of the Contract.

Execution of the Facilities

17. Representatives 17.1 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.

17.2 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

18.1 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.

18.2 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.

18.3 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.

18.4 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.

18.5 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

- 19.1 The Appendix to the Contract Agreement titled List of Major Items of Plant 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.

19.2 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.

19.3 For items or parts of the Facilities not specified in the Appendix to the Contract Agreement titled List of Major Items of Plant and Installation Services and List of Approved Subcontractors, the Contractor may employ such Subcontractors as it may select, at its discretion.

19.4 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.

19.5 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

20.1 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.

20.2 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.

20.3 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

21.1 Plant

Subject to GC Sub-Clause 14.2, the Contractor shall procure and transport all Plant in an expeditious and orderly manner to the Site.

21.2 Employer-Supplied Plant

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.

21.3 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.

21.4 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

22.1 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.

22.2 Labor:

22.2.1 Engagement of Staff and Labor

Except as otherwise stated in the Specification, the Contractor shall make arrangements for the engagement of all staff and labor, 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 labor as is necessary for the proper and timely execution of the Contract. The Contractor is encouraged to use local labor 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 labor 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 labor from amongst the Employer's Personnel.

22.2.3 Labor Laws

The Contractor shall comply with all the relevant labor 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 labor of its Subcontractors.

The Contractor shall, in all dealings with its labor and the labor 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 labor.

22.2.4 Rates of Wages and Conditions of Labor

The Contractor shall pay rates of wages, and observe conditions of labor, 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 Labor

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 labor (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 of 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 labor 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 labor.

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 labor 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 Labor

The contractor shall not employ "forced or compulsory labor" in any form. "Forced or compulsory labor" 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 Labor

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.

22.3 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.

22.4 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.

22.5 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.

22.6 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.

22.7 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.

22.8 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

23.1 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 Plant and any part of the Facilities as are specified in the Contract.

23.2 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.

23.3 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.

- 23.4 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.

- 23.5 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.

- 23.6 If any Plant or any part of the Facilities fails to pass any test and/or inspection, the Contractor shall either rectify or replace such Plant or part of the Facilities and shall repeat the test and/or inspection upon giving a notice under GC Sub-Clause 23.3.

- 23.7 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 Plant 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.

- 23.8 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 Plant 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.

23.9 The Contractor agrees that neither the execution of a test and/or inspection of Plant 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.

23.10 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.

23.11 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

24.1 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.

24.2 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 Precommissioning 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 Precommissioning of the Facilities or any part thereof.

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 have been provided by the Employer in accordance with GC Sub-Clause 24.2, the Contractor shall commence Precommissioning of the Facilities or the relevant part thereof in preparation for Commissioning, subject to GC Sub-Clause 25.5.

24.4 As soon as all works in respect of Precommissioning 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.

24.5 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.

24.6 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.

24.7 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.

24.8 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**

25.1 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.

25.2 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.

25.3 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.

25.4 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 Precommissioning and/or Guarantee Test

25.5.1 In the event that the Contractor is unable to proceed with the Precommissioning 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 plant is ready for Precommissioning, the Contractor shall proceed without delay in performing Precommissioning in accordance with Clause 24.

Guarantees and Liabilities

26. Completion Time Guarantee

26.1 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.

26.2 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.

26.3 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**

27.1 The Contractor warrants that the Facilities or any part thereof shall be free from defects in the design, engineering, materials and workmanship of the Plant supplied and of the work executed.

27.2 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 Plant 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 or 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.

27.3 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.

27.4 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.

27.5 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 Plant 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.

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.

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.

27.7 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.

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.

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 Facilities or any part thereof, the Plant, 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.

27.10 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

28.1 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.

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 Plant 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.

28.3 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.

28.4 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

29.1 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, plant or materials not supplied by the Contractor, pursuant to the Contract Agreement.

29.2 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.

- 29.3 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

- 30.1 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

- 31.1 Ownership of the Plant (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 Plant from the country of origin to that country.
- 31.2 Ownership of the Plant (including spare parts) procured in the country where the Site is located shall be transferred to the Employer when the Plant are brought on to the Site.
- 31.3 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.
- 31.4 Ownership of any Plant 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 Plant in question are no longer required for the Facilities.
- 31.5 Notwithstanding the transfer of ownership of the Plant, 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 Plant are incorporated.

32. Care of Facilities

- 32.1 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.
- 32.2 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.

32.3 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.

32.4 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

33.1 Subject to GC Sub-Clause 33.3, the Contractor shall indemnify

**Damage to
Property;
Accident or
Injury to
Workers;
Indemnifica-
tion**

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.

- 33.2 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.

- 33.3 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.
- 33.4 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

34.1 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 Plant (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.

- 34.2 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.
- 34.3 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.
- 34.4 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.
- 34.5 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.

34.6 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.

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. 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

35.1 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 Plant 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 Plant 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.

35.2 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.

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**

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. 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**

37.1 “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

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- (f) shortage of labor, materials or utilities where caused by circumstances that are themselves Force Majeure.

37.2 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.

37.3 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.

37.4 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.

37.5 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.

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 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.

37.7 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.

37.8 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

38.1 “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.

38.2 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, Plant, 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.

38.3 If the Facilities or any Plant 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 Plant 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 Plant 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.

38.4 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.

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 either Party may terminate the Contract by giving a notice to the other.

38.6 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.

Change in Contract Elements

39. Change in the Facilities

39.1 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).

39.2 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.

39.3 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

40.1 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.

40.2 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

41.1 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.

41.2 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.

- 41.3 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.

- 41.4 During the period of suspension, the Contractor shall not remove from the Site any Plant, any part of the Facilities or any Contractor's Equipment, without the prior written consent of the Employer.

42. Termination

42.1 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 Plant 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.

42.2 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 labor 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 Plant 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 Plant 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.

42.3 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 Plant 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.

42.4 In this GC Clause 42, the expression “Facilities executed” shall include all work executed, Installation Services provided, and all Plant 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.

42.5 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

43.1 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**

44.1 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 Plant and Installation Services to be supplied which arise from trade regulations from a country supplying those Plant 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 Plant 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**

45.1 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

46.1 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.

- 46.2 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.
- 46.3 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.
- 46.4 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.

46.5 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,

(a) the parties shall continue to perform their respective obligations under the Contract unless they otherwise agree

(b) 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 plants), 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:*

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- 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:*
- v. 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;
 - vi. 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
- vii. 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 plants, batch plants: 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);

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- 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 plantings 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 B³⁵

Appointment of Adjudicator

Suggested Draft³⁶ 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

³⁵ If 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.

³⁶ The draft letter may be modified as necessary.

and the Contractor's share) to the Adjudicator within 30 days of the receipt of the bill. The Contractor's share on this 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 a 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 Laws³⁷

SALIENT FEATURES OF SOME MAJOR LABOUR LAWS APPLICABLE TO ESTABLISHMENTS ENGAGED IN BUILDING AND OTHER CONSTRUCTION WORK

- (a) Employees Compensation Act 1923: The Act provides for compensation in case of injury, disease or death arising out of and during the course of employment.
- (b) Payment of Gratuity Act 1972: 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) Employees P.F. and Miscellaneous Provision Act 1952 (since amended): The Act provides for monthly contribution by the employer plus workers @ 10% or 8.33%. The benefits payable under the Act are:
 - (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.
- (d) Maternity Benefit Act 1961: The Act provides for leave and some other benefits to women employees in case of confinement or miscarriage etc.
- (e) Sexual Harassment of Women at the Workplace (Prevention, Prohibition and Redressal) Act, 2013: 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) Contract Labour (Regulation & Abolition) Act 1970: 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.

³⁷ This 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, plants 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, plants, 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 plants 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 plants 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 plants, hot mix plants, 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 plants 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 foe 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: <i>State Project Implementation Unit. Project Director, Department of Revenue (Disaster Management), M S Building, Govt. of Karnataka, Bengaluru, India.</i></p> <p>The Project Manager is: Dr. Rajkumar Pujari</p> <p>The Bank is: 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> <p>(i) the ESHS Management Strategies and Implementation Plans; and</p> <p>(ii) Code of Conduct (ESHS).</p>
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>GC 7.1 In line 6, delete the word” and” after “completion” and insert a “(,)”. Also, add in line 7, the words “and performance testing” after the word “commissioning”.</p>
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 five years: 5 <i>[A reasonable number of years should be specified in words and figures.]</i></p> <p>Employer expects that wear and tear on Early Warning Dissemination System (EWDS) System components will necessitate routine replacement of such components.</p> <p>The contractor agrees to supply EWDS spare parts required for the operation and maintenance of the System for five years from the date successful Operational Acceptance.</p> <p>The contractor shall stock sufficient nos. of critical spares to achieve the desired SLA. The Bidder shall replace Spare equipment for the EWDS System that has been damaged, found</p>

	<p>in operable or substituted for defective equipment with new equipment configured, tested and labeled within two weeks of being identified or substituted.</p> <p>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 7 months from the Effective Date as described in the Contract Agreement.</p> <p><i>(Parts and times for respective Completions shall be specified where applicable.)</i></p>
	.
PC 12. Terms of Payment	<p>GC 12.3 - add the words “which have become due” after the word, “payment” in line 1.</p> <p>-- Delete the words “whether before or after judgment or arbitral award” in the last line.</p>
PC 12. Terms of Payment	<p>PC 12.4 The currency in which payments are made to the Contractor under this Contract shall be Indian Rupees (Rs.)</p>
PC 13. Securities	<p>GC 13.2.1 – Add at the end of para (before full stop), “with a validity of ninety (90) days beyond the day of completion of facilities in accordance with GC Clause 24.”</p> <p>GC 13.2.2 Delete the portion in line 1 ‘or in another form acceptable to the Employer’</p> <p>-- Delete the portion starting from line 2 “in proportion ... till the end of this Sub-Clause ... after its expiration” and substitute with, “as per the procedures specified in PC. The security shall be discharged after Completion of the Facilities or relevant part thereof”.</p> <p>-- Procedure for effecting reduction in the Advance Payment Security:</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</p>

	<p>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><i>[The ESHS Performance Security if applicable, will normally be in the amount(s) of between 1% to 3% of the Accepted Contract Amount. The sum of the total "demand guarantees" (performance security and ESHS performance security) shall normally not exceed ten percent (10%) of the Contract Amount].</i> 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>Add the following at the end of GC 13.3.1: If the performance security is a bank guarantee, it shall be issued either by a Nationalized or Scheduled Bank in India or a by foreign bank through a correspondent Nationalized or Scheduled Bank located in India.</p> <p>-- Add the following at the end of Sub-Clause after the word, "PC": "with a validity up to sixty (60) days beyond the Defect Liability period."</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 Delete the first sentence reading "Unless otherwise specified of the Operational Acceptance"</p> <p>In cases where partial acceptance (GC 25.4) is provided retain GC 13.3.3 with the following changes; Add the following at the start of Para: "The performance security shall be reduced prorata to the contract price of a part or the facilities for which a separate time for completion is provided for".</p> <p>-- In lines 5 & 9, after the word "Facilities", add the words "(or the relevant part thereof)."</p>
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		<p><i>(The following provision should be used when the Facilities have warranty obligations beyond the Defect Liability Period, pursuant to the provisions in the PC under GC Clause 27.)</i></p> <p>PC 13.3.3 The Performance Security shall be reduced to ten percent (10%) of the value of the component covered by the extended defect liability to cover the Contractor's extended defect liability in accordance with the provision in the PC, pursuant to GC Sub-Clause 27.10. <i>[To be inserted only when an extended warranty is requested]</i>.</p> <p>PC 13.3.4 Deleted.</p>
PC 14 Taxes and Duties		<p>GC 14.2 - replace it with the following: GC 14.2 – “The Employer shall bear and pay/reimburse to the Contractor domestic taxes such as CGST, SGCT and IGST, in respect of direct transaction between the Employer and the Contractor imposed upon, on the EWDS 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>GC 14.3 – Deleted.</p> <p>GC 14.4 – Add the following at the end of the Sub-Clause: “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 License/Use of Technical Information	15.1	<p>GC 15.1 - Add the following at the end of the Sub-Clause: “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 Representatives	17	<p>GC 17.1 - In line 8, delete the word “No” and replace with the words, “The Employer shall take all reasonable care to see that no”.</p> <p>-- In line 8, substitute the words, “shall be” with “is”.</p> <p>-- In line 10-11, delete the sentence “Such appointment shall only take effect upon receipt of such notice by the Contractor”.</p> <p>Sample Provision <i>[to be inserted only if requirement of Contract Co-ordination Procedure is envisaged]</i>.</p> <p>-- Add the following Sub-Clause after GC Sub-Clause 17.2.3:</p> <p>17.2.3.1 “Notwithstanding anything stated in GC Sub-Clause 17.1 and 17.2.1 above, for the purpose of execution of Contract, the Employer and the Contractor shall finalize and agree to a Contract Co-ordination</p>

	<p>Procedure and all the communication under the Contract shall be in accordance with such Contract Coordination Procedure.”</p> <p>GC 17.2.4 - In line 2, substitute the word “Completion” with “Operational Acceptance”.</p>
PC 18 Work Program	<p>GC 18.2 - In line 1, substitute the words “Effective Date” with “Notification of Award”.</p> <p>GC 18.3 - The Supplier shall submit to the Purchaser the following reports:</p> <ul style="list-style-type: none"> (a) Monthly progress reports, summarizing: <ul style="list-style-type: none"> (i) results accomplished during the prior period; (ii) cumulative deviations to date from schedule of progress milestones as specified in the Agreed and Finalized Project Plan; (iii) corrective actions to be taken to return to planned schedule of progress; proposed revisions to planned schedule; (iv) other issues and outstanding problems; proposed actions to be taken; (v) resources that the Supplier expects to be provided by the Purchaser and/or actions to be taken by the Purchaser in the next reporting period; (vi) other issues or potential problems the Supplier foresees that could impact on project progress and/or effectiveness. (b) inspection and quality assurance reports; (c) training participants test results; and (d) Monthly log of service calls and problems resolutions throughout the contract period including warranty and AMC period.
PC 20 Design and Engineering	<p>GC 20.3.2 - Delete the last sentence of the Sub-Clause “If the Project Manager ... by the Project Manager”.</p> <p>GC 20.3.4 - In line 7, after the words “modification(s)”, delete the word “whereupon” and substitute with “and upon resubmission with the required modifications”.</p> <p>GC - Add the following at the end of the Sub-Clause:</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 Procurement	21	<p>GC 21.3 - The Contractor shall provide the Purchaser with shipping and other documents “as specified in the GCC,” along with the following documents</p> <p>1) Original Invoice Custom, 2) Packing Slip, 3) Country of Origin Certificate from Concerned Chamber of Commerce, 4) Airway Bill, 5) Insurance Certificate, 6) Bill of Lading, 7) Factory Inspection Report, 8) Letter of Waiver if any by the purchaser</p> <p>GC 21.4 – substitute this sub-clause with the following:</p> <p>“GC 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>GC 22.2.3 - Add the following at the end of GC 22.2.3:</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</p> <p>Normal working hours are: 09:00 hrs to 18:00 hrs _____</p> <p>PC 22.2.8 Funeral Arrangements: _____</p>
PC Completion of the Facilities	24	<p>GC 24.3 - In line 4, after the word “matters”, add, “if so specified in Appendix 6 (Scope of Works and Supply by the Employer).</p> <p>GC 24.4 – In line 4, add the following after the word “shall”:</p> <p>“commence Commissioning as per procedures stipulated in Technical Specification, and as soon as Commissioning is satisfactorily completed, the Contractor shall”.</p>
PC 24.3 and 25.2		<p>Completion – Guarantee Test – Acceptance</p> <p>[1] <u>Sample Provision for ‘deemed completion of activities’</u></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</p>

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.

[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:

- (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.

[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.

[4] When the Contractor is notified by the project Manager that the EWDS is ready for Pre-commissioning, the Contractor shall proceed without delay in performing all the specified activities and obligations under the contract.

[The above SC Clause may be used when performance of Pre-

	<i>commissioning activities and/or Functional Guarantees will be tied to the completion of other facilities which and are not under the responsibilities of the Contractor.]</i>
PC 25. Commissioning and Operational Acceptance	<p>GC 25.1.1 replace the existing clause with the following: Commissioning of the Facilities or any part thereof shall be completed by the Contractor as per procedures detailed in Technical Specifications.</p> <p>GC 25.1.2 - In line 1, after the word “shall”, add, “unless otherwise specified in Technical Specifications”</p> <p>PC 25.2.2 The Guarantee Test of the Facilities shall be successful completed within one month_____ from the date of Completion. <i>[Parts and separate times for the respective Guarantee Tests shall be specified where applicable].</i></p> <p>GC 25.3.1(b) - In the last line, after the word “the Contractor” add the words “but successful completion of the Facilities has been achieved”. Add the following Sub-Clause:-</p> <p>GC 25.3.1(e) – Three sets of as built drawings of (in scale) and operating and maintenance manuals and CD’s (as required) are furnished.</p> <p>GC 25.3.3 - in line 2, substitute the word “Seven (7)” with “Twenty or (21)”.</p> <p>GC 25.3.4 - In line 1, substitute the word “Seven (7)” with “Twenty or (21)”.</p>
PC 26. Completion Time Guarantee	<p>PC 26.2</p> <p>Applicable rate for liquidated damages: ____0.5% 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. <i>[The above provision may be used where separate Times for Completion have been prescribed for parts of the Facilities].</i></p> <p>Maximum deduction for liquidated damages: 10% of Contract Price</p> <p>PCPC 26.3 No bonus will be given for earlier Completion of the Facilities or part thereof.</p>
PC 27. Defect Liability	<p>GC 27.2 – Required Defect Liability Period is two year from the date of commissioning</p> <p>GC 27.6 - Substitute the last sentence of the second para with the following: “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</p>

	<p>original equipment/part of the Facilities”.</p> <p>GC 27.8 - Add the following at the end of the Sub-Clause: “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>GC 27.8 - -- Add the following as a new Sub-Clause 27.8.1: “GC 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>GC 27.9 – Replace the word “completion of facilities” with “operational acceptance” in line 5.</p>
PC 28 Functional Guarantees	<p>GC 28.2 - Add the following after the words “GC Sub-Clause 42.2.2” in the last sentence: “and recover the payments already made to the Contractor”.</p> <p>GC 28.3 (a) - In line 3, after the word “expense” add the words “within a mutually agreed time”.</p> <p>GC 28.4 - Substitute the word “The “ appearing in the beginning of the Sub-Clause with the following: “In case the employer exercises its option to accept the equipment after levy of liquidated damages, the”</p>
PC 31 Transfer of Ownership	<p>PC 31.1 – deleted</p> <p>GC 31.2 - <i>In case the terms of payment envisage payment for locally supplied goods on EXW basis (instead of on receipt at site) then delete the last line in this Sub-Clause 31.2 and substitute with “loaded on to the mode of transport to be used to convey the EWDS and equipment from the works to the Site and upon endorsement of the despatch documents in favour of the Employer”.</i></p> <p>GC 31.4 - Add the following after the word “Facilities” in the last line: “provided quantity of any EWDS and Equipment specifically stipulated in the Contract shall be the property of the Employer whether or not incorporated in the Facilities.”</p>

PC 34 Insurance	<p>GC 34.7</p> <p>-- In line 4, after the word “Contractor” add the words “as per the procedure outlined in PC.”</p> <p>Add Clause GC 34.8 as under:</p> <p><i>GC 34.8 – Appropriation of Insurance Proceeds</i></p> <p>Should any loss or damage occur, the Supplier shall:</p> <ul style="list-style-type: none"> a) initiate and pursue claim till settlement; and b) 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> <p><i>(Modify the above as appropriate to suit each case)</i></p>
PC 36 Change in Laws and Regulations	<p>GC 36.1 - Add the following before the last sentence of the Sub-Clause:</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.”</p>
PC 37 Force Majeure	<p>GC 37.6 - In line 6-7-8-9, replace the words “failing which either party may terminate the Contract by giving a notice of the other, but without prejudice to either party’s right to terminate the Contract under GC Sub-Clause 38.5” with the words “failing which the dispute will be resolved in accordance with GC Clause 46”.</p> <p>GC 37.7 - Delete this Sub-Clause.</p> <p>GC 37.8 - Renumber this Sub-Clause as “37.7”</p>
PC 38 War Risks	<p>GC 38.5 - In lines 12-13, replace the words “failing which either party may terminate the Contract by giving a notice to the other” with the words “failing which the dispute will be resolved in accordance with</p>

	GC Clause 46”.
	GC 38.6 - In line 1-2, delete the words “or 38.5”
PC 39. Change in the Facilities	<p>GC 39.2.5 - In the last sentence of first sub Para substitute the words “shall withdraw the proposed change and shall notify the Contractor in writing thereof” with the words “and the Contractor shall agree on specific rates for valuation of the Change”</p> <p>GC 39.2.6 - Add the following sentence in the beginning of the Sub-Clause:</p> <p>“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.”</p>
PC 42 Termination	GC 42.3.1(b) - At the end of the para, after the word “Facilities”, add the words “which the Employer is required to obtain as per provision of the Contract as per relevant applicable laws of the country”.
PC 44.1 Export Restrictions	GC 44.1 – deleted.
PC 46. Disputes and Arbitration	<p>PC 46.1 and PC 46.2</p> <p>Name of the agreed Adjudicator XXXXX..... (<i>insert name before signing contract</i>).</p> <p>Appointing Authority for the Adjudicator: [<i>insert name of Authority</i>].</p> <p>[<i>Note: if ITB 46 provides for an Adjudicator from list provided by an Institution, insert the name of the same institution as the appointing authority</i>]</p>
	<p>PC 46.4</p> <p>Daily rate and types of reimbursable expenses to be paid to the Adjudicator: <i>Rs. 10,000 per day boarding/ lodging/ travel etc.</i></p> <p>[<i>Note: if ITB 46 provides for provision of an Adjudicator from list provided by an institution, kindly state that ‘the daily fee and reimbursable expenses payable to the Adjudicator will be governed by rules of IEEE’.</i>]</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</p>

	<p>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 Bengaluru, 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</p>
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	<p>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.....180... days of starting of the proceedings [<i>indicate the days (Between 120-180) by which arbitrator should give award</i>], 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> <p>* Choose <i>one alternative, or any other appropriate institution (depending on nature of the work)</i>.</p> <p><i>Alternatively</i></p> <p><i>[Apart from the adhoc arbitration services obtained through mutually agreed Arbitrator(s) as above, Institutional arbitration services are also available in India. Institutional arbitration (and mediation) dispute resolution mechanisms can be gainfully used, preferably for relatively larger contracts. Following clause may be included, if it is decided to use Institutional Services for arbitration for resolution of disputes, and in such a case other clauses related to Arbitration/ Arbitrator would be deleted. In the sample clause below, substitute the reference to 'Rules of Domestic Commercial Arbitration of the Indian Council of Arbitration' by the specific institution that is sought to be engaged e.g. The International Chamber of Commerce (India), Centre for Alternative Dispute Resolution (ICADR), The Indian Institute of Arbitration and Mediation (IIAM), Indian Chamber's Council of Arbitration, Delhi International Arbitration Centre (DAC), Council For National and International Commercial Arbitration, London Court of International Arbitration (India Centre) or the like.]</i></p> <p>"Any dispute or difference whatsoever arising between the parties out of or relating to the Work, meaning, scope, operation or effect of this contract or the validity or the breach thereof shall be settled by arbitration in accordance with the Rules of Domestic Commercial Arbitration of the Indian Council of Arbitration and the award made in pursuance thereof shall be binding on the parties.</p>
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	The arbitral tribunal shall consist of 3 Arbitrators, arbitration proceedings shall be held at Bengaluru and that of all documents and communications between the parties shall be English”. <i>[ICA rules provide for arbitration tribunal of 3 arbitrators if the value of claim is over Rs. 1 crore unless the parties have agreed otherwise for a sole arbitrator].</i>
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Section IX. - Contract Forms

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 modified³⁸ 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 Adjudicator³⁹.

[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 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 46.1⁴⁰.

³⁸ Delete "corrected and" or "and modified" if not applicable.

³⁹ To 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.

⁴⁰ 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.

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

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

Contract Documents

1. 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 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 EWDS 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

[The following Terms and Procedures of Payment are given as a guideline suitable for Supply and Installation Contracts. In the event that the Employer wishes to introduce substantially different terms of payment, it may be done in consultation with the Bank. If additional Price Schedules are introduced, suitable terms of payment for such additional schedules must be added]

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. EWDS and Equipment Supplied from Abroad/ India –

Acceptance Certificate, within forty-five (45) days after receipt of invoice.

In respect of EWDS and equipment (including Mandatory Spare Parts), the following payments shall be made in Rs. In the following manner:

(a) **Advance Payment:**

Ten percent (10%) of the entire Contract Price, exclusive of all Recurrent Costs, shall be paid against receipt of a claim accompanied by the Advance Payment Security specified in GCC Clause 13.2. 10% Advance Payment Security in the form of BG shall be retained up to the Project period.

The advance payment security in form of BG shall be endorsed by Nationalized/Scheduled Bank located in India.

The 10% advance payment shall be adjusted against balance payment.

(b) **All Materials, and other Goods, along with the Custom Software and Custom Materials:**

Fifty percent (50%) of the Contract Price (Supply & installation services) for this category against Delivery of receipt of Ordered materials in Good condition at Destination. Supplies against each Solution wise Part payment may be considered.

Ten percent (10%) of the Contract Price (Supply & installation services) against Installation.

Ten percent (10%) of the Contract Price (Supply & installation services) against Operational Acceptance.

(c) Training:

Ten percent (10%) of the Contract Price (Supply & installation services) against Training.

(d) Post Complete System Integration and Commissioning:

Twenty percent (20%) of the Contract Price (Supply & installation services) against Installation services, payable towards complete System Integration and commissioning, exclusive of all recurrent Costs as a final payment against operational acceptance of the EWDS System, shall be payable on quarterly basis in eight equal instalments.

(e) O&M (OPEX):

One hundred percent (100%) of the price of the services actually delivered will be paid quarterly in arrears, on submission and Employer's approval of invoices.

(f) AMC Charges:

(g) After 2 years of completion of Warranty:

AMC charges for 3rd to 5th Year: One hundred percent (100%) of the price of the services actually delivered will be paid quarterly on submission and Purchaser's approval of invoices

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 _____2_____ / percent (___%) per month for period of delay until payment has been made in full.

PAYMENT PROCEDURES

The procedures to be followed in applying for certification and making payments shall be as follows: *[insert appropriate procedures, normally through bank transfer, crossed cheque for specific account number, letter of credit etc.]*

Appendix 2. Price Adjustment NA

Where the Contract Period (excluding the Defects Liability Period) exceeds eighteen (18) months, it is normal procedure that prices payable to the Contractor shall be subject to adjustment during the performance of the Contract to reflect changes occurring in the cost of labor and material components. In such cases the bidding documents shall include in this Appendix 2 a formula of the following general type, pursuant to GC Sub-Clause 11.2.

Where Contracts are of a shorter duration than eighteen (18) months or in cases where there is to be no Price Adjustment, the following provision shall not be included. Instead, it shall be indicated under this Appendix 2 that the prices are to remain firm and fixed for the duration of the Contract.

Sample Price Adjustment Formula

If in accordance with GC 11.2, prices shall be adjustable, the following method shall be used to calculate the price adjustment:

Prices payable to the Contractor, in accordance with the Contract, shall be subject to adjustment during performance of the Contract to reflect changes in the cost of labor and material components, in accordance with the following formula:

$$P_1 = P_0 \times \left(a + b \frac{L_1}{L_0} + c \frac{M_1}{M_0} \right) - P_0$$

in which:

P_1 = adjustment amount payable to the Contractor

P_0 = Contract price (base price)

a = percentage of fixed element in Contract price ($a = \%$)

b = percentage of labor component in Contract price ($b = \%$)

c = percentage of material and equipment component in Contract price ($c = \%$)

L_0, L_1 = labor indices applicable to the appropriate industry in India on the base date and the date for adjustment, respectively e.g. 'Labor -Consumer Price Index for Industrial Workers forcentre' issued by 'Labour Bureau, Ministry of Labour & Employment, Government of India'.

M_0, M_1 = material and equipment indices in India on the base date and the date for adjustment, respectively e.g. 'Material - All India Wholesale Price Index (all

commodities or for specific machinery/ equipment) issued by “Economic Advisor to the Government of India, Ministry of Commerce and Industry”.

N.B. $a+b+c=100\%$.

Conditions Applicable To Price Adjustment

The Employer shall specify the weightings for various indices, the appropriate type and source of labor and materials/equipment indices, and the applicable base date.

<u>Item</u>	<u>Source of Indices Used</u>	<u>Base Date Indices</u>
-------------	-------------------------------	--------------------------

The base date shall be the date twenty-eight (28) days prior to the Bid closing date.

The date of adjustment shall be the mid-point of the period of manufacture or installation of component or EWDS .

The following conditions shall apply:

- (a) No price increase will be allowed beyond the original delivery date unless covered by an extension of time awarded by the Employer under the terms of the Contract. No price increase will be allowed for periods of delay for which the Contractor is responsible. The Employer will, however, be entitled to any price decrease occurring during such periods of delay.
- (b) No price adjustment shall be payable on the portion of the Contract price paid to the Contractor as an advance payment.
- (c) Price adjustment will be applied only if the resulting increase or decrease is more than two percent (2%) of the Contract price.

[Note: For complex EWDS supply and installation involving several sources of supply and/or a substantial amount of installation works, a family of formulas may be necessary.]

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 insurances⁴¹ 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.

Note: The Bidder is required to account for the following mentioned insurances, in lines with the actual value of his offer. The total value of all these insurances shall be equal to 100% of the project cost.

(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.

<u>Amount</u>	<u>Deductible limits</u>	<u>Parties insured</u>	<u>From</u>	<u>To</u>
---------------	--------------------------	------------------------	-------------	-----------

⁴¹ Contractors' may also take out and maintain Contractor's All Risks (CAR) Insurance policies, provided the policy covers all risks listed herein.

(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

- Twelve (12) Months for Project implementation
- Two (2) years O&M and warranty after project implementation
- Three (3) years AMC after O&M

The bidder is required to submit his own proposed implementation schedule.

Appendix 5. List of Major Items of EWDS and Installation Services and List of Approved Subcontractors

Prior to award of Contract, the following details shall be completed, indicating those Subcontractors proposed by the Bidder in the corresponding Attachment to its bid that are approved by the Employer for engagement by the Contractor during the performance of the Contract.

A list of major items of EWDS 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 EWDS and Installation Services	Approved Subcontractors/Manufacturers	Nationality

Appendix 6. Scope of Works and Supply by the Employer

Prior to issuing the bidding documents, the Employer shall indicate in this Appendix details of all personnel and Facilities it will provide for use by the Contractor and indicate, where applicable, the charges that it will make in respect of their use.

The Employer shall also identify any part(s) of the facilities it intends to carry out itself (or by other contractors), and any EWDS , equipment, or materials that it proposes to purchase itself and supply to the Contractor for incorporation in the facilities, indicating, where applicable, the charges that it will make in respect thereof.

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

A. Approval

- 1.
- 2.
- 3.

B. Review

- 1.
- 2.
- 3.

Appendix 8. Functional Guarantees

1. General

This Appendix sets out

- (a) the functional guarantees referred to in GC Clause 28 (Functional Guarantees)
- (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 25.2.]*

3. Functional Guarantees

Subject to compliance with the foregoing preconditions, the Contractor guarantees as follows:

3.1 Production Capacity

*[List here the production capacity that the Contractor is to guarantee, **making sure to use, as functional guarantees, the figures offered by the Contractor in its bid.**]*

and/or

3.2 Raw Materials and Utilities Consumption

*[List here the guaranteed items of consumption per unit of production (e.g., kg, tons, kcal, kWh, etc.) that the Contractor is to guarantee, **making sure to use, as functional guarantees, the figures offered by the Contractor in its bid.**]*

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

[To be specified in the appropriate wording for the type of facilities if there are consumption guarantees.]

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. *[the percentage specified shall not exceed twenty five percent (25%)]*

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 Contractor⁴²]*
 (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 bank⁴³ 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 guarantee⁴⁴]* _____ *[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.

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.

⁴² In the case of a JV, insert the name of the Joint Venture

⁴³ The Bank Guarantee from a Scheduled Bank in India is acceptable to the Employer.

⁴⁴ An 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.

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:⁴⁵ (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____.⁴⁶

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.]

⁴⁵

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).

⁴⁶

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 Contractor⁴⁷]*
 (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 bank⁴⁸ 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 guarantee⁴⁹]* _____ *[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.

⁴⁷ In the case of a JV, insert the name of the Joint Venture

⁴⁸ The Bank Guarantee from a Scheduled Bank in India is acceptable to the Employer.

⁴⁹ 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 until⁵⁰, 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.

⁵⁰ 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."