GUJARAT INTERNATIONAL FINANCE TEC-CITY COMPANY LIMITED (GIFTCL)

BID DOCUMENT

GUJARAT INTERNATIONAL
FINANCE TEC-CITY

"SUPPLY, INSTALLATION, TESTING, COMMISSIONING, TRAINING AND MAINTENANCE OF CCTV INFRASTRUCTURE AT VARIOUS PLACES IN DTA AREA OF GIFT CITY"

APRIL 2023

BID Reference No. GIFT/ICT/WC/2023/01

GUJARAT INTERNATIONAL FINANCE TEC-CITY CO. LTD.

GUJARAT INTERNATIONAL FINANCE TEC-CITY

E-TENDER

BID DOCUMENT FOR "SUPPLY, INSTALLATION, TESTING, COMMISSIONING, TRAINING AND MAINTENANCE OF CCTV INFRASTRUCTURE AT VARIOUS PLACES IN DTA AREA OF GIFT CITY"

BID REFERENCE NO: GIFT/ICT/WC/2023/01

APRIL 2023

GUJARAT INTERNATIONAL FINANCE TEC-CITY COMPANY LIMITED

EPS - Building no. 49A, Block 49,

Zone 04, Gyan Marg, GIFT City, Gandhinagar – 382355

Sr. No. …….

Issued To: **Issued By:**

…… ……

GUJARAT INTERNATIONAL FINANCE TEC-CITY COMPANY LIMITED

GUJARAT INTERNATIONAL FINANCE TEC-CITY

E-TENDER

ABSTRACT

NAME OF THE WORK	**Supply, Installation, Testing, Commissioning, Training and Maintenance of CCTV Infrastructure at Various Places in DTA area of GIFT City**
ESTIMATED COST OF THE WORKS	**Rs.29,98,302/- (Including GST).**
DOWNLOADING OF BID DOCUMENTS	From: :25/04/2023 To :24/05/2023 up to 17:00hrs
PREBID MEETING	:04/05/2023 at 15.00 hrs.
LAST DATE AND TIME FOR ONLINE SUBMISSION OF FINANCIAL BIDS	:25/05/2023 on or before 15.00 hrs.
LAST DATE AND TIME FOR PHYSICAL SUBMISSION OF TECHNICAL BIDS, DOCUMENTS, TENDER FEE & BID SECURITY (HARD COPIES)	:26/05/2023 on or before 15:00 hrs.
OPENING OF TECHNICAL BIDS	:26/05/2023 at 15.30 hrs.
OPENING OF FINANCIAL BIDS	Date and time will be informed later
PLACE OF PRE-BID MEETING, PHYSICAL SUBMISSION OF TECHNICAL BID, DOCUMENTS, TENDER FEE & BID SECURITY (HARD COPIES) AND OPENING OF BIDS	At: Office of the Managing Director & Group CEO Gujarat International Finance Tec- City Company Ltd. GIFT House, Block No.12, Road-1D, Zone 1, GIFT City, Gandhinagar 382355
AMOUNT OF TENDER FEE	**Rs.10,000 (Rupees Ten Thousand Only)** payable in the form of Demand Draft / Banker's cheque / Pay Order from any Bank drawn in favor of "Gujarat International Finance Tec- City Company Limited", payable at Ahmedabad.
BID VALIDITY	180 days from last date of online submission of Bid
PERIOD OF COMPLETION OF WORKS	**02 (Two) Months from the date of issuance of Notice to Commence plus 03 Years of Maintenance Support after successful completion of Defect Liability period.**

BID SECURITY DEPOSIT	**Rs.60,000/- (Rupees Sixty Thousand Only)** payable in the form of Demand Draft / Banker's cheque / Pay Order from any Bank drawn in favor of "**Gujarat International Finance Tec- City Company Limited**", payable at Ahmedabad or in the form of Bank guarantee as specified in section 1, Instructions to Bidders.
SUBMISSION OF TENDER FEE, BID SECURITY, TECHNICAL BID AND SUPPORTING DOCUMENTS	Scan copy of instruments evidencing the payment of tender fee and bid security shall be submitted by uploading through online. Further, the original instruments for the payment of tender fee and bid security shall be submitted along with the hard copy of the bid documents. Technical Bid, containing all bid documents of [Volume-1 (Section 1 to 10)] including technical forms and supporting documents shall be submitted in physical form, before the last date of submission of technical bid.
SUBMISSION OF FINANCIAL BID	The Financial Bid [Volume-2 (Section 11) of the Bid document] shall be submitted in electronic format on the website https://gift.nprocure.com. before the last date and time of online submission of financial bid. Financial Bid will not be accepted in physical form.

Note:

1. The bidder is required to quote the rate only in Section 11 (Bill of Quantities) of the bid document.
2. While preparing his bid, the bidder shall take into consideration the entire bid document including "Instructions to Bidders - Section 1", "General Conditions of Contract - Section 2", "Special Conditions of Contract- Section 3" and "Technical Specifications-Section 4" forming part of the bid document.

INVITATION FOR BID (IFB)

Gujarat International Finance Tec- City Company Ltd (GIFTCL) invites Bids on item rate basis from reputed contractors for **"Supply, Installation, Testing, Commissioning, Training and Maintenance of CCTV Infrastructure at Various Places in DTA area of GIFT City"**

The website address for E-Tender is https://gift.nprocure.com.

Bid document may be downloaded online from website at https://gift.nprocure.com. by interested bidders during the dates of online downloading of bidding documents and Bids will be submitted on or before the last date and time for submission of bids as mentioned in the Abstract of the bid document

Bidders must submit Financial Bid [Volume-2 (Section 11)] in electronic format only on https://gift.nprocure.com website on or before the last date & time for online submission. Offers in physical form shall not be accepted in any case.

The Bidder should submit the Technical Bid including Tender Fee, Bid Security, Bid & related documents etc. [Volume-1 (Section 1 to 10)] in physical form at the office of GIFTCL, GIFT City, Gandhinagar, so as to reach on or before last date and time of physical submission of technical bids, as mentioned in the Abstract of the bid document. GIFTCL shall not be responsible for any kind of postal delay.

Bids shall not be received, entertained, accepted after the stipulated date and time.

The interested bidders, who wish to participate in E-tendering, will have to be registered on https://gift.nprocure.com and will have a valid Digital Certificate as per Information Technology Act, 2000, using which they can sign, submit their bids electronically. The Bidders who already have a valid Digital Certificate need not to procure a new Digital Certificate. However, the bidders who are not having a valid Digital Certificate can procure the same from M/s. (n) Code Solution, GNFC, Ahmedabad, who is a licensed certifying authority by Government of India.

In case bidder needs any clarification or if any training is required for participating in E-tendering or if there any problem regarding downloading, viewing or online submission of bid/ tender, the bidders can contact M/s. (n) Code Solution on following addressed, before last date of online submission of Bid: -

M/s. (n) Code Solution, A division of G.N.F.C. Ltd.,

301, G.N.F.C. Infor Tower, Bodakdev, S.G. Road,

Ahmedabad, Gujarat – 380 054 (India),

Phone No.079-40007501, 40007512, 40007516, 40007517,

Fax 079-26857321 toll free No.: 1-800-419-4632

Email: nprocure@ncode.in

GENERAL INSTRUCTIONS

(a) The Tender Fee will not be refunded under any circumstances.

(b) Bid Security in the form as specified in bid document only shall be accepted.

(c) The offer shall be valid for 180 days from the last date of online submission of bid.

(d) Bids without Tender Fee, Bid Security and which do not fulfill all or any of the conditions or those submitted incomplete, in any respect shall not be considered for evaluation.

(e) Not more than one tender shall be submitted by a Bidder.

(f) Conditional tender shall not be accepted.

(g) GIFTCL reserves the right to accept the lowest responsive offer, based on evaluation of package and reject any or all bids/ tenders without assigning any reason.

(h) The bidders are advised to carefully read the instructions and eligibility criteria contained in the bid/ tender document.

Bid Inviting Authority: -
The Managing Director & Group CEO

Gujarat International Finance Tec- City Company Ltd.

EPS Building No.49A, Block No.49,

Zone-04, Gyan Marg,

GIFT City, 382355 GANDHINAGAR

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SECTION 1

INSTRUCTIONS TO BIDDERS (ITB)

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SECTION 1: INSTRUCTIONS TO BIDDERS (ITB)

These Instructions to Bidders are provided to assist the Bidders for preparing their Bids. These instructions will be integral part of the Contract and will be taken into consideration in interpreting or construing the Contract.

A. GENERAL

1 SCOPE OF BID

1.1 **Gujarat International Finance Tec- City Company Ltd (GIFTCL),** hereinafter referred to as "the Employer" invites bids for **"Supply, Installation, Testing, Commissioning, Training and Maintenance of CCTV Infrastructure at Various Places in DTA area of GIFT City"** on Item Rate basis **(Bid Reference No.: GIFT/ICT/WC/2023/01)** as defined in Sub-Clause 2.0 of Section 3 (Special Conditions of Contract) of the bidding documents, hereinafter referred to as "**the Works**". The words used herein or in the Special Conditions of Contract (SCC) unless specified otherwise, shall be as defined in the General Conditions of Contract (GCC).

1.2 The Contract period for completion of work 02 (Two) Months from the date of issuance of Notice to Commence plus 03 Years of Maintenance Support after successful completion of Defect Liability period

1.3 Bids not covering the entire scope of the work shall be treated as incomplete and hence be liable to be rejected.

1.4 Throughout these bidding documents, the terms "bid" and "tender" and their derivatives (bidder/tenderer, bidding/tendering, bidding documents/tender documents, etc.) are synonymous, and "day" means calendar day.

2 ELIGIBILITY FOR SUBMISSION OF BIDS

2.1 The Bidder may be a company, partnership firm, limited liability partnership (LLP), sole proprietorship firm or any other legal entity validly incorporated and/or registered under the laws of India and is competent to Contract.

2.2 A bidder (including any proposed subcontractor of a bidder) if affiliated with an entity which has provided consulting services during the preparatory stages of the Works or who has been hired (or is proposed to be hired) as Engineer's

Representative for the Contract shall not be eligible to participate in the bidding process.

2.3 Bidders shall provide evidence of their eligibility to the satisfaction of the Employer.

2.4 The bidder shall not be allowed to form the consortium nor to appoint any sub-Contractor.

2.5 The Bidder would have to submit their GST registration and PF Registration certificate along with technical bid, in absence of which their bid will be treated nonresponsive.

2.6 Self-attested true copies of documentary evidence regarding registration under Shop and Establishment Act or the Companies Act, commencement of business and the Memorandum and Articles of Association or any other documentary evidence shall be submitted along with the submission of RFP.

2.7 GIFTCL reserves the right to verify the above details from the respective authorities. Any business entity which has been barred by Government of Gujarat, Government of India, or any other State Governments or any of their agencies, from participating in providing similar Services and the bar subsists as on the Proposal Due Date, would not be eligible to submit a Proposal.

3 MINIMUM QUALIFICATION OF THE BIDDER

3.1 The Bidder must be a well-established Engineering Contractor having experience in similar scope of works. The bidder should possess and be able to deploy all the machinery/ equipment necessary for the timely completion of the Works and shall augment the same if considered necessary by the Engineer to achieve the targeted progress of the works at no additional cost to the Employer.

3.2 To get qualified for being considered for award of the Contract, bidders shall provide evidence, satisfactory to the Employer, of their capability and adequacy of resources to carry out and execute the Contract effectively. All bidders shall include the following information and documents with their bids:

(a) Bidders should meet the following minimum qualification cum eligibility criteria on a pass or fail basis:

Financial Eligibility Criteria

Bidder should have.

i. Achieved in preceding 3 (three) consecutive financial years (ending on 31st March 2022), average annual financial turnover of (of all classes of supply & ICT works only) not less than **Rs. 60 Lakhs** (**Refer Format 10 in Section 5** of the bidding document).

ii. Liquid assets and/ or credit facilities of not less than **Rs.6 Lakhs** (credit lines/ letter of credit support from bank to be enclosed) (**Refer Format 2 in Section 5** of the bidding document)

iii. The profit before tax for any 3 years out of last 5 consecutive financial year should be positive.

iv. Net worth (NW) for each of the 3 (three) consecutive financial years ending on 31st March 2022 should be more than **Rs.3 Lakhs** Net worth (NW) = Share Capital + Reserves and Surplus – Miscellaneous Expenditure – Revaluation Reserves, if any (**Refer Format 2 in Section 5** of the bidding document)

v. Minimum Bid Capacity of **Rs. 30 Lakhs** (**Refer Format 4 in Section 5 of the bidding document)**

Technical Eligibility Criteria

The bidder in preceding three (3) years (up to the date of Bid Notification) Supply, Installation, Testing and Commissioning of CCTV Surveillance with minimum 24 nos. of Bullet Camera, out of which should have successfully executed and completed at least One project of Supply, Installation, Testing and Commissioning of CCTV Surveillance with minimum 08 nos. of Bullet Cameras.

3.3 The Bidder should submit the additional document as follows:

(a) The Bidder shall provide curriculum vitae of one qualified Project Manager having at least a bachelor's degree in engineering or equivalent with minimum relevant professional experience of 5 years including 3 years as project Manager, proposed to be deployed on the project (Refer

Format 7 in Section 5). The Bidder shall undertake to employ such personnel or equally experienced personnel on the work if awarded.

(b) copies of original documents defining the constitution or legal status, place of registration and principal place of business; written Power of Attorney authorizing the signatory of the bid to commit and bind the Bidder (Refer Format 1 in Section 5).

(c) details of financial data giving annual turnover including profit and loss statements, balance sheets, auditor's reports for the past 3 consecutive financial years ending 31-03-2022 and evidence of access to lines of credit (Refer Format 2 in Section 5).

(d) A letter of authority to seek references from the bidders' bankers and previous / existing Employer's (Refer Format 12 in Section 5).

(e) project wise experience as a Prime Contractor on similar scope of works over the last 3 years (Refer Format 3 in Section 5).

(f) Proposed safety plan and procedures that shall be followed during the execution of the Bided Works (Refer Format 8 in Section 5).

(g) Proposed general program / method statements in sufficient detail to demonstrate the adequacy of the bidder's proposals to meet the technical specifications and the completion time referred to in Sub-clause 1.2 above (Refer Format 6 in Section 5).

(h) an Organization Chart of administration and execution of the contract showing the deployment of key personnel at Site with individual tasks (Refer Format 7 in Section 5).

(i) Experience in handling Similar Projects to be supported by WO, PO Copies, Completion and Performance Certificates from clients.

3.4 Even though the bidders meet the above qualifying criteria, they are liable to be disqualified if they have.

(a) made misleading or false representations in the forms, statements and attachments submitted by them which comes to the knowledge of Employer; and/ or.

(b) Record of poor performance such as abandoning the works, not properly completing the contract, inordinate delays in completion, financial failures, etc.

(c) Submitted conditional Bid or alternative proposal.

4 ONE BID PER BIDDER

4.1 Each bidder shall submit only one bid. A bidder including its subsidiary or associate who submits or participates in more than one bid for the Works will be disqualified. The limitation, however, will not apply in respect of bids which include specialist sub-contractors or reputed equipment suppliers who could be used by more than one bidder.

5 COST OF BIDDING

5.1 The bidder shall bear all costs associated with the preparation and submission of his bid and the Employer will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.

6 SITE VISIT

6.1 The bidder is advised to visit and examine the Site of the Works and its surroundings and obtain for himself on his own risk and responsibility all information that may be necessary for preparing the bid and entering a Contract for construction of the Works. The costs of visiting the Site shall be at the bidder's own expense.

6.2 The bidder and any of his personnel or agents will be granted permission by the Employer to enter upon his premises and lands for the purpose of such inspection, but only upon the express condition that the bidder, his personnel and agents, will release and indemnify the Employer and his personnel and agents from and against all liability in respect thereof and will be responsible for death or personal injury to any person, loss of or damage to property and any other loss, damage, costs and expenses incurred by the Employer as a result of the inspection.

6.3 Dimensions / Distances / Levels mentioned in the Bid documents are indicative. Bidder shall confirm the same at the site after due diligence.

B. BIDDING DOCUMENTS

7 CONTENTS OF BIDDING DOCUMENTS

7.1 The bidding documents are those stated below and should be read in conjunction with any Addendum issued in accordance with Clause 9 of Section1:

VOL 1

Abstract of Bid.

Invitation for Bids

Section 1 : Instructions to Bidders

Section 2 : General Conditions of Contract

Section 3 : Special Conditions of Contract

Section 4 : Technical Specifications

Section 5 : Form of Bid, Appendix to Bid, Form of Bid Security and Qualification Information

Section 6 : Sample Forms of LOI and Agreement

Section 7 : Sample Forms of Securities

Section 8 : Bid Drawings (including List of Drawings)

Section 9 : Safety Conditions for Site Works and Standard Operating Procedures

Section 10 : Contractors Health and Safety Program

VOL 2

Section 11 : Financial Bid (Bill of Quantities)

7.2 The bidding documents including Addendum, if any, will be available for downloading from GIFTCL's website https://gift.nprocure.com. The printed hard copy of the bid documents shall not be issued.

7.3 Only one bid is to be submitted by interested bidder.

7.4 The bidder is expected to carefully examine the contents of all the above documents. Failure to comply with the requirements of bid submission will be at the bidder's own responsibility.

7.5 Pursuant to Clause 26 of Section 1, bids which are not substantially responsive to the requirements of the bidding documents will be rejected.

7.6 Conditional Bid will be out right rejected. No condition shall be included in Bid/ Tender to be submitted by the bidders.

7.7 In the event of any conflict or discrepancy within the bidding documents the order of precedence will be determined as follows:

a) In case of any inconsistency, the provisions of Section 3 (*Special Conditions of Contract*) shall take precedence and prevail over the provisions of Section 2 (*General Conditions of Contract*).

b) In case of any inconsistency, the provisions of Section 11 (*Bill of Quantities*) and Section 4 (*Technical Specifications*), together will take precedence over the provisions of Section 8 (*Bid Drawings*).

8 CLARIFICATION OF BIDDING DOCUMENTS

8.1 A prospective bidder requiring any clarification of the bidding documents may so notify the Employer in writing at the Employer's address indicated in the Invitation for Bids or on contract@giftgujarat.in.The Employer will respond to the relevant points in the pre-bid meeting, to any request for clarification which he receives earlier than **2** days prior to the date of pre-bid meeting. The response or clarification to the bid documents will be uploaded at the GIFTCL's website https://gift.nprocure.com.

9 AMENDMENT OF BIDDING DOCUMENTS

9.1 At any time prior to the last date for submission of bids, the Employer may, for any reason, whether at his own initiative or in response to clarifications sought by prospective bidder(s), modify the bidding documents by issuing addendum.

9.2 Any addendum thus issued shall be part of the bidding documents pursuant to Sub Clause 7.1 of Section 1 and shall be uploaded on the GIFTCL's website https://gift.nprocure.com, not later than 7 days prior to the last date of online submission of bid.

9.3 To afford prospective bidders, a reasonable time to take an addendum into account in preparing their bids, the Employer may extend the stipulated deadline as necessary for online submission of bids.

C. PREPARATION OF BIDS

10 LANGUAGE OF BID

10.1 The bid and all correspondences and documents related to the bid exchanged by the bidder and the Employer shall be written in the **ENGLISH** language only.

11 DOCUMENTS COMPRISING TECHNICAL BID, TENDER FEE AND BID SECURITY TO BE SUBMITTED IN PHYSICAL FORM

11.1 The documents comprising the Technical Bid to be submitted by the bidder in physical form shall comprise the following:

- Bidding documents (Sections 1 to 10) and Addendum, if any.
- Bid form and Appendix to Bid.
- Tender Fee.
- Bid Security.
- A detailed note outlining the bidder's proposed work method and construction schedule, manpower deployed, and other materials required to be completed and submitted by bidders in accordance with the Instructions to Bidders.

11.2 The Abstract of Bid and the documents listed under Section 5 shall be filled in without any change or exception, in the same format and subject to the provisions of Sub Clause 14.1 herein regarding the alternative forms of Bid Security.

11.3 **Conditional Bid:** Employer discourages stipulation of any conditions by the Bidders, as bidders are expected to accept the various provisions and conditions stipulated in the Bid documents. Conditional Bids will not be accepted. The Bidder must submit the Bid without any precondition or footnotes etc. If such conditions are stipulated their bid will be treated as **"Non-Responsive".** Any conditions of the bid documents that are required to be clarified must be raised by Bidder before 2 (days) of pre-bid meeting.

11.4 The bidder should sign & stamp all the pages of the bid documents (Volume-1) and submit in physical form on or before the last date of submission for documents in physical format.

12 FINANCIAL BID (BILL OF QUANTITIES) TO BE SUBMITTED IN ELECTRONIC FORM ONLY

12.1 The Bidders must submit Financial Bid [Volume-2 (Section 11)] in electronic format only on https://gift.nprocure.com website, on or before the last date & time for online submission. Financial Bid in physical form shall not be accepted in any case.

12.2 Prices and rates, etc. quoted by the Bidders in Financial Bid shall be **inclusive of GST** and all other taxes, duties, levies, cess etc. including the Cost of consumables, transport and all direct and indirect costs or associated costs including materials, labor, supervision of works, tools, plants and equipment used during construction, consumables such as but not limited to petrol, oil, diesel, lubricants, drill bits, pipes, ropes, etc. setting out, transport charges and all other taxes, duties, cess, royalties, octroi, any local taxes or levies payable on all transactions for due performance of work under this contract including repairs, profits, overheads, etc. and expenses associated with the works are included in the Contract Price.

12.3 The rates shall also include mobilization of equipment unless rate for such mobilization is asked for separately in the Schedule of Quantities by the Employer. Further, no mobilization advance shall be paid to the contractor.

12.4 Quoted prices and rates shall be deemed to include everything necessary to satisfactorily complete the Works as determined by the Engineer. The Contractor shall provide his own scaffolding, drilling, shoring, tarpaulins, windbreak, etc. as may be required.

12.5 The bidders shall fill in rates and prices for all items of the Works described in the Bill of Quantities (Financial Bid) in electronic format only. Items against which no rate or price is entered by the bidder shall be deemed covered by other items in the Bill of Quantities.

12.6 Prices and rates shall be firm and shall not be subject to any price variation whatsoever.

12.7 The Employer will evaluate and compare only the bids determined to be responsive in accordance with Clause 26.

12.8 Bidders, if they source materials and services from countries other than India and Overseas shall include in their quoted rates, all taxes and duties applicable in the country of origin. Bidders have to collect the required information from their own sources and Tax consultants. The rates shall also include transit insurance for safety of materials / goods / equipment in transit and any other similar contingencies.

12.9 The Contractor shall be responsible to make his own arrangement of electric power supply at his own cost including providing portable generators for construction, site lighting, office and stores enclosure lighting, construction machinery and other operations.

12.10 Contractor shall be responsible to make his own arrangement of water including potable water required for construction purposes for the work covered under the Scope of the Contract as well as for drinking purposes and for Contractor's temporary establishment at site.

12.11 The Contractor shall make his own arrangement for site office, stores, and labor camp close to the job site as possible. For labor camp and sanitary conveniences, provisions of clause 34.0 of General Conditions of Contract shall apply.

12.12 The Employer shall not supply any material required for the Works which will be arranged by the contractor.

12.13 The bidders shall have to give detailed rate analysis in justification of the prices as may be required by the Employer as a part of the evaluation process, if so desired by the Employer.

12.14 Currencies of Bid and Payment

The unit rates and prices shall be quoted by the bidder entirely in Indian Rupees only. Valuation of work, billing and payments will also be in Indian Rupees.

13 BID VALIDITY

13.1 The bid shall be kept valid by the bidders for a period of **180 (One Hundred and Eighty)** days after the stipulated last date of online bid submission and shall be extended if required as outlined in clause 13.2 below.

13.2 In exceptional circumstances, prior to expiry of the original bid validity period, the Employer may request in writing, the Bidder to extend the period of validity for a specified additional period.

14 BID SECURITY AND TENDER FEE

14.1 The Bid Security for this work shall be **Rs.60,000/- (Rupees Sixty Thousand Only)** payable on properly executed Bank Guarantee in the approved format as enclosed herewith (as referred in Section 5) from any Scheduled Commercial Banks located in India and shall be valid for **225 days** after stipulated last date of online bid submission or in form of Demand Draft / Banker's cheque / Pay Order payable at Ahmedabad in favor of "**Gujarat International Finance Tec- City Company Ltd".**

14.2 A nonrefundable Tender Fee of **Rs.10,000 (Rupees Ten Thousand Only)** including GST is payable in the form of Demand Draft / Banker's cheque / Pay Order from any Nationalized / Scheduled Bank drawn in favor of **"Gujarat International Finance Tec- City Company Ltd**", payable at Ahmedabad.

14.3 Any bid not accompanied by an acceptable Bid Security and Tender Fee shall not be opened.

14.4 The Bid Security of the unsuccessful bidder except the second lowest bidder shall be returned without interest as promptly as possible, but not later than 45 days after the expiration of the period of bid validity.

14.5 The Bid Security of the successful Bidder will be returned when the preferred/successful bidder has signed the Agreement and furnished the required performance security.

14.6 In exceptional circumstances, prior to expiry of the original Bid Security validity period, the GIFTCL may ask to the Bidder to extend the period of Bid Security validity for a specified additional period.

14.7 The Bid Security shall be forfeited:

a. If the Bidder withdraws his bid during the period of bid validity; or
b. if the Bidder does not accept the correction of his bid price, pursuant to Clause 27 and 28 of Section 1 (Instruction to Bidders); or
c. in the case of successful Bidder, if he/it fails to submit the requisite PBG and Insurance etc., within the time limit specified in the Letter of Intent (LOI) or within any extended timeline for submission thereof and sign the Agreement.

15 ALTERNATIVE PROPOSALS BY BIDDERS

15.1 Bidders shall submit offers to comply with the requirements of the bidding documents, including the Concept Plan as indicated in the Drawings and Specifications. Alternative proposals will not be considered. Attention of the bidders is drawn to Clause 26 regarding the rejection of bids which are not substantially responsive to the requirement of the bidding documents.

16 PRE-BID MEETING

16.1 The bidders who wish to submit the Bid Documents may participate in the Pre-Bid Meeting. The bidder or his/ its authorized representative may attend a pre-bid meeting which will take place on the stipulated date and time in the office of:

Gujarat International Finance Tec- City Company Ltd.

"GIFT House, Block 12, Road 1D, Zone 1, GIFT SEZ, GIFT City, Gandhinagar 382355

Ph no-079 61708300

Email: contract@giftgujarat.in

The purpose of the meeting will be to clarify issues and to answer questions which have been submitted in writing.

16.2 The bidder shall submit any questions in writing to reach the Employer not later than 2 days before the pre-bid meeting. The bidders shall bear all expenses incurred by them for attending the pre-bid meeting. Email-contract@giftgujarat.in

16.3 Minutes of the meeting, including the text of the questions raised and the response given will be uploaded on the website. Any modifications of the

bidding documents listed in Sub Clause 7.1 of Section 1, which may become necessary because of the pre-bid meeting shall be made by the Employer exclusively through the issue of an Addendum pursuant to Clause 9 of Section 1 and not through the minutes of the pre-bid meeting. The Addendum so issued will form a part of the bidding documents.

16.4 Bidders are advised to attend the pre-bid meeting to have common understanding of the issues that may be raised by the bidders. However, nonattendance at the pre-bid meeting will not be a cause for disqualification of the bidder.

17 FORMAT AND SIGNING OF BID

17.1 The bidder shall prepare and submit one original and one copy of the bid documents (Volume-1) duly signed as described in Clause 11 of these Instructions to Bidders and clearly mark “ORIGINAL” and “COPY”. In the event of discrepancy between them, ORIGINAL shall prevail.

17.2 The original and copy of the bid shall be typed or written in indelible ink (in the case of copy, Photostats are also acceptable) and shall be signed by a person duly authorized to sign on behalf of the bidder. All pages of both the copies of the bid and bid drawings shall be signed by the person signing the bid.

17.3 The bid shall contain no alterations, omissions, or additions, except those to comply with instructions issued by the Employer or as necessary to correct errors made by the bidder, in which case such corrections shall be signed by the person signing the bid.

17.4 Bid document means the Bid Documents uploaded by the Employer on website https://gift.nprocure.com.

D. SUBMISSION OF BIDS

18 SEALING AND MARKING OF BIDS

18.1 The Financial Bid submitted by an individual/ proprietor, shall be digitally signed by the individual/ proprietor. The Financial Bid submitted by a partnership firm/ company/ corporation, shall be digitally signed by the partner or authorized signatory holding Power of Attorney/ Board Resolution, as the case may be.

18.2 Each bidder shall submit only one bid. A bidder, who submits and/ or participates in more than one bid, will be disqualified.

18.3 A Bidder shall submit the Financial Bid in electronic form and the Technical bid documents along with Bid Security & Tender Fee in the physical form, in the manner as prescribed in this bidding documents. The bid documents shall be submitted in two separate sealed envelopes placed under one large cover-Envelop as under:

A. Envelope No. 1 (Bid Security and Tender Fee)

First Envelope clearly marked as "**Bid Security and Tender Fee**" shall contain original and one copy of instrument of Bid Security & Tender Fee

B. Envelope No.2 (Technical Bid)

Second envelope clearly marked as "Technical Bid" shall contain original and one copy each of the following documents.

1. Copies of documents as asked in Clause 3.2 (a) to 3.2 (j) of Instructions to Bidders.
2. Vol-1 of the Bid Documents duly initialed on each page by the authorized signatory of the Bidder

The Tender Fee & Bid Security will be marked "ENVELOPE-1" and the Technical Bid will be marked "ENVELOPE-2".

18.4 Submission of Bid

18.4.1 The bidder should submit the Financial Bid in electronic format only on the website https://gift.nprocure.com on or before the last date of online bid submission, as mentioned in the Abstract.

18.4.2 The Financial Bid received in physical form, will not be accepted.

18.4.3 The Employer at its sole discretion can extend the last date for online submission of bids by amending the bidding document in which case all rights and obligations of the Employer and bidder will thereafter be subject to the date as extended.

Bidders will have to submit the Bid security and tender fee in a separate sealed envelope **(Envelope-1: Tender Fee & Bid Security)** and other documents of

technical Bid in another sealed envelope (Envelope-2: Technical Bid). Each cover must clearly be marked with the contents i.e., “Technical Bid” and “Tender Fee & Bid Security”.

18.5 The two sealed envelopes (Envelope No. 1: Tender Fee & Bid Security) and (Envelope No.2: Technical Bid) shall be put together in one common cover which will be sealed.

18.6 The name of the Works and Bid Reference number shall be written in BOLD letters on the outermost envelope for Bid Submission.

18.7 The full name and address of the Bidder shall be written on the bottom left-hand corner.

18.8 No bid shall be accepted unless it is properly sealed. Bidders shall not be allowed to fill in or seal their bids at the Employers office.

18.9 All envelopes shall indicate the name and address of the bidder.

18.10 All envelopes shall be addressed to the Employer at the following address:

The Managing Director & Group CEO
Gujarat International Finance Tec- City Company Ltd.

“GIFT House, Block 12, Road 1D, Zone 1, GIFT SEZ, GIFT City, GANDHINAGAR 382355
and shall bear the following identification:

Project: Gujarat International Finance Tec-City (Non SEZ Area)

Name of the Contract: **“Supply, Installation, Testing, Commissioning, Training and Maintenance of CCTV Infrastructure at Various Places in DTA area of GIFT City”**

18.11 If envelopes are not sealed and not marked as above, the Employer will assume no responsibility for the misplacement or premature opening of the bid. In that case, this will be recorded at the time of opening of bids and liable for rejection.

18.12 The Technical bid documents in physical format may be submitted in person or by courier/ speed post/ registered post only before the last date of submission

of Technical Bid. However, GIFTCL shall not be responsible for any delay in receipt of the bid documents.

19 DEADLINE (Due date) FOR SUBMISSION OF BIDS

19.1 The Financial Bid in electronic form should be submitted on or before the last date of online submission of Financial Bid.

19.2 The Technical Bid and the original instruments of Tender Fee and Bid Security should be submitted at the specified address on or before the last date and time of physical submission of technical bid. In the event of the specified date for submission being declared as holiday for the Employer the bids shall be received by the Employer at the appointed time and location on the next working day.

19.3 The Employer may at its sole discretion, extend the deadline for submission of bids, communication of which will be made to the bidders through online.

20 LATE BIDS

20.1 The system will not accept any Financial Bid after the due date and time.

20.2 Bidders shall be fully responsible to ensure that their Financial Bids are submitted on or before the stipulated date & time and the Technical Bid in physical form to reach at GIFTCL's office well within stipulated date & time.

21 MODIFICATION AND WITHDRAWAL OF BIDS

21.1 The bidders can edit their Financial Bids any number of times before the last date & time of online submission of bid. Thereafter bids cannot be edited or amended, in any case. No written or online request in this regard shall be granted.

21.2 No bid shall be modified or withdrawn by the bidder after the last date and time of submission of online bids.

E. BID OPENING AND EVALUATION

22 BID OPENING –

The designated officer of the Employer will open the E-tender on the date as mentioned in the Bid, if possible, in its office at the address specified in the tender/ bid document. The intending Bidders, if they wish may participate in E-

tender opening process and view the result on https://gift.nprocure.com to participate in E-tender opening, bidder will have to log in with his user ID and password and click on “Mark my attendance button” to view tender result.

23 TECHNICAL BID (Envelope No. 2)

23.1 The designated officer of GIFTCL will first open Envelope No.1 containing Tender Fee & Bid Security and after being satisfied with proper submission, will open Envelope No.2 (Technical Bid). The Employer will carry out a detailed evaluation of the documents in order to determine whether the bidders are qualified and whether the technical aspects are substantially responsive to the requirements set forth in the bidding documents. In order to reach such a determination, the Employer will examine the information supplied by the Bidders and other requirements in the bidding documents, taking into account the factors viz. qualification/ eligibility criteria and overall completeness and compliance as per the Employer’s requirements.

23.2 The bidders' names, technical bid modifications and withdrawals, the submission or non-submission of bid security and/or tender fee and such other details as the Employer may consider appropriate, will be announced, and recorded by the Employer at the time of Bid opening.

23.3 The Employer shall prepare, for their own records minutes of the proceeding of Bid opening, including the information disclosed to the bidders’ representatives in accordance with Clause 23.2 hereinabove.

23.4 If the documents contained in this envelope do not meet the requirements of the Invitation to Bid, a note will be recorded by the Bid Opening authority of the Employer.

23.5 The Employer shall have the right to reject the bid if it is not submitted as per the requirements of clause 17 and clause 18 of Section 1 (Instructions to Bidders).

23.6 The bidder shall be qualified on the basis of information furnished by the bidder, in support of his capability and eligibility criteria laid down under this Section 1.

23.7 During the process of evaluation Employer may visit and inspect the works carried out by the bidder in order to assess the performance of the work. The bidder shall have to make arrangement for inspection of work at the respective

work site only. This shall also be considered for evaluation with reference to performance of the bidder.

23.8 Depending upon the actual bid capacity assessed and other qualifying requirements, the bidder will be qualified for the work. However, at the bid evaluation stage, a careful check of the appropriate references with reference to the information submitted by the bidder will be done and in no case, a contract will be awarded to a bidder lacking in the financial criteria.

24 PROCESS TO BE CONFIDENTIAL

24.1 Information relating to the examination, clarification, evaluation and comparison of bids and recommendations for the award of the Contract shall not be disclosed to bidders. Any effort by a bidder to influence the Employer's processing of bids or award decisions may result in the rejection of his bid.

24.2 Bids shall be deemed to be under consideration from the date of opening of the technical bids until award of the Contract is made.

25 CLARIFICATION OF TECHNICAL BIDS

25.1 To assist in the examination, evaluation and comparison of the technical bids, the Employer may, at its discretion, ask any bidder any clarification on his technical bid. The request for clarification and the response shall be in writing, but no change in the price or substance of the bid will be sought, offered, or permitted except as required to confirm the correction of arithmetic errors.

25.2 During the evaluation of the technical bids, the Employer may ask for following additional documents to assess the capability of bidder to execute and complete the work as per specified time limit and specified technical specifications:

a) Proposed general program / method statements in sufficient detail to demonstrate the adequacy of the bidder's proposals to meet the technical specifications and the completion time.

b) an Organization Chart of administration and execution of this contract showing the deployment of key personnel at Site with individual tasks.

c) Reasonability of bidder's proposed method and technique of construction, construction program, sequence of components of the

work and proposed resources assigned to the work shall be seen where it has been called for in the bid/ tender.

26 EXAMINATION OF BIDS AND DETERMINATION OF TECHNICAL RESPONSIVENESS

26.1 The Employer will determine whether each bid -

i. meets the eligibility criteria.

ii. has been properly signed.

iii. is accompanied by the required Bid security and tender fee.

iv. is nonresponsive / substantially responsive to the requirement of the bid documents; and

v. Provides any clarification and/or substantiation that the Employer may require pursuant to Sub-Clause 25.2.

26.2 A substantially responsive bid is one, which to the satisfaction of the Employer conforms to all the terms, conditions, and specifications of the bid documents, without material deviation or reservation. A material deviation or reservation is one -

i. which affects in any substantial way the scope, quality, or performance of the Works; or

ii. which limits in any substantial way, inconsistent with the bid documents, the Employer's rights, or the bidder’s obligations under the Contract; or

iii. The rectification of which (deviation or reservation) would affect unfairly the competitive position of other bidders presenting substantially responsive bids.

26.3 If a bid is not substantially responsive, even after obtaining clarifications from the Bidder it will not be considered by the Employer and may not subsequently be made responsive by correction or withdrawal of the non-conforming deviation or reservation.

26.4 As a result of the technical evaluation, the Bids which are substantially responsive shall be shortlisted.The Financial Bids of the substantially

responsive and technically qualified bidders only shall be opened on the date of opening of Financial Bids which will be informed to those bidders.

26.5 The Employer reserves the right to reject any variation, deviation, or any alternate offer.

27 BID OPENING – FINANCIAL BID

27.1 The rates and prices in Bill of Quantities (Financial Bid) shall be submitted in the electronic formats on the website https://gift.nprocure.com. Rates and prices received in any other formats will not be accepted and the Bids will be disqualified.

27.2 Each item is to be individually priced in Bill of Quantities and total sum of such quoted price of each item shall be considered to derive the total price of Financial Bid.

27.3 The Financial Bid of only technically qualified bidders shall be opened on a date to be notified to those bidders. On the notified date, time and place, the designated officer of the Employer will open the Financial Bid. The qualified bidders or their authorized representatives, if they wish, may remain present at the time of Financial Bid opening or they will have to log in with his user ID and password and click on “Mark my attendance button”.

27.4 The Employer shall prepare for their own records, minutes of the opening of the Financial Bids, including the information disclosed to the bidders’ representatives.

27.5 The Financial Bids will be opened online irrespective of the presence of the Bidder.

28 CLARIFICATION OF FINANCIAL BIDS

28.1 To assist in the examination, evaluation and comparison of Financial Bids, the Employer may, at its discretion, ask any bidder for clarification of his Financial Bid including break up of unit prices / rates. The request for clarification and response shall be in writing or by facsimile, but no change in the price or substance of the bid shall be sought, offered, or permitted. The response sent by facsimile shall be followed by a signed confirmatory copy by post.

28.2 Any attempt by the bidder to modify any prices / rates or substance of the bid after the submission of Bids may cause rejection of his bid and forfeiture of the bid security as provided in clause 14.7 (b).

29 CORRECTION OF ERRORS

29.1 Not Applicable

30 EVALUATION AND COMPARISON OF BIDS

30.1 The Employer will evaluate and compare only the bids determined to be responsive and technically qualified.

30.2 Quoted price rates in Bill of Quantities shall have to be reasonable and competitive to meet with the timely and satisfactory performance of the contract.

30.3 No column in the Bill of Quantities shall be left blank. In case the price is not quoted for any item, the bidder shall be deemed to have covered the cost of such items (according to the requirements of the bid document) elsewhere in the prices quoted for other items and no extra payment on this account will be made. For evaluation purpose the rate of such item will be considered zero to sum up the price of that part.

30.4 Prices quoted by the bidder shall be firm for the entire period of Contract including defect liability period without any escalation.

30.5 If the bid of the preferred bidder is seriously unbalanced in relation to the Engineer's estimate of cost of the Works (i.e. less than 20%), the Employer may require the bidder to produce detailed price analysis for any or all items of the Financial Bid (Bill of Quantities), to demonstrate the internal consistency of those prices with the construction methods and schedule proposed. However, such information will not have any bearing in valuation of any variation or claim during the execution of the bids. In that case, after evaluation of the price analysis, the Employer may require that the amount of the performance security set forth in Clause 36 herein below be increased by an amount to be specified by the Employer and accepted by such bidder only after which the LOI shall be issued to such preferred bidder. The amount so specified shall be sufficient to financially protect the Employer in the event of default of the preferred bidder under the Contract. In case, such bidder does not accept to provide the

performance bank guarantee for additional/ increased amount, the amount so specified shall be deducted from the running bills as additional security. This security will be released after issue of taking over certificate by the Employer.

30.6 In case of individual item/items of the Financial Bid of the preferred bidder, having impact of more than 5% of the Estimated cost of work and are unrealistically low priced with respect to the estimated rates, the Employer may seek the clarification from the Bidder. In case the clarification is not justified in the opinion of the Employer, the amount of the performance security set forth in Clause 36 may be increased by an amount to be specified by the Employer. The amount so specified shall be sufficient to financially protect the Employer in the event of default of the preferred bidder under the Contract and LOI shall be issued to such preferred bidder only after acceptance for additional Performance Bank Guarantee. In case, such bidder does not accept to provide the performance bank guarantee for additional/ increased amount, the amount so specified shall be deducted from the running bills as additional security. This security will be released after issue of taking over certificate by the Employer.

30.7 In case of unrealistically high price of any individual or more items, the preferred bidder may be advised for proper justification with breakup/backup calculation of the rates of individual Item/Items. Based on the justification submitted by the Bidder, Employer may suggest suitable changes in Payment terms and condition of individual item/items or any other suitable action to the satisfaction of the Employer. The LOI shall be issued to the preferred Bidder only after accepting the additional terms and condition as imposed by Employer.

In any of the above conditions, price analysis provided by the bidder cannot be substantiated satisfactorily, the Employer reserves the rights to reject the bid of preferred bidder without assignment any reason whatsoever.

F. AWARD OF CONTRACT

31 AWARD

31.1 Subject to Clause 32 below, the Employer may award the Contract to the Preferred Bidder.

31.2 The “Preferred Bidder” will be selected; -

a) Whose bid has been determined to be responsive to the bidding documents.

b) On the pass / fail basis on evaluation of their qualification parameters (Technical & Financial eligibility criteria).

c) The financial bid of only those bidders who qualifies in the above will be opened.

d) The Employer may award the Contract to the bidder whose bid has been determined to be responsive to the bidding documents and who has offered the lowest Financial Bid, subject however, the same is found workable (“the Preferred Bidder”).

32 EMPLOYER'S RIGHT TO ACCEPT ANY BID AND TO REJECT ANY OR ALL BIDS

32.1 Notwithstanding Clause 31 above, the Employer reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids, re-tendering, reverse bidding at any time prior to award of the Contract, without incurring any liability or any obligation to inform to the affected bidder or bidders of the grounds for the Employer's action.

33 NOTIFICATION OF AWARD

33.1 Prior to expiration of the period of bid validity, the Employer will notify the Preferred/successful bidder by E-mail, followed by letter that his bid has been accepted. This Letter of Award/ Letter of Intent shall contain the contract price which the Employer will pay to the contractor in consideration of execution, completion and remedying any defects of the works by the contractor (as provided in the Bid Document), evaluated by the Employer and provided in the bid document.

33.2 The Letter of Award / Letter of Intent will mean that the process of formation of the contract is initiated.

33.3 After furnishing by the Preferred Bidder/ successful bidder the required Performance Security, the Employer will notify all other bidders except the second lowest bidder, that their bids have been unsuccessful and there upon return their Bid Security.

33.4 The Bid Security of the second lowest bidder that had been retained would be returned after three months from the Award of Contract to the Preferred Bidder.

34 SIGNING OF AGREEMENT

34.1 At the time that the Employer notifies the Preferred Bidder that his Bid has been accepted, the Employer will send the bidder, the Agreement based on the format provided in the bidding documents, incorporating therein specific agreement reached between the parties.

34.2 Within 15 days of issue of the Letter of Intent (LOI) or as decided by Employer, the Employer shall prepare the Agreement, in duplicate, on non-judicial Stamp Paper of Rs.300/- (Rupees Three hundred only) and the Preferred/Successful Bidder shall meet the Employer during normal office hours on any working day to furnish the Performance Security as per Clause 36 herein below and to sign the said Agreement. One copy of the signed Agreement will be provided to the Contractor, and the other will be retained by the Employer.

35 The Engineer will issue the “Notice to Commence” to the Contractor upon signing of the Agreement or on such other day the Employer may decide.

36 PERFORMANCE SECURITY

36.1 Within 15 days of receipt of the Letter of Intent (LOI), the Preferred Bidder shall furnish to the Employer a performance security as per clause 10.1 of Section 2 (*General Conditions of Contract*) in the form of an unconditional bank guarantee/FDR for an amount of minimum **10 (Ten)** percent of the Contract Price issued by any Scheduled Commercial Bank located in India. The form of Performance Security provided in Section 7 of the bidding documents shall be adopted. The Bank Guarantee shall be initially kept valid until the successful completion of contract duration plus defect liability period of the Contract plus three (3) months as mentioned in the Appendix to Bid.

36.2 Failure of the Preferred Bidder to comply with the requirements of Clause 34 and/or Sub-Clause 36.1 referred above shall constitute sufficient grounds for the annulment of the award of contract and forfeiture of the Bid Security.

37 CORRUPT AND FRADULENT PRACTICES

37.1 GIFTCL requires bidders to observe the highest standard of ethics and performance during the procurement and execution of the project and the works.

37.2 Canvassing in any form is strictly prohibited and any Bidder found to have resorted to canvassing shall be liable to have his Bid rejected summarily.

I / We hereby declare that I/We have read and understood the above instructions for the guidance of Bidders.

Place:

Date: Signature of Bidder

SECTION 2

GENERAL CONDITIONS OF CONTRACT (GCC)

SECTION 2: GENERAL CONDITIONS OF CONTRACT (GCC)

CONTENTS

SECTION 2: GENERAL CONDITIONS OF CONTRACT

DEFINITIONS AND INTERPRETATION

1.1 Definitions

In the Contract (as hereinafter defined) the following words and expressions shall have the meanings hereby assigned to them, except where the context otherwise requires:

(a) (i) "Employer" means **Gujarat International Finance Tec- City Company Ltd** (GIFTCL) having office at **"EPS - Building no. 49A, block 49, Zone 04, Gyan Marg, GIFT City, Gandhinagar – 382355"** represented through its Managing Director & Group CEO and includes its successor(s) in interest.

(ii) "Contractor" means the person (legal or natural) who has been issued Letter of Award and who entered with an agreement with GIFTCL and includes its successor(s) in interest with the consent of the Employer.

(iii) "Subcontractor" means any person named in the Contract as Subcontractor for a part of the Works or any person to whom a part of the Works has been subcontracted with the consent of the Engineer.

(iv) "Engineer-in-Charge" means the person appointed by the Employer to act as Engineer-in-Charge for the purpose of the Contract, or any other competent person appointed by the Employer and notified to the Contractor to act in replacement to such person and shall include his authorised representative.

(v) "Engineer" means the person appointed by the Employer to act as Engineer for the purposes of the Contract, or any other competent person appointed by the Employer and notified to the Contractor to act in replacement to such person and shall include his authorised representative.

(vi) "Engineer's Representative" means a person appointed from time to time by the Engineer with the approval of Engineer-in-Charge as specified under Sub-Clause 2.2.

(b) (i) "Contract" means these General Conditions, the Special Conditions, the Specifications, the Drawings, the Bill of Quantities, the Bid, the Letter of Award, and such further documents as may be expressly incorporated in the Letter of Award or Contract Agreement as the case may be.

(ii) "Specification" means the specification of the Works included in the Contract and any modification thereof or addition thereto made by the Engineer or submitted by the Contractor and approved by the Engineer.

(iii) "Drawings" means all drawings provided by the Engineer to the Contractor under the Contract and all drawings, calculations, samples, patterns, models, operation and maintenance manuals and other technical information of a like nature submitted by the Contractor and approved by the Engineer.

(iv) "Bill of Quantities" means the priced and completed bill of quantities forming part of the Bid.

(v) “Bid” means the Contractor’s priced offer to the Employer for the execution and completion of the Works and the remedying of any defects therein in accordance with the provisions of the Contract, as accepted by the Letter of Award. The word ‘Tender’ is synonymous with ‘Bid’ and the word ‘Tender Documents’ with ‘Bidding Documents’.

(vi) “Letter of Award” means the formal acceptance of the bid by the Employer.

(vii) “Contract Agreement” means the Contract Agreement (if any) referred to in Sub-Clause 9.1.

(viii) “Appendix to Bid” means the appendix comprised in the form of Bid annexed to these Conditions.

(c) (i) “Commencement Date” means the date specified in the notice to commence issued by the Engineer to the Contractor.

(ii) “Time for Completion” means the time for completing the execution of and passing the Tests on Completion of the Works or any Section or part thereof as stated in the Contract (or as extended by the Employer) calculated from the Commencement Date.

(d) (i) “Tests on Completion” means the tests specified in the Contract or otherwise agreed by the Engineer and the Contractor which are to be made by the Contractor before the Works or any Section or part thereof are taken over by the Employer.

(ii) “Taking-Over Certificate” means a certificate issued pursuant to Sub-Clauses 48.1 to 48.5.

(e) (i) “Contract Price” means the sum stated by the Employer in the Letter of Award as payable to the Contractor for the execution and completion of the Works and the remedying of any defects therein in accordance with the provisions of the Contract.

(ii) “Retention Money” means the aggregate of all moneys retained by the Employer pursuant to Sub-Clause 60.5.

(f) (i) “Works” means the works covered under the scope of the contract including Permanent Works and the Temporary Works or either of them as appropriate.

(ii) “Permanent Works” means the permanent Works to be executed (including Plant) in accordance with the Contract.

(iii) “Temporary Works” means all temporary Works of every kind (other than Contractor’s Equipment) required in or about the execution and completion of the Works and the remedying of any defects therein.

(iv) “Plant” means machinery, apparatus and the like intended to form or forming part of the Permanent Works.

(v) “Contractor’s Equipment” means all appliances and things of whatsoever nature (other than Temporary Works) required for the execution and completion of

the Works and the remedying of any defects therein, but does not include Plant, materials or other things intended to form or forming part of the Permanent Works.

(vi) "Section" means a part of the Works specifically identified in the Contract as a Section.

(vii) "Site" means the places provided by the Employer where the Works are to be executed and any other places as may be specifically designated in the Contract as forming part of the Site.

(g) (i) "Cost" means all expenditures properly incurred or to be incurred, whether on or off the Site, including overhead and other charges properly allocable thereto but does not include any allowance for profit.

(ii) "Day" means calendar day and "year" means 365 days.

(iii) "Writing" means any handwritten, type written, or printed communication, including telex, cable, facsimile and e-mail transmission.

(h) "Facilities" means the Plant and Equipment to be supplied and installed, as well as the Services to be provided by the Contractor under the Contract.

(i) "Plant and Equipment" means plant, equipment, machinery, apparatus, articles and things for 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 but does not include Contractor's Equipment.

(j) "Installation Services" means all those services ancillary to the supply of Plant and Equipment for the Facilities, e.g. transportation and provision of marine or other similar insurance, inspection, expediting, Site preparation works (including the supply of all Construction materials required), installation including the supply of all Construction materials required), installation including Civil Works, testing, pre-commissioning, commissioning, the provision of operations and maintenance manuals, training etc.

(k) "Pre-commissioning" means testing, checking and other works specified in the Technical Specifications which are to be carried out by the Contractor in preparation for Commissioning as provided in Clause GCC 85 hereof.

(L) "Commissioning" means Trial operation of the Facilities or any part thereof by the Contractor (in terms of Clause GCC 86) following Completion.

(m) "Guarantee Test(s)" means the test(s) specified in the Technical Specifications to be facilitated by the Employer to ascertain whether the Plant or a specified part thereof is able to attain the Functional Guarantees specified in the Technical Specifications in accordance with the provisions of Clause GCC 86 hereof.

(n) "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 fulfilment of the Contract in respect of Commissioning of the Facilities (or the relevant part thereof) in accordance with the provisions of Clause GCC 86.

"Operation & Maintenance (O&M) Services" means all those services required for proper and efficient O&M of the Facilities in accordance with provisions of Clause GCC 86.

(o) "Guarantee/Efficiency Acceptance" means the acceptance of the Facilities by the Employer upon successful completion of all such tests as specified in Technical Specifications to be performed at site on the Facilities".

(p) "Final Acceptance/Employer's Acceptance" means the taking over/final acceptance of the Facilities by the Employer upon successful completion of all the tests as specified in Technical Specifications to be performed at site prior to the completion of period for O&M services on the Facilities.

(q) "Defect Liability Period" means and includes the period of validity of the warranties given by the Contractor which includes manufacturers guarantees commencing at successful completion of Commissioning (Trial Operation) 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 GCC 49 (Defect Liability) hereof.

"Drawings", "Plans" shall mean and include all:

a) Drawings furnished by the Employer/Consultant as a basis for bid.

b) Supplementary drawings furnished by the Employer/Consultant to clarify and to define in greater detail the intent of the Contract.

c) Drawings submitted by the contractor with his bid provided such drawings are acceptable to the Employer/Consultant.

d) Drawings furnished by the Employer/Consultant to the Contractor during the progress of the work; and

e) Engineering data and drawings submitted by the Contractor during the progress of the work provided such drawings are acceptable to the Engineer.

"GC" means the General Conditions hereof.

1.2 Headings and Marginal Notes

The headings and marginal notes in these Conditions shall not be deemed part thereof or be taken into consideration in the interpretation or construction thereof or of the Contract.

1.3 Interpretation

Words importing persons or parties shall include firms, corporations and/or any legal entity or any organisation having legal identity.

1.4 Singular and Plural

Words importing the singular shall include the plural and vice versa where the context so requires.

1.5 Notices, Consents, Approvals, Certificates and Determinations

Wherever in the Contract provision is made for the giving or issue of any notice, consent, approval, certificate or determination by any person, unless otherwise specified such notice, consent, approval, certificate or determination shall be made in writing and the words “notify”, “certify” or “determine” shall be made construed accordingly. Any such consent, approval, certificate or determination shall not unreasonably be withheld or delayed.

ENGINEER-IN-CHARGE, ENGINEER AND ENGINEER’S REPRESENTATIVE

2.1 (i) Engineer-in-Charge Duties and Authority

(a) The Engineer-in-Charge shall represent and act for the Employer at all times during the currency of the contract. All notices, instructions, orders, certificates, approvals and all other communications including the contract administration under the Contract shall be given by the Engineer-in-charge as delegated to him by the Employer.

(ii)Engineer’s Duties and Authority

(a) The Engineer shall carry out the duties specified in the Contract.

(b) The Engineer may exercise the authority specified in or necessarily to be implied from the Contract, provided, however, that if the Engineer is required, under the terms of his appointment by the Employer, to obtain the specific approval of the Employer before exercising any such authority, particulars of such requirements shall be set out in Special Conditions of Contract Provided further that any requisite approval shall be deemed to have been given by the Employer for any such authority by the Engineer.

(c) Except as expressly stated in the Contract, the Engineer shall have no authority to relieve the Contractor of any of his liabilities and obligations under the Contract without requisite approval of the Employer.

2.2 Engineer’s Representative

The Engineer’s Representative shall be appointed by and be responsible to the Engineer and shall carry out such duties and exercise such authority as may be delegated to him by the Engineer under Sub-Clause 2.3.

2.3 Engineer’s Authority to Delegate

The Engineer may from time-to-time delegate to the Engineer’s Representative any of the duties and authorities vested in the Engineer and he may at any time revoke such delegation. Any such delegation or revocation shall be in writing and shall not take effect until a copy thereof has been delivered to the Employer and the Contractor. Any communication given by the Engineer’s Representative to the Contractor in

accordance with such delegation shall have the same effect as though it had been given by the Engineer. Provided that:

(a) any failure of the Engineer's Representative to disapprove any work, materials or Plant shall not prejudice the authority of the Engineer to disapprove such work, materials or Plant and to give instructions for the rectification thereof;

(b) if the Contractor questions any communication of the Engineer's Representative he may refer the matter to the Engineer who shall confirm, reverse or vary the contents of such communication.

2.4 Appointment of Assistants

The Engineer or the Engineer's Representative may appoint any number of persons to assist the Engineer's Representative in the carrying out of his duties under Sub-Clause 2.2. He shall notify to the Contractor the name, duties and scope of authority of such persons. Such assistants shall have no authority to issue any instructions to the Contractor save in so far as such instructions may be necessary to enable them to carry out their duties and to secure their acceptance of materials, Plant or workmanship as being in accordance with the Contract, and any instructions given by any of them for those purposes shall be deemed to have been given by the Engineer's Representative.

2.5 Instructions in Writing

Instructions given by the Engineer having financial or legal implications shall be in writing, provided that if for any reason the Engineer considers it necessary to give any such instruction orally, the Contractor shall comply with such instruction. Confirmation in writing of such oral instruction given by the Engineer, whether before or after the carrying out of the instruction, shall be deemed to be an instruction within the meaning of this Sub-Clause. Provided further that if the Contractor, within 7 days, confirms in writing to the Engineer any oral instruction of the Engineer and such confirmation is not contradicted in writing within 7 days by the Engineer, it shall be deemed to be an instruction of the Engineer.

The provisions of this Sub-Clause shall equally apply to instructions given by the Engineer's Representative and any assistants of the Engineer or The Engineer's Representatives pursuant to Sub-Clause 2.4.

2.6 Engineer to Act Impartially.

Wherever, under the Contract, the Engineer is required to exercise his discretion by:

a) giving his decision, opinion or consent, or

b) expressing his satisfaction or approval, or

c) determining value, cost or extension of time, or

d) otherwise taking action which may affect the rights and obligations of the Employer or the Contractor,

he shall exercise such discretion impartially within the terms of the Contract.

ASSIGNMENT AND SUBCONTRACTING

3.1 Assignment of Contract

The Contractor shall not, without the prior and express consent of the Employer (which consent notwithstanding the provisions of Sub-Clause 1.5 shall be at the sole discretion of the Employer), assign the Contract or any part thereof, or any benefit or interest therein or thereunder, otherwise than by

(a) A charge in favor of Contractors, bankers, of any monies due or to become due under the Contract, or

(b) assignment to the Contractor's insurers (in cases where the insurers have discharged the Contractor's loss or liability) of the Contractor's right to obtain relief again any other party liable.

4.1 Subcontracting

No sub-contracting shall be permitted other than vendor supply items with installations and commissioning, which shall be done with the prior consent of the Engineer. Any such consent shall not relieve the Contractor from any liability or obligation under the Contract in respect of or in relation to the subcontracted works and he shall be responsible for the acts, defaults and neglects of any Subcontractor, his agents, servants or workmen as fully as if they were the acts, defaults or neglects of the Contractor, his agents, servants or workmen.

Provided that the Contractor shall not be required to obtain such consent for:

a) the provision of labour, or

b) the purchase of materials which are in accordance with the standards specified in the Contract, or

c) the subcontracting of any part of the Works for which the Subcontractor is named in the Contract.

4.2 Assignment of Subcontractor's Obligation

In the event of a Subcontractor having undertaken towards the Contractor in respect of the work executed, or the goods, materials, Plant or services supplied by such Subcontractor, any continuing obligation extending for a period exceeding that of the Defects Liability Period under the Contract, the Contractor shall at any time, after the expiration of such Period, assign to the Employer, at the Employer's request and cost, the benefit of such obligation for the unexpired duration thereof.

CONTRACT DOCUMENTS

5.1 Language and Law

(a) The **English** language only shall be used in the Contract documents and all official correspondence.

(b) Laws which shall apply to the Contract and according to which the Contract shall be construed shall be the laws of India.

5.2 Priority of Contract Documents

The several documents forming the Contract are to be taken as mutually explanatory of one another, but in case of ambiguities or discrepancies/ inconsistencies the same shall be explained and adjusted by the Engineer who shall thereupon issue to the Contractor instructions thereon and in such event, unless otherwise provided in the Contract, the following documents forming the Contract override the next below and following documents given hereunder in sequential order shall be as follows:

(1) The Contract Agreement

(2) The Letter of Award

(3) The Bid

(4) Section 3, Special Conditions of Contract

(5) Section 2, General Conditions of Contract

(6) Section 11, Priced Bill of Quantities

(7) Section 4, Technical Specifications

(8) Section 8, Bid Drawings

However, the Contract Documents are complementary. Anything mentioned in the specification and not shown on the drawing or shown on the drawings and not mentioned in the specifications, shall have the effect as if they are mentioned in both unless such a meaning lead to repugnancy.

DRAWINGS AND DOCUMENTS

6.1 Custody and Supply of Drawings and Documents

The Drawings shall remain in the sole custody of the Engineer, but two copies thereof shall be provided to the Contractor free of charge. The Contractor shall make at his own cost any further copies required by him. Unless it is strictly necessary for the purposes of the Contract, the drawings, Specifications and other documents provided by the Employer or the Engineer shall not, without the consent of the Engineer, be used or communicated to a third party by the Contractor. Upon issue of the Defects Liability Certificate, the Contractor shall return to the Engineer all Drawings, Specifications and other documents provided under the Contract.

The Contractor shall supply to the Engineer four copies of all Drawings, Specifications and other documents submitted by the Contractor and approved by the Engineer in accordance with Sub-Clauses 7.1 to 7.3, together with a reproducible copy of any material which cannot be reproduced to an equal standard by photocopying. In addition the Contractor shall supply such further copies of such Drawings, Specifications and

other documents as the Engineer may request in writing for the use of the Employer, who shall pay the cost thereof.

6.2 One Copy of Drawings to be kept on Site

Two copies of Drawings, provided to or supplied by the Contractor as aforesaid, shall be kept by the Contractor on the Site and the same shall at all reasonable times be available for inspection and use by the Engineer and by any other person authorised by the Engineer in writing.

6.3 Disruption of Progress

The Contractor shall give notice to the Engineer, with a copy to the Employer, whenever planning or execution of the Works is likely to be delayed or disrupted unless any further drawing or instruction is issued by the Engineer within a reasonable time. The notice shall include details of the drawing or instruction required and why and by when it is required and of any delay or disruption likely to be suffered if it is late.

6.4 Delay and Cost of Delay of Drawings

If, by reason of any failure or inability of the Engineer to issue, within a time reasonable in all the circumstances, any drawing or instruction for which notice has been given by the Contractor in accordance with Sub-Clause 6.3, the Contractor suffers delay then if so requested by the Contractor the Engineer shall, after due consultation with the Employer and the Contractor, determine any extension of time to which the Contractor is entitled under Sub-Clauses 44.1 to 44.3, and shall notify the Contractor accordingly, with a copy to the Employer. Any price adjustment which may be applicable for such time extension granted by the Engineer will be determined in accordance with the provision of Sub-Clauses 70.1 to 70.8.

6.5 Failure by Contractor to Submit Drawings

If the failure or inability of the Engineer to issue any drawings or instructions is caused in whole or in part by the failure of the Contractor to submit Drawings, Specifications or other documents which he is required to submit under the Contract, the Engineer shall take such a failure or inability caused by the Contractor into account when making his determination pursuant to Sub Clause 6.4.

7.1 Supplementary Drawings and Instructions

The Engineer shall have authority to issue to the Contractor, from time to time, such supplementary Drawings and instructions as shall be necessary for the purpose of the proper and adequate execution and completion of the Works and the remedying of any defects therein. The Contractor shall carry out and be bound by the same.

7.2 Permanent Works Designed by Contractor

Where the Contract expressly provides that part of the Permanent Works shall be designed by the Contractor, he shall submit to the Engineer, for approval:

(a) such Drawings, Specifications, Calculations and other information as shall be necessary to satisfy the Engineer as to the suitability and adequacy of that design, and

(b) Operation and Maintenance manuals, together with Drawings of the Permanent Works as completed, in sufficient detail to enable the Employer to operate, maintain, dismantle, reassemble and adjust the Permanent Works incorporating that design.

The Works shall not be considered to be completed for the purpose of taking over in accordance with Sub-Clauses 48.1 to 48.5 until such Operation and Maintenance manuals together with "As-built" Drawings on completion, have been submitted to and approved by the Engineer.

7.3 Responsibility Unaffected by Approval

Approval by the Engineer, in accordance with Sub-Clause 7.2, shall not relieve or absolve the Contractor of any of his obligations and responsibilities under the Contract.

GENERAL OBLIGATIONS

8.1 Contractor's General Responsibilities

The Contractor shall, with due care and diligence, design (to the extent provided for by the Contract), execute and complete the Works and remedy any defects therein in accordance with the provisions of the Contract. The Contractor shall provide all superintendence, labour, materials, Plant, Contractor's Equipment and all other things, whether of a temporary or permanent nature, required in and for such design, execution, completion and remedying of any defects, so far as the necessity for providing the same is specified in or is reasonably to be inferred from the Contract.

The Contractor shall strictly comply with the conditions of the Environment Clearance (EC) granted by State Level Environment Impact Assessment Authority (SEIAA) Gujarat vide its letter (No. SEIAA/GUJ/EC/8(b)/276/2009) dated 3rd November 2009 as provided in Annexure A-2. In case of non compliance a requisite amount will be deducted as penalty by the Engineer from any outstanding payment of the Contractor. Any action/penalty by state Environmental authorities including Gujarat Pollution Control Board will be sole responsibility of the Contractor and they shall bear and take appropriate remedial actions.

The Contractor shall promptly notify the Employer and the Engineer of any error, omission, fault or any other defect in the design of or specifications for the Works which he discovers when reviewing the Contract documents or in the process of execution of Works.

8.2 Site Operations and Methods of Construction

The Contractor shall take full responsibility for the adequacy, stability and safety of all Site operations and methods of construction for the Works provided that the Contractor shall not be responsible (except as stated hereunder or as may otherwise be agreed)

for design or specification of permanent Works, or for the design or specification of any Temporary Works not prepared by the Contractor. Where the Contract expressly provides that part of the permanent Works shall be designed by the Contractor, he shall be fully responsible for that part of such Works, notwithstanding any approval by the Engineer. The Contractor shall be responsible for construction of any item, material or equipment whether or not designed by the Contractor.

9.1 Contract Agreement

The Contractor shall, enter into and execute the Contract Agreement with the Employer in the form annexed to these conditions with such modifications as may be necessary.

10.1 Performance Security

The Contractor shall provide Performance Security for due and faithful performance of the Contract to the Employer within **15** days after the receipt of the Letter of Award. The performance security shall be in the form of an unconditional bank guarantee issued by any Nationalised/ Scheduled Bank located in India, for 10%(Ten percent) of the Contract Price and in the form provided in Section 7. The cost of complying with the requirements of this Clause shall be borne by the Contractor. When providing such security to the Employer, the Contractor shall notify the Engineer of so doing.

10.2 Period of Validity of Performance Security

The Performance Security shall be valid until the Contractor has executed and completed the Works and remedied any and all defects therein in accordance with the Contract. No claim shall be made after the issue of the Defects Liability Certificate, and the Performance Security shall be returned to the Contractor within 14 days after the issue of the said Defects Liability Certificate.

10.3 Claims under Performance Security

Prior to making a claim for encashment of Bank Guarantee provided by the Contractor as the Performance Security the Employer will, notify the Contractor stating the nature of the default in respect of which the claim is to be made. Encashment of the bank guarantee shall not be questioned or contested either by the Contractor or by the issuing Institution (Bank) on the ground of dispute if any.

11.1 Inspection of Site

The Employer shall have made available to the Contractor, before the submission by the Contractor of the Tender, such data on hydrological and sub-surface conditions as have been obtained by or on behalf of the Employer from investigations undertaken relevant to the Works but the Contractor shall be responsible for collection of any additional data, for carrying out any additional surveys and tests, and for his own interpretation thereof.

The Contractor shall be deemed to have inspected and examined the Site and its surroundings and information available in connection therewith and to have satisfied himself so far as is practicable before submitting his Tender, as to:

(a) the form and nature thereof, including the sub-surface conditions,

(b) the hydrological and climatic conditions,

(c) the extent and nature of work and materials necessary for the execution and completion of the Works and the remedying of any defects therein, and

(d) the means of access to the Site and the accommodation he may require and, in general, shall be deemed to have obtained all necessary information, subject as above mentioned, as to risks, contingencies and all other circumstances which may influence or affect his Tender.

11.2 Access to Data

Data made available by the Employer in accordance with Sub-Clause 11.1 shall be deemed to include data that may be listed in Special Conditions of Contract that shall be open for inspection at the specified location.

12.1 Sufficiency of Tender

The Contractor shall be deemed to have based his Tender on the data made available by the Employer and on his own inspection and examination, all as aforementioned.

The Contractor shall be deemed to have satisfied himself as to the correctness and sufficiency of the Tender and of the rates and prices stated in the Bill of Quantities, all of which shall, except insofar as it is otherwise provided in the Contract, cover all his obligations under the Contract (including those in respect of the supply of goods, materials, Plant or services or of contingencies) and all matters and things necessary for the proper execution and completion of the Works and the remedying of any defects therein.

12.2 Adverse Physical Obstructions or Conditions.

If, however, during the execution of the Works the Contractor encounters physical obstructions or physical conditions, other than climatic conditions on the Site, which obstructions or conditions, were in his opinion, not foreseeable by an experienced Contractor, the Contractor shall forthwith give notice thereof to the Engineer, with a copy to the Employer. On receipt of such notice, the Engineer shall, if in his opinion such obstructions or conditions could not have been reasonably foreseen by an experienced Contractor if so requested by the Contractor, after due consultation with the Employer and the Contractor determine any extension of time to which the Contractor is entitled under Sub-Clauses 44.1 to 44.3, and shall notify the Contractor accordingly, with a copy to the Employer.

13.1 Work to be in Accordance with Contract

The Contractor shall execute and complete the Works and remedy any defects therein in strict accordance with the Contract to the satisfaction of the Engineer. The Contractor shall comply with and adhere strictly to the Engineer's instructions on any matter, whether mentioned in the Contract, or not, touching or concerning the Works. The Contractor shall take instructions only from the Engineer or, subject to the provisions of Sub-Clause 2.2 to 2.6, from the Engineer's Representative.

14.1 Programme to be submitted.

The Contractor shall, within 14 days after the date of the Letter of Award, submit to the Engineer for his consent a programme, in such form and detail as acceptable to the Engineer, for the execution of the Works. The Contractor shall also provide in writing for the information of the Engineer a general description of the arrangements and methods which the Contractor proposes to adopt for the execution of the Works.

14.2 Revised Programme

If any time it should appear to the Engineer that the actual progress of the Works does not conform to the programme to which consent has been given under the preceding Sub-Clause 14.1, the Contractor shall produce a revised programme showing the modifications to such programme necessary to ensure completion of the Works within the Time for Completion.

14.3 Cash Flow Estimate to be submitted.

The Contractor shall, within 14 days after the date of the Letter of Award, provide to the Engineer for his information a detailed cash flow estimate, in quarterly periods, of all payments to which the Contractor will be entitled under the Contract and the Contractor shall subsequently supply revised cash flow estimates at quarterly intervals, if required to do so by the Engineer.

14.4 Contractor Not Relieved of Duties or Responsibilities

The submission to and consent by the Engineer of such programmes or the provision of such general descriptions or cash flow estimates shall not relieve the Contractor of any of his duties or responsibilities under the Contract.

14.5 Reports to be submitted.

The Contractor shall maintain a daily log of the labour, equipment and materials supplied to and used at the site and shall prepare monthly progress reports in such form and detail as acceptable to the Engineer.

15.1 Contractor's Superintendence

The Contractor shall provide all necessary superintendence during the execution of the Works and as long thereafter as the Engineer may consider necessary for the proper fulfilling of the Contractor's obligations under the Contract. The Contractor, or a competent and authorised representative approved of by the Engineer, which approval may at any time be withdrawn, shall give his whole time to the superintendence of the Works. Such authorised representative of the Contractor shall receive, on behalf of the Contractor, instructions from the Engineer or, subject to the provisions of Sub-Clause 2.1 to 2.6, the Engineer's Representative.

If approval of the representative is withdrawn by the Engineer, the Contractor shall, as soon as is practicable, having regard to the requirement of replacing him as hereinafter mentioned, after receiving notice of such withdrawal, remove his representative from the Works and shall not thereafter employ him again on the Works in any capacity and shall replace him by another representative approved by the Engineer.

16.1 Contractor's Employees

The Contractor shall provide on the Site in connection with execution and completion of the Works and the remedying of any defects therein:

(a) only such technical assistants as are skilled and experienced in their respective callings and such foremen and leading hands as are competent to give proper superintendence of the Works; and

(b) such skilled, semiskilled and unskilled labour as are necessary for the proper and timely fulfilling of the Contractor's obligations under the Contract.

16.2 Engineer at Liberty to Object

The Engineer shall be at liberty to object to and require the Contractor to remove forthwith from the Works any person provided by the Contractor who, in the opinion of the Engineer, misconducts himself, or is incompetent or negligent in the performance of his duties, or whose presence on Site is otherwise considered by the Engineer to be undesirable, and such person shall not be again allowed upon the Works without the consent of the Engineer. Any person so removed from the Works shall be replaced by competent person as approved by the Engineer.

16.3 Language Ability of Contractor's Staff.

It is expected that the Contractor and his representative shall have adequate knowledge of English and local language so as to ensure proper transmission of instructions and information.

The Contractor is encouraged, to the extent practicable and reasonable having regard to the nature of the work, to employ staff and labour from within the State of **Gujarat**. A reasonable proportion of the Contractor's superintending staff shall have working knowledge of **Gujarati**.

17.1 Setting-out

The Contractor shall be responsible for:

(a) the accurate setting-out of the Works in relation to original points, lines and levels of reference given by the Engineer in writing.

(b) the correctness, subject as above mentioned, of the position, levels, dimensions, and alignment of all parts of the Works; and

(c) the provision of all necessary instruments, appliances, and labour in connection with the foregoing responsibilities.

If, at any time during the execution of the Works, any error appears in the position, levels, dimensions or alignment of any part of the Works, the Contractor, on being required so to do by the Engineer, shall, at his own cost, rectify such error to the satisfaction of the Engineer, unless such error is based on incorrect data supplied in writing by the Engineer, in which case the Engineer shall determine an addition to the Contract Price in accordance with Sub-Clauses 52.1 to 52.3 and shall notify the Contractor accordingly, with a copy to the Employer. The checking of any setting-out or

of any line or level by the Engineer shall not in any way relieve the Contractor of his responsibility for the accuracy thereof and Contractor shall carefully protect and preserve all benchmarks, sight-rails, pegs and other things used in setting-out the Works. The Contractor shall give to the Engineer not less than 48 hours notice of his intention to set out or give levels for any part of the Work so that timely arrangement may be made for checking and issuing instructions.

18.1 Boreholes and Exploratory Excavation

If at any time during the execution of the Works the Engineer requires the Contractor to make boreholes or to carry out exploratory excavations in excess of the requirement specified elsewhere in the Contract, such requirements shall be the subject of an instruction in accordance with Sub-Clauses 51.1 and 51.2 unless an item or provisional sum in respect of such Works is included in the Bill of Quantities.

19.1 Safety, Security and Protection of the Environment

The Contractor shall, throughout the execution and completion of the Works and remedying of any defects therein:

(a) have full regard for the safety of all persons entitled to be upon the Site and keep the Site (so far as the same is under his control) and the Works (so far as the same are not completed or occupied by the Employer) in an orderly state appropriate to the avoidance of danger to such persons.

(b) provide and maintain at his own cost all lights, guards, fencing, warning signs, watching, when and where necessary or required by the Engineer or by any duly constituted authority, for the protection of the Works or for the safety and convenience of the public or others.

(c) take all reasonable steps to protect the environment on and off the Site and to avoid damage or nuisance to persons or to property of the public or others resulting from pollution, noise or other causes arising as a consequence of his methods of operation; and

(d) screen all lights provided by the Contractor so as to not to interfere with any signal light on the railways or with any traffic or signal lights of any local or other authority.

(e) The Contractor shall not set fire to any standing jungle, trees, bush wood or grass without a written permit from the Engineer.

When such permission is given, and also in all cases when destroying, cut or dug up trees, grass, etc. by fire the Contractor shall take necessary measures to prevent such fire spreading to or otherwise damaging surrounding property.

(f) Compensation for all damages done intentionally or unintentionally by Contractor's labours, whether in or beyond the limits of including any damage caused by the spreading of fire mentioned in (e) above shall be estimated by the Engineer, subject to the decision of the Engineer, on appeal, shall be final and the Contractor shall be bound to pay the amount of the assessed compensation

on demand failing which the same will be recovered from the Contractor shall be deducted by the Engineer from any sums that may be due to or become due from Employer to the Contractor under this contract or otherwise.

The Contractor shall bear the expenses of defending any action or other legal proceedings that may be brought by any person for injury sustained by him owing to neglect of precautions to prevent the spread of fire and he shall also pay any damage and cost that may be awarded by the court in consequence.

19.2 Employer's Responsibilities

If under Sub-Clauses 31.1 and 31.2 the Employer shall carry out work on the site with his own workmen he shall, in respect of such work:

(a) have full regards to the safety of all persons entitled to be upon the Site, and

(b) Keep the site in an orderly state appropriate to the avoidance of danger to such persons.

If under Sub-Clauses 31.1 and 31.2 the Employer shall employ other Contractors on the site, he shall require them to have the same regard for safety and avoidance of danger.

20.1 Care of Works

The Contractor shall take full responsibility for the care of the Works and materials and Plant for incorporation therein from the Commencement Date until the date of issue of the Taking-Over Certificate for the whole of the Works, when the responsibility for the said care shall pass to the Employer. Provided that:

(a) if the Engineer issues a Taking-Over Certificate for any Section or part of the Permanent Works the Contractor shall cease to be liable for the care of that Section or part from the date of issue of the Taking -Over Certificate, when the responsibility for the care of that Section or part shall pass to the Employer, and

(b) the Contractor shall take full responsibility for the care of any outstanding Works and materials and Plant for incorporation therein which he undertakes to finish during the Defects Liability Period until such outstanding Works have been completed pursuant to Sub-Clauses 49.1 to 49.5.

20.2 Responsibility to Rectify Loss or Damage

If any loss or damage happens to the Works, or any part thereof, or materials or Plant for incorporation therein, during the period for which the Contractor is responsible for the care thereof, from any cause whatsoever other than the risks defined in Sub-Clause 20.4, the Contractor shall, without any extra cost to the Employer, rectify such loss or damage so that the Permanent Works conform in every respect with the provisions of the Contract to the satisfaction of the Engineer. The Contractor shall also be liable for any loss or damage to the Works occasioned by him in the course of any operations carried out by him for the purpose of complying with his obligations under Sub-Clauses 49.1 to 49.5 and 50.1.

20.3 Loss or Damage Due to Employer's Risk

In the event of any such loss or damage happening from any of the risks defined in Sub-Clause 20.4 or in combination with other risks, the Contractor shall, if and to the extent required by the Engineer, rectify the loss or damage and the Engineer shall determine an addition to the Contract Price in accordance with Sub-Clauses 52.1 to 52.3 and shall notify the Contractor accordingly, with a copy to the Employer. In the case of a combination of risks causing loss or damage any such determination shall take into account the proportional responsibility of the Contractor and the Employer.

20.4 Employer's Risks

The Employer's risks are:

(a) insofar as they directly affect the execution of Works in the country where the Permanent Works are executed:

(i) war and hostilities (whether war be declared or not), invasion, act of foreign enemies.

(ii) rebellion, revolution, insurrection, or military or usurped power, or civil war.

(iii) ionising radiation, or contamination by radioactivity from any nuclear fuel, or from any nuclear waste from the combustion of nuclear fuel, radioactive toxic explosive or other hazardous properties of any explosive nuclear assembly or nuclear component thereof.

(iv) pressure waves caused by aircraft or other aerial devices travelling at sonic or supersonic speeds.

(v) riot, commotion or disorder, unless solely restricted to the employees of the Contractor or of his Subcontractors and arising from the conduct of the Works.

(b) loss or damage due to the use or occupation by the Employer of any Section or part of the Permanent Works, except as may be provided for in the Contract.

(c) loss or damage to the extent that it is due to the design of the Works, other than any part of the design provided by the Contractor or for which the Contractor is responsible; and

(d) any operation of the forces of nature (insofar as it occurs on the site) which an experienced Contractor:

(i) could not have reasonably foreseen, or

(ii) could reasonably have foreseen but against which he could not reasonably have taken at least one of the following measures:

(a) prevent loss or damage to physical property from occurring by taking appropriate measures, or

(b) Insure against.

INSURANCE

21.1 Insurance of Works and Contractor's Equipment

The Contractor shall, without limiting his or the Employer's obligation and responsibilities under Sub-Clauses 19.1, 19.2 and 20.1 to 20.4, insure:

(a) the Works, together with materials and Plant for incorporation therein, to the full replacement cost.

(b) an additional sum of 25 percent of such replacement cost to cover any additional costs of and incidental to rectification of loss or damage including professional fees and the cost of demolishing and removing any part of the Works and of removing debris of whatsoever nature; and

(c) the Contractor's Equipment and other things brought onto the Site by the Contractor, for a sum sufficient to provide for their replacement at the site.

The insurance shall be issued by an insurance company which has been determined by the Contractor to be acceptable to the Employer.

21.2 Scope of Cover

The insurance in paragraphs (a) and (b) of Sub-Clause 21.1 shall be in the joint names of the Contractor and the Employer and shall cover:

(a) the Employer and the Contractor against all loss or damage from whatsoever cause arising, other than as provided in Sub-Clause 21.4, from the start of work at the Site until the date of issue of the Employer Acceptance Certificate in respect of the Works or any Section or part thereof as the case may be, and

(b) the Contractor for his liability:

(i) for loss or damages occasioned by the Contractor during any operations carried out by him for the purpose of complying with his obligations under Sub-Clause 84.1.

(c) It shall be the responsibility of the Contractor to notify the Insurance Company of any change in the nature and extent of the Works and to ensure the adequacy of the Insurance cover at all times during the period of contract.

(d) It shall be responsibility of the Contractor to prepare and make claims in consultation with the Employer and submit claim documents complete in all respect to the insurance company and make required follow up till the claim is fully settled and realized.

21.3 Responsibility for Amounts Not Recovered

Any amounts not insured or not recovered from the insurers shall be borne by the Employer or the Contractor in accordance with their responsibility under Sub-Clauses 20.1 to 20.4.

21.4 Exclusions

There shall be no obligation for the insurance in Sub-Clause 21.1 to include loss or damage caused by the Employer's risks listed under Sub-Clause 20.4 (a) (i) to (v).

21.5 War Risk Insurance

If the Contractor receives instructions from the Employer to insure against War Risk, such insurance if normally available shall be affected at the cost of the Employer, with an Insurance Company acceptable to the Employer and shall be in the joint names of the Contractor and the Employer.

22.1 Damage to Persons and Property

The Contractor shall, except if and so far as the Contract provides otherwise, indemnify the Employer against all losses and claims in respect of:

(a) death of or injury to any person, or

(b) loss of or damage to any property (other than the Works),

Which may arise out of or in consequence of the execution and completion of the Works and the remedying of any defects therein, and against all claims, proceedings, damages, costs, charges and expenses whatsoever in respect thereof or in relation thereto, subject to the exceptions defined in Sub- Clause 22.2.

22.2 Exceptions

The "exceptions" referred to in sub-clause 22.1 are:

a. the permanent use or occupation of land by the works, or any part thereof,

b. the right of the Employer to execute the Works, or any part thereof, on, over, under, in or through any land.

c. damage to property which is the unavoidable result of the execution and completion of the Works or the remedying of any defects therein, in accordance with the Contract.

d. death of or injury to persons or loss of or damage to property resulting from any act or neglect of the Employer, his agents, servants or other Contractors not being employed by the Contractor, or in respect of any claims, proceedings, damages, costs, charges and expenses in respect thereof or in relation thereto or, where the injury or damage was contributed to by the Contractor, his servants or agents, such part of the said injury or damage as may be just and equitable having regard to the extent of the responsibility of the Employer, his servants or agents or other Contractors for the injury or damage.

22.3 Indemnity by Employer (Clause Deleted)

22.4 Indemnity to Employer's Officials and Employer Representative

The Contractor shall indemnify and hold harmless the Employer, the Employer's Personnel, and their respective agents, against and from all claims, damages, losses and expenses (including legal fees and expenses) in respect of:

(a) Bodily injury or accidental death, of any person whatsoever arising out of or in the course of or by reason of the design, execution and completion of the Works and the remedying of any defects, unless attributable to any negligence, wilful act or breach of the Contract by the Employer, the Employer's Personnel, or any of their respective agents, and

(b) Damage to or loss of any property, real or personal (other than the Works), to the extent that such damage or loss:

a. Arises out of or in the course of or by reason of the design, execution and completion of the Works by the Contractor and the remedying of any defects, and

b. Is not attributable to any negligence, wilful act or breach of the Contract by the Employer, the Employer's Personnel, their respective agents, or anymore directly or indirectly employed by any of them.

23.1 Third Party Insurance (including Employer's Property)

The Contractor shall, without limiting his or the Employer's obligations and responsibilities under Sub-Clause 22.1, in the joint names of the Contractor and the Employer, against liabilities for death of or injury to any person (other than as provided in Sub-Clauses 24.1 and 24.2) or loss of or damage to any property (other than the Works) arising out of the performance of the Contract, other than the exceptions defined in paragraphs (a), (b) and (c) of Sub- Clause 22.2

23.2 Minimum Amount of Insurance

Such insurance shall be for at least the amount stated in the Appendix to Tender.

23.3 Cross Liabilities

The insurance policy shall include a cross liability clause such that the insurance shall apply to the Contractor and to the Employer as separate insured.

24.1 Accident or Injury to Workmen

The Employer shall not be liable for or in respect of any damages or compensation payable to any workman or other than death or injury resulting from any act or default of the Employer, his agents or servants. The Contractor shall indemnify and keep indemnified the Employer against all such damages and compensation, other than those for which the Employer is liable as aforesaid, and against all claims, proceedings, damages, costs, charges, and expenses whatsoever in respect thereof or in relation thereto.

24.2 Insurance against Accident to Workmen

The Contractor shall insure against such liability and shall continue such insurance during the whole of the time that any persons are employed by him on the Works. Provided that, in respect of any persons employed by any Subcontractor, the Contractor's obligations to insure as aforesaid under this Sub- Clause shall be satisfied if the Subcontractor shall have insured against the liability in respect of such persons in such manner that the Employer is indemnified under the policy, but the Contractor shall require such Subcontractor to produce to the Employer, when required, such policy of insurance and the receipt for the payment of the current premium.

25.1 Evidence and Terms of Insurance

The Contractor shall provide evidence to the Employer prior to the start of Work at the Site that the insurance required under the Contract have been affected and shall, within 30 days of the Commencement Date, provide the insurance policies to the Employer. When providing such evidence and such policies to the Employer, the Contractor shall notify the Engineer of so doing. Such insurance policies shall be consistent with the general terms agreed prior to the issue of the Letter of Award. The Contractor shall affect all insurance for which he is responsible with insurers and in terms approved by the Employer.

25.2 Adequacy of Insurance

The Contractor shall notify the insurers of changes in the nature, extent or programme for the execution of the Works and ensure the adequacy of the insurances at all times in accordance with the terms of the Contract and shall, when required, produce to the Employer the insurance policies in force and the receipts for payment of the current premiums.

25.3 Remedy on Contractor's Failure to Insure

If the Contractor fails to effect and keep in force any of the insurances required under the Contract, or fails to provide the policies to Employer within the period required by Sub- Clause 25.1, then and in any such case the Employer may effect and keep in force any such insurances and pay any premium as may be necessary for that purpose and from time to time deduct the amount so paid from any monies due or to become due to the Contractor, or recover the same as a debt due from the Contractor.

25.4 Compliance with Policy Conditions

In the event that the Contractor or the Employer fails to comply with conditions imposed by the insurance policies effected pursuant to the Contract, each shall indemnify the other against all losses and claims arising from such failure.

25.5 Source of Insurance

The Contractor shall be entitled to place all insurances relating to the Contract (including but not limited to insurances referred to in clauses 21, 23 and 24) with insurers determined by Contractor and acceptable to the Employer from any eligible source country, listed in section 5 of the bidding documents.

CONTRACTOR'S OBLIGATIONS

26.1 Compliance with Statutes, Regulations

The Contractor shall conform and comply in all respects, including by the giving of all notices and the paying of all fees, with the provisions of:

(a) any National or State Statute, Ordinance, or other Law, or any regulation, or by law of any local or other duly constituted authority in relation to the execution and completion of the Works and the remedying of any defects therein, and

(b) the rules and regulations of all public bodies and companies whose property or rights are affected or may be affected in any way by the execution of Works,

and the Contractor shall keep the Employer indemnified against all penalties and liability of every kind for breach of any such provision. Provided always that the Employer shall be responsible for obtaining any planning, zoning or other similar permission required for the Works to proceed.

27.1 Fossils

All fossils, coins, articles of value or antiquity and structures and other remains or things of geological or archaeological interest discovered on the Site shall, as between the Employer and the Contractor, be the absolute property of the Employer and shall be handed over to the Employer or his authorised representative. The Contractor shall take reasonable precautions to prevent his workmen or any other persons from removing or damaging any such article or thing and shall, immediately upon discovery thereof and before removal, acquaint the Engineer of such discovery and carry out the Engineer's instructions for dealing with the same. If, by reason of such instructions, the Contractor suffers delay and/or incurs costs then the Engineer shall, after due consultation with the Employer and the Contractor, determine any extension of time to which the Contractor is entitled under Sub-Clauses 44.1 to 44.3, and shall notify the Contractor accordingly, with a copy to the Employer. Any price adjustment which may be applicable for such time extension granted by the Engineer will be determined in accordance with Sub-Clauses 70.1 to 70.8.

28.1 Patent Rights

The Contractor shall save and hold harmless and indemnify the Employer from and against all claims and proceedings for or on account of infringement of any patent right, design trademark or name or other protected rights in respect of any Contractor's Equipment, materials or Plant used for or in connection with or for incorporation in the Works from and against all damages, costs, charges and expenses whatsoever in respect thereof or in relation thereto, except where such infringement results from compliance with the design or Specification provided by the Engineer.

28.2 Royalties

Except where otherwise stated, the Contractor shall pay all royalties, rent and other payments or compensation to the Government, if any, for getting stone, sand, gravel,

clay or other materials required for the Works. ***Contractor shall produce proof of payment to the Engineer before submission of final bill.***

29.1 Interference with Traffic and Adjoining Properties

All operations necessary for execution and completion of the Works and the remedying of any defects therein shall, so far as compliance with the requirements of the Contract permits, be carried on so as not to interfere unnecessarily or improperly with:

(a) the convenience of the public, or

(b) the access to, use and occupation of public or private roads, railways, footpaths and any other right of way to or of properties whether in the possession of the Employer or of any other person.

The Contractor shall save harmless and indemnify the Employer in respect of all claims, proceedings, damages, costs, charges and expenses whatsoever arising out of, or in relation to, any such matters insofar as the Contractor is responsible, therefore.

30.1 Avoidance of Damage to Roads

The Contractor shall use every reasonable means to prevent any of the roads or bridges communicating with or on the routes to the Site from being damaged or injured by any traffic of the Contractor or any of his Subcontractors and, in particular, shall select routes, choose and use vehicles and restrict and distribute loads so that any such extraordinary traffic as will inevitably arise from the moving of materials, Plant, Contractor's Equipment or temporary Works from and to the Site shall be limited, as far as reasonably possible, and so that no unnecessary damage or injury may be occasioned to such roads and bridges.

30.2 Transport of Contractor's Equipment or Temporary Works

Save insofar as the Contract otherwise provides, the Contractor shall be responsible for and shall pay the cost of strengthening any bridges or altering or improving any road communicating with or on the routes to the Site to facilitate the movement of Contractor's Equipment or Temporary Works and the Contractor shall indemnify and keep indemnified the Employer against all claims for damage to any such road or bridge caused by such movement, including such claims as may be made directly against the Employer, and shall negotiate and pay all claims arising solely out of such damage.

If it is found necessary for the Contractor to move one or more loads of heavy construction equipment, materials or pre-constructed units or parts of units of work over roads, highways, bridges on which such oversized and overweight items are not normally allowed to be moved, the Contractor shall obtain prior permission from the concerned authorities. Payments for complying with the requirements, if any, for protection of or strengthening of the roads, highways or bridges shall be made by the Contractor and such expenses shall be deemed to be included in his Contract Price.

30.3 Transport of Materials or Plant

If, notwithstanding Sub-Clause 30.1, any damage occurs to any bridge or road communication with or on the routes to the Site arising from the transport of materials or Plant, the Contractor shall notify the Engineer with a copy to Employer as soon as he becomes aware of such damage or as soon as he receives any claim from the authority entitled to make such claim. Where under any law or regulation the haulier of such materials or Plant is required to indemnify the road authority against damage, the Employer shall not be liable for any costs, charges or expenses in respect thereof or in relation thereto.

30.4 Waterborne Traffic

Where the nature of the Works is such as to require the use by the Contractor of waterborne transport the foregoing provisions of the Clause shall be construed as though “road” included a lock, dock, sea wall or other structure related to a waterway and “vehicle” included craft and shall give effect accordingly.

31.1 Opportunities for Other Contractors

The Contractor shall, in accordance with the requirements of the Engineer, afford all reasonable opportunities for carrying out their work to:

(a) any other Contractors employed by the Employer and their workmen,

(b) the workmen of the Employer, and

(c) the workmen of any duly constituted authorities who may be employed in the execution on or near the Site of any work not included in the Contract or of any contract which the Employer may enter into in connection with or ancillary to the Works.

31.2 Facilities for Other Contractors

If, however, pursuant to Sub-Clause 31.1 the Contractor shall, on the written request of the Engineer:

(a) make available to any such other Contractor, or to the Employer or any such authority, any roads or ways for the maintenance of which the Contractor is responsible, or

(b) permit the use, by any such, or Temporary Works or Contractor’s Equipment on the Site, or

(c) provide any other service of whatsoever nature for any such Works

the Engineer shall determine an addition to the Contract Price in accordance with Clause 52 .1and shall notify the Contractor accordingly, with a copy to the Employer.

32.1 Contractor to Keep Site Clear

During the execution of the Works the Contractor shall keep the Site free from all unnecessary obstruction and shall store or dispose of any Contractor’s Equipment and

surplus materials and clear away and remove from the Site any wreckage, rubbish or Temporary Works no longer required.

33.1 Clearance of Site on Completion

Before the issue of any Taking-Over Certificate the Contractor shall clear away and remove from that part of the Site to which such Taking-Over Certificate relates all Contractor's Equipment, surplus material, rubbish and Temporary Works of every kind, and leave such part of the Site and Works clean and in a workmanlike condition to the satisfaction of the Engineer. Provided that the Contractor shall be entitled to retain on Site, until the end of the Defects Liability Period, such materials, Contractor's Equipment and Temporary Works as are required by him for the purpose of fulfilling his obligations during the Defects Liability Period.

33.2 Epidemics

In the event of any outbreak of illness of an epidemic nature, the Contractor shall comply with such regulations and carry out such orders as are issued by the Government or Local Authority.

LABOUR

34.1 Engagement of Staff and Labour

The Contractor shall make his own arrangements for the engagement of all staff and labour, local or other, and for their payment, housing, feeding, water and transport.

34.2 Compliance with Labour Regulations

The Contractor and his Sub-Contractors shall abide by the local laws and regulations governing labour as detailed in Annexure A and Annexure A-1.

34.3 Alcoholic Liquor or Drugs

The Contractor shall not, otherwise than in accordance with the Statutes, Ordinances and Government Regulations or Orders for the time being in force, import, sell, give, barter or otherwise dispose of any alcoholic liquor or drugs, or permit or suffer any such importation, sale, gift, barter or disposal by his Subcontractors, agents, staff or labour.

34.4 Arms and Ammunition

The Contractor shall not give, barter or otherwise dispose of to any person or persons, any arms or ammunition of any kind or permit or suffer the same as aforesaid.

34.5 Festivals and Religious Customs

The Contractor shall in all dealings with his staff and labour have due regard to all recognized festivals, days of rest and religious or other customs.

35.1 Returns of Labour and Contractor's Equipment

The Contractor shall deliver to the Engineer a return in detail, in such form and at such intervals as the Engineer may prescribe, showing the staff and the numbers of the

several classes of labour from time to time employed by the Contractor on the Site and such information in respect of Contractor's Equipment as the Engineer may require.

MATERIALS, PLANT AND WORKMANSHIP

36.1 Quality of Materials, Plant and Workmanship

All materials, Plant and workmanship shall be:

(a) of the respective kinds described in the Contract and in accordance with the Engineer's instructions, and

(b) subjected from time to time to such tests as the Engineer may require at the place of manufacture, fabrication or preparation, or on the Site or at such other place or places as may be specified in the Contract, or at all or any of such places.

The Contractor shall provide such assistance, labour, electricity, fuels, stores, apparatus and instruments as are normally required for examining, measuring and testing any materials or Plant and shall supply samples of materials, before incorporation in the Works, for testing as may be selected and required by the Engineer.

The Contractor is encouraged, to the extent practicable and reasonable, to use plant and materials from sources within India.

36.2 Cost of Samples

All samples shall be supplied by the Contractor at his own cost if the supply thereof is clearly intended by or provided for in the Contract.

36.3 Cost of Tests

The cost of making any test shall be borne by the Contractor if such test is:

(a) clearly intended by or provided for in the Contract, or

(b) particularised in the Contract (in cases only of a test under load or of a test to ascertain whether the design of any finished or partially finished work is appropriate for the purposes which it was intended to fulfil) in sufficient detail to enable the Contractor to price or allow for the same in his Tender.

36.4 Cost of Tests Not Provided For

If any test required by the Engineer which is:

(a) not so intended by or provided for, or

(b) (in the cases above mentioned) not so particularised, or

(c) (though so intended or provided for) required by the Engineer to be carried out at any place other than the Site or the place of manufacture, fabrication or preparation of the materials or Plant tested,

shows the materials, Plant or workmanship not to be in accordance with the provisions of the Contract to the satisfaction of the Engineer, then the cost of such test shall be borne by the Contractor.

Provided that if, as a result of the Contractor's method of working not being in accordance with the Contract, the Engineer has reasonable grounds to suspect that any materials, Plant or workmanship used in any part or parts of the Works may not be in accordance with the provisions of the Contract, he may require the Contractor to carry out any test, which in the opinion of the Engineer is necessary to verify the quality of such materials, Plant or workmanship in such part or parts of the Works and the cost of any test so required shall be borne by the Contractor regardless of whether or not such test shows the materials, Plant or Workmanship to be in accordance with the provisions of the Contract and to the satisfaction of the Engineer and the Contractor shall not be allowed to claim any extension of time as a result of having to carry out such tests.

Contractor shall submit Quality Assurance Plan as mentioned in Section 3.

37.1 Inspection of Operations

The Engineer, and any person authorised by him, shall at all reasonable times have access to the Site and to all workshops and places where materials or Plant are being manufactured, fabricated or prepared for the Works and the Contractor shall afford every facility for and every assistance in obtaining the right to such access.

37.2 Inspection and Testing

The Engineer shall be entitled, during manufacture, fabrication or preparation to inspect and test the materials and Plant to be supplied under the Contract. If materials or Plant are being manufactured, fabricated or prepared in workshops or places other than those of the Contractor, the Contractor shall obtain permission for the Engineer to carry out such inspection and testing in those workshops or places. Such inspection or testing shall not release the Contractor from any obligation under the Contract.

37.3 Dates for Inspection and Testing

The Contractor shall agree with the Engineer on the time and place for inspection or testing of any materials or Plant as provided in the Contract. The Engineer shall give the Contractor not less than 24 hours notice of his intention to carry out the inspection or to attend the tests. If the Engineer, or his duly authorised representative, does not attend on the date agreed, the Contractor may, unless otherwise instructed by the Engineer, proceed with the tests, which shall be deemed to have been made in the presence of the Engineer. The Contractor shall forthwith forward to the Engineer duly certified copies of the test readings. If the Engineer has not attended the tests, he shall accept the said readings as accurate.

37.4 Rejection

If, at the time and place agreed in accordance with Sub-Clause 37.3, the materials or Plant are not ready for inspection or testing or if, as a result of the inspection or testing

referred to in this Clause, the Engineer determines that the materials or Plant are defective or otherwise not in accordance with the Contract, he may reject the materials or Plant and shall notify the Contractor thereof immediately. The notice shall state the Engineer's objections with reasons. The Contractor shall then promptly make good the defect or ensure that rejected materials or Plant comply with the Contract. If the Engineer so requests, the tests of rejected materials of Plant shall be made or repeated under the same terms and conditions. All costs incurred by the Employer by the repetition of the tests shall, after due consultation with the Employer and the Contractor, be determined by the Engineer and shall be recoverable from the Contractor by the Employer and may be deducted from any monies due or to become due to the Contractor and the Engineer shall notify the Contractor accordingly, with a copy to the Employer.

37.5 Independent Inspection

If the Engineer so desires, he may delegate inspection and testing of materials or Plant to an independent inspector. Any such delegation shall be affected in accordance with Sub-Clause 2.4 and for this purpose such independent inspector shall be considered as an assistant of the Engineer. Notice of such appointment (not being less than 14 days) shall be given by the Engineer to the Contractor.

37.6 Works to be open to inspection, Contractor or responsible agent to be present.

All works under or in course of execution or executed in pursuance of the contract shall at all times, be open to the inspection and supervision of the Engineer and his sub-ordinates and the Contractor shall, at all times during the usual working hours, and at all other times at which reasonable notice of the intention of the Engineer or his sub-ordinate to visit the works shall have been given to the Contractor, either himself be present to receive orders and instructions, or have a responsible agent duly accredited in writing present for the purpose. Orders given to the Contractor's duly authorised agent shall be considered to have the same force and effect as if they had been given to the Contractor himself.

38.1 Examination of Work Before Covering Up

No part of the Works shall be covered up or put out of view without the approval of the Engineer and the Contractor shall afford full opportunity for the Engineer to examine and measure any such part of the Works which is about to be covered up or put out of view and to examine foundations before any part of the Works is placed thereon. The Contractor shall give notice to the Engineer whenever any such part of the Works or foundations is or are ready or about to be ready for examination and the Engineer shall, without unreasonable delay, unless he considers it unnecessary and advises the Contractor accordingly, attend for the purpose of examining and measuring such part of the Works or of examining such foundations.

38.2 Uncovering and Making Openings

If, for any reason whatsoever, the Contractor fails to comply with the provisions of Sub-Clause 38.1 before covering up the works, the Contractor shall uncover any part of the

Works or make openings in or through the same as the Engineer may from time to time instruct and shall reinstate and make good such part. All costs shall be borne by the Contractor.

If following discovery of defective workmanship or materials in any part of the Works, the Engineer has reasonable grounds to suspect that further part or parts of the works may be similarly defective, the Contractor shall uncover such further part or parts of the Works or make further openings, in or through the same, as the Engineer may reasonably instruct, and the Contractor shall reinstate and make good such part or parts. The costs of all such works carried out by the Contractor under the provisions of this paragraph shall be borne by the Contractor and the Contractor shall not be entitled to claim nor shall the Engineer determine any extension of time as a result of carrying out such work.

39.1 Removal of Improper Work, Materials or Plant

The Engineer shall have authority to issue instructions from time to time, for:

(a) the removal from the Site, within such time or times as may be specified in the instruction, of any materials or Plant which, in the opinion of the Engineer, are not in accordance with the Contract,

(b) the substitution of proper and suitable materials or Plant, and

(c) the removal and proper re-execution, notwithstanding any previous test thereof or interim payment therefor, of any work which, in respect of

(i) materials, Plant or workmanship, or

(ii) design by the Contractor or for which he is responsible,

is not, in the opinion of the Engineer, in accordance with the Contract.

39.2 Default of Contractor in Compliance

In case of default on the part of the Contractor in carrying out such instruction within the time specified therein or, if none, within a reasonable time, the Employer shall be entitled to employ and pay other agencies to carry out the same and all costs consequent thereon or incidental thereto shall, after due consultation with the Employer and the Contractor, be determined by the Engineer and shall be recoverable from the Contractor by the Employer, and may be deducted by the Employer from any monies due or to become due to the Contractor and the Engineer shall notify the Contractor accordingly, with a copy to the Employer.

39.3 Stores

All stores of controlled materials such as cement, steel, etc. shall be properly secured and kept by the Contractor under lock and key and they will be accessible for inspection by the Engineer or his authorized representative.

In case the Contractor uses materials if supplied by Employer / Engineer in excess of what is required as per theoretical calculations without having an explanation therefore to the satisfaction of the Engineer or refuse to return in good condition, such materials

issued in excess of the requirement so worked out for any reasons whatsoever, the Contractor shall be required to pay the cost of such extra materials at the penal rate which shall be at double the issue rate to be charged to the Contractor as per contract agreement.

SUSPENSION

40.1 Suspension of Work

The Contractor shall, on the instructions of the Engineer, suspend the Works or any part thereof for such time and in such manner as the Engineer may consider necessary and shall, during such suspension, properly protect and secure the Works or such part thereof so far as is necessary in the opinion of the Engineer.

Unless such suspension is:

(a) otherwise provided for in the contract, or

(b) necessary by reason of some default of or breach of Contract by the Contractor or for which he is responsible, or

(c) necessary by reason of adverse and abnormal non-working climatic weather conditions at the construction site , floods or

(d) necessary for the proper execution of the Works or for the safety of the Works or any part thereof (save to the extent that such necessity arises from any act or default by the Engineer or the Employer or from any of the risks defined in Sub-Clause 20.4), Sub-Clause 40.2 shall apply.

40.2 Engineer's Determination Following Suspension

Where, pursuant to Sub-Clause 40.1 this Sub-Clause applies the Engineer shall after due consultation with the Employer and the Contractor, determine any extension of time to which the Contractor is entitled under Sub-Clauses 44.1 to 44.3 and shall notify the Contractor accordingly, with a copy to the Employer. Any price adjustment which may be applicable for such time extension granted by the Engineer will be determined in accordance with Sub-Clauses 70.1 to 70.8.

40.3 Suspension Lasting More than 84 Days.

If the progress of the Works or any part thereof is suspended on the written instructions of the Engineer and if permission to resume work is not given by the Engineer within a period of 84 days from the date of suspension then, unless such suspension is within paragraph (a), (b), (c) or (d) of Sub-Clause 40.1 the Contractor may give notice to the Engineer requiring permission, within 28 days from the receipt thereof, to proceed with the Works or that part thereof in regard to which progress is suspended. If, within the said time, such permission is not granted, the Contractor may, but is not bound to, elect to treat the suspension, where it affects part only of the Works, as an omission of such part under Sub-Clauses 51.1 and 51.2 by giving a further notice to the Engineer

to that effect, or where it affects the whole of the Works, treat the suspension as an event of default by the Employer and suspend his work under the Contract.

COMMENCEMENT AND DELAYS

41.1 Commencement of Works

The Contractor shall commence the Works as soon as is reasonably possible after the receipt by him of a notice to this effect by the Engineer, which notice shall be issued within the time stated in the Appendix to Bid after the date of the Letter of Award. Thereafter, the Contractor shall proceed with the Works with due expedition and without delay, provided that:

(a) the Engineer will, whenever possible, endeavour to issue the notice to proceed on the same day as the formal agreement is signed, subject to provision by the Contractor of a satisfactory Performance Security pursuant to Sub-Clauses 10.1 to 10.3 and proof of insurance pursuant to Sub-Clause 25.1; and

(b) the Contractor will commence the Works not later than **15** days after issue by the Engineer of the notice to proceed.

ACCESS TO SITE

42.1 Possession of Site and Access Thereto

Save insofar as the Contract may prescribe:

(a) the extent of portions of the Site of which the Contractor is to be given possession from time to time and,

(b) the order in which such portions shall be made available to the Contractor and subject to any requirement in the Contract as to order in which the Works shall be executed, the Employer will, with the Engineer's notice to commence the Works, give to the Contractor possession of

(c) so much of the Site, and

(d) such access as, in accordance with the Contract, is to be provided by the Employer

as may be required to enable the Contractor to commence and proceed with the execution of the Works. The Employer will, from time to time as the Works proceed, give to the Contractor possession of such further portions of the Site as may be required to enable the Contractor to proceed with the execution of the Works with due dispatch in accordance with the agreed programme or proposals, as the case may be.

42.2 Failure to Give Possession

If the Contractor suffers delay and/or incurs costs from failure on the part of the Employer to give possession in accordance with the terms of Sub-Clause 42.1, the Engineer shall, after due consultation with the Employer and the Contractor, determine any extension of time to which the Contractor is entitled under Sub-Clauses 44.1 to

44.3, and shall notify the Contractor accordingly, with a copy to the Employer. No price adjustment except for the extension of time will be offered to the Contractor.

42.3 Wayleaves and Facilities

The Contractor shall bear all costs and charges for special or temporary wayleaves required by him in connection with access to the Site. The Contractor shall also provide at his own cost any additional facilities outside the Site required by him for the purposes of the Works.

42.4 Access to the Site

The Contractor shall arrange to construct, maintain and afterwards remove and reinstate any temporary access required for and in connection with the execution of the Works. Reinstatement shall include restoring the area of the access route to at least the degree of safety, stability, drainage and appearance that existed before the Contractor entered the site.

42.5 Use of Site

(a) The Contractor shall not use any portion of the site for any purpose not connected with the Works without the prior written approval of the Engineer. Such approval shall only be issued by the Engineer after due consultation with the Employer.

(b) The Contractor shall maintain and permit access for the inspection, operation and maintenance of any plant or works belonging to the Employer or other authorities which lie within the Site or in other areas which are affected by the Contractor's operations.

(c) The Contractor shall observe all agreements entered into by the Employer and made known to the Contractor with any person or persons relating to occupation of land and properties by the Employer and the execution of the Works thereon.

(d) The Contractor shall not disturb damage or pull down any hedge, tree, wall or building outside the area occupied by the permanent Works and within the Site without the written consent of the Engineer after approval by the Employer, unless specifically stated otherwise under the Contract.

TIME

43.1 Time for Completion

The whole of the Works and, if applicable, any section required to be completed within a particular time as stated in the Appendix to Tender, shall be completed, in accordance with the provisions of Sub-Clauses 48.1 to 48.5, within the time stated in the Appendix to Tender for the whole of the Works or the Section (as the case may be), calculated from the Commencement Date, or such extended time as may be allowed under Sub-Clauses 44.1 to 44.3.

43.2 No claim to Compensation on account of Loss due to delay in supply of materials by Employer, if any

The Contractor shall not be entitled to claim any compensation from Employer / Engineer for the loss suffered by him on account of delay by Employer in the supply of materials if any, where such delay is caused by :

- Force Majeure events or conditions that shall include
    a. any cause which is beyond the control of the CONTRACTOR or the OWNER, as the case may be,
    b. natural phenomenon including but not limited to abnormal weather conditions, floods, drought, earthquakes and epidemics,
    c. acts of any Governmental authority, domestic or foreign, including but not limited to war, declared or undeclared, priorities, quarantine, embargoes, licensing control or production or distribution restrictions,
    d. accidents and disruptions including but not limited to fires, explosions and power shortage,
    e. transportation delay due to force majeure or accidents,
    f. strikes, slowdown, lockouts and sabotages,
    g. riots and civil commotions,
    h. failure or delay in the CONTRACTOR's source of supply due to force majeure causes enumerated at (a) to (g) above.
- Act of God
- Act of enemies of the State or any other reasonable cause beyond the control of Employer.

In case of such delay in the supply of materials, Employer / Engineer shall grant such extension of time for the completion of the work as shall appear to the Engineer to be reasonable in accordance with the circumstances of the case. Contractor shall accept the decision of the Engineer as to the extension of time as final.

44.1 Extension of Time for Completion

In the event of

a) force majeure such as acts of God, acts of public enemy, acts of Government, floods, epidemics, etc., or

b) abnormally bad weather, or

c) serious loss of damage by fire, or

d) civil commotion, local combination of workmen, strike or lockout of any of the traders employed on the work, or

e) delay on the part of other Contractors or tradesmen engaged by the Employer in executing Works not forming part of the Contract, or

f) non-availability of stores which are the responsibility of the Employer to supply, or

g) the ordered variations namely the amount or nature of extra or additional work referred in Sub-Clause 51.1 and 51.2, or

h) reasons stated in Sub-Clauses 6.3, 6.4 and 12.2, or

i) any other cause which, in the absolute discretion of the Engineer is beyond the Contractor's control.

being such as fairly to entitle the Contractor to an extension of the Time for Completion of the Works, or any Section or part thereof, the Engineer upon request by the contractor, shall, after due consultation with the Employer and the Contractor, determine the amount of such extension and shall notify the Contractor accordingly, with a copy to the Employer. No payments for any time extension will be made. Payments will be only for additional or extra or variation leading to gross amount more than contract amount.

44.2 Contractor to Provide Notification and Detailed Particulars

Provided that the Engineer is not bound to make any determination unless the Contractor has:

(a) within 28 days after such event has first arisen notified the Engineer with a copy to the Employer, and

(b) within 28 days, or such other reasonable time as may be agreed by the Engineer, after such notification submitted to the Engineer detailed particulars of any extension of time to which he may consider himself entitled in order that such submission may be investigated at the time.

44.3 Interim Determination of Extension.

Provided also where an event has a continuing effect such that it is not practicable for the Contractor to submit detailed particulars within the period of 28 days referred to in Sub-Clause 44.2 (b), he shall nevertheless be entitled to an extension of time provided that he has submitted to the Engineer interim particulars at intervals of not more than 28 days and final particulars within 28 days of the end of the effects resulting from the event. On receipt of such interim particulars, the Engineer shall, without undue delay, make an interim determination of extension of time and on receipt of the final particulars, the Engineer shall review all the circumstances and shall determine an overall extension of time in regard to the event. In both such cases the Engineer shall make his determination after due consultation with the Employer and the Contractor and shall notify the Contractor of the determination, with a copy to the Employer. No final review shall result in a decrease of any extension of time already determined by the Engineer.

45.1 Restriction on Working Hours

The working hours and timing of the work shall be as statutorily provided and there will be no violation by the Contractor or any of his staff in respect thereof.

46.1 Rate of Progress

If for any reason, which does not entitle the Contractor to an extension of time, the rate of progress of the Works or any Section is at any time, in the opinion of the Engineer, too slow to comply with the Time for Completion, the Engineer shall so notify the Contractor who shall thereupon take such steps as are necessary, subject to the consent of the Engineer, to expedite progress so as to comply with the Time for Completion. The Contractor shall not be entitled to any additional payment for taking such steps. If, as a result of any notice given by the Engineer under this Clause, the Contractor considers that it is necessary to do any work at night or on locally recognised days of rest, he shall be entitled to seek the consent of the Engineer so to do. Provided that if any steps, taken by the Contractor in meeting his obligations under this Clause, involve the Employer in additional supervision costs, such costs shall, after due consultation with the Employer and the Contractor, be determined by the Engineer and shall be recoverable from the Contractor by the Employer, and may be deducted by the Employer from any monies due or to become due to the Contractor and the Engineer shall notify the Contractor accordingly, with a copy to the Employer.

LIQUIDATED DAMAGES

47.1 Liquidated Damages for Delay

If the Contractor fails to complete the work within the Time for Completion in accordance with Clause 48 for the whole of the Works or, if applicable, any Section within the time prescribed by Sub-Clause 43.1, then the Contractor shall pay to the Employer the sum stated in the Appendix to Bid as liquidated damages for such delay and not as a penalty (which sum shall be the only monies due from the Contractor for such delay) for every week or part of a week which shall elapse between the Time for Completion and the date stated in the Taking-Over Certificate of the whole of the Works or the relevant Section, subject to the applicable limit stated in the Appendix to Bid. The Employer may, without prejudice to any other method of recovery, deduct the amount of such damages from any monies due or to become due to the Contractor. The payment or deduction of such damages shall not relieve the Contractor from his obligation to complete the Works, or from any of his other obligations and liabilities under the Contract.

47.2 Reduction of Liquidated Damages

If, before the Time for Completion of the whole of the Works or, if applicable, any Section, a Taking-Over Certificate has been issued for any part of the Works or of a Section, the liquidated damages for delay in completion of the remainder of the Works or of that Section shall, for any period of delay after the date stated in such Taking-Over Certificate, and in the absence of alternative provisions in the Contract, be reduced in the proportion which the value of the part so certified bears to the value of the whole of the Works or Section, as applicable. The provisions of this Sub- Clause shall only apply to the rate of liquidated damages and shall not affect the limit thereof.

TAKING OVER

48.1 Taking-Over Certificate

When the whole of the Works has been functionally completed i.e. fit to be occupied and used and have satisfactorily passed required Tests on Completion prescribed by the Contract, the Contractor will give a notice to that effect to the Engineer, with a copy to the Employer, accompanied by a written undertaking to finish with due expedition any outstanding work during the Defects Liability Period. Such notice and undertaking shall be deemed to be a request by the Contractor for the Engineer to issue a Taking-Over Certificate in respect of the Works. The Engineer shall, within 21 days of the date of delivery of such notice, either issue to the Contractor, with a copy to the Employer, a Taking-Over Certificate stating the date on which, in his opinion, the Works were functionally completed in accordance with the Contract or give instructions in writing to the Contractor specifying all work which, in the Engineer's opinion, is required to be done by the Contractor before the issue of such Certificate. The Engineer shall also notify the Contractor of any defects in the Works affecting functional completion that may appear after such instructions and before completion of the Works specified therein. The Contractor shall be entitled to receive such Taking-Over Certificate within 21 days of completion, to the satisfaction of the Engineer, of the Works so specified and remedying any defects so notified.

For the purpose of this clause "Substantial completion" would mean readiness of the Works for Commissioning or nearly full functional and operational use as specified in the Contract and "Substantial Completion" shall deem to be accomplished when the Works are complete in accordance with the Contract and are ready for sound and safe operational or functional occupation save some minor outstanding Works, to be completed by the Contractor which can be completed during the Defects Liability Period, without affecting the sound and safe operational and functional occupation of the Works.

Satisfaction and judgement of the Employer about in this respect as to whether the work is substantially completed shall be final and binding on the contractor.

48.2 Taking Over of Sections or Parts

Similarly, in accordance with the procedure set out in Sub-Clause 48.1, the Contractor may request and the Engineer shall issue a Taking - Over Certificate in respect of:

(a) any Section in respect of which a separate Time for Completion is provided in the Appendix to Bid, or

(b) any substantial part of the Permanent Works which has been both completed to the satisfaction of the Engineer and, otherwise than as provided for in the Contract, occupied or used by the Employer, or

(c) any part of the Permanent Works which the Employer has elected to occupy or use prior to completion (where such prior occupation or use is not provided for in the Contract has not been agreed by the Contractor as a temporary measure).

48.3 Functional Completion of Parts

If any part of the Permanent Works has been substantially completed and has satisfactorily passed any Tests on Completion prescribed by the Contract, the Engineer may issue a Taking-Over Certificate in respect of that part of the Permanent Works before completion of the whole of the Works and, upon the issue of such Certificate, the Contractor shall be deemed to have undertaken to complete with due expedition any outstanding work in that part of the permanent Works during the Defects Liability Period.

48.4 Surfaces Requiring Reinstatement

The Contractor shall restore and reinstate the surface at the worksite as provided in the contract and as per the instruction of the Engineer before finally handing over of the worksite to the employer. No taking over certificate will be issued in the absence of such reinstatement.

48.5 Prevention from Testing

If the Contractor is prevented from carrying out the Tests on Completion by a cause for which the Employer or the Engineer or other Contractors employed by the Employer are responsible, the Employer shall be deemed to have taken over the Works on the date when the Tests on Completion would have been completed but for such prevention. The Engineer shall issue a Taking-Over Certificate accordingly. Provided always that the Works shall not be deemed to have been taken over if they are not functionally accepted in accordance with the Contract.

If the Works are taken over under this Sub-Clause the Contractor shall nevertheless carry out the Tests on Completion during the Defects Liability Period. The Engineer shall require the tests to be carried out by giving 14 days notice.

DEFECTS LIABILITY

49.1 Defects Liability Period

In these Conditions the expression “Defects Liability Period” shall mean the defects liability period named in the Appendix to Bid, calculated from:

(a) the date of functional completion of the Works certified by the Engineer in accordance with Sub Clauses 48.1 to 48.5 or

(b) in the event of more than one certificate having been issued by the Engineer under Sub-Clauses 48.1to 48.5, the respective dates so certified and in relation to the Defects Liability Period the expression “the Works’ shall be construed accordingly.

49.2 Completion of Outstanding Work and Remedying Defects

To the extent that the Works shall, at or as soon as practicable after the expiration of the Defects Liability Period, be delivered to the Employer in the condition required by the Contract, fair wear and tear excepted, to the satisfaction of the Engineer, the Contractor shall:

(a) complete the work, if any, outstanding on the date stated in the Taking-Over Certificate as soon as practicable after such date, and

(b) execute all such work of amendment, reconstruction, and remedying defects, or other faults as the Engineer may, during the Defects Liability Period or within 14 days after its expiration, as a result of an inspection made by or on behalf of the Engineer prior to its expiration, instruct the Contractor to execute.

49.3 Cost of Remedying Defects

All work referred to in Sub-Clause 49.2 including remedying of defects shall be executed by the Contractor within the Contract Price if the necessity thereof is, in the opinion of the Engineer, due to:

(a) the use of materials, Plant or workmanship not in accordance with the Contract, or

(b) where the Contractor is responsible for the design for part of the Permanent Works, any fault in such design, or

(c) the neglect or failure on the part of the Contractor to comply with any obligation, expressed or implied, on the Contractor's part under the Contract.

If, in the opinion of the Engineer, such necessity is due to any other cause, he shall determine an addition to the Contract Price in accordance with Sub-Clauses 52.1 to 52.3 and shall notify the Contractor accordingly, with a copy to the Employer.

49.4 Contractor's Failure to Carry Out Instructions

In case of default on the part of the Contractor in carrying out such instruction within a reasonable time, the Employer shall be entitled to employ and pay other persons to carry out the same and if such work is work which, in the opinion of the Engineer, the Contractor was liable to do at his own cost under the Contract, then all costs consequent thereon or incidental thereto shall, after due consultation with the Employer and Contractor, be determined by the Engineer and shall be recoverable from the Contractor by the Employer and may be deducted from any monies due or to become due to the Contractor and the Engineer shall notify the Contractor accordingly, with a copy to the Employer.

49.5 Extension of Defects Liability

The provisions of this Clause shall apply to all replacements or renewals of Plant carried out by the Contractor to remedy defects and damages as if the replacements and renewals had been taken over on the date they were completed. The Defects Liability Period for the Works shall be extended by a period equal to the period during which the Works could not be used by reason of a defect or damage. If only part of the

Works is affected the Defects Liability Period shall be extended only for that part. In neither case shall the Defects Liability Period extend beyond 2 years from the date of taking over.

When progress in respect of Plant has been suspended under Sub-Clauses 40.1 to 40.3, the Contractor's obligation under this Clause shall not apply to any defects occurring more than 2 years after the Time for Completion established on the date of the Letter of Award.

50.1 Contractor to Search.

If any defect or other fault in the Works appears at any time prior to the end of the Defects Liability Period, the Engineer may instruct the Contractor, with a copy to the Employer, to search under the directions of the Engineer for the cause thereof. Unless such defect or other fault is one for which the Contractor is liable under the contract, the Engineer shall, after due consultation with the Employer and the Contractor, determine the amount in respect of the costs of such search incurred by the Contractor, which shall be added to the Contract Price, and shall notify the Contractor accordingly, with a copy to the Employer. If such defect or other fault is one for which the Contractor is liable, the cost of the work carried out in searching as aforesaid shall be borne by the Contractor and he shall in such case remedy such defect or other fault at his own cost in accordance with the provisions of Sub-Clauses 49.1 to 49.5.

ALTERATIONS, ADDITIONS AND OMISSIONS

51.1 Variations

The Engineer shall make any variation of the form, quality or quantity of the Works or any part thereof that may, in his opinion, be necessary and for that purpose, or if for any other reason it shall, in his opinion, be appropriate, he shall have the authority to instruct the Contractor to do and the Contractor shall do any of the following:

(a) increase or decrease the quantity of any work included in the Contract,

(b) omit any such work (but not if the omitted work is to be carried out by the Employer or by another Contractor),

(c) change the character or quality or kind of any such work,

(d) change the levels, lines, position and dimensions of any part of the Works,

(e) execute additional work of any kind necessary for the completion of the Works,

(f) change any specified sequence or timing of construction of any part of Works.

No such variation shall in any way vitiate or invalidate the Contract, but the effect, if any, of all such variations shall be valued in accordance with Sub-Clauses 52.1 to 52.3. Provided that where the issue of an instruction to vary the Works is necessitated by some default of or breach of contract by the Contractor or for which he is responsible, any additional cost attributable to such default shall be borne by the Contractor.

51.2 Instructions for Variations

The Contractor shall not make any such variation without an instruction in writing of the Engineer. Provided that no instruction shall be required for increase or decrease in the quantity of any work where such increase or decrease is not the result of an instruction given under this Clause but is the result of the quantities exceeding or being less than those stated in the Bill of Quantities.

52.1 Valuation of Variations

All variations referred to in Sub-Clauses 51.1 and 51.2 and any adjustments to the Contract Price which are required to be determined in accordance with Sub-Clauses 52.1 to 52.3 (for the purpose of this Clause referred to as “varied works”) shall be valued at the rates and prices set out in the Contract if, in the opinion of the Engineer, the same shall be applicable. If the Contract does not contain any rates or prices applicable to the varied work, the rates and prices in the Contract shall be used as the basis for valuation so far as may be reasonable, failing which, after due consultation by the Engineer with the Employer and the Contractor, suitable rates or prices shall be agreed upon between the Engineer and the Contractor. In the event of disagreement, the Engineer shall fix such rates or prices as are, in his opinion, appropriate and shall notify the Contractor accordingly, with a copy to the Employer. Until such time as rates or prices are agreed or fixed, the Engineer shall determine provisional rates or prices to enable on-account payments to be included in certificates issued in accordance with Sub-Clauses 60.1 to 60.14.

52.2 Power of Engineer to Fix Rates

Provided that if the nature or amount of any varied work relative to the nature or amount of the whole of the Works or to any part thereof is such that, in the opinion of the Engineer, the rate or price contained in the Contract for any item of the Works is, by reason of such varied work, rendered inappropriate or inapplicable, then, after due consultation by the Engineer with the Employer and the Contractor, a suitable rate or price shall be agreed upon. In the event of disagreement, the Employer shall fix such other rate or price as is, in his opinion, appropriate and shall notify the Contractor accordingly, with a copy to the Engineer. Until such time as rates or prices are agreed or fixed, the Engineer shall determine provisional rates or prices to enable on-account payments to be included in certificates issued in accordance with Sub-Clauses 60.1 to 60.14.

Provided further that no change in the rate or price for any item contained in the Contract shall be considered unless such item accounts for an amount more than 5 percent of the Contract Price and the actual quantity of work executed under the item exceeds or falls short of the quantity set out in the Bill of Quantities by more than 25 percent.

Provided also that no varied work instructed to be done by the Engineer pursuant to Sub-Clauses 51.1 and 51.2 shall be valued under Sub-Clause 52.1 or under this Sub-Clause unless, within 14 days of the date of such instruction and, other than in the

case of omitted work, before the commencement of the varied work, notice shall have been given either:

(a) by the Contractor to the Engineer of his intention to claim extra payment or a varied rate or price, or

(b) by the Engineer to the Contractor of his intention to vary a rate or price.

52.3 Variations Exceeding 15 percent

If, on the issue of the Taking-Over Certificate for the whole of the Works, it is found that as a result of:

(a) all varied work, valued under Sub-Clauses 52.1 and 52.2, and

(b) all adjustments upon measurement of the estimated quantities set out in the Bill of Quantities, excluding Provisional Sums, day works, and adjustments of price made under Sub-Clauses 70.1, 70.2, 70.3, 70.4 and 70.5,

but not from any other cause, there have been additions to or deductions from the Contract Price which taken together are in excess of 15 percent of the "Effective Contract Price" (which for the purpose of this Sub-Clause shall mean the Contract Price, excluding Provisional Sums and allowance for day works, if any) then and in such event (subject to any action already taken under any other Sub-Clause of this Clause), after due consultation by the Engineer with the Employer and the Contractor, there shall be added to or deducted from the Contract Price such further sum as may be agreed between the Contractor and the Engineer or, failing agreement, determined by the Engineer having regard to the Contractor's Site and the general overhead costs of the Contract. The Engineer shall notify the Contractor of any determination made under this Sub-Clause, with a copy to the Employer. Such sum shall be based only on the amount by which such additions or deductions shall be in excess of 15 percent of the Effective Contract Price.

PROCEDURE FOR CLAIMS

53.1 Notice of Claims

Notwithstanding any other provision of the Contract, if the Contractor intends to claim any additional payment pursuant to any Clause of these Conditions or otherwise, he shall give notice of his intention to the Engineer, with a copy to the Employer, within 28 days after the event giving rise to the claim has first arisen.

No compensation shall be allowed for any delay in execution of the work on account of water standing in borrow pits or compartments. The rates are inclusive of hard or cracked soil, excavation in mud, sub-soil water or water standing in borrow pits and no claim for an extra rate shall be entertained unless otherwise expressly specified.

53.2 Contemporary Records

Upon the happening of the event referred to in Sub-Clause 53.1, the Contractor shall keep such contemporary records as may reasonably be necessary to support any

claim he may subsequently wish to make. Without necessarily admitting the Employer's liability, the Engineer shall, on receipt of a notice under Sub-Clause 53.1, inspect such contemporary records and may instruct the Contractor to keep any further contemporary records as are reasonable and may be material to the claim of which notice has been given. The Contractor shall permit the Engineer to inspect all records kept pursuant to this Sub-Clause and shall supply him with copies thereof as and when the Engineer so instructs.

53.3 Substantiation of Claims

Within 42 days, or such other reasonable time as may be agreed by the Engineer, of giving notice under the Sub-Clause 53.1, the Contractor shall send to the Engineer an account giving detailed particulars of the amount claimed and the grounds upon which the claim is based. Where the event giving rise to the claim has a continuing effect, such account shall be considered to be an interim account and the Contractor shall, at such intervals as the Engineer may reasonably require, send further interim accounts giving the accumulated amount of the claim and any further grounds upon which it is based. In cases where interim accounts are sent to the Engineer, the Contractor shall send a final account within 28 days of the end of the effects resulting from the event. The Contractor shall copy to the Employer all accounts sent to the Engineer pursuant to this Sub-Clause.

53.4 Failure to Comply.

If the Contractor fails to comply with any of the provisions of this Clause in respect of any claim which he seeks to make, his entitlement to payment in respect thereof shall not exceed such amount as the Engineer considers to be verified by contemporary records (whether or not such records were brought to the Engineer's notice as required under Sub-Clause 53.2 and 53.3).

53.5 Payment of Claims

The Contractor shall be entitled to have included in any interim payment certified by the Engineer pursuant to Sub-Clauses 60.1 to 60.14. such amount in respect of any claim as the Engineer, after due consultation with the Employer and the Contractor, may consider due to the Contractor provided that the Contractor has supplied sufficient particulars to enable the Engineer to determine the amount due. If such particulars are insufficient to substantiate the whole of the claim, the Contractor shall be entitled to payments in respect of such part of the claim as such particulars may substantiate to the satisfaction of the Engineer. The Engineer shall notify the Contractor of any determination made under this Sub-Clause, with a copy to the Employer.

CONTRACTOR'S EQUIPMENT, TEMPORARY WORKS, AND MATERIALS

54.1 Exclusive Use for the Works

All Contractor's Equipment, Temporary Works and materials provided by the Contractor shall, when brought on to the Site, be deemed to be exclusively intended for

the execution of the Works and the Contractor shall not remove the same or any part thereof, except for the purpose of moving it from one part of the Site to another, without the consent of the Engineer. Provided that consent shall not be required for vehicles engaged in transporting any staff, labour, Contractor's Equipment, Temporary Works, Plant or materials to or from the Site.

54.2 Employer Not Liable for Damage

The Employer shall not at any time be liable, save as mentioned in Sub-Clauses 20.1 to 20.4 and 65.1 to 65.8, for the loss of or damage to any of the said Contractor's Equipment, Temporary Works or materials.

54.3 Incorporation of Clause in Sub-Contracts

The Contractor shall, where entering into any subcontract for the execution of any part of the Works, incorporate in such subcontract (by reference or otherwise) the provisions of this Clause in relation to Contractor's Equipment, Temporary Works or materials brought on to the Site by the Subcontractor.

54.4 Approval of Material Not Implied

The operation of the Sub-Clauses 54.1 to 54.4 shall not be deemed to imply any approval by the Engineer of the material or other matters referred to therein nor shall it prevent the rejection of any such materials at any time by the Engineer.

MEASUREMENT

55.1 Quantities

The quantities set out in the Bill of Quantities are the estimated quantities for the Works, and they are not to be taken as the actual and correct quantities of the Works to be executed by the Contractor in fulfilment of his obligations under the Contract.

56.1 Works to be Measured.

The Engineer shall, except as otherwise stated, ascertain and determine by measurement the value of the Works in accordance with the Contract and the Contractor shall be paid that value in accordance with Sub-Clauses 60.1 to 60.14. The Engineer shall, when he requires any part of the Works to be measured, give reasonable notice to the Contractor's authorised agent, who shall:

(a) forthwith attend or send a qualified representative to assist the Engineer in making such measurement, and

(b) supply all particulars required by the Engineer.

Should the Contractor not attend, or neglect or omit to send such representative, then the measurement made by the Engineer or approved by him shall be taken to be the correct measurement of such part of the Works. For the purpose of measuring such Permanent Works as are to be measured by records and drawings, the Engineer shall prepare such records and drawings as the work proceeds as he deems necessary or

appropriate and the Contractor, as and when called upon to do so in writing, shall within 14 days, attend to examine and agree such records and drawings with the Engineer and shall sign the same when so agreed. If after examination of such records and drawings, the Contractor does not agree the same or does not sign the same as agreed, they shall nevertheless be taken to be correct, unless the Contractor, within 14 days of such examination, lodges with the Engineer notice of the respects in which such records and drawing are claimed by him to be incorrect. On receipt of such notice, the Engineer shall review the records and drawings and either confirm or vary them.

57.1 Method of Measurement

The Works shall be measured net, notwithstanding any general or local custom, except where otherwise provided for in the Contract.

57.2 Breakdown of Lump Sum Items

For the purpose of statements submitted in accordance with Sub-Clause 60.1, the Contractor shall submit to the Engineer, within 28 days after the receipt of the Letter of Award, a breakdown for each of the lump sum items contained in the Tender. Such breakdowns shall be subject to the approval of the Engineer.

PROVISIONAL SUMS (Not applicable for this Contract)

58.1 Definition of "Provisional Sums" (Not applicable for this Contract)

58.2 Use of Provisional Sums (Not applicable for this Contract)

58.3 Production of Vouchers (Not applicable for this Contract)

NOMINATED SUBCONTRACTORS (Not applicable for this Contract)

59.1 Definitions of "Nominated Subcontractors" (Not applicable for this Contract)

59.2 Nominated Subcontractors; Objection to Nomination (Not applicable for this Contract)

59.3 Design Requirements to be expressly stated (Not applicable for this Contract)

59.4 Payments to nominated Subcontractors (Not applicable for this Contract)

59.5 Certification of payments to nominated Subcontractors (Not applicable for this Contract)

CERTIFICATES AND PAYMENTS

60.1 Monthly Statements and Bills

The Contractor shall submit a statement in 3 copies to the Engineer by 7th day of each month for the work executed up to the end of previous month in a tabulated form approved by the Engineer, showing the amounts to which, the Contractor considers

himself to be entitled. The statement shall include the following items, as applicable, which shall be taken into account in the sequence listed:

(a) the estimated Contract value of the Temporary and Permanent Works executed up to the end of the month in question, at base unit rates and prices;

(b) the actual value certified for payment for the Temporary and Permanent Works executed up to the end of the previous month, at base unit rates and prices;

(c) the estimated Contract value at base unit rates and prices of the Temporary and Permanent Works for the month in question, obtained by deducting (b) from (a);

(d) the value of any variations executed up to the end of the month in question, less the amount certified in the previous Interim Payment Certificate, pursuant to Sub-Clauses 52.1 to 52.3;

(e) amount reflecting changes in cost and legislation, if any, pursuant to Sub-Clauses 70.1 to 70.8;

(f) any amount to be withheld under the retention provision of Sub-Clause 60.5, determined by applying the percentage set forth in Sub-Clause 60.5 to the amounts due;

(g) any amount to be deducted as repayment of the Advance under the provisions of Sub-Clause 60.7;

(h) any other sum, to which the Contractor may be entitled under the Contract;

(i) any deduction for the advance income tax, advance works contract tax and Royalties on materials as per the relevant act and as provided in the Appendix to Bid.

60.2 Monthly Payments

The said statement shall be approved or amended by the Engineer in such a way that in his opinion, it reflects the amounts due to the Contractor in accordance with the Contract after deduction, other than pursuant to Sub-Clauses 47.1 and 47.2, of any sums which may have become due and payable by the Contractor to the Employer. In case where there is a difference of opinion as to the value of any item the Engineer's view shall prevail. Within 30 days following the receipt of the monthly statement referred to in Sub-Clause 60.1, the Engineer shall determine the amounts due to the Contractor and shall issue to the Employer and the Contractor a certificate, herein called the "Interim Payment Certificate", certifying the amount due to the Contractor. **Thereafter the Contractor shall raise the invoice for the certified amount for payment.**

Provided that the Engineer shall not be bound to certify any payment under this Sub-Clause if the billed amount is less than the Minimum Amount of Interim Payment Certificate stated in the Appendix to Bid.

Notwithstanding the terms of this Clause or any other Clause of the Contract, no amount will be certified by the Engineer for payment until the performance security has been provided by the Contractor and approved by the Employer.

60.3 Material and Plant for the Permanent Works

With respect to materials and Plant brought by the Contractor to the Site for incorporation in the Permanent Works, the Contractor shall (i) receive a credit in the month in which these materials and Plant are brought to the Site and (ii) be charged a debit in the month in which they are incorporated in the Permanent Works, both such credit and debit to be determined by the Engineer in accordance with the following provisions:

No credits shall be given unless the following conditions shall have been met to the Engineer's satisfaction:

(i) the materials and Plant are in accordance with the specifications for the Works.

(ii) the materials and Plant are properly stored and protected against loss, damage or deterioration.

(iii) the Contractor’s records of the requirements, orders, receipts and use of materials and Plant are kept in a form approved by the Engineer and such records are available for inspection by the Engineer.

(iv) the Contractor has submitted a statement of his cost of acquiring and delivering the materials and Plant to the Site, together with such documents as may be required for the purpose of evidencing such cost; and

(v) the Contractor has adequately indemnified the Employer against loss or damage to the materials and Plant during the period between delivery to the site and incorporation into the Works.

Payment by the Employer under this Clause for materials and Plant delivered to the Site does not, in any way, relieve the Contractor of his responsibility to ensure the safety and protection of such materials and Plant during the period between delivery to the site and their incorporation into the Permanent Works. In the event that any materials and Plant are lost, damaged or deteriorated between their delivery to the site and their incorporation into the Permanent Works, the Contractor shall be fully responsible to replace such materials and Plant, or to make such repairs as may be required to restore the materials and Plant to the specified condition, at his own cost.

60.4 Place of Payment

Payments to the Contractor by the Employer shall be made into a bank account or accounts nominated by the Contractor, or as may otherwise be agreed.

60.5 Retention Money

A retention amounting to 5% (Five) of the amounts due as determined in accordance with the procedure set out in Sub-Clause 60.1 shall be affected by the Engineer from the Interim Payment Certificates of the third month until the amount so retained from

each of the subsequent Interim Payment certificates reaches the limit of retention money as stated in the Appendix to the Bid.

60.6 Refund of Retention Money

Upon the issue of the Taking-Over Certificate with respect to the whole of the construction Works, one half of the retention money (2.5%), or upon the issue of a Taking-Over Certificate with respect to a Section or a part of the Permanent Works only such proportion thereof as the Engineer determines having regard to the relative value of such Section or part of the Permanent Works, shall be certified by the Engineer for payment to the Contractor. At this stage, the Contractor may, at his option, request the Engineer to certify for payment the full amount of the retention money on the submission, by the Contractor, of an unconditional bank guarantee for half the retention money to cover the Defects Liability Period.

Upon the expiration of the Defects Liability Period for the construction works the other half of the Retention Money (balance 2.5%) shall be certified by the Engineer for payment to the Contractor (or return of the bank guarantee, as the case may be). Provided that, in the event of different Defects Liability Periods being applicable to different Sections or parts of the Permanent Works pursuant to Clause 48.1 to 48.5, the expression “expiration of the Defects Liability Period” shall, for the purposes of this Sub-Clause, be deemed to mean the expiration of the latest of such periods.

Provided also that, if at such time, there shall remain to be executed by the Contractor any work ordered, pursuant to Sub-Clauses 49.1 to 49.5 and 50.1, in respect of the Works, the Engineer shall be entitled to withhold certification until completion of such work of so much of the balance of the Retention Money as shall, in the opinion of the Engineer, represent the cost of the work remaining to be executed.

60.7 Advance Payment

(a) No advance payment will be made to the Contractor.

(b) Mobilisation will be paid in the form of Running account bill to be raised by the Contractor after completion of Mobilisation activities including but not limited to, construction of site access roads, Contractor’s site office, store workshop shed, etc; and delivery at Site, of Key Construction Equipment, required commencing the construction activity.

60.8 Time for Payment

The amount due to the Contractor under any Interim Payment Certificate issued by the Engineer pursuant to this Clause, or to any other term of the Contract shall, subject to Sub-Clauses 47.1 and 47.2, be paid by the Employer to the Contractor within 29 days after the Contractor’s monthly statement has been submitted to the Engineer for certification or, in the case of the Final Certificate, pursuant to Sub-Clause 60.13 within 150 days after the agreed Final Statement and written discharge have been submitted to the Engineer for certification. In the event of the failure of the Employer to make payment (admitted but not paid) within the times stated, the Employer shall pay to the

Contractor interest at the rate stated in the Appendix to Bid upon all sums unpaid from the date by which the same should have been paid.

60.9 Correction of Certificate

The Engineer may by any Interim Payment Certificate make any correction or modification in any previous Interim Payment Certificate which has been issued by him, and shall have the authority, if any work is not being carried out to his satisfaction, to omit or reduce the value of such work in any Interim Payment Certificate.

60.10 Final Bill and Statement at Completion

Not later than 42 days after the issue of the Taking-Over Certificate in respect of the whole of the Works, the Contractor shall submit to the Engineer a Statement at Completion with supporting documents showing in detail, in the form approved by the Engineer:

(a) the final value of all work done in accordance with the Contract up to the date stated in such Taking-Over-Certificate.

(b) any further sums which the Contractor considers to be due; and

(c) an estimate of amounts which the Contractor considers will become due to him under the Contract.

Estimated amounts shall be shown separately in such Statement at Completion. The Engineer shall certify payment in accordance with Sub-Clause 60.2.

60.11 Final Statement

Not later than 28 days after the issue of the Defects Liability Certificate pursuant to Sub-Clause 62.1, the Contractor shall submit to the Engineer for consideration a draft final statement with supporting documents showing in detail, in the form approved by the Engineer:

(a) the value of all work done in accordance with the contract; and

(b) any further sums which the Contractor considers to be due to him under the Contract.

If the Engineer disagrees with or cannot verify any part of the draft final statement, the Contractor shall submit such further information as the Engineer may reasonably require and shall make such changes in the draft as may be agreed between them. The Contractor shall then prepare and submit to the Engineer the Final Statement as agreed (for the purpose of these Conditions referred to as “Final Statement”).

If, following discussions between the Engineer and the Contractor and any changes to the draft final statement which may be agreed between them, it becomes evident that a dispute exists, the Engineer shall issue to the Employer an Interim Payment Certificate for those parts of the draft final statement which are not in dispute. The dispute shall then be settled in accordance with Sub-Clauses 67.1 to 67.5. The final statement shall be agreed upon settlement of the dispute.

60.12 Discharge

Upon submission of the Final Statement, the Contractor shall give to the Employer, with a copy to the Engineer, a written discharge confirming that the total of the Final Statement represents full and final settlement of all monies due to the Contractor arising out of or in respect of the Contract. Provided that such discharge shall become effective only after payment due under the Final Certificate issued pursuant to Sub-Clause 60.13 has been made and the Performance Security referred to in Sub-Clause 10.1 has been returned to the Contractor.

60.13 Final Certificate

Within 28 days after receipt of the Final Statement and the written discharge, the Engineer shall issue to the Employer (with a copy to the Contractor) a Final Certificate stating:

(a) the amount which, in the opinion of the Engineer, is finally due under the Contract; and

(b) after giving credit to the Employer for all amounts previously paid by the Employer and for all sums to which the Employer is entitled under the Contract other than Sub-Clauses 47.1 and 47.2, the balance, if any, due from the Employer to the Contractor or from the Contractor to the Employer as the case may be.

60.14 Cessation of Employer's Liability

The Employer shall not be liable to the Contractor for any matter or thing arising out of or in connection with the Contract or execution of the Works, unless the Contractor shall have included a claim in respect thereof in his Final Statement and (except in respect of matters or things arising after the issue of the Taking - Over Certificate in respect of the whole of the Works) in the Statement at Completion referred to in Sub-Clause 60.10.

DEFECTS LIABILITY

61.1 Approval Only by Defects Liability Certificate

Only the Defects Liability Certificate, referred to in Sub-Clauses 62.1 and 62.2, shall be deemed to constitute approval of the Works.

62.1 Defects Liability Certificate

The Contract shall not be considered as completed until a Defects Liability Certificate shall have been signed by the Engineer and delivered to the Employer, with a copy to the Contractor, stating the date on which the Contractor shall have completed his obligations to execute and complete the Works and remedy any defects therein to the Engineer's satisfaction. The Defects Liability Certificate shall be given by the Engineer within 28 days after the expiration of the Defects Liability Period or, if different defects liability periods shall become applicable to different Sections or parts of the Permanent

Works, the expiration of the latest such period, or as soon thereafter as any works instructed, pursuant to Sub-Clauses 49.1 to 49.5 and 50.1, have been completed to the satisfaction of the Engineer.

62.2 Unfulfilled Obligations

Notwithstanding the issue of the Defects Liability Certificate the Contractor and the Employer shall remain liable for the fulfilment of any obligation remaining to be performed under the provisions of the Contract prior to the issue of the Defects Liability Certificate which remains unperformed at the time such Defects Liability Certificate is issued and, for the purpose of determining the nature and extent of any such obligation, the Contract shall be deemed to remain in force between the parties to the Contract.

REMEDIES AND TERMINATION

63.1 Default of Contractor

If the Contractor is deemed by law unable to pay his debts as they fall due, or enters into voluntary or involuntary bankruptcy, liquidation or dissolution (other than a voluntary liquidation for the purposes of amalgamation or reconstruction), or becomes insolvent, or makes an arrangement with, or assignment in favour of, his creditors, or agrees to carry out the Contract under a committee of inspection of his creditors, or if a receiver, administrator, trustee or liquidator is appointed over any substantial part of his assets, or in case the Contractor abandons the work owing to serious illness or death of the Contractor or if, under any law or regulation relating to reorganisation, arrangement or readjustment of debts, proceedings are commenced against the Contractor or resolutions passed in connection with dissolution or liquidation or if any steps are taken to enforce any security interest over a substantial part of the assets of the Contractor, or if any act is done or event occurs with respect to the Contractor or his assets which, under any applicable law has a functionally similar effect to any of the foregoing acts or events, or if the Contractor has contravened Sub-Clause 3.1, or has an execution levied on his goods or if the Engineer certifies to the Employer with a copy to the Contractor, that, in his opinion, the Contractor:

(a) has repudiated the Contract, or

(b) without reasonable excuse has failed

  (i) to commence the Works in accordance with Sub-Clause 41.1, or

  (ii) to proceed with the Works, or any Section thereof, within 28 days after receiving notice pursuant to Sub-Clause 46.1, or

(c) has failed to comply with a notice issued pursuant to Sub-Clause 37.4 or an instruction issued pursuant to Sub-Clause 39.1 within 28 days after having received it, or

(d) despite previous warning from the Engineer, in writing, is otherwise persistently or flagrantly neglecting to comply with any of his obligations under the Contract, or

(e) has contravened Sub-Clause 4.1,

(f) has contravened Sub-Clause 33.1

then the Employer may, after giving fourteen days notice to the Contractor, enter upon the Site and terminate the Contract of the Contractor without thereby releasing the Contractor from any of his obligations or liabilities under the Contract or affecting the rights and powers conferred on the Employer or the Engineer by the Contract, and may himself complete the Works or may employ any other Contractor to complete the Works at the risk and cost of the defaulting Contractor. The Employer or such other Contractor may use for such completion so much of the Contractor's Equipment, Plant, Temporary Works and materials which have been deemed to be reserved exclusively for the execution of the Works under the provisions of the Contract as he or they may think proper and the Employer may at any time sell any of the said Contractor's Equipment, Temporary Works and unused Plant and materials and apply the proceeds of sale in or towards the satisfaction of any sums due or which may become due to him from the Contractor under the Contract.

63.2 Valuation at Date of Termination

The Engineer shall, as soon as may be practicable after any such entry and termination by the Employer, fix and determine exparte, or by or after reference to the parties or after such investigation or enquiries as he may think fit to make or institute, and shall certify:

(a) what amount (if any) had, at the time of such entry and termination, been reasonably earned by or would reasonably accrue to the Contractor in respect of work then actually done by him under the Contract, and

(b) the value of any of the said unused or partially used materials, any Contractor's Equipment and any Temporary Works.

63.3 Payment after Termination

If the Employer shall enter and terminate the Contract of the Contractor under this Clause, the Employer shall forfeit the Performance Security provided under the terms of Sub-Clauses 10.1 to 10.3. The Employer shall not be liable to pay to the Contractor any further amount (including damages) in respect of the Contract until the expiration of the Defects Liability Period and thereafter until the costs of execution, completion and remedying of any defects, damages for delay in completion (if any) and all other expenses incurred by the Employer have been ascertained and the amount thereof certified by the Engineer. The Contractor shall then be entitled to receive only such sum (if any) as the Engineer may certify would have been payable to him upon due completion by him after deducting the said amount. If such amount exceeds the sum which would have been payable to the Contractor on due completion by him, then the Contractor shall, upon demand, pay to the Employer the amount of such excess and it shall be deemed a debt due by the Contractor to the Employer and shall be recoverable accordingly.

63.4 Assignment of Benefit of Agreement

Unless prohibited by law, the Contractor shall, if so instructed by the Engineer within 14 days of such entry and expulsion referred to in Sub-Clause 63.1, assign to the Employer the benefit of any agreement for the supply of any goods or materials or services and/or for the execution of any work for the purposes of the Contract which the Contractor may have entered into.

64.1 Urgent Remedial Work

If, by reason of any accident, or failure, or other event occurring to, in, or in connection with the Works, or any part thereof, either during the execution of the Works, or during the Defects Liability Period, any remedial or other work is, in the opinion of the Engineer, urgently necessary for the safety or progress of the Works and the Contractor is unable or unwilling at once to do such work, the Employer shall be entitled to employ and pay other persons to carry out such work as the Engineer may consider necessary. If the work or repair so done by the Employer is work which, in the opinion of the Engineer, the Contractor was liable to do at his own cost under the Contract, then all costs consequent thereon or incidental thereto shall, after due consultation with the Employer and the Contractor, be determined by the Engineer and shall be recoverable from the Contractor by the Employer, and may be deducted by the Employer from any monies due or to become due to the Contractor and the Engineer shall notify the Contractor accordingly, with a copy to the Employer. Provided that the Engineer shall, as soon after the occurrence of any such emergency as may be reasonably practicable, notify the Contractor thereof.

SPECIAL RISKS

65.1 No Liability for Special Risks

The Contractor shall be under no liability whatsoever in consequence of any of the special risks referred to in Sub-Clause 65.2 whether by way of indemnity or otherwise, for or in respect of:

(a) destruction of or damage to the Works, save to work condemned under the provision of Sub-Clauses 39.1 & 39.2 prior to the occurrence of any of the said special risks, or

(b) destruction of or damage to property, whether of the Employer or third parties, or

(c) injury or loss of life.

65.2 Special Risks

The special risks are the risks defined under para (a) sub-paras (i) to (v) of Sub-Clause 20.4

65.3 Damage to Works by Special Risks

If the Works or any materials or Plant on or near or in transit to the Site, or any of the Contractors Equipment, sustain destruction or damage by reason of any of the said

special risks, the Contractor shall be entitled to payment in accordance with the Contract for any Permanent Works duly executed and for any materials or Plant so destroyed or damaged and, so far as may be required by the Engineer or as may be necessary for completion of the Works, to payment for:

(a) rectifying any such destruction or damage to the Works, and

(b) replacing or rectifying such materials or Contractor's Equipment,

and the Engineer shall determine an addition to the Contract Price in accordance with Sub-Clauses 52.1 to 52.3 (which shall in the case of the cost of replacement of Contractor's Equipment include the fair market value thereof as determined by the Engineer) and shall notify the Contractor accordingly, with a copy to the Employer.

65.4 Projectile, Missile

Destruction, damage, injury or loss of life caused by the explosion or impact whenever and wherever occurring, of any mine, bomb, shell, grenade or other projectile, missile, munitions, or explosive of war, shall be deemed to be a consequence of the said special risks.

65.5 Increased Costs Arising from Special Risks

Save to the extent that the Contractor is entitled to payment under any other provision of the Contract, the Employer shall repay to the Contractor any costs of the execution of the Works (other than such as may be attributable to the cost of reconstructing work condemned under the provisions of Sub-Clauses 39.1 and 39.2 prior to the occurrence of any special risks)which are howsoever attributable to or consequent on or the result of or in any way whatsoever connected with the said special risks, subject however to the provisions in this Clause hereinafter contained in regard to outbreak of war, but the Contractor shall, as soon as any such cost comes to his knowledge, forthwith notify the Engineer thereof. The Engineer shall, after due consultation with the Employer and the Contractor, determine the amount of the Contractor's costs in respect thereof which shall be added to the Contract Price and shall notify the Contractor accordingly, with a copy to the Employer.

65.6 Outbreak of War

If during the currency of the Contract, there is an outbreak of war, whether war is declared or not, in any part of the world which, whether financially or otherwise, materially affects the execution of the Works, the Contractor shall, unless and until the Contract is terminated under the provision of this Clause, continue to use his best endeavours to complete the execution of the Works. Provided that the Employer shall be entitled, at any time after such outbreak of war, to terminate the Contract by giving notice to the Contractor and upon such notice being given, the Contractor shall, except as to the rights of the parties under this Clause and to the operation of Sub-Clauses 67.1 to 67.5, terminate, but without prejudice to the rights of either party in respect of any antecedent breach thereof.

Technical Drilling (HDD) to lay HDPE ducts and al protecting / reinstatement works.

(a) **Soil Categorization** For the purpose of deciding the depth at which the cable is to be laid, the soil shall be categorized under two broad categories viz. Rocky and Non-Rocky. Only that type of soil shall be categorized as rocky where the cable trench cannot be dug without blasting and / or chiseling. All other types of soil shall be categorized as non-Rocky. ncluding Murram and soil mixed with stone or soft rock.
(b) **Ducts for Cable Laying and Protection**. Optical Fiber Cables shall be pulled through 25/40 mm (outer diameter) HDPE ducts having strength of 6 Kg/ cm2. Wherever RCC ducts are used for protection, the two ends must be properly sealed, to bar entry of rodents. In addition, blowing of fiber through permanently lubricated Silicone duct also be included in proposal.
(c) **Measurement of Cable**. All depth shall be measured from the top of duct. However, the depth shall be considered as acceptable if it is not less by more than 8 cm from the specified depth.
(d) **On Ducted Routes.** Optical Fiber Cable may be laid through the existing ducts wherever the ducts are available. As far as possible the cable may be diverted to the ducts laid subsequently. When the cables are laid in ducts, no particular depth of the cable will be insisted upon. End of the ducts should be properly sealed and necessary protection by way of GI duct / RCC duct should be provided at the entry and exist of the duct till the cable is buried to a depth of 1.65 m.
(e) **On Non- ducted Routes.** At the non-ducted routes, in built up areas, OFC is more vulnerable to faults due to cables/ ducts of other services laid close to our cables. It is essential to take special care while laying OFC on these routes. OFC shall be laid through HDPE ducts at a depth of 1.65 m. If need be, the OFC cable can be laid below the cables and ducts of other agencies and if required cable can be laid via alternate longer route. Only in exceptional cases the depth of cable will be relaxed.
(f) **Road Crossing.** OFC will be laid at a depth of 1.65 m. These RCC ducts will extend minimum 3 m on both sides of road.

Fiber Patch Cord Specifications

Fiber patch cord shall meet the following requirements.	
(a)	Shall consist of one or two single, tight buffered, single-mode graded index fibers.
(b)	The fiber patch shall be used for optical fiber cross connects. and interconnects.
(c)	The fiber cladding shall be covered by aramid yarn and jacket. of flame-retardant PVC.
(d)	The fiber cord shall be factory terminated with ST (Straight Tip), SC (Subscriber connector), LC or hybrid ceramic. connectors at each end as per GIFT Engineer requirement.
(e)	The fiber patch cord shall meet the following specifications. (i) Minimum band radius 90 deg at min 25.4 mm (ii) Operating temperature: -42 to + 75 deg C (iii) Loss: < 3 db/ mated connector. (iv) Cable outer diameter: 3mm

Camera Poles

Camera poles should be used as and when required. The bidder based on site survey will be at a liberty to decide type of Pole/Tower to be erected at the site keeping Industry leading practice in mind.

Pole Type	Hot Dip Galvanized after fabrication with Zinc coating of 86 micron as per IS:2629; Fabrication in accordance with IS-2713(1980)
Height	3 meter or higher, as per requirements for different types of cameras & Site conditions
Pole Diameter	Minimum 10 cm diameter pole (Bidder to choose larger diameter for higher height)
Bottom Plate Base	Minimum base plate of size; 300MM x 300MM x 15 MM
Mounting Facilities	To mount CCTV cameras, switch, etc.

Foundation	Casting of civil foundation with foundation bolts, to ensure vibration free erection (basic aim is to ensure that video feed quality is not impacted due to winds in different climatic conditions and also from vibration caused due to heavy vehicles on road). Expected foundation depth of min. 100 cms
Protection	Lightning arrestors with proper grounding
Colour of the pole	Grey / White / Cream white

Wireless Device Specification

Specifications of Point to Point and Point to Multi-Point Radios The specification covers procurement of point to point, point to multi point and CPE Radio system complete with all services such as RF designing, planning, installation, commissioning, post warranty support. The offered technology should be the latest/best considering the geographical terrain.requirement to ensure proper throughput & latency of the network.

Point to Multi Point Radios

1. The bidder shall carry out the feasibility for assessing the requirement and apprise themselves fully on the site condition before submitting the offer. It is to be clearly understood by the bidder to establish successful communication link between various locations and link budget for assured throughput of up to 10, 25 and 50 Mbps aggregated bandwidth at CPE port supporting multiple cameras at each CPE. Actual tower height required to be finalized by the bidder on proper radio site survey of various locations.
2. Frequency Range: 5.8GHz or 2.4GHz unlicensed band applicable for India.
3. The proposed network architecture shall have central base station with connectivity to various CPE Radios in point to multi point Architecture.
4. The offered radio systems should be of IEEE 802.3 network compliant and should have TEK/AES 128/AES 256-bit encryption.

5. Base station radio should support TDD synchronization to eliminate mutual Interference at sites with multiple radios. Collocated Radios should support TDD inter site synchronization using GPS Based Synchronization support via Ethernet Port.
6. The Radios should have inbuilt spectrum viewer feature.
7. System standards: All the radio equipments shall be conforming to the latest safety and EMC standards & must have valid TAC (Type Approval Certificate) approval of WPC.
8. ***Network Management: Report generation, Performance Monitoring and Trend Reports, User Access Control Management SNMP v1& v3, Packet classification to 4 queues according to 802.1p and Diffserv, same can be configured using EMS or through NMS. The network management system to be deployed at central location to manage and configure base stations and remote station unit. The functionality includes automatic and manual device discovering of all network elements such as base stations, remote stations etc and system shall keep details of all network elements. ***
9. Point to Multi-Point Base Stations and Point to Multi-Point CPEs should be of same Make and Manufacturer to enabling configuration and fault management with single NMS.
10. Offered Radio should be of proven track record and should have been deployed for 200 or more CPEs in one Single Project for more than one year with Govt/Public Sector Undertaking. Bidder to provide documentary evidence and regarding deployment and satisfactory performance.
11. OEMs of the products quoted should have own local RMA repair centre in India. The offered system should have capabilities of self-backhaul by using one of the high-capacity CPE to act as back haul to base station eliminating additional P to P link for back haul requirements.

<u>Point to Multi Point Base Station Radios</u>

12. System consisting of outdoor and indoor equipment, antenna, cables (RF/IF) with connectors, system software and all other hardware (Laptop not required) and software required for operation, monitoring & configuration of the link.
13. The maximum throughput per Base Station Sector should be 200 Mbps or more for provision of high capacities per CPE for Video applications.
14. The Base Station Sector should be capable of 60º, 90º, 120º coverage using sectorial antenna. 15. Network Interface should support GbE Port at Base station to enable carrying of more than 100 Mbps aggregate asymmetrical traffic.

16. Spectral efficiency should be 5 Bit/Hz or more
17. Point to Multi Point Radio should support 200,000 pps or more catering high capacity even at lower frame size
18. VLAN Support: It should be based on IEEE 802.1Q, 802.1P and QinQ Tagging/UnTagging
19. ***Channel Bandwidth: 05/10/20/40 MHz with 5 MHz steps. ***
20. Distance coverage: up to 10 Kms.
21. Should support SNMPv1, v3 & Telnet.
22. ***No of CPE per base station: Mimimum20 CPE per base station. ***
23. Modulation Technology: OFDM – MIMO 2x2
24. Point to Multipoint System should support space diversity
25. IP Protection: IP 67 or better.
26. Operating temperature:0 to 55 deg. Celsius

CPE Radio

27. System consisting of outdoor and indoor equipment, antenna, cables (RF/IF) with connectors, system software and all other hardware (Laptop not required) and software required for operation, monitoring & configuration of the link.
28. The throughput per CPE should be 10Mbps with option of capacity upgrade to 25Mbps
29. Network Interface should support IEEE 802.3.
30. VLAN Support: It should be based on IEEE 802.1Q, 802.1P and QinQ Tagging/ UnTagging
31. Channel Bandwidth: 05/10/20/40 MHz with 5 MHz steps.
32. Radio should cover distance of 15 Kms.
33. Should support SNMP v1, v3 & Telnet.
34. No of CPE per base station: up to 20 CPE per base station.
35. Modulation Technology: OFDM – MIMO 2x2
36. Point to Multipoint System should support polarization and space diversity

37. IP Protection: IP 67 or better.

38. Operating temperature: 0 to 55 deg. Celsius

Point to Point Radios

39. System consisting of outdoor and indoor equipment, antenna, cables (RF/IF) with connectors, System software and all other hardware (Laptop not required) and software required for operation, monitoring & Configuration of the link. It should support TDD synchronization to eliminate interference. Collocated Radios should support TDD inter site synchronization using GPS Based Synchronization support via Ethernet Port.

40. The maximum throughput supported should be up to 200Mbps Aggregated or more per Link.

41. Network Interface should support GbE Interface to enable transporting more than 100Mbps asymmetric traffic.

42 Spectral efficiency should be 5B/Hz or more

43. The system shall support flexible quality of services and concurrent use of and voice, video and data applications

44. Channel Bandwidth: 05/10/20/40 MHz with 5 MHz steps.

45. Should support SNMP v1, v3 & Telnet.

46. Distance coverage: up to 30 Kms or more.

47. Modulation Technology: OFDM – MIMO 2x2

48. PtP System should support space diversity

49. Point to Point Radio should support 200,000 pps or more

50. VLAN Support: It should be based on IEEE 802.1Q, 802.1P and QinQ Tagging/Un-Tagging

51. IP Protection: IP 67 or better.

52. Operating temperature: 0 to 55 deg. Celsius

SINGLE MODE LOOSE TUBE ARMORED FIBER OPTIC CABLE SPECIFICATIONS

1.GENERAL

1.1 SCOPE

This listed specification covers the basic design requirements and performance standard for the supply of optical fiber cable in the GIFT City. It also includes fiber optic designed cable with optical, mechanical, and geometrical characteristics.

1.2 CABLE DESCRIPTION

Fiber Optic should possess high tensile strength and flexibility in compact cable sizes. At the same time, it provides excellent optical transmission and physical performance.

Approved OFC Makes: Finolex, CommScope, Birla, HFCL, KEC (RPG), Molex, Sterlite.

1.3 REFERENCE

Fiber Optic cable should be designed, manufactured, and tested according to international standards as follows:

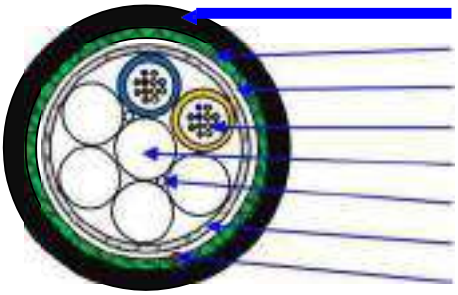
IEC 60793-1	Optical fiber Part 1: Generic specifications
IEC 60793-2	Optical fiber Part 2: Product specifications
IEC 60794-3-10	Outdoor cables- family specification for duct and directly buried optical. telecommunication cable
ITU-T G.650	Definition and test methods for the relevant parameters of single-mode fibers
ITU-T G.652	Characteristics of a single-mode optical fiber and cable
EIA/TIA 598	Color code of fiber optic cables

2.OPTICAL FIBER

The optical fiber detail data of performance are shown in the following table.

Category	Description	Specifications	
		Before cabling	After cabling
Optical Specifications	Attenuation @1310 nm	≤0.34 dB/km	≤0.36 dB/km
	Attenuation @1550 nm	≤0.20 dB/km	≤0.22 dB/km
	Zero Dispersion Wavelength	1300~1324 nm	
	Zero Dispersion Slope	≤0.092 ps/nm^2·km	
	PMD (Polarization Mode Dispersion)	≤0.2 ps/√km	
	Cable Cutoff Wavelength (λ_{cc})	≤1260 nm	
	Macro bending Loss. (100 turns; Φ50 mm) @1550 nm (100 turns; Φ50 mm)@1625 nm	≤ 0.05 dB ≤ 0.10 dB	
	Mode Field Diameter @1310 nm	9.2±0.4μm	
Dimensional Specifications	Cladding Diameter	125 ±1μm	
	Core/clad concentricity error	≤0.6μm	
	Cladding Non-Circularity	≤1.0%	
Mechanical Specifications	Proof stress	≥0.69Gpa	

3.CABLE STRUCTURE



Picture is only for reference. Actual OFC may different considering different design mythologies in use by various manufacturers.

Technical Characteristics

- The fibers in the tube with good flexibility and bending endurance.
- Industry standard mechanical and environmental properties
- Water blocking material filling.
- Provided with good tension performance.

Construction：

1. Outer sheath (**PE**)
2. Corrugated steel tape
3. Water blocking tape.
4. Loose tube, fiber and water blocking yarn.
5. Central strength member (FRP or Coated FRP)
6. Water blocking yarn.
7. Strength member (Glass yarns)
8. Rip cord

DIMENSION AND PROPERTIES

Physical	Fiber count (G.652D)	12	24	48	72	96
	No of loose tube / filler	1 or 2/5	2/4	4/2	6/0	8/0
	Fiber No. per tube	12				
	Loose tube diameter	2.5±0.2mm				
	Cable OD	12.5mm±5%				14.2mm±5%
	Cable weight	144kg/km±15%				178kg/km±15%
	Operation temperature range	-60 deg C to + 70 deg C				
	Installation temperature range	-30 deg C to + 60 deg C				
	Transport and storage temperature range	-40 deg C to + 75 deg C				
Mechanical	Max. tensile load	Short term: 2700N, long term: 800N				
	Crush resistance	2200 N/10cm				
	Minimal installation bending radius	15 x OD				
	Minimal operation bending radius	10 x OD				

Color code scheme:

Fiber color	blue	orange	green	brown	gray	white	red	black	yellow	violet	pink	aqua
Tube color	blue	orange	green	brown	gray	white	red	black	/	/	/	/

4.TEST REQUIREMENTS

Approved by various professional optical and communication product institutions, the fiber optic cable supplied to GIFT City must have or capable to pass the following test items are carried out according to corresponding reference.

Routine tests of optical fiber

Mode field diameter	IEC 60793-1-45
Mode field Core/clad concentricity	IEC 60793-1-20
Cladding diameter	IEC 60793-1-20
Cladding non-circularity	IEC 60793-1-20
Attenuation coefficient	IEC 60793-1-40
Chromatic dispersion	IEC 60793-1-42
Cable cut-off wavelength	IEC 60793-1-44

TEST LIST

4.1Tension Loading Test

Test Standard	IEC 60794-1-2 E1
Sample length	No less than 50 meters
Load	Max. tension load
Duration time	1 minute
Test results	Fiber strain: ≤0.60%
	Additional attenuation: ≤0.1dB
	No damage to outer jacket and inner elements

4.2Crush/Compression Test

Test Standard	IEC 60794-1-2 E3
Load	Crush load
Duration time	1minute
Test number	3
Test results	Additional attenuation: ≤0.05dB after test
	No damage to outer jacket and inner elements

4.3Impact ResistanceTest

Test Standard	IEC 60794-1-2 E4
Impact energy	10J
Radius	300mm
Impact points	3
Impact number	1
Test result	Additional attenuation: ≤0.05dB after test
	No damage to outer jacket and inner elements

Test Standard	IEC 60794-1-2 E6
Bending radius	15 X diameter of cable
Cycles	25 cycles
Test result	No damage to outer jacket and inner elements

4.4Repeated BendingTest

4.5Torsion/Twist Test

Test Standard	IEC 60794-1-2 E7
Sample length	2m
Angles	±180 degree
cycles	5
Test result	No damage to outer jacket and inner elements

4.6Bend Test

Test Standard	IEC 60794-1-2 E11
Mandrel diameter	20 X diameter of cable
Turn number	4
Number of cycles	3
Test result	Additional attenuation: ≤0.05dB after test
	No damage to outer jacket and inner elements

4.7Temperature cycling Test

Test Standard	IEC 60794-1-2 F1
Temperature step	+20℃ →-60℃ →+70℃ →+20℃
Time per each step	12 hrs
Cycles	2

Test result	Attenuation variation for reference value (the attenuation to be measured before test at +20±3℃) ≤ 0.15 dB/km and is reversible during last cycle

4.8Water penetration Test

Test Standard	IEC 60794-1-2 F5
Height of water column	1m
Sample length	3m
Test time	24 hrs
Test result	No water leakage from the opposite of the sample

SECTION - 5:

FORM OF BID, APPENDIX TO BID, FORM OF BID SECURITY, FORM OF POWER OF ATTORNEY AND QUALIFICATION INFORMATION

SECTION - 5: FORM OF BID, APPENDIX TO BID, FORM OF BID SECURITY AND QUALIFICATION INFORMATION

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SECTION: 5: FORM OF BID, APPENDIX TO BID, BID SECURITY,

AND QUALIFICATION INFORMATION

1. FORM OF BID

Name of Contract: **"Supply, Installation, Testing, Commissioning, Training and Maintenance of CCTV Infrastructure at Various Places in DTA area of GIFT City" (Bid Ref. No GIFT/ICT/WC/2023/01)**

To:

The Managing Director & Group CEO,

Gujarat International Finance Tec-City Company Limited,

EPS - Building no. 49A, Block 49, Zone 04,

Gyan Marg, GIFT City, Gandhinagar

Taluka & District Gandhinagar – 382355

GUJARAT STATE, INDIA

1. Having examined the General Conditions of Contract, Special Conditions of Contract, Instruction to Bidders, Specifications, Drawings, Bill of Quantities and Addenda Nos. (if any) _____for the execution of the above named Works we, the undersigned offer to execute and complete such Works and remedy any defects therein in conformity with the General Conditions of Contract, Special Conditions of Contract, Instruction to Bidders, Specifications, Drawings, Bill of Quantities and Addenda thereof for the total Contract Price as mentioned in Financial Bid or such other sums as may be ascertained in accordance with the said conditions.

2. We acknowledge and understand that the Appendix forms part of our bid.

3. We undertake that, if our bid is accepted, we shall submit contract Performance Security and commence the Works as soon as is reasonably possible after receipt of the Engineer's notice to commence, but in no event later than **15** (fifteen) days thereafter, and to complete the whole of the Works comprised in the Contract within_____ month as stated in the Appendix to Bid.

4. We agree to keep our Bid valid for the period of _____ (_____) days from the date fixed for receiving the same, and this may be accepted at any time before the expiration of the period aforesaid and any extension thereof.

5. If we withdraw our bid during period of its validity or on being awarded the contract do not submit the Contract Performance Security or do not sign the

contract Agreement within specified time, our Bid Security is liable to be forfeited,

6. We shall make available to GIFTCL any additional information it may find necessary or require supplementing or authenticate the Bid

7. We agree to treat the bid document, drawings and other records connected with the Works as secret and confidential documents and shall not communicate information described therein to any person other than the person authorized by you or use the information in any manner prejudicial to the safety of the Works.

8. We certify that in the last 3 (three) years, we or our Associates have neither failed to perform on any contract, as evidenced by imposition of a penalty or a judicial pronouncement or arbitration award, nor been expelled from any project or contract nor have had any contract terminated for breach on our part.

9. We hereby irrevocably waive any right which we may have at any stage at law or howsoever otherwise arising to challenge or question any decision taken by GIFTCL in connection with the selection of the Bidder, or in connection with the bidding process itself, in respect of the above-mentioned contract and the terms and implementation thereof.

10. The Bids are submitted by us after taking into consideration all the terms and conditions stated in the bidding documents.

11. We agree and understand that the Bid is subject to the provisions of the bidding documents. In no case, we shall have any claim or right of whatsoever nature if the contract is not awarded to us or our Bid is not opened.

12. Unless and until time the Contract Agreement is prepared and executed, this Bid together with your Letter of Intent thereof shall constitute a legally binding contract between us.

13. We understand that you are not bound to accept the lowest or any tender you may receive or annul the tender/ bidding process at your will and acknowledge the right of Gujarat International Finance Tec-City Company Ltd to reject our Bid without assigning any reason or otherwise and hereby waive our right to challenge the same on any account whatsoever.

Dated this _____day of _____, 2023.

Signature _____ in the capacity of _____ duly authorized to sign bids for and on behalf of:

(In block capitals or typed)

Contact Details:

Landline No:

Mobile No:

E-mail Id:

Address:

Witness:

1.

2.

Address:

Occupation:

2. Appendix to Bid.

Description	Sub Clause	Remarks
Amount of Performance Guarantee	10.1 of Section 2 read with sub-clause 35 of Section 1	10% (Ten percent) of the Contract Price
Amount of additional security for seriously unbalanced and/or substantially low bids	clause 30.6 of Section 1	If any
Minimum Amount of Third-Party Insurance	23.2 of Section 2 and clause 8 of Section-3	Third Party Insurance for minimum amount of not less than Rs. 10,00,000/- (Rupees Ten Lakh only) or 10% of the Contract Price whichever is higher per occurrence with a minimum coverage of three occurrences at all times.
Time for issue of Notice to Commence the Works	41.1 of Section 2	within 15 days after signing of the Agreement or on such other day the Employer may decide, the Engineer will issue the “Notice to Commence” to the Contractor
Time for Completion of Works	43.1 of Section 2	**02 (Two) Months** from the date of issuance of Notice to Commence plus 03 Years of Maintenance Support after successful completion of Defect Liability period .
Amount of Liquidated Damages	47.1 of Section 2	1 % of the Contract Price per week of the work, of delay or part thereof from the schedule completion of that respective part of the work as liquidated damage.
Limit of Liquidated Damages	47.1 of Section 2	10% (ten percent) of the Contract Value.

Description	Sub Clause	Remarks
Defects Liability Period	49.1 of Section 2	12 Calendar Months from successful completion and commissioning of all the parts of work
Deduction of Income Tax at source (TDS)	60.1 of Section 2	As per the prevailing rate of Tax under the Rules of the Government of India and the Government of the State of Gujarat.
Deduction of Works Contract Tax at source	60.1 of Section 2	As per the prevailing rate of Tax under the Rules of the Government of India and the Government of the State of Gujarat.
Deduction for Royalty on Materials used	28.2 and 60.1 of Section 2 and 9 of Section 3	As per prevailing rates of Geology and Mining Department of Government of Gujarat.
Limit of Retention Money	60.5 of Section 2	5% (Five percent) of Contract Price from each invoice.
Advance Payment	60.7 of Section 2	Not applicable
Start Repayment of Advance Payment	60.7 of Section 2	Not applicable
Monthly Amortization of Advance Payment	60.7 of Section 2	Not applicable
Rate of Interest up to Delayed Payments	60.8 of Section 2	Not applicable
Currency of Payment	83.1 of Section 2	Indian Rupees. (INR)
Ceiling on Escalation	70.4 of Section 2	Not Applicable
Adjustment Formulae Coefficients	Clause 70.1to 70.7 of Section 2	Not Applicable

SAMPLE

3. FORM OF BID SECURITY (BANK GUARANTEE)

WHEREAS, _____ (Name Of Bidder) (hereinafter referred to as "the Bidder") has Submitted his/ its Bid dated _____ (Date) For **"Supply, Installation, Testing, Commissioning, Training and Maintenance of CCTV Infrastructure at Various Places in DTA area of GIFT City" (Bid Reference No. : GIFT/ICT/WC/2023/01).**

KNOW ALL MEN by these presents that we _____(Name of Bank) of (Name of Country and constitution) having our registered office at _____ (hereinafter referred to as "the Bank") under this guarantee are bound into Gujarat International Finance Tec-City Company Ltd (hereinafter referred to as "the Employer") in the sum of _____ (Insert amount, in words and figures, as designated in Clause 14.1 of the Instructions to Bidders,) for which payment well and truly shall be made to the said Employer by the Bank and the Bank binds itself, its successors and assigns by these presents.

SEALED with the Common Seal of the said Bank this ____ day of _____ 2023.

THE CONDITIONS of this obligation are:

1. If the Bidder withdraws his Bid during the period of bid validity specified in the Form of Bid; or,
2. Refuses to accept the correction of his bid; or
3. if the Bidder having been notified of the acceptance of his Bid by the Employer during the said period of bid validity.
    a. fails or refuses to execute the Agreement in accordance with the Instructions to Bidders, if required; or
    b. fails or refuses to furnish the Performance Security, in accordance with the Instructions to Bidders,

We unconditionally and irrevocably undertake to pay to the Employer the above amount immediately upon receipt of his/its first written demand without any question or contestation and without the Employer having to substantiate his/ its demand, provided that in his/its demand the Employer will note that the amount claimed by him/it is due to him/it owing to the occurrence of any one of the above conditions specifying the occurred condition or conditions.

We further undertake to the Employer that the payment under this Guarantee shall be made regardless of any difference and dispute between Bidder and the Employer as to the justifiability and legality about breach of the aforesaid conditions and that a demand from the Employer with statement about the breach shall be the conclusive proof of the Bidder having committed breach of any condition of these conditions.

The Guarantee shall not be affected by any change in the constitution or winding up of the Bidder or the Bank or any absorption, merger or amalgamation of the Bidder or the Bank with any other person.

It shall not be necessary for GIFTCL to proceed against the Bidder before proceeding against the Bank and the guarantee herein contained shall be enforceable against the Bank, notwithstanding any other security which GIFTCL may have obtained from the said Bidder or any other person and which shall, at the time when proceedings are taken against the Bank hereunder, be outstanding or unrealised.

This Guarantee will remain in force till ……..i.e. **225 days (Two Hundred Twenty Five days)** from the date of the submission of the bids, as stated in the Instructions to Bidders or as may be extended by the Employer, notice of which extension(s) to the Bank is hereby waived. This guarantee will be extended in the event of extension of period of validity of the bid, if so requested by the Bidder. Any demand in respect of this Guarantee should reach the Bank not later than the above date or extended date of this guarantee.

We, the Bank, further undertake not to revoke this Guarantee during its currency except with the previous express consent of GIFTCL in writing.

The Bank declares that it has power to issue this Guarantee and discharge the obligations contemplated herein, the undersigned is duly authorized and has full power to execute this Guarantee for and on behalf of the Bank.

SIGNED AND SEALED with the Common Seal of the Bank _____ this day of _____2023

Date _____Signature of the Bank _____

Witness _____ Seal _____

(Signature, Name and Address)

4. FORM OF POWER OF ATTORNEY FOR SIGNING THE BID DOCUMENTS

(On a Stamp Paper of relevant value)

Know all men by these presents, we, ... (*name of Contractor and address of the registered office)* do hereby irrevocably constitute, nominate, appoint and authorize Mr / Ms..... son/daughter/wife of ..... and presently residing at ....., who is presently employed with us and holding the position of ..... as our true and lawful attorney (hereinafter referred to as the "**Attorney**") to do in our name and on our behalf, all such acts, deeds and things as are necessary or required in connection with or incidental to submission of bid for the For **"Supply, Installation, Testing, Commissioning, Training and Maintenance of CCTV Infrastructure at Various Places in DTA area of GIFT City", (Bid Reference No. GIFT/ICT/WC/2023/01)** at Gujarat International Finance Tec-City (GIFT) project being developed by the Gujarat International Finance Tec-City Company Limited ("GIFTCL") including but not limited to signing and submission of all applications, proposals/bids and other documents and writings, participating in pre-bid and other conferences and providing information/ responses to GIFTCL, representing us in all matters before GIFTCL, signing and execution of all contracts and undertakings consequent to acceptance of our proposal and generally dealing with GIFTCL in all matters in connection with or relating to or arising out of our Proposal for the said work and/or upon award thereof to us till the entering into of the agreement with GIFTCL.

AND GENERALLY to act as our Attorney or agent on behalf of us in relation to the bid for **"Supply, Installation, Testing, Commissioning, Training and Maintenance of CCTV Infrastructure at Various Places in DTA area of GIFT City"** (and to execute and do all instruments, acts, deeds, matters and things in relation to the said Proposal or any incidental or ancillary activity, as fully and effectually in all respects as we could do if personally present.

AND We hereby agree to ratify and confirm and agree to ratify and confirm all acts, deeds and things whatsoever lawfully done or caused to be done by our said Attorney and that all acts, deeds and things done by our said Attorney in exercise of the powers hereby conferred shall and shall always be deemed to have been done by us.

IN WITNESS WHEREOF WE, ... THE ABOVE-NAMED PRINCIPAL HAVE EXECUTED THIS POWER OF ATTORNEY ON THIS ..... DAY OF ....., 2023.

For.....
(Signature, name, designation and address)

Witnesses:

1.

2.

Notarised

Accepted
.....
(Signature, name, designation and address of the Attorney)

Notes:

The mode of execution of the Power of Attorney should be in accordance with the procedure, if any, laid down by the applicable law and the charter documents of the executant(s) and when it is so required the same should be under common seal affixed in accordance with the required procedure. The Power of Attorney should be executed on a non-judicial stamp paper of Rs. 300 (Three hundred) and duly notarized by a notary public.

Wherever required, the Bidder should submit for verification the extract of the charter documents and other documents such as a resolution/power of attorney in favour of the person executing this Power of Attorney for the delegation of power hereunder on behalf of the Bidder.

In case the Power of Attorney is signed by an authorised Director/ Partner or any authorized person of the Bidder, a certified copy of the appropriate resolution /document conveying such authority shall also be enclosed along wth the Power of Attorney.

For a Power of Attorney executed and issued overseas, the document will also have to be legalized by the Indian Embassy and notarized in the jurisdiction where the Power of Attorney is being issued. However, Bidders from countries that have signed the Hague Legislation Convention, 1961 need not get their Power of Attorney legalized by the Indian Embassy if it carries a conforming Appostille certificate.

5. QUALIFICATION INFORMATION

(The information to be filled in by the bidder in the following pages will be used for Clause 3 of the Instructions to Bidders. This information will not be incorporated in the Contract)

Format - 1: Organization Documents

(for the Bidders)

1.1. a. Constitution or legal status : (Attach copy of original document)

(Private Limited or Public Limited Company (National or International Company), limited liability partnership (LLP) etc.)

1. Memorandum of Association / Articles of Association
2. Company Incorporation Certificate
3. Business Commencement Certificate

b. Place of registration :

c. Principal place of business :

d. Details of the Manufacturing unit :

e. Power of Attorney of Signatory of the Bid: (Attach Copy)

f. Bidder's Legal Name **[insert Bidder's legal name]**

g. Bidder's actual or intended Country of Registration: **[insert actual or intended Country of Registration]**

h. Bidder's Year of Registration: **[insert Bidder's year of registration]**

i. Bidder's Correspondence Address:

Bidder's Authorized Representative Information:-

j. Name: [insert Authorized Representative's name]

k. Address: **[insert Authorized Representative's Address]**

l. Mobile/Telephone/Fax numbers: **[insert Authorized Representative's telephone/fax numbers]**

m. Email Address: **[insert Authorized Representative's email address]**

VENDOR & CUSTOMER CREATION / INFORMATION FORM

Name of Vendor / Customer	**:**
Address	**:**
Line 2	**:**
Line 3	**:**
Pincode	**:**
Contact Number	**:**
Contact Person Name	**:**
Mail ID of contact Person	**:**
Permanent Account Number	**:**
Tax Account Number	**:**
GST Number	**:**
LUT Reference Number (for SEZ)	**:**
Bank Details for RTGS / NEFT	
Benificiary Name	**:**
Bank Name	**:**
Branch	**:**
Branch Address	**:**
	:
Bank Account Number	**:**
IFSC Code	**:**
BSR Code	**:**
MICR Number	**:**

Note: Kindly provide following along with vendor form

1) Copy of cancelled cheque / Bank Mandate for mentioned Bank Account
2) Copy of PAN Card
3) Copy of GST Number Alloted

Format - 2: Financial Data

The bidder shall supply the following information in the format shown:-

1.2 Financial Data

Name of Bidder

(a) …….

(b) Attach audited balance sheet including Auditor's Report for the past three years ending 31st March 2022 for the immediate previous year, Provisional Certificate can also be provided.

Firms owned by individuals and partnerships Firms, may submit their balance sheet certified by a qualified registered accountant, supported by copies of tax returns.

Summarise assets and liabilities in Indian Rupees for the past three years ending 31st March 2022 from the audited balance sheet.

Financial Information	Year 2021-22 Rs. In Lakhs	Year 2020-21 Rs. In Lakhs	Year 2019-20 Rs. In Lakhs
1. Total assets			
2. Current assets			
3. Total liabilities			
4. Current liabilities			
5. Share Capital			
6. Reserves and Surplus			
7. Networth = Share Capital + Reserves and Surplus – Miscellaneous Expenditure – Revaluation Reserves (if any)			
8. Profit before TAX			

Financial Information	Year 2021-22 Rs. In Lakhs	Year 2020-21 Rs. In Lakhs	Year 2019-20 Rs. In Lakhs
9. Liquid Assets (i) Cash and Bank Balance (ii) Fixed Deposit (iii) Others (Please Specify)			

In case of difference from the audited annual reports, the audited figures will prevail.

(c) Name, address and telephone, telex and fax numbers of the bidders' bankers who may provide references if contacted by the Employer (If necessary, use separate sheets to provide complete banker information).

Banker	Name of Banker	
	Address of Banker ……..	
	Telephone	Contact name and title
	Facsimile	E-mail

(d) Specify proposed sources of credit line to meet the cash flow demands of the Contract. Provide evidence of access to lines of credit. Enclose credit lines/letter of credit from bank

Source of Credit Line	Amount in Rs.
1.	
2.	

Format - 3: Project Experience as Prime Contractor

1.3 Project wise experience as a Prime Contractor on similar scope of works over the last Three Years as on date of inviting tender

Name of Bidder

Sr. No.	Name of Contract	Location of Contract	Employer's Name and Address with Phone No.	Date of Award	Similar Scope of Work**	Value of Contract (Rs. In Lakhs)	Project Completion Date*	Value of Balance Work as on date (Rs. in Lakhs)
1								
2								
3								
4								

*Provide relevant proof of completion from Employer

**Similar scope of work

Format - 4: Current Contract Commitments/Works in Progress

1.4 Bidders shall provide information on their current commitments on all contracts in progress, or tendered for or for which a Letter of Intent (LOI) 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 Bidder							
Name of Contract*	Location of Contract	Employer's Name and Address with Phone No.	Date of Award	Value of Contract	Value of Certified Completed Work	Estimated Completion Date	Value of Balance Work in Hand for **02 (Two)** Calendar Months
				Rs. In Lakhs	Rs. In Lakhs		Rs. In Lakhs
1							
2							
3							
4							
5							
6							

*Provide relevant proof (LoI etc.) from Employer based on the status of Work

The available bid capacity will be calculated as under:

Assessed Available Bid capacity = (A * N * 2 - B)

Where,

A = Maximum value of all classes of supply & construction works executed in any one year during the last three years (updated to 2021-2022 price level) taking into account the completed as well as works in progress. In connection with Bid Capacity calculations financial year 2021-2022 shall also be accepted towards calculation of 'A'.

N = Number of years prescribed for completion of the works for which bids are invited.

B = Value at 2021-2022 price level of existing commitments and on-going works to be completed during the Contract duration.

Note: The statements showing the value of completed works, existing commitments and on-going works as well as stipulated period of completion remaining for each of the works listed must be supported by a certificate from the concerned employer.

The Financial turnover & Cost of completed works of previous years shall be given weightage of 5% per year based on rupee value to bring them to 2021-2022 price level.

Format - 5: List of Equipment/Plant and Machinery

1.5 Availability of major equipment/plants and machinery required to carry out the contract works:

(Name of the Bidder)

Sr. No.	Item of equipment including make & capacity	Number	Availability Proposals			Remarks regarding condition/ source/ availability
			Owned/ Leased/ to be procured	Number and Capacity	Age and Condition	

Format - 6: General Program / Method Statements

1.6 Bidders shall provide information on the following to demonstrate the adequacy of his proposal to meet the technical specifications and the completion time:

(a) General Programme / Method Statements

i. Tentative Construction Schedule describing execution of various construction activities in the bar chart:

ii. Construction Methodology (in maximum 1000 words)

(Attach descriptions, drawings and charts as necessary to comply with the conditions of the bidding documents)

Format - 7: Organization Structure for execution of Contract and Key Personnel

1.7 Bidders shall provide **Organization chart** of administration and execution of **the contract** showing the **deployment of various key personnel at site** with details of individual tasks; **Curriculum Vitae (CV) of the key personnel showing** age, qualification and experience etc. in similar works and proposed to be deployed on Site

(a)Organization chart (Provide as an organogram)

(b)Key Personnel at Site: (Provide in the following format)

Sr. No.	Name of Personnel	Firm	Qualification	Work Experience in Similar Works (Years)	Proposed Position	Tasks Assigned
1						
2						
3						
4						

Format - 8: Proposed Safety Plan

1.8 Bidders are requested to provide the following:

(a) Proposed Safety Plan and Procedures that shall be followed during the execution of the bidded work

(b) Safety Policy of the Organization

(c) Safety Certifications and Accreditations

(d) Safety Awards and Distinctions

Format - 9: Details of any Arbitrations / Litigations

1.9 Bidders shall provide details of Arbitration proceedings and or Court cases in which the bidders are involved in the past 5 years.

(For the individual Bidder)

(a) Contract related arbitrations / litigations:

Sr. No.	Name of Contract	Location	Employer's Name and Address with Phone No.	Period since under arbitration or litigation	Details of Litigation	Status

(a) Other arbitrations / litigations:

Sr. No.	Details of Litigation	Period since under arbitration or litigation	Disputed Amount	Status

Format - 10: Average Annual Financial Turnover

(For all classes of supply & ICT works only)

1.10 Bidders shall provide details in the following format:

	FY 2021-22**	**FY 2020-21***	**FY 2019-20***
Turnover (For all classes of supply & ICT works only)			
Profit before Tax			
Networth			

*provide Certificate of Statutory Auditor of the Company

**For the immediate previous year, Provisional Certificate can also be provided

Format - 11: Project Experience

1.11 Bidders shall provide details in the following format:

(Name of Bidder)

Sr. No.	Name of Contract	Location of Contract	Employer's Name and Address with Phone No.	Date of Award	Scope of Work	Value of Contract (Rs. In Lakhs)	Project Completion Date
1							
2							
3							
4							

*Provide relevant proof of completion from Employer

Format - 12: Letter of authority to seek references.

1.12 Bidders shall provide details in the following format:

To:

The Managing Director & Group CEO,

Gujarat International Finance Tec-City Company Limited,

EPS - Building no. 49A, Block 49, Zone 04,
Gyan Marg, GIFT City, Gandhinagar
Taluka & District Gandhinagar – 382355
GUJARAT STATE, INDIA

Sub: - A letter of authority to seek references from bankers and previous / existing Employer's.

Name of Work:- **"Supply, Installation, Testing, Commissioning, Training and Maintenance of CCTV Infrastructure at Various Places in DTA area of GIFT City"**

Dear Sir,

I/We **"Bidder's Name"** authorized **Gujarat International Finance Tec-City Company Limited (GIFTCL)** to collect information from our bankers and previous / existing Employer's.

Sign:

Date:

Stamp:

SECTION-6 SAMPLE FORMS OF LOI AND AGREEMENT

SAMPLE FORM OF LOI AND AGREEMENT

(Draft)
Letter of Intent (LOI)

(Letterhead paper of Employer)

GIFT/ICT/WC/2023/01/ Date: [_____]

To,

(Name and Address of the Contractor)

Kind Attn.: Mr. _____

Sub: -**Letter of Intent (LOI) For "Supply, Installation, Testing, Commissioning, Training and Maintenance of CCTV Infrastructure at Various Places in DTA area of GIFT City"** (**Bid Reference No: GIFT/ICT/WC/2023/01) on item rate basis**

Dear Sir,

(1) We refer to your Bid submitted on [_____],in response to the invitation for Bids for **"Supply, Installation, Testing, Commissioning, Training and Maintenance of CCTV Infrastructure at Various Places in DTA area of GIFT City"(Bid Reference No: GIFT/ICT/WC/2023/01)** on item rate basis.

(2) Gujarat International Finance Tec-City Company Limited (GIFTCL) is pleased to inform you that your Bid submitted on dated _____, for **"Supply, Installation, Testing, Commissioning, Training and Maintenance of CCTV Infrastructure at Various Places in DTA area of GIFT City" (Bid Reference No: GIFT/ICT/WC/2023/01)** on item rate basis has been accepted by GIFTCL and you have been selected as the Preferred Bidder for the total Contract Price of **Rs. _____/- (Rupees _____only)** (hereinafter referred to as the "Contract Price") subject to fulfillment of all terms and conditions specified in the Bid document. The Contract Price mentioned above will be inclusive of all applicable taxes, duties, cess, statutory charges, levies and any other charges as applicable from time to time. The payment under the contract will be on item rate basis and the Contract Price is as per the arrived bill of quantity rates given in the Financial Bid and accepted by GIFTCL.

(3) Pursuant to the terms of the Bid document, within 15 (fifteen) days of the date of issue of this Letter of Intent, you are required to provide:-

a) Performance Security for Rs._____ /- (Rupees _____ Only) being 03 % of the above Contract Price in the form of an unconditional bank guarantee issued by any Nationalized / Scheduled Bank located in India in the format prescribed in the Bid document. [Please refer Clause 35.1 of the Section 1 (Instruction to Bidders) of Bid Document].

b) Copies of the required Insurance Policies [Please refer Clause 9 of Sec. 3 (Special Conditions of Contract) and Clause 21 of Sec. 2 (General Conditions of Contract)].

c) Detailed work program and corresponding cash flow projections [Please refer Clause 5 of Sec.3 (Special Conditions of Contract)],

d) Provide copy of the following applications submitted to the concerned Labor department for the said Works to be undertaken for GIFTCL. (Employer):-

(i) Copy of application for obtaining the license, under Contact Labor (Regulation and Abolition) Act, 1970 and

(ii) Copy of application for obtaining BOCW registration certificate

e) Thereafter, sign and execute the Agreement, prepared by the Employer [Please refer Clause 34 of the Section 1 (Instruction to Bidders) of the Bid document].

Please note that, if you fail to comply with any of the above-mentioned requirements within the prescribed time limit, GIFTCL shall have the right to withdraw this LOI and forfeit your Bid Security, without assuming any liability whatsoever.

Please convey your acceptance of this “Letter of Intent” by affixing your sign and seal and send one original of this LOI to us.

For, Gujarat International Finance Tec-City Company Limited

_____

Engineer-in Charge

Accepted:

_____

Signature and Seal of Bidder

SAMPLE FORM OF AGREEMENT

AGREEMENT

This Agreement made at Gandhinagar on _____ day of _____, 2023

BETWEEN

Gujarat International Finance Tec-City Company Limited, a company incorporated under the Companies Act 1956 and having its registered office **at "EPS - Building no. 49A, Block 49, Zone 04, Gyan Marg, GIFT City, Gandhinagar – 382355",** Gujarat (hereinafter referred to as "**GIFTCL**" or "**Employer**") which expression shall, unless repugnant to the context or meaning thereof, include its successors-in-title and assigns of the **ONE PART.**

AND

_____, a company incorporated under the Companies Act 1956 and having its registered office at _____(hereinafter referred to as the "**Contractor"**) which expression shall, unless repugnant to the context or meaning thereof, include its successors-in-title and permitted assigns of the **OTHER PART**

GIFTCL/Employer and _____/ Contractor shall hereinafter be individually referred to as a "Party" and collectively as "Parties".

WHEREAS

1. The Employer has issued Letter of Intent (LOI) vide its Letter No._____ dated _____, 2023 to the Contractor and the Contractor has agreed and accepted to execute the work of **"Supply, Installation, Testing, Commissioning, Training and Maintenance of CCTV Infrastructure at Various Places in DTA area of GIFT City" (Bid Reference No. GIFT/ICT/WC/2023/01)** (hereinafter referred to as "the Works") for contract value of Rs._____/- (Rupees _____ only) (hereinafter referred to as the "Contract Price"). The Contract Price is inclusive of all applicable taxes, cess,

duties, statutory charges levies and any other charges and subject to fulfillment of all terms and conditions specified in the Bid document of the GIFTCL and LOI issued by GIFTCL to the Contractor; and

2. The Contractor has accepted the LOI and is ready and willing to do so and further covenants to execute the Works on the terms and conditions as mentioned hereinafter.

NOW THEREFORE, IT IS AGREED BY AND BETWEEN THE PARTIES AND THIS AGREEMENT WITNESSETH AS FOLLOWS:

1. In this Agreement words and expressions, unless the context otherwise requires, shall have the same meaning as are assigned to them in the General Conditions of Contract and Special Conditions of Contract of the bid documents. The General Conditions of Contract ("GCC") and Special Conditions of Contract ("SCC") including the other documents as mentioned in clause 4 hereinafter of this Agreement shall be deemed to form and be read and construed as integral part of this Agreement.

2. In consideration of the payments to be made by the Employer to the Contractor as mentioned hereinabove, the Contractor hereby covenants with the Employer to execute and complete the Works by the Contractor and remedy any defects therein in conformity with and in all respects as detailed under the provisions of the Bid/Tender and this Agreement.

3. The Employer hereby covenants to pay the Contractor, in consideration for the execution and completion of the Works and for remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of this Contract at the time and in the manner as prescribed in the bid documents of this Contract.

4. The following documents shall be deemed to form and be read and construed as integral part of this Agreement, viz. :

   (a) The Letter of Intent (LOI) No._____ dated _____

   (b) The Notice to Commence;

   (c) The Bid;

(d) Instruction to Bidders
(e) The Special Conditions of Contract;
(f) The General Conditions of Contract;
(g) The Priced Bill of Quantities;
(h) The Technical Specifications;
(i) The Bid Drawings; and,
(j) Any other document, not listed and not referred hereinabove, in the bid/ tender shall form part of this Contract.

5. This Contract shall not be amended or modified except with the prior written consent of the Parties hereto.

IN WITNESS WHEREOF the Parties hereto have caused this Agreement to be executed through their respective authorized representatives/ signatories on the day, month and year first hereinabove written.

SIGNED AND DELIVERED by the within named **Gujarat International Finance Tec-City Company Limited** by the hand of its Authorized Signatory Mr._____

SIGNED AND DELIVERED by the within named _____ by the hand of its Authorized Signatory Mr/Mrs. _____

Both in the presence of: -
Witnesses

1.

2.

Section 7

Sample Forms of Securities

SAMPLE FORM OF PERFORMANCE BANK GUARANTEE (UNCONDITIONAL)

To:

The Managing Director & Group CEO

Gujarat International Finance Tec-City Company Limited (GIFTCL)

EPS - Building no. 49A, Block 49, Zone 04, Gyan Marg, GIFT City, Gandhinagar – Taluka & District Gandhinagar – 382355

Tel No: 91 79 61708300

Fax No: 91 79 30018321

WHEREAS _____(*name and address of Contractor)* (hereinafter referred to as "the Contractor") which expression shall, unless repugnant to the context or meaning thereof, include its successors-in-title and permitted assigns) has undertaken, in pursuance of **Bid Ref. No. GIFT/ICT/WC/2023/01** dated _____ for **"Supply, Installation, Testing, Commissioning, Training and Maintenance of CCTV Infrastructure at Various Places in DTA area of GIFT City"** (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 any Nationalized/Scheduled Bank located in India for the sum specified therein as Performance Security for due and faithful compliance of his obligation in accordance with the Contract;

AND WHEREAS we have agreed and hereby give you Bank guarantee; as aforesaid,

NOW THEREFORE we hereby affirm that we are the Guarantor and liable to pay you, as an amount, up to a total of Rs. _____ (amount of Guarantee) _____ (in words), notwithstanding anything to the contrary, as contained in the Contract, we hereby agree that your decision as to whether the Contractor has made any such default(s) / breach(es), as aforesaid and the amount or amounts to which you are entitled by reasons thereof, subject to the terms and conditions of the Contract, will be binding on us and we shall not be entitled to ask you to establish your claim or claims under this Performance Bank Guarantee, and we undertake to pay you, upon your first written demand and without any cavil, argument, or contest whatsoever 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. Such sum being payable in Indian Rupees in which the Contract Price is payable.

We hereby waive the necessity of your demanding the said debt from the Contractor before making the demand from us.

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.

The Bank hereby, unconditionally and irrevocably, guarantees and affirms that in order to give effect to this Guarantee, GIFTCL shall be entitled to act as if the Bank were the principal debtor and any change in the constitution of the Contractor and/or the Bank, whether by their absorption with any other body or corporation or otherwise, shall not in any way or manner affect the liability or obligation of the Bank under this Guarantee.

It shall not be necessary, and the Bank hereby waives any necessity, for GIFTCL to proceed against the Contractor before presenting to the Bank its demand under this Guarantee.

This Guarantee is in addition to and not in substitution of any other guarantee or security now or which may hereafter be held by GIFTCL in respect of or relating to the Contract or of the Works or for the fulfillment, compliance and/or performance of all or any of the obligations of the Contractor under the Contract.

The Bank undertakes not to revoke this Guarantee during its currency, except with the previous express consent of GIFTCL in writing and declares and warrants that it has the power to issue this Guarantee and the undersigned has full powers to do so on behalf of the Bank.

We undertake that on receipt of your demand we shall forthwith make payment of sum demanded by you regardless of any difference or dispute the Contractor may have with you on any issue regarding non-performance of the contract.

The guarantee shall be valid up to _____ or until the 3 Months after the date of issue of the Defects Liability Certificate, which ever date is later and we undertake to extend this guarantee, if Defects Liability certificate is not issued within the aforesaid date.

SIGNATURE AND SEAL OF THE GUARANTOR: _____

NAME OF BANK _____

ADDRESS _____

Note: Please note that no additions, deletions or alterations (save and except filling in blanks) regarding the contents of this Form shall be made to the Performance Security to be furnished by the Contractor, if any are made, this Bank Guarantee may not be accepted and shall be rejected by GIFTCL.

Section 8

Bid Drawings

SECTION 9
SAFETY CONDITIONS FOR SITE WORKS AND STANDARD OPERATING PROCEDURES

GENERAL CONDITIONS

1.0 SCOPE

This document gives broad guidelines to be followed by the CONTRACTOR for ensuring safe working conditions in and around the site.

2.0 SAFETY SETUP

2.1 Each CONTRACTOR at site shall organise a Safety Group headed by a Safety Officer who shall be responsible for providing, supervising and monitoring safe working conditions at all times for their workers. The Safety Officer shall be experienced in maintaining safe conditions for workers at site and shall be responsible for and shall have authority to enforce safe conditions for the workers.

2.2 The CONTRACTOR shall have a declared Safety Policy and shall get the same approved by the client. The approved Safety Policy shall be displayed prominently in the CONTRACTOR's site office.

2.3 The CONTRACTOR shall take active interest and participate in the development and operation of safety programs at site. His responsibility does not cease with establishment of Safety Group and approval of its various activities. He shall demonstrate his involvement by regular participation in safety meetings, review of safety records and taking corrective action where required, introduction of safety promoting bulletins, posters, suggestions and awards and by setting example by strictly observing safety rules.

2.4 The CONTRACTOR shall remove all waste material and debris from and around the work area and properly clean up the area at the end of each day before leaving the work site.

2.5 The CONTRACTOR shall take all necessary precautions not only for safe working of his own workmen but also deploy all precautions to ensure safety of structures, equipment and workmen of other agencies in and around his work site.

2.6 The CONTRACTOR shall ensure that his workmen do not trespass into prohibited areas.

2.7 The PURCHASER/CONSULTANT shall have the right to inspect at any time, all items of machinery or equipment brought to site by the CONTRACTOR, his agents or workmen and to prohibit the use on the site of any item, which in the opinion of the client or his representative may be detrimental to the safety of the site. The exercise of such right or the omission to exercise it in any particular case shall not absolve the CONTRACTOR or his agents or workmen of their responsibility of adhering to the safe working practices.

2.8 The CONTRACTOR shall execute the work in a manner causing the least possible interference with the business of the client or his representative, or with the work of any other CONTRACTOR who may be engaged on the premises and shall at all times co-operate with the other CONTRACTORS working at site.

2.9 The CONTRACTOR shall obtain work permit from the client or his representative before starting any work at site. The work permits are issued to prevent the

CONTRACTOR from working in un-authorized areas and shall be valid for specific area for a stipulated period

2.10 The CONTRACTOR shall ensure at all times that his workers do not lie down or sleep under or around any machine, equipment, vessel or vehicle in his work area.

2.11 RESPONSIBILITIES OF THE CONTRACTOR'S SAFETY OFFICER

2.11.1 He is responsible and accountable for:

(a) Preventing injury to personnel, damage to plant and equipment and fires.

(b) Instituting ways to improve existing work methods from safety point of view.

(c) Legal and contractual requirements affecting safety, health, and welfare of his workmen

(d) Provision and use of protective clothing and equipment and use of firefighting equipment

(e) Suitability of new and hired equipment from a safety viewpoint

(f) Identifying potential hazards.

(g) Changes in safety requirements and fire precautions

(h) Carrying out site surveys to see that only safe work methods are in operation, health and safety requirements are being observed and welfare and first aid facilities are adequate and properly maintained.

(i) Determining the cause of an accident or dangerous occurrence and recommend means of preventing recurrence.

(j) Supervising the recording and analysis of information on injuries, damage and production loss. Assess accident trends and review overall safety performance.

(k) Assisting with training of employees at all levels. Organizing periodic demonstration of practicing safe working conditions by experienced safety instructors.

(l) Taking part in discussions on injury, damage and loss control.

(m) Keeping up-do-date with recommended codes of practice and safety literature. Circulating information applicable to each level of employees.

(n) Fostering within the company an understanding that injury prevention and damage control are an integral part of business and operational efficiency.

(o) Attending job progress meetings where safety is an item on the agenda. Report on job safety performance.

2.11.2 The Contractor's Safety Officer shall inspect and ensure the following:

(a) All electrical equipment are securely earthed.

(b) Standard access platforms and ladders are provided for inspection, operation and maintenance of equipment.

(c) The equipment is periodically inspected for their condition, maintained properly and operated by trained personnel at design speeds and loads.

3. SAFETY- STANDARD OPERATING PROCEDURE

I. OBJECTIVES

One of the major objectives of Standard Operating Procedure is to recognize and accept its statutory as well as moral responsibilities for ensuring safe Design, Construction, Erection, Commissioning, Operation and Maintenance and for the provision of safe methods of work and healthy working conditions as well as safety to general public, consumers, animals etc.

This procedure is to provide rules and procedures to protect persons from the hazards in work and to establish mandatory requirements for practices to protect persons and properties from hazards.

ii. Area of work

These SOPs covers all, operation, construction and projects work sites of GIFTCL, where infrastructure and operation & maintenance/related activities are carried out.

4. SAFETY POLICY

punitive provisions for effective implementation of sops

i. Objectives

Punitive provisions for safety violations are a tool to prevent accidents, production output and financial losses and any adverse impact on development. These measures discourage people from violating the Safety Norms as established under GIFT Safety SOPs.

This measure will be useful to bring discipline and safety in work culture and to endorse the implementation of safety-compliances.

ii. General

Safety should not be compromised in the pursuit of GIFT's goals and to achieve targets. Safety shall be given equal importance and emphasis as quality and efficiency and shall be considered as equal.

GIFT Employees at all designations will be responsible for the Safety-related performance and the conduct of the Contractors under their authority and supervision.

All the employees of the Contractor in supervisory and controlling position shall be responsible to ensure that Safety guidelines are adhered to while carrying out any work or activity. They should be involved in taking initiatives by effectively communicating the safety-instructions before assigning work, emphasizing on safety-training, toolbox talk, ensuring the proper supervision of work at site etc., to ensure the safety compliance with the GIFT's safety-guidelines and SOPs.

Every Contractor shall be individually responsible for the compliance with the safety-policy of the Company, safety-regulations/SOPs in addition to the statutory-provisions related to safety. S/he shall therefore keep her/himself updated on all the relevant provisions, regulations and policy. The Safety-Officer can always be contacted for any information or clarification in this regard.

To enhance safety awareness and culture toolbox talk and pre work start briefing shall be imparted by contractors and safety SOPs training shall be imparted to their employees.

Contractors is required to inform the respective supervisor about any accident/incident immediately along with corrective measure taken, and with a written report within 4 hours of the occurrence.

To motivate employees of the contractor towards safety enhancement, safety award/certificate shall be issued to individuals for best safety performance and developing safety culture at workplace.

The Plant / site in-charge shall be responsible for proper display of informative and motivational Signage, banner and posters in consultation with the GIFT Safety Officer for Safe working.

It is proposed to include the Safety SOPs in all the future works orders and contracts as relevant.

iii. Scope

This policy applies to all personnel, contractors & their workforces and supervisors working at GIFT City, Gandhinagar. The SOPs shall be updated periodically to update and add new SOPs as required.

The contractor will take all necessary steps and measures for incorporating and adapting the safety aspect in all its business operations by hiring of competent personnel, training, , imparting training to staff for its work-processes, monitoring, issuing work permits etc. Disciplinary action will be taken against who so ever, fails to comply with the SOPs.

In case anyone fails to comply with the safety norms, necessary disciplinary action shall be taken for Employees of the Contractors as per **Table -1**.

iv. Safety violations and ramification

a) Classification of safety-violations

Safety-violations are classified under three categories for the purposes of disciplinary action against the contractor and its Employees. **A single or repeated violation depending on the criticality of the violation may lead to warning, penalty and even termination of employment or contract as per the decision of the management.**

- **Category - I**
- **Category - II**
- **Category - III:**

Category-I: Safety-violations (Penalty for each violation: Rs.500 to Rs.2000)

These are general violation as stated in the **Annex -I** such as

I. Not using PPE or improper use of PPE at work site

II. Using nonstandard electrical wire / no plug socket/ open electrical joints etc.

III. Non display of Project information and Emergency Contact person details

IV. Hand waving was used as signal to communicate important work-instructions to someone at a distance

V. Poor house keeping

VI. Spitting, loitering, fighting, gambling etc.

VII. Other similar violations

Category-II: Safety-violations (Penalty for each violation: Rs.2000 to Rs.5000)

These are violation as stated in **Annex-II**, that may lead to serious accidents involving more than one person, such as

I. Working without work permit

II. Unauthorized issuance of Work permit

III. Hazardous Driving / No Driving license/ Insurance/ Over speeding of construction or other vehicles at site.

IV. Creating unsafe conditions at site

V. Other similar violations

Category-III: Safety-violations (Penalty for each violation: Rs.5000 and above)

These are violation as stated in **Annex-III** that may lead to very serious or fatal accidents involving more than one person. This includes actual accidents, dangerous-occurrences and near-misses' incidents due to gross negligence and/or complete violation of safety-policy guidelines and Sops.

I. Not providing barricades/shoring for excavations

II. Using Lifting tools /Cranes – without Form-10

III. Absence of supervisor during work execution at site

IV. Noncompliance of working at height

V. Unsafe handling of Gas cylinders

VI. Unauthorized/ not suitably skilled person allowed to execute work

VII. Other similar violations

Table -1

ANNEXURE - I			
CATEGORY	**SAFETY VIOLATION TYPE**	**CONTRACTOR**	
CATEGORY-I	1. Not using PPE or improper use of PPE at work site. 2. Using nonstandard wire / no plug socket / open joints etc. 3. Non display of Project information and emergency contact person 4. Hand waving was used as signal to communicate important work-instructions to someone at a distance. 5. Poor housekeeping. 6. Spitting, loitering, fighting, gambling etc.	**I - Time**: Written warning **II - Time** Rs. 500/- per day / per violation and remove the person from site till suitable compliance. **III - Time**: Repeat violation Rs.1000/- and remove the person from site till suitable compliance. **IV - Time:** Permanent removal of person from site. Penalty of Rs. 2000/-.	
ANNEXURE II			
CATEGORY-II	1. Working without work permit. 2. Unauthorized issuance of Work permit. 3. Hazardous Driving / Invalid license/ No insurance / Over speeding of construction or other vehicles at site. 4. Creating Un-safe condition at site	**I - Time**: Written warning **II - Time** Rs. 2000/- per day / per violation. Stop work till suitable compliance. **III- Time**: Repeat violation Rs. 3000/- , Stop work, remove the person from site till suitable compliance. **IV - Time:** Penalty of Rs. 5000/-. Permanently removal of person from site.	
ANNEXURE III			
CATEGORY-III	1. Not providing barricades/shoring for excavations. 2. Using Lifting tools /Cranes – under rated or un-rated	**I - Time**: Written warning **II – Time**	

	3. Absence of supervisor during work execution at site 4. Noncompliance of working at height 5. Unsafe handling of Gas cylinders 6. Unauthorized/ not suitably skilled person allowed to execute work	Rs. 5000/- or above per day / per violation. Stop work at site till compliance. Safety inquiry. **III - Time**: Repeat violation Penalty of Rs. 10,000/-. Stop work. Termination of person from site. Safety inquiry. Termination of Contract if required.	

b. Site safety inspection

The supervisor or any GIFT officials, during the course of inspection, safety audit or site-visits of any project or work in progress, find any Safety violation, failure to follow the SOPs or safety norms, by the Contractor or her/employees, a penalty would be imposed by the Safety Officer through the HOD inputs to the contractor. Repetitive safety violations by the contractor or his/her workers will lead to higher penalty depending on the severity of the case, temporary/permanent termination of the workers from site and may also result in termination of the overall contract.

c. Investigation is mandatory for Category- III type Safety violations:

Due to the nature of seriousness of the Safety violation resulting in accidents, dangerous-occurrences and/or near-misses on account of gross negligence and/or non-compliance of safety-policy, SOPs.

In case of Category III Safety Violation, an investigation will be carried out into the event within one-week by a Safety-Officer not below the level of Manager. The HOD, In-charge of the execution of that work area will also be asked to provide separate inputs. The investigating Officer will submit his/her report with findings directly to the Managing Director & Group CEO within 15 days of the occurrence of the incident.

For Contractor:
Based on the findings in the report, a show-cause notice would be issued to the contractor and the response will be examined. Necessary action will be initiated by the HOD against the Contractor or his/her worker/s concerned if found guilty and/or negligence, non-compliance, violation of safety guidelines /SOPs is established. A suitable penalty would be imposed by the HOD based on the criticality of the incident and could lead to termination of the contract. Apart from the Contractor being liable for all expenses including payment of compensation to persons concerned, a penalty of Rs.25,000/- for each very serious, near miss or non-fatal accident shall be imposed. Where appropriate the contract may be terminated.

d. Conclusion

Sincere efforts are required from each contractors and its employee to consider Safety as the paramount importance and compulsory adherence to the Safety SOPs to avoid any

safety violations. Initiative must be taken for compliance of safety SOPs by Contract worker and in case of any safety violation or negligence it should be urgently notified to the immediate supervisory of respective Department, HoD or the Safety Officer.

Any concerns or clarification with regard to the interpretation of the policy will be referred to the Managing Director & Group CEO whose decision shall be final and binding in all the cases.

Standard Operating PROCEDURES: **CIVIL**

1. GENERAL SAFETY INSTRUCTIONS

Following safety rules shall be followed by supervisor and workmen at site.

A. Working at height safety

1. During working at heights, Proper and safe access shall be provided & scaffold hand railing shall comprise of top rail, mid rail and toe guard.

2. All workmen/employees shall wear approved safety PPEs (Safety helmet, Safety shoe, Safety glasses, Safety harness, hearing protection & welding helmets)

3. Work permit shall be followed to carry out any work having 1.8 meters or more height.

4. Full body harness with double lanyard shall be worn.

5. No one shall be allowed to work at or more than two meters height without wearing safety belt and anchoring the lanyard of safety belt to firm support preferably at shoulder level.

6. Ladders shall be adequately secured at bottom and top. Ladders shall not be used as work-platforms.

7. All scaffoldings / work-platforms shall be strong enough to take the expected load. The width of the working platform and fall protection arrangements shall be maintained.

8. Erection zones and dismantling zones shall be barricaded, and nobody shall be allowed to stand under suspended load.

9. No floor opening, floor edges shall be left unguarded.

10. Safety net shall be installed surrounding the periphery of the slab to provide overhead and fall protection.

11. Safety nets shall be inspected daily before use for wear or damage caused by falling materials.

12. Material, equipment and other items that fall into the net shall be promptly removed.

13. Adequate lighting facilities shall be provided for night work and obvious safety signs shall be set at the edge of the floor, the work site and the road junction. At the same time, red warning lights shall be set up at night

14. Unstable objects, such as barrels, boxes loose bricks or concrete blocks shall not be used to support scaffolds or planks.

15. Persons shall not be allowed to work on scaffolds during storms or high winds.

B. Electrical safety

1. Electrical danger sign- electrical installations, high voltage equipment, high tension line, Welding transformers, meter panels, fuse distribution boards, etc.

shall be used appropriately

2. Only Industrial 3 pin electrical plug sockets shall be used.

3. All Boards, Main DB, Sub dB, FDB, Switch plug Sockets units shall be covered by suitable weatherproof condition.

4. Rubber mat shall be provided in front of electrical dB panel.

5. Inserting of bare/opened/naked wires for tapping the power from electrical socket shall be completely prohibited.

6. LOTO procedure shall be followed for major electrical maintenance job.

7. ISI marked PPEs shall be used by all electricians.

8. Electrical hand tools and machinery shall be inspected, and tag system and records shall be maintained.

9. All electrical cables shall be provided double insulated and minimum 3 cores.

10. Continuity of earthing of all panels shall be checked in a regular interval.

11. Proper and safe tapping shall be done in cable joints.

12. Damaged Insulation: Defective or inadequate insulation is a hazard. Be aware of damaged insulation and report it immediately. Turn off all power sources before replacing damaged insulation and never attempt to cover them with electrical tape.

13. Wet Conditions: Never operate electrical equipment in wet locations. Water greatly increases the risk of electrocution especially if the equipment has damaged insulation. Qualified electrician shall inspect electrical equipment that has gotten wet before energizing it.

14. Emergency plan shall be displayed with evacuation guidelines as well as contact information for emergency services in the area.

C. Excavation safety

1. All excavated pits shall be barricaded and barricade to be maintained till the backfilling is done. Safe approach to be ensured into every excavation.

2. No equipment/machinery shall be driven/operated without permission/authority. All heavy vehicles shall be provided with reverse Horn.

3. Practice of Excavation work permit shall be followed.

4. Safe slopes shall be provided in excavated face.

5. Warning signage shall be displayed.

6. Be mindful of the location of utilities underground.

7. Keep heavy equipment away from trench edges.

8. Adequate illumination at workplace shall be ensured before starting the job at night.

9. Loose excavated material shall be placed no closer than 3 feet from the edge of the excavations. In any case it shall be outside the excavation barricaded area. Precautions shall be taken to prevent loose excavated material falling into the excavated area.

10. The disposal area shall be defined, made safe for receiving the loose excavated material and manner of disposal is defined.

11. If there is evidence of cave-ins or slides, all work in the excavation shall cease until the necessary precautions have been taken to safeguard employees.

12. Incase ground water is in entering excavated area, ensure provision of continuous dewatering.

D. Welding and Gas cutting safety

1. Hot work permit shall be followed prior to commencement of any hot work.

2. Regular inspection of welding machine and gas cutting set shall be done.

3. Appropriate PPEs like face shield or goggles, safety helmet, lather hand gloves, full body harness and safety shoes shall be used.

4. Welding leads connections shall be in good condition.

5. Guard/covers shall be provided on welding machine to protect from water/rain.

6. Electrode/welding holders shall be fully insulated.

7. Double earthing shall be provided in welding machine.

8. Flash back arrestors shall be installed in both ends cylinders as well as torch.

9. Hose pipes shall be from damage.

10. Nearby area shall be free from flammable substances.

11. Storage and Handling: Keep cylinders away from physical damage, heat, and tampering.

12. Store extra gas and oxygen cylinders separately.

13. Store cylinders in upright position.

14. Securely chain equipment to prevent falling.

15. Close cylinder valves before moving.

16. Protective caps or regulators should be kept in place.

17. Roll cylinders on bottom edges to move--Do not drag.

18. General Gas Welding Safety Tips: Protect hoses and cylinders from sparks,

flames and hot metal

19. Stand to the side (away from the regulators) when opening cylinder valves.

20. Open cylinder valves very slowly to keep sudden high pressures from exploding the regulators.

21. Personal Protective Equipment: Infrared radiation is a cause of retinal burning and cataracts. Protect your eyes with safety glasses.

22. Protect your body from welding spatter and arc flash with protective clothing. Such as:

    a. Flame-proof apron

    b. Gloves

    c. Properly fitted clothing that is not frayed or worn.

    d. Shirts should have long sleeves.

    e. Trousers should be straight-legged and covering shoes when arc welding

    f. Fire resistant cape or shoulder covers are needed for overhead work.

23. Check protective clothing equipment before each use to make sure it is in good condition.

24. Keep clothes free of grease and oil.

25. Proper Ventilation: Be sure there is adequate ventilation available when welding in confined areas or where there are barriers to air movement. Natural drafts, fans and positioning of the head can help keep fumes away from the welder's face.

E. General Safety

1. All the dangerous moving parts of the portable / fixed machinery being used shall be adequately guarded.

2. Report all Unsafe Act / Unsafe Condition, first aid cases and dangerous occurrences to the responsible supervisors/ engineers/safety person.

3. No workmen below 18 years of age shall be engaged for a job. Physical fitness of the person to certain jobs like working at height or other dangerous locations to be ensured before engaging the person on work. The final decision rests with the site management to reject any person on the ground of physical fitness.

4. Smoking, spitting & urination strictly prohibited at workplace.

5. Contractors shall ensure adequate supervision at workplace. They shall ensure that all persons working under them shall not create any hazards to self or to co-workers.

6. Nobody is allowed to work without wearing safety helmet. Chinstrap of safety helmet shall be always on.

7. No one shall be allowed to enter into workplace at site and work without safety shoes.

8. Condition of all PPEs shall be in good condition. All PPE like shoes, helmet, safety belt etc. shall be arranged before starting the job.

9. All the dangerous moving parts of the portable / fixed machinery being used shall be adequately guarded.

10. All major, minor accidents and near misses to be reported to project head to enable the management to take necessary steps to avoid the recurrence.

11. All tools and tackles shall be inspected before use. Defects to be reported immediately. No lifting tackle to be used unless it is certified by the competent person.

12. Good housekeeping practice to be maintained. Passages shall not be blocked with materials. Materials like bricks shall not be stacked to the dangerous height at workplace.

13. Debris, scrap and other materials to be cleared from time to time from the workplace and at the time of closing of work every day.

14. Contractors shall ensure that all their workmen are following safety practices while travelling in the company's transport and staying at company's accommodations.

15. All the unsafe conditions, unsafe act identified /reported by site supervisors and / or safety personnel to be corrected on priority basis.

16. No children/kids shall be allowed to enter the workplace.

17. Consumption of alcohol and drugs is prohibited.

18. Display of safety banners, safety posters, safety exhibitions, safety badges, and organizing of various safety competitions, recognition of best safety practices and awarding prizes can be done at Project Site/offices.

19. No Smoking signs all over site and particularly near diesel room, general stores or near Combustible materials etc.

20. Physical fitness check shall be carried out for crane operators & Drivers.

21. Those who are violating the safety norms shall be penalized.

22. Emergency plan shall be made available indicating emergency exits, fire points, safe access route, first aid box locations & emergency contact numbers.

23. Never remove or tamper with safety devices

24. All emergency contact numbers details shall be displayed at all critical locations.

25. Never leave machinery running unattended.

26. Never walk in front of a forklift, tractor, or any other heavy machine; the operator may not have seen you—and, even if he has, there's always room for error, so

make sure that error is not you being trampled.

27. Always read labels and instructions alerting you to potential dangers and hazards.

28. Fire mock drill shall be conducted once in a year.

2.0 DEEP EXCAVATION

A. Safety Procedures

General Excavation:

1. All the Excavations, more than 5 feet (1.5Mt) deep where loose soil is encountered shall require shoring or sloping.

2. Excavated material shall be kept at least 3 feet (1Mt) away from the edge of the excavation.

3. Excavated material shall not be permitted to accumulate in the work area or aisles. It should be shifted away.

4. Excavation bracing and shoring shall be checked by an engineer, prior to start the job, subsequently on daily basis and also after every rain and storm.

5. If the trench is 4 feet (1.2Mt) or deeper, it should be provided with standard ladder to facilitate safe entry and exit.

6. Contractor shall ensure all required safety prior to start work and checklist for the same should be maintained.

B. Potential Hazards during deep excavation

1. Falling of persons into excavated trench or pit.

2. Collapse of excavation sides and falling of excavated material onto persons working within excavation trench or pit.

3. Collapse of temporary arrangements (shoring etc) made to support sides of excavation.

4. Collapse of adjacent structure due to excavation.

5. Persons within excavation pit struck by fall of spoils from excavator buckets and other objects dropped on them.

6. Worker hit by reckless driving / operation of equipment.

7. Spiking of underground electric cables with resulting flash burns and electric shock.

8. To ensure existing utilities permission/NOC from respective utility owners shall be taken prior to commence excavation.

C. Safety Aspects

Following important safety aspects shall be implemented during execution of excavation activity at project site:

i. Safe access

1. Safe access shall be provided to excavations by means of ladders, stairs or ramps.
2. Provision of safe means of access & egress to workers. E.g. clear passage for entry and exit, ladder, staircase, slope, steps etc. shall be ensured.
3. If the excavation is more than 4 feet (1.2Mt) deep it should be provided with standard ladder to facilitate safe entry and exit.
4. The ladder shall be provided at every 25 feet (8Mt) intervals.
5. Trenches more than 4 feet (1.2Mt) in depth shall have ladders spaced so that employee's lateral travel to a ladder does not exceed 25 feet (8Mt). Such ladders shall be installed in accordance with the ladder safety requirements. The height of the ladder to be extended up to 3.3 feet (1Mt) from the top of ground surface. The ladder shall be secured.
6. Ensure proper passage over the excavation for by passers to move from one bank side to other with minimum 2 gratings Placed on horizontal members with guard rail.

ii. Caution and Barricading

1. Excavations shall be barricaded to prevent workers/employees and others falling into them.
2. Provide barricading of the area and display of warning signboard in Hindi / English / regional language at conspicuous locations.
3. Warning signs including Light signal to be provided.
4. No trench, ditch or other excavation shall be left overnight without barricades and warning lights.
5. Adequate illumination shall be provided in the night and in day as per site condition so that the area will become visible.
6. If barricades or portions of barricades are removed for work, they shall be replaced as soon as practicable.
7. Suitable warning sign, such as fluorescent warning tapes, flashing lights, shall be provided to warn the persons in night.
8. The warning barricades shall be 6 feet away from the edge of the excavation (plastic tape & sign board).
9. The barricades installed closer than 6 feet (1.8Mt) from the edge of the excavation, shall be hard barricade.
10. All efforts shall be made to locate underground utilities that may reasonably be expected to be encountered during excavation work. A cable detector may be used before start of excavation. In the situation where a cable or utility is found to be existent, the engineer shall judiciously after obtaining the excavation clearance, excavate a trial trench manually only. The depth of trial trench shall not exceed 1.5 meters in general 2.0 meters in special cases so as to ascertain the presence of

any cable/gas pipeline/other utility. In case, no cable or other utility service lines detected in the trial trench, mechanical excavation up to 1.2 meters depth shall be undertaken.

11. It should be ensured that all excavations are supervised by an engineer/supervisor.

iii. Dewatering

1. In case ground water is entering excavated area, ensure continuous dewatering.

2. Persons shall not work in excavated trench that contain or accumulates water unless precautions have been taken to protect persons from hazards posed by water accumulation. The precautions taken shall include support or sealed systems to protect from cave-ins, water removal to control the level of accumulating water and use of safety harness and lifelines.

3. Dewatering from the pit shall be done at remote location to avoid backflow to the pit, resulting in soil collapse. If water is controlled or prevented from accumulating by the use of water removal equipment, the water removal equipment & operation shall be monitored by a person trained in the use of the equipment.

4. If excavation work interrupts the natural drainage of surface water, diversion ditches, dikes, or other suitable means will be used to prevent surface water from entering the excavation. Precautions shall also be taken to provide adequate drainage of the area adjacent to the excavation.

iv. Traffic Management

1. Ensure deployment of standby person on site.

2. When sites are active, signage shall be displayed to clearly demarcate the safe traffic movement.

v. Shoring

Excavations greater than or equal to 1.5 m deep are particularly hazardous and shall be shored unless:

1. The face is cut back to a safe slope and the material in the face remains stable under all anticipated conditions of work and weather.

2. An adequate supply of materials such as timbers, trench sheets & props with which to shore the sites of excavation shall be delivered to the site before starting excavation.

3. Material used for sheeting, shoring or bracing shall be of good condition. Timbers shall be sound, free of large knots and of appropriate dimensions.

4. Shoring with GI sheets shall be firmly supported by steel/ scaffold pipes with spacing of 4 ft in horizontal & vertical direction with cross bracing & shall be suitable clamped.

5. Supporting systems shall be designed to meet accepted engineering requirements. When tie rods are used to restrain the top of sheeting or other retaining systems, the rods shall be securely anchored well back of the angle of repose.

6. For shoring extending below the water table proper means of water drainage with

the means of weep holes or other means shall be ensured.

vi. Safe slopes in excavations

Unless the stability of the excavated face is determined by a Site engineer, the safe slope shall not exceed:

1. Vertical: 1Horizontal (45 degrees) or the angle of repose, whichever is flatter.

2. Where the slope of an excavation is benched, the maximum height between benches should not exceed 1.5 m.

vii. Materials and loads above excavations.

1. Excavated or other loose material shall be effectively stored or retained not closer than 2 m from the edge of the face unless the face is specially shored to allow for the increased load, and suitable toe boards or other safeguards are provided.

2. Mechanical plant, vehicles or any heavy loads shall not approach closer than a safe distance from the edge of the excavation.

3. Proper wheel stopper or wheel choke shall be provided for the vehicles.

viii. Excavations adjacent to buildings or structures

Where it is intended to excavate alongside another structure, the following precautions shall be observed:

1. Never excavate below the level of the foundation of any adjacent structure, or within an area which would be inside the safe slope, unless adequate precautions have been taken to ensure that the stability of the excavation face and the building or structures above are not at risk either during or after excavating.

2. if excavation is likely to affect the stability of existing structures, advice from a competent person shall be obtained before the excavation is started.

3. Where pumping is being carried out to lower the ground water level, subsidence of adjacent structures may result. The characteristics of the supporting soil may be changed by pumping, which may reduce the load-bearing capacity of the soil. If such works are to be undertaken, expert advice shall be obtained.

ix. Dust nuisance or greasy surface

In dry conditions, frequent watering or chemical spraying of haul roads and working areas shall be considered to reduce dust nuisance. Care shall also be exercised to avoid the dust hazards being replaced by greasy over-water surfaces.

3 WORKING IN CONFINED SPACE

A. Safety Procedures

Control

1. Area in charge/supervisor shall ensure no entry to confined spaces. When entry is necessary, pre-entry checks shall be carried out to determine the condition of the confined space and the necessary measures to ensure safety of the entry workers.

2. Determine, if any material / equipment to be used, which can generate hazardous fumes.

3. Flame proof lightings shall be used for illuminating work area.

4. Area in charge/supervisor to issue a work permit for confined spaces.

5. A suitable means of communication between the site and an external point of contact shall be established tested and should working before entry commences.

6. The number of workers entering the confined space shall be appropriate to the task and Log in and Log Out Mechanism shall be established.

B. Confined Space Entry Workers

1. Ensure that employees are deemed medically and physically fit to enter confined spaces and use PPE before authorizing them to enter confined spaces.

C. Ventilation

1. All available confined spaces access points shall be opened to permit air circulation.

2. Access points shall remain open and guarded throughout the period entry.

D. Access and Egress

1. All employees (entrants) entering a confined space shall be logged in and out.

2. The area in charge/supervisor shall confirm that all workers have exited the confined space before the openings are closed and the site vacated.

3. Suitable lifting equipment shall be used to facilitate entry and exit when entry is via a vertical shaft.

E. Fire Safety (In Case of Hot Works)

1. Flammable or combustible materials shall not be stored in a confined space.

2. All potentially flammable waste material from the work activity shall be removed from the confined space and disposed of in a safe manner.

3. Smoking in or near confined spaces shall not be permitted.

4. Flame proof electrical equipment shall be provided.

F. Emergencies and Rescue

1. All work is to cease immediately, escape breathing apparatus shall be put on and the confined space exited immediately the atmosphere monitor alarms.
2. The attendant has responsibility for raising the alarm and invoking the appropriate emergency response.
3. The emergency rescue services shall be contacted first if there are any casualties.
4. The attendant shall not enter the confined space to attempt a rescue.

   Depending upon the severity of conditions, the affected person shall be provided suitable first aid or immediate medical attention shall be provided.

4 WORK AT HEIGHT

A. FORMWORK (SHUTTERING & DE-SHUTTERING) SAFETY

a) Shuttering

1. Shift shuttering material – reinforcement, plywood, batten, jack support, etc.
2. Provide shuttering as per measurement.
3. Pour concrete manually with the help of chute following above said procedure.

b) De-shuttering

1. Remove shuttering jacks & plywood.
2. If working height is more than 2-meter then use of full body harness shall be practiced.
3. Keep material in designated area in orderly manner by removing manually.

c) Risk Identification

During the whole process of work the following risks are foreseen:

1. Chances of fall of material/Personal from Height.
2. Improper support from side may lead to injury.
3. Improper scaffolding may lead to injury.
4. Improper platform may lead to injury.
5. Improper barricading may lead to injury.
6. Improper Steel shifting & mishandling may result into shoulder & hand injury.
7. Improper use of electric safety equipment may lead to major injury.
8. Injury during cutting or binding of steel.
9. Chances of getting injured if housekeeping not done.

d) Control Measures

1. Provision of access by Ladder / Scaffold tower with platform / ramp / stair tower / staircase / steps.

2. Safety net shall be fixed surrounding the periphery of slab for overhead and fall protection.

3. All safety net systems shall meet the requirements of Indian Standard (IS: 5175).

4. Material, Loose Concrete, equipment and other items that fall into the net shall be promptly removed.

5. Safety nets shall be inspected before use and then daily for wear or damage caused by falling materials.

6. Ladders shall not be used as work platforms or scaffolding or as structured members of scaffolds or walkways. Ladders shall not be used in horizontal position.

7. Proper area barricading to prevent people walking across below the working area shall be done before commencing Concrete placing work at height. If such barricading is not possible, safety net shall be provided, and “Work in Progress” boards shall be displayed.

8. Temporary platforms and scaffolds shall be provided with solid grating (free of openings) and standard guardrails with toe boards attached.

9. All platform/walkway above 1.8 M from floor shall be provided with guardrail system.

10. Maintaining the steps/ramp free of loose gravel, sand etc.

11. Provide proper scaffolding ladder arguments with 300 gap in-between two rungs.

12. Scaffold tower shall be inspected through competent scaffold inspector / Formwork team.

13. Open to sky ducts, attached terrace and corridor duct shall be covered by safety net and lift openings covered by M.S. Gratings.

14. All openings and sides of buildings from which a worker might fall shall be adequately covered or barricaded.

15. Close supervision shall be ensured by the supervisor. Planks shall be tied with bending wires.

16. Use of dual lifeline full body harness, safety helmet, safety shoes/gum shoes, safety goggle shall be made mandatory.

17. Full body harness shall be anchored at rigged support / use of lifeline wherever possible / full body harness is not anchored on bracing.

18. Adequate lighting facilities shall be provided for night work and obvious safety signs shall be set at the edge of the floor, the work site and the road junction. At the same time, red warning lights shall be set up at night.

19. Close supervision shall be ensured during the work.

20. Periodically training shall be considered for all height workmen.

21. Adequate PPEs shall be provided to all workmen and supervision shall be ensured.

22. Periphery of slab to be concreted shall be barricaded by hard barricading with the use of MS pipes.

23. Top rail and mid rail to be provided in hard barricading.

24. Unstable objects, such as barrels, boxes loose bricks or concrete blocks shall not be used to support scaffolds or planks.

25. Persons shall not be allowed to work on scaffolds during storms or high winds.

e) General Safety Considerations

The following safety precautions shall be followed during construction.

1. All the workers shall wear proper personal protective equipment.

2. All the workers & staff personals shall be trained well in works to be executed at height & precautionary & corrective measures to be taken for the same.

3. All the workers shall be trained, and safety induction shall be imparted to them before the commencement of work at site.

4. Toolbox talk shall be carried out for mutual understanding of work.

5. Regular or daily check of equipment prior to use shall be carried out.

6. A competent site supervisor shall be present at all times during work.

7. A first aid person shall be present at site and a first aid kit shall be provided in site office.

8. Emergency call numbers shall be posted on site for contact in emergency.

9. Safety net shall be fixed surrounding the periphery of slab for overhead and fall protection.

B. REINFORCEMENT PLACING

a) Safety Procedures

Manually/Mechanically Unloading of reinforcement bars from vehicle & Stacking of reinforcement bars.

1. Licensed drivers & operators shall operate vehicles.

2. Speed limit 20KMPH shall be observed.

3. Warning signage shall be posted.

4. Separate training shall be provided to operators in regular intervals.
5. Reverse Horns & Taillights of the vehicle shall be in working condition.
6. A Separate banks man may be deployed to direct all vehicles to its designated positions safely.
7. Vehicle shall be parked at a secured place at work site where required and wooden stopper shall be provided to protect automatic back side movement.
8. Sufficient number of skilled workmen allotted to the job.
9. Safety helmet, safety shoes, hand gloves shall be provided to the workmen.
10. Outriggers shall be erected securely.
11. Competent operator shall be deployed for lifting operations.
12. Surface compaction shall be ensured for proper stability of lifting equipments and cutting machines
13. Certified lifting tolls shall be used for lifting of materials.
14. Periodically inspection shall be done for all lifting appliances.
15. Rebars shall be stacked size wise with signage posted.
16. Bundles shall be removed, only when old unbundled rebars are over.

b) Bending & Cutting operation by Machine

1. Shoulder pad may be used for shifting of rebars
2. Safety helmet, safety shoes, safety goggles, hand gloves shall be provided to the workmen
3. Educate the workmen to carry the sharp-edged bars front side upward.
4. Ensuring adequate space for working.
5. Only authorized person shall operate the cutting machines.
6. Power shall be disconnected when not in use.
7. All rotating parts & cutting wedge shall be provided with suitable guards to avoid entanglement of limbs/loose cloth part.
8. Workmen with loose attire not to be involved.
9. Periodic inspection shall be done for the cutting & bending machine.
10. Cables of sufficient capacity with double insulation & Industrial plug tops & sockets shall be used.
11. Provision of Main & Body earthing.
12. Insulation tape provided near cable joints with a knot.

13. Damage to cables to be prevented by proper lying of cable either overhead above 7ft height or underground.

14. Periodic electrical inspection shall be done to ensure proper electrical safety and inspection shall be pasted.

15. During mechanical operation, the power shall be cut off immediately when power failure occurs. Pull the switch, lock the door of the switch box and clean the construction site. Circuit fault shall be ruled out by professional electrician. Non electrician is strictly prohibited to connect, disassemble and repair electrical equipment.

16. Daily housekeeping practice is adopted.

17. Separate scrap yard is demarked to dump cut pieces & scrap bars.

18. Sized rebars shall be stacked diameter wise with identity.

19. Proper maintenance of the Machine.

c) General Conditions during reinforcement tying work.

1. Good housekeeping practice shall be maintained.

2. Strictly limit the access to the work area where formwork, protruding rebar, and rebar cages are present.

3. All the gang ways shall be illuminated during night activity.

4. Safety net shall be fixed surrounding the periphery of slab for overhead and fall protection. All safety net systems shall meet the requirements of Indian Standard (IS: 5175).

5. Material, equipment and other items that fall into the net shall be promptly removed.

6. Safety nets are shall be inspected before use and then daily for wear or damage caused by falling materials.

7. Ladders shall not be used as work platforms or scaffolding or as structured members of scaffolds or walkways. Ladders shall not be used in horizontal position.

8. Proper area barricading to prevent people walking across below the working area shall be done before commencing reinforcement placing work at height. If such barricading is not possible, safety net shall be provided, and “Work in Progress” boards shall be displayed.

9. Temporary platforms and scaffolds shall be provided with solid grating (free of openings) and standard guardrails with toe boards attached.

10. All platform / walkway above 1.8 M from floor shall be provided with guardrail system.

11. Shoulder pads shall be used for shifting.

12. PPE such as Dual lifeline Full body harness, Helmets, Hand gloves, & shoe shall be provided to workmen.

13. SWL (Safe Working Load) with the identification mark needs are marked on lifting gear. Hand gloves shall be provided to all handling engaged workmen.

14. All cable shall be routed through RCCB.

15. All cables shall be double insulated & properly routed.

16. Insulation of the joints shall be provided sufficiently & with a knot to provide stability / cable joint connector shall be made available.

17. Electrical machinery shall be covered/enclosed to prevent rain, smashing, moisture and so forth. The switch box of electric machinery shall be installed sensitive and effective leakage protection in accordance with the regulations.

18. Proper access & egress provision shall be made, and double walkway plank shall be placed on the reinforcement cage and shall be tied or secured equivalently.

19. Hand gloves shall be provided to all workmen doing tying work of reinforcements bars.

20. All the gang ways shall be properly illuminated during night activity.

21. Approach area illumination shall be ensured.

22. Adequate lighting facilities shall be provided for night work and obvious safety signs shall be set at the edge of the floor, the work site and the road junction. At the same time, red warning lights shall be set up at night.

23. Persons shall not be allowed to work on scaffolds during storms or high winds.

C. CONCRETING WORK

a) Safety Procedures

Transportation of concrete at site by T.M (Transit Mixers)

1. Licensed operator shall be engaged for vehicle driving.

2. Periodically, operator awareness training for defense driving techniques shall be arrange at site.

3. Working of Reverse Horns & Taillights of the Transit Mixture (TM) shall be ensured.

4. Access availability or compaction of ground surface shall be checked prior to send the vehicle on the road.

5. Safe vehicle movement area shall be made.

6. Authorized operator photo shall be placed for identification.

7. During night work adequate lighting shall be provided in road area.

8. Proper area lighting shall be ensured by area supervisor prior to start.

9. Fitness of vehicle shall be ensured periodically in vehicle inspection report and observations shall be resolved immediately if found.

10. Periodically maintenance shall be covered.

11. Fitness of vehicle shall be ensured in beginning of inspection of vehicle during engaging at site.

12. Overloading of TM shall be ensured during loading at batching plant and chute shall be kept in secured position.

13. Spillage shall be eliminated.

14. Waste concrete disposed area shall be made.

b) Concrete pouring

1. Vehicle shall be kept away from edge of the excavated area and availability of bank man shall be ensured during pouring of concrete and secure provision of chute shall be ensured.

2. Close supervision shall be ensured during operation.

c) Pouring of concrete by TM & Boom placer

Competent Driver shall be deployed for operating the boom placer.

d) Concreting operation by Concreting pump

1. When the concrete is being placed in the hopper of the pump (either from batching plant chute or transit mixer chute), no person shall climb on the hopper of the pump.

2. The danger zones (within working area) like hose end position, beneath the placing boom, moving parts of the concrete pump and its hopper, its support legs and the area of the concrete pipe line, etc. shall be identified by the safety officer/ mechanical engineer in advance. Accordingly, these areas shall be cordoned, and restricted movement shall be ensured as practicable as possible.

3. Personal protective equipment like helmet, safety shoes, ear defenders (earmuff/ earplug), protective gloves and goggles, face mask/respiratory protector, etc. shall be arranged by the contractor for all the workers working on concrete pump.

4. Concrete pump shall have suitable pressure relief valve, set at a predetermined pressure level, in order to ensure safety of the workers as well as the pump.

5. Adequate support / locking shall be done for concreting pipeline to prevent the failure due to vibration of pump line.

6. Workmen engaged for concreting works shall be adequately briefed about the work & hazards.

7. Lock & key arrangement made for the hopper of the pump to prevent the opening while operation.

8. Competent pump operator deployed for the operation.

e) Concreting at height

1. Provision of access by Ladder/Scaffold tower with platform/ramp/stair tower/staircase/steps shall be made.

2. Safety net shall be fixed surrounding the periphery of slab for overhead and fall protection.

3. All safety net systems shall meet the requirements of Indian Standard (IS: 5175).

4. Material, Loose Concrete, equipment and other items that fall into the net shall be promptly removed.

5. Safety nets shall be inspected before use and then daily for wear or damage caused by falling materials.

6. Ladders shall not be used as work platforms or scaffolding or as structured members of scaffolds or walkways. Ladders shall not be used in horizontal position.

7. Proper area barricading to prevent people walking across below the working area shall be done before commencing Concrete placing work at height. If such barricading is not possible, safety net shall be provided, and “Work in Progress” boards shall be displayed.

8. Temporary platforms and scaffolds shall be provided with solid grating (free of openings) and standard guardrails with toe boards attached.

9. All platform/walkway above 1.8 M from floor shall be provided with guardrail system.

10. Approach steps/ramp shall be free of loose gravel, sand etc. to avoid accident

11. Provide proper scaffolding ladder arguments with 300 gap in-between two rungs.

12. Scaffold tower shall be inspected through competent scaffold inspector / Formwork team.

13. Open to sky ducts, attached terrace and corridor duct shall be covered by safety net and lift opening covered by M.S. Gratings.

14. All openings and sides of buildings from which a worker might fall shall be adequately covered or barricaded.

15. Close supervision shall be ensured by the supervisor. Planks shall be tied with bending wires.

16. Use of dual lifeline full body harness, safety helmet, safety shoes/gum shoes, safety goggle shall be made mandatory.

17. Full body harness shall be anchored at rigged support / use of lifeline wherever possible / full body harness is not anchored on bracing.

18. Adequate lighting facilities shall be provided for night work and obvious safety signs should be set at the edge of the floor, the work site and the road junction. At the same time, red warning lights shall be set up at night.

19. Close supervision shall be ensured during the work.

20. Periodically training shall be considered for all height workmen.

21. Adequate PPEs shall be provided to all workmen and supervision shall be ensured.

22. Periphery of slab to be concreted shall be barricaded by hard barricading with the use of MS pipes.

23. Top rail and mid rail to be provided in hard barricading.

24. Unstable objects, such as barrels, boxes loose bricks or concrete blocks shall not be used to support scaffolds or planks.

25. Persons shall not be allowed to work on scaffolds during storms or high winds.

D. BRICK/BLOCK & PLASTERING WORK

a) Safety Procedures

Stacking of bricks

1. Bricks shall not be stacked more than 1.2m height.

2. Bricks shall be stacked in zigzag manner to provide stability.

b) **Shifting of material**

Long distance shifting shall be done by using construction trolley.

c) Safety During Brick Masonry/Plaster Work

1. Proper scaffolds and/or temporary work platforms shall be provided for working at height at elevations 1.8 meters or more where no permanent work platform is available to work safely. The elevated work platforms shall have guardrails and provided with ladders for access/egress.

2. Temporary platforms and scaffolds shall be provided with solid grating (free of openings) and standard guardrails with toe boards attached.

3. Where it is not feasible to erect scaffolds, suitable hydraulically elevated work platforms or portable platform with wheel locks / chokes and guardrails shall be used.

4. Ladders shall not be used as work platforms or scaffolding or as structured members of scaffolds or walkways. Ladders shall not be used in horizontal position.

5. Proper area barricading to prevent people walking across below the working area shall be done before commencing Brick, Plaster and Block work at height.

If such barricading is not possible, safety net shall be provided, and “Work in Progress” boards shall be displayed.

6. Work platforms shall be provided with top rail, mid rail & toe board.
7. Workmen shall use full body harness on > 1.8m height.
8. Safety net shall be fixed surrounding the periphery of slab for overhead and fall protection.
9. All safety net systems shall meet the requirements of Indian Standard (IS: 5175).
10. Material, Loose Concrete and mortar, Bricks, equipment and other items that fall into the net shall be promptly removed.
11. Safety nets are shall be inspected before use and then daily for wear or damage caused by falling materials.
12. Safety net installation shall be inspected by the concerned maintenance/ construction supervisor.
13. The safety nets shall extend out at least 8 ft. from the side of the open edge.
14. All platform/walkway above 1.8 M from floor shall be provided with guardrail system.
15. Open to sky ducts, attached terrace and corridor duct shall be covered by safety net and lift opening covered by M.S. Gratings.
16. All openings and sides of buildings from which a worker might fall should be adequately covered or barricaded.
17. Adequate lighting facilities shall be provided for night work and obvious safety signs should be set at the edge of the floor, the work site and the road junction. At the same time, red warning lights shall be set up at night.
18. Unstable objects, such as barrels, boxes loose bricks or concrete blocks shall not be used to support scaffolds or planks.
19. Persons shall not be allowed to work on scaffolds during storms or high winds.
20. Lifelines, if used, shall be of sufficient strength to withstand the large forces involved in falls.
21. For work involving painting jobs from elevations 1.8 meters or more from ground having risk of injuries due to fall, proper scaffolds or portable hydraulically elevated work platforms shall be provided and used, if there is no permanent provision is available to work safely.
22. Compliance of safety googles during brick work and plaster work.
23. Min 50 lux of illumination shall be provided for access & egress and > 100 lux for working area.
24. Lighting shall be such that it should not create any glare.

E. PAINTING WORK

a) Safety Procedure

UNLOADING AND STORAGE OF PAINT/PUTTY CONTAINERS

1. Do not over strain back through poor lifting posture. Load carrying limit shall be 45 kg. Seek assistance of co-workers for lifting more than 45 kg, use adequate PPE/ Use cut resistance gloves, ensure adequate posture, with adequate cordoning.

b) Painting Preparation

1. Experienced personnel shall be deployed for operation, working on platform/scaffolding with full body harness secured with anchor point.

2. Provide a ventilated area for material storage as per MSDS for paint storage, provide drip tray under the paint drum of agitator to prevent spillage, maintain height limit for stacking. Use pallet for paint storage, use adequate PPE.

3. Use standard, certified and serviceable equipment for operation, follow standard cable management, do not use damage equipment, use proper connectors for cable connections.

c) Putty / Paint Mixing

1. Standard serviceable equipment for mixing shall be used and provide drip tray under the agitator

2. Proper earthling of equipment shall be done.

d) Painting Work /Manual

1. Proper and safe working platform shall be provided.

2. Ensure use of full body harness while working at elevated location.

3. Loose materials shall be kept away from the edge of platform.

4. Provide floor protection for preventing paint spillage.

5. Take sufficient quantities of paint containers which can be easily carry by hand,

6. Do with proper body posture during painting/only inside work platform.

7. Do not come outside handrail, use adequate PPE (Appropriate mask, Eye Glass, Gloves, Safety shoes and Hard hat shall be used).

8. Ensure adequate illumination during work.

e) Painting Work /Compressed Air

1. Ensure Use of standard and serviceable accessories, ensure adequate usage of whip chuck in the hose. Ensure TPI for compressors, ensure periodical inspection and functioning of gauges and pressure relief valve.

f) Waste Paint and Drum Disposal

1. Collect all drums into a designated place. Provide proper indication/warning signage shall be provided at the area, Disposal shall be carried out as per local rules and regulations of hazard waste disposal.

2. Proper scaffolds and/or temporary work platforms shall be provided for working at height at elevations 1.8 meters or more where no permanent work platform is available to work safely.

3. Temporary platforms and scaffolds should be provided with solid grating (free of openings) and standard guardrails with toe boards attached.

4. Where it is not feasible to erect scaffolds, suitable hydraulically elevated work platforms or portable platform with wheel locks/chokes and guardrails shall be used.

5. Ladders shall not be used as work platforms or scaffolding or as structured members of scaffolds or walkways. Ladders shall not be used in horizontal position.

6. Proper area barricading to prevent people walking across below the working area shall be done before commencing Paint work at height. If such barricading is not possible, safety net shall be provided, and “Work in Progress” boards shall be displayed.

7. All platform / walkway above 1.8 M from floor shall be provided with guardrail system.

8. All openings and sides of buildings from which a worker might fall should be adequately covered or barricaded.

9. Unstable objects, such as barrels, boxes loose bricks or concrete blocks shall not be used to support scaffolds or planks.

10. For work involving painting jobs from elevations 1.8 meters or more from ground having risk of injuries due to fall, proper scaffolds or portable hydraulically elevated work platforms shall be provided and used, if there is no permanent provision is available to work safely .

11. Persons shall not be allowed to work on scaffolds during storms or high winds.

F. GLASS FACADE WORK

a) Safety Procedure

General guideline

1. Glass shall be stored in a dry condition and on its edge.

2. To minimize the risk of damage and breakage, the glass shall not be in contact with any substances that are harder than it.

3. Use rubber, timber, or plastic material for supporting, packing and lifting operation.

4. Glass stored on its edge shall be supported as evenly as possible over its surface

area.

5. Site access shall be adequate, levelled and smooth to permit vehicles to approach.
6. Storage and lifting position shall be accessible for delivery and distribution of materials.
7. Bulk glass shall be distributed over floors on wooden stools within the safe loading capacity.
8. Suitable racking arrangements shall be made so that the glass is safely positioned and cannot be damaged by others working on site.
9. Tinted glass should be placed out of direct sunlight.
10. If glass breaks during handling it shall be allowed to fall, no attempt should be made to intercept it.
11. On windy locations and condition the glass shall be tied to prevent it blowing over.
12. A safe lifting posture shall be used with considering the direction of wind.
13. When lifting, the glass shall be kept upright and the movement smooth to avoid undue flexing.
14. The floor shall be checked for obstacles or slippery patches.
15. Use straps or slings usually made of leather or plastic with timber handles at each end.
16. Check the workability, strength and capacity of the webbing slings, suction pads etc. before lifting.
17. The safe lifting load of crane/ winch shall be marked on the crane and this should be never exceeding except direct test under competent person.
18. The operator of the crane / davit shall be trained, experienced and shall have a knowledge of lifting accessories and method of attaching the load to the crane.
19. Overhead crane/ winch/ davit shall be properly secured with rigid structures at top for its stability.
20. The operator of an overhead crane/ winch shall have a clear view at all times of the object being lifted and route to be taken.
21. Area bellow the lifting shall be barricade with the display sign of lifting work in progress.
22. Guideline/ lifeline shall be provided with the glass panel to control the movement / oscillation due to blowing wind.
23. Check the lifting accessories like, wire rope, slings, lifeline, winch lever and break and emergency stop system etc. before lifting.
24. Ensure the third-party inspection of all lifting gears and accessories.

25. Ensure proper edge protection for the intermediate floors and ensure proper lifeline and use of full body harness with proper anchorage point for the workers exposed to outer edge for facade erection.

26. Provide proper hand gloves suitable for handling and lifting glass panel. And, other PPE's i.e. helmet, safety shoe, full body harness etc.

27. Competent supervisor/ engineer shall be available at the place of erection, loading and unloading at all time.

Handling of glass

A. Glass handling (Manual)

1. Check the condition of glass, look particularly for edge runs.

2. Check that the destination is prepared with satisfactorily insulated seating in place.

3. Do not use a screwdriver to open a case of glass. Use the mattock provided.

4. Lean each crate against a stationary object to prevent the glass from falling out when the crate (Bundle) is opened.

5. Do not attempt to catch a falling load of glass.

6. Remove nails on the packaging before attempting to load or unload a case of glass.

7. Do not stand under a suspended load of glass.

8. Do not pick up broken or cracked pieces of glass using your bare hands.

9. Do not carry glass under your arm.

10. Carry sheets of glass in a position vertical to the ground; do not put your hand in the center, or hold the edges, and attempt to carry the glass parallel to the ground.

B. Mechanical

In today's market there are a very wide range of cranes, conveyors and powered mobile trucks, electrical winches available, which could be used as mechanical handling equipment in a modern glass handling, shifting and storing.

a) Cranes and hoists

1. Do not use load hooks that are cracked, bent or broken.

2. Do not use cranes that do not have their rated load capacity indicated on each side of the crane or on its load block.

3. Do not exceed the rated load capacity as specified by the manufacturer.

4. Do not operate a crane on soft ground without using cribbing and mats.

5. The operator of an overhead crane shall have a clear view at all times of the object being lifted and the route to be taken.

6. The most common accident occurs when a crane is traversing with a slung load which catches behind a stack of glass

7. It requires comparatively little force to control/ handle it over.

8. Over-travel switches on the lifting system to prevent over-winding shall be present and working, and on tracked cranes there will need to be limit switches to prevent over-run of the track ends.

9. Where loose loads are to be moved, overhead protective guards shall be fitted for the protection of the operator.

10. Care should be taken to ensure slings are correctly located on the location blocks fitted to the side of the end caps as lifting commences.

11. Worn links shall be discarded before lifting, check chains are not twisted and both lifting grapples are properly located in rings or handles.

12. Ensure the grab is centered over the packs and that the weight-bearing bars are properly located in their housings.

13. Ensure the frames are centered over the pack and the securing clamps are placed correctly to hold the glass in place.

14. Check that the edges of the glass in the pack are level before turning otherwise breakage is likely. Ensure the pack is securely clamped in the grab.

15. Make sure the glass to be lifted is dry and that all suction caps are in contact with the glass prior to lifting. The glass being lifted shall be separated from any sheet it may be stacked against before moving it away.

16. It is recommended that a visual check of all pads is carried out daily to inspect for damage. All identified faults shall be rectified prior to further lifting operation.

17. Ensure packing is in balance before lifting.

18. Rubber facing of the mechanical equipment shall be well maintained.

b) Storage of glass

Glass is generally stored in dry conditions, on its edge. Whether storage is on the short or the long edge is dependent on size, substance, availability of space etc. Great care shall be taken when loading and unloading, and the following points should be considered.

1. Glass shall be kept as upright as possible. An excessive lean may result in damage to the glass edges, with a possible risk of injury when removing the glass from the rack.

2. Only single sheets shall be turned over to stop a sudden redistribution of weight at any time. This will avoid excessive stress being placed upon the vertical supports of the racks.

3. Wherever possible the glass shall lean in alternate direction along the length of rack.

4. A clearly defined gangway shall be provided in front of the rack wide enough to enable the operator to turn the sheet through 90° when clear of the front of the rack.

5. It is recommended that 50mm wide timber bearers are laid at right angles to the glass on the floor of the rack. This may avoid damage by glass particles, which may become embedded in the rack floor

6. The floor on which these racks sit shall be as flat and even as possible, so that they do not move or rock when empty or lightly loaded.

7. Clearly defined gangways of at least 1m shall be provided in front of each rack to avoid the danger of an operator tripping over any exposed timber bases when carrying glass.

8. The platform and floor of building shall be sufficient to take the load of glass racks.

9. Ensure sufficient access to allow delivery vehicle on to the site.

10. Glass store shall be secure and safe from accidental damage by other contractors on site.

c) Facade Work Lifting (Glass Panel Erection)

1. Ensure all engaged workman for facade work are well trained and experience.

2. Winch machine operator shall be trained and well experienced.

3. Wheel mounted stool shall be used for shifting the glass panel near the location.

4. Overhead crane/electric winch and lifting gears used for lifting operation shall be tested by competent person.

5. Check the lifting hooks, slings and packing before lifting

6. When working outside, do not install or remove glass during lightning storms, rain or windy weather.

7. The slings shall be of appropriate length to maintain the recommended angle at the hook of the lifting point.

8. Clean up all glass splinters or fragments after installation of glass.

9. Wear glass handling gloves when moving, installing, handling, or loading glass.

10. Wear safety goggles or face shields when cutting, grinding, fabricating, polishing or sanding glass.

11. Use lifelines and safety belts when working on a swing stage scaffold, window jack scaffold, suspended platform or boatswain chair.

d) Fall Protection

1. All workers engaged for facade erection work shall be aware about the fall protection.

2. Floor edged belongs to glass fixing work shall be protected with hard railing.

3. Person engaged at the outer edge of floor shall wear and secure full body harness with proper anchorage point (provide lifeline with anchor fastener).

4. Check the gondola and other lifting devices before lifting.
5. Check the pulley arrangement and supporting system of gondola and electrical winch.
6. Provision of separate lifeline for each individual working on gondola shall be made. Lifeline shall be tied with rigid structure and protect against sharp edges.
7. Locking of counterweight in a one unit with extra locking of same by wire rope with rigid structure shall be ensured to avoid slide.
8. Daily check for gondola shall be ensured and provide daily check tag before work start.
9. Ensure that gondola shall be handled and operated by trained and medically fit persons.
10. Ensure hammer weight for wire rope locking.
11. Ensure bellow area of lifting should be cordon off.
12. Ensure the implementation of height work permit system.
13. Ensure proper communication system at the workplace like walkie-talkie.
14. Operator shall have clear vision of rope, winch and lifting panel while erecting the panel.

G. RCC HUME PIPE LAYING

a) Safety Procedure General guideline:

Delivery and unloading/shifting of pipe

1. Unload and stack pipes in accordance with the instructions of Site In-charge. Pipes shall be stacked on leveled base/platform.
2. Maintain control of loads when lifting & moving.
3. Carry pipes close to ground while moving.
4. Secure pipes to prevent movement irrespective of slope of surface, secure pipes to prevent movement
5. Place pipes in secure compound if site left unattended.
6. Minimize waiting time for pipes on site prior to laying.
7. All vehicles operators shall be experienced and competent to perform task.
8. Insurance of all vehicles and 3rd party certificates (competent person's) of lifting tools and tackles shall be ensured prior to commence the work.

b) Loading, unloading, shifting and placing of RCC Hume pipe with Hydra

Hydra Marching Without Load

1. Travelling speed without load shall not be more than 10 Km/hr.
2. A helper shall always be available with the operator on the machine. While marching he should guide the operator about the safe distance from the things around Hydra.
3. Do not overtake any vehicle while marching.
4. Always give indicators while traveling/turning and stopping.

Hydra Marching with Load

1. Maintain a maximum speed of 2-3 Km/hr.
2. Match with the speed of helper walking along with the Hydra.
3. Always travel low in 1st gear and do not change the gears while marching with the load.
4. Always march with boom fully retracted and in the lowest convenient position.
5. Load shall be stable while marching.
6. Load shall not be right/left, forward or backward direction, which may be caused due to uneven surface, lifting height of load and length of the wire rope from boom to hook block.
7. Avoid stopping/lifting the load with jerks.
8. Hook shall be placed right over the C.G of the load.
9. While marching ensure that C.G should always fall between the front wheels.
10. Plan the lift so as to minimize turning with load as far as possible.
11. Do not use hydra with long distances with the load. Instead use trailer
12. Check the conditions and capacity of wire ropes, lifting tools & tackles.
13. Never march on sideways sloping surface.
14. Use standard Slings safety procedure.
15. Be cautious about contact with High Tension (HT) Cables.

c) Secure Site

1. Provide the appropriate fencing and/or barricades as per site risk assessment.
2. Display appropriate signage and provide pedestrian control.
3. Conduct site inspection to ensure access/egress is adequate for the task activities.
4. SOP of excavation shall be followed.

d) Install pipe and fittings on bed

1. String only sufficient pipes for day's work.

2. Wear appropriate PPE including reflective jacket, safety shoes and safety helmet etc.
3. Place trained personnel on look-out.
4. Adopt correct manual handling techniques.
5. Use mechanical aids where possible.
6. Maintain control of loads when lifting & moving.
7. Carry pipes close to ground while moving providing mechanical aid is used.
8. Use only skilled and experience person to perform the task.
9. Adequately secure connecting pipes (safety pins for lever couplings).
10. Extreme care when working in wet and slippery areas.
11. Personnel shall never run on worksite.
12. Keep worksite clean and tidy at all times.

H. BITUMINOUS ROAD WORKS

a) Safety Procedure

Hazards:

Dust hazards

1. Respiratory related illness
2. Eye problem

Safety measures:

1. Spray water on dust or loose soil
2. Provide nose mask and safety goggles to workers

Hazards during handling of Hot tar

1. Skin infection, skin burn

Safety measures:

1. Provide safety shoes and hand gloves to workers

Hazards due to manual handling

1. Back pain

Safety measures:

1. Provide trolley to workers

Hazards due to Collision of vehicles / public vehicles

1. Workers can get injured
2. Loss of property

Safety measures:

1. Provide alternative road for public vehicles
2. Display of safety Sign board
3. Barricade the work area
4. Provide adequate lighting / illumination
5. Signage of retro-reflective sheet of high intensity grade.
6. Delineators in the form of cone/drums(300 to 500 diameter and 1000mm high) made of plastic/rubber having retro-reflective red and white band , at a spacing of 5m along with a reflective tape to be tied in between the gaps of cones/drum for delineation dark hours and night.
7. Portable barricades using iron sheet with adequate iron railing painted with retro-reflective paint in alternate white stripes.
8. Provision of flagmen
9. First Aid and emergency response arrangements.

a. Asphalt paver machine precautions

1. Only trained and authorized personnel shall be allowed to use Asphalt paver machine.
2. Check the parking brake and service brakes according to the manufacturer's instructions.

3. A helper shall always be available with the operator on the machine. While marching he should guide the operator about the safe distance from the things around the paver machine.

4. Never march on sideways sloping surface.

5. Always signal your intent to move, and do not jump – either on or off – the machine. When loading material into the hopper, make certain that personnel are clear.

6. Keep all personnel clear of the auger any time the engine is running or about to be starting. Never let personnel reach into an operating auger or conveyor or climb into the hopper when the engine is running.

7. A qualified operator shall be in the operator's station anytime the engine is running during cleaning and wash down. Cleaning personnel should remain in full view of the operator.

b. Safety guidelines

1. PPE shall be provided as indicated by local assessment including hearing, eye, foot and head protection.

2. When working with heated asphalt, recommended PPE includes chemical goggles, loose clothing with closed collars and buttoned cuffs, thermally insulated gloves with gauntlets that extend up the arm, and boots with tops at least 6 inches high.

3. All those on site, including visitors, shall wear high-visibility clothing. Traffic control signs, lighting and safety zones shall be set out in accordance with the Approved Code of Practice.

4. Minimum widths for moving traffic shall be maintained. Sufficient lighting shall be provided for night work.

5. Additional signs and warning lights for use in adverse weather conditions shall be available on site.

6. Flagmen (Flaggers)with all required PPEs shall be placed for guiding and diverting the traffic on the road. Flaggers shall be trained and know how to

properly communicate with motorists. Red Flags, STOP, SLOW paddle and lights may be used in controlling traffic through work area.

7. Only trained and authorized personnel shall be allowed to use heavy machinery.

8. One shall not go near machinery while they are being operated. No un-authorized person shall be allowed to enter the work area when lifting, piling and excavation work is in progress.

9. Burnt or hot area shall be drenched by water –filled extinguisher or with cold running water.

10. Use of goggles is very helpful to protect eyes from the entering of bitumen dusts. If bitumen enters the eye, flush it out with cold water for quite some time.

11. Use of full sleeve cloths to protect the hands and the body from the contact of hot bitumen.

12. If hot bitumen contacts the skin, do not attempt to remove the bitumen unless it is blocking the victim's airway. Once the bitumen has cooled it will not further harm, and in fact it will provide a sterile dressing for the burnt skin below.

13. Workers performing road construction are susceptible to overexertion and heat-related illnesses. Asphalt absorbs 95% of the sun's rays and asphalt temperatures can easily be 30° F or higher than the surrounding air temperature. Workers should drink plenty of water or liquids high in electrolytes like sports drinks or coconut water. Workers should also get out of the heat and sun as much as possible especially on extremely hot days to avoid heatstroke, dehydration and heat exhaustion.

14. Fire/explosion prevention:

    - Asphalt is often stored and handled at high temperatures, so it is important to take fire prevention seriously.

    - "One of the greatest hazards in handling hot asphalt is exposure to a source of ignition". Sparks, electricity, open flames, incandescent material (lighted cigarette), or other possible ignition sources shall be

prohibited or otherwise strictly controlled in the vicinity of asphalt operations.

b) Asphalt Safety Reminders

1. When working with any asphaltic material, avoid prolonged contact of the material with skin.
2. Excessive breathing of asphalt materials shall be avoided.
3. Wear PPE (heavy work gloves, old clothing, protective shoe, etc.) to protect against asphalt spatters.
4. When chipping or chiseling old blacktop, wear eye protection. Also, do not chisel with a carpenter's hammer, because it is not designed for this type of job and may chip; use a hand-drilling hammer or machinist's hammer.
5. Keep all asphalt materials away from high heat. Keep solvent-thinned materials away from open flames.
6. Close containers after each use.
7. Always follow the manufacturer's instructions for the product being used.

c) Environmental Control Measures

1. Segregation of wastes shall be done.
2. Disposal of wastes at the designated disposal sites shall be done.
3. Water sprinklers shall be operated to arrest fugitive emissions.
4. Sound barriers shall be used to arrest noise generating out of the running equipment.
5. The wastes coming out from the melting bitumen shall be disposed off safely.

LIST OF ATTACHMENTS

A. Annexure - Glossary/ Definitions

Excavation- Any man-made cut, cavity, trench or depression in earth surface formed by earth removal. Relatively large volume of earth is involved. Generally, have relatively equal dimensions of width and length. Depth will vary but usually is lesser than the smaller dimension. Used for basements, installation or maintenance of underground tanks and pipelines, piling, culverts, and larger spread footings. Size generally makes sloping of banks more economical than shoring.

Hazard- Source or situation with potential for harm, something that can cause body injury / occupational illness, damage company property.

Ramp - An inclined walking surface specifically provided to gain access from one point to another and is constructed from earth or from structural members such as steel or wood.

Risk- The likelihood (probability) which can lead to potential negative consequences.

Shoring- A structure that supports the sides of an excavation and protects against cave-in.

Sloping- Cutting of the edge back in inclined manner that it will not slide in the trench or excavated area.

Trench -Generally long, narrow, and deeper than its width, but the width of a trench is not greater than 15 feet (4.5Mt). Relatively small volume of earth involved. Used for installation or maintenance of underground pipelines, conduit, cables, or footings for buildings without basement. Size generally makes shoring more economical than sloping of banks.

LOTO: (Lock Out Tag Out) is the physical restraint of all hazardous energy sources that supply power to a piece of equipment, machinery or system.

PPE: Personal Protective Equipment

PTW: Permit to Work

ELCB: Earth Leakage Circuit Breaker

Risk: The likelihood (probability) which can lead to potential negative consequences.

Risk Assessment: A systematic and structured process whereby hazards present in a workplace, or arising from workplace activity, are identified, risks assessed / evaluated, and decisions prioritized in order to reduce risks to acceptable levels.

Stand-by Person: A certified trained person assigned to remain on the outside of, and in close proximity to, the confined space and capable of being in continuous communication with and to observe those inside.

Qualified/person(s) - Those who by extensive knowledge, training, and experience have successfully demonstrated their ability to carry out sloping and shoring of an excavation.

Entrant: A person who is authorized to enter a confined space; who understands the potential hazards, the precautions to be taken, the scope and limits of the specified work, and the evacuation and communication procedures; and who knows the other people involved in the entry.

LEL: Lower explosive limit

Confined Space: A confined space is defined as a space, which may or may not be enclosed.

- It is large enough and a person can bodily enter and perform assigned work.
- It is not designed for continuous human occupancy.
- It has got limited or restricted means for entry and exit.

Attendant: The attendant is the individual stationed outside a permit space to perform attendant duties. The attendant's major function is to monitor and protect the authorized entrants.

Ventilation: Ventilation is a method of controlling the environment with airflow.

Formwork: Formwork means the surface of the form and framing used to contain and shape wet concrete until it is self-supporting. Formwork includes the forms on or within which the concrete is poured and the frames and bracing which provide stability.

Reinforcement: Steel reinforcement are steel bars that are provided in combination with plain cement concrete to make it reinforced concrete. Hence these structures form steel reinforced cement concrete structure (R.C.C). Steel reinforcement is commonly called as ‘rebars’.

RCCB: Residual Current Circuit Breaker

Concreting: A hard, strong construction material consisting of sand, conglomerate gravel, pebbles, broken stone, or slag in a mortar or cement matrix.

BRICK: A solid masonry unit of clay or shale, formed into a rectangular prism while plastic and burned or fired in a kiln.

MASONRY: Brick, stone, concrete, etc., or masonry combinations thereof, bonded with mortar.

MORTAR: A plastic mixture of cementitious materials, fine aggregate, and water.

PLASTER: A cementitious material or combination of cementitious materials and aggregate that, when mixed with water, forms a plastic mass. When applied to a surface, plaster adheres to it and subsequently sets or hardens, preserving in a rigid state the form or texture imposed during the period of plasticity.

Paint: Paint is usually a colored liquid laid on the surface of building materials by a brush, roller or spray gun, drying as an impervious coat to protect covered from the effects of the atmosphere and also for decorative purposes.

Putty: A plastic substance composed of a mixture of whiting and linseed oil and sometimes including white lead, used for fixing panes of glass in window frames and to fill nail holes and defects in wood before applying paint or enamel.

MSDS: Material Safety Data Sheet

Facade: The exterior faces of a building, often used to refer to the wall in which the building entry is located.

STORM WATER: surface water in abnormal quantity resulting from heavy falls of rain or snow.

RCC Hume Pipes: RCC Spun Pipe. Reinforced Cement Concrete (RCC) Spun / Hume Pipes are generally used for water drainage, sewerage, culverts and irrigation. RCC Pipes are very much preferred for such usage because they are leak proof, are easily repairable and are non-reactive to sewerage toxins.

AGGREGATE: a general term for discrete mineral particles of specified size or size distribution, e.g. crushed rock, slag, gravel and sand.

ASPHALT: a natural or manufactured mixture in which bitumen is associated with inert mineral matter.

BITUMEN: a viscous liquid or a solid, consisting essentially of hydrocarbons and their derivatives, which is soluble in trichloroethylene. It is almost non-volatile and has thermoplastic properties, i.e. it softens gradually when heated and hardens when cooled. It is black or brown in color and has waterproofing and adhesive properties.

GENERAL SAFETY INSTRUCTION

ELECTRICAL

It endeavors to ensure compliance with the requirements of I.E. rules 1956, OSHA code no. 1910.269(Electrical power generation, transmission & distribution), 1910.137(Electrical protective equipment), 1915.181(Electrical circuits & distribution boards), GERC Grid code & power system safety standards.

1. No unauthorized person shall be allowed to enter switching and controlling area of substation. A signboard distinctly displaying this notice shall be provided on the gate meant for entry into the switching & controlling area of substation.
2. Permit to work and Lock out and tag out system is to be followed before working on any electrical appliances.
3. All electrical tools will be periodically tested for its safe use.
4. Equipment with inspection tag will be allowed to use at site.
5. Approved Single Line Diagram (SLD) should be displayed.
6. LOTO procedure for major electrical maintenance jobs should be maintained.
7. Isolation and subsequent confirmation test shall be carried out to verify absence of voltage.
8. Work Area cordoning off by barricading tape/Hard barricades shall be done prior to installation/maintenance/testing.
9. Proper illumination shall be provided if the work has to be continued during dark hours.
10. Hazard/flashing lights shall be installed if the work involve HV testing at 1 KV and above.
11. The room in which work is being carried out should have adequate ventilation system and emergency exit points. Adequate communication systems should be made available.
12. Ensure proper earthing and bonding of earthing conductors to equipment and structures to prevent generation of static electricity.
13. Each site should be equipped with adequate lightning arrestor.
14. ISI marked PPE to be provided to all electricians.
15. Electrical hand tools and machinery should be inspected & tagging system and records to be maintained.
16. Electrical shock treatment chart (emergency procedure) should be displayed in all electrical panel room.
17. All boards, main DB, SDB, switch, plug, sockets units should be covered either by canopy or by enclosure.

18. All portable power tools should be in correct specification & effectively control.

19. All electrical system should be maintained properly to prevent personal exposure to electric shocks.

20. Panel area should be cordon off and caution board should be displayed. Unauthorized entry of main panel room should be restricted.

21. Adequate number & CO2 fire extinguisher should be provided in front of main DB, SDB & DG.

22. Rubber mat should be provided when working in or around environment like HV panels, sub-station, power transformer rooms, near bus bars and near control panels.

23. Normally, a standard first aid box with medicines & bandages etc. available in the market made of steel sheet shall be provided in each & every control room.

24. SAFETY CLEARANCES FOR WORKING ON EXTRA HIGH VOLTAGE (EHV) AND HIGH VOLTAGE SYSTEMS.

25. Persons shall not be allowed any part of their body or objects to approach within the following Safety Clearances exposed EHV/HV conductors, which are Live. (Except during approved live line work).

Rated Voltage (KV)	**Safety Clearance(Meters)**
Up to 33	0.8
132	1.0
220	2.4
400	3.1

ARC / FLASHOVER HAZARDS

Arcing faults in electrical equipment are multi-energy events (i.e., involving heat, blast, light, and sound) that generally produce high levels of energy release in a short duration.

1. It takes place due to phase to phase and phase to earth fault conditions. It may cause heavy flashover which may result in severe injury to persons in the close vicinity.

2. GIFTPCL shall clearly specify the level of Incident Energy above which the recommended PPE's (such as cool coat, face shield with goggles, safety shoes, hand gloves and insulated electrical hand tools) are to be used.

3. Areas where dangers of Arc/Flashover hazards can occur should be identified.

4. There should be warning boards wherever use of ARC SUIT is mandatory.

5. This phenomenon can occur at low voltage levels as well. Areas where dangers of Arc/flashover hazards can occur should be identified. There should be warning boards wherever use of ARC SUIT is mandatory.

1. OPERATION & MAINTENANCE OF 11KV & 33 KV VACCUM CIRCUIT BREAKERS

a) Operation of 11kv & 33kv Vacuum Circuit Breaker

1. Only Authorized Person is allowed to perform Operation (On/Off) of the Feeder/Switchgear.

2. Before any Operation (On /Off) it should be confirming the status as follows –

   - Running LC/Work Permit for the Feeder.
   - Feeder Health (Faulty/Healthy/Malfunctioning).
   - Feeder cable Condition (Discharge / Reverse Charged)

3. The Feeder on which Operation (On /Off) have to be perform should be in Healthy & working Condition in all respect (Electrical / Mechanical) & all the protection system /Interlock of the Feeder should be in healthy Condition.

4. In Local Operation of Feeder use of PPE's are Mandatory.

b) Maintenance of 11kv & 33kv Vacuum Circuit Breaker

1. Only Authorized Person is allowed to perform Maintenance of the Feeder / Switchgear.

2. Relevant Safety Work Permit should be issued for subjected Feeder / Equipment (Line Clear/Work Permit/Height Permit/Hot line permit etc.)

3. Safety work permit issuing authority will be the Shift In-charge.

4. PPE's & Specific Tools tackles must be in place before starting the Maintenance work.

5. Circuit Breaker OFF Procedure as following:

- Put Off the respective Feeder/ Circuit Breaker from SCADA /LCP.
- Ensure no Back feeding of supply.
- Switch off all the supply of Spring Charging Motor by Off the respective Control MCB.
- Rack out the Feeder/VCB in Test Position & simultaneously operate the breaker on & OFF, ensure Spring is discharge.
- Put Off all the Control MCB's AC / DC.
- Open the front door as per the sequence / de-interlocking & Setup VCB trolly if Required & Rack out the breaker gently on the trolly / floor. Lock the trolly & VCB.
- Display the Appropriate Caution board Danger/Man at Work/Do not Operate etc.
- Barricade the area where Work has been performed.

- Before starting the Maintenance, ensure whether the VCB is OFF, Spring Discharge & VCB is Mechanically/Electrically de-energized.
- Start the maintenance activity as per Annex……. (O&M Manual).
- Before Putting in Test Position, ensure whether the VCB is OFF, Spring Discharge & VCB is Mechanically/Electrically de-energized.

6. Circuit Breaker ON Procedure as following:

- Collect all Tools and Tackles from the Maintenance place & ensure no tools & tackles left inside the VCB compartment / Equipment, Remove local Earthing.
- Remove Barricade, Caution Boards after Clearing the Work Permit / Line Clear Permit. Clean the area where Work was performed.
- Return the safety work permit /Line clear permit after the Maintenance work is over.
- Before Putting in Test Position, ensure whether the VCB is OFF, Spring Discharge & VCB is Mechanically/Electrically de-energized.
- Rack in the VCB Gently in the VCB Compartment, Close the front door as per the sequence / interlocking.
- Rack in the in VCB in Test Position in the Compartment, Switch ON all the control MCB's & Restore the AC/DC control supply & take trial in VCB Test Position.
- Check All the Indications & Operations from Remote /Local.
- Put the VCB Service Position and take trial in service position from Remote/Local.
- Check the Indication, parameters like voltage/current in the respective Feeder/VCB.
- Keep Observation of the Maintained Feeder / VCB & Record in Logbook.

2. OPERATION & MAINTENANCE OF POWER TRANSFORMER

This procedure provides detailed information on the process of Operation & Maintenance of Power Transformer.

a) Operation of Power Transformer

7. Only Authorized Person is allowed to perform Operation (On /Off) of the Transformer Feeder / Switchgear.

1. Before any Operation (On /Off) it should be confirming the status as follows –

- Running LC/Work Permit for the Feeder.
- Feeder Health (Faulty/Healthy/Malfunctioning).

- Feeder cable Condition (Discharge / Reverse Charged)

2. The Feeder on which Operation (On /Off) have to be perform should be in Healthy & working Condition in all respect (Electrical / Mechanical) & all the protection system /Interlock of the Feeder should be in healthy Condition.

3. It should be confirming that during the operation of Feeder, Transformer would not be reverse charged.

4. Before parallel operation of the transformer always observe parameter like Voltage, tap position & follow the instruction as per O&M manual.

5. For Increase /Decrease the Output Voltage always use remote Tap Changer panel. In Local Operation of Feeder/ OLTC use of PPE's are Mandatory.

b) Maintenance of Power Transformer

1. Only Authorized Person is allowed to perform Maintenance of the Power Transformer.

2. Relevant Safety Work Permit should be issued for subjected Feeder / Equipment (Line Clear/Work Permit/Height Permit/Hot line permit etc.)

3. Safety work permit issuing authority will be the Shift In-charge.

4. PPE's & Specific Tools tackles must be in place before starting the Maintenance work.

5. Power Transformer Stop /OFF Procedure

- Put off the LV Side (AIS 33kV/11kV-Incomer) Feeder & keep it in Test position. Press Emergency Push Button & Do the lock out and tag out. In case of 33kV GIS Feeder Follow the Interlocks - OFF the Circuit Breaker then Open Line Isolator.
- Put off the HV Side (66kV/33kV) Feeder & keep it in Test position. Press Emergency Push Button & Do the lock out and tag out. In case of 66kV GIS Feeder Follow the Interlocks - OFF the Circuit Breaker then Open Bus Isolator & then Transformer Isolator.
- After Off the Both side Feeder i.e. HV & LV side Put Local Earthing at both the End of Feeder i.e. on HV side & LV side via Local Earthing or by Earth Switch.
- Keep the RTCC Panel selector switches in independent mode.
- Connect the earth rod permanently in all phases at both end (i.e. LV & HV) of Transformer till the work permit is returned.
- Discharge the transformer LV & HV windings with Earth rod.
- Display the Appropriate Caution board at Feeder & Equipment Danger/Man at Work/Do not Operate etc.

- Barricade the area where Work has been performed.
- Start the maintenance activity as per Annex… (O&M Manual).

6. Power Transformer Start /ON Procedure

- Collect all Tools and Tackles from the Maintenance place & ensure no tools & tackles left inside the Feeder / Equipment, Transformer LV chamber and at top of the transformer.
- Remove Barricade, Caution Boards after Clearing the Work Permit / Line Clear Permit.
- Remove all the Local earthing & Earth Isolators at LV Side, HT Side of the Equipment & Feeder Side. Remove LOTO.
- Return the safety work permit /Line clear permit after the Maintenance work is over.
- Keep the RTCC Panel selector switches in Normal mode that is Master /Follower mode and ensure all the transformers tap positions are same.
- In case of HV Side GIS Bay (66kV/33kV)- As per the Interlock, follow the Operation sequence first On the Bus Isolator then Transformer Isolator, check Indication & parameter if found Healthy & Normal then only On the Circuit breaker. All the Operation of 66kV/33kV GIS bay should be performed from Remote only, in case if Operation Required from LCC then use of PPEs are mandatory.
- In case of HV Side (33kV) AIS Feeder- As per interlocks put Circuit breaker in Service position Check All the Indications of Healthiness & Operate from Remote /Local, in case if Operation Required from Local then use of PPEs are mandatory.
- After, On the HV side Feeder, Check parameters like Voltage, Ampere, Frequency etc. at HV & LV Side, if found ok then start the procedure to operate the LV Side (33kV/11kV) Circuit Breaker /Feeder.
- In Case LV Side (33kV /11kV) AIS Feeder- If all the Parameters are Healthy then As per interlocks put LV Side (33kV /11kV) Circuit breaker in Service position, Check All the Indications of Healthiness & Operate from Remote /Local, in case if Operation Required from Local then use of PPEs are mandatory.
- In case of LV Side Feeder (33kV/11kV) GIS - As per the Interlock, follow the Operation sequence, On the Line Isolator, check Indication & parameter if found Healthy & Normal then only On the Circuit breaker. Operate feeder

from Remote /Local, in case if Operation Required from Local then use of PPEs are mandatory.

- Check the Indication, parameters like voltage/current in the respective Feeder.
- Keep Observation of the Maintained Feeder / Equipment & Record Parameters in Logbook like WTI, OTI, HV/LV Voltage, HV/LV Ampere, Oil Leakage, OLTC Operation any abnormal sound. For any abnormal phenomena, Shift Engineer will inform to Station In charge, and follow the instructions.

3. OPERATION & MAINTENANCE OF 66KV SF6 CIRCUIT BREAKER

This procedure provides detailed information on the process of Operation & Maintenance of 66kV SF6 Circuit Breaker.

a) Operation of 66kV SF6 Circuit Breaker

1. Only Authorized Person is allowed to perform Operation (On /Off) of the 66kV SF6 Circuit Breaker / Switchgear.
2. Before any Operation (On /Off) it should be confirming the status as follows –
   - Running LC/Work Permit for the Feeder.
   - Feeder Health (Faulty/Healthy/Malfunctioning).
   - Feeder cable Condition (Discharge / Reverse Charged)
3. The Feeder on which Operation (On /Off) have to be perform should be in Healthy & working Condition in all respect (Electrical / Mechanical) & all the protection system /Interlock of the Feeder should be in healthy Condition.
4. The Feeder Operation (On /Off) Should be performed from remote only, in case of Local Operation of Feeder use of PPE's are Mandatory.

b) Maintenance of 66kV SF6 Circuit Breaker

1. Only Authorized Person is allowed to perform Maintenance of the 66kV SF6 Circuit Breaker.
2. Relevant Safety Work Permit should be issued for subjected Feeder / Equipment (Line Clear/Work Permit/Height Permit/Hot line permit etc.)
3. Safety work permit issuing authority will be the Shift In-charge.
4. PPE's & Specific Tools tackles must be in place before starting the Maintenance work.

5. 66kV SF6 Circuit Breaker Stop /OFF Procedure

- The Feeder/Equipment should be made Off from remote only, in case of Local Operation of Feeder, use of PPE's are Mandatory.

Follow the table to Off the concern 66kV SF6 Circuit Breaker-

Steps	Line - 1 SF6 C.B. to be maintained	Line - 2 SF6 C.B. to be maintained	B/C SF6 C.B. to be maintained
1st Step	Line - 01 C.B. Open	Line - 02 C.B. Open	Bus Coupler C.B. Open
2nd Step	GETCO GIFT Line - 01 C.B. Open	GETCO GIFT Line - 02 C.B. Open	Bus Coupler Isolator 01/02 Open
3rd Step	GETCO GIFT Line - 01 Line side Isolator Open	GETCO GIFT Line - 02 Line side Isolator Open	Bus Coupler Isolator 01/02 Open
4th Step	Line - 01 Isolator Open	Line - 02 Isolator Open	
5th Step	Bus - 01 Isolator Open	Bus - 02 Isolator Open	

- Display the Appropriate Caution board Danger/Man at Work/Do not Operate etc. on CRP Panel & at Feeder.
- Do the lock out and tag out. Disable remote operation keep Local /remote switch at SF6 control panel in Local mode.
- Ensure no Back feeding of supply.
- Switch off all the supply of Spring Charging Motor by Off the respective Control MCB.
- Ensure Spring is discharge.
- Put Off all the Control MCB's AC / DC of SF6 Breaker.
- Open 66kV Isolator from remote operation, in case of Local Operation of Feeder use of PPE's are Mandatory.
- Check all the parameter in SCADA system like Open/Close, Remote/local, Voltage etc.
- Do the lock out and tag out. Disable remote operation keep Local /remote switch at Isolator panel in Local mode.
- Put Off all the Control MCB's AC / DC of Isolator.
- Put Local Earthing on both side of 66kV SF6 Circuit Breaker. Discharge the Bus bar of 66kV SF6 Circuit Breaker.
- Barricade the area where Work has been performed.

- Before starting the Maintenance, ensure whether the 66kV SF6 Circuit breaker is Mechanically & Electrically de-energized. If not, then de-energized bus bar via Earthing rod.
- Start the maintenance activity as per Annex……. (O&M Manual).

6. 66 kV SF6 Circuit Breaker Start /ON Procedure

- Collect all Tools and Tackles from the Maintenance place & ensure no tools & tackles left inside the Feeder / Equipment over the Bus Bar etc.
- Remove all the Local earthing from both Side of the Equipment & Feeder Side. Remove LOTO.
- Return the safety work permit /Line clear permit after the Maintenance work is over.
- Remove Barricade, Caution Boards after Clearing the Work Permit / Line Clear Permit.
- Keep all the selector switches in Remote mode & put all the AC/DC MCB's ON of Breaker & Isolator.
- All the Operation of Isolator/SF6 Breaker should be performed from Remote only, in case if Operation Required from LCC then use of PPEs are mandatory.

Follow the steps for Restoration of SF6 Circuit Breaker-

Steps	**Line - 1 SF6 C.B. to be Restored**	**Line - 2 SF6 C.B. to be Restored**	**B/C SF6 C.B. to be Restored**
1st Step	Line - 01 Isolator Close	Line - 02 Isolator Close	Bus Coupler Isolator 01/02 Close
2nd Step	Bus - 01 Isolator Close	Bus - 02 Isolator Close	Bus Coupler Isolator 01/02 Close
3rd Step	GETCO GIFT Line - 01 Line side Isolator Close	GETCO GIFT Line - 02 Line side Isolator Close	Bus Coupler C.B. Close
4th Step	GETCO GIFT Line - 01 C.B. Close	GETCO GIFT Line - 02 C.B. Close	
5th Step	Line - 01 C.B. Close	Line - 02 C.B. Close	

- First, On the relevant 66kV Isolator Check whether it is perfectly fixed in contact.

- Check the Indication, feedback parameters in the SCADA System.
- Check the Indication, feedback parameters in the SCADA System. As you on 66kV Line isolator you will get 66kV voltage indication at CRP panel check the parameter whether it is OK/Not. If Ok, then further proceed otherwise check for the problem.
- When All the Isolator were fixed, made ON the 66kV SF6 Circuit Breaker from Remote operation only, in case if Operation Required from Local then use of PPEs are mandatory.
- Check the Indication, feedback parameters at the CRP Panel & in SCADA System whether it is OK/Not. If Ok, then keep observation otherwise check for the problem.
- Keep Observation of the Maintained Feeder / Equipment & Record Parameters in Logbook like Voltage, Ampere, Gas Pressure etc.
- For any abnormal phenomena, Shift Engineer will inform to Station In charge, and follow the instructions.

4. OPERATION & MAINTENANCE OF 66KV GIS BAY

This procedure provides detailed information on the process of Operation & Maintenance of 66kV GIS Bay.

a) Operation of 66kV GIS Bay

1. Only Authorized Person is allowed to perform Operation (On /Off) of the 66kV GIS Bay / Switchgear.
2. Before any Operation (On /Off) it should be confirming the status as follows –
   - Running LC/Work Permit for the Feeder.
   - Feeder Health (Faulty/Healthy/Malfunctioning).
   - Feeder cable Condition (Discharge / Reverse Charged)
3. The Feeder on which Operation (On /Off) have to be perform should be in Healthy & working Condition in all respect (Electrical / Mechanical) & all the protection system /Interlock of the Feeder should be in healthy Condition.
4. The Feeder Operation (On /Off) Should be performed from remote only, in case of Local Operation of Feeder use of PPE's are Mandatory.

b) Maintenance of 66kV GIS Bay

1. Only Authorized Person is allowed to perform Maintenance of the 66kV GIS Bay.
2. Relevant Safety Work Permit should be issued for subjected Feeder / Equipment (Line Clear/Work Permit/Height Permit/Hot line permit etc.)
3. Safety work permit issuing authority will be the Shift In-charge.

4. PPE's & Specific Tools tackles must be in place before starting the Maintenance work.

5. 66kV GIS Bay Stop /OFF Procedure

- The Feeder should be made Off from remote only, in case of Local Operation of Feeder, use of PPE's are Mandatory.
- Open the 33kv Transformer Incomer & then Open 66kV GIS Bay Circuit Breaker.
- Open 66kV GIS Bay Bus Isolator from remote operation, in case of Local Operation of Feeder use of PPE's are Mandatory.
- Open 66kV GIS Bay Transformer Isolator from remote operation, in case of Local Operation of Feeder use of PPE's are Mandatory.
- Rack out / Disable the respective 33kV Transformer feeder, do the lock out and tag out. Disable remote operation keep Local /remote switch in Local mode, display sign board (do not operate/man at work) put local earthing.
- Check all the parameter in SCADA system like Open/Close, Remote/local, Voltage etc.
- Do the lock out and tag out. Disable remote operation keep Local /remote switch in Local mode at GIS LCC panel.
- Put Local Earthing on both side of 66kV GIS Bay (Transformer / Bus).
- Before starting the Maintenance, ensure whether the 66kV GIS Bay is Mechanically & Electrically de-energized. If not, then de-energized bus bar via Earthing rod.
- Put Off all the Control MCB's AC / DC.
- Barricade the area where Work has been performed.
- Display the Appropriate Caution board Danger/Man at Work/Do not Operate etc. on CRP Panel & at Feeder.
- Start the maintenance activity as per O&M Manual.

6. 66kV GIS Bay Start /ON Procedure

- Collect all Tools and Tackles from the Maintenance place & ensure no tools & tackles left inside the Feeder / Equipment over the Bus Bar etc.
- Remove all the Local earthing from both Side of the Equipment & Feeder Side. Remove LOTO.
- Return the safety work permit /Line clear permit after the Maintenance work is over.

- Remove Barricade, Caution Boards after Clearing the Work Permit / Line Clear Permit.
- Keep all the selector switches in Remote mode.
- All the Operation of Isolator/Circuit Breaker should be performed from Remote only, in case if Operation Required from LCC then use of PPEs are mandatory.
- Rack in / Enable the respective 33kV Transformer feeder, Keep selector switch in remote position. Do not ON the 33kv Circuit Breaker. Before Putting in Test Position, ensure whether the VCB is OFF, Spring Discharge & VCB is Mechanically/Electrically de-energized.
- Put ON all the Control MCB's AC / DC in 66kv GIS Bay & 33kV Feeder.
- First, On the 66kV GIS Bus Isolator Check whether it is perfectly fixed in contact.
- Check the Indication, feedback parameters in the SCADA System.
- If ever thing is Ok, then on the 66kV Transformer Isolator Check whether it is perfectly fixed in contact.
- Check the Indication, feedback parameters in the SCADA System.
- When both the Isolator were fixed, made ON the 66kV GIS Bay Circuit Breaker from Remote operation only, in case if Operation Required from LCC then use of PPEs are mandatory.
- Check the Indication, feedback parameters at the CRP Panel & in SCADA System whether it is OK/Not. If Ok, then keep observation otherwise check for the problem.
- Check Transformer Voltage at 33kV Incomer Feeder, if parameter is normal then made ON the 33kv Feeder.
- Keep Observation of the Maintained Feeder / Equipment & Record Parameters in Logbook like Voltage, Ampere, Gas Pressure etc.
- For any abnormal phenomena, Shift Engineer will inform to Station In charge, and follow the instructions.

5. OPERATION & MAINTENANCE OF 66KV LA/CT/PT

This procedure provides detailed information on the process of Operation & Maintenance of 66kV LA/CT/PT.

a) Operation of 66kV LA/CT/PT

1. Only Authorized Person is allowed to perform Operation of the 66kV LA/CT/PT Switchgear.

2. Before any Operation it should be confirming that status of LC/Work Permit for the Equipment or Fault Status on the Equipment.

b) Maintenance of 66kV LA/CT/PT

1. Only Authorized Person is allowed to perform Maintenance of the 66kV LA/CT/PT.

2. Relevant Safety Work Permit should be issued for subjected Feeder / Equipment (Line Clear/Work Permit/Height Permit/Hot line permit etc.)

3. Safety work permit issuing authority will be the Shift In-charge.

4. PPE's & Specific Tools tackles must be in place before starting the Maintenance work.

5. 66kV LA/CT/PT Stop /OFF Procedure

Follow the steps for Isolation of LA/PT/CT

Steps	Transformer-01 LA to be Isolate	Transformer-02 LA to be Isolate	Transformer-03 LA to be Isolate	Transformer-04 LA to be Isolate
1st Step	33 kV I/C-01 GIS C.B. Open	33 kV I/C-02 GIS C.B. Open	33 kV I/C-01 AIS C.B. Open	33 kV I/C-03 GIS C.B. Open
2nd Step	33 kV I/C-01 GIS Isolator Open	33 kV I/C-02 GIS Isolator Open	66kV GIS Bay-03 C.B. Open	33 kV I/C-03 GIS Isolator Open
3rd Step	66kV GIS Bay-01 C.B. Open	66kV GIS Bay-02 C.B. Open	66kV GIS Bay-03 C.B. Open	66kV GIS Bay-04 C.B. Open
4th Step	66kV GIS Bay-01 Trfo & BuS Isolator Open	66kV GIS Bay-02 Trfo & BUS Isolator Open	66kV GIS Bay-03 Trfo & BUS Isolator Open	66kV GIS Bay-04 Trfo & BUS Isolator Open

Steps	Line - 01 LA to be Isolate	Line - 02 LA to be Isolate	Line - 01 PT to be Isolate	Line – 02 PT to be Isolate
1st Step	Line - 02 C.B. Open	Line - 02 C.B. Open	Line - 01 C.B. Open	Line - 02 C.B. Open

2nd Step	GETCO GIFT Line - 01 C.B. Open	GETCO GIFT Line - 02 C.B. Open	GETCO GIFT Line - 01 C.B. Open	GETCO GIFT Line - 02 C.B. Open
3rd Step	GETCO GIFT Line - 01 Line side Isolator Open	GETCO GIFT Line - 02 Line side Isolator Open	GETCO GIFT Line - 01Line side Isolator Open	GETCO GIFT Line - 02 Line side Isolator Open
4th Step	Line - 01 Isolator Open	Line - 02 Isolator Open	Line - 01 Isolator Open	Line - 02 Isolator Open
5th Step			Line Side Bus – 01 Isolator Open	Line Side Bus - 02 Isolator Open

- Open 66kv Circuit Breaker from remote operation, in case of Local Operation of Feeder use of PPE's are Mandatory.
- Open 66kV Isolator from remote operation, in case of Local Operation of Feeder use of PPE's are Mandatory.
- Put Off all the Control MCB's AC / DC.
- Check all the parameter in SCADA system like Open/Close, Remote/local, Voltage etc.
- Do the lock out and tag out. Disable remote operation keep Local /remote switch in Local mode at Local Control panel.
- Put Local Earthing on both side of 66kV Equipment (LA / CT/PT).

Steps	**Line - 01 CT to be Isolate**	**Line - 02 CT to be Isolate**	**Bus Coupler CT-01**	**Bus Coupler CT-02**
1st Step	Line – 01 C.B. Open	Line - 02 C.B. Open	Bus Coupler C.B. Open	Bus Coupler C.B. Open
2nd Step	GETCO GIFT Line – 01 C.B. Open	GETCO GIFT Line - 02 C.B. Open	Bus Coupler Isolator 01 Open	Bus Coupler Isolator 01 Open
3rd Step	GETCO GIFT Line – 01 Line side Isolator Open	GETCO GIFT Line - 02 Line side Isolator Open	Bus Coupler Isolator 02 Open	Bus Coupler Isolator 02 Open
4th Step	Line – 01 Isolator Open	Line - 02 Isolator Open		
5th Step	Line Side Bus – 01 Isolator Open	Line Side Bus - 02 Isolator Open		

- Before starting the Maintenance, ensure whether the 66kV equipment is Electrically de-energized. If not, then de-energized bus bar via Earthing rod.
- Barricade the area where Work has been performed.
- Display the Appropriate Caution board Danger/Man at Work/Do not Operate etc on CRP Panel & at Feeder.
- Start the maintenance activity as per O&M Manual.

6. 66kV LA/CT/PT Start /ON Procedure

- Collect all Tools and Tackles from the Maintenance place & ensure no tools & tackles left inside the Feeder / Equipment over the Bus Bar etc.
- Remove all the Local earthing from both Side of the Equipment & Feeder Side. Remove LOTO.
- Return the safety work permit /Line clear permit after the Maintenance work is over (GETCO/GIFTPCL).
- Remove Barricade, Caution Boards after Clearing the Work Permit / Line Clear Permit.
- Keep all the selector switches in Remote mode.
- Put ON all the Control MCB's AC / DC in 66kv Circuit breaker (GETCO IInd Source Feeder). Remove Earthing Put the Feeder in Remote Mode inform to GETCO officials for Operation.
- Put ON all the Control MCB's AC / DC in 66kv SF6 Circuit Breaker & switch on Remote Mode.
- All the Operation of Isolator/Circuit Breaker should be performed from Remote only, in case if Operation Required from LCC then use of PPEs are mandatory

Follow the steps for Restoration of LA/PT/CT-

Steps	**Transformer-01 LA to be Restore**	**Transformer-02 LA to be Restore**	**Transformer-03 LA to be Restore**	**Transformer-04 LA to be Restore**
1st Step	33 kV VCB GIS I/C-01 Isolator Close	33 kV VCB GIS I/C-02 Isolator Close	66kv GIS Bay-03 Trafo & BUS Isolator Close	33 kV VCB GIS I/C-03 Isolator Close
2nd Step	66kv GIS Bay-01 Trafo & BUS Isolator Close	66kv GIS Bay-02 Trafo & BUS Isolator Close	66kv GIS Bay-03 C.B. Close	66kv GIS Bay-04 Trafo & BUS Isolator Close
3rd Step	66kv GIS Bay-01 C.B. Close	66kv GIS Bay-02 C.B. Close	33 kV VCB AIS-I/C-01 C.B. Close	66kv GIS Bay-04 C.B. Close

4th Step		33 kV VCB GIS I/C-01 C.B. Close		33 kV VCB GIS I/C-02 C.B. Close				33 kV VCB GIS I/C-03 C.B. Close

Steps		**Line - 01 CT to be Restore**		**Line - 02 CT to be Restore**		**Bus Coupler CT Bus - 01 to be Restore**		**Bus Coupler CT Bus - 02 to be Restore**
1st Step		Line - 01 Isolator Close		Line - 02 Isolator Close		Bus Coupler Isolator 01 Close		Bus Coupler Isolator 02 Close
2nd Step		Line Side Bus – 01 Isolator Close		Line Side Bus - 02 Isolator Close		Bus Coupler Isolator 01 Close		Bus Coupler Isolator 02 Close
3rd Step		GETCO GIFT Line - 01 Line side Isolator Close		GETCO GIFT Line - 02 Line side Isolator Close		Bus Coupler C.B. Close		Bus Coupler C.B. Close
4th Step		GETCO GIFT Line - 01 C.B. Close		GETCO GIFT Line - 02 C.B. Close				
5th Step		Line - 01 C.B. Close		Line - 02 C.B. Close				

Steps		**Line - 01 LA to be Restore**		**Line - 02 LA to be Restore**		**Line – 01 PT to be Restore**		**Line - 02 PT to be Restore**
1st Step		Line - 01 Isolator Close		Line - 02 Isolator Close		Line - 01 Isolator Close		Line - 02 Isolator Close
2nd Step		GETCO GIFT Line - 01 Line side Isolator Close		GETCO GIFT Line - 02 Line side Isolator Close		Line Side Bus - 01 Isolator Close		Line Side Bus - 02 Isolator Close
3rd Step		GETCO GIFT Line - 01 C.B. Close		GETCO GIFT Line - 02 C.B. Close		GETCO GIFT Line – 01 Line side Isolator Close		GETCO GIFT Line - 02 Line side Isolator Close
4th Step		Line - 01 C.B. Close		Line - 02 C.B. Close		GETCO GIFT Line - 01 C.B. Close		GETCO GIFT Line - 02 C.B. Close
5th Step						Line - 01 C.B. Close		Line - 02 C.B. Close

- When Isolator were fixed, made ON the 66kV SF6 Circuit Breaker from Remote operation only, in case if Operation Required from LCC then use of PPEs are mandatory.

- Check the Indication, feedback parameters at the CRP Panel & in SCADA System whether it is OK/Not. If Ok, then keep observation otherwise check for the problem.
- Keep Observation of the Maintained Equipment & Record Parameters in Logbook like Voltage, Ampere, LA Counter etc.
- For any abnormal phenomena, Shift Engineer will inform to Station In charge, and follow the instructions.

6. OPERATION & MAINTENANCE OF 66KV ISOLATOR

This procedure provides detailed information on the process of Operation & Maintenance of 66kV Isolator.

a) Operation of 66kV Isolator

1. Only Authorized Person is allowed to perform Operation of the 66kV Isolator.
2. Before any Operation (On /Off) it should be confirming the status as follows –
   - Running LC/Work Permit for the Feeder.
   - Feeder Health (Faulty/Healthy/Malfunctioning).
   - Feeder cable Condition (Discharge / Reverse Charged)
3. The Equipment on which Operation (On /Off) have to be perform should be in Healthy & working Condition in all respect (Electrical / Mechanical) & all the protection system /Interlock of the Feeder should be in healthy Condition.
4. The Feeder Operation (On /Off) Should be performed from remote only, in case of Local Operation of Feeder use of PPE's are Mandatory.

b) Maintenance of 66kV Isolator

1. Only Authorized Person is allowed to perform Maintenance of the 66kV Isolator.
2. Relevant Safety Work Permit should be issued for subjected Feeder / Equipment (Line Clear/Work Permit/Height Permit/Hot line permit etc.)
3. Safety work permit issuing authority will be the Shift In-charge.
4. PPE's & Specific Tools tackles must be in place before starting the Maintenance work.

5. 66kV Isolator Stop /OFF Procedure

- Open the concern 66kV Circuit Breakers & Isolator from both end Source/Load. Put the Feeder in Local Mode inform to GETCO officials for LC/Work Permit. After Spring discharge apply Earthing Switch ON & Put Off all the Control MCB's AC / DC.

Follow the table to Off the concern Isolator-

Steps	Line Isolator - 01 Isolator to be Maintained	Line Isolator - 02 Isolator to be Maintained	Bus Isolator - 01 Isolator to be Maintained	Bus Isolator - 02 Isolator to be Maintained	B.C. Isolator - 01 Isolator to be Maintained	B.C. Isolator - 02 Isolator to be Maintained
1st Step	Line - 01 C.B. Open	Line - 02 C.B. Open	* 33 kV AIS I/C.-1	* 33 kV GIS I/C.-3	* 33 kV AIS I/C.-1	* 33 kV GIS I/C.-3
2nd Step	GETCO GIFT Line - 01 C.B. Open	GETCO GIFT Line - 02 C.B. Open	* 33 kV GIS (8-nos.) I/C.	* 33 kV GIS I/C.-2	* 33 kV GIS (8-nos.) I/C.	* 33 kV GIS I/C.-2
3rd Step	GETCO GIFT Line - 01 Line side Isolator Open	GETCO GIFT Line - 02 Line side Isolator Open	Line - 01 C.B. Open	Line - 02 C.B. Open	Bus Coupler C.B. Open	Bus Coupler C.B. Open
4th Step	Line Side Bus - 01 Isolator Open	Line Side Bus - 02 Isolator Open	Bus Coupler C.B. Open	Bus Coupler C.B. Open	Line - 01 C.B. Open	Line - 02 C.B. Open
5th Step	Line – 01 Isolator Open	Line - 02 Isolator Open	Line - 01 Isolator Open	Line - 02 Isolator Open	Line - 01 Isolator Open	Line - 02 Isolator Open
6th Step			Bus Coupler - 01 Isolator Open	Bus Coupler - 02 Isolator Open	Bus Coupler – 01 & 02 Isolator Open	Bus Coupler – 02 & 01 Isolator Open
7th Step			Line Side Bus - 01 Isolator Open	Line Side Bus - 02 Isolator Open		

***** Before Operate (ON/OFF) the C.B. Follow the Parallel Operation Sequence.

- Open 66kV SF6 Circuit Breaker from remote operation, in case of Local Operation of Feeder use of PPE's are Mandatory.
- Open 66kV Isolator from remote operation, in case of Local Operation of Feeder use of PPE's are Mandatory.
- Put Off all the Control MCB's AC / DC.

- Check all the parameter in SCADA system like Open/Close, Remote/local, Voltage etc.
- Do the lock out and tag out. Disable remote operation keep Local /remote switch in Local mode at Local Control panel.
- Put Local Earthing on both side of Equipment (Isolator).
- Before starting the Maintenance, ensure whether the 66kV equipment is Electrically de-energized. If not, then de-energized bus bar via Earthing rod.
- Barricade the area where Work has been performed.
- Display the Appropriate Caution board Danger/Man at Work/Do not Operate etc. on CRP Panel & at Feeder.
- Start the maintenance activity as per Annex……. (O&M Manual).

6. 66kV Isolator Start /ON Procedure

- Collect all Tools and Tackles from the Maintenance place & ensure no tools & tackles left inside the Feeder / Equipment over the Bus Bar etc.
- Remove all the Local earthing from both Side of the Equipment & Feeder Side. Remove LOTO.
- Return the safety work permit /Line clear permit after the Maintenance work is over (GETCO/GIFTPCL).
- Remove Barricade, Caution Boards after Clearing the Work Permit / Line Clear Permit.
- Keep all the selector switches in Remote mode.
- All the Operation of Isolator/Circuit Breaker should be performed from Remote only, in case if Operation Required from LCC then use of PPEs are mandatory.
- Put ON all the Control MCB's AC / DC in 66kv Circuit breaker & Isolator. Remove Earthing Put the Feeder in Remote Mode inform to GETCO officials for Operation.
- Put ON all the Control MCB's AC / DC in 66kv SF6 Circuit Breaker/Isolator & switch on Remote Mode.

Restoration Sequence for concern Isolator-

Steps	Line Isolator - 01 Isolator to be		Line Isolator - 02 Isolator to be		Bus Isolator - 01 Isolator to be		Bus Isolator - 02 Isolator to be		B.C. Isolator - 01 Isolator to be		B.C. Isolator - 02 Isolator to be

	Maintained		**Maintained**		**Maintained**		**Maintained**		**Maintained**		**Maintained**
1st Step	Line – 01 Isolator Close		Line - 02 Isolator Close		Line Side Bus - 01 Isolator Close		Line Side Bus - 02 Isolator Close		Bus Coupler – 01 & 2 Isolator Close		Bus Coupler – 02 & 01 Isolator Close
2nd Step	Line Side Bus – 01 Isolator Close		Line Side Bus - 02 Isolator Close		Line - 01 Isolator Close		Line - 02 Isolator Close		Line - 01 Isolator Close		Line - 02 Isolator Close
3rd Step	GETCO GIFT Line - 01 Line side Isolator Close		GETCO GIFT Line - 02 Line side Isolator Close		Bus Coupler - 01 Isolator Close		Bus Coupler - 02 Isolator Close		Line - 01 C.B. Close		Line - 02 C.B. Close
4th Step	GETCO GIFT Line - 01 C.B. Close		GETCO GIFT Line - 02 C.B. Close		Bus Coupler C.B. Close		Bus Coupler C.B. Close		Bus Coupler C.B. Close		Bus Coupler C.B. Close
5th Step	Line – 01 C.B. Close		Line - 02 C.B. Close		Line - 01 C.B. Close		Line - 02 C.B. Close		* 33 kV GIS (8-nos.) I/C.		* 33 kV GIS I/C.-2
6th Step					* 33 kV GIS (8-nos.) I/C.		* 33 kV GIS I/C.-2		* 33 kV AIS I/C.-1		* 33 kV GIS I/C.-3
7th Step					* 33 kV AIS I/C.-1		* 33 kV GIS I/C.-3				

***** Before Operate (ON/OFF) the C.B. Follow the Parallel Operation Sequence.

- First, On the 66kV Isolator Check whether it is perfectly fixed in contact.
- Check the Indication, feedback parameters in the SCADA System.
- When All the Isolator were fixed, made ON the 66kV SF6 Circuit Breaker from Remote operation only, in case if Operation Required from LCC then use of PPEs are mandatory.
- Check the Indication, feedback parameters at the CRP Panel & in SCADA System whether it is OK/Not. If Ok, then keep observation otherwise check for the problem.
- Keep Observation of the Maintained Equipment & Record Parameters in Logbook like Voltage, Ampere, etc.
- For any abnormal phenomena, Shift Engineer will inform to Station/Section In charge and follow the instructions.

7. oPERATION & MAINTENANCE OF 33kv & 11kv compact substation(css)

This procedure provides detailed information on the process of Operation & Maintenance of Compact Substation (CSS).

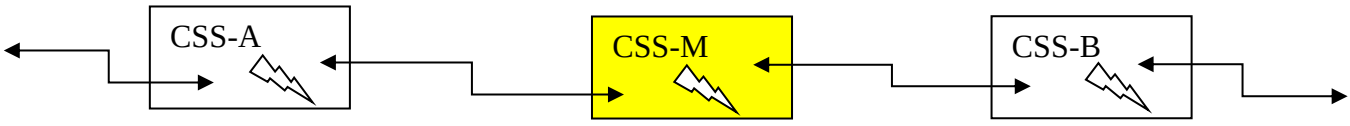
a) Operation of Compact Substation

1. Only Authorized Person is allowed to perform Operation of the Equipment (CSS).
2. Before any Operation (On /Off) it should be confirming the status as follows –
   - Running LC/Work Permit for the Feeder.
   - Feeder Health (Faulty/Healthy/Malfunctioning).
   - Feeder cable Condition (Discharge / Reverse Charged)
3. The Equipment on which Operation (On /Off) have to be perform should be in Healthy & working Condition in all respect (Electrical / Mechanical) & all the protection system /Interlock of the Feeder should be in healthy Condition.
4. The Feeder Operation (On /Off) Should be performed from remote only, in case of Local Operation of Feeder use of PPE's are Mandatory.

b) Maintenance of 66kV Isolator

1. Only Authorized Person is allowed to perform Maintenance of the 66kV Isolator.
2. Relevant Safety Work Permit should be issued for subjected Feeder / Equipment (Line Clear/Work Permit/Height Permit/Hot line permit etc.)
3. Safety work permit issuing authority will be the Shift In-charge.
4. PPE's & Specific Tools tackles must be in place before starting the Maintenance work.
5. All the operations should be done from remote, in case of Local Operation of Feeder use of PPE's are Mandatory.

6. Compact Substation (CSS) Stop /OFF Procedure



- Assume we are going to operate CSS-M for Maintenance purpose then these steps should be followed-
- Open both the HT Isolators of CSS-M (In & Out) from Remote/Local operation.
- Open/Off the HT Circuit Breaker Transformer of CSS-M from Remote/Local operation. Rack out /press emergency button.
- Open/Off the LT Circuit Breaker Transformer of CSS-M from Remote/Local operation. Rack out /press emergency button.

- Open the HT Isolators of CSS-A at position Out & On the Earth Switch as mentioned in Fig.
- Open the HT Isolators of CSS-B at position In & On the Earth Switch as mentioned in Fig.
- Put Off all the Control MCB's AC / DC in the CSS-M.
- Check all the parameter in SCADA system like Open/Close, Remote local, Voltage etc.
- Do the lock out and tag out. Disable remote operation keep Local /remote switch in Local mode at All the CSS (CSS-A, CSS-B, CSS-M).
- Put Local Earthing on both side of Isolator of CSS-M. & at Lt Side of Equipment (Transformer).
- Before starting the Maintenance, ensure whether the Equipment is Electrically de-energized. If not, then de-energized bus bar via Earthing rod.
- Barricade the area where Work has been performed.
- Display the Appropriate Caution board Danger/Man at Work/Do not Operate etc. on CRP Panel & at Feeder.
- Start the maintenance activity as per O&M Manual.

7. Compact Substation (CSS) Start /ON Procedure

- Collect all Tools and Tackles from the Maintenance place & ensure no tools & tackles left inside the Feeder / Equipment over the Bus Bar etc.
- Remove all the Local earthing from both Side of the Equipment & Feeder Side. Remove LOTO.
- Return the safety work permit /Line clear permit after the Maintenance work is over (GETCO/GIFTPCL).
- Remove Barricade, Caution Boards after Clearing the Work Permit / Line Clear Permit.
- Keep all the selector switches in Remote mode.
- All the Operation of Equipment should be performed from Remote only, in case if Operation Required from Local then use of PPEs are mandatory.
- Put ON all the Control MCB's AC / DC in all the CSS. Remove Earthing Put the Feeder in Remote Mode.
- Assume we are going to operate CSS-M for Restoration purpose then these steps should be followed-
- Close the HT Isolators of CSS-A at position Out & Off the Earth Switch as mentioned in Fig.

- Close the HT Isolators of CSS-B at position In & Off the Earth Switch as mentioned in Fig.
- Close both the HT Isolators of CSS-M (In & Out) from Remote/Local operation.
- Release Emergency push button, Rackin the HT Circuit Breaker Transformer of CSS-M & made On from Remote/Local operation.
- Release Emergency push button, Rackin the LT Circuit Breaker Transformer of CSS-M & made On from Remote/Local operation.
- Check the Indication, feedback parameters at the CSS & in SCADA System whether it is OK/Not. If Ok, then keep observation otherwise check for the problem.
- Keep Observation of the Maintained Equipment & Record Parameters in Logbook like Voltage, Ampere, etc.
- For any abnormal phenomena, Shift Engineer will inform to Station In charge, and follow the instructions.

8. OPERATION & MAINTENANCE OF 415V LT PANEL

This procedure provides detailed information on the process of Operation & Maintenance of 415V LT Panel.

a) Operation of 415V LT Panel

1. Only Authorized Person is allowed to perform Operation of the Equipment.
2. Before any Operation (On /Off) it should be confirming the status as follows –
   - Running LC/Work Permit for the Feeder.
   - Feeder Health (Faulty/Healthy/Malfunctioning).
   - Feeder cable Condition (Discharge / Reverse Charged)
3. The Equipment on which Operation (On /Off) have to be perform should be in Healthy & working Condition in all respect (Electrical / Mechanical) & all the protection system /Interlock of the Feeder should be in healthy Condition.
4. The Feeder Operation (On /Off) Should be performed from remote only, in case of Local Operation of Feeder use of PPE's are Mandatory.

5. Maintenance of 415V LT Panel

- Only Authorized Person is allowed to perform Maintenance of the 415 V LT Panel.
- Relevant Safety Work Permit should be issued for subjected Feeder / Equipment (Line Clear/Work Permit/Height Permit/Hot line permit etc.)
- Safety work permit issuing authority will be the Shift In-charge.

- PPE's & Specific Tools tackles must be in place before starting the Maintenance work.
- All the operations should be done from remote, in case of Local Operation of Feeder use of PPE's are Mandatory.

6. 415V LT Panel OFF Procedure -

- Put Off the respective Feeder/ Circuit Breaker from SCADA /Local.
- Ensure no Back feeding of supply. Put Local Earthing on respective feeder.
- Switch off all the supply of Spring Charging Motor by Off the respective Control MCB.
- Rack out the Feeder/ACB in Test Position & simultaneously operate the breaker On & OFF, ensure Spring is discharge.
- Put Off all the Control MCB's AC / DC.
- Open the front door as per the sequence / de-interlocking & Setup ACB trolly if Required & Rack out the breaker gently on the trolly / floor. Lock the trolly & ACB.
- Display the Appropriate Caution board Danger/Man at Work/Do not Operate etc.
- Barricade the area where Work has been performed.
- Before starting the Maintenance, ensure whether the ACB is Mechanically & Electrically de-energized. If not, then de-energized the ACB's Spring & Discharge ACB's bus bar via Earthing rod.
- Start the maintenance activity as per O&M Manual.

7. 415V LT Panel ON Procedure -

- Collect all Tools and Tackles from the Maintenance place & ensure no tools & tackles left inside the VCB compartment / Equipment, Remove local Earthing.
- Return the safety work permit /Line clear permit after the Maintenance work is over.
- Remove Barricade, Caution Boards after Clearing the Work Permit / Line Clear Permit.
- Before Putting in Test Position, ensure whether the ACB is Mechanically & Electrically de-energized. If not, then de-energized the ACB's Spring. & Discharge VCB's bus bar via Earthing rod.
- Rack in the ACB Gently in the ACB Compartment, Close the front door as per the sequence / interlocking.

- Rack in the in ACB in Test Position in the Compartment, Switch ON all the control MCB's & Restore the AC/DC control supply & take trial in ACB Test Position.
- Check All the Indications & Operations from Remote /Local.
- Put the ACB Service Position and take trial in service position from Remote/Local.
- Check the Indication, parameters like voltage/current in the respective Feeder/ACB.
- Remove Barricade & Clean the area where Work was performed.
- Keep Observation of the Maintained Feeder / ACB & Record in Logbook.

9. INSTALLATION OF ENERGY METER

1. The person shall be equipped with essential PPE i.e. Helmet and safety shoes during the work.
2. All tools used during work should be properly insulated.
3. Before installation of energy meter ensure that power supply at the metering point shall be OFF.
4. Install energy meter and its accessories with the help of proper tools.
5. Ensure that there should not be any loose connection in energy meter.
6. Ensure all connection point in the circuit should be complete before release of connection.

10. REMOVAL OF ENERGY METER

1. The person shall be equipped with essential PPE i.e. Helmet and safety shoes during the work.
2. All tools used during work should be properly insulated.
3. Before removal of energy meter, ensure that power shall be made OFF from both sides.
4. Remove energy meter and its accessories with the help of proper tools.

11. ENERGY METER TESTING

1. The person shall be equipped with essential PPE i.e. Helmet and safety shoes during the work.
2. All tools used during work should be properly insulated.
3. Take necessary approval/consent from the consumer before the start of meter testing.

4. Ensure safe clearance while connecting and removing CT & PT terminal of Accu-check at load point.
5. Ensure CT terminal connection shall be tight and proper.
6. After testing, CT, PT & meter connection shall be restored as before.

12. GLOSSARY / DEFINATIONS

List of Attachments

Annexure - Glossary/ Definitions

ampere (amp) - unit used to measure current.

bonding - joining electrical parts to assure a conductive path.

circuit - complete path for the flow of current.

circuit breaker - overcurrent protection device that automatically shuts off the current in a circuit if an overload occurs.

conductor - material in which an electrical current move easily.

CPR - cardiopulmonary resuscitation-emergency procedure that involves giving artificial breathing and heart massage to someone who is not breathing or does not have a pulse (requires special training).

current - movement of electrical charge.

de-energize - shutting off the energy sources to circuits and equipment and depleting any stored energy.

double-insulated - equipment with two insulation barriers and no exposed metal parts.

flexible wiring - cables with insulated and stranded wire that bends easily.

fuse - overcurrent protection device that has an internal part that melts and shuts off the current in a circuit if there is an overload.

ground - physical electrical connection to the earth.

guarding - covering or barrier that separates you from live electrical parts.

insulation - material that does not conduct electricity easily.

lock-out - applying a physical lock to the energy sources of circuits and equipment after they have been shut off and de-energized.

tag-out - applying a tag that alerts workers that circuits and equipment have been locked out.

neutral - at ground potential (0 volts) because of a connection to ground.

ohm - unit of measurement for electrical resistance.

overcurrent protection device - device that prevents too much current in a circuit.

overload - too much current in a circuit.

power - amount of energy used each second, measured in watts.

PPE - personal protective equipment (eye protection, hard hat, special clothing, etc.).

shocking current - electrical current that passes through a part of the body.

short - low-resistance path between a live wire and the ground, or between wires at different voltages (called a fault if the current is unintended).

trip - automatic opening (turning off) of a circuit by a circuit breaker.

voltage - measure of electrical force.

Hazard Identification & Risk Assessment: Hazard Identification & Risk Assessment is to identify and evaluate the hazards, Risk and put controls measures for safe execution of activities.
Hazard: Source or situation with potential for harm, something that can cause body injury / occupational illness, damage company property.

Risk: The likelihood (probability) which can lead to potential negative consequences.

Risk Assessment: A systematic and structured process whereby hazards present in a workplace, or arising from workplace activity, are identified, risks assessed / evaluated, and decisions prioritized in order to reduce risks to acceptable levels.

GENERAL SAFETY INSTRUCTIONS

MECHANICAL

a) General Safety

1. All the dangerous moving parts of the portable / fixed machinery being used shall be adequately guarded.

2. Report all Unsafe Act / Unsafe Condition, first aid cases and dangerous occurrences to the responsible supervisors/ engineers/safety person.

3. No workmen below 18 years of age shall be engaged for a job. Physical fitness of the person to certain jobs like working at height or other dangerous locations to be ensured before engaging the person on work. The final decision rests with the site management to reject any person on the ground of physical fitness.

4. Smoking, spitting & urination are strictly prohibited at workplace.

5. Ensure adequate supervision at workplace. All persons working at workplace should not create any hazards to self or to co-workers.

6. Nobody is allowed to work without wearing safety helmet. Chinstrap of safety helmet shall be always on.

7. No one is allowed to enter into workplace and work at site without safety shoes.

8. Condition of all PPEs shall be in good condition. All PPE like shoes, helmet, safety belt etc. shall be arranged before starting the job.

9. All major, minor accidents and near misses to be reported to project head to enable the management to take necessary steps to avoid the recurrence.

10. All tools and tackles shall be inspected before use. Defects to be reported immediately. No lifting tackle to be used unless it is certified by the competent person.

11. Good housekeeping to be maintained. Passages shall not be blocked with materials. Materials like bricks shall not be stacked to the dangerous height at workplace.

12. Debris, scrap and other materials to be cleared from time to time from the workplace and at the time of closing of work every day.

13. All the unsafe conditions, unsafe act identified /reported by site supervisors and / or safety personnel to be corrected on priority basis.

14. No children/kids shall be allowed to enter the workplace.

15. Consumption of alcohol and drugs is prohibited.

16. Display of safety banners, safety posters, safety exhibitions, safety badges,

and organizing of various safety competitions, recognition of best safety practices and awarding prizes can be done at Project Site/offices.

17. No Smoking signs all over site and particularly near diesel room, general stores or near Combustible materials etc.

18. Physical fitness check shall be carried out for crane operators & Drivers.

19. Those who are violating the safety norms should have zero tolerance.

b) General Safety Instructions - Electrical

1. Only authorized person is allowed to enter 33/11 KVA electrical panel.

2. Provide a notice or board outside the 33/11 KVA electrical room.

3. Lock out/Tag out (LOTO) procedure to be followed.

4. Testing of electrical tools regularly.

5. Electrical single line diagram to be displayed in room.

6. Cordon off work area.

7. Proper illumination should be in work area.

8. Ensure proper ventilation of room.

9. Emergency exit routes to be cleared.

10. Standard PPEs to be used. Identify such locations where flashover hazards is there and display warning signage, arc suit is mandatory at said area.

11. Display electrical shock treatment chart in room.

12. Fire extinguishers & sand buckets to be placed at electrical room.

13. Rubber mat of good quality to be placed in front of each panel.

14. First aid box to be kept in electrical room and control room.

15. Maintain 1 mt (3 feet) distance from live electrical conductor of 33 KV

1. OPERATION & MAINTENANCE OF 11KV & 33 KV VACCUM CIRCUIT BREAKERS

a) Operation of 11kv & 33kv Vacuum Circuit Breaker

1. Only Authorized Person is allowed to perform Operation (On/Off) of the Feeder
   /Switchgear.
2. Before any Operation (On /Off) it should be confirming the status as follows –

- Running LC/Work Permit for the Feeder.
- Feeder Health (Faulty/Healthy/Malfunctioning).

- Feeder cable Condition (Discharge / Reverse Charged)

3. The Feeder on which Operation (On /Off) have to be perform should be in Healthy & working Condition in all respect (Electrical / Mechanical) & all the protection system /Interlock of the Feeder should be in healthy Condition.
4. In Local Operation of Feeder use of PPE's are Mandatory.

b) Maintenance of 11kv & 33kv Vacuum Circuit Breaker

1. Only Authorized Person is allowed to perform Maintenance of the Feeder / Switchgear.
2. Relevant Safety Work Permit should be issued for subjected Feeder / Equipment (Line Clear/Work Permit/Height Permit/Hot line permit etc.)
3. Safety work permit issuing authority will be the Shift In-charge.
4. PPE's & Specific Tools tackles must be in place before starting the Maintenance work.
5. **Circuit Breaker OFF Procedure as following:**

- Put Off the respective Feeder/ Circuit Breaker.
- Ensure no Back feeding of supply.
- Switch off all the supply of Spring Charging Motor by Off the respective Control MCB.
- Rack out the Feeder/VCB in Test Position & simultaneously operate the breaker on & OFF, ensure Spring is discharge.
- Put Off all the Control MCB's AC / DC.
- Open the front door as per the sequence / de-interlocking & Setup VCB trolly if Required & Rack out the breaker gently on the trolly / floor. Lock the trolly & VCB.
- Display the Appropriate Caution board Danger/Man at Work/Do not Operate etc.
- Barricade the area where Work has been performed.
- Before starting the Maintenance, ensure whether the VCB is OFF, Spring Discharge & VCB is Mechanically/Electrically de-energized.
- Start the maintenance activity as per O&M Manual.
- Before Putting in Test Position, ensure whether the VCB is OFF, Spring Discharge & VCB is Mechanically/Electrically de-energized.

6. **Circuit Breaker ON Procedure as following:**

- Collect all Tools and Tackles from the Maintenance place & ensure no tools & tackles left inside the VCB compartment / Equipment, Remove local Earthing.
- Remove Barricade, Caution Boards after Clearing the Work Permit / Line Clear Permit. Clean the area where Work was performed.
- Return the safety work permit /Line clear permit after the Maintenance work is over.
- Before Putting in Test Position, ensure whether the VCB is OFF, Spring Discharge & VCB is Mechanically/Electrically de-energized.
- Rack in the VCB Gently in the VCB Compartment, Close the front door as per the sequence / interlocking.
- Rack in the in VCB in Test Position in the Compartment, Switch ON all the control MCB's & Restore the AC/DC control supply & take trial in VCB Test Position.

7. Check All the Indications & Operations from Remote /Local.

- Put the VCB Service Position and take trial in service position from Remote/Local.
- Check the Indication, parameters like voltage/current in the respective Feeder/VCB.
- Keep Observation of the Maintained Feeder / VCB & Record in Logbook.

2. OPERATION & MAINTENANCE OF 33KV/11KV/415V PANEL ROOM

a) Safety procedure (O& M of 33 kV/11 kV/0.415 kV panel)

1. Only authorized person should enter the 33KV/11KV Electrical panel. A "DANGER" signage to be displayed at the entry gate.

2. PPEs of standard ISI marked (safety shoes, safety helmet, lather hand gloves, arc suit etc.) should be used.

3. Key of the main door of the electrical panel room should be with security or manager level person. Only for authorize work which will be planned and approved by GIFTCL office, the key should be issued for access and work.

4. Work permit to be obtained/issued.

5. LOTO (Lock out tag out) procedure to be followed.

   (a) Key to be deposited at BMS in charge.

6. After work completion, electrical engineer

   (a) To inspect & verify the work for satisfactory completion.

   (b) Collect key from BMS & release LOTO.

(c) Energize feeder.

(d) Close the work permit.

7. After work completion – Return main entrance door keys to security or manager.
8. Before starting work, HT/LT feeder to be isolated.
9. FRP (Fiberglass Reinforced Plastic) ladder should be used to work on electrical panels.
10. Discharge the static charge before starting the work.
11. Rubber mat of good quality should be placed in front of each panel.
12. Ensure fire extinguishers & sand buckets are available.

b) Operation of 415V LT Panel

1. Only Authorized Person is allowed to perform Operation of the Equipment.
2. Before any Operation (On /Off) it should be confirming the status as follows –
   - Running LC/Work Permit for the Feeder.
   - Feeder Health (Faulty/Healthy/Malfunctioning).
   - Feeder cable Condition (Discharge / Reverse Charged)
3. The Equipment on which Operation (On /Off) have to be perform should be in Healthy & working Condition in all respect (Electrical / Mechanical) & all the protection system /Interlock of the Feeder should be in healthy Condition.
4. The Feeder Operation (On /Off) Should be performed from remote only, in case of Local Operation of Feeder use of PPE's are Mandatory.

5. Maintenance of 415V LT Panel

- Only Authorized Person is allowed to perform Maintenance of the 415 V LT Panel.
- Relevant Safety Work Permit should be issued for subjected Feeder / Equipment (Line Clear/Work Permit/Height Permit/Hot line permit etc.)
- Safety work permit issuing authority will be the Shift In-charge.
- PPE's & Specific Tools tackles must be in place before starting the Maintenance work.
- All the operations should be done from remote, in case of Local Operation of Feeder use of PPE's are Mandatory.

6. 415V LT Panel OFF Procedure -

- Put Off the respective Feeder/ Circuit Breaker from SCADA /Local.
- Ensure no Back feeding of supply. Put Local Earthing on respective feeder.

- Switch off all the supply of Spring Charging Motor by Off the respective Control MCB.
- Rack out the Feeder/ACB in Test Position & simultaneously operate the breaker On & OFF, ensure Spring is discharge.
- Put Off all the Control MCB's AC / DC.
- Open the front door as per the sequence / de-interlocking & Setup ACB trolly if Required & Rack out the breaker gently on the trolly / floor. Lock the trolly & ACB.
- Display the Appropriate Caution board Danger/Man at Work/Do not Operate etc.
- Barricade the area where Work has been performed.
- Before starting the Maintenance, ensure whether the ACB is Mechanically & Electrically de-energized. If not, then de-energized the ACB's Spring & Discharge ACB's bus bar via Earthing rod.
- Start the maintenance activity as per O&M Manual.

7. 415V LT Panel ON Procedure -

- Collect all Tools and Tackles from the Maintenance place & ensure no tools & tackles left inside the VCB compartment / Equipment, Remove local Earthing.
- Return the safety work permit /Line clear permit after the Maintenance work is over.
- Remove Barricade, Caution Boards after Clearing the Work Permit / Line Clear Permit.
- Before Putting in Test Position, ensure whether the ACB is Mechanically & Electrically de-energized. If not, then de-energized the ACB's Spring. & Discharge VCB's bus bar via Earthing rod.
- Rack in the ACB Gently in the ACB Compartment, Close the front door as per the sequence / interlocking.
- Rack in the in ACB in Test Position in the Compartment, Switch ON all the control MCB's & Restore the AC/DC control supply & take trial in ACB Test Position.
- Check All the Indications & Operations from Remote /Local.
- Put the ACB Service Position and take trial in service position from Remote/Local.
- Check the Indication, parameters like voltage/current in the respective Feeder/ACB.

- Remove Barricade & Clean the area where Work was performed.
- Keep Observation of the Maintained Feeder / ACB & Record in Logbook.

3. OPERATION & MAINTENANCE OF 33KV/11KV (12.5 MVA) & 11KV/0.415KV (2.5 MVA) TRANSFORMER

a) General Safety Instructions - Transformer

1. Only authorized person is allowed to operate and maintain transformer.
2. Provide a notice or “DANGER” board outside the transformer area.
3. Lock out/Tag out (LOTO) procedure to be followed.
4. Testing of electrical tools regularly.
5. Surrounding area of transformer should be free from metal things /obstacles.
6. Prevent Oil splitting near transformer area.
7. Ensure grass should not be grew near transformer area.
8. Cordon off transformer area while working
9. Terminal box should be covered/sealed.
10. Proper illumination should be in work area during dark hours.
11. Emergency exit routes to be cleared.
12. Standard PPEs like safety helmet, safety shoes, safety goggle, HT/LT hand gloves to be used.
13. Earthing should be properly maintained.
14. Fire extinguishers & sand buckets to be placed at transformer area. Water sprinkler system should be maintained.
15. First aid box to be kept available.
16. Maintain 1 mt (3 feet) distance from live electrical conductor of transformer.

b) Safety Procedure - Transformer

1. Work permit to be obtained/issued.
2. Transformer should be re-energized after thorough investigation once any alarm of protection has operated.
3. Do not leave red pointer behind the black pointer in OTI and WTI.
4. Dirt and deposits on bushings should be periodically cleaned.
5. FRP (Fiberglass reinforced plastic) ladder should be used to work near transformer.

6. After work completion, electrical engineer

   (a) To inspect & verify the work for satisfactory completion.

   (b) Release LOTO.

   (c) Close the work permit.

c) Operation of power transformer

This procedure provides detailed information on the process of Operation & Maintenance of Power Transformer.

1. Only Authorized Person is allowed to perform Operation (On /Off) of the Transformer Feeder / Switchgear.

2. Before any Operation (On /Off) it should be confirming the status as follows –

   - Running LC/Work Permit for the Feeder.
   - Feeder Health (Faulty/Healthy/Malfunctioning).
   - Feeder cable Condition (Discharge / Reverse Charged)

3. The Feeder on which Operation (On /Off) have to be perform should be in Healthy & working Condition in all respect (Electrical / Mechanical) & all the protection system /Interlock of the Feeder should be in healthy Condition.

4. It should be confirmed that during the operation of Feeder, Transformer would not be reverse charged.

5. Before parallel operation of the transformer always observe parameter like Voltage, tap position & follow the instruction as per O&M manual.

6. For Increase /Decrease the Output Voltage always use remote Tap Changer panel. In Local Operation of Feeder/ OLTC use of PPE's are Mandatory.

d) Maintenance of power transformer

1. Only Authorized Person is allowed to perform Maintenance of the Power Transformer.

2. Relevant Safety Work Permit should be issued for subjected Feeder / Equipment (Line Clear/Work Permit/Height Permit/Hot line permit etc.)

3. Safety work permit issuing authority will be the Shift In-charge or Plant In charge.

4. PPE's & Specific Tools tackles must be in place before starting the Maintenance work.

5. Power Transformer Stop /OFF Procedure

- Put off the LV Side (33kV/11kV-Incomer) Feeder & keep it in Test position. Press Emergency Push Button & Do the lock out and tag out. In case of

33kV GIS Feeder Follow the Interlocks - OFF the Circuit Breaker then Open Line Isolator.

- Put off the HV Side (33kV/11kV) Feeder & keep it in Test position. Press Emergency Push Button & Do the lock out and tag out. In case of 33kV GIS Feeder Follow the Interlocks - OFF the Circuit Breaker then Open Bus Isolator & then Transformer Isolator.
- After Off the Both side Feeder i.e. HV & LV side Put Local Earthing at both the End of Feeder i.e. on HV side & LV side via Local Earthing or by Earth Switch.
- Keep the RTCC Panel selector switches in independent mode.
- Connect the earth rod permanently in all phases at both end (i.e. LV & HV) of Transformer till the work permit is returned.
- Discharge the transformer LV & HV windings with Earth rod.
- Display the Appropriate Caution board at Feeder & Equipment Danger/Man at Work/Do not Operate etc.
- Barricade the area where Work has been performed.
- Start the maintenance activity as per O&M Manual.

6. Power Transformer Start /ON Procedure

- Collect all Tools and Tackles from the Maintenance place & ensure no tools & tackles left inside the Feeder / Equipment, Transformer LV chamber and at top of the transformer.
- Remove Barricade, Caution Boards after Clearing the Work Permit / Line Clear Permit.
- Remove all the Local earthing & Earth Isolators at LV Side, HT Side of the Equipment & Feeder Side. Remove LOTO.
- Return the safety work permit /Line clear permit after the Maintenance work is over.
- Keep the RTCC Panel selector switches in Normal mode that is Master /Follower mode and ensure all the transformers tap positions are same.
- Follow the Operation sequence first On the Bus Isolator then Transformer Isolator, check Indication & parameter if found Healthy & Normal then only On the Circuit breaker. In case if Operation Required from LCC then use of PPEs are mandatory.
- In case of HV Side (33kV) AIS Feeder- As per interlocks put Circuit breaker in Service position Check All the Indications of Healthiness & Operate from

Remote /Local, in case if Operation Required from Local then use of PPEs are mandatory.

- After, On the HV side Feeder, Check parameters like Voltage, Ampere, Frequency etc. at HV & LV Side, if found ok then start the procedure to operate the LV Side (33kV/11kV) Circuit Breaker /Feeder.
- In Case LV Side (33kV /11kV) AIS Feeder- If all the Parameters are Healthy then As per interlocks put LV Side (33kV /11kV) Circuit breaker in Service position, Check All the Indications of Healthiness & Operate from Remote /Local, in case if Operation Required from Local then use of PPEs are mandatory.
- Check the Indication, parameters like voltage/current in the respective Feeder.
- Keep Observation of the Maintained Feeder / Equipment & Record Parameters in Logbook like WTI, OTI, HV/LV Voltage, HV/LV Ampere, Oil Leakage, OLTC Operation any abnormal sound. For any abnormal phenomena, Shift Engineer will inform to Station In charge, and follow the instructions.

4. WORK AT HEIGHT (CHILLER/COOLING TOWER/TES TANK/OVERHEAD TANK/UTILITY TUNNEL)

a) Safety Procedure

1. Full body harness with double lanyard shall be worn to carry out work having 2 meters or more height.
2. Proper scaffold shall be used to carry out any maintenance of equipment at height.
3. Work permit system should be used for working at height more than 2.0 meters of height.
4. Fall arrestor system shall be installed at overhead tank and very high levels (>8.0 mts.)
5. Ensure that persons involve in height work activities shall be physically fit.

5. GRINDER WORK SAFETY

a) Safety Procedure

1. Select suitable grinding disc for respective RPM of grinder machine.
2. Obtain Hot work permit for grinding work.
3. Always use grinding wheel guard on grinder for protection.
4. Check the grinding wheel for any kind of crack or damage before using the

grinder.

5. Naked/Opened cables shall not be allowed for the connection of grinding machine. Only industrial 3 pin plug top shall be used.

6. Use right flanges and attached properly for a smooth movement. Ensure that there are no traces of burr or flash.

7. Use the right dimension of grinding wheel to ensure safety and achieving higher efficiency.

8. Grinders must always be tested before use. Test run the grinder in a safe enclosed area such as beneath the workbench to detect any kind of damage or fault in the wheel or the grinder.

9. Always wear all the personal protective equipment and clothing such as goggles, face shield, helmets, masks, ear protection, gloves, leather aprons etc.

10. Carry out maintenance of grinders at regular intervals.

11. Grinder machine shall be used by trained person only.

12. Grinding wheel storage:

    (a) Suitable racks, bins, drawers or boxes shall be provided to store the various types of wheels used.

    (b) Exception: Pallets should only be stacked in accordance with wheel manufacturers' recommendation. Wheels shall not be stored subject to:

- Exposure to water or other solvents.
- Any temperature or humidity condition that causes Condensation on the wheels

6. SAFETY DURING ARC WELDING

a) Safety Procedure

1. Hot work permit is required for welding work.

2. Ensure area shall be free from flammable materials and safe to work.

3. Welder should have trade certificate of said work.

4. Welder to use appropriate personal protective equipment like welding helmet, face shield or goggles, safety helmet, full body harness, leather hand gloves, safety shoes.

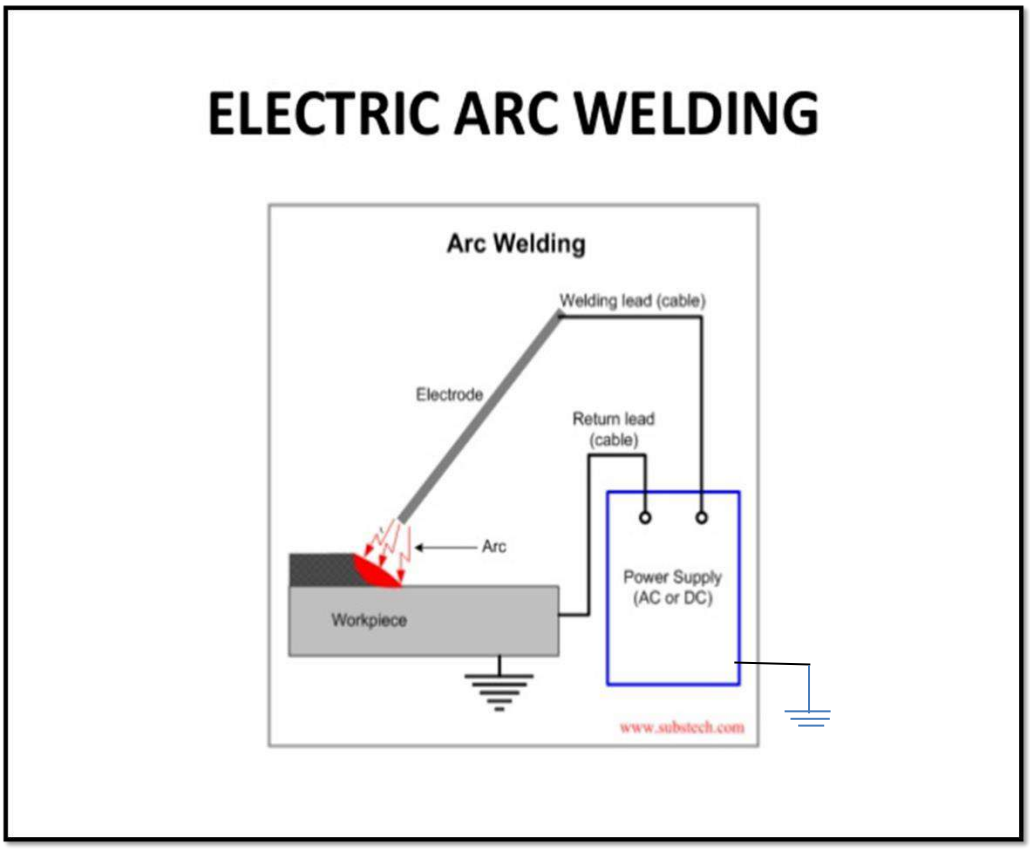
5. ON/OFF switch should be provided on the welding machine.

6. Nearby area should be free from flammable substances.

7. Compliance of work permit during whole operation under the supervision of area in – charge.

8. Protect welding machine from water/rain.
9. Input / Output terminals should be covered from direct touch or contact.
10. Connections are made through ELCB/RCCB of suitable size.
11. Welding leads connections should be in good condition.
12. Double earthing to be provided.
13. Plug top should be provided for electrical connection.
14. Conditions of switches and regulators (for adjusting current) should be in good condition.
15. ABC or CO2 fire extinguishers should be available nearby during work.
16. Personnel should be trained to operate the fire extinguishers.

b) Electric Arc Welding Diagram



c) Glass Protection during Shielded Metal Arc Welding and Gas shielded Arc Welding

Welding Operations- Type	Welding Glass Shade Number
Shielded metal-arc welding (1.6 mm to 4 mm) diameter electrodes	7 to 11
Gas-shielded arc welding (nonferrous) (1.6 mm to 4 mm) diameter electrodes	11
Gas-shielded arc welding (ferrous) (1.6 mm to 4 mm) diameter electrodes	12
Shielded metal-arc welding (4.7 mm 6.35 mm) diameter electrodes	12

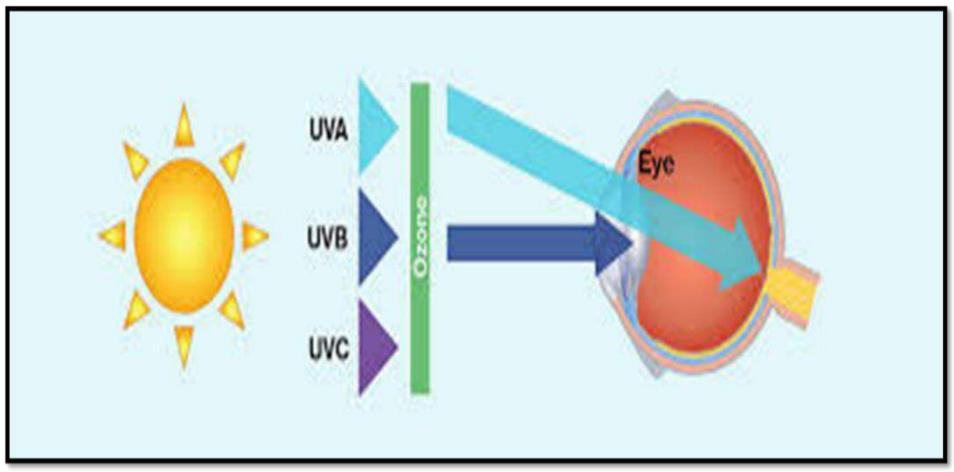
d) Face shield specification: IS 8521

Radiation UV

- UV-A (315 – 400 nm) passes through cornea and is absorbed in the lens of the eye.
- UV-C & B (100-315nm) are absorbed in the cornea of the eye.
- Some UV radiation, visible light, and IR radiation can reach the retina.

Protects from

- Exposure Limit (12 to 24 hours) can cause Arc eyes
- Flying particles, debris
- Hot slag, sparks (800 - 1000 Deg C)
- Intense light (3400 K Heat)
- Irritation and chemical burns



7. GAS CUTTING SAFETY

a) Safety Procedure

1. Hot work permit system shall be ensured and followed.
2. Keep cylinders away from physical damage, heat, and tampering.
3. Store cylinders in an upright position.
4. Securely chain cylinder to prevent falling.
5. Store away from flammable and combustible materials.
6. Inspect equipment for leaks at all connections using approved leak-test solution.
7. Inspect hoses for leaks and worn places.
8. Replace bad hoses.
9. Protect hoses and cylinders from sparks, flames and hot metal.
10. Use a flint lighter to ignite the flame.
11. Stand to the side (away from the regulators) when opening cylinder valves.
12. Open cylinder valves very slowly to keep sudden high pressures from exploding the regulators.
13. Flash back arrestor shall be ensured at both ends cylinder as well as torch ends.
14. Only open the acetylene cylinder valve 1/4 - 3/4 turn; leave wrench in place so the cylinder can be quickly closed in an emergency.
15. Open and light acetylene first, then open and adjust oxygen to a neutral flame.
16. Close the acetylene torch valve first when shutting off the torch (a "pop" might occur as the oxygen "blows out" the flame, but this eliminates the possibility of the flame burning up the acetylene line).
17. Do not apply oxygen through hose pipe for surface cleaning.
18. After completion of work ensure closure of cylinder valves.
19. Ensure closure of permit after completion of gas cutting work.
20. Have a fire extinguisher easily accessible at the work area.
21. Ensure adequate ventilation available when gas welding/cutting in confined areas.
22. Ensure that the gas cutter uses appropriate personal protective equipment while working at height like apron, face shield or black goggles, safety helmet, full body harness, leather hand gloves, safety shoes.

8. CHEMICAL HANDLING & STORAGE

a) Safety Procedure

MSDS — Materials Safety Data Sheet

MSDS shall include the following:

a) Name of chemical
b) Physical and Chemical properties
c) Hazard Classification
d) Reactivity
e) Explosive properties
f) Poisonous properties
g) Caution remarks for transport, handling and storage
h) First aid and firefighting measures
i) Caution remarks for waste disposal management

b) Storage Guidelines

1. Storage areas are secured when not in use and are available to authorized personnel only.

2. Storage areas are well illuminated.

3. Open flames, smoking and localized heating units are not permitted near storage areas.

4. Aisles surrounding storage areas are free from obstruction and other tripping hazards.

5. The limit of chemical storage quantity shall be mentioned.

6. Chemicals shall not be exposed to direct sunlight or localized heat.

7. It is recommended that containers of corrosive chemicals to be stored in trays large enough to contain spillage or leakage.

8. Chemicals are stored by reactive class as indicated on MSDS (i.e. flammables with flammables, oxidizers with oxidizers).

9. MSDS for each of the chemical must be consulted for proper storage instructions and should be accessible to the storage area.

10. New chemicals shall be segregated from waste chemicals.

11. Spillage of chemicals on ground shall be avoided.

12. Concrete surface shall be provided for storage of chemicals to avoid soil contamination.

c) Storage Containers

1. Storage containers are inspected periodically for rust, corrosion and leakage.

2. Damaged containers are replaced or repaired immediately.

3. Chemicals are stored in sealed containers.

4. Stoppers are easily removed from containers.

d) Chemical Handling

1. Carefully read the ingredient list of any product or chemical to be used.

2. Ensure the label to be displayed on any chemical containers.

3. Use proper personal protective equipment like gloves, goggles, safety shoes and aprons.

4. Follow MSDS or safe procedures when handle hazardous material. Do not take shortcuts.

5. Do not mix or combine hazardous materials unless you know you can do so safely.

6. Always carry chemicals in approved containers.

7. Always wash hands after using chemicals material.

e) Spillage Management (How to deal with a chemical spill)

1. Wear appropriate PPE (gloves, safety shoes, safety goggles etc.) as indicated on MSDS.

2. Open doors and windows.

3. Use cat litter to firstly surround the spill, and then pour all over the chemical to absorb it.

4. Use the plastic dustpan to scoop the chemically-damp material into a plastic bucket.

5. Re-cover the affected area with more cat litter to ensure all of spilt chemical has been absorbed and scoop up.

6. Contain the spillage with earth or sand and neutralize carefully with soda ash or sodium bicarbonate or as indicated on MSDS.

7. Wash the affected area with excess water. Some detergent may help.

8. Clean up and leave area dry.

9. Dispose-off damp solid as chemical waste.

10. Know where the fire extinguisher is.

f) Personal Protective Equipment (PPE)

- Personal protective equipment (PPE) can protect you against chemical and physical hazard exposure. PPE includes eye protection, gloves, maximum skin coverage and closed toe shoes. In some cases, protection such as

aprons, respirators, splash shields, ear plugs, and specialized gloves may be recommended or required.

- Provide at least one eye wash station near chemical handling & storage area.

9. Safety Formats

a) Hot work permit

b) Confined space work permit

c) Height work permit

d) Emergency display board

PERMIT FOR HOT WORK

Contractor's Name		Permit Number:	
Permit required from (Date & Time)		To (Date)	
Location of Hot work:			
Permit Requested by:			
Permit Issued by:			
Purpose of Hot Work:			

PPE ISSED TO THE WORKERS FOR HOT WORK

Safety shoes ☐ Welding Helmet ☐ Welding Goggle ☐ Welding Gloves ☐ Apron

WOK SUPERVISOR/ ENGINEER

The work Supervisor/ Engineer has to make sure the following:	Y/N/NA
1. Distance between cylinder should be at least 10 inches.	
2. Cylinder to be upright and properly secured.	
3. LPG not to be used.	
4. Proper earthing with suitable cable of welding machine.	
5. Other nearby equipment & people should be protected.	
6. Welding light protection screen to be used.	
7. All nearby wall/floor opening to be temporarily closed.	
8. Clear all burning materials, purge vapor of flammable material within 50 feet of work.	
9. Physically check for any damage in welding/cutting equipment.	
10. Provide fire extinguisher.	

The above location has been examined and verified by permit recipient	**Supervisor (Sig.)**
The above location has been verified and confirmed by permit issuer	**Engineer (Sig.)**

CLOSURE OF PERMIT

Work areas and all adjacent areas were inspected after 60 minutes of the completion of work and were found safe.

Signature of Site Engineer

PERMIT FOR WORKING IN CONFINED SPACE

Contractor's Name		Permit Number:	
Permit required from (Date & Time)		TO (Date & Time)	
Location of Work:			
No. of workers engaged for work:			
Permit Requested by:			
Permit Issued by:			
Work supervised by:			
PPE issued:			
Equipment used:			

The following to be checked & ensure:		Y/N/NA
1	The work is properly planned and safe without health risk.	
2	Good means of access and egress should be provided.	
3	Sufficient lighting and ventilation should be available.	
4	Work area should be free from seepage, oxygen deficiency, flammable & toxic gas.	
5	Electrical and mechanical drives should be disconnected.	
6	Persons require to enter the confined space should be trained in dealing with the hazards.	
7	Task specific PPEs should be provided.	
8	Emergency rescue system should be available.	
9	Outside the work area stand by person should be deployed to help the workers.	
10	In – Out log sheet should be maintained.	

The above location has been examined and verified	**Supervisor (Sig.)**
The above location has been verified and confirmed	**Engineer (Sig.)**

CLOSURE OF PERMIT

Work areas and all adjacent areas were inspected after completion of work and were found safe.

Signature of Site Engineer

4.3 PERMIT FOR HEIGHT WORK

Contractor's Name		Permit Number	
Permit required from (Date & Time)		TO (Date & Time)	

Location of work:

Permit Requested by:

Permit Issued by:

Work Supervised by:

PPE ISSED TO THE WORKERS FOR HEIGHT WORK

Safety shoes ☐ Safety Helmet ☐ Goggles ☐ Full body safety Harness ☐ Gloves ☐ Fall arrester ☐

CHECK LIST

Sr. No	Description	Y/N/ NA
1.	Are the height workers are medically fit?	
3.	Are the open spaces, edges and shafts are protected?	
4.	Is there safe access to the work area is provided?	
5.	Is the scaffold safely erected on a firm ground with enough bracing?	
6.	Are there provided proper work platforms?	
7.	Are safety nets provided?	
8.	Are Safety full body harnesses worn?	
9.	Are the worker properly briefed about the work activity?	
10.	Is there adequate supervision to ensure safe work practices for working at heights are in place?	

The above location has been examined and verified	**Supervisor (Sig.)**
The above location has been verified and confirmed	**Engineer (Sig.)**

CLOSURE OF PERMIT

Work areas and all adjacent areas were inspected after completion of work and were found safe.

Signature of Site Engineer

EMERGENCY DISPLAY BOARD

2 FEET

2 FEET

Name of Work:
Nature of Work:
Department:
Name & Contact number - GIFT Officer In Charge:
Location & Area of Work
Name & Phone of Contractor's Supervisor
Time of Work:
Start & Estimated Completion date:
Tentative number of workers to be deployed

10. GLOSSARY/DEFINITION

ampere (amp) - unit used to measure current.

bonding - joining electrical parts to assure a conductive path.

circuit - complete path for the flow of current.

circuit breaker - overcurrent protection device that automatically shuts off the current in a circuit if an overload occurs.

conductor - material in which an electrical current move easily.

CPR - cardiopulmonary resuscitation-emergency procedure that involves giving artificial breathing and heart massage to someone who is not breathing or does not have a pulse (requires special training).

current - movement of electrical charge.

de-energize - shutting off the energy sources to circuits and equipment and depleting any stored energy.

double-insulated - equipment with two insulation barriers and no exposed metal parts.

flexible wiring - cables with insulated and stranded wire that bends easily.

fuse - overcurrent protection device that has an internal part that melts and shuts off the current in a circuit if there is an overload.

ground - physical electrical connection to the earth.

guarding - covering or barrier that separates you from live electrical parts.

insulation - material that does not conduct electricity easily.

lock-out - applying a physical lock to the energy sources of circuits and equipment after they have been shut off and de-energized.

tag-out - applying a tag that alerts workers that circuits and equipment have been locked out.

neutral - at ground potential (0 volts) because of a connection to ground.

ohm - unit of measurement for electrical resistance.

overcurrent protection device - device that prevents too much current in a circuit.

overload - too much current in a circuit.

power - amount of energy used each second, measured in watts.

PPE - personal protective equipment (eye protection, hard hat, special clothing, etc.).

shocking current - electrical current that passes through a part of the body.

short - low-resistance path between a live wire and the ground, or between wires at different voltages (called a fault if the current is unintended).

trip - automatic opening (turning off) of a circuit by a circuit breaker.

voltage - measure of electrical force.

Hazard Identification & Risk Assessment: Hazard Identification & Risk Assessment is to identify and evaluate the hazards, Risk and put controls measures for safe execution of activities.

Hazard: Source or situation with potential for harm, something that can cause body injury / occupational illness, damage company property.

Risk: The likelihood (probability) which can lead to potential negative consequences.

Risk Assessment: A systematic and structured process whereby hazards present in a workplace, or arising from workplace activity, are identified, risks assessed / evaluated, and decisions prioritized in order to reduce risks to acceptable levels.

MSDS - Material Safety Data Sheet.

Autoignition Temperature - The lowest temperature at which a substance will burst into flames without a source of ignition like a spark or flame. The lower the ignition temperature, the more likely the substance is going to be a fire hazard.

Boiling Point - The temperature of a liquid at which its vapor pressure is equal to the gas pressure over it. With added energy, all of the liquid could become vapor. Boiling occurs when the liquid's vapor pressure is just higher than the pressure over it.

Chronic Health Effect - An adverse effect with symptoms that develop or recur very slowly, or over long periods of time as a result of continued or periodic exposure to the offending agent.

Combustible - A material that will burn under most conditions.

Explosive - A chemical that causes a sudden, almost instantaneous release of pressure, gas, and heat when subjected to sudden shock, pressure, or high temperature.

Explosive Limits - The amounts of vapor in air which forms explosive mixtures. Explosive limits are expressed as Lower Explosive Limit (LEL) and Upper Explosive Limit (UEL). These give the range of vapor concentrations in air which will explode if heat is added. Explosive limits are expressed as per cent of vapor in air.

Eye/Skin Irritant - A chemical which irritates the eye or skin.

Flash Point - The minimum temperature in degrees Fahrenheit at which a liquid will give off sufficient vapors to form an ignitable mixture with air near the surface or in the container.

Toxic- Poisonous. Causes adverse health effects when the body is exposed.

Threshold Limit Value (TLV) - Term used by the ACGIH to express the maximum airborne concentration of a material to which most workers can be exposed during a

normal daily and weekly work schedule (i.e., day-after-day) without adverse health effects.

pH - a figure expressing the acidity or alkalinity of a solution on a logarithmic scale on which 7 is neutral, lower values are more acid and higher values more alkaline.

GENERAL SAFETY INSTRUCTIONS

WATER TREATMENT, SEWAGE TREATMENT & AUTO WASTE COLLECTION SYSTEM

Following safety rules shall be followed by supervisor and workmen at site.

a) Working at height safety

1. During working at heights, Proper and safe access will be provided & in scaffold hand railing will comprise of top rail, mid rail and toe guard.
2. All workmen/employees must wear approved safety appliances (Safety helmet, Safety shoe, Safety glasses, Safety harness, hearing protection & welding helmets) shall be worn wherever required.
3. Work permit shall be followed to carry out any work having 1.8 meters or more height.
4. Full body harness with double lanyard shall be worn.
5. No one is allowed to work at or more than two meters height without wearing safety belt and anchoring the lanyard of safety belt to firm support preferably at shoulder level.
6. Ladders being used at site shall be adequately secured at bottom and top. Ladders shall not be used as work-platforms.
7. All scaffoldings / work-platforms shall be strong enough to take the expected load. The width of the working platform and fall protection arrangements shall be maintained.
8. Erection zones and dismantling zones shall be barricaded, and nobody will be allowed to stand under suspended load.
9. No floor opening, floor edges shall be left unguarded.
10. Safety net shall be installed surrounding the periphery of the slab to provide overhead and fall protection.

b) Electrical safety

1. Electrical danger sign- electrical installations, high voltage equipment, high tension line, Welding transformers, meter panels, fuse distribution boards, etc.
2. Only Industrial 3 pin electrical plug sockets shall be used.
3. All Boards, Main DB, Sub db, FDB, Switch plug Sockets units shall be covered by suitable weatherproof condition.
4. Rubber mat shall be provided in front of electrical db panel.
5. Inserting of bare/opened/naked wires for tapping the power from electrical socket is completely prohibited.
6. LOTO procedure shall be followed for major electrical maintenance job.

7. ISI marked PPEs shall be used by all electricians.

8. Electrical hand tools and machinery shall be inspected, and tag system and records shall be maintained.

9. All electrical cables shall be provided double insulated and minimum 3 cores.

10. Adequate number of CO2 fire extinguishers and fire bucket stand shall be provided near electrical panel.

11. Continuity of earthing of all panels shall be checked in a regular interval.

12. Proper and safe tapping shall be done in cable joints.

c) Excavation safety

1. All excavated pits shall be barricaded and barricade to be maintained till the backfilling is done. Safe approach to be ensured into every excavation.

2. Do not drive any equipment without authority. All heavy vehicles must be provided with reverse Horn.

3. Excavation work permit shall be followed.

4. Safe slopes shall be provided in excavated face.

5. Warning signage shall be displayed.

6. Be mindful of the location of utilities underground.

7. Keep heavy equipment away from trench edges.

8. Adequate illumination at workplace shall be ensured before starting the job at night.

d) Welding and Gas cutting safety.

1. Hot work permit shall be followed prior to commence any hot work.

2. Adequate firefighting equipment shall be made available at workplace and persons are to be trained in firefighting techniques.

3. Regular inspection of welding machine and gas cutting set shall be done.

4. Appropriate PPEs like face shield or goggles, safety helmet, lather hand gloves, full body harness and safety shoes.

5. Welding leads connections shall be in good condition.

6. Guard/covers shall be provided on welding machine to protect from water/rain.

7. Electrode/welding holders shall be fully insulated.

8. Double earthing shall be provided in welding machine.

9. Flash back arrestors shall be installed in both ends cylinders as well as torch.

10. Hose pipes shall be from damage.

11. ABC or CO2 type fire extinguishers shall be made available during hot work activity.

12. Nearby area shall be free from flammable substances.

e) General Safety

1. All the dangerous moving parts of the portable / fixed machinery being used shall be adequately guarded.

2. Report all Unsafe Act / Unsafe Condition, first aid cases and dangerous occurrences to the responsible supervisors/ engineers/safety person.

3. No workmen below 18 years of age shall be engaged for a job. Physical fitness of the person to certain jobs like working at height or other dangerous locations to be ensured before engaging the person on work. The final decision rests with the site management to reject any person on the ground of physical fitness.

4. Smoking, spitting & urination are strictly prohibited at workplace.

5. Sub-contractors shall ensure adequate supervision at workplace. They shall ensure that all persons working under them shall not create any hazards to self or to co-workers.

6. Nobody is allowed to work without wearing safety helmet. Chinstrap of safety helmet shall be always on.

7. No one is allowed to enter into workplace and work at site without safety shoes.

8. Condition of all PPEs shall be in good condition. All PPE like shoes, helmet, safety belt etc. shall be arranged before starting the job.

9. All major, minor accidents and near misses to be reported to project head to enable the management to take necessary steps to avoid the recurrence.

10. All tools and tackles shall be inspected before use. Defects to be reported immediately. No lifting tackle to be used unless it is certified by the competent person.

11. Good housekeeping to be maintained. Passages shall not be blocked with materials. Materials like bricks shall not be stacked to the dangerous height at workplace.

12. Debris, scrap and other materials to be cleared from time to time from the workplace and at the time of closing of work every day.

13. Contractors shall ensure that all their workmen are following safety practices while travelling in the company's transport and staying at company's accommodations.

14. All the unsafe conditions, unsafe act identified /reported by site supervisors and / or safety personnel to be corrected on priority basis.

15. No children/kids shall be allowed to enter the workplace.

16. Consumption of alcohol and drugs is prohibited.

17. Display of safety banners, safety posters, safety exhibitions, safety badges, and organizing of various safety competitions, recognition of best safety practices and awarding prizes can be done at Project Site/offices.

18. No Smoking signs all over site and particularly near diesel room, general stores or near Combustible materials etc.

19. Physical fitness check shall be carried out for crane operators & Drivers.

20. Those who are violating the safety norms shall be penalized.

1. CONFINED SPACE ACCESS – AWCS

a) **Safety Procedure**

1. Supervisor shall ensure to avoid possible entry to confined spaces. When entry is necessary, pre-entry checks are to be carried out to determine the condition of the confined space and the necessary measures to ensure safety of the entry workers.

2. Determine, if any material / equipment to be used, which can generate hazardous fumes.

3. Prior to entering a confined space, all power-driven equipment that has the potential to endanger the workers or cause additional hazards must be rendered inoperable according to the Lockout/Tagout isolation method.

4. Only flame proof lightings shall be used for illuminating work area.

5. Supervisor to issue a work permit for confined spaces.

6. A suitable means of communication between the site and an external point of contact is to be established tested and should working before entry commences.

7. The number of workers entering the confined space is to be appropriate to the task and Log in and Log Out Mechanism shall be established.

8. Workers must wear suitable PPE when working with hazards in confined spaces.

b) **Confined Space Entry Workers**

1. Supervisor of contractor shall ensure that employees/workers are deemed medically and physically fit to enter confined spaces and use PPE before authorizing them to enter confined spaces.

c) **Atmosphere**

1. Once a confined space has been properly isolated and verified by the supervisor, testing of the atmospheric conditions must be done. The atmosphere of the confined space will be tested for oxygen, flammable and Toxic gases.

2. The atmosphere is to be monitored continually throughout the period of entry.

3. Electronic monitoring equipment to be capable of detecting the gases.

4. All testing must be done by the Entry Supervisor and witnessed by the attendant before entry is allowed.

d) Ventilation

1. Ventilation is the most commonly used engineering control in confined spaces. Ventilation is acceptable in the forms of mechanical, natural, and exhaust.

2. All available confined spaces access points are to be opened to permit air circulation.

3. Access points are to remain open and guarded throughout the period entry.

e) Access and Egress

1. All employees entering a confined space are to be logged in and out.

2. Supervisor is to confirm that all workers have exited the confined space before the openings are closed and the site vacated.

3. Suitable lifting equipment is to be used to facilitate entry and exit when entry is via a vertical shaft.

f) Fire Safety (In Case of Hot Works)

1. Flammable or combustible materials shall not be stored in a confined space.

2. All potentially flammable waste material from the work activity is to be removed from the confined space and disposed of in a safe manner.

3. Smoking in or near confined spaces shall not be permitted.

4. Appropriate fire-fighting equipment is to be available at confined spaces when it is deemed necessary.

5. Flame proof electrical equipment shall be provided.

g) Emergencies and Rescue

1. The attendant shall not enter the confined space to attempt a rescue.

2. Depending upon the severity of conditions, the affected person shall be provided suitable first aid or immediate medical attention shall be provided.

2. CHEMICAL HANDLING & STORAGE - WTP

a) Safety Procedure

MSDS — Materials Safety Data Sheet

MSDS shall include the following:

a) Name of chemical

b) Physical and Chemical properties
c) Hazard Classification
d) Reactivity
e) Explosive properties
f) Poisonous properties
g) Caution remarks for transport, handling and storage
h) First aid and firefighting measures
i) Caution remarks for waste disposal management

b) **Storage Guidelines**

1. Storage areas are secured when not in use and are available to authorized personnel only.
2. Storage areas are well illuminated.
3. Open flames, smoking and localized heating units are not permitted near storage areas.
4. Aisles surrounding storage areas are free from obstruction and other tripping hazards.
5. The limit of chemical storage quantity shall be mentioned.
6. Chemicals shall not be exposed to direct sunlight or localized heat.
7. It is recommended that containers of corrosive chemicals to be stored in trays large enough to contain spillage or leakage.
8. Chemicals are stored by reactive class as indicated on MSDS (i.e. flammables with flammables, oxidizers with oxidizers).
9. MSDS for each of the chemical must be consulted for proper storage instructions and should be accessible to the storage area.
10. New chemicals shall be segregated from waste chemicals.
11. Spillage of chemicals on ground shall be avoided.
12. Concrete surface shall be provided for storage of chemicals to avoid soil contamination.

c) Shelf Storage

1. Containers shall not be stored on shelves no higher than waist level.
2. Containers of chemicals are stored at or below eye level, where possible.
3. Containers do not protrude over the shelf edges.
4. Enough storage space is allotted, ensuring that shelves are not crowded.
5. The weight limit of the shelves is not exceeded.
6. Shelves are clean, free from chemical contamination.

d) Storage Containers

1. Storage containers are inspected periodically for rust, corrosion and leakage.
2. Damaged containers are replaced or repaired immediately.
3. Chemicals are stored in sealed containers.
4. Stoppers are easily removed from containers.

e) **Chemical Handling**

1. Carefully read the ingredient list of any product or chemical to be used.
2. Ensure the label to be displayed on any chemical containers.
3. Use proper personal protective equipment like gloves, goggles, safety shoes and aprons.
4. Follow MSDS or safe procedures when handle hazardous material. Do not take shortcuts.
5. Do not mix or combine hazardous materials unless you know you can do so safely.
6. Always carry chemicals in approved containers.
7. Always wash hands after using chemicals material.

f) **Spillage Management (How to deal with a chemical spill)**

1. Wear appropriate PPE (gloves, safety shoes, safety goggles etc.) as indicated on MSDS.
2. Open doors and windows.
3. Use cat litter to firstly surround the spill, and then pour all over the chemical to absorb it.
4. Use the plastic dustpan to scoop the chemically-damp material into a plastic bucket.
5. Re-cover the affected area with more cat litter to ensure all of spilt chemical has been absorbed and scoop up.
6. Contain the spillage with earth or sand and neutralize carefully with soda ash or sodium bicarbonate or as indicated on MSDS.
7. Wash the affected area with excess water. Some detergent may help.
8. Clean up and leave area dry.
9. Dispose-off damp solid as chemical waste.
10. Know where the fire extinguisher is.

g) Checking

1. Plant In charge to carry out Store inspection.

h) Personal Protective Equipment (PPE)

Personal protective equipment (PPE) can protect you against chemical and physical hazard exposure. PPE includes eye protection, gloves, maximum skin coverage and closed toe shoes. In some cases, protection such as aprons, respirators, splash shields, ear plugs, and specialized gloves may be recommended or required.

3. UNDERGROUND WATER TANK CLEANING - WTP

a) Tank cleaning hazards

1. Potential hazards vary widely; however, proper planning for any tank cleaning should cover risk mitigation strategies to reduce threats. Tanks, by nature, are confined spaces. This creates unique challenges due to lack of air flow and light as well as potential problems for workers entering and exiting tanks.

2. Employing trained professionals for all tank cleanings is often the best choice for avoiding employee health hazards or environmental dangers and mitigating risk.

b) Tank cleaning safety tips

It's important to confirm those cleaning your tanks are not only properly trained but that they also adhere to proper safety procedures. Key safety considerations to plan for include:

i. **Coordination** — Ideally, tank cleanings should only occur after planning sessions during which plant in charge assess and plan for risks. Planning should also include obtaining permits if necessary and facilitating safety meetings to ensure properly executed cleanings.

ii. **Trained professionals** — Tank cleanings require training and industry specific experience. Only allow those with the right knowledge and expertise to clean storage tanks. Employees unsure of cleaning best practices or those in questionable health should not partake in these activities.

iii. **Personal protective equipment (PPE)** — Tank cleanings should never take place without first preparing the correct equipment for handling the holding materials and working with specific tanks. Properly equipping staff members with the right protective gear can be the difference between safety and catastrophe.

iv. **Safety equipment** - Plant in charge should also have dual lifeline full body harnesses on hand in the event problems arise.

v. **Safety precautions - Before cleaning, it's critical for trained personnel to make sure all valves, manholes, and other tank components are properly shut off, opened, closed, or otherwise addressed.**

vi. **Under mentioned Procedures are established for safely working/cleaning underground water storage tanks.**

c) Inspection

1. Drain the tank and inspect the hatch and entry ladder for integrity and safe entry.

2. Clean the tank interior – implement all confined space Entry requirements mentioned below before entering the tank.

3. Remove any accumulated Sediment/sludge from tank bottom.

d) Confined space entry requirements

1. The primary safety and health concerns in entering water tanks are lack of oxygen and possible electrical/mechanical Hazards, should there be electrical equipment such as a Submersible pump.

2. The required strategy for safe tank entry is to take measures to remove the hazards and then have an emergency response plan for extricating workers in case something unexpected occurs.

3. After water is drained, depressurize and mechanically blank off the incoming water line(s) and physically lock the water valve(s) closed.

4. Physically lock out electrical circuits supplying any electrical equipment such as water pumps Contained in the tank.

5. Ventilation should be provided whenever anyone is in the tank. If work stops for a day or so, ventilate for another 24 hours before anyone can re-enter.

6. Tank workers have appropriate personal Protective equipment for the job. i.e. Eye protection, full body harness etc.

7. Use of electrical mechanical means i.e. grinders etc. Is not recommended since they can create more severe hazards including high particulate levels, severe hazardous noise problems and possibly electrical hazards.

8. Any individual working inside the tank should be equipped with a safety harness/lifeline.

9. One Individual should always be outside the tank monitoring the operation, available to implement emergency extraction of workers should the need arise.

4. CHEMICAL HANDLING & STORAGE - STP

a) Safety Procedure

MSDS — Materials Safety Data Sheet

MSDS shall include the following:

a) Name of chemical
b) Physical and Chemical properties
c) Hazard Classification
d) Reactivity
e) Explosive properties
f) Poisonous properties
g) Caution remarks for transport, handling and storage

h) First aid and firefighting measures
i) Caution remarks for waste disposal management

b) Storage Guidelines

1. Storage areas are secured when not in use and are available to authorized personnel only.
2. Storage areas are well illuminated.
3. Open flames, smoking and localized heating units are not permitted near storage areas.
4. Aisles surrounding storage areas are free from obstruction and other tripping hazards.
5. The limit of chemical storage quantity shall be mentioned.
6. Chemicals shall not be exposed to direct sunlight or localized heat.
7. It is recommended that containers of corrosive chemicals to be stored in trays large enough to contain spillage or leakage.
8. Chemicals are stored by reactive class as indicated on MSDS (i.e. flammables with flammables, oxidizers with oxidizers).
9. MSDS for each of the chemical must be consulted for proper storage instructions and should be accessible to the storage area.
10. New chemicals shall be segregated from waste chemicals.
11. Spillage of chemicals on ground shall be avoided.
12. Concrete surface shall be provided for storage of chemicals to avoid soil contamination.

c) Shelf Storage

1. Containers shall not be stored on shelves no higher than waist level.
2. Containers of chemicals are stored at or below eye level, where possible.
3. Containers do not protrude over the shelf edges.
4. Enough storage space is allotted, ensuring that shelves are not crowded.
5. The weight limit of the shelves is not exceeded.
6. Shelves are clean, free from chemical contamination.

d) Storage Containers

1. Storage containers are inspected periodically for rust, corrosion and leakage.
2. Damaged containers are replaced or repaired immediately.
3. Chemicals are stored in sealed containers.

4. Stoppers are easily removed from containers.

e) Chemical Handling

1. Carefully read the ingredient list of any product or chemical to be used.
2. Ensure the label to be displayed on any chemical containers.
3. Use proper personal protective equipment like gloves, goggles, safety shoes and aprons.
4. Follow MSDS or safe procedures when handle hazardous material. Do not take shortcuts.
5. Do not mix or combine hazardous materials unless you know you can do so safely.
6. Always carry chemicals in approved containers.
7. Always wash hands after using chemicals material.

f) Spillage Management (How to deal with a chemical spill)

1. Wear appropriate PPE (gloves, safety shoes, safety goggles etc.) as indicated on MSDS.
2. Open doors and windows.
3. Use cat litter to firstly surround the spill, and then pour all over the chemical to absorb it.
4. Use the plastic dustpan to scoop the chemically-damp material into a plastic bucket.
5. Re-cover the affected area with more cat litter to ensure all of spilt chemical has been absorbed and scoop up.
6. Contain the spillage with earth or sand and neutralize carefully with soda ash or sodium bicarbonate or as indicated on MSDS.
7. Wash the affected area with excess water. Some detergent may help.
8. Clean up and leave area dry.
9. Dispose-off damp solid as chemical waste.
10. Know where the fire extinguisher is.

g) Checking

1. Plant In charge to carry out Store inspection.

h) Personal Protective Equipment (PPE)

Personal protective equipment (PPE) can protect you against chemical and physical hazard exposure. PPE includes eye protection, gloves, maximum skin coverage and closed toe shoes. In some cases, protection such as

aprons, respirators, splash shields, ear plugs, and specialized gloves may be recommended or required.

5. SAFETY IN CHEMICAL LABORATORY

a) Safety Procedure

1. Laboratory is used for analysis of water and sewage water samples. Glass wares, plastic wares and containers are used to handle chemicals and samples. Hazard of glass breakage should be understood and handle such glass wares carefully. Rubber and flexible tubes should be checked frequently and replaced periodically. Their connections should be checked and kept leak proof. Laboratory instruments, equipment and reactors should never be subjected to over pressure, temperature, speed etc. Necessary PPE and apron should be used. Safety showers and wash basins should be provided for washing hands etc.

2. More opening will make the suction weak and gas/vapor may also come out.

3. Wash skin promptly if contacted by any chemical, regardless of corrosivity or toxicity.

4. Waste collection bins or to trolleys and should be used to clean and collect wastes from the floor.

5. Batch sheets should be used for recording of the process and necessary instructions should be mentioned for the next shift worker if the process is to continue in the next shift.

6. Room exhaust and process exhaust systems should be provided and run efficiently.

7. Cupboards, shelves and racks are used to put small bottles, equipment etc. Necessary stool or support should be used while working with them. Laboratory should be kept clean, attractive and without any smell, dust or dirtiness.

b) Safety And Emergency Equipment For The Laboratory

- **Personal Protective Equipment**

1. Chemical splash goggles
2. Face shields
3. Lab coat
4. Lab apron
5. Gloves (selected based on the material being handled and the particular hazard involved)

- **Safety and Emergency Equipment**

1. Hand-free eye-wash stations

2. Deluge safety showers
3. Safety shields with heavy base
4. Fire extinguishers (DCP and CO2)
5. Sand bucket
6. Emergency lights
7. Emergency signs
8. First-aid kit
9. Spill control kit (absorbent and neutralizing agents)
10. Chemical storage cabinets (preferably with an explosion proof ventilation system)
11. Container for broken glass and sharps
12. Material safety data sheets

c) General Rules for Chemical Storage

- **Criteria for storage area**

1. Chemicals (including waste) must be separated and stored according to their hazard group and specific chemical incompatibilities.
2. A defined storage place should be provided for each chemical and the chemical should be returned to that location after each use.
3. Chemical containers must be in good condition before they are stored. Containers must be managed to prevent leaks.
4. Manufacturer chemical labels must never be removed or defaced until the chemical is completely used.
5. All chemical containers must be labelled to identify the container contents (no abbreviations or formulas) and should identify hazard information.
6. Store chemicals inside a closable cabinet or on shelf with a front-edged lift to prevent accident and chemicals spills
7. Secure shelving to the wall or floor
8. Ensure that all storage areas have doors with locks
9. Keep chemical storage areas off limits to all persons
10. Ventilate storage area adequately.

d) Organization

11. Organize chemicals first by compatibility – not alphabetic succession.

e) Chemical Segregation

12. Store acids in a dedicated acid cabinet. Nitric acid should be stored alone unless the cabinet provides a separate compartment for nitric acid storage.

13. Store highly toxic chemicals in a dedicated, lockable poison cabinet that has been labelled with a highly visible sign.

14. Store volatile and odoriferous chemicals in a ventilated cabinet.

15. Store flammables in an approved flammable liquid storage cabinet

16. Store water sensitive chemicals in a watertight cabinet in a cool and dry location segregated from all other chemicals in the laboratory.

f) Storage Don'ts

17. Do not place heavy materials, liquid chemicals, and large containers on high shelves.

18. Do not store chemicals on top of cabinets.

19. Do not store chemicals on the floor, even temporarily.

20. Do not store items on bench tops and in laboratory chemicals hoods, except when in use.

21. Do not store chemicals on shelves above eye level.

22. Do not store chemicals with food and drink.

23. Do not store chemicals in personal staff refrigerators, even temporarily.

24. Do not expose stored chemicals to direct heat or sun light, or highly variable temperatures. Smell chemicals, taste chemicals, or pipette by mouth.

g) Proper use of chemical storage containers

1. Never use food containers for chemicals storage.

2. Make sure all containers are properly closed.

3. After each use, carefully wipe down the outside of the container with a paper towel before returning it to the storage area. Properly disposed of the paper after use.

6. **GLOSSARY/DEFINITIONS**

Confined Space: A confined space is a place that is substantially (although not always entirely) enclosed where there is a risk of death or serious injury from hazardous substances or dangerous conditions (e.g. lack of oxygen).

Attendant: The attendant is the individual stationed outside a permit space to perform attendant duties. The attendant's major function is to monitor and protect the authorized entrants.

MSDS - Material Safety Data Sheet.

Autoignition Temperature - The lowest temperature at which a substance will burst into flames without a source of ignition like a spark or flame. The lower the ignition temperature, the more likely the substance is going to be a fire hazard.

Boiling Point - The temperature of a liquid at which its vapor pressure is equal to the gas pressure over it. With added energy, all of the liquid could become vapor. Boiling occurs when the liquid's vapor pressure is just higher than the pressure over it.

Chronic Health Effect - An adverse effect with symptoms that develop or recur very slowly, or over long periods of time as a result of continued or periodic exposure to the offending agent.

Combustible - A material that will burn under most conditions.

Explosive - A chemical that causes a sudden, almost instantaneous release of pressure, gas, and heat when subjected to sudden shock, pressure, or high temperature.

Explosive Limits - The amounts of vapor in air which forms explosive mixtures. Explosive limits are expressed as Lower Explosive Limit (LEL) and Upper Explosive Limit (UEL). These give the range of vapor concentrations in air which will explode if heat is added. Explosive limits are expressed as per cent of vapor in air.

Eye/Skin Irritant - A chemical which irritates the eye or skin.

Flash Point - The minimum temperature in degrees Fahrenheit at which a liquid will give off sufficient vapors to form an ignitable mixture with air near the surface or in the container.

Toxic- Poisonous. Causes adverse health effects when the body is exposed.

Threshold Limit Value (TLV) - Term used by the ACGIH to express the maximum airborne concentration of a material to which most workers can be exposed during a normal daily and weekly work schedule (i.e., day-after-day) without adverse health effects.

pH - a figure expressing the acidity or alkalinity of a solution on a logarithmic scale on which 7 is neutral, lower values are more acid and higher values more alkaline.

Drain Line - A pipe or conduit from a water conditioning unit used to carry backwash water, regeneration wastes and/or rinse water to a drain or waste system by gravity.

Respiratory protection - The primary objective of the respiratory protection program is to prevent exposure to air contaminated with harmful dusts, fogs, fumes, mists, gases, smokes, vapors, or sprays, and thus to prevent occupational illness.

Electrical Lockout - Electrical Lockout equipment is used for locking out switched off circuit breakers, preventing re-energizing, to control dissipation of residual energy, to ground electricity and also to effectively tagout equipment.

Risk - A situation involving exposure to danger.

Hazard - A hazard is something that has the potential to cause harm.

Full Body Harness - A full body harness is a body support device that distributes fall arrest forces across the shoulders, thighs and pelvis.

ACCIDENTS

In case of injury or serious illness of a worker, the PURCHASER/ CONSULTANT shall be notified immediately. All accidents shall be recorded by filling in the 'Accident Report' form, which shall be kept in easy accessible location in the site office of the CONTRACTOR. Any 'Near Miss's incident shall also be reported by the CONTRACTOR and recorded.

INSURANCE

All the CONTRACTOR's workmen shall be covered under the Employees State Insurance Scheme, Janata Policy or any other scheme which may be specified by the Statutory Authorities from time to time.

REVIEW MEETING

The PURCHASER/CONSULTANT shall conduct fortnightly Safety Review Meeting to review the safety conditions practiced at work areas by the CONTRACTOR.

WORK AFTER NORMAL WORKING HOURS

1. Extra care shall be taken for jobs to be carried out after normal working hours with due revalidated work permit and supervised by the CONTRACTOR's site-in-charge. The site-in-charge shall make available his residential address and telephone number to the PURCHASER/CONSULTANT so that he can be contacted in case of an emergency.

2. Proper lighting shall be ensured at the workplace for any work carried out after the normal working hours.

CONVEYANCE FOR EMERGENCY

The CONTRACTOR shall ensure that conveyance and person with driving license is available at site at all times of work execution so that in case of an accident, the victim can be rushed to nearest medical Center.

EMERGENCY PROCEDURES

1.0 The CONTRACTOR shall familiarize himself with the emergency procedures, which apply to plants and areas in which his men are working.

2.0 First Aid Box shall be kept in the CONTRACTOR's site office. The CONTRACTOR's site-in-charge and his key supervisors shall be trained in administering first aid, preliminary treatment for electrical shocks, fall from height and burns etc.

3.0 When an emergency condition exists or on hearing the 'Stop Work Alarm' every supervisor shall ensure:

(a) All work is stopped at once.

(b) All equipment is shutdown.

(c) All men are evacuated to a pre-determined assembly point.

(d) A roll call is taken and every man is accounted for.

(e) No one shall be permitted to return to work until notification has been received from a responsible authorized agency that it is safe to do so.

RESPONSIBILITY OF THE CONTRACTOR'S SITE INCHARGE

His primary responsibility is safety of personnel and equipment. He shall:

1 Understand the company's policy on maintaining safe working environment and appciate the responsibility allocated to each grade of supervision.

2 Know the safety requirements and relevant Government Regulations, and ensure their implementation.

3 Ensure that sound, safe working methods and reasonable welfare facilities are provided for workers.

4 Determine at the planning stage the following:

(a) The most appropriate order and method of working

(b) Allocation of responsibilities to supervisors

(c) Storage areas and access etc.

(d) Hazards which may arise from overhead or underground services

(e) Facilities for welfare, first aid and sanitation

(f) Work permit procedures and requirements

(g) Basic fire precautions

(h) Provide written instructions to establish work methods, to explain the sequence of operations, to outline potential hazards at each stage and to indicate precautions to be adopted.

SOP for "Permission to use Portable Power Tools"

A. Objective

The objective of this SOP for permission to use Portable Power tools is to prevent the potential injuries that may occur due to use of unsafe and faulty portable power tools by inspection and verification program for the

tools at regular intervals. It lays out the methodology of the systematic recurrent inspection program.

The agency or the contractor shall be solely responsible to keep the tools in healthy condition and any liability occurring due to use of unfit and unsafe tool shall be of the contractor even if the tools has been inspected and certified for use by GIFT Safety dept under this program.

B. Scope

The scope of this program covers all the portable power tools available at GIFTCL Project sites (DTA & SEZ), Buildings & Utilities plants being used by GIFT team or subcontractors.

Definition of Power Tools:

"Tools that are powered by electricity, hydraulic, pneumatic or any fuel."

General list of tools under this definition is given below:

1. Drills
2. Concrete breaking m/c
3. Grinding
4. Cutting,
5. Spraying
6. Bar bending
7. Cutting m/c
8. Circular saw
9. Chain saw
10. Saw
11. Air blower
12. Hedge cutter

13. Brush cutter
14. Lawn mower
15. Welding m/s

This is the general list of tools but is not limited to the list given to which the Safety Tag Policy applies. Any other such tools that may fall in the category of the power tool, required to carry out work at site which has the potential to harm or can cause health hazard to the user or other peoples in the vicinity shall also falls under the category of the power tool that will required to be governed by the GIFT Safety Sops of power tool.

C. Procedure for Inspection and Verification of Power Tools and Providing "Safety Tool Tag"

Initially all the tools for the existing on-going work at site and at Utility Plants shall be inspected for the first time and appropriate Safety Tag shall be issued.

Subsequently, whenever the contractor or the Utility plant acquires a new power tool at site, the GIFT Safety Officer or GIFT site supervisor shall be informed within 8 hours for inspection and tagging.

Upon receiving the tool inspection request, the Safety Officer or his representative shall visit the work site or Utility plant to inspect the tools and issue the Safety Tag within 12 hours.

After informing the GIFT Safety officer / GIFT Site supervisor the contractor is free to use the tool duly following the Safety Sops and shall not be required to liaison or follow up for the inspection and Safety Tool Tag (STT).

1. Once in every Six months (Half Yearly), all the portable power tools being actively use at Project site and/or Utility Plants belonging to the contractor or GIFT (In-House) shall be inspected & approved for use jointly by the following:
    i. GIFT Site supervisor / Safety Warden
    ii. GIFT Safety Officer
2. Inspection shall be carried out at respective Utility Plant rooms and Project sites in coordination with the Safety Dept, GIFT site supervisor & Contractor's shift supervisor. The contractor and Utility Plant supervisor shall co-operate in the inspection process.
3. Every power tool in use shall be inspected and issued with a Safety Tool Tag (Green or Red) with unique Serial Tag Number and entered in Safety Officer Register for Power Tools. The Tag issued will be pasted on each tool to declare if the tool is fit or Un-fit for use.

Tool Tag:

1. Two types of Safety Tags, Green and Red will be issued. Each Power Tool under active use with contractor or Utility plant must have a at least one Safety Tool Tag, Green or Red, otherwise the tool may be confiscated by GIFT Safety Dept. Only authorized person shall be eligible to provide the Tool Tag.

Green Tag:

a. In case of a green tag, it shall be pasted on each power tool with Tag Number, if the tool/equipment is in safe and Fit for Use.

b. No tool is allowed to be used without a Green Tool Tag.

GIFT SAFETY DEPARTMENT TOOL & EQUIPMENT TAG		FIT FOR USE
TAG NO		
TYPE OF EQUIPMENT	DEPARTMENT	
EQUIPMENT OWNER		
SERIAL NO/ ID NO		
INSPECTION DATE		
VALID UPTO		
INSPECTED BY	SIGN.	
WARNING: Up to Rs. 5000/- PENALTY FOR MISUSE OR TAMPERING WITH INSPECTION TAG		

Red Tag:

a. A Red tag shall be pasted on power tool with Tag Number, if the tools is not found to be in good working condition and may cause accident.

b. Tool with Red Tag is Not Allowed to be used. Such tool shall have to be repaired by the owner and subsequently represent for inspection after which if the tool is found safe the Red Tag will be removed and a Green Tag will be provided by authorized person.

GIFT SAFETY DEPARTMENT TOOL & EQUIPMENT TAG		NOT FIT FOR USE
TAG NO		
TYPE OF EQUIPMENT	DEPARTMENT	
EQUIPMENT OWNER		
SERIAL NO/ ID NO		
INSPECTION DATE		
INSPECTED BY	SIGN.	
WARNING: Up to Rs. 5000/- PENALTY FOR MISUSE OR TAMPERING WITH INSPECTION TAG		

c. No Tag (Green or Red) can be provided/pasted or removed by any person other than who is authorized for this purpose.

It is the responsibility of contractor to ensure that all portable power tools must be inspected thoroughly prior to use and where the damage is evident, the tool/equipment must be removed from service immediately. The record of the inspection shall be maintained by respective contractor in register.

It is the responsibility of the contractor that before starting any new contract work at site he should inform the GIFT Safety office and get all his power tools inspected and obtain the Safety Tag from the GIFT Safety Officer.

In case if a new power tool is introduced during an ongoing work at site, it should be informed GIFT Safety Officer and request for a Safety Tool Tag. Failing to do so will disqualify the tool owner from using the tool and invite penalty.

D. Confiscation & Release of Power tool

Power tools may be confiscated by GIFT Safety Dept. under the following safety violations circumstance:

a. Power Tool in active use with contractor or Utility plant but without having Green Safety Tool Tag.
b. Power tool found in use with Green Tag but in unsafe condition.
c. Power tool with Green Tag with tampered date, Tag torn or appear to be replaced or duplicated.
d. Tool found at site but not registered with GIFT Safety Dept and not having any Safety Tag (Red/Green)

Method for Release of Power Tool

Confiscated power tools shall be released only after following conditions:

1. Undertaking to comply with the GIFT Safety SOP, violation against which the tool was confiscated.

2. Payment of Penalty as applicable.

E. Safety Violations

The Contractor shall be penalized under following circumstances if any safety violation pertaining to power tools/equipment shall be observed.

a. No tool or equipment shall be present at site even if not in use without Safety Tool Tag (STT) – Penalty Rs.2000/- for each tool.

b. Any misuse or tampering with Safety Tool Tag (STT) Red or Green, if observed during inspection by GIFT Safety official, a penalty may be imposed on contractor or tool owner up to Rs. 3000/-.

c. In case if the Tool having Red Safety Tool Tag or without any Safety Tool Tag (STT) is found being used, a penalty of Rs. 5000/- .

d. The contractor shall be penalized as per the given table for using power tool with Green Safety Tool Tag having following safety violations:

Sr. No	**Safety Violation in Power tool/Equipment**	**Penalty Amount**
1	Usage of Single insulated cable	Rs. 1000/-
2	Non provision of guard in rotating parts	Rs. 1000/-
3	Using nonstandard Abrasive wheel	Rs. 500/-
4	Non provision of insulated grip in tool/equipment	Rs. 500/-

5	Inserting Bare wire for connection of tool	Rs. 500/-
6	Not using appropriate PPEs while using tool	Rs. 500/-
7	Usage of Damaged plug sockets	Rs. 500/-
8	Using damage tool (Damage physical condition)	Rs. 2000/-

The responsibility of properly and safely using the power tools at site shall solely remain with the original owner as registered with GIFT SAFETY Dept. even if the tool is used by person other than the tool owner.

Green & Red Inspection Tag

	GIFT SAFETY DEPARTMENT TOOL & EQUIPMENT TAG	**FIT FOR USE**
TAG NO		
TYPE OF EQUIPMENT	DEPARTMENT	
EQUIPMENT OWNER		
SERIAL NO/ ID NO		
INSPECTION DATE		
VALID UPTO		
INSPECTED BY	SIGN.	
WARNING: Up to Rs. 5000/- PENALTY FOR MISUSE OR TAMPERING WITH INSPECTION TAG		
	GIFT SAFETY DEPARTMENT TOOL & EQUIPMENT TAG	**NOT FIT FOR USE**
TAG NO		
TYPE OF EQUIPMENT	DEPARTMENT	
EQUIPMENT OWNER		
SERIAL NO/ ID NO		
INSPECTION DATE		
INSPECTED BY	SIGN.	
WARNING: Up to Rs. 5000/- PENALTY FOR MISUSE OR TAMPERING WITH INSPECTION TAG		

F. Guidelines for safe use of power tools:

General:

While using portable power tools the user must follow manufacturer's instructions.

1. Only trained and/or experienced operators may use/operate tools or equipment. Tools and equipment shall not be modified, and they are to be used only for their designed purpose. It shall be the responsibility of the operator to inspect tools and equipment prior to use and to use all tools and equipment in a safe manner.
2. Misuse of power tool, altering, modifying the tools or equipment shall not allowed.
3. Operator shall wear all appropriate personal protective equipment while using tools and equipment. Additionally, if a tool or piece of equipment is found to be defective, the tool/equipment should not be used and sent for repair /replacement.

Mechanical Safety:

1. Read & understand the owner's/user manual for each portable power tool expected to be used by the operator. The manual should address the tool's
   proper use, limitations, proper operation, hazards, PPE, storage and maintenance practice applicable to the equipment.
2. Safety mechanisms, such as machine guards and safety switches, must never be removed or disabled.

3. While using portable power tools, unauthorized personnel must keep clear of the work area.
4. Utilize appropriate signage to indicate when portable power tools are in use and clearly define restricted areas.
5. Power tools to be regularly maintained.
6. Wear appropriate PPE during the use of power tools including hand, head, eye, foot, hearing and body protection. Loose clothing, long hair, ties, or jewelry can be drawn into the moving parts.
7. Maximum RPM rating of the abrasive wheel must be compatible with the RPM rating of the grinder/cutter motor.
8. Abrasive wheel must be of IS standard.
9. All moving/rotating parts of the power tools must be guarded to prevent physical contact.
10. All tools shall be kept in good working condition and safely stored.
11. Use the right tool for the particular task instead of trying to make the wrong one fit.
12. Check tools and equipment prior to use for any defects, wear and tear or damage.
13. Contractor's supervisor shall be responsible to ensure that only trained operator use specific tool.
14. Do not hold power tools from start switch or finger on trigger while transporting or moving from one place to other to prevent accidental start.

Electrical Safety

1. Cable of Electric power tools must be double-insulated and properly grounded.
2. Appropriate PPE will be used while using power tools.
3. All electrical tools and power cords must be inspected for defects like cut, multiple joints, insulation damage. Connection to be made through plug socket.
4. Operator shall avoid loose fitting clothing when operating power tools.
5. The power source on tools shall be physically disconnected prior to attempting any repairs or attachment replacement.
6. Protective guards must be used on rotating / cutting equipment.
7. Electrical tools shall not be hoisted or carried by their power cords.
8. Cords are tripping hazards. Route them overhead, to prevent interference in walkways.

It is preferred to use Ground Fault Circuit Interrupter (GFCI) with automatic electrical circuit breaking as safety device for protection against ground faults

SECTION 10

CONTRACTORS HEALTH AND SAFETY PROGRAMME

SECTION 10

CONTRACTORS HEALTH AND SAFETY PROGRAMME

1.0 SAFETY ORGANISATION

1.1 HEALTH AND SAFETY POLICY

The CONTRACTOR's organisation shall have a written HEALTH AND SAFETY POLICY (POLICY) issued by the Chief Executive of the organisation, appropriate to the scale and nature of the risks involved in the CONTRACT works. A copy of the POLICY shall be made available to the PURCHASER at the time of the award of the CONTRACT in evidence of the CONTRACTOR's commitment to management of employee's health and safety and compliance to statutory and regulatory requirements. The POLICY along with its component operation procedures shall be evidenced as working document publicised among the CONTRACTOR's and his SUB-CONTRACTORS' employees through appropriate language/s. All the CONTRACTOR's employees shall be familiar with the POLICY and their role and obligations in its implementation. The POLICY shall meet the relevant statutory and regulatory requirements and the requirements of the PURCHASER/CONSULTANT. The POLICY shall periodically be reviewed for updating with respect to new and emerging legal and other requirements.

1.2 SAFETY REPRESENTATIVE

1.2.1 The CONTRACTOR shall appoint a Safety Representative (SR) meeting statutory competence requirements, with a minimum experience of five years of safety management in comparable contracts, approved by the PURCHASER on the basis of his qualification and experience. The SR shall give his whole time to the superintendence of the 'Health and Safety Programme' of the CONTRACTOR

1.2.2 The CONTRACTOR shall also nominate in writing competent Safety Appointees (SAs) from various disciplines to assist the SR in implementation of health and safety measures in their routine contract works. The SR shall have sufficient authority to direct the CONTRACTOR's or his SUB-CONTRACTOR's personnel to meet health and safety requirements and to stop performance of work until such requirements are met.

1.3 EMPLOYEE CONSULTATIONS, SAFETY COMMITTEE AND COMMUNICATION

1.3.1 The CONTRACTOR shall ensure full involvement of all his employees recognising their right to consultation on health and safety matters. The safety appointees of the various areas, in conjunction with the SR shall be responsible for ensuring employees' involvement through routine safety inspections, hazard and risk assessment in new and changed works and their control. The CONTRACTOR shall maintain appropriate operating procedures to guide these requirements.

1.3.2 The CONTRACTOR shall also appoint a Safety Committee (SC) comprising of

the SAs from the various areas under the chairmanship of the SR. The committee shall meet at periodic intervals to discuss the status and adequacy of the safety management, and any safety concerns of the employees. The committee shall also formulate and validate the safety procedures incorporating controls to prevent or mitigate hazards and risks before submission for approval by the PURCHASER/CONSULTANT. The minutes of the SC meeting shall be submitted to the PURCHASER/CONSULTANT. The SR shall maintain the records of the meetings.

1.3.3 The CONTRACTOR shall communicate to the employees regularly on job hazards applicable to their tasks in hand. The SAs or any of the SR's nominees shall hold 'Toolbox Talks' for this purpose on a routine basis before undertaking any safety critical and/or non-routine activities. Weekly meetings of the CONTRACTOR and his SUB-CONTRACTORS attended by the SR and the SAs shall include safety as a key item in the agenda to discuss hazards and risk assessments, job safety analysis and control procedures and to review accidents and incidents (Near-miss) for remedial measures to prevent such occurrence. The minutes of the meeting shall be submitted to the PURCHASER/CONSULTANT. The SR shall maintain the records.

1.4 CONTRACTOR'S SAFETY REPORTS

1.4.1 The CONTRACTOR shall submit a monthly written report to the PURCHASER/ CONSULTANT, which shall be due on the fifth workday of every month. The health and safety of all full time, part-time, permanent, temporary, contract employees and any outsourced employee undertaking any part of the CONTRACT works shall be included in the safety report. The report shall include the total number of working hours for the month, the number of recordable accidents and the number of lost-time accidents. A cumulative trend plot of the monthly severity and frequency rate of the reportable accidents shall be included in the monthly safety report and calculated as:

$$\frac{\text{LOST MANDAYS DUE TO LOSS-TIME INJURIES} \times 1{,}000{,}000}{\text{MANHOURS WORKED}}$$

$$\text{FREQUENCY} = \frac{\text{NUMBER OF LOST TIME INJURY} \times 1{,}000{,}000}{\text{MANHOURS WORKED}}$$

1.4.2 The CONTRACTOR shall arrange to display the safety statistics and the cumulative plot of severity and frequency of accidents mentioned above painted on a board prominently displayed, as a means of encouragement and assurance to all interested parties and for publicising the safety achievements.

1.5 CONTRACTOR'S ACCIDENT/INCIDENT REPORTS

1.5.1 ‘Accident’ for the purpose of this para is defined as ‘Undesired Event Giving Rise to Death, Ill-health, Injury, Damage or other Loss’ and ‘Incident’ is defined as ‘Event that gave rise to an Accident or had the Potential to lead to an Accident’. An accident where no ill health, injury, damage or other loss occurs is also referred to as ‘Near-Miss’. Incident includes Near-Miss. The

CONTRACTOR shall report orally, to the PURCHASER/CONSULTANT regardless of their extent, duration and severity, immediately on occurrence of all accidents resulting in:

(a) Personal injury

(b) Property damage

(c) Fires

(d) Spills

(e) Near-Misses

1.5.2 The CONTRACTOR shall submit the accident and incident report in writing to the PURCHASER/CONSULTANT within 24 hours of its happening in the form as prescribed by the governing statute or in the absence of which, in the form prescribed by the PURCHASER/CONSULTANT. The CONTRACTOR shall detail in the 'Accident/Incident Report', the particulars of the dangerous occurrence leading to the accident, lost time of absence due to accident, root cause analysis and the corrective and preventive actions to prevent such recurrence. In addition, the CONTRACTOR shall include his estimate of the impact of accident on project schedule. Incidents shall also be reported in the same manner identifying root cause/s to eliminate such potential occurrence or risks.

1.6 FIRST-AID PERSONNEL AND FACILITIES

1.6.1 The CONTRACTOR shall make available first-aiders, first-aid boxes and or first-aid stations as per statutory requirements. The persons holding current certificates of competency of recognised institutions in prescribed numbers as per any governing statute and in the absence of such regulatory requirement a minimum of two first-aiders for each area of work for every hundred workmen. First-aiders' names shall be prominently displayed.

1.6.2 The first-aid boxes shall display contents of medical and medicinal articles with quantity maintained, which shall be in accordance with governing statute. Nominated first-aider shall replenish stock promptly.

1.6.3 The first-aid refresher training shall be provided at least once in a year and all employees shall be encouraged to undergo first-aid training. A record shall be kept of all first aid treatments with particulars of treatment and personnel providing the treatment.

1.7 OCCUPATIONAL HEALTH CENTRE

1.7.1 Where required by the CONTRACT, the CONTRACTOR shall establish and maintain an Occupational Health Centre where hazardous Processes are involved such as roof work, steel work, working above or below water, demolition and confined space. Where the PURCHASER maintains the Occupational Health Centre facilitating the CONTRACTOR, such a facility shall meet the requirements laid by the governing statute and this shall be stated in the CONTRACT. Where the CONTRACTOR out-sources such facility, it shall meet the statutory requirements and shall be approved by the

PURCHASER/CONSULTANT and the statutory body.

1.7.2 The Occupational Health Centre shall be served by a full time medical officer holding a medical degree in allopathic medicine with a minimum of five years experience in Occupational Health/Medicine. A nurse, one dresser/compounder and one sweeper-cum-ward boy who will all be available during entire construction operation during the day shall assist the medical officer. One additional Medical Officer shall be posted for every additional thousand Construction workmen along with the team of nurse, compounder and ward boy

1.7.3 The Occupational Health Centre shall be capable of undertaking emergency care services or emergency treatment facilities which shall include emergency life saving aids and appliances to handle head and spinal injuries, severe fractures, snake bites, burns of all nature, electric shocks, cases of asphyxiation and such other severe injuries as could be reasonably anticipated at the facilities and shall meet provisions of any governing statute.

1.8 AMBULANCE ROOM AND AMBULANCE VANS

The PURCHASER shall arrange for an ambulance room and an ambulance van directly or outsource the facilities meeting the governing statutory needs for prompt transportation of serious cases accident and or sickness to the hospital. Such facilities shall be maintained in good repair and equipped with facilities such as dry powder type extinguishers, flashlights, portable oxygen unit, self-contained breathing apparatus etc. as prescribed by the governing statute.

1.9 INDUCTION AND JOB-SAFETY TRAINING

1.9.1 The CONTRACTOR shall maintain a procedure for identification of the training needs and training his employees to create a health and safety conscious work-force that will comply with the law and safety requirements of the Organisation. He shall also maintain a procedure for safety induction and initial training as well as follow-up training on the job safety for new entrants. All employees shall receive effective training and periodic refresher training on the operation control procedures specific to their tasks designed to control the job-safety risks. A booklet of such operation control procedures and safety rules with need based pictorial illustrations shall be made available to all employees who are to learn and be familiar with such procedures. All training shall be monitored for effectiveness as per established procedures. The CONTRACTOR shall maintain records of all training.

1.9.2 The SR and the SAs shall conduct regular fortnightly or weekly mock-safety drills for different imaginary accident scenarios, in premeditated work areas to provide on-job training such as:

(a) Use of safety appliances such as water monitors, hydrants, hydrant pumps, fire-hoses, extinguishers, breathing apparatus and safety harness for working at height,

(b) Response to health and safety emergencies,

(c) fighting fires using various equipment and

(d) First-aid

1.9.3 Participants shall receive training during mock-drills through role-play of their normal expected tasks during emergencies and fire fighting. The degree of demonstrated ability in the chosen tasks during such safety drills shall be recorded as participants' competence level for planning his further training. The experience gained in mock drills shall be used to update of operational control procedures and the training needs. The roster of participants and contents for routine mock-drills shall be appropriately planned to cover all employees in the training at least once in four months.

1.9.4 The SR and the SAs shall be trained on a standardised comprehensive advanced training programme covering safety management, legal aspects, techniques of hazard identification and risk assessment and specific job-safety in various disciplines such as Civil, Electrical, Instrumentation and Mechanical plant and equipment of the CONTRACTOR. The training records shall be maintained subject to audit by the PURCHASER/CONSULTANT. Training effectiveness shall be assessed and recorded and used as input for further training plans of the employee.

1.10 HEALTH AND SAFETY PROMOTION

Safety posters, banners and slogans displayed for safety promotion shall be rotated at frequent intervals. The CONTRACTOR is encouraged to have safety promotion as an item in the SC agenda. The CONTRACTOR is encouraged to include safety promotion programmes such as: safety bulletins, magazines, competitions in slogan and poetry writing on safety, screening of safety films, celebration of national safety and environmental day, safety suggestion schemes and safety library etc.

1.11 PURCHASE AND PROCUREMENT CONTROL

1.11.1 The CONTRACTOR shall maintain a procedure for control of his purchases to ensure that all safety requirements are appropriately vetted by the safety personnel during all stages of procurement including planning of specifications, inspection for acceptance and commissioning in order that threats to safety are not overlooked and appropriate attention is paid to the training of personnel in the operation of the CONTRACTOR's new or changed machinery and their operation control procedures, to prevent/control risks.

1.11.2 The CONTRACTOR shall exercise due diligence in appointing his SUB-CONTRACTORS and outsourcing contract services, that no new health and safety threats are created. The CONTRACTOR shall ensure personnel of SUB-CONTRACTORS and outsourced contract services are competent in health and safety management to meet the POLICY requirements. They shall be made aware of the safety rules, emergency procedures and any information that will have a bearing on the safety, health and related contractual obligations

1.12 HAZARD IDENTIFICATION AND RISK ASSESSMENT

1.12.1 The CONTRACTOR shall ensure that his key personnel and safety personnel are trained to be competent in hazard identification, risk assessment and risk control processes. The CONTRACTOR shall on a routine basis identify,

evaluate and control all health and safety risks especially in the hazardous work activities and also to validate the previous risk assessments. Elements such as hazard identification, evaluation of risks with existing control measures in place and estimate of tolerability of the residual risks shall be an ongoing process. Any additional/New control measures shall be designed based on this process on need basis.

1.12.2 The CONTRACTOR shall maintain a Hazard Identification, Risk Analysis and Risk Control Manual (HIRARC) pertaining to all his activities duly updated as detailed above. The HIRARC manual shall be made available to the PURCHASER/CONSULTANT during regular inspections and audits

1.13 WORK PERMITS

1.13.1 The CONTRACTOR shall maintain a work permit procedure to limit the hazardous processes and high risks tasks to authorised personnel, who shall be informed of the job safety analysis and the job specific safety precautions, on issue of a work-permit. The work permit issued under the procedure shall be valid for a specified period and shall be issued only after all safety precautions are fulfilled and duly verified by the SR or the SA or specialist who is authorised for safety certification as a prerequisite for issue of a work permit. The work permit shall be appropriate for the purpose for which it is issued. Various work-permits are:

(a) Safety Work Permit (SWP)

SWP is mandatory for working at heights, on fragile roofs such as asbestos or such roofing works, steel erection, work over water, a live substation or switch-yard even if section of work is not electrically charged, demolition, blasting and such potentially hazardous CONTRACT works in the opinion of the PURCHASER/CONSULTANT.

(b) Hot Work Permit (HWP)

HWP shall be used where hot working, like electric or gas welding, gas cutting, or burning or any other operation involving heating, open flames or electric arcs, grinding and electrical works etc. are potentially dangerous in areas such as inflammable materials storage, plant and pipe lines handling inflammable and or explosive materials either presently or in the past, or where new works are undertaken adjoining such works which in the opinion of the PURCHASER/CONSULTANT are potential risks. A HWP shall be deemed mandatory in all such potentially dangerous areas. The CONTRACTOR shall get areas such as welding shops or maintenance areas approved by the PURCHASER/CONSULTANT for 'Permit-Free' operation.

(c) Confined Space Entry Permit (CSP)

CSP is issued for entering and carrying out tasks in confined space. Confined space for the purpose of this para is defined as an enclosed or partially enclosed space which is not intended or designed primarily as a work place and

(i) is at atmospheric pressure during occupancy

(ii) has restricted entry and exit

(iii) has potentially harmful level of toxic or inflammable contaminant or unsafe level of oxygen

(iv) is of a nature that could contribute to overwhelming a person by an unsafe atmosphere

(v) has a potential that safety on entry could be affected by unsafe conditions stated above by accident or due to human errors

Confined spaces shall include but not limited to storage tanks, process vessels, bins, boilers, ventilation or exhaust ducts, sewers, underground utility vaults, tunnels, pipelines and open top spaces more than 4 feet in depth such as pits, tubs, vaults and vessels.

(d) Electrical Safety permits/Lock-out and Tag out (ESP/LOTO)

The CONTRACTOR shall institute an electrical safety permit system to ensure safe electrical isolation. Safety permits shall not be issued until safe release tag is placed on the equipment isolated on all isolating points. The safety permit shall be returned on satisfactory completion of the job by the executing agencies duly signing off indicating that all shorts and grounds and men and materials are removed from the job and that the job safe for energising. This is a prerequisite to energise the isolated equipment. The safety tags shall be collected in the order first the isolated equipment and lastly the tag on the main control of the equipment The tags and permit system shall be auditable

1.14 JOB SAFETY INSPECTION

1.14.1 The CONTRACTOR shall maintain a procedure for Safety Inspection at routine intervals to provide assurance that the instituted safety procedures are in place to prevent deviations from established standards that could lead to a safety hazard and consequential risk. The CONTRACTOR shall establish appropriate standardised checklists for systematic job safety verification to ensure

(a) set standards are followed without deviation

(b) employees are competent to perform as per prescribed operation control procedures,

(c) monitoring of safety of the various work areas/tasks and

(d) adequacy of existing operation control procedures and practices to mitigate and eliminate risks

1.14.2 Should the existing operation control procedures prove inadequate and the residual risks are higher than tolerable levels, the SR shall initiate hazard and risk assessment and analysis and consultations with the SC to deploy

appropriate remedial measures and improved operation control procedures. Periodic inspection reports and proposed remedial measures shall be submitted to the PURCHASER/CONSULTANT. Records of changes change processes; consultations with the SC and revision of operational controls shall all constitute objective evidence of the existence of established procedures.

1.15 SAFETY AUDITS

1.15.1 The CONTRACTOR shall undertake periodic safety audits to confirm through investigative methods the effectiveness of the measures set out in the POLICY. In order to be effective such safety audit shall be comprehensively covering all aspects detailed in this specification to ensure effective loss-control/accident prevention programme. Safety audits shall take into account the safety inspection records, remedial measures and effectiveness of the safety programme. Effectiveness of safety programme shall be based on the CONTRACTOR's effective hazard identification and risk assessment processes for design of operation control procedures and on the safety statistics. Audit reports and preventive actions and safety improvement programmes shall be submitted to the PURCHASER/CONSULTANT.

1.15.2 The PURCHASER/CONSULTANT shall retain their right to audit the CONTRACTOR's Safety Management System either directly by their employees or his nominated representatives for its effectiveness.

2.0 EQUIPMENT, SUBSATANCES AND PERSONAL SAFEGUARDING

2.1 MECHANICAL SAFETY

2.1.1 The CONTRACTOR shall ensure that all his equipment and machinery are safe to use while in motion or working. Operators shall have received training or instruction on operation of the machinery and the regulatory requirements. The CONTRACTOR shall have adequate procedure to ensure the stability and securing of his working machinery during operation. He shall restrict repair and maintenance of the machinery to trained personnel and maintain records of repairs and maintenance. The equipment shall have appropriately designed means of isolating from sources of energy and shall have emergency stop control, which is easily accessible. All controls shall be clearly and uniformly marked. All operation controls, interlocks, sensing devices and guards on tools and equipment shall be functional and their status shall be regularly checked and recorded. The CONTRACTOR shall provide evidence of compliance to these requirements in any contractual write-ups submitted to the PURCHASER/ CONSULTANT for approval in respect of critical construction/contract works.

2.1.2 The CONTRACTOR shall provide only good quality hand tools and ensure control of condition, storage, routine inspection and use of such hand-tools. Unsafe tools such as with cracked or broken handles, mushroomed chisels and punches, worn screwdrivers, hardened hammerheads; power tools with unsafe resistance to earth or without safety guards shall be prohibited.

2.1.3 All safety ladders, scaffolding and such access equipment shall meet requirements of IS 3696 and IS 4014 and such standards as the PURCHASER/CONSULTANT may stipulate. The safety work permits shall be issued only after ensuring that all safety requirements of access equipment are complied with. Access equipment shall be inspected on a routine basis to

prevent injuries caused by falls.

2.1.4 The CONTRACTOR shall ensure safety of all those concerned with lifting and those who may be affected by material hoisting, lifting and handling using various mechanical aids. All lifting equipment such as cranes, hoists, lifting shackles, hooks chains and links shall be designed as per appropriate International codes of construction. Operators shall have been trained in operation and maintenance of such equipment besides training on standard hand signals to be employed during the hoisting and lifting operations. Safe Working Loads (SWL) shall be marked on equipment prominently. SWL shall be evidenced to have been established by test procedures in accordance with acceptable codes of practices.

2.1.5 Riding on construction equipment, forklifts and cranes shall be prohibited unless such vehicles are provided with passenger seats.

2.1.6 Pressurised gas and air systems shall be maintained safe in good working order and shall meet the requirements of the Factories Act 1948, The Static and Mobile Pressure Vessels Rules 1984 and the Gas Cylinder Rules 1934 as applicable. The safety relief valves, safety appurtenances and isolation systems shall be compliant with safety code of practices. Any statutory register of pressure vessel records and the code of practices shall be subject to periodic auditing by the PURCHASER/CONSULTANT.

2.1.7 The areas of highly dangerous activities like hoisting, lifting and rock blasting, and radiation, shall be appropriately barricaded to protect personnel and machinery and guided by work permit discipline. Emergency plans shall cater to emergencies arising out of such activities.

2.1.8 Signs, barricades, barrier tapes and warning or entry restriction devices or accessories shall be provided to minimise work related risks of accidents and injuries. Signage shall meet all regulatory requirements such as under The Building and other construction workers Act 1996, Factory Act 1948, Manufacture, Storage, Import of Hazardous Chemicals Rules under Environmental Protection Act 1986, Indian Explosives Act 1984 and Gas Cylinder Rules 1981 and Indian Electricity Act 1910 and Rules there of and any other safety requirements of the PURCHASER/CONSULTANT.

2.2 <u>ELECTRICAL SAFETY</u>

2.2.1 The CONTRACTOR shall provide only such equipment for work that is electrically safe to work. The CONTRACTOR shall have a procedure to identify and record all his electrical equipment in a register, with provisions to record his periodic inspections of such equipment. Inspection shall cover cables, extension leads, all electrical equipment drawing power from socket outlet. He shall identify and maintain in good working order all electrical installations such as distribution panels and major switchgear ensuring safe accessibility. A clear area shall be maintained around panels and switchgears. The installed equipment shall be periodically inspected by qualified personnel to ensure their continued safe operating condition. Inspection shall include earth polarity checks, continuity checks and earth resistance checks. The CONTRACTOR shall ensure use of flameproof and explosion proof switchgears and lighting fittings where required as per governing codes.

2.2.2 Approved earth leakage relays or alternative safety devices to relevant IS and International codes shall be used on all portable electrical hand tools. Where possible low-voltage electric power supply shall be used for hand tools, earth leakage units shall protect electrical installations in workshops, kitchens, cafeterias, first-aid rooms, laboratories and offices. Record of regular checks shall be maintained. The CONTRACTOR shall comply with 'Code of Practice for Earthing' as per IS 3043.

2.2.3 Safety rubber matting of appropriate voltage rating conforming to IS 5424 entitled 'Rubber Mats for Electrical Purposes' shall be provided in front of all switchgears and power distribution panels for the safety of personnel operating such equipment.

2.2.4 The CONTRACTOR shall arrange displaying signage under Indian Electricity Act 1910, such as:

(a) Danger notices as per IS 2551 in conspicuous places on all low, medium and High voltages as per Rule 35,

(b) Instruction of restoration of persons suffering from electric shock in English and local languages as per Rule 44 in switchgear rooms, substations and places where electricity is used and

(c) Notice prohibiting unauthorised entry in areas where electrical apparatus are used.

2.2.5 All power cables providing construction power to various construction machinery and the connectors shall be in safe and sound condition. Cables shall be routed through cable trays supported on appropriately designed structures, duly clamped, secured and identified. Road crossing cables shall be laid in conduits buried at least 600 mm below the surface to prevent damage due to vehicular traffic. All cables shall be off the floor to avoid damage or tripping hazard. Cables shall be terminated at the switchgear and sockets in a workman like manner to prevent loose contacts and flashover. Only safety receptacles shall be used for providing power connection to hand-tools. All switches and distribution boards shall be clearly marked. All electrical distribution and panel wiring diagrams shall be available with the electrical maintenance personnel. The CONTRACTOR shall maintain a safe electrical isolation/lockout procedure.

2.2.6 The CONTRACTOR shall ensure lighting circuits are not used for hand-tools. No electrical equipment shall be overloaded. Tools and test equipment used on electrical systems shall be insulated.

2.3 SUBSTANCES ABUSE PROGRAMME

The CONTRACTOR is encouraged to have a 'Substance Abuse Programme', and pre-employment drug testing. Drinking during working hours shall be strictly prohibited. The CONTRACTOR shall promote through poster and other publicity, awareness on abuse of substances such as alcohol and such depressant drugs that slows the activity of brain and spinal cord on abusive usage endangering the safety and health of users and others affected by their work.

2.4 HAZARDOUS SUBSTANCES CONTROL

2.4.1 The CONTRACTOR shall prevent all injuries, illnesses and damage to property or the environment caused by any article or substance, which proves to be hazardous. The code of practices of construction and operation and maintenance and control procedures shall meet required statutory and regulatory requirements. Personnel shall be trained on use, handling, storage, disposal and emergency spillage procedures.

2.4.2 The CONTRACTOR shall detail and deploy operational controls to reduce hazardous wastes and their disposal as required by the statute 'Hazardous Waste (Management and handling) Rules 2000'. Oil wastes, used oils, soil and cotton soaked in oil consequent to handling operations, grease and many class of paints and asbestos sheets and gaskets are typical hazardous wastes.

2.4.3 The CONTRACTOR shall identify, contain and control all sources of radiation. Appropriate regulatory approvals shall be obtained before commencement of work involving radiation sources. Radiation protection advisors suitably qualified and experienced shall be appointed whose names shall be submitted to PURCHASER/CONSULTANT. Dosimetry and surveillance of personnel engaged in such work shall be maintained in accordance with regulatory requirements.

3.0 **PERSONAL SAFGUARDING**

3.1 PERSONAL PROTECTION EQUIPMENT (PPE)-GENERAL

The CONTRACTOR shall provide his employees required PPE meeting the requirements of the stated IS specifications and guidelines or equivalent International Standards as may be prescribed by the PURCHASER/ CONSULTANT from time to time. The CONTRACTOR shall have instituted good working procedures and practices in providing PPE, maintenance, issue and training on their use. All PPE shall be periodically checked to ensure worn, damaged equipment are replaced expeditiously.

3.1.1 Control Issue, Use and Maintenance of the PPE

Employees shall be responsible for the PPE issued to them. The CONTRACTOR shall meet requirements of IS 8519 entitled 'Guide for Selection of Industrial Safety Equipment for Body Protection' or any equivalent international specification that the PURCHASER/CONSULTANT may prescribe.

3.1.2 Head Protection

3.1.3 Eye and Face Protection

Eye protection shall be worn during all operations by operators and people in the vicinity, where there is a danger of flying particles of metal such as generated during use of hand tools such as chisels, grinding, welding and cutting lathe work on brass and cast iron acid and alkali splash, high pressure jet cleaning or insulation removal from heights using high pressure jets. The CONTRACTOR shall meet the requirements of IS 8520 entitled 'Guide for Selection of Industrial Safety Equipment for Eye, Face and Ear Protection'.

3.1.4 Footwear

Safety shoes, boots and gumboots fitted with steel toe-caps of approved quality conforming to prescribed Indian or international standards. Wearing of unsafe safety shoes such as jogging shoes, tennis shoes, slippers and sandal etc. are prohibited. The CONTRACTOR shall meet the requirements of IS 10667 entitled 'Guide for Selection of Industrial Safety Equipment for Protection of Foot and Leg'.

3.1.5 Protective Clothing

The CONTRACTOR shall prevent hazards of loose clothes worn by workmen getting caught in moving machine parts. Loose and thin garments such as dhoti and pyjamas are prohibited. While the CONTRACTOR shall ensure that all workmen wear long sleeved shirts, jackets or the like with the sleeves rolled down and secured at the cuff, long pants/ trousers extending upto the top of the safety shoes so as to prevent injuries caused by contact with heat, cold abrasive and sharp surfaces shall be strictly enforced. Such protective clothing shall be mandatory in hazardous areas especially during start-up operations involving hot, inflammable, and other chemical hazards, furnaces and Boilers and such fired equipment and asphalting plants. Personnel exposed to acids and alkalies hot fluids and steam during such operations shall be provided with appropriate heat or corrosion resistant clothing. The CONTRACTOR shall meet the requirements of IS 8990 entitled 'Maintenance and Care of Industrial Safety Clothing'.

3.1.6 Hand Protection

The CONTRACTOR shall provide appropriate hand gloves as per IS 8807 entitled 'Guide for Selection of Industrial Safety Equipment for Protection of Arms and Hands' to prevent injuries to hands during work. The CONTRACTOR shall maintain appropriate inventory of gloves for different applications like acid and alkali handling, general-purpose work gloves and asbestos or heat resistant hand gloves etc.

3.1.7 Safety Harness or Fall Arrest

The CONTRACTOR shall provide safety harness or means of restraint such as safety belts, harness and lifelines etc. to workmen engaged to work in heights such as open-sided floors, open-sided scaffoldings, floor and roof openings, overhead construction works of various nature etc. where there is a falling hazard of two metres or above. Storage, issue, wearing and maintenance of safety harness shall be under strict supervision and records shall be maintained. All fall arrests shall consist of full-body harnesses, lanyards with shock absorbers, lifelines, rope grabs and associated hardware. Two alternate lanyards shall be used to facilitate tying off at a new location before disconnecting from the previous location. Practices for safety harnesses and fall arrests shall conform to IS 4912, IS 11972 and IS 8519 or equivalent international codes.

3.1.8 Falling Object Protection

Where work is in progress in elevated areas, barricades, barrier tapes, signs

and such entry restriction devices shall be used to keep area below clear of personnel to prevent injury due to falling objects. If work is required in the area below elevated work area, it shall be scheduled at a time different from elevated works. The workmen below shall be protected from falling objects by the debris net or a catch platform with an adequate toe board to prevent material from falling off. Use of safety net for elevated works shall be considered in the work-permits where appropriate. Where a lift is made above a working area, the area below the path of the lift shall be cleared of personnel during the lift and barricaded and guarded to prevent entry of persons generally in conformity with IS 4912, IS 11972 and IS 13416 for protective barriers in and around building and preventive measures against safety hazards in work places and safety requirements for floor and, wall opening, railings and toe-boards.

3.1.9 Respiratory Equipment

The CONTRACTOR shall maintain where appropriate, procedures for training and use of Self-Contained Breathing Apparatus (SCBA). The SCBA shall be provided together with lifelines and rescue teams to safeguard personnel working in areas where gases such as carbon monoxide, methane chlorine and such life endangering atmospheres are present. The CONTRACTOR shall meet requirements of IS 9623 for 'Selection, Use and Maintenance of Respiratory Protective Devices'. The CONTRACTOR shall have trained adequate number of personnel including the identified fire fighting teams, hose teams and SAs in the use of the SCBA. The CONTRACTOR shall use the periodic safety drills to demonstrate, train and establish competence of personnel in the use of SCBA.

3.1.10 Hearing Conservation

The CONTRACTOR shall ensure reasonable precautions are taken to avoid injury to the hearing of the employees. All noise levels shall be controlled within 85 dBA. The CONTRACTOR shall identify noise areas where noise levels exceed prescribed safe level for arranging for appropriate engineering revision. Where this is not feasible, appropriate earmuffs or protectors shall be provided to workmen ensuring these are worn by those exposed to noise levels beyond safe levels. Periodic hearing acuity tests shall be conducted on such persons exposed to high noise levels to ensure that they do not suffer any hearing impairment as per requirements of IS 8520.

3.2 MANUAL HANDLING AND ERGONOMICS

3.2.1 The CONTRACTOR shall have procedures to identify risks involved in manual handling operation and tasks. The CONTRACTOR shall ensure appropriate training to prevent any possible injury. Full use of mechanical aids shall be made to avoid risks arising out of such manual handling. Employees shall be adequately trained on such manual tasks and related safety precautions to reduce the risk of injury to personnel engaged in such work.

3.2.2 The CONTRACTOR shall undertake ergonomic study of manual operations to prevent musculoskeletal injury during manual handling, besides visual fatigue and mental stress giving considerations to matters such as seating lighting and ventilation etc.

4.0 **FIRE PROTECTION AND PREVENTION**

4.1 GENERAL REQUIREMENTS

4.1.1 Where the PURCHASER maintains the fire protection equipment, the CONTRACTOR shall comply with the PURCHASER's fire regulations, warning signals and procedures. The CONTRACTOR shall arrange to train his personnel meeting the prescribed qualifying competence needs, in requisite numbers in the operation of such fire protection equipment and systems.

4.1.2 Risk assessments shall be carried out to identify potentially vulnerable areas to provide sufficient quantities of correct type of extinguishers and ancillary equipment to deal with various types of fire hazards.

4.1.3 Where required under the CONTRACT the CONTRACTOR shall provide appropriate type of extinguishers close to areas of fire hazard but not too close they are cut off from use during a fire. Water based extinguishers shall not be positioned close to or used on electrical equipment.

4.1.4 Extinguishers shall be marked/labelled and recorded with location particulars in a register. These shall be inspected at monthly intervals to ensure they are in operable sound condition. There shall be a systematic plan for servicing, repairing and recharging fire extinguishers and for recording such dates on the register and equipment.

4.1.5 The location of fire fighting equipment shall quickly and easily be identifiable especially in emergencies in a conspicuous manner painted as high as possible to identify the location of the extinguisher to prevent it from being obscured by machinery and goods stacked in front and to return the equipment to its location after emergency use in other locations. In order to ensure this, 'Keep Clear' area shall be demarcated and maintained. Location plans of extinguishers and fire-fighting equipment shall be prominently displayed when desired by the PURCHASER/CONSULTANT.

4.1.6 SR and SAs shall be trained on fire fighting techniques who shall co-ordinate and control fire protection and prevention programmes.

4.1.7 Where required under the CONTRACT, the CONTRACTOR shall maintain alarm systems powered by mains and by battery for back-up. Where required under the CONTRACT, emergency lighting shall be provided to aid evacuation in poor lighting conditions following the alarm. The alarm system shall be made known to all employees. When the PURCHASER extends these facilities for use by the CONTRACTOR, he shall provide appropriate training to his personnel in the use of such emergency facilities and duties

4.1.8 A clear written procedure for action in the event of fire should be produced. Fire teams and hose teams shall be identified and their responsibilities during emergencies shall be detailed in writing. Personnel shall be trained on their fire duties and use of fire-fighting equipment. Regular drills shall be conducted to test procedures and to validate them. Fire instructions and emergency procedures shall be displayed throughout the premises. Emergency response procedures are detailed under para 5.0 below.

4.1.9 A means of escape shall be provided in all work areas and storages and maintained and kept free from obstruction. All exits shall be clearly marked and

kept unlocked whilst the premises are in use. Escape routes shall be protected from fire.

4.1.10 When a hot work permit is issued, the CONTRACTOR shall ensure

(a) Identification of combustibles such as paper, cardboard and wood and moving away from area where hot work is undertaken using open flame or electric arc.

(b) Determination that flammable vapours and liquids are not present

(c) Protection of floor and wall openings to keep out sparks

(d) Determination that sprinkler and hydrant and other installed fire systems are functional

(e) Establishing a fire-watch with fully loaded extinguishers or charged water-hoses throughout the operation and 30 minutes after completion of operation

(f) Adequate ventilation for welders, by means of natural air movement local exhaust ventilators or air-line respirators as required

(g) Workmen performing the task are adequately briefed on job safety analysis, hazards and risks and the safeguards against risks.

4.2 SECURITY

4.2.1 Where required under the contract, security personnel shall do all that is reasonably practicable to ensure the safety of employees and property of the company in the face of accidents by fighting fires and containing losses due to pilferage, theft, vandalism and industrial espionage both by employees and external elements. Security personnel shall be appropriately competent and receive adequate safety training. Security personnel shall routinely report on a standardised basis on aspects such as violation of fire-protection rules, use of alcohol and narcotic drugs, condition of security fencing, floodlighting and storages etc.

4.2.2 Where the project is located where a number of other companies are in operation, the CONTRACTOR shall plan for mutual assistance programmes in cases of emergencies, as are practiced in the area in conjunction with the PURCHASER.

4.2.3 Where common boundaries exist between companies, the CONTRACTOR in conjunction with the PURCHASER shall co-ordinate security control over factors common: such as floodlights, fencing, pipelines containing gas, fuel and electricity

4.2.4 Security personnel shall be represented in the SC through the SA nominated from the area.

5.0 EMERGENCY PLANNING (EP)/EMERGENCY RESPONSE (ER)

5.1 The CONTRACTOR shall plan to deal with emergencies. An EP/ER specific to

the job site shall be written and communicated to all employees. The EP/ER shall identify for the potential for and responses to incidents and emergency situations and for preventing and mitigating the likely illness and injury that may be associated with them.

5.2 The CONTRACTOR shall review his emergency preparedness and response plans and procedures in particular after occurrence of incidents or emergency operations

5.3 The CONTRACTOR shall designate his emergency team with their duties during emergencies defined, Including those of the hose teams, medical personnel, first-aiders and security. The CONTRACTOR shall maintain a procedure as to how his emergency organisation shall liaise with the PURCHASER's representatives in the EP/ER.

5.4 The CONTRACTOR shall also periodically test such emergency procedures by conducting mock-drills and use the experience for updating the EP/ER and for training the employees on the perceived competence needs.

5.5 The EP/ER of the CONTRACTOR shall be under the control of the SR who shall be able to co-ordinating with the PURCHASER/CONSULTANT for liaising with government agencies, neighbouring industries and community

5.6 The EP/ER shall be designed to allow people to work under disaster conditions when normal services such as telephone water, light power, transport and sanitation are not available and first aid and fire fighting facilities are not able to cope with sudden demand on services.

5.7 The telephone numbers of ambulance, police, managers and the PURCHASER’s key executives shall be prominently displayed in the identified Emergency Response Centre.

6.0 PREMISES AND HOUSE-KEEPING

6.1 ORDERLY WORK-PLACE

The CONTRACTOR shall maintain a well-managed safe working place in sound clean condition. The CONTRACTOR shall ensure that there is a place for everything and everything in its place so that optimum use is made of valuable floor space with commensurate cleanliness and reduced handling time. He shall ensure that his entire infrastructure including temporary and semi-temporary buildings are kept clean and good repair.

6.2 GOOD LIGHTING-NATURAL AND ARTIFICIAL

The CONTRACTOR shall provide lighting natural or artificial to enable work Processes are carried out safely. Artificial lighting shall be adequate especially in the nights and emergencies. The lumen levels shall meet the statutory requirements.

6.3 VENTILATION-NATURAL AND ARTIFICIAL

The CONTRACTOR shall ensure that workplaces are ventilated with at least prescribed amount of clean or cleaned fresh air of a suitable temperature,

especially where toxic or irritating substances are present such as welding, vehicle exhaust fumes, irritating dusts, organic solvents or any other inimical atmosphere creating health hazards or safety.

6.4 WELFARE AND HYGIENE FACILITIES

The CONTRACTOR shall provide welfare facilities to ensure a high standard of cleanliness for all activities and rest. The CONTRACTOR shall provide facilities for his employees such as ablutions, toilets change rooms, kitchens and cafeterias adequate and in a clean and hygienic state.

6.5 POLLUTION TO GROUND, AIR AND WATER

The CONTRACTOR shall strive to exceed established minimum performance norms in waste and pollution control. All drains shall be identified as clean water and foul water to aid non-armful disposal.

6.6 TRAFFIC ROUTES AND AISLES

The CONTRACTOR shall arrange to separate pedestrian and vehicular including material handling equipment traffic wherever possible and maintain the routes clear of obstruction. To ensure safety of users clear painted demarcation is encouraged as a discipline to be enforced.

6.7 STACKING AND STORAGE PRACTICE

6.7.1 The CONTRACTOR shall ensure stacked material is bonded on a stable and level footing capable of carrying the mass of the stack. Adequate clearances shall be provided between the sides of the stack and top to facilitate unimpeded access to service equipment like overhead wiring, cranes, forklifts and fire fighting equipment, and hoses. Circular items shall be sufficiently choked with wedges not with odd bits of materials. Free-standing stacks of gunny bags and sacks such as cement bags shall be stacked to prescribed safe-stack heights with layers formed for stable bonding, preventing slippage causing accidents. Stacking against walls shall not be permissible.

6.7.2 The CONTRACTOR shall maintain the premises and surrounding areas in clean and clear manner with safe access and egress. There shall be sufficient and adequate storage racks, shelving, bins and pallets and material handling equipment to stack his construction materials such as pipes structurals and construction enabling materials. Unwanted materials shall be promptly moved away for efficient material movement.

6.8 STORAGE OF HAZARDOUS MATERIALS

6.8.1 Hazardous materials shall be stored on solid bases. Solid bases shall include compacted earth, pallets, concrete or asphalt platforms or paving. Hazardous materials shall be stored, stacked and secured to prevent toppling, spillage or other unintended dislodgement. Aisles and clearances shall be as detailed under 6.6 above. Hazardous materials shall be stacked in such a manner that an observer standing in the aisle can read their labels and legend.

6.8.2 Each hazardous material contained hall be identified by a legible or legend as per governing statute, code or regulation. The label shall identify the item,

quantity and appropriate warnings.

6.8.3 Hazardous materials which if brought in contact with each other could react or pose equal or greater hazard than either material stored alone shall be stored at a distance not lesser than twenty feet apart.

6.8.5 Where hazardous materials are unloaded in the CONTRACTOR's storage maintained at site in a semi-permanent installation, such installations shall be approved by relevant statutory bodies. Copies of licences for storage shall be lodged with the PURCHASER. The containers and storage shall display quantities stored with name of the hazardous material and the UN hazard classification label in prescribed colour code prominently painted in a conspicuous manner

6.8.6 The CONTRACTOR shall inspect the hazardous storages and installations on a daily basis and hall undertake any requisite preventive action necessary to avoid safety risks

6.9 STORAGE OF FLAMMABLE AND EXPLOSIVE MATERIALS

6.9.1 The CONTRACTOR shall secure flammable and or explosive materials against accidental ignition.

6.9.2 Storage facilities for flammable liquids such as petrol, diesel kerosene and lubricants as well as the quantities stored shall meet the legal and statutory requirements. These shall be stored in approved fire-resistant rooms with a sump of sufficient volume to contain any spillage.

6.9.3 The electrical fittings to be flame -proof and on a strict maintenance schedule. Containers shall be appropriately bonded in receptacles into which low flash point fuel is decanted.

6.10 COMPRESSED GAS CYLINDERS

Compressed gas cylinders shall be stored and secured in the upright position at safe distances from shielded from welding and cutting operations. Compressed gas cylinders in storage shall be shut off and torches, hose and manifolds removed and capped. Cylinders shall be periodically checked for leakages. Storage shall meet requirements of Gas Cylinder Rules 1981.Compressed gas storages shall be provided with safety relief valves, Safety valves and rupture disc to protect them overpressures. appropriately designed to ensure their continued availability in the face of process changes

6.11 SCRAP AND REFUSE BINS-REMOVAL SYSTEM

The CONTRACTOR shall ensure that he has sufficient waste bins that are identified for different wastes and maintained in clearly demarcated areas. Wastes with oily or other ignitable materials such as oily cotton wastes and hand gloves shall be stored separately with covers to prevent fires and shall be made of metal. Different wastes shall be segregated and stored separately and disposed off. These shall be emptied at routine intervals to prevent that they do not overflow with wastes.

SECTION – 11

Bill of Quantities

Bill of Quantities
for
Supply, Installation, Testing, Commissioning, Training and Maintenance of CCTV Infrastructure at Various Places in DTA area of GIFT City

ITEM NO.	ITEM DERSCRIPTON	QTY	UNIT
CCTV AT ROAD 1-B GANTRY			
1	Supply, Installation, Testing, Commissioning and Training of Bullet Camera for CCTV Surveillance System. Detail specifications as per separate Specifications Annexure and SoW Annexure included in Tender document.	8	EA
2	Supply, Installation, Testing, Commissioning and Training of CAT6 UTP cable for CCTV Surveillance System Project. Detail specifications as per separate Specifications Annexure and SoW Annexure included in Tender document.	610	M
3	Supply, Installation, Testing, Commissioning and Training of 8 port L2 All GIGA POE+ Switch for CCTV Surveillance System Project. Detail specifications as per separate Specifications Annexure and SoW Annexure included in Tender document.	2	EA
4	Supply, Installation, Testing, Commissioning and Training of Fiber 6 Core SM-DX-Armoured cable. Detail specifications as per separate Specifications Annexure and SoW Annexure included in Tender document.	150	M
5	Supply, Installation, Testing, Commissioning and Training of Fiber LIU 6/12 port with pigtail and SC Connectors for CCTV Surveillance System Project. Detail specifications as per separate Specifications Annexure and SoW Annexure included in Tender document.	2	EA
6	Supply, Installation, Testing, Commissioning and Training of Fiber LC-SC Patch Code for CCTV Surveillance System Project. Detail specifications as per separate Specifications Annexure and SoW Annexure included in Tender document.	4	EA
7	Supply, Installation, Testing, Commissioning and Training of HDPE Pipe - 25 MM or 40 MM (in Mtr). Detail specifications as per separate Specifications Annexure and SoW Annexure included in Tender document.	750	M
8	Supply, Installation, Testing, Commissioning and Training of Outdoor Utility Rack IP-66 for LIU and switch for CCTV Surveillance System Project. Detail specifications as per separate Specifications Annexure and SoW Annexure included in Tender document.	2	EA

9	Supply, Installation, Testing, Commissioning and Training of Metal clamp For Pole mounted Camera for CCTV Surveillance System Project. Detail specifications as per separate Specifications Annexure and SoW Annexure included in Tender document.	6	EA
10	Supply, Installation, Testing, Commissioning and Training of Online UPS (1 Kva) with Batteries for CCTV Surveillance System Project. Detail specifications as per separate Specifications Annexure and SoW Annexure included in Tender document.	2	EA
11	Supply, Installation, Testing, Commissioning and Training of PVC Backbox for Camera for CCTV Surveillance System Project. Detail specifications as per separate Specifications Annexure and SoW Annexure included in Tender document.	6	EA
12	Supply, Installation, Testing, Commissioning and Training of PVC Flexible Pipe (in Mtr) for CCTV Surveillance System Project. Detail specifications as per separate Specifications Annexure and SoW Annexure included in Tender document.	20	M
13	Supply, Installation, Testing, Commissioning and Training of Soft Digging Charges (in Mtr) for CCTV Surveillance System Project. Detail specifications as per separate Specifications Annexure and SoW Annexure included in Tender document.	600	M
14	Supply, Installation, Testing, Commissioning and Training of 5Ghz P2P Wireless Link for CCTV Surveillance System Project. Detail specifications as per separate Specifications Annexure and SoW Annexure included in Tender document.	2	EA
15	Supply, Installation, Testing, Commissioning and Training of Fiber Core Termination Charges for CCTV Surveillance System Project. Detail specifications as per separate Specifications Annexure and SoW Annexure included in Tender document.	12	EA
16	Supply, Installation, Testing, Commissioning and Training of SFP (Small Form Factor) Single Mode Single or Dual Fiber with GIG Capability for CCTV Surveillance System Project. Detail specifications as per separate Specifications Annexure and SoW Annexure included in Tender document.	2	EA
17	Provisioning for Electrical Work for CCTV Surveillance System Project. To provide and provision electricity from nearest electrical point to Outdoor / Indoor Rack. This includes material such as required capacity power cables, MCBs, Plugs, Termination and connection to provide electricity and earthing work (if required) . Nearby electrical point from where electricity to be taken will be guided by GIFT Electrical team.	1	EA

ANPR AT ROAD 1-B JUNCTION			
1	Supply, Installation, Testing, Commissioning and Training of ANPR Camera with IP67 for CCTV Surveillance System Project. Detail specifications as per separate Specifications Annexure and SoW Annexure included in Tender document.	2	EA
2	Supply, Installation, Testing, Commissioning and Training of CAT6 UTP cable for CCTV Surveillance System Project. Detail specifications as per separate Specifications Annexure and SoW Annexure included in Tender document.	305	M
3	Supply, Installation, Testing, Commissioning and Training of HDPE Pipe - 25 MM or 40 MM (in Mtr). Detail specifications as per separate Specifications Annexure and SoW Annexure included in Tender document.	200	M
4	Supply, Installation, Testing, Commissioning and Training of Metal clamp For Pole mounted Camera for CCTV Surveillance System Project. Detail specifications as per separate Specifications Annexure and SoW Annexure included in Tender document.	2	EA
5	Supply, Installation, Testing, Commissioning and Training of Metal Pole outer Dia > 72 MM with Foundation for CCTV Surveillance System Project. Detail specifications as per separate Specifications Annexure and SoW Annexure included in Tender document.	2	EA
6	Supply, Installation, Testing, Commissioning and Training of PVC Backbox for Camera for CCTV Surveillance System Project. Detail specifications as per separate Specifications Annexure and SoW Annexure included in Tender document.	2	EA
7	Supply, Installation, Testing, Commissioning and Training of PVC Flexible Pipe (in Mtr) for CCTV Surveillance System Project. Detail specifications as per separate Specifications Annexure and SoW Annexure included in Tender document.	10	M
8	Supply, Installation, Testing, Commissioning and Training of Soft Digging Charges (in Mtr) for CCTV Surveillance System Project. Detail specifications as per separate Specifications Annexure and SoW Annexure included in Tender document.	100	M

9	Provisioning for Electrical Work for CCTV Surveillance System Project. To provide and provision electricity from nearest electrical point to Outdoor / Indoor Rack. This includes material such as required capacity power cables, MCBs, Plugs, Termination and connection to provide electricity and earthing work (if required) . Nearby electrical point from where electricity to be taken will be guided by GIFT Electrical team.	1	EA
ANPR AT KHODIYAR NAGAR JUNCTION			
1	Supply, Installation, Testing, Commissioning and Training of ANPR Camera with IP67 for CCTV Surveillance System Project. Detail specifications as per separate Specifications Annexure and SoW Annexure included in Tender document.	2	EA
2	Supply, Installation, Testing, Commissioning and Training of Server Hardware for hosting ANPR application and licenses. Latest Licensed Windows 11 Pro, Minimum Intel Xeon Silver Dual Socket with total 16 core CPU, 128 GB RAM, usable 6 TB SAS / NLSAS Harddisk storage, 2U Rack Mount Server. Approved Make: Dell, HP, IBM. Detail specifications as per separate Specifications Annexure and SoW Annexure included in Tender document.	1	EA
3	Supply, Installation, Testing, Commissioning and Training of CAT6 UTP cable for CCTV Surveillance System Project. Detail specifications as per separate Specifications Annexure and SoW Annexure included in Tender document.	305	M
4	Supply, Installation, Testing, Commissioning and Training of HDPE Pipe - 25 MM or 40 MM (in Mtr). Detail specifications as per separate Specifications Annexure and SoW Annexure included in Tender document.	100	M
5	Supply, Installation, Testing, Commissioning and Training of Metal clamp For Pole mounted Camera for CCTV Surveillance System Project. Detail specifications as per separate Specifications Annexure and SoW Annexure included in Tender document.	2	EA
6	Supply, Installation, Testing, Commissioning and Training of PVC Backbox for Camera for CCTV Surveillance System Project. Detail specifications as per separate Specifications Annexure and SoW Annexure included in Tender document.	2	EA

7	Supply, Installation, Testing, Commissioning and Training of PVC Flexible Pipe (in Mtr) for CCTV Surveillance System Project. Detail specifications as per separate Specifications Annexure and SoW Annexure included in Tender document.	10	M
8	Supply, Installation, Testing, Commissioning and Training of Soft Digging Charges (in Mtr) for CCTV Surveillance System Project. Detail specifications as per separate Specifications Annexure and SoW Annexure included in Tender document.	50	M
9	Provisioning for Electrical Work for CCTV Surveillance System Project. To provide and provision electricity from nearest electrical point to Outdoor / Indoor Rack. This includes material such as required capacity power cables, MCBs, Plugs, Termination and connection to provide electricity and earthing work (if required) . Nearby electrical point from where electricity to be taken will be guided by GIFT Electrical team.	1	EA
AMC OF CCTV FOR 3 YEAR			
1	Comprehensive Annual Maintenance Charges for CCTV Surveillance System Project starting from 1st anniversary (for 2nd year) till end of 2nd Year . This will include all labor work and material components installed during this project.	12	MONTH
2	Comprehensive Annual Maintenance Charges for CCTV Surveillance System Project starting from 2nd anniversary (for 3rd year) till end of 3rd Year. This will include all labor work and material components installed during this project.	12	MONTH
3	Comprehensive Annual Maintenance Charges for CCTV Surveillance System Project starting from 3rd anniversary (for 4th year). This will include all labor work and material components installed during this project.	12	MONTH

GUJARAT INTERNATIONAL FINANCE TEC-CITY COMPANY LIMITED

EPS Building No. 49A, Block No.49,
Zone-IV, Gyan Marg, GIFT City, Gandhinagar-382355
Telephone: +91 79 61708300