



IndianOil

INDIAN OIL CORPORATION LIMITED

(SOUTHERN REGION PIPELINES)

TENDER NO.: SRPL23C095

TENDER DOCUMENT

FOR

**Engineering, Procurement, Construction (EPC)
inclusive of 1-Year Comprehensive Operation &
Maintenance (O&M) of 1 MWp Solar Power Project at
SRPL Chittoor and its further Comprehensive O&M for
4 Years**

VOLUME (I OF II)

**NOTICE INVITING TENDER
SPECIAL INSTRUCTIONS TO TENDERERS
GENERAL CONDITIONS OF CONTRACT
SPECIAL CONDITIONS OF CONTRACT
SCOPE OF WORK AND JOB SPECIFICATIONS
ANNEXURES
VIM COMMUNICATION**

Issued by

**Deputy General Manager (M&C)
Southern Region Pipelines
Indian Oil Corporation Ltd.
(Pipelines Division)
House of Four Frames 6/13,
Wheat Croft Road Nungambakkam,
Chennai – 600034**



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INDIAN OIL CORPORATION LIMITED
(SOUTHERN REGION PIPELINES)
House of Four Frames 6/13, Wheat Croft Road Nungambakkam, Chennai – 600034

Detailed Notice Inviting Tender (NIT)
(TWO BID SYSTEM)

Indian Oil Corporation Limited invites online electronic bids through e-tender portal under two bid system for the subject work from bonafide Indian contractors fulfilling the qualifying requirements stated hereunder and in tender documents.

1.0 Basic Tender Details		
a.	Name of Work	Engineering, Procurement, Construction (EPC) inclusive of 1-Year Comprehensive Operation & Maintenance (O&M) of 1 MWp Solar Power Project at SRPL Chittoor and its further Comprehensive O&M for 4 Years
b.	Tender No	SRPL23C095
c.	E-Tender -ID	2024_SRCHN_175748_1
d.	Type of tender	Open (National)
e.	Tender Category	Composite
f.	Reverse Auction	Yes
g.	Cost of tender document	No Tender fee is applicable for this tender, since the bidders are required to download the tender documents from IOCL e-tender website.
2.0 Requirement/ Tender Details		
a.	Job completion time/Contract Period	Complete Project Time Schedule Details as per clause 8 of SCC of tender documents.
b.	Type of BoQ	The Bidder shall quote in percentage above/at par/below on the rates indicated in the BoQ. The Percentage quoted by the Bidder shall be applicable uniformly to all the rates of the items indicated in the BoQ. Bidders shall note that Estimated Item rates specified in the BoQ is excluding GST and rate of GST has been pre-selected in the BoQ. Complete Details as per clause 31.0.0 of SIT-Commercial of tender documents.
c.	Site Location /State	Chittoor, Andhra Pradesh Complete Details as per clause 4 of SCC of tender documents.
d.	Brief Scope of Work	Complete Details as per Scope of Work and Job Specifications of tender documents.
e.	Defect Liability Period	Defect liability of 12 months is applicable as per clause 10.2 of SCC of tender documents.
f.	Goods and Services Tax	Bidder to note that rate of GST has been selected in the BoQ. Complete Details as per clause 18.14 of SCC of tender documents.

g.	Limitation of liability	As per clause 8.6.0.0 of GCC of tender documents		
h.	Currencies & payment	As per clause 26.0.0 of SIT-Commercial of tender documents. Payment terms as per clause 12 of SCC of tender documents.		
i	Place of Payment	All the payments in Indian Rupees shall be released from the VIM Centre, IOCL, Noida		
3.0 CRITICAL DATES				
a.	Start date for download of Tender Document	13.03.2024		
b.	Pre-Bid Meeting	20.03.2024 at 14:30 Hrs through Online mode. Interested bidders may forward their willingness to join this meeting prior to this date to Tender Issuing Authority. Accordingly, the meeting link shall be shared.		
c.	Online bid Submission Start Date & Time	27.03.2024 from 14:30 Hrs		
d.	Online bid Submission Closing Date & Time	10.04.2024 up to 14:30 Hrs		
e.	Bid Submission Time (In no. of Days)	28 days		
f.	Tender Opening (techno-commercial bid) Date & Time	11.04.2024 at 15:00 Hrs. or convenient date there after		
g.	Bid Validity	4 months from the date of Opening of Techno Commercial bid		
4.0 Eligibility to Participate				
a.	Nature of Bidders eligible/Bidding entity Allowed	a) Sole Bidder: Individual (Proprietorship) /Partnership/ Limited Company b) Indian Wholly owned subsidiary of a company on the strength of its parent company.		
b.	Purchase Preference allowed in the tender	PPP MII Preference –Applicable MSE Preference – Not Applicable		
c.	Preferential bidding selection	Applicable		
d.	Eligibility of bidders from countries that share a land border with India	Complete Details as per clause 7.4.0 of SIT-Commercial of tender documents.		
5.0 Qualification Criteria				
a.	Commercial Qualification Criteria	✱ Annual turnover (Standalone Financial Statements) of the tenderer during any one of the preceding 3 (three) financial years shall be at least of the value mentioned below: <table><tr><td>Amount (in Rs. Lakh)</td></tr><tr><td>322.24</td></tr></table> ✱ The Bidder should have successfully completed similar work, as a main or as a sub-contractor, during last seven years ending on last day of the month, immediately previous to the month in which the last date of bid submission falls. Even in case the bid submission is extended, the date originally consisted as reference date for experience criteria shall remain unchanged. The value of	Amount (in Rs. Lakh)	322.24
Amount (in Rs. Lakh)				
322.24				

		completed work for evaluation shall be considered as under: (a) One similar completed work (including service tax/ including goods and services tax) costing not less than the value mentioned below, <table><tr><td>Amount (in Rs. Lakh)</td></tr><tr><td>268.53</td></tr></table> OR (b) Two similar completed works (including service tax/including goods and services tax) each costing not less than the value mentioned below <table><tr><td>Amount (in Rs. Lakh)</td></tr><tr><td>214.82</td></tr></table> OR (c) Three similar completed works (including service tax/including goods and services tax) each costing not less than the value mentioned below. <table><tr><td>Amount (in Rs. Lakh)</td></tr><tr><td>161.12</td></tr></table> The similar work mentioned above is works involving “Engineering, Procurement & Construction (EPC) of greater than or equal to (>=) 500 KWp On-Grid Solar Power Project with Net-Metering /Gross Metering/ Net Billing or feed-in /open access Facility in any industry”. Details as per clause 30.0.0 of SIT-Commercial of tender document.	Amount (in Rs. Lakh)	268.53	Amount (in Rs. Lakh)	214.82	Amount (in Rs. Lakh)	161.12
Amount (in Rs. Lakh)								
268.53								
Amount (in Rs. Lakh)								
214.82								
Amount (in Rs. Lakh)								
161.12								
b.	Technical Qualification Criteria	Bidder should have successfully completed similar nature works in last 07 years which is defined as “Engineering, Procurement & Construction (EPC) of greater than or equal to (>=) 500 KWp On-Grid Solar Power Project with Net-Metering /Gross Metering/ Net Billing or feed-in /open access Facility in any industry”. Last 07 years are defined as last seven years ending on last day of the month, immediately previous to the month in which the last date of bid submission falls. Even in case the bid submission is extended, the date originally considered as reference date for experience criteria shall remain unchanged. Complete details as per clause 1.7.0 of SIT-Technical of tender documents.						
6.0 Others								
a.	EMD	The tenderer shall furnish Earnest Money Deposit, at the time of submission of the bid, as mentioned below: <table><tr><td>Amount (in Rs.)</td></tr><tr><td>Rs.5,18,500.00</td></tr></table>	Amount (in Rs.)	Rs.5,18,500.00				
Amount (in Rs.)								
Rs.5,18,500.00								

		Complete Details as per clause 29.0.0 of SIT-Commercial of tender documents.
b.	Performance Security/ISD/SD	<i>Initial Security Deposit shall be 2.5 % of Nominal Contract Value which is required to be submitted at time of contract signing. Alternatively, full Security Deposit@10% of nominal contract value may be submitted.</i>
c.	Concurrent Commitment requirement	Not Applicable
d.	Net worth	Not Applicable
e.	Integrity Pact (In case of Tenders>10 Crs)	Not Applicable
f.	Advance Payment/Mobilization Advance	Not Applicable
g.	Incentive Clause	Not Applicable
h.	Additional BG	Not Applicable
i.	Helpdesk Contact	<u>IOCL E-tender portal</u> Indian Oil Help Desk: (updated details available at https://iocletenders.nic.in/)
j.	Tender Inviting Authority (TIA)/ Submission Office Address	<i>Deputy General Manager (Materials & Contracts)</i> Southern Region Pipelines, Indian Oil Corporation Ltd., (Pipelines Division), House of Four Frames, 6/13, Wheat Croft Road, Nungambakkam, Chennai – 600034 Contact-Phone No.:+044 28243131/ 28243183/178/184 <u>Email: cpvarghese@indianoil.in; preethib@indianoil.in; garguk@indianoil.in</u>

Other Important Points

1. **Physical Bids will not be accepted.** Tender Document can be downloaded from <https://iocletenders.nic.in> and on line bids are required to be submitted with Digital signatures on the system.
2. The tender documents are non-transferable.
3. IOCL reserves the right of annulment of tender without assigning any reasons whatsoever.
4. The Tenderers shall upload scanned copy of necessary documents in support of required qualification and experience along with their offer as per instruction given in the Special Instructions to Tenderers.

Place: Chennai

Date: 13.03.2024

Tender Issuing Authority

Please visit our e-tendering website www.iocletenders.nic.in for more details.

CHAPTER - I

SPECIAL INSTRUCTIONS TO TENDERERS

SECTION A - TECHNICAL

SPECIAL INSTRUCTIONS TO TENDERERS

Technical

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1.5	SITE VISIT
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1.7	CRITERION FOR EVALUATION
1.8	DOCUMENT TO BE SUBMITTED ALONG WITH BID
1.9	OTHER REQUIREMENTS
1.10	PROVISIONS FOR DISCOURAGING SUBMISSION OF FORGED/ FALSE/ FAKE DOCUMENTS WITH THE BID
1.11	VERIFICATION OF DOCUMENTS

1.1.0 INFORMATION

- 1.1.1** The information given in the Bid Documents and plans and drawings forming part thereof are merely intended as a general information without any undertaking on the part of the Owner as to its accuracy and without obligation relative thereto upon the Owner. The Bidders are expected to conduct their own surveys and investigations prior to Bidding.
- 1.1.2** Before bidding, the Bidder shall undertake and shall be deemed to have undertaken a thorough study of the proposed work, the job site(s) involved, the site conditions, the labour, power, water, material and equipment availability, transport and communication facilities and temporary offices and accommodation quarters, and all other factors, constraints and facilities necessary for the formulation of the Bid, supply of materials and the performance of the work(s) as envisaged in this document.
- 1.1.3** The bidder shall inspect and examine the site(s) and its surroundings and shall satisfy himself before submitting his tender as to the nature of the ground present, physical conditions and all roads, approaches and lands which may be used temporarily otherwise in connection with the works, means of access to the site, accommodation he may require and in general shall himself obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect his tender.

1.2.0 INTRODUCTION

Indian Oil Corporation Limited (IOCL), a Government of India Undertaking owns, operates and maintains an extensive network of cross-country pipelines for transportation of Crude Oil and Petroleum products to different destinations throughout the length and breadth of the sub-continent. Indian Oil Corporation Limited, a company registered in India under the Companies Act, 1956 invites tenders from bona fide and experienced Contractors of financial standing and reputation for the following job:

Name of Work:	Engineering, Procurement, Construction (EPC) inclusive of 1-Year Comprehensive Operation & Maintenance (O&M) of 1 MWp Solar Power Project at SRPL Chittoor and its further Comprehensive O&M for 4 Years

1.3.0 SITE LOCATION

S.no	Station	Detailed Site Address
1	SRPL Chittoor	Indian Oil Corporation Limited Chittoor Delivery cum Pumping-station, – Southern Region Pipelines, Gudiyatham Road, Yadamari Chittoor District, Andhra Pradesh- 517422.

1.4.0 BRIEF DESCRIPTION OF WORK:

- 1.4.1** The Owner intends to carry out “**Engineering, Procurement, Construction (EPC) inclusive of 1-Year Comprehensive Operation & Maintenance (O&M) of 1 MWp Solar Power Project at SRPL Chittoor and its further Comprehensive O&M for 4 Years**”.
- 1.4.2** The detailed scope of work for the subject contract shall be as amplified in Special Conditions of Contract, Scope of work and Schedule of Rates of this tender document.

1.5.0 SITE VISIT

The Tenderers are advised to visit the station locations and obtain all information that may be necessary for preparing the tender and entering into the contract. **Non-familiarity with site conditions will not be considered a reason either for extra claims or for not carrying out the work conforming to the specifications.** The intending Tenderers may contact the tender issuing authority for any site visit at least 2 days in advance. However no claims (financial or otherwise) against site visit carried out prior to the submission of tender for site assessment purpose shall be entertained by IOCL.

As a precautionary measure, it is advised that tenderer shall visit the site before submitting his offer. The intending tenderers may contact the following IOCL's site office for necessary guidance and help during site visits:

Indian Oil Corporation Limited
Chittoor Delivery cum Pumping station,
Southern Region Pipelines,
Gudiyatham Road, Yadamari
Chittoor District, Andhra Pradesh- 517422.

Contact person:

Mr Kranthi K, Operations Manager
Mobile: 9585516242

1.6.0 LOCAL CONDITIONS

- 1.6.1** It will be imperative on BIDDER to acquaint himself of all local laws, conditions and factors which may have any effect on the execution of works and supplies under the Bid document. In their own interest, the BIDDERS are requested to familiarise themselves with, but not limited to, the Indian Income Tax Act, 1961, Indian Companies Act, 1956, Indian Customs Act, 1962, Factory act, Contract labour Regulation & Abolition Act, 1970, Arbitration Act, P.F. Act, Andhra Pradesh state solar policy, Rules and regulations related to solar and windmill plants by State/central government, DISCOMS, other government bodies and other related Acts, Laws and Regulations, with their latest amendments, as prevalent in India. OWNER shall not entertain any request from the bidder for clarification regarding such local conditions.

- 1.6.2** It must be understood and agreed that such factors have properly been investigated and considered while submitting the Bid. No claim for financial and other adjustments to the contract price, on account of lack of clarity or proper understanding of such factors, shall be entertained.

1.7.0 CRITERIA FOR EVALUATION

- 1.7.1** Any bidder participating in this bidding must have experience as described herein and the Technical evaluation of their offers shall be primarily done based on the following qualifying criteria:

(A) Experience criteria (Technical)

The bidder must have executed work order/s of similar nature of works (as explained under) in last seven years

Definition of similar works:

Engineering, Procurement & Construction (EPC) of greater than or equal to ($\geq$) 500 KWp On-Grid Solar Power Project with Net-Metering /Gross Metering/ Net Billing or feed-in /open access Facility in any industry.

1.7.2 SUBMISSION OF OFFER (TECHNICAL BID)

The bidder shall submit the following details/ documents along with the bid:

- i. Details of Experience as per **Annexure-T#3** meeting Experience (Technical) Criteria for techno-commercial evaluation as per Clause 1.7.0 and sub clauses there under of Special Instructions to Tenderers (SIT)-Technical along with relevant documents, such as copies of work order(s)/ contract(s) and completion certificate(s), supporting the claim.
- ii. Exceptions/Deviations pertaining to all Technical Provisions & Specifications, if any, for all works to be indicated only as per **Annexure-T#1**.
- iii. Duly Signed Declaration by the Tenderer as per **Annexure-T#2**.
- iv. Duly Signed Addendum/Corrigendum, if any, issued to the Bidder.
- v. **Failure to furnish all information required as per the tender documents or submission of bid not substantially responsive to the tender documents, in every respect, may result in rejection of the bid.**
- vi. Notwithstanding any other condition/ provision in the tender documents, Bidders are required to submit complete documents pertaining to Pre-Qualification Criteria (PQC) along with their offer. Failure to meet the PQC will render the bid to be rejected. IOC reserves the right to complete the evaluation based on the details furnished by the Bidder, with or without seeking any additional supporting documents/ clarifications.
- vii. **PRICE SHALL NOT APPEAR ANYWHERE IN PART-A OF THE TENDER.**

1.8.0 DATA AND DOCUMENTATION REQUIREMENT ALONG WITH THE BID

1.8.1 Documentation to be supplied with each offer:

- a) Completion certificates along with work order/ contract copy with detailed scope of work and other stated documents to substantiate the above technical qualification criteria.

1.9.0 OTHER REQUIREMENTS

Clause-by-clause compliance/ deviations of the tender including Annexures (pertaining to all Technical Provisions & Specifications) are to be furnished along with the bid in **Annexure-T#1**. Attaching a mere deviation statement with respect of some clauses would mean the remaining clauses stand complied.

1.10.0 Provisions for discouraging submission of forged/ false/ fake documents with the bid

- a) The tenderer shall enclose documents to show that he has previous experience in having successfully completed in the recent past works of similar nature together with the name of the OWNER location, sites and value of contract in the format annexed to the Form of Tender. It shall be the responsibility of the Tenderers to fill complete, correct and accurate information in line with the requirements/stipulations of the Tender Document, regarding their past experience and other information required to facilitate due evaluation/ consideration of their tenders.
- b) If any information given by the Bidder/ Tenderer is found to be incorrect in any particular considered by the OWNER to be relevant for the evaluation of the bid/ tender or is found by the OWNER to misrepresent facts, or if any of the documents submitted by the Bidder/ Tenderer in support of or relevant to the bid/ tender is found by the owner to be forged, false or fabricated, the OWNER may reject the bid, and without prejudice to any other right(s) of action or remedy available to the OWNER, the Owner may forfeit the Earnest Money given by the Bidder in the form of Earnest Money Deposit or Bank Guarantee in lieu of Earnest Money Deposit in order to compensate the OWNER for the expenses incurred by it in considering the bid {and not by way of penalty} and take action for putting the Bidder/ Tenderer on holiday list for such period as the OWNER in this behalf considers warranted and/ or to remove the Bidder/ Tenderer from the approved list of Vendors/ Contractors. If prior to the discovery of incorrect information, misrepresentation or false, forged or fabricated document(s), the bid/ tender has resulted in a contract, the contract shall be liable to be terminated by the OWNER pursuant to the provisions of Clause 7.0.1.0 of the General Conditions of Contract with the consequences of termination as provided in Section 7 of the General Conditions of Contract.

1.11.0 VERIFICATION OF DOCUMENTS

1.11.1 After opening of Techno-Commercial Bid, Bidders may be called, if required, for physical verification of documents uploaded on e-tender portal in support of the “Criteria for Evaluation” as per relevant clause mentioned above. While verification, the respective uploaded bid documents shall be cross-checked with the Original documents.

1.12.0 PLACE OF PAYMENT



इंडियन ऑयल कॉर्पोरेशन लिमिटेड/Indian Oil Corporation Limited
(पाइपलाइन्स प्रभाग)/ Pipelines Division
दक्षिणी क्षेत्र पाइपलाइन्स, चेन्नै/ Southern Region Pipelines, Chennai

All payments shall be released from Indian Oil Corporation Limited, IBM Tower, 2nd Floor, A 26, Rani Ramgarh Road, Block A, Industrial Area, Sector 62, NOIDA, Uttar Pradesh.

CHAPTER - I

SPECIAL INSTRUCTIONS TO TENDERERS

SECTION B - COMMERCIAL

CHAPTER-I - SPECIAL INSTRUCTIONS TO TENDERERS
[SECTION B - Commercial]
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DEFINITIONS

Tender/ Bid/offer/ Quotation/ Proposal	Bidder's offer to supply goods, services or execution of works made as per the terms and conditions set out in a Bidding Document
Tender Document/ Bidding Document	Documents purchased by Bidder or issued by Owner through tender website including any subsequent addenda to enable Bidder to submit the Bid
Bidder/ Tenderer	Person or company or bidding entity who receives the Tender Document and submits Tender or Bid to IOCL (Pipelines Division)
Owner/ Purchaser/ IOCL/ IOCL (Pipelines Division)/ Corporation/Procuring entity	Words used interchangeably and would mean the same in expression and intent in proper context
Bidder/ Tenderer/ Contractor/ Vendor	Words used interchangeably and would mean the same in expression and intent in proper context
Schedule of Rates (SOR)/ Bill of Quantities (BoQ)/ Price Schedule	Words used interchangeably and would mean the same in expression and intent in proper context
ENGINEER-IN-CHARGE/CONTRACT MANAGER	Words used interchangeably and would mean the same in expression and intent in proper context
Contract/Purchase Order/ Work Order/ 'Letter of Acceptance – LoA')	Words used interchangeably and would mean the same in expression and intent in proper context It is a formal legal agreement in writing relating to the subject matter of procurement, entered into between the Procuring Entity and the contractor on mutually acceptable terms and conditions and which are in compliance with all the relevant provisions of the laws of the country
BQC/ PQC	Words used interchangeably and would mean the same in expression and intent in proper context
Blacklisting / Holiday listing / Debarment/ Banning:	Words used interchangeably and would mean the same in expression and intent in proper context

ABBREVIATIONS

BC	Bankers Cheque
BG	Bank Guarantee
BOQ	Bill of Quantity
BQC	Bid Qualification Criteria
CEO	Chief Executive Officer
CFO	Chief Financial Officer
DD	Demand Draft
DDP	Delivered duty paid
DPIIT	Department for Promotion of Industry and Internal Trade
EPFO	Employees Provident Fund Organization
ESI	Employees State Insurance
EMD	Earnest Money Deposit
FEMA	Foreign Exchange Management Act
FOR	Freight on Road
GCC	General Conditions of Contract
GST	Goods and Services Tax
GCC	General Conditions of Contract
GeM	Government e-Marketplace
GTE	Global Tender Enquiry (International Competitive Bidding)
HSN	Harmonized System of Nomenclature
IEM	Independent External Monitor
IPR	Intellectual Property Rights
IFSC	Indian Financial System Code
IMPS	Immediate Payment Service
INR	Indian Rupee
IOCL	Indian Oil Corporation Limited
ITT	Instruction to Tenderers
IPA	Integrity Pact Agreement
JV	Joint Venture
LLP	Limited Liability Partnership
LOA	Letter of Acceptance
MoP&NG	Ministry of Petroleum and Natural Gas
MOU	Memorandum of Understanding
MSE	Micro and Small Enterprise
MSMED	Micro, Small And Medium Enterprises Development Act
NEFT	National Electronics Funds Transfer
NIT	Notice Inviting Tender
PAN	Permanent Account Number
POA	Power of Attorney
PPP MII	Purchase Preference Linked to Make In India
PQC	Pre Qualification Criteria
RBI	Reserve Bank of India
RTGS	Real Time Gross Settlement
SBI	State Bank of India
SCC	Special Conditions of Contract



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SIT	Special Instruction to Tenderers
SWIFT	Society for Worldwide Interbank Financial Telecommunication
TDS	Tax Deducted at Source
SFMS	Structured Financial Messaging System
SAC	Service Account Code
TT	Telegraphic Transfer
UDIN	Unique Document Identification Number

GENERAL INSTRUCTIONS TO BIDDERS

Bids are requested from bonafide bidders of sound financial standing and reputation for the subject item on e-procurement system in total compliance to technical specifications, scope, terms & conditions of enquiry documents / attachments.

The issue of these Bid Request documents shall not automatically create any relationship, contractual or otherwise, between Indian Oil Corporation Limited (IOCL) and the Bidder, and IOCL shall not be liable for any costs and expenses incurred by the Bidder in the preparation and submission of a Bid. Further, it reserves the right without assigning any reason whatsoever to:

- (a) reject any or all of the Bids, or
- (b) cancel the tender process; or
- (c) abandon the procurement of the Services; or
- (d) issue another tender for identical or similar Services

Bidders in their own interest are requested to register on e-tender Portal and upload/submit their bid well in time. Bidder will be responsible for any delay due to any issues arising during submission of bids at their end. IOCL shall not be responsible for any delay in uploading the offer on the e-tender website. E-tender portal does not allow uploading and submitting the bid after due date and time. **Bidder must also acquaint and train themselves with the compliance, procedures etc. of the e-tender portal. Bidders shall settle clarifications and disputes, if any, regarding the Portal directly with them. Bidders also to study resources provided by the Portal for Bidders.**

Bidders should attend the Pre bid meeting for the tender (if any) and shall upload the queries on the Seek Clarification module of the e-tender portal only within the fixed time frame. No query shall be entertained after the time limit for uploading query on the portal has expired. Kindly refer Clause No 8.0.0 of SIT (Commercial) for additional details.

Bidders should go through each and every clause of SIT (Section B Commercial) before submitting their bids.

CHAPTER – I : SPECIAL INSTRUCTION TO TENDERERS

[SECTION-B - COMMERCIAL]

1.0.0 TENDER DOCUMENTS

1.1.0 The tender documents include the following;

Part No.	Contents
Part-A	TECHNO-COMMERCIAL BID • Notice Inviting Tender • [CHAPTER-I] Special Instructions to Tenderers (SIT) - Section-A - Technical - Section-B - Commercial • [CHAPTER-II] General Conditions of Contract (GCC-LSTK) • [CHAPTER-III] Special Conditions of Contract (SCC) • Scope of Work and Job Specifications • Technical Specifications • Annexures - Technical • Annexure - Commercial • VIM Communication • Unpriced SOR
Part-B	PRICE BID • Schedule of Rates (SOR)/ Bill of Quantity (BoQ)

1.2.0 Owner has hosted the complete tender document on the website (<https://iocletenders.nic.in>) and has ensured its availability for downloading the full set comprising the above mentioned contents.

Bidders are required to register themselves at <https://iocletenders.nic.in>. The bidders are required to submit their bids electronically on the **e-tender Portal** only (URL: <https://iocletenders.nic.in>) using valid Digital Signature Certificates, on or before the bid submission date and time.

Bidders to refer attached “Special Instructions to the Bidder for participating in e-Tender” for detailed instructions on registration and online bid submission. Help Desk details are available in e-tender Portal.

Tenders submitted in any other form (Fax/ e-mail/ Courier/ Post/ Hard copy, etc.) will not be accepted.

1.3.0 The Bidder is expected to download the complete tender document only from the above mentioned website, i.e. <https://iocletenders.nic.in>, as per the index of the tender, fully read and understood the same and submit their acceptance to all tender terms and conditions as per proforma in **Annexure-1**. Bidder may note that Schedule of Rates attached with the tender documents are to be filled only in the Excel file named BoQ (Bill of Quantity).

Bidder shall also ensure that bids are based strictly as per the terms, conditions and specifications contained in the Tender document. Bidders shall submit bid as per instructions given in Clause No. 5.2.0, 5.3.0 and its sub-clauses. Any deviation and exceptions taken to terms and conditions of the tender documents must be clearly listed out and submitted along with techno-commercial part of the offer as per proforma in **Annexure-2**.

1.4.0 The Bidder is expected to examine the tender documents, including all instructions, specifications and drawings. Failure to furnish all the information, required as per the tender documents, or submission of bid not in consonance to the tender document, may render the bid liable for rejection. Refer Clause No. 29.11.0 of this section of document for further details.

1.5.0 The tender documents shall remain the exclusive property of the Owner without any right of the Bidder to use them for any purpose except for the purpose of tendering and for use by the successful

Bidder with reference to the work.

- 1.6.0 Any person/ Bidder downloading the tender document from Owner's website or purchasing it shall do so in strict confidence and shall not part with possession thereof or copy or disclose the provision thereof or any of them or disclose or take copies or tracings of any drawings, plans or routes forming part thereof, it being understood that the information therein are confidential and that the tender documents have been downloaded or purchased by the eligible Bidder solely for the purpose of bidding.
- 1.7.0 The tender document is non-transferable.
- 1.8.0 Consultant appointed for the project/ job is not allowed to participate in the tender either directly or indirectly. An indirect participation shall include participation through an affiliate or their subsidiary company or companies under the management of consultant or as a sub-contractor, consultant or supplier. The expression 'affiliate' for the purpose of this clause will include any person, or company or association (whosoever designated) who/ which is a member of the consulting agency (if the consultant is a joint venture or consortium or who or which directly or indirectly holds 10% (ten percent) or more of the capital or voting capital of consultant (if the consultant or any of its members is a company or a body corporate) or who or which is a consultant or sub-contractor of the consulting agency with regard to the project. Such bids shall be rejected.
- 1.9.0 Commercial Annexures of SIT (Section B- Commercial) have been uploaded with the tender. Bidders are requested to upload the filled formats along with their offer. Please note that all Commercial Annexures need to be filled. In case of wrong submission or blank submission, IOC reserves the right to complete the evaluation, with or without seeking any additional supporting documents/ clarifications.
- 1.10.0 In case any bidder is found to be involved in cartel formation, his bid will not be considered for evaluation / placement of order. Such bidder(s) will also be debarred from bidding in future apart from penal action as deemed fit.
- 1.11.0 If any provision or condition of this Contract is prohibited or rendered invalid or unenforceable, such prohibition, invalidity or unenforceability shall not affect the validity or enforceability of any other provisions and conditions of this Contract.

2.0.0 PRICE OF TENDER DOCUMENT

- 2.1.0 No tender fee is applicable for the e-tenders, since the Bidders are required to download the tender documents from IOCL e-tender website (<https://iocletenders.nic.in>).

For physical (Legacy) tenders, the applicable fee shall be deposited by the Bidder.

3.0.0 COST OF BIDDING

- 3.1.0 The Bidder shall bear all costs associated with the preparation and submission of his bid and Owner in no case will be responsible or liable for these works, regardless of the outcome of the bidding process.

4.0.0 LANGUAGE OF BID

- 4.1.0 The bid prepared by the Bidder including all documents(s) such as work order(s), drawing(s), certificate(s), literature, annexure(s) etc. shall be in English language only. The correspondence(s)/covering letter relating to the bid exchanged by the Bidder and the Owner shall be in English/ Hindi language.

In case, supporting document(s) and correspondences furnished by the Bidder are in language other than English, the same should be accompanied by an English translation duly authenticated as mentioned at Clause No. 5.2.1 (A) (I) of this document. For the purpose of interpretation of the bid, the English language shall prevail.

5.0.0 SUBMISSION OF TENDER

- 5.1.0 Bids may be submitted by entities defined in Clause No. 7.0.0 of this section.
- 5.1.1 Bidders shall quote for the work subject to their meeting the criteria for evaluation specified in **Clause No. 1.7.0 of SIT Technical: Section A and Clause No. 30.0.0** of this document (Section B: Commercial).
- 5.1.2 The Tender shall be submitted in “**two bid system**” in two parts, viz., PART-A (**Techno-commercial Bid**) and PART-B (**Price Bid**) as detailed below through **online mode only** for e-tenders.
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|---|--|
| <p>PART – A
(Techno-commercial Bid)</p> | <p>: Technical and commercial aspects of the offer of the tender documents with NO PRICE indicated therein. Indicating price in the techno-commercial bid may render the offer liable for rejection.</p> |
| <p>PART – B
(Price Bid)</p> | <p>: It shall be noted that this part shall contain only PRICES and no conditions whatsoever. Any condition mentioned in Part-B of the tender shall not be considered at the time of evaluation of the tender and may make the offer liable for rejection.</p> |
- 5.1.3 All Amendments to tender documents issued by Owner subsequently, if any, must be signed and submitted along with the Bid. The Bid submitted by the Bidder shall take into account all such amendments.
- 5.1.4 The tender shall be completely filled in all respects with requisite information and annexures strictly in the order indicated in Clause No. 5.2.0 and 5.3.0. Incomplete tender(s) not supported by requisite documents may not be considered. Decision of the Owner, in this regard, shall be final and binding on the Bidder.
- 5.1.5 The Bidder shall be deemed to have satisfied himself before submitting the bid, with regards to the correctness and sufficiency of the tender and of the rates stated in the Schedule of Rates and BoQ, which shall cover all his obligations under the Contract and all matters and things necessary for proper completion of the works.
- 5.1.6 Any bidder having a conflict of interest, which substantially affects fair competition, shall not be eligible to bid in this tender. Bids found to have a conflict of interest shall be rejected as nonresponsive. A bidder in this Tender Process shall be considered to have a conflict of interest if the bidder:
- 1) directly or indirectly controls, is controlled by or is under common control with another Bidder;
 - 2) receives or have received any direct or indirect subsidy/ financial stake from another bidder;
 - 3) has a relationship with another bidder, directly or through common third parties, that puts it in a position to have access to information about or influence the bid of another Bidder or influence the decisions of the Owner regarding this Tender process.
 - 4) participates in more than one bid in the tender process. Participation in any capacity by a Bidder (including the participation of a Bidder as sub-contractor in another bid or vice-versa) in more than one bid shall result in the disqualification of all bids in which he is a party. However, this does not limit the participation of a non-bidder firm as a sub-contractor in more than one bid; or would be providing goods, works, or non-consulting services resulting from or directly related to consulting services that it provided.
 - 5) has a close business or family relationship with a staff of the Owner who:
 - a) are directly or indirectly involved in the preparation of the Tender document or specifications of the Tender Process, and/or the evaluation of bids;
 - b) would be involved in the implementation or supervision of resulting Contract
 - 6) Each Bidder can submit only one bid in a tender/ group.
- It is clarified that a **Person** shall be deemed to have submitted multiple bids if he submits more than one bid, either individually or in any combination of person (individual capacity, proprietor, affiliates, partnership, association of persons, company/ association of Companies/ Consortium (including Unincorporated Joint Venture)/ Incorporated Joint Venture). All such multiple bids in a tender / group shall be liable for rejection.

It may be noted that:

- (i) A **company** shall for this purpose include any artificial person whether constituted under the laws of Indian or of any other country.
- (ii) A **Person** shall be deemed to have bid in a partnership format or in association of persons format if he is a partner of the firm which has submitted the bid or is a member of any association of persons which has submitted a bid.
- (iii) A **Person** shall be deemed to have bid in a Company format if, the person holds more than 10% (ten percent) of the voting share capital of the company which has submitted a bid, or is a Director of the Company which has submitted a bid, or holds more than 10% (ten percent) of voting share capital and/or is a Director of a holding Company which has submitted the bid.
- (iv) **Affiliates** of a firm are not permitted to make separate bids directly or indirectly. Two or more parties who are affiliates of one another can decide which affiliate will make the bid. Only one affiliate may submit a bid. If two or more affiliates submit more than one bid, then all such bids shall be liable for rejection.

5.2.0 PART-A (TECHNO-COMMERCIAL BID)

5.2.1 COMMERCIAL BID

(A) FOLDER No. I – QUALIFICATION DOCUMENTS

The Bidders are required to upload a scanned copy of following documents:

- (I) Details of experience as per **Annexure-3** meeting experience (Commercial) as per Clause No. 30.1.2 of this section along with relevant documents, such as copies of Work Order(s) and Completion Certificate(s), supporting their credentials.
- (II) Complete Audited Financial Statement including Auditors reports, Audited Balance Sheet, Profit & Loss Account, Notes, Annexures (if any), etc. for the last 3 (three) financial years for meeting the annual turnover and net worth (if applicable), as per Clause No. 30.1.1 & Clause 30.1.4
- ~~(III) Concurrent commitment (if applicable) duly certified by a chartered accountant (containing Membership No. and UDIN) for the period one year period, counted from the first day of month of start date of downloading of tender as per **Annexure-4** (if applicable), as per Clause No. 30.1.3.~~
- (IV) Earnest Money Deposit as per Clause No. 29.0.0 in this section.
- (V) In case, any Indian Bidder submits documents against qualification criteria originally in language other than English, English translation of such documents certified true copies duly signed, dated and stamped by an official authorised for the purpose in Indian embassy/ High commission in client's country OR certification by local chamber of commerce shall be submitted.

Bidder shall ensure that all the documents uploaded in e-tender portal are complete and legible. The offer must be complete in all respects, leaving no scope for ambiguity. Bidder is fully responsible for the bid submitted and no relief or consideration can be given for errors and omissions. Submission of incomplete and/ or illegible documents may be liable for rejection of bid.

Notwithstanding any other condition/ provision in the tender documents, Bidders are required to submit complete documents pertaining to Pre-Qualification Criteria (PQC) along with their offer. Failure to meet the PQC will render the bid to be rejected. IOC reserves the right to complete the evaluation based on the details furnished by the Bidder, with or without seeking any additional supporting documents/ clarifications.

(B) FOLDER No. II COMMERCIAL BID

The Bidders are required to ensure that all the applicable annexures are complied. Bidder to ensure that:

- i) Acceptance of terms and conditions of Techno-commercial volumes of the tender documents including SOR along with tender forwarding letter duly filled as per **Annexure-1**. Bidder shall also confirm that they have quoted for all items of the BoQ/ SOR.
- ii) Documents in favour of authorised signatory of the tender having a valid Digital signature Certificate (DSC) and valid Power of Attorney.

The Power of Attorney (POA) shall be clearly evidenced by submitting Board resolution for authorization in favour of person signing the bid.

Authorized signatories are defined as under

- (a) **Proprietorship firm:** Proprietor of the firm himself or power of attorney holder (Attested/ notarised copy to be submitted on stamp paper of appropriate value). Proprietor will also upload undertaking certifying that he is sole proprietor on stamp paper of appropriate value.
- (b) **Partnership firm/ LLP:** All the partners or a partner holding power of attorney or a power of attorney holder for signing the tender (Attested / notarised copy of power of attorney, partnership deed/ LLP agreement and current address of all the partners to be submitted on stamp paper of appropriate value).
- (c) **Private or Public Limited Company or Incorporated Joint Venture:** Power of attorney holder (Attested/ notarised copy of power of attorney on stamp paper of appropriate value, Articles of Association, memorandum of understanding also to be submitted).

Certified copy of Board Resolution authorising the person submitting the bid on behalf of the company is also be submitted.

- (d) ~~Consortium (including Unincorporated Joint Venture) (if applicable as per clause no 34.0.0 of SIT Section B (Commercial)):~~ An authorised representative of Consortium (including unincorporated Joint Venture) members having power of attorney signed by legally authorised signatories of all the Consortium members. Also, Duly signed and executed Memorandum of Understanding (MOU) in original duly notarised indicating the name of the Leader/ Prime Member of the Consortium (including unincorporated Joint Venture), the roles and responsibilities of each of the parties shall accompany the Tender. Articles of Association, memorandum of understanding of all the members is to be submitted.
- iii) Commercial Exceptions/ deviations pertaining to Special Instructions to Tenderers, General Conditions of Contract (GCC-LSTK), Special Conditions of Contract (SCC) and other general tender conditions to be indicated only as per Performa as per **Annexure-2**. In case bidder has any deviations, bidder shall mention them in a separate sheet whose format shall be as per Annexure -2. Any exceptions / deviations listed anywhere else shall not be considered during evaluation of the Bid if the bidder has mentioned "NIL deviations" in the excel sheet for **Annexure-2**.
- iv) Duly filled Statement of Credentials as per (**Annexure-3**) along with all supporting documents.
- ~~v) Details of Concurrent Commitment, (if applicable) to be mentioned as per **Annexure-4** along with CA membership no and UDIN no. Bidder to ensure that the contents of Annexures-4 are the same as uploaded on the UDIN verification website against the mentioned UDIN no. **This certificate is to be uploaded separately in the techno-commercial bid duly signed and stamped.**~~
- ~~vi) Declaration for Net Worth, (if applicable) as per **Annexure-5** along with membership No. of any Practicing Chartered Accountant and UDIN No. Bidder to ensure that the contents of Annexures-5 are the same as uploaded on the UDIN verification website against the mentioned UDIN no. **This certificate is to be uploaded separately in the techno-commercial bid duly signed and stamped.**~~
- vii) Bidder shall submit a copy of Goods and Services tax Registration Certificate.

- viii) The Contractor shall get their name registered as per tax law of the State where the work is to be executed. The Contractor shall be responsible for procurement of material in its own registration (GSTIN etc.) and also to issue its own Road Permit/ E Way bill etc., if any.
- ix) Declarations pertaining to Integrity pact Agreement (format attached **in the tender**), if applicable as per **Clause no 33.0.0** of SIT (Section B Commercial) shall be submitted with Seal and Signature of the Bidder.
- x) Declaration of Black listing/ Holiday Listing in the prescribed format as given as per **Annexure-9**.
- xi) Certificate regarding restriction of Bidder from the country sharing border with India and for tenders involving possibility of subcontractor as per **Annexure-10**. Clause No 7.4.0 of this document may please referred for further details
- xii) Form of Tender for Commercial Bid**, duly filled as given as per **Annexure-11**.
- xiii) Form of Tender for **Price Bid** duly filled as given as per **Annexure-12**.
- xiv) Information regarding the Bidder as per **Annexure-13**.
- xv) Declaration of relationship with directors of IOCL as per **Annexure-14**.
- xvi) Declaration on proceedings under Insolvency and Bankruptcy Code, 2016 as per **Annexure-15**
- xvii) An undertaking in support of not being under liquidation, court receivership or similar proceedings as on the bid submission date (**Annexure-16**). Failure to do so will result in bids not being considered for evaluation.

If there is any change in status prior to the award of work, the same has to be promptly informed to Owner by the Bidder. Concealment of the facts shall tantamount to misrepresentation of facts as per Clause No. 5.4.0 and sub-clauses and shall lead to action against such Bidders.
- xviii) Declaration as per proforma given as per **Annexure-17** regarding Non-engagement of child labour.
- xix) Safety declaration as per **Annexure-18**.
- xx) Duly signed Corrigendum/ addendum, if any, issued at a later date in addition to excel based Annexures.
- xxi) Provident Fund Code Number (for Indian Bidders only) is to be furnished as per Clause No. 4.18 of ITT of General Conditions of Contract.
- xxii) Income Tax Permanent Account Number.
- xxiii) Duly filled in Format for giving consent and bank details as per **Annexure-19**. Bidder to also include a copy of cancelled cheque.
- xxiv) Proforma of Indemnity Bond to be submitted by successful Bidder along with request for issuance of Completion Certificate as per **Annexure-20**.
- xxv) **No claim/ No due certificate** as per **Annexure-21**.
- xxvi) Bidders are requested to note and confirm compliance to PPP MII policy (if applicable as per Clause No 36.1.0 of this document). Bidder has to also furnish Undertaking for Applicability of Policy and for meeting local content as per Annexure-23. A statutory Auditor's /Cost Auditor's Certificate (Annexure 24) is also to be submitted (if mentioned in Commercial Annexures). In case appointment of cost/ statutory auditor is not applicable documents can also be submitted by a practicing CA. (Refer to policy for further details). The certificate in Annexure-24 is to be uploaded in techno commercial bid duly signed and stamped with UDIN no. for further evaluation.

5.3.0 PART – B (PRICE BID)

5.3.1 **For e-tenders, the price bid shall be submitted online only. Price bid submitted in any other mode shall not be accepted.**

5.3.2 The Bidder shall quote firm prices in the price schedule (BoQ). The bid prices shall conform to the provisions of Clause No. 31.0.0 of this document.

5.3.3 Price bid shall be quoted in BoQ (excel file) available elsewhere in the tender document. The words "BoQ" and "BoQ excel file" has been used interchangeably in the tender document and would mean the same in expression and intent in proper context. Tender also contains unpriced BoQ in pdf version termed as "Schedule of Rates".

5.3.4 **Bidders are advised to check the BoQ before submitting the price bid w.r.t. the Schedule of Rates. In case of any discrepancy in item text, Quantity and Units in the BoQ vis-à-vis Schedule of rates, the Schedule of Rates attached with Tender documents shall prevail.**

5.3.5 The price quoted under each head shall include all costs towards equipment, labour and laboratory back-up, logistics, transport, travel and stay arrangements and other incidentals including supply of materials as may be necessary for rendering the services in totality as per detailed specifications.

5.3.6 For supply of indigenous/imported items under the scope of the contractor, the rates quoted by the Bidder shall be all inclusive for delivery of material at site (FOR/DDP destination basis). It shall include the basic cost, all applicable taxes and duties (excluding Goods and Services Tax), inspection charge, transportation charges, transit insurance, auxiliary taxes, octroi, (wherever applicable), etc.

5.3.7 **The price offered by the Bidder shall not appear anywhere in any manner in the Technical Bid. Indicating price in the techno-commercial bid may render the offer liable for rejection.**

5.4.0 **Submission of forged/ false/ fake documents/ misrepresentation of facts:**

5.4.1 The Bidder shall enclose documents to show that he has previous experience in having successfully completed in the recent past, works of similar nature together with the name of the client and/ or end customer, location, sites and value of contract in the format (**Annexure-3**) annexed to the Form of Tender. It shall be the responsibility of the Bidders to fill complete, correct and accurate information in line with the requirements/ stipulations of the Tender Document, regarding their past experience and other information required to facilitate due evaluation/ consideration of their tenders.

5.4.2 If any information given by the Bidder is found to be incorrect in any particular manner, considered by the OWNER to be relevant for the evaluation of the bid/ tender, or is found to misrepresent facts, or if any of the documents submitted by the Bidder in support of or relevant to the bid/ tender is found to be forged, false or fabricated, the OWNER may reject the bid. Further, without prejudice to any other right(s) of action or remedy available to the OWNER, the Owner may forfeit the Earnest Money Deposit or Bank Guarantee in lieu of Earnest Money Deposit in order to compensate the OWNER and take action for putting the Bidder on holiday list for such period as the OWNER in this behalf considers warranted and/ or to remove the Bidder from the approved list of Vendors/ Contractors. If prior to the discovery of incorrect information, misrepresentation or false, forged or fabricated document(s), the bid/ tender has resulted in a contract, the contract shall be liable to be terminated by the OWNER pursuant to the provisions of Clause 7.0.1.0 of the General Conditions of Contract with the consequences of termination as provided in Section 7 of the General Conditions of Contract.

5.5.0 Submission of the information and details shall be done strictly in the manner described. In case the relevant data/ details/ information in respect of the above is not furnished in the techno commercial part (**Part-A**), the tender may be rejected.

6.0.0 VALIDITY OF OFFER

6.1.0 Tender submitted by the Bidder shall remain valid and open for acceptance for a period of **4 (four) months** from the date of opening of Techno-commercial part of the tender. The rates quoted in the BoQ shall remain firm during the validity period. The Bidder shall not be entitled to modify, vary, revoke or cancel his bid during the said period. In case of Bidders modifying, varying, revoking or

cancelling his bid, the Earnest Money paid by them shall be liable to be forfeited. In case the day up to which the bids are to remain valid falls on/ subsequently declared a holiday or closed day for the Owner, the bid validity shall automatically be deemed to be extended up to the next working day.

- 6.2.0 In exceptional circumstances, prior to expiry of the original bid, the Owner may request the Bidder for a specified extension in the period of validity. The request and the responses thereto shall be made in writing or by fax/ e-mail. A Bidder may refuse the request without getting his bid security (EMD) forfeited. A Bidder agreeing to the request will not be permitted to modify his bid, but will be required to only extend the validity of his EMD correspondingly. The provisions of discharge and forfeiture of EMD shall continue to apply during the extended period of the validity.

7.0.0 BIDDING ENTITY

7.1.0 Bids may be submitted by:

- Sole Bidder: Individual (Proprietary)/ Partnership/ Company
- ~~Consortium (including an unincorporated Joint Venture) having a maximum of two members (if applicable) as per Clause No 34.0 of SIT (Section B Commercial);~~
- Wholly owned Indian subsidiary of any company on the financial strength of its parent company

Any Bidder from a country which shares a land border with India will be eligible to bid in this tender, only if it is registered with the competent authority (Refer Clause No. 7.4.0 for further details)

Bidder shall submit the details as per **Annexure-1** mentioning the nature of their bidding entity. Any change in the nature of bidding entity at a later stage would tantamount to alteration of bids and shall be liable to have his/its/their tender rejected and his/its/their Earnest Money deposit or Bank Guarantee submitted by way of earnest money forfeited/encased.

In addition to this, bidder should not have changed its name or created a new “Allied Firm”, consequent to having declared ineligible/ suspended/ blacklisted/ banned/ debarred by the organization.

7.2.0 Sole Bidder

Sole Bidder shall fulfill Eligibility Criteria as specified in the Experience Criteria (technical) as per Clause No. 6.0.0 of Section-A of SIT and Experience criteria (commercial) defined at Clause No. 30.0.0 of Section-B of SIT and its sub-clauses.

7.3.0 Wholly owned Indian Subsidiary of any Company:-

A company registered in India (under Companies Act, 1956 or subsequent amendment if any), which is a Wholly Owned Subsidiary of a foreign or Indian company can be qualified based on the financial qualification of its parent company provided that the parent company declares under a memorandum of understanding with the Indian subsidiary that it would be jointly and severally responsible for all the jobs being carried out by the bidding company. Bidder has to submit documentary evidence for establishing itself being wholly owned subsidiary.

Following shall be complied and necessary documents from Parent Company shall be submitted:

- Details of mode of job execution, manpower, machinery deployment shall be submitted at the time of bid. Responsibility matrix of Parent company and bidding subsidiary, not limited to the following, shall be furnished along with the bid:
 - Overall responsibility for execution of entire job under the contract shall be with wholly Owned Subsidiary that shall be financially supported by the parent company.
 - The parent company and bidding subsidiary are jointly and severally responsible in terms of tender.
 - The parent company will ensure deployment of requisite equipments required for undertaking different jobs as per tender requirements.

- (iv) The correspondences for execution of job will be made with bidding subsidiary. However, whenever called for by the Owner, parent company shall ensure its presence in progress review meeting.
- (v) The Parent Company shall furnish an undertaking to be jointly and severally responsible with the subsidiary for due, proper and timely performance of the Contract and discharge of liabilities of its subsidiary in the event of the award of job to its subsidiary.
- (b) Bidder shall submit notarised copy of MoU between parent company and bidding company (subsidiary) incorporating details as mentioned above at Clause No. 7.3.0(a). The MoU should be signed by the Authorized Representatives of both the companies. Supporting documents in respect of Authorization should also be submitted.
- (c) The jobs under consideration shall be executed by the Wholly Owned Subsidiary. Failure to honour the commitment as per MoU, will attract all actions including but not limited to General Conditions of Contract Clause Nos. 4.7.3.0, 4.7.4.0, 7.0.0.0 and any other related clauses and holiday listing of the bidding company and/or parent company.

7.4.0 **GUIDELINES FOR BIDDERS FROM COUNTRY SHARING LAND BORDER WITH INDIA**

7.4.1 Bidders are advised to refer Order (Public Procurement No. 1) issued vide OM No. F.NO.6/18/2019-PPD dated 23.07.2020, Order (Public Procurement No. 2) issued vide OM No. F.NO.6/18/2019-PPD dated 23.07.2020 and Order (Public Procurement No. 3) issued vide OM No. F.NO.6/18/2019-PPD dated 24.07.2020, Department of Expenditure, Ministry of Finance, Govt. of India. The same are available at website <https://doe.gov.in/procurement-policy-divisions>.

7.4.2 Any Bidder from a country which shares a land border with India will be eligible to bid in this tender, only if the Bidder is registered with the competent authority. For details of competent authority refer to Annexure I of Order (Public Procurement No. 1) dated 23.07.2020.

Further, the above will not apply to Bidders from those countries (even if sharing a land border with India) to which the Government of India has extended lines of credit, or in which the Government of India is engaged in development projects. Updated lists of countries to which lines of credit have been extended or in which development projects are undertaken are given in the website of the Ministry of External Affairs, Govt. of India.

7.4.3 “Bidder” for the above purpose (including the term “tenderer”, ‘consultant’ or ‘service provider’) means any person or firm or company, including any Member of a consortium or joint venture (this is an association of several persons, or firms or companies), every artificial Juridical person not falling in any of the descriptions of Bidders stated hereinabove, including any agency, branch office or office controlled by such person, participating in procurement process.

7.4.4 “Bidder from a country which shares a land border with India “ for the purpose of above clause is defined as:

- a. An entity incorporated, established or registered in such a country; or
- b. A subsidiary of an entity incorporated, established or registered in such a country; or
- c. An entity substantially controlled through entities incorporated, established or registered in such a country; or
- d. An entity whose *beneficial Owner* is situated in such a country; or
- e. An Indian (or other) agent of such an entity; or
- f. A natural person who is a citizen of such a country; or
- g. A Consortium (including unincorporated Joint Venture) where any Member of the consortium or incorporated joint venture falls under any one of the above.

7.4.5 “Beneficial Owner” for the purpose of Clause No.7.4.4 (d) above will be as under:

- (i) In case of a company or Limited Liability Partnership, the beneficial Owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person(s), has a controlling ownership interest or who exercises control through other means.

- (a) “Controlling ownership interest” means ownership of, or entitlement to, more than twenty-five percent of shares or capital or profits of the company;
 - (b) “Control” shall include the right to appoint the majority of directors or to control the management or policy decisions, including by virtue of their shareholding or management rights or shareholders agreements or voting agreements.
 - (ii) In case of a partnership firm, the beneficial Owner is the natural person(s), who whether acting alone or together, or through one or more juridical person, has ownership of or entitlement to more than fifteen percent of capital or profits the partnership;
 - (iii) In case of an unincorporated association or body of individuals, the beneficial Owner is natural person(s), who, whether acting alone or together, or through one or more juridical person, has ownership of or entitlement to more than fifteen percent of the property or capital or profits of such association or body of individuals;
 - (iv) Where no natural person is identified under Clause No. 7.4.5 (i) or (ii) or (iii) above, the beneficial Owner is the relevant natural person who holds the position of senior managing official.
 - (v) In case of trust, the identification of beneficial Owner(s) shall include identification of the author of the trust, the trustee, the beneficiaries with fifteen percent or more interest in trust and any other natural person exercising ultimate effective control over the trust through a chain of control of ownership.
- 7.4.6 “Agent” for the purpose of this order is a person employed to do any act for another, or to represent another in dealings with third person.
- 7.4.7 After award of contract, the successful Bidder, shall not be allowed to sub-contract works to any contractor from a country which shares a land border with India (defined above) unless such sub-contractor is registered with competent authority.
- 7.4.8 All Bidders shall submit certificate for compliance of the subject clauses as per **Annexure-10**. If such certificate given by a Bidder whose bid is accepted is found to be false, this would be a ground for immediate termination and further legal action in accordance of law.
- 8.0.0 PRE-BID MEETING**
- 8.1.0 The pre-bid meeting, if specified in Notice Inviting Tender shall be held as per the schedule mentioned therein. The purpose of the meeting is to clarify any techno-commercial issues pertaining to the bidding document.
- 8.2.0 Bidders in their own interest are advised to actively take part in the pre-bid meeting. Their authorised representative(s) shall attend the pre-bid meeting on the prescribed day at the given venue specified in the NIT.
- Alternatively, the pre-bid meeting may be arranged through Video Conference, at Owner's discretion. All the bidders interested to participate in the pre-bid meeting through Video Conference. Participation in the meeting shall be requested through their official e-mail ID to the tender issuing authority email provided in the NIT. The details of video conference (Meeting ID, password, link, etc.) shall be shared only to bidders who have sent the request for participation.
- Bidders are expected to participate in pre-bid meeting after going through the tender document with an objective of deliberating technical and commercial issues to the maximum extent so as to seek any clarifications or put forth their suggestions for consideration of the Owner. This would facilitate the bidders to correctly submit their bid. Hence, bidders shall treat the pre bid meeting as utmost important and depute competent and senior persons, who have authority to sort out any technical and commercial issues.
- In order to ensure fruitful discussions during pre-bid meeting, the bidder is requested to submit any queries that they have under the seek clarification facility on the e-tender portal.
- 8.3.0 In case, a bidder is not able to attend the pre-bid meeting due to any unavoidable reasons, bidder may submit their queries on seek clarification facility on the e-tender portal. **Also, no queries/**

clarifications sent through mail shall be entertained. After the Seek Clarification end date on the e-tender portal, no further queries shall be entertained.

- 8.4.0 In case any Bidder does not attend the pre-bid meeting and also doesn't raise any queries, it shall be understood that the Bidder has a clear understanding of the BQC, scope, terms and conditions of the Bidding Document and does not have any comment/ deviation with regard to the same.
- 8.5.0 Pre-bid queries should be uploaded on the portal under seek clarification tab as per the format given below with the subject "Pre bid queries – Tender Title and Tender Ref No":

S. No.	Tender Clause Number	Query (if any)	Justification

- 8.6.0 Any modification in the bidding document, which may become necessary as a result of Pre-bid meeting/Pre Bid Query shall be incorporated by issuing the addendum/ corrigendum by the Owner in the IOCL e-tender portal.

9.0.0 CORRIGENDUM/ ADDENDA/ CLARIFICATIONS

- 9.1.0 Corrigendum/ Addenda/ Clarifications may be issued by the Owner, prior to the date of opening of the tender to clarify issues arising out of various queries/ clarifications relevant to the tender documents from Bidders or to reflect modification in the design or contract terms. Such addendum/ addenda shall be uploaded on the IndianOil e-tendering site <https://iocletenders.nic.in> for reference of all Bidders. Each recipient shall retain one copy of such corrigendum/ addendum/ addenda for submission along with the tender in acknowledgement of receipt thereof. All such addendum issued shall form part of the tender document.
- 9.2.0 Bidders may note that if they have downloaded the tender documents from the above mentioned website by using Guest User ID, the intimation regarding Corrigendum/ Addenda/ Clarification shall also be sent to Guest User ID by the website and bidder may miss the same. Bidders are therefore advised to ensure that they have downloaded all such Corrigendum/ Addenda/ Clarifications that have been issued prior to the date of opening of the tender. Before uploading the final offer, all such Corrigendum/ Addenda/ Clarifications must be considered by the Bidder. Owner shall not be held responsible on this account and the bid may be rejected by the Owner.
- 9.3.0 If a Bidder does not take a note/ fails to take a note of the corrigendum/ addenda/ clarifications hosted on the e-tendering website on any accounts whatsoever and their offer is without considering the corrigendum/ addenda/ clarifications, then Owner may reject the offer.

10.0.0 CONFORMITY TO TERMS AND CONDITIONS OF BID DOCUMENTS

- 10.1.0 Bids shall be strictly based on the terms, conditions and specifications contained in the Bid documents. Any deviation and exceptions taken to terms and conditions of the Bid documents must be clearly listed out as per proforma of "Exceptions and Deviations" at **Annexure-2**. Exceptions and Deviations are to be submitted in different folders giving proper reference to Page No./ Clause No./ Para, etc.
- 10.2.0 All correspondences from Owner, as well as from the contractor regarding clarifications during techno-commercial evaluation of the bid and mutually accepted deviations to tender document shall be concluded as "Agreed Variations". The "Agreed Variations" shall form part of the contract. All other correspondences in this regard will be treated as null and void.

11.0.0 MODIFICATION AND WITHDRAWAL OF BIDS

- 11.1.0 The Bidder may modify or even withdraw his bid after bid submission but before the end date and time of bid submission. However, if a Bidder withdraws his bid, then he will no longer be able to re-submit his bid for that tender.
- 11.2.0 A Bid once opened cannot be modified or withdrawn except when additional conditions are proposed by Owner as per clause no 17.4.0 of this document.

12.0.0 OPENING OF TECHNO-COMMERCIAL BIDS

- 12.1.0 The Techno-Commercial Bid (Part-A of Bid) of all the Bidders submitted online up to the date and time for receipt of bids as per the Notice Inviting Tender and also appearing under "Critical Dates"

stated in the e-tender portal or in the subsequent corrigendum, if any, shall be opened. The system time (IST) displayed on e-Procurement web page shall be the time considered for determining the expiry of due date and time of the tender. No other time shall be taken into cognizance.

13.0.0 INSOLVENCY AND BANKRUPTCY CODE

13.1.0 Offer of Bidder(s) will not be considered in the following cases:

- i. If the Bidder is undergoing insolvency resolution process or liquidation or bankruptcy proceeding under Insolvency and Bankruptcy Code, 2016 (Code) or any other applicable law (in cases where the said code is not applicable),
- ii. Insolvency resolution process or liquidation or bankruptcy proceeding is initiated under the Code or any other applicable law (in cases where the said code is not applicable) against/by the Bidder at any stage of evaluation of the bid.

13.2.0 In the event, insolvency resolution process or liquidation or bankruptcy proceeding is initiated under the Code or any other applicable law (in cases where the said code is not applicable) against/by the Bidder, after submission of its bid but at any stage of evaluation of the bid, it will be the responsibility of the Bidder to inform IOCL within 15 days from the date of order of insolvency resolution process or liquidation or bankruptcy proceeding passed by the Adjudicating Authority namely, National Company Law Tribunal (NCLT) or Debt Recovery Tribunal (DRT) under the Code or any other applicable law (in cases where code is not applicable).

13.3.0 A declaration/ undertaking is to be furnished by the Bidder as per the attached format **Annexure-15** during bidding.

13.4.0 If Bidder refuses or fails to share the information regarding their status of insolvency resolution process or liquidation or bankruptcy proceeding as sought hereinabove, in their bid or at any later stage, as applicable, their offer is liable to be rejected by IOCL and without prejudice to any other remedy or action available with IOCL, the Earnest Money Deposit provided by the Bidder, in any form whatsoever, shall be forfeited.

13.5.0 In case where the bid of the L-1 Bidder is rejected on the aforesaid grounds during the period between Price-Bid-Opening and Award of Contract, then the bid of the next higher eligible Bidder will be considered for further processing.

13.6.0 If Bidder fails to share or misrepresents the information regarding their status of insolvency resolution process or liquidation or bankruptcy proceeding as sought hereinabove and the Bidder's bid results in a contract, IOCL, without prejudice to any other any other remedy or action available with IOCL, shall be within its rights to terminate the resultant contract.

14.0.0 APPOINTMENT OF CONSULTANTS

14.1.0 Owner shall have full discretion to engage consultants of his choice for expert advice on the evaluation of bids, inspection of equipments, supervision of installation and commissioning or any other services deemed necessary from time to time. Bidder shall be bound to answer all relevant queries from Owner/ Consultant.

15.0.0 CLARIFICATION OF BIDS

15.1.0 To assist in the examination, evaluation and comparison of bids, the Owner may ask the Bidders individually for clarification on their Bids. The request for clarification and the response shall be in writing, but no changes in the price or substance of the bid shall be sought, offered or permitted except as required to confirm the correction of errors discovered by the Owner during the evaluation of bids.

16.0.0 EVALUATION OF OFFERS AND ACCEPTANCE/ REJECTION OF BIDS

16.1.0 Owner reserves the right to accept the tender in full or in part/ parts. Owner does not bind itself to accept the lowest tender and reserves the right to reject any or all the tenders received without assigning any reason whatsoever and no compensation shall be paid for the efforts made by the Bidder.

- 16.2.0 Bids in which, any of the particulars and prescribed information are missing or are incomplete in any respect and/ or the prescribed conditions are not fulfilled and/ or the Bidder is not responding to queries or has submitted incomplete response to queries posted on the e-tender portal within the cut-off date and time shall be considered “Non-Responsive” and are liable to be rejected.
- 16.3.0 Any effort by a Bidder or Bidder’s agent, consultant or representative, howsoever described to influence the OWNER in any way concerning scrutiny, consideration, evaluation or computation of the bid(s) or decision concerning award of contract shall entail rejection of Bid.
- 16.4.0 Reasons for rejection shall be disclosed on written representation by the concerned Bidder whose bid is rejected.
- 16.5.0 IOCL reserves the right to use in-house information for assessment of Bidder’s capabilities keeping in view their performance in past job(s) with any client. The final techno-commercial evaluation shall be done on the basis of evaluation of financial soundness, past experience, present commitment, credentials of the subcontractors proposed (if any), capability to deploy specified manpower and equipments for the work and confirmation regarding strict adherence to the time schedule to be submitted in the form of a bar chart for the present work and all terms and conditions stipulated in tender documents.
- 17.0.0 PRE-PRICE BID MEETING**
- 17.1.0 Pre-price bid meeting may be held before price bid opening, if considered necessary by IOCL. The date and time of pre-price bid meeting shall be conveyed to the technically and commercially qualified Bidders.
- 17.2.0 Authorized representatives of the Bidders shall attend the pre-price bid meeting for resolving outstanding issues, if any, and for other mutual clarifications. Based on discussions in the pre-price bid meeting, deviations, if any, from tender terms and conditions shall be communicated in writing to all the Bidders. In such cases, Bidders shall be advised to submit acceptance of the deviations and price implication (positive or negative), if any, in sealed envelope within stipulated period.
- 17.3.0 In case, no response is received till the stipulated time, it shall be construed that Bidder accepts the deviations and has no price implication to offer. Price implications received after the stipulated date shall not be considered. In such cases, their original offer will be considered along with the conclusion that the Bidder has accepted the revised terms and conditions.
- 17.4.0 Bidders unable to comply with IOCL’s terms and conditions including proposed deviations will be allowed to withdraw their bids.
- 17.5.0 In case after opening of their revised offer indicating price implication, it is found that a new deviation is incorporated in the offer, their bid shall be rejected outright and EMD of Bidder shall be forfeited. A warning letter shall also be issued to such Bidders. For MSE Bidder (exempted from EMD submission) a complaint shall be lodged to the concerned certificate issuing authority.
- 18.0.0 OPENING OF PRICE BID**
- 18.1.0 The Price Bids of the techno-commercially acceptable Bidder(s) shall be opened online on suitable date and time. The date and time of the price bid opening shall be updated on the e-tender portal of IOCL. Bidder(s) can also witness bid opening by logging into the e-tender portal, using valid digital signature/certificate.
- 18.2.0 Though Qualification Criteria mentioned above are the basic criteria for consideration of a bid, fulfilment of the same shall not automatically mean qualification of the Bidder for opening of the price bid or for award of the job.
- 19.0.0 PRICE EVALUATION AND COMPARISON OF BIDS**
- 19.1.0 Bidders may note that their bids will be evaluated based on the landed cost including GST. If GST rate is not quoted in the BoQ, then quoted rate by the Bidder shall be considered **as inclusive of GST**.
- 19.2.0 It is incumbent upon the bidders to classify the correct categories of supply/SAC code and applicable tax rate for the subject scope of work under GST Law. Further, the bidder being successfully awarded the tender shall be liable to issue tax invoice(s) for such supply, prominently indicating the rate and

amount of GST, which shall form part of the price at which such supply is to be made.

- 19.3.0 The bidders to note that, Notwithstanding the price evaluation and comparison of bids mentioned elsewhere in this tender documents, bids will be evaluated on the landed cost including GST, quoted by the bidders as mentioned above. However, in case of bidders have quoted/selected different GST rates for the subject scope of works under this tender, the evaluation shall be done as NET of ITC on GST basis (Quoted amount of GST (minus) Available Input Tax Credit (ITC) on GST to IOCL), so that works shall be awarded on the lowest cost to IOCL.

As a piece of general information to bidders, considering prevalent GST law and in particular, Section 16 and 17 of CGST Act, the admissibility of ITC to IOCL related to the different scope of works shall be as under.

Sl No	Nature of Works	ITC admissibility	Remarks
1	Related to LPG Pipeline Project	Yes	100% ITC admissible
2	Related to Naptha Pipeline Project	Yes	100% ITC admissible
3	Related to Crude Pipeline Project	Proportionate	28.37% ITC admissible
4	Related to Product Pipeline Project	Proportionate	28.37% ITC admissible
5	Related to Natural Gas Pipeline Project	No	0% ITC admissible
6	Related to ATF Pipeline Project	No	0% ITC admissible
7	Related to Administrative Offices (like PLHO)	Proportionate	28.37% ITC admissible

It may please be noted that the above shall be the guiding principle for evaluation, wherever applicable. The comparative positions of the bidders will be arrived as above and the auto generated comparative statement by the system will not be considered.

- 19.4.0 Deleted.
- 19.5.0 In case of tie between two or more Bidders at L-1 position, all the L-1 Bidders shall be advised to submit discount bid in terms of percentage discount over previous quoted amount in a sealed envelope. Above exercise shall currently be an offline activity outside the e-tender portal. The Bidders shall be advised well in advance to witness the opening of sealed envelopes.
- 19.6.0 In case there is a tie again, the Bidder with the highest turnover in immediate preceding financial year (as submitted against turnover criteria) as defined in note (iii) of Clause No. 30.1.1 shall be considered as L-1 Bidder.

20.0.0 REJECTION CRITERIA:

- 20.1.0 A bid may be liable for rejection in the following circumstances:

- If the Earnest Money Deposit is not deposited before closing date and time of tender.
- Payment is made through NEFT/RTGS in wrong account.
- Does not fulfill minimum qualification criteria prescribed in the Tender documents.
- Bidder is holiday listed as per prevailing holiday listing guidelines.
- Bidder is banned for participation in tenders for a specific period as per CPE guidelines
- Bidder is undergoing proceedings under Corporate Insolvency Resolution Process (CIRP).
- Stipulates the validity period of the bids lesser to what is stated in the Tender Document.
- Quotes the rates or prices in documents other than price bid documents (for two- bid tenders).
- Stipulates his own conditions and does not agree to withdraw the deviations, rendering his bid unacceptable.
- If the bids contain unacceptable terms and conditions.

- (k) In case of suo-moto reduction in the prices offered by the bidder except in case of L-1 bidder.
- (l) Any discrepancy done with the BOQ uploaded on the e-tender portal.
- (m) Revised price bid during validity period without being asked for.
- (n) In case the bidder misrepresents facts or submits, forged, false or fabricated document
- (o) If it is found that the bidder remains non-compliant to taxation laws including GST, income Tax, Customs against earlier awarded contracts by IOCL such as failure in (i) depositing collected GST amount to the exchequer (ii) filing prescribed return (iii) issuance of TDS certificate, etc. in spite of intimation/opportunity for compliance, their offer for this tender may be liable for rejection.
- (p) Failure of bidder to submit tenders without taking cognizance of corrigendum / amendment issued.
- (q) Failure of bidder to submit reply to Technical / Commercial Query (TQ/CQ) within the given deadline.

21.0.0 NEGOTIATION

- 21.1.0 Negotiations will not be conducted with the Bidders as a matter of routine. However, Corporation reserves the right to conduct negotiations. Bidders are required to quote competitive prices considering the fact that price negotiations, if required, will be held with the lowest Bidder only, unless specified otherwise in the tender.
- 21.2.0 Only the authorized representative of the bidding entity shall attend such negotiations. The commitments made and/ or clarifications given during the negotiations will be final and binding on the Bidder. He/ She should carry the necessary authorization to attend such negotiations and to hand over an authenticated copy of the same to IOCL representative/s participating in negotiations. Conditional discount after negotiation given by the bidder shall not be acceptable.

22.0.0 DOCUMENT VERIFICATION

- 22.1.0 Document verification with originals shall be carried out only for the successful Bidders (s) after opening of price bids or after completion of Reverse Auction, as applicable. The technical qualification of the Bidders shall be based on the document submitted by Bidders in the tender. Award of contract shall be made only after verification of documents with originals of the successful Bidder(s).

Conditions for verification of documents are:

- As the documents are being submitted by the Bidders in tenders, the responsibility of authenticity of documents shall be with Bidders.
- Only documents against Pre-Qualification criteria shall be verified with originals.
- In case it is observed that the L1 Bidder has submitted forged documents, necessary action for holidays listing of the Bidder in line with guidelines shall be carried out including forfeiture of EMD, and any other provision as detailed in the tender document.
- However Owner reserves its right to verify statutory documents/ declarations/ financial statements from relevant online portals.
- The Bidders shall be required to present their original documents to Tender Inviting Authority within a period of 7 days from date of opening of Price bids/ conclusion of Reverse Auction or date of intimation, whichever is later.

Submission of authentic documents is the prime responsibility of the bidder. Wherever IOCL has concern or apprehension regarding the authenticity/ correctness of any document, IOCL reserves the right to get the documents verified from issuing authority/any relevant source. If documents (part or full) are found forged, such offers will be summarily rejected, EMD will be forfeited, orders if any placed against subject tender will be terminated and may be debarred from future tenders. For the purpose of verification bidders shall submit complete client details with names, address, phone number, e-mail ID etc in **Annexure -3**.

23.0.0 AWARD OF WORK/ CONTRACT

- 23.1.0 Within the period of bid validity granted by the Bidder, IOCL will notify the successful Bidder in

- writing by letter sent by registered post/ courier/ mail or hand delivered, intimating IOCL's acceptance of the bid.
- 23.2.0 For Group tenders, the Owner shall have the right to award all the Groups of work either to a single Contractor or to different contractors on least cost option to the Owner. However, single Group of work shall mean total scope of work envisaged in that Group and no bifurcation of scope of work of the said Group shall be made while awarding the work. Bidder shall also refer clause 32.3.0 & its sub-clauses for evaluation of Bids in group Tenders.
- 23.3.0 For contracts of value above Rs. 25.00 lakh, the successful Bidder(s) shall have to execute a formal Contract with IOCL (Pipelines Division) in accordance with the form of contract in the format prescribed in GCC forming part of the bid documents within 30 (thirty) days from the date of receipt of the Letter of Acceptance from IOCL(Pipelines Division) on a non-judicial stamp paper and of appropriate value. The cost of non-judicial stamp paper shall be borne by the Bidder.
- 23.4.0 Until the formal contract is signed, the bid documents and Addendum(a) at any time and any modification thereto and/or there from agreed upon by IOCL(Pipelines Division) read with the Bidder's final bid shall be considered as contract.
- 23.5.0 The Contract document shall consist of the following:
- (i) Agreement (Form of Contract), on non-judicial stamp paper by Owner and Contractor.
 - (ii) Letter of Acceptance.
 - (iii) The Bidding Document along with the drawings, if any
 - (iv) General Conditions of Contract of Indian Oil Corporation Ltd
 - (v) Amendments to Bidding Document or post award Amendment, if any
- 23.6.0 Bidder hereby agrees to accept Repeat Work Order on same terms and conditions during period of six months from the date of original order for the quantities nor more than that of the original order.
- 24.0.0 ADDITIONAL INFORMATION TO BE SUBMITTED BY SUCCESSFUL BIDDER**
- 24.1.0 Successful Bidder(s) against this tender who is not a Micro or Small Enterprise (MSE) as per the Micro, Small and Medium Enterprises Development Act, 2006 (MSMED Act 2006) and Micro, Small and Medium enterprises order- 2012, will have to furnish the information to the Engineer-in-Charge upon award of work as per **Annexure-25**.
- 25.0.0 INDIGENISATION**
- 25.1.0 Bidder shall make maximum possible utilisation of indigenous manufacturing facilities and other services/ expertise available for their project implementation plans. It is, therefore, essential that as a preliminary exercise, Bidders should explore potential available indigenously for utilisation of manufacturing facilities and other various products/ equipment/ material of Indian origin conforming to specifications as well as construction expertise available indigenously and associate experienced Indian Agencies under overall supervision and responsibility of Contractor. This may be read in conjunction with relevant clauses of SIT (Technical)/ SCC (Technical).
- 26.0.0 CURRENCIES AND PAYMENT**
- 26.1.0 Indian Bidders shall quote their prices in Indian Rupees only.
- 26.2.0 All payments will be made in Indian Rupees only. In case, bidders are required to pay any amount in foreign currency to their subcontractor or for any imported items, necessary arrangement for such foreign currency payment shall be made at their end.
- 26.3.0 All the payment in Indian Rupees and/or foreign currency shall be released through e-banking only. Successful Bidder shall submit details of their Bank Account for e-payment purpose as per **Annexure-19**.
- 27.0.0 GRIEVANCE REDRESSAL**
- 27.1.0 Bidder has the right to submit a complaint or seek de-briefing regarding the rejection of his bid, in writing or electronically, within 2 working days of declaration of techno-commercial or financial evaluation results. The complaint shall be addressed to the Grievance officer mentioned below at

Clause 27.3.0.

27.2.0 The Tender Inviting Officer shall convey the final decision to the complainant. No response shall be given regarding the confidential process of evaluating bids and awarding the contract before the award is notified, although the complaint shall be kept in view during such a process. However, no response shall be given regarding the following topics explicitly excluded from such complaint process:

- (a) Only a bidder who has participated in the concerned Tender Process, i.e., pre-qualification, bidder registration or bidding, as the case may be, can make such representation.
- (b) Clarification in respect of the following shall not be entertained by the Owner:
 - (i) Determination of the need for procurement.
 - (ii) Technology selection for execution of work.
 - (iii) Complaints against performance standards except under the premise that they are either vague or too specific to limit competition.
 - (iv) Selection of the mode of procurement or bidding system.
 - (v) Choice of the selection procedure.
 - (vi) Provisions limiting the participation of bidders in the Tender Process, in terms of policies of the Government.
 - (vii) Provisions regarding purchase preferences to specific categories of bidders in terms of policies of the Government.
 - (viii) Cancellation of the Tender Process.

27.3.0 Contact person for grievance redressal is as under:

CONTACT PERSON FOR ANY GRIEVANCE.	Name	: FX Joseph Benedicto
	Designation	: Chief General Manager (Operations)
	Department	: SRPL
	Division	: Pipelines
	e-mail	: fxjoseph@indianoil.in

28.0.0 HOLIDAY LISTING OF VENDORS :

28.1.0 The purpose of putting a party on holiday list is to protect the Corporation from dealing with an undesirable party.

28.2.0 The detailed guidelines is available on IOCL portals <https://iocl.com> and <https://iocletenders.nic.in>. Bidder to refer to the website mentioned above for further details.

It will be the sole decision of IOCL in each case to evaluate whether the conduct of the party is such as it makes it undesirable for the Corporation to deal further with the party. The duration of such Holiday shall be as decided by IOCL in each case.

29.0.0 EARNEST MONEY DEPOSIT (EMD)

29.1.0 The Bidder shall furnish Earnest Money Deposit, at the time of submission of the bid, as mentioned below:

Amount (Rs lakh)
As per NIT

~~In case of group tenders, the bidder shall have the option to deposit separate EMDs for each group through IMPS/ NEFT/ RTGS/ BG/ Insurance Surety Bonds or a consolidated EMD through BG only, for the groups in which he is participating. If the numbers of groups that can be awarded to a single bidder are limited as per the tender conditions, the total amount of consolidated EMD to be submitted shall be worked out based on maximum estimated value of the number of groups that can be awarded to a single bidder.~~

29.1.1 For payment of EMD, Bidder shall adopt one of the following process for its submission of EMD:-

Sl no	Instrument / category	Process
1	Net banking	Bidder shall choose “ <i>Net Banking</i> ” option and click the submit button, which will redirect the Bidder to payment gateway where he shall choose his bank and proceed to pay the EMD. After successful payment, system will bring him back to e-Tendering portal for further submission of offer.
2	NEFT/RTGS/IMPS	Bidders shall choose “ <i>NEFT/RTGS/IMPS</i> ” option and click the submit button. On next page he shall get the option to download NEFT/ RTGS /IMPS challan (<i>ICICI NEFT/ RTGS/IMPS form</i>) having unique bank account number for that particular EMD. Bidder shall pay NEFT/ RTGS/IMPS as per details in generated challan either using online banking or by visiting his bank branch.
3	BG – Bank Guarantee (Refer Clause No. 29.3.0 , 29.4.0 & 29.5.0)	Bidder shall select YES against EMD exemption and shall select exemption type as “ <i>Percentage</i> ”. Bidder shall enter 100 in <i>Percentage/ Amount</i> field. Subsequently Bidder shall upload the scanned copy of “ <i>Bank Guarantee (BG)</i> ” in the space provided for uploading EMD exemption document
4	Exempted Category (General) (Refer Clause No. 29.8.0)	Bidder shall select YES against EMD exemption and shall select exemption type as “ <i>Percentage</i> ”. Bidder shall enter 100 in <i>Percentage/ Amount</i> field. Subsequently Bidder shall upload the scanned copy of <i>supporting EMD exemption document</i> in the space provided for uploading EMD exemption document.
5	Partial Exempted Category	Bidder shall select YES against EMD exemption and shall select exemption type as “ <i>Fixed</i> ”. Bidder shall calculate the exemption amount (<i>i.e. Total EMD amount – EMD amount payable by the Bidder</i>) and enter the same in <i>Percentage/Amount</i> field. Subsequently Bidder shall upload the scanned copy of the document specifying the reason for claiming such exemption. (<i>e.g. In case of transportation tender, Bidder shall mention the nos. of vehicle(s) the Bidder is going to offer and EMD payable by him for that Tender within the document itself.</i>)
6	Insurance Surety Bonds	Bidder shall select YES against EMD exemption and shall select exemption type as “ <i>Percentage</i> ”. Bidder shall enter 100 in <i>Percentage/ Amount</i> field. Subsequently Bidder shall upload the scanned copy of “ <i>Insurance Surety Bonds</i> ” in the space provided for uploading EMD exemption document.

EMD payment through Demand Draft (DD), Bankers Cheque (BC) and Swift Transfer (ST) shall not be accepted.

29.1.2 To facilitate the Bidders, Special Instructions to the Bidder (SITB)”and “FAQs - Online EMD Facility in IOCL e- Tendering” documents are also uploaded in e-Tendering portal are. These documents contain detailed process and precautions to be taken for EMD submission by the Bidders.

29.1.3 Bidders shall note that the proof of submission of EMD must be provided through e-mail at the email

ID mentioned in the detailed NIT so as to reach the tender issuing/ submission authority on or before the bid submission date. In case Bidder is exempted as per provisions of Clause No. 29.8.0, then Bidder must send the relevant copy/ documentary evidence for EMD exemption on or before bid submission date at the email ID of tender issuing authority.

29.1.4 Offers of the Bidders making payment through NEFT/ RTGS/IMPS after Tender closing date and time or making payment in wrong account and claiming 100% exemption (uploading the NEFT/ RTGS/IMPS done at the last moment or done in a wrong account details as proof of payment) shall be liable for rejection.

29.2.0 Bank Details of IOCL is as below :-

Beneficiary Name	: INDIAN OIL CORPORATION LIMITED-PIPELINES DIVISION
Account No	: 10130455999
Beneficiary Bank	: STATE BANK OF INDIA, : CAG BRANCH, EGMORE
CITY	: Chennai - 600003
COUNTRY	: INDIA
IFSC CODE	: SBIN0009999
MICR	: 600002098
Swift Code	: SBININBB174

29.3.0 A Bank Guarantee (BG) may be accepted by the Owner towards EMD **provided the amount of such BG is not less than Indian Rupees 100,000.00 (Indian Rupees One Lakh)**. It shall be an unconditional Bank Guarantee issued by a Scheduled Bank in India or an Indian Branch of foreign Bank (acceptable to the Owner) and operating in India under the guidelines of Reserve Bank of India. The proforma for furnishing the bank guarantee is given in **Annexure-6 of Annexure (Commercial)**. **The BG shall be kept valid upto 6 months from the date of opening of the techno-commercial offer.**

Original BG sent by Bidder/ bank should reach the Tender Issuing Authority (as mentioned in the tender) as per the following schedule:

- Single Bid Tenders: Before due date and time of opening of bids.
- Two Bid Tenders: Within 7 working days from the date of opening of technical bids.

29.4.0 For the purpose of receipt of BG, the time recorded in the Receipt/ DAK section against receipt shall also be considered as receipt time. Only those Physical BG instruments found matching with the copy submitted in the e- portal shall be considered as valid. Selection of Banks for Bank Guarantees:

- BG for value upto Rs. 2 crore can be accepted if it is issued by an Indian Branch of any Scheduled Bank appearing in the Second Schedule to the RBI Act, 1934.
- BG for value above Rs. 2 crore can be accepted if it is issued by an Indian Branch of
 - Any Nationalized/ PSU Bank appearing in the Second schedule to the RBI Act, 1934

OR

 - Any scheduled bank (other than a Nationalized Bank/ PSU Bank) having at least Desired Credit Rating at the time of acceptance of BG:

Bank	If the tenure of BG is more than 1 year	If the tenure of BG is up to 1 year
In case of foreign banks	Credit rating of 'A' of Moody's or equivalent	Credit rating of 'P-1' of Moody's or equivalent i.e. highest short term rating
In case of Indian Banks	Credit rating of 'AA' of CRISIL or equivalent	Credit rating 'A1+' of CRISIL or equivalent i.e.

		highest short term rating

- (c) Apart from the above, irrespective of its amount, BG issued by any other bank including non-scheduled banks, foreign branches of scheduled banks and foreign branches of foreign banks, can be accepted provided such BG is counter guaranteed by any Bank mentioned at (b) above.
- (d) Merely signing or endorsing or forwarding the BG by the scheduled bank does not amount to counter guaranteeing. A proper document executed on a non-judicial stamp paper of appropriate value with specific reference to the BG being counter guaranteed, is essential.
- (e) In case of acceptance of BG issued or counter guaranteed by a Bank mentioned at para (b) ii above, the credit rating of such Bank falls below the Desired Credit Rating during the validity period of BG, the Bidder/contractor shall either submit a fresh BG issued by the other bank with required credit rating or get the existing BG counter guaranteed, at its own cost, through a bank mentioned above at (b) [having at least Desired Credit Rating, if applicable].
- (f) Bidders shall ensure that IFSC and SWIFT Code of IOCL's Bank as mentioned at Clause No. 29.2.0, is submitted to the Bidders bank while opening the EMD BG, so that BG confirmation is transmitted through SWIFT Message to IOCL's Bank under SFMS System.
- 29.5.0 Bidders must ensure that the text of bank guarantee submitted towards bid security (EMD) shall be strictly as per the format for BG in lieu of EMD as given in Annexure-6 of Annexure (Commercial). In case of a deviation/ variation, necessary amendment shall be sought from the Bidder.
- 29.6.0 In the case of Consortium (including unincorporated Joint Venture), the EMD shall be furnished by the Consortium (including unincorporated Joint Venture) or Leader/ Prime Member of the Consortium (including unincorporated Joint Venture).
- 29.7.0 Further to provisions of Clause 4.19 and Clause 5.0 at page 122 & 123 of Instructions to Tenderers of General Conditions of Contract, Bidders shall note that in case an Indian Company, otherwise eligible for exemption from submission of EMD as per Government of India Guidelines, submits a bid as a Consortium (including unincorporated Joint Venture) with another company, then the EMD must be submitted with the offer.
- 29.8.0 **Entities exempted from submission of EMD:**
- 29.8.1 To promote Micro and Small Enterprises, EMD is exempted by IOCL for such entities. In case bidder is a Micro or Small Enterprise, the bidder shall submit the following :
- (i) Ministry of MSME vide Gazette notification no. CG-DL-E-26062020-220191 dated 26.06.2020 had notified certain criteria for classifying the enterprises as Micro, Small and Medium Enterprises and specified form and procedure for filing the memorandum (Udyam Registration) w.e.f. 01.07.2020 (for complete details of policy refer website of Ministry of MSME i.e. <https://msme.gov.in/>).
- Accordingly, Micro and Small Enterprises (MSEs) shall be required to submit Udyam Registration Certificate for availing benefit under Public Procurement Policy for MSEs-2012.
- If the bidder does not provide the above confirmation or appropriate document or any evidence, then it will be presumed that they do not qualify for any exemption in the Public Procurement Policy (PPP) 2012.
- 29.8.2 In addition, any guideline/ policies/ circulars issued by Government of India from time to time as applicable till date of closure of techno commercial bid submission date, will also be applicable.
- 29.8.3 Status of Bidder as on techno commercial bid opening date shall be considered for benefits under MSE policy.
- 29.8.4 Other agencies exempted from submission from EMD
- Public sector Undertakings of Central/ State Government
 - Joint Ventures of IOC

iii. Registered Start-up entities Start Up Entities registered with GOI

- 29.8.5 No interest or any expense whatsoever will be payable by owner on the EMD furnished by bidder in any manner.
- ~~29.8.6 Bidders who are exempted from submission of EMD as bid security as per GeM GTC Clause 4, are not required to submit EMD. However, bidder has to submit relevant document to ascertain that they fall under subject category. All other terms and conditions shall be as per IOCL tender terms and conditions (For GeM tenders)~~
- 29.9.0 EMD of the successful BIDDER will be discharged after the bidder has signed the agreement and furnished the required Initial Security Deposit/ Security Deposit. Alternately, the same may be adjusted against Initial Security Deposit, if requested by such Bidder.
- 29.10.0 EMD of the unsuccessful Bidders shall be released in their respective bank accounts through e-banking. The Bidders shall provide their bank details in the format as per **Annexure-19** for the said purpose.
- 29.11.0 Bids submitted without EMD may be considered as “NON-RESPONSIVE” and shall be liable for REJECTION. The decision of the Owner, in this regards, shall be final and binding on the Bidder(s).
- 29.12.0 The EMD may be forfeited:
- If a bidder withdraws his bid during the period of bid validity except when additional terms are proposed by Owner as per clause no 17.4.0 of this document;
 - If L-1 bidder backs out after opening of price bids
 - If L-1 increases their offer price after price bid opening
 - In the conditions as defined at Clause No. 17.5.0 of Section-B(SIT-Commercial)
 - In case the Bidder misrepresents facts or submits forged, false or fabricated documents as detailed in Clause 5.4.0 above
 - The bidder violates IP Agreement
 - In the case of a successful bidder, if he fails within the specified time limit to:
 - sign the agreement, and/or
 - deposit the required initial security deposit and/or
 - commence work at each job site within 10 (ten) days of handing over the job or any part thereof to him.

30.0.0 CRITERIA FOR EVALUATION – COMMERCIAL

Any Bidder participating in this tender must have experience as described herein and the evaluation of their offers shall be primarily done on the basis of the following qualifying criteria:

30.1.0 SOLE BIDDER [INDIVIDUAL (PROPRIETSHIP)/ PARTNERSHIP/ COMPANY]

- 30.1.1 Annual turnover of the Bidder (on the basis of standalone financials of bidding entity) during any one of the preceding 3 (three) financial years shall be at least of the value mentioned below:

Amount (in Rs. Lakh)
As per NIT

Notes:

- Turnover shall be as per the audited Standalone Financial Statements of the Bidder. However, if the Bidder is not required to get its accounts audited under section 44AB of the income Tax Act, 1961, a certificate from a Practicing Chartered Accountant towards the turnover of the Bidder along with copy of its Income Tax Return shall be furnished along with UDIN no.

- ii) If Audited Financial Report of foreign Bidder/ foreign parent company of Wholly Owned Indian subsidiary Company (in case bidding entity is as per Clause No. 7.1.0 c above), is in currency other than INR, the respective/ desired figure for calculation of Annual Turnover shall be converted into equivalent INR considering the conversion factor indicated in their Audited Financial Report. In case the same is not indicated, the conversion rate of INR as on last date of financial year shall be considered based on TT Selling exchange rate published by State Bank of India/ RBI/ Other scheduled bank/ Customs Notified exchange rate/ any other reputed Financial Institutions.
- iii) In case the tenders having the bid submission end date up to 30th September of the **current** financial year and audited financial results of the immediate three preceding financial years are not available, the Bidder has an option to submit the audited financial results of the three financial years immediately prior to that. Wherever the bid submission end date of the bid is after 30th September of the **current** financial year, Bidder has to compulsorily submit the audited financial results for the immediate three preceding financial years. The immediate preceding financial year shall be considered accordingly. **The audited financial results should be certified by a statutory auditor on or before the bid submission end date.**
- iv) For the Bidders whose financial year is calendar year, the audited financial results shall be considered as calendar year, in lieu of financial year.
- v) In case, any foreign Bidder due to their internal/ local regulations, is unable to submit audited financial statements, the following shall apply:

In such cases, CEO's/ CFO's certificate, from the company or from the parent company (in case Bidder is a subsidiary) stating the turnover of the bidding entity along with a declaration that the bidding company is not in a position to submit its financial statement as per the local regulation (clearly specifying the applicable regulation) with an endorsement by Chartered Accountant/ Statutory Auditor/ Certified Public Accountant (not being an employee or a Director or not having any interest in the Bidder(s) company/ firm) shall be accepted.

Wherever Chartered Accountant/ Statutory Auditor/ Certified Public Accountant (not being an employee or a Director or not having any interest in the Bidder(s) company/ firm) is not in a position to endorse such CEO's/ CFO's certificate due to local regulations, CEO's/ CFO's certificate in original without endorsement may be accepted provided a reference of the local regulation restricting this endorsement is given in the CEO's/ CFO's certificate.

- vi) The audited financial statement shall be signed with membership No. and UDIN No. of the statutory auditor/practicing chartered accountant as per statutory norms.

30.1.2 The Bidder **on its own** should have successfully completed similar work, as a main contractor or as a subcontractor, during any of the last **seven** years ending on last day of the month, immediately previous to the month in which the last date of bid submission falls. Even in case the date of bid submission is extended, the date originally considered as reference date for experience criteria, shall remain unchanged. The value of completed work for evaluation shall be considered as under:

- (a) **One similar completed work** (including goods and services tax/ service tax whichever is applicable) costing not less than the value mentioned below,

Amount (in Rs. Lakh)
As per NIT

OR

- (b) **Two similar completed works** (including goods and services tax/ service tax whichever is applicable) each costing not less than the value mentioned below,

Amount (in Rs. Lakh)
As per NIT

OR

- (c) **Three similar completed works** (including goods and services tax/service tax whichever is applicable) each costing not less than the value mentioned below.

Amount (in Rs. Lakh)
As per NIT

The similar work mentioned above is defined in NIT.

Note:

- In case the work order submitted by the Bidder is in multiple currency/ non INR, the same shall be converted in equivalent INR considering the conversion rate as on the date of issue of the reference order(s) based on TT selling exchange rate published by SBI or RBI/ Other scheduled bank/ Customs Notified exchange rate/ any other reputed Financial Institutions.
- The qualification documents shall include copy of work order (WO) along with Completion certificate, issued to the Bidder as a main Contractor or as a subcontractor, clearly specifying WO number., description of work, final executed value and actual completion date. In case, if the value of executed amount is not specified in the completion certificate, Bidder shall submit certified copy (by order issuing authority/ consultant) of final bill/ invoice. Copy of TDS Certificate is required to be submitted in case where the tender issuing authority specifically asks for the same.

Whenever a contractor had worked as a sub-contractor to main contractor, their experience also can be considered. In case bidder submits prior experience as a sub-contractor, the bidder has to submit a certificate from the end User/ Owner/ Consultant of the owner engaged as EIC (Engineer-In- Charge) for the execution of the said works.

CA certificate certifying the executed value of works shall be submitted along with UDIN no for works executed as a subcontractor.

- A job executed by a bidder for its own plant/ projects can't be considered as experience for the purpose of meeting requirement of BQC of the enquiry document. However, jobs executed for Subsidiary/ Fellow subsidiary / Holding company will be considered as experience for the purpose of meeting BQC subject to submission of tax paid invoice(s) duly certified by Statutory Auditor of the bidder towards payments of statutory tax in support of the job executed for Subsidiary/ Fellow subsidiary / Holding company. Such bidders to submit these documents in addition to the documents specified above to meet BQC.
- Bidders are required to ensure that the value of completed job indicated by them depicts separately the value of completed job and GST/ Service tax as applicable. Accordingly, the completion certificate submitted by the Bidder should separately indicate the Service tax/ Goods and Services tax amount included in the value of completed job OR a separate certificate from the respective client, mentioning the Service tax/ Goods and Services tax amount if any, included in the value of completed job under consideration, should be submitted by the Bidder.

In case Service tax/ Goods and Services tax amount/ component is not specified in the submitted completion certificate, then it shall be presumed that the amount mentioned in the certificate is including Goods and Services tax/ Service tax (whichever is applicable) and the offer shall be evaluated accordingly.

- For Annual Rate Contracts (ARC) of repetitive nature, similar ARC job that has been successfully completed by Bidder for the originally awarded period of such ARC, shall be considered as completed works even though such ARC is under execution on account of extension. However, the original contract must have been completed within the cut-off date of completion as mentioned under Clause No. 30.1.2 above and supporting documentary evidence regarding date of completion and executed value of work till that cut off date shall be provided by the Bidder.

vi) If a Bidder has executed a work jointly in consortium(including an unincorporated JV) , the Bidder shall be considered eligible subject to the following:

- A. The Bidder should meet required technical experience as per Clause No. 1.7.0 of Special Instruction to Tenderer– [Section-A (Technical)] and required commercial experience as per Clause No. 30.1.2 of Special Instruction to Tenderer – [Section-B (Commercial)].
- B. The detailed scope of work/ responsibility matrix of each Member, the percentage/ quantum of payment to be received by each Member, executed value of the work with the client shall be evident from any of the following document(s) duly certified by the client:
 - a. MOU Agreement between the consortium or unincorporated JV partners.
 - b. Work order issued by the client to the Consortium/ unincorporated JV.
 - c. Contract document between the consortium/ unincorporated JV and client.
 - d. Completion certificate issued by the client.

In case, no separate document regarding the percentage/ quantum of payment to be received by each Member is not available, the same shall be considered based on the share holding pattern of the Joint Venture Company. Bidder shall submit JV agreement.

30.1.3 Deleted

30.1.4 Deleted.

30.2.0 BQC FOR WHOLLY OWNED INDIAN SUBSIDIARY OF A FOREIGN OR INDIAN COMPANY ON THE FINANCIAL STRENGTH OF ITS PARENT COMPANY

30.2.1 Bidder shall refer to Clause No 7.3.0 above for providing additional document for participation under this bidding entity.

30.2.2 The said Subsidiary of a foreign or Indian company can be qualified, only if the following conditions are met:

- (i) The subsidiary company has the required technical experience as per NIT/SIT-Technical.
- (ii) The subsidiary company shall meet following commercial evaluation criteria:
 - (a) 50% of Annual Turnover as specified at Clause No.30.1.1,
 - (b) 50% of work order values criteria specified at Clause No. 30.1.2,
 - (c) Concurrent commitment criteria specified at Clause No. 30.1.3 and
 - (d) Net worth criteria specified at Clause No. 30.1.4
- (iii) The parent company shall meet in full the commercial criteria as stated in Clause No. 30.1.0 and all its associated sub clauses.
- (iv) Bidder may refer the Clause No. 7.4.0 and its sub clauses for guidelines regarding land sharing with India.

30.3.0 ~~BQC relaxation to Start ups (For Non critical services/works)~~

- ~~(a) Qualification criteria as mentioned at Clause 30.1.0 and its sub clauses above shall not be applicable for registered start-up entities.~~
- ~~(b) However, such entities shall meet quality and technical specifications of tendered service/work.~~
- ~~(c) Such entities shall submit valid certificate of recognition as start-up from Dept. of Industrial Policy & Promotion, Ministry of Commerce and Industries, Govt. of India.~~

30.4.0 ~~BQC relaxation for MSE bidder (For Non critical services/works)~~

- ~~(a) For bidders registered as Micro and Small category under Ministry of MSME, 15% relaxation in Turnover Value and Similar completed work order value requirement as mentioned at Clause 30.1.1 & Cl 30.1.2 above is applicable.~~

- (b) ~~However, such entities shall meet quality and technical specifications of tendered service/work.~~
- (c) ~~Such entities shall submit valid Udyam Registration certificate issued from Ministry of MSME.~~

31.0.0 INSTRUCTIONS FOR FILLING SOR/BOQ

31.1.0 Bidders are advised to fill the BoQ as per following instructions.

(Percentage BoQ)

- The Bidder has to download the BoQ containing rates excluding Goods and services tax along with tender documents and subsequent Addendum/ Corrigendum/ Clarifications, if any, issued at a later stage. Latest BoQ should be used by Bidder for submission of price bid.
- Bidder is to note that there are '**White**' cells in the BoQ, which should not be modified by the Bidder. Only "**Bidder Name**", "**Excess(+)/ At Par/ Less(-)**" and "**Percentage**" are to be filled by the Bidder in the designated "Sky Blue Cells".
- The Bidder shall quote in percentage (limited to a maximum of 2 decimal places) "**Excess(+)/ At Par/ Less(-)**" on the rates indicated in the BoQ. "Excess (+)" or "At Par" or "Less (-)" can be selected from the dropdown menu by clicking on the cell. In case, the rates are quoted to more than 2 decimal places, the amount quoted towards the tender shall be worked out for the rates quoted to first 2 decimal points without rounding off. The "Percentage" quoted by the Bidder shall be applicable uniformly to all the rates of the items indicated in the BoQ.

Bidders shall note that Estimated Item rates specified in column F of the BoQ is excluding GST and rate of GST has been pre-selected in the BoQ.

The landed cost inclusive of GST shall be arrived at cell no. BA20 after factoring in the "Excess (+)" or "At Par" or "Less (-)" selected by the Bidder.

- Bidders are strictly advised not to temper/ alter/ change the BOQ format/ contents. Bidders are also advised not to paste any image file or put any additional conditions or insert any additional sheet in the BOQ worksheet.
- Rates quoted shall be inclusive of all taxes and duties, but exclusive of Goods and Services tax(GST) which shall be paid extra upon submission of Goods and Services tax invoice.
- The scope of work under the subject tender is of indivisible nature and shall be awarded to a single agency only unless specified in the tender document.
- Deleted

32.0.0 GROUP TENDERS – Not Applicable

33.0.0 INTEGRITY PACT PROGRAM – Not Applicable

34.0.0 CONSORTIUM INCLUDING UNINCORPORATED JOINT VENTURE – Not Applicable

35.0.0 REVERSE AUCTION

35.1.0 Bidders are informed that Reverse Auction will be conducted for finalizing this Tender.

35.2.0 **Tenders without preferential bidding:** Bidders shall note that in case of more than three techno commercially qualified Bidders against the subject tender, the bidder with highest bid received in Price Bid (BoQ) against this Tender shall not be eligible to participate in the Reverse Auction process and his bid will be rejected by the system.

35.3.0 **Tenders with preferential bidding:** If there are more than three (3) techno-commercially accepted Bidders:

- H1 Bidder shall be rejected, if the Bidder is a non-preferential Bidder;

- (ii) In case H1 Bidder is a preferential Bidder, H1 Bidder will be rejected if his quote is beyond the defined tolerance limit of L1 price as per his preferential Bidder category such as MSE as per MSME Act, Local content as per PP-MII guidelines, DMEP as per the DPIT guidelines, etc.

Bidders are advised to update their preferential status and category in their profile on e-tender portal. For above preference, Bidder will have to select the option of preference in e-tender portal and upload supporting documents at the time of submission of their bid.

- 35.4.0 In case of more than one H1 Bidders (H1 tie), out of all such H1 bidders, Bidder who has submitted his bid at the last, will be rejected.

An intimation by e-mail/ SMS shall be provided to the eligible Bidders for Reverse Auction along with its scheduled start time and other details.

- 35.5.0 The lowest price (excluding or including GST as per the BoQ template) shall be available on the Reverse Auction screen at any point of time during the Auction process. The displayed price is the price based on which the lowest bid is determined. Accordingly, the Bidder will submit his quote in the Auction window, if he wants to offer the reduced price.

- 35.6.0 Wherever required, the Evaluation factor/ criteria shall be informed to the Bidders before start of RA. In other cases the Bidder shall calculate his final evaluated price as per BoQ or evaluation criteria mentioned in the tender document and quote accordingly.

- 35.7.0 The lowest quote after end of Reverse Auction shall be considered for further processing. The discount offered during Reverse Auction shall be uniformly distributed over all items of the BoQ.

- 35.8.0 For the purpose of extending preference/ benefit to PPP MII, etc. as per guidelines, the quote of respective Bidder(s) after the tender-cum-auction process shall be considered.

- 35.9.0 Bidder will be responsible for any issues at their end during the entire process of Reverse Auction on e-tender portal. Any issues faced by the bidders during the auction process must be communicated directly on the helpdesk provided in the portal. IOCL endeavours to give equal opportunities to all the bidders.

- 35.10.0 IOCL reserves the right to conduct price negotiation with overall L1 Bidder based on price quoted in BoQ and RA.

36.0.0 PURCHASE PREFERENCES APPLICABLE

36.1.0 PURCHASE PREFERENCE LINKED WITH MAKE IN INDIA

- 36.1.1 Public Procurement (Preference to Make in India), Order 2017 and subsequent amendments (if any) shall be applicable against this tender.

Bidders are requested to read the policy for participation in this tender. Bidder to note that the evaluation of offers will be done in accordance with the above policy. A copy of the policy is available on website of (<https://dpiit.gov.in>).

Bidders are requested to note and confirm compliance and also furnish Undertaking for Applicability of Policy and for meeting policy as per **Annexure-23** and Statutory Auditor's /Cost Auditor's Certificate (**Annexure 24**).

The policy shall not include goods/ services falling under Micro and Small Enterprises (MSME) or Domestically Manufactured Electronic Products (DMEP), as those products/ services are already covered under specific policy.

- 36.1.2 In addition, any guideline/ policies/ circulars issued by Government of India/ Ministry of petroleum & Natural Gas from time to time as applicable till date of closure of techno commercial bid submission date, will also be applicable.

36.2.0 POLICY TO PROVIDE PURCHASE PREFERENCE TO DOMESTICALLY MANUFACTURED TELECOM PRODUCTS, SERVICES OR WORKS IN FURTHERANCE

TO PUBLIC PROCUREMENT POLICY (PREFERENCE TO MAKE IN INDIA), ORDER 2017 (APPLICABLE ONLY FOR TELECOM CONTRACTS)

Not Applicable.

36.3.0 CONDITIONS FOR PURCHASE PREFERENCE FOR MICRO & SMALL ENTERPRISES (MSES) (APPLICABLE ONLY FOR TENDERS CONSISTING OF PURELY SERVICE)

Not Applicable

36.4.0 CONDITIONS FOR PURCHASE PREFERENCE FOR MICRO & SMALL ENTERPRISES (MSES) (for works/composite contracts)

36.4.1 This tender is for Works contract. A Work Contract is an indivisible contract which involves not just the supply of goods but also the provision of labour and service. Purchase preference provided to the Micro and Small enterprises under Micro, Small and Medium enterprises Development Act-2006 and Micro, Small and Medium Enterprises Order- 2012 are not applicable herein.

36.5.0 In case both Purchase preference to MSEs under MSME order and PPP-MII Order 2017 are applicable as per tender terms, their Concurrent application shall be as per guidelines mentioned in OM no F.1/4/2021-PPD dated 18.05.2023 from Dept. of expenditure, Ministry of Finance.

37.0.0 GLOBAL TENDERS – Not Applicable

38.0.0 PLACE OF PAYMENT

38.1.0 All payment in Indian rupees shall be released from the office of

Indian Oil Corporation Limited, IBM Tower, 2nd Floor, A 26, Rani Ramgarh Road,
Block A, Industrial Area, Sector 62, Noida, Uttar Pradesh.

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IndianOil

INDIAN OIL CORPORATION LIMITED

GENERAL CONDITIONS OF LUMP SUM TURNKEY (LSTK) CONTRACT

(Amended in April - 2017)

GENERAL CONDITIONS OF LSTK CONTRACT

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SECTION – 1 DEFINITIONS

- 1.0.0.0 The following expressions hereunder and elsewhere in the Contract documents used and their grammatical variations shall unless repugnant to the subject or context thereof, have the following meanings hereunder respectively assigned to them, namely:
- 1.0.1.0 “Agreed Variations” shall mean the statement of agreed variations annexed to the Detailed Letter of Acceptance and any document subsequently signed by the OWNER and the CONTRACTOR as an amendment of contract.
- 1.0.2.0 “Approval” and its grammatical variations shall mean approved or confirmed in writing by OWNER or Engineer-in-Charge.
- 1.0.3.0 “Battery Limit ” shall mean the demarcated area within which the Unit is to be located.
- 1.0.4.0 “Bid/Bidding Documents” shall mean the totality of the documents comprising the Bidding Document for the Project.
- 1.0.5.0 “Bills of Materials” shall mean the Bill of Materials from time to time established by the CONTRACTOR and approved by the OWNER pursuant to the provisions of the general conditions of contract.
- 1.0.6.0 “CATALYST” shall mean any catalyst or adsorbent or other like chemical(s) or additive(s) required to be loaded to operate the UNIT.
- 1.0.6.0.A “Certificate of Verification and Good Condition” shall mean such certificate referred to in Clause 3.0.6.0 hereof.
- 1.0.7.0 “Code-1 or Level-1 Approval” means final approval of drawings/documents incorporating all comments of the OWNER (including OWNER’s Consultant).
- 1.0.8.0 “Code-2 or Level-2 Approval” means tentative approval of the drawings/ documents by the OWNER (including OWNER’s Consultant) with comments to be incorporated by Contractor, with the intent that subject to incorporation of and/or rectification in accordance with such comments, construction/ manufacture can proceed based on commented drawings/ documents pending their re-submission and grant of Code-1 or Level-1 Approval.
- 1.0.9.0 “Code-3 or Level-3 Approval” means that on review of the drawings/ documents by the OWNER (including OWNER’s Consultant) the same have not been found in accordance with the applicable codes, standards, design basis and contractual stipulations and must therefore be re-submitted for review and approval after appropriate correction and/or re-preparation.
- 1.0.10.0 “Commissioning” means successfully pressing into service of the plant(s), Equipment(s), Vessel(s), Pipeline(s), Machinery(ies) and systems & sub-systems comprised within the UNIT in accordance with the procedures as approved in the applicable Operating Manual and as per the requirement of Process Licensor after successful testing, pre-commissioning and trial run of the UNIT.
- 1.0.10.0(A) “Commissioning Certificate” shall mean the commissioning certificate specified in Clause 5.2.1.4 hereof.

- 1.0.11.0 “Commissioning and Performance Test Certificate” shall mean the Commissioning and Performance Test Certificate issued under Clause 5.2.1.5 hereof.
- 1.0.12.0 “Completion Certificate” shall mean the Completion Certificate issued by the Engineer-in-Charge under Clause 5.3.0.0 hereof.
- 1.0.13.0 “Construction materials” shall mean all materials whatsoever required for permanent incorporation in the constructed Works, including but not limited to, cement, iron and steel rods, plates, sheets and structurals of any or all kinds, sand, stone, aggregate, bricks, earth and clay, nuts and bolts, screws and nails and other fasteners of all kinds, wood and boards of all kinds, electrical and other wires, sanitary pipes and other sanitary fittings, sewage pipes and other sewage fittings, drainage pipes and associated fixtures and fittings, switches, lights, fans, contactors, cut-outs, switch boards, bus bars and control panels, bulbs and other electrical fittings whatsoever, basins, taps, valves, stoppers, flanges, cisterns, toilets, toilet-seats and other sanitary fittings of any kind whatsoever, water proofing compounds, chemicals, paints, varnishes, white-washes, distempers, plaster of paris and other finishing materials whatsoever, barricading materials of all kinds and welding and other electrodes, lead and other alloys and compounds and consumables whatsoever involved for and/or incorporated in the permanent Works.
- 1.0.14.0 The “Contract” shall mean the totality of agreement between OWNER and the CONTRACTOR as derived from the contract documents.
- 1.0.15.0 The “CONTRACTOR” shall mean the bidder selected by the OWNER for the performance of the work and supply of materials and shall include the successors and permitted assigns of the CONTRACTOR, and if the CONTRACTOR is joint venture or consortium, shall include each member thereof.
- 1.0.16.0 “Contract Documents” shall mean the contract documents as defined in Article -1 of the form of the contract.
- 1.0.17.0 “Defect Liability Period” shall mean the defect liability period as specified in the contract.
- 1.0.18.0 “Delivery Schedule” shall mean the delivery schedule of the supplies as elsewhere provided for in the contract documents and Clause 3.0.5.3 hereof and associated provisions.
- 1.0.19.0 The “Engineer-in-Charge” shall mean the Engineer for the time being nominated by the OWNER as Engineer-in-Charge for the purpose of the contract or any portion thereof, and shall include the PMC or CONSULTANT for the project wherever the Contract so reasonably admits.
- 1.0.20.0 “Equipment” shall include all scaffolding, shuttering, appliances, equipment, machinery, instruments and other things of whatever nature required for use in or for the execution or completion of the work or maintenance of the work(s) or temporary works other than materials falling within the scope of supply.
- 1.0.21.0 The “Executive Director” shall mean the Executive Director or Chief Executive (by whatever name called) for or embracing the project and in the absence of an Executive Director or Chief Executive shall include any person acting as Executive Director or Chief Executive (by whatever name called) and in the

absence of an Acting Executive Director or Acting Chief Executive shall include a General Manager or Deputy Chief Executive (by whatever name called) under whose overall jurisdiction the work falls, and on conclusion of the project shall mean the Executive Director, Chief Executive, General Manager, Acting Chief Executive or Acting General Manager or Deputy Chief Executive as the case may be for the resultant facility in which the Unit is comprised.

- 1.0.22.0 "Facilities" shall mean land, transport, telephone, telex and fax communication and other amenities and facilities whatsoever required for or incidental to the performance of the services.
- 1.0.23.0 "FEED Package" shall mean all technical details such as specifications, drawings, documents, guidelines and/or instructions which will form the basis for CONTRACTOR to take up detailed engineering, procurement and construction activities for the UNIT.
- 1.0.24.0 "Final Certificate" shall mean the Final Certificate issued by the Engineer-in-Charge under Clause 6.8.0.0 hereof.
- 1.0.25.0 "Final Test Certificate" shall mean a Final Test Certificate in respect of civil works or a Mechanical Completion Certificate in respect of civil or mechanical works, as the case may be, issued by the Engineer-in-charge under Clause 5.2.1.2 hereof.
- 1.0.26.0 Foreign Currency means United States Dollar, EURO, Pound Sterling and Japanese Yen.
- 1.0.27.0 The "Job Site/ Site" means any site at which the work is to be performed by the CONTRACTOR and shall include a part or portion of the site required for the time being to provide a work front to the CONTRACTOR.
- 1.0.28.0 "Letter of Acceptance" shall mean the Letter or Fax of Acceptance of bid issued by the OWNER to the CONTRACTOR, and shall wherever the Contract so requires include the "Detailed Letter of Acceptance" subsequently issued by the OWNER to the CONTRACTOR.
- 1.0.29.0 "LICENSOR" shall mean the Process Licensor for the UNIT or of any part thereof.
- 1.0.30.0 "Lumpsum Price" shall mean the aggregate of the price of materials specified in FORM SP-1 of the Price Schedule and the price of the services specified in FORM SP-2 of the Price Schedule and insofar as the same is expressed in Indian Rupees and Foreign Currency for determination of a percent thereof, shall mean the specified percentage of each, and if the percentage is to be calculated in Indian Rupees shall mean the aggregate arrived at after converting the Foreign Currency into Indian Rupees at the mean rate of exchange between the two arrived at on the basis of the notified mean rate or of the average between the buying rate and the selling rates if the mean rate is not separately notified, as the case may be, by the State Bank of India for the day immediately preceding the date of conversion."
- 1.0.31.0 "Materials" shall mean all materials, plant, machinery, instruments, components, assemblies, parts, spares and any other items and things whatsoever required for permanent incorporation in the works to establish the UNIT and/or works complete in all respect, and will include the replacement of any defective materials and of any materials damaged, lost, or destroyed

during transit, storage, fabrication, erection, installation, testing, pre-commissioning, commissioning or otherwise upto and until issue of the Completion Certificate, and shall also include all construction materials.

- 1.0.32.0 “Mechanical Completion” mean the installation of all equipment and facilities and the completion of all Works required to complete the Unit(s) in all respects, and thereafter the completion of all activities as listed in API-700 to be performed by the CONTRACTOR including Pre-commissioning and Start-up activities, completion of all punch list items as provided by OWNER/PMC and/or Process Licensor and/or Statutory bodies like OISD, CCE, TAC, Factory Inspector, Pollution Control Authorities etc., and insulation of hot lines/ Steam lines, but excluding for the limited purpose of enabling milestone payment due upon commissioning of the Unit(s), insulation of other lines, final painting, Alkali Boil Out, furnace drying, Catalyst loading and punch list items which, in the sole opinion of the Engineer-in-Charge, do not affect Commissioning. Copy of API-700 tick-marked in line with above is attached to the technical documents for guidance. Notwithstanding any exclusion as aforesaid, Mechanical Completion shall be understood not to have achieved for any purpose other than the milestone payment due on Mechanical Completion or for the purpose of any payment milestone(s) subsequent to Mechanical Completion unless the excluded items are completed.
- 1.0.33.0 “Mobilisation” shall mean establishment of sufficient and adequate infrastructure by the CONTRACTOR at and about the job site(s) comprising of equipment, aids, tools, tackle including establishment of temporary works, with facilities, utilities, man power and equipment ready to receive, transport and store materials and to commence and execute work at site(s), in accordance with the Progress Schedule to the satisfaction of the Engineer-in-Charge.
- 1.0.34.0 “Notified Claim” shall mean a claim of the CONTRACTOR notified in accordance with the provisions of Clause 6.6.1.0.
- 1.0.35.0 “Order” and “Instruction” shall respectively mean any written order or instructions given by the OWNER or by the Engineer-in-Charge to the CONTRACTOR within the scope of their respective powers in terms of the contract.
- 1.0.36.0 “Outside Battery Limit Facilities (OSBL)” shall mean the Offsite Facilities & Utilities (if any) which are required to be set up by the CONTRACTOR outside the Battery Limit.
- 1.0.37.0 The “OWNER” shall mean Indian Oil Corporation Ltd., a Company incorporated in India and having its registered office at G-9, Ali Yavar Jung Marg, Bandra (East) Bombay: 400051.
- 1.0.38.0 “Performance Test” shall mean the test or series of tests to be carried out by the CONTRACTOR to prove the contractual guarantees with respect to the UNIT or any part thereof, whether with reference to its input, throughput, output, quality, quantity or consumption or otherwise.
- 1.0.39.0 “Plans” and “Drawings” shall mean maps, plans, tracings and prints forming part of the bid documents and any detail or working drawings, amendments and/or modifications thereof approved in writing by the Engineer-in-Charge or any agency notified by the OWNER to the CONTRACTOR for the purpose and shall include any other drawings or plans in connection with the work or

any supply as may from time to time be furnished by or approved in writing by the Engineer-in-Charge or any other agency nominated by the OWNER in this behalf .

- 1.0.40.0 "Pre-commissioning" shall mean all activities required to be performed after final tests for all plant, equipment & machinery comprised within the UNIT which is the subject matter of the Contract to bring the equipment covered from an inactive condition to a state ready for trial run and shall include but not be limited to checking of systems and vessels, flushing and steam blowing, air blowing of pipelines, system leak checking upto the specified pressure, purging the system using inert gas, checking of electrical equipment for proper earthing, installation of resistance, conducting operability tests on individual equipment, vessels & systems, integration of all control systems of the Unit with the control systems of the Refinery or other installation(s) concerned and all other activities required to be performed in terms of the Contract and as per API 700 under the head "Check list for plant completion " and division of responsibilities between the OWNER and the CONTRACTOR after final tests and before commissioning of the UNIT. The activities to be performed by the CONTRACTOR shall also include Loop checking during pre-commissioning activities for completely integrated instrumentation and control system, including package/sub-package system items and units for which control system is being integrated by the CONTRACTOR in line with the requirements specified elsewhere in the bid documents.
- 1.0.41.0 "Price Schedule" or "Schedule of Rates" shall mean the Price Schedule annexed to the Detailed Letter of Acceptance.
- 1.0.42.0 "Price of Materials" shall mean the price for materials excluding the taxes indicated in FORM SP-1 of the Price Schedule or in the Bidding Formats.
- 1.0.43.0 "Price of Services" shall mean the price of services excluding the taxes indicated in FORM SP-2 of the Price Schedule or in the Bidding Formats.
- 1.0.44.0 "Progress Schedule" shall mean the Progress Schedule for the work as defined in Clauses 4.3.4.0 hereof and shall, in the event of more than one progress schedule being prepared, include each of such progress schedules.
- 1.0.45.0 The "Project" shall mean the project embracing the works and/or unit(s) forming the subject matter of the Bid and resultant Contract.
- 1.0.46.0 "PROJECT MANAGEMENT CONSULTANT" or "PMC" or "CONSULTANT" shall mean any person(s) nominated by the OWNER as the Project Management Consultant for the Project. The words "PROJECT MANAGEMENT CONSULTANT", "PMC"& "CONSULTANT" are synonymous.
- 1.0.47.0 "Running Account Bill" shall mean a Bill for the payment of "on account" monies to the CONTRACTOR in terms of Clause 6.4.0.0 hereof and associated Clauses thereunder.
- 1.0.48.0 "Schedule of Activities" shall mean the Schedule of Activities from time to time submitted by the CONTRACTOR and approved by the OWNER pursuant to the provisions of these General Conditions of Contract.
- 1.0.49.0 "Scope of Supply" shall mean the totality of materials by expression or implication envisaged in the Contract including (but not limited to) the supply as identified in the Bid Document.

- 1.0.50.0 "Scope of Contract" shall mean the totality of work and services to be performed by the CONTRACTOR within the Scope of Work and totality of materials to be supplied by the CONTRACTOR within the Scope of Supply and shall include (but not be limited to) all works/services and supplies by expression or implication envisaged in the Bid Documents.
- 1.0.51.0 The expressions "Scope of Work" and "Scope of Services" and "Work" are synonymous and mean the totality of the work/services and supplies by expression or implication envisaged in the Contract, including (but not limited to) the work as detailed in the Bid Documents, and include all work, facilities, materials, utilities, consumables and equipment and labour required for or relative or incidental to or in connection with the preparation for, commencement, performance, completion, testing, pre-commissioning, start up, commissioning, performance guarantees, replacement and/or rectification of any work(s)/services and/or in the maintenance or inspection of the work(s) and any and all temporary works required for or incidental to any work/service.
- 1.0.52.0 "Security Deposit" shall mean Bank Guarantee(s) furnished by the CONTRACTOR by way of Security Deposit as specified in Clause 2.1.0.0 hereof and associated Clauses thereunder.
- 1.0.53.0 "Specification(s)" shall mean the various specification as set out in the specifications and other documents forming part of the bid documents and as referred to and derived from the contract and any order(s) or instruction(s) thereunder, and in the absence of any specifications as aforesaid covering any particular work or supply or part or portion thereof shall mean the relevant BS, AWS, API, ASTM, BIS, AWWA or NACE, ASME, HEI, IEC, Indian Boiler Regulation (IBR), IEEE standard or code, as the case may be, approved by the Engineer-in-Charge and in the absence of any such standard or code covering the relative work or part or portion thereof, shall mean the relevant international standard or practice applied as a standard Engineering practice for the work and approved in writing by the Engineer-in-Charge with or without modification(s). All references to any code, standard, specification or practice in the specifications shall be deemed to be a reference to the latest edition of relative code, standard, specification or practice, as the case may be, prevailing as on date of submission of the last price bid, notwithstanding the mention of any previous year or date of edition relative thereto in the specifications.
- 1.0.54.0 "Start-up" shall mean all activities required to be performed after Pre-commissioning and prior to trial operation and shall include final Pre-commissioning inspection and check out of equipment, vessels and systems and supporting sub systems, initial operation of complete equipment and systems within the plant to obtain necessary pre-trial operation data, confirmation and correction of calibration, and change of safety interlock/control loop, shutdown inspection and adjustment and other steps required to be taken prior to and to enable commissioning/trial operation.
- 1.0.55.0 "Supply" or "Supplies" shall mean the totality of the materials by expression or implication required to be supplied by the CONTRACTOR for permanent incorporation in the works within the Scope of Supplies.
- 1.0.56.0 "Temporary works" means all temporary offices, living quarters and works of every kind required in for or about the execution, completion or maintenance of the works.

- 1.0.57.0 “Tools” shall mean all tools and things whatsoever to be supplied by the CONTRACTOR to the OWNER within the scope of supply for or in relation to the operation and maintenance of the Unit or any part, machinery or component thereof.
- 1.0.58.0 “UNIT” shall mean the totality of the Units and Facilities comprised in the Scope of Contract, which form a distinct operating system.
- 1.0.59.0 “Unit Rate” shall mean the unit rate for the particular item of supply as specified in Bill of Materials and for Services as specified in the Bill of Activity.
- 1.0.60.0 “Utilities” shall mean water (including raw water and treated water of all kinds), steam, gases of all kinds, power, electricity, gas and other sources of energy, lubricants, fuels, chemicals of all types (except catalysts and adsorbents forming part of the Plant or Process) whatsoever required for or incidental to the performance, testing or pre-commissioning of the works, not being materials required for permanent incorporation in the works.
- 1.0.61.0 The expression “Works” means the product of materials and services.
- 1.1.0.0 Unless otherwise specifically stated, the masculine gender shall include the feminine and neuter genders and vice-versa and the singular shall include the plural and vice-versa.
- 1.2.0.0 The definitions shall apply to all the expressions defined above when used in the contract documents, whether expressed wholly in capitals or partly in capital or with the first letter in capital or wholly in ordinary letters.

SECTION – 2 GENERAL

2.0.0.0 INTERPRETATION OF CONTRACT DOCUMENTS

- 2.0.1.0 The several Contract documents forming the Contract are to read together as a whole and are to be taken as mutually explanatory.
- 2.0.1.1 Notwithstanding the sub-division of the Contract into these separate documents and/or volumes and/or heads, every part of each separate section/volume/head shall be deemed to be supplementary of every other part and shall be read with and into the contract so far as it may be practicable to do so.
- 2.0.1.2 Subject to the provisions of Clause 2.0.1.3 hereof, in case of an irreconcilable contradiction in the commercial terms or conditions to the extent that the two provisions cannot co-exist, the following shall prevail in order of precedence.
- i) Contract Agreement
 - ii) Detailed Letter of Acceptance
 - iii) Statement of Agreed Variations
 - iv) Special Conditions of Contract
 - v) Instructions to Bidders
 - vi) Price Schedule
 - vii) General Conditions of Contract
 - viii) Other documents
- 2.0.1.3 If in respect of any commercial term or condition, if any provision in the General Conditions of Contract is repugnant to or at variance with any provision(s) of the Special Conditions of Contract and/or the Agreed Variations or if any provision of the Special Conditions of Contract is repugnant to or at variance with any provision(s) of the Agreed Variations, and the two cannot be reconciled or otherwise co-exist, then unless a different intention appears, the provision(s) of the Special Conditions of Contract shall be deemed to override the provision(s) of General Conditions of Contract and the provision(s) of the Agreed Variations shall be deemed to override the provision(s) of the Special Conditions of Contract, but only to the extent that such repugnancies in the General Conditions of Contract cannot be reconciled with the Special Conditions of Contract and/or Agreed Variations or to the extent that such repugnancies in the Special Conditions of Contract cannot be reconciled with the Agreed Variations, as the case may be.
- 2.0.1.4 Without prejudice to the provisions of the General Conditions of Contract, whenever in the Bidding documents it is mentioned or stated that the CONTRACTOR shall perform certain work or provide certain facilities, it is understood that the CONTRACTOR shall do so at his own cost and the Lumpsum Price shall be deemed to have included the cost of such performance and/or provision, as the case may be.
- 2.0.1.5 The materials, design and workmanship shall satisfy the applicable relevant Indian Standards, the job specifications contained herein and the codes referred to by expression or implication. Where the job specifications stipulate requirements in addition to those contained in the standard codes and specifications, these additional requirements shall also be satisfied. In the

absence of any standard/specification/code of practice for detailed specifications covering any part of the work covered in this tender, the instructions/directions of the Engineer-in-Charge shall be binding on the CONTRACTOR.

- 2.0.1.6 In case of an irreconcilable contradiction in the technical requirements or technical specifications between Indian standards/Applicable Codes & Standards, General Conditions of Contract, Special Conditions of Contract, Specifications, Drawings, Schedule of Lumpsum Price and or Agreed Variations to the extent that the two provisions cannot co-exist or be read together to satisfy both or all, the following order of precedence shall prevail:
- i) Formal Contract
 - ii) Detailed Letter of Acceptance
 - iii) Statement of Agreed Variations
 - iv) Job specifications/ Scope of Work
 - v) Drawings
 - vi) Technical/Material Specifications
 - vii) Quality Assurance Procedures
 - viii) Applicable Codes & Standards
 - ix) Special Conditions of Contract
 - x) General Conditions of Contract
 - xi) Price Schedule
 - xii) Instructions to Bidders
 - xiii) Other documents
- 2.0.1.7 Should there be any doubt or ambiguity in the interpretation of the Contract documents or contradiction therein or should there be any discernable error or omission in any Contract document, the CONTRACTOR shall, prior to commencing the relative work or supply, as the case may be, apply in writing to the Engineer-in-Charge for his decision for resolution of the doubt, ambiguity or contradiction or correction of the error or making good the omission, as the case may be. Should the CONTRACTOR fail to apply to the Engineer-in-Charge for his decision as aforesaid prior to commencing the relative work or supply, the CONTRACTOR shall perform the said work or make the said supply, as the case may be, at his own risk, and the provisions of Clause 2.0.1.10 hereof shall apply to any such work performed or supply made by the CONTRACTOR.
- 2.0.1.8 Notwithstanding anything provided in Clause 2.0.1.7 hereof above, either the CONTRACTOR or any representative of the OWNER or CONSULTANT may, at any time prior to or during the execution of the work or supply of any material or any part thereof (if the CONTRACTOR has failed to make an application as provided for in Clause 2.0.1.7), apply to the Engineer-in-Charge in writing for his decision in resolution of any doubt, ambiguity or contradiction or for the correction of any error or for making good the omission as the case may be.
- 2.0.1.9 The decision of the Engineer-in-Charge on any application under Clause 2.0.1.7 or Clause 2.0.1.8 hereof shall be in writing and shall be final and binding upon the CONTRACTOR and shall form part of the Contract documents, with the intent that the Contract documents shall be read as though the said decision is and was at all times incorporated therein.

- 2.0.1.10 In the event of the CONTRACTOR performing or executing any work or making any supply at variance with the decision of the Engineer-in-Charge as aforesaid, then such work shall, if the Engineer-in-Charge so consider necessary, be deemed to be a defective work/ supply and the provision of Clause 5.1.5.0. hereof and associated clauses thereunder shall apply thereto.
- 2.0.2.0 Any work or supply shown, indicated or included in any description of the work, plans, drawings, Specifications and/or Price Schedule or other Contract or Bid documents shall be deemed to form part of the work and/or supply contracted for, as the case may be, notwithstanding failure to show, indicate or include such work or supply in any other or others among the documents aforesaid with the intent that the indication or inclusion of the work or supply within any one of the said documents shall be deemed to be a sufficient indication or inclusion of the work or supply, as the case may be, within the work and supply covered by the Contract.
- 2.0.3.0 No verbal agreement, assurance, representation or understanding given by any employee or officer of the OWNER or so understood by the CONTRACTOR, whether given or understood before or after the execution of the contract, shall any-wise bind the OWNER or alter the Contract documents unless specifically given in writing and signed by the OWNER or by the Engineer-in-Charge on behalf of the OWNER and CONTRACTOR'S authorised representative as an Agreed Variation and amendment of the relative term(s) in the contract documents.
- 2.0.4.0 Clause headings given in this or any other contract documents are intended only as a general guide for convenience in reading and segregating the general subject of the various Clauses, but do not form part of the contract documents, with the intent that the Clause headings shall not govern the meaning or import of the Clauses thereunder appearing or confine or otherwise affect the interpretation thereof.
- 2.0.5.0 The OWNER may, as a measure of convenience to the CONTRACTOR, furnish Hindi or any other Vernacular translation of the several contract documents or any of them. Such translation shall, however, not any-wise operate as the contract between the parties or regulate upon the terms and conditions of the contract documents, with the intention that all rights and obligations of the parties in terms of the contract documents and any reference to the contract or contract documents or any of them shall be deemed as the rights and obligations arising out of the contract or contract documents or any of them as written in English; and no claim, disputes, difference or other objection will lie or will be entertained by the OWNER on account of any reference in the import or interpretation between any provision contained in Hindi and/or any other Vernacular translation of the contract documents or any of them and the contract documents in English .
- 2.1.0.0 **SECURITY DEPOSIT**
- 2.1.1.0 The CONTRACTOR shall within 30 (Thirty) days from the date of issue of the Acceptance of Bid furnish Security Deposit in an amount equivalent to 10% (Ten percent) of the Lumpsum Price in the manner specified in Clause 2.1.2.0 hereof. Such security deposit is to be held by the OWNER in lieu of cash as security for the due performance of the CONTRACTOR'S obligation under the contract and due discharge of CONTRACTOR's liabilities under and/or arising out of the Contract.

- 2.1.2.0 As and by way of the said Security Deposit, the CONTRACTOR shall within 30 (Thirty) days from the date of issue of Acceptance of Bid submit one or more unconditional Bank Guarantee(s) from one or more Bank(s) in India acceptable to the OWNER and in a format, provided by the OWNER, for a sum equivalent to 10% (Ten percent) of the Lumpsum Price of the Contract. Such Bank Guarantee(s) to the extent that the Lumpsum Price as designated in Foreign Currency, shall be for an amount of 10% (Ten percent) of the designated Foreign Currency(ies), and to the extent that the Lumpsum Price as designated in Indian Rupees, shall be for an amount of 10% (Ten percent) of the designated Indian Rupees, and shall be valid in the first instance for a period of not less than 3 (three) months after the expiry of the defect liability period, reckoned from the scheduled date of final completion under the Contract. PROVIDED that if and after the CONTRACTOR has successfully completed all CONTRACTOR's obligations under the Contract as witnessed by the issue of a Completion Certificate under Clause 5.3.3.0, so that the only surviving obligations of the CONTRACTOR under the Contract concern or relate to and arise out of the Defect Liability Period and obligations consequent thereto, the CONTRACTOR may opt to replace the existing Bank Guarantee(s) aforesaid furnished by the CONTRACTOR to the OWNER under this Clause with similar unconditional Bank Guarantee(s) for a sum equivalent to 5% (five per cent) of the Lumpsum Price designated in Foreign Currency and for a sum equivalent to 5% (five per cent) of the Lumpsum Price designated in Indian Rupees. Such replacement Bank Guarantee(s) shall be valid for a period of not less than 3 (three) months after the expiry of the Defect Liability Period.
- 2.1.2.1 The Bank Guarantee(s) shall be extended by such further period(s) as the OWNER may require until performance of all the Contractor's obligations under the Contract.
- 2.1.2.2 Without prejudice to any other right or remedy available to the OWNER, the OWNER may at any time and from time to time before issue of the Final Certificate under the Contract require the CONTRACTOR by notice in writing to renew the Bank Guarantee(s) for such period(s) as the OWNER may deem fit, and upon such request, the CONTRACTOR shall renew the Bank Guarantee(s) for the required period(s), and without prejudice to any other right or remedy under the Contract, and unless the OWNER shall not have required such renewal, the OWNER shall be entitled to encash the Bank Guarantee(s) or any of them which are not renewed at least 14 (Fourteen) days prior to the date of expiry thereof .
- 2.1.3.0 The Security Deposit shall be held by the OWNER as security for the due performance of the CONTRACTOR'S obligations under the contract, PROVIDED that nothing herein stated shall make it incumbent upon the OWNER to utilise the Security Deposit in preference to any other remedy which the OWNER may have, nor shall be construed as anyway confining the claims of the OWNER against the CONTRACTOR to the quantum of the security deposit.
- 2.1.4.0 Upon determination of the contract prior to completion of the work(s) for any cause, the OWNER shall insofar as the Security Deposit constitutes cash refund, and insofar as Security Deposit is in any other form, release/ discharge/ return, as the case may be, to the CONTRACTOR the unutilised balance of the Security Deposit, if any, for the time being remaining in the hands of the OWNER, after settlement of accounts and discharge of all

amounts due from the CONTRACTOR to the OWNER and fulfillment of all obligations of the CONTRACTOR .

2.2.0.0 PLANS, DRAWINGS AND APPROVALS FURNISHED BY OWNER

2.2.1.0 Plans and Drawings and other information forming part of the bid documents has been provided by the OWNER in good faith with a view to assist the CONTRACTOR, and shall constitute only a general guidance to enable the CONTRACTOR to visualise the work and/or supplies contemplated under the contract. The OWNER assumes no responsibility as to the correctness thereof, and the CONTRACTOR is expected prior to bidding, to have undertaken a complete and independent survey and to have made its own study and assessment of all factors relevant to the performance of the work or making the supplies. The CONTRACTOR shall exercise its knowledge and competence in scrutinising and evaluating such information and shall proceed with use of such information only after satisfying itself of its sufficiency and correctness for use.

2.2.1.1 It shall be the exclusive responsibility of the CONTRACTOR to call upon the Engineer-in-Charge for and to pursue and obtain from the Engineer-in-Charge any approvals required to be furnished to the CONTRACTOR under the Contract for the proper execution of the work or any particular item or job therein or for making available any front or supply of materials or utilities to be supplied by the OWNER, as the case may be, as and when required, sufficiently in advance of the stage of delivery of the materials or of the progress of the work for continuance of which the same shall be required. Any failure by the CONTRACTOR to do so shall be entirely at the risks and the costs of the CONTRACTOR and shall not constitute a ground for the extension of time. If the Engineer-in-Charge shall fail to provide the CONTRACTOR requisite approval(s) or disapproval(s) or front(s) or supply, as the case may be, the CONTRACTOR shall give written notice to the Engineer-in-Charge and to the OWNER stating specifically the approval(s), front(s) and/or utilities and/or supplies as the case may be, which is/are pending, the period for which it/they are pending, the reason(s) for which they are pending and specially stating that the notice is being given pursuant to the provisions of this Clause 2.2.1.1 of the General Conditions of Contract. If thereafter, the said notice notwithstanding (i) the approval or the disapproval, as the case may be, is not granted within 10(ten) working days after the receipt of such notice by the Engineer-in-Charge and OWNER, the drawings or documents or other proposal(s) put up for approval, will be deemed to have been approved; and (ii) the front, material or utility as the case may be, is not provided by the OWNER within 10 (ten) working days of the receipt of such notice by the Engineer-in-Charge and OWNER, the CONTRACTOR shall be entitled to resort to the provisions of Clause 4.3.5.0 for extension of time, if so required.

2.2.1.2 The CONTRACTOR shall submit to OWNER/ Engineer-in-Charge, within the periods specified by OWNER/ Engineer-in-Charge, such documents, write-ups, designs, samples, patterns, models, data and other information as may be required in order to enable OWNER/ Engineer-in-Charge to furnish the requisite approval(s). The CONTRACTOR shall be responsible for any discrepancy, error, or omission in any drawings or other matters or things or documents and other particulars supplied by it whether or not such drawings, documents and particulars or other matters and/or things have been approved by the OWNER/ Engineer-in-Charge.

- 2.2.1.3 Where the CONTRACTOR claims such deemed approval, pursuant to Clause 2.2.1.1, the CONTRACTOR shall submit to the Executive Director the supporting documents and notice(s) in support of the claim of deemed approval and the Executive Director shall, if satisfied of the existence of such deemed approval, certify the approval on the drawing/document and upon such certification the drawing/document shall be deemed to have been approved in Code-I. The CONTRACTOR shall not be entitled to claim any extension of time on this account.
- 2.2.1.4 The CONTRACTOR shall not depart from the approved documents, drawings, samples, patterns, models or manuals except as directed in writing by OWNER/ Engineer-in-Charge.
- a) With a view to expedite OWNER's approvals of critical drawings, the CONTRACTOR shall furnish to the Engineer-in-Charge, in writing as precisely as possible, a list of critical drawings (hereinafter referred to "critical drawings") within 25 (twenty five) working days of the Letter of Acceptance or at the commencement of the kick-off meeting, whichever is earlier.
 - b) At the initiative of the CONTRACTOR, the Engineer-in-Charge and the CONTRACTOR shall discuss as soon as possible and finalise the schedule for the presentation for approval of the critical drawings so as to enable appropriate persons to be assigned for approval of the drawings.
 - c) The critical drawings requiring the OWNER's approval shall be transmitted to the office of the OWNER's CONSULTANT electronically for which the CONTRACTOR shall establish an electronic system compatible with that of the OWNER's CONSULTANT for document/ data transfer. The details of the system available with the OWNER's CONSULTANT are provided in the Bidding Documents. Failure by the CONTRACTOR to install such compatible electronic transfer system shall constitute a breach of the CONTRACTOR's obligations to which the provisions of Clause 7.0.1.0 of these General Conditions shall be applicable, without prejudice to any right of action available to the OWNER's in this behalf. Until the CONTRACTOR provides such system, the CONTRACTOR shall solely assume all risks and delay, and shall personally deliver to OWNER's CONSULTANT's office all drawings and documents requiring approval and to depute to the OWNER's CONSULTANT's designated office, its design engineer for across the table discussions with reference to the drawings/documents and to personally pick up from the designated offices of the OWNER's CONSULTANT the reviewed/commented upon drawings/documents.
 - d) It is anticipated that the non-critical drawings will be submitted periodically in accordance with a schedule to be established by the CONTRACTOR in consultation with the Engineer-in-Charge within 56 (Fifty Six) days of the notification of award in conjunction with the Progress Schedule.
 - e) Bottlenecks in critical and non-critical drawings shall be removed by discussion across the table between the OWNER/OWNER's CONSULTANT with the CONTRACTOR and the CONTRACTOR's consultants and/or sub-vendors concerned. These meetings shall be held at the designated offices of OWNER or the OWNER's CONSULTANT once in a week or otherwise as required.
 - f) The CONTRACTOR shall as soon as possible, after issue of Letter of Acceptance establish with the Process Licensor(s), in consultation with

the OWNER, the schedule for and modalities of Licensor's review of CONTRACTOR's drawings, so far as required.

- 2.2.2.0 The CONTRACTOR shall carefully study the plans/drawings and other Contract documents and shall bring to the notice of the Engineer-in-Charge for clarification/correction, any ambiguity, error, discrepancy, contradiction or omission therein prior to the execution of related work(s) or undertaking the related supply(ies) as the case may be, under the provisions of Clause 2.0.1.7 hereof.
- 2.2.3.0 Notwithstanding anything to the contrary in the contract documents expressed or implied, and notwithstanding the absence of any ambiguity, error, discrepancy, contradiction or omission in the plans/drawings as aforesaid, the Engineer-in-Charge shall be entitled at any time before or during the making of the related supplies or execution of the related works to amend/modify or alter any plan(s) or drawing(s) furnished to the CONTRACTOR by the OWNER and the CONTRACTOR shall, subject to the provisions of Clause 2.4.2.0 hereof, thereafter perform and/or to continue to perform the related work(s) or supply(ies) as the case may be, according to the amended/modified/alterd plans/drawings without entitlement to any extra remuneration . Should the CONTRACTOR thereafter execute any relative work(s) or make any supply at variance there with, the provisions of Clause 5.1.5.0 hereof and associated clauses thereunder relating to defective work and supply shall apply thereto, provided that if any such amendment/ modification/ alteration shall, in the opinion of the CONTRACTOR, necessitate an extension of time, the provisions of Clause 4.3.5.0 hereof and Clauses related thereto shall apply.
- 2.2.4.0 Copies of all approved plans and designs relating to the work(s) and supplies shall be kept and maintained at the CONTRACTOR'S office at the site and shall be made available to the Engineer-in-Charge for inspection or reference at any time during the execution of work.
- 2.2.5.0 All plans and drawings furnished by the OWNER to the CONTRACTOR shall be and remain the property of the OWNER and shall be returned by the CONTRACTOR to the OWNER on completion of the work(s) or prior to determination of the contract.
- 2.3.0.0 **PLANS, DESIGNS, DRAWINGS AND SPECIFICATIONS TO BE FURNISHED BY CONTRACTOR**
- 2.3.1.0 The CONTRACTOR shall within scope of his work prepare detailed working and other plans, drawings and designs required for or in connection with the performance of the work or selection, procurement or making any supply, and these plans/ drawings shall be got approved from the OWNER before the CONTRACTOR commences the performance of the relative work or making the relative supply.
- 2.3.2.0 The CONTRACTOR shall, if within the scope of his work also carry out investigative and design studies and prepare detailed design for the various materials and works covered in the contract documents. Such detailed designs along with referred codes, standards and practices, back-up calculations, computer runs and other details on basis of which the designs have been prepared shall be subject to the OWNER'S approval. Detailed working drawings and material specifications shall be prepared and established on the basis of the approved design(s) and shall also be subject to the OWNER'S approval.

2.3.3.0 Where the CONTRACTOR shall be required under the contract to prepare or furnish any plan(s) or specification(s) or other items or things in respect of the work or any particular work and/or supplies or any particular supply, the CONTRACTOR shall within 30(thirty) days (or such other period as the Engineer-in-Charge may prescribe in this behalf) of receipt of Letter of Acceptance or not less than 90(ninety) days before the proposed date of commencement of the relative work or supply, which ever shall be earlier, submit to the Engineer-in-Charge or other authorities specified by the OWNER in this behalf for approval the relative plan(s)/ drawing(s)/ design(s)/ specification(s)/ item(s)/ thing(s) concerned. The Engineer-in-Charge/ specified authority shall be entitled at any time to suggest any amendment (s) or modification(s) in the plans/ drawings and/or specifications and the CONTRACTOR shall thereupon either convince the Engineer-in-Charge/specified authority of the unnecessary in whole or part of such amendment or modifications or shall implement the same and shall cause the plan(s)/drawing(s)/ design(s)/ specification(s) or item(s) or thing(s) concerned to be accordingly amended, provided that no such approval of or amendments/ modifications in the plans/drawings/designs/specifications by or suggested by the Engineer-in-Charge/specified authority shall anyway absolve the CONTRACTOR of any of his obligations, responsibilities or liabilities under the contract, inclusive of and relative to the utility and suitability of the CONTRACTOR's plans/drawings/designs/specifications or items or things concerned in or for the relative works or supplies and fulfillment of all specifications and performance and other guarantees of the consequent works/supplies, any such approval or suggestion by the Engineer-in-Charge/ authority as aforesaid being intended only by way of assistance to the CONTRACTOR and prima facie satisfaction of the OWNER without any attendant liability upon the Engineer-in-Charge/ specified authority in this behalf and without any estopped against the OWNER from asserting that notwithstanding such approval, the plan, drawing, design, specification or other item or thing approved and any resultant work or supply were faulty and/or not in accordance with the contractual requirements .

- 2.3.3.1 The CONTRACTOR shall furnish six prints each of the drawings for approval of the Engineer-in-Charge.
- 2.3.4.0 The CONTRACTOR shall not permit any work to be done or any material to be supplied or fabricated or manufactured at variance with drawings/ designs/ specifications approved by the Engineer-in-Charge or other specified authority. The approved drawings may be released to the CONTRACTOR for fabrication/ installation progressively.
- 2.3.5.0 Unless otherwise required at least 3(three) sets of direct reading reproduces, no lower in quality than auto positive of extra thin paper able to produce clean legible prints (the reproduces to be submitted in roll forms) and 3(three) sets of prints of all approved plans/drawings/ designs/ specifications prepared by the CONTRACTOR, together with similar sets of reproduces and prints of all revisions/amendments/ modifications therein shall be lodged with the Engineer-in-Charge/ specified authority for the record of the OWNER, such sets of plans/ drawings/designs/ specifications shall be signed by the CONTRACTOR and shall indicate thereon the number and date of each revision/ amendment and of the communication of the Engineer-in-Charge or any other agency appointed by the OWNER for the approval thereof, by which the approval was given.

- 2.3.5.1 All the Final drawings shall bear the certification stamp as indicated below, duly signed by both, the CONTRACTOR and the approving authority specified/ Engineer-in-Charge:

"Certified true for EPCC Package No. _____ i.e. _____
_____,"

Contract No.: _____

signed (CONTRACTOR): _____

signed (on behalf of IOCL): _____"

2.4.0.0 **ALTERATIONS IN DESIGNS, PLANS, DRAWINGS, SPECIFICATIONS
ORDERS AND INSTRUCTIONS**

- 2.4.1.0 In addition and without prejudice to the provisions of Clause 2.2.0.0 and 2.3.0.0 and associated clauses thereunder, if the Engineer-in-Charge is of opinion that any plan, drawings, design or specification or order or instruction relative thereto within the CONTRACTOR'S scope of work or supply is anyway erroneous or is otherwise required to be modified, altered, amended or improved to conform to the Contract requirements, whether or not the same has or have been priorly approved by or on behalf of the OWNER, the Engineer-in-Charge may by written notice to the CONTRACTOR at any time prior to or in the course of the execution of the works or any part thereof modify or amend the relevant plan, drawing, design, specification, order and/or any instruction or any of them by addition, omission, substitution or otherwise whatsoever, and the CONTRACTOR shall thereupon either convince the Engineer-in-Charge of the unnecessary in the whole or part of the amendment(s) or modification(s) or shall implement the same and shall cause the plan, drawing, design, specification, order or instruction as the case may be to be accordingly amended and the CONTRACTOR shall thereafter carry out the work or supply or the related work or supply, as the case may be, in accordance with such altered specification, order, instruction, plan, drawing and/or design, as the case may be, on the same terms and conditions in all respects without entitlement to any additional remuneration or price.

- 2.4.1.1 In addition to and without prejudice to Clause 2.4.1.0 hereof, the Engineer-in-Charge shall have the power by written notice to the CONTRACTOR at any time prior to the or in the course of the execution of the relative works or supply or any other part thereof, to alter or amend or modify any other requirement. If and so far as the alteration, amendment and/or modification requires any consequential amendment in any plan(s), drawing(s), design(s) or specification(s) within the CONTRACTOR'S scope of work and/or supply, the CONTRACTOR shall make such alternations, amendment(s) or modification(s) as the case may be.

- 2.4.1.2 If such alteration, amendment, modification or improvement under Clause 2.4.1.0 or 2.4.1.1 shall, in the opinion of the CONTRACTOR, necessitate an extension in the item for completion, the provisions of Clause 4.3.5.0 hereof and related clauses with regard to the extension of time shall apply.

- 2.4.2.0 If any alteration, amendment or modification under Clauses 2.4.1.1 shall, in the opinion of the OWNER, result in a reduction in the scope of work or specifications of the work or supply covered by the Lumpsum Price so as to render unreasonable the Lumpsum Price, or if in the opinion of the CONTRACTOR, the alteration, amendment or modification shall result in

an increase in the scope of work or specifications of the work or supply covered by the Lumpsum Price so as to render unreasonable the Lumpsum Price, the OWNER or the CONTRACTOR, as the case may be, shall serve written notice thereof to the other, with a copy to the Engineer-in-Charge and the OWNER's Project Management Consultant, and the provisions of Clause 2.6.0.0 and associated provisions thereunder applicable to a Change Order initiated by the OWNER or CONTRACTOR, as the case may be, shall mutatis mutandis apply. Such notice shall constitute and shall comply with the requirements of a Change Order Proposal under Clause 2.6.1.0 (if initiated by the OWNER) or Clause 2.6.2.0 (if initiated by the CONTRACTOR).

- 2.4.2.1 Pending finalization of a Change Order pursuant to a notice/change order proposal given under the provisions of Clause 2.4.2.0 hereof, the CONTRACTOR shall continue and be bound to continue and perform the work(s) and/or make the supply(ies) to completion in all respects according to the Contract (unless the Contract or works be determined by the OWNER) and the CONTRACTOR shall continue to be liable and bound in all respects under the Contract.

2.5.0.0 **ALTERATION IN THE SCOPE OF WORK OR SUPPLY**

- 2.5.1.0 The OWNER may at any time(s), before or after the commencement of the work or supply, by notice in writing issued to the CONTRACTOR, alter the scope of work or supply, by increasing or reducing the quantities relative to any job(s) or supply(ies) or by increasing or reducing the job(s) required to be done or supplied with respect thereto or by omitting therefrom any specific job(s) or portion(s) or by substituting any existing jobs or operations with other jobs and/or operations, or by requiring the CONTRACTOR to perform any extra works and upon receipt of such notice the CONTRACTOR shall execute the job(s) and/or make supplies as required within the altered scope of work and/or supply.

- 2.5.2.0 If any alteration in the scope of work and/or supply shall in the opinion of the CONTRACTOR, necessitate any extension in time for completion, the provisions of Clause 4.3.5.0 hereof and related Clauses with regard to the extension of time shall apply.

- 2.5.3.0 If an alteration under Clause 2.5.1.0 shall, in the opinion of the OWNER, result in a reduction in the scope of work or supply covered by the Lumpsum Price so as to render unreasonable the Lumpsum Price, or if in the opinion of the CONTRACTOR, the alteration, amendment or modification shall result in an increase in the scope of work or supply covered by the Lumpsum Price so as to render unreasonable the Lumpsum Price, the OWNER or the CONTRACTOR, as the case may be, may initiate a Change Order Proposal by serving written notice thereof to the other, with a copy to the Engineer-in-Charge and the OWNER's Project Management Consultant, and the provisions of Clause 2.6.0.0 and associated provisions thereunder applicable to a Change Order initiated by the OWNER or CONTRACTOR, as the case may be, shall mutatis mutandis apply. Such notice shall constitute and shall comply with the requirements of a Change Order Proposal under clause 2.6.1.0 (if initiated by the OWNER) or Clause 2.6.2.0 (if initiated by the CONTRACTOR).

- 2.5.4.0 Pending finalization of a Change Order pursuant to a notice/Change Order Proposal given under the provisions of Clause 2.5.3.0 hereof, the CONTRACTOR shall continue and be bound to continue and perform the

work(s) and/or make the supply(ies) to completion in all respects according to the Contract (unless the Contract or works be determined by the OWNER) and the CONTRACTOR shall continue to be liable and bound in all respects under the Contract.

2.6.0.0 CHANGE ORDERS

2.6.1.0 If initiated by the OWNER, the Change Order Proposal shall specify the reduction in the Lumpsum Price proposed by the OWNER by virtue of the change(s) referred to in the notice and shall set forth the basis for the calculation thereof.

2.6.2.0 A Change Order Proposal may be initiated by the CONTRACTOR only within 21 (twenty one) days from the date of issue of orders or instructions relative to any works for which the CONTRACTOR claims the additional payment or compensation. The Change Order Proposal made by the CONTRACTOR shall set out the reasons for the proposal and the basis on which the increase in the Lumpsum Price is proposed to be calculated and shall give particulars of the order or instruction from which it arises.

2.6.2.1 If the CONTRACTOR fails to initiate a Change Order Proposal within the time and in the manner specified in Clause 2.6.2.0, the OWNER shall not be liable for or in respect of a claim or Change Order Proposal subsequently or otherwise made or initiated by the CONTRACTOR in respect of such orders or instructions, and the CONTRACTOR hereby waives and relinquishes any and all rights in respect of any such claim or Proposal subsequently or otherwise made or initiated by the CONTRACTOR.

2.6.3.0 The OWNER's Project Management Consultant shall promptly consider a Change Order Proposal submitted by the CONTRACTOR in compliance with Clause 2.6.2.0 and shall submit its recommendations to the OWNER within 2 (two) weeks of receipt of the Change Order Proposal.

2.6.3.1 The OWNER shall within 3 (three) weeks thereafter examine the Proposal and the recommendations of its Project Management Consultant with respect thereto and convey in writing to the CONTRACTOR its approval or disapproval in principle of the Change Order Proposal.

2.6.3.2 If the Change Order Proposal is made by the OWNER or if the OWNER conveys its approval in principle to the Change Order Proposal made by the CONTRACTOR, the CONTRACTOR shall within 3 (three) weeks of receiving the Change Order Proposal or OWNER's approval in principle, as the case may be, submit to the OWNER, the Engineer-in-Charge and the OWNER's Project Management Consultant in writing its detailed engineering analysis and costing of the change by way of reduction or increase, as the case may be, in the Lumpsum Price.

2.6.3.3 The OWNER's Project Management Consultant shall review the detailed engineering and costing of the change proposed by the CONTRACTOR and submit to the OWNER and the CONTRACTOR its comments thereon within three (3) weeks of the receipt thereof.

2.6.3.4 Within 4 (four) weeks of receiving its Project Management Consultant's comments, if the OWNER is able to agree with the CONTRACTOR on the costing of the change, the OWNER shall issue a Change Order incorporating

the cost impact of the change by increase or reduction, as the case may be, in the Lumpsum Price. In order to achieve such agreement, the OWNER may call the CONTRACTOR for negotiations.

- 2.6.4.0 If a Change Order is not issued by the OWNER within 18 (eighteen) weeks of initiation of the Change Order Proposal by the OWNER or within seven (7) weeks of the CONTRACTOR's compliance with Clause 2.6.3.2, whichever is later, the OWNER or the CONTRACTOR may apply to the Engineer-in-Charge for fixing an ad hoc price for the activities covered by the change which shall be 90% (ninety per cent) of the cost of such change, as estimated by the Engineer-in-Charge, and the OWNER shall pay such ad hoc price for such activities in accordance with the payment terms specified in the Contract Documents.
- 2.6.5.0 If the OWNER has not given its in principle approval to a Change Order Proposal initiated by the CONTRACTOR in accordance with the provisions of Clause 2.6.2.0, or if the OWNER and the CONTRACTOR are unable to agree on the costing of the Change Order Proposal as envisaged in Clause 2.6.3.4, the Change Order Proposal made by the CONTRACTOR shall be deemed to be a claim of the CONTRACTOR under Clause 6.6.1.0 to which the provisions of Clause 6.6.1.0 and associated provisions with regard to the CONTRACTOR's claims shall mutatis mutandis apply.
- 2.6.6.0 Provided always that the provisions with respect to a Change Order or a Change Order Proposal shall not be applicable if:
- (a) the change of supply or services or work is required by the OWNER or Engineer-in-Charge before approval of detailed design or engineering to meet the requirements of the Contract.
 - (b) the change of supply or services or work is necessary at any time in order for the CONTRACTOR to comply with the requirements of the Contract or the CONTRACTOR's responsibilities under the Contract.
 - (c) the additional supply or services or works are required because of any delay or deficiency attributable to the CONTRACTOR.
 - (d) the additional Work/services and/or materials are required to make good the CONTRACTOR's Warranties and/or Guarantees as set forth in the Contract.
 - (e) the change relates to the repair, rectification or re-performance of any of the defective work(s) or materials within the CONTRACTOR's scope or supply or services or work
- 2.6.7.0 Unless otherwise agreed between the CONTRACTOR and the OWNER, the price implications of a Change Order Proposal for addition to or subtraction from the Lumpsum Price shall be calculated on the following basis:
- (A) (i) For Materials covered under the CONTRACTOR's scope of supply (including equipment) incorporated in work(s) not being Civil and Structural Works covered by (B) below, at cost of such materials involved in the work(s) to which the Change Order Proposal relates, as witnessed by the Supplier's relative invoices;
 - (ii) For works and services, other than Civil and Structural works covered by (B) below, at the cost of labour and consumables and utilities involved in the works to which the Change Order Proposal relates and the cost of equipment involved in the

execution of such work, the cost of the equipment to be worked out by amortization in the manner provide in Clause 2.6.7.1;

(iii) 6 % (six per cent) of (i) and (ii) above to cover design and other engineering and overall co-ordination costs.

(iv) 15% (fifteen per cent) of the total of (i), (ii) and (iii) above to cover all other costs, overheads and profit.

(B) (i) For Civil and Structural works involved in the works to which the Change Order Proposal relates, on basis of the CPWD rates then prevailing for the location of the works or, in the absence of the existence of CPWD rates for the location, at the applicable State PWD rates, which cover costs, overheads and profit;

(ii) 6 % (six per cent) of (i) above to cover design and other engineering and overall co-ordination costs.

2.6.7.1 Unless otherwise agreed, for the purposes of calculating the increase or reduction in the Lumpsum Price consequent upon a Change Order Proposal with respect to any works other than Civil and Structural work(s) covered by Clause 2.6.7.0 (B), as and from the date of the initiation of a Change Order Proposal, the CONTRACTOR shall on each day prepare and submit to the OWNER, a statement of time worked by all labour employed in the work/services to which the Change Order Proposal relates and showing the description and quality and invoiced costs of all CONTRACTOR supplied materials (including equipment) incorporated in the works and the cost of materials and utilities and equipment utilized for the work to which the Change Order Proposal relates. Such statement shall be submitted by the CONTRACTOR on a daily basis to the OWNER after obtaining the comments (if any) and signature of the Engineer-in-Charge thereon. At the end of each month, the CONTRACTOR shall deliver to the OWNER for approval a price statement of the cost of labour, materials, utilities and equipment used in this behalf. The cost of mechanical equipment utilized for the work shall be worked out on a capital amortization of 2000 (two thousand) working days. Notwithstanding any dispute as to the cost allocation, the Statement shall be signed by the Engineer-in-Charge with a Note of dissent as a record of the views of the Engineer-in-Charge thereon.

2.6.7.2 Unless otherwise agreed, the amount calculated under Clause 2.6.7.0 shall solely determine the rights of the OWNER or the CONTRACTOR, as the case may be, pursuant to a Change Order Proposal in respect of which the OWNER is entitled to a reduction in the Lumpsum Price or the CONTRACTOR is entitled to an increase in the Lumpsum Price.

2.6.7.3 It is hereby specifically clarified as follows:

(a) Nothing provided herein shall in any manner permit the CONTRACTOR to disobey any order(s) or instruction(s) of the OWNER or the Engineer-in-Charge or other person or authority competent to issue such order(s) or instruction(s) or to await the outcome of the process set forth herein for claiming or determining the cost implications or implementing such order(s) or instruction(s).

(b) The CONTRACTOR shall within the Scope of Work and Services be bound to promptly and timely implement such order(s) or instruction(s).

(c) The time taken in implementing the process herein set forth shall in no circumstances constitute a ground for extension of time under Clause 4.3.5.0 or Clause 4.3.6.0 or otherwise.

(d) Any delay or inability by the Project Management Consultant to consider and/or submit its recommendations on a Change Order Proposal in accordance with Clause 2.6.3.0 or to review and/or submit its comments in accordance with Clause 2.6.3.3, or by the OWNER to examine the Change Order Proposal or recommendations of the Project Management Consultant, or convey its approval or disapproval to the Change Order Proposal in accordance with Clause 2.6.3.1 or to convey its agreement or to issue a Change Order under Clause 2.6.3.4 shall in

no circumstances constitute a ground for extension of time under Clause 4.3.5.0 or Clause 4.3.6.0 or otherwise.

2.7.0.0 CANCELLATION OF CONTRACT

2.7.1.0 The OWNER shall be entitled at any time at its discretion to cancel the Contract, if in the opinion of the OWNER the cessation of the work becomes necessary owing to any cause whatsoever other than the default of the CONTRACTOR, and a notice in writing from the OWNER to the CONTRACTOR of such cancellation and the reason(s) therefore shall be conclusive proof of such cancellation and of the reason(s) thereof. Upon cancellation of the Contract the Engineer-in-Charge may require the CONTRACTOR :

- i) To perform, to completion or to any other intermediary stage of completion to the satisfaction of the Engineer-in-Charge, any work(s) already commenced by the CONTRACTOR; and
- ii) To take steps as are considered necessary by the Engineer-in-Charge for properly protecting and securing the works performed by the CONTRACTOR, to the satisfaction of the Engineer-in-Charge.

And the CONTRACTOR shall act accordingly and the same shall be deemed to be included within the CONTRACTOR's scope of work.

2.7.2.0 Upon receipt of a notice as specified in Clause 2.7.1.0 hereof the CONTRACTOR shall, unless the notice otherwise requires:

- i) Immediately discontinue work and/or supply from the date and to the extent specified in the notice.
- ii) Not place any further orders or sub-Contracts for materials, services or facilities other than as may be necessary or required for completing or performing such portion of the work(s) or supplies which the CONTRACTOR is required to complete or perform.
- iii) Promptly make every reasonable effort to obtain cancellation or fulfillment, as the case may be at the option of the Engineer-in-Charge/OWNER of all orders and sub-contracts to the extent they relate to the performance of the work(s) or supplies cancelled.
- iv) Assist the Engineer-in-Charge/OWNER, as specifically requested in writing by the Engineer-in-Charge/OWNER, in the maintenance, protection and disposition of property/works acquired by the OWNER pursuant to the Contract.

2.7.3.0 Upon Cancellation of the Contract, the OWNER shall take over from the CONTRACTOR, the approved surplus materials supplied by the CONTRACTOR for permanent incorporation in the work and lying at the job site on the date of receipt of notice of cancellation by the CONTRACTOR, and the decision of the Engineer-in-Charge as to the approved materials lying at the site on the date of cancellation and the quantities thereof shall be final and binding upon the CONTRACTOR.

2.7.4.0 Upon cancellation of the Contract, the CONTRACTOR agrees to waive any claim for damages, including loss of anticipated profits on account thereof, and as the sole right and remedy of the CONTRACTOR against the OWNER resultant upon such cancellation, the CONTRACTOR agrees to accept from the OWNER the following, namely :

- i) The cost of settling and paying claims for cancellation or completion of pending orders and/or sub contracts as provided for in sub-clause (iii) of clause 2.7.2.0 hereof.
- ii) The cost of protecting, securing and/or maintaining the works pursuant to the provisions of sub-clause (ii) of Clause 2.7.1.0 hereof and/or sub-clause (iv) of Clause 2.7.2.0 hereof.
- iii) Payment for the supplies actually made on the basis of the Bill of Materials.
- iv) Payment for the work actually performed by the CONTRACTOR, calculated on the basis of the relative milestone achieved as derived from the Payment Schedule specified in the Special conditions of Contract.

- v) The cost of materials taken over by the OWNER pursuant to the provisions of Clause 2.7.3.0 hereof.
- vi) An allowance, if any due, as determined by the Engineer-in-Charge (whose decision shall be final) to cover the cost of CONTRACTOR's actual mobilisation and de-mobilisation at job site for the work to the extent uncovered by payments under items (i) to (iv) above.

AND THE CONTRACTOR shall not be entitled to any compensation in addition to the payments specifically provided for above, and the CONTRACTOR hereby specifically waives any and all contrary rights and claims whatsoever.

- 2.7.5.0 Upon cancellation of the Contract, the CONTRACTOR shall as soon as is reasonably feasible prepare an account of all amounts due to it from the OWNER pursuant to Clause 2.7.4.0 hereof and upon submission of such account to the OWNER, the parties shall forthwith agree upon a reduction in the value of the Bank Guarantee(s) furnished by way of Security Deposit on behalf of the CONTRACTOR to cover defects in the works performed and supplies made by the CONTRACTOR for the Defect Liability Period specified in Clause 1.0.17.0 hereof, and upon such agreement, the value of the Bank Guarantee(s) shall be reduced to the value agreed and the period of the Bank Guarantee(s) shall be reduced to the Defect Liability Period reckoned from the date of the said agreement plus a claim period of three (03) months thereafter. The CONTRACTOR shall cause fresh Bank Guarantee(s) to be furnished to the OWNER for the amount and period aforesaid in lieu of the existing Bank Guarantee(s) furnished to the OWNER by way of Security Deposit and the provisions of Clause 2.1.1.0 to 2.1.3.0 hereof shall mutatis mutandis apply to such substituted Bank Guarantee(s).

2.8.0.0 **SUSPENSION OF WORK AND SUPPLIES**

- 2.8.1.0 The Engineer-in-Charge or the OWNER may at any time(s), at his discretion should he consider that the circumstances so warrant (the decision of the Engineer-in-Charge as to the existence of circumstances warranting such suspension shall be final and binding upon the CONTRACTOR), by notice in writing to the CONTRACTOR, temporarily suspend the work or supply or any part thereof for such period(s) as the Engineer-in-Charge/ OWNER shall deem necessary and the CONTRACTOR shall, upon receipt of the order of suspension, forthwith suspend the work(s) or supply(ies) or such part thereof as shall have been suspended until he has received a written order from the Engineer-in-Charge/ OWNER to proceed with the work suspended or any part thereof.
- 2.8.1.1 During the period of any suspension under Clause 2.8.1.0, the CONTRACTOR shall at his own cost within the scope of the relative work, properly protect and secure the work and materials so far as is necessary in the opinion of the Engineer-in-Charge.
- 2.8.2.0 If the suspension under Clause 2.8.1.0 is for reasons of force majeure as defined in Clause 4.3.8.0 or by reason(s) of the default or failure on the part of the CONTRACTOR or is for the purpose of ensuring safety of the work(s) or any part thereof or is necessary for the proper execution of the work(s) or is for reason(s) of weather affecting the safety or quality of the work(s) or materials (the reasons for the suspension stated by the Engineer-in-Charge/ OWNER in any notice of suspension as aforesaid, inclusive as to existence or default or failure on the part of the CONTRACTOR, if so stated in the notice,

shall be final and binding upon the CONTRACTOR), the CONTRACTOR shall not be entitled to claim compensation for any loss or damage sustained by the CONTRACTOR by virtue of any suspension as aforesaid, notwithstanding that consequent upon such suspension, the machinery, equipment and/or labour of the CONTRACTOR or any part thereof shall be or become or be rendered idle and notwithstanding that the CONTRACTOR shall be liable to pay salary, wages or hire charges and expenses thereof or therefor.

- 2.8.2.1(a) If a suspension under Clause 2.8.1.0 affecting the work(s) occurs for any reason(s) other than specified in Clause 2.8.2.0, the CONTRACTOR may at any time after the commencement of the suspension, give written notice to the Engineer-in-Charge (with a copy to the OWNER), of his intention to claim "Standby Allowance" for the continuance of the suspension thereafter, and shall upon communication of such notice cause to be jointly prepared with the Engineer-in-Charge a list of all CONTRACTOR's equipment and personnel and permanent Labour on Contractor's payroll rendered idle directly by such suspension, and shall thereafter so long as the order of suspension remains in force, once in every 24 (Twenty four) hours, cause a like statement to be jointly compiled with the Engineer-in-Charge.
- (b) In this event, effective from communication of the said notice by the CONTRACTOR upto communication of an order of the Engineer-in-Charge or OWNER removing the relative suspension, the CONTRACTOR shall be entitled to a "Standby Allowance" as hereunder provided for the CONTRACTOR's equipment, personnel and labour, actually and directly rendered idle by the suspension:
- i) Standby Allowance for equipment actually and directly rendered idle by the suspension shall be calculated for each day of consequent idleness in accordance with the provisions of Sub-Clause (c) hereof below.
 - ii) Standby allowance for personnel and labour actually and directly rendered idle by the suspension shall be calculated for each day of consequent idleness in accordance with the provisions of Sub-Clause (d) hereof below.
 - iii) "Day" shall mean each 24 (twenty-four) hours' period commencing from midnight and terminating at midnight.
 - iv) Standby Allowance shall be subject to the ceiling of Standby Allowance for each day calculated in accordance with the following formula :
$$\text{Per day Ceiling} = 15 \% \text{ of LP} \div N$$

Where LP = Lumpsum Price
$$N = \text{Number of days from the date of Letter of Acceptance upto the date of Mechanical Completion of the Unit/ Works indicated in the Time Schedule.}$$
- (c) For calculating Standby allowance for equipment actually and directly rendered idle by the suspension, the list of the equipment referred to in Clause 2.8.2.1(a) shall be submitted by the CONTRACTOR on a day-to-day basis to the OWNER after obtaining the comments (if any) and signature of the Engineer-in-Charge thereon. Per day stand-by allowance for such equipment shall be calculated on the basis of the per day idle cost of each equipment rendered idle worked out on an amortization of the cost of the equipment over 5000 (Five thousand) idle days. The cost of equipment shall be determined on the basis of the actual cost of the purchase, for which the CONTRACTOR shall furnish the OWNER satisfactory proof of the cost of purchase, failing which the cost shall be determined on the basis of the

manufacturer's price list of the equipment (if this be not available, then of like equipment) prevailing at the time of purchase as established by the CONTRACTOR to the satisfaction of the Engineer-in-Charge. If any equipment is more than 5000 (Five thousand) days old, the cost of equipment shall be deemed to be nil and no stand-by allowance shall be applicable with respect thereto.

- (d) For calculating the stand-by allowance for personnel and labour actually and directly rendered idle by the suspension, the list of personnel and labour referred to in Clause 2.8.2.1(a) shall be submitted by the CONTRACTOR to the OWNER on daily basis after obtaining the comments (if any) and signature of the Engineer-in-Charge thereon. For determining the stand-by allowance, the CONTRACTOR shall furnish to the OWNER such proof as may be reasonably required for determining the salary/ wages payable to such personnel and/or labour. If the emoluments payable are on monthly basis, the daily rate shall be worked out by amortizing the monthly emoluments over 30 (Thirty) idle days.
- (e) If any dispute arises as to whether any particular equipment/personal/labour was or was not actually and directly rendered idle by virtue of the suspension, or personnel/labour concerned was or was not on the permanent pay roll of the CONTRACTOR or is employed in a claimed capacity or not, the decision of the Engineer-in-Charge shall be final and binding upon the CONTRACTOR.
- (f) Standby Allowance provided above shall be the sole right and remedy of the CONTRACTOR for any suspension and the CONTRACTOR shall not be entitled to any compensation for loss or damage sustained by the CONTRACTOR by virtue of suspension as aforesaid or for any additional costs, charges or expenses incurred or liable to be incurred by the CONTRACTOR resultant thereupon.

2.8.3.0 Unless the suspension is by reason of default or failure on the part of the CONTRACTOR (and the reasons for the suspension stated by the Engineer– in-Charge in any notice of suspension as aforesaid inclusive as to the existence of default or failure on the part of the CONTRACTOR if so stated in the notice, shall be final and binding upon the CONTRACTOR), if in the opinion of the CONTRACTOR such suspension shall necessitate any extension in the time of completion, the provisions of Clause 4.3.5.0 hereof and related Clauses in respect of extension of time shall apply.

2.8.4.0 In the event that the suspension continues for a period of 84 (Eighty Four) days or more, the OWNER and the CONTRACTOR shall forthwith review the situation with a view to take suitable remedies, including termination of contract. If the parties are unable to agree upon a suitable remedy, either party may terminate the Contract by giving the other party written notice of such termination, provided that any notice of termination by the CONTRACTOR shall be operative only if the Engineer-in-Charge/ OWNER does not lift the suspension within 28 (Twenty Eight) days of receipt of the CONTRACTOR's notice in this behalf, and the CONTRACTOR's notice shall so specify.

2.8.5.0 In the event of such termination being upon a suspension consequent to a default or failure by the CONTRACTOR, the CONTRACTOR shall not be entitled to any damage, compensation, loss of profit or other compensation whatsoever in addition to payment for the completed supplies made and completed works done in accordance with the terms of the Contract in

accordance with the provisions of sub-Clauses (iii) and (iv) of Clause 2.7.4.0 hereof.

2.8.6.0 Except for a suspension by written order of the Engineer-in-Charge under Clause 2.8.1.0 hereof, the CONTRACTOR shall not suspend the work for any cause and any such suspension, if occurs shall be likely to be attended by consequences under Clause 7.0.1.0 (i) (g) hereof.

2.9.0.0 Notwithstanding anything provided in Clause 2.7.0.0 and/or Clause 2.8.0.0 and related Clauses thereunder, upon a cancellation of the Contract under the provisions of Clause 2.7.1.0 hereof or termination of the Contract under provisions of Clause 2.8.4.0 hereof, the provisions of Clauses 7.0.3.0 to 7.0.7.0 hereof consequent upon termination of Contract shall apply. Should the termination be one to which the provisions of Clause 2.8.5.0 hereof apply, then the provision of Clauses 7.0.2.0, 7.0.8.0, 7.0.9.0, 7.0.10.0, 7.1.0.0 and 7.2.0.0 consequent upon termination of Contract shall also mutatis mutandis apply.

2.9.1.0 It is hereby clarified that on no account shall Standby Allowance be payable to the CONTRACTOR on the ground that:

(i) The Job Site/Work Front was in whole or part not timely provided to the CONTRACTOR in accordance with the Front Release Programme or otherwise; or

(ii) Any other front required for progressing further with the work is not timely made available to the CONTRACTOR in whole or part; or

(iii) Any approval or disapproval required to be given by the Engineer-in-Charge or the OWNER is delayed, or the supply of any material or utility required to be supplied by the OWNER is delayed or interrupted; or

(iv) The progress of any work is delayed or interrupted for a cause not attributable to the CONTRACTOR.

In all such cases the CONTRACTOR's sole remedy shall be extension of time so far as permissible under and in accordance with the provisions of Clause 4.3.5.0 and/or 4.3.6.0 and the CONTRACTOR hereby waives any and all contrary rights or claims for compensation or damages or otherwise.

2.10.0.0 **WORK FRONT**

2.10.1.0 The work front/ job site required by the CONTRACTOR for the performance of the works shall be handed over by the OWNER to the CONTRACTOR sequentially in the stages meeting the CONTRACTOR's requirements for the works with a view that the CONTRACTOR shall so plan his works as to perform and achieve completion in a sequential manner without starting all the works at the same time.

2.10.2.0 To this end, within 28 (Twenty Eight) days of the Letter of Acceptance, the CONTRACTOR shall finalise in consultation with the Engineer-in-Charge, sequential requirements of the work front/ job site taking into account other works concurrently being undertaken by the OWNER at and about the same job site and/or on the performance or completion of which the CONTRACTOR's performance depends (the "Front Release Programme")

2.10.3.0 In the event that the OWNER for any reason(s) not attributable to the CONTRACTOR, is unable to hand-over to the CONTRACTOR, the relative work front/ job site on the planned date of release thereof as specified in the Front Release Programme, as a result of which the CONTRACTOR is prevented from continuing with the work, the CONTRACTOR shall give written notice thereof to the Engineer-in-Charge and the OWNER, specifying the particular work front/ job site with reference to which the default has occurred and specifying that notice is being given under this Clause 2.10.3.0 of the General Conditions of Contract, and if the work front/ job site is not thereafter sufficiently made available to the CONTRACTOR within 10 (ten) working days from the receipt of such notice and the CONTRACTOR cannot commence or progress with the work, the CONTRACTOR shall be entitled to resort to the provisions of Clause 4.3.5.0 and 4.3.6.0 for extension of time if so required as the CONTRACTOR's sole remedy in accordance with the provisions of Clause 2.9.1.0 hereof.

SECTION – 3
MATERIALS, LABOUR, EQUIPMENT AND FACILITIES

3.0.0.0 CONTRACTOR'S RESPONSIBILITY

3.0.1.0 Notwithstanding anything to the contrary in the Contract Documents expressed or implied, the CONTRACTOR shall be and remain at all times exclusively responsible to Supply all material and provide all, labour, equipment, machinery and facilities and utilities and other items and things whatsoever required for or in connection with the work, including but not limited to those indicated by expression or implication in the job description, Schedule of Rates, the specifications, plans, drawings and/or other Contract documents or howsoever otherwise as shall or may from time to time and at any time be necessary for or in connection with the work, either for incorporation in or within the permanent works or relative to the execution and the performance of the work.

3.0.2.0 MATERIALS

3.0.2.1 These General Conditions of Contract shall, on issue of the Letter of Acceptance to the CONTRACTOR, constitute a firm and indivisible contract for the sale and supply, to the OWNER, of all materials required for incorporation in the permanent works as determined by the CONTRACTOR, within the scope of work, to be necessary to establish, commission and operate (so far as concerns mandatory spares) the Plant/ Unit delivered on CIF basis at Indian port of CONTRACTOR's choice in respect of imported materials and delivered ex-factory in respect of other materials, at the price of materials specified in the Price Schedule. It is hereby clarified that the said contract shall include a contract for the sale and supply within the price of materials (and any recoveries in respect thereof under any policy of insurance) of all materials required for the replacement of any defective materials and any materials lost, damaged or destroyed during transit, storage, fabrication, erection or otherwise prior to the issue of the Completion Certificate.

3.0.2.2 (a) Supplier's invoices in respect of materials covered within the scope of supply under Clause 3.0.2.1 shall be made out by the Supplier in favour of the OWNER and the materials shall be consigned to the OWNER. Where the CONTRACTOR is the supplier, the invoices shall be drawn by the CONTRACTOR as the Supplier.

(b) The Supplier's invoices for imported materials shall include the cost of all pre-delivery tests and third party inspections, but shall not include the CONTRACTOR's procurement charges.

(c) The Supplier's invoices for indigenously supplied materials shall include all pre-delivery tests, but shall not include the CONTRACTOR's procurement charges.

(d) The invoices for indigenously supplied materials shall also include the taxes, duties and other levies on the supply which are reimbursable by the OWNER. Reimbursement shall, however, be subject to the satisfaction of the conditions and provision of the documents required to qualify for the reimbursement.

3.0.2.3 The CONTRACTOR shall be responsible at his own cost and initiative within the scope of services, to take delivery of the materials from the port of delivery in India in respect of imported materials and from the factory or ware-house or

other place(s) of delivery in respect of indigenous materials and to transport these to the CONTRACTOR's stockpiles, godowns or other places of storage approved by the Engineer-in-Charge, and to transport the same from said godowns or place(s) of storage to the work site for incorporation in the permanent works.

3.0.2.4

The work of delivery and transportation of materials shall include (but not be limited to) the following :

- i) Clearance of the goods through custom and port clearance including filling and/or filing of all custom manifests, bills of entry, and custom declarations and other documents as may be required for the clearance of the goods from customs or port authorities, for which purpose the OWNER shall, from time to time, grant to the CONTRACTOR or the CONTRACTOR's designate(s), such authority(ies) as may be reasonably required by the CONTRACTOR in this behalf.
- ii) Stevedoring, clearing, forwarding and handling services as required for clearing, forwarding and handling imported and indigenous materials and consignments including payment at CONTRACTOR's cost of any demurrage, wharfage, port charges, siding charges, retention charges, detention charges or other charges whatsoever and howsoever designated or levied by any railway, air-port, ship and/or other authorities for or in connection with the loading, unloading or detention of any materials or vessels or other means of transport beyond the free period or unloading, clearance, retention or detention or loading, as the case may be, provided by the relevant authority(ies) or carrier(s) in this behalf.
- iii) All works and operations necessary to lift and to remove the material from port, ware-house, railway or other siding, factory or other places of delivery, loading, handling, transporting and unloading and safely stacking, placing or storing the same at approved godowns, yards or other place(s) of storage including lashing or other-wise securing or protecting the same in transit and during and in storage.
- iv) Supply, procurement, mobilisation, and deployment of all labour thereofs, equipment & machinery necessary for lifting, loading, handling, removing, transporting, unloading, stacking or securing the materials.
- v) Transit and storage insurance of all materials for the full replacement value thereof delivered at site.
- vi) All acts, deeds, matters or things required to fulfill all local, municipal and other statutory authorities with respect to the transportation of any materials through or into any State, municipal, local or other barriers or limits or for the import of the materials or any of them within the limits of such barrier, including payment of octroi or other local toll, terminal and/or entry or other taxes payable on the passage or entry of the materials through or within any local limits, for which purpose the OWNER shall give the CONTRACTOR and/or CONTRACTOR's designate(s) any and all authority(ies) as may be reasonably required in this behalf. If Road Permits, Entry Permits, Transit Permits or the like for the transportation of any materials is to be obtained in the name of the OWNER, the OWNER shall at the request of the CONTRACTOR sign and provide such documents as are required to be furnished by the OWNER to obtain the Permit(s).
- vii) All other acts, deeds, matters and things whatsoever ancillary, auxiliary or incidental to the above including but not limited to the grading of the

site and/or creation of temporary approaches and ramps etc. as may be required.

3.0.3.0 GENERAL PROVISION WITH REGARD TO MATERIALS

3.0.3.1 The CONTRACTOR shall, within the scope of work, undertake the following activities and responsibilities with respect to and in addition and without prejudice to the activities and responsibilities under Clause 3.0.2.0 and associated clauses thereunder in respect of materials :

- i) The CONTRACTOR shall in taking delivery, ensure compliance of any condition for delivery applicable to deliveries from the concerned authority or carrier, and shall be exclusively responsible to pay and bear any detention, demurrage or penalty or other charges payable by virtue of any delay or failure by the CONTRACTOR in lifting the materials or in observing any of the conditions aforesaid, and shall keep the OWNER indemnified from and against all consequences thereof.
- ii) The CONTRACTOR shall maintain a day-to-day account of all materials indicating the daily receipt(s), consumption(s) and balance of each material and category thereof. Such account shall be in the format, if any, prescribed by the Engineer-in-Charge and shall be supported by all documents necessary to verify the correctness of the entries in the account. Such account shall be maintained at the CONTRACTOR's relative officer(s) and site(s) and shall be open for inspection and verification (by verification of documents in support of the entry as also by feasible verification of the stock) at all times by the Engineer-in-Charge and his representative(s) with authority at all times without obstruction to enter into or upon any godown or other place(s) or premise(s) where the materials or any part of them are lying or stored and to inspect the same himself and or through his representative(s).
- iii) All materials shall be taken delivery of, held, stored and utilised by the CONTRACTOR as Trustee of the OWNER, and delivery of the material to the CONTRACTOR shall constitute an entrustment thereof to the CONTRACTOR, with the intent that any utilisation, application or disposal thereof by the CONTRACTOR otherwise than for permanent incorporation in the contractual works in terms of the contract shall constitute a breach of trust by the CONTRACTOR.
- iv) All materials, including materials in respect of which licences/release orders/permits/authorisation have been accorded in the name of the OWNER shall, without prejudice to the responsibility/liability of the CONTRACTOR in respect thereof, vest in the OWNER at the time when it/they would have ordinarily vested in the OWNER on a direct delivery to the OWNER, and the CONTRACTOR shall be deemed to be acting on behalf of the OWNER and as an agent of the OWNER in respect of deliveries taken by the CONTRACTOR.
- v) The Engineer-in-Charge may at his discretion require that all premises in which any materials are stored, shall be double Locked with the keys to one lock retained by the Engineer-in-Charge or his representative, with the intent that all issues of materials shall be with the concurrence of the Engineer-in-Charge or his representative, as the case may be, provided that any such double-locking and/or concurrence as aforesaid

shall only be an additional precaution and shall not anyway absolve the CONTRACTOR of his full liabilities or responsibilities in respect of such material.

- vi) The CONTRACTOR shall at all times be exclusively responsible for any and all losses, damages, deterioration, misuse, wastage, theft, or other application or misapplication or disposal of the materials or any of them contrary to the provisions hereof and shall keep the OWNER indemnified from and against the same and shall forthwith at its own cost and expenses replace any such material, lost, damaged, deteriorated, misused, wasted, stolen, applied, mis-applied and/or disposed as aforesaid with other material of equivalent quality and quantity delivered to site at the CONTRACTOR's risks and costs in all respects.
- vii) The CONTRACTOR shall take out, at his own cost and keep in force at all times, during transit, handling, storage, and erection upto completion in all respect of the work, policy(ies) with Insurance Company(ies) approved by the OWNER for the full replacement value of the materials at site against the risks hereinafter specified. Such policies shall be in the joint names of the OWNER and the CONTRACTOR, with exclusive right in the OWNER to receive all monies due in respect of such policy(ies) and with right in the OWNER (but without obligation to do so) to take out and pay the premia for any such policy(ies) and deduct the premia and any other costs and expense in this behalf from the monies for the time being due or in future becoming due to the CONTRACTOR.
 - a) Notwithstanding anything herein provided, the CONTRACTOR shall be and remain solely and exclusively liable to repair, restore or replace, as the case may be, the materials damaged or destroyed as a result of any act or omission, notwithstanding the existence or otherwise of any policy(ies) of insurance aforesaid, with the intent that any policy(ies) of insurance aforesaid taken out by or on behalf of the CONTRACTOR or by the OWNER, shall not anyway absolve the CONTRACTOR from his full liability under Clause 5.3.4.0 hereof or otherwise with respect to the materials, but shall constitute merely an additional security and not a substitution of liability.
 - b) It shall be the exclusive responsibility of the CONTRACTOR to lodge and pursue any or all claims in respect of the insurance aforesaid.
 - c) The CONTRACTOR shall, as a condition to the certification of any Running Account Bill, satisfy the OWNER/ Engineer-in-Charge of the existence of one or more policy(ies) of insurance, covering the materials as specified herein. The policy(ies) of insurance aforesaid shall cover all insurable risks, including but not limited to, any loss or damage commencing from the supplier's ware house in handling, transit, storage and during erection, theft, pilferage, riot, civil commotion, force majeure (including earth quake, flood, storm, cyclone, tidal wave, lightening and other adverse weather conditions), accidents of kinds, fire, war risks and explosion.
- viii) Notwithstanding anything herein provided and notwithstanding the transference of all risks in respect of the materials to the

CONTRACTOR, the Ownership in respect of the material shall at all times be and remain in the OWNER.

- ix) An inventory shall be made by the CONTRACTOR of all surplus construction materials and empties including but not limited to scrap, wastages and unserviceable material supplied and/or remaining in the hands of the CONTRACTOR upon completion of the contract for whatsoever reason, and the CONTRACTOR shall forthwith, upon being required to do so, place the OWNER in undisputed possession of and transport the said material to the OWNER's stores or otherwise as reasonably directed by the Engineer-in-Charge.
- x) If the CONTRACTOR shall default in replacing at the job site, free of any cost to the OWNER, any material lost, damaged, deteriorated, misused, wasted, short, stolen, misapplied or disposed of within the provisions hereof above, or shall fail to return to the OWNER any surplus material or empties within the provision hereof above, the CONTRACTOR shall be liable to pay to the OWNER the cost of such materials or empties delivered at OWNER's stockpile/godown plus departmental charges calculated at 15% (Fifteen percent) of the said costs determined by the Engineer-in-Charge, and the decision of the Engineer-in-Charge as to such cost shall be final and binding upon the CONTRACTOR.

3.0.4.0 **BILLS OF MATERIALS**

3.0.4.1 The CONTRACTOR shall within 56 (Fifty Six) days from the date of acceptance of bid, furnish to the OWNER a detailed Bill of Materials specifying the materials, which on preliminary determination made by the CONTRACTOR, will be required to be incorporated in the permanent works in order to establish the Works/ Unit and to operate the Plant/Unit (to the extent of the mandatory spares), including construction materials.

3.0.4.2 Each item entered in the Bill of Materials shall be priced, so far as possible, in conformity with the details given in this behalf in the priced bid. The Bill of Materials and said price break-up therein and in the price bid are intended only to form a basis for the purpose of calculating on account payments and for calculating payments due to the CONTRACTOR under Clause 2.7.4.0 hereof upon cancellation of contract, and for no other purpose.

3.0.4.3 The OWNER shall review or cause to be reviewed the prima facie adequacy, sufficiency, validity and/or suitability of the materials listed in the Bill of Materials for the works for which they are intended, and of the prices indicated in the Bill of Materials in respect thereof. Such review shall be performed in conjunction with the design, engineering, specification and other technical reviews to be done by the OWNER and all provisions applicable thereto with reference to critical drawings shall be applicable to the review of the Bill of Materials.

3.0.4.3.1 The priced Bill of Materials as approved by the OWNER shall constitute the Bill of Materials envisaged in the contract documents. However, no such approval shall, in any manner, absolve the CONTRACTOR of his full responsibility under the contract to sell and supply to the OWNER at and within the price of materials quoted in the Price Schedule, all materials required for the permanent incorporation in the works and which are required to establish, commission and operate (to the extent of mandatory spares) the Plant/ Unit in accordance with the contract and the specifications, complete in all respects including spares, tools, tackles and testing equipment, so far as included within the scope of supply, whether or not any particular material is

actually included within or omitted in the Bill of Materials and whether or not the price thereof is included in the price indicated in the Bill of Materials and whether or not the price thereof is in conformity with the price thereof indicated in the Bill of Materials. The review and approval of the Bill of Materials and the prices therein are intended only for the satisfaction of the OWNER that the priced Bill of Materials, prima-facie covers the materials required to be supplied by the CONTRACTOR within the scope of supply.

- 3.0.4.4 The Bill of Materials shall be subject to amendment in both items and prices in so far as necessary consequent upon any amendment in any relevant related technical particulars, and upon any amendment, the amended Bill of Materials as approved by the OWNER, shall thereafter constitute the Bill of Materials as envisaged in the contract documents, provided that unless the amendment results from a Change Order and/or Agreed Variation, no such amendment shall anyway impose any liability on the OWNER to pay customs and other import duties in excess of the customs and other import duties payable on the value of imported materials as indicated in the Price schedule but for such amendment.

3.0.5.0 **SUPPLY OF MATERIALS**

- 3.0.5.1 The CONTRACTOR shall supply the materials required to be supplied within the Contractor's scope of supply for incorporation in the permanent works in accordance with and to meet the requirements in quality, quantity and other particulars of the descriptions, specifications, plans, drawings, designs and other documents applicable thereto, and the CONTRACTOR shall be deemed to have undertaken that all materials selected, procured and supplied by the CONTRACTOR within the scope of supply shall be of the best quality and workmanship and shall be capable of producing the designed and desired results and to perform the designed and desired functions to meet the contractual requirements in all respects for the project.
- 3.0.5.2 The CONTRACTOR shall undertake and complete the supply of materials within the scope of supply to meet the scheduled progress and requirements of the work within the scope of work, and on no account later than the delivery dates in this behalf specified in the Delivery Schedule.
- 3.0.5.3 Within 42 (Forty Two) days from the date of issue of the Letter of Acceptance of bid, the CONTRACTOR shall submit to the OWNER for approval in respect of each work or groups of work, a detailed Delivery Schedule in Graphical or other suitable form giving dates of starting and finishing the various supplies relative to the work, providing sufficient margin to cover for contingencies. The Engineer-in-Charge and the CONTRACTOR shall thereafter, within 14 (Fourteen) days, settle the Delivery Schedule which shall form part of the contract with attendant obligations upon the CONTRACTOR to make the various deliveries/supplies involved on or before the date(s) mentioned in respect thereof in the Delivery Schedule and default by the CONTRACTOR to make within the prescribed date(s) any supply shall be deemed to be a breach by the CONTRACTOR to which the provisions of clause 7.0.1.0 hereof relating to termination of contract shall be applicable, but without prejudice to any other right or remedy that OWNER may have in this behalf.
- 3.0.5.4 All materials shall be deemed to have been accepted only when the material is received at the project site and accepted by the Engineer-in-Charge. Such acceptance shall however, be subject to the terms and conditions hereof, including the right of rejection and/or replacement as elsewhere herein specified.

- 3.0.5.5 If the CONTRACTOR fails to submit to the OWNER a Delivery Schedule as envisaged above or if the Engineer-in-Charge and the CONTRACTOR shall fail to agree upon the Delivery Schedule as envisaged above, then the Engineer-in-Charge shall in consultation with the CONTRACTOR so far as reasonably feasible prepare the Delivery Schedule as best he can and the dates of delivery as fixed by the Engineer-in-Charge shall be final and binding upon the CONTRACTOR except as herein otherwise expressly provided. The Engineer-in-Charge shall issue the Delivery Schedule so prepared to the CONTRACTOR, and the provisions of Clause 3.0.5.3 hereof shall apply thereto as though it was an approved Delivery Schedule.
- 3.0.5.6 Any reference in the contract documents to the “approved Delivery Schedule” or to the “Delivery Schedule” shall mean the approved Delivery Schedule specified in Clause 3.0.5.3 above or the Delivery Schedule prepared and issued by the Engineer-in-Charge as specified in Clause 3.0.5.5 above, whichever shall be in existence.
- 3.0.5.7 Within 7 (Seven) days of the occurrence of any act, event or omission which, in the opinion of the CONTRACTOR, is likely to lead to delay in the commencement or completion of delivery of any particular material or of all material and is such as would entitle the CONTRACTOR for an extension of the time specified in this behalf in the Delivery Schedule(s), the CONTRACTOR shall inform the Engineer-in-Charge in writing of the occurrence of the act, event or omission and date of commencement of such occurrence. Thereafter, if even upon the cessation of such act or event or the fulfillment of the omission, the CONTRACTOR is of opinion that an extension of time specified in the Delivery Schedule relative to particular material(s) or in relation to all materials is necessary, the CONTRACTOR shall within 7 (Seven) days after the cessation or fulfillment as aforesaid make a written request to the Engineer-in-Charge for extension of the relative time specified in the Delivery Schedule and the Engineer-in-Charge may at any time, prior to completion of the work, extend the relative time of completion in the Delivery Schedule for such period(s) as he considers necessary, if he is of opinion that such act/event/omission constitutes a ground for extension of time in terms of the contract and that such act/event/omission has in fact resulted in insurmountable delay to the CONTRACTOR. The opinion/decision of the Engineer-in-Charge in this behalf and as to the extension necessary shall, subject to the provisions of Clause 3.0.5.8 hereof, be final and binding upon the CONTRACTOR.
- 3.0.5.8 Notwithstanding the provisions of Clause 3.0.5.7 hereof, the OWNER may at any time after the completion of the work in all respects at the request of the CONTRACTOR made by way of appeal either against a decision of the Engineer-in-Charge taken under Clause 3.0.5.7 or against the Engineer-in-Charge’s refusal to take a decision under the said clause, if satisfied of the existence of any ground(s) justifying the delay/omission, extend the date of delivery of any materials for such period(s) as the OWNER may consider necessary, and the decision of the OWNER as to the existence or otherwise of any grounds justifying the extension and as to the periods of extension, if any necessary, shall be final and binding upon the CONTRACTOR.
- 3.0.5.9 Subject as elsewhere herein or in the contract documents, otherwise expressly provided, only the existence of force majeure circumstances as defined in Clause 3.0.5.10 hereof, shall afford the CONTRACTOR a ground for extension of time for delivery of materials, and specifically without prejudice to the generality of the foregoing :

- i) Inclement or unforeseen weather, strike or lock-out (except as provided in Clause 3.0.5.10), shutdown, third party breach, delay in payment or commercial hardship shutdown or idleness or other impediment in progress or completion of the supply or work due to any reason whatsoever shall not afford the CONTRACTOR a ground for extension of time or relieve the CONTRACTOR of his/its full obligations under the contract.
- ii) No delay whatsoever in the supply of any material by the CONTRACTOR or any of the CONTRACTOR's vendors, suppliers or sub-contractors shall anyway entitle the CONTRACTOR to any extension of time for completion or to any claim for additional costs, remuneration or damages or compensation notwithstanding that an increase in the time of performance of the contract is involved by virtue of the delay or failure and notwithstanding that any labour, machinery or equipment brought to or upon the job site by the CONTRACTOR or any sub-contractor is rendered idle by such delay.

3.0.5.10 "Force Majeure" shall mean an event beyond the control of the CONTRACTOR and not involving the CONTRACTOR's fault or negligence and not foreseeable, such as, but not restricted to wars (declared or undeclared), revolutions, civil wars, tidal waves, fires, major floods, earthquakes, epidemics, quarantine restrictions, nation-wide transportation strikes and national strikes and freight embargoes.

Notwithstanding the provisions of Clause 3.0.5.9 hereof, strike or lock-out in the works of manufacturers of critical equipments (if any) as specified in the Special Conditions of Contract, in excess of a continuous period of 7 (seven) days at any time during the period established for the supply of such equipment, shall constitute a force majeure event provided that :

- i) The strike or lock-out, as the case may be, was not foreseeable at the time of placing the order on the manufacturer; and
- ii) The strike/ lockout occurred at least 3 (three) months after the CONTRACTOR placed the order on the manufacturer.

It is clarified that the expression "manufacturer of Critical Equipment" and "manufacturer" shall not include a sub-manufacturer of such equipment or any part or component thereof or a vendor of such equipment or any part or component thereof who is not a manufacturer; and the expression "Critical Equipment" shall not include any part or component thereof.

3.0.5.11 No assurance, representation, promise or other statement by any personnel, Engineer or representative of the OWNER regarding the extension of time for the supply by the CONTRACTOR of any material within the CONTRACTOR's scope of supply shall be binding upon the OWNER or shall constitute an extension of time for the supply of any material(s) within the provision of Clause 3.0.5.7 or Clause 3.0.5.8 hereof, unless the same has been communicated by the Engineer-in-Charge to the CONTRACTOR in writing under Clause 3.0.5.7 or by the Executive Director under Clause 3.0.5.8 and the writing specifically states that it constitutes an extension of time within the provisions of Clause 3.0.5.7 or 3.0.5.8, as the case may be. Without prejudice to the foregoing, it is clarified that the mere agreement, acceptance or prescription of a Delivery or other Schedule containing an extended time of commencement or completion in respect of the entire delivery(ies) or any of them shall not anyway constitute an extension of time in a terms of the contract so as to bind the OWNER or relieve the CONTRACTOR of all or any

of his liabilities under contract, nor shall constitute a promise on behalf of the OWNER or a waiver by the OWNER of any of its rights in terms of the contract relative to the performance of the contract within the time specified or otherwise, but shall be deemed only (at the most) to be a guidance to the CONTRACTOR for better organising his work on a recognition that the CONTRACTOR has failed to organise his supplies and/or make the same within the time specified in the Delivery Schedule.

3.0.5.12 If the CONTRACTOR fails to supply the materials in accordance with the dates in this behalf specified in the Delivery Schedule, the CONTRACTOR shall be deemed in breach of contract and the provisions of Clause 7.0.0.0 and associated Clauses thereunder with regard to the termination of the contract shall apply, but without prejudice to any other rights, discount or remedy available to the OWNER in respect of such delay or failure.

3.0.5.13 **MAKE OF MATERIALS**

- i) All equipment and materials to be supplied under this Contract shall be from approved vendors as indicated in the Bidding Document or as otherwise approved by the Engineer-in-Charge/ OWNER.
- ii. Wherever any item is specified by a brand name, manufacturer or vendor, the make mentioned shall be for establishing type, function and quality desired. Other makes will be considered, provided sufficient information is furnished to the OWNER/ Engineer-in-Charge, to assess the makes proposed by the CONTRACTOR as equivalent and acceptable.
- iii. Where the makes of materials are not indicated in the Bidding document, the CONTRACTOR shall furnish details of proposed makes and supplies and supply the same after obtaining the OWNER's/Engineer-in-Charge's approval.

3.0.6.0 **CERTIFICATE OF VERIFICATION AND GOOD CONDITION**

3.0.6.1 The CONTRACTOR shall, before supply of material covered within the scope of supply, at his own risks, costs and initiative, undertake or cause to be undertaken all tests, analysis and inspections as shall be required to be undertaken with regard to the materials under the specifications and any codes, practices, orders and instructions with respect thereto and shall cause the results thereof to be recorded, reported or certified, as the case may be, and shall not offer for delivery or deliver any material(s) which has/have not passed such tests/analysis or inspection and which are not accompanied by the tests results, reports and/or certificates in this behalf provided in the applicable specifications, code(s) and/or practices.

3.0.6.2 On arrival of the material at site the CONTRACTOR shall give written notice thereof to the Engineer-in-Charge or Inspection Agency notified by the OWNER in this behalf, to inspect the materials, and shall keep in readiness for inspection, the materials and the relevant tests results, reports and certificates hereto.

3.0.6.3 Notwithstanding any other provisions in the contract documents for analysis or tests of materials and in addition thereto, the CONTRACTOR shall, if so required by the Engineer-in-Charge or Inspection Agency in writing at his own risks and costs, analyse, test, prove and weigh all materials (including materials incorporated in the works) required to be analysed, tested, proved and/or weighed by the Engineer-in-Charge or Inspection Agency in this behalf and shall have such analysis or tests

authority(ies) if any specified by the Engineer-in-Charge or Inspection Agency. The CONTRACTOR shall provide all equipment, labour, materials and other things whatsoever required for testing, preparation of the samples, measurement of work and/or proof of weightment of the materials as directed by the Engineer-in-Charge or Inspection Agency.

- 3.0.6.4 If on Inspection or proof, analysis or tests as aforesaid the Engineer-in-Charge or Inspection Agency nominated by the OWNER in this behalf is prima facie satisfied that the material received is in conformity with the material requirements of the Bill of Materials and description given in the shipping documents and in the Contractor's invoices in this behalf and that the test reports/results/certificates given in respect thereof are prima facie in conformity with the relevant result/reports/certificates required in respect thereof in terms of the specifications and/or relevant codes and practices, and that the material appears to be prima facie in good order and condition, the Engineer-in-Charge shall promptly issue to CONTRACTOR, a Certificate of Verification and Good Condition in respect of such material, and this shall constitute the Certificate of Verification and Good Condition elsewhere envisaged in the contract documents.
- 3.0.6.5 Such certificate is only intended to satisfy the OWNER that prima facie the material supplied by the CONTRACTOR is in order and shall not anyway absolve the CONTRACTOR of his/its full responsibility under the contract in relation thereto, including in relation to specification fulfillment and/or performance or other guarantees.
- 3.0.6.6 Notwithstanding that any area(s) or source(s) has/have been suggested by the OWNER to the CONTRACTOR from which any material for incorporation in the works can be obtained, the CONTRACTOR shall independently satisfy himself of the suitability, accessibility and sufficiency of the source(s) of supply suggested by the OWNER and suitability of the material available from such source(s) with the intent that any suggestion as aforesaid shall not anyway relieve the CONTRACTOR of his full liability in respect of the suitability and quality of the material(s) obtained from said source(s) and the Contractor shall obtain material(s) therefrom and incorporate the same within the permanent works entirely at his own risks and costs in all respects, with the intent that any such suggestion by the Owner shall only be by way of assistance to the Contractor and shall not entail any legal responsibility or liability upon the OWNER.
- 3.0.7.0 **MATERIALS WITHIN THE CONTRACTOR'S SCOPE OF SUPPLY**
- 3.0.7.1 The OWNER does not warrant or undertake the provisions of any materials and the CONTRACTOR shall not imply, by conduct, expression or assurance or by any other means, any promise or obligation on the part of the OWNER in his respect understood by the CONTRACTOR.
- 3.0.8.0 **TAXES AND DUTIES AND OTHER LEVIES**
- The Special Conditions of Contract and Clause 8.1.4.0 to 8.1.5.3 state the taxes, duties and levies which will be borne by the OWNER or which will be reimbursed by the OWNER to the CONTRACTOR in respect to the supplies and/or services/works, and the conditions under and/or subject to which such payments or re-imbursements shall be made by the OWNER.
- 3.0.8.1 Except as specifically provided to the contrary in the Special Conditions of Contract:

- (i) The CONTRACTOR shall within the price of materials and scope of supply be liable to pay and bear any and all duties, taxes, levies and cesses lawfully payable on any goods, equipment or materials imported into India or within any local limits for permanent incorporation in the work(s), and on materials sold and supplied to the OWNER pursuant to the Contract.
- (ii) The CONTRACTOR shall within the price of services and scope of services be liable to pay and bear any and all duties, taxes, levies and cesses lawfully payable on any goods or equipment imported into India or within any local limits for use in the performance of the work(s), and on services performed pursuant to the contract.

3.0.8.2 TAXES, DUTIES AND LEVIES IN FOREIGN COUNTRIES

The CONTRACTOR shall accept full and exclusive liability at his own cost for the payment of any and all taxes, duties, cesses and levies howsoever designated, as are payable to any government, local or statutory authority in any country other than India as are now in force or as are hereafter imposed, increased or modified and as are payable by the CONTRACTOR, his agents, Sub-contractors and Suppliers and its/their respective employees for or in relation to the performance of this Contract. The CONTRACTOR shall be deemed to have been fully informed with respect to all such liabilities and shall further be deemed to have considered and included the same in his bid and the Lumpsum Price shall not be varied in any way on this account.

3.0.8.3 TAX INDEMNITY

It will be the duty of the CONTRACTOR to duly observe and perform all laws, rules, regulations, orders and formalities applicable to Excise Duty, Sales Tax/VAT and Customs Duty on the manufacture, sale, import and/or supply of any material to OWNER and/or applicable to Service Tax on the services performed by the CONTRACTOR pursuant hereto. The CONTRACTOR shall keep the OWNER indemnified for and against any and all claims, demands, prosecutions, penalties, damages, demurrages and/or other levies whatsoever made or levied by the Court or Customs Authorities with respect to any alleged breach, evasion or infraction of such duties, taxes, charges or levies or any breach or infraction of such laws, rules, regulations, orders or formalities concerning the same and from the consequence thereof.

3.1.0.0 MATERIAL AND EQUIPMENT SUPPLIED BY THE OWNER

3.1.1.0 The OWNER may supply within its scope of supply specific equipment and/or materials for permanent incorporation in the works. The supply of equipment and materials to the CONTRACTOR shall be on the following terms and conditions:

- a) Deliveries shall be either from the storage of the OWNER or from the factory/ storage of supplier or from nearest suitable railhead or other point(s) of collection as may be determined by the OWNER taking into account the source(s) of supply of the material.
- b) It shall be the responsibility of the CONTRACTOR at his own risks and costs to take delivery of the materials from the stores, factory, railhead or other designated collection point, and to arrange for its loading, transportation to job site and unloading at the job site or other place of storage. The CONTRACTOR shall, in taking delivery, ensure compliance of any conditions for delivery applicable to deliveries from

OWNER's or supplier's factory/ stores or railways or other transporters concerned, and shall be exclusively responsible to pay and bear any demurrage or penalty or other charges payable by virtue of any failure or delay by the CONTRACTOR in lifting the supplies and/or any failure by the CONTRACTOR to observe the conditions of supply as aforesaid, and the CONTRACTOR shall keep the OWNER indemnified from and against all consequences thereof.

- c) The CONTRACTOR shall inspect the equipment and materials at the time of taking delivery thereof and satisfy himself of the quality, quantity and condition thereof prior to taking delivery and the OWNER shall not be liable for any claims or complaints whatsoever in respect of quality, quantity or conditions of the equipment or materials once the CONTRACTOR has taken delivery thereof, except for established latent defects which could not be determined at the time of delivery.
- d) The CONTRACTOR shall on receiving and opening the packing cases or other packaging of equipment and material on behalf of the OWNER, verify and tally the actual contents with the packing list and bring any discrepancies to the notice of the Engineer-in-Charge. The CONTRACTOR shall also sort out and segregate and hand over to the OWNER's stores, the Instruction Manuals, Operation and Maintenance Manuals, Special Maintenance Tools, Erection Spares, Commissioning Spares, and Maintenance Spares and other extras, if received with the equipment/ materials.
- e) The equipment and/or material(s) supplied or procured by the OWNER shall be utilized by the CONTRACTOR only for incorporation in the permanent works and even so shall not (unless specifically authorized by the OWNER in this behalf) be utilized for manufacturing any item(s) which can be obtained in finished form from standard manufactures.
- f) The CONTRACTOR shall furnish to the Engineer-in-Charge sufficiently in advance a detailed statement showing its requirement of all types and quantities of equipment and materials agreed to be supplied by the OWNER, indication of the time when relative types and quantities thereof shall be required by him for the works so as to enable the OWNER to verify the quantities of materials specified by the CONTRACTOR and to enable the OWNER to make arrangements for supply thereof.
- g) The Contractor shall maintain a day to day account of all equipment and materials supplied to him by the OWNER indicating the daily receipt(s), consumption and balance(s) in hand of each material and category thereof. Such account shall be maintained in such form (if any) as shall be prescribed by the Engineer-in-Charge and shall be supported by all documents necessary to verify the correctness of the entries in the account. Such account shall be maintained at the CONTRACTOR's office at the site, and shall be open for inspection and verification (by verification of documents in support of the entries as also by physical verification of the stocks) at all times by the Engineer-in-Charge and Site Engineer without notice, and for the purpose, the Engineer-in-Charge and Site Engineer shall be permitted and enabled without obstruction to enter into any godown or other place or premises where the equipment or materials or any part thereof shall be stored and to inspect the same and to take by himself and/or through his representative(s) an inventory thereof.
- (h) All equipment and materials supplied by the OWNER shall be taken delivery of, held, stored and utilized by the CONTRACTOR as trustee of

the OWNER, and delivery of material to the CONTRACTOR shall constitute an entrustment thereof by the OWNER to the CONTRACTOR, with the intent that any utilization, application or disposal thereof by the CONTRACTOR otherwise than for permanent incorporation in the contractual works in terms hereof shall constitute a breach of trust by the CONTRACTOR.

- (i) The CONTRACTOR shall hold and store any equipment or material(s) supplied by the OWNER only at such place and/or premises as may be approved by the Engineer-in-Charge, provided that no such approval shall absolve the CONTRACTOR in whole or part of his full liabilities in respect of such equipment or material, and the CONTRACTOR shall be and remain responsible at all times at his own risk and cost to ensure that the equipment and material(s) supplied by the OWNER is/are retained at all times in premises that are water tight and otherwise suitable for the storage of the concerned equipment or materials so as to prevent damage or deterioration for any cause whatsoever or theft or other loss, and shall arrange such watch and ward therefor as shall be necessary to ensure the safety thereof.
- (j) The Engineer-in-Charge may at his discretion require that all premises in which any equipment or materials supplied by the OWNER are stored, shall be double-locked with the keys to one lock retained by the Site Engineer or his representative and the other with the CONTRACTOR with the intent that all issues of OWNER supplied equipment and materials shall be with concurrence of the Site Engineer or his representative, as the case may be, provided that any such double-locking and/or concurrence as aforesaid shall be an additional precaution and shall not anyway absolve the CONTRACTOR of his full liabilities or responsibilities in respect of such equipment or materials.
- (k) The equipment and material supplied by the OWNER shall be insured by the OWNER against normal risks during transit, storage and erection. The CONTRACTOR shall, however, be responsible forthwith to make/lodge with the insurers and pursue on behalf of the OWNER any and all claims under the policy(ies) and to fulfill all formalities required to obtain payment thereunder and/or to assist the OWNER in making or pursuing any such claim(s) and/or in obtaining payment thereunder.
- (l) No such insurance(s), shall anyway absolve the CONTRACTOR from his full liabilities hereunder, with the intent that the CONTRACTOR shall at all times be exclusively responsible for any and all loss(es), damage(s), deterioration, misuse, theft, misapplication or disposal of the equipment or material(s) supplied by the OWNER or any of them contrary to the provisions hereof and shall keep the OWNER indemnified from and against the same and shall forthwith at his own cost and expense replace any such equipment and material(s) lost, damaged, deteriorated, misused, stolen, misapplied and/or disposed as aforesaid, with other equipment or material of equivalent quality and quantity to the extent that the same is not covered by any insurance as above, and if covered, to the extent that payment under the relative policy(ies) is for any reason not available to the OWNER.
- (m) The CONTRACTOR shall use the equipment and materials supplied by the OWNER for incorporation in the permanent works carefully and judiciously with no wastage or the minimum possible wastage, wherever some wastage is inevitable or unavoidable, in any case within the wastage limit, if any, specified by the OWNER in respect of any such material(s). For any excess wastage or generation of scrap or misuse or

injudicious, careless or wrong use of OWNER supplied materials, as to all of which the decision of the Engineer-in-Charge shall be final and binding on the CONTRACTOR, the CONTRACTOR shall be bound to replace the material lost by such excess, misuse or injudicious, careless or wrong use with material of equivalent quantity and grade acceptable to the OWNER within the time limit specified by the OWNER and where this is not done or is not possible, practicable or advisable to be done, in the opinion of the OWNER, which shall be final and binding on the CONTRACTOR, the OWNER shall be compensated by the CONTRACTOR for the replacement costs at site thereof plus the costs of procurement at 15% (fifteen percent) of the assessed replacement cost thereof. Failing remittance of this amount by the CONTRACTOR to the OWNER within a week of demand made by the OWNER, the OWNER shall be entitled to recover/adjust the amount demanded from any money(ies) due from the OWNER to the CONTRACTOR and/or from any Security or any other deposits of the CONTRACTOR lying with the OWNER under this and/or any other contract, without any further notice to the CONTRACTOR. The decision of the OWNER in respect of the actions contemplated in this clause shall be final and binding on the CONTRACTOR.

- (n) Notwithstanding anything herein provided and notwithstanding the transfer of all risks in respect of such equipment and materials to the CONTRACTOR, the ownership in respect of all OWNER supplied equipment and materials shall at all times be and remain in the OWNER.
- (o) The excess equipment and material and the scrap material generated from the work, in so far as the OWNER supplied materials are concerned, shall be returned to the OWNER's stores. On completion of the work, the CONTRACTOR shall duly render accounts for the materials and equipment issued by the OWNER, to the satisfaction of the OWNER. Any shortages, losses and/or damages shall be to the CONTRACTOR'S account and all the conditions stipulated under sub-Clause(m) above shall apply in this case also.
- (p) The CONTRACTOR shall within the scope of the CONTRACTOR's obligations and price payable under the contract and without entitlement to claim any additional cost, charge, remuneration or compensation therefor be responsible to co-ordinate the supply of OWNER supplied materials and equipment (including parts and components thereof) and to expedite with the manufacturer(s), supplier(s) and transporter(s) of such materials and equipment the timely supply and delivery thereof to meet the CONTRACTOR's requirements and the progress of the work in such manner as the CONTRACTOR considers necessary taking into account the location of the manufacturer or supplier or transporter, and the urgency of the requirement so as to ensure that there is no delay in any supply or delivery of such material or equipment as could affect the progress of the work.
- (q) The OWNER shall not be responsible for any delay in the supply of any such equipment and/or materials supplied or procured or agreed to be supplied or procured by the OWNER, and no such delay or failure shall in any way render the OWNER liable for any claim for damages or compensation by the CONTRACTOR notwithstanding that an increase in the time of performance of the contract is involved by virtue of such delay and notwithstanding any labour, machinery or equipment brought upon or to the job site by the CONTRACTOR for the performance of the work being rendered idle by such delay or failure, PROVIDED that:

- (i) If in spite of best efforts on the part of the CONTRACTOR to coordinate and expedite deliveries of such material or equipment for permanent incorporation in the work, the Contractor has been unable to persuade or otherwise to get the manufacturer, supplier or transporter thereof to agree to supply or deliver the material or equipment within the date(s) of the anticipated requirement of such equipment or material by the CONTRACTOR for permanent incorporation in the work thereafter to match the actual requirement of such material to match the progress of work achieved by the CONTRACTOR, the CONTRACTOR shall give written notice thereof to the Engineer-in-Charge and to the OWNER at least 15 (fifteen) days prior to the requirement specifying the material or equipment involved, the manufacturer, supplier or transporter involved, the steps which the CONTRACTOR has taken to expedite supply or delivery of such material or equipment, and the anticipated date of actual requirement of such material or equipment for incorporation in the permanent works to match the actual progress of the work by the CONTRACTOR, so that Engineer-in-Charge and/or OWNER may also intervene to expedite delivery of such material(s) or equipment; and
- (ii) If notwithstanding such notice by the CONTRACTOR, the Engineer-in-Charge and OWNER have not been able to arrange supply/delivery of such equipment or material to match the CONTRACTOR's requirement thereof within 15 (fifteen) days of the notice or the requirement, whichever is later, the CONTRACTOR shall give further notice thereof to the Engineer-in-Charge in accordance with the provisions of Clause 4.3.5.0 hereof, and the provisions of Clauses 4.3.5.0 and 4.3.6.0 hereof with regard to extension of time shall apply with regard to any period of delay thereafter in the supply of such material or equipment if the CONTRACTOR is able to demonstrate by the documents to the satisfaction of the Engineer-in-Charge or OWNER, as the case may be, that the CONTRACTOR has taken all reasonable steps to expedite the supply or delivery of the equipment/material and that the completion of the work has actually been delayed because of the unavailability of such equipment or material, and that there has been no concurrent delay by the CONTRACTOR in the performance of any other work. In such event, the Contractor shall be entitled to extension of the time specified in the Time Schedule for the number of days by which the completion of the work has been actually delayed because of the unavailability of such equipment or material absent any concurrent delay by the CONTRACTOR.

3.2.0.0 UTILITIES AND CONSUMABLES ETC.

3.2.1.0 The CONTRACTOR shall be and remain at all times exclusively responsible within the scope of work to provide all utilities, consumables, permits, licenses, easements and facilities and other items and things whatsoever required for or in connection with the work, including but not limited to those indicated by expression or implication in the bid documents and/or other contract documents or howsoever otherwise as shall be or may from time to time be necessary for or in connection with the work.

3.2.1.1 The OWNER shall supply all Utilities required for commissioning the Unit/works, if and so far as commissioning is within the CONTRACTOR's scope of work under the Contract.

3.2.1.2 The OWNER shall not be responsible for any delay in the supply of any Utility required for commissioning the Unit or works and no such delay or failure shall in any way render the OWNER liable for any claim for damages or compensation by the CONTRACTOR notwithstanding that an increase in the time of performance of the contract may be involved by virtue of such delay and notwithstanding any labour, machinery or equipment brought upon to the job site by the CONTRACTOR for the performance of the work being rendered idle by such delay or failure, PROVIDED that:

- (i) If the CONTRACTOR shall have given written notice to the Engineer-in-Charge and to the OWNER specifying the Utility(ies) required and the anticipated date of actual requirement of such Utility(ies) for commissioning to match the actual progress of the work by the CONTRACTOR at least 15 (fifteen) days prior to such requirement; and
- (ii) If notwithstanding such notice by the CONTRACTOR, the Engineer-in-Charge/OWNER has not been able to arrange supply of the Utility to match the CONTRACTOR's requirement thereof within 15 (fifteen) days of the notice or the actual requirement, whichever is later, the CONTRACTOR shall give further notice thereof to the Engineer-in-Charge in accordance with the provisions of Clause 4.3.5.0 hereof, and the provisions of Clauses 4.3.5.0 and 4.3.6.0 hereof with regard to extension of time shall apply with regard to any delay thereafter in the supply of such Utility if the Contractor is able to demonstrate by documents to the satisfaction of the Engineer-in-Charge or OWNER, as the case may be, that the commissioning has actually been delayed because of the unavailability of such Utility and that there has been no concurrent delay by the CONTRACTOR in the performance of any other work. In such event, the CONTRACTOR shall be entitled to extension of time for commissioning specified in the Time Schedule by the number of day for which the commissioning has actually been delayed by the unavailability of the utility absent any concurrent delay by the CONTRACTOR.

3.3.0.0 **LABOUR, MACHINERY, AND EQUIPMENT**

3.3.1.0 The CONTRACTOR shall be and remain at all times exclusively responsible within the scope of work at his/its own risks and costs in all respects to provide all labour, supervision, staff, personnel, machinery and equipment(s), tools, tackles and instruments whatsoever required for or in connection with the work, including all testing and/or measuring laboratories, equipment, instruments and/or facilities and associated personnel.

3.4.0.0 **LAND, POWER, WATER AND OTHER FACILITIES**

3.4.1.0 The CONTRACTOR shall be responsible to provide within the scope of work, all facilities necessary for performance of the work including (but not limited to) water (including water for hydrostatic testing if any), power, transportation, handling and construction equipment, vehicles, vessels and any additional land at or about the job site(s) required for the CONTRACTOR's field office(s), camps, godowns, workshops and residential accommodation for CONTRACTOR's staff, quarry rights, borrow areas and access roads to or

- about the job site(s) and CONTRACTOR's offices, camps, godowns, workshops, accommodations, and temporary works and facilities whatsoever.
- 3.4.2.0 The OWNER does not warranty or undertake the provisions of any facility aforesaid or otherwise whatsoever to the CONTRACTOR or assistance in obtaining, procuring the same or other assistance whatsoever for or in the performance or testing the work(s) and the CONTRACTOR shall not imply by conduct, expression or assurance or by any other means any promise or obligation on the part of the OWNER contrary to the provisions hereof, and any such promise or obligation understood by the CONTRACTOR shall not be binding upon the OWNER.
- 3.4.3.0 Any assistance which the OWNER renders to the CONTRACTOR, in terms hereof or otherwise relative to the work by provision of any facility, water, power, transportation, tools, vessels, vehicles, construction and/or testing equipment and machinery, provision of land for quarries or borrow areas or for CONTRACTOR's Office, godown(s), workshop(s) or accommodations and/or access road(s) or otherwise howsoever in the performance or testing of the work(s), shall be, without any attendant obligation upon the OWNER or liability on the OWNER for any failure, omission, delay or refusal in providing or continuing to provide the same, and shall not for any cause afford a basis of defence to the CONTRACTOR for any breach by the CONTRACTOR of any of his obligations under the Contract or a ground for extension of time for completion.
- 3.4.4.0 After the completion of the works, certain areas shall be declared as Restricted Areas by the OWNER. If the CONTRACTOR is still in location or occupation of any such Restricted Area, the CONTRACTOR shall vacate the same forthwith on being required to do so by the OWNER, and meanwhile shall at all times comply with and ensure strict compliance with all regulations as the OWNER may from time to time issue with reference to such Restricted Area(s).
- 3.5.0.0 **POWER SUPPLY**
- 3.5.1.0 Without prejudice to the provisions of Clause 3.4.0.0 hereof and following clauses thereunder, as and when adequate power supply becomes available for the site, the OWNER may, at its discretion provide for supply of power to the CONTRACTOR for the work from the OWNER's convenient & nearest sub station, from which source the CONTRACTOR shall at his own cost and initiative make arrangements for temporary distribution of power to CONTRACTOR's work(s) at the site.
- 3.5.2.0 All arrangements for the distribution or power from source aforesaid and the work relative thereto shall be made, performed and/or installed in conformity with Indian Electricity Act and other applicable Laws and Regulations governing the supply and transmission, distribution of electricity and shall be subject to prior approval by the Engineer-in-Charge.
- 3.5.3.0 The CONTRACTOR shall, at his own costs and initiative, on completion or prior determination of work or otherwise during execution of the work, if required by the Engineer-in-Charge because of hindrance caused thereby or for any other cause, forthwith remove or re-route the distribution lines, installations and/or works or part(s) thereof, as the case may be required to be removed or re-routed.
- 3.5.4.0 The OWNER shall recover from the CONTRACTOR for the power consumed by the CONTRACTOR from the OWNER's source(s) of supply the cost thereof to the OWNER as determined by the OWNER in this behalf from time

to time. The amount due to the OWNER in respect of such power supplied shall, without prejudice to any other mode of recovery available to the OWNER, be deductible from the Running Account/Final Bill(s) of the CONTRACTOR and/or any monies due or becoming due to the CONTRACTOR from time to time.

3.5.5.0 The CONTRACTOR shall provide at his own cost suitable electric meters certified by State Electricity Board or other authority approved by the Engineer-in-Charge for measurement of the power units supplied to the CONTRACTOR for determination of the payment due thereon to the OWNER. Such meters shall be under the custody and control of the OWNER.

3.5.6.0 In the event of failure or defect of meter(s), power charges shall be calculated on the consumption determined by the Engineer-in-Charge (whose decision shall be final both as regards the existence of a defect or failure and as regards the power consumed).

3.5.7.0 The OWNER may at any time without notice and without specifying any cause, suspend or discontinue power supply as aforesaid to the CONTRACTOR, and such suspension or discontinuance shall not entitle the CONTRACTOR to any compensation or damages or constitute a basis for extension of time for completion.

3.5.8.0 Power supplied by the OWNER to the CONTRACTOR shall be entirely at the risk of the CONTRACTOR as to the continuity and regularity of supply, maintenance of voltage and adequacy of load and frequency without any warranty by or liability of the OWNER in respect thereof and without entitlement to the CONTRACTOR for any compensation, damages, extension of time or otherwise on ground of grid disturbances, discontinuance, fluctuation of voltage or inadequacy of load or frequency or any other cause whatsoever.

3.6.0.0 **WATER SUPPLY**

3.6.1.0 Without prejudice to the provisions of Clause 3.4.0.0 hereof and the following clauses thereunder in the event of the OWNER having adequate source of water supply at the site available for distribution, the OWNER may at its discretion provide water to the CONTRACTOR for the work from the OWNER's source of supply. The CONTRACTOR shall, at CONTRACTOR's own cost and initiative provide suitable pumping installations and piping for the transportation of water to and distribution at the CONTRACTOR's place or work.

3.6.2.0 Such installations, pipes and other equipment shall be laid out/installed by the CONTRACTOR only with the prior approval of the Engineer-in-Charge so as not to interfere with the layout and progress of the other construction work at the site and access to or about the job site.

3.6.3.0 The CONTRACTOR shall forthwith on completion of the work or earlier determination of the Contract or during the execution of the work(s), if so required by the Engineer-in-Charge, on grounds of hindrance or obstruction caused thereby or other cause whatsoever at his/ its own cost and initiative remove or re-route, as the case may be, any installation, pipes and/or other equipment put up or erected by the CONTRACTOR for the transportation and/or distribution of water, and fill any trenches, ditches or other excavations done by the CONTRACTOR for the purpose thereof and restore the site to the same condition in which it was prior to the installation.

3.6.4.0 The OWNER shall recover from the CONTRACTOR, for water supplied to the CONTRACTOR from OWNER's source of supply at the cost thereof to the

OWNER as determined by the OWNER in this behalf from time to time. The amount due to the OWNER in respect thereof shall (without prejudice to any other mode of recovery available to the OWNER) be deductible from the Running Account and Final Bill(s) of the CONTRACTOR and/or payments due or becoming due to the CONTRACTOR from time to time.

- 3.6.5.0 The CONTRACTOR shall provide at his own cost and initiative suitable water meters approved by the Engineer-in-Charge for measurement of the water units supplied to the CONTRACTOR for determination of the payments due in this behalf to the OWNER. Such meters shall be under the custody and control of the OWNER.
- 3.6.6.0 In the event of failure or defect of meters, water charges will be calculated on the consumption determined by the Engineer-in-Charge (whose decision shall be final both as regards the existence of a defect or failure and as regards the water consumed).
- 3.6.7.0 The OWNER may without notice or specifying any cause, suspend or discontinue water supply to the CONTRACTOR and such suspension or discontinuation shall not entitle the CONTRACTOR to any compensation or damages or constitute a basis or ground for extension of the time for completion.
- 3.6.8.0 Water supply by the OWNER to the CONTRACTOR shall be entirely at the risk of the CONTRACTOR as to the continuity and regularity of supply and maintenance and adequacy of pressure without any warranty by or liability to the OWNER in respect thereof and without entitlement to the CONTRACTOR on grounds of discontinuance, irregularity, drop or rise in pressure or other cause whatsoever to claim from the OWNER any damages, compensation or extension of time or otherwise in respect thereof or the consequences thereof.
- 3.7.0.0 **LAND**
- 3.7.1.0 Without prejudice to the provision of Clause 3.4.1.0 hereof and following Clauses thereunder, the OWNER may at its discretion and convenience, if it has sufficient available land at its disposal, provide land to the CONTRACTOR near or about any job site, for the construction of the CONTRACTOR's field office(s), godown(s), workshop(s), assembly yard, residential accommodation and/or temporary works or any of them required for/or in connection with the execution of the works.
- 3.7.2.0 The CONTRACTOR shall at his own cost and initiative construct temporary buildings or other accommodation or works necessary and make suitable arrangement for water and power supply thereto and for provision of sanitary, drainage and de-watering arrangements in respect thereof in accordance with plans/designs, layouts previously approved by the Engineer-in-Charge in this behalf.
- 3.7.3.0 Any land provided by the OWNER to the CONTRACTOR within the provisions hereof shall be strictly on a license basis, and shall not create any right, title or interest whatsoever in the CONTRACTOR therein or in respect thereto.
- 3.7.4.0 The CONTRACTOR shall pay to the OWNER, license fee @ Rs. 1000/- (Rupees One Thousand only) per month or part thereof for upto 500 (Five Hundred) square meters of land or part thereof made available to it by the OWNER and Rs. 200/- (Two Hundred only) per month or part thereof for

each additional 100 (One Hundred) square meters of land or part thereof made available by the OWNER to the CONTRACTOR or at such other rate(s) of license fee as specified by the OWNER in this behalf from time to time for any land made available to the CONTRACTOR within the provisions hereof, and the OWNER shall be entitled (without prejudice to any other mode of recovery), to recover the license fee from the Running Account and Final Bill(s) of the CONTRACTOR and/or other payments due or becoming due to the CONTRACTOR from time to time.

3.7.5.0 Notwithstanding anything herein provided, the OWNER reserves the right at any time during the pendency of the work to call upon the CONTRACTOR to vacate the land or any part thereof on giving 7 (Seven) days' written notice to the CONTRACTOR in this behalf.

3.7.6.0 Forthwith upon expiry of such notice or on completion of the works or earlier determination of the contract, the CONTRACTOR shall remove all constructions, works, piping and other installation whatsoever not forming part of the contractual works, put up or erected by the CONTRACTOR upon the land, and shall have the land cleared, leveled and dressed to the satisfaction of the Engineer-in-Charge.

3.7.7.0 The CONTRACTOR shall not be entitled, upon any vacation or notice within the provisions of clause 3.7.5.0 hereof, to claim any resultant compensation or damage from the OWNER nor shall such notice or vacation constitute a ground or basis for any claim by the CONTRACTOR for compensation or damages or ground for extension of time for completion.

3.7.8.0 The OWNER shall be entitled at any time without notice to the CONTRACTOR, to suspend or withdraw use by the CONTRACTOR of any part of such area or land or access thereto and no suspension or withdrawal of such facility, or disruption or inadequacy thereof by virtue of flood, storm, fire, disrepair or other cause whatsoever, shall form the basis of any claim by the CONTRACTOR for compensation or damages or ground for extension of time for completion.

3.7.9.0 Notwithstanding anything herein provided, the provisions of clause 7.0.6.0 hereof and related Clauses applicable consequent upon termination of contract, shall apply to any breach by the CONTRACTOR of his obligations, within the provisions of Clauses 3.4.4.0, 3.5.3.0, 3.6.3.0 and 3.7.6.0 hereof as to a breach of clause 7.0.5.0 hereof.

3.8.0.0 **ACCESS TO SITE**

3.8.1.0 The CONTRACTOR shall at his own cost and initiative arrange for and provide any access to the work area and stringing or other yards for labour, equipment and material as may be necessary for any cause in addition to the ingress and egress available through public highways. Any arrangements in respect thereof as may be entered into by the CONTRACTOR with any person interested in the land through which access is sought, shall be in writing and a copy of the writing (certified by or on behalf of the CONTRACTOR to be true copy thereof) shall forthwith be lodged with the OWNER. Such a writing shall specifically stipulate that the OWNER shall not be responsible for any claims under the Contract or for any damage, loss or injury to the land or any material, item or thing thereon or in, and the CONTRACTOR shall keep the OWNER indemnified from and against any claim, action or proceedings in respect thereof.

3.8.2.0 The CONTRACTOR shall at his own cost and initiative arrange for and obtain all necessary permissions, permits, consents and licenses as may be

necessary to transport the materials, tools, equipment, machinery and labour along or across any highway, roadway, or other way, or railway, tramway, bridge, dyke, dam or embankment, or lake, pond, canal, river, state terminal, toll octroi, or other line, border or barrier.

If for the purpose of convenience of the CONTRACTOR, the OWNER shall arrange road permits for the transportation of any materials to site in its own name, or otherwise if by applicable law, rule, regulation or practice road permits will only be granted to the OWNER for the transportation of any such materials to or within the local area in a state and the OWNER by virtue thereof shall be liable to pay toll, octroi or other tax or levies in relation to such permit(s), the CONTRACTOR shall on demand forthwith reimburse the OWNER, the cost of such tax or levy imposed upon or borne by the OWNER, failing which the CONTRACTOR shall be liable to pay interest thereon at 2% (two percent) above the prime lending rate of the State Bank of India as long as the amount remains outstanding or unadjusted from any bill or other payment due to the CONTRACTOR

3.9.0.0 SHIPPING AND OTHER DOCUMENTS

3.9.1.0 Without prejudice to any other obligations of the CONTRACTOR under the Contract, and in addition to any other documents required to be furnished by the CONTRACTOR under the Contract, the CONTRACTOR shall, in respect of all items and materials imported into India, obtain and furnish within

10 (Ten) working days to the OWNER, at his own cost and initiative, the following documents (hereinafter for the sake of brevity collectively referred to as the "the said documents") according to the provisions of the following clauses, namely :

- i) Signed Invoice(s);
- ii) Clean Bill of Lading;
- iii) Packing lists/Mill Tally Sheets;
- iv) Certificate of origin;
- v) Consular's Invoice, if necessary ;
- vi) Export License/documents, if applicable; and
- vii) Any other document(s) or literature required for Custom clearance;
- viii) Phytosanitary Certificate for packing material as per International norms

3.9.2.0 The Bill of Lading shall be drawn to show the OWNER's concerned project as the consignee, or otherwise as instructed by the OWNER, and shall clearly indicate the Contract Number specified in this behalf by the OWNER, the description of the items/materials giving the dimensions, quantities, weights, and all other details required for Customs clearance of the consignment, and/or as may be specified by the OWNER from time to time in this behalf.

3.9.3.0 The Bill of Lading shall show the gross freight amount, and shall either indicate or be accompanied by the carrier's statement of charges and shall carry all other particulars necessary to bind the carrier.

3.9.4.0 The CONTRACTOR shall not less than 7(seven) clear days before the contemplated date of shipment, inform the Engineer-in-Charge of the contemplated date of relative shipment of the item(s) or material(s) and of the contemplated date of arrival thereof in India.

- 3.9.5.0 In addition, within 7 (Seven) working days of the date of shipment, the CONTRACTOR shall dispatch, by Air Courier, according to the instructions of the Engineer-in-Charge in this behalf, 10 (Ten) sets/copies of the said documents.
- 3.9.6.0 The CONTRACTOR shall also, within 48 (Forty-Eight) hours of shipment, send intimation of shipment by fax or scanned copy by email to the addresses of the OWNER and/or Engineer-in-Charge specified in this behalf.
- 3.9.7.0 The Invoice shall be drawn in the name of the OWNER and shall state the quantity and detailed description of each item supplied reflecting the value of each item/material and the basis of delivery as CIF.
- 3.9.8.0 The description of each item/material indicated in the Invoice and the Bill of Lading shall conform to the description of the item/material as given in the relative Import License(s)/Permit(s) issued to the OWNER in this behalf.
- 3.9.9.0 The Invoice and Bill of Lading shall also indicate on the face of it, the Number, date and validity of the Import License (if the Import License has been revalidated, Number and date of re-validation) against which the Import is being made.
- 3.9.10.0 Invoice(s) referred to with reference to the said documents are intended merely to comply with customs and Import formalities and will not create any obligation for payment thereof or against unless specifically as provided elsewhere in the Contract.
- 3.9.11.0 The OWNER reserves the right to vary the said list of documents by addition thereto or subtraction therefrom and to vary applicable instruction(s) from time to time.
- 3.10.0.0 **PACKING AND FORWARDING**
- (a) **IMPORTED SUPPLIES**
- (i) The CONTRACTOR wherever applicable, shall, after proper painting, pack and crate all materials for shipment in a manner suitable for export to a tropical, humid climate in accordance with internationally accepted export practices and in such a manner so as to protect them from damage and deterioration in transit by road, rail and/or sea and during storage at the site till the time of erection. Without prejudice to any other liabilities or obligations of the CONTRACTOR, the CONTRACTOR shall be responsible for all damage(s) to the materials due to improper packing.
 - (ii) The CONTRACTOR shall notify the OWNER and Engineer-in-Charge of the date of each shipment from the port of embarkation as well as of the expected date of arrival of such shipment at the designated port of arrival only for the OWNER's/ Engineer-in-Charge's information and to enable the OWNER to pay customs duty at the port of dis-embarkation
 - (iii) The CONTRACTOR's notification shall give complete shipping information concerning the weight, size and content of each package and such other information as the OWNER may require.
 - (iv) The packing material used should be duly certified by a Phytosanitary Certificate issued as per international norms.

(b) **INDIGENOUS SUPPLIES**

- i. The CONTRACTOR shall, wherever applicable, after proper painting, pack and crate all items in such a manner as to protect them from deterioration and damage during rail and road transportation to the site and during storage at the site till the time of erection. Without prejudice to any other liabilities or obligations of the CONTRACTOR, the CONTRACTOR shall be responsible for all damage(s) due to improper packing.
- ii. The CONTRACTOR shall notify OWNER/ Engineer-in-Charge of the date of each shipment from the works and expected date of arrival at the site for the information of OWNER/ Engineer-in-Charge.
- iii. The CONTRACTOR's notification shall also give all shipping information concerning the weight, size and content of each packing and such other information as the OWNER/ Engineer-in-Charge may require.
- iv. The following documents shall be sent to the OWNER/ Engineer-in-Charge within 3 (three) days from the date of shipment :
 - Invoice (2 copies)
 - Packing List (2 copies)
 - Test Certificate (4 copies)
 - Railway Receipt/Lorry Receipt (2 copies)
 - Insurance Certificate (2 copies) or copy of MCE Policy
 - Third Party Inspection Release Note or Inspection Certificate as per QAP approved by OWNER/ Engineer-in-Charge or waiver certificate issued by OWNER/ Engineer-in-Charge (2 copies).

3.11.0.0 **EQUIPMENT**

3.11.1.0 The CONTRACTOR shall be exclusively responsible to arrange for importation into India in its own name on drawback or re-export or other basis all equipment, if any, required to be imported into India for the purposes of the work and to pay and bear the customs, import and other duties and levies (if any) payable thereon or in respect thereof, and will be solely responsible for the timely and proper compliance of all applicable terms and conditions and formalities relative thereto.

3.11.2.0 The CONTRACTOR shall within 28 (Twenty Eight) days from the date of receipt of Acceptance of Bid, furnish to the Engineer-in-Charge a list of the said equipment which he proposes to import into India on a draw-back/re-export basis for the purposes of the work, together with complete details thereof. The OWNER may without obligation or responsibility furnish to the Import Licensing Authorities in India its recommendations relative to import of such equipment which the OWNER considers necessary for the work. The OWNER may also without obligation or responsibility render such assistance as may be reasonably required by the CONTRACTOR from the OWNER to enable the CONTRACTOR to obtain the relative Import License(s)/Permit(s) for the importation of the said equipment on a draw-back/re-export basis.

3.12.0.0 **MISCELLANEOUS IMPORTS**

3.12.1.0 The CONTRACTOR shall be exclusively responsible at his own costs and initiative to arrange for importation into India, to import into India, to pay Custom duties and Port and other charges and levies, to clear from Customs and to transport to job site all consumables, spares for the CONTRACTOR's equipment and other materials and things whatsoever not covered by the OWNER's obligation under Clause 3.1.0.0 hereof provided that the OWNER

may, without obligation or responsibility, render the CONTRACTOR such assistance by way of recommendation to the Import Control authorities in India or otherwise as may be reasonably required by the CONTRACTOR from the OWNER to enable the CONTRACTOR to obtain Import License(s)/Permit(s) for importation of such consumables, spares, material and other items as the OWNER considers necessary for importation by the CONTRACTOR for the purpose of the Contract, taking into account local availability.

- 3.12.2.0 Any obligation undertaken or recommendation, facility or assistance provided by the OWNER to the CONTRACTOR for or in relation to the importation of any equipment or material whatsoever into India by or on behalf of the CONTRACTOR pursuant to the provisions hereof or otherwise shall be without any responsibility or liability whatsoever upon the OWNER and without right in the CONTRACTOR to raise any claim or demand or to seek extension of time on account of any delay or failure on the part of the OWNER or any delay or failure by the CONTRACTOR in obtaining Import License(s) and/or permits for importation thereof into India.
- 3.12.3.0 All materials and equipment Imported into India by or on behalf of the CONTRACTOR for and in connection with the work and any obligation undertaken or recommendation, facility or assistance provided by the OWNER relative thereto shall be on the clear understanding that the materials and equipment shall be utilised only for and relative to the performance of the work covered by the Contract.
- 3.12.4.0 All the equipment and temporary works and materials when brought to or erected on the job site, shall be exclusively intended for execution of 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 job site to another, without the prior consent in writing of the Engineer-in-Charge.
- 3.12.5.0 Upon completion of the works, the CONTRACTOR shall within the scope of work remove from the job site all the equipment and temporary works remaining thereon.
- 3.12.6.0 All equipment, materials and temporary works shall at all times be and remain at the risks of the CONTRACTOR in all respects. The OWNER shall not, at any time, be liable for the loss or destruction of or damage to any equipment, temporary works or materials for any reason whatsoever.

SECTION – 4

PERFORMANCE OF WORKS

4.0.0.0 GENERAL

- 4.0.1.0 All works shall be performed and executed by the CONTRACTOR in strict conformity with the job description(s), Specification(s), Plan(s), drawing(s), design(s) and other contract documents applicable to the specific work(s) and any relative instructions as may be issued to the CONTRACTOR by the Engineer-in-Charge from time to time.
- 4.0.2.0 The Engineer-in-Charge shall be entitled from time to time or at any time, at their discretion, to issue written orders or instructions to the CONTRACTOR relative to the performance and/or execution of work(s) by the CONTRACTOR or otherwise, relative to any matter touching or affecting the contract or arising therefrom and to revise or revoke any orders or instructions previously issued, and the CONTRACTOR shall, subject to the provisions of the following clause, obey and/or abide thereby.
- 4.0.2.1 Should the CONTRACTOR require any clarification in respect of any orders or instructions issued by the Engineer-in-Charge, or should there appear to the CONTRACTOR to be any contradiction between any orders or instructions issued by the Engineer-in-Charge and the contract documents or any of them, the CONTRACTOR shall refer the matter immediately in writing to the Engineer-in-Charge for his decision before proceeding further with the work and the decision of the Engineer-in-Charge on any such matters shall be final and binding upon the CONTRACTOR, who shall perform the work accordingly, without entitlement to any claim against or compensation from the OWNER resultant upon such order, instruction or decision.
- 4.0.3.0 The CONTRACTOR shall, within 28 (Twenty Eight) days of receipt of notification of acceptance of bid, name Engineer(s) responsible for the work at the job site on behalf of the CONTRACTOR. The said Engineer(s) of CONTRACTOR shall be the representative(s) of the CONTRACTOR at the job site for and relative to all actions and transactions and dealings on behalf of the CONTRACTOR and to whom all plans, designs, drawings, orders and instructions or other documents or communications for or relative to the job site may be given, with the intent that all transactions and dealings had with the said Engineer(s) shall be deemed to have been had with the CONTRACTOR, and any and all plans, drawings, orders, instructions, documents or communications delivered to said Engineer(s) shall be deemed to have been delivered to the CONTRACTOR. The CONTRACTOR shall also independently or from amongst the said Engineer(s) designate one person to be the CONTRACTOR's Project Manager with whom the OWNER may also deal with as the CONTRACTOR's representative in the manner specified above, and who is authorized to take decisions on behalf of the CONTRACTOR and to co-ordinate amongst the aforesaid Engineer(s) of the CONTRACTOR.
- 4.0.3.1 The CONTRACTOR shall also nominate, at the job site, a Deputy Site Representative (which nomination shall also be subject to the approval of the Engineer-in-Charge) to deputize for the CONTRACTOR's Representative(s) during periods of unavoidable absence.
- 4.0.4.0 The CONTRACTOR shall also provide and maintain, at or about the job site, an office for the working accommodation of the CONTRACTOR's engineer and staff. Such office shall remain open and attended at all hours during

which work is being performed at the job site, for the receipt of instructions, notices, and other communications.

- 4.0.5.0 The CONTRACTOR shall, within the scope of work erect and/or cause to be erected any and all temporary works, ancillary works and enabling works, including preparing approaches and working areas for movement and operation of cranes, preparing and leveling areas for assembly and erection, dewatering of surface and sub-soil water and protection of existing works, drains, pipes, trenches, cables overhead and underground works and other facilities and utilities falling within the job site and/or approximate thereto and repair and/or re-placement of any and all existing works, drains, pipes, trenches, cables, wires and facilities and/or utilities damaged or destroyed by the CONTRACTOR or which may have to be temporarily or permanently diverted or re-routed to enable the contractual works.
- 4.0.6.0 The CONTRACTOR shall co-operate with and afford the OWNER and other contractors engaged at site, access to the work and shall supply at cost as determined by the Engineer-in-Charge (whose decision will be final), power and water for the performance of the work entrusted to them and/or for the carriage and storage of materials by them and whenever any work by the CONTRACTOR is being done in association, collaboration or in proximity with any other contractors, the CONTRACTOR shall co-operate with the OWNER or other contractor(s)/ agency(ies) involved in such work and shall ensure the harmonious working between the CONTRACTOR and the OWNER/contractor(s)/agency(ies) involved, and shall comply with any instructions issued by the Engineer-in-Charge for the purpose.
- 4.0.7.0 The OWNER shall be entitled, at its discretion, to appoint one or more engineers and/or other personnel at or about its job site on behalf of the OWNER to do such acts, deeds, matters and things as may be necessary to safeguard the OWNER'S interests including (but not limited to), at the discretion of the OWNER, supervision and testing of the works being conducted by the CONTRACTOR at the job site and/or for rendering such assistance to the CONTRACTOR relative thereto as the OWNER or such Engineer(s) or personnel shall or may deem fit, it being understood, however, that the presence of any engineers or personnel of the OWNERS at or about the job site for any supervision, inspection or test performed or conducted by any such engineer(s) or any personnel of the OWNER in respect of any work(s) or any other assistance rendered by such engineer(s) and/or personnel to the CONTRACTOR relative thereto, shall be without any attendant obligation or liability of the OWNER vis-à-vis the CONTRACTOR, nor shall relieve the CONTRACTOR of his/its full responsibility in respect of the work(s) under the contract or bind the OWNER to accept as satisfactory or complete and/or in accordance with the contract, any work(s) performed by the CONTRACTOR which has/ have been supervised, inspected, tested or assisted by the said engineer(s) and/or personnel of the OWNER.
- 4.0.8.0 If the CONTRACTOR's work or any part thereof shall be consequent or resultant upon any works performed by any other person or shall be in continuance thereof or otherwise based or founded or dependant thereon, the CONTRACTOR shall before commencing with his/its work, bring to the notice of the Engineer-in-Charge, in writing, any defects existing in said prior works.
- 4.1.0.0 **THE JOB SITES**
- 4.1.1.0 The OWNER shall furnish the CONTRACTOR with only four corners of the job site and level bench mark, and the CONTRACTOR shall at his own cost

and initiative, set out the works to the satisfaction of the Engineer-in-Charge, but shall be solely responsible for the accuracy of such setting up notwithstanding satisfaction as aforesaid of the Engineer-in-Charge or any other assistance rendered by the Engineer-in-Charge for the purpose.

- 4.1.2.0 The CONTRACTOR shall provide, fix and be responsible for the maintenance of all stakes, templates, level marks, profiles and the like and shall take all precautions necessary to prevent their removal or disturbance and for their efficient and timely reinstatement. The CONTRACTOR shall also be responsible for the maintenance of all survey marks, boundary marks, distance marks, whether existing or supplied/fixed by the CONTRACTOR.
- 4.1.3.0 So far as necessary to achieve the desired levels, the CONTRACTOR shall before commencing the work, remove, spread, and/or fill earth (brought from outside the job site, if necessary) to achieve and/or maintain the desired levels.
- 4.1.4.0 Before commencing the work, the CONTRACTOR shall at his/its own cost and initiative provide all necessary reference and level posts, pegs, bamboos, flags, ranging rods, strings and other materials for proper layout of the work in accordance with the scheme for bench marks acceptable to the Engineer-in-Charge. The centre, longitudinal or face line and cross line shall be marked by means of small masonry pillars. Each pillar shall have a distinct mark at the centre to enable a theodolite to be set over it. No work shall be started until all these points are approved by the Engineer-in-Charge in writing, but such approval shall not relieve the CONTRACTOR of any of his responsibilities in respect of the adequacy or accuracy thereof. The CONTRACTOR shall also provide all labour, material, tools and other facilities necessary for the proper checking of layout and inspection of the points during construction.
- 4.1.5.0 Pillars bearing geodetic marks located at the sites of units of works under construction should be protected and fenced by the CONTRACTOR.
- 4.1.5.1 On completion of works, the CONTRACTOR must submit to the Engineer-in-Charge the geodetic documents according to which the work was carried out.
- 4.1.6.0 The CONTRACTOR shall be exclusively responsible for the provision and maintenance of horizontal and vertical alignments and levels and for the correctness of every part of the work in accordance therewith and shall, at his own cost, rectify any error or imperfections therein.
- 4.1.7.0 **SITE CLEARANCE, FILLING AND LEVELLING**
- 4.1.7.1 The CONTRACTOR shall clear the job site of all unwanted trees, bushes, undergrowth and overground and underground structures, pipes and installations, and shall re-route, if necessary, any private utilities located on or within the job sites and shall take care to keep the job site clean at all times for easy access to the job site and also from the safety point of view to the satisfaction of the Engineer-in-Charge.
- 4.2.0.0 **COMPLIANCE WITH CODES AND STANDARDS**
- 4.2.1.0 (a) The Work and all systems, components and parts of the Works shall comply with :
 - (i) Those design criteria, codes and standards which are specified in this Contract, Scope of Contract and as agreed between CONTRACTOR and OWNER, and

- (ii) The requirements of all relevant Indian authorities, including without limitation :
 - (a) Factories Act;
 - (b) Indian Petroleum Rules;
 - (c) Tariff Advisory Committee Guidelines;
 - (d) Liquid effluent discharge, as per Minimal National Standards for liquid effluents and air emissions conforming to Pollution Control Board Standards;
 - (e) Civil Aviation Rules;
 - (f) Indian Boiler Regulations;
 - (g) Indian Electricity Rules;
 - (h) Requirement of Chief Controller of Explosives;
 - (i) Requirement of Town & Country Planning Department;
 - (j) Requirements of other authorities concerned with the Project or with any license, permission, sanction, approval or no objection relative thereto, and the terms thereof.
- (b) Any modification to the agreed design criteria will be subject to the CONTRACTOR providing detailed justification and OWNER's/ Engineer-in-Charge's approval of the same.

4.2.2.0 **CONDITIONS OF WORK**

- 4.2.2.1 If necessary, the CONTRACTOR shall work overtime or in two or more shifts in a day. The CONTRACTOR shall not be entitled to any extra compensation or remuneration for overtime or double or triple shift working.
- 4.2.2.2 The CONTRACTOR will be expected to work on Sundays and holidays, if necessary, without extra compensation.
- 4.2.2.3 The CONTRACTOR shall plan and organise all operations taking into account all suspensions or shut downs necessitated by weather conditions and the severity of weather conditions (foreseen or unforeseen) shall on no account constitute a ground for extension of time for completion nor shall entitle the CONTRACTOR to claim any idle charges or additional compensation howsoever designated.
- 4.2.2.4 Notwithstanding the shut down or suspension of any operations necessitated by weather conditions, the CONTRACTOR shall, without entitlement to any additional compensation or remuneration, at his own cost and initiative take all steps necessary to protect the job site, and works, materials, equipment and machinery at site during adverse weather conditions and the effects thereof and shall, at his own cost and initiative, do and perform, to the satisfaction of the Engineer-in-Charge, all such consequential rectification, repairs and/or reworking as shall be necessary.
- 4.2.2.5 The CONTRACTOR shall plan, well in advance for the collection of materials and equipment and the erection of such tarpaulins, sheds, wind breakers and/or other protection as shall or may be necessary for work during adverse weather conditions.
- 4.2.2.6 The CONTRACTOR shall also arrange and bring to job site and install such pumps and special equipment and machinery as may be necessary to enable work during the monsoon or adverse weather conditions and shall, at his own cost and initiative, arrange for dewatering the job sites so as to keep the construction site and areas to be worked upon free of water.

- 4.2.2.7 The CONTRACTOR shall not be entitled to any extra compensation or remuneration for or relative to any work during the monsoon or adverse weather conditions or for or relative to any special arrangements to be made and/or equipment or machinery to be brought to the job sites and/or operated to enable such workings.
- 4.3.0.0 **TIME FOR COMPLETION**
- 4.3.1.0 The CONTRACTOR shall complete in all respects in accordance with the Contract, the entire work within the time specified in this behalf in the Time Schedule included in the bid documents.
- 4.3.2.0 Within 28 (Twenty Eight) days from the date of receipt of notification of acceptance of Bid the CONTRACTOR shall submit to the OWNER for approval a detailed Progress Schedule in graphical or other suitable form, giving dates of starting and finishing of various operations and works within the scope of work, providing sufficient margin to cover for contingencies and for final testing and commissioning and consequential reparation, replacement and/or supply. The Engineer-in-Charge and the CONTRACTOR shall thereafter within another 14 (Fourteen) days settle the Progress Schedule and the Progress Schedule so settled shall be the approved Progress Schedule and shall form part of the contract with attendant obligations upon the CONTRACTOR to commence the various works/operations involved on or before date(s) mentioned in this behalf in the approved Progress Schedule and to conclude the said works/operations on or before date mentioned in this behalf in the approved Progress Schedule and default by the CONTRACTOR to commence or complete within prescribed date(s) any work or operation shall for the limited purpose of Clause 7.0.1.0 hereof be deemed to be a breach by the CONTRACTOR to which the provisions of clause 7.0.1.0 hereof relating to termination of contract shall apply, but without prejudice to any other rights or remedies which the OWNER may have in this behalf.
- 4.3.2.1 The said Progress Schedule(s) to be submitted to the Engineer-in-Charge for approval shall be accompanied as part thereof by a document which will list, relative to each operation, the labour, machinery and equipment to be employed by the CONTRACTOR to achieve the desired rate of progress, it being understood, however, that the quantity and types therein indicated shall merely constitute an indication of minimums, and shall not anyway absolve the CONTRACTOR from his/its obligations to complete the work in all respects within the time for completion specified in this behalf elsewhere in the bid documents and/or to employ additional labour, machinery and equipment necessary to achieve the desired rates of progress and/or to complete the work within the specified time.
- 4.3.3.0 If the CONTRACTOR shall fail to submit to the OWNER a Progress Schedule as envisaged above or if the Engineer-in-Charge and CONTRACTOR shall fail to agree upon the Progress Schedule as envisaged above, then the Engineer-in-Charge shall in consultation with the CONTRACTOR prepare the Progress Schedule (the dates of progress as fixed by the Engineer-in-Charge being final and binding upon the CONTRACTOR except as herein otherwise expressly provided), and shall issue the Progress Schedule so prepared to the CONTRACTOR, and the provisions of clause 4.3.2.0 shall apply relative thereto as though it was as approved Progress Schedule.

- 4.3.4.0 Any reference in the contract documents to the “approved Progress Schedule” or to the “Progress Schedule” shall mean the “approved Progress Schedule” specified in clause 4.3.2.0 above or the “Progress Schedule” prepared and issued by the Engineer-in-Charge as specified in clause 4.3.3.0 above, whichever shall be in existence.
- 4.3.5.0 Within 7 (Seven) days of the occurrence of any OWNER’s hold-up or change, alteration or instruction by the OWNER or Engineer-in-Charge in accordance with the provisions hereof or of the occurrence of any act, event or omission which, in the opinion of the CONTRACTOR, is likely to lead to delay in the commencement or completion of any particular work(s) or operation(s) or the entire work at any job site(s) and is such as would entitle the CONTRACTOR to an extension of time specified in this behalf in the Progress Schedule(s), the CONTRACTOR shall inform the OWNER and the Engineer-in-Charge, in writing, of the occurrence of the change, alteration or instruction or of the act, event or omission and the date of commencement of such occurrence. Thereafter, within 7 (seven) days of such notice in the case of a change, alteration or instruction, and, if even upon the cessation of such act or event or the fulfillment of the omission in any other case, the CONTRACTOR is of the opinion that an extension of the time specified in the Progress Schedule relative to particular operation(s) or item(s) of work or the entire work at the job site(s) is necessary, the CONTRACTOR shall, within 7 (Seven) days after the cessation or fulfillment as aforesaid, make a request to the Engineer-in- Charge for extension of the relative time specified in the Progress Schedule. The Engineer-in-Charge may on such request at any time prior to completion of the works extend the relative time of completion in the Progress Schedule for such period(s) as he considers necessary, if he is of opinion that such act, event, or omission constitutes a ground for extension of time in terms of the Contract and that such act, event, or omission has in fact resulted in insurmountable delay to the CONTRACTOR. The opinion/decision of the Engineer-in-Charge in this behalf and as to the extension necessary shall subject to the provisions of clause 4.3.6.0 hereof, be final and binding upon the CONTRACTOR.
- 4.3.5.1 The application for extension of time made by the CONTRACTOR to the Engineer-in-Charge should contain full details of -
- (a) The OWNER’s hold-up, change, alteration or instruction, if any, for which the application is made,
 - (b) A copy each of the notices sent to the Engineer-in-Charge and Site Engineer under Clause 4.3.5.0 and other Clauses applicable to OWNER’s hold ups,
 - (c) The activity(ies) of the Progress schedule affected,
 - (d) Particulars of the bottleneck(s) or obstruction(s) perceived/experienced or additional work and time involved and the reason(s)/explanations therefor,
 - (e) Extension required/ necessitated on account of the above,
 - (f) Extension of time
 - (g) Extension required/ necessitated on account of force majeure reasons, and

- (h) The total extension of time (if any) required/ necessitated for completion, taking the above into account and after eliminating all overlaps.
- 4.3.6.0 Notwithstanding the provisions of clause 4.3.5.0 hereof, the OWNER may at any time after final completion of the Unit or works in all respects of its own initiative consider a request for extension of time made by the CONTRACTOR to the Engineer-in-Charge under Clause 4.3.5.0 or at the request of the CONTRACTOR made by way of appeal either against the decision of the Engineer-in-Charge taken under clause 4.3.5.0 or against the Engineer-in-Charge's failure to take a decision under the said clause, if , satisfied that the act, event or omission which forms the subject matter of the CONTRACTOR's application for extension of time constitutes a ground for extension of time in terms of the contract and such act, event or omission has in fact resulted in insurmountable delay to the CONTRACTOR extend the date for completion of the work or any item or operation thereof for such period(s) as the OWNER may consider necessary, and the decision of OWNER as to the existence or otherwise of any grounds justifying the extension and as to the period(s) of extension necessary shall be final and binding upon the CONTRACTOR.
- 4.3.7.0 Subject as elsewhere herein or in the Contract documents expressly provided, only the existence of force majeure circumstances as defined in clause 4.3.8.0 hereof or OWNER's holdup as defined in Clause 4.3.8.1 hereof shall afford the CONTRACTOR a ground for extension of time for completion of the work or any part of the work or any operation(s) involved therein, and specifically without prejudice to the generality of the foregoing, inclement or unforeseen weather, strike, lockouts, third party breach, delay in supply of materials(s) or commercial hardship shall not afford the CONTRACTOR a ground for extension of time or relieve the CONTRACTOR of his/its full obligations under the Contract, nor will any forced shutdown or idleness or other impediment in progress or completion of the work due to any reason whatsoever afford the CONTRACTOR a ground for extension of time or relieve the CONTRACTOR of his/its full obligation under the Contract except and to the extent otherwise elsewhere herein specifically provided.
- 4.3.8.0 "Force Majeure" shall mean an event beyond the control of the CONTRACTOR and not involving the CONTRACTOR's fault or negligence and not foreseeable, such as, but not restricted to, wars (declared or undeclared) or revolutions, civil wars, tidal waves, hurricanes, typhoons, act of terrorism, fires, major floods, earthquakes, epidemics, quarantine restrictions, freight embargoes, nation-wide transportation strikes and national strikes.
- 4.3.8.1 The term "OWNER's hold up" as employed in this Contract applies to a delay by the OWNER in providing a drawing, specification, approval, change, alteration, instruction, work front, input, material or facility or utility which the OWNER is required to provide under the Contract and on which the progress or further progress of the work is dependant and will include any act of the OWNER or any other contractor appointed by the OWNER which prevents or interrupts the further progress of the whole work or a substantial portion thereof.
- 4.3.8.2 In granting or refusing in whole or part an application of the CONTRACTOR for extension of time and in calculating the number of days for which extension of time, if any, is to be granted to the CONTRACTOR, the Engineer-in-Charge or OWNER, as the case may be, shall be guided by the following principles:

(i) An extension of time shall only be granted on and with reference to an application made by the CONTRACTOR to the Engineer-in-Charge in compliance with the provisions of Clauses 4.3.5.0 and 4.3.5.1 hereof.

(ii) If the extension of time is sought on account of an OWNER's holdup, the CONTRACTOR must have given a written Notice to the Engineer-in-Charge, and to the OWNER under Clause 2.2.3.0 hereof or under this Clause specifically stating that and setting out the specific drawing, specification, approval, front, input, material or facility which the OWNER is required to provide under the Contract and on which further progress of the work or any part of the work is dependent which has not been provided, and the said Notice notwithstanding, the drawing, specification, approval, front, input, material or facility which the OWNER is required to provide under the Contract is not provided within 15 (fifteen) days of service of the Notice to the Engineer-in-Charge and to the OWNER.

(iii) If the extension of time is sought on account of OWNER's hold-up, subject to the satisfaction of (i) and (ii) above, the following principles shall be applied:

(a) Extension of time will only be considered in respect of delay with respect to Owner's hold-up which continues after the expiry of the 15 (fifteen) days notice period specified in (ii) above.

(b) Extension of time will only be considered in respect of an insurmountable delay which impacts the critical path and not to an OWNER's hold-up which does not impact the critical path.

(c) Extension of time will be considered only in respect of an OWNER's hold-up which has in fact resulted in insurmountable delay to the CONTRACTOR, meaning thereby, that the CONTRACTOR had progressed the work or activity in relation to which the OWNER's hold-up has occurred to a stage at which the work could not progress further because of the OWNER's hold-up. In such a case, extension of time can be considered for the number of days by which the OWNER's hold-up has actually and insurmountably thereafter delayed the performance of the work by the CONTRACTOR.

(d) If the CONTRACTOR has independently of the OWNER's hold-up delayed the work or any activity beyond the date on which the drawing, specification, approval, front, input, material or facility is provided or could be provided by the OWNER, the CONTRACTOR will not be entitled to any extension of time in respect of such delay.

(e) If the CONTRACTOR has independently of the OWNER's hold-up delayed performance of any activity or of work(s), but such delay was less than the delay arising out of the OWNER's hold-up, then the CONTRACTOR will be entitled to an extension of time only for the number of days by which the delay(s) occasioned by the OWNER's hold-up exceeds the CONTRACTOR's delay.

(iv) If the extension of time is sought by the CONTRACTOR on the ground of the intervention of a force majeure, event, the CONTRACTOR must have given written notice of the commencement or cessation of such event to the

Engineer-in-Charge under and in accordance with Clause 4.3.5.0 and shall have applied for extension of time with respect thereto under and in accordance with the said Clause.

(v) If the extension is sought on ground(s) of force majeure, then subject to the satisfaction of (ii) above, extension of time shall be permissible only in respect of the number of days during which the performance of any activity or all activities were insurmountably prevented by the force majeure and impacted the critical path.

(vi) If the extension of time is sought because of a change, alteration or instruction of the OWNER or Engineer-in-Charge in terms of the Contract, subject to the satisfaction of (i) above, extension of time shall have to be considered for such number of days as the change, alteration or instruction has actually and insurmountably delayed the performance of the work by the CONTRACTOR on application mutatis mutandis of the principles enunciated in (iii) (b), (c), (d), and (e) above.

- 4.3.9.0 Upon an extension of the time for completion of the work or any part of the work or any operation(s) involved therein, the extended date of completion shall be deemed to be the relative date of completion in the Progress Schedule.
- 4.3.10.0 The extension of time shall be the sole remedy of the CONTRACTOR for any cause or event of delay and the CONTRACTOR shall not be entitled in addition to or in lieu of such extension, to claim any damages or compensation for extended stay or otherwise whether under the law governing contracts or quasi-contracts or any other relationship, and the CONTRACTOR hereby waives and disclaims any and all contrary rights.
- 4.3.11.0 No assurance, representation, promise or other statement by any personnel, Engineer or representative of the OWNER in relation to extension of time for commencement or completion of any work(s) or operation thereof or of the entire works under the Contract shall be binding upon the OWNER or shall constitute an extension of time for commencement or completion of the entire work(s) or any part or operation thereof within the provision of Clause 4.3.5.0 or Clause 4.3.6.0 hereof, unless the same is communicated to the CONTRACTOR by the Engineer-in-Charge under Clause 4.3.5.0 or by the Executive Director under Clause 4.3.6.0 and the writing specifically states to embody an extension of time within the provisions of Clause 4.3.5.0 or 4.3.6.0 as the case may be, and without prejudice to the foregoing, the mere agreement or prescription of a Progress Schedule by the Engineer-in-Charge or any representative of the OWNER at variance with the Progress Schedule, or approved Progress Schedule, as the case may be, referred to in Clause 4.3.2.0 and/or 4.3.3.0, or containing an extended time of commencement or completion in respect of the entire work(s) or any part or operation thereof shall not anyway constitute an extension of time in terms of the contract so as to bind the OWNER or to relieve the CONTRACTOR of all or any of his/its liabilities under the Contract, nor shall constitute a promise on behalf of the OWNER or a waiver by the OWNER of any of its rights in terms of the Contract relative to the performance of the contract within the time specified or otherwise, but shall be deemed only (at the most) as a guidance to the CONTRACTOR for better organising his work on a recognition that the CONTRACTOR has failed to organise his work and/or to perform the same within the time specified in the Progress Schedule established within the

provisions of clause 4.3.2.0 or 4.3.3.0 hereof as the case may be.

4.4.0.0 **PRICE ADJUSTMENT FOR SLIPPAGE IN COMPLETION**

4.4.1.0 The Lumpsum Price specified in the Contract is based (i) On the Mechanical Completion of the Unit(s) by the CONTRACTOR; and (ii) On Mechanical Completion of the Unit(s) within the time for Mechanical Completion of the Unit(s) specified in the Time Schedule. The Lumpsum Price shall be subject to adjustment by way of discount as hereinafter specified, if the Unit(s) is/are not mechanically completed by the CONTRACTOR or if the Unit(s) is/are mechanically completed subsequent to the date of Mechanical Completion specified in the Time Schedule.

4.4.2.0 If Mechanical Completion of the Unit(s) is/are not achieved by the date of Mechanical Completion of the Unit(s) specified in the Time Schedule or if any works for which a separate Progress Schedule has been established is/are not achieved by the date of completion thereof specified in the relevant Progress Schedule (each of the said date(s) is hereinafter referred to as the "starting date for discount calculation"), the OWNER shall be entitled to a discount in the Lumpsum Price in a sum equivalent to the Lumpsum Price specified below for each week or part thereof that the work remains incomplete beyond the starting date for discount calculation, namely :

- (i) For Mechanical Completion of the Unit(s) or completion of the works, as the case may be, achieved within 1 (one) week of the starting date for discount calculation – $\frac{1}{8}$ % (one eighth percent) of the Lumpsum Price.
- (ii) For Mechanical Completion of the Unit(s) or completion of the works, as the case may be, achieved within 2 (two) weeks of the starting date for discount calculation – $\frac{1}{4}$ % (one quarter percent) of the Lumpsum Price.
- (iii) For Mechanical Completion of the Unit(s) or completion of the works, as the case may be, achieved within 3 (three) weeks of the starting date for discount calculation – $\frac{1}{2}$ % (one half percent) of the Lumpsum Price.
- (iv) For Mechanical Completion of the Unit(s) or completion of the works, as the case may be, achieved within 4 (four) weeks of the starting date for discount calculation – $\frac{3}{4}$ % (three fourth percent) of the Lumpsum Price.
- (v) For Mechanical Completion of the Unit(s) or completion of the works, as the case may be, achieved within 5 (five) weeks of the starting date for discount calculation – 1% (one percent) of the Lumpsum Price.
- (vi) For Mechanical Completion of the Unit(s) or completion of the works, as the case may be, achieved within 6 (six) weeks of the starting date for discount calculation – $1\frac{1}{2}$ % (One and one half percent) of the Lumpsum Price.
- (vii) For Mechanical Completion of the Unit(s) or completion of the works, as the case may be, achieved within 7 (seven) weeks of the starting date for discount calculation – 2% (two percent) of the Lumpsum Price.

- (viii) For Mechanical Completion of the Unit(s) or completion of the works, as the case may be, achieved within 8 (eight) weeks of the starting date for discount calculation – 2½ % (two and one half percent) of the Lumpsum Price.
- (ix) For Mechanical Completion of the Unit(s) or completion of the works, as the case may be, achieved within 9 (nine) weeks of the starting date for discount calculation – 3 % (three percent) of the Lumpsum Price.
- (x) For Mechanical Completion of the Unit(s) or completion of the works, as the case may be, achieved within 10 (ten) weeks of the starting date for discount calculation – 3½ % (three and one half percent) of the Lumpsum Price.
- (xi) For Mechanical Completion of the Unit(s) or completion of the works, as the case may be, achieved within 11 (eleven) weeks of the starting date for discount calculation – 4% (four percent) of the Lumpsum Price.
- (xii) For Mechanical Completion of the Unit(s) or completion of the works, as the case may be, achieved within 12 (twelve) weeks of the starting date for discount calculation – 4½ % (four and one half percent) of the Lumpsum Price.
- (xiii) For Mechanical Completion of the Unit(s) or completion of the works, as the case may be, achieved within 13 (thirteen) weeks of the starting date for discount calculation – 5% (five percent) of the Lumpsum Price.
- (xiv) The adjustment in the contract price hereunder by way of price discount shall in no event exceed 5% (five per cent) of the Total Contract Value.

4.4.2.1 The starting date for discount calculation shall be subject to variation upon extension of the date for Mechanical Completion of the Unit(s) or final completion of the works as the case may be by the Engineer-in-Charge under Clause 4.3.5.0 or by the OWNER under Clause 4.3.6.0, with a view that upon any such extension there shall be an equivalent extension in the starting date for discount calculation under Clause 4.4.2.0 hereof.

4.4.3.0 Application of price adjustment under clause 4.4.2.0 above shall be without prejudice to any other right of the OWNER, including the right of termination under Clause 7.0.1.0 and associated clauses thereunder.

4.4.4.0 Nothing in Clause 4.4.2.0 above shall prevent the OWNER from exercising its right of termination of Contract under Clause 7.0.1.0 hereof and associated clauses thereunder, and the OWNER shall be entitled, in the event of exercising its said right of termination after the last date for Mechanical Completion of the Unit(s) and/or for final completion of the works as the case may be, as specified in the Progress Schedule or any extension thereof, without prejudice to any other right or remedy available to the OWNER, to discount as aforesaid in the contractual price of services in addition to any amount as may be due consequent to a termination under Clause 7.0.1.0 hereof and associated clauses thereunder.

4.4.5.0 It is specifically acknowledged that the provisions of this Clause 4.4.0.0 and associated Clauses thereunder constitute purely a provision for price adjustment and/or fixation and are not to be understood or construed as a provision for liquidated damages or penalty under Clause 74 of the Indian

Contract Act or otherwise, and that the OWNER shall be entitled to damages or compensation, if any, for any breach or delay, independently of these provisions for price adjustment.

4.5.0.0 SCHEDULE OF ACTIVITIES

4.5.1.0 The CONTRACTOR shall within 28 (Twenty Eight) days from the date of issue of the Letter of Acceptance, furnish to the OWNER a detailed Schedule of Activities specifying in detail the various activities which the CONTRACTOR would be required to perform and the milestones with respect to each which the CONTRACTOR would have to achieve in order to set-up, complete, establish and successfully commission the UNIT/ works in accordance with the Contract.

4.5.2.0 Each activity entered in the Schedule of Activities and each milestone therein shall be priced so as to break-up so far as possible, the Lumpsum Price of services into various priced milestones of achievements and priced activities required to achieve those milestones. The Schedule of Activities and the said priced break-up of activities therein are intended only to provide a basis for the purpose of calculating on account payments for services and for calculating payments due to the CONTRACTOR under clause 2.7.4.0 hereof upon cancellation of Contract, and for no other purpose.

4.5.3.0 The prices in Schedule of Activities shall be in conformity with the price(s) quoted by the CONTRACTOR for the various activities and the Contractual provisions for on account payments.

4.5.4.0 The OWNER shall review or cause to be reviewed the prima facie adequacy, sufficiency, validity and/or suitability of the activities listed in the Schedule of Activities for the works for which they are intended, and of the prices indicated in the Schedule of Activities in respect thereof. Such review shall be performed in conjunction with the design, engineering, specification and other technical reviews to be done by the OWNER and all provisions applicable thereto shall be applicable to the review of the Schedule of Activities. OWNER shall approve or comment on such schedule of activities submitted by the CONTRACTOR within a period of 3 (Three) Weeks from the date of submission by CONTRACTOR.

4.5.5.0 The priced Schedule of Activities as approved by the OWNER shall constitute the Schedule of Activities envisaged in the contract documents. However, no such approval shall in any manner absolve the CONTRACTOR of his full responsibility under the contract to perform within the lump-sum price of services specified in the Price-Schedule, all services and to perform and undertake the work(s) required to set up, establish and commission the Unit in accordance with the Contract and the specification, complete in all respects, whether or not any particular work or activity required is included within the Schedule of Activities and whether or not the price thereof is included in the price indicated in the Schedule of Activities and whether or not the price thereof is in conformity with the price thereof indicated in the Schedule of Activities.

4.5.6.0 The Schedule of Activities shall be subject to amendment in both items and prices in so far as necessary consequent upon any amendment in any relevant related technical particulars or consequent upon a Change Order, and upon any amendment, the amended Schedule of Activities as approved by the OWNER shall thereafter constitute the Schedule of Activities as envisaged in the Contract Documents, provided that no such amendment shall by itself anyway oblige the OWNER to pay any amount in addition to the

Lumpsum Price of services as specified in the Price Schedule or oblige the OWNER to pay or bear any tax or duty which it would not have had to pay or bear but for such amendment.

4.6.0.0 REPORT AND RECORDS

4.6.1.0 The CONTRACTOR shall from time to time maintain at each job site (in addition to any records or registers required to be maintained by the CONTRACTOR under any law, rule or regulation having the force of law), such records and registers with respect to the materials and/or works as the Engineer-in-Charge or the OWNER shall require the CONTRACTOR to keep and/or maintain from time to time.

4.6.2.0 In addition to any other records or registers to be maintained by the CONTRACTOR from time to time and/or reports required to be furnished by the CONTRACTOR, the CONTRACTOR shall submit to the Engineer-in-Charge and to the OWNER a Daily Progress Report of all work done and/or progress achieved by the CONTRACTOR at each job site within the preceding day.

The said daily Progress Report shall also contain category-wise the labour and equipment deployed in the various activities during the previous day.

4.6.2.1 The CONTRACTOR shall also submit to the Engineer-in-Charge and to the OWNER at the end of each week (terminating on Sunday), a Progress Report of all work done and/or progress achieved by the CONTRACTOR at each job site within the preceding week. The Report shall also indicate the targets and the slippage (if any) in the achievement of targets, and the cause(s) for such slippage.

4.6.2.2 The CONTRACTOR shall also at the end of each English Calendar month submit to the Engineer-in-Charge and to the OWNER, a Progress Report of all work done and/or progress achieved by the CONTRACTOR at each job site within preceding month. Such Report shall also indicate the slippages of any achievement in the targets upto the previous month and the steps being taken and to be taken to catch up and the catch up plan of the CONTRACTOR relative thereto. The said Report shall also indicate in a separate statement, the equipment(s) received at the job site during the previous month, the date of receipt of each equipment at site and whether the equipments have been erected or deployed or not.

4.6.3.0 The failure by the CONTRACTOR to submit the reports as specified in Clause 4.6.2.0, 4.6.2.1 and/or 4.6.2.2 shall:

- (i) disentitled the CONTRACTOR from submitting any Running Account Bill or other Bill or Invoice for material or equipment or for work done until the CONTRACTOR shall have duly made up any shortfall in the compliance(s).
- (ii) constitute a breach of contract under Clause 7.0.1.0(i)(e) of the General Conditions of Contract.

4.6.4.0 The receipt and/or acceptance of any such report by the Engineer-in-Charge and/or the OWNER shall be without prejudice to the full rights and remedies of OWNER and obligations/liabilities of CONTRACTOR under the Contract, and shall not anyway operate as an estopped against OWNER by reason only of the fact that no notice or objection was taken of any information contained in any such report; nor shall any statement in any such report be deemed to be correct merely by virtue of the existence of such statement, and it being uncontroverted by the OWNER or the Engineer-in-Charge.

- 4.7.0.0 **QUALITY ASSURANCE/QUALITY CONTROL PROGRAMME**
- 4.7.1.0 The CONTRACTOR shall establish, document and maintain an effective Quality Assurance Programme conforming to ISO 9001. Within 28 days of the issue of the Letter of acceptance, a detailed Quality Assurance Programme conforming to the said specifications to be followed for the execution of the contract shall be submitted by the CONTRACTOR to the Engineer-in-Charge for approval.
- 4.7.2.0 The Quality Assurance Programme, plans and procedures shall be furnished in the form of a QA manual. This document should cover details of the personnel responsible for the quality assurance plan or procedures to be followed for quality control in respect of design, engineering, procurement, supply, work(s), fabrication, installation, testing and commissioning. The quality assurance system should indicate organisational approach for Quality Control and quality assurance of the construction activities, at all stages of work at site as well as at manufacturer's works and despatch of materials.
- 4.7.3.0 The Engineer-in-Charge shall review the Quality Assurance Programme within 3 (three) weeks of receipt.
- 4.7.4.0 The CONTRACTOR shall within the Scope of Supply, arrange for and carry out inspection activities in respect of imported equipment/ materials through an approved Third Party Inspection Agency. Third party inspection shall be carried out by TPI office of the country (ies) from where materials are being procured/ sourced. The Third Party shall within its scope of work, examine the existence, correctness and completeness of all test and other certificates and Reports required to be furnished under the approved Quality Assurance Procedure (QAP), the applicable codes and specifications and the contract documents.
- 4.7.5.0 Payments to be made to the Third Party Inspection Agency shall be the responsibility of the CONTRACTOR. The responsibility for ensuring inspection/ testing as per specifications, approved documents and agreed QAP and plans shall be that of the CONTRACTOR. Inspection activities of the Third Party Inspection Agency shall be coordinated by the Inspection Coordinator of the CONTRACTOR.
- 4.7.6.0 The CONTRACTOR shall ensure the following to maintain utmost quality in supply of equipment/ materials :
- (a) No supply will be accepted unless drawings (wherever required) are approved under Code-1.
 - (b) The Inspection Agency shall carry out inspection based on Code-1 approved drawings and approved QAP.
 - (c) The Inspection Release Note issued by the Inspection Agency shall clearly stipulate that materials/ equipment(s) has/have been inspected as per Code-1 approved drawings and approved QAP, and that the Certificate and Reports referred to in Clause 4.7.4.0 which have been examined by the Inspection Agency are correct and complete and have been signed by the Inspection Agency in token thereof. Payment shall be released only after receipt of the said Release Note from the Inspection Agency.
 - (d) No clearance shall be given to the CONTRACTOR for erection works or for installation of the equipment without receipt of the Inspection Release Note as indicated in para (c) above.

- (e) Pre-commissioning and commissioning of the plant and equipment and of the UNIT shall be undertaken only after complete satisfaction/ verification of supplies as per final approved drawings (Code-1) and QAP (Code-1).
- 4.7.7.0 The CONTRACTOR has to ensure the deployment of quality Assurance and Quality Control Engineer(s) depending upon the quantum of work. This QA/QC group shall be fully responsible to carry out the work as per standards and all code requirements. In case the Engineer-in-charge feels that QA/QC Engineer(s) of the CONTRACTOR or any of them are incompetent or that the designated Engineer(s) are insufficient, the CONTRACTOR shall deploy other experienced Engineer(s) to the satisfaction of Engineer-In-Charge.
- 4.7.8.0 If the CONTRACTOR fails to comply with the requirements of the QAP and the above provisions or to follow the instructions of Engineer-in-charge under Clause 4.7.7.0, the next payment due to him shall not be certified, or if already certified, shall not be released unless the CONTRACTOR complies therewith to the satisfaction of Engineer-in-charge.
- 4.7.9.0 If Third Party Inspection is specifically excluded from the CONTRACTOR's responsibility under the Contract, the inspection shall be carried out by the EIC or by any other Inspection Agency nominated by the OWNER, and Cl. 4.7.4.0, 4.7.5.0, 4.7.7.0 and 4.7.8.0 shall stand accordingly modified.
- 4.8.0.0 **EXECUTION OF THE WORK**
- 4.8.1.0 The CONTRACTOR shall provide sufficient labour, staff (qualified and unqualified), machinery, tools and equipment, material and things whatsoever necessary for the proper performance of the work and to ensure the rate of progress as envisaged in the Progress Schedule.
- 4.8.2.0 If in the opinion of the Engineer-in-Charge (the opinion of either of whom in this behalf shall be final), the work(s)/operation(s) at any job site or as a whole is/are not meeting the progress necessary to achieve the relative date of completion in the Progress Schedule, the Engineer-in-Charge may instruct the CONTRACTOR to employ/provide additional labour, staff, machinery, tools, equipment or material necessary to achieve the required progress and the CONTRACTOR shall forthwith comply with such instruction(s).
- 4.8.3.0 Should the CONTRACTOR fail to comply with such instruction(s) or fail to comply therewith to the satisfaction of the Engineer-in-Charge (whose opinion in this behalf shall be final and binding upon the CONTRACTOR), the Engineer-in-Charge may, at his discretion, at the risk and cost of CONTRACTOR, and after consulting the CONTRACTOR, appoint, procure or provide the material(s) and/or the additional labour/personnel and or equipment as the Engineer-in-Charge (whose decision in this behalf shall be final and binding upon the CONTRACTOR) considers necessary to achieve the necessary progress in relation to any particular work/operation or the work as a whole, or may appoint subcontractor(s) for the performance of any particular work or operation and/or for the supply of any requisite material. In so doing, the Engineer-in-Charge shall be deemed to be acting for and on behalf of and as agent of the CONTRACTOR and any such appointment(s), procurement or provision shall be deemed to have been made by the CONTRACTOR and shall be paid for by the CONTRACTOR and/or out of any monies payable to the CONTRACTOR. The OWNER shall also be entitled in this event to 15% (Fifteen Percent) as supervision charges on the total cost of such appointment(s), procurement(s) and/or provision(s), and the OWNER shall be entitled (without prejudice to any other mode of recovery) to deduct

the same from the running account/final bills of the CONTRACTOR or any amount howsoever becoming payable to the CONTRACTOR from time to time and the decision of the Engineer-in-Charge as to the cost incurred in this behalf shall be final and binding upon the CONTRACTOR.

- 4.8.4.0 Should the Engineer-in-Charge at any stage (notwithstanding that the time for completion of the relative work or item of work as specified in the Progress Schedule has not expired) be of the opinion (the opinion of the Engineer-in-Charge in this behalf being final) that the performance of any work or item of work by the CONTRACTOR is unsatisfactory (whether in the rate of progress, the manner, quality or workmanship of the performance or in the adherence to specifications, or in the omission, neglect or failure to do, perform, complete or finish any works or item, or for any other cause whatsoever), the Engineer-in-Charge shall be entitled (without prejudice to any other rights of the OWNER and/or obligations of the CONTRACTOR under the Contract) at his discretion and after consulting the CONTRACTOR at the risk and cost of the CONTRACTOR either to appoint, procure and/or provide such labour, staff, machinery, tools, materials etc. as the Engineer-in-Charge (whose decision shall be final and binding upon the CONTRACTOR) considers necessary to achieve satisfaction in relation to the particular work, operation or item or work, or the work as a whole, as the case may be, or to appoint one or more subcontractors for the satisfactory performance thereof or any part thereof, or to undertake the performance thereof or any part thereof departmentally, and the provisions of clause 4.8.3.0 hereof shall mutates mutandis apply to any action taken by the Engineer-in-Charge pursuant to this clause in the same manner as applicable to an action taken under the said clause.
- 4.8.4.1 After and so far as the performance of any work or supply of any materials under Clause 4.8.3.0 or under Clause 4.8.4.0 shall involve payment of any advance(s) or down payment(s) or any other payment in advance of the payments for relative works or supplies to the CONTRACTOR, such payment(s) shall be funded out of the amounts payable or becoming payable on the Running Account Bills or other Bills of the CONTRACTOR and/or out of any Bank Guarantees to secure advance(s) or otherwise held by the OWNER pursuant to this contract.
- 4.8.5.0 Any action, taken by the Engineer-in-Charge under clause 4.8.3.0 and/or 4.8.4.0 shall be without prejudice to the full liability of the CONTRACTOR under the Contract including but not limited to the OWNER'S full rights under clauses 4.4.0.0 and associated clauses thereunder, and under clauses 7.0.7.0 and 7.0.8.0 hereof.
- 4.8.6.0 During the progress of the works, the CONTRACTOR shall keep the site reasonably free from all unnecessary obstruction and shall store or dispose of any constructional plant and surplus materials and clear away and remove from the site, any wreckage, rubbish or temporary works no longer required. Disposal of surplus materials shall be in accordance with the instructions of the Engineer-in-Charge.
- 4.9.0.0 **SUB-CONTRACTS**
- 4.9.1.0 The CONTRACTOR shall not assign, sub-contract or subject the whole or any part of the work in any manner to any third party lien, right or interest, provided that the CONTRACTOR may, with the prior written approval of Engineer-in-Charge and subject to the other provisions in this behalf, sub contract any particular work or part of the work to a subcontractor approved by the Engineer-in-Charge.

- 4.9.2.0 Each Sub-Contractor shall be covered by the contract on the same basis as the CONTRACTOR, provided, however, that notwithstanding approval of the Sub-Contract as aforesaid and notwithstanding that the OWNER/Engineer-in-Charge shall have received a copy of the Contract between CONTRACTOR and Sub-Contractor, the CONTRACTOR shall be and shall remain exclusively responsible to the OWNER, for which purposes the Sub-Contractor shall, vis-a-vis the OWNER, be deemed to be the servant/agent of CONTRACTOR employed for the performance of the particular work with full responsibility on CONTRACTOR for all acts, omissions and defaults of the Sub-Contractor.
- 4.9.3.0 Subject as herein above in this behalf specifically permitted and provided, the CONTRACTOR shall not sub-contract or assign any work under the Contract, and any sub-contract in breach hereof shall be deemed to be an assignment of the Contract or part or portion thereof sub-contracted, as the case may be.
- 4.9.4.0 If any sub-contractor engaged upon the work at the site executes any work which in the opinion of the Engineer-in-Charge is not of the requisite standard (the opinion of the Engineer-in-Charge being final in this behalf), the Engineer-in-Charge may after consulting the CONTRACTOR, by written notice to the CONTRACTOR require the CONTRACTOR to terminate such sub-contract, and the CONTRACTOR shall upon the receipt of such notice, terminate such sub-contract at the risks and cost of the CONTRACTOR, and shall keep OWNER indemnified against the consequences.
- 4.9.5.0 Notwithstanding such sub-contract being approved by Engineer-in Charge as herein envisaged, the CONTRACTOR shall, at the commencement of every month, furnish the Engineer-in-Charge with a list of all sub-contractors engaged and working at the site during the previous month, with particulars of the general nature of the works performed by them.
- 4.9.6.0 **SUB-CONTRACTOR FOR CONSTRUCTION WORKS**
- 4.9.6.1 Following the issue of the Letter of Acceptance, the CONTRACTOR will submit to the OWNER and Engineer-in-Charge for approval the details of sub-Contractors for construction in the Format prescribed by the OWNER for the purpose. The CONTRACTOR shall ensure that only competent and resourceful agencies with proven track record and performance should be proposed for the work to be sub-contracted.
- 4.9.6.2 The list of construction sub-contractors proposed by the Bidders in the Bid shall be considered as indicative only.
- 4.9.6.3 A minimum of the following construction activities shall be performed by the CONTRACTOR directly and shall not be sub-contracted:
- (i) Total Project Management
 - (ii) Planning, Scheduling, Monitoring
 - (iii) Procurement: (except for procurement of Cement, Steel and aggregate)
 - (iv) Quality Assurance
 - (v) Construction Management
 - (vi) Mechanical Completion, Pre-commissioning, Start up and Commissioning
- 4.9.6.4 Additionally, the CONTRACTOR must deploy its own manpower for planning, supervision and quality of works at site including Project Manager(s), Quality Control Engineer(s) for various disciplines, Planning Engineer(s) and front line supervisors for Civil, Electrical, Mechanical, Piping and Instrumentation jobs. Sub-contracting of these activities shall not be permitted under any circumstances.

4.9.7.0 **ENGINEERING SUB-CONTRACTOR**

4.9.7.1 The CONTRACTOR shall carry out residual process design and detailed engineering activities either himself and/or if so permissible in terms of the tender/ bid documents, through an approved engineering sub-contractor having the requisite experience and qualifications.

4.9.7.2 The CONTRACTOR or Engineering sub-contractor executing residual process design and detailed engineering shall follow inter alia the methodology mentioned below:

- a) Residual Process Design and detailed Engineering shall be done by the CONTRACTOR or specified Engineering Subcontractor identified by the CONTRACTOR in his Bid and approved by the OWNER. No other or further subcontracting shall be permitted.
- b) The Residual process Design and detailed Engineering shall be carried out at the Principal International Design Office of the CONTRACTOR/ Engineering Subcontractor, as the case may be, with adequate strength of technical personnel and support design aids.
- c) The CONTRACTOR/ Engineering Subcontractor shall extensively use latest design software including 3D Modeling with PDS/PDMS software.
- d) In the case of Residual Design Engineering and/or Detailed Engineering being done by engineering subcontractor, the CONTRACTOR shall locate its Lead Engineers of the respective disciplines viz CIVIL, STRUCTURAL, PRESSURE VESSELS, STATIC & ROTATING EQUIPMENT, PIPING, ELECTRICAL and INSTRUMENTATION at the design Centre (office) of the engineering subcontractor to control, monitor and approve the engineering design work/deliverables of the engineering subcontractor prior to their issue for Review or Construction, as applicable. Such placement shall be a pre-condition for the issue of any drawings for review or construction, to which end the CONTRACTOR shall keep the OWNER informed of such deployment with particulars of the Lead Engineers deployed, and the relevant dates of their deployment, and all drawings issued for review or construction shall be countersigned by the concerned Lead Engineer. All interactions on Design / Review / Discussions with OWNER / OWNER's representative shall be done under single point responsibility of the CONTRACTOR.
- e) After start of construction work, the CONTRACTOR and/or its engineering subcontractor, as the case may be, shall position at work site a field engineering team essentially consisting of General Civil, Piping and Structures initially and followed by Electrical and Instrumentation who have been involved in carrying out the design at the design centre in order to closely co-ordinate with site construction group to resolve any issues related to design/construction and provide additional drawings/documents as required. Other specialists as required shall also be deployed. The field engineering team shall be equipped with all their design aids (both hardware and software) and with effective communication network facilities with their Principal International Design Office.

4.10.0.0 **RELATIONSHIP WITH CONSORTIA**

- 4.10.1.0 Where the CONTRACTOR is a consortium, the members of the consortium shall nominate or appoint one amongst them to be the consortium leader and to represent them in all dealings with the OWNER and to do all acts, deeds, matters and things required to be done by the CONTRACTOR under the contract, including (but not limited to) exchange of correspondence, raising invoices, drawings, documents and receiving payments. Failing such nomination or appointment, the OWNER shall be entitled at its discretion to nominate any one member of consortium to be the consortium leader and to represent the CONTRACTOR and/or to deal with the OWNER. The Consortium leader must be a person/entity who satisfies the qualification criterion for bidding.
- 4.10.1.1 All dealings had with and/or all acts, deeds, matters and things done by or payments made to and invoices/documents drawn and/or negotiated by a person/entity appointed or nominated by the consortium or the OWNER as aforesaid shall be binding upon the CONTRACTOR and each member of the consortium, and in so far as the OWNER shall require a discharge in respect of any dealing had or act, deed, matter or thing done or payment made as aforesaid, the same shall constitute a valid discharge to the OWNER.
- 4.10.2.0 Each and every member of the consortium shall be jointly and severally liable to the OWNER for and in respect of all liabilities and obligations of the CONTRACTOR under the Contract.
- 4.10.3.0 The constitution of the consortium or the relative distribution of work(s) and/or activities amongst the consortium members within the relative expertise of each as approved by the OWNER shall not be altered or assigned, as the case may be, except with the prior written consent of the OWNER with the intent that any contrary alteration or assignment shall be deemed to be an unauthorised assignment of contract with attendant liabilities including termination of contract.
- 4.11.0.0 **MISCONDUCT**
- 4.11.1.0 If and whenever any of the CONTRACTOR's or Sub-contractor's agents, sub-agents, assigns, consultants or employees shall in the opinion of the Engineer-in-Charge (whose opinion in this behalf shall be final), be guilty of misconduct or be incompetent or indifferently qualified or negligent in the performance of his/their duties, or if in the opinion of the Engineer-in-Charge (which shall be final), it is undesirable for any reason (which need not be disclosed to the CONTRACTOR) for such person(s) to be employed in the works, the CONTRACTOR, if so directed by the Engineer-in-Charge, shall forthwith remove or cause to be removed such person(s) from employment thereon, and any person(s) so removed shall not be re-employed in the works except with the prior permission in writing of the Engineer-in-Charge. Should the CONTRACTOR be requested to repatriate any person removed from the works, the CONTRACTOR shall do so forthwith at his own cost. Any person(s) so removed from the works shall be immediately replaced at the expense of CONTRACTOR by a qualified and competent substitute.
- 4.11.2.0 The CONTRACTOR shall keep the OWNER indemnified from and against all personal and third party claims whatsoever (inclusive of all costs incurred between attorney and client) arising out of any act or omission on part the of any sub-contractor or agent, sub-agent, consultant or employee of the CONTRACTOR or any Sub-contractor, whether committed, omitted or arising within or without the scope of the contract, sub-contract, agency or employment, as the case may be.

SECTION – 5

INSPECTION AND TESTING

5.0.0.0 INSPECTION AND TESTING OF MATERIALS

- 5.0.1.0 All materials to be supplied by the CONTRACTOR within the scope of supply shall each be individually inspected, tested and analysed in terms of the specifications, applicable codes and the relevant practices specified therein or elsewhere in the contract document by expression or implication.
- 5.0.1.1 Inspection, tests and analysis shall be carried out in so far as possible, at the place of manufacture, production or fabrication of the materials, at the cost of the CONTRACTOR/manufacturer.
- 5.0.1.2 In each and every instance, the CONTRACTOR shall give the OWNER and its specified representatives, adequate advance (minimum 15 days) notification of the schedule of inspection or test so that the OWNER/its representative may witness the same. The CONTRACTOR shall afford the OWNER/its authorised representatives, access to any and all parts of manufacturer's facilities or other places where manufacture, production or fabrication is being done, of any material intended for supply within the scope of supply.
- 5.0.1.3 The OWNER shall be entitled at all times whether prior to despatch of stores, by itself and/or through inspectors appointed by the OWNER to inspect, test and/or analyse and/or to direct the manufacturers to inspect, test and/or analyse, any materials used or proposed to be used in the manufacture, production or fabrication of any material to be supplied by the CONTRACTOR within the scope of supply. The said inspection, test and analysis as far as required, shall be conducted in the presence of the inspector. The manufacturer shall ensure that the inspecting personnel referred to above are given free access to all the required places and information connected with their work, besides working facilities to carry out their functions. The said inspection, test and analysis shall be so conducted as not to interfere with the manufacturer's normal production.
- 5.0.1.4 The OWNER shall be entitled at any time at the risk of the CONTRACTOR to inspect and/or test by itself or through any independent person(s) or agency(ies) appointed by the OWNER any materials, items and components whatsoever supplied or proposed to be supplied for incorporation in the works.
- 5.0.1.5 Further, the OWNER may, if so considers necessary for reasons to be recorded in writing, direct the CONTRACTOR to conduct such inspection or tests in addition to the inspection/ tests specified in the Contract or the applicable codes, standards and/or practices. The inspection and/or tests, if conducted by the CONTRACTOR, shall be conducted at the expense of CONTRACTOR and may be directed by the OWNER to be conducted by agency(ies) nominated by the OWNER. Such tests may include destructive and/or non-destructive tests by ultrasonic, electromagnetic, radiological, visual and other means.
- 5.0.1.6 Where the manufacture or fabrication of any materials intended for incorporation in the works is being done by any person(s) other than the CONTRACTOR, and/or in the premises/workshop of any person other than

the CONTRACTOR, the CONTRACTOR shall procure and arrange for the inspection or testing and/or analysis thereof by such other person(s) and shall provide the OWNER and/or its authorised representative(s) every facility and assistance necessary for the inspection and/or testing thereof.

- 5.0.1.7 The CONTRACTOR shall also, on receipt of intimation or any communication of any inspection or tests by the OWNER or any agencies nominated by the OWNER in this behalf, present himself or his authorised representative(s) at the place of inspection and/or testing to receive any orders or instructions consequent thereto, as shall be necessary.
- 5.0.1.8 The CONTRACTOR shall furnish to the OWNER and/or agency specified by the OWNER for the purpose of inspection or approval when requested, or as required by the inspection or other contract documents, adequate samples of all materials and finishes intended for incorporation in the works. Such samples shall be submitted before the work is commenced, permitting sufficient time for tests/examination(s) thereof by the OWNER. All materials furnished and finishes incorporated in the work shall conform to the approved sample(s) in all respects.
- 5.0.1.9 The CONTRACTOR/manufacturers including their authorised Sub-contractors/ Suppliers shall make available to the OWNER and any other individual/agency authorised by the OWNER, for the purpose of inspection, all its records and results in respect of inspection, test and analysis conducted by it as part of their manufacturing and testing operations under the applicable codes and practices.
- 5.0.2.0 Should the manufacturers fail to comply with any of the provisions aforesaid relating to inspection, testing and/or analysis, the OWNER shall be entitled by itself and/or through inspector to conduct the inspection, test and/or analysis at the risk and expense of the manufacturer/CONTRACTOR in all respects.
- 5.0.2.1 No rejected material, component or sub-assembly shall be used or reused for manufacture, production or fabrication of any material(s) intended for permanent incorporation in the works.
- 5.0.3.0 Unless otherwise specifically authorised by the OWNER in writing, the supplier shall not ship or dispatch for shipment, within the scope of supply, any store(s) which have not been priorly inspected, tested and/or analysed as herein contemplated and in respect of which a certificate of quality has not been issued or signed by the inspectors.
- 5.0.4.0 If the rejection rates at the OWNER'S inspection for defects exceeds 5% (Five percent), the OWNER shall be entitled to halt production until the cause thereof is rectified, without any liability to the OWNER and without in any manner relieving the CONTRACTOR of its full liabilities under the Contract.
- 5.0.5.0 The Engineer-in-Charge shall be entitled for reasons to be recorded in writing to reject at any time even after delivery to the job site any defective materials (including specially manufactured or fabricated items and components) supplied by the CONTRACTOR for incorporation in the works, notwithstanding previous inspection and/or testing thereof by or on behalf of the OWNER without rejection or previous approval thereof by or on behalf of the OWNER and upon such rejection the CONTRACTOR shall either perform such work or improvement thereon or in respect thereof as shall be necessary to bring the material, item or component to the requisite standard, or shall if

so required by the Engineer-in-Charge (whose decision in his behalf shall be final), remove the rejected material/item/component from the job site within the time specified by the Engineer-in-Charge and replace it at his own cost and expense (without additional remuneration or compensation in respect thereof) with material (s)/item(s)/component(s) approved by the Engineer-in-Charge.

- 5.0.6.0 Should the CONTRACTOR commit a breach of its obligations under Clauses 5.0.2.1 or Clause 5.0.3.0 or Clause 5.0.5.0 hereof, the CONTRACTOR shall be deemed to be in breach of contract within the provisions of Clause 7.0.1.0 hereof with regard to termination of Contract, and the provisions of the said Clause and associated provisions thereunder shall apply to such breach.
- 5.0.7.0 Notwithstanding anything provided in the foregoing clauses hereof and notwithstanding that the OWNER and/or its representative or any agency appointed by the OWNER has inspected, tested and/or approved any raw material intended to be incorporated in any material(s) to be supplied pursuant to the Scope of Supply and/or has inspected, tested and/or approved any such material(s), the CONTRACTOR shall be and remain fully responsible under the Contract for and in relation to specification fulfillments and performance guarantees. The said inspection, tests and related procedures are intended only for the OWNER'S satisfaction that prima facie the raw material and/or material(s), as the case may be, intended for incorporation and/or supply under the Contract, are in order.
- 5.1.0.0 **INSPECTION AND TESTING OF WORKS**
- 5.1.1.0 The CONTRACTOR shall at all times ensure highest standards of workmanship relative to the work to the satisfaction of the Engineer-in-Charge. The Engineer-in-Charge shall have the power to inspect or cause to be inspected the works in all respects at any and all times up to completion of the works, as also, to test or to instruct the CONTRACTOR to test the works or any structure, material or component thereof at the risk and cost of the CONTRACTOR, either by the CONTRACTOR or by any agency(ies) nominated by the Engineer-in-Charge in this behalf.
- 5.1.1.1 The CONTRACTOR shall provide all facilities, instruments, material, labour and equipment required for testing the work (including checking the setting out of the works) and shall afford the Engineer-in-Charge all assistance necessary to conduct or have conducted the inspection and tests.
- 5.1.1.2 The CONTRACTOR shall also provide and keep at all times during the progress of the work and maintenance period, proper means of access to the works and every part thereof by means of ladders, gangways etc. and the necessary attendants to move and set up the same as directed by the Engineer-in-Charge for inspection or measurement of the works.
- 5.1.2.0 On no account shall the CONTRACTOR proceed with cover up or otherwise place beyond reach of inspection, test or measurement any work before necessary inspection entries are filled in the Site Inspection Register by the Engineer-in-Charge or his authorised representative unless OWNER has been permitted sufficient time for test/examination(s) in accordance with foregoing provisions hereof. Should the CONTRACTOR do so, the same shall be uncovered at CONTRACTOR'S risk and expense for carrying out of the inspection, test and/or measurement.

- 5.1.3.0 Should the CONTRACTOR fail to comply with any provisions foregoing relative to inspection and/or testing of the works, the Engineer-in-Charge shall in his absolute discretion be entitled to remove, dismantle and/or uncover, as the case may be, at the risk and cost of the CONTRACTOR, such cover-up thereof installed, erected or put up by the CONTRACTOR and to conduct or have conducted the test(s) and/or examination at the risk and cost of the CONTRACTOR. In such event the CONTRACTOR shall also bear the risk and cost of the replacement, reinstallation or re-erection of the concerned work(s) or part thereof, as case may be.
- 5.1.4.0 Notwithstanding anything provided in the foregoing clauses hereof, the CONTRACTOR shall be and remain liable at his own cost and initiative to conduct all tests at all relevant times during performance, erection and installation of any work(s), as shall be required in terms of the contract documents or the codes, standards or practices referred to therein, or as reasonably required by the Engineer-in-Charge, such tests to be conducted through agency(ies) or Laboratory(ies) specified or approved by the Engineer-in-Charge in this behalf.
- 5.1.5.0 Should the Engineer-in-Charge on inspection or test be not satisfied with the quality or workmanship of any work(s), or any part thereof (the decision of the Engineer-in-Charge being final in this behalf), the CONTRACTOR shall re-perform, replace, re-install and/or re- erect, as the case may be, such work(s) or part as the case may be and no such rejected work(s) or part shall be used or reused with reference to the works except with the prior permission of the Engineer-in-Charge and the provisions of Clause 5.1.7.0 hereof shall apply to default by the CONTRACTOR of the provisions of this clause.
- 5.1.6.0 Notwithstanding anything provided on foregoing clauses hereof and notwithstanding that the Engineer-in-Charge and/or his representative has inspected, tested and/or approved any particular work(s) or structure or part thereof, such inspection, test or approval shall not absolve CONTRACTOR of his full responsibility under the contract inclusive of and relative to specification fulfillments and performance guarantees. The said inspection and test procedure is intended basically to satisfy the OWNER that prima facie the work(s) done and/or structure or system installed is/are in order.
- 5.1.7.0 Should the CONTRACTOR fail to re-perform, replace, reinstall and/or re-erect, as the case may be, any work(s) or structure, or part thereof rejected or found defective in terms of clause 5.1.5.0 hereof within such period as the OWNER or Engineer-in-Charge may specify by written notice to the CONTRACTOR in this behalf, without prejudice to the rights of the Engineer-in-Charge under Clause 4.8.3.0 and Clause 4.8.4.0 thereof, the CONTRACTOR shall be deemed to be in breach of contract within the provisions of clause 7.0.1.0 hereof with regard to termination of Contract and the provision of the said clause and associated provisions thereunder shall apply to such breach, and the OWNER shall be entitled (without prejudice to any other right or remedy available to the OWNER) upon expiry of the period specified in said notice, to demolish and/or remove the rejected/defective work(s) and/or structure, or part thereof and to re-perform, replace, re-install and/or re-erect, as the case may be, the same by itself or through other agency or CONTRACTOR at the risks and cost of the CONTRACTOR in all respects, and to recover the costs incurred by the OWNER in this behalf together with a supervision charge of 15% (Fifteen percent) thereon admissible to the OWNER, and the OWNER shall be entitled (without

prejudice to any other mode of recovery) to deduct the same from the Running Account/ Final Bill(s) of the CONTRACTOR or any monies becoming due to the CONTRACTOR from time to time and the decision of the Engineer-in-charge as to the cost incurred by the OWNER as aforesaid shall be final and binding upon the CONTRACTOR.

5.2.0.0 TESTS, COMMISSIONING AND POSSESSION OF WORKS

- 5.2.1.0 As soon as the works at any Site have been completed in all respects to the satisfaction of the Engineer-in-Charge, and prior to the start-up of the UNIT, Final Tests of the different equipments, sub-systems, and systems comprised in the works/UNIT shall be undertaken by the CONTRACTOR at the risks and costs of the CONTRACTOR in the presence of the Engineer-in-Charge or his authorised representative. The OWNER may at its discretion permit Final Tests, piece-meal in respect of particular part(s) or section(s) or group(s) of the works.
- 5.2.1.1 As soon as all the Final Tests have been completed in all respects to the satisfaction of the Engineer-in-Charge, pre-commissioning & start up of the complete system, plant(s), equipment(s), vessels and machinery, and associated systems or the UNIT, as the case may be shall be undertaken by the CONTRACTOR at the risk and cost of the CONTRACTOR under the overall supervision of the Engineer-in-Charge or his authorised representative and/or of the Process Licensor.
- 5.2.1.2 Upon satisfactory completion of the Final Tests in respect of all plant, machinery, equipment, sub-systems and systems constituting the works/UNIT and Mechanical Completion of the UNIT to the satisfaction of the OWNER, the Engineer-in-Charge shall prepare a Final Test Certificate or Mechanical Completion Certificate which shall certify the date on which Final Tests in respect of various plant, machines, equipment, sub-systems and systems have been successfully completed and the date of Mechanical Completion of the UNIT.
- 5.2.1.3 Following Mechanical Completion of the UNIT to the satisfaction of the OWNER the CONTRACTOR shall, as soon as feasible, commission the UNIT insofar as the Scope of Contract comprises of a UNIT, in accordance with the contractual requirements.
- 5.2.1.4 Once the UNIT has been successfully commissioned to the satisfaction of OWNER, Engineer-In-Charge shall issue a Commissioning Certificate to CONTRACTOR which will set out the date of successful commissioning of the UNIT solely in order to facilitate the CONTRACTOR to claim the milestone payment against Commissioning and to fix the Defect Liability Period. The issue of the Commissioning Certificate to CONTRACTOR shall not, however relieve the CONTRACTOR of any obligations, which CONTRACTOR has to perform until issue of the Commissioning and Performance Test Certificate as per the Contract. Subsequent to successful commissioning of the UNIT, and after the operation of the UNIT has been stabilized, the CONTRACTOR shall undertake Performance Tests for the UNIT to establish that the UNIT performs according to the contractual requirements. Such Performance Tests will be undertaken by the CONTRACTOR at the risks and costs of the CONTRACTOR under the overall supervision of the Engineer-in-Charge or his authorized representative and/or of the Process Licensor.
- 5.2.1.5 On successful completion of the Performance Tests to the satisfaction of the OWNER, the Engineer-in-Charge shall issue a Commissioning and

Performance Test Certificate to the CONTRACTOR, which will set out the date of successful commissioning of the UNIT and the date of successful completion of the Performance Tests.

- 5.2.2.0 If within the scope of work, the Contractor is required to load the Catalyst into the UNIT, such loading shall include within its scope the handling and removal of the catalyst from the OWNER's godown or warehouse where the Catalyst is stored, its transportation to the job site, opening of packing or containers in which the catalyst is loaded, loading of the catalyst in accordance with the specifications and/or instructions of the Licensor and/or the Engineer-in-Charge, and return of empties to the OWNER's designated warehouse. Loading of the catalyst shall be an activity excluded from the scope of Mechanical Completion.
- 5.2.3.0 As and from the date of issue of Commissioning and Performance Test Certificate, the OWNER shall be deemed to have taken over the work(s) as mentioned in the Commissioning and Performance Test Certificate but without prejudice to CONTRACTOR's liability under clause 5.3.4.0 hereof. In respect of works which are not required to be commissioned by the CONTRACTOR, the OWNER shall be deemed to have taken over the works as and from the date of successful completion of the final tests and stated in the Final Test Certificate, but without prejudice to the CONTRACTOR's liability under Clause 5.3.4.0 hereof.
- 5.2.4.0 If during Final Tests and/or pre-commissioning, start up, commissioning and/or Performance Tests or at any time prior thereto, any defect(s) in the design or in any work performed or structure erected or component installed or in any installation or erection(s) or material(s) incorporated in the works is/are noticed, the CONTRACTOR shall forthwith within the scope of the work remove and/or demolish the same and re-perform, replace, re-install and re-erect the same and otherwise do and provide whatever is necessary to be done to correct, repair and/or rectify the defect(s) to the satisfaction of the Engineer-in-Charge, and if the defect(s) be discovered during Final Tests or commissioning or Performance Tests, the CONTRACTOR shall thereafter repeat the Final Tests or commissioning or Performance Tests or such of them as may be required to be repeated, and so on until successful conclusion of Final Tests, commissioning of the total system without defect, and/or successful completion of the Performance Tests. Any and all lubricants, consumables and spares required for commissioning the UNIT and to undertake the Performance Tests shall be provided by the CONTRACTOR within the scope of supply.
- 5.2.4.1 Should the CONTRACTOR fail to correct, repair or rectify any defects as aforesaid, the provision of Clause 5.1.7.0 hereof shall mutatis mutandis apply as for defects under Clause 5.1.5.0.
- 5.2.5.0 Notwithstanding anything provided in Clause 5.2.3.0, Clause 5.2.4.0 and Clause 5.2.4.1 hereof, the OWNER shall be entitled without prejudice to any other rights of the OWNER or liabilities of the CONTRACTOR under the foregoing provisions hereof or otherwise under the Contract, including the rights of the OWNER under clause 4.4.0.0 hereof and associated clause thereunder and clause 7.0.1.0 hereof and associated clauses thereunder :
- i) If by reason of any default on the part of the CONTRACTOR a Commissioning and Performance Test Certificate has not been issued in respect of the entire works within 28 (Twenty Eight) days after the

date fixed for completion of the entire works in the Progress Schedule(s), to take over and use any portion of works in respect of which Commissioning and Performance Test Certificate has not been issued, with or without affording the CONTRACTOR further opportunity for completing the work for issue of the Commissioning and Performance Test Certificate.

- ii) At any time during the progress of the works, notwithstanding that time for the completion of the entire works or concerned part, portion or section thereof according to the Progress Schedule(s) shall not have expired, to take over and/or use for any purpose the incomplete or partially completed works/UNIT or any part or portion or section thereof, as the case may be, and give the CONTRACTOR an opportunity for completing the work or relative part or portion or section thereof, as the case maybe, within the time for completion permitted therefor under the Progress Schedule and if in the opinion of the CONTRACTOR, such taking over and/or use shall require an extension of time for completion, the provision of Clause 4.3.5.0 hereof and associated clauses thereunder relating to extension of time shall apply.

Provided always that take over, possession or use of the works/UNIT or any part or portion or section thereof by the OWNER within the provisions of item (i) and/or item (ii) above shall not be deemed to be an acceptance of work or relative part or portion or section thereof by the OWNER or relieve the CONTRACTOR of his full obligations in respect thereof under the Contract.

- 5.2.6.0 The CONTRACTOR shall be deemed to have successfully commissioned the UNIT contracted for when the following conditions are satisfied :
- (i) The UNIT and all its components/facilities have been successfully tested after installation at site individually and as a whole and Final Test Certificate shall have been issued in respect thereof.
 - (ii) The UNIT is successfully commissioned by continuous and stabilised operation up to full capacity for a continuous period of not less than 7 (seven) days.
 - (iii) The Performance Tests for the UNIT shall have been successfully completed.
 - (iv) The Engineer-in-Charge shall have issued a Commissioning and Performance Test Certificate in respect of the UNIT.

5.3.0.0 **COMPLETION CERTIFICATE**

- 5.3.1.0 After the final tests have been successfully completed in respect of all the works envisaged in the contract, or after the UNIT has been Mechanically completed, as the case may be, the CONTRACTOR shall clear the job site of all scaffolding, wiring, pipes, surplus materials, CONTRACTOR's labour, equipment and machinery and shall demolish, dismantle and remove all CONTRACTOR's site offices and quarters and other temporary works, structure and constructions and other items and things whatsoever brought upon or erected at the job site or on any land allotted to the CONTRACTOR by the OWNER and not incorporated in the permanent works and shall remove all rubbish from the job site and the land allotted to the CONTRACTOR and shall clear, level and dress the job site and said land to the satisfaction of the Engineer-in-Charge and shall put the OWNER in undisputed custody and possession of the job site and all land allotted by the

OWNER to the CONTRACTOR and unless the CONTRACTOR shall have fulfilled the provisions of the clause, the works shall not be deemed to have been completed.

5.3.2.0

Upon the satisfactory fulfillment by the CONTRACTOR of the provisions of Clause 5.3.1.0 hereof and the issue of Final Test Certificate by the Engineer-in-Charge, the CONTRACTOR shall be entitled to apply to the Engineer-in-Charge, for a Completion Certificate in respect of the entire work or work at any job site, as the case may be, upon submission of the following documents:

- i) The Technical Documents according to which the work was carried out.
- ii) Complete set of working drawings showing therein corrections and modifications (if any) made during the course of execution of the works, signed by the Engineer-in-Charge.
- iii) Statement of final levels as set for various works, signed by the Engineer-in-Charge.
- iv) Final Test Certificate issued by the Engineer-in-Charge (if commissioning is not within the CONTRACTOR's scope of the work with respect to which the Final Test Certificate has been issued) and Commissioning Certificate (if Performance Tests are not within the CONTRACTOR's scope of work) and Commissioning and Performance Test Certificate (if Performance Tests are within the CONTRACTOR's scope of work) issued by the Engineer-in-Charge.
- v) Confirmation of Engineer-in-Charge of satisfactory fulfillment of the provisions of the Clause 5.3.1.0 hereof.
- vi) Item-wise list of surplus materials including the quantity & estimated value of each surplus item (out of the materials issued by the OWNER or brought at site by the CONTRACTOR) returned to the OWNER's Store or otherwise disposed of, duly signed by the Engineer-in-Charge.
- vii) Materials-at-site accounting for OWNER-supplied materials, signed by the Engineer-in-Charge.
- viii) Discharge in respect of OWNER-supplied equipment and machinery, signed by the Engineer-in-Charge;
- ix) Declaration by the CONTRACTOR that he has duly cleared any and all of the dues payable by him to his Labour/Piece rate workers (PRWs), Sub-Contractors, Suppliers, Vendors, Income Tax, Sales Tax, Octroi and Service Tax, Excise and Customs, Provident fund, ESI and royalties, if any; and
- (x) Proof of payment in full of the cess payable under the Building and other Construction Workers' Welfare Cess Act, 1996.

5.3.3.0 If the Engineer-in-Charge is satisfied of the completeness in all respects of all documents specified in Clause 5.3.2.0 and of proper reconciliation and accounting of all materials the Engineer-in-Charge shall, within 1 (One) month of receipt of the application for the Completion Certificate, issue a Completion Certificate in respect of the works for which the Completion Certificate has been applied. If the CONTRACTOR cannot produce to the satisfaction of the Engineer-in-Charge, the statement of reconciliation or other explanation of issues, utilisation and balance of materials, the Engineer-in-Charge shall (after taking into account irrecoverable losses, if any, determined to be reasonable by Engineer-in-Charge) debit the CONTRACTOR the reasonable cost of such material plus

15% (Fifteen percent) thereof under the provision of item (x) of clause 3.0.3.1 hereof and issue the Completion Certificate subject thereto. The decision of the Engineer-in-Charge as to the acceptability of the material reconciliation furnished by the CONTRACTOR and as to the irrecoverable losses, if any, permissible shall be final and binding upon the CONTRACTOR.

5.3.3.1 The issue of a Completion Certificate shall be without prejudice to the OWNER's rights and CONTRACTOR's liabilities under the Contract, including the CONTRACTOR's liability for the defect liability period under clause 5.4.1.0 hereof nor shall the issue of a Completion Certificate in respect of the works be construed as a waiver of any right or claim of the OWNER against the CONTRACTOR in respect of works or any of them.

5.3.4.0 Up to and until issue of the Completion Certificate as provided for herein above in respect of the works, the work(s) and all materials incorporated therein shall be and remain at the risks of the CONTRACTOR in all respects, including (but not limited to) accident, lightning, earth-quake, fire, storm, flood, tempest, riot, civil commotion and/or war, provided that notwithstanding the Engineer-in-Charge's failure to issue a Completion Certificate under Clause 5.3.3.0 hereof, the risk specified above shall be transferred to the OWNER within 01 (one) month of the Engineer-in-Charge receiving the CONTRACTOR's application for the Completion Certificate if the application and the documents submitted in support thereof satisfy in all respects the requirements of Clause 5.3.2.0 and properly reconciled and account for all materials and a Commissioning Certificate has been issued in respect of the Unit(s).

5.3.4.1 Without limiting his obligations and liabilities under Clause 5.3.4.0 hereof, the CONTRACTOR shall takeout erection insurance and/or other suitable insurance and at all times from the commencement of the work keep insured for full value the works in progress and completed works in the joint names of the OWNER and the CONTRACTOR against loss or damage from whatsoever causes arising, including the risks specified below, in a manner that the OWNER and the CONTRACTOR are covered during the period of construction of the works and are also covered during the defect Liability Period for loss or damage arising from any cause occurring prior to the commencement of the Defect Liability Period and for any loss or damage occasioned by the CONTRACTOR in the course of any operation carried out by it for the purposes of complying with its obligation under clause 5.4.1.0 hereof. Such insurance(s) shall be effected with an insurer(s) and in terms approved by the OWNER (which approval shall not be unreasonably withheld) and the CONTRACTOR shall whenever required produce to the Engineer-in-Charge or his representative, the policy or policies of insurance and the receipt for payment of the current premium(s) PROVIDED THAT the OWNER shall, at the CONTRACTOR's cost, insure under the Emergency Risk Insurance Law as applicable in India from time to time, the OWNER's works covered under this contract as insurable under the said law.

The policy(ies) of insurance aforesaid shall stipulate exclusive rights in the OWNER to receive all monies due in respect of such policy(ies), and the OWNER shall exclusively be entitled to receive all monies payable under said policy (ies). In default by the contractor to effect or maintain insurance as aforesaid, the Owner shall be entitled (but without obligation to do so) to take out/or pay the premium for any such policy (ies) and deduct the premium(s) and other costs and expenses incurred in this behalf by the Owner from the

monies for the time due or payable or becoming due or payable to the Contractor.

PROVIDED ALWAYS THAT:

- (i) Notwithstanding anything herein provided, the CONTRACTOR shall be and remain solely and exclusively liable to repair, restore or replace, as the case may be, works (including the materials therein incorporated) damaged or destroyed as a result of any force majeure or other act or omission, notwithstanding the existence or otherwise of any policy(ies) of insurance aforesaid, with the intent that any policy(ies) of insurance aforesaid taken out by the CONTRACTOR or by the OWNER on default by the CONTRACTOR, shall not anyway absolve the CONTRACTOR from his full liability under Clause 5.3.4.0 hereof or otherwise but shall constitute merely an additional security and not a substitution of liability.
- (ii) It shall be the exclusive responsibility of the CONTRACTOR to lodge and pursue any or all claims in respect of the insurance aforesaid.
- (iii) The CONTRACTOR shall, as a condition to the certification of any Running Account Bill, satisfy the OWNER/ Engineer-in-Charge of the existence of one or more policy(ies) of insurance covering the materials as specified herein. The policy(ies) of insurance aforesaid shall cover all insurable risks including but not limited to any loss or damage in handling at storage point, transit from storage point, storage at job site and during erection and upto issue of Completion Certificate against theft, pilferage, riot, civil commotion, force majeure (including earthquake, flood, storm, cyclone, tidal wave, lightening and other adverse weather conditions), accidents of kinds, fire, war risks and explosion.

5.3.4.2 APPLICATION OF PROCEEDS OF INSURANCE

- (a) Proceeds of any policy(ies) of insurance received by the OWNER pursuant to Clause 3.0.3.1(vii) or Clause 5.3.4.1 hereof shall be utilized at the sole discretion of the OWNER either for payment to the CONTRACTOR for repair, restoration or replacement, as the case may be, of the relative materials or works, or to meet the costs of repair, restoration or replacement in the event of the CONTRACTOR refusing or failing or neglecting to undertake such repair, restoration and/or replacement, as the case may be, without prejudice to any other right or remedy available to the OWNER in respect of such default, failure or neglect.
- (b) If the CONTRACTOR repairs, restores or replaces, as the case may be, the lost, damaged or destroyed materials or works affected to the satisfaction of the OWNER, the CONTRACTOR shall be entitled to the disbursement by the OWNER of the full monies received by the OWNER under the relative policy(ies) of insurance with respect to such materials or works repaired, restored or replaced, as the case may be, by the CONTRACTOR.

5.4.0.0 DEFECT LIABILITY PERIOD AND LATENT DEFECTS

- 5.4.1.0 The primary Defect Liability Period for the complete works/Unit(s) shall be 12 (twelve) months from the date of the issue of the Commissioning Certificate or 8000 hours of run, whichever shall be earlier, provided that if the Unit(s)

cannot be commissioned for a cause solely attributable to the OWNER within 12 (twelve) months from the Mechanical Completion, the primary Defect Liability Period shall be 18 (Eighteen) months from the date of Mechanical Completion.

Notwithstanding the expiry of the primary Defect Liability Period aforesaid, the CONTRACTOR shall be and remain liable:

- (i) To correct and/or rectify or replace, as the case may be, the defective works or materials with respect to which a greater defect liability period than as stated above has been specified in any of the Contract Documents, for the entirety of the period so specified; and
- (ii) To pass on to the OWNER the benefit(s) of any or all warranties or guarantees which may be available to the CONTRACTOR from its vendors in respect of materials or parts or components thereof which enure(s) for a period in excess of the primary Defect Liability Period specified above.

5.4.2.0 The CONTRACTOR shall at its own cost and initiative, within the scope of work, correct, repair and/or rectify to the satisfaction of the OWNER/Engineer-in-Charge any and all defects and/or imperfections in the design of the work and/or in the works performed and/or systems, materials (including plant, equipment and machinery) incorporated therein as shall be discovered during the said defect liability period and if it be not possible to correct, repair and/or rectify any defective works and/or system(s), incorporated therein, the CONTRACTOR shall at his own cost and initiative replace and/or re-install the defective works, system(s) and/or materials and shall, insofar as necessary for the purpose, at his own cost and initiative re-perform in whole or in part the relative and/or any associated works to the satisfaction of the OWNER/Engineer-in-Charge, and shall within the scope of supply, supply any and all materials required to correct, repair and/or rectify the defect and/or imperfections and/or to replace or re-install the defective works.

5.4.2.1 The responsibility under Clause 5.4.1.1 hereof shall, without prejudice to the foregoing, include the responsibility on the part of the CONTRACTOR at his own cost and initiative (and without cost to the OWNER), to provide and furnish, within the scope of work, all labour, equipment, crafts and inputs, whatsoever required in and relative to the correction, repair, rectification, replacement, installation and/or re-performance of the relative work(s) and/or system(s), and to supply within the scope of supply, all materials and other items to be incorporated therein including, without prejudice to the generality of the foregoing, the supply by the CONTRACTOR of all materials.

5.4.3.0 The defect liability period for any works re-performed and/or systems, materials, components or other items supplied and incorporated therein pursuant to the obligations of the CONTRACTOR under Clause 5.4.1.0 shall be 12 (Twelve) months from the date of correction, repair, rectification, replacement and/or re-installation thereof, as the case may be, with the intent that the provisions of Clause 5.4.2.0 hereof and associated provisions thereunder shall apply thereto in respect of all defects discovered during a period of 12 (Twelve) months from the date of completion of the relative correction, repair, rectification, replacement and/or re-installation, as the case may be, in the same manner and to the same extent as apply in respect of the original works. For the purpose of clarification, it is stated that such

extended defect liability period shall be applicable only to the particular work, system, material, component or other item corrected, repaired rectified, replaced, re-performed or re-installed, as the case may be (example: if the bearings of an equipment are replaced, the extended defect liability shall be applicable only with respect to the bearings, while the basic defect liability period shall be applicable to the relative equipment).

- 5.4.4.0 Should the CONTRACTOR fail to fulfill his obligations under Clause 5.4.1.0, 5.4.2.0 and/or 5.4.3.0 and associated clauses thereunder, the provisions of Clause 5.1.7.0 hereof shall mutates mutandis apply.
- 5.4.5.0 In fulfillment of the CONTRACTOR's obligations relative to defects, the CONTRACTOR shall so arrange the working as to cause the least inconvenience to the OWNER in operating the UNIT and/or avoid shut-downs thereof except during the periods of planned shut-down or idleness in the course of normal operation of the system (s).
- 5.5.0.0 **CONTRACTOR'S GUARANTEES**
- 5.5.1.0 The guarantees herein set forth are without prejudice and in addition to any other guarantees or liabilities of the CONTRACTOR. The CONTRACTOR guarantees and undertakes that:
- 5.5.2.0 **GENERAL**
- 5.5.2.1
- (i) The UNIT designed, supplied and installed and/or erected by the CONTRACTOR shall on operation under local conditions when operated under the specified operating conditions operate to the desired capacity to produce the desired product(s) of desired purity(ies) and quantity(ies) at desired economy(ies). Excluded from the scope of this guarantee are defects and shortcomings arising wholly out of defects in design(s) furnished by a Process Licensor other than CONTRACTOR.
 - (ii) The materials supplied and incorporated in the UNIT including plant and machinery and instruments shall be of good quality and workmanship and shall conform in all respects to the specifications and the provisions of the Contract.
 - (iii) The work performed pursuant to the Contract including civil and associated work shall be of good quality and workmanship and shall conform in all respect to the specifications and the provisions of the Contract.
 - (iv) The plant, machinery and systems incorporated in the UNIT shall be so designed and arranged that even after the expiry of the said 2 (Two) years period, the spares, spare parts and/or suitable replacement parts shall be and remain available at reasonable cost to enable trouble free operation of the UNIT for its reasonable life expectancy.
- 5.5.3.0 **ENGINEERING GUARANTEE**
- 5.5.3.1 Since residual process design and detailed engineering (including Hazop & Hazan as specified) is within the CONTRACTOR's scope and the work shall be executed and UNIT established based on the engineering performed, it shall be the prime responsibility of the CONTRACTOR to carry out such design and engineering in accordance with good and sound engineering practices.

- 5.5.3.2 In case any error or omission in design or engineering within the CONTRACTOR's scope i.e. the residual process design or detailed engineering (including Hazop & Hazan) requires re-engineering which results in any new requirements for equipment/materials, the same shall be supplied and re-engineering shall be carried by the CONTRACTOR within the scope of relative Work and/or supply and within the contractual period without extra cost to the OWNER or entitlement of extension of time to the CONTRACTOR.
- 5.5.3.3 The CONTRACTOR shall guarantee that the system design for the UNIT/PLANT shall meet and comply with the OWNER's requirements and :
- the equipment approved and/or selected
 - the Site Criteria
 - the Engineering specifications, standards and design guides and codes
 - the Front End Engineering Design (FEED) as mentioned in Bidding Document.
- 5.5.3.4 The CONTRACTOR shall check the Front End Engineering Data (FEED) for any discrepancy or deficiency and with regard to its completeness to meet the CONTRACTOR's guarantees. In case any discrepancy, deficiency or incompleteness is discovered in the FEED, the CONTRACTOR shall forthwith inform the OWNER/Consultant thereof and of the action required to be taken to rectify the discrepancy or deficiency or to complete the FEED and shall within the Scope of Work undertake such corrective measures as are approved or suggested by the OWNER/Consultant to rectify at no extra cost to the OWNER, the discrepancy or deficiency or to complete the FEED.
- The CONTRACTOR, if required shall carry out corrective Technical studies and Engineering based on action suggested by OWNER/Consultant as may be required without any extra cost to Owner.
- 5.5.4.0 **WORKMANSHIP GUARANTEE**
- 5.5.4.1 Workmanship for manufacture and construction shall be carried out in accordance with the requirements of the Contract and the codes and standards and practices therein specified. Any defective material supplied or defective works done shall be made good and shall, if so required by the OWNER or the Engineer-in-Charge, be replaced by new materials within the relative scope of Work and/or supply.
- 5.5.4.2 The CONTRACTOR accepts full responsibility for the quality and correctness of all materials (including plant and equipments and all components/parts) and Works within the CONTRACTOR's scope of supply and/or scope of work including but not limited to :
- Selection of materials, unless such selection is unnecessary because the material has been selected and specified by the LICENSOR/PMC;
 - Material specifications and metallurgy;
 - Work specifications;
 - Fabrication/manufacturing workmanship;
 - Engagement of experienced, reliable and qualified suppliers, engineers and/or sub-Contractors.
- 5.5.5.0 **PERFORMANCE GUARANTEE**
- 5.5.5.1 The CONTRACTOR is not responsible for the process guarantees of the LICENSOR. The CONTRACTOR however guarantees its engineering as set

forth in Clause 5.5.3.0 and its workmanship as set forth in Clause 5.5.4.0. If the UNIT does not achieve the results set forth in the LICENSOR's process guarantees due to defect(s) or deficiency(ies) in the CONTRACTOR's engineering or workmanship, the CONTRACTOR shall within the Scope of its Work and responsibilities, repair, alter and/or replace such defective engineering and/or workmanship and/or the product(s) thereof. The CONTRACTOR's guarantees shall also cover the mechanical performance of such equipment/materials and their efficiencies as indicated by the CONTRACTOR in its bid. Equipment which does not perform to the guarantees shall, in consultation with the OWNER/ Engineer-in-Charge either be replaced or altered or repaired in parts or components or wholly (including dismantling, transportation, erection, hook-up, commissioning and performance tests) within the relative scope of supply and/or services at no extra cost to the OWNER and without entitlement of extension of time to the CONTRACTOR. Although the CONTRACTOR is not responsible for the Licensor's process guarantees, he shall carry all activities in collecting the required data during Performance Tests or other process guarantee runs to identify problems of non-performance.

- 5.5.5.2 The CONTRACTOR shall select the equipment considering the economy of power consumption and minimum effluent or pollution discharge.
- 5.5.5.3 All instruments required to establish performance are within the CONTRACTOR's scope of contract at no extra cost to the OWNER.
- 5.5.5.4 The CONTRACTOR shall provide a list of laboratory test procedures and frequencies thereof required for validating the CONTRACTOR's Performance Guarantees.
- 5.5.5.5 Performance tests shall be started when the operation of the UNIT is stabilized under design conditions. The UNIT shall be operated and controlled in accordance with procedures set up before hand. One or more performance tests shall be carried out for a maximum of 120 hours under the technical direction of OWNER/Licensor and/or their designated representatives after successfully commissioning the UNIT in accordance with the procedures and conditions detailed in the Bid documents. At the end of the performance tests, an uninterrupted period of 72 hours shall be selected by OWNER/ Engineer-in-Charge and average results obtained during that period shall form the basis of comparison between the actual performance and the guaranteed performance.
- 5.5.5.6
 - (a) If on any testing, any material or equipment or the UNIT does not meet the design, rated or guaranteed performance relative thereto, the CONTRACTOR shall forthwith, within the CONTRACTOR's scope of Work and at no additional cost to the OWNER, undertake such additional tests and/or operations as are necessary to identify the cause of such failure. Such tests and/or operations shall be conducted in conjunction with the Process Licensor, if the UNIT as a whole fails to meet the Process Licensor's process guarantees.
 - (b) If as a result of such tests and/or operations it is determined that the design, rated and/or guaranteed outputs or capacities have not been met because of a defect in any material(s) (including plant and equipments) supplied by the CONTRACTOR, the CONTRACTOR shall forthwith in consultation with the Engineer-in-Charge take steps necessary to cause

the defect to be identified and rectified, either by replacement of the defective material, plant or equipment or part thereof or by repair or replacement thereof. After such repair/replacement is carried out, the guarantee performance tests shall be repeated. The costs for such repeated tests (including charges payable to the Process Licensor or any other agency) shall be borne by the CONTRACTOR. The CONTRACTOR shall forthwith establish a Time Schedule acceptable to the Engineer-in-Charge for such replacement/rectification bearing in mind the exigencies of the Project requirement. Should the CONTRACTOR fail to establish such Time Schedule, the Engineer-in-Charge shall establish the Time Schedule, and the Time Schedule so established shall be binding on the CONTRACTOR.

- (c) Should the CONTRACTOR thereafter fail to adhere to a Time Schedule so established for the replacement/rectification, the OWNER may (but without obligation to do so) take over in whole or part such replacement/rectification at the risk and cost of and as agent of the CONTRACTOR. In so doing, the OWNER shall be entitled to identify and employ through private negotiations, the quickest available resources of supply and/or Work without resorting to the tender process or any other form of competitive bidding.

5.6.0.0 **COMMISSIONING**

5.6.1.0 The CONTRACTOR shall be responsible to commission the UNIT and to prove the CONTRACTOR's performance guarantees with respect thereto. The commissioning shall, to the extent necessary, be carried out under the supervision of Licensor, Engineer-in-Charge and with the assistance of the OWNER's personnel. The CONTRACTOR shall, within his responsibilities for and the scope of Commissioning the UNIT, train OWNER's personnel at the site of the UNIT in such number and for such period as the CONTRACTOR considers reasonably necessary for Commissioning the PLANT.

5.6.2.0 It is envisaged that the UNIT will be commissioned within 3 (three) months of Mechanical Completion, and the mobilisation and/or retention of the CONTRACTOR's personnel until completion of Final Testing and Commissioning shall be included within the Lumpsum Price of services. If, however, for any reason not attributable to the CONTRACTOR the Commissioning of the UNIT cannot be undertaken within 3 (three) months of Mechanical Completion of the UNIT, the CONTRACTOR may, in consultation with the OWNER, demobilise some or all of its personnel brought to or retained at the site for the purpose of Commissioning. The CONTRACTOR shall re-mobilise the required personnel on receipt of notice for Commissioning, and the OWNER and the CONTRACTOR shall agree upon the reasonable cost to be incurred by the CONTRACTOR for re-mobilisation of such personnel, which shall be payable in addition to the price of services specified in the Contract, and this additional amount shall be included within and form part of the Final Bill of the CONTRACTOR.

5.6.3.0 In addition, within the CONTRACTOR's responsibilities for Commissioning and within the price of services, the CONTRACTOR shall be required to maintain watch and ward of and ensure the safety and integrity of the UNIT until successful completion of Commissioning and issue of Commissioning and Performance Test Certificate for the UNIT. If Commissioning of the UNIT

commences later than 3 (three) months of Mechanical Completion of the UNIT for any reason not attributable to the CONTRACTOR, the OWNER and the CONTRACTOR shall agree upon the reasonable cost incurred for maintaining watch and ward and preservation and insurance of the UNIT beyond the said 3 (three) months period and upto commencement of Commissioning, which shall be payable to the CONTRACTOR in addition to the price of services and this additional amount shall be included within and form part of the Final Bill of the CONTRACTOR. If the Commissioning of the UNIT is delayed beyond 6 (six) months of Mechanical Completion of the UNIT, the OWNER and the CONTRACTOR shall work out the modalities for the takeover of the UNIT by the OWNER without prejudice to the CONTRACTOR's obligation for and related to and consequent to Commissioning.

5.6.4.0 As and when the UNIT is ready to be commissioned, the OWNER shall give the CONTRACTOR notice of not less than 10 (Ten) days for Commissioning the UNIT.

5.6.5.0 The OWNER shall supply free of cost to the CONTRACTOR, power, water, DM water, steam, plant air, instrument air and raw materials (required for producing the final product), hydrogen, nitrogen (excluding chemicals & lubricating oil), required exclusively for pre-commissioning and commissioning and Guarantee Performance Tests of the UNIT. The OWNER will also make available its existing facilities for handling and disposal of waste water during pre-commissioning and commissioning.

5.6.6.0 If Commissioning of the UNIT and/or the conduct of the Performance Test is delayed beyond 6 (six) months from the date of Mechanical Completion of the UNIT for reasons not attributable to the CONTRACTOR, the OWNER shall (subject to such adjustments as permissible) release to the CONTRACTOR, the undisputable balance payable on commissioning and Performance Tests against the CONTRACTOR furnishing a Bank Guarantee from a scheduled bank in India (including the Indian branch of a foreign bank) acceptable to the OWNER in a format prescribed by the OWNER for an amount equivalent to the amount of the payment(s) to be released. The validity of such Bank Guarantee(s) shall be initially for a period of 6 (six) months and shall be extended for one further period of 6 (six) months. If the commissioning and/or Performance Test cannot be conducted within such extended period for reasons solely attributable to the OWNER, the Bank Guarantee will be substituted by Corporate Guarantee of the CONTRACTOR in a format acceptable to the OWNER. If however, the UNIT cannot be commissioned within the said period for reason(s) attributable to the CONTRACTOR or if commissioning and/or the Performance Test conducted indicates that the UNIT does not perform to the contractual specifications and requirements, then the Bank Guarantee(s) shall even after the extension aforesaid continue to be extended upto and until successful commissioning and Performance Tests of the UNIT. In either event, the OWNER will be entitled to encash the Bank Guarantee(s) if the Bank Guarantee is not extended or substituted by an acceptable Corporate Guarantee permissible in terms aforesaid, as the case may be, at least 14 (Fourteen) days prior to the date of expiry of Bank Guarantee(s).

5.7.0.0 **GUARANTEE PERFORMANCE TESTS**

5.7.1.0 For the purpose to demonstrate that the UNIT meets CONTRACTOR's contractual guarantees, one or more performance tests shall be carried out by

the CONTRACTOR under the technical direction of the Process Licensor, the CONTRACTOR and the Engineer-in-Charge and/or their designated representatives after commissioning the UNIT in accordance with the stipulated and/or agreed procedures and conditions.

5.7.2.0 The Performance Tests shall be carried out in accordance with a detailed technical programme to be drawn up by Engineer-in-Charge and the CONTRACTOR in consultation with OWNER prior to the commencement of the performance tests.

5.7.3.0 Within five days after completion of a performance test, all relevant operating and production figures having any bearing on CONTRACTOR's guarantees or in connection therewith and actually achieved during the performance test conducted shall be recorded in a protocol to be signed by authorised representatives of OWNER and the CONTRACTOR.

5.7.4.0 The CONTRACTOR's guarantees shall be deemed to have been met once all guarantees have been established during one or more performance tests carried out in respect of the UNIT.

5.8.0.0 **SPARE PARTS**

5.8.1.0 **COMMISSIONING SPARES**

The CONTRACTOR shall procure and supply all spare parts required during commissioning of the UNIT and various systems. The price of supply shall be deemed to be inclusive of the provision of all such commissioning spares required till successful commissioning of the UNIT. The CONTRACTOR should make available all the commissioning spares required at site at least 4 (four) weeks prior to commissioning.

5.8.2.0 **MANDATORY SPARES**

The CONTRACTOR shall within the Lumpsum Price supply all the mandatory spares as specified elsewhere in Bidding Document required for the UNIT. The handing over of the spares will be followed through SAP system and the templates against individual category of items shall be duly filled in by the CONTRACTOR including price for each item before handing over the mandatory spares to OWNER. Methodology/Modalities to be followed for handing over of spares as per SAP system shall be provided by OWNER during Kick of Meeting.

5.8.3.0 **OPERATION AND MAINTENANCE (O&M) SPARES**

- a) The lump-sum price quoted shall include cost of O & M Spares required during the Defect Liability Period.
- b) The CONTRACTOR shall, within 3 (three) months of finalisation of all the suppliers by the CONTRACTOR, furnish to the OWNER the current price list for O&M spares for 2 (two) years operation beyond the Defect Liability Period as recommended by manufacturers of various equipment (other than commissioning, mandatory and O&M spares required during the defect liability period). Price lists of these spares are intended for information purpose only shall not be included in quoted Lumpsum Price.

SECTION – 6

MEASUREMENTS, CERTIFYING INSPECTIONS AND PAYMENTS

6.0.0.0 CERTIFYING INSPECTIONS

6.0.1.0 All provisions hereinafter referred to in Clauses 6.1.2.0 to 6.1.5.0 in respect of measurement shall mutatis mutandis apply to all inspections required to be made in order to qualify the CONTRACTOR for any payment(s) under the Contract and any reference in the said clauses to measurements shall, for the purpose of this clause, be deemed to be a reference to certifying inspections and any reference therein to the measurement book shall, for the purpose of this clause, be deemed to be a reference to the certifying inspection book.

6.1.0.0 MEASUREMENT

6.1.1.0 All measurements shall be in the metric system, and except where expressly indicated to the contrary in the Contract, all measurements shall be taken in accordance with the procedure set forth in the Contract documents notwithstanding any provision(s) in the relative standard method of measurement or any other general or local custom to the contrary.

6.1.2.0 All measurements shall be taken jointly by the Engineer-in-Charge or his representative on the one hand and the CONTRACTOR or his representative on the other hand, and the CONTRACTOR shall be bound to present himself or his authorised representative for measurement(s) whenever so required by the Engineer-in-Charge or his designated representative, and shall remain present throughout the time required for joint measurements.

6.1.3.0 If the CONTRACTOR absents himself for any reason whatsoever on any date appointed for joint measurements, the joint measurements shall be taken by the Engineer-in-Charge or his representative in the absence of the CONTRACTOR and such measurements signed by the Engineer-in-Charge or his representative shall be final and binding upon the CONTRACTOR.

6.1.4.0 Measurements shall be signed and dated on each page by the CONTRACTOR/CONTRACTOR's representative and Engineer-in-Charge or his representative. If the CONTRACTOR objects to any of the measurements recorded, including the mode of measurement, such objection shall be noted in the Measurement Book/Sheet against the item objected to and such note shall be signed by the CONTRACTOR/CONTRACTOR's representative and Engineer-in-Charge or his representative. In the absence of any noted objections as aforesaid, the CONTRACTOR shall be deemed to have accepted the relative measurements as entered in the Measurement Book/Sheets and shall be barred from making or recording any objection in respect of the measurements recorded in the Measurement Book/Sheets.

6.1.5.0 All measurement(s) relative to which any objection have been noted in the Measurement Book/Sheet shall be submitted to the Engineer-in-Charge for his decision, and the decision of the Engineer-in-Charge relative thereto (whether on the correct measurement to be adopted or on the mode of measurement to be adopted) shall be final and binding upon the CONTRACTOR.

6.2.0.0 FINAL BILL

- 6.2.1.0 On the basis of the Lumpsum Price provided in the Contract, the CONTRACTOR shall prepare a Final Bill in the prescribed form with reference to the total supplies covered by the scope of supplies and shall prepare a separate Final Bill with reference to the total services covered by the scope of services. Such Bill shall be prepared by applying the price of materials specified in FORM SP-1 of the Price Schedule in respect of supplies broken up with respect to the indigenous materials and with respect to imported materials (including plant, parts and components) in accordance with the break-up of the Price of Materials given in FORM SP-1 of the Price Schedule and the various formats thereunder, and by applying the price of services specified in FORM SP-2 of the Price Schedule in respect of works/services broken up with respect to the various heads of services/works in accordance with the break-up of the Price of services given in FORM SP-2 of the Price Schedule and the various formats thereunder. Additions claimed to the Lumpsum Price or reductions therefrom resultant upon any Change Order(s) shall be separately indicated in the Final Bill with reference to the relative Change Orders(s).
- 6.2.2.0 The Final Bill shall, in addition to the payment entitlements arrived at according to the provisions of Clause 6.2.1.0 hereof separately state and include therein all claims of the CONTRACTOR as provided for in Clause 6.6.3.0 hereof.
- 6.2.3.0 The Final Bill drawn in accordance with Clause 6.2.1.0 shall be submitted together with the Completion Certificate to the Engineer-in-Charge for certification, who shall certify the Final Bill, if drawn in accordance with Clause 6.2.1.0. After certification of the Engineer-in-Charge, the Final Bill shall be submitted in quadruplicate (or in such other number of copies as the OWNER may prescribe) accompanied by the Completion Certificate to the OWNER for payment.
- 6.2.4.0 All monies payable under the Contract for works to be performed and materials to be supplied up to and including successful completion and final tests and commissioning of the system and performance tests shall become due and payable to the CONTRACTOR only after submission to the OWNER of the Final Bill prepared in accordance with the provisions of Clause 6.2.1.0 hereof and associated provisions thereunder accompanied by the Completion Certificate in respect of the works.
- 6.2.5.0 Payments of the amount(s) due on the Final Bill to the extent certified by the Engineer-in-Charge, shall be made within 84 (Eighty Four) days from the due date as specified in Clause 6.2.4.0 hereof, subject to the deductions provided in Clause 6.2.5.1.
- 6.2.5.1 All payments due to the CONTRACTOR on the Final Bill shall be subject to deduction of "on-account" payments and other amounts due from CONTRACTOR to the OWNER, tax deductions as provided for in Clause 6.5.2.0 and associated clauses thereunder, and any other deduction provided for herein or agreed to between the parties or required to be made under any law, rule or regulation having the force of law for the time being applicable, or elsewhere provided for in the Contract documents.

6.3.0.0 **PRICE SCHEDULE**

6.3.1.0 The remuneration determined due to the CONTRACTOR as provided for in Clause 6.2.1.0 hereof shall constitute the entirety of the remuneration and entitlement of the CONTRACTOR in respect of the work under the Contract, and no further or other payment whatsoever shall be or become due or payable to the CONTRACTOR under the Contract.

6.3.2.0 Without prejudice to the generality of the provisions of Clause 6.3.1.0 hereof, the Price Schedule and Lumpsum Price shall be deemed to include and cover (unless otherwise expressly specified to the contrary in any contract document(s)) :

- (i) All costs, expenses, outgoings and liabilities of every nature and description whatsoever and all risks whatsoever (foreseen or unforeseen, including force majeure) to be taken or which may occur in or relative to execution, completion, testing, commissioning and/or handling over the works to the OWNER and/or in or relative to acquisition, loading, unloading, transportation, storing, working upon, using, converting fabricating, or erecting any item, equipment, system, material or component in or relative to the works, and the CONTRACTOR shall be deemed to have known the nature, scope, magnitude and the extent of the works and items, materials, equipment, and components required for the proper and complete execution of the works though the Contract documents may not fully and precisely set out, describe or specify them, and the generality hereof shall not be deemed to be anyway limited, restricted or abridged because in certain cases the Contract documents or any of them shall or may and/or in other cases they shall or may not expressly state that the CONTRACTOR shall do or perform any particular labour or service or because in certain cases the Contract documents state that a particular work, operation, supply, labour or service shall be performed/made by the CONTRACTOR at his own cost or without additional payment, compensation or charge or without entitlement of claim against the OWNER or words to similar effect, and in other cases they do not, or because in certain cases it is stated that the same are included in or covered by the Price Schedule and in other cases it is not so stated.
- (ii) The cost of all construction and related vessels, craft, vehicles, movements, plant, equipment, supply of water and power, construction of temporary roads and access, temporary works, pumps, wiring, pipes, scaffolding, piling, shuttering and other materials, supervision, labour, insurance, fuel, stores, spares, supplies, appliances and materials, items, articles and things whatsoever (foreseen or unforeseen) by expression or implication to be supplied, provided or arranged in or relative to or in connection with the performance and/or execution of the works and/or related or incidental thereto, complete in every respect in accordance with the Contract document, and the plans, drawing, designs, orders and/or instructions;
- (iii) The cost of mobilisation including but not limited to mobilisation of vehicles, movements, machinery, equipment, gear, tools, tackle, consumables and other items and goods and personnel necessary for or to perform the works contemplated under the Contract, preparation

and erection of work yards and other work places and facilities necessary for or to perform the works contemplated under the Contract and/or to supply the material included within the scope of supplies including all work, labour, inputs, goods, equipment, and other items and things whatsoever necessary for the performance of the works, dismantling and/or removal of the same and restoration of the site, lifting the materials and transporting them to CONTRACTOR's stock piles/work yard, job sites and loading, stacking and/or storing the same.

- (iv) The costs and risks of all rents, royalties, licenses, permits, permission and other fees, duties, penalties, levies, and damages whatsoever payable for or in respect of any protected or patented goods, materials, equipment or processes employed in or relative to the works and of all rents, royalties, licenses, permits, permissions and any other fee, duty, penalty, levy, loss or damages payable on the excavation, removal or transportation of any material or acquisition or use of any right of way or other right, licenses, permit, privilege, permission or uses required for or relative to the performance of the work.
- (v) The cost of all sales taxes and/or octroi or terminal taxes payable in India with regard to materials supplied by the CONTRACTOR within the scope of supplies, all customs and import duties, excise duties, Indian Income Tax, Sales Tax and other direct and indirect taxes and duties, quay, wharfage, demurrage, detention and landing charges and all other duties, taxes, fees, charges, levies, and/or cesses whatsoever imposed or to be imposed by the Central Government or State Government or Municipal or Local Bodies or other Authorities whatsoever and payable on any materials supplied and/or on works performed without any entitlement to the CONTRACTOR for any exemption, remission, refund or reduction thereof.
- (vi) The cost of all indemnities under the Contract, and insurance premia on insurance required in terms of the Contract documents or otherwise under any law, rule or regulation, and the cost of all risks whatsoever (foreseen and unforeseen) including but not limited to risks of delay or extension of time or reduction or increase in the work or scope of work and/or cancellation of Contract, and/or accident, strike, civil commotion, war, strike, labour trouble, third party breach, fire, lighting, inclement weather, storm, tempest, flood, earthquake and other acts of God, Government regulation or imposition or restriction, dislocation of road, rail, sea, air and other transport, access or facility, flooding of site and/or access roads and approaches thereto, suspension of work, sabotage and other cause whatsoever.
- (vii) The cost of all inspections, tests and certificates relative thereto including third party tests and/or inspections where necessary, and of items, instruments, plant and/or tools and appliances required to conduct such inspection and tests.
- (viii) The cost of all materials supplied and/or intended for incorporation in the works supplied within the scope of work, delivery thereof to the job site, loading, transportation and unloading thereof, waste on materials, and return of empties and surpluses.

- (ix) The cost of all escalations (foreseen and unforeseen) including but not limited to increase in Government taxes and duties, labour costs and material costs and other inputs whatsoever, except for new, altered or increased taxes elsewhere specifically provided for in these General Conditions of Contract or other Contract document(s).
 - (x) All supervision charges, establishment's overheads, finance charges and other costs and expenses and charges to the CONTRACTOR, and the CONTRACTOR's profit of and relative to the work and/or supply.
 - (xi) The cost of all deductions, reductions, discounts, adjustments and withholdings whatsoever under or in connection with the Contract.
- 6.3.3.0 The rates stated in the Price Schedule and the lump sum price(s) shall not be subject to escalation or increase for any reason whatsoever.
- 6.3.4.0 Notwithstanding any provision to the contrary in these conditions, the Engineer-in-Charge may at his absolute discretion agree to accept as complete any incomplete works or items of work performed or supply made by the CONTRACTOR at variance with the specifications, subject and upon the terms and conditions of this clause. Upon such acceptance in writing by the Engineer-in-Charge, such works/materials shall be deemed to have been accepted as complete (but without prejudice to any right(s) of the OWNER or obligation(s) of the CONTRACTOR relative thereto under the Contract) subject to the terms and conditions of this clause. The conditions of such acceptance shall be that the CONTRACTOR shall be entitled to reduced remuneration therefor only as determined by the Engineer-in-Charge in accordance with the provisions of Clauses 2.4.2.0 hereof, and the provisions of the said clause shall in all respects mutatis mutandis apply to such work and/or supply, as the case may be, and for the determination of the reduced remuneration to the CONTRACTOR in respect thereof, provided always that the remuneration therefor shall on no account exceed the Lumpsum price or remuneration therefor payable under the Price Schedule in respect of the relative completed works or supply.
- 6.4.0.0 **ADVANCE AND ON ACCOUNT PAYMENT**
- 6.4.1.0 Without prejudice to the provisions of Clause 6.2.4.0 hereof, the OWNER may by way of assistance to the CONTRACTOR, make "advance" or "on-account" payments to the CONTRACTOR during the progress of the work and/or supply on the basis of Running Account Bills or otherwise as elsewhere more specially provided for in the Contract documents.
- 6.4.2.0 The CONTRACTOR may be allowed a Mobilization Advance for an amount equivalent to upto 10% (ten per cent) of the Lumpsum Price (to be released in two or more equal installments as the OWNER may determine), subject to the fulfillment of the following conditions:
- a) The CONTRACTOR shall have signed and sent back a copy (or copies if so required) of the Acceptance of Tender issued by the OWNER in token of unqualified acceptance thereof.
 - b) The CONTRACTOR shall have furnished the Security Deposit as stipulated in Clause 2.1.1.0 and associated clauses hereof.

c) The CONTRACTOR shall have executed the formal contract in terms of the Form of Contract.

d) The CONTRACTOR shall have made a formal application for the release of the Mobilization Advance and shall have furnished in addition to any other Bank Guarantees required to be furnished by the CONTRACTOR under the Contract, a Bank Guarantee in the sum of the Mobilization Advance sought plus a sum equivalent to 10% (ten per cent) thereof from a Schedule Bank in India acceptable to the OWNER and in format prescribed in this behalf by the OWNER.

e) The outstanding balance of the Mobilization Advance shall carry interest at 1% (one percent) above the State Bank of India declared rate for cash credit advances prevailing on the date of opening of Price Bids;

f) Without prejudice to any other mode of recovery available to the OWNER, the Mobilization Advance, together with interest thereon calculated on the reducing balance, may be recovered at the rate of 10% (ten per cent) of the gross amount certified against each Running Account Bill, till the advance, together with the interest accrued thereon, is recovered in full. The unrecovered balance if any, and interest may be recovered from the Final Bill of the CONTRACTOR and/or from any other amount due to the CONTRACTOR under any other contract or otherwise.

g) All recoveries shall first be appointed and appropriated to interest and then to principal.

(h) If the OWNER is satisfied that 25% (twenty five per cent) of the Mobilization Advance and interest accrued till then on the Mobilization Advance has been repaid to or recovered by the OWNER, the OWNER may on the application of the CONTRACTOR, if the Bank Guarantee submitted by the CONTRACTOR covers and secures only the Mobilization Advance, permit the CONTRACTOR to substitute the Bank Guarantee by a Bank Guarantee in a format approved by the OWNER from a Scheduled Bank in India acceptable to the OWNER for an amount reduced by 25% (twenty five per cent) of the Bank Guarantee sought to be substituted.

(i) The provisions of paragraph (h) hereof above, shall mutatis mutandis apply to the OWNER's satisfaction that the CONTRACTOR has repaid 50% (fifty per cent) and/or 75% (seventy five per cent), as the case may be, of the Mobilization Advance, and interest upto then accrued till then on the Mobilization Advance.

(j) Any Bank Guarantee furnished to secure the Mobilization Advance shall be valid, in the first instance, for a period of 3 (three) months beyond the period of Mechanical Completion/completion of all the works under the Contract specified in the Time Schedule. The CONTRACTOR shall prior to the expiry of any period for which a Bank Guarantee is valid, at the request of the OWNER, suitably extend the validity of the Bank Guarantee(s) for such further period or periods as may be required by the OWNER failing which, without prejudice to any other right or remedy available to the OWNER, the OWNER shall be entitled to encash the Bank Guarantee(s) and recover in part or whole the outstanding mobilization advance and interest from the proceeds of the encashment.

(k) All other conditions stipulated in Clause 2.1.3.0 and Clause 2.1.4.0 hereof shall be applicable to the Mobilization Advance(s).

- 6.4.2.1 (a) Interest shall be applied on the portion of the Mobilization Advance outstanding from any amount certified for payment under a Running Account Bill up to the date of recovery or up to a period of thirty (30) days from the date of submission of the Running Account Bill complete in all respects to the Engineer-in-Charge, whichever is earlier.

(b) Interest shall be applied on the portion of the Mobilization Advance outstanding from any amount certified for payment under the Final Bill upto the date of recovery or up to a period of ninety (90) days from the date of submission of the Final Bill complete in all respects to the Engineer-in-Charge, whichever is earlier. The Final Bill shall be deemed to be submitted on the date when the Engineer-in-Charge has acknowledged receipt of the Final Bill without conveying any reservation.

6.4.2.2 The provisions aforesaid in Clause 6.4.2.0 and Clause 6.4.2.1 shall mutatis mutandis apply to any other advance which the OWNER may agree to grant the CONTRACTOR in relation to the Contract.

6.4.2.3 Nothing provided in the foregoing clauses hereof shall anyway be deemed to confer any rights or entitlement on the CONTRACTOR to receive on-account payments or Advance payments of any kind whatsoever, nor shall any failure or delay by the OWNER to make any advance or on-account payment(s) as herein envisaged or otherwise afford the CONTRACTOR a ground or basis for extension of time for completion or otherwise relieve the CONTRACTOR from any of its/his liabilities under the Contract, it being clearly understood that these on-account payments or advance payments are only by way of assistance to the CONTRACTOR.

6.4.2.4 The Mobilization Advance shall be utilized by the CONTRACTOR solely for and in the execution of the Contract and for no other purpose, and the CONTRACTOR shall satisfy the OWNER/Engineer-in-charge in this regard whenever required. If it is found that any of the advance(s) have been utilized by the CONTRACTOR in whole or part for any other purpose or if the Contract is for any reason cancelled or terminated, the OWNER may at its discretion recall the said advances or the unrecovered portion(s) thereof, as the case may be, and without prejudice to any other right or remedy available to the OWNER, recover the same by recourse to any Bank guarantee(s) furnished by the CONTRACTOR to the OWNER.

6.4.3.0 The approved Bill of Materials shall form the basis for the calculation of “on-account” payments with respect to supplies of materials. It is understood, however, that the Bill of Materials or approval thereof by the OWNER shall not in any way relieve the CONTRACTOR of its full responsibility to supply to the OWNER within the scope of supply, any and all materials whatsoever required for the performance of the work within the scope of work, or otherwise howsoever confine the responsibility of the CONTRACTOR within the scope of supply to the supply of materials indicated in the Bill of Materials, nor shall it otherwise be assumed or be deemed or construed as an acceptance by the OWNER of the adequacy or sufficiency of the materials listed in the Bill of Materials to meet the quantitative and/or qualitative requirements of the materials required to be supplied by the CONTRACTOR under the scope of supply or otherwise in any manner operate to bind the OWNER or to limit the liability of the CONTRACTOR, such Bill(s) of Materials being designed only to provide a basis for making “on account” payments to the CONTRACTOR for materials supplied, with a view that the OWNER shall make “on account” payments to the CONTRACTOR for the various materials supplied on the basis thereof in the manner and at the time in this behalf provided for in the contract.

6.4.4.0 The approved Schedule of Activities shall form the basis for the calculation of on account payments with respect to services/works performed by the CONTRACTOR. It is however understood that the Schedule of Activities or approval thereof by the OWNER shall not in any way relieve the CONTRACTOR of his full responsibility to perform within the scope of services/works whatsoever is required for the performance of the work covered by the scope of work or

otherwise however confine the responsibility of the CONTRACTOR to the performance of the services indicated in the Schedule of Activities, nor shall otherwise be assumed or be deemed or construed as an acceptance by the OWNER of the adequacy or sufficiency of the work/activities listed in the Schedule of Activities to meet the quantitative and/or qualitative requirements of services required to be performed or work required to be done by the CONTRACTOR under the scope of services or otherwise in any manner operate to bind the OWNER or to limit the liability of the CONTRACTOR, such Schedule of Activities being designed primarily to provide a basis for making On Account payments to the CONTRACTOR for works/services performed, with a view that the OWNER shall make "On Account" payments to the CONTRACTOR for the work/services performed on basis thereof in the manner and at the time in this behalf provided for in this Contract.

- 6.4.5.0 For the purposes of making "on account" payments for the work performed, monthly or otherwise as the Engineer-in-Charge may specify in this behalf, the CONTRACTOR shall make a quantitative assessment of the work performed by the CONTRACTOR as listed in the Schedule of Activities during the preceding month or other specified period and shall submit a Running Account Bill (in the form prescribed by the OWNER) in quadruplicate to the Engineer-in-Charge for the works performed during the said month/period with detailed measurement thereof, the said Running Account Bill(s) to be drawn by applying the rates applicable under the Schedule of Activities to the applicable items, which shall be subject to certification by the Engineer-in-Charge specified for the purpose. The Engineer-in-Charge shall thereafter have a summary verification undertaken of the work and quantities entered in the Running Account Bills and shall certify the Running Account Bills for payments on basis of such verification.
- 6.4.5.1 For the purpose of making "On Account" payment for materials supplied within the scope of supply other than payments made in advance monthly or otherwise as the Engineer-in-Charge may specify in this behalf, the CONTRACTOR shall make a quantitative list of material supplied by the CONTRACTOR within the scope of supplies at the job site and of the "On Account" payment made in respect thereof prior thereto, and of the "On Accounts" payment(s) becoming due in respect thereof during the preceding month or other specified period as the case may be supported by the Certificate of Verification and Good Condition given by the Engineer-in-Charge in order to qualify for the relative on account payment claimed as due. The CONTRACTOR shall submit such assessment in the form of a Running Account Bill prepared in the format prescribed or approved by the OWNER in this behalf in quadruplicate to the Engineer-in-Charge. The Running Account Bill(s) shall be drawn by applying applicable parts of the price(s) for relative materials as indicated in the Bill(s) of materials for the applicable item(s) and shall be subject to certification by the Engineer-in-Charge. The Engineer-in-Charge shall thereafter have a summary verification undertaken of the materials and quantities entered in the Running Account Bill(s) and of the amount claimed and shall certify the Running Account Bill(s) for payment on the basis of such verification.
- 6.4.6.0 The amount certified for payment by the Engineer-in-Charge on any Running Account Bill within the provisions for "on account" payments in the Contract documents shall be conclusive for the determination of any "on account" payments and no claim shall be entertained by the OWNER contrary thereto or in contradiction thereof.
- 6.4.6.1 In any certificate for on account payment, the Engineer-in-Charge shall be authorised to adjust in whole or part, any previous amount certified by error.

- 6.4.7.0 All “on account” payments shall be subject to deduction of previous payments on account and of all claims of the OWNER, adjustments and/or deductions provided for in the Contract or agreed to between the parties, tax deductions and any other deductions required to be made under any law, rule or regulation for the time being in force.
- 6.4.7.1 All “advance” and “on account” payments shall be regarded merely as advance payments against the amounts due to the CONTRACTOR in terms of the Contract, and any such payments shall be without prejudice to the full rights of the OWNER under the contract and the liabilities of the CONTRACTOR thereunder, and specially shall not be regarded as an acceptance or completion of any works or the acceptance of any materials paid for in terms of any Running Account Bill or otherwise, notwithstanding any verification or certification by the Engineer-in-Charge or otherwise in respect thereof.
- 6.4.7.2 Except as elsewhere herein to the contrary provided, the Schedule of Activities or Bill of Materials or other criterion applied by the CONTRACTOR in respect of any work or supply in his Running Accounts Bill(s) or acceptance thereof by the Engineer-in-Charge in verifying the bill in respect of such work or supply or criterion applied shall not be deemed to be binding upon the OWNER as determining the completeness, acceptance or price payable for relative work or supply.
- 6.4.7.3 Unless or until an extension of time has been granted by the Engineer-in-charge under Clause 4.3.5.0 hereof or by the OWNER under Clause 4.3.6.0 hereof on account payments made under Running Account Bills raised by the CONTRACTOR for the works executed after the expiry of the date of Mechanical Completion of the works under the approved Progress Schedule, shall be subject to provisional withholding of an amount towards adjustment by way of discount in the price calculated in accordance with the provisions of Clause 4.4.2.0 hereof. The amount so withheld shall be adjusted towards the Price Adjustment (if any) finally determined after Mechanical Completion of the works, without prejudice to the OWNER’s right to recover from the CONTRACTOR any shortfall between the Price Adjustment finally determined and the amount provisionally withheld. Any excess amount provisionally withheld in excess of Price Adjustment finally determined shall upon such determination be paid to the CONTRACTOR.

As an alternative, the CONTRACTOR shall have an option to provide a Bank Guarantee from a schedule bank and in a format acceptable to the OWNER for a sum equal to 5% (five percent) of the total contract value which shall be available for recovery of the Price Adjustment For Slippage In Completion (if any) finally determined after Mechanical Completion of the works/Unit(s). This Bank guarantee shall be in addition to any other guarantee to be provided by the CONTRACTOR and shall be valid for a period of not less than 12 (twelve) months from the date of Mechanical Completion of the works.

6.4.8.0 Interest on Delayed Payment

- 6.4.8.1 For the purpose of calculating late payment interest and notional interest pursuant to the following provisions, relevant due date shall be the date terminating with the expiry of 45 (forty five) days after the date the CONTRACTOR delivers his Running Account Bill to the Engineer-in-charge for certification in accordance with the contractual provisions (hereinafter for the purposes of Clause 6.4.8.2 and Clause 6.4.8.3, referred to as the “relevant due date”). Such date of delivery shall be entered by or on behalf of the Engineer-in-charge on the face of the bill and on the face of a copy thereof returned for the CONTRACTOR’s record.

- 6.4.8.2 Any undisputed amounts of any Running Account Bill(s) not paid by the OWNER on the relevant due date shall bear interest (the "Late Payment Interest") from the date following the **relevant due date** for payment upto the date of payment at the same rate as payable in respect of Indian Rupees on rupee advances by the OWNER to the CONTRACTOR and as payable in respect of foreign currency on foreign currency advances by the OWNER to the CONTRACTOR. The Late Payment Interest shall be recorded in the OWNER's records (with notice of the same to the CONTRACTOR) (the "Late Payment Interest Account").
- 6.4.8.3 **Notional Interest on Early Payment**
- In case any payment is made by the OWNER on a date earlier than the relevant due date of payment the OWNER shall calculate an amount of notional interest (the "Notional Interest") on the amount so paid at the same rate as for late payments specified in Clause 6.4.8.2 from the date of payment to the relevant due date. The Notional Interest shall be recorded in the OWNER's records (with notice of same to the CONTRACTOR) (The "Notional Interest Account"). If the OWNER is required to pay any Late Payment Interest in the Late Payment Interest Account pursuant to Clause 6.4.8.2, the OWNER will offset any such Late Payment Interest otherwise due by any positive amount of Notional Interest in the Notional Interest Account.
- 6.4.8.4 The Late Payment Interest Account and the Notional Interest Account shall be closed at the time of payment of the Final Bill by the OWNER. If the balance standing to credit in the Notional Interest Account is less than the Late Payment Interest payable under the Late Payment Interest Account, the shortfall shall be paid to the CONTRACTOR in Indian Rupees at the time of the payment of the Final Bill. For the purposes of the said payment, foreign exchange shall be converted into Indian Rupees at the Bill Collection Buying Rate of the State Bank of India, New Delhi for the relevant foreign exchange prevailing 7 (seven) working days prior to the date of payment.
- Notwithstanding the foregoing, in no event shall the Contract Price be reduced under this Clause 6.4.8.4 due to adjustments made for Notional Interest or due to any unallocated Notional Interest in the Notional Interest Account, with the intent that credit in the Notional Interest Account only be utilised to offset any Late Payment Interest payable by the OWNER.
- 6.4.9.0 Notwithstanding provisions aforesaid any failure or delay by the OWNER to make any advance or on account payment(s) shall not afford the CONTRACTOR a ground or basis for extension of time for completion or for any claim (other than interest) or otherwise relieve the CONTRACTOR from any of its liabilities and obligations under the Contract.
- 6.4.10.0 Notwithstanding anything elsewhere provided in the Contract documents, all advances made by the OWNER to the CONTRACTOR shall forthwith become repayable to the OWNER in the event of the contract being terminated for any cause.
- 6.5.0.0 **MODE OF PAYMENT AND TAX DEDUCTIONS**
- 6.5.1.0 All payments to be made by the OWNER to the CONTRACTOR under or in terms of the Contract shall be paid by bank transfer to the designated account of the CONTRACTOR notified in this behalf by the CONTRACTOR to the OWNER for which purpose, the CONTRACTOR shall furnish to the OWNER such documents and information as required by the OWNER to effect the bank transfer.

- 6.5.1.1 On written request from the CONTRACTOR, the payments by the OWNER to the CONTRACTOR may be made by wire transfer to an account or accounts to be designated by the CONTRACTOR and maintained by the CONTRACTOR with a bank or banks in India in respect of Rupee payments and to a bank or banks in the country in which CONTRACTOR's relevant bank account is located in respect of the Dollar/Home Currency payments, and shall be deemed to have been fully discharged when deposited in Dollars/Home Currency or Rupees as the case may be, in the account or accounts designated by CONTRACTOR as aforesaid, provided that, once all acts necessary to initiate the relevant wire transfer have been completed within the time specified for such payment, any delays within the international or domestic banking system in the transfer of such payments to CONTRACTOR's account or accounts shall not give rise to a claim that OWNER has breached its payment obligations hereunder. If funds are not received in the account or accounts designated by CONTRACTOR, OWNER will furnish upon CONTRACTOR's written request, documentary substantiation that all steps necessary to initiate the transfer of such funds have been taken by OWNER's bank or banks. All costs associated with such wire transfer and incurred in India shall be for OWNER's account, and all other costs shall be borne by the CONTRACTOR.
- 6.5.2.0 The CONTRACTOR shall be primarily responsible for the payment of all Indian Income Tax.
- 6.5.2.1 It is to understand that in terms of the Indian Law, the OWNER is responsible also to deduct at source Indian Income Tax at prescribed rates on any money paid or payable by the OWNER to a non-resident CONTRACTOR. With this in view, the following stipulations shall apply with respect to payments to non-resident CONTRACTOR.
- (i) The CONTRACTOR shall promptly apply for instructions from Income Tax Authorities in India of the rate at which deductions of tax at source shall be made by the OWNER on payments to the CONTRACTOR. Any information required by the Owner or Income Tax Authorities for such instructions shall promptly be furnished by the CONTRACTOR, in the form (if any) required. Pending such instructions, the OWNER shall not release any payment to a non-resident CONTRACTOR.
 - (ii) The amount(s) deductible at source by way of Indian Income Tax in accordance with the instructions of the Indian Authorities or otherwise as aforesaid shall be deducted from all amounts payable by the OWNER to the CONTRACTOR.
 - (iii) The amounts deducted shall be paid by the OWNER directly to the Income Tax Authorities on behalf of the CONTRACTOR.
 - (iv) In the event of the amounts deducted being found ultimately to be in excess of the Indian Income Tax assessed, the CONTRACTOR shall be exclusively responsible to apply for and collect the refund thereof from the Income Tax authorities concerned in this behalf.
 - (v) In the event of the amount deducted being found to be less than the Indian Income Tax payable on assessment or otherwise, the CONTRACTOR shall forthwith pay the short- fall to the concerned Indian Income Tax Authorities, and shall indemnify and keep indemnified the OWNER from and against all claims and recoveries against the OWNER relative thereto.

- 6.5.2.2 The CONTRACTOR shall be exclusively liable to pay directly to the concerned Income Tax Authorities in India and to bear all Indian Taxes payable relative to employment of any personnel by the CONTRACTOR.
- 6.5.2.3 Payments to a CONTRACTOR resident in India shall be subject to deduction of taxes under Section 194 C of Income Tax and/or under other Section, law, rule or regulation for the time being in force providing for the deduction of tax at source. OWNER shall issue Tax deduction certificate of taxes deducted at source as per the provisions and within the time limits prescribed under the Indian Income Tax Act 1961 and the rules thereunder.
- 6.6.0.0 **CLAIMS BY THE CONTRACTOR**
- 6.6.1.0 Should the CONTRACTOR consider that he is entitled to any extra payment or compensation in respect of the works or supplies over and above the amounts due in terms of the Contract as specified in Clause 6.3.1.0 hereof, the CONTRACTOR shall give notice in writing of its claim in this behalf to the Engineer-in-Charge and the OWNER within 21 (Twenty one) days from the date of the issue of orders or instructions relative to any work(s) for which the CONTRACTOR claims such additional payment or compensation, or from the date of the happening of any other event upon which the CONTRACTOR bases such claim, as the case may be. Such notice shall give full particulars of the nature of such claim, grounds on which it is based, and the amount claimed. The OWNER shall not anyway be liable in respect of any claim by the CONTRACTOR unless notice of such claim shall have been given by the CONTRACTOR to the Engineer-in-Charge and the OWNER in the manner and within the time aforesaid, and the CONTRACTOR hereby waives and relinquishes any and all claims and all his rights in respect of any claim which is not notified by the CONTRACTOR to the Engineer-in-Charge and the OWNER in writing in the manner and within the time aforesaid.
- 6.6.2.0 The Engineer-in-Charge and/or the OWNER shall be under no obligation to reply to any notice of claim given or claim made by the CONTRACTOR within the provisions aforesaid or otherwise, or to otherwise reject the same, and no omission or failure on the part of the Engineer-in-Charge or the OWNER to reject any claim made or notified by the CONTRACTOR nor any consideration thereof or dealing therewith shall be deemed to be an admission by the OWNER of the validity of such claim or waiver by the OWNER of the provisions of Clause 6.6.1.0 hereof.
- 6.6.3.0 Any or all claims of the CONTRACTOR notified in accordance with the provision of Clause 6.6.1.0 hereof as shall remain/persist at the time of preparation of the Final Bill by the CONTRACTOR shall be separately included in the Final Bill prepared by the CONTRACTOR in the form of a Statement of Claims attached thereto, giving particulars of the nature of such claim, grounds on which it is based, and the amount claimed, and shall be supported by copy(ies) of the notice(s) sent in respect thereof to the Engineer-in-Charge and the OWNER under Clause 6.6.1.0 hereof. In so far as such claim shall in any material particular be at variance with the claim notified by the CONTRACTOR within the provisions of Clause 6.6.1.0 hereof, it shall be deemed to be a claim different from the notified claim with consequence in respect thereof indicated in Clause 6.6.1.0 hereof, and with consequence in respect of the notified claim as indicated in Clause 6.6.3.1 hereof.
- 6.6.3.1 Any and all notified claims not specially reflected and included in the Final Bill in accordance with the provisions of Clause 6.6.3.0 hereof shall be deemed to have been waived and relinquished by the CONTRACTOR, and the CONTRACTOR hereby waives and relinquishes all rights to raise or include

in the Final Bill any claim(s) other than a notified claim conforming in all respects to and in accordance with the provisions of Clause 6.6.3.0 hereof.

- 6.6.4.0 No claim(s) shall on any account be made by the CONTRACTOR after the Final Bill, with the intent that the Final Bill prepared by the CONTRACTOR shall reflect any and all claims whatsoever of the CONTRACTOR against the OWNER arising out of or in connection with the Contract or any supply made or work performed by the CONTRACTOR thereunder or in relation thereto, and notwithstanding any enabling provision in any law or Contract and notwithstanding any claim in quantum meruit that the CONTRACTOR could have with respect thereto, the CONTRACTOR hereby waives and relinquishes any and all such claims not included in the Final Bill and absolves and discharges the OWNER from and against the same, even if in not including the same as aforesaid, the CONTRACTOR shall have acted under a mistake of law or of fact, or shall claim to have acted under economic compulsion or necessity.
- 6.6.5.0 Notwithstanding the existence of any claim by the CONTRACTOR in terms hereof or otherwise, the CONTRACTOR shall continue and be bound to continue and perform the works and supplies to completion in all respects according to the Contract (unless the contract be priorly determined by the OWNER).
- 6.6.6.0 The payment of any sum on account to the CONTRACTOR during the performance of any work or the making of any supply in respect of which a claim has been notified by the CONTRACTOR in terms of Clause 6.6.1.0 hereof or the making or negotiation of any interim arrangement(s) by the OWNER in respect of the performance of such work or item of work or the making of any supply or item of supply by the CONTRACTOR shall not be deemed to be an acceptance of the related claim by the OWNER, or any part or portion thereof unless specifically signed by the authorised representative of the OWNER and the CONTRACTOR as an Amendment to Contract, or as an Agreed Variation, with the intent that any such payment or arrangement shall (unless signed as an amendment or variation aforesaid) constitute merely a facility or assistance to the CONTRACTOR, and not an obligation upon the OWNER.
- 6.6.7.0 If required by the OWNER, the Engineer-in-Charge shall be authorised to require the CONTRACTOR to furnish, and the CONTRACTOR shall, upon the request of the Engineer-in-Charge/OWNER, furnish all invoices, vouchers and accounting records as may be deemed necessary by the Engineer-in-Charge/OWNER for the purpose of verifying any CONTRACTOR's claim.
- 6.7.0.0 **DISCHARGE OF OWNER'S LIABILITY**
- 6.7.1.0 The acceptance by the CONTRACTOR of any amount paid by the OWNER to CONTRACTOR in respect of the Final Bill of the CONTRACTOR in settlement of all said dues to the CONTRACTOR under the Final Bill shall, without prejudice to the claims of the CONTRACTOR included in the Final Bill in accordance with the provisions of clause 6.6.3.0 hereof, be deemed to be in full and final satisfaction of all such dues to the CONTRACTOR notwithstanding any qualifying remarks, protest or condition imposed or purported to be imposed by the CONTRACTOR relative to the acceptance of such payment, with the intent that upon acceptance by the CONTRACTOR of any payment made as aforesaid, the contract (including the arbitration clause) shall stand discharged and extinguished insofar as relates to and/or concerns the entitlements of the CONTRACTOR under the Contract except for the

CONTRACTOR's right, if any, to receive payment in respect of his notified claims included in his Final Bill and the right to receive payment of the unadjusted balance of the Security Deposit in accordance with the provisions of Clause 6.8.3.0 hereof on successful completion of the defect liability period. But nothing herein stated shall affect the CONTRACTOR's undischarged liabilities and obligations under the Contract.

6.7.2.0 The acceptance by the CONTRACTOR of any amount paid by the OWNER to the CONTRACTOR in respect of the notified claims of the CONTRACTOR included in the Final Bill, in settlement of the claims of the CONTRACTOR, shall be deemed to be in full and final settlement of all claims of the CONTRACTOR notwithstanding any qualifying remarks, protest or condition imposed or purported to be imposed by the CONTRACTOR relative to the acceptance of such payment made as aforesaid with the intent that upon acceptance by the CONTRACTOR of any payment made as aforesaid, the Contract shall stand discharged and extinguished insofar as relates to and/or concerns the claims of the CONTRACTOR except for the CONTRACTOR's rights to receive payments of the unadjusted balance, if any, of the security deposit in accordance with clause 6.8.3.0 hereof on successful completion of the defect liability. But nothing herein stated shall affect the CONTRACTOR's undischarged liabilities and obligations under the Contract.

6.7.3.0 Notwithstanding anything provided in Clause 6.7.1.0 and/or Clause 6.7.2.0 hereof, the CONTRACTOR shall be and remain liable for defects in terms of Clause 5.4.0.0 and associated clause thereunder and for any indemnity to the OWNER in terms of Clause 6.8.2.0 and shall be and remain entitled to receive the unadjusted balance of the Security Deposit remaining in the hands of the OWNER in terms of Clause 6.8.3.0 hereof and associated clauses thereunder.

6.8.0.0 **FINAL CERTIFICATE AND RELEASES OF SECURITY**

6.8.1.0 Forthwith on the CONTRACTOR's application made after the expiry of the period of defect liability provided for in Clause 5.4.0.0 hereof and associated clauses thereunder and satisfaction of all liabilities of the CONTRACTOR in respect thereof, the Engineer-in-Charge shall issue a Final Certificate to the CONTRACTOR Certifying that the CONTRACTOR has performed his obligations in respect of the defect liability period in terms of Clause 5.4.0.0 hereof and associated clauses thereunder, and until issue of such Final Certificate, the CONTRACTOR shall be deemed not to have performed such liabilities notwithstanding issue of the Completion Certificate or payment of the Final Bill by the OWNER.

6.8.2.0 Upon application for the Final Certificate, the CONTRACTOR shall :

- (i) Be deemed to have warranted that it had been fully paid and satisfied all claims for or arising out of the work, labour, materials, supplies and equipment used in or connected with the Contract and all other liabilities whatsoever touching or affecting the Contract, or its performance, including in relation to sub-contractors and suppliers, and
- (ii) To have undertaken to indemnify and keep indemnified the OWNER from and against all claims, demands, debts, liens, obligations and liabilities whatsoever arising therefrom or relating thereto.

6.8.2.1 Upon issue of the Final Certificate, the CONTRACTOR shall be deemed to have released, acquitted and discharged the OWNER from and against all

claims (known or unknown), liens, demands or causes of action of any kind whatsoever arising out of or relating to the Contract or otherwise howsoever touching or affecting the same.

- 6.8.3.0 Forthwith on application made by the CONTRACTOR in this behalf accompanied by the Final Certificate, or within 84 (Eighty Four) days of the OWNER passing the CONTRACTOR's Final Bill, whichever shall be later, the OWNER shall cancel and return to the CONTRACTOR all previous Bank Guarantees remaining unutilised in the hands of the OWNER, and upon such cancellation and return, the OWNER shall stand discharged of all obligations/liabilities under the Contract provided that the cancellation and return of any Bank Guarantee(s) furnished by the CONTRACTOR as and by way of security deposit shall be subject to the CONTRACTOR replacing such Bank Guarantee(s) with a Bank Guarantee from any Bank in India (including the Indian Branch of foreign Bank) in a format acceptable to the OWNER covering 10% (ten percent) of the value (as determined by the OWNER) of equipments/works replaced or repaired during the Defect Liability Period for the unexpired term of defect liability in respect thereof plus a 3 (three) months claim period.

6.9.0.0 **CLAIMS OF OWNER**

- 6.9.1.0 No release/payment of any unadjusted balance of the Security Deposit (furnished in the form of a Bank Guarantee or otherwise) by the OWNER to the CONTRACTOR as aforesaid or otherwise shall be deemed or treated as a waiver of any right(s) or claim(s) of the OWNER or shall stop or prevent the OWNER from thereafter making or enforcing any claim or any rights against the CONTRACTOR with the intent that the claims of the OWNER, against the CONTRACTOR shall continue to survive and shall not get extinguished notwithstanding the issue of Final Certificate and/or the release of Security Deposit to the CONTRACTOR.

SECTION – 7 TERMINATION

7.0.0.0 TERMINATION

7.0.1.0 Notwithstanding anything elsewhere herein provided and in addition to any other right or remedy of the OWNER under the CONTRACT or otherwise (including the right of the OWNER to discount by way of price adjustment under the provisions of Clause 4.4.0.0 hereof and associated Clauses thereunder), the OWNER shall be entitled to terminate the CONTRACT by written notice at any time during its currency on or after occurrence of any one of the following events/contingencies, namely :

- (i) Breach or failure by the CONTRACTOR of any of the obligations of the CONTRACTOR under the Contract, including :
 - (a) Failure to start the work within 84 (Eighty Four) days of the date of issue of the Acceptance of Bid by the OWNER, notwithstanding the OWNER having made available to the CONTRACTOR the work front necessary for the commencement of work.
 - (b) Failure to commence work at site within 21 (Twenty-One) days of the time prescribed in this behalf in the Progress Schedule or to commence supply of any material within 21 (Twenty One) days of the time prescribed in this behalf in the Delivery Schedule.
 - (c) Failure to carry out or carry on the works or any of them to meet the Progress Schedule resulting in a delay of 28 (Twenty Eight) days or more in the actual performance of the work, or failure to complete any supplies to meet the Delivery Schedule resulting in a delay of 28 (Twenty Eight) days or more in the scheduled deliveries of materials.
 - (d) Failure to provide at the job site, within 21 (twenty one) days of being required to do so by the Engineer-in-Charge, sufficient labour, material, equipment, machinery, temporary works and/or facilities required for the proper and/or due execution of the work or any part thereof.
 - (e) Failure to execute the works or any of them in accordance with the Contract or disobedience of any order or instruction of the Engineer-in-Charge or negligence or lack of expertise in the performance of the work, or failure to supply materials of quality conforming to the requirements of the contract.
 - (f) Abandonment of the works or any part thereof.
 - (g) Substantial suspension of the works or any part thereof for a period of 14 (Fourteen) days or more without the authority of the Engineer-in-Charge.
 - (h) Failure to execute the Contract in terms of the Form of Contract forming part of the Bid Documents within 30 (thirty) days of the date of issue of the Letter of Acceptance by the OWNER or within such extended period as may be permitted by the OWNER in this behalf.

- (i) Failure to furnish the Bank Guarantee (s) required to be furnished by the CONTRACTOR under Clause 2.1.1.0 and related provisions hereof within 28 (Twenty Eight) days of the date of issue of Letter of Acceptance by the OWNER.
 - (j) Any other event which is an event of termination under the Contract or which in the opinion of the OWNER, reasonably impinges on the CONTRACTOR's capability to fulfill its contractual commitments.
- (ii) Dissolution of the CONTRACTOR (if a firm), or commencement of liquidation or winding up (whether voluntary or compulsory) of the CONTRACTOR (if a company) or of any member (if the CONTRACTOR is a consortium), or insolvency of the CONTRACTOR or of any partner (if a firm), or appointment of a receiver or manager of the CONTRACTOR's assets or of any partner/member of the CONTRACTOR (if a firm or consortium) by a court;
 - (iii) Distress, execution, or other legal process being levied on or upon any of the CONTRACTOR's goods and/or assets involved in or relative to the performance of the work or supply;
 - (iv) Death of a CONTRACTOR (if an individual);
 - (v) If upon any voluntary change in the partnership/constitution of CONTRACTOR's organisation (if a partnership or Company) the OWNER refuses in its sole discretion to Continue the Contract with the re-constituted firm or Company;
 - (vi) If the CONTRACTOR or any person employed by him shall make or offer for any purpose connected with the contract, any gift, gratuity, royalty, commission, gratification or other inducement (whether money or in any other form) to any employee or agent or CONSULTANT of OWNER;
 - (vii) If the CONTRACTOR shall assign or attempt to assign his interest or any part thereof in or under the Contract.
- 7.0.1.1 The decision of the Executive Director as to whether any of the events or Contingencies mentioned in Clause 7.0.1.0 hereof entitling the OWNER to terminate the Contract has occurred or not shall be final and binding upon the CONTRACTOR.
- 7.0.2.0 The notice of termination shall set forth, in addition to statement of the reason or reasons for terminating the Contract, the time(s) and place(s) for conducting a survey and inspection/measurement of the work performed and materials supplied under the Contract upto the date of termination for the purpose of determining the final amount(s) due to the CONTRACTOR therefor. The reasons for the termination stated in the notice of termination shall be final and binding upon the CONTRACTOR.
- 7.0.2.1 Forthwith upon receipt of notice of termination, the CONTRACTOR shall at his own risks and costs within the scope of relative work, do and perform to the satisfaction of the Engineer-in-Charge all and whatsoever is necessary, in the opinion of the Engineer-in-Charge (which shall be final and binding upon the CONTRACTOR) to secure and protect all complete and incomplete works performed by the CONTRACTOR upto termination, and should it fail to do so, the OWNER shall be entitled by itself or through an independent Contractor(s) or partly by itself and partly through an independent

Contractor(s), to do and perform at the risks and costs of the CONTRACTOR all such work(s) not done by the CONTRACTOR, and the provisions of Clause 7.0.9.0 therefore shall mutatis-mutandis apply thereto.

- 7.0.3.0 For the purpose of measurements, the provisions of Clause 6.0.0.0 to 6.1.5.0 hereof shall apply. Only completed items of work and materials shall be reckoned for the purpose of measurements and the decision of the Engineer-in-Charge as to whether or not any works have or supply has been completed for the purpose of measurement shall be final and binding upon the CONTRACTOR. Incomplete items or works shall be measured and paid for only on the basis of materials (if any) supplied by the CONTRACTOR, and the decision of the Engineer-in-Charge as to the quantity of material involved in or relative to any incomplete works shall be final and binding upon the CONTRACTOR.
- 7.0.4.0 Work done and/or supplies made by the CONTRACTOR qualifying for payment under Clause 7.0.3.0 hereof shall be paid for in respect of work done on the basis of on account payment due thereon based on Schedule of Activities, and for materials supplied on the basis of on account payment due thereon on the basis of Bill of Materials and the provisions of Clause 6.4.6.0, 6.4.6.1, 6.4.7.0 and 6.4.8.0 hereof shall mutatis mutandis apply and accounting done and bill prepared by the CONTRACTOR on the basis thereof shall be the Final Bill and no other amount(s) shall be due to the CONTRACTOR in respect thereof, subject to the provisions of 6.6.0.0 and associated clauses thereunder with regard to the notified claim(s) of the CONTRACTOR included in the Final Bill in accordance with the provisions of Clause 6.6.3.0.
- 7.0.5.0 Within 28 (Twenty Eight) days of completion of the inspection/measurements, the CONTRACTOR shall clear the job site(s) made available by the OWNER to the CONTRACTOR of all surplus materials, CONTRACTOR's labour, equipment and machinery and shall demolish, dismantle and remove such temporary works, structure and construction and other items and things brought upon or erected at the job site(s) and not incorporated in the permanent works and shall remove all rubbish from the job site(s) and shall clear, dress and restore the job site(s) to the satisfaction of the Engineer-in-Charge and shall put the OWNER in undisputed custody and possession thereof and the entire works.
- 7.0.6.0 Should a CONTRACTOR fail to comply with the provisions of Clause 7.0.5.0 hereof in the manner and within the time specified therein, the OWNER shall have the right at the risk and costs of the CONTRACTOR in all respects to clear the job site(s) of all surplus materials, CONTRACTOR's labour, equipment and machinery and other materials and things and/or demolish/dismantle and remove any temporary works, structures and/or construction and other items and things brought upon or erected at the job site(s) and to remove all rubbish from the job site(s) and the land allotted to the CONTRACTOR and clear, dress and restore the said land to the satisfaction of the Engineer-in-Charge and take undisputed possession and custody thereof and of the works and CONTRACTOR's stores thereon and dispose of and/or otherwise deal with any and all equipment and machinery etc., stores and other items and things aforesaid and recoveries of any demolition/dismantling as the OWNER shall in its absolute discretion deem fit, and the CONTRACTOR shall forth with on demand pay the OWNER the entire costs/expenses of the OWNER relative to the above together with 15%

(Fifteen percent) thereof to cover the OWNER's supervision, with right in the OWNER (without prejudice to any other mode or recovery) to recover the same from the proceeds of any sale or disposal as aforesaid or from any monies whatsoever of the CONTRACTOR held by the OWNER or dues of the CONTRACTOR and the CONTRACTOR hereby irrevocably nominates, constitutes and appoints the OWNER (with right to the OWNER to delegate any and all of its rights in terms hereof to such of its officer(s) and/or other person(s) as it shall deem fit) for and on behalf of and as attorney of the CONTRACTOR to do, commit and/or sign all acts, deeds, matters and things as shall or may be necessary to be done, committed and/or signed by the CONTRACTOR to put into effect the provisions of this clause with full right to enter into arrangements with third parties for or relative to the storage, sale and/or other disposal of any goods, equipment and machinery and other items and things and to enter into or upon any of the CONTRACTOR's premises and to break open if necessary any locks, bolts, fasteners, bonds or other devices restricting entry thereto and to do all other acts, deeds, matters and things as shall or may be necessary to give full effect to the provision of this Clause.

PROVIDED ALWAYS THAT:

- (i) The OWNER shall be entitled, without prejudice to the foregoing and in addition thereto, upon the CONTRACTOR failing to comply with the provisions of Clause 7.0.5.0 hereof after removing/demolishing/dismantling from the job site any of the CONTRACTOR's goods, temporary works and other items and things, by written notice to the CONTRACTOR, to require the CONTRACTOR to take delivery of, lift and/or clear the same within 7 (seven) days (or such other period as may be specified in said notice) of date of said notice failing which the OWNER shall abandon the same at the risks and costs of the CONTRACTOR, and should the CONTRACTOR fail to take delivery of, lift and/or clear the same within the period in this behalf specified in the said notice, the OWNER shall be entitled at any time thereafter to abandon the same at the risks and costs of the CONTRACTOR, whereupon (without prejudice to any other rights of the OWNER) the OWNER shall stand absolutely discharged and absolved in respect of all and any material, equipment, machinery and other item and things whatsoever abandoned as aforesaid.
- (ii) Notwithstanding anything to the contrary herein provided, nothing herein stated shall constitute the OWNER as a trustee or bailee of any of the CONTRACTOR's material, equipment, machinery or other items or things removed, cleared, demolished, dismantled or abandoned as aforesaid, nor shall the OWNER be bound in law or fact by any duty of care in respect thereof, with the intent that all actions, dealings and disposals within the provisions of this clause shall be exclusively at the risk and liability of the CONTRACTOR (including relative to any loss or damage) and the OWNER shall not be howsoever responsible, accountable or liable in respect thereof.

7.0.7.0 If for any cause attributable to the CONTRACTOR (including but not limited to resistance put up by the CONTRACTOR and/or his servants or agents or any court order consequent upon a suit or proceedings filed by the CONTRACTOR), the OWNER is unable to fully take over possession of the entire works within 7 (Seven) days from the date of completion of the

measurements as contemplated above, the OWNER shall, in addition to all discounts, compensations and/or damages recoverable from the CONTRACTOR in terms hereof (including but not limited to OWNER's entitlements under Clause 4.4.0.0 and Clause 7.0.9.0 hereof) or otherwise, be entitled to recover from the CONTRACTOR liquidated damages in the amount equivalent to 1% (one percent) of the Lumpsum Price for each week or part thereof that the said taking over possession of any works is delayed beyond the period of 7 (seven) days specified above, subject to a maximum of 5% (five percent) of the Lumpsum Price.

- 7.0.8.0 Notwithstanding anything provided in Clause 7.0.5.0 hereof, the OWNER shall have the right at any time prior to the removal of the same from the job site, to take possession of such of the CONTRACTOR's goods or equipment at any and all jobs sites as the OWNER shall deem fit, and the CONTRACTOR shall be entitled to compensation for any such goods or equipment taken over at cost thereof to the CONTRACTOR or depreciated value thereof in the case of equipment, whichever shall be less, such cost or value not to include the cost of transport, carriage or handling or storage, but to include the cost of freight to India on imported goods. The cost of goods and/or depreciated value of equipment taken over as determined by the Engineer-in-Charge shall be final and binding upon the CONTRACTOR.
- 7.0.9.0 Upon termination of the Contract, the OWNER shall be entitled at the risk and expenses of the CONTRACTOR in all respects to either engage one or more contractors to complete the work and/or supplies and/or to redesign, re-perform and/or redo and/or to alter, modify and/or replace the materials supplied by the CONTRACTOR and/or supply other materials or substitutes to the extent necessary to set up, install, erect, establish and operate the Unit and tools and spares in accordance with the Contract and/or to complete the works in accordance with the Contract, notwithstanding that the contractor(s) so engaged shall adopt design and/or processes or methods or materials different from those proposed or projected and/or adopted by the CONTRACTOR for any purpose.
- 7.0.10.0 In addition to rights under clauses 7.0.8.0 and 7.0.9.0, the OWNER shall, upon termination of the contract have an option to take over from the CONTRACTOR, in whole or part, any subsisting order or sub-contract entered into by the CONTRACTOR in or relative to performance of the CONTRACTOR's obligations under the contract, for which purpose the provisions hereof shall operate as an assignment by the CONTRACTOR to OWNER of the orders and sub-contract opted to be taken over by the OWNER, with right in the OWNER as attorney for and on behalf of and in the name of the CONTRACTOR to sign, execute and/or deliver any document, notice or other communication as may be required under the law applicable to the relative contract or order to complete the assignment thereof in favour of the OWNER, and the provisions hereof shall constitute appropriate appointment by the CONTRACTOR in favour of the OWNER in this behalf, with right in the OWNER to act in this behalf through any of its directors or officers.
- 7.1.0.0 No amount shall be due and payable to the CONTRACTOR upon or in the event of termination of the Contract unless and until the entirety of the works as contemplated in the scope of services and the entirety of the supplies as contemplated in the scope of supplies shall have been completed in all respects and all payments finally due on any account to the OWNER and/or

other contractor(s) in respect of the balance works and supplies have been finally settled and the OWNER has been discharged from all liabilities in respect thereof.

- 7.2.0.0 If upon the satisfaction of the clause 7.0.9.0 and 7.1.0.0 hereof there shall remain in the hands of the OWNER any excess/balance after all accounting and adjustment of all dues from the CONTRACTOR to the OWNER, the OWNER shall forthwith pay over the excess/balance to the CONTRACTOR and in the event of the security deposit and other dues of the CONTRACTOR in the hands of the OWNER being insufficient to meet the dues of the OWNER as aforesaid, the CONTRACTOR shall forthwith on demand by the OWNER pay the OWNER the shortfall. For calculating the excess/balance aforesaid in the hands of the OWNER any price discount or adjustment due to the OWNER from any other contractor under the provisions of Clause 4.3.6.0 hereof or any equivalent or similar provisions in the Contract in this behalf between the OWNER and the other CONTRACTOR shall not be reckoned.

SECTION – 8 MISCELLANEOUS

8.0.0.0 PERSONAL ACTS AND LIABILITIES

8.0.1.0 No director, officer or other employee of the OWNER shall anyway be personally bound or liable to the CONTRACTOR for the acts, commissions or obligations of the OWNER under the contract or otherwise or be personally answerable to the CONTRACTOR for on in respect of any default or omission in the performance of any act(s), deed(s), or things to be observed and/or performed by the OWNER under the contract.

8.0.2.0 The CONTRACTOR shall not be entitled to any increase in the rate(s) mentioned in the Price Schedule or in any of them or to any other payment, right, benefit or claim whatsoever by reason of any representation, explanation, statement, assurance or understanding given or alleged to have been given to him by the Engineer-in-Charge, PMC or any other agent or consultant of the OWNER, nor shall any director, officer or other employees or the Engineer-in-Charge, PMC or agent or consultant of the OWNER be personally liable for or in respect of any representation, explanation, statement or assurance or understanding given or alleged to have been given by him to the CONTRACTOR or any other person relative to the contract, nor shall the OWNER be responsible in respect thereof unless the same has been jointly signed by the CONTRACTOR and the OWNER as an agreed variation or amendment to Contract.

8.0.3.0 The CONTRACTOR shall not under any circumstances, pay or advance to any officer(s), servant or agent(s) of the OWNER, any sum or money on any account without prior authority of the OWNER in writing, and any such payment made or money advanced by the CONTRACTOR without such authority shall be entirely at the risks of the CONTRACTOR without any liability to the OWNER in respect thereof.

8.0.4.0 Any money paid to or dealing had with any partner or member of the CONTRACTOR (if a firm or consortium) and any receipt, settlement, acknowledgement of liability or other arrangement, agreement or document whatsoever signed by any one of the partners or members of the firm or consortium or erstwhile partner or member of the firm or consortium (without notice of the cessation of his interest) or to any person held out to be a partner of the firm or member of the consortium shall be binding upon the CONTRACTOR vis-à-vis the OWNER and shall constitute a full release and discharge to the OWNER and/or a valid settlement, acknowledgement or obligation upon the CONTRACTOR, as the case may be, and the OWNER shall not be concerned with the application of any monies so paid or the authority of the concerned partner or member (or erstwhile or purported partner or member) vis-à-vis the other partner(s)/members to make the settlement, receipt, acknowledgement or other document(s) concerned, provided always that the OWNER shall be entitled at its discretion at any time to call upon all or any of the partners/members of the CONTRACTOR's firm/consortium to sign any receipt, settlement, acknowledgement or other document(s) including any receipt, settlement, acknowledgement or other document signed by a partner or member (or erstwhile or purported partner or member) as aforesaid, and all the partners of the firm or members of the consortium shall, when called upon to do so by the OWNER, forthwith sign the receipt, order, acknowledgement or other documents required to be so signed.

- 8.0.5.0 Any money paid to any director, attorney, agent, officer or employee of the CONTRACTOR and any receipt, settlement, acknowledgement of liability or other arrangement, agreement or document whatsoever signed by any such director, attorney, agent, officer or employee of the CONTRACTOR or erstwhile director, attorney, agent, officer or employee of the CONTRACTOR (without notice of his cessation of interest) or by any person held and to be a director, attorney, agent, officer or employee of the CONTRACTOR authorised to act on behalf of and/or to bind the CONTRACTOR, shall as between the OWNER and the CONTRACTOR, be binding upon the CONTRACTOR and shall constitute a full release and discharge to the OWNER and/or settlement, acknowledgement or obligation of, upon or with the Contractor, as the case may be, and the OWNER shall not be concerned with the actual authority of such director, attorney, agent, officer or employee (actual, erstwhile or purported, as the case may be) vis-a-vis the CONTRACTOR (and if the CONTRACTOR be a consortium vis-à-vis each member of the consortium) to make the settlement, receipt, acknowledgement, agreement or other document concerned.
- 8.1.0.0 **TAXES**
- 8.1.1.0 Except as herein elsewhere expressly otherwise provided, the CONTRACTOR shall be exclusively liable for the payment of any and all fees, cesses, duties, taxes and levies now or hereafter imposed, increased or modified in respect of any work done and/or material supplied and for the payment of all contributions and taxes for unemployment compensations, welfare, insurance, old age pension and/or annuity or gratuity now or hereinafter imposed by the Central or State Government or authority with respect to or covered by the wages, salaries or other compensations paid to person employed or engaged by the CONTRACTOR, and the CONTRACTOR hereby undertakes to indemnify and keep indemnified the OWNER from and against the same and all claims, actions, demands and payments whatsoever against the OWNER whatsoever arising therefrom or in connection therewith.
- 8.1.2.0 Except as herein elsewhere expressly otherwise provided, the CONTRACTOR shall be liable for and shall pay any and all Indian fees, cesses, taxes, duties and levies assessable against CONTRACTOR in respect of or pursuant to the Contract.
- 8.1.3.0 In addition, the CONTRACTOR shall be responsible for payment of all Indian duties, levies, and taxes assessable against the CONTRACTOR or CONTRACTOR's employees or Sub-contractor's whether corporate or personal or applicable in respect of property.
- 8.1.4.0 Notwithstanding anything to the contrary elsewhere provided in these General Conditions of Contract;
- (i) If and prior to the date of Mechanical Completion/completion of the entire work(s) specified in the Time Schedule or any extension thereof by the Engineer-in-Charge under Clause 4.3.5.0 or by the OWNER under Clause 4.3.6.0 (the later of the said dates is hereafter in this and associated sub-clauses referred to as the "Relevant Date"), there is an increase in the rate of any of the following output taxes applicable to invoices raised on the OWNER, namely, Central Sales Tax, VAT or Service Tax or Goods and Service Tax

(GST) relevant to the execution of Contract (in this Clause referred to the “said taxes”) between rate(s) of the said taxes as exist on the last date of submission of the Price Bid relevant to the Contract and the date of relative invoice (in the Clause referred to as the “additional tax”), the OWNER shall pay and bear the additional tax in respect of the work performed by the CONTRACTOR upto the Relevant Date. Similarly, if there is any reduction in any of the said taxes between the said dates, the CONTRACTOR shall pass on the benefit of such reduction to the OWNER with a view that the OWNER shall be invoiced for and pay the reduced tax(es).

- (ii) If after the date of the last Price Bid of the CONTRACTOR relevant to the Contract and prior to the Relevant Date, any new output tax is introduced in addition to the taxes then existing relevant to the execution of the works, on proof of payment by the CONTRACTOR, the OWNER will reimburse the CONTRACTOR the amount of such new tax paid by the CONTRACTOR in respect of the work performed by the CONTRACTOR upto the Relevant Date.
- (iii) If after the date of the last Price Bid of the CONTRACTOR relevant to the Contract and prior to the Relevant Date, a new output tax is introduced in lieu of an existing output tax(es) and the rate and impact of the new tax is in excess in aggregate of the rate and impact of existing tax(es) which it replaces, the OWNER shall on satisfactory proof reimburse the CONTRACTOR the additional tax paid by the CONTRACTOR as a result of the imposition of the new tax in respect of the work performed by the CONTRACTOR upto the Relevant Date. If, on the other hand, the rate and impact of the new tax is less than the aggregate rate and impact of the tax(es) which it replaces, the CONTRACTOR shall pass on to the OWNER the benefit thereof as determined by the OWNER (whose decision in this behalf shall be final and binding on the CONTRACTOR) by reduction in the amounts payable by the OWNER to the CONTRACTOR.
- (iv) If after the Acceptance of Tender and prior to the Relevant Date, the Goods and Service Tax or equivalent New Central Tax in lieu of Excise Duty, Service Tax and Central Sales Tax and/or any other Central Taxes (in this clause hereinafter referred to as the “New Central Tax”) is introduced and the rate of such New Central Tax is higher than the combined rate of the Central taxes which it replaces, then the OWNER will reimburse the CONTRACTOR the additional output tax burden borne by the CONTRACTOR by virtue of the higher rate of the New Central Tax in respect of the work performed by the CONTRACTOR upto the Relevant Date. In calculating the additional output tax burden for the purpose of reimbursement, benefit of any difference in abatement in the original Central Tax and the New Central Tax shall be passed on to the Owner.
- (v) If the New Central Tax is levied at a rate lower than the combined rate of the Central taxes which it replaces, the CONTRACTOR shall pass on to the OWNER the benefit or advantage which it has gained as a result of the lower rate of the New Central Tax along with any difference in abatement in the original Central Tax and the New Central Tax.
- (vi) If, after the Acceptance of Tender, and prior to the Relevant Date, the State(s) in which the work(s) is/are to be carried out imposes a Goods and Service Tax or equivalent New State Tax in lieu of VAT, Local Sales Tax (including tax on sale of goods under works contracts) and Entry Tax and/or any other State Tax(es) is introduced, (in this clause hereinafter referred to as the “New State Tax”) and

the rate of such New State Tax is higher than the combined rate of the State taxes which it replaces, then the OWNER will reimburse the CONTRACTOR the additional tax burden borne by the CONTRACTOR by virtue of the higher rate of the New State Tax in respect of the work performed by the CONTRACTOR upto the Relevant Date. In calculating the additional tax burden for the purpose of reimbursement, benefit of any difference in abatement in the original State Tax and in the New State Tax shall be passed on to the Owner.

- (vii) If the New State Tax is levied at a rate lower than the combined rate of the State taxes which it replaces, the CONTRACTOR shall pass on to the OWNER the benefit or advantage which it has gained as a result of the lower rate of the New State Tax along with any difference in abatement in the original State Tax and the New State Tax.
- (viii) If, after the acceptance of tender and prior to the Relevant Date, the New Central Tax and the New State Tax is replaced by an Integrated Goods and Service Tax (howsoever designated) (hereinafter called the "Integrated Tax") then the provisions of Sub-clauses (iv) to (vii) above shall mutatis mutandis apply with respect to such Integrated Tax to the extent that it replaces the New Central Tax and the New State Tax, and in applying the said Sub-clauses, the increase or benefit shall be calculated with reference to the impact of the Integrated Tax in comparison to the combined impact of the New Central Tax and the New State Tax.
- (ix) For purpose of calculating the impact of any benefit to be passed to the OWNER under sub-clauses (iii), (iv), (v), (vii) and (viii) above, if the CONTRACTOR fails to submit satisfactory documents in relation to such benefit to the OWNER then the benefit shall be determined by the OWNER and such determination by the OWNER shall be final and binding on the CONTRACTOR.

8.1.4.1 If there is an increase in the rate of output tax (CST, VAT, Excise Duty, Service Tax and Goods and Service Tax (GST) etc) or any new output tax is introduced in addition to the exiting taxes in lieu of existing taxes where the total financial implication on account of new output taxes is more and arises beyond the contractual completion period ("Relevant Date" as described in 8.1.4.0 (i)), Owner shall reimburse the same, if the increase in output taxes or new output taxes is entitled for tax credit to the Owner. In other cases, Contractor shall bear the increase in the rates of existing taxes or any new output tax.

8.1.5.0 The CONTRACTOR shall ensure that it is registered with the respective tax authorities in the Centre and the applicable State(s) in which the work is to be executed, and shall submit to the OWNER self attested copy(ies) of such registration certificate(s). Any taxes/duties/levies claimed by the CONTRACTOR shall be claimed by issuing a proper Invoice raised on the OWNER indicating details/elements of all taxes charged and necessary requirements as prescribed under the respective tax laws. The CONTRACTOR shall mention correct and valid registration numbers applicable to the tax charged on all invoices raised on the OWNER.

8.1.5.1 The CONTRACTOR shall reimburse to or make good to the OWNER any loss to the OWNER resulting from a claim by the OWNER of any tax credit being rejected/disallowed by any tax authority due to non deposit of taxes or non-compliance of tax laws by the CONTRACTOR or of any requirement or formality to be fulfilled by the CONTRACTOR to qualify the OWNER for such tax credit.

- 8.1.5.2 The CONTRACTOR shall charge the correct rate of tax as prescribed under the respective tax laws, and shall avail of and shall pass on to the OWNER the benefit(s) of all exemptions, rebates and concessions available to the CONTRACTOR under tax laws as may be applicable after the last date of submission of price bid relevant to the Contract.
- 8.1.5.3 The OWNER will issue/provide Road Permits to the CONTRACTOR only in respect of material directly purchased by the OWNER and transported by the CONTRACTOR. In such event, the CONTRACTOR will be obliged to ensure the proper utilization of the Road Permit issued /provided by the OWNER for the specific supply, and in case of the seizure of goods or vehicle transporting the goods, the CONTRACTOR will be solely responsible for release of the goods/vehicle and shall reimburse the OWNER any resultant litigation costs incurred by the OWNER.
- 8.2.0.0 **LABOUR LAWS AND REGULATIONS**
- 8.2.1.0 The CONTRACTOR shall be responsible for strict compliance of and shall ensure strict compliance by its sub-contractors, servants and agents of all laws, rules or regulations having the force of law affecting the relationship of employer and employee between the CONTRACTOR/sub-contractors and their respective employees and/or otherwise concerning labour, social welfare and provident fund, pension, bonus, gratuity and other benefits to employees. Without prejudice to the generality of this provision, the CONTRACTOR shall comply with and ensure that his sub-contractors and other agencies employed by him comply with the provisions of the Payment of Wages Act 1936, Minimum Wages Act 1948, Employers Liability Act 1938, Workmen's Compensation Act 1923, Industrial Disputes Act 1947, Maternity Benefit Act 1961, Mines Act 1952, Contract Labour (Abolition & Regulation) Act 1970, Payment of Bonus Act, Gratuity Act, Factories Act and the Employees' Provident Fund and Miscellaneous Provisions Act 1952 and Employees' State Insurance Act 1948, all as amended from time to time and all rules, regulations and schemes framed thereunder from time to time.
- 8.2.1.1 In addition, the CONTRACTOR shall abide by and observe the provisions of:
- (i) The Inter-State Migrant Workmen (Regulation of Employment and Conditions of Service) Act, 1979,
 - (ii) The Building and Other Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996,
 - (iii) The Building and Other Construction Workers' Welfare Cess Act, 1996,
 - (iv) The Child Labour (Prohibition and Regulation) Act, 1986.
- 8.2.1.2 The CONTRACTOR shall also be responsible at its own cost and initiative to pay directly to the prescribed authorities and bear any and all cess(es) payable under the Building and Other Construction Workers' Welfare Cess Act, 1996 with respect to the contract and work covered thereunder and with respect to any subsidiary contract or sub-contract entered into by the CONTRACTOR for the performance thereof, and shall indemnify and keep indemnified the OWNER from and against any liability in respect thereof.

- 8.2.1.3 To this end, the CONTRACTOR shall as a document to be submitted to the Engineer-in-Charge for the Completion Certificate under Clause 5.3.2.0 hereof, submit to the Engineer-in-Charge satisfactory proof of having paid in full the cess payable with respect to the contract under the Building and other Construction Workers' Welfare Cess Act, 1996.
- 8.2.2.0 The CONTRACTOR and sub-contractor(s) of the CONTRACTOR shall obtain from the authority(ies) designated in this behalf under any applicable law, rule or regulation (including but not limited to) the Factories Act and Labour (Abolition and Regulation) Act, 1970 (in so far as applicable) any and all such license(s), consent(s), registration(s) and/or other authorisation(s) as shall from time to time be or become necessary for or relative to the execution of the work or any part or portion thereof or the storage or supply of any material(s) or otherwise in connection with the performance of the Contract and shall at all times observe and ensure due observance by the sub-contractors, servants and agents of all terms and conditions of the said license(s), consent(s), regulation(s) and other authorisation(s) and laws, rules and regulations applicable thereto. Without prejudice to the generality of this provision, the CONTRACTOR shall obtain and ensure that his sub-contractors and other agencies employed by him on the Work, obtain a valid License under the Contract Labour (Regulation & Abolition) Act, 1970 and shall duly and faithfully observe and comply with the provisions of the Contract Labour (Regulation & Abolition) Central Rules 1971 and other Central and State Act or Rules as amended from time to time and applicable to the work, and shall duly, promptly and faithfully maintain and/or cause to be maintained all records and facilities required to be maintained and/or provided in terms thereof or any license granted thereunder.
- 8.2.3.0 The CONTRACTOR shall ensure that wages are paid by himself or by his sub-contractors to their workmen directly without the intervention of any Jamadars or Thekedars and that no amount by way of commission or otherwise is deducted or recovered by the Jamadars from the wages of the workmen.
- 8.2.4.0 The OWNER shall be entitled at all times to carry out any check(s) or inspection(s) of the CONTRACTOR's facilities, records and accounts to ensure that the provisions aforesaid are being observed by the CONTRACTOR and the sub-contractors and that the workmen are not denied the rights and benefits to which they are entitled under such provisions. Any violation shall, without prejudice to any other rights or remedies available to the OWNER, constitute a ground for termination of the Contract as though specifically set forth under Clause 7.0.1.0 thereof.
- 8.2.5.0 Nothing in the Contract Documents stated shall anyway constitute any workman/employee of the CONTRACTOR or any sub-contractor as or to be a workman/employee of the OWNER, or place obligation or liability in respect of any such workman/employee upon the OWNER.
- 8.2.6.0 The CONTRACTOR shall not employ in connection with the work, any person below the prohibited age of employment.
- 8.2.7.0 The establishment of the CONTRACTOR and its sub-contractors shall be duly registered under the Employees' Provident Fund and Miscellaneous Provisions Act, 1952 and the Employees' State Insurance Act, 1948 and the CONTRACTOR shall duly and timely pay and ensure payment by its sub-contractors of contributions and its/their employees to the Authorities prescribed under the said Acts and any schemes framed thereunder in

respect of all labour employed by it/them for the execution of the contract. Copies of challans/receipt of such payments alongwith the list showing persons employed together with emoluments paid for the purpose of P.F. deductions shall be submitted to the OWNER before the end of every calendar months. In case the Provident Fund Authority's receipted challan referred to above are not furnished, the OWNER shall deduct 5% (five percent) of the payable amount from the CONTRACTOR's running bill for services and retain the same as a security for the payment of the Provident Fund. Such retained amounts shall be released to the CONTRACTOR only on production of challan/receipts of the Provident Fund Authority for the period covered by the related deduction.

8.2.8.0 On receiving information of any breach, non-fulfillment and/or non-observance by the CONTRACTOR and/or his sub-contractors and other agencies engaged by him in connection with the Works or any of the provisions or requirements of any of the Labour Laws, rules and regulations and/or as to the inaccuracy of any of the returns or statements furnished by the CONTRACTOR and/or his sub-contractors and/or any records or accounts maintained by any of them with respect to which the OWNER as the principal employer or otherwise can have a liability, the OWNER shall be entitled to deduct from the bills and any amounts due or becoming due to the CONTRACTOR, under this or other contract(s) with the CONTRACTOR, any sum(s) required or estimated to be required, in its judgement which shall be final and binding on the CONTRACTOR, for making good or compensating for the liability or possible liability of the OWNER by reason of the said breach, non-fulfillment or non-observance and/or inaccuracy aforesaid.

8.2.9.0 The CONTRACTOR shall indemnify and keep indemnified the OWNER from and against all actions, claims, demands and liabilities whatsoever under and in respect of the breach of any of the provisions hereof and/or against any claim, action or demand by any workman/ employee of the CONTRACTOR or any sub-contractor and/or from any liability anywise to any sub-contractor under any law, rules or regulation having the force of law including (but not limited to) claims against the OWNER under the Workmen's Compensation Act 1923, the Employees' Provident Funds and Miscellaneous Provisions Act 1952, the Employees' State Insurance Act 1948 and/or the Contract Labour (Abolition & Regulation) Act 1970 and/or the Child Labour (Prohibition and Regulation Act, 1986.

8.2.10.0 The CONTRACTOR and his sub-contractors and agents employed by him for and/or in the performance of the Works shall strictly abide by and observe the provision of the "Contractors' Labour Regulations" and the "Model Rules for Labour Welfare" as set out in **Appendix I** and **Appendix II** to these General Conditions of Contract, which shall be binding on the CONTRACTOR, his sub-contractors and agents.

8.2.10.1 In the event of an irreconcilable conflict between the provisions herein and the provisions contained in the "Contractors' Labour Regulations" and/or the "Model Rules of Labour Welfare" (as set out in Appendix I and Appendix II hereto), the "Contractors' Labour Regulations" and "Model Rules for Labour Welfare" shall prevail to the extent of the irreconcilable conflict.

8.2.10.2 In the event of irreconcilable conflict between the "Contractors' Labour Regulations" and/or the "Model Rules for Labour Welfare" (set out in Appendix I and Appendix II hereto) and any applicable law, rule or regulation, the law, rule or regulation shall prevail over the "Contractors' Labour

Regulation" and/or the "Model Rules for Labour Welfare", as the case may be, and shall be complied with.

8.3.0.0 RISK, ACCIDENT AND DAMAGE

8.3.1.0 The CONTRACTOR shall take due precaution to avoid damages to any pipelines, Railway lines, roads, canals, cables, culverts, bridges, drains, sewer, telegraph and telephone lines, water mains, dykes, poles, pillars, fences, wires, supports and embankments and other underground or over ground works, structural or constructions whatsoever and shall at his own cost and initiative forthwith restore and repair any damage thereto the satisfaction of OWNER and/or the person or authority concerned relative to the line, pipe or other works, construction of installation as the case may be.

8.3.2.0 The CONTRACTOR shall be responsible at his own cost in and relative to performance of the work(s) and contract to observe and to ensure observance by his sub-contractor's agents and servants, of the provisions of the safety code as hereinafter appearing and all fire, safety and security instructions and regulations as may be prescribed by the OWNER, the Central Government or any State Government, any Marine or Port Authority or any other body or authority legally authorized to issue such instructions or regulations, from time to time and such other precautions and measures as shall be necessary, and shall employ/deploy all equipment necessary to protect all works, materials, properties, structures, equipment, installations, communications and facilities whatsoever from damage, loss or other hazard whatsoever (including but not limited to fire, collision or explosion) and shall during construction and other operations, minimize the disturbance and inconvenience to the OWNER, shipping, transportation, the public and the adjoining land and property of the OWNER and occupiers, and crops, trees and vegetation.

8.3.3.0 The CONTRACTOR shall indemnify and keep indemnified the OWNER from and against all losses and damages (including relative to any gas, crude oil, refined products and other commodities lost) and costs, charges and expenses and penalties, actions, claims, demands and proceedings whatsoever suffered or incurred by or against the OWNER, as the case may be, by virtue of any loss, alteration, displacement, disturbance or destruction or accident to any vessel, works, material, property, structure, equipment, installation, communication and facility and land and property of the OWNER and occupiers and crops, trees and vegetation as aforesaid, with the intent that the CONTRACTOR shall be exclusively responsible for any accident, loss, damage, alteration, displacement, disturbance or destruction as aforesaid directly or indirectly from any breach by the CONTRACTOR of his obligations aforesaid or upon any operation, act or omission of the CONTRACTOR, his Sub-contractor(s) or his or their agent(s) or servant(s).

8.4.0.0 INDEMNITY AND INSURANCE

8.4.1.0 The CONTRACTOR shall at all times indemnify and keep indemnified the OWNER and its officers, servants, agents from and against all third party claims whatsoever (including but not limited to property loss and damage, personal accident, injury or death of/or to property or person of any Sub-contractor and/or the servants/agents of the CONTRACTOR or any Sub-contractor(s) and/or the OWNER) arising out of any act or omission of the CONTRACTOR and the CONTRACTOR shall at his own cost and initiative at

all times upto the successful conclusion of the defect liability period specified in Clause 5.4.1.0 hereof take out and maintain all insurable liabilities under this Clause, including but not limited to third party insurance and liabilities under the Motor Vehicles Act, Worker's Compensation Act, Fatal Accidents Act, Personal Injuries Insurance Act, Emergency Risk Insurance Act and/or other Industrial Legislation from time to time in force in India with Insurance Company(ies) approved by the OWNER, and such policy(ies) shall be of not lesser limit then the limits hereunder specified with reference to the matters hereunder specified, namely.

- (a) Workmen's Compensation Insurance to the limit to which compensation may be payable under the laws of the Republic of India.
- (b) Third party Insurance for body injury and property damage to the limit of not less than Rs. 10,00,000 (Rupees One Million only) in each accident at each job site and to a limit of not less than Rs. 100,00,000 (Rupees Ten Million only) for all accidents at all job sites. Provided that the limits specified above shall operate only as a specification of minimum limits for insurance purposes, but shall not anyway limit the CONTRACTOR'S liability in terms of this clause or otherwise to the limit(s) specified.

8.4.1.1 Should the CONTRACTOR fail to take out and/or keep afoot insurance as provided for in the foregoing clause the OWNER shall be entitled (but without obligation to do so) to take out and/or keep afoot such insurance at the cost and expense of the CONTRACTOR, and without prejudice to any other rights or remedies of the OWNER in this behalf, to deduct the sum(s) incurred therefore from any amounts howsoever becoming payable to the CONTRACTOR.

8.4.2.0 In addition, the CONTRACTOR shall protect, defend, indemnify and hold the OWNER harmless from and against:

- (a) any and all losses arising directly or indirectly from or incurred by reason of the acts or omissions of the CONTRACTOR, its Affiliates, Subcontractors or Suppliers or any of their respective officers, directors, employees, servants or agents in the performance of CONTRACTOR's obligations under this Contract, whether or not resulting from any defect in or condition of the premises on which the Works are or are to be performed, or any equipment thereon or any materials furnished by OWNER including any losses arising from or in respect of or in consequence of any illness, accident or injury to any employees, directors, servants or agents of the CONTRACTOR, its affiliates, sub-contractors or suppliers.
- (b) any and all losses, arising directly or indirectly from or incurred by reason of claims or sanctions or penalties imposed by any Governmental Authorities or others for any actual or asserted failure by the CONTRACTOR or its affiliates, sub-contractors or suppliers or any of their respective officers, directors, employees, servants or agents to comply with any applicable law or applicable consent(s), sanction(s) and/or authorization(s) or with any rules or regulations applicable to it or them or to obtain or maintain any such consent, sanction or authorization.
- (c) any and all losses, arising directly or indirectly from or incurred by reason of any failure of CONTRACTOR or any sub-contractor or supplier (i) to pay any taxes relating to income or any other taxes required to be paid by such person (ii) to pay any amounts in respect of taxes which are to be paid by such person in connection with the

- performance of its obligations relating to this Contract or (iii) to file tax returns as required by applicable laws or comply with reporting or filing requirements under applicable law relating to taxes or (iv) arising directly or indirectly from or incurred by reason of any misrepresentation by or on behalf of such person to any competent authority in respect of taxes (nothing in this clause shall restrict any person's right to bonafide contest the amount of any tax or other liability owed to a competent authority provided such contest is bonafide and made in good faith); and
- (d) any and all losses arising directly or indirectly from or incurred by reason of hazardous materials introduced to the job site or works or any other location by the CONTRACTOR, its affiliates, sub-contractors or suppliers or its or their agents in or in connection with the performance of the Contract.

8.5.0.0 EFFECTS OF INSURANCE

The obligations of CONTRACTOR to indemnify and hold harmless the OWNER under the Contract shall not be limited or reduced to any insurance provided pursuant to the Contract or otherwise, provided always that the proceeds of any such insurance shall in the first instance be applied to meet the obligations of the CONTRACTOR under the relative indemnity(ies).

8.6.0.0 LIMITATION OF LIABILITY

8.6.1.0 Except as otherwise specifically provided in the Contract, neither the OWNER nor the CONTRACTOR shall be liable to the other for loss of production, loss of profit or indirect /consequential loss or for or arising out of idleness or extended stay or like damages suffered or incurred by such other party because of any breach of contract, and each party hereby specifically waives and disclaims any and all contrary rights.

- 8.6.2.0 a) Subject to Clause 8.6.1.0, the aggregate liability of the CONTRACTOR to the OWNER (whether based on contract or tort, including negligence and strict or absolute liability) arising out of or under this Contract shall not exceed twenty percent (20%) of the Lumpsum Price provided that no such limit shall apply in respect of:
- (i) any liability pursuant to CONTRACTOR's indemnity obligations under the Contract; or
 - (ii) any loss resulting from fraud, intentional or willful misconduct or illegal or unlawful acts or omissions of CONTRACTOR, its affiliates or any sub-contractor or any supplier or any of its or their respective officers, directors, employees, servants or agents; or
 - (iii) any liability to rectify, repair, restore or replace any materials and/or works or deficiencies therein in terms of the Contract;
 - (iv) any liability under clause 7.0.7.0. or Clause 7.0.9.0;
- b) The aggregate liability of the CONTRACTOR to the OWNER under Clause 7.0.9.0 shall not exceed 50% (fifty percent) of the Lumpsum Price provided that no such limit shall apply in respect of
- (i) Any liability pursuant to CONTRACTOR's indemnity obligations under Clauses 3.0.3.1 (i), 3.0.3.1 (vi), 3.0.8.3, 3.1.1.0 (b), 3.8.1.0, 4.9.4.0, 4.11.2.0, 6.3.2.0 (vi), 6.5.2.1 (v),

- 6,8,2,0 (ii), 8.1.1.0, 8.2.9.0, 8.3.3.0, 8.4.1.0, 8.4.2.0, 8.5.0.0, 8.9.2.0, 8.9.3.0, 8.12.1.1, 8.1481.0 & 8.18.2.0; or
- (ii) Any loss resulting from fraud, intentional or willful misconduct or illegal or unlawful acts or omissions of CONTRACTOR, its affiliates or any sub-contractor or any supplier or any of its or their respective officers, directors, employees, servants or agents; or
 - (iii) Any liability to rectify, repair, restore or replace any materials and/or works or deficiencies therein in terms of Clauses 5.0.5.0, 5.1.3.0, 5.1.5.0, 5.1.7.0, 5.2.4.0, 5.2.4.1, 5.3.4.1 (i), 5.4.1.0 (i), 5.4.2.0, 5.4.2.1, 5.4.3.0, 5.5.3.2 hereof and Appendix-2 to the Special Conditions of Contract arising out of any supply made or work done by the CONTRACTOR up to the date of termination.
- c) Provided always that any limitation of liability aforesaid shall exclude any amounts recovered under any policy(ies) of insurance taken out and/or maintained by the CONTRACTOR pursuant to the provisions of the Contract.

8.7.0.0 TRAINING OF APPRENTICES

8.7.1.0 The CONTRACTOR shall if so required by law, himself engage and/or procure engagement by his subcontractor(s) of such number of apprentices and for such period as may be required in this behalf in accordance with the provisions of the Apprentices Act, 1961 and any other act, rule and/or regulation having the force of law, regulating upon the employment of apprentices, and the CONTRACTOR shall be responsible at his own cost and initiative and without entitlement to any extra compensation or remuneration from the OWNER in this behalf, to fulfill all obligations of the employer under the said Act, including liability for payment to apprentices as required thereunder.

8.8.0.0 RECORDS AND INSPECTION

8.8.1.0 The CONTRACTOR shall if and when required by the Engineer-in-Charge relative to the execution of the Contract produce or cause to be produced before the Engineer-in-Charge or any other person designated by the Engineer-in-Charge in this behalf, for examination, any records and documents in the possession of the CONTRACTOR or any subcontractor or subsidiary or associated firm or company or the CONTRACTOR or any sub- CONTRACTOR, and/or copies or extracts thereof and/or other information or returns relative thereto. Such returns shall be verified in the manner prescribed by the Engineer-in-Charge or other officer aforesaid designated in this behalf. The CONTRACTOR shall in addition produce and/or caused to be produced before the Engineer-in-Charge or any other person designated by the Engineer-in-Charge in this behalf, for examination any vouchers, bills and orders etc. required for verifying or ascertaining the cost of any material, labour, service or item or thing, to calculate any monies payable under the Contract for which item rates are not mutually agreed. The decision of the Engineer-in-Charge as to whether any book, record, document, information or return is relevant for any of the purpose aforesaid, shall be final and conclusive.

8.9.0.0 PATENTS AND ROYALTIES

8.9.1.0 The CONTRACTOR undertakes that all equipment, machinery, instruments and materials used or supplied by the CONTRACTOR or methods or processes practiced or employed by the CONTRACTOR in the works shall not be covered by any third party patent, design or other rights, with the intent that the OWNER shall be entitled to the unfettered use of and right to the same and any subsequent works in which the same are incorporated without any third party right, claim or entitlement.

8.9.2.0 If any equipment, machinery, instruments and/or materials, used or supplied by the CONTRACTOR, or methods or processes practiced or employed by the CONTRACTOR in the performance of this contract or resultant works, is/are covered by a patent, design or other rights under which the CONTRACTOR, is not licensed, the CONTRACTOR shall before supplying or installing or using or employing or practicing the same obtain such license(s) and pay such royalty(ies) and license fees as may be necessary in connection with the performance of this contract. In the event that the CONTRACTOR fails to pay such royalty or obtain such license, the CONTRACTOR shall defend at its own expense, any suit for infringement of patent, design or other right which is brought against the CONTRACTOR and/or the OWNER as a result of the failure, and shall pay any damages and costs awarded in such suit and shall keep the OWNER indemnified from and against all other consequences thereof, including (but not limited to) the costs incurred by the OWNER relative to such proceedings and in obtaining legal advice or opinion(s) relative to such proceedings, and shall perform all remedial and consequent works as shall be necessary, and the provision of Clause 8.9.3.0 shall mutatis mutandis apply.

8.9.3.0 Forthwith upon the CONTRACTOR acquiring any knowledge or information of any patent, design or information or other right in respect of which a claim for infringement of patent, design or other right could be brought involving any equipment, machinery, instrument or materials used or supplied by the CONTRACTOR or methods or processes practiced or employed by the CONTRACTOR in the performance of the contractual works, the CONTRACTOR shall notify the OWNER in respect thereof and shall, at its own cost and initiative take such steps as shall be necessary to procure the relative rights or licenses, or compound the relative claims, and/or shall at his own cost and initiative re-design, re-fabricate, re-supply, replace and/or install, as the case may be by alternative systems and works necessary to avoid such patent, design or other rights within the CONTRACTOR's scope of work and within the time for completion in this behalf prescribed in the contract documents, without entitlement to any additional remuneration in respect thereof, and the CONTRACTOR shall, meanwhile, keep the OWNER indemnified from and against all consequences and liabilities and losses, claims and damages whatsoever. Excluded from the scope of this indemnity is any patent, design information or other right arising out of work done or performed or materials supplied strictly in accordance with the process design provided by the Process Licensor within the exclusive scope of the Process Licensor.

8.10.0.0 **ARTICLES OF VALUE FOUND**

8.10.1.0 All gold, silver and other metals and minerals or ore of any kind or description and all precious and semi-precious stones and bearing earth, rock or shale, coins, treasures, treasure trove, bullion, antiques and other items and things whatsoever which may be found under or upon the job site shall, between the CONTRACTOR and the OWNER, be the exclusive property of the OWNER

and the CONTRACTOR shall, forthwith upon discovery thereof, notify the OWNER of such discovery with the details of the item(s) or things discovered and pending directions by the OWNER for disposal thereof shall hold and preserve the same as trustee of the OWNER to the satisfaction of the Engineer-in-Charge.

8.11.0.0 MATERIALS OBTAINED FROM DISMANTLING

8.11.1.0 Any materials obtained by the CONTRACTOR consequent upon dismantling-mantling of any building, structure or construction upon the job site (not being a temporary building, structure or construction erected by the CONTRACTOR for the performance of the works by him) shall be the exclusive property of the OWNER.

8.12.0.0 LIENS AND LIABILITIES

8.12.1.1 If, at any time there is evidence of any item or claim for which the OWNER might be or become liable and which in terms of the Contract or otherwise is chargeable to or the liability of the CONTRACTOR, the OWNER shall have the right to retain, out of any payment then due or thereafter becoming due to the CONTRACTOR, an amount sufficient to completely indemnify the OWNER against such lien or claim, and should the CONTRACTOR not dispute such lien or claim and/or if such lien or claim be found to be valid, the OWNER may pay and discharge the same and deduct the amount so paid together with any legal and other costs, charges and expenses incurred by the OWNER in defending any action and/or in obtaining legal advice or opinion relative to the lien, claim or action, from any monies retained as aforesaid and any monies then due or thereafter becoming due to the CONTRACTOR, and if no monies have been retained and/or if the same be insufficient to satisfy the payment(s) aforesaid, the CONTRACTOR shall on demand pay to the OWNER the same, and failing such payment within 10 (ten) days or demand by the OWNER in this behalf, shall be liable to pay interest on the amount due from the date of demand up to and until the date of payment in full at the State Bank of India lending rate applicable to the OWNER plus 1% (one percent) per annum and the provisions hereof (insofar as such notice shall be deemed to be necessary in addition to the contractual provisions herein) shall be deemed to constitute a notice for the payment of interest under the provisions of the Indian Interest Act, 1839.

8.13.0.0 COLLECTION OF INDEBTEDNESS

8.13.1.0 Without prejudice to any other rights or remedies of the OWNER and in addition to any other provisions thereof, the OWNER shall be entitled to deduct out of the Security Deposit or the proceeds of any Bank Guarantee or any monies for the time being of the CONTRACTOR in its hands and any payment then due or becoming due to the CONTRACTOR on any account, any and all amounts claimed by the OWNER from the CONTRACTOR arising out of or in connection with the Contract.

8.13.2.0 Where the OWNER makes any deduction pursuant to the provisions of Clause 8.13.1.0 hereof, the OWNER shall furnish to the CONTRACTOR all details of the deduction(s) with copies of the documents, if any, in support of the deduction(s).

8.14.0.0 LIABILITIES OF SUB – CONTRACTOR (S)

8.14.1.0 Without prejudice to any other liabilities or obligations of the CONTRACTOR relative to Sub-contractor(s) in terms hereof or otherwise, the CONTRACTOR shall require every Sub-contractor to whom any portion of the work to be performed under the contract has been sub-contracted, to comply with the provisions of the Contract insofar as applicable to each Sub- contractor, and the CONTRACTOR shall hold the OWNER harmless and indemnified, from and against any and all penalties, actions, claims and demands and costs, charges and expenses whatsoever arising out of or occasioned by failure of the CONTRACTOR or any Sub-contractor(s) to fully and properly comply with any of the terms and conditions of Contract.

8.15.0.0 **CONFIDENTIAL HANDLING OF INFORMATION**

8.15.1.0 The CONTRACTOR and his employees, agents and Sub-contractors and employees and agents of the Sub-contractors shall treat as strictly confidential and shall take all steps necessary to ensure confidential handling of all maps, plans, charts, designs, drawings, photographs, data, reports, tests, specifications, methods and other information developed or acquired by the CONTRACTOR from or by means of the tender documents or any facility extended to the CONTRACTOR pursuant thereto or the award or performance of the contract or any of them or otherwise disclosed or made available to the CONTRACTOR or any aforesaid persons and shall constitute the intellectual property of the OWNER without prejudice to the generality of the foregoing, the CONTRACTOR, its sub-contractor(s) and their respective employees and agents shall not report, disclose or reproduce the same in any book, article, speech or other publications, provided always that, the OWNER may, upon application by the CONTRACTOR to the OWNER in this behalf, permit report, disclosure or re-production of the same in any book, article, speech or the publications if it is satisfied that this would not involve the disclosure of any classified or other proprietary information which would not be in the interest of public or security to disclose and/or which should not be in breach of any obligation of confidentiality.

The information and documents pertaining to the CONTRACTOR and furnished or submitted by CONTRACTOR to the OWNER as part of the CONTRACTOR's bid and marked as 'Confidential' shall be treated as Confidential by the OWNER and shall be utilized by the OWNER or their authorized representative(s) solely for the purpose of assessing the CONTRACTOR's capabilities and bid.

8.15.1.1 Application for such consent shall be submitted to the OWNER in writing outlining the intended use of the relative material and shall be submitted to the OWNER at least one month prior to the expected use accompanied by the text of the relative publication in which it is sought to be used. Photographs should be accompanied by their caption. An application shall not be understood to have been permitted unless expressly permitted in writing by the OWNER.

8.16.0.0 **WAIVER**

8.16.1.0 It shall always be open to the OWNER, by written communication to the CONTRACTOR, to waive in whole or part any right or the enforcement of any right or remedy which the OWNER may have against the CONTRACTOR or of any obligations which the CONTRACTOR may have hereunder, provided always that :

- i) No waiver shall be presumed or inferred unless made in a written communication addressed by the OWNER to the CONTRACTOR and specifically communicated as a Waiver;
- ii) No waiver of any right or part of any right on one occasion shall be deemed to be a waiver or abandonment of that right for all occasions with the intent that a waiver once given shall be limited to the specific waiver and shall be without prejudice to the right of the OWNER to insist upon the strict adherence of the attendant obligations of the CONTRACTOR and/or the future enforcement of the right by the OWNER in respect of the same and/or any other dependent obligation.

8.17.0.0 **CONTRACTOR'S ESTABLISHMENT**

8.17.1.0 It is understood that the establishment of the CONTRACTOR (and any Sub-contractor engaged by the CONTRACTOR) constitutes an independent establishment involved inter alia in undertaking works and/or services for others of the nature and kind forming the subject matter of the Contract. It is consequently understood that all the employees of the CONTRACTOR (and any Sub-contractor engaged by the CONTRACTOR) are the employees of the independent establishment of the CONTRACTOR or Sub-contractor (as the case may be) who have been and will be appointed solely for and/or with reference to the work of that establishment, and have not been and will not be appointed specifically or otherwise for the sole purpose of the work covered by the present Contract. To this end, each CONTRACTOR (and Sub-contractor engaged by the CONTRACTOR) shall issue to each of its employees deputed to the job-site to perform any work in relation to the Contract, a regular letter of appointment for employment in the CONTRACTOR's/ Sub-contractor's independent establishment, with authority in the CONTRACTOR/ Sub-contractor to employ or depute him for or in relation to any work or engagement assumed by the CONTRACTOR/Sub-contractor from time to time in the course of its business and the production of a certified copy of each letter of appointment duly acknowledged by the concerned employee shall be a pre-condition for the issue of a Gate Pass to any employee of the CONTRACTOR/Sub-contractor into any area, the entry to which is restricted by the OWNER.

8.18.0.0 **OBSERVANCE OF ENVIRONMENTAL REGULATIONS AND ENVIRONMENTAL PROTECTION.**

8.18.1.0 The CONTRACTOR shall ensure that its servants and agents and sub-contractors and their servants and agents shall duly comply with all environmental laws, rules and regulations and the conditions of any permit, permission, consent and/or no-objection granted in this behalf by any authority with respect to or concerning the work, and shall independently so organize and conduct its operations and cause its sub-contractors to so organize and conduct their operations as not to cause any hazard or pollution to health, life, property or environment including (but not limited to) discharge of any noxious substance or effluent into the atmosphere or into the earth or into any drain, canal, stream, river, pond, lake or other water body.

8.18.2.0 The CONTRACTOR shall indemnify and keep indemnified the OWNER from and against the breach, non-observance, infraction or dereliction of any of the provisions of Clause 8.15.1.0 hereof, and against any and all claims, actions or proceedings, prosecutions and liabilities, and losses and damages, and costs (including legal costs), charges and expenses whatsoever suffered or

incurred or instituted against the OWNER as the case may be.

8.19.0.0 **REGISTRATION OF THE CONTRACTOR WITH STATUTORY AUTHORITIES**

8.19.1.0 Within 30 days of execution of the Contract Agreement, the CONTRACTOR shall, insofar as necessary, register itself and the Contract at its own cost with the Reserve Bank of India, Income Tax, Sales Tax, Excise and other statutory authorities as required under the rules and regulations governing in India. A copy of all documents related to all such registrations shall be submitted to the OWNER for record.

8.19.2.0 Immediately after notification of the Letter of Acceptance, the CONTRACTOR shall, in so far as necessary obtain permission for opening of office(s) in India from the Reserve Bank of India.

8.20.0.0 **STATUTORY APPROVALS**

8.20.1.0 Unless otherwise specified, it shall be the CONTRACTOR's sole responsibility to obtain all approvals from any authority (except for environment clearance) required under any statute, rule or regulation of the Central or State Government concerned with the performance of the Contract and/or the contractual Work. The application on behalf of the OWNER for submission to relevant authorities alongwith copies of required certificates complete in all respects shall be prepared and submitted by the CONTRACTOR well ahead of time so that the actual construction/commissioning of the works is not delayed for want of the approval/inspection by the concerned authorities. The CONTRACTOR shall arrange for the inspection of the works by the authorities and will undertake necessary coordination and liaison required and shall not be entitled to any extension of time for any delay in obtaining such approvals.

8.20.2.0 Any deficiency(ies) as pointed out by any such authority shall be rectified by the CONTRACTOR within the scope of relative supply and/or Work at no extra cost to the OWNER. The inspection and acceptance of the Works by such authorities shall, however, not absolve the CONTRACTOR from any of its responsibilities under this Contract.

8.20.3.0 Statutory Approval of Oil Industry Safety Director (OISD) is also required to be taken by the CONTRACTOR and any deficiency(ies) as pointed out by Internal and External audit team of OISD shall be rectified by the CONTRACTOR within the scope of relative supply and/or Work at no extra cost to the OWNER.

8.20.4.0 No extension of time shall be granted for meeting the requirement and/or obtaining approval of statutory authorities.

8.21.0.0 **RENTS & ROYALTIES**

8.21.1.0 Unless otherwise specified, the CONTRACTOR shall pay all tonnage and other royalties, rents and other payments or compensation (if any) for getting stone, sand, gravel, clay, bricks or other materials required for the works or any temporary works and the price quoted shall be deemed to be inclusive of such payment.

8.22.0.0 **UTILISATION OF LOCAL RESOURCES**

8.22.1.0 The CONTRACTOR shall ascertain the availability of local sub-Contractor's and skilled/ unskilled manpower and engage them to the extent possible for performance of the works.

8.22.2.0 The CONTRACTOR shall not recruit personnel of any category from among those who are already employed by the other agencies working at the site, but shall make maximum use of local labour available.

8.23.0.0 **FUEL REQUIREMENT OF WORKERS**

8.23.1.0 The CONTRACTOR and its sub-contractor(s) shall be responsible to arrange for the fuel requirement of its workers and staff without resorting to cutting of trees and shrubs. Cutting of trees and shrubs is strictly prohibited for this purpose.

SECTION – 9 ARBITRATION

9.0.0.0 ARBITRATION

- 9.0.1.0 Subject to the provisions of Clauses 6.7.1.0, 6.7.2.0 and 9.0.2.0 hereof, any dispute arising out of a Notified Claim of the CONTRACTOR included in the Final Bill of the CONTRACTOR in accordance with the provisions of Clause 6.6.3.0 hereof, and any dispute arising out of any claim(s) of the OWNER against the CONTRACTOR shall be referred to the arbitration of a Sole Arbitrator selected in accordance with the provisions of Clause 9.0.1.1 hereof. It is specifically agreed that the OWNER may prefer its claim(s) against the CONTRACTOR as counter-claim(s) if a Notified Claim of the CONTRACTOR has been referred to arbitration. The CONTRACTOR shall not, however, be entitled to raise as a set-off, defence or counter-claim any claim which is not a Notified Claim included in the CONTRACTOR's Final Bill in accordance with the provisions of Clause 6.6.3.0 hereof.
- 9.0.1.1 The Sole Arbitrator referred to in Clause 9.0.1.0 hereof shall be selected by the CONTRACTOR out of a panel of 3 (three) persons nominated by the OWNER for the purpose of such selection, and should the CONTRACTOR fail to select an arbitrator within 30 (thirty) days of the panel of names of such nominees being furnished by the OWNER for the purpose, the Sole Arbitrator shall be selected by the OWNER out of the said panel.
- 9.0.1.2 If a dispute arises with reference to any of the matters referred to in Paragraphs (i) and/or (ii) of Clause 9.0.2.0 hereof before the appointment of the sole Arbitrator under this clause, such dispute shall be referred for decision of the General Manager under Clause 9.0.2.0 hereof and the appointment of the sole Arbitrator under this Clause shall be subject to and without prejudice to Clause 9.0.2.0 and the sole Arbitrator so appointed shall refrain from proceeding in the arbitration so far as concerns any such disputed matter until the decision of the General Manager or his nominee is rendered under Clause 9.0.2.0 in respect thereof. If a dispute with respect to any of the said matters arises after a statement of claim is filed during the course of the arbitration proceedings commenced under Clause 9.0.1.0 with respect to any of the said matters, the Arbitrator shall forthwith refrain from proceeding further in the arbitration so far as concerns any such disputed matters until the decision of the General Manager or his nominee under Clause 9.0.2.0 is rendered, and if necessary, the Arbitrator so appointed under this Clause shall direct the parties before him for the purpose to make reference of such dispute(s) to the General Manager or his nominee under Clause 9.0.2.0.
- 9.0.2.0 Any dispute(s) or difference(s) with respect to or concerning or relating to any of the following matters are hereby specifically excluded from the scope, purview and ambit of the Arbitration Agreement embodied in Clause 9.0.1.0 with the intention that any dispute or difference with respect to any of the said following matters and/or relating to the Arbitrator's or Arbitral Tribunal's jurisdiction with respect thereto shall not and cannot form the subject-matter of any reference or submission to arbitration under Clause 9.0.1.0, and the Arbitrator or the Arbitral Tribunal shall have no jurisdiction to entertain the same or to render any decision with respect thereto, and such matter shall be referred to the General Manager for decision by the General Manager or his nominee and shall be decided by the General Manager or his nominee, as the case may be (whose decision shall be final and binding on the OWNER and the CONTRACTOR) prior to the Arbitrator appointed under Clause 9.0.1.0 proceeding with or proceeding further with the reference, as the case may be. The said excluded matters are:

- (i) Whether or not a Claim sought to be referred to arbitration by the CONTRACTOR under Clause 9.0.1.0 is a Notified Claim;
 - (ii) Whether or not a Notified Claim is included in the CONTRACTOR's Final Bill in accordance with the provisions of Clause 6.6.3.0 hereof.
- 9.0.2.1 The General Manager or his nominee shall act as a persona designate or expert and not as an arbitrator and the provisions of the Indian Arbitration and Conciliation Act, 1996 or any law governing arbitration shall not apply to proceedings before the General Manager.
- 9.0.2.2 The General Manager shall render his decision on the basis of the material placed before him either by the OWNER or by the CONTRACTOR, and if the CONTRACTOR fails to place material before him, the General Manager shall assume that the CONTRACTOR has no material to place and may render his decision accordingly.
- 9.0.3.0 The provisions of the Indian Arbitration & Conciliation Act, 1996 and any re-enactment(s) and/or modification(s) thereof and of the Rules framed there under shall apply to arbitration proceedings pursuant hereto subject to the following conditions:
 - (a) The Arbitrator shall give his Award separately in respect of each Claim and /or Counter-Claim as the case may be; and
 - (b) The Arbitrator shall not be entitled to review any decision, opinion or determination (howsoever expressed) which is stated to be final and/or binding on the CONTRACTOR in terms of the Contract Documents.
 - (c) Any procedure applicable to the arbitration shall be subject to the provisions of Clauses 9.0.1.0 and 9.0.2.0 hereof.
- 9.0.4.0 The venue of the arbitration under Clause 9.0.1.0 shall be New Delhi, provided that the Arbitrator may with the consent of the OWNER and the CONTRACTOR agree upon any other venue, while the proceedings under Clause 9.0.2.0 shall be at the place where the General Manager is located, provided that the General Manager may with the consent of the Contractor agree upon any other venue.
- 9.1.0.0 **CONCILIATION**
- 9.1.1.0 At any time prior to or during arbitration of any arbitrable dispute(s) pursuant to Clause 9.0.1.0, the CONTRACTOR may seek resort to the Conciliation Machinery under the Indian Oil Conciliation Rules, 2014 as amended and/or re-enacted from time to time. The proposal for conciliation shall be made to the General Manager.
- 9.1.2.0 The said Rules are available on the OWNER's website.
- 9.2.0.0 **GENERAL**
- 9.2.1.0 Notwithstanding the existence of any arbitration or conciliation in terms hereof or otherwise, the CONTRACTOR shall continue and be bound to continue and perform all its/ his outstanding obligations in all respects under the Contract (unless the Contract is determined by the OWNER), and the CONTRACTOR shall remain liable and bound in all respects under the Contract.
- 9.2.2.0 The provisions of this Section 9 shall apply for the resolution of disputes between the OWNER and the CONTRACTOR irrespective of whether the CONTRACTOR is a foreign entity or an Indian entity, or whether the CONTRACTOR is an undertaking in public sector or the private sector.

SECTION – 10

SAFETY CODE AND REGULATIONS

10.0.0.0 GENERAL

10.0.1.0 The CONTRACTOR shall adhere to safe construction practices and guard against hazardous and unsafe working conditions and shall comply with the OWNER's safety rules as set forth herein.

10.0.2.0 In addition, the CONTRACTOR shall adhere to and be bound by the "Safety Practices During Construction" (OISD-GDN-192) formulated by the Oil Industry Safety Directorate from time to time. A copy of the existing "Safety Practices During Construction" as presently formulated by the Oil Industry Safety Directorate is annexed hereto as Appendix III.

10.0.3.0 In the event of any irreconcilable conflict between the "Safety Practices During Construction" prescribed by the Oil Industry Safety Directorate and the Safety provisions set out herein, the "Safety Practices During Construction" established by the Oil Industry Safety Directorate shall prevail to the extent of the irreconcilable conflict.

10.0.4.0 In this Section any reference to the Refinery shall wherever applicable include any existing Plant, Unit or Installation (other than a Refinery) in or adjacent to which the job site or any part thereof is located.

10.1.0.0 FIRST AID AND INDUSTRIAL INJURIES

10.1.1.0 The CONTRACTOR shall maintain first aid facilities for its employees and those of its sub-contractors.

10.1.2.0 The CONTRACTOR shall make outside arrangements for ambulance service and for the treatment of industrial injuries. Names of those providing these services shall be furnished to the Engineer-in-Charge prior to start of construction, and their telephone numbers shall be prominently posted in CONTRACTOR's field office.

10.1.3.0 All critical industrial injuries shall be reported promptly to the Engineer-in-charge, and a copy of CONTRACTOR's report covering each personal injury requiring the attention of a physician shall be furnished to the OWNER.

10.2.0.0 GENERAL RULES

10.2.1.0 Carrying/Striking of matches, lighters inside the Refinery area, smoking within the refinery, tank, farm, or dock limits are strictly prohibited. Violators of the "No Smoking" rules shall be discharged immediately. Within the operation area, no hot work shall be permitted without valid gas safety/fire permits. The CONTRACTOR shall be held liable and responsible for all lapses of his sub-contractors/employees in this regard.

10.3.0.0 CONTRACTOR'S BARRICADES

10.3.1.0 The CONTRACTOR shall erect and maintain barricades required in connection with his operation to guard or protect :

- (i) Excavation
- (ii) Hoisting areas
- (iii) Areas adjudged hazardous by the CONTRACTOR's or the OWNER's inspectors.

- (iv) OWNER's existing property liable to damage by CONTRACTOR's operations, in the opinion of Engineer-in-Charge.
 - (v) Railroad unloading spots.
- 10.3.2.0 The CONTRACTOR's employees and those of its sub-contractors shall become acquainted with the OWNER's barricading practices and shall respect the provisions thereof.
- 10.3.3.0 Barricades and hazardous areas adjacent to but not located in normal routes of travel shall be marked by red flasher lanterns at nights.
- 10.4.0.0 **SCAFFOLDING**
- 10.4.1.0 Suitable scaffolding shall be provided for workmen for all works that cannot safely be done from the ground or from solid construction except such short period work as can be done safely from ladders. When a ladder is used, an extra person shall be engaged for holding the ladder and if the ladder is used for carrying materials as well, suitable footholds and handholds shall be provided on the ladder and the ladder shall be given an inclination not steeper than 1 in 4 (1 horizontal 4 vertical)
- 10.4.2.0 Scaffolding or staging more than 12' above the ground floor, swung or suspended from an overhead support or erected with stationary support shall have a guard rail properly attached, bolted, braced and otherwise rewinded at least 3' high above the floor or platform of scaffolding or staging and extending along the entire length of the outside and ends thereof with only such openings as may be necessary for the delivery of materials. Such scaffolding or staging shall be so fastened as to prevent it from swaying from the building or structure.
- 10.4.3.0 Working platforms, gangways and stairways should be so constructed that they should not sag unduly or unequally and if the height of the platform or the gangway or the stairway is more than 12' above ground level or floor level, they should be closely boarded, should have adequate width and should be suitably fastened as described in Clause 10.4.2.0 above.
- 10.4.4.0 Every opening in the floor of a building or in a working platform shall be provided with suitable fencing or railing whose minimum height shall be 3 feet to prevent the fall of persons or materials by providing.
- 10.4.5.0 Safe means of access shall be provided to all working platforms and other working places. Every ladder shall be securely fixed. No portable single ladder shall be over 30' in length while the width between the side rails in rung ladder shall in no case be less than 11.5" for ladder up to and including 10' in length. For longer ladders this width would be increased by at least ¼" for each additional foot of length. Uniform step spacing shall not exceed 12". Adequate precautions shall be taken to prevent danger from electrical equipment. No materials on any site of work shall be so stacked or placed as to cause danger or inconvenience to any person or public. The CONTRACTOR shall also provide all necessary fencing and lights to protect the workers and staff from accidents, and shall be bound to bear the expenses of defence of every suit, action or other proceedings, that may be brought by any person for injury sustained owing to neglect of the above precautions and to pay damages and costs which may be awarded in any such suit or action or proceedings to such person, or which may with the consent of the CONTRACTOR be paid to compromise any claim by any person.

10.5.0.0 **EXCAVATION AND TRENCHING**

10.5.1.0 All trenches 4' or more in depth, shall at all times be supplied with at least one ladder for each 100' length or fraction thereof.

10.5.2.0 The Ladder shall be extended from bottom of the trench to at least 3' 3" above the surface of the ground. The site of the trenches which is 5' or more in depth shall be stepped back to give suitable slope, or securely held by timber bracing, so as to avoid the danger of sides to collapse. The excavated material shall not be placed within 5' of the edge of the trench or half of trench depth whichever is more. Cutting shall be done from top to bottom. Under no circumstances shall undermining or undercutting be done.

10.6.0.0 **DEMOLITION**

10.6.1.0 Before any demolition work is commenced and also during the process of such work all roads and open areas adjacent to the work site shall either be closed or suitably protected.

10.6.2.0 No electric cable or apparatus which is liable to be a source of danger over a cable or apparatus used by the operator shall remain electrically charged.

10.6.3.0 All practical steps shall be taken to prevent danger to persons employed, from risk of fire or explosion or flooding. No floor, or other part of the building shall be so overloaded with debris or material as to render it unsafe.

10.7.0.0 **SAFETY EQUIPMENT**

10.7.1.0 All necessary personal safety equipment as considered adequate by the Engineer-in-charge should be made available for the use to the persons employed on the site and maintained in a condition suitable for immediate use, and the CONTRACTOR should take adequate steps to ensure proper use of equipment by those concerned.

10.7.2.0 Workers employed on mixing asphaltic materials, cement and lime mortars shall be provided with protective footwear and protective gloves.

10.7.3.0 Those engaged in white washing and mixing or stacking of cement bags or any materials which are injurious to the eyes shall be provided with protective goggles.

10.7.4.0 Those engaged in welding and cutting works shall be provided with protective face and eyeshields, and gloves, etc.

10.7.5.0 Stone breakers shall be provided with protective goggles and protective clothing and seated at sufficiently safe intervals.

10.7.6.0 When workers are employed in sewers and manholes, which are in use, the CONTRACTOR shall ensure that the manhole covers are opened and are ventilated at least for an hour before the workers are allowed to get into the manholes, and the manholes so opened shall be cordoned off with suitable railing and provided with warning signals or boards to prevent accident.

10.7.7.0 The CONTRACTOR shall not employ men below the age of 18 years and women on the work of painting or products containing lead in any form. Wherever men above the age of 18 years are employed on the work of lead painting, the following precautions should be taken:

- 10.7.7.1 No paint containing lead product shall be used except in the form of paste or readymade paint.
- 10.7.7.2 Suitable face masks shall be supplied for use by the workers when paint is applied in the form of spray or if a surface having lead paint dry rubbed and scrapped.
- 10.7.7.3 Overalls shall be supplied by the CONTRACTOR to workmen and adequate facilities shall be provided to enable the working painters to wash during and on cessation of work.
- 10.8.0.0 **RISKY PLACES**
- 10.8.1.0 When the work is done near any place where there is a risk of drowning, all necessary safety equipments shall be provided and kept ready for use and all necessary steps taken for prompt rescue of any person in danger and adequate provision should be made for prompt first aid treatment of all injuries likely to be sustained during the course of the work.
- 10.9.0.0 **HOISTING EQUIPMENT**
- 10.9.1.0 Use of hoisting machines and tackle including their attachments, anchorage and supports shall conform to the following standards or conditions:
- 10.9.1.1 These shall be of good mechanical construction, sound materials and adequate strength and free from patent defect and shall be kept in good condition and in good working order.
- 10.9.1.2 Every rope used in hoisting or lowering materials or as a means of suspension shall be of durable quality and adequate strength and free from patent defects.
- 10.9.1.3 Every crane driver or hoisting appliance operator shall be properly qualified and no person under the age of 21 years should be in charge of any hoisting machine including any scaffolding winch or to give signals to the operator.
- 10.9.1.4 In case of every hoisting machine and of every chain, ring, hook, shackle, swivel and pulley block used in hoisting or lowering or as a means of suspension, the safe working load shall be ascertained by adequate means. Every hoisting machine and all gear referred to above shall be plainly marked with the safe working load and the condition under which it is applicable shall be clearly indicated. No part of any machine or any gear referred to above in this paragraph shall be loaded beyond the safe working load except for the purpose of testing.
- 10.9.1.5 In case of departmental machines, the safe working load shall be notified by the Engineer-in-Charge. As regards CONTRACTOR's machines, the CONTRACTOR shall notify the safe working load of the machine to the Engineer-in-charge, whenever he brings any machinery to site of work and get it verified by the Engineer-in-charge concerned.
- 10.10.0.0 **ELECTRICAL EQUIPMENT**
- 10.10.1.0 Motor, Gearing, Transmission, wiring and other dangerous parts of hoisting appliances shall be provided with efficient safeguards. Hoisting appliances should be provided with such means as will reduce to the minimum, the risk of accidental descent of the load. Adequate precautions shall be taken to reduce to the minimum the risk of any part of a suspended load becoming

accidentally displaced. When workers are employed on electrical installations which are already energised, insulating mats, wearing apparel, such as gloves and boots as may be necessary shall be provided. The workers shall not wear any rings, watches and carry keys or other materials which are good conductors of electricity.

10.11.0.0 MAINTENANCE OF SAFETY DEVICES

10.11.1.0 All scaffolds, ladders and other safety devices mentioned or described herein shall be maintained in safe conditions and no scaffold, ladder or equipment shall be altered or removed while it is in use. Adequate washing facilities should be provided at or near the place of work.

10.12.0.0 DISPLAY OF SAFETY INSTRUCTIONS

10.12.1.0 These safety provisions should be brought to the notice of all concerned by display on a notice board at a prominent place at the job site. The person responsible for compliance of the safety code shall be named therein by the CONTRACTOR.

10.13.0.0 ENFORCEMENT OF SAFETY REGULATIONS

10.13.1.0 To ensure effective enforcement of the rules and regulations relating to safety precautions, the arrangements made by the CONTRACTOR shall be open to inspection by the Welfare Officer, Engineer-in-charge or Safety Engineer of the OWNER or their representatives.

10.14.0.0 NO EXEMPTION

10.14.1.0 Notwithstanding anything provided in Clauses 10.0.0.0 to 10.13.0.0, the CONTRACTOR shall be bound by the provisions of any other Act or rules in force in the Republic of India, with a view that the provisions hereof shall be in addition thereto and not in lieu thereof.

10.14.2.0 The works throughout including any temporary works shall be carried on in such a manner as not to interfere in any way whatsoever with the traffic on any roads or footpaths at the site or in the vicinity thereof or with any existing works whether the property of the OWNER or of a third party.

10.14.3.0 In addition to the above, the CONTRACTOR shall abide by the safety code provision as per CPWD Safety Code framed from time to time.

10.14.4.0 The CONTRACTOR shall also arrange to obtain valid gate passes for his men and equipment from the concerned authorities of the Refinery/Project

10.14.5.0 No man/material/equipment not covered by valid passes shall be permitted within the Refinery/ Project area and no material/equipment shall be permitted to be taken out of the Refinery/Project area, unless authorised by the concerned authorities of the Refinery/Project. The CONTRACTOR shall be held fully responsible for any or all delays/ losses/ damages that may result consequent on any lapse(s) that may occur on the part of his sub-contractors/employees in this regard.

10.15.0.0 ENTRY PASSES

10.15.1.0 The CONTRACTOR has to apply for photo Entry Passes for his workers and staff and the workers and staff of his sub-Contractors in a prescribed

proforma provided by the OWNER. The Application shall be accompanied by a Statement and Declaration in the form prescribed by the OWNER signed by the employees for whom the Entry Passes are sought and confirmed by the employer. The photo Entry Passes shall be issued by the OWNER for a maximum period of 3 (three) months, which will be extendable upon the CONTRACTOR's application. As a special case, Temporary Passes may be issued for a maximum period of 7 (seven) days.

10.15.2.0 Unutilized/expired Entry Passes/Identity Cards shall have to be immediately surrendered to the OWNER.

10.15.3.0 In case of the loss of an Entry Pass/Identity Card, the CONTRACTOR shall immediately lodge an FIR with the local police station and inform the Engineer-in-Charge of the loss and shall pay a charge of Rs.150/- against Entry Pass/Identity Card lost. The CONTRACTOR is required to keep an account and track of all Entry Passes issued and surrendered.

Gate Passes/Identity Cards issued by the Security Section should always be displayed by the CONTRACTOR's or Sub-contractor's employees while working inside the Plant.

10.16.0.0 **GATE PASSES**

10.16.1.0 To bring materials, equipment, tools and tackle and other things inside the Refinery for construction Work, the CONTRACTOR has to produce proper documents of title or authority relative thereto for inspection by the OWNER's personnel at the gate. These shall be checked thoroughly by the OWNER's personnel at the Gate and recorded in their Register before permitting the same to be brought inside the Refinery limits. It is the CONTRACTOR's responsibility to see that the entry is duly recorded in the Register with proper Entry Number, date and signature of OWNER's authorised representative and that the supporting challans/documents are stamped and signed by the OWNER's personnel at the gate at the time of entry.

10.16.2.0 Those materials which need repairing/ replacement as per site condition will be allowed to move beyond OWNER's battery limit only after exchange of good equivalent material.

10.17.0.0 **WORK PERMIT**

10.17.1.0 In order to keep the OWNER informed of the various jobs being undertaken within the Refinery and to enable the OWNER to regulate the same to ensure the observance of safety regulations relative thereto, when Work is to be carried out in hazardous areas, a Hot Work Permit is to be obtained by the CONTRACTOR from the OWNER before start of Work on jobs which are capable of generating a flame, spark or heat e.g., gas cutting, grinding, welding, use of any electrical, diesel, petrol or battery operated prime mover, machine, tool or equipment or generator set, mixer machine, drilling machine, pump, crane, fork lift or hand truck or trailer or chipping or breaking of rocks or concrete or hacksaw cutting and drilling. Similarly the CONTRACTOR shall obtain a Cold Work Permit from the OWNER for jobs which do not come under the category of hot work and in respect of which there is no risk of fire, e.g., transportation, backfilling of ordinary soil by manual process, pile testing, hydrotesting, shuttering, fixing of reinforcement, hand mixed concreting, plastering and brickwork.

- 10.17.2.0 Depending on the nature of the Work and the equipments and tools involved, the CONTRACTOR shall apply for Cold/Hot Permit in a prescribed format at least 7(seven) days before the Work is planned to start. No Work Permit shall be issued by the OWNER unless proper arrangement is made by the CONTRACTOR to ensure safe performance of the Work inside the Refinery limit. Job-wise and area-wise permits shall be issued to the CONTRACTOR and for Work against each permit the CONTRACTOR shall post at site at least one Construction Supervisor and one Safety Supervisor of required level to ensure the due observance of all safety requirements.
- 10.18.0.0 **VEHICLE PERMIT**
- 10.18.1.0 Permits are to be obtained separately for entry/use of vehicles/trailers and other mobile equipment inside the Refinery limits. All the CONTRACTOR's vehicles should have a valid 'PUC Certificate'. The following requirements are to be met to obtain vehicle permit :
- i. Vehicle/Equipment shall be in good condition and fitted with spark arrestor.
 - ii. Vehicles should carry, wherever applicable, valid Road Tax Certificate and Fitness Certificate from the Competent authority and insurance policy.
 - iii. Valid operating/driving license of driver/operator.
- 10.18.2.0 **VALIDITY OF THE PERMIT**
- (i) Any Hot or Cold Work Permit issued is valid only for 24 hours.
 - (ii) Thereafter the validity of the Permit must be renewed for each shift (morning & evening) by the shift in-charge/ shift representative of the OWNER.
 - (iii) The permit may be renewed for a maximum period of one month from the date of issue and if extension is required, the CONTRACTOR has to apply for a fresh permit.
 - (iv) A permit is not valid for Work on holidays unless special permission of the OWNER is obtained for the purpose.
- 10.19.0.0 **SPECIAL SAFETY REGULATIONS**
- 10.19.1.0 **REGARDING WORK PERMIT**
- 10.19.1.1 The Work shall be carried out inside the Refinery limits to conform to the OWNER's safety section and in accordance with any instructions of the Engineer-in-Charge issued from time to time. Sometimes working hours may be drastically reduced or increased to satisfy safety requirements and the CONTRACTOR shall meet these requirements without any time and cost implications. No claim for idling of machinery, plant, manpower or equipment shall be entertained for reason of delay in the issue of a Work Permit and it shall be the exclusive responsibility of the CONTRACTOR to apply for, pursue and obtain the requisite Work Permit(s) well in advance of the relative requirement(s).
- 10.19.1.2 The CONTRACTOR shall abide by all safety regulations of the Plant and ensure that safety equipment for specific jobs as stipulated in the Factories Act Safety Handbook is issued to all employees during the execution of Work, failing which all the works at site shall be suspended.

- 10.19.1.3 HSE specifications, OISD and other requirements shall be followed in totality.
- 10.19.2.0 **REGARDING HOT WORK**
- 10.19.2.1 When doing hot work inside the plant, the CONTRACTOR must ensure that the fire hose is hooked up with the fire water system and extended to the work site. In addition, at least one fire extinguisher must be kept near the working spot. The area around and below the place of hot work must be adequately protected from sparks and hot metals by a booth made of asbestos cloth/sheet and by wetting with water. In addition, depending on the location and hazard of the work, the CONTRACTOR shall at its own cost arrange sufficient number of additional fire hoses and such fire fighting equipment of approved quality as may be required to carry out hot job inside the plant.
- 10.19.2.2 Welding & electrical cables should be of approved quality and no jointing or loose connection shall be permitted.
- 10.19.2.3 At the end of the working day the CONTRACTOR must inform the electrical section to switch off power at sub-station end.
- 10.19.2.4 The CONTRACTOR must provide cotton clothes, safety shoes, safety helmet, safety belt, and hand gloves of approved quality to his workers to meet the safety requirement of various jobs to be carried out inside the Plant.
- 10.19.3.0 **REGARDING USE OF VEHICLE**
- 10.19.3.1 Vehicle must not ply on any road within the Refinery limit at a speed exceeding 20 KM/hr.
- 10.19.3.2 Mobile cranes, loaded trucks and trailers must not exceed the speed limit of 15 KM/hr inside the plant.
- 10.19.3.3 No crane is allowed to move inside the plant with load.
- 10.19.3.4 No vehicle is allowed to be parked inside the plant.
- 10.19.3.5 Limited number of vehicles will be permitted inside the battery area due to security reasons.
- 10.20.0.0 **DEDUCTIONS FROM LUMP SUM PRICE**
- 10.20.1.0 In addition to price reduction and deductions as provided for, the OWNER shall be entitled to deduct from any payment due to the CONTRACTOR, any amount claimed by the OWNER under the Contract and any costs, damages or expenses for which the CONTRACTOR is liable under the Contract.
- 10.20.2.0 In addition to price reduction and deductions as provided for in the Contract, the OWNER shall be entitled to deduct from any payment due to the CONTRACTOR, for violations of safety provisions, as per details given below:
- (i) Violation of applicable safety, health and environment related norm, a price reduction of Rs.5000/- per occasion
 - (ii) Violation as above resulting in :
 - (a) Any physical injury - a price reduction of 0.5% of the Lumpsum Price (maximum of Rs.2,00,000) per injury in addition to Rs. 5,000/-

- (b) Fatal accident - a price reduction of 1% of the Lumpsum Price (maximum of Rs.10,00,000) per fatality in addition to Rs. 5,000/-

10.21.0.0 **SPECIAL CONTRIBUTIONS**

10.21.1.0 With a view to ensure the formulation and enforcement of a safety code by the CONTRACTOR, it is stipulated that in the event of any act, omission or accident at the job site which results in the death of a person, the CONTRACTOR shall contribute a sum of Rs.5,00,000/- (Rupees five lakh only), or which results in the permanent disablement of a person, the CONTRACTOR shall contribute a sum of Rs.3,00,000/- (Rupees three lakh only) in addition to any other sum(s) required to be paid by the CONTRACTOR under any law or other contract, to a welfare fund to be established by the OWNER for, inter alia, such contributions, and until such fund is established, to a charity nominated by the OWNER.

APPENDICES

The following documents listed in Appendices hereto shall be deemed to form part of these General Conditions of LSTK Contracts:

- (i) CONTRACTOR's LABOUR REGULATIONS (APPENDIX-I)
- (ii) MODEL RULES FOR LABOUR WELFARE (APPENDIX-II)
- (iii) SAFETY PRACTICES DURING CONSTRUCTION (APPENDIX-III)
- (iv) FORM OF CONTRACT (APPENDIX-IV)
- (v) FORM OF BANK GUARANTEE TO COVER EARNEST MONEY DEPOSIT (EMD) (APPENDIX-V)
- (vi) FORM OF BANK GUARANTEE TO COVER LUMP SUM ADVANCE (MOBILISATION) (APPENDIX-VI)
- (vii) FORM OF BANK GUARANTEE TO COVER SECURITY DEPOSIT (APPENDIX-VII)

CONTRACTORS' LABOUR REGULATIONS

1. These regulations may be called Model Contractors Labour Regulations.
2. **Definition** : In these regulations, unless otherwise expressed or indicated, the following words and expressions shall have the meaning hereby assigned to them :
 - (a) "Labour" means workers employed by a contractor, directly or indirectly through a sub-contractor, or by an agent on his behalf to do any skilled, semi-skilled or unskilled manual, supervisory, technical or clerical work.
 - (b) "Fair Wage" means wages, which shall include wages for weekly day of rest and other allowances, whether for time or piece work, after taking into consideration prevailing market rates for similar employments in the neighbourhood but shall not be less than the minimum rates of wages fixed under the payment of Minimum Wages Act.
 - (c) "Wages" shall have the same meaning as defined in the Payment of Wages Act.
 - (d) "Contractor" for the purpose of these regulations shall include an agent or sub-contractor employing labour on the work taken on the contract.
 - (e) "Inspecting Officer" means any Labour Enforcement Officer or Assistant Labour Commissioner of the Chief Labour Commissioner's Organisation.
 - (f) "Prescribed" means prescribed under the Contract Labour (Regulation and Abolition) Act, 1970 and Rules framed thereunder.
3. **Notice of commencement** : The Contractor, shall within SEVEN days of commencement of the work, furnish in writing, to Inspecting Officer of the area concerned the following information:
 - (a) Name and Situation of the work.
 - (b) Contractor's name and address.
 - (c) Particulars of the Department for which the work is undertaken.
 - (d) Name and address of sub-contractors as and when they are appointed.
 - (e) Commencement and probable duration of the work.
 - (f) Number of workers employed and likely to be employed.
 - (g) "Fair wages" for different categories of workers.
 - (i) Number of hours of work to constitute a normal working day : The number of hours which shall constitute a normal working day for an adult shall be NINE hours. The working day of an adult worker shall be so arranged that it is inclusive of intervals, if any, for rest, it shall not spread over more than twelve hours on any day. When a worker is made to work for more than NINE hours on any day or for more than FORTY EIGHT hours in a week, he shall, in respect of overtime work, be paid wages at double the ordinary rate of wages.
 - (ii) Weekly day of rest : Every worker shall be given a weekly day of rest which shall normally be a Sunday unless otherwise fixed and notified at least TEN days in advance. A worker shall not be required or allowed to work on the weekly rest day unless he has or will have a substituted rest day, on one of the five days immediately before or after the rest day, provided that no substitution shall be made which will result in the worker working for more than ten days consecutively without a rest day for a whole day.

4. Where, in accordance with the foregoing provisions, a worker works on the rest day and has been given a substituted rest day, he shall be paid wages for the work done on the weekly rest day at the overtime rate of wages.
- (NOTE : The expression "ordinary rate of wages" means the fair wage the worker is entitled to.)
5. **Display of notice regarding Wages, Weekly Day of Rest etc. :** The contractor shall, before the commencement of his work on the Contract, display and correctly maintain and continue to display and correctly maintain in a clean and legible condition in conspicuous places on the works, notice in English and in the local Indian language, spoken by majority of workers, giving the rate of fair wages, the hours of work for which such wages are payable, the weekly rest days workers are entitled to and name and address of the Inspecting Officer. The Contractor shall send a copy each of such notices to the Inspecting Officers.
- 6.1 **Fixation of Wage Periods :** The Contractor shall fix wage periods in respect of which wages shall be payable. No wage period shall normally exceed one month.
- 6.2 **Payment of wages :**
- (i) Wages due to every worker shall be paid to him direct. All wages shall be paid in current coins or currency or in both. The wages shall be paid without deductions of any kind except those specified by Central Government by General Order or Special Order in this behalf or permissible under the Payment of Wages Act.
 - (ii) Wages of every worker employed as contract labour in an establishment or by Contractor are less than one thousand, such workers shall be paid within SEVEN days from the end of the Wage period; and before the expiry of the 10th day from the end of the wage period accordingly as the number of workers exceed 1,000.
 - (iii) When employment of any worker is terminated by or on behalf of the Contractor, the wages earned by him shall be paid before expiry of the second working day from the date on which his employment is terminated.
 - (iv) All payment of wages shall be made at the work site on a working day except when the work is completed before expiry of the wage period, in which case final payment shall be made at the work site within 48 hours of the last working day and during normal time.
- (NOTE : The term "working day" means a day on which labour is employed, and the work is in progress)
7. **Register for Workmen :** A register of workmen shall be maintained in the prescribed form and kept at the work site or as near to it as possible, and the relevant particulars of every workmen shall be entered therein within THREE days of his employment.
8. **Employment Card :** The Contractor shall issue an employment card in the Form appended to these regulations to each worker on the day of work or entry into his employment. If a worker already has any such card with him issued by the previous employer, the Contractor shall merely endorse that Employment Card with relevant entries. The Contractor may, alternatively, issue an attendance-cum-wage slip to each worker in the form appended. This card shall be valid for a wage period. The Contractor shall mark attendance on the cards twice each day and again after the rest interval, before he actually starts the work. On termination of employment, the Employment Card shall again be endorsed by the Contractor, service certificate issued and returned to the Worker.

9. **Register of Wages etc.:**

- (i) A register of Wages-cum-Muster Roll in the prescribed Form shall be maintained and kept at the work site or as near to it as possible.
- (ii) A wage slip in the prescribed Form shall be issued to every worker employed by the Contractor at least a day prior to disbursement of wages.

10. **Fines and deductions which may be made from Wages :**

- (i) Wages of a worker shall be paid to him without any deduction of any kind except the following:
 - (a) Fines ;
 - (b) Deduction for absence from duty, i.e. from the place of his employment he is required to work. The amount of deductions shall be in proportion to the period for which he was absent ;
 - (c) Deduction for damage to or loss of goods expressly entrusted to the employed person for custody, or for loss of money which he is required to account for, where such damage or loss is directly attributable to his neglect or default ;
 - (d) Deductions for recovery of advances or for adjustment of overpayment of wages. Advance granted shall be entered in a register ; and
 - (e) Any other deduction which the Corporation may from time to time allow.
- (ii) No fines shall be imposed on any worker say in respect of such acts and omissions on his part as have been approved by the Chief Labour Commissioner or Competent Authority.
- (iii) No fine shall be imposed on a worker and no deductions for damage or loss shall be made from his wages until the worker has been given an opportunity of showing cause against such fines or deductions.
- (iv) The total amount of fines which may be imposed in any one wage period on a worker shall not exceed an amount equal to three paise in a rupee of the wages payable to him in respect of that wage period.
- (v) No fine imposed on a worker shall be recovered from him in installments, or after expiry of sixty days from the date on which it was imposed. Every fine shall be deemed to have been imposed on the day of the act or commission in respect of which it was imposed.
- (vi) The Contractor shall maintain both in English and the local Indian language, a list approved by the Chief Labour Commissioner or Competent Authority clearly stating the acts and commissions for which penalty or fine may be imposed on a workman and display it in good condition in a conspicuous place on the work site.
- (vii) The Contractor shall maintain a register of fines and the register of deductions for damage or loss in the prescribed Forms which should be kept at the place of work.
- (viii) The Contractor shall display in a conspicuous place of work the list of acts and omissions for which the fines can be imposed. They are as under :
 - 1. Willful insubordination or disobedience, whether alone or in combination with other.
 - 2. Theft, fraud or dishonest in connection with the Contractors beside a business or property of Corporation.
 - 3. Taking or giving bribes or any illegal gratification.

4. Habitual late attendance.
 5. Drunkenness, fighting, riotous or disorderly or indifferent behaviour.
 6. Habitual negligence.
 7. Smoking near or around the area where combustible or other materials are locked.
 8. Habitual indiscipline
 9. Causing damage to work in the progress or to property of the Corporation or of the Contractor.
 10. Sleeping on duty.
 11. Malingering or slowing down work.
 12. Giving of false information regarding name, age, father's name etc.
 13. Habitual loss of wage cards supplied by the employers.
 14. Unauthorised use of employer's property of manufacture or making of unauthorised articles at the work place.
 15. Bad workmanship in construction and maintenance by skilled workers which is not approved by the Corporation and for which the Contractor is compelled to undertake rectification.
 16. Making false complaints and/or misleading statements.
 17. Engaging trade within the premises of the establishments.
 18. Any unauthorised divulgence of business affairs of the employers.
 19. Collection or canvassing for the collection of money within the premises of an establishment unless authorised by the employer.
 20. Holding meeting inside the premises without previous sanction of the employers.
 21. Threatening or intimidating any workmen or employer during the working hours within the premises.
 22. Non-observance of Safety norms/practices applicable to the Worksite.
11. **Register of Accidents :** The Contractor shall maintain a register of accidents in such form as may be convenient at the work place but the same shall include the following particulars :
- (a) Full particulars of the labourers who met with accident.
 - (b) Rate of wages.
 - (c) Sex
 - (d) Age
 - (e) Nature of accident and cause of accident
 - (f) Time and date of accident
 - (g) Date and time when admitted in hospital
 - (h) Date of discharge from the hospital
 - (i) Period of treatment and result of treatment
 - (j) Percentage of loss of earning capacity and disability as assessed by Medical Officer.
 - (k) Claim required to be paid under Workmen's Compensation Act.
 - (l) Date of payment of compensation
 - (m) Amount paid with details of the person to whom the same was paid.
 - (n) Authority by whom the compensation was assessed
 - (o) Remarks

12. **Preservation of Registers :** The Register of Workmen and the Register of Wages - cum-Muster Roll required to be maintained under these Regulation shall be preserved for 3 years after the date on which the last entry is made therein.
13. **Enforcement :** The Inspecting Officer shall either, on his own motion or on a complaint received by him, carry out investigations and send a report to the Engineer-in-charge specifying the amounts representing Workers' dues and amount of penalty to be imposed on the Contractor for breach of these Regulations, that have to be recovered from the Contractor, indicating full details of the recoveries proposed and the reasons therefor. It shall be obligatory on the part of the Engineer-in-charge on receipt of such a report to deduct such amounts from payments due to the Contractor.
14. **Disposal of amounts recovered from the Contractor :** The Engineer-in-charge shall arrange payment to workers concerned within FORTY FIVE days from receipt of a report from the Inspecting Officer. In cases where there is an appeal, payment of workers dues would be arranged by the Engineer-in-charge wherever such payments arise, within THIRTY days from the date of receipt of the decision of the Regional Labour Commissioner (RLC).
15. **Appeal against decision of Inspecting Officer :** Any person aggrieved by a decision of the Inspecting Officer may appeal against such decision to the RLC concerned within THIRTY days from the date of decision, forwarding simultaneously a copy of his appeal to the Engineer-in-charge. The decision of the RLC shall be final and binding upon the Contractor and the workmen.
16. **Representation of parties :**
- (i) A workman shall be entitled to be represented in any investigation or enquiry under these Regulations by an officer of a registered trade union of which he is a member or by an officer of a Federation of Trade Unions to which the said trade union is affiliated or where the workman is not a member of any registered trade union, by an officer of a registered trade union, connected with, or by any other workman employed in the industry in which the worker is employed.
 - (ii) A contractor shall be entitled to be represented in any investigation of enquiry under these Regulations by an officer of an Association of Contractors of which he is a member or by an officer of a Federation of Association of Contractors to which the said association is affiliated or where the Contractor is not a member of any Association of Contractors, by an officer of association of employers, connected with, or by any other employer engaged in the industry in which the Contractor is engaged.
 - (iii) No party shall be entitled to be represented by a legal practitioner in any investigation or enquiry under these Regulations.
17. **Maternity benefits for female employees :** The Contractor shall extend the leave, pay and other benefits as admissible to the female employees. No maternity benefits shall be admissible to a female worker unless she has been employed for a total period of not less than 6 months immediately proceeding the date on which she proceeds on leave. The Contractor shall maintain a register of maternity benefits in prescribed form, and shall be kept in all places of work.
18. **Inspection of Books and other documents :** The Contractor shall allow inspection of the Registers and other documents prescribed under these Regulations by Inspecting Officers and the Engineer-in-Charge or his authorised representative at any time and by the worker or his agent on receipt of due notice at the convenient time.

19. **Submission of Returns** : The Contractor shall submit periodical returns as may be specified from time to time.
20. **Amendments** : The Corporation may, from time to time, add to or amend these Regulations, and issue such directions as it may consider necessary for the proper implementation of these Regulations or for the purpose of removing any difficulty which may arise in the administration thereof.

MODEL RULES FOR LABOUR WELFARE**1. Definitions**

- (a) "Workplace" means a place at which, on an average, twenty or more workers are employed on any day during which the Contract work is in progress.
- (b) "Large Workplace" means a place at which, on an average 500 or more workers are employed.

2. First Aid

- i) At every workplace, there shall be provided and maintained in a readily accessible place First Aid appliances including an adequate supply of sterilized dressings and sterilized cotton wool as prescribed in the Factory Rules of the State in which the work is carried on. The appliances shall be kept in good order and in large work places, they shall be placed under the charge of a responsible person who shall be trained in First Aid treatment and who shall also be readily available during working hours. The First Aid boxes at the rate of not less than one box for 150 contract labour or part thereof shall be ordinarily employed. Adequate arrangement shall be made for immediate recoupment of items/equipment when necessary.
- ii) At large work places, where hospital facilities are not available within easy distance of the Works, First Aid posts shall be established and be run by a trained compounder.

Where large work places are remotely situated far away from regular hospitals, an indoor ward shall be provided with one bed for every 250 employees.

Where large work places are situated in cities, towns or in their suburbs and no beds are considered necessary owing to proximity of city or town hospitals, suitable transport shall be provided to facilitate removal of urgent cases to these hospitals. At other workplaces, some conveyance shall be kept readily available to take injured person or persons suddenly taken seriously ill to the nearest hospital.

At large work places, there shall be provided and maintained an ambulance room of the prescribed sizes, containing the prescribed equipment and in the charge of such medical and nursing staff as may be prescribed. For this purpose, the relevant provisions of the Factory Rules of the State Government area where the work is carried on may be taken as the prescribed standard.

3. Accommodation for labour : The Contractor shall during the progress of the Works, provide, erect and maintain necessary temporary living accommodation and ancillary facilities for labour at his own expense and to standard and scales as approved by the Engineer-in-charge. However, following specifications shall be followed :

- (a) (i) The minimum height of each hut at the eaves level shall be 2.10m (7ft) and the floor area to be provided will be at the rate of 2.7 sq.m (30sq.ft.) for each member of the worker's family staying with the labourer.
- (ii) The Contractor shall in addition construct suitable cooking places having a minimum area of 1.80mX 1.50m (6' x 5') adjacent to the hut for each family.

- (iii) The Contractor shall also construct temporary latrines and urinals for the use of the labourers, each on the scale of not less than four per each one hundred of the total strength. Separate latrines and urinals shall be provided for women.
 - (iv) The Contractor shall construct sufficient number of bathing and washing places, one unit for every 25 persons residing in the camp. These washing and bathing places shall be suitably screened.
 - (b) (i) All the huts shall have walls of sun-dried or burnt-bricks laid in mud mortar or other suitable local material as may be approved by the Engineer-in-Charge. In case of sun-dried bricks, the walls should be plastered with mud gobi on both sides. The floor may be katcha, but plastered with mud gobi and shall be at least 15cm. (6") above the surrounding ground. The roofs shall be laid with thatch or any other materials as may be approved by the Engineer-in-Charge and the Contractor shall ensure that throughout the period of their occupation, the roofs remain water-tight.
 - (ii) The Contractor shall provide each hut with proper ventilation.
 - (iii) All doors, windows and ventilators shall be provided with suitable leaves for security purposes.
 - (iv) There shall be kept an open space at least 7.2m (8 yards) between the rows of huts which may be reduced to 6m (20ft) according to the availability of site with the approval of the Engineer-in-charge. Back to back construction will be allowed.
4. **Drinking Water** : In every workplace, there shall be provided and maintained at suitable places, easily accessible to labour, a sufficient supply of cold water fit for drinking.
- Where drinking water is obtained from an intermittent public water supply, each workplace shall be provided with storage where drinking water should be stored.
- Every water supply storage shall be at a distance of not less than 15 meters from any latrine, drain or other source of pollution. Where water has to be drawn from an existing well, which is within such proximity of latrine, drain or any other source of pollution, the well shall be properly chlorinated before water is drawn for drinking. All such wells shall be entirely closed in and be provided with a trap door which shall be dust and water proof.
- A reliable pump shall be fitted to each covered well, the trap door shall be kept locked and opened only for cleaning or inspection which shall be done at least once a month.
5. **Washing and Bathing Places** : Adequate washing and bathing places shall be provided separately for men and women. Such places shall be kept in clean and drained conditions.
6. **Scale of accommodation in latrines and urinals** : There shall be provided within the precincts of every workplace, latrines and urinals in an accessible place and the accommodation separately for each of these, shall not be less than at the following scales :
- No. of seats
- | | | |
|--|---|---|
| (a) Where number of persons does not exceed 50 | - | 2 |
| (b) Where number of persons exceeds 50 but does not exceed 100 | - | 3 |
| (c) For additional persons (per 100 or part thereof) | - | 3 |

In particular cases, the Engineer-in-Charge shall have the power to increase the requirement, where necessary.

7. **Latrines and Urinals** : Except in workplaces provided with water-flushed latrines connected with a water-borne sewage systems, all latrines shall be provided with receptacies on dry earth system which shall be cleaned at least four times daily and at least twice during working hours and kept in strictly sanitary condition. Receptacies shall be tarred inside and outside at least once a year.

If women are employed, separate latrine and urinals screened from those for men and marked in the vernacular in conspicuous letters "For Women Only" shall be provided on the scale laid down in Rule 6. Those for men shall be similarly marked "For Men Only". A poster showing the figure of a man and a woman shall also be exhibited at the entrance to latrines for each sex. There shall be adequate supply of water close to latrines and urinals.

8. **Construction of latrines** : Inside walls shall be constructed of masonry or other non-absorbent materials and shall be cement-washed inside and outside at least once a year. The dates of cement washing shall be noted in a register maintained for the purpose and kept available for inspection. Latrines shall have at least thatched roof.

9. **Disposal of excreta** : Unless otherwise arranged for by the local municipal authority, arrangement for proper disposal of excreta by incineration at the workplace shall be made by means of a suitable incinerator approved by the local medical, health and medical or cantonment authorities. Alternatively, excreta may be disposed off by putting a layer of night soils at the bottom of pucca tank prepared for the purpose and covering it with a 15 c.m. Layer of waste or refuse and then covering it with a layer of earth for a fortnight (when it will turn into manure).

The Contractor shall, at his own expense, carry out all instructions issued to him by the Engineer-in-charge to effect proper disposal of soil and other conservancy work in respect of Contractor's work people or employees at the site. The Contractor shall be responsible for payment of any charges which may be levied by municipal or cantonment authority for execution of such work on his behalf.

10. **Provision of shelters during rest** : At every workplace shall be provided, free of cost, four suitable sheds, two for meals and two others for rest, separately for use of men and women labour. Height of each shelter shall not be less than 3 meters from the floor level to lowest part of roof. Sheds shall be kept clean and the space provided shall be on the basis of at least 0.5 sq.m per head.

11. **Creches** : At a place at which 20 or more women workers are ordinarily employed, there shall be provided at least one hut for use of children under the age of 6 years belonging to such women. Huts shall not be constructed to a standard lower than that of thatched roof, mud floor and wall with wooden planks spread over mud floor and covered with matting.

Huts shall be provided with suitable and sufficient openings for light and ventilation. There shall be adequate provision of sweepers to keep the places clean. There shall be two dais in attendance. Sanitary utensils shall be provided to the satisfaction of local medical, health and municipal or cantonment authorities. Use of huts shall be restricted to children, their attendants and mothers of children.

Where the number of women workers is more than 25 but less than 50, the Contractor shall provide at least one hut and one Dai to look after the children of women workers.

Size of creche(s) shall vary according to the number of women workers employed.

Creche(s) shall be properly maintained and necessary equipment like toys etc. provided.

12. **Canteen** : A cooked food canteen on a moderate scale shall be provided for the benefit of workers wherever it is considered necessary.
13. Planning, setting and erection of the above mentioned structures shall be approved by the Engineer-in-charge and the whole of such temporary accommodation shall at all times during the progress of the works be kept tidy and in a clean and sanitary condition as per requirements of the local bodies and to the satisfaction of the Engineer-in-charge and at the Contractor's expense. The Contractor shall conform generally to sanitary requirements of local medical, health and municipal or cantonment authorities and at all time adopt such precautions as may be necessary to prevent soil pollution of the site.

On completion of the Work, the whole of such temporary structures shall be cleared away, all rubbish burnt, excreta or other disposal pits or trenches filled in and effectively sealed off and the whole of site left clean and tidy to the entire satisfaction of the Engineer-in-Charge and at the Contractor's expense.
14. **Anti-malarial precautions** : The Contractor shall, at his own expense, conform to all anti-malarial instructions given to him by the Engineer-in-Charge, including filling up any burrow pits which may have been dug by him.
15. **Enforcement** : The Inspecting Officer mentioned in the Contractors' Labour Regulations or any other officer nominated in his behalf by the Engineer-in-charge shall report to the Engineer-in-charge all cases of failure on the part of the Contractor and or his sub-contractors to comply with the provisions of these Rules either wholly or in part and the Engineer-in-charge shall impose such fines and other penalties as are prescribed in the conditions.
16. **Interpretations etc** : On any question as to the application, interpretation of effect of these Rules, the decision of the Chief Labour Commissioner or Deputy Chief Labour Commissioner (Central) shall be final and binding.
17. **Amendments** : Government/Corporation may, from time to time, add to or amend these rules and issue such directions as it may consider necessary for the proper implementation of these Rules or for the purpose of removing any difficulty which may arise in the administration thereof.

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SAFETY PRACTICES DURING CONSTRUCTION

1.0 INTRODUCTION

Safety in Construction Management deserves utmost attention especially in the hydrocarbon industry, such as Exploration, Refineries, Pipelines and Marketing installations, Gas Processing units etc. Construction is widely recognised as one of the accident-prone activities. Most of the accidents are caused by inadequate planning, failure during the construction process and/or because of design deficiencies. Besides property loss, accidents also result in injuries and fatalities to the personnel; same needs to be prevented.

The reasons for accidents during construction activities are related to unique nature of the industry, human behaviour, difficult work-site conditions, extended odd duty hours, lack of training & awareness and inadequate safety management. Unsafe working methods, equipment failure and improper housekeeping also tend to increase the accident rate in construction.

Ensuring good quality of materials, equipment and competent supervision along with compliance of standard engineering practices shall go a long way to in built safety in the system.

The objective of this standard is to provide practical guidance on technical and educational framework for safety and health in construction with a view to:

- (a) prevent accidents and harmful effects on the health of workers arising from employment in construction;
- (b) ensure appropriate safety during implementation of construction;
- (c) provide safety practice guidelines for appropriate measures of planning, control and enforcement.

2.0 SCOPE

This document specifies broad guidelines on safe practices to be adhered to during construction activities in oil industry. However, before commencing any job, specific hazards and its effects should be assessed and necessary corrective/preventive actions should be taken by all concerned. The document is intended only to supplement and not to replace or supersede the prevailing statutory requirements, which shall also be followed as applicable. For Personal Protective Equipment (PPE's), OISD-STD-155 (Part I&II) shall be referred to. The scope of this document does not include the design aspects and quality checks during construction.

3.0 DEFINITIONS

Definitions of various terminology are given below:

- **Adequate, appropriate or suitable** are used to describe qualitatively or quantitatively the means or method used to protect the worker.
- **Brace:** A structural member that holds one point in a fixed position with respect to another point; bracing is a system of structural members designed to prevent distortion of a structure.
- **By hand:** The work is done without the help of a mechanised tool.
- **Competent Authority:** A statutory agency having the power to issue regulations, orders or other instructions having the force of law.
- **Competent person:** A person possessing adequate qualifications, such as suitable training and sufficient knowledge, experience and skill for the safe performance of the specific work. The competent authorities may define appropriate criteria for the designation of such persons and may determine the duties to be assigned to them.

- **Execution agency:**
Any physical or legal person, having contractual obligation with the owner, and who employs one or more workers on a construction site
- **Owner:**
Any physical or legal person for whom construction job is carried out.
It shall also include owner's designated representative/consultant/nominee/agent, authorised from time to time to act for and on its behalf, for supervising/ coordinating the activities of the execution agency.
- **Hazard:** Danger or potential danger.
- **Guard-rail:** An adequately secured rail erected along an exposed edge to prevent persons from falling.
- **Hoist:** A machine, which lifts materials or persons by means of a platform, which runs on guides.
- **Lifting gear:** Any gear or tackle by means of which a load can be attached to a lifting appliance but which does not form an integral part of the appliance or load.
- **Lifting appliance:** Any stationary or mobile appliance used for raising or lowering persons or loads.
- **Means of access or egress:** Passageways, corridors, stairs, platforms, ladders and any other means for entering or leaving the workplace or for escaping in case of danger.
- **Scaffold:** Any fixed, suspended or mobile temporary structure supporting workers and material or to gain access to any such structure and which is not a lifting appliance as defined above.
- **Toe-board:** A barrier placed along the edge of a scaffold platform, runway, etc., and secured there to guard against the slipping of persons or the falling of material.
- **Worker:** Any person engaged in construction activity.
- **Workplace:** All places where workers need to be or to go by reason of their work.

4.0 GENERAL DUTIES

4.1 GENERAL DUTIES OF EXECUTION AGENCIES

4.1.1 Execution agency should:

- i) provide means and organisation to comply with the safety and health measures required at the workplace.
- ii) provide and maintain workplaces, plant, equipment, tools and machinery and organise construction work so that, there is no risk of accident or injury to health of workers. In particular, construction work should be planned, prepared and undertaken so that:
 - (a) dangers, liable to arise at the workplace, are prevented;
 - (b) excessively or unnecessarily strenuous work positions and movements are avoided;
 - (c) organisation of work takes into account the safety and health of workers;
 - (d) materials and products used are suitable from a safety and health point of view;
 - (e) working methods are adopted to safeguard workers against the harmful effects of chemical, physical and biological agents.
- iii) establish committees with representatives of workers and management or make other arrangement for the participation of workers in ensuring safe working conditions.

- iv) arrange for periodic safety inspections by competent persons of all buildings, plant, equipment, tools, machinery, workplaces and review of systems of work, regulations, standards or codes of practice. The competent person should examine and ascertain the safety of construction machinery and equipment.
- v) provide such supervision to ensure that workers perform their work with due regard to safety and health of theirs as well as that of others.
- vi) Employ only those workers who are qualified, trained and suited by their age, physique, state of health and skill.
- vii) satisfy themselves that all workers are informed and instructed in the hazards connected with their work and environment and trained in the precautions necessary to avoid accidents and injury to health.
- viii) Ensure that buildings, plant, equipment, tools, machinery or workplaces in which a dangerous defect has been found should not be used until the defect has been rectified.
- ix) Organise for and remain always prepared to take immediate steps to stop the operation and evacuate workers as appropriate, where there is an imminent danger to the safety of workers.
- x) establish a checking system by which it can be ascertained that all the members of a shift, including operators of mobile equipment, have returned to the camp or base at the close of work on dispersed sites and where small groups of workers operate in isolation.
- xi) provide appropriate first aid, training and welfare facilities to workers as per various statutes like the Factories Act, 1948 etc. and, whenever collective measures are not feasible or are insufficient, provide and maintain personal protective equipment and clothing in line with the requirement as per OISD-STD-155 (Vol. I & II) on Personnel Protective Equipment. They should also provide access to workers to occupational health services.
- xii) Educate workers about their right and the duty at any workplace to participate in ensuring safe working conditions to the extent of their control over the equipment and methods of work and to express views on working procedures adopted as may affect safety and health.
- xiii) Ensure that except in an emergency, workers, unless duly authorised, should not interfere with, remove, alter or displace any safety device or other appliance furnished for their protection or the protection of others, or interfere with any method or process adopted with a view to avoiding accidents and injury to health.
- xiv) Ensure that workers do not operate or interfere with plant and equipment that they have not been duly authorised to operate, maintain or use.
- xv) Ensure that workers do not sleep, rest or cook etc in dangerous places such as scaffolds, railway tracks, garages, confined spaces or in the vicinity of fires, dangerous or toxic substances, running machines or vehicles and heavy equipment etc.
- xvii) Obtain the necessary clearance/permits as required and specified by owner
- xviii) As per the Govt. circular as amended from time to time all contractors who employ more than 50 workers or where the Lumpsum Price exceeds Rs. 50 crores, the following facilities are to be provided by contractor at site :
 - Arrangement for drinking water
 - Toilet facilities
 - A creche where 10 or more women workers are having children below the age of 6 years
 - Transport arrangement for attending to emergencies

- xix) should deploy a safety officer at site

4.2 GENERAL DUTIES OF OWNERS

4.2.1 Owners should:

- i) co-ordinate or nominate a competent person to co-ordinate all activities relating to safety and health on their construction projects;
- ii) inform all contractors on the project of special risks to health and safety;
- iii) Ensure that executing agency is aware of the owner's requirements and the executing agency's responsibilities with respect to safety practices before starting the job.

5.0 SAFETY PRACTICES AT WORK PLACES

5.1 GENERAL PROVISIONS

- 5.1.1 All openings and other areas likely to pose danger to workers should be clearly indicated.
- 5.1.2 Workers & Supervisors should use the safety helmet and other requisite Personal Protective Equipment according to job & site requirement. They should be trained to use personal protective equipment.
- 5.1.3 Never use solvents, alkalis and other oils to clean the skin.
- 5.1.4 Lift the load with back straight and knees bent as far as possible. Seek the help in case of heavy load.
- 5.1.5 Ensure the usage of correct and tested tools and tackles. Don't allow the make shift tools and tackles.
- 5.1.6 No loose clothing should be allowed while working near rotating equipment or working at heights.

5.2 MEANS OF ACCESS AND EGRESS

Adequate and safe means of access (at least two, differently located) to and egress from all workplaces should be provided. Same should be displayed and maintained.

5.3 HOUSEKEEPING

5.3.1 Ensure:

- i) proper storage of materials and equipment;
- ii) removal of scrap, inflammable material, waste and debris at appropriate intervals.

5.3.2 Removal of loose materials, which are not required for use, to be ensured. Accumulation of these at the site can obstruct means of access to and egress from workplaces and passageways.

5.3.3 Workplaces and passageways, that are slippery owing to oil, grease or other causes, should be cleaned up or strewn with sand, sawdust, ash etc.

5.4 PRECAUTIONS AGAINST THE FALL OF MATERIALS & PERSONS AND COLLAPSE OF STRUCTURES

5.4.1 Precautions should be taken such as the provision of fencing, look-out men or barriers to protect any person against injury by the fall of materials, or tools or equipment being raised or lowered.

- 5.4.2 Where necessary to prevent danger, guys, stays or supports should be used or other effective precautions should be taken to prevent the collapse of structures or parts of structures that are being erected, maintained, repaired, dismantled or demolished.
- 5.4.3 All openings through which workers are liable to fall should be kept effectively covered or fenced and displayed prominently.
- 5.4.4 As far as practicable, guardrails and toe-boards should be provided to protect workers from falling from elevated workplaces.
- 5.5 PREVENTION OF UNAUTHORISED ENTRY**
- 5.5.1 Construction sites located in built-up areas and alongside vehicular and pedestrian traffic routes should be fenced to prevent the entry of unauthorised persons.
- 5.5.2 Visitors should not be allowed access to construction sites unless accompanied by or authorised by a competent person and provided with the appropriate protective equipment.
- 5.6 FIRE PREVENTION AND FIRE FIGHTING**
- 5.6.1 All necessary measures should be taken by the executing agency and owner to:
- i) avoid the risk of fire;
 - ii) control quickly and efficiently any outbreak of fire;
 - iii) bring out a quick and safe evacuation of persons.
 - iv) Inform unit/fire station control room, where construction work is carried out within existing operating area.
- 5.6.2 Combustible materials such as packing materials, sawdust, greasy/oily waste and scrap wood or plastics should not be allowed to accumulate in workplaces but should be kept in closed metal containers in a safe place.
- 5.6.3 Places where workers are employed should, if necessary to prevent the danger of fire, be provided with:
- i) suitable and sufficient fire-extinguishing equipment, which should be easily visible and accessible;
 - ii) an adequate water supply at sufficient pressure meeting the requirements of various OISD standards.
- 5.6.4 To guard against danger at places having combustible material, workers should be trained in the action to be taken in the event of fire, including the use of means of escape.
- 5.6.5 At sites having combustible material, suitable visual signs should be provided to indicate clearly the direction of escape in case of fire.
- 5.6.6 Means of escape should be kept clear at all times. Escape routes should be frequently inspected particularly in high structures and where access is restricted.
- 5.7 LIGHTING**
- 5.7.1 Where natural lighting is not adequate, working light fittings or portable hand-lamps should be provided at workplace on the construction site where a worker will do a job.
- 5.7.2 Emergency lighting should be provided for personnel safety during night time to facilitate standby lighting source, if normal system fails.
- 5.7.2 Artificial lighting should not produce glare or disturbing shadows.

5.7.3 Lamps should be protected by guards against accidental breakage.

5.7.4 The cables of portable electrical lighting equipment should be of adequate size & characteristics for the power requirements and of adequate mechanical strength to withstand severe conditions in construction operations.

5.8 PLANT, MACHINERY, EQUIPMENT AND HAND TOOLS

5.8.1 General Provisions

- i) Plant, machinery and equipment including hand tools, both manual and power driven, should:
 - a) be of proper design and construction, taking into account health, Safety and ergonomic principles.
 - b) be maintained in good working order;
 - c) be used only for work for which they have been designed.
 - d) be operated only by workers who have been authorised and given appropriate training.
 - e) be provided with protective guards, shields or other devices as required.
- ii) Adequate instructions for safe use should be provided.
- iii) Safe operating procedures should be established and used for all plant, machinery and equipment.
- iv) Operators of plant, machinery and equipment should not be distracted while work is in progress.
- v) Plant, machinery and equipment should be switched off when not in use and isolated before any adjustment, clearing or maintenance is done.
- vi) Where trailing cables or hose pipes are used they should be kept as short as practicable and not allowed to create a hazard.
- vii) All moving parts of machinery and equipment should be enclosed or adequately guarded.
- viii) Every power-driven machine and equipment should be provided with adequate means, immediately accessible and readily identifiable to the operator, of stopping it quickly and preventing it from being started again inadvertently.
- ix) Operators of plant, machinery, equipment and tools should be provided with PPEs, including where necessary, suitable ear protection.

5.8.2 Hand tools

- i) Hand tools should be repaired by competent persons.
- ii) Heads of hammers and other shock tools should be dressed or ground to a suitable radius on the edge as soon as they begin to mushroom or crack.
- iii) When not in use and while being carried or transported sharp tools should be kept in sheaths, shields, chests or other suitable containers.
- iv) Only insulated or nonconducting tools should be used on or near live electrical installations.
- v) Only non-sparking tools should be used near or in the presence of flammable or explosive dusts or vapours.

5.8.3 Pneumatic Tools

- i) Operating triggers on portable pneumatic tools should be:
 - a) so placed as to minimise the risk of accidental starting of the machine.
 - b) so arranged as to close the air inlet valve automatically when the pressure of the operator's hand is removed.

- ii) Hose and hose connections for compressed air supply to portable pneumatic tools should be:
 - a) designed and tested for the pressure and service for which they are intended;
 - b) fastened securely on the pipe outlet and equipped with the safety chain, as appropriate.
- iii) Pneumatic shock tools should be equipped with safety clips or retainers to prevent dies and tools from being accidentally expelled from the barrel.
- iv) Pneumatic tools should be disconnected from power and the pressure in hose lines released before any adjustment or repair is made.

5.8.4 Electrical Tools

- i) Low voltage portable electrical tools should generally be used.
- ii) All electrical tools should be earthed, unless they are "all insulated" or "double insulated" tools which do not require earthing.
- iii) All electrical tools should get inspected and maintained on a regular basis by a competent electrician and complete records kept.

5.8.5 Engines

- i) Engines should:
 - a) be installed so that they can be started safely and the maximum safe speed cannot be exceeded.
 - b) have controls for limiting speed.
 - c) have devices to stop them from a safe place in an emergency.
- ii) IC engines should not be run in confined spaces unless adequate exhaust ventilation is provided.
- iii) When IC engines are being fuelled:
 - a) the engine should be shut off.
 - b) care should be taken to avoid spilling fuel;
 - c) no person should smoke or have an naked light in the vicinity.
 - d) a fire extinguisher should be kept readily available.
- iv) Secondary fuel reservoir should be placed outside the engine room.

6.0 CONSTRUCTION ACTIVITIES

The various common activities in construction are as under:

- Excavation
- Scaffolding, Platforms & Ladders
- Structural Work, Laying of Reinforcement & Concreting
- Road Work (Laying of roads)
- Cutting/ Welding
- Working in Confined Space
- Proof/Pressure Testing
- Working at Heights
- Handling & Lifting Equipments
- Vehicle Movement
- Electrical

- Offshore
- Demolition
- Radiography
- Sand/shot blasting/ spray painting
- Work above water

The safe practices to be followed during the implementation of above construction activities are given below:

6.1 EXCAVATION

- 6.1.1 All excavation work should be planned and the method of excavation and the type of support work required should be decided considering the following:
- i) the stability of the ground;
 - ii) the excavation will not affect adjoining buildings, structures or roadways;
 - iii) to prevent hazard, the gas, water, electrical and other public utilities should be shut off or disconnected, if necessary;
 - iv) presence of underground pipes, cable conductors, etc.,
 - v) the position of culvert/bridges, temporary roads and spoil heaps should be determined;
- 6.1.2 Before digging begins on site, all excavation work should be planned and the method of excavation and the type of support work required decided.
- 6.1.3 All excavation work should be supervised.
- 6.1.4 Sites of excavations should be thoroughly inspected:
- i) daily, prior to each shift and after interruption in work of more than one day;
 - ii) after every blasting operation;
 - iii) after an unexpected fall of ground;
 - iv) after substantial damage to supports;
 - v) after a heavy rain, frost or snow;
 - vi) when boulder formations are encountered.
- 6.1.5 Safe angle of repose while excavating trenches exceeding 1.5m depth upto 3.0m should be maintained. Based on site conditions, provide proper slope, usually 45° , and suitable bench of 0.5m width at every 1.5m depth of excavation in all soils except hard rock or provide proper shoring and strutting to prevent cave-in or slides.
- 6.1.6 As far as possible, excavated earth should not be placed within one meter of the edge of the trench or depth of trench whichever is greater.
- 6.1.7 Don't allow vehicles to operate too close to excavated area. Maintain at least 2m distance from edge of excavation. No load, plant or equipment should be placed or moved near the edge of any excavation where it is likely to cause its collapse and thereby endanger any person unless precautions such as the provision of shoring or piling are taken to prevent the sides from collapsing.
- 6.1.8 Adequately anchored stop blocks and barriers should be provided to prevent vehicles being driven into the excavation. Heavy vehicles should not be allowed near the excavation unless the support work has been specially designed to permit it.

- 6.1.9 If an excavation is likely to affect the security of a structure on which persons are working, precautions should be taken to protect the structure from collapse.
- 6.1.10 Barricade at 1m height (with red & white band/self glowing caution board) should be provided for excavations beyond 1.5m depth. Provide two entries/exits for such excavation.
- 6.1.11 Necessary precautions should be taken for underground utility lines like cables, sewers etc. and necessary approvals/clearances from the concerned authorities shall be obtained before commencement of the excavation job.
- 6.1.12 Water shall be pumped/bailed out, if any accumulates in the trench. Necessary precautions should be taken to prevent entry of surface water in trenches.
- 6.1.13 During rains, the soil becomes loose. Take additional precaution against collapse of side wall.
- 6.1.14 In hazardous areas, air should be tested to ascertain its quality. No one should be allowed entry till it is suitable for breathing.
- 6.1.15 In case of mechanised excavation, precaution shall be taken to not to allow anybody to come within one meter of extreme reach of the mechanical shovel. The mechanised excavator shall be operated by a well-trained experienced operator. When not in operation, the machine shall be kept on firm leveled ground with mechanical shovel resting on ground. Wheel or belt shall be suitably jammed to prevent any accidental movement of the machine. Suitable precautions as per manufacturer guidelines should be taken for dozers, graders and other heavy machines.
- 6.1.16 In case of blasting, follow strictly IS:4081-1986 & Indian Explosive Act and rules for storage, handling and carrying of explosive materials and execution of blasting operation.

6.2 SCAFFOLDING, PLATFORMS & LADDERS

6.2.1 Metal as material of construction

- i) A scaffold should be provided and maintained or other equally safe and suitable provision should be made where work cannot safely be done on or from the ground or from part of a building or other permanent structure.
- ii) Scaffolds should be provided with safe means of access, such as stairs, ladders or ramps. Ladders should be secured against inadvertent movement.
- iii) Every scaffold should be constructed, erected and maintained so as to prevent collapse or accidental displacement when in use.
- iv) Every scaffold and part thereof should be constructed :
 - (a) in such a way so as not to cause hazards for workers during erection and dismantling;
 - (b) in such a way so as guard rails and other protective devices, platforms, ladders, stairs or ramps can be easily put together;
 - (c) with sound material and of requisite size and strength for the purpose for which it is to be used and maintained in a proper condition.
- v) Boards and planks used for scaffolds should be protected against splitting.
- vi) Materials used in the construction of scaffolds should be stored under good conditions and apart from any material unsuitable for scaffolds.

- vii) Couplers should not cause deformation in tubes. Couplers should be made of drop forged steel or equivalent material.
- viii) Tubes should be free from cracks, splits and excessive corrosion and be straight to the eye, and tube ends cut cleanly square with the tube axis.
- ix) Scaffolds should be designed for their maximum load as per relevant code.
- x) Scaffolds should be adequately braced.
- xi) Scaffolds which are not designed to be independent should be rigidly connected to the building at designated vertical and horizontal places.
- xii) A scaffold should never extend above the highest anchorage to an extent which might endanger its stability and strength.
- xiii) Loose bricks, drainpipes, chimney-pots or other unsuitable material should not be used for the construction or support of any part of a scaffold.
- xiv) Scaffolds should be inspected and certified:
 - (a) before being taken into use;
 - (b) at periodic intervals thereafter as prescribed for different types of scaffolds;
 - (c) after any alteration, interruption in use, exposure to weather or seismic conditions or any other occurrence likely to have affected their strength or stability.
- xv) Inspection should more particularly ascertain that:
 - (a) the scaffold is of suitable type and adequate for the job;
 - (b) materials used in its construction are sound and of sufficient strength;
 - (c) it is of sound construction and stable;
 - (d) that the required safeguards are in position.
- xvi) A scaffold should not be erected, substantially altered or dismantled except by or under the supervision.
- xvii) Every scaffold should be maintained in good and proper condition, and every part should be kept fixed or secured so that no part can be displaced in consequence of normal use.
- xviii) If out-rigger scaffolding is to be used, it should be specifically designed and inspected before putting in use.

6.2.2 Lifting appliances on scaffolds

- i) When a lifting appliance is to be used on a scaffold:
 - (a) the parts of the scaffold should be carefully inspected to determine the additional strengthening and other safety measures required;
 - (b) any movement of the scaffold members should be prevented;
 - (c) if practicable, the uprights should be rigidly connected to a solid part of the building at the place where the lifting appliance is erected.

6.2.3 Prefabricated scaffolds

- i) In the case of prefabricated scaffold systems, the instructions provided by the manufacturers or suppliers should be strictly adhered to. Prefabricated scaffolds should have adequate arrangements for fixing bracing.
- ii) Frames of different types should not be intermingled in a single scaffold.
- iii) Scaffolding shall be erected on firm and level ground.

- iv) All members of metal scaffolding shall be checked periodically to screen out defective/ rusted members. All joints should be properly lubricated for easy tightening.
- v) Entry to scaffolding should be restricted.
- vi) Erection, alteration and removal shall be done under supervision of experienced personnel.
- vii) Use of barrels, boxes, loose bricks etc., for supporting platform shall not be permitted.
- viii) Each supporting member of platform shall be securely fastened and braced
- ix) Where planks are butt-joined, two parallel putlogs shall be used, not more than 100mm apart, to give support to each plank.
- x) Platform plank shall not project beyond its end support to a distance exceeding 4 times the thickness of plank, unless it is effectively secured to prevent tipping. Cantilever planks should be avoided.
- xi) The platform edges shall be provided with 150mm high toe board to eliminate hazards of tools or other objects falling from platform.
- xii) Erect ladders in the "four up-one out position"
- xiii) Lash ladder securely with the structure.
- xiv) Using non-slip devices, such as, rubber shoes or pointed steel ferules at the ladder foot, rubber wheels at ladder top, fixing wooden battens, cleats etc.
- xv) When ladder is used for climbing over a platform, the ladder must be of sufficient length, to extend at least one meter above the platform, when erected against the platform in "four up-one out position."
- xvi) Portable ladders shall be used for heights not more than 4mt. Above 4mt flights, fixed ladders shall be provided with at least 600 mm landings at every 6mt or less.
- xvii) The width of ladder shall not be less than 300mm and rungs shall be spaced not more than 300mm.
- xviii) Every platform and means of access shall be kept free from obstruction.
- xix) If grease, mud, gravel, mortar etc., fall on platform or scaffolds, these shall be removed immediately to avoid slippage.
- xx) Workers shall not be allowed to work on scaffolds during storms or high wind. After heavy rain or storms, scaffolds shall be inspected before reuse.
- xxi) Don't overload the scaffolding. Remove excess material and scrap immediately.
- xxii) Dismantling of scaffolds shall be done in a pre-planned sequential manner.

6.2.4 Suspended scaffolds/boatwain's chair

- i) In addition to the requirements for scaffolds in general as regards soundness, stability and protection against the risk of falls, suspended scaffolds should meet the following specific requirements.
 - (a) platforms should be designed and built with dimensions that are compatible with the stability of the structure as a whole, especially the length;
 - (b) the number or anchorage should be compatible with the dimensions of the platform;
 - (c) the safety of workers should be safeguarded by an extra rope having a point of attachment independent of the anchorage arrangements of the scaffold;

- (d) the anchorage and other elements of support of the scaffold should be designed and built in such a way as to ensure sufficient strength;
- (e) the ropes, winches, pulleys or pulley blocks should be designed, assembled, used and maintained according to the requirements established for lifting gear adapted to the lifting of persons according to national laws and regulations;
- (f) Before use, the whole structure should be checked by a competent person.

6.2.5 Bamboo Scaffolding

- i) In general, it should be avoided as far as possible. It should not be used in the unit/off-site areas and where hot work is to be done.
- ii) For construction and maintenance of residential and office buildings, situated outside explosive licensed area, bamboo scaffold, if used, should conform to provisions given in IS-3696 (Part 1)-1987.

6.3 STRUCTURAL WORK, LAYING OF REINFORCEMENT & CONCRETING

6.3.1 General provisions

- i) The erection or dismantling of buildings, structures, civil engineering works, formwork, falsework and shoring should be carried out by trained workers only under the supervision of a competent person.
- ii) Precautions should be taken to guard against danger to workers arising from any temporary state of weakness or instability of a structure.
- iii) Formwork, falsework and shoring should be so designed, constructed and maintained that it will safely support all loads that may be imposed on it.
- iv) Formwork should be so designed and erected that working platforms, means of access, bracing and means of handling and stabilising are easily fixed to the formwork structure.

6.3.2 Erection and dismantling of steel and prefabricated structures

- i) The safety of workers employed on the erection and dismantling of steel and prefabricated structures should be ensured by appropriate means, such as provision and use of:
 - (a) ladders, gangways or fixed platforms;
 - (b) platforms, buckets, boatswain's chairs or other appropriate means suspended from lifting appliances;
 - (c) safety harnesses and lifelines, catch nets or catch platforms;
 - (d) Power-operated mobile working platforms.
- ii) Steel and prefabricated structures should be so designed and made that they can be safely transported and erected.
- iii) In addition to the need for the stability of the part when erected, the design should explicitly take following into account:
 - (a) the conditions and methods of attachment in the operations of transport, storing and temporary support during erection or dismantling as applicable;
 - (b) Methods for the provision of safeguards such as railings and working platforms, and, when necessary, for mounting them easily on the structural steel or prefabricated parts.

- iv) The hooks and other devices built in or provided on the structural steel or prefabricated parts that are required for lifting and transporting them should be so shaped, dimensioned and positioned as:
 - (a) to withstand with a sufficient margin the stresses to which they are subjected;
 - (b) Not to set up stresses in the part that could cause failures, or stresses in the structure itself not provided for in the plans, and be designed to permit easy release from the lifting appliance. Lifting points for floor and staircase units should be located (recessed if necessary) so that they do not protrude above the surface;
 - (c) To avoid imbalance or distortion of the lifted load.
- v) Store places should be so constructed that:
 - (a) there is no risk of structural steel or prefabricated parts falling or overturning;
 - (b) storage conditions generally ensure stability and avoid damage having regard to the method of storage and atmospheric conditions;
 - (c) racks are set on firm ground and designed so that units cannot move accidentally.
- vi) While they are being stored, transported, raised or set down, structural steel or prefabricated parts should not be subjected to stresses prejudicial to their stability.
- vii) Every lifting appliance should:
 - (a) be suitable for the operations and not be capable of accidental disconnection;
 - (b) be approved or tested as per statutory requirement.
- viii) Lifting hooks should be of the self-closing type or of a safety type and should have the maximum permissible load marked on them.
- ix) Tongs, clamps and other appliances for lifting structural steel and prefabricated parts should:
 - (a) be of such shape and dimensions as to ensure a secure grip without damaging the part;
 - (b) be marked with the maximum permissible load in the most unfavourable lifting conditions.
- x) Structural steel or prefabricated parts should be lifted by methods or appliances that prevent them from spinning accidentally.
- xi) When necessary to prevent danger, before they are raised from the ground, structural steel or prefabricated parts should be provided with safety devices such as railings and working platforms to prevent falls of persons.
- xii) While structural steel or prefabricated parts are being erected, the workers should be provided with appliances for guiding them as they are being lifted and set down, so as to avoid crushing of hands and to facilitate the operations. Use of such appliances should be ensured.
- xiii) A raised structural steel or prefabricated part should be so secured and wall units so propped that their stability cannot be imperiled, even by external agencies such as wind and passing loads before its release from the lifting appliance.
- xiv) At work places, instruction should be given to the workers on the methods, arrangements and means required for the storage, transport, lifting and erection

of structural steel or prefabricated parts, and, before erection starts, a meeting of all those responsible should be held to discuss and confirm the requirements for safe erection.

- xv) During transportation within the construction area, attachments such as slings and stirrups mounted on structural steel or prefabricated parts should be securely fastened to the parts.
- xvi) Structural steel or prefabricated parts should be so transported that the conditions do not affect the stability of the parts or the means of transport result in jolting, vibration or stresses due to blows, or loads of material or persons.
- xvii) When the method of erection does not permit the provision of other means of protection against fall of persons, the workplaces should be protected by guardrails, and if appropriate by toe-boards.
- xviii) When adverse weather conditions such as snow, ice and wind or reduced visibility entail risks of accidents, the work should be carried on with particular care, or, if necessary, interrupted.
- xix) Structures should not be worked on during violent storms or high winds, or when they are covered with ice or snow, or are slippery from other causes.
- xx) If necessary, to prevent danger, structural steel parts should be equipped with attachments for suspended scaffolds, lifelines or safety harnesses and other means of protection.
- xxi) The risks of falling, to which workers moving on high or sloping girders are exposed, should be limited by all means of adequate collective protection or, where this is impossible, by the use of a safety harness that is well secured to a strong support.
- xxii) Structural steel parts that are to be erected at a great height should as far as practicable be assembled on the ground.
- xxiii) When structural steel or prefabricated parts are being erected, a sufficiently extended area underneath the workplace should be barricaded or guarded
- xxiv) Steel trusses that are being erected should be adequately shored, braced or guyed until they are permanently secured in position.
- xxv) Load-bearing structural member should not be dangerously weakened by cutting, holing or other means.
- xxvi) Structural members should not be forced into place by the hoisting machine while any worker is in such a position that he could be injured by the operation.
- xxvii) Open-web steel joists that are hoisted singly should be directly placed in position and secured against dislodgment.

6.3.3 Reinforcement

- i) Ensure that workers use Personnel Protective equipment like safety helmet, safety shoes, gloves etc.
- ii) Don't place the hand below the rods for checking clear distance. Use measuring devices.
- iii) Don't wear loose clothes while checking the rods.
- iv) Don't stand unnecessarily on cantilever rods.
- v) To carry out welding/cutting of rods, safety procedures/precautions as mentioned in Item No. 6.5 to be followed.
- vi) For supplying of rods at heights, proper staging and/or bundling to be provided.

- vii) Ensure barricading and staging for supplying and fixing of rods at height.
- viii) For short distance carrying of materials on shoulders, suitable pads to be provided.
- ix) While transporting material by trucks/trailers, the rods shall not protrude in front of or by the sides of driver's cabin. In case such protrusion cannot be avoided behind the deck, then it should not extend 1/3rd of deck length or 1.5M which ever is less and tied with red flags/lights.

6.3.4 Concreting

- i) Ensure stability of shuttering work before allowing concreting.
- ii) Barricade the concreting area while pouring at height/depths.
- iii) Keep vibrator hoses, pumping concrete accessories in healthy conditions and mechanically locked.
- iv) Pipelines in concrete pumping system shall not be attached to temporary structures such as scaffolds and formwork support as the forces and movements may affect their integrity.
- v) Check safety cages & guards around moving motors/parts etc. provided in concreting mixers.
- vi) Use Personal Protective Equipment like gloves, safety shoes etc. while dealing with concrete and wear respirators for dealing with cement.
- vii) Earthing of electrical mixers, vibrators, etc. should be done and verified.
- viii) Cleaning of rotating drums of concrete mixers shall be done from outside. Lockout devices shall be provided where workers need to enter.
- ix) Where concrete mixers are driven by internal combustion engine, exhaust points shall be located away from the worker's workstation so as to eliminate their exposure to obnoxious fumes.
- x) Don't allow unauthorised person to stand under the concreting area.
- xi) Ensure adequate lighting arrangements for carrying out concrete work during night.
- xii) Don't allow the same workers to pour concrete round the clock. Insist on shift pattern.
- xiii) During pouring, shuttering and its supports should be continuously watched for defects.

6.4 ROAD WORK

- 6.4.1 Site shall be barricaded and provided with warning signs, including night warning lamps at appropriate locations for traffic diversion.
- 6.4.2 Filled and empty bitumen drums shall be stacked separately at designated places.
- 6.4.3 Mixing aggregate with bitumen shall preferably be done with the help of bitumen batch mixing plant, unless operationally non-feasible.
- 6.4.4 Road rollers, Bitumen sprayers, Pavement finishers shall be driven by experienced drivers with valid driving license.
- 6.4.5 Workers handling hot bitumen sprayers or spreading bitumen aggregate mix or mixing bitumen with aggregate, shall be provided with PVC hand gloves and rubber shoes with legging up to knee joints.
- 6.4.6 At the end of day's work, surplus hot bitumen in tar boiler shall be properly covered by a metal sheet, to prevent anything falling in it.

- 6.4.7 If bitumen accidentally falls on ground, it shall be immediately covered by sprinkling sand, to prevent anybody stepping on it. Then it shall be removed with the help of spade.
- 6.4.8 For cement concrete roads, besides site barricading and installation of warning signs for traffic diversion, safe practices mentioned in the chapter on "Concreting", shall also be applicable.

6.5 CUTTING/WELDING

- 6.5.1 Common hazards involved in welding/cutting are sparks, molten metal, flying particles, harmful light rays, electric shocks etc. Following precautions should be taken: -
- i) A dry chemical type fire extinguisher shall be made available in the work area.
 - ii) Adequate ventilation shall be ensured by opening manholes and fixing a shield or forced circulation of air etc, while doing a job in confined space.
 - iii) Ensure that only approved and well-maintained apparatus, such as torches, manifolds, regulators or pressure reducing valves, and acetylene generators, be used.
 - iv) All covers and panels shall be kept in place, when operating an electric Arc welding machine.
 - v) The work piece should be connected directly to Power supply, and not indirectly through pipelines/structures/equipments etc.
 - vi) The welding receptacles shall be rated for 63 A suitable for 415V, 3-Phase system with a scraping earth. Receptacles shall have necessary mechanical interlocks and earthing facilities.
 - vii) All cables, including welding and ground cables, shall be checked for any worn out or cracked insulation before starting the job. Ground cable should be separate without any loose joints.
 - viii) Cable coiling shall be maintained at minimum level, if not avoidable.
 - ix) An energised electrode shall not be left unattended.
 - x) The power source shall be turned off at the end of job.
 - xi) All gas cylinders shall be properly secured in upright position.
 - xii) Acetylene cylinder shall be turned and kept in such a way that the valve outlet points away from oxygen cylinder.
 - xiii) Acetylene cylinder key for opening valve shall be kept on valve stem, while cylinder is in use, so that the acetylene cylinder could be quickly turned off in case of emergency. Use flash back arrestors to prevent back-fire in acetylene/oxygen cylinder.
 - xiv) When not in use, valves of all cylinders shall be kept closed.
 - xv) All types of cylinders, whether full or empty, shall be stored at cool, dry place under shed.
 - xvi) Forced opening of any cylinder valve should not be attempted.
 - xvii) Lighted gas torch shall never be left unattended.
 - xviii) Store acetylene and oxygen cylinders separately.
 - xix) Store full and empty cylinders separately.
 - xx) Avoid cylinders coming into contact with heat.

- xxi) Cylinders that are heavy or difficult to carry by hand may be rolled on their bottom edge but never dragged.
- xxii) If cylinders have to be moved, be sure that the cylinder valves are shut off.
- xxiii) Before changing torches, shut off the gas at the pressure reducing regulators and not by crimping the hose.
- xxiv) Do not use matches to light torches, use a friction lighter.
- xxv) Move out any leaking cylinder immediately.
- xxvi) Use trolleys for oxygen & acetylene cylinder and chain them.
- xxvii) Always use Red hose for acetylene and other fuel gases and Black for oxygen, and ensure that both are in equal length.
- xxviii) Ensure that hoses are free from burns, cuts and cracks and properly clamped.
- xxix) Avoid dragging hoses over sharp edges and objects
- xxx) Do not wrap hoses around cylinders when in use or stored.
- xxxi) Protect hoses from flying sparks, hot slag, and other hot objects.
- xxxii) Lubricants shall not be used on Ox-fuel gas equipment.
- xxxiii) During cutting/welding, use proper type goggles/face shields.

6.6 WORKING IN CONFINED SPACES

- 6.6.1 Following safety practices for working in confined space like towers, columns, tanks and other vessels should be followed in addition to the safety guidelines for specific jobs like scaffolding, cutting/welding etc.
- i) Shut down, isolate, depressurise and purge the vessel as per laid down procedures.
 - ii) Entry inside the vessel and to carry out any job should be done after issuance of valid permit only in line with the requirement of OISD-STD-105.
 - iii) Ensure proper and accessible means of exit before entry inside a confined space.
 - iv) The number of persons allowed inside the vessel should be limited to avoid overcrowding.
 - v) When the work is going on in the confined space, there should always be one man standby at the nearby manway.
 - vi) Before entering inside the vessels underground or located at lower elevation, probability of dense vapours accumulating nearby should also be considered in addition to inside the vessel.
 - vii) Ensure requisite O₂ level before entry in the confined space and monitor level periodically or other wise use respiratory devices.
 - viii) Check for no Hydrocarbon or toxic substances before entry and monitor level periodically or use requisite Personal Protective Equipment.
 - ix) Ensure adequate ventilation or use respiratory devices.
 - x) Depending upon need, necessary respirator system, gas masks and suit shall be worn by everyone entering confined space. In case of sewer, OWS or in the confined area where there is a possibility of toxic or inert gas, gas masks shall be used by everyone while entering.

- xi) Barricade the confined spaces during hoisting, radiography, blasting, pressure testing etc.
- xii) Use 24V flameproof lamp fittings only for illumination.
- xiii) Use tools with air motors or electric tools with maximum voltage of 24V.
- xiv) House keeping shall be well maintained.
- xv) Safety helmet, safety shoes and safety belt shall be worn by everyone entering the confined space.
- xvi) Don't wear loose clothing while working in a confined space.
- xvii) In case of the vessels which are likely to contain pyrophoric substances (like Iron Sulphide), special care need to be taken before opening the vessel. Attempt should be made to remove the pyrophoric substances. Otherwise, these should be always kept wet by suitable means.
- xviii) The cutting torches should also be kept outside the vessel immediately after the cutting.
- xix) The gas cylinders used for cutting/welding shall be kept outside.
- xx) All cables, hoses, welding equipment etc., shall be removed from confined space at end of each work day, even if the work is to be resumed in the same space the next day.
- xxi) To the extent possible sludge shall be cleared and removed from outside before entering.
- xxii) No naked light or flame or hot work such as welding, cutting and soldering should be permitted inside a confined space or area unless it has been made completely free of the flammable atmosphere, tested and found safe by a competent person. Only non-sparking tools and flameproof hand lamps protected with guard and safety torches should be used inside such confined space or area for initial inspection, cleaning or other work required to be done for making the area safe.
- xxiii) Communication should be always maintained between the worker and the attendant.

6.7 PROOF/PRESSURE TESTING

- 6.7.1 Review test procedure before allowing testing with water or air or any other fluid.
- 6.7.2 Provide relief valves of adequate size while testing with air or other gases.
- 6.7.3 Ensure compliance of necessary precautions, step wise loading, tightening of fasteners, grouting etc. before and during testing.
- 6.7.4 Inform all concerned in advance of the testing.
- 6.7.5 Keep the vents open before opening any valve for filling/draining of liquid used for hydrotesting. The filling/draining should not exceed the designed rate for pressure testing.
- 6.7.6 Provide separate gauges of suitable range for pressurising pump and the equipment to be tested.
- 6.7.7 Provide gauges at designated locations for monitoring of pressures.
- 6.7.8 Check the calibration of all pressurising equipment and accessories and maintain records.
- 6.7.9 Take readings at pre-defined intervals.

6.8 WORKING AT HEIGHTS

6.8.1 General Provision

- i) While working at a height of more than 3 meters, ISI approved safety belt shall be used.
- ii) While working at a height of more than 3 meters, permit should be issued by competent person before commencement of the job.
- iii) Worker should be well trained on usage of safety belt including its proper usage at the time of ascending/descending.
- iv) All tools should be carried in tool kits to avoid their falling.
- v) If the job is on fragile/sloping roof, roof walk ladders shall be used.
- vi) Provide lifeline wherever required.
- vii) Additional safety measures like providing Fall Arrestor type Safety belt, safety net should be provided depending upon site conditions, job requirements.
- viii) Keep working area neat and clean. Remove scrap material immediately.
- ix) Don't throw or drop material/equipment from height.
- x) Avoid jumping from one member to another. Use proper passageway.
- xi) Keep both hands free while climbing. Don't try to bypass the steps of the ladder.
- xii) Try to maintain calm at height. Avoid over exertion.
- xiii) Avoid movements on beam.
- xiv) Elevated workplaces including roofs should be provided with safe means of access and egress such as stairs, ramps or ladders.

6.8.2 Roof Work

- i) All roof-work operations should be pre-planned and properly supervised.
- ii) Roof work should only be undertaken by workers who are physically and psychologically fit and have the necessary knowledge and experience for such work.
- iii) Work on roofs shouldn't be carried on in weather conditions that threaten the safety of workers.
- iv) Crawling boards, walkways and roof ladders should be securely fastened to a firm structure.
- v) Roofing brackets should fit the slope of the roof and be securely supported.
- vi) Where it is necessary for a person to kneel or crouch near the edge of the roof, necessary precautions should be taken.
- vii) On a large roof where work have to be carried out at or near the edge, a simple barrier consisting of crossed scaffold tubes supporting a tubing guardrail may be provided.
- viii) All covers for openings in roofs should be of substantial construction and be secured in position.
- ix) Roofs with a pitch of more than 10 should be treated as sloping.
- x) When work is being carried out on sloping roofs, sufficient and suitable crawling boards or roof ladders should be provided and firmly secured in position.
- xi) During extensive work on the roof, strong barriers or guardrails and toe-boards should be provided to stop a person from falling off the roof.

- xii) Where workers are required to work on or near roofs or other places covered with fragile material, through which they are liable to fall, they should be provided with suitable roof ladders or crawling boards strong enough and when spanning across the supports for the roof covering to support those workers.
- xiii) A minimum of two boards should be provided so that it is not necessary for a person to stand on a fragile roof to move a board or a ladder, or for any other reason.

6.8.3 Work on tall chimneys

- i) For the erection and repair of tall chimneys, scaffolding should be provided. A safety net should be maintained at a suitable distance below the scaffold.
- ii) The scaffold floor should always be at least 65 cm below the top of the chimney.
- iii) Under the working floor of the scaffolding the next lower floor should be left in position as a catch platform.
- iv) The distance between the inside edge of the scaffold and the wall of the chimney should not exceed 20 cm at any point.
- v) Catch platforms should be erected over:
 - (a) the entrance to the chimney;
 - (b) Passageways and working places where workers could be endangered by falling objects.
- vi) For climbing tall chimneys, access should be provided by:
 - (a) stairs or ladders;
 - (b) a column of iron rungs securely embedded in the chimney wall;
 - (c) Other appropriate means.
- vii) When workers use the outside rungs to climb the chimney, a securely fastened steel core rope looped at the free end and hanging down at least 3 m should be provided at the top to help the workers to climb on to the chimney.
- viii) While work is being done on independent chimneys the area surrounding the chimney should be enclosed by fencing at a safe distance.
- ix) Workers employed on the construction, alteration, maintenance or repair of tall chimneys should not:
 - a) work on the outside without a safety harness attached by a lifeline to a rung, ring or other secure anchorage;
 - b) put tools between the safety harness and the body or in pockets not intended for the purpose;
 - c) haul heavy materials or equipment up and down by hand to or from the workplace on the chimney;
 - d) fasten pulleys or scaffolding to reinforcing rings without first verifying their stability;
 - e) work alone;
 - f) climb a chimney that is not provided with securely anchored ladders or rungs;
 - g) Work on chimneys in use unless the necessary precautions to avoid danger from smoke and gases have been taken.
- x) Work on independent chimneys should not be carried on in high winds, icy conditions, fog or during electrical storms.

6.9 HANDLING AND LIFTING EQUIPMENT:

6.9.1 General Provisions

Following are the general guidelines to be followed with regard to all types of handling and lifting equipment in addition to the guidelines for specific type of equipments dealt later on.

- i) There should be a well-planned safety programme to ensure that all the lifting appliances and lifting gear are selected, installed, examined, tested, maintained, operated and dismantled with a view to preventing the occurrence of any accident;
- ii) All lifting appliances shall be examined by competent persons at frequencies as specified in "The Factories act".
- iii) Check thoroughly quality, size and condition of all lifting tools like chain pulley blocks, slings, U-clamps, D-shackles etc. before putting them in use.
- iv) Safe lifting capacity of all lifting & handling equipment, tools and shackles should be got verified and certificates obtained from competent authorities before its use. The safe working load shall be marked on them.
- v) Check periodically the oil, brakes, gears, horns and tyre pressure of all moving equipments like cranes, forklifts, trailers etc as per manufacturer's recommendations.
- vi) Check the weights to be lifted and accordingly decide about the crane capacity, boom length and angle of erection.
- vii) Allow lifting slings as short as possible and check packing at the friction points.
- viii) While lifting/placing of the load, no unauthorised person shall remain within the radius of the boom and underneath the load.
- ix) While loading, unloading and stacking of pipes, proper wedges shall be placed to prevent rolling down of the pipes.
- x) Control longer jobs being lifted up from both ends.
- xi) Only trained operators and riggers should carry out the job. While the crane is moving or lifting the load, the trained rigger should be there for keeping a vigil against hitting any other object.
- xii) During high wind conditions and nights, lifting of heavy equipments should be avoided. If unavoidable to do erection in night, operator and rigger should be fully trained for night signaling. Also proper illumination should be there.
- xiii) Allow crane to move on hard, firm and leveled ground.
- xiv) When crane is in idle condition for long periods or unattended, crane boom should either be lowered or locked as per manufacturer's guidelines.
- xv) Hook and load being lifted shall remain in full visibility of crane operators, while lifting, to the extent possible.
- xvi) Don't allow booms or other parts of crane to come within 3 meters reach of overhead electrical cables.
- xvii) No structural alterations or repairs should be made to any part of a lifting appliance, which may affect the safety of the appliance without the permission and supervision of the competent person.

6.9.2 Hoists

- i) Hoist shafts should be enclosed with rigid panels or other adequate fencing at:
 - (a) ground level on all sides;
 - (b) all other levels at all points at which access is provided;
 - (c) all points at which persons are liable to be struck by any moving part.

- ii) The enclosure of hoist shafts, except at approaches should extend where practicable at least 2mt above the floor, platform or other place to which access is provided except where a lesser height is sufficient to prevent any person falling down the hoistway and there is no risk of any person coming into contact with any moving part of the hoist, but in no case should the enclosure be less than 1mt in height.
- iii) The guides of hoist platforms should offer sufficient resistance to bending and, in the case of jamming by a safety catch, to buckling.
- iv) Where necessary to prevent danger, adequate covering should be provided above the top of hoist shafts to prevent material falling down them.
- v) Outdoor hoist towers should be erected on firm foundations, and securely braced, guyed and anchored.
- vi) A ladderway should extend from the bottom to the top of outdoor hoist towers, if no other ladderway exists within easy reach.
- vii) Hoisting engines should be of ample capacity to control the heaviest load that they will have to move.
- viii) Hoists should be provided with devices that stop the hoisting engine as soon as the platform reaches its highest stopping place.
- ix) Winches should be so constructed that the brake is applied when the control handle is not held in the operating position.
- x) It should not be possible to set in motion from the platform a hoist, which is not designed for the conveyance of persons.
- xi) Winches should not be fitted with pawl and ratchet gears on which the pawl must be disengaged before the platform is lowered.
- xii) Hoist platforms should be capable of supporting the maximum load that they will have to carry with a safety factor.
- xiii) Hoist platforms should be equipped with safety gear that will hold the platform with the maximum load if the hoisting rope breaks.
- xiv) If workers have to enter the cage or go on the platform at landings there should be a locking arrangement preventing the cage or platform from moving while any worker is in or on it.
- xv) On sides not used for loading and unloading, hoist platforms should be provided with toe-boards and enclosures of wire mesh or other suitable material to prevent the fall of parts of loads.
- xvi) Where necessary to prevent danger from falling objects, hoist platforms should be provided with adequate covering.
- xvii) Counterweights consisting of an assemblage of several parts should be made of specially constructed parts rigidly connected together.
- xviii) Counterweights should run in guides.
- xix) Platforms should be provided at all landings used by workers.
- xx) Following notices should be posted up conspicuously and in very legible characters:
 - (a) on all hoists:
 - on the platform: the carrying capacity in kilograms or other appropriate standard unit of weight;
 - on the hoisting engine: the lifting capacity in kilograms or other appropriate standard unit of weight;

- (b) on hoists authorised or certified for the conveyance of persons:
 - on the platform or cage: the maximum number of persons to be carried at one time;
- (c) on hoists for goods only:
 - on every approach to the hoist and on the platform: prohibition of use by persons.
- xxi) Hoists intended for the carriage of persons should be provided with a cage so constructed as to prevent any person from falling out or being trapped between the cage and any fixed part of the structure when the cage gate is shut, or from being struck by the counterbalance weight or by articles or materials tailing down the hoistway.
- xxii) On each side in which access is provided, the cage should have a gate fitted with devices which ensure that the gate cannot be opened except when the cage is at a landing and that the gate must be closed before the cage can move away from the landing.
- xxiii) Every gate in the enclosure of the hoist shaft which gives access from a landing place to the cage should be fitted with devices to ensure that the gate cannot be opened except when the cage is at that landing place, and that the cage cannot be moved away from that landing place until the gate is closed.

6.9.3 Derricks

Stiff-leg derricks

- i) Derricks should be erected on a firm base capable of taking the combined weight of the crane structure and maximum rated load.
- ii) Devices should be used to prevent masts from lifting out of their seating.
- iii) Electrically operated derricks should be effectively earthed from the sole plate or framework.
- iv) Counterweights should be so arranged that they do not subject the backstays, sleepers or pivots to excessive strain.
- v) When derricks are mounted on wheels:
 - a) a rigid member should be used to maintain the correct distance between the wheels;
 - b) they should be equipped with struts to prevent them from dropping if a wheel breaks or the derrick is derailed.
- vi) The length of a derrick jib should not be altered without consulting the manufacturer.
- vii) The jib of a scotch derrick crane should not be erected within the backstays of the crane.

Guy derricks

- i) The restraint of the guy ropes should be ensured by fitting stirrups or anchor plates in concrete foundations.
- ii) The mast of guy derricks should be supported by six top guys spaced approximately equally.
- iii) The spread of the guys of a guy derrick crane from the mast should not be more than 450 from the horizontal.
- iv) Guy ropes of derricks should be equipped with a stretching screw or turnbuckle or other device to regulate the tension.
- v) Gudgeon pins, sheave pins and fool bearings should be lubricated frequently.
- vi) When a derrick is not in use, the boom should be anchored to prevent it from swinging.

6.9.4 Gin poles

- i) Gin poles should:
 - (a) be straight;
 - (b) consist of steel or other suitable metal;
 - (c) be adequately guyed and anchored;
 - (d) be vertical or raked slightly towards the load;
 - (e) be of adequate strength for the loads that they will be required to lift/move.
- ii) Gin poles should not be spliced and if a gin pole is composed of different elements, they should be assembled in conformity with their intrinsic material strength.
- iii) Gin poles should be fastened at their feet to prevent displacement in operation. iv)
Gin poles, which are moved from place to place and re-erected, should not be taken into use again before the pole, lifting ropes, guys, blocks and other parts have been inspected, and the whole appliance has been tested under load.
- v) When platforms or skips are hoisted by gin poles, precautions should be taken to prevent them from spinning and to provide for proper landing.

6.9.5 Tower cranes

- i) Where tower cranes have cabs at high level, persons, capable and trained to work at heights, should only be employed as crane operators.
- ii) The characteristics of the various machines available should be considered against the operating requirements and the surroundings in which the crane will operate before a particular type of crane is selected.
- iii) Care should be taken in the assessment of wind loads both during operations and out of service. Account should also be taken of the effects of high structures on wind forces in the vicinity of the crane.
- iv) The ground on which the tower crane stands should have the requisite bearing capacity. Account should be taken of seasonal variations in ground conditions.
- v) Bases for tower cranes and tracks for rail-mounted tower cranes should be firm and level. Tower cranes should only operate on gradients within limits specified by the manufacturer. Tower cranes should only be erected at a safe distance from excavations and ditches.
- vi) Tower cranes should be sited where there is clear space available for erection, operation and dismantling. As far as possible, cranes should be sited so that loads do not have to be handled over occupied premises, over public thoroughfares, other construction works and railways or near power cables.
- vii) Where two or more tower cranes are sited in positions where their jibs could touch any part of the other crane, there should be direct means of communication between them and a distinct warning system operated from the cab so that one driver may alert the other of impending danger.
- viii) The manufacturers' instructions on the methods and sequence of erection and dismantling should be followed. The crane should be tested before being taken into use.
- ix) The climbing operation of climbing tower cranes should be carried out in accordance with manufacturers' instructions. The free-standing height of the tower crane should not extend beyond what is safe and permissible in the manufacturers' instructions.

- x) When the tower crane is left unattended, loads should be removed from the hook, the hook raised, the power switched off and the boom brought to the horizontal. For longer periods or at times when adverse weather conditions are expected, out of service procedures should be followed. The main jib should be slewed to the side of the tower away from the wind, put into free slew and the crane immobilised.
- xi) A windspeed measuring device should be provided at an elevated position on the tower crane with the indicator fitted in the drivers' cab.
- xii) Devices should be provided to prevent loads being moved to a point where the corresponding safe working load of the crane would be exceeded. Name boards or other items liable to catch the wind should not be mounted on a tower crane other than in accordance with the manufacturers' instructions.
- xiii) Tower cranes should not be used for magnet, or demolition ball service, piling operations or other duties, which could impose excessive loading on the crane structure.

6.9.6 Lifting ropes

- i) Only ropes with a known safe working capacity should be used as lifting ropes.
- ii) Lifting ropes should be installed, maintained and inspected in accordance with manufacturers' instructions.
- iii) Repaired steel ropes should not be used on hoists.
- iv) Where multiple independent ropes are used, for the purpose of stability, to lift a work platform, each rope should be capable of carrying the load independently.

6.10 VEHICLE MOVEMENT

- 6.10.1 Park vehicles only at designated places. Don't block roads to create hindrance for other vehicles.
- 6.10.2 Don't overload the vehicle.
- 6.10.3 Obey speed limits and traffic rules.
- 6.10.4 Always expect the unexpected and be a defensive driver.
- 6.10.5 Drive carefully during adverse weather and road conditions.
- 6.10.6 Read the road ahead and ride to the left.
- 6.10.7 Be extra cautious at nights. Keep wind screens clean and lights in working condition.
- 6.10.8 All vehicles used for carrying workers and construction materials must undergo predictive/preventive maintenance and daily checks
- 6.10.9 Driver with proper valid driving license shall only be allowed to drive the vehicle
- 6.10.10 Routes shall be leveled, marked and planned in such a way so as to avoid potential hazards such as overhead power lines and sloping ground etc.
- 6.10.11 While reversing the vehicles, help of another worker should be ensured at all times
- 6.10.12 An unattended vehicle should have the engine switched off
- 6.10.13 Wherever possible one-way system shall be followed
- 6.10.14 Barriers/fixed stops should be provided for excavation/openings to prevent fall of vehicle
- 6.10.15 Load should be properly secured
- 6.10.16 The body of the tipper lorry should always be lowered before driving the vehicle off.
- 6.10.17 Signs/signals/caution boards etc. should be provided on routes.

6.11 ELECTRICAL

6.11.1 General Provisions

- i) Only persons having valid licenses should be allowed to work on electrical facilities.
- ii) No person should be allowed to work on live circuit. The same, if unavoidable, special care and authorisation need to be taken.
- iii) Treat all circuits as "LIVE" unless ensured otherwise.
- iv) Electrical "Tag Out" procedure "MUST" be followed for carrying out maintenance jobs.
- v) Display voltage ratings prominently with "Danger" signs.
- vi) Put caution/notice signs before starting the repair works.
- vii) All electrical equipment operating above 250V shall have separate and distinct connections to earth grid.
- viii) Proper grounding to be ensured for all switch boards and equipment including Portable ones prior to taking into service.
- ix) Make sure that electrical switchboards, portable tools, equipments (like grinding machine etc.) don't get wet during their usage. If it happens, stop the main supply, make the tools dry and then only use them. Check proper earthing.
All temporary switch boards/ KIOSKS put up at work site should be suitably protected from rain and the level of same should be high enough to avoid contact with water due to water logging.
- x) Don't work wet on electrical system.
- xi) Don't overload the electrical system.
- xii) Use only proper rated HRC fuses.
- xiii) Industrial type extension boards and Plug sockets are only to be used.
- xiv) ELCB for all temporary connections must be provided. Use insulated 3-pin plug tops.
- xv) All power supply cables should be laid properly and neatly so that they don't cause hindrance to persons working and no physical damage also takes place to the cables during various construction activities.
- xvi) All Power cables to be properly terminated using glands and lugs of proper size and adequately crimped.
- xvii) Use spark-proof/flame proof type electrical fittings in Fire Hazard zones as per area classification under OISD-STD-113.
- xviii) Check installations of steel plates/pipes to protect underground cables at crossings.
- xix) Don't lay unarmored cable directly on ground, wall, roof or trees. All temporary cables should be laid at least 750 mm below ground and cable markers should be provided. Proper sleeves should be provided at road crossings. In case temporary cables are to be laid on wooden poles/steel poles, the minimum cable heights should be 4.5 M.
- xx) Maintain safe overhead distance of HT cables as per Indian Electricity Rules and relevant acts.
- xxi) Don't connect any earthing wire to the pipelines/structures.
- xxii) Don't make any unsafe temporary connections, naked joints/wiring etc.
- xxiii) Ensure that temporary cables are free from cuts, damaged insulation, kinks or improper insulated joints.

- xxiv) Check at periodic intervals that pins of sockets and joints are not loose.
- xxv) Protect electrical wires/equipments from water and naked flames.
- xxvi) Illuminate suitably all the work areas.
- xxvii) All switchboards should be of MS structure only and incoming source should be marked.
- xxviii) Hand lamps should not be of more than 24V rating.
- xxix) Fire extinguishers (DCP/CO2/Sand buckets) should be kept near temporary switch boards being used for construction purposes. Don't use water for fighting electrical fires.
- xxx) Insulating mats shall be provided in the front and back end of switch boards.
- xxxi) All parts of electrical installations should be so constructed, installed and maintained as to prevent danger of electric shock, fire and external explosion.
Periodic checking/certification of electrical safety appliances such as gloves, insulating mats, hoods etc. to be done/witnessed along with maintaining a register at site signed by competent authority.
- xxxii) A notice displaying following, should be kept exhibited at suitable places:
 - a) prohibiting unauthorised persons from entering electrical equipment rooms or from handling or interfering with electrical apparatus;
 - b) containing directions as to procedures in case of fire, rescue of persons in contact with live conductors and the restoration of persons suffering from electric shock;
 - c) specifying the person to be notified in case of electrical accident or dangerous occurrence, and indicating how to communicate with him.
- xxxiii) No other cables/pipes to be laid in trench used for electrical cables.
- xxxiv) Utmost care should be taken while excavating Earth from cable trench to avoid damage or any accident.
- xxxv) Sub-station floor cut-outs meant for switch board installations to be covered wherever installation is incomplete.

NOTE: A Residual Current Operated Circuit Breaker (RCCB) or Earth Leakage Circuit Breaker (ELCB), when installed, protects a human being to the widest extent. RCCB or ELCB should be provided as per Indian Electricity Rules.

6.11.2 Inspection and maintenance

- i) All electrical equipment should be inspected before taking into use to ensure suitability for its proposed use.
- ii) At the beginning of every shift, the person using the electrical equipment should make a careful external examination of the equipment and conductors, especially the flexible cables.
- iii) Apart from some exceptional cases, work on or near live parts of electrical equipment should be forbidden.
- iv) Before any work is begun on conductors or equipment that do not have to remain live:
 - a) the current should be switched off by a responsible authorised person;
 - b) precautions should be taken to prevent the current from being switched on again;
 - c) the conductors or the equipment should be tested to ascertain that they are dead;
 - d) the conductors and equipment should be earthed and short-circuited;

- e) neighboring live parts should be adequately protected against accidental contact.
- v) After work has been done on conductors and equipment, the current should only be switched on again on the orders of a competent person after the earthing and short-circuiting have been removed and the workplace reported safe.
- vi) Electricians should be provided with approved and tested tools, and personal protective equipment such as rubber gloves, mats etc.
- vii) All conductors and equipment should be considered to be live unless there is a proof of the contrary.
- viii) When work has to be done in dangerous proximity to live parts the current should be cut off. If for operational reasons this is not possible, the live parts should be fenced off or enclosed by qualified staff from the sub-station concerned.

6.11.3 Testing

- i) Electrical installations should be inspected and tested and the results recorded.
- ii) Periodic testing of the efficiency of the earth leakage protective devices should be carried out.
- iii) Particular attention should be paid to the earthing of apparatus, the continuity of protective conductors, polarity and insulation resistance, protection against mechanical damage and condition of connections at points of entry.

6.12 OFFSHORE

6.12.1 General

The isolated nature of offshore installations are hazardous. They call for greater need for safety and survival at offshore. Safety at offshore is safety of installations and safety of personnel. Safety problems and accidents at offshore have high risks due to limited space, helicopter operation, sea transport etc. Following are the general safety guidelines to be followed in addition to the safety guidelines stipulated for specific jobs dealt later on:

- i) Workers should be well trained to do their job independently with high degree of self-control and self-discipline.
- ii) On arrival at offshore, everyone should be briefed about the safety rules to be followed at offshore, evacuation system etc. All personnel should wear overall (dangri), helmet and shoes for personnel protection.
- iii) In case of emergency, workers should follow instruction of Field Production Superintendent (F.P.S.) In certain cases instructions may be given to abandon the offshore installation and evacuate the persons to safe location.
- iv) To overcome above problems, offshore personnel must receive training for using life saving appliances and other personal survival techniques.
- v) Any person working at offshore should have one person as standby for any eventuality.

6.12.2 Drilling Rigs

- i) Location of jack up rigs should not be less than 5 Kms from shipping route. Orientation of the rig, wind direction etc are required for safe landing of helicopter. Information w.r.t. sea currents, wind speed, Hi-lo tide etc are required for mooring of supply vessels.
- ii) Sea bed condition at every location should be ensured for safety of rig.

- iii) Radio and other communication facilities should be such to maintain contact with base all times.
- iv) During toeing of rig, the rig deck should be clear of load, toeing lines should be in good condition and tensions in various toeing lines should be constantly monitored.
- v) Few steps during toeing are:
 - a) crane booms should be secured to their vesta,
 - b) all hatches and water tight doors should be closed,
 - c) number of personnel on board should be restricted,
 - d) evacuate in case of emergency and operation should be completed preferably in day light.

6.12.3 Drilling

- i) In view of CO₂ and H₂S gas cut from well, effective ventilation should be provided where drilling is in progress.
- ii) Safety alarm shall be checked in advance in view of failure of ventilation system.
- iii) Suitable sensors for H₂S and Methane should be function tested time to time and suitable colour code should be given.
- iv) Working areas of the crane should be illuminated during night to avoid accident.
- v) Clear space should be available for despatch and receipt of load and, in particular, basket transfer of passengers. Persons engaged in loading/unloading of materials should be protected from falling into the sea.
- vi) Signal light should be fitted at the top of the jib.
- vii) Crane hook should be fitted with safety latches.
- viii) Experienced person should be engaged in operation of specific equipment like winches, cranes etc.
- ix) At least three cable turns shall always be there on the winch drum.
- x) Adequate communication like walkie talkie, round robin phone should be available between the crane operator, supervisor and helper.
- xi) Crane operation should be completely stopped during helicopter landing/taking off.
- xii) Except for helicopter landing deck, all decks, platforms, bridges, ladders should have rigid and fixed guard rails at least one meter high and should have one intermediate rail midway between the handrail and 100 mm toe board.
- xiii) Wooden ladders shall not be used at offshore.
- xiv) Flow sensor in the flow line should be ensured for safe working and to avoid blow out.
- xv) Hydrogen sulphide gas In offshore is of great risk and at 10 ppm (0.001%) concentration in air, a person should not be exposed for more than 8 hours, If concentration is more, then breathing apparatus should be used. Corrosion of equipment is also caused by H₂S.
- xvi) Portable H₂S gas detector should be continuously used.

6.12.4 Production Platforms

- i) In case hydrocarbon is released due to overpressure, leak, overflow, gas blow etc., shut down process to stop flow of hydrocarbon. Prevent ignition of released hydrocarbon and in case of fire shut in the process complex and follow emergency contingency plan.
- ii) Sub surface safety valve (SSSV)) below the well head should be actuated during uncontrolled well -flow and they should be regularly checked.
- iii) Surface safety valve or SDV should be checked for no gas leakage from bleed port/ flange etc., in the well head area. It should not be in "mechanical override" or bypassed from panel.
- iv) High pressure gas lift lines - blowdown system should be O.K.
- v) Auto actuation of SDVs in the inlet of pressure vessels should be O.K. and in "normal position" from shutdown panels. A record of status of switches normal/bypassed in auto-con* panels (PSH, PSL, LSL, ILSL) should be maintained.

* Shut Down Panels

- vi) Welders rectifier set and electrical connections to it should be checked and approved by electrical-in- charge for proper electrical safely.
- vii) "SCADA" telemetry system if available should be operational for remote opening and closing of wells at unmanned platforms (through RPMC).
- viii) Local ESD/FSD (near the work site) should be provided for jobs of very critical nature, so that the persons working can access it immediately in emergency for safety. Safety officer should judge the requirement & inform FPS for the same.
- ix) Railings and Gratings etc. in and around work area should be O.K. and inspected to avoid slippage of man into sea.
- x) Emergency shut down (ESD) system is initiated when an abnormal condition is detected. ESD should be checked once in six months.
- xi) Platform should be manned round the clock.
- xii) Welding and cutting work should be regulated by hot work permit.
- xiii) All detectors should be calibrated as per recommendation of the manufacturer.
- xiv) No system should be by-passed which affects the system of platform.
- xv) In H₂S field platforms, due care shall be taken as per recommendations.
- xvi) Follow the instructions of F.P.S. during stay at platform

6.12.5 Fire Prevention And Control

- i) Provision be made for safe handling and storage of dirty rags, trash, and waste oil. Flammable liquids and chemicals applied on platform should be immediately cleaned.
- ii) Paint containers and hydrocarbon samples, gas cylinders for welding and cutting should be stored properly. Cylinders should be transported in hand-cart.
- iii) Smoking should be restricted and no smoking area should be identified.
- iv) Special attention should be given to crude oil pump seals, diesel and gas engines which are potential source of ignition in the event of failure.
- v) Fire and smoke detectors i.e. ultraviolet heat, thermal and smoke detector should be function tested once in three months.

- vi) Fire is controlled in offshore by water spraying, Halon, CO2 flooding, DCP and sprinkler system.
- vii) Foaming agent is applied for controlling fire in liquid hydrocarbon. The system is not effective in gas fire.
- viii) Light weight breathing system should be used.
- ix) The fire control plan at offshore should reveal control station, fire alarms and fire detectors, deluge valves and sprinkler, fire extinguishing appliances, fireman outfit and ventilation system.
- x) Fire fighting equipment should be maintained in ready to use condition.

6.12.6 Life Saving Appliances

- i) Life boats with a speed of 6 knots and carrying capacity upto 50 persons are used in offshore.
- ii) No. of life boats on one installation should have a capacity to accommodate twice the number of persons onboard installation.
- iii) Launching appliances and life boat equipment should be checked every week.
- iv) Boat landing areas should be adequately illuminated.
- v) Life raft has no power and they rely on drift.
- vi) Life jacket lifts the wearer after entering water.
- vii) Life buoys are used to rescue persons if any person accidentally falls in the sea.
- viii) All life saving appliances should be inspected by the MMD surveyor/ sr. officials once a year.
- ix) Every life boat shall be inspected once a week.
- x) Every life boat and life raft should be serviced once a year by a competent authority,

6.12.7 Safety Precautions during Helicopter Transportation

- i) Passenger briefing regarding safety rules while travelling in helicopter should be carried out before boarding the helicopter.
- ii) Emergency procedure should be briefed to all the passenger In case helicopter is to ditch into the sea.
- iii) Heli-pad should have a non-skid surface. Nylon rope net should be stretched on the deck.
- iv) Proper drainage should be available on helideck.
- v) There should be no obstruction on the helideck itself and within 3 meters of its parameter. Closest super structure above the helideck should have red obstruction light.
- vi) While landing fire crew of two persons should be standby adjacent to helideck.
- vii) Heli-deck should be properly illuminated for night landing.
- viii) During switching off helicopter, persons should not be allowed to go out/ towards helicopter

6.13 DEMOLITION

6.13.1 General provisions

- i) When the demolition of any building or structure might present danger to workers or to the public:
 - (a) necessary precautions, methods and procedures should be adopted, including those for the disposal of waste or residues;
 - (b) the work should be planned and undertaken only under the supervision of a competent person.
- ii) Before demolition operations begin:
 - (a) structural details and builders' drawings should be obtained wherever possible;
 - (b) details of the previous use should be obtained to identify any possible contamination and hazards from chemicals, flammables, etc.;
 - (c) an initial survey should be carried out to identify any structural problems and risks associated with flammable substances and substances hazardous to health. The survey should note the type of ground on which the structure is erected, the condition of the roof trusses, the type of framing used in framed structures and the load-bearing walls;
 - (d) a method of demolition should be formulated after the survey and recorded in a method statement having taken all the various considerations into account and identifying the problems and their solutions;
- iii) All electric, gas, water and steam service lines should be shut off and, as necessary, capped or otherwise controlled at or outside the construction site before work commences.
- iv) If it is necessary to maintain any electric power, water or other services during demolition operations, they should be adequately protected against damage.
- v) As far as practicable, the danger zone round the building should be adequately fenced off and sign posted. To protect the public a fence 2m high should be erected enclosing the demolition operations and the access gates should be secured outside working hours.
- vi) The fabric of buildings contaminated with substances hazardous to health should be decontaminated. Protective clothing and respiratory devices should be provided and worn.
- vii) Where plant has contained flammable materials, special precautions should be taken to avoid fire and explosion.
- viii) The plant to be demolished should be isolated from all other plant that may contain flammable materials. Any residual flammable material in the plant should be rendered safe by cleaning, purging or the application of an inert atmosphere as appropriate.
- ix) Care should be taken not to demolish any parts, which would destroy the stability of other parts.
- x) Demolition activities should not be continued under adverse climatic conditions such as high winds, which could cause the collapse of already weakened structures.

- xi) To prevent hazards parts of structures should be adequately shored, braced or otherwise supported.
- xii) Structures should not be left in a condition in which they could be brought down by wind pressure or vibration.
- xiii) Where a deliberate controlled collapse technique is to be used, expert engineering advice should be obtained, and:
 - (a) it should only be used where the whole structure is to come down because it relies on the removal of key structural members to effect a total collapse;
 - (b) it should only be used on sites that are fairly level and where there is enough surrounding space for all operatives and equipment to be withdrawn to a safe distance.
- xiv) When equipment such as power shovels and bulldozers are used for demolition, due consideration should be given to the nature of the building or structure, its dimensions, as well as to the power of the equipment being used.
- xv) If a swinging weight is used for demolition, a safety zone having a width of at least one-and-a-half times the height of the building or structure should be maintained around the points of impact.

6.13.2 Demolition of structural steelwork

- i) All precautions should be taken to prevent danger from any sudden twist, spring or collapse of steelwork, ironwork or reinforced concrete when it is cut or released.
- ii) Steel construction should be demolished tier by tier.
- iii) Structural steel parts should be lowered and not dropped from a height.

6.14 RADIOGRAPHY

- 6.14.1 All radiography jobs shall be carried out as per BARC Safety Regulations
- 6.14.2 During field radiography, nearby area around the radiation source should be cordoned off.
- 6.14.3 If the field radiography is to be done at the same location repeatedly, it is advisable to provide either a wire fencing around or a temporary brick enclosure.
- 6.14.4 Special permission/permit should be taken for radiography from area-in-charge.
- 6.14.5 As far as possible, field radiography should be done only during night time when there is little or no occupancy there.
- 6.14.6 Radiation warning signals should be pasted all along the cordoned off area.
- 6.14.7 Entry into the restricted area by unauthorised persons should be strictly prohibited during exposure.
- 6.14.8 The radiation level alongwith the cordon should be monitored by a suitable and well-calibrated radiation survey meter.
- 6.14.9 All personnel working with radiography sources should wear appropriate protective equipment and film badges issued by BARC.
- 6.14.10 Protection facilities such as manipulator rod, remote handling tongs, lead pots, radiation hazard placards and means of cordon off shall be available at each site.
- 6.14.11 The radiography source shall never be touched or handled directly with hands.
- 6.14.12 The package containing radiography cameras and sources should never be carried by public transport like bus, train etc.

6.14.13 Radiography sources and cameras, when not in use, should be stored inside a source pit with lock and key arrangement as approved by BARC. The storage room should preferably be located in an isolated area of minimum occupancy and radiation level outside the storage room should not exceed 0.25 mR/hr as per BARC Regulations.

6.14.14 In case of an accident (due to loss or of damage to radiography source), action should be taken in line with BARC Safety Rules/Guidelines.

6.15 SAND/SHOT BLASTING/ SPRAY PAINTING

6.15.1 Sand blasting should be used only after approval from competent person.

6.15.2 Air Compressor used for sand/shot blasting/painting should have guard and positioned away from the work place.

6.15.3 Exhaust of the prime mover, if IC engine is used, should be directed away from the work place.

6.15.4 In case of motor driven compressor, the body of the motor as well as the compressor to be properly earthed.

6.15.5 The hoses used for compressed air should be of proper quality, and health of the same to be ensured through regular check/ test.

6.15.6 The operator of sand/shot blasting/painting should wear suitable PPE's including mask.

6.15.7 Adequate measures to be taken to suppress dust/spray particle.

6.15.8 Sand used for sand blasting should be suitably covered & protected from rain/moisture.

6.15.9 When these activities are done in confined places, adequate measure to be taken for proper ventilation.

6.16 WORK ABOVE WATER

6.16.1 General Provisions

- i) Where work is done over or in close proximity to water & where possibility of drowning exists, provision should be made for:
 - a) Preventing workers from falling into water;
 - b) The rescue of workers in danger of drowning;
 - c) Safe and sufficient transport.
- ii) Provisions for the safe performance of work over or in close proximity to water should include, where appropriate, the provision and use of suitable and adequate:
 - a) fencing, safety nets and safety harnesses;
 - b) lifebuoys, life jackets and manned boats;
 - c) protection against such hazards as reptiles and other animals.
- iii) Gangways, pontoons, bridges, footbridges and other walkways or work places over water should:
 - a) possess adequate strength and stability;
 - b) be sufficiently wide to allow safe movement of workers;
 - c) have level surfaces free from tripping hazards;
 - d) be adequately lit when natural light is insufficient;
 - e) where practicable and necessary, to prevent danger, be provided with toe-boards, guard rails, hand ropes etc.

- f) be secured to prevent dislodgment by rising water or high winds;
- g) if necessary, be equipped with ladders which should be sound, of sufficient strength and length and be securely lashed to prevent slipping.
- iv) All deck openings including those for buckets should be fenced.

6.16.2 Rescue & Emergency procedures

- i) Persons who work over water should be provided with some form of buoyancy aid. Life jackets should provided sufficient freedom of movement, have sufficient buoyancy to bring persons to the surface and keep them afloat face upwards, be easily secured to the body, be readily visible by way of self luminous paint/strip.
- ii) Nobody should work alone on or above water.
- iii) Each worker should be trained in the procedure to be followed in the event of an emergency.

7.0 ADDITIONAL SAFETY PRECAUTION FOR UNITS WITH HYDROCARBONS

In addition to general safety precautions as outlined above for the activities in Clause 6.0, following additional safety precautions need to be taken for the sites within the operating area or nearby, where presence of Hydrocarbons cannot be ruled out.

- i) No job shall be carried out without a valid permit. Permit should be in line with OISD-STD-105 "Work Permit System".
- ii) Smoking should be prohibited in all places containing readily combustible or flammable materials and "No Smoking" notices be prominently displayed.
- iii) In confined spaces and other places where flammable gases, vapours or dusts can cause danger, following measures should be taken:
 - (a) only approved type electrical installations and equipment, including portable lamps, should be used;
 - (b) there should be no naked flames or source of ignition;
 - (c) oily rags, waste and clothes or other substances liable to spontaneous ignition should be removed without delay to a safe place;
 - (d) ventilation should be provided.
- iv) Regular inspections should be made of places where there are fire risks. These include the vicinity of heating appliances, electrical installations and conductors, stores of flammable and combustible materials, welding and cutting operations.
- v) Welding, flame cutting and other hot work should only be done after issuance of work permit in line with the requirement of OISD-STD-105 after appropriate precautions, as required, are taken to reduce the risk of fire. For carrying out other jobs also, OISD-STD-105 should be followed strictly.
- vi) Fire-extinguishing equipment should be well maintained and inspected at suitable intervals by a competent person. Access to fire-extinguishing equipment such as hydrants, portable extinguishers and connections for hoses should be kept clear at all times.
- vii) All supervisors and a sufficient number of workers should be trained in the use of fire-extinguishing equipment, so that adequate trained personnel are readily available during all working periods.
- viii) Audio means to give warning in case of fire should be provided where this is necessary to prevent danger. Such warning should be clearly audible in all parts of the site where persons are liable to work. There should be an effective evacuation plan so that all persons are evacuated speedily without panic and accounted for and all plant and processes shut down.

- ix) Notices should be posted at conspicuous places indicating:
 - (a) the nearest fire alarm;
 - (b) the telephone number and address of the nearest emergency services.
- x) The work site shall be cleared of all combustible materials, as Sparks and molten metal coming from the welding job can easily ignite combustible materials near or below the welding site. If the combustible materials cannot be removed from the area, the same shall be properly shielded.
- xi) A dry chemical type fire extinguisher shall be made available in the work area. Also fire protection facilities like running hoses etc. as per permit should be complied with.
- xii) Wherever required, welding screens shall be put up to protect other equipment in adjoining areas against flying sparks. Material used should be metal/asbestos/water curtain.
- xiii) Welding or cutting of vessels/ equipments used in Hydrocarbon/ hazardous chemicals shall be done after proper gas freeing and verifying the same with the explosive-meter.
- xiv) The confined space/equipment shall be gas freed and cleaned.
- xv) Absence of any toxic gas and any flammable gas above explosion limit shall be ensured with the help of gas detection instrument and explosive meter respectively.
- xvi) Used and hot electrode stubs shall be discarded in a metal bucket.
- xvii) Use approved and certified flame arrestors for vehicles.
- xviii) Work permit to be obtained, if construction work is carried out within existing operating area.

8.0 FIRST AID

First aid facilities should be provided in line with various statutory regulations like factory act etc. However following care should be taken:

- i) First aid, including the provision of trained personnel should be ensured at work sites. Arrangement should be made for ensuring the medical attention of the injured workers. First aid box should be as per the Factory rules.
- ii) Suitable rescue equipment, like stretchers should be kept readily available at the construction site.
- iii) First-aid kits or boxes, as appropriate and as per statutory requirements, should be provided at workplaces and be protected against contamination by dust, moisture etc.
- iv) First-aid kit or boxes should not keep anything besides material for first aid in emergencies.
- v) First-aid kits and boxes should contain simple and clear instructions to be followed, be kept under the charge of a responsible person qualified to render the first aid and be regularly inspected and stocked.
- vi) Where the work involves risk of drowning, asphyxiation or electric shock, first-aid personnel should be proficient in the use of resuscitation and other life saving techniques and in rescue procedures.
- vii) Emergency telephone numbers of nearby Hospitals, Police, Fire Station and Administration should be prominently displayed.

9.0 DOCUMENTATION

The intention of keeping documentation of all types of accident(s) is to prevent recurrence of similar accident(s). All accidents should be reported as per OISD Guidelines (OISD-GDN-107) and Factories act, 1948.

All accidents (major, minor or near miss) should be investigated, analysed and recommendations should be documented along with implementation status.

All related data should be well-documented and further analysis highlighting the major cause(s) of accidents be done. This will help in identifying thrust areas and training needs for prevention of accidents.

10.0 SAFETY AWARENESS & TRAINING

Safety awareness to all section of personnel ranging from site-in-charge to workmen helps not only preventing the risk but also build up the confidence. Time and expenditures also get saved as a result.

Safety awareness basically seeks to persuade/inform people on safety besides supplementing skill also. Awareness programme may include followings:

- i) **Poster:** Posters with safety slogan in humorous, gruesome demonstrating manner may be used to discourage bad habits attributable to accidents by appealing to the workers' pride, self-love, affection curiosity or human aspects. These should be displayed in prominent location(s).
- ii) **Safety Sign Boards:** Different type of message of cautioning, attention, notice etc. should be displayed at the appropriate places for learning/ awareness of the workmen while working at site.
- iii) **Films & Slides:** Film(s) narrating the accident including the causes and possible remedial ways of preventing the recurrence of a similar accident should be displayed at regular intervals. Slides consisting main points of the film show may also be shown to workers.
- iv) **Talks, lectures & conferences:** The success of these events would depend much on audience's understandings of the speaker (s). The speakers are to be knowledgeable and good presenter. Speakers should know to hold the attention and to influence the audiences.
- v) **Competitions:** Organise competition(s) between the different deptts/categories of workers. The sense of reward/recognition also will improve safety awareness and result in enhancing safety levels.
- vi) **Exhibitions:** Exhibitions also make the workers acquainted with hazards and means of preventive measures.
- vii) **Safety Publication:** Safety publications including pocket books dealing with ways of investigation and prevention in the field of safety and so on, may be distributed to workers to promote the safety awareness.
- viii) **Safety Drives:** From time to time, an intensive safety drive by organising a safety day or a safety week etc. should be launched.
- ix) **Training:** Training for covering the hazards for different trade should be imparted. Training should also include the specific hazards related to a job in addition to the general safety training as has been dealt in various chapters and should include all workers. Reference may be drawn from OISD-STD-154.

11.0 REFERENCES

- i) Factory Act, 1948
- ii) Indian Electricity Rules
- iii) Safety & Health in Construction by ILO
- iv) The Building & Other Construction Workers (Regulation, Employment and Conditions of Service) Act 1996

LIST OF SAFETY CODES FOR CIVIL WORKS PUBLISHED BY BUREAU OF INDIAN STANDARDS

<u>Sr. No</u>	<u>Code No.</u>	<u>Title</u>
01.	IS : 818	Code of Practice for Safety and Health Requirements in Electric and Gas Welding and Cutting Operations - First Revision.
02.	IS : 875	Code of practice for Structural safety of buildings: Masonry walls
03.	IS : 933	Specification for Portable Chemical Fire Extinguisher, Foam Type - Second Revision.
04.	IS : 1179	Specification for Equipment for Eye and Face Protection during Welding - First Revision.
05.	IS : 1904	Code of practice for Structural safety of buildings: Shallow foundations
06.	IS : 1905	Code of practice for Structural safety of buildings: Masonry walls
07.	IS : 2171	Specification for Portable Fire Extinguishers, Dry Powder Type -Second Revision.
08.	IS : 2361	Specification for Building Grips - First Revision.
09.	IS : 2750	Specification for Steel Scaffoldings.
10.	IS : 2925	Specification for Industrial Safety Helmets - First Revision.
11.	IS : 3016	Code of Practice for Fires Precautions in Welding and Cutting Operations - First Revision.
12.	IS : 3521	Industrial safety belts and harnesses
13.	IS : 3696 - Part I	Safety Code for Scaffolds and Ladders : Part I - Scaffolds.
14.	IS : 3696 - Part II	Safety Code for Scaffolds and Ladders : Part II - Ladders.
15.	IS : 3764	Safety Code for Excavation Work.
16.	IS : 4014 -Part I & II	Code of practice for Steel tubular scaffolding
17.	IS : 4081	Safety Code for Blasting and Related Drilling Operations.
18.	IS : 4082	Recommendations on staking and storage of construction materials at site
19.	IS : 4130	Safety Code for Demolition of Buildings - First Revision.
20.	IS : 4138	Safety Code Working in Compressed Air-First Revision
21.	IS : 4756	Safety code for Tunneling works
22.	IS : 4912	Safety requirements for Floor and Wall Openings, Railings and toe Boards -First Revision.
23.	IS : 5121	Safety Code for Piling and other Deep Foundations.
24.	IS : 5916	Safety Code for Construction involving use of Hot Bituminous Materials.
25.	IS : 5983	Specification for Eye Protectors - First Revision.
26.	IS : 6922	Structures subject to underground blasts, criteria for safety and design of

27.	IS : 7155	Code of recommended practices for conveyor safety
28.	IS : 7205	Safety Code for Erection on Structural Steel Works.
29.	IS : 7069	Safety Code for Handling and Storage of Building Materials.
30.	IS : 7293	Safety Code for Working with Construction Machinery.
31.	IS : 7323	Guidelines for operation of Reservoirs
32.	IS : 7969	Safety code for handling and storage of building material
33.	IS : 8758	Recommendation for Fire Precautionary Measures in construction of Temporary Structures and Pandals.
34.	IS : 8989	Safety Code for Erection of Concrete Framed Structures.
35.	IS : 9706	Code of Practices for construction of Arial ropeways for transportation of material
36.	IS : 9759	Guidelines for de-watering during construction
37.	IS : 9944	Recommendations on safe working load for natural and man-made fibre roap slings
38.	IS : 10291	Safety code for dress divers in civil engineering works
39.	IS :10386 - Part I	Safety Code for Construction, Operation and Maintenance for River Valley Projects.
40.	IS :10386 - Part II	Safety Code for Construction, Operation and Maintenance of River Valley Projects.
41.	IS : 11057	Code of practice for Industrial safety nets
42.	IS : 13415	Code of Practice on safety for Protective barriers in and around building
43.	IS : 13416	Recommendations for preventive measures against hazards at working places

FORM OF CONTRACT**CONTRACT NO.:**

THIS CONTRACT made at New Delhi this day of 200__ BETWEEN **INDIAN OIL CORPORATION LTD.**, a Government of Indian Undertaking registered in India under the Indian Companies Act-1956, having its registered Office at G-9, Ali Yavar Jung Marg, Bandra (East), Mumbai-400051 and the Head Office of its Refineries Division of Indian Oil Corporation Ltd. (Refineries Division), at Scope Complex, Core-2, 4th Floor, 7 Institutional Area, Lodhi Road, New Delhi-110003 (hereinafter referred to as the "OWNER" which expression shall include its successors and assigns) of the One Part;

AND

_____, a Company registered in India under the Indian Companies Act 1913/1956 having its registered office at _____ (hereinafter referred to as the "CONTRACTOR") of the other part :

WHEREAS

WHEREAS the OWNER issued Tender No. _____ for Residual Process Design, Detailed Engineering, Procurement, Supply, Transportation, Storage, Fabrication, Construction, Installation, Testing, Pre-commissioning, Commissioning, Performance, Guarantee Test Run and handing over of Unit for the _____ of Indian Oil Corporation Ltd. at _____.

AND WHEREAS the Contract with respect to the said Tender has been awarded to the CONTRACTOR, pursuant where to, the CONTRACTOR has to make supplies of materials and to execute works and to undertake services with the use of the said material as more specifically mentioned and described in the Contract Documents as hereinafter defined.

AND WHEREAS it is desirable to have a formal Document setting out the documents which comprise the Contract and determining certain other aspects as hereinafter appearing.

NOW, THEREFORE, THIS CONTRACT WITNESSETH as follows:

ARTICLE 1**CONTRACT DOCUMENTS**

1.1 The Contract Document shall comprise the following:

- (i) Letter Inviting Bid/Invitation to Bidder
- (ii) Instructions to Bidder
- (iii) General Conditions of Contract
- (iv) Special Conditions of Contract (including the Scope of Work and Time Schedule)
- (v) Specifications
- (vi) Plans Exhibits _____ to _____

- (vii) Drawings Exhibits _____ to _____
 - (viii) Form of Contract
 - (ix) Form of Bid, including formats attached to the Form of Bid as embodied in the CONTRACTOR's final bid.
 - (x) Form of Schedule of Payment as embodied in the CONTRACTOR's final bid.
 - (xi) Addendum/Addenda to the Bid Documents
 - (xii) Notification of Acceptance of Bid
 - (xiii) Detailed Letter of Acceptance (including Statement of Agreed Variations and other enclosures/annexures to the Detailed Letter of Acceptance).
- 1.2 A copy of each of the Tender Documents is annexed hereto and the said copies have been collectively marked Annexure 'A' while a copy of the Detailed Letter of Acceptance of Tender alongwith Annexures thereto and a copy of Notification of Acceptance of Bid dated.....are annexed hereto & said copies have been collectively marked as Annexure-'B'.
- 1.3 Where the CONTRACTOR is a Consortium of one or more entities or persons, all members of the Consortium shall be jointly and severally liable for the performance of the Contract and of all obligations of the CONTRACTOR arising under the Contract and for the discharge of all the CONTRACTOR's liabilities to the OWNER under or in respect of the Contract and any claim of the OWNER without any limitation of liability as between the OWNER and the members aforesaid, notwithstanding the existence of any agreement between the said members inter se limiting the liability of any member for or in the performance of any duties or obligations under the Contract.

ARTICLE 2

SERVICES, SUPPLIES AND WORK

- 2.1 The CONTRACTOR shall make the Supplies specified in the Contract Documents upon the terms and conditions and within the time specified in the Contract Documents.
- 2.2 The CONTRACTOR shall undertake the works and perform the services specified in the Contract Documents upon the terms and conditions and within the time specified in the Contract documents.

ARTICLE 3

PRICE AND COMPENSATION

- 3.1 Subject to and upon the terms and conditions contained in the Contract Documents, the OWNER shall pay CONTRACTOR the price for the said supplies and Compensation for the said works and services as specified in respect to each in the Contract Documents upon the satisfactory completion of the said supplies and satisfactory performance of the services and/or otherwise as may be specified in this behalf in the Contract Documents.

ARTICLE 4

JURISDICTION & GOVERNING LAW

- 4.1 Notwithstanding any other Court or Courts having jurisdiction to decide the question(s) forming the subject matter of the reference if the same had been the subject matter of a suit, any and all actions and proceeding arising out of or relative to the contract or any award arising therefrom, shall lie only in the Court of competent civil jurisdiction in this behalf at New Delhi (where this Contract has been signed on behalf of OWNER) and only the said Court(s) shall have jurisdiction to entertain and try any such action(s) and/or proceeding(s) to the exclusion of all other Courts.
- 4.2 The Contract shall be governed in all aspects by the law of the Republic of India, without application of the doctrine of Renvoi.

ARTICLE 5

ENTIRE CONTRACT

- 5.1 The Contract Documents mentioned in Article-1 hereof embody the entire Contract between the parties hereto, and the parties declare that in entering this Contract they do not rely upon any previous representation, whether express or implied and whether written or oral, or any inducement, understanding or agreements of any kind not included within the Contract Documents and all prior negotiations, representations, contracts and/or agreements and understandings are hereby cancelled.

ARTICLE 6

NOTICES

- 6.1 Subject to any provisions in the Contract documents to the contrary, any notice, order or communication sought to be served by the CONTRACTOR on the OWNER with reference to the CONTRACT shall be deemed to have been sufficiently served upon the OWNER notwithstanding any enabling provisions under any law to the contrary, only if delivered by hand or by Courier to the Engineer-in-Charge as defined in the General Conditions of Contract.
- 6.2 Without prejudice to any other mode of service provided for in the Contract Documents or otherwise available to the OWNER, any notice, order or other communication sought to be served by the OWNER on the CONTRACTOR with reference to the CONTRACT, shall be deemed to have been sufficiently served if delivered by hand or through Courier to the principal office of the CONTRACTOR at _____ or other address for service subsequently notified by CONTRACTOR to the OWNER in this behalf in writing.

ARTICLE 7

WAIVER

- 7.0 No failure or delay by the OWNER in enforcing any right or remedy of the OWNER in terms of the CONTRACT or any obligation or liability of the CONTRACTOR in terms thereof, shall be deemed to be a waiver of such right, remedy, obligation or liability, as the case may be, by the OWNER and notwithstanding such failure or delay, the OWNER shall be entitled at any time to enforce such right, remedy, obligation or liability, as the case may be.

ARTICLE 8

NON-ASSIGNABILITY

- 8.0 The Contract and benefits and obligations thereof shall be strictly personal to the CONTRACTOR and shall not on any account be assignable or transferable by the CONTRACTOR.

ARTICLE 9

LANGUAGE OF CONTRACT AND COMMUNICATION

- 9.0 The language of the Contract shall be English and all communications, drawings, design, data, information, codes specifications and other document whatsoever supporting the bid or otherwise exchanged under the Contract shall be in English. In the event that any technical documentation is in any language other than English, the document should be translated and presented to the OWNER/Engineer-in-Charge in English and English document/translated document shall be regarded as the only authentic document.

ARTICLE 10

GOVERNMENT OF INDIA NOT LIABLE

- 10.0 It is expressly understood and agreed by and between the CONTRACTOR and the OWNER that the OWNER is entering into this agreement solely on its own behalf and not on behalf of any other person or entity. In particular, it is expressly understood and agreed that the Government of India is not a party to this agreement and has no liabilities, obligations or rights thereunder. It is expressly understood and agreed that the OWNER is an independent legal entity with power and authority to enter into contracts, solely in its behalf under the applicable laws of India and general principles of Contract Law. The CONTRACTOR expressly agrees, acknowledges and understands that the OWNER is not an agent, representative or delegate of the Government of India. It is further understood and agreed that the Government of India is not and shall not be liable for any acts, omissions, commissions, breaches or other wrongs arising out of the Contract. Accordingly, CONTRACTOR hereby expressly waives, releases and foregoes any and all actions or claims, including cross claims, impleader claims or counter claims against the Government of India arising out of this Contract and covenants not to sue the Government of India on any matter, claim, cause of action or thing whatsoever arising out of or under this Contract.

ARTICLE 11

NO LIABILITY ON DIRECTOR AND EMPLOYEE

- 11.0 No Director, employee, consultant or agent of the OWNER or other person representing the OWNER or acting on behalf of the OWNER in or pursuant to the Contract or in the discharge of any obligation to the OWNER under the Contract or otherwise in relation to the Contract shall have any personal liability to the CONTRACTOR or any Sub-Contractor, agent, representative, director or employee of the CONTRACTOR or to any other person acting for or on behalf of the CONTRACTOR and the CONTRACTOR on its own behalf and on behalf of its Sub-

Contractors, directors, employees, agents and representatives hereby waives and disclaims any and all right of action which it or they may have whether under tort or Contract or otherwise against the OWNER or any director, employee, agent, consultant or representative of the OWNER for act of omission or commission done or omitted to be done.

IN WITNESS WHEREOF THE PARTIES hereto have executed this Contract in duplicate at the place, day and year first above written.

SIGNED & DELIVERED
FOR AND ON BEHALF OF
INDIAN OIL CORPORATION LTD

BY _____

(THIS DAY OF _____ 20____)

IN THE PRESENCE OF:

1.

2.

SIGNED & DELIVERED
FOR AND ON BEHALF OF

(CONTRACTOR)

BY _____

IN THE PRESENCE OF :

1.

2.

FORM OF BANK GUARANTEE IN LIEU OF EARNEST MONEY DEPOSIT

BG NO: _____

DATED : _____

VALID UPTO : _____

To,
Indian Oil Corporation Limited
(Refineries Division)

Dear Sirs,

In consideration of Indian Oil Corporation Limited (Refineries Division) (hereinafter called "the Corporation" which expression shall include its successors and assigns), having agreed inter alia to consider the tender of _____ (Name of the Tenderer) having its Head Office/Registered Office at _____ (Address of the Tenderer) (hereinafter called the "Tenderer" which expression shall include its successors and assigns), for the work of _____ (Name of the Project/Work) at _____ to be awarded under Tender No. _____ upon the Tenderer furnishing an undertaking from the Bank as hereinafter appearing in lieu of cash deposit of the Earnest Money.

We _____ (Name of the Bank), a Bank constituted/Registered under the _____ Act, having our Head Office/Registered Office at _____ (hereinafter called the "Bank" which expression shall include its successors and assigns), at the request of the Tenderer and with the intent to bind the Bank and its successors and assigns do hereby unconditionally and irrevocably undertake to pay the Corporation at New Delhi forthwith on first demand without protest or demur or proof or satisfaction or condition and without reference to the Tenderer, all sums payable by the Tenderer as and by way of Earnest Money to the Corporation, upto an aggregate limit of (Amount in figures and words).

AND THE BANK DOTH HEREBY FURTHER AGREES AS FOLLOWS :

1. This Guarantee/Undertaking shall be a continuing guarantee and shall remain in full force and effect for all claims or demands made by the Corporation on the Bank until the Corporation discharges this Guarantee/Undertaking subject, however, that the Corporation shall have no claims under this Guarantee/Undertaking after the midnight of _____ 200____ or any written extension(s) thereof.

PROVIDED that if the aforesaid work tendered for or any part thereof shall be awarded to the Tenderer on or before the said date, whether on the basis of accompanying tender or any other basis, then the validity of this guarantee/undertaking shall stand automatically extended for all claims and demands made by the Corporation for a further three months.

2. The Corporation shall have the fullest liberty without reference to the Bank and without affecting in any way the liability of the Bank under this Guarantee/Undertaking at any time and/or from time to time any wise to postpone and/or vary any of the powers, rights, and obligations exercisable by the Corporation against the Tenderer and either to enforce or to forbear from enforcing all or any of the terms and conditions of or governing the said Tender and/or any contract consequent upon any award of work or the said Earnest Money Deposit or the securities available to the Corporation or any of them and the Bank shall not be released from its liability under these Presents and the liability of the Bank hereunder shall remain in full force and effect notwithstanding any exercise by the Corporation of the liberty with reference to any or all the matters aforesaid or by reason of any other act, matter or thing whatsoever which under law relating to the sureties or otherwise which could, but for this provision have the effect of releasing the Bank from all or any of its obligations hereunder or any part thereof, and the Bank specifically waives any and all contrary rights whatsoever.
3. It shall not be necessary for the Corporation to proceed against the Tenderer before proceeding against the Bank and the Guarantee/Undertaking herein contained shall be enforceable against the Bank as principal debtor notwithstanding the existence of any other undertaking or security for any indebtedness of the Tenderer to the Corporation and notwithstanding that any such security shall at the time when claim is made against the Bank or proceedings taken against the Bank hereunder, be outstanding or unrealised.
4. The amount stated by the Corporation in any demand, claim or notice made with reference to this guarantee shall as between the Bank and the Corporation for the purpose of these Presents be conclusive of the amount payable by the Bank to the Corporation hereunder.
5. The liability of the Bank to the Corporation under this Guarantee/Undertaking shall remain in full force and effect notwithstanding the existence of any difference or dispute between the Tenderer and the Corporation, the Tenderer and the Bank and/or the Bank and the Corporation or otherwise howsoever touching these Presents or the liability of the Tenderer to the Corporation, and notwithstanding the existence of any instructions or purported instructions by the Tenderer or any other person to the Bank not to pay or for any cause withhold or defer payment to the Corporation under these Presents, with the intent that notwithstanding the existing of such difference, dispute or instructions, the Bank shall be and remain liable to make payment to the Corporation in terms thereof.
6. This Guarantee/Undertaking shall not be determined or affected by the liquidation or winding up or dissolution or change of constitution or insolvency of the Tenderer or any change in the legal constitution of the Bank or the Corporation.
7. Without prejudice to any other mode of service, a demand or claim or other communication may be transmitted by the Corporation to the Bank either by post or by fax. If transmitted by fax, the transmission shall be complete as soon as acknowledged by the Bank.
8. Notwithstanding anything contained herein:
 - (i) The Bank's liability under this guarantee/undertaking shall not exceed (Amount in figures & words) ;

- (ii) This guarantee/undertaking shall remain in force upto_____and any extension(s) thereof; and
- (iii) The Bank shall be released and discharged from all liability under this guarantee/undertaking unless a written claim or demand is issued to the Bank on or before_____ or the date of expiry of any extension(s) thereof if this guarantee/undertaking has been extended.

The Bank doth hereby declare that
Shri_____(designation)_____ who is authorised to sign
this Guarantee/Undertaking on behalf of the Bank and to bind the Bank thereby.

This_____day of_____20_____

Yours faithfully

Signature :_____

Name & Designation:_____

Name of the Branch:_____

FORM OF BANK GUARANTEE TO COVER LUMP SUM ADVANCE (MOBILISATION)

BG NO: _____

DATED : _____

VALID UPTO : _____

To,
INDIAN OIL CORPORATION LIMITED
(Refineries Division)

Dear Sirs,

WHEREAS Indian Oil Corporation Limited (hereinafter called "the Corporation" which expression shall include its successor and assigns) has awarded to _____ (Name & Address of the Contractor) hereinafter called "the Contractor" which expression shall include its successors and assigns) the work of _____ (Name of the Project/Work) under and in terms of a Contract as evidenced by a Letter of Acceptance No. _____ dated _____ issued by the Corporation to the Contractor read with the relevant Tender Documents (hereinafter collectively called "the Contract" which expression shall include any formal contract entered into between the Corporation and the Contractor in supersession of the said Letter of Acceptance and all amendments and/or modifications therein or in the terms of the said advance as herein stipulated) :

AND WHEREAS the Corporation has agreed to advance the Contractor, inter-alia, a sum of Rs. _____ (Rupees _____ only) (hereinafter called "the said Advance"), upon the condition, inter-alia, that the said Advance together with interest thereon at the rate of _____ % (_____ percent) per annum on the amount of the said Advance for the time being outstanding shall without prejudice to any other mode of recovery available to the Corporation be recoverable by the Corporation by deduction from the gross accepted amount of any Running Account Bills and the Final Bill of the Contractor commencing from the first Running Account Bill of the Contractor, and meanwhile, the said Advance shall be secured by an undertaking from a Bank as hereinafter appearing.

We _____ (Name of the Bank), a body registered/constituted under the _____ Act, having Registered Office/Head Office at _____ (hereinafter called the "Bank" which expression shall include its successors and assigns), at the request of the Contractor and with the intent to bind the Bank and its successors and assigns, do hereby unconditionally and irrevocably undertake to pay the Corporation at New Delhi forthwith on first demand without protest or demur or proof or satisfaction

and without reference to the Contractor, any and all amounts demanded from us by the Corporation with reference to this Undertaking upto an aggregate limit of Rs._____ (Rupees _____ only) and interest thereon at the rate hereinabove provided.

AND the Bank doth hereby further agrees as follows : -

- i) This Guarantee/Undertaking shall be a continuing guarantee and shall remain valid and irrevocable for all claims of the Corporation upon the Bank made up to the midnight of _____ provided that the Bank shall upon the written request of the Corporation made upon the Bank at any time within 6 (six) months from the said date extend the validity of the Bank Guarantee by a further 6 (six) months so as to enable claims to be made under this Guarantee by a further 6 (six) months from the said date with the intent that the validity of this Guarantee shall automatically stand extended by a further 6 (six) months upon such request by the Corporation.
- ii) The Corporation shall have the fullest liberty without reference to the Bank and without affecting in any way the liability of the Bank under this guarantee/undertaking, at any time and/or from time to time to amend or vary the contract and/or any of the terms and conditions thereof or relative to the said Advance and/or to extend time for performance of the said contract in whole or part and/or payment of the said Advance in whole or part or to postpone for any time and/or from time to time any of the said obligations of the Contractor and/or the rights, remedies or powers exercisable by the Corporation against the Contractor and either to enforce or forbear from enforcing any of the terms and conditions of or governing the said Contract and/or the said Advance, or the securities, available to the Corporation and the Bank shall not be released from its liability under these Presents and the liability of the Bank shall remain in full force and effect notwithstanding any exercise by the Corporation of the liberty with reference to any or all the matters aforesaid or by reason of time being given to the Contractor or any other forbearance, act or omission on the part of the Corporation or any indulgence by the Corporation to the Contractor or of any other act, matter or thing whatsoever which under any law could (but for this provision) have the effect of releasing the Bank from its liability hereunder or any part thereof and the Bank hereby specifically waives any and all contrary rights whatsoever.
- iii) The obligations of the Bank to the Corporation hereunder shall be as principal to principal and shall be wholly independent of the Contract and it shall not be necessary for the Corporation to proceed against the Contractor before proceeding against the Bank and the guarantee/undertaking herein contained shall be enforceable against the Bank as Principal debtor notwithstanding the existence of any undertaking or security for any indebtedness of the Contractor to the Corporation (including relative to the said Advance) and notwithstanding that any such undertaking or security shall at the time when claim is made against the bank or proceedings taken against the Bank hereunder, be outstanding or unrealised.
- iv) As between the Bank and the Corporation for the purpose of this undertaking, the amount stated in any claim, demand or notice made by the Corporation on the Bank with reference to this undertaking shall be final and binding upon the Bank as to be the amount payable by the Bank to the Corporation hereunder.

- v) The liability of the Bank to the Corporation under this undertaking shall remain in full force and effect notwithstanding the existence of any difference or dispute between the Contractor and the Corporation, the Contractor and/or the Bank and/or the Bank and the Corporation or otherwise howsoever touching or affecting these presents or the liability of the Contractor to the Corporation, and notwithstanding the existence of any instructions or purported instructions by the Contractor or any other person to the Bank not to pay or for any cause withhold or defer payment to the Corporation under these presents, with the intent that notwithstanding the existence of such difference, dispute or instruction, the Bank shall be and remain liable to make payment to the Corporation in terms hereof.
- vi) This undertaking shall not be determined or affected by any change in the constitution of the Bank or that of the Contractor or the Corporation or any irregularity in the exercise of borrowing powers by or on behalf of the Contractor.
- vii) Without prejudice to any other mode of service, a demand or claim or other communication may be transmitted by the Corporation to the Bank either by post or by fax. If transmitted by fax, the transmission shall be complete as soon as acknowledged by the Bank.
- viii) Notwithstanding anything contained herein:
- (i) The Bank's liability under this guarantee/undertaking shall not exceed _____(Amount in figures & words);
- (ii) This guarantee/undertaking shall remain in force upto_____and any extension(s) thereof; and
- (iii) The Bank shall be released and discharged from all liability under this guarantee/undertaking unless a written claim or demand is issued to the Bank on or before_____or the date of expiry of any extension(s) thereof if this guarantee/undertaking has been extended.
- ix) The Bank doth hereby declare that Shri _____ who is the _____ (designation) of the Bank is authorised to sign this undertaking on behalf of the Bank and to bind the Bank thereby.

Yours faithfully,

Signature : _____

Name & Designation: _____

Name of the Branch: _____

Dated: _____

FORM OF BANK GUARANTEE IN LIEU OF SECURITY DEPOSIT

**Indian Oil Corporation Limited
(Refineries Division)**

Dear sir,

In consideration of Indian Oil Corporation Limited (Refineries Division) (hereinafter called the Corporation which expression shall include its successors and assigns) having awarded certain Work for and relative to the installation of a (Name of Project) at _____ of the Corporation to (Name & address of Contractor) (hereinafter called the "CONTRACTOR") upon certain terms and conditions mentioned in the Corporation's Letter of Acceptance No. Dated read with the CONTRACTOR's bid and the relative Bid Documents (hereinafter collectively called the "Contract" which expression shall include any formal Contract entered into between the Corporation and the CONTRACTOR in supersession of the said Letter of Acceptance and all amendments and/or modifications in the Contract) inclusive of the condition that the Contractor shall cause to be furnished a Bank Guarantee from a Scheduled Bank in India (which includes the Indian Branch of a foreign Bank acceptable to the Corporation) as hereinafter appearing in lieu of cash Security deposit.

We (Name of the Bank) a body corporate registered/constituted under the laws of..... (hereinafter called the "BANK" which expression shall include its successors and assigns) with the intent to bind the Bank and its successors and assigns, do hereby unconditionally and irrevocably undertake to pay the Corporation at the project office of the Indian Oil Corporation at New Delhi on first demand in writing without protest or demur or proof of condition any and all amounts from time to time demanded by the Corporation from the Bank with reference to this Guarantee/Undertaking upto an aggregate limit of US \$ (United States Dollars only) and Indian Rupees (Rupees only).

AND the Bank doth hereby further agree as follow :

- (i) The Guarantee/Undertaking herein contained shall remain in full force and effect during the entire period that would be taken for the performance for the Contract and until the claims of the Corporation relative thereto are satisfied and/or discharged and the Corporation accordingly discharges this Guarantee/Undertaking subject, however, that the Corporation shall have no claim under this Guarantee/Undertaking after midnight of 200 , unless a notice of the claim under this Guarantee/ Undertaking has been served on the Bank before the expiry of the said date, in which event the same shall be valid notwithstanding that the same is enforced after the expiry of the said date, provided that the Bank shall upon the written request of the Corporation made at any time within 6 (six) months after the expiry of the said date extend this Guarantee/Undertaking for a further 6 (Six) months from the said date within which the Corporation may make a demand.

- (ii) The Corporation shall have the fullest liberty without reference to the Bank and without affecting in any way the liability of the Bank under this Guarantee/ Undertaking, at any time and/or from time to time anywise to vary the Contract and/or any of the terms and conditions thereof or relative to the Security deposit or to extend time of performance of the Contract in whole or part or to postpone for any time and/or from time to time any of the obligations of the CONTRACTOR and/or the power(s) exercisable by the Corporation against the CONTRACTOR and either to enforce or forbear from enforcing any of the terms and conditions of or governing the Contract or the Security deposit or the securities available to the Corporation or any of them and the Bank shall not be released from its liability under these presents and the liability of the Bank shall remain in full force and effect notwithstanding any exercise by the Corporation of the liberty with reference to any or all the matters aforesaid or by reason of time being given to the CONTRACTOR or any or all the matters aforesaid or by reason of time being given to the CONTRACTOR or any other forbearance, act or omission on the part of the Corporation or any indulgence by the Corporation to the CONTRACTOR or of any other act, matter or thing whatsoever which under the law relating to sureties could but for this provision, have the effect of releasing the Bank from its liability hereunder or any part thereof and the Bank doth hereby specifically waive any and all contrary rights.
- (iii) It shall not be necessary for the Corporation to proceed against the CONTRACTOR before proceeding against the Bank and the Guarantee/Undertaking herein contained shall be enforceable against the Bank notwithstanding the existence of any other security for any indebtedness of the CONTRACTOR to the Corporation (including relative to the security deposit) and notwithstanding that any such security shall at the time when claim is made against the Bank or proceeding taken against the Bank hereunder, be outstanding or unrealised.
- (iv) The amount stated by the Corporation in any demand, claim or notice as due to the Corporation from the CONTRACTOR shall as between the Bank and the Corporation for the purpose of these presents be conclusive of the amount payable by the Bank to the Corporation hereunder.
- (v) The liability of the Bank to the Corporation under this Guarantee/Undertaking shall remain in full force and effect notwithstanding the existence of any difference or dispute between the CONTRACTOR and the Corporation, the CONTRACTOR and the Bank and/or the Bank and the Corporation, or otherwise howsoever touching or affecting these presents or the liability of the CONTRACTOR to the Corporation, and notwithstanding the existence of any instructions or purported instructions by the CONTRACTOR or any other person to the Bank not to pay or for any cause withhold or defer payment to the Corporation, under these presents, with the intent that notwithstanding the existence of such difference, dispute or instructions, the Bank shall be and remain liable to make payment to the Corporation in terms hereof.
- (vi) The Bank shall not revoke this Guarantee/Undertaking during its currency except with the previous consent of the Corporation in writing and also agrees that any change in the constitution of the CONTRACTOR or of the Bank or of the Corporation shall not discharge the Bank's liability hereunder.

(vii) Without prejudice to any other mode of service, a demand or claim or other communication may be transmitted by the Corporation to the Bank either by post or by fax. If transmitted by fax, the transmission shall be complete as soon as acknowledged by the Bank.

(viii) The Bank doth hereby declare that Shri (Name and Designation of the person) is authorised to sign this Guarantee/Undertaking on behalf of the Bank and to bind the Bank thereby.

Dated : _____ day of _____ 200_____

Yours faithfully,

For _____

Signature
Name and designation
Name of the Branch

- NOTES:** (1) This Guarantee/Undertaking is not to be witnessed
- (2) This Guarantee/Undertaking is required to be stamped as an agreement according to the stamp duty prescribed either in the State in which it is executed or at New Delhi, whichever is higher.

CHAPTER - III

SPECIAL CONDITIONS OF CONTRACT

1. GENERAL

- 1.1. Special Conditions of Contract (SCC) shall be read in conjunction with the General Conditions of Contract (GCC), Job Specifications, drawings and any other document forming part of this contract, wherever the context so requires.
- 1.2. Notwithstanding the sub-division of the documents into these separate parts and volumes, every part of each shall be deemed to be supplementary to and complementary of every other part and shall be read with and into the contract in so far as it may be practical to do so.
- 1.3. Where any portion of the GCC is repugnant to or at variance with any provision of the SCC, then the provision of the SCC shall be deemed to override the provisions of the GCC and shall, to the extent of such repugnance or variations, prevail.
- 1.4. Wherever it is mentioned in the specifications that the Contractor shall perform certain works or provide certain facilities, it is understood that the Contractor shall do so at his own cost, being deemed to be part of the relevant item in the SCHEDULE OF RATES / BOQ (SOR) whether expressly stated or not.
- 1.5. The materials, design and workmanship shall satisfy the relevant Indian Standards, the specifications contained herein and codes referred to. Where the specifications stipulate requirements in addition to those contained in the standard codes and specifications, these additional requirements shall also be satisfied.
- 1.6. In so far as the contract does not deal with or provide by expression or implication for any aspect or specification with respect to the product(s) or any of them or with respect to any other matter or thing required to be furnished, done or supplied relative thereto or for the delivery thereof according to the contract, the internationally accepted relevant specification, standard of workmanship and/or codes or practices, as the case may be, shall apply. In the event of any doubt or ambiguity relative thereto, the Contractor shall seek the clarification of IOCL.

2. DEFINITIONS

The following expressions hereunder and elsewhere in the Contract documents used and their grammatical variations shall unless repugnant to the subject or context thereof, have the following meanings hereunder respectively assigned to them, namely:

- 2.1. **“Bidder / Tenderer”** shall mean the company, who has submitted their bid individually, against this tender document to Indian Oil Corporation Ltd. (IOCL) and includes the Bidders’ legal representative, his successors and permitted assignors.
- 2.2. **“BOQ”** shall mean Bill of Quantities.
- 2.3. **“Contractor”** means any person, company, firm or body who may be engaged by the Owner for works and services connected with the Project.

- 2.4. **“Engineer In-charge (EIC)”** shall mean Engineer responsible for the execution of the work of Solar Power Project.
- 2.5. **“GCC”** shall mean General Conditions of Contract.
- 2.6. **“Owner”** shall mean Indian Oil Corporation Limited.
- 2.7. **“PGT”** shall mean Performance Guarantee Test as described in Clause 10.4
- 2.8. **“SCC”** shall mean Special Conditions of Contract.
- 2.9. **“SHO”** shall mean Site Handing Over.
- 2.10. **“SOR”** shall mean Schedule of Rates.
- 2.11. **“PMC”** shall mean Project Management Consultant hired by IOCL to assist IOCL in total Project Management of the proposed project.

3. BRIEF SCOPE OF WORK

IOCL intends to select and appoint the LSTK Contractor through open tender competitive bidding in two-bid system (i.e. PART-I: Techno-Commercial Bid and PART-II: Price Bid) for development of 1 MWp Solar Power Project premises of IndianOil Southern Region Pipelines, Chittoor, Andhra Pradesh. The brief Scope of Work shall be as mentioned hereinafter but not limited to the following:

- 3.1. Part-A(1): Engineering, Procurement and Construction (EPC) of 1 MWp Captive Solar PV (SPV) Plant (Ground Mounted) on turnkey basis on the premises of Indian Oil, Southern Region Pipelines, Chittoor with net metering facility applicability as per clause 39 of this SCC .

Part-A(2): Comprehensive O&M of the SPV Plant and power evacuation infrastructure for a period of one year from the date of successful project commissioning.

Part-A, wherever referred in this tender document shall mean total of Part-A(1) + Part-A(2).

- 3.2. Part-B: Operation & Maintenance of plant and power evacuation infrastructure for a further period of 4 years from the date of completion of work mentioned in Part-A.

The detailed scope of work to be carried out under this contract is defined in Chapter-Job specifications.

4. SITE DETAILS

4.1. Site location and access

S.No.	Parameters	Details
1.	Location	IndianOil, Southern Region Pipelines, Chittoor
2.	Site Address	Indian Oil Corporation Limited Chittoor Delivery cum Pumping station, Southern Region Pipelines, Gudiyatham Road, Yadamari Chittoor District, Andhra Pradesh- 517422.
3.	Nearest Major Town/City	Chittoor, Andhra Pradesh
4.	Site Coordinates	13.167139° N , 79.036344° E
5.	Area Available	~3 Acres Land area

The plant location is at IOCL Chittoor Marketing terminal area. Applicable work permit system, security check up and other prevalent norms to be followed during project execution and O&M period.

4.2. Site description

Site preparation and land development should be done before starting the construction work. Uprooting of vegetation, grass, brush wood, saplings, shrubs etc. and removal of rubbish outside the site and to unobjectionable place will be under scope of contractor. After vegetation removal the given land has to be filled/levelled, as per the requirement in order to make it suitable for the development of proposed SPV Plant with a south tilt facilitating enhanced plant performance.

5. INPUTS PROVIDED BY IOCL

IOCL Chittoor is an intermediate pumping cum delivery location of Cross Country pipeline from Chennai to Bangalore. The Incoming power supply is drawn from APSPDCL (Southern Power Distribution Corporation limited of Andhra Pradesh) 33 KV feeder. The contracted demand of Chittoor location is 2000 KVA. Further one IOCL windmill of 2.1 MW at Gandikota, Kadapa district in Andhra Pradesh is under Long Term Open access agreement for Chittoor station and energy generated from this wind mill are adjusted against consumption of station. On an average around 45% of Power consumption is met through wind Energy. For offsetting part of the remaining 55%, IOCL intends to install 1 MW solar plant inside the terminal

The proposed solar plant should not affect the existing open access agreement of wind mill.

Indicative site layout demarcating the area for solar PV array installation and associated systems and electrical single line diagram (SLD), attached as Annexure-1,

6. CONTRACTOR SUPPLIED MATERIAL

- 6.1. All the equipments, materials, field instruments, consumables, etc. which are not specifically indicated in Owner's Scope of Supply but are required for successful completion of the works as per specification, drawing, construction methodology etc., shall be included in the Contractor's Scope of Supply.
- 6.2. All materials required for the civil works including cement, reinforcement, structural steel, sheeting, consumables, testing appliances, tools and tackles necessary for completing the work shall be supplied by the contractor at his own cost and shall conform to the job specifications and SCHEDULE OF RATES/ BOQ. No claim/ delay on this account will be entertained by the Owner.
- 6.3. The Contractor shall ensure that only the qualified and experienced subcontractor(s) are appointed by him for discharge of work or part thereof. The Contractor may appoint subcontractors for various works from IOCL approved vendors / subcontractors for certain materials / services. For other vendors / subcontractors, contractor may seek approval of EIC on case-to-case basis.
- 6.4. It is responsibility of contractor to strictly adhere to labour laws & regulations as stipulated in GCC clause 8.2.0.0. "Labour Laws & Regulations".
 - 6.4.1. PF, ESIC and Wage payment related documents for hired labour shall be maintained at site and to be provided to IOCL authorities as and when desired.
 - 6.4.2. The Government of India, Ministry of Labour & Employment has developed Shram Suvidha Portal (<https://shramsuvudha.gov.in/home>) to bring about transparency and ease in the system of compliance with labour laws. The portal Inter-alia provides for labour Identification Number (LIN) to each unit and common Annual Return under eight Central acts enforced by Chief Labour Commissioner(C) in central sphere. Contractor to register the project on the portal, obtain LIN and file annual return.
 - 6.4.3. Successful contractor shall adhere to maintain the details of engaged contract manpower on e-CLMS Portal of IOCL as per guidelines. The detailed guideline is available on IOCL Portal <https://associates.indianoil.co.in/Vendor/>. Bidder to refer to the website mentioned above for further details.
 - 6.4.4. PROHIBITION OF ENGAGEMENT OF CHILD LABOUR: The contractor shall state that they are not engaging child labour as per various labour laws applicable to them. Making a fake claim would have its contract terminated forthwith, if detected later. It is mandatory for the Contractor to submit an undertaking as per attached Performa (Annexure-17) for Non-engagement of child labour.

- 6.5. All expenses towards mobilization at site and demobilization including bringing in equipment, work force, materials, dismantling the equipment, clearing the site after completion of work and liaisoning with the State Grid and other concerned departments, if required, etc. shall be deemed to be included in the prices quoted and no separate payments on account of such expenses shall be entertained.
- 6.6. Contractor may have to work in energized or partly energized conditions. In such cases, it shall be the responsibility of the Contractor to arrange for necessary permits or shut downs and provide skilled and responsible persons for the execution of works. Contractor shall organize his works during the shutdown periods properly and complete the programmed works within the time given. Contractor shall not be paid any extra payments for working under the above said circumstances.
- 6.7. It shall be entirely the Contractor's responsibility to provide, operate and maintain all necessary construction equipments, metal scaffoldings (wooden scaffoldings are not allowed) and safety gadgets, cranes and other lifting tackles, tools and appliances to perform the work in a workman like and efficient manner and complete all the jobs as per time schedules. However, if any equipment/ facility are provided by Owner, the same shall be on chargeable basis.
- 6.8. Procurement and supply, in sequence and at the appropriate time, of all materials and consumables shall be entirely the Contractor's responsibility and his rates for execution of work shall be inclusive of supply of all these items.
- 6.9. In case any material is issued by the Owner, then it will be properly used and maintained. Subsequent to completion of its use, it will be returned to Owner in good condition. In case of damage or misuse of such stores, Owner will recover the cost from the Contractor from the payments due to the Contractor.

7. PROJECT AND O&M MANPOWER

Contractor to submit detailed organogram of site team and design team before initiation of work. Organogram will be approved by IOCL based on similar past experience of the team.

For O&M period contractor shall depute team of qualified personnel to undertake O&M activities for the plant. One graduate engineer with min. 4 yrs.experience in electrical maintenance shall be deputed as O&M incharge. During operation of the plant min. 2 person of diploma in electrical engineering shall be deputed. For maintenance purpose scheduled as well as breakdown, persons with relevant experience to be deputed as per schedule and as & when required. Contractor should have the required licence to work at the maximum voltage level and shall submit the same. Further an undertaking to be provided by the contractor for suitability of deputed manpower for working at 33 KV voltage level.

Contractor shall depute one graduate engineer as safety officer during project execution. It will be his responsibility to ensure safe work practices are followed during project

installation and commissioning. During O&M phase Contractor to nominate one safety officer out of the O&M team deputed.

During O&M phase regular trainings to be organised at site level for O&M staff, record of which is to be maintained.

8. PROJECT TIME SCHEDULE

- 8.1. Commissioning of the full capacity within 6 months from the date of Site Handing Over (SHO). The date of commissioning shall be considered as defined in Clause 31 of this chapter.
- 8.2. Performance Guarantee Test (PGT) within 3 months & project acceptance (as defined in Clause 31 of this chapter) within 6 months from the date of project commissioning.
- 8.3. 1-Year Inclusive Operation & Maintenance (O&M) of Solar plant shall be for 12 months from the date of project commissioning (as defined in Clause 31 of this chapter).
- 8.4. Overall completion time for work mentioned in clause 3.1 of SCC is 18 months from date of Site Handing over (SHO).
- 8.5. Overall completion time for work mentioned in clause 3.2 of SCC is 48 months from date of completion of clause 3.1 of SCC.
- 8.6. The contractor shall submit a detailed PERT/BAR chart or any other project progress monitoring tool in line with the proposed time schedule covering all activities with various key phases of supply and service obligations under the contract such as supply schedule and field erection activities within fifteen (15) days of the date of LOA.
- 8.7. The time of commissioning / acceptance shall be inclusive of time for mobilisation, engineering, approval of the design & other materials and intervening monsoon, if any.

9. WORK SCHEDULE

- 9.1. Upon award of work, the Contractor shall provide detailed work schedule to the Engineer-in-Charge (EIC) covering all activities related to supply, installation, testing and commissioning falling under the scope of work in the kick-off meeting.
- 9.2. There would be a kick-off meeting with the contractor within 15 days from the date of LOA, where in the contractor would present the detailed action plan, work plan schedule, critical/long delivery item plan, etc. along with the weekly review schedule.
- 9.3. Detailed Timelines for work completion shall be discussed and finalised by Contractor after Award of Work.

10. GUARANTEES

10.1. Security Deposit

- 10.1.1. In partial modification of Clause 2.1.0.0 & Clause 4.4.0.0 of the General Conditions of Contract, the CONTRACTOR shall furnish Security Deposit in the amount

equivalent to 10% (ten percent) of the work order value towards Contract Performance Guarantee (PG) for commissioning of the full capacity of the project, establishment of PGT and for performance of 1 year inclusive O&M. Such Security Deposit is to be held by the OWNER as security for the due performance of the CONTRACTOR's obligations under the contract.

- 10.1.2. The Security Deposit shall be made up of the Initial Security Deposit, and the Retention Monies, of a sum equal to 10% (ten percent) of the total (gross) value of each bill, up to and until the recovery of full Security Deposit to the extent specified in Clause 10.1.1 hereof is achieved. The deductions for the retention money(ies) will be stopped after the Security Deposit limit of 10% (ten percent) of the Total Contract Value is reached, unless otherwise required.
- 10.1.3. The CONTRACTOR shall, within 10 (ten) days of the receipt of Acceptance of Tender issued by the OWNER, deposit Initial Security Deposit in an amount equal to 2.5% (Two and one half percent) of the total contract value as aforesaid in clause 10.1.1, by Bank Guarantee/NEFT/ RTGS/ Online transfer, subject to the stipulation(s) contained in the said Acceptance by the OWNER.
- 10.1.4. Security Deposit shall be payable online through Net Banking / NEFT / RTGS. Security Deposit may be furnished through Bank Guarantee (BG) from any nationalized / scheduled Bank in the prescribed format, provided the amount of Security Deposit is not less than Rs.1,00,000/- (Rs. One Lakh only).
- 10.1.5. The above BG towards Security Deposit cum Performance Guarantee shall be valid in the first instance for a period of not less than 24 months from date of LOA.
- 10.1.6. If the total value of the Guarantee amount becomes deficient at any time till commissioning of project, the Contractor shall make up the deficiency within 10 (ten) days of such occurrence, by paying (or furnishing a BG in case Security Deposit was furnished through BG) for the deficient amount, failing which, the Owner shall be entitled to make up the deficiency by adjustment recovery from the Running Bills or any other amount payable.
- 10.1.7. For the Operations & Maintenance (O&M) contract period (Part-B), the BG (1% of the total contract price for Part-A of Scope of Work shall be furnished within one (1) month prior to the completion Part-A of Scope of Work. BG, if applicable, towards Security Deposit for O&M shall be valid in the first instance for a period of not less than 15 (fifteen) months. The Bank Guarantee shall be renewed every year during the O&M period with the same validity of 15 (fifteen) months within one (1) month prior to the completion of previous O&M period.
- 10.1.8. BG, if applicable, shall be submitted by the Contractor as per format from any scheduled bank in India or any foreign bank operating in India under the rules of Reserve Bank of India.
- 10.1.9. SD shall be returned to the Contractor after the validity is over and all the obligations

of the contractor under the contract have been met.

- 10.1.10. If the completion of work of Part-A is delayed beyond schedule or there is short-fall in performance of Part-B, the owner will recover the penalty as described in Clause 38 from pending bills, if any, else through SD submitted by the Contractor.
- 10.1.11. ISD/ SD of value less than Rs. 1,00,000.00 shall be paid online as per remittance details mentioned in Clause no. 29.2.0 of Special Instruction to Tenderer [Section-B (Commercial)].
- 10.1.12. Bank Guarantee (BG) may be accepted by the Owner towards ISD/SD provided the amount of such BG is not less than Indian Rupees 100,000.00 (Indian Rupees One Lakh).
- 10.1.13. Bidder shall refer Clause 29.4.0 and sub-clauses of Special Instruction to Tenderer [Section-B (Commercial)] for selection of Banks for ISD/SD BG.
- 10.1.14. Contractor **shall ensure that the text of bank guarantee submitted shall match the format for BG in lieu of SECURITY DEPOSIT/ INITIAL SECURITY DEPOSIT as given in Annexure-7 verbatim including all comma/ full stops. In case of a deviation/variation, necessary amendment shall be sought from the bidder/ their bankers.**
- 10.1.15. Clause 10.1.13 shall also apply to all Bank Guarantees submitted by the contractor including but not limited to Bank Guarantee to cover Lump sum Advance (Mobilisation), Bank Guarantee for Lump sum Advance, Composite Bank Guarantee for Advance and Security Deposit, Bank Guarantee for imported raw material and Bank Guarantee against delayed delivery discount, if any.
- 10.1.16. For the confirmation of BG, please ensure that BG issuing bank will send SFMS in IFN 760 COV (for any new bank Guarantee) and IFN 767 COC (for any amendment in Bank Guarantee) through SFMS platform as per the mandatory fields mentioned below:

Field	Description	Value
7034	Name of the beneficiary with details	Indian Oil Corporation Limited
7035	Beneficiary IFSC	ICIC0000007
7036	Beneficiary Branch name and address	ICICI Bank, 9A, Phelps Building, Connaught Place, New Delhi-110001
7037	Sender to receiver information	IOCL9291

Vendor is requested to take up with their banks to update the information in SFMS at

the time of issuing of new/amendment BG.

- 10.1.17. In partial modification to GCC Clause No 2.1.0.0, The Contractor shall submit the ISD within 30 (thirty) days from the issuance of Letter of Acceptance by the Owner.

10.2. Defect Liability Period

In partial modification to clause 5.4.1.0 of GCC, the defect liability period for the works (including the materials incorporated therein within the Contractor's scope of supply) shall be 12 (twelve) months from the date of project commissioning as defined in Clause 31.

10.3. Manufacturer's warranty

- 10.3.1. The manufacturer's warranty for all bought out items shall be made available to the Owner and shall be valid for the entire defect liability period. However, this does not absolve the Contractor of his responsibilities under defect liability clause to perform in attending to the defects noticed and rectifying these without any delay.
- 10.3.2. Manufacturer's/Contractor's warranty, for any replaced item shall also be made available to the Owner and shall be kept valid for the original warranty period.
- 10.3.3. Guaranteed performance data as required in the specifications shall be included as part of the contract. The Contractor shall furnish further, such data and this shall form a part of the contract document.
- 10.3.4. The Contractor shall warrant that the goods supplied will be new and in accordance with the Contract Documents and be free from defects in material and workmanship. The Contractor shall further warrant that the Goods supplied under this contract shall have no defects arising from design, material or workmanship or from any act or omission of the Contractor, which may develop under normal use of the supplied goods in conditions obtaining in the country of final destination.
- 10.3.5. The Contractor shall replace/ repair to the satisfaction of the Owner any defective parts in the Goods of his own manufacture or those of his subcontractor's under normal use and arising solely from faulty design, materials and/or workmanship.
- 10.3.6. If it becomes necessary for the Contractor to replace or renew any defective equipment/ component/ part/ material of the Solar Power Project (during the warranty period), the provision of this Clause shall apply to items so replaced or renewed until the expiration of defect liability period/warranty period, whichever is greater. If any defects are not remedied within thirty (30) days from the date of notice by the Owner, Owner may proceed to do the work at the Contractor's risk and cost, but without prejudice to any other rights, which the Owner may have against the Contractor in respect of such defects.
- 10.3.7. The repaired or new parts will be furnished and erected free of cost by the Contractor.

If any repair is carried out on his behalf at the Site, the Contractor shall bear the cost of such repairs.

- 10.3.8. The cost of any special or general overhaul rendered necessary during the maintenance period due to defects in the plant or defective work carried out by the Contractor, the same shall be borne by the Contractor.
- 10.3.9. The acceptance of the Goods by the Owner shall in no way relieve the Contractor of his obligation under this clause.
- 10.3.10. Timely replacement/ repair of the defective part would be at contractor's cost.
- 10.3.11. At the end of the warranty Period, the Contractor's liability ceases except for latent defects.
- 10.3.12. The Photo-voltaic Modules shall have product warranty of minimum 10 years and performance warranty of 25 years from date of commissioning and the inverters / PCUs shall be warranted for 5 years from date of commissioning and the Microprocessor-based Remote Monitoring System for data acquisition shall be warranted for minimum 5 years. All Switchgears, transformers and other electrical equipments shall have warranty of min. 1 year or as per the manufacturer's standard warranty whichever is higher. All warranty shall be from date of plant commissioning.
- 10.3.13. All Photo-voltaic Modules should carry a linear performance warranty from second year. The solar PV modules offered should not degrade more than 2.5% for first year and not more than 0.7% from second year of its rated power. During the first 10 years and entire life span of 25 years the solar modules should not degrade more than 10% and 20% of its rated power respectively.

10.4. Performance Certificate

Minimum three years satisfactory performance certificate to be submitted for all the equipments (Inverter, switchgears, battery & battery charger, SCADA, transformer etc.) offered for the project. Certificate shall be for the offered model of same or higher capacity. Contact details of the customer from whom the equipment performance certificate is obtained shall be shared with owner.

10.5. Performance Guarantee Test (PGT)

Initiation of PGT to establish quality of Solar PV System installed shall be upon prior intimation to EIC.

The performance of the solar PV system installed shall be established through Performance Ratio (PR) test as described in Annexure-2 (Performance Evaluation). To establish successful PGT, minimum 78% (as described in Annexure-2) of PR shall be established. In case of failure to establish the PGT during first test period, the contractor may initiate the next test period for establishing the PGT upon prior intimation to EIC. The contractor shall have to establish the successful PGT of installed system within 3 months from the date of project commissioning.

10.6. Yearly Performance Evaluation

Yearly Performance Evaluation shall be done in the last month of every year during execution of 1-Year O&M of Part-A as well as during the execution of Part-B of the contract as described in Clause 3 of SCC. Yearly Performance Evaluation Tests shall be carried out as described in **Annexure-2**. The plant availability during O&M stage should be greater than 97% excluding non-availability due to factors beyond control of contractor.

11. SCHEDULE OF RATES / BOQ

- 11.1. All the items of work mentioned in the SCHEDULE OF RATES / BOQ and covered by the Contract shall be carried out as per the drawings, specifications and under the direction of EIC and shall include all costs/expenses including equipment, labour, logistics, transport, travel & stay arrangements, attending meetings, presentations at IOCL office, collection of necessary data, other incidentals including supply of materials, etc. as may be necessary for rendering the services in totality as per detailed technical specifications of the Tender. The Contractor shall be and remain at all-time exclusively responsible to provide all material, consumables, labour supervision, equipment tools machines, permits, licenses, casements and facilities and other items and things whatsoever required for or in connection with the work, included but not limited to those indicated by expression or implication in the SCHEDULE OF RATES / BOQ, Technical Specification, approved designs, plans, drawings and/or other Contract documents or howsoever otherwise required either for incorporation within the permanent works or in relative to the execution and performance of the work. No quotes are to be filled in the format for schedule of rate attached for reference. The quotes are to be filled in format given in Part-II of this Tender document.
- 11.2. The rates stated in the SCHEDULE OF RATES / BOQ shall not be subject to escalation or increase on any account whatsoever, other than taxes and duties as mentioned in Clause 18 of this Chapter.
- 11.3. Complete contents of the Price Bid / SOR shall be made available in the un-priced offer with the words "Quoted" (but not the actual prices) at the places wherever prices are there in the priced part of offer. If the price quote is made in the un-priced offer, the bid shall be liable for rejection.
- 11.4. The Bidder shall quote prices for the total services mentioned in the Scope of Work. It will be the responsibility of the bidder to supply all materials/ Equipments required for completion of work as per contract, irrespective of whether all items are identified in Schedule of Rates / BOQ.
- 11.5. Items in the SOR / BOQ – include EPC of Solar Power Generating System inclusive of 1-Year Comprehensive O&M and its further Comprehensive O&M for 4 Years” which includes Part-A(1), Part-A(2) and Part-B of the Scope of Work.. -

12. TERMS OF PAYMENT

Payment will be made for the items on each stage of payment as indicated hereunder and shall be applicable only when the work has been accepted in accordance with the tender specification up to that particular stage.

IOCL shall pay the Contractor in the following manner and at the following times, on application for payment by the Contractor as work proceeds.

12.1. PART-A: SOLAR POWER GENERATING SYSTEM

A. PART-A(1): EPC of Solar Power Generating System

In respect of this item payment shall be claimed as below:

% of contract price of Part-A(1) of the Scope Of Work	Milestone
Forty Percent (40%)	On receipt, physical inspection, certification and acceptance of equipment at site for Solar PV Modules (including mandatory spares) received and stored at site
Five Percent (5%)	On receipt, physical inspection, certification and acceptance of equipment at site for Module Mounting Structure received and stored at site
Five Percent (5%)	On receipt, physical inspection, certification and acceptance of equipment at site for Power Conditioning Unit/Inverter received and stored at site
Ten Percent (10%)	On receipt, physical inspection, certification and acceptance of equipment/material at site for Power Evacuation System, Switchyard Equipments, Cables (AC and DC), Conductors, Switchgears, FRTU, if applicable, and Transformers received and stored at site
Three Percent (3%)	On completion of entire Module erection
Two Percent (2%)	On construction of MCR Building and on Placement/Installation of Inverter(s)
One Percent (1%)	On Placement/Installation of Transformers, FRTU, if applicable, Switchgears, and Microprocessor-based Remote Monitoring System/SCADA for data acquisition
Two Percent (2%)	On completion of Cable (AC and DC) laying, Switchyard work and Power Evacuation System

Two Percent (2%)	On completion of all other allied civil/mechanical works including Roads, Drains, Main Gate, Fencing, Wicked Gate, Storm Drain Water Recharge Pits, Pumps and piping works for module cleaning, Module Cleaning System, Street Lights, CCTV Cameras
Ten percent (10%)	On successful Project Commissioning and completion of PGT
Ten percent (10%)	On successful project acceptance
Ten percent (10%)	Shall be paid during 12 months inclusive O&M period on pro-rata basis at the end of every quarter in four equal instalments, provided PGT has been successfully established. The payment for last quarter (2.5%) shall be done subject to establishment of Yearly Performance Evaluation Test for Solar PV System in the last quarter of O&M period and Completion Certificate (as detailed in Clause 32 of this Chapter) has been issued by the EIC.

B. PART-A(2): Operation & Maintenance of Solar Power Generating System for 1 Year

In respect of this item payment shall be claimed as below:

% of contract price	Milestone
of Part-A(2) of the Scope Of Work	

Twenty Five percent (25%)	After first quarter, upon EIC's concurrence for satisfactory performance of O&M activity as per the O&M checklist, duly approved by EIC at the start of O&M activity, and production of the following documents: • PGT has been successfully established and joint certification of Performance ratio (PR) of the plant has been done • Record of faulty components/ sub-systems, if any, repaired or replaced during the quarter. • Record of O&M carried out by the Contractor during the quarter as per schedule approved by EIC/Owner representative. • A certificate for compliance to the existing laws for employment of the manpower, and payments for statutory taxes and duties, as applicable.
Twenty Five percent (25%)	After second quarter, upon EIC's concurrence for satisfactory performance of O&M activity as per the O&M checklist, duly approved by EIC at the start of O&M activity, and production of the following documents: • Record of faulty components/ sub-systems, if any, repaired or replaced during the quarter. • Record of O&M carried out by the Contractor during the quarter as per schedule approved by EIC/Owner representative. • A certificate for compliance to the existing laws for employment of the manpower, and payments for statutory taxes and duties, as applicable.
Twenty Five percent (25%)	After third quarter, upon EIC's concurrence for satisfactory performance of O&M activity as per the O&M checklist, duly approved by EIC at the start of O&M activity, and production of the following documents: • Record of faulty components/ sub-systems, if any, repaired or replaced during the quarter. • Record of O&M carried out by the Contractor during

	the quarter as per schedule approved by EIC/Owner representative. • A certificate for compliance to the existing laws for employment of the manpower, and payments for statutory taxes and duties, as applicable.
Twenty Five percent (25%)	After fourth quarter, upon EIC's concurrence for satisfactory performance of O&M activity as per the O&M checklist, duly approved by EIC at the start of O&M activity, and production of the following documents: • Record of faulty components/ sub-systems, if any, repaired or replaced during the quarter. • Record of O&M carried out by the Contractor during the quarter as per schedule approved by EIC/Owner representative. • A certificate for compliance to the existing laws for employment of the manpower, and payments for statutory taxes and duties, as applicable. In addition, the payment for last quarter of every year shall be done subject to establishment of Yearly Performance Evaluation Test of Solar Power Project in the last month of the year.

12.2. PART-B: OPERATION AND MAINTENANCE

12.2.1. Quarterly payment of 25% of the yearly contracted value as per Part-B of Scope of Work will be released upon EIC's concurrence for satisfactory performance of O&M activity as per the O&M checklist, duly approved by EIC at the start of O&M activity, and production of the following documents:

- Record of faulty components/ sub-systems, if any, repaired or replaced during the quarter.
- Record of O&M carried out by the Contractor during the quarter as per schedule approved by EIC/Owner representative.
- A certificate for compliance to the existing laws for employment of the manpower, and payments for statutory taxes and duties

12.2.2. The payment for last quarter of every year shall be done subject to establishment of Yearly Performance Evaluation Test of Solar Power Project in the last month of the year and submission of joint certification of Performance ratio (PR) of the plant.

12.2.3. Each stage of payment as indicated here-in-above shall be applicable only when the work has been accepted in accordance with the contract specification up to that particular stage.

12.2.4. All payments will be made in Indian Rupees only.

12.2.5. Payment shall be released through e-banking only.

12.2.6. The payment of O&M charges shall be made on quarterly basis after deduction of leviable taxes and adjustment of dues payable to owner. The owner will be billed by the Contractor/ Operator promptly following the end of each quarter of O&M period.

12.2.7. The O&M charges shall be quoted with applicable GST showing separately.

13. CONDITION OF WORK SPECIFIC REQUIREMENTS

13.1. Civil works

13.1.1. The contractors must note that relevant codes shall be made available at site for reference whenever demanded.

13.1.2. Contractors must note that sufficient provision of shuttering materials is made available at Site including implements and equipment.

13.1.3. Adequate arrangement i.e. cube testing machine with calibration certificate, slump test instrument etc. to be made available at site for verifying compressive strength of RCC.

13.1.4. At locations where earth filling/ area grading is involved the contractor shall take the levels of the plot on a grid of 10 m x 10 m before commencement of the work. The grid levels shall be plotted on a drawing with a benchmark reference and jointly signed by the contractor and Site Engineer/ EIC.

13.2. Electrical works

13.2.1. Code Requirements

The electrical works shall comply with all applicable statutory regulations comprising of but not limited to the following: -

- i) Indian Electricity Rules 1956, Electricity act 2003, Grid Code
- ii) Central Electricity Authority (CEA) regulations and Notifications.
- iii) General Conditions of Power supply of State Electricity Boards, RLDC, and SLDC
- iv) Tariff Advisory Committee, CERC, SERC
- v) Any other statutory Body/ Authority

13.2.2. For Solar PV Module, Inverter/PCU, Cables, SMBs, Transformers, Switchgear, RMU Panel, CTs/PTs, Batteries and MMS, the OEM must have a manufacturing with testing facility in India.

For Solar PV Modules and Inverter/PCU, the contractor shall ensure that the OEM is maintaining minimum percentage of local content as mentioned in Office Memorandum of Government of India, Ministry of New & Renewable Energy vide F. No. 146/57/2018-P&C dated 11.12.2018. In line with the Clause-4 of the office memorandum for verification of local content/Domestic value addition, the contractor shall be required to arrange and provide self certification from OEM that the items being offered meets the minimum local content giving details of locations at which the local value addition is made and if applicable as per the clause, a certificate from the statutory auditor/cost accountant of OEM / a practicing statutory auditor/cost accountant giving the percentage of local content.

No make other than that specified in Annexure-3 shall be allowed for Cables, Connectors, Switchgear, RMU Panels, CT/PT and Trivector Meters. However, if successful bidder is OEM for any component other than these components, use of the same may be allowed subject to compliance of tender conditions and on approval from owner.

13.2.3. Statutory Clearances

The contractor has to obtain all the necessary Statutory clearances for completion of work outline within the scope of this Tender.

13.2.4. Commissioning/operation

The contractor shall provide labour & equipments/ machinery for testing and commissioning of the entire system.

The Contractor at his own cost and without delay to suit the commissioning programme shall carry out rectification of defect in any work done by the Contractor.

13.2.5. Electrical work for Net-metering shall be as per designs approved by DISCOM/ state nodal agency. Design shall be prepared considering existing infrastructure at GSS under coordination/Guidance of DISCOM /state nodal agency officials.

13.2.6. Electrical Inspector's Approval/ Completion/Acceptance/ Performance Test/ Third Party Verification

The contractor shall produce license secured from State Electricity Board to the EIC for verification, wherever required. Contractors have to perform the job with qualified personnel recognized by the Electricity Board inspectorate. For this purpose, contractor shall furnish the details pertaining to supervisory competence certificate and wiremen license of concerned workers for carrying out electrical works as they

will be actually engaged in the daily execution of the job. On completion of electrical installation, the contractor shall furnish the completion certificate to the Electrical Inspectorate, if required. The certificate shall be prescribed in the form as required by the local inspectorate, if required. The Contractor shall approach the Inspectorate and arrange for inspection, seek approval in writing before starting up of the testing work and also before commissioning the installation. However, the necessary fee paid to Inspectorate shall be reimbursed by the Owner on submission of actual receipts.

Prior to synchronization of the Power Project, the project shall be required to be certified for the requisite acceptance/performance test as may be laid down by Central Electricity Authority or an agency identified by the central government to carry out testing and certification for the solar power projects

The third party may verify the construction works/operation of the Power Project being carried out and if it is found that the construction works/ operation of the Power Project is not as per the Prudent Utility Practices or industry/project benchmark, it may seek clarifications or require the works to be stopped or to comply with the instructions of such third party.

13.3. Standardisation

Installation methods and procedure for equipment supplied by the contractor shall conform to standard design and shall be uniform. Particularly for cable jointing, fixing labels, cable gauging and supports, termination etc. so that installations are uniform in appearance.

13.4. Workmanship (General)

Electrical equipment shall be installed and electrical work undertaken by qualified and competent tradesman/ supervisors. Manufacturer's installation instruction and recommendations shall be closely followed at all times. Particular care shall be taken with transformers, switchgears and other equipment to ensure that the metal joints are clean and that safe gaps are not exceeded. Adequate weather protection during installation shall be provided at all times.

During O&M period (1 year inclusive O&M and subsequent 4 years of O&M), it will be mandatory to depute HT authorised manpower to handle O&M work of HT side.

14. TEST, INSPECTION AND PERFORMANCE OF WORKS

- 14.1. The Contractor shall carry out the routine tests as enumerated in the relevant standards/codes, technical specifications and approved Quality Assurance Plans (QAPs) for respective components/systems and no separate payment shall be made unless otherwise stipulated. The type test certificates shall be submitted at the time of Factory Acceptance Tests (FATs). In case, any type test is scheduled during the period of delivery of the component, the same shall be intimated to Owner for its witness at factory

premises.

- 14.2. All the tests either on the field or at outside laboratories concerning the execution of the work and supply of materials by the Contractor shall be carried out by Contractor at his own cost. All test equipment including all recording/ measuring gauges/ instruments shall be calibrated and necessary certificate of compliance issued by the Statutory agency/body to the effect that the test equipment's /instruments have been calibrated as per standard practices and found meeting the norms shall have to be furnished by the Contractor. The entire cost of carrying out such calibration and furnishing of the compliance certificate from a Statutory Authority/ body shall be at the expense of the Contractor.
- 14.3. The work is subject to inspection at all times by the Owner/ EIC. The Contractor shall carry out all instructions given during inspection and shall ensure that the work is being carried out according to the technical specifications, the technical documents and the relevant codes of practice furnished to him during the performance for the work. Contractor shall discuss his daily work programme with Site Engineer/ EIC before starting the same every day.
- 14.4. Any work not conforming to the execution drawings, specifications or codes shall be rejected forthwith and the Contractor shall carry out the rectification at his own cost.
- 14.5. All results of inspection and tests will be recorded in the inspection reports, performa of which will be approved by the EIC. These reports shall form part of the completion documents.
- 14.6. In addition to the provisions of clause 5.1.0.0 of GCC, on no account shall the Contractor proceed with the backfilling or other underground works by covering up or otherwise placing beyond reach of inspection or measurement before inspection by the Site Engineer or his authorised representative. Should the Contractor do so, the same shall be uncovered at Contractor's risk and expense for carrying out the inspection and measurement.

15. SETTING OUT OF THE WORKS

- 15.1. The Contractor shall be responsible for the true and proper setting out of the works and for the correctness of the position and levels, dimension and alignment of all parts of the works and for the provision of all necessary instruments, appliances and labour in connection therewith.
- 15.2. If at any time during the progress of the work, shall any error appear or arise in the position, level, dimension or alignment of any part of the works, the Contractor shall at his own expense rectify such error to the satisfaction of EIC or the Site Engineer.
- 15.3. The checking of any setting-out or of any line or level by the EIC or the Site Engineer shall not in any way relieve the Contractor of his responsibility for the correctness thereof and the Contractor shall carefully protect and preserve all bench marks, pegs and other things used in setting out the works.

16. WATER & POWER SUPPLY

- 16.1. In partial modification of the provisions of clause 3.5.0.0, 3.6.0.0 & sub clauses thereof of the GCC, the contractor shall arrange construction water/ procure water required for the work at his own cost. IOCL shall not be responsible for supplying water and Contractor shall ensure timely and adequate supply of water to meet the schedule.
- 16.2. During EPC stage, the contractor will make his own arrangement for power required for the work at his cost. IOCL shall not be responsible for power supply and contractor shall ensure proper supply of electricity to meet the schedule.
- 16.3. The electrical works shall be carried out through licensed electrical personnel only.

17. PERSONAL ACTS & LIABILITIES

Any money paid to any director, attorney, agent, officer or employee of the Contractor and any receipt, settlement, acknowledgement of liability or other arrangement, agreement or document whatsoever signed by any such director, attorney, agent, officer, or employee of the Contractor or erstwhile director, attorney, agent, officer or employee of the Contractor (without notice of his cessation of interest) or by any person held out to be a director, attorney, agent, officer or employee of the Contractor authorized to act on behalf of and/or to bind the Contractor, shall be binding upon the Contractor and shall constitute a full release and discharge to the Owner and/or settlement, acknowledgement or obligation of, upon or with the Contractor, as the case may be, and the Owner shall not be concerned with the actual application of any money so paid or of the actual authority of such director, attorney, agent, officer or employee (actual, erstwhile or purported as the case may be) vis-à-vis the company to make the settlement, receipt, acknowledgement, agreement or other document concerned.

18. PRICES, TAXES AND DUTIES

- 18.1. **Definition:** Contractual period / Work Completion Period /Contractual Delivery Date / Contractual Completion Period shall mean the Scheduled Delivery / Completion Period as mentioned in the LOA (Letter of Acceptance) or Purchase Order or Work Order and shall also include approved extensions, if any.
- 18.2. The quoted price shall be exclusive of applicable Goods & Service Tax (GST) and shall remain fixed and firm for contract period and until completion of performance of contract and its acceptance by IOCL. Applicable taxes including GST shall be reimbursed by IOCL at actual on prevailing rates or shall be deposited by IOCL (under reverse charge/ imports) as applicable.
- 18.3. All tax invoices raised by the Contractor as per the outward return would have to be

matched with IOCL's inward return.

- 18.4. Contractor shall raise its invoices as per the format prescribed under the GST Act and GST Rules. Contractor shall further ensure necessary compliances with the GST Act and the GST Rules to facilitate the receipt of Input Tax Credit by IOCL. Contractor shall indemnify IOCL on account of non-compliance in this regard for any loss of tax credit, tax, interest, penalty etc. liability imposed by tax authorities.
- 18.5. In case of un-registered vendor under GST, the recipient of services that is, IOCL as buyer shall be liable to issue tax invoice on behalf of the vendor and shall be liable to deposit the applicable taxes / GST under reverse charge.
- 18.6. Under GST law, if any composite supplier that is, Contractor raises tax invoice to purchaser that is , IOCL and IOCL is unable to take input tax credit, in such cases the Contractor will indemnify IOCL against such tax credit losses.
- 18.7. Bidder agrees to pay all taxes which are based on or determined by reference to its income or that of its personnel and services and will hold harmless and indemnify IOCL from all claims, taxes, penalties, fines, interest and other costs which may be made or assessed against the Bidder with respect to the performance under this Contract or with respect to personnel of the bidder and its sub-contractors. The indemnities under this clause shall survive the term of this Contract by a term equal to the length of time allowed by statute. For the purpose of this clause, the benefit of any indemnity given in favour of the IOCL shall include its personnel, sub - contractors, joint venture partners, associates, affiliates and agents.
- 18.8. IOCL may deduct or withhold sums from payments to be made by IOCL to the contractor to the extent that such deduction or withholding may be required by applicable law, orders, rules or directions of any competent taxing authority. The rates and prices set forth in this Contract shall be inclusive of any taxes required to be deducted or withheld.
- 18.9. New Taxes: In the event that there is any new indirect tax, introduced as a result of a new legislation, after the bid closing date, IOCL shall compensate the Bidder for such new tax, provided that the Contractor can substantiate the same with adequate documentation.
- 18.10. Any increase / decrease in such taxes after the date of submission of price bid but within the contractual completion / mobilization date as stipulated in the Contract will be to the account of IOCL.
- 18.11. Any increase in the duties and taxes after the contractual completion / mobilization date during the extended period will be to the Contractor's account, where delay in completion /mobilization period is attributable to the Contractor. However, any benefit of decrease in duties and taxes after the contractual completion / mobilization date will be passed on IOCL.
- 18.12. The prices inclusive of all taxes & duties (excluding goods and service tax and cess thereon) shall be firm without any escalation/de-escalation unless specified in the SIT (Section A- Technical). Price bid to be submitted strictly as per the format in the price

bid. Fulfilment of all the statutory requirements for supply of materials and services and any other statutory requirement shall be the exclusive responsibility of the Contractor.

18.13. Income Tax/TDS/Withholding Tax

Income Tax along with surcharge of Income Tax as applicable at the prevailing rate on the gross amount billed shall be deducted from the Contractor's bill as per applicable laws.

Notwithstanding anything contained anywhere in the Tender documents or any intimation, notice, questionnaire, clarification, correspondence or communication at any time before submission of Tender, the following clauses shall apply for the purpose of Income tax/TDS/Withholding Tax described herein below:-

i. The BIDDER shall be exclusively responsible and liable to pay taxes on income comprised in all or any payments arising out of the Contract; whether payable/paid in India or in any other jurisdiction and quoted prices shall be inclusive of Income Tax.

ii. All amounts in this Tender for supply of equipment, machinery or any other Supply of goods made from outside India is not liable for any withholding tax in India because title to goods are transferred in favour of OWNER outside India. However, in case it is applicable, all amounts in this Tender for supply shall be gross of withholding tax levied under Indian Income Tax or Double Taxation Avoidance Agreement. Owner shall deduct the Withholding Tax payable to Government of India from the total amount payable for such supplies. All relevant documents for such payment shall be provided to the Owner.

iii. Withholding tax/tax deductible at source is applicable to all payments of Services to be made to the BIDDER. Withholding/deduction are required to be made at the rates specified in the Indian Income Tax Act. However, in case of non-resident BIDDERS, lower of the rate of withholding tax as available in the relevant Double Taxation Avoidance Convention Agreements (DTAA) as notified or amended from time to time as compared to the rate applicable as per relevant Income Tax Act will be applicable subject to certain specified documentary compliances. Therefore, it is incumbent upon the BIDDER to decide and declare whether it intends to take benefits of lower rate of Withholding Tax and commit to provide necessary documents. As per extant provisions of Income Tax Act and Rules made there under following documents are mandatory for this purpose (a) Tax Residency Certificate (TRC) issued by the competent authority of the country of residence of the BIDDER (b) Form 10F as described in Indian Income Tax Rules, 1962 and (c) PAN No as per Indian Income Tax Act or a declaration in specified format in lieu of Permanent Account Number (PAN) (d) No Permanent Establishment Certificate (if applicable).

iv. The Indian Income Tax Act and rules made there under contains provisions permitting deduction of tax at a lower rate if the BIDDER is able to justify to the Income Tax Authorities such lower rate of deduction. However, a deduction once made has to be deposited by the OWNER with the Income Tax Authorities in India

and will not be adjustable by the OWNER. It is therefore in the interest of the BIDDER that prior to release of any payment due to the BIDDER under the Contract that the BIDDER obtains, from the relevant Income Tax Authorities in India, a certificate specifying the rate of deduction/withholding of Income tax at source, failing which, payment to the BIDDER shall be made by the OWNER after Withholding/deduction at the highest rate as may be applicable to the non-resident BIDDERS as per Provisions of Income Tax Act, 1961.

18.14. Goods and Services Tax (GST)

18.14.1 Bidder to note that rate of GST has been selected in the BoQ. It may be noted that the total quoted price inclusive of GST shall be displayed in the BoQ at cell BA20 after considering the selected GST rate.

18.14.2 Bidders to note that their bids will be evaluated based on the landed cost including GST. Also if GST rate is not quoted in BoQ, then quoted rate by bidder displayed in BoQ at cell BA20 against 'quoted rates in figures' shall be considered inclusive of GST.

Notes:

- 1) In view of GST implementation from 01.07.2017, bidders are requested to quote prices including all duties and taxes excluding **GST**.
- 2) In case a supply/service is covered under RCM (Reverse Charge Mechanism), then evaluation will be done by considering GST rates as mentioned above.
- 3) Bidder to consider "Input Tax Credit" available to them under GST, and quote the prices accordingly.
- 4) Bidders hereby confirm that they have taken note of Anti- profiteering measure clause (Sec 171 of CGST) wherein it is stated that any reduction in rate of tax on any supply of goods and services or the benefit of input tax credit shall be passed on to the recipient by way of commensurate reduction in prices, and they have quoted accordingly.
- 5) Bidder will be required to raise invoice indicating the GST amount separately as the Owner intends to avail Input Tax Credit under GST. The invoice should be GST Compliant.

18.14.3 If GST rate is not quoted in BoQ, then quoted rate by bidder displayed in BoQ at cell BA20 against 'quoted rates in figures' shall be considered inclusive of GST.

Bidders to note that their bids will be evaluated based on the landed cost including GST subject to clause no. 19.3.0 of SIT.

Goods and Services tax rates as quoted by the bidder shall be considered for evaluation of the bids. Payment of goods and services tax (GST) shall be made in accordance with tax compliant invoice(s) raised by the contractor. In case of variation between GST rate notified under GST Law and quoted / selected GST rate, the contractor shall adjust the difference if any on the

quoted basic price, so that the overall evaluated landed cost remains same.

18.14.4 Statutory variation on Goods and Service Tax (as payable to the bidder) as applicable for the category/service shall be to Owner's account up to the contractual completion period. Any statutory variation in goods and service tax after expiry of the contractual completion period shall be to the contractor's account. Contractual completion period mentioned above is TIME SCHEDULE indicated in letter of Acceptance which will be inclusive of time extension, if any, granted by the OWNER in terms of Clause 3.0.5.7 and/or 3.0.5.8 of GCC without imposition of any price discount under clause 4.4.0.0 of GCC. Similarly, in case of any reduction in the rate(s) of the 'said taxes' between last date of submission of Price bid relevant to the Contract and the date of execution of activities under the contract, the CONTRACTOR shall pass on the benefit of such reduction to the OWNER.

18.14.5 **The Goods and Services Tax payable by the OWNER** to the contractor shall be limited to the rate(s) considered during evaluation as per clause No. 18.14.3 and its sub-clauses above (except for condition mentioned in clause No. 18.14.4) irrespective of the amount payable by the Contractor towards goods and service tax to Statutory Authorities.

18.14.6 Bidders are required to submit copies of Goods and services Tax Registration pertaining to the State of its operation along with the techno-commercial bid as per GST laws including CGST, SGST, UTGST, IGST & compensation cess laws.

18.14.7 Bidders have to be registered under applicable Goods and Services tax Clause. Bidders are to give an undertaking to comply with all Goods and services Tax clauses as soon as they become applicable to the bidders. In case the bid involves inter-state supply of goods or services, bidder has to be registered under the Goods and services tax laws. In such cases bidder has to submit his Goods and services Tax registration number at the time of entering into the Contract. Bidder has to give undertaking that he will get registered under Goods and services Tax as soon as it becomes applicable to him.

Bidder is requested to acquaint themselves about Goods and services Tax Law and other tax provisions before bidding. Bidders are advised to quote the rate considering "input tax credit" available to bidder under Goods and services Tax.

18.14.8 The contractor/supplier would be liable to reimburse or make good amount equivalent to the value of GST charged in tax invoice/debit note to IOCL along with other consequential implications in cases where contractor/supplier defaults in deposit of taxes to Govt. or non updation / incorrect updation of the invoice data in GSTN network or non-filling of returns or wrongly charges Integrated Tax in place of Central Tax + State/Union Territory Tax or vice versa or any other non-compliance of GST laws; by issuance of suitable credit note to IOCL. In case, contractor/supplier does not issue credit note to IOCL, IOCL would be constrained to recover the amount with consequential implications including interest / penalty payable.

18.14.9 Bidders to take note of Anti profiteering measure clause in Goods and services Tax (Section 171) wherein it is stated that any reduction in rate of tax on any supply of goods and services or the benefit of input tax credit shall be passed on to the recipient by way of

commensurate reduction in prices."

18.14.10 The vendor will be under the obligation for invoicing correct rate of tax/duties as prescribed under the Goods and services Tax law to IOCL, and pass on the benefits, of Goods and services Tax including input tax credit, in line with sec 171 of Goods and services Tax Act.

18.14.11 Tax Invoice to be submitted by the bidder in compliance with the prevailing tax laws at the time of execution/delivery. No other invoice will be accepted as Owner intends to avail Input Tax/ Cenvat Credit. Separate invoice main line item wise of the LOA shall be submitted in consultation with EIC for ease in availing of Input Tax Credit by the OWNER. Any invoice issued under Goods and services Tax Law shall contain the following particulars-

- (a) Name, address and Goods and services Tax IN of the supplier;
- (b) A consecutive serial number of the invoice;
- (c) Date of issue;
- (d) Name, address and Goods and services Tax IN or UIN, if registered of the recipient;
- (e) Name and address of the recipient and the address of the delivery, along with the State and its code,
- (f) HSN code of goods or Accounting Code of services;
- (g) Description of goods or services;
- (h) Quantity in case of goods and unit or Unique Quantity Code thereof;
- (i) Total value of supply of goods or services or both;
- (j) Taxable value of supply of goods or services or both taking into account discount or abatement if any;
- (k) Rate of tax (Central Tax, State Tax, Integrated Tax (for inter-state supply), Union Territory Tax or cess);
- (l) Amount of tax charged in respect of taxable goods or services (Central Tax, State Tax, Integrated Tax (for inter-state supply), Union Territory Tax or cess);
- (m) Place of supply along with the name of State, in case of supply in the course of inter-state trade or commerce;
- (n) Address of the delivery where the same is different from the place of supply;
- (o) Whether the tax is payable on Reverse Charge basis and
- (p) Signature or digital signature of the supplier or his authorized representative.

18.14.12 Goods and services Tax invoice shall be prepared in triplicate, in case of supply of goods, and duplicate in case of supply of service in the following manner-

- (a) The original copy being marked as ORIGINAL FOR RECIPIENT;
- (b) The duplicate copy being marked as DUPLICATE FOR TRANSPORTER and
- (c) The triplicate copy being marked as TRIPLICATE FOR SUPPLIER.
- (d) For supply of service duplicate copy being marked as DUPLICATE FOR SUPPLIER.

18.14.13 In case of any advance given against any supplies contract, the supplier of the goods shall issue Receipt Voucher containing the following particulars-

- (a) Name, address and Goods and services TaxIN of the supplier;
- (b) Serial number of the voucher;
- (c) Date of its issue;
- (d) Name, address and Goods and services TaxIN or UIN if registered of the recipient;
- (e) Description of goods;
- (f) Amount of advance taken;
- (g) Rate of tax (Central Tax, State Tax, Integrated Tax (for inter-state supply), Union Territory Tax or cess);
- (h) Amount of tax charged in respect of taxable goods or services (Central Tax, State Tax, Integrated Tax (for inter-state supply), Union Territory Tax or cess);
- (i) Place of supply along with the name of State and its code, in case of supply in the course of inter-state trade or commerce;
- (j) Whether the tax is payable on Reverse Charge basis and
- (k) Signature or digital signature of the supplier or his authorized representative.

18.14.14 In case of Price Adjustment for delay in Completion applicable as per GCC Clause 4.4.0.0, the Contractor shall issue a Credit Note for the Price Reduction amount containing all the details stated in SCC (Commercial) clause 18.14.11 (a) to (p), for lower incidence of GST.

18.14.15 In case of non-submission of credit note by the vendor, IOCL reserve the right to raise invoice for recovery/ adjustment of the Price discount/ risk & cost recovery / Liquidated Damages/ Forfeiture of EMD & SD etc. along with applicable GST.

18.15. Customs duty on equipment

18.15.1 Contractor is liable to pay all customs duty, as applicable on the equipment brought to India for executing the works.

18.15.2 The Contractor shall be fully liable for observing all the formalities in this regard as well as to pay the customs duty chargeable on the equipment, including any deposit payable for such purposes. No adjustment in the quoted rates shall be permissible for any change in duty draw-back applicable in respect of equipment and machinery brought to India for use in

the project and for re-export of equipment & machinery, on completion of the project.

18.16. Import Licence

The Contractor shall arrange import of all materials required for permanent incorporation in the works as well as construction equipment as per the guidelines laid down by the Government of India. Import license shall not be provided by Owner.

19. INSURANCE

The contractor shall arrange insurance to cover all risks in respect of personnel, materials and equipment belonging to the contractor or its subcontractor during the currency of the contract. The contractor shall indemnify IOCL for all the losses, if any, during contract period.

19.1. Insurance during Supply, Erection and Commissioning

- 19.1.1. Contractor shall at his own expenses effect insurance to the supplies, transit, personnel and all other related activities to the satisfaction of the Owner as follows including all third party risks. A copy of all such policies will be given to the Owner. Owner shall be informed of such insurance policies. The policy shall remain valid until commissioning of the Solar Power Project. Thereafter, Owner shall maintain a comprehensive insurance policy for the plant.
- 19.1.2. Insurance to cover marine & transit insurance.
- 19.1.3. Insurance to cover storage cum erection cum commissioning policy with IOCL as beneficiary.
- 19.1.4. Insurance to cover third party liability along with an undertaking indemnifying Owner from any such claim.
- 19.1.5. The insurance to cover any consequences arising out of pilferage, theft, burglary by the contractor
- 19.1.6. Workmen compensation and /or group personal accidents Insurance policy covering its employees and workers including Sub contractor
- 19.1.7. Contractor shall also effect and maintain any other insurance that may be required under any law or regulation or practice from time to time.
- 19.1.8. The Contractor shall take all reasonable precautions to prevent fire of any nature in the general area of his operations and he shall be responsible for all damage from fires due directly or indirectly.
- 19.1.9. Operator shall provide insurance, which shall cover among other things, fire, earthquake, and flood damage and deductibles thereon. Machinery breakdown insurance and deductibles / excess thereon for modules, inverters, PCUs, other auxiliaries and complete Solar Power Project.

19.2. Transit insurance

- 19.2.1. Contractor shall at his own expenses effect insurance from Insurance Agencies to the supplies, transit, personnel and all other related activities to the satisfaction of the Owner as follows including all third party risks. A copy of all such policies will be given to the Owner along with. Owner shall be informed such insurance policies.
- 19.2.2. Insurance to cover marine, transit cum storage cum erection cum commissioning policy.
- 19.2.3. Insurance to cover third party liability of appropriate value along with an undertaking indemnifying IOCL from any such claim.
- 19.2.4. Contractor shall also effect and maintain any other insurance that may be required under any law or regulation or practice from time to time.
- 19.2.5. The Contractor shall take all reasonable precautions to prevent fire of any nature in the general area of his operations and he shall be responsible for all damage from fires due directly or indirectly.

19.3. Insurance during Operation and maintenance

Operator shall provide or obtain and maintain in force throughout the period of O&M the following insurance coverage:

- 19.3.1. Insurance to cover third party liability along with an undertaking indemnifying IOCL from any such claim.
- 19.3.2. Workmen compensation and /or group personal accidents Insurance policy covering all its employees and workers including sub operator.
- 19.3.3. Fire and allied perils including earthquake, flood, storms, cyclone, tempest, theft & burglary, insurance policy shall be taken by the Owner regularly immediately after commissioning. In case of any loss/claim under the policy, Operator shall immediately inform the same to the owner, take necessary steps required to be taken at site and assist in filing and realizing the claim.
- 19.3.4. It shall be the responsibility of the operator to operate and maintain the solar power plant and all the associated equipments at his own cost for the quoted O&M period for which the owner shall pay the agreed O&M charges only. Any replacement / repair / modification of any item / equipment shall be carried out by the Operator at his own cost for the quoted O&M period so as to have minimum plant downtime irrespective of the fact that whether the contractor takes the comprehensive insurance policy or not. The owner shall not be responsible for any break down/ failure of any equipment to any reason thereof except for Force majeure / Fire & Allied Perils Events or extraneous reasons.
- 19.3.5. The scope / type / form of insurance cover mentioned elsewhere in this tender, for the scope of the project for the quoted O&M period, would be superseded by this Clause.

20. PATENT INDEMNIFICATION

Further to General Conditions of Contract clause no. 8.9.0.0, Contractor shall indemnify the Owner against all losses, costs, damages and expenses arising from any claim asserted against Owner that the work or part thereof, or any methods, designs or things furnished or specified by Contractor or any sub-Contractor or supplier under this Contract, or any use thereof in the reasonable contemplation of the parties at the time furnished, or any methods, processes or acts employed by Contractor in connection with the performance of its obligations hereunder constitutes an infringement of any patent, trade secret, proprietary information, know-how copyright (statutory or non- statutory), un-patented invention or any unauthorized use of the work of others.

21. RESTRICTION OF VISITORS

The Contractor shall not allow any visitors on the work or premises of the site without the approval of EIC and/ or site engineer.

22. SAFETY AND POLLUTION CONTROL

In addition to the provisions of clause 10.0.0.0 of GCC, the Contractor shall take all reasonable precautions to avoid pollution or contamination of the air, land or water arising out of the performance of the work. Disposal of returns and cuttings produced by the work shall not be allowed to be discharged in the river. Contractor shall make arrangement at his own cost and initiatives to dispose of the return and cuttings generated from the drilling operation, as to avoid any pollution to the environment. Should there be a discharge or escape of appreciable quantity of pollutants or contaminants during performance of its obligations under this contract which occurs as a result of activities of the Contractor or its sub-contractor, the Contractor shall immediately take all necessary actions to contain, control, recover or disperse the substance and to eliminate the safety and environmental risks and correct the damages resulting there from.

22.1. Adherence to safety procedures and practices

Contractor shall ensure that the prudent industrial safety measure, applicable to the plant as per the norms and statutory requirements are adhered to during the EPC as well as O&M phase. In case of accidents depending on the seriousness of injury etc. in addition to the hospitalisation/ Treatment charges and Group insurance amount, compensation shall be paid by the Contractor to the affected person/ his family members in presence of EIC as per Workmen Compensation Act.

22.2. Safety practices while working at height

Contractor shall ensure that the prudent safety measure, applicable to the plant as per the norms and statutory requirements are adhered to during the EPC as well as O&M phase.

23. NO COMPENSATION FOR ALTERATION IN OR RESTRICTION OF WORK

If at any time from the commencement of the work, the Owner shall for any reason whatsoever not require the whole work or part thereof as specified in the tender to be carried out or, alteration in the work are required, the EIC shall give notice in writing of the fact to the Contractor, who shall have no claim to any payment or compensation whatsoever on account of any profit or advantage which he might have derived from the execution of the work in full or prior to alteration.

24.

25. SUB-CONTRACTING OF WORK

Contractor shall not subcontract or assign, in whole or in part, its obligations to perform under this contract, except with Owner's prior written consent. In the eventuality of sub-contracting of work, Owner will be informed in advance. However, the Contractor's liability or obligations will not get altered / delegated to sub-contractor. If any sub-contractor engaged upon the work at the site executes any work which in the opinion of the EIC is not in accordance with the contract documents, the Owner may give written notice to the Contractor advising him to terminate such sub-contracts and the Contractor on the receipt of such notice shall terminate such contracts.

26. POWER OF ENTRY

26.1. In case the Contractor does not commence the work in the manner described in the contract documents or if he shall at any time in the opinion of the EIC:

- a) Fail to carry on the works in conformity with contract document/ schedule, or
- b) Substantially suspend work or the works for a continuous period of 14 days without permission from the EIC, or
- c) Commit or permit any other breach of any of the provisions of the contract on his part to be performed, or
- d) Abandons the works, or
- e) During the continuance of the contract becomes bankrupt.

26.2. In any such events, the Owner shall have the power to enter upon the works and take possession of the materials, temporary works, equipment, tools and stocks thereon, and to revoke the Contractor's order to complete the works by his agents, other Contractors or workmen.

27. USE OF COMPLETED PORTIONS

27.1. Whenever in the opinion of the Owner, the work or any part thereof is in a condition suitable for use and in the best interest of the Owner required use, the Owner may take possession of the same. The Contractor shall, however, be not relieved of his pending obligations.

27.2. Prior to the date of final acceptance of the work by the Owner, all necessary repairs or renewals in the work or part thereof so used on account of defective materials or workmanship or due to the operations failure shall be at the expenses of the Contractor.

Such use shall neither relieve the Contractor or any of his responsibilities under the contract, nor act as waiver by the Owner of the conditions thereof. However, if in the opinion of the Owner, the use of the work or the part thereof delays the completion of the remainder of the work, the Owner may grant such extensions of time as it may consider reasonable. The decision of the Owner in the matter shall be final. The Contractor shall not be entitled to claim any compensation on account of such use by the Owner.

28. POWER OF THE EIC TO ORDER SUSPENSION OF WORK

The EIC may, from time to time by direction in writing and without invalidating the contract, order the Contractor to suspend the work or any part thereof at such time or times and for such reasons as he may consider necessary. After such directions to suspend the work or any part thereof have been given, Contractor cannot then proceed with the work or part thereof, directed to be suspended, until he receives a written order from the EIC to proceed. In the event of suspension, the Owner may under the provisions of the contract, extend the time for completion of the work or part thereof by such period as it may find reasonable. The decision of the Owner in the matter shall be final and binding on the Contractor.

29. DEFECTS PRIOR TO TAKING OVER

29.1. If at any time before the work is taken over, EIC shall:

- a) Decide that any work done or materials used by the Contractor or any sub- Contractor is defective or not in accordance with the contract, or that the works or any portion thereof, are defective, or do not fulfil the requirements of contract (all such matters being hereinafter, called Defects in this Clause).

AND

- b) As soon as reasonably practicable notice given to the Contractor in writing of the said decision specifying particulars of the defects alleged to exist or to have occurred, then the Contractor at his own expense and with all efforts shall make good the defects so specified.

29.2. In case the Contractor fails to do so, the Owner may take, at the cost and risk of the Contractor, such steps as in all circumstances be reasonable to make good such defects.

The expenditure so incurred by the Owner will be recovered from the amount due to the Contractor. The decision of the EIC with regard to the amount to be recovered from the Contractor will be final and binding on the Contractor. As soon as the works have been completed in accordance with the contract and have passed the tests on completion, the EIC shall issue a certificate in which he shall certify the date on which the works have been so completed and have passed the said tests and the Owner shall be deemed to have taken over the works on the date so certified.

30. DEFECTS AFTER TAKING OVER

- 30.1. In order that the Contractor could obtain a completion certificate, he shall rectify any defect arising from the defective materials supplied by the Contractor or workmanship or any act or omission of the contract or that may have been noticed or developed after the works or group of the works has been taken over, the period allowed for carrying out such works will be normally 15 days. Normally it is expected that work will be completed within 15 Days. However in case of unforeseen /genuine delay, EIC may take a call on this aspect whose decision will be final. If any defect be not remedied within period stipulated above, the Owner may proceed to do the work at Contractors risk and expense and deduct from the final bill such amount as may be decided by the Owner/EIC.
- 30.2. If by reason of any default on the part of the Contractor, a completion certificate has not been issued in respect of the works within one month after the date fixed by the Contractor for the completion of the work, the Owner shall be at liberty to use the works or any portion thereof in respect of which a completion certificate has not been issued, provided that the works or the portion thereof so used as aforesaid shall be afforded reasonable opportunity for completion of these works for the issue of completion certificate.
- 30.3. All the aforesaid safeguards/ rights provided for the Owner shall not prejudice its other rights/ remedies elsewhere provided herein and/ or under law.

31. PROJECT COMMISSIONING AND ACCEPTANCE

Project Commissioning:

Project commissioning shall be established when the entire plant capacity is synchronized to the HT side of power supply at Indian Oil SRPL Chittoor and net-metering facility/license established, as per the applicability defined in tender.

Project Acceptance:

The Contractor shall submit Acceptance Report of the project to Owner after completion of Part-A of the scope of work **except** for the inclusive one year comprehensive O&M period. The Report shall consist of the following documents:

- a) Successful PG test completion report.

- b) Technical documents as per scope of work & technical specifications according to which the work has been carried out including but not limited to following:
- i) Four sets of as built drawings showing therein modification and corrections, if any, made during the course of execution signed by the Contractor. A soft copy of as built drawings shall also be submitted (CAD and PDF and any other format as required).
 - ii) Complete layout of the solar array including power evacuation system.
 - iii) Complete warranty/Guarantee documents as received from OEMs.
 - iv) Complete test certificates for type / routine tests performed on major equipment.
 - v) O&M Manuals – 4 sets
 - vi) Copies of Statutory clearances / permissions.
 - vii) All permits required to operate and maintain the plant.
 - viii) Certificate / undertaking for making payment of all statutory requirements, duties, labour wages and others for having made payment.
 - ix) An undertaking confirming the payment of all statutory duties, taxes or document (s) having evidence of paying statutory duties, taxes etc. as per requirement of concerned statutory authorities.
 - x) Certificate regarding completion of the facility in all respect by the EIC.
 - xi) List of all mandatory spares which are duly tagged and stored.
 - xii) Part list for each & every equipment installed including item description, rating, make with contact details of OEM, catalogue no., quantity and drawing no.

Take over shall occur after issuance of Final Acceptance certificate and, if and only if:

- i) A Performance Test Report has been prepared by the Contractor and accepted by the Owner in accordance with the Contract,
- ii) All Permits required to operate and maintain the Plant have been obtained,
- iii) The Contractor has completed all the Scope of Work related to EPC works,
- iv) The Contractor has obtained the Commissioning Certificate for the Solar Plant,
- v) All Sub-contractors have been paid the dues by the Contractor and no-dues certificates received from such Sub-contractor,
- vi) All statutory or legal liabilities on account of the work performed under the contract have been duly calculated and paid by the Contractor,
- vii) All as-built drawings have been submitted to the Owner,

viii) Detailed Engineering document with detailed specification, schematic drawing, circuit drawing and test results, manuals for all deliverable items, Operation, Maintenance & Safety Instruction Manual and other information about the project have been submitted to the IOCL.

ix) All scaffoldings, construction wastage and garbage is cleaned off the site completely.

Owner shall issue Acceptance Certificate after verifying from the documents and satisfying itself that the work has been completed in accordance with details set out in the construction and erection drawings and the contract documents.

32. COMPLETION CERTIFICATE

Owner shall issue Completion Certificate after satisfying itself that the work has been completed in accordance with details set out in the contract documents. No Completion Certificate shall be given nor shall the work be deemed to have been executed until the following are ensured:

- a) Contractor submits the Acceptance Report of the project.
- b) All Owner's property and documents handed over to EIC.
- c) Fulfilment of all the requirement of clause 37 of SCC.

33. STATUTORY APPROVALS FOR WORKS

33.1. Statutory and other related approvals

The clearances/ approvals in respect of installation, testing and commissioning of the complete electrical and associated system would be obtained by contractor on behalf of the owner. Owner would fill up the required forms and applications under the advice of the contractor for clearance from / for:

- a) State Power Utilities, if required
- b) State Renewable Energy Development Agency, if required
- c) Chief Electrical Inspectorate General (CEIG) and/or CEA Inspection, as required
- d) Permission for laying of power evacuation line
- e) Permission for metering Code implementation
- f) Permission of Protection system
- g) Permission of construction of bay by local DISCOM

33.2. Contractor shall obtain other statutory approvals/ clearances, if and wherever required, from government departments but not limited to the following:

- a) State renewable energy development agency

- b) Pollution control board of the state, if applicable
- c) Forest department, environmental clearances and local bodies
- d) Other applicable permissions/ clearances relevant for the offered site
- e) No objection Certificate from Energy department

33.3. Statutory and other related approvals

The clearances/ approvals in respect of installation, testing and commissioning of the complete electrical and associated system would be obtained by contractor on behalf of the owner. Owner would fill up the required forms and applications under the advice of the contractor for clearance from/for:

- a) State Power Utilities, if required
- b) State Renewable Energy Development Agency, if required
- c) Chief Electrical inspectorate General (CEIG) / CEA Inspection
- d) Pollution control board of the state

33.4. Contractor shall obtain other statutory approvals/ clearances/ Registration, if and wherever required for facilitation such as availing subsidy/ Incentives/ Viability Gap Funding etc and all other kind of fiscal benefits, from government departments but not limited to the following:

- a) State renewable energy development agency
- b) Central Agency
- c) Other applicable permissions/ clearances relevant for the offered site

33.5. The Contractor shall ensure facilitation of net-metering provision, as per the applicability defined in Clause 39 of this SCC, through necessary liaisoning and coordination with state regulatory authorities within the time schedule as described in Clause 8 of this Chapter.

33.6. The contractor shall at his own expense provide all amenities to his workmen as per applicable laws and rules.

33.7. The contractor shall ensure that all safety measures are taken at the site to avoid accidents to his or his Co-contractor's or Sub-contractor's or Owner's Workmen.

33.8. Repair/ replace any equipment/ part/ components/ systems in time in the event of failure/ breakdown which is not on account of natural calamity or of the force majeure events etc.

34. PROGRESS REPORT & PROJECT REVIEW MEETING

34.1. The contractor shall submit fortnightly and monthly progress report (soft and hard copies) along with catch up plans against slippages to Owner.

34.2. Owner shall hold project review meetings with Contractor at pre-defined periodicity defined at the onset of project, during project kick-off meeting.

35. OBLIGATIONS PRIOR TO TAKING OVER OF THE O&M ACTIVITY

The Operator shall perform the following obligations prior to taking over of the O&M activity:

- a) Submit Performance Bank Guarantee for the O&M period as stipulated in Clause 10.1.4.
- b) Prepare Mobilization plan in consultation with the Owner
- c) Provide the services and personnel set forth in the Mobilization Plan
- d) Prepare in consultation with the Owner/EIC, the initial Annual Operating Plan
- e) Develop and implement plans and procedures including those for fire fighting, maintenance planning, procuring and inventory control of stores and spares, plan to meet emergencies, plant safety and security, and such other facilities and systems as may be necessary to commence O&M Operator's ongoing responsibilities.

36. HANDING OVER THE PLANT AFTER EXPIRY OF TERM

- 36.1. After the expiry of term & extension of term as the case may be, operator shall hand over the plant to the owner in excellent condition. The operator shall demonstrate performance test of all the major & critical equipment to ensure Generation from the Solar Photovoltaic Power Plant. While handing over the plant, operator shall hand over all technical documents, literature, instruction manuals, O&M records, history registers, lists of spare part & other relevant documents. While handing over mandatory spares (in similar quantity as that of quantity provided during initiation of O&M contract) should be duly tagged and stored and shall be in working condition. Contractor shall also hand over special tools and tackles in working condition.
- 36.2. On completion of O&M term, the Operator will apply to the EIC for the issue of Handing Over Certificate and the same will be issued within 1 months of the Handing Over in all respects, after verifying from the documents & tests and satisfying that the Operation & Maintenance has been completed in accordance with details set out in the control documents & Prudent Utility Practices.
- 36.3. All the aforesaid safeguards/ rights provided for IOCL shall not prejudice its other rights/ remedies elsewhere provided herein and/ or under law.

37. DEFECTS / NON-ACHIEVEMENT PLANT DEPENDABLE CAPACITY AFTER HANDING OVER

- 37.1. In order for the Operator to obtain a Handing Over certificate, he shall rectify any defect / non-achievement of plant dependable capacity in accordance to the norms of manufacturer arising from the defective Operation & Maintenance practices or

noncompliance of Prudent Utility Practices or that may have been noticed or developed during/after the plant has been taken over, the period allowed for carrying out such works will be normally one month. If any defect could not be remedied or plant dependable achievement capacity in accordance to the norms of manufacturer could not be achieved within a reasonable time, the Owner may proceed to do the work at operator's risk & expense and deduct from the final bill such amount as may be decided by the Owner.

- 37.2. All the aforesaid safeguards/rights provided for the Owner shall not prejudice its other rights/ remedies elsewhere provided herein and/ or under law.

38. PRICE DISCOUNT

38.1. Price discount for delay in project commissioning (as defined in Clause 31 of this Chapter)

It is contractor's responsibility to complete all the work and avail all the approvals on time.

In case contractor is unable to commission the project on time, the price discount would be at the rates mentioned below:

- a) If delay is upto 4 weeks : 0.25% of entire contract value per week of delay.
- b) If delay is more than 4 weeks and upto 8 weeks : 1% of entire contract value + 0.50% of entire contract value per week of additional delay beyond 4 weeks.
- c) If delay is more than 8 weeks : 3% of entire contract value + 1% of entire contract value per week of additional delay beyond 8 weeks subject to maximum of 10% of the total contract value.

If the project commissioning is delayed due to any reason other than force majeure delay discount as per above paragraph will be deducted from pending bills, if any, else through SD submitted by the Contractor.

38.2. Price Discount for non-achievement of required performance ratio during PGT

The price discount applicable at the end of Performance Guarantee Test for the guaranteed minimum Performance Ratio of 78% as described in Annexure-2 upon tests shall be as follows:

If the actual performance ratio for the Plant is less than the guaranteed PR as mentioned in Annexure-2 at PGT, the owner shall have the right to claim price discount from the Contractor: 2% of the total contract amount for Part-A (as described in Clause 3.1 and 11.6 of the SCC) for each percentage point of reduction of the Plant's actual measured

performance ratio below the Guaranteed Performance ratio on pro rata basis. The evaluation of Performance Guarantee Test is as per Annexure-2.

38.3. Price Discount for non-achievement of required performance ratio during 1-Year Inclusive Operation & Maintenance of Part-A (Clause 3 of this Chapter)

If the actual performance ratio for the plant is less than the guaranteed performance ratio in Yearly Performance Evaluation Test during the 1-Year Inclusive O&M period as described in **Annexure-2**, the owner shall have the right to claim price discount at the rate of 0.1% of the total contract amount for Part-A (as described in Clause 3.1 and 11.6 of the SCC) for reduction of each % of reduced PR against set guaranteed value on pro-rata basis.

The evaluation of Yearly Performance Evaluation is as per **Annexure-2**.

38.4. Price Discount for non-achievement of required performance ratio during Operation & Maintenance as described in Part-B of Clause 3.2

If the actual performance ratio for the Plant is less than the guaranteed performance ratio in Yearly Performance Evaluation Test as described in the **Annexure-2**, the owner shall have the right to claim price discount at the rate of 0.1% of the total contract amount for Part-A (as described in Clause 3.1 and 11.6 of the SCC) for reduction of each % of reduced PR against set benchmark value on pro rata basis.

The evaluation of Yearly Performance Evaluation is as per **Annexure-2**.

39. APPLICABILITY OF NET-METERING FACILITY WITHIN THE SCOPE OF WORK OF THIS TENDER

39.1. Applicability of Net-Metering facility within the Scope of Work of this Tender

Net-Metering facility shall be applicable within the Scope of Work if prevailing regulations allow it in Chittoor station along with the open access windmill as detailed in clause 5 of this SCC. In case of applicability, Contractor shall ensure that Net-Metering Facility is as per the State Authority/Technical requirements laid down and as detailed in Job Specifications. The contractor shall also ensure signing of net-metering agreement between the Owner and concerned electricity DISCOM/authority and all approvals required for the same must be obtained by the contractor within project timelines.

40. SPECIFIC CLAUSES ON TAXATION:

The following clauses are relevant for tenders for works contract under GST Law.

Clause No.	Description
	DEFINITIONS
	Contractual period / Work Completion Period /Contractual Delivery Date / Contractual Completion Period shall mean the Scheduled Delivery / Completion Period as mentioned in the LOA (Letter of Acceptance) or Purchase Order or Work Order and shall also include approved extensions, if any.
	GENERAL
1	Where any portion of the GCC/any other section of tender, is repugnant to or at variance with any provision of the Standard Taxation Condition (STC), then the provision of the STC shall be deemed to override the provisions of the GCC and shall, to the extent of such repugnance or variations, prevail.
2	For the purpose of this STC, the term "tax" in addition to tax imposed under CGST (Central Tax)/SGST (State Tax)/IGST (Integrated Tax)/UTGST (Union Territory Tax)/ GST Compensation Cess Acts, also includes any duties, cess or statutory levies levied by central or state authorities.
3	Rate variation in Taxes and any new promulgated taxes after last date of the submission of price bid only on the final product and/or services (applicable to invoices raised on IOCL) within the contractual delivery date /period (including extension approved if any) shall be on IOCL's Account against submission of documentary evidence.
	Further , in case of delay in delivery of goods and/or services, any upward rate variation in Taxes and any new promulgated taxes imposed after the contractual delivery date shall be to the Seller's / Contractor's Account.
3	Similarly in case of any reduction in the rate(s) of the Taxes between last date of submission of price bid relevant to the Contract and the date of execution of activities under the contract, the Contractor shall pass on the benefit of such reduction to IOCL with the view that IOCL shall pay reduced duty/Tax to Govt.
4	Wherever any escalation / de-escalation linked to raw material price (Basic price excluding taxes) is allowed as per terms of the contract, Variation to the extent related to escalation / de-escalation of value of material shall be allowed without Tax unless specified otherwise.
5	It would be the responsibility of the contractor to get the registration with the respective Tax authorities. Any taxes being charged by the Contractors would be claimed by issuing proper TAX Invoice indicating details /elements of all taxes charged and necessary requirements as prescribed under the respective tax laws and also to mention his correct and valid registration number(s) along with IOCL's registration number as applicable for particular supply on all invoices raised on IOCL.

	Contractor to provide the GSTIN number from where the supply is proposed to be under taken. Further the HSN Code / Service Accounting Code (SAC) as applicable for the subject tender needs to be provided in the columns provided in the technical bid.
	In case the contractor is opting for Composition scheme under the GST laws (i.e Section 10 of the CGST Act, 2017 and similar provisions under the respective State / UT law), the contractor should confirm the same. Further the contractor to confirm the issuance of Bill of Supply while submission of tender documents and no GST will be charged on IOCL.
	In case the contractor is falling under Unregistered category, the contractor should confirm the same.
6	The contractor would be liable to reimburse or make good of any loss/claim by IOCL towards tax credit rejected /disallowed by any tax authorities due to non deposit of taxes or non updation of the data in GSTIN network or non filling of returns or non compliance of tax laws by the Contractor by issuance of suitable credit note to IOCL. In case, contractor does not issues credit note to IOCL, IOCL would be constrained to recover the amount including interest payable along with Statutory levy/Tax, if any, payable on such recovery.
7	Tax element on any Debit Note / Supplementary invoice, raised by the contractor will be reimbursed by IOCL as long as the same is within the permissible time limit as per the respective taxation laws and also permissible under the Contract terms and conditions. Contractors to ensure that such debit Notes are uploaded while filing the Statutory returns as may be prescribed from time to time.
8	The contractor will be under obligation for quoting/charging correct rate of tax as prescribed under the respective Tax Laws. Further the Contractor shall avail and pass on benefits of all exemptions/concessions/benefits/waiver or any other benefits of similar nature or kind available under the Tax Laws. In no case, differential Tax Claims due to wrong classification of goods and/or services or understanding of law or rules or regulations or any other reasons of similar nature shall be entertained by IOCL.
9	In case, IOCL's Input Tax Credit (ITC) is rejected on account of wrong levy of tax i.e. payment of Integrated Tax in place of Central Tax+ State/Union Territory Tax or vice versa, the contractor is liable to make good the loss suffered by IOCL by issuance of suitable credit note to IOCL. In case, contractor does not issue credit note to IOCL, IOCL would be constrained to recover the amount including interest payable along with Statutory levy, if any, payable on such recovery.
10	In case the contractor is opting for Composition scheme under the GST laws, in such event the evaluation of his bid will be based on the Quoted Price. In case the contractor is falling under Unregistered category, then GST liability, if any, on IOCL will be included for the purpose of evaluation.

11	In case, IOCL is eligible to avail Input TAX Credit (ITC), the same shall be reduced from the delivered price to arrive at the net landed cost.
12	IOCL shall reimburse GST levied as per invoice issued by the Contractor as prescribed under section 31 of the CGST Act and respective states and Rules.
13	To enable IOCL to avail ITC, the contractor/supplier shall furnish/submit any and all certificates, documents and declarations as are required by IOCL to avail of the ITC with respect to GST reimbursed by IOCL on materials sold to IOCL.
14	Invoice should be raised as per Tax Rates mentioned in the BIDs and in case at the time of raising Invoice if the invoices raised are not as per Tax rates mentioned in the bid, payment will be limited to the rate quoted as per BID subject to increase /decrease in Rates after last date of submission of Price Bid provided delivery is within the Contractual period.
15	CUSTOM DUTY (These clauses will not be applicable wherever port clearances are in the scope of IOC and IOC is to take delivery at Port) applicable for Global Tender
15.1	Custom Duty for this clause shall mean Basic Custom Duty, Additional Duty of Customs levied under Section 3 of the Customs Tariff Act equivalent to the IGST and Education Cess and Secondary and Higher Secondary Cess.
15.2	The contractor shall within 7 (seven) days of dispatch /shipment of any such materials forward to the owner, the following documents.
	(i) Supplier's /Vendor Invoice indicating item wise price of the materials for the purpose of assessing customs and other Import duties
	(ii) Bill of lading/Airway Bill
	(iii) Package wise packing list
	(iv) Certificate of origin and other relevant documents relating to the identification of the materials.
15.3	(v) Other relevant documents for the assessment of customs duties and the clearance of goods through Customs.
	The Contractor shall also be fully responsible for Port and Customs clearance including stevedoring, handling, unloading, loading and storage and for satisfying all Port and Customs formalities for the clearance of the goods , including preparation of the BILL(s) of Entry mentioning the applicable GSTIN of IOCL and other documents required for import and or/clearance of the goods. The applicable GSTIN shall be advised by IOCL. The Contractor shall also be fully responsible for any delays, penalties, interest, demurrages, shortages and any other charges and losses, if any in this regard.
15.4	The Custom Duty payable shall be reimbursed on production of supporting documents or paid directly to the Customs Authority, as the case may be.
15.5	IOCL shall pay the CUSTOM DUTY within 1 (one) working day or specified under Customs law, after the day on which the CONTRACTOR furnishes the complete necessary documents including duty requisition slip along with BILL of ENTRY to the IOCL's designated office for

	release of requisite materials/ equipment from Customs.
	However additional cost on account of delayed payment of Custom duty due to IOCL' s fault shall be paid by IOCL.
15.6	IOCL will not bear liability towards payment of safeguard duty, Anti Dumping duty, Protective Duty or Countervailing Duty on subsidized articles or any other such duties of Customs imposed by the Government of India under Custom Tariff Act 1975 applicable on such materials in India.
15.7	All other costs towards Port and Customs Clearance shall be the contractor's responsibility including appointment and payment to clearing agents and no reimbursement will be made by IOCL except as quoted in the price bid.
15.8	The contractor shall provide IOCL with all documents necessary for IOCL to claim Input Tax Credit (ITC) of the IGST levied under Section 3 of the Custom Tariff Act. Should the contractor fail to provide any such document(s) resulting in a shortfall in the ITC available to IOCL, the shortfall shall be made good by the contractor by issuance of suitable credit note to IOCL. In case the contractor does not issue credit note to IOCL, in such case, IOCL would be constrained to recover the amount along with interest and statutory levy, if any, and such recovery would be without pre-judice to any other mode of recovery from the Running Account or other bills or payments to the Contractor.
15.9	The input tax credit available to IOCL will be reduced to arrive at the net Landed cost in the hand of IOCL for evaluating the Bids.
15.1	In case the bidder is availing any exemption under the prevailing customs law, then necessary documentary proof for availing the said exemption is required to be submitted. In the event of non submission of the requisite documents as per the conditions for availing the exemption by the successful bidder, then the additional outflow on account of various taxes and duties will be recovered from the bidder.
15.11	The Tariff Head under which the goods will fall should be clearly mentioned along with the Custom Duty Rate at the time of submission of Bid.
16	ROAD PERMIT /WAY BILL
16.1	IOCL will issue Road Permit/Way Bill, by whatever name it is called, to the Contractor only in those cases where materials is purchased by IOCL directly and/or IOC is statutorily required to issue the Road permit/Way Bill, by whatever name it is called. Contractor will be under obligation for proper utilization of road permits for the specific supply and in case of seizure of goods/vehicle; the Contractor will be wholly responsible for release and reimburse the litigation cost to IOCL.

16.2	IOCL shall on no account be responsible for delay or hold up due to the timely non availability of such documents as are required to be furnished by the owner to obtain the Road Permit/Way bill, by whatever name it is called. However, IOCL shall make best efforts to provide sufficient number of Road Permits/way bill, by whatever name it is called. on demand to avoid any delay or Hold up.
17	Works Contract / Composite Supply / Mixed Supply
17.1	Works contracts as defined under the GST law includes Contracts for Building, Construction, Fabrication, Completion, Erection, Installation, Fitting out, Improvement, Modification, Repair, Maintenance, Renovation, Alteration or Commissioning of any immovable property wherein transfer of goods is involved in the execution of such contracts.
	Composite Supply has been defined as supply in which two or more supply of goods or service or both or any combination are naturally bundled and supplied in conjunction with each other in the ordinary course of Business, and then the rate as applicable for principal supply will be applicable on the entire transaction.
	Mixed supply has been defined as supplies of goods or service or both which are made in conjunction with each other for a single price and which does not constitute a composite supply then the rate as applicable for the highest rate will be applicable.
17.2	
	In view of the above various definitions under GST law, bidders are required to evaluate the jobs to be undertaken covered under the tender and quote accordingly by taking in to account the nature of Job read with the legal provision.
	The place of supply in relation to an immovable property shall be the location at which the immovable property is located or intended to be located. Hence the bidders have to seek registration at the locations where the work is intended to be carried out.
17.3	In case, IOCL is eligible to avail Input TAX Credit (ITC), the same shall be reduced from the delivered price to arrive at the net landed cost. IOCL shall reimburse GST levied as per TAX invoice issued by the Contractor as prescribed under respective GST Acts and Rules. In case the contractor is not permitted to issue Tax Invoice the same should be clearly mentioned in the price Bid.
17.4	To enable IOCL to avail ITC, the contractor/supplier shall furnish/submit any and all certificates, documents and declarations as are required by IOCL to avail of the ITC with respect to VAT reimbursed by IOCL on materials sold to IOCL
17.5	Invoice should be raised as per Tax Rates mentioned in the BIDs and in case at the time of raising Invoice if the invoices raised are not as per Tax rates mentioned in the bid, payment will be limited to the rate quoted as per BID subject to increase /decrease in Rates after last date of submission of Price Bid provided delivery is within the Contractual period.

	GST TDS
18	Wherever provisions of Tax deduction at Source (TDS) are applicable under the CGST / SGST / UTGST/IGST Act ,2017 on supplies of goods or services or both to IOCL , tax will be deducted from the invoice raised and deposited with the authorities by IOCL. TDS certificate as per provisions of CGST / SGST / UTGST/IGST Act, 2017 shall be issued by IOCL.
	INCOME TAX
19	The contractor shall be exclusively responsible and liable to pay Taxes on Income arising out of payment made out of the contract.
20	Wherever withholding tax i.e. Tax deduction at source (TDS) is applicable under the Income tax Act, 1961 the same will be deducted from the Invoices raised and TDS Certificate as per provision of the Income tax Act and Rules shall be issued to the contractor.
21	Wherever withholding tax i.e. Tax collection at Source (TCS) is applicable under the Income tax Act, 1961 the same will be deposited by the tenderer and provide TDS Certificate as per provision of the Income tax Act and Rules shall be issued by the contractor.
22	PAN is mandatory. If PAN is not provided TDS would be deducted at higher rate as per the provisions of Income Tax Act.

BUSINESS TRANSACTION STATUS & INSOLVENCY CLAUSE

BIDDERS UNDER INSOLVENCY OR LIQUIDATION OR BANKRUPTCY PROCEEDINGS UNDER INSOLVENCY AND BANKRUPTCY CODE, 2016

1. Tenders who have transferred their ownership rights either in whole or in part to another entity or under process of transfer shall intimate the same to IOCL in their letter head while submitting the bid. IOCL reserves its right to reject the tender of any entity, which has transferred its ownership rights in whole or in part or which is in process of transfer without assigning any reason for such rejection.
2. If the tenderer refuses or fails to share the information regarding their status of any kind of business transfer process/restructuring etc. in their tender or at any later stage, as applicable, their tender is liable to be rejected by IOCL and without prejudice to any other remedy or action available with IOCL, IOCL shall forfeit the Earnest Money Deposit provided by the tenderer, in any form whatsoever.

Offers from the following type of bidders shall not be considered:

- If the bidder is undergoing insolvency resolution process or liquidation or bankruptcy proceeding under Insolvency and Bankruptcy Code, 2016 (Code) or any other applicable law (in cases where code is not applicable).
- Insolvency resolution process or liquidation or bankruptcy proceeding is initiated

under the Code or any other applicable law (in cases where code is not applicable) against/by the bidder at any stage of evaluation of the bid.

- In the event, insolvency resolution process or liquidation or bankruptcy proceeding is initiated under the Code or any other applicable law (in cases where code is not applicable) against/by the bidder, after submission of its bid but at any stage of evaluation of the bid, it will be the responsibility of the bidder to inform IOCL within 15 days from the date of order of insolvency resolution process or liquidation or bankruptcy proceeding passed by the Adjudicating Authority namely, National Company Law Tribunal (NCLT) or Debt Recovery Tribunal (DRT) under the Code or any other applicable law (in cases where code is not applicable).
- If bidder refuses or fails to share the information regarding their status of insolvency resolution process or liquidation or bankruptcy proceeding as sought hereinabove, in their bid or at any later stage, as applicable, their offer is liable to be rejected by IOCL and without prejudice to any other remedy or action available with IOCL, IOCL shall forfeit the Earnest Money Deposit provided by the bidder, in any form whatsoever.
- IOCL reserves the right to cancel/terminate the contract without any liability on the part of IOCL immediately on the commencement of insolvency resolution process or liquidation or bankruptcy proceeding of any party under the contract.
- In case where the bid of the L-1 bidder is rejected on the aforesaid grounds during the period between Price-Bid-Opening and Award of Contract, then the bid of the next higher eligible bidder will be considered for further processing.
- If bidder fails to share or misrepresents the information regarding their status of insolvency resolution process or liquidation or bankruptcy proceeding as sought hereinabove and the bidder's bid results in a contract, IOCL, without prejudice to any other any other remedy or action available with IOCL, shall be within its rights to terminate the resultant contract.

An Undertaking shall be submitted by the bidder in the attached format along with the techno-commercial bid.

41. PENALTY CLAUSE IN CASE OF BREACH OF SAFETY:

The penalty for breach of safety during execution of works shall be levied by the Corporation as below:

- a) Violation of applicable safety, health and environment related norm, a penalty of Rs5000/- per occasion.
- b) Violation as above resulting in;
 - Any physical injury, a penalty of 0.5% of the contract value (max. of Rs 2 lacs) per injury in addition to Rs 5000/- as mentioned above.
 - Fatal accident, a penalty of 1% of the contract value (max. of Rs 10 lacs) per fatality in

addition to Rs 5000/- as mentioned above.

In case of any breach of contract (other than price reduction clause for delayed completion), recovery of requisite Goods and service tax amount over and above the penalty amount shall be done from the contractors bill.

42. PLANNING AND DESIGNING IN PURVIEW OF VULNERABILITY ATLAS OF INDIA:

42.1.0 Vulnerability Atlas of India (VAI) is a comprehensive document which provides existing hazard scenario for the entire country and presents the digitized State/UT-wise hazard, maps with respect to earthquakes, winds and floods for district-wise identification of vulnerable areas. It also includes additional digitized maps for thunderstorms, cyclones and landslides. The main purpose of this Atlas is its use for disaster preparedness and mitigation at policy planning and project formulation stage.

This Atlas is one of its kind single point source for the various stakeholders including policy makers, administrators, municipal commissioners, urban managers, engineers, architects, planners, public etc. to ascertain proneness of any city/location/site to multi-hazard which includes earthquakes, winds, floods thunderstorms, cyclones and landslides. While project formulation, approvals and implementation of various urban housing, buildings and infrastructures schemes, this Atlas provides necessary information for risk analysis and hazard assessment.

The Vulnerability Atlas of India has been prepared by Building Materials and Technology Promotion Council under Ministry of Housing and Urban Affairs, Government of India and available at their website www.bmtpc.org.

It is mandatory for the bidders to refer Vulnerability Atlas of India for multi-hazard risk assessment and include the relevant hazard proneness specific to project location while planning and designing the project in terms of:

- i) Seismic zone (II to V) for earthquakes,
- ii) Wind velocity (Basic Wind Velocity: 55, 50, 47, 44, 39 & 33 mis)
- iii) Area liable to floods and Probable max. surge height
- iv) Thunderstorm's history
- v) Number of cyclonic storms/ severe cyclonic storms and max sustained wind specific to coastal region
- vi) Landslides incidences with Annual rainfall normal
- vii) District wise Probable Max. Precipitation

SCOPE OF WORK

1. SCOPE OF WORK

1.1 PART-A(1)-EPC OF SOLAR POWER GENERATING SYSTEM

GENERAL:

Engineering, Procurement and Construction (EPC) Contract of 1 MWp Solar Power Project **(Ground Mounted)** on turnkey basis on the premises of IndianOil, SRPL Chittoor. It is, however, understood and confirmed by the Contractor that the scope as described in the tender document is not limiting in so far as the responsibilities of the Contractor shall include inter-alia, carrying out any and all works and providing any and all facilities those are required in accomplishing an operating system, complying fully with all requirements as are envisaged of it, complete in all respect and satisfying all Performance and Guarantee requirements stated or implied from the contents of the tender document.

The scope of work shall cover all civil, electrical & mechanical works, providing of labour, tools, plants, materials and performance of work necessary for the planning, design, engineering, manufacture, quality assurance, shop assembly/ testing, insurance, supply, packing & forwarding, transportation, unloading at site, site storage & preservation, installation, commissioning, performance testing, acceptance testing, training of the Owner's personnel, Comprehensive Operation & Maintenance of the SPV plant for a period of one year from the date of successful commissioning of the plant as detailed in tech specs, supply of all spare parts, consumables, repairs / replacement of any defective equipment etc., handing over plant to the Owner and guarantee of all equipment covered under the scope as per the technical specifications.

The Contractor shall make all required liaisoning with all the agencies including all concerned power utilities for finalization/signing of Net Metering Agreement, as per the applicability defined in Clause 39 of SCC Technical, and other required approvals/permits/agreements so as to commence utilization of the power generated from solar power plant soon after its commissioning.

The scope of work shall also include supply of approximately 900 mtrs of 2 nos. (i.e total of 1800 mtrs in length) of HT cable suitable for a voltage of 6.6 kV, out of which one will be used as spare at time of fault and also around 900m of LT cable for auxiliary supply of plant from owner's PMCC building.

Designing of all the equipment and systems along with test reports/OEM certifications, shall be submitted for owner/EIC for final approval. . The work shall be executed in conformity with the relevant applicable latest standards codes, rules/ordinances & regulations. The overall design & engineering of the plant shall be based on latest available technology and optimal usage of space to minimize losses and maximize efficiency.

The detailed scope of work shall include but not limited to following:

1.1.1 SUPPLY

The equipment and materials for Solar PV Power Plant with associated system(Typical) shall include but not be limited to the supply of the following:

A. DC side:

- a. Solar PV modules
- b. Solar PV Module mounting structures along with foundation bolts etc.
- c. DC cables including MC4 connectors and DWC pipes and communication cables
- d. String Monitoring Unit(s)/Box(s) with string level monitoring and disconnection switches, distribution boxes and fuse boxes, MCBs, and Surge Arrestor(s)
- e. Power Conditioning Unit(s)/Inverter(s)

B. AC side:

- a. Switchgear (LT)
- b. ACDBs for auxiliary power supply and required numbers of MCB Panels for power load distribution
- c. Inverter transformer(s) along with necessary auxiliary equipment
- d. Approx. 2 nos. of 0.9 km of 6.6 kV HT cables, one to be used as spare at the time of fault
- e. LT cables and 0.9 kms LT cable for solar plant auxiliary supply
- f. Communication, control and earthing cables
- g. Cable Trays
- h. SCADA System/ Micro-processor based remote monitoring system as per job specifications
- i. Earthing System
- j. Lightning Protection System
- k. Peripheral lighting/Plant illumination system
- l. Auxiliary Power Supply System
- m. UPS
- n. Battery and Battery Charger with provision of standby.
- o. Time Synchronisation System, if required for plant monitoring and performance evaluation
- p. Electrical Protection Systems with measuring instruments
- q. Metering System
- r. Bi-directional energy meters / Net Meters required for net metering scheme as per clause 39 applicability clause of SCC Technical, conforming to the standards, specifications and accuracy class as provided in the Central Electricity Authority (Installation and operation of Meters) Regulations, 2006, and applicable APSPDCL/STATE regulations/policies.
- s. Complete infrastructure/system to transmit plant data to SLDC, if required as per regulations.

- t. The output of solar plant is to be fed to 6.6 KV bus in HT panel in existing PMCC room after necessary synchronization.
- u. It shall be ensured that solar power generation and utilization is maximized. The balance power requirement shall be met from other sources i.e. Grid or LT Diesel Generator (DG). PCU shall take reference voltage from either of the source available (Grid/Diesel Generator).
- v. There should be no break in the supply while changing from one mode to another mode of operation.
- w. Solar Grid DG Management System shall be provided. The system shall have following features –
 - Linear control of solar output (0-100%)
 - Suitable for monitoring solar vs. grid power injection at captive load bus
 - Suitable for allowing flow of power to grid on all the days when in excess to the captive load requirement as per the net-metering facility.
 - Suitable for operating with different/multiple inverter make
 - All breakers available for Solar, Grid and DGs shall have NONC control contacts through which suitable wiring/cabling can be done from respective breakers to the Controller/Solar Grid DG Management System.
 - In general, the priority of usage of input energy sources should be in the following order:

Order of Priority	When Solar is available	When Solar is not available
First	Solar + Grid	Grid
Second	Solar + DG	DG

There should be no break in the supply (transfer time between supplies to be less than 10 milliseconds) while changing from one mode to another mode of operation, in case of hybrid system.

C. General Systems

- a. Weather Monitoring Station to measure solar insolation, ambient temperature, module temperature, wind speed.
- b. Metering instruments.
- c. Fire Detection and protection system which include fire alarm system installation in Main Control Room and inverter rooms and placement of fire extinguishers.
- d. Lightning Arrestors with its earthing system.
- e. Module cleaning System
- f. Security equipment such as IP night vision CCTV cameras, etc.
- g. Peripheral lighting system and garden lights along the length of peripheral and main roads.
- h. Danger plates, name boards etc.
- i. Any other equipment / material required to complete the Solar Power Plant on turnkey Basis.
- j. Chain link fencing of plant and Transformer(s) yard along with Entry gates

D. Spares

The Bidder shall include in his scope of supply all the necessary Mandatory spares as described elsewhere in the specifications.

E. Special tools & tackles and test/ measuring equipments

The contractor shall supply with the equipment the complete set of all special tools and tackles and other instruments required for the erection, assembly, disassembly and proper maintenance of the plant and equipment and systems (including software). These special tools will also include special material handling equipment, jigs and fixtures for maintenance and calibration / readjustment, checking and measurement aids etc. The price of each tool / tackle shall be deemed to have been included in the total bid price. These tools and tackles shall be separately packed and sent to site. All the tools and tackles shall be of reputed make acceptable to the Owner. List of such special tools and tackles to be provided and included in the O&M manual.

1.1.2 SERVICES

A. MOBILIZATION AT SITE

Storage facility for incoming material, arrangement of Power and Water requirement during project construction, Accommodation for the workforce required for construction.

B. CIVIL WORKS:

- i) Site development/ Land development including Contour survey, Soil investigation, clearing of bushes/trees, grading, leveling, compacting of the entire area of the plant premises, Excavation, Back filling, Stone pitching, geotechnical investigation of soil, water sample, rocks & geophysical parameters, meteorological data, shadow analysis etc., as required.
- ii) All requisite foundations and structures wherever required (PV array foundation, foundation for all array yard & outdoor switchyard equipments, Inverter & Control room etc.)
- iii) Requisite conduiting, cable trenches for routing cables as required in the
 - a. PV array field
 - b. Inverter rooms
 - c. Microprocessor based Remote Monitoring System/SCADA System
 - d. Main Control Room (MCR)
 - e. Outdoor/Indoor Power Electrical equipments
 - f. Connection to HT Switchyard
- iv) All external units/equipments such as Inverters, Distribution Boards if any, etc. shall be provided with suitable canopy structure for protection from rain and sun.

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- v) Arrangement of all requisite piping, valves & hoses for module washing water purpose and other services.
- vi) Ensure accessibility and free movement inside the solar plant, as required.
- vii) Providing proper drainage system for the plant by connecting to the main plant drain system.
- viii) Chain link fencing along the periphery of the project area as required, in case of ground mounted Solar PV system.
- ix) 1 no. tank of capacity 500 ltrs. for MCR building shall be required for water supply to MCR. For module cleaning system necessary pumps with piping to be installed for bringing water from existing openwell about 0.9 kms from plant. If the TDS value of the available water is greater than 75 ppm, RO system of adequate capacity to be installed to maintain TDS of water within 75 PPM. However if open well becomes non-functional during course of O&M and no other alternate water source is available, complete responsibility of arranging water for module cleaning of desired PPM will be of contractor. (To be adhering to Gazette notification ref No. CG-DL-E-24092020-221952 dated 24.09.2020)
- x) Construction of RCC main control Room. A separate battery room/partition should be equipped with proper flameproof exhaust and ventilation system with provision of eye wash. If PEB rooms are opted for housing of inverters, walls of PEB shall be of insulated panels.
- xi) Providing proper drainage system for the entire plant, all drains shall be lined/pucca, and connected to the existing Storm Drain Water system.
- xii) Adequate lighting provisions to be provided for internal approach road, Transformer yards and switchyard apart from peripheral lighting installation.
- xiii) Only LED lights to be provided in the plant (MCR, Inverter Room, peripheral lights, garden lights etc.) to minimise auxiliary consumption.

C. ENGINEERING DRAWINGS AND DATA:

The scope of the bidder includes complete design and engineering, technical coordination (including participation and arranging technical coordination meetings), finalization of drawings/documents, submission of engineering drawing / documents and processing for their approvals by the Owner. The complete design of the Solar Power Plant (such as PV Array configuration, selection of components and their ratings, etc.) shall be in line with the specifications defined in

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SCC Following documents in three copies each and in soft copy shall be submitted to Owner within 30 days of Award of Contract for review and reference and approval

- i) Design Basis Document for complete system designing.
- ii) Detail Technical Specifications and Guaranteed Technical Particulars (GTP) for all the equipments, components, systems and auxiliaries to be supplied within the scope of this tender. .
- iii) Organization chart consisting of name, designation and contact details.
- iv) Detailed list of drawings/designs indicating drawing for approval and drawing for information separately.
- v) General arrangement drawing for the project and site layout plan (duly certified by PMC) including
 - a) Plant Layout
 - b) Single Line Diagram of the power plant
 - c) SPV Array Layout drawing
 - d) Monitoring system configuration
 - e) Foundation drawing, if required
 - f) Switch gear – scheme of protection
- vi) Quality Assurance Plans including Field Quality Plan.
- vii) PERT/BAR diagram with critical path showing detailed time schedule of supply, erection and commissioning of the complete plant, including weekly level plans where applicable, periodic review schedules (weekly, fortnightly or monthly). The entire work schedule should be subdivided into micro activity schedule interval with details of review plan.
- viii) QAPs and all other engineering drawings and documents need to be approved by EIC/Owner before execution.

Further, the scope shall also include submission, in proper shape & format, of all types of manuals, handbooks & documents in requisite numbers to the Owner at different phases of the project as per the requirement of Owner.

Contractor shall share the unpriced Purchase Order/Work Order copy with Owner in line with the project execution as and when desired after placement of orders.

D. ALL STATUTORY CLEARANCES AND OTHER APPROVALS:

- i) All statutory clearances related to electrical works required from the concerned state power utilities/State Electricity Board / Central Electricity Authority/ Pollution Control Board/ State Nodal Agency/ Forest Department (if required) or any other statutory body shall be obtained by the Contractor, if required.
- ii) Arranging CEIG/ CEA Inspection clearance/permission to connect, as required, shall be in contractor's scope. The Contractor shall be responsible for interconnection of Solar PV

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power plant with the State grid connection and net metering agreement, as per the applicability defined in Clause 39 of SCC Technical.

- iii) Arranging APSPDCL /Other designated Agency approval for design, SLDs and technical specification of equipment to be installed as part of net-metering arrangement.
- iv) Capacity Registration with State Regulatory Agency, if required.
- v) For all the required clearances, liasioning, documentation and processing to be done by the Contractor. However, the fees / statutory charges to be reimbursed by the Owner on production of actual receipt.
- vi) Tentative list of approvals and clearances that may be required are as below:
 - a) Connectivity approval for net-metering, as per the applicability defined in Clause 39 of Chapter-5
 - b) Project registration, if applicable
 - c) Metering Approval, if applicable
 - d) Meter testing, CT, PT testing and inspection certificate
 - e) Clearance from Chief Electrical Inspector, if required
 - f) Certificate of commissioning - Nodal Agency /Local Agency etc.

E. ELECTRICAL AND ELECTRONICS WORK:

- i) Cable laying
 - a) Laying of cables in cable trenches including providing MS cable markers, including backfilling the trenches.
 - b) Making straight through joints using for cables as per applicable norms and site conditions.
 - c) Connection, termination and testing of cables to distribution boards
 - d) Cable laying shall be as per standards.
 - e) Wherever there is drainage or water flowing channels, the trenches should be water proof (i.e. brick lined/RCC) and filled with sand to prevent any water accumulation or cables should be laid in GI/ hume pipes or wherever cable is passing through drain; rerouting of cables should be done.
 - f) Laying of cables on prefabricated GI cable trays and / or within suspended ceiling spaces including cable trays, hangers, supports, cable terminations, all fixing accessories wherever required as per standard specifications.
- ii) Earthing System

Installation, testing and commissioning of earthing electrodes / earthing strips as per the requirements detailed in the technical specifications further.
- iii) Telecommunication works (OFC and LAN Cabling works)

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- iv) Contractor shall provide leased internet line for the Solar PV plant. Initial fixed cost for internet infrastructure to be borne by contractor. However monthly/recurring internet charges will be paid by owner.
- v) Contractor shall ensure additional replication of CCTV Coverage of Solar Plant area at IOCL CBPL control room (Distance of CBPL control room is around 0.9 kms from solar plant). Proper wiring and other necessary arrangement in regards to display of CCTV Coverage at the location needs to be ensured.
 - a) Remote accessibility of SCADA/Remote monitoring system to be provided at IndianOil CBPL control room for effective monitoring.
 - b) Contractor shall provide the port in Remote Monitoring System, all internal OFC/ telephone/ LAN cabling from modules arrays to PCUs to Remote Monitoring System to external OFC connection, as applicable.
 - c) Supply, laying, terminating and testing cables & connectors, as per required specifications, drawing and appropriate standards.
 - d) Supply, erection and installation of MS cable markers, including excavation and installation of Markers, cement concrete grouting, back filling etc. required as per drawing, specifications and directions of Site Engineer/ Engineer-in-charge including cost of all labour, tools & tackles, materials etc. complete in all respects.
 - e) Testing of all types of telephone cables, LAN cables, OFCs with their connectors installed in the plant as part of the work, after completing the laying work and before commissioning of the plant system. Providing assistance for integration of installed telephone cables with the Telecom System.
 - f) All electrical, civil, mechanical works related to the above job.
 - g) Remote Monitoring System as required with internet connectivity through leased line, and additional backup SIM Card connectivity facility

F. TRANSPORTATION OF EQUIPMENT FROM WORKS TO SITE, STORAGE AND ACCOMMODATION AT SITE

- i) All necessary permits and licenses, as may be necessary, to transport the equipment/ material, machinery, and labour along or across highway, roadway, railway, bridge, dike, dam, river or through posts of toll collection, octroi checks or other line border or barrier.
- ii) Receipt, unloading & installation of all supplied Equipment on Foundations at their respective places.
- iii) Proper storage of material before installation. Storage area shall be suitable to prevent equipment against rain & water logging.
- iv) Suitable accommodation for workforce outside IOCL premises.

G. QA/QC

Submission of QA /QC procedure for all activities in line with the detailed work specification, relevant codes /standards of practice for approval of EIC/Owner before start of any work at site. The works shall be executed in line with the approved QA /QC procedures.

H. QAP

QAPs shall be formulated and submitted after placement of purchase orders for equipments/components through manufacturer/OEM for approval of Owner in line with the specifications/requirements stipulated in the relevant standards/codes. The same shall be the abiding document for acceptance of the equipments/components in terms of Quality after Technical Specifications and respective Standards/Codes. QAP shall cover all the relevant Routine/Type tests mandatory to establish the quality of the supplied product.

I. TESTING

All acceptance and routine tests as per the specification, relevant standards and approved QAP shall be carried out at the cost of the contractor. The testing schedule for equipments/auxiliaries shall be intimated at least a week in advance. The test certificates for equipments/materials witnessed/inspected by Owner / PMC and/or Third Party Inspection Agency (as given in Annexure-5 of SCC) and certified by the respective Third Party Inspector shall be submitted for approval of PMC /OWNER before dispatch of respective equipment/auxiliary at site. The test certificates for those equipments/materials not witnessed/inspected by Third Party Inspection Agency shall be submitted for approval of PMC /OWNER before delivery of respective equipment/auxiliary at site.

J. PAINTING

Painting of all equipments and structures as per Owner's instruction. The quality and finish of paints shall be as per standards of BIS or equivalent.

K. TRAINING OF OWNER'S PERSONNEL

Providing a detailed training plan on Energy assessment, design, technologies, plant design, and erection & commissioning, operation & maintenance procedures, which shall, after approval by Owner, form the basis of the training program. Contractor shall impart classroom as well as field training on production engineering, plant and site to owner personnel during manufacturing, works, erection, testing & commissioning of the plant and associated equipments.

Expenses towards travel, stay, lodging, and boarding and other expenses for the owner personnel shall be borne by the OWNER.

L. SYNCHRONIZATION, COMMISSIONING AND COMMERCIAL OPERATION

- i) The Solar Power Project would be synchronized by the contractor to the local/captive Grid System after taking proper approvals for net-metering facility, as per the applicability defined in Clause 39 of SCC Technical. It shall meet all the connection conditions prescribed by State Electricity Regulatory Agency/Grid Sub-station and otherwise meet all other Indian legal requirements for synchronization to the Grid System.
- ii) Intimation to the Owner to give the concerned SLDC at least sixty (60) days advance preliminary written notice and at least thirty (30) days advance final written notice, of the date on which it intends to synchronize the Power Project to the Grid System. Synchronization of the SPV Power Project to the Grid System when it meets all the connection conditions prescribed in applicable Grid Code then in effect and otherwise meets all other statutory requirements for synchronization to the Grid System.
- iii) Installation of synchronization equipment at the SPV Power Project end. Project shall be synchronized with the Grid system only after the approval for synchronization scheme is granted by the head of the concerned substation/ Grid System and checking/ verification is made by the concerned authorities of the Grid System.
- iv) In addition to above, contractor shall prepare and submit running and pre commission checklist in discussion with Owner during construction and before commissioning of the plant.
- v) Owner shall reserve the right to conduct Technical Audit of solar PV Power Plant after completion of commissioning. Any technical lapses observed during the audit shall be rectified by contractor before end of contractual period.

M. PERFORMANCE GUARANTEE (PG) TEST

The performance guarantee tests shall be carried out as detailed in SCC Technical of the tender document. All special equipment, tools and tackles instruments, measuring devices required for the successful conductance of PG test shall be provided by the bidder, at his own cost. All costs associated with the PG tests shall be included in bid price.

N. CODES AND STANDARDS

The equipment and accessories covered by this specification shall be designed, manufactured and tested in accordance with the latest relevant standards and codes of practice published by the Bureau of Indian Standards (BIS), IEC, etc. as applicable. The quality of materials of construction and the workmanship of the finished products / components shall be in accordance with the highest standard and practices adopted for the equipment covered by the specification.

- i) All electrical equipment and installation shall conform to the latest Indian Electricity Rules as regards to safety, earthing and other essential provisions specified for installation and operation of electrical plants.

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- ii) All working parts, in so far as possible, are to be arranged for convenience of operation, inspection, lubrication and ease of replacement with minimum downtime. All parts of equipment or of standby equipments offered shall be interchangeable.
- iii) The quality of materials of construction and the workmanship of the finished products / components shall be in accordance with the highest standard and practices adopted for the equipment covered by the specification.
- iv) All items of equipment and materials shall be thoroughly cleaned and painted in accordance with relevant Indian Standards. The finish paint shall be done with two coats of epoxy based final paint of colour Shade RAL 7032 of IS:5 for indoor equipment.
- v) Any fitting or accessories which may not have been specifically mentioned in the specification but which are usual or necessary in the equipment of similar plant or for efficient working of the plant shall be deemed to be included in the contract and shall be provided by the Contractor without extra charges. All plant and apparatus shall be complete in all details whether such details are mentioned in the specifications or not.
- vi) All equipment shall be designed for operation in tropical humid climate at the required capacity in a minimum de-rating temperature of 50°C. Equipment shall be suitable for an ambient temperature range of -10°C to 50°C. Maximum relative humidity of 90% shall also be taken into consideration for design of equipment.

1.1.3 PART-A(2) - ONE YEAR INCLUSIVE O&M:

Contractor has to undertake comprehensive O&M of plant for one year from date of plant commissioning in line with the specifications mentioned in Part-B of Scope of Work.

1.2 PART-B – OPERATION & MAINTENANCE

The contractor shall perform comprehensive Operation and Maintenance (O&M) of the Solar Power Plant & power evacuation infrastructure for a period of four years after completion of one Year Inclusive O&M of Part-A. The scope of work includes, but not limited to, attending all repairs and maintenance jobs of the complete Solar Power Plant with whole Transmission network/Underground cable, plant switchyard, bay (upto metering cubicle) at GSS including supplying of materials. O&M shall be carried out as detailed in the job specification.

1.3.1 OPERATION AND MAINTENANCE SPECIFICATIONS

Bidder shall be responsible for all the required activities for successful running, optimum energy generation & maintenance of the plant, covering

- i) Keeping the plant in operational mode so as to get optimum energy generation
- ii) Maintaining necessary spares at all point of time to ensure minimum plant outage and immediate restoration upon any malfunction. Indicative list of spares to be available with the Contractor any time but not restricted to the following is as below:

- a. MC4 Connectors

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- b. MCCBs/MCB/AC & DC Fuses
- c. String Monitoring Box(s)
- d. Control Cards of each type for PCUs
- e. SMB Surge Arrestor/MOV
- f. WTI with contacts
- g. OTI with contacts
- h. Buchholz relay
- i. Set of gasket for Transformer
- j. MOG
- k. HV / LV Bushing with metal parts
- l. Circuit Breaker(s)
- m. Voltage/Potential Transformer(s)
- n. Current Transformer(s)

- iii) Regular maintenance of battery at periodic intervals
- iv) Monitoring, controlling, trouble shooting, maintaining of records and registers
- v) Supply of all spares, consumables and fixing/application of the same
- vi) Arranging equipments/instruments at his own cost as required from time to time for schedule and preventive maintenance, major overhauling of the project
- vii) Replacement of components/equipments, if required
- viii) General upkeep of all equipments, etc.
- ix) Submission of periodical reports to Owner about energy generation & operating conditions of the plant
- x) Continuous monitoring of performance of the plant and regular maintenance of the whole system including panels, outdoor kiosks, switchgear, equipments etc. for extracting and maintaining the maximum energy output from the plant
- xi) Regular cleaning of the module surfaces at pre-defined intervals as outlined in approved O&M plan
- xii) Continuous monitoring of plant performance through Remote Monitoring System/SCADA
- xiii) Frequent checking and calibration of instruments
- xiv) Developing a system of cross checking instrument indications with each other to determine whether the instrument is faulty or there is an abnormal operating condition
- xv) Developing a well-documented system of analyzing indicated data to determine accurately what could be wrong
- xvi) Monitoring and maintaining performance through operations & maintenance records
- xvii) Coordination with various agencies, departments for continuous operation, maximum generation and energy certification
- xviii) Comply with applicable rules and regulations

A. MAINTENANCE

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After taking over the activity of O&M for the power plant, the Operator shall be responsible for the operation and maintenance of the plant and shall perform all necessary services including applicable services listed (in brief) below:

- i) The Contractor shall formulate and get approved the preventive maintenance schedules and attend to the breakdowns keeping in view maximizing uptime and designed generation.
- ii) Regular periodic checks shall be carried out as a part of routine preventive maintenance.
- iii) Particular care shall be taken for outdoor equipment to prevent corrosion.
- iv) Cleaning of the components/equipments shall also be carried out at periodic intervals.
- v) Resistance of the earthing system as well as individual earth pits are to be measured and recorded quarterly. If the earth resistance is high(greater than 1 ohm in disconnected mode) , suitable action is to be taken to bring down the same.
- vi) The Contractor shall attend to any breakdown jobs as soon as possible for repair/replacement/adjustments and complete at the earliest working round the clock.
- vii) The Contractor shall immediately report the accidents, if any, to the EIC/Site-In-Charge & to all the concerned authorities as per prevailing law of the State, if required, showing the circumstances under which it happened and the extent of damage and / or injury caused. O&M Contractor would be solely & fully responsible / liable to pay for any losses/damages/claims, etc. and Owner will be fully indemnified for such losses / claims.
- viii) The Contractor shall comply with the provisions of all relevant acts of Centre or State, if required.
- ix) Government Acts including payment of Wages Act 1936, Minimum Wages Act 1948, Employer's Liability Act 1938, Workmen's Compensation Act 1923, Industrial Dispute Act 1947, Maturity Benefit Act 1961, Mines Act 1952, Employees State Insurance Act 1948, Contract Labour (Regulations & Abolishment) Act 1970 or any modification thereof or any other law relating thereto and rules made there under from time to time.
- x) The Contractor shall at his own expense provide all amenities to his workmen as per applicable laws and rules.
- xi) The Contractor shall ensure that all safety measures are taken at the site to avoid accidents to his or his Co-Contractor's or Owner's Workmen.
- xii) If in the event of negligence or mal-operation by the Contractor's operator, any failure of equipment take place, then such equipment should be repaired / replaced by Contractor free of cost within a reasonable period of time.
- xiii) Establish robust preventive maintenance system to maximize up time and to ensure peak generation in peak periods.
- xiv) Careful logging of operation data/historical information from the Data Monitoring Systems, and periodically processing it to determine abnormal or slowly deteriorating conditions.
- xv) Careful control and supervision of operating conditions.

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- xvi) Regulate routine maintenance work such as keeping equipment clean, preventive maintenance and checks of delicate ingredients of circuit breakers, junction boxes, module mismatches, Cleanliness of isolators to be ensured.
- xvii) Repairs and replacements to ensure maximum uptime for the plant.
- xviii) To undertake maintenance & repair of civil infrastructure like MCR, PEB, Drains, foundations etc. as and when required.
- xix) Critical drawings like SLDs, Earthing Layout Diagram (showing earthing connections), shock treatment charts etc. to be displayed at appropriate locations.

B. GENERAL O&M

- i) To maintain accurate and up-to-date operating logs, records and monthly reports regarding Operation & Maintenance of the facility.
- ii) To perform or contract for and oversee the Performance of periodic overhauls or maintenance required for the facility in accordance with the recommendations of the original equipment manufacturer.
- iii) To maintain and up-keep battery systems, control panels/switchgears, Inverters, and other solar PV systems/auxiliaries.
- iv) Proper ventilation of battery systems to be ensured at all times.
- v) To discharge obligations relating to retirement/ Superannuating benefits to employees (of the contractor) or any other benefit accruing to them in the nature of compensation, bonus /in addition to salary, etc. for the period of service with the Contractor.

JOB SPECIFICATIONS

A) DC SYSTEM

A.1 SOLAR PV MODULE

1. The technical details of Solar PV Modules shall be as given below:

S. No	Description	Details
1	Type of SPV Module	Mono Crystalline Silicon with PERC
2	Peak Power rating of Module	Shall not be less than 330 Wp at Standard Test Conditions
3	Module Efficiency	Should not be less than 17.5% at Standard Test Conditions
4	Fill Factor	0.75 (Minimum)

The Solar modules shall be selected in adherence to specifications laid out in the Tender Document.

2. Codes and standards

Shall comply to all the relevant standards, but not limited to the following,

Codes	Description
IEC 61215 / IS 14286	Crystalline silicon terrestrial photovoltaic (PV) modules – Design qualification and type approval
IEC 61730 – 1	Photovoltaic (PV) module safety qualification – Part 1: Requirements for construction
IEC 61730 – 2	Photovoltaic (PV) module safety qualification – Part 2: Requirements for Testing
IEC 62804-1	Photovoltaic modules – test methods for the detection of potential induced degradation – Part 1 : Crystalline silicon
IEC 62790	Junction boxes for Photovoltaic modules – Safety requirements and tests

Compliance to the PID free nature of PV modules shall be established and relevant certificate from accredited agency (UL, CE, TUV etc.) to be submitted for the same. Also manufacturer shall give certification that there is no claim or complaint against the manufacturer on account of PID.

The list of approved makes is given in **Annexure-3 of SCC Technical**.

3. Technical Requirements:

- 3.1 SPV module shall perform satisfactorily in relative humidity up to 85% $\pm$ 5% with operating temperatures between -10°C & +85°C and shall withstand wind speed of 180 kmph.

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- 32 The PV modules shall be equipped with bypass diode to minimize power drop caused by shade.
- 33 The module frame shall be made of anodized Aluminium or corrosion resistant material frame, which shall be electrolytically compatible with the structural material used for mounting the modules with sufficient no. of grounding installation. The anodizing thickness shall be 15 micron or more.
- 34 The actual module power capacity shall not vary by more than +3% from its minimum certified module power capacity. No negative tolerance shall be accepted.
- 35 The negative temperature co-efficient for power output of the Solar PV module shall not be more than 0.41% / °C.
- 36 All photovoltaic modules shall have linear performance warranty from second year. The solar PV modules offered shall not degrade more than 3% in first year and not more than 0.7% from second year of its rated power.
- 37 Each Solar PV modules used in solar power plants/ systems must be warranted for their output peak watt capacity, which shall not be less than 90% at the end of 10 years and 80% at the end of 25 years from the completion of the trial run.
- 38 The module mismatch losses for modules connected to an inverter shall be less than 2%.
- 39 Module shall be PID free. The modules shall be provided with anti reflection coating and back surface field (BSF) structure to increase conversion efficiency.
- 3.10 The SPV module shall be made up of impact resistant, low iron and high transmissivity toughened glass. The front surface shall give high encapsulation gain.
- 3.11 The SPV modules shall have suitable encapsulation and sealing arrangements to protect the silicon cells from environment. The encapsulation arrangement shall ensure complete moisture proofing for the entire life of solar modules. Encapsulation for superstrate and substrate shall be of min. 0.45 mm thickness.
- 3.12 Bus bar of modules shall be distributed type of 4 BB and above.
- 3.13 The equipment shall be designed to give efficient and reliable performance and shall be such that the risks of accidental short-circuit due to animals, birds or vermin are obviated.
- 3.14 The data sheets of all modules shall be provided. The exact power of the module shall be indicated if the data sheet consists of a range of modules with varying output power.
- 3.15 Module Junction box and Terminal Block shall be of high quality (IP 67 rated) fitted at the back side and shall be weather proof and designed to be used with standard wiring or conduit connection. Each Junction Box shall contain Bypass Diode. They shall have a provision for opening /replacing the cables, if required. The module junction box shall be certified as per IEC 61215.

- 3.16 Each module shall have two UV resistant output copper cables (of min. 4 sq.mm), min. 1 metre length of 1500 Vdc rating each terminated with connectors adaptive to MC4 type connector directly. MC4 type connector should have typical certification from testing agencies such as TUV, competent for the purpose. Cable shall comply to EN50618 and TUV Pfg 1990/05.2012 standards.
- 3.17 The typical solar PV module electrical characteristics including current-voltage (I-V) performance curves and temperature coefficients of power, voltage and current shall be provided for all the modules supplied. However, the tabulated document with all the relevant data like voltage, current, power output for each module is also required to be provided along with the supply.
- 3.18 Modules deployed must use a Radio Frequency Identification (RFID) tag for traceability. It shall contain the following information:
- a) Name of the manufacturer of the PV module
 - b) Name of the manufacturer of Solar Cells
 - c) Month & year of the manufacture (separate for solar cells and modules)
 - d) Country of origin (separately for solar cells and module)
 - e) I-V curve for the module
 - f) Wattage, I_{mp} , V_{mp} and FF for the module
 - g) Unique Serial No. and Model No. of the module
 - h) Number and Date of IEC PV module qualification certificate
 - i) Name of the test lab issuing IEC certificate
 - j) Other relevant information on traceability of solar cells and module as per ISO 9001 and ISO 14001
- 3.19 All individual modules shall be provided with Name Plate label at the back of module which shall provide the information given below for identification. They shall be clearly visible and shall not be hidden by equipment wiring. Type of labels and fixing of labels shall be such that they are not likely to peel off/ fall off during the life of the panel.
- a) Manufacturer's Name
 - b) Model Number, Serial Number
 - c) Overall Dimensions (WxLxD)
 - d) Weight (kg)
 - e) Maximum Power (P_{max}), Voltage (V_{mp}), Current (I_{mp})
 - f) Short Circuit Current (I_{sc}), Open Circuit Voltage (V_{oc})
 - g) Main System Voltage
 - h) Relevant standards, Certification lab. name

i) Warnings, if any

3.20 Testing of solar PV modules:

PV modules must qualify test from IEC/NABL accredited laboratory as per relevant IEC standard and report/certification of the same must be attached. The performance of PV modules at STC conditions must be tested and approved by one of the IEC / NABL Accredited Testing Laboratories / Solar Energy Centre of MNRE/ any other MNRE authorized test laboratories/centres. OWNER on its discretion can ask EPC Contractor to advise the manufacturer to get the modules tested at third party laboratory. Sample size for testing will be 4 modules. Cost for the testing at third party laboratory shall be borne by the EPC Contractor.

A.2 MODULE MOUNTING STRUCTURES

1. General:

The PV modules shall be mounted on metallic structures called Module Mounting Structures (MMS) having adequate strength and appropriate design, which can withstand the load of the modules and design wind pressure.

Module mounting structure with fixed tilt, south facing orientation and **tilted as per site location** from the horizontal is proposed in order to maximize the total annual incident solar irradiation. Bidder may propose a different orientation or design to achieve better generation with detailed documentary proof.

The mounting structures shall withstand the maximum wind speed of the location. The Contractor shall establish the maximum wind speed of the location through relevant standards (IS 875 and other relevant standards) to the EIC/Owner.

Proper design and calculations report pertaining to foundations and structures duly certified by Independent Chartered Structural/Civil engineer shall be submitted to EIC/owner for approval prior to commencement of work at site. Certification from independent Chartered Structural/Civil Engineer for conformance to adherence of technical specifications laid out for Module Mounting Structure shall also be submitted.

Any additional statutory clearances as required for complying to the Oil Industry/other regulatory

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agencies norms shall have to be ensured by the Contractor.

2. Codes and Standards:

Shall comply to all the relevant standards, but not limited to the following,

Codes	Description
UL 2703	Standard for Mounting Systems, Mounting Devices, Clamping/Retention Devices, and Ground Lugs for Use with Flat- Plate Photovoltaic Modules and Panels
IS 2062	Hot rolled medium and high tensile structural steel specification
IS 4759	Hot-dip zinc coatings on structural steel and other allied products
IS 2629	Recommended practice for hot-dip galvanizing of iron and steel
IS 3043/ IEEE 80	Code of practice for earthing
IS 513	Cold-rolled low carbon steel sheets and strips
IS 808	Dimensions for hot-rolled steel beam, column, channel and angle sections
IS 811	Cold formed light gauge structural steel sections
IS 800:2007	Code of practice for General construction in steel of Hot Rolled
IS 801: 1975	Code of practice for cold formed steel
IS 456-2000	Plain and Reinforced Concrete Code of Practice
IS 2911-1 &2 : 2010	Code of practice for design and construction of pile foundations

The list of approved makes is given in **Annexure-3 of SCC Technical**.

3. Technical Requirements:

- All solar panels must be accessible from the top for cleaning and from the bottom for access to the module junction box.
- Adequate walking space shall be made available between the SPV arrays to allow walkway for maintenance personnel.

The module mounting structure members, of minimum 2mm thickness (including truss, purlins and other supporting members) and made of hot dip galvanized MS profiles/ hot rolled/ cold formed steel sections. Proper design and calculations report should be provided to Owner. The minimum thickness of galvanization shall be at least 80 microns or higher as per IS 4759:1996.

- c) All nuts & bolts shall be made of very good quality stainless steel of grade SS 304 or higher. However if particular clamps for which extrusion is not possible in SS 304 material and are not available in the market (documentary evidence to be provided), same can be manufactured from Aluminium 6063 T6 after taking proper approval from owner. Nut & bolts, supporting structures including module mounting structures shall have to be adequately protected against all climatic condition and all galvanic corrosion at contact point of dissimilar metals.
- d) Purlins shall be fabricated from MS profile of min. 2mm thickness to avoid bending. Bent purlins will be rejected.
- e) The minimum clearance of the lowest part of the module structure and the developed ground level shall not be less than 500 mm in case of ground mounted. The base columns shall be made with reinforced cement concrete or structure column integrated with PCC pile foundation. Foundation dimensions to be decided based on soil conditions, geographical condition, regional wind speed, bearing capacity, slope stability etc. The foundation for module mounting structure shall be adopted as per the design basis report approved by the Owner. In general, depth of foundation shall be uniform for all the foundation structures and depth shall be finalized considering worst soil conditions where maximum foundation depth is required.
- f) Pile capping of min. 300 mm. Above FGL to be ensured.
- g) Foundation bolts, if applicable shall be of high tensile grade 8.8 steel (galvanised) or galvanised / painted rebar FE-500 grade.
- h) The structure shall support Solar PV modules in Portrait orientation, absorb and transfer the mechanical loads to the ground and roof properly.
- i) The legs of the module support structures made with standard structural section profiles of appropriate size.
- j) L connectors, sag rods and any other structure items need to be free from bends and any other structural deformity.
- k) All mechanical items must be supplied as per approved drawing, BOQ and as per direction of EIC.

4. Drawings and documents

Proper design and calculations report should be provided to IOCL for approval.

A.3 STRING MONITORING UNIT(S)/BOX(S)

- 1. SMUs are used in multi-string photovoltaic systems to combine the individual strings electrically and connect them to the Inverters/PCUs.
- 2. The SMBs shall be selected in adherence to specifications laid out in the Tender Document.
- 3. SMUs shall be installed with a canopy cover of adequate dimensions and at a minimum distance of 1 metre from Solar PV modules.
- 4. Codes and Standards:

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Shall comply to all the relevant standards, but not limited to the following,

<u>Codes</u>	<u>Description</u>
IEC 62093	Balance-of-System components for Photovoltaic systems-design qualification
IEC 60269-6	Low-voltage fuses - Part 6: Supplementary requirements for fuse-links for the protection of solar photovoltaic energy systems
IEC 62262	Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts
IS 2147/ IEC 60529	Degree of protection provided by Enclosures (IP Code)
IEC 61643	Low-voltage surge protective devices
IS 3043/ IEEE 80	Code of practice for earthing

List of approved makes is given in Annexure-3 of SCC Technical.

5. Technical Requirements:

SMU shall be equipped (but not limited to) with the following

- a) Monitor / Read the individual string currents, voltage and total current of all the strings connected to SMU.
- b) DC Disconnecter /Breaker to disconnect the PV strings from the Inverter for maintenance purpose. It shall be of on-load disconnecter type. Disconnecter switch shall be in separate enclosure such that it can be operated from outside without opening enclosure and shall have lock for restricted usage.
- c) String fuses (one for each string)
- d) Surge Protection Devices for protection against surge currents and voltages. Should have installed type II SPD and proper earthing arrangements.
- e) Suitable cable entry points with cable glands of appropriate sizes for both incoming and outgoing cables.
- f) Suitable markings provided on the bus bar for easy identification, and cable ferrules/marker strips fitted at the cable termination points for identification.
- g) Other associated items like cable glands, lugs and items required for the protection and completeness of the system.
- h) Should be very low power consuming.
- i) SMU enclosure/frame shall be earthed through two distinct earthing paths.
- j) SMU shall have processor/ controller to monitor all the above parameters and shall communicate and transfer the required data to the Remote Monitoring System.
- k) Provide a test point for each sub-group for quick fault location.

- l) The following parameters shall be available at SCADA System for monitoring the health of the each PV string:
- i) Individual string current
 - ii) Bus voltage at the output of each SMU
 - iii) Total current of SMU
 - iv) Total Power at each SMU
 - v) Based on string current and voltage measured at SMU level, KW & KWH values for each strings to be derived & displayed at Remote Monitoring System.
 - vi) Status of Disconnecter Switches, Fuses and MOVs

The design and components of the SMU shall be approved by IOCL prior to placement of orders.

6. DC Surge Protection Devices (SPD):

SPD shall consist of three Metal Oxide Varistors (MOV) type surge arrestors which shall be connected from positive and negative bus to earth. As per IEC 61643-11/12, nominal discharge current (I_n) at 8/20 microseconds shall be at least 10 KA with maximum discharge current (I_{max}) of at least 20 KA at 8/20 microseconds. The I_{scwvp} (Short Circuit current withstand capacity) of arrester would be at least 10% more than nominal output current of the combiner box and Array Junction Box. Detailed internal schematic for the above SPDs, compliant to these specifications, shall be submitted by the manufacturers. During earth fault and failure of MOV, the SPD should safely disconnect the healthy system. SPD shall have thermal disconnecter to interrupt the surge current arising from internal and external faults. In order to avoid the fire hazard due to possible DC arcing in the SPD due to operation of thermal disconnecter, the SPD shall be able to extinguish the arc. Earthing of SPD shall be as per manufacturer's recommendations.

7. SMU Enclosure:

SMU Enclosure shall satisfy the following requirement

- a) The enclosure shall be fire retardant with self-extinguishing property and free from Halogen and Silicon conforming to RoHS directive 2002/95/EC.
- b) Degree of protection for enclosure shall be at least IP 67 (for outdoor) or IP 42 (for indoor) or above and the enclosure shall be UV protected.
- c) Shall be double insulated with protection class II as per IEC 61439-1.
- d) Separate enclosure for DC disconnecter switch to be provided away from main enclosure.
- e) The mechanical impact resistance of enclosure shall be IK 07 or better to protect against impacts as per IEC/EN 62262 or equivalent standard. Operating ambient temperature rating shall be at least in bracket of -10°C to +60°C. Design calculation verifying the capability of SMB enclosure to withstand temperature rise shall be submitted for PMC/IOCL approval.
- f) Shall be chemically resistant to acid, lye, petrol, and mineral oil & partially resistant to benzene.

- g) In each SMU 5% spare terminals (along with cable glands) rounded off to next higher integer shall be provided to connect the PV strings.
- h) Minimum requirements for fire protection in the event of internal faults in accordance with IEC 60695-2-11.
- i) Breather glands to prevent overheating and explosions.

A.4 POWER CONDITIONING UNIT(S)/ INVERTER(S)

1. The string inverters shall be designed to supply the three phase AC power to the grid conforming to the requirement of all relevant standards. The power conditioning unit shall be capable to adjust the output voltage & frequency to suit the grid condition. Sizing of inverter shall be finalized after submission of proper design calculations to IOCL for approval. For sizing of inverter, the contractor shall select Inverters with DC:AC power capacity ratio as 1:1 at maximum operating temperature. The array output shall be well within the input voltage range of the inverter so that the inverter works in MPPT range for most of the solar insolation range. This should be applicable for the whole life of the solar array. Necessary all weather room/covered structure/cabin to be provided for inverter area for safe operation by operator during all weather conditions.

The Inverters shall be selected in adherence to specifications laid out in the Tender Document.

2. Codes and Standards:

Shall comply to all the relevant standards, but not limited to the following,

Codes	Description
IEC 61727	Photovoltaic (PV) systems - Characteristics of the utility interface
IEC 61683	Photovoltaic systems –Power Conditioners – Procedure for measuring efficiency
IEC 62116-2014	Utility-interconnected photovoltaic inverters – Test procedure of islanding prevention measures
IEC 62109-1 & 2	Safety of power converters for use in photovoltaic power systems
UL 1741	Standard for Inverters, converters, controllers and interconnection system equipment for use with distributed energy resources
IEEE 929-2000	Recommended Practice for Utility Interface of Photovoltaic (PV) Systems
IEC 62894	Photovoltaic Inverters - Data Sheet and Name Plate
IEC 62910	Utility-interconnected photovoltaic inverters - Test procedure for low-voltage ride through measurements
IEC 62891	Indoor testing, characterization and evaluation of the overall efficiency of photovoltaic grid connected inverters

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IEC 61000	Electromagnetic Compatibility
IEC 60068	Environmental Testing
IS 3043/IEEE 80	Code of practice for earthing

For tests like Anti Islanding (IEC 62116) and efficiency measurement (IEC 61683), third party tests from NABL accredited labs shall be acceptable.

The list of approved makes is given in **Annexure-3 of SCC Technical**.

3. General Requirements:

2.2.4.1 The inverter output shall always confirm to the grid in terms of voltage and frequency.

2.2.4.2 Technical details required for Inverters to be installed shall be as under

Parameters	Values
Output frequency	50 Hz $\pm$ 0.5% Hz
Maximum Input voltage	1000 V DC
THD (Current)	Less than 3%
Power factor control range	0.9 lag to 0.9 lead
No load losses	<1% of rated power and maximum loss in sleep mode shall be less than 0.05%
Ambient temperature	As per site conditions
Humidity	95% non-condensing
Enclosure (type)	IP 65 or better (Outdoor rated) IP 42 or better (Indoor rated)
Overload Capacity	125% for 10 min 120% at 25°C continuous on DC side
DC Injection	Less than 0.5% of nominal load current
Electromagnetic Compatibility	As per IEC 61000
Noise level	Less than 85 dB at 1 mt.

2.2.4.3 The efficiency of the PCU shall be at least 97% at 75% load. The conversion efficiency for PCU at different loads 10%, 25%, 50%, 75%, 100%, 120% shall be submitted during design approval.

2.2.4.4 PCU shall have Low Voltage Ride-Through (LVRT) feature to provide support during grid fault/disturbance.

2.2.4.5 PCU shall have the facility of recording solar energy (KWh) generated at the output of PCU in addition to PV voltage, PV current (in Amps), Instantaneous PV power, daily PV power generated & cumulative PV power generated.

2.2.4.6 Maximum Power Point Tracker (MPPT) shall be integrated in the PCU to maximize energy drawn from the Solar PV array. The MPPT shall be microprocessor based to minimize power losses. The operating voltage range of PCU and the MPPT shall be large enough so that it satisfactorily operates for PV modules exposed to the ambient temperature range of -10°C to 60°C.

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- 2.2.4.7 DC lines shall have suitably rated isolators to allow safe start up and shut down of the system.
- 2.2.4.8 The PCU must have the feature to work in tandem with other similar PCUs and to be successively switched "ON" and "OFF" automatically based on Grid availability/Solar radiation variations during the day.
- 2.2.4.9 The PCU shall have anti-islanding protection as per the relevant IEC standards.
- 2.2.4.10 Minimum operating temperature range: (-)10⁰C to (+)60⁰C.
- 2.2.4.11 Remote as well as local monitoring shall be provided. Built-in data logger (to record all the important operational parameters and all the events) to monitor plant performance through external PC shall be provided. The communication shall be in such a way that the PCU can be monitored with the help of appropriate software from the centralized system. The PCU shall have the facility to provide the analysis for reason of tripping, in cases of inadvertent tripping.
- 2.2.4.12 MOV type surge arrestors shall be provided on all PV inputs for overvoltage protection against lightening induced surges.
- 2.2.4.13 PCU shall have feature to be regulated from 0-99% in steps of minimum 1%.
- 2.2.4.14 PCU shall include ground lugs for equipment and PV array groundings. The DC circuit ground shall be a solid single point ground connection.
- 2.2.4.15 PCU shall have power export control. PCU shall have the facility to export excess PV power to grid in case consumption of load is less than the generation and net/gross metering is available. The provision should be there to enable and disable this export feature. PCV should also suitable for feeding internal HT load through transformer without net/gross metering facility.
- 2.2.4.16 All external units/equipments such as Inverters, Distribution Boards if any, etc. shall be provided with suitable canopy structure for protection from rain and sun.
- 2.2.4.17 PCU shall be tropicalized and design shall be compatible with conditions prevailing at site. Provision of exhaust fan with proper ducting for cooling of PCUs shall be incorporated in the PCUs.
- 2.2.4.18 Nuts, bolts and the PCU enclosure shall have to be adequately protected taking into consideration the atmosphere and weather prevailing in the area.
- 2.2.4.19 Rubber mats, as per IS 15652, shall also be provided in front and backside of the PCU panel.
- 2.2.4.20 Display:
- PCU shall have the facility to display the basic parameters of the system on in-built LED/LCD display on its front panel or on separate data logging/display device to display following or through any other indication means:

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- a) DC Input Voltage
- b) DC Input current
- c) AC Output Voltage
- d) AC Output Current
- e) AC Power output (kW)
- f) AC Energy output (KWh)
- g) Frequency
- h) Temperatures ($^{\circ}\text{C}$)
- i) Over frequency
- j) Under frequency
- k) Inverter ON/OFF
- l) Grid ON/OFF
- m) Inverter over-load
- n) Inverter over-temperature

2.2.4.21 Protections:

Following is an indicative list of protections (the actual scheme shall be finalized at design stage):

- a) Over-voltage both at input and output
- b) Over-current both at input and output
- c) Over/under grid/bus frequency
- d) Over temperature
- e) Reverse polarity protection
- f) Array ground fault protection
- g) Protection against earth leakage faults (DC as well as AC side)
- h) Protection against lightning induced surges
- i) Protection against surge voltage induced at input and output due to external source
- j) Provision for input & output isolation
- k) PCU shall have arrangement for adjusting DC input current and should trip against sustainable fault downstream and shall not start till the fault is rectified.

2.2.4.22 In addition, PCU shall ensure following protection measures:

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- a) MCBs/MCCBs shall be provided for systems connected to PCU/Inverter.
- b) The PCU shall include appropriate self protective and self diagnostic feature to protect itself and the PV array from damage in the event of PCU component failure or from parameters beyond the PCUs safe operating range due to internal or external causes. The self-protective features shall not allow signals from the PCU diagnostic circuit to cause the PCU to be operated in a manner which may be unsafe or damaging. Faults due to malfunctioning within the PCU, including commutation failure, shall be cleared by the PCU protective devices.
- c) Automatic reset of all non-critical faults such as overloads, AC over voltage/under voltage, etc. once the fault has been cleared.

2.2.4.23 Operating modes of PCU:

- a) LOW VOLTAGE MODE: The control system shall continuously monitor the output of the solar PV plant. Once the pre-set value is exceeded, PCU shall automatically “wake up” and begin to export power provided there is sufficient solar energy and the PCU voltage and frequency are in the specified range.
- b) ACTIVE Maximum Power Point Tracking (MPPT) MODE (HIGH POWER MODE): When solar radiation increases further, the PCU shall enter Maximum Power Point Tracking (MPPT) mode and adjust the voltage of the SPV array to maximize solar energy fed into the grid. When the solar radiation falls below threshold level, the PCU shall enter in low power mode.
- c) SLEEP MODE: Automatic ‘sleep’ mode shall be provided so that unnecessary losses are minimized at night.

2.2.4.24 DC side of each inverter shall be earthed as per PV module manufacturer’s recommendations. The earthing design for the same shall be submitted to EIC/Owner for final approval. Separate grid is to be formed for DC side earthing of inverters.

2.2.4.25 The PCU shall withstand the environmental tests as per IEC 60068 or equivalent Indian Standard, with the PCU working at full load for at least last half an hour. Environmental test results in respect of any similar design PCU for at least 500 KWp SPV systems will be adequate.

B) AC SYSTEMS

B.1 LT SWITCHGEAR

1 General:

235.1 3-phase, 50 HZ, LT switchgear system would consist of various LT Switchgear boards in between PCU and HT transformer as per the design requirement. The scope would include standard load distribution boards complete with cubicles, protection, metering, bus-bar system, cabling, wiring and other accessories, each comprising of following major equipment and the quantities/ratings of which shall be finalized during detail engineering, duly certified by Independent Chartered Electrical Engineer and approved by EIC.

All the above boards shall be metal enclosed 415 V switchgear type, complete with suitably rated

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- a) Draw out type incoming Air Circuit Breaker (ACB),
- b) All necessary AC bus bars
- c) Local control switches,
- d) Indicators (LED Type) as per requirement,
- e) All necessary auxiliaries for control and supervisory circuits, and other relays as required,
- f) Other additional feeder units necessary to fulfil the requirements of the specification and sockets etc.,
- g) All secondary wiring, terminal blocks, labelling and nameplates, sockets etc.,
- h) Cubicle lighting including lighting fixtures and power and communication sockets,
- i) Cubicles heating including heating elements/space heater.
- j) Coordination and provision of necessary contacts and/or ports for integration with plant Remote Monitoring System
- k) Any other item(s) not mentioned specifically but necessary for the satisfactory completion of system will be in scope of supply.
- l) Surge Protection Devices
- m) Required no. of MCCBs and ELCBs
- n) Numerical Relays, with the provision of in-built event logger
- o) Required no. of Multifunction meters
- p) Bus bars

2352 Technical Requirements:

Location	Indoor
No. of bus bars, 3-phase	1
Rated voltage , V	As per the system configuration requirement
Rated frequency Hz	50 $\pm$ 0.5 Hz
Rated circuit breaker short circuit	50 KA
breaking capacity	
Protection Class	Min. IP 42 or better as per requirement of location (indoor) Min. IP 65 or better (outdoor)
Control voltage, DC	Uninterrupted supply through power pack/UPS with voltage level as per system requirement
Auxiliary AC supply, 3 phase	415 $\pm$ 10 %
Control and auxiliary power supply source	Reliable supply to the control and power circuit
Material of Bus bar	Aluminium alloy / copper

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Type of Earthing	Solidly earthed

- 2353 List of approved makes is given in Annexure-3 of SCC Technical.
- 2354 The Switchgear(s) shall be selected after conformance by Independent Chartered Electrical Engineer for adherence to specifications laid out in the Tender Document. A duly certified conformance certificate from Independent Chartered Electrical Engineer needs to be submitted before placement of purchase order.
- 2355 Codes and Standards

Shall comply to all the relevant standards, but not limited to the following:

Codes	Description
IS/IEC 60529	Degrees of protection provided by enclosures (IP Code)
IEC 60439 / IS 8623	Low-voltage switchgear and control gear assemblies
IEC 60364	Low-voltage electrical installations
IS/IEC 60947	Low-voltage switchgear and control gear
IS 3072	Code of practice for installation and maintenance of Switchgear
IS 3231	Electrical relays for power system protection
IS 13703 / IEC 60269	Low voltage fuses for voltage not exceeding 1000 V AC or 1500 V DC - specification
IEC 61643	Low-voltage surge protective devices
IS 3043/IEEE 80	Code of practice for earthing
IS 14697	AC Static Transformer Operated Watt-hour and VAr-hour Meters - Class 0.2 S and 0.5 S - Specification
IS 13010	AC Watt-hour Meters - Class 0.5, 1 and 2 - Specification

2 CONSTRUCTIONAL DETAILS OF SWITCHBOARDS:

- All Switchboards shall be of metal enclosed, indoor, floor-mounted, free-standing type.
- Hinged doors and removable covers shall be provided wherever necessary to allow access to all equipment. The frame of the cubicles shall be sufficiently sturdy to ensure safe transport, mounting and operation without deformation or bulging. Natural ventilation as required shall be provided. Continuous lifting angle or lifting hooks shall be provided to facilitate the installation of cubicles.
- All panel edges and cover / door edges shall be reinforced against distortion by rolling, bending or by the addition of welded reinforcement members. The top covers of the panels should be designed such that they do not permanently bulge/ bend by the weight of maintenance personnel working on it.
- All switchboards shall be of dust-proof and vermin-proof construction and shall be provided with a degree of protection of IP42 as per relevant IS/IEC 60529.

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- e) All switchboards shall be divided into distinct vertical sections (panels), each comprising of the following compartments:
- i) **BUSBAR COMPARTMENT:** A completely enclosed bus bar compartment shall be provided for the horizontal and vertical busbars. Bolted covers shall be provided for access to horizontal & vertical busbars and all joints, for repair and maintenance, which shall be feasible without disturbing any feeder compartment. Auxiliary and power busbars shall be in separate compartments.
 - ii) **SWITCHGEAR / FEEDER COMPARTMENT:** All equipment associated with an incomer or outgoing feeder shall be housed in a separate compartment of the vertical section. Two-tier breaker arrangement in a vertical section shall be offered for outgoing breaker feeders as per the SLD configuration and design approved by Owner. The compartment shall be sheet steel (minimum 2 mm thickness) enclosed on all sides with the withdrawable units in position or removed. The front of the compartment shall be provided with the hinged single leaf door with captive screws for positive closure.
 - iii) **CABLE COMPARTMENT OR CABLE ALLEY:** A full-height vertical cable alley of minimum 250mm width shall be provided for power and control cables. Cable alley shall have no exposed live parts and shall have no communication with busbar compartment. Wherever cable alleys are not provided for distribution boards, segregated cable boxes for individual feeders shall be provided at the rear for direct termination of cables. For circuit breaker external cable connections, a separately enclosed cable compartment shall also be acceptable. The contractor shall furnish suitable plugs to cover the cable openings in the partition between feeder compartment and cable alley. Cable alley door shall be hinged.
 - iv) **CONTROL COMPARTMENT:** A separate compartment shall be provided for relays and other control devices associated with a circuit breaker.

3 POWER BUSBARS AND INSULATORS:

- a) All 415V Switchboards shall be provided with three phase and neutral busbars. Two separate sets of vertical busbars shall be provided in each panel of double front MCCs. Interleaving arrangement for busbars shall be adopted for switchboards with a rating of more than 1600A. DCDBs shall be provided with two (2) busbars. Entire busbar system shall be insulated with PVC sleeves.
- b) All busbars and jumper connections shall be of high conductivity aluminium alloy / copper of adequate size.
- c) The cross-section of the busbars shall be uniform throughout the length of switchboard section and shall be adequately supported and braced to withstand the stresses due to the specified short circuit currents. Neutral busbar short circuit strength shall be same as main busbars.
- d) All busbars shall be adequately supported by non-hygroscopic, noncombustible, track-resistant and high strength sheet molded compound or equivalent type polyester fiber glass molded insulator. Separate supports shall be provided for each phase and neutral busbar. If a common support is provided, anti-tracking barriers shall be provided between the supports. The busbar insulators shall be supported on the main structure.
- e) All busbar joints shall be provided with high tensile steel bolts, Belleville / spring washers and

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nuts, so as to ensure good contacts at the joints. Non-silver plated busbar joints shall be thoroughly cleaned at the jointed locations and suitable contact grease shall be applied just before making a joint. All bolts shall be tightened by torque spanner to the recommended value. The overlap of the busbars at each joint surface shall be such that the length of overlap shall be equal to or greater than the width of the busbar. All copper to aluminum joints shall be provided with suitable bimetallic washers.

- f) All busbars shall be colour coded as per IS: 375.
- g) Calculations establishing the adequacy of bus bar sizes for specified current ratings shall be submitted for approval of Owner before placing the order/start of construction of LT Switchgear unit.

4 CIRCUIT BREAKERS:

- a) Circuit breakers shall be three pole, air break, horizontal draw out type.
- b) Circuit breakers along with its operating mechanism shall be provided with suitable arrangement for easy withdrawal. Suitable guides shall be provided to minimize misalignment of the breaker.
- c) All circuit breakers shall be provided with atleast "6 NO" and "6 NC" potential free auxiliary contacts. The contacts dedicated for the Owner's use shall be made to operate only in breaker service position condition. These contacts shall be in addition to those required, for internal mechanism of the breaker and should be directly operated from breaker operating mechanism.
- d) Main poles of the circuit breakers shall operate simultaneously in such a way that the maximum difference between the instants of contacts touching during closing shall not exceed half a cycle of rated frequency.
- e) Circuit-breaker cubicles shall be provided with safety shutters operated automatically by the movement of the circuit breaker carriage, to cover the stationary isolated contacts when the breaker is withdrawn. It shall however be possible to open the shutters intentionally against pressure for testing purposes.
- f) Breaker of particular rating shall be prevented from insertion in a cubicle of a different rating.
- g) Circuit breakers shall be provided with coded key / electrical interlocking devices, as per requirements.

5 MCCB:

- a) MCCB shall be fixed type/part of withdrawable feeder module as per specification, three pole, air break type having trip free mechanism with quick make and quick break type contacts. MCCB shall have current limiting feature. MCCB of identical ratings shall be physically and electrically interchangeable. MCCB shall be provided with atleast 1 NO and 1NC auxiliary contacts.
- b) MCCB shall be provided with Microprocessor based inbuilt front adjustable releases (overload & short circuit) and shall have adjustable earth fault protection unit also. The protection settings shall have suitable range to achieve the required time & current settings. LED indications shall also be provided for faults, MCCB status (on/off etc.).

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- c) MCCB shall be provided with padlocking facility to enable the operating mechanism to be padlocked. The MCCBs being offered shall have common/interchangeable accessories for all ratings like aux. switch, shunt trip, alarm switch etc. The MCCBs shall have the current discrimination up to full short circuit capacity and shall be selected as per manufacturer's discrimination table.
- d) The auxiliary contacts of the MCCB shall be fed to the digital inputs in the numerical relays of Incomer/bus coupler/motor circuit breaker feeders, for integration in to the numerical relay network.
- e) Atleast one no. of spare MCCB set of the rating equivalent to incomer circuit shall be made available.

6 CONTACTORS:

- a) Motor starter contactors shall be of air break, electromagnetic type rated for uninterrupted duty as per IS: 13947 Part-4 Section- 1.
- b) Contactors shall be double-break, non-gravity type and their main contacts shall be silver faced.
- c) The contactor shall operate satisfactorily between 85% and 110% of the rated voltage. The contactor shall not drop out at 70% of the rated voltage but shall definitely drop out at 20% of the rated voltage.

7 FUSES:

- a) All fuses shall be of HRC cartridge fuse link type. Screw type fuses shall not be accepted.
- b) Fuse shall have visible operation indicators. Insulating barriers shall be provided between individual power fuses.
- c) Fuse shall be mounted on insulated fuse carriers, which are mounted on fuse bases. Wherever it is not possible to mount fuses on carriers, fuses shall be directly mounted on plug-in type of bases. In such cases one set of insulated fuse pulling handles shall be supplied with each switchboard.
- d) The neutral links shall be mounted on fuse carriers which shall be mounted on fuse bases.
- e) Spare fuse links shall be provided.
- f) Design basis for selection of fuse shall establish the fault protection capability of fuse as per the design fault current level of the system.

8 INTERNAL WIRING:

All switchboards shall be supplied completely wired internally upto the terminals, ready to receive external cables. All necessary cable terminating accessories such as supporting clamps and brackets, hardware etc., shall be provided by the contractor, to suit the final cable sizes. All the wires shall be neatly laid and properly dressed.

9 DERATING OF COMPONENTS:

The Contractor shall, ensure that the equipment offered will carry the required load current at site

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ambient conditions specified and perform the operating duties without exceeding the permissible temperature as per Indian Standards /Specifications. Continuous current rating at 50⁰C ambient in no case shall be less than 90% of the normal rating specified. The Contractor shall indicate clearly the derating factors, if any, employed for each component and furnish the basis for arriving at these derating factors duly considering the specified current ratings and ambient temperature of 50⁰C.

10 PROTECTION CO-ORDINATION:

It shall be the responsibility of the Contractor to fully coordinate the overload and short circuit tripping of the circuit breakers with the upstream and downstream circuit breakers / fuses / motor starters, to provide satisfactory discrimination. Further the various equipment supplied shall meet the requirements of Type II class of Co-ordination as per IS: 8544.

The grading mechanism for relay operation shall be duly established by Contractor at the time of system commissioning.

11 INTERLOCKS:

The following interlocks are foreseen and shall be completed and developed in conjunction with the control system:

- a) In all operating modes the sectionalising circuit breaker shall normally be open and shall be closed only in case of loss of one Bus-Section power supply,
- b) It shall be possible to insert/withdraw the breaker only in open position,
- c) It shall be possible to lock the circuit breaker closing mechanism in open position.

Any other nature of interlock as envisaged in the design requirement shall be ensured. The schematics for the protection coordination and interlocks shall be submitted for approval of IOCL before final configuration.

12 HT SWITCHGEARS

12.1 General:

12.1.1 3-phase, 50 HZ (Voltage as per design), switchgear system consisting of following major items:

- a) Requisite nos. of panels between Inverter/Power Transformers and Switchyard.
- b) Requisite number of Bus coupler breakers, if required
- c) Spare parts, required tools and instruments

12.1.2 Proper design and calculations report pertaining to design and selection of components duly certified by Independent Chartered Electrical Engineer shall be submitted to EIC for approval prior to commencement of work at site. Certification from Independent Chartered Electrical Engineer for conformance to adherence of technical specifications laid out for HT Switchgear(s) shall also be submitted.

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12.1.3 All the HT switchgear panels shall be complete with cubicles, protection, metering, bus-bar system, cabling, wiring and other accessories, each comprising of following major equipment

- a. HT VCB
- b. AC bus bars
- c. Current transformers, as per requirement
- d. Potential transformers, as per requirement
- e. Multifunction meters (for measuring electrical parameters), as per requirement
- f. Energy meters

Switchgear shall also consist of Remote Annunciator Panel to be placed in control room near Remote Monitoring System. Operator should be able to control HT switchgear and VCB from a control panel in MCR building. The quantities shall be finalised during detail engineering based on the proposed configuration.

12.1.4 The design, ratings, quantities of all the components shall be finalised during detail engineering, duly certified by Independent Chartered Electrical and approved by EIC.

12.1.5 Technical Requirements:

Location	Indoor
Type of earthing	Solidly earthed
Rated system voltage, kV, r.m.s	As per design
Rated frequency, Hz	50
Auxiliary AC supply, 3 phase	Design Voltage $\pm$ 10% V
Control and Auxiliary power supply source	Reliable supply to the control circuit

12.1.6 Codes and Standards: shall comply to all the relevant standards, but not limited to the following

Codes	Description
IS: 722	AC electricity meters
IS: 13947	Degree of protection provided by enclosures for low voltage switchgear and control gear.
IS: 2544	Porcelain post insulators for systems with nominal voltages greater than 1000 Volts.
IS: 2705	Current transformers.
IS: 3156	Voltage Transformers
IEC: 61850	Communication Standard for Numerical relays
IEC: 61131-3	Automation Standard for Numerical relays
IS: 9046	AC contactors for voltages above 1000 volts and upto and including 11000 Volts.

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IS: 13703	Low voltage fuses
IS: 9385	HV fuses
IS: 9921	A.C. disconnectors (isolators) and Earthing switches for voltages above 1000 V
IS: 13118	Specification for high voltage AC circuit breakers
IS/IEC: 62271- 100	High voltage alternating current circuit breakers
IS/IEC: 62271- 200	High voltage metal enclosed switchgear and control gear.
IS : 3427	Metal enclosed Switchgear and control gear for voltage above 1 kV and upto and including 52 kV
IS : 1248	Direct acting indicating analogue electrical measuring instruments and their accessories
IS : 3231	Electrical relays for power system protection
IS : 6875	Control switches for voltage upto and including 1000 V AC and 1200 V DC
IS : 2147	Degrees of protection provided by enclosures for low Voltage switchgear and control gear

The list of approved makes is given in **Annexure-3 of SCC Technical**.

12.1.7 Constructional details of switchgear panel:

- a) The contractor should provide HT switchgear panels on site, fulfilling appropriate requirements of design, manufacture and tests. The switch gear and accessories shall be complete in all respects and any device not included in the specification but essential for proper operation of the equipment and also to comply with the requirements of the statutory authority shall be deemed to have been included.
- b) Switchgear shall be indoor type, weather proof, floor mountable and metal enclosed draw out type, incorporating separate enclosures of the circuit breaker unit, busbar chamber, current transformers, potential transformers, with necessary meters, relay and switches, auxiliary wiring etc.
- c) The switchgear shall be of robust construction designed for maximum reliability of service in the tropical climate specified suitable for outdoor installation.
- d) All hardware for the complete equipment including foundation bolts, lifting lugs etc. shall be supplied along with the panel.
- e) Metering, closing, manual tripping and on/off indication features to be provided in the MCR.
- f) Contractor should furnish following details for switchgear box

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- i) Temperature Rise
 - ii) Current Ratings
 - iii) Making and Breaking Capacities
 - iv) Circuit Breaker Type
 - v) Operating Mechanism
 - vi) Contacts
 - vii) Circuit Breaker Isolating Features
 - viii) Interlocks & protection
 - ix) Safety Shutter Devices
 - x) Bus-bars and Connections
 - xi) Insulators
 - xii) Control Switches
 - xiii) Auxiliary Switches
 - xiv) Current Transformers
 - xv) Voltage Transformers
 - xvi) Instruments, Relays And Indication Lamps
 - xvii) Panel Wiring
- g) Following drawing and manuals should be submitted for Owner in five copies:
- i) General arrangement of circuit breaker panel showing overall dimensions with foundation plan, terminal location and dimensional data, total weight, sectional views, operating mechanism, Bill of Materials
 - ii) Schematic and wiring diagram for control
 - iii) Operation timing charts of main and auxiliary contacts
 - iv) Manufacturing schedule and test schedule
 - v) Instruction manual, six copies of drawing, O&M manual, and catalogues shall be submitted prior to dispatch of panel

12.1.8 Busbars And Insulators:

- a) All busbar and jumper connections shall be of high conductivity aluminium alloy or Copper. They shall be adequately supported on insulators to withstand electrical and mechanical stresses due to specified short circuit currents.
- b) Busbar cross-section shall be uniform throughout the length of switchgear. Busbars and other high voltage connection shall be sufficiently corona free at maximum working voltage.
- c) Busbar insulators shall be arc and track resistant, high strength, non-hygroscopic, non-combustible type and shall be suitable to withstand stresses due to over-voltages, and short circuit current. Busbar shall be supported on the insulators such that the conductor expansion and contraction are allowed

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without straining the insulators.

- d) Contractor shall furnish calculation establishing adequacy of busbar sizes for the specified continuous and short time current ratings. All busbars shall be color coded.

12.1.9 Circuit Breakers:

Short circuit breaker Current:	
a) A.C. component	40 kA/Max. System Short-Circuit Fault Current
b) D.C. component	As per IS: 13118 or IEC-62271
Short Circuit making current	100 kA(peak)
Operating Duty	B-3 Min-MB-3 Min-MB
Total break time	Not more than 4 cycles
Total make time	Not more than 5 cycles
Operating Mechanism	Motor wound spring charged stored energy type as per IEC-62271

- a) All the circuit breakers shall be of VCB type.
- b) They shall comprise of three separate, identical single pole interrupting units, operated through a common shaft by a sturdy operating mechanism complete in all respects with all fittings and wiring. The circuit breakers and accessories shall conform to IEC- 62271-100 or equivalent Indian Standard.
- c) Circuit breaker shall be totally restrike free, stored energy operated and trip free type. Motor wound closing spring charging shall only be acceptable. An arrangement of two breakers in parallel to meet a specified current rating shall not be acceptable.
- d) The circuit breaker shall meet the duty requirement of any type of fault or fault location and shall be suitable for line charging and dropping when used on 6.6 KV effectively grounded or ungrounded systems and perform make or break operations as per the stipulated duty cycles satisfactorily.
- e) It shall also be capable of breaking the line charging currents as per IEC- 62271- 100 with a voltage factor of 1.4.
- f) The circuit breakers shall reasonably be quiet in operation. Noise level in excess of 140 dB measured at base of the breaker would be considered unacceptable. Contractor shall indicate the noise level of breaker at a distance of 50 to 150m from the base of the breaker.
- g) All working part of the mechanism shall be of corrosion resisting material. Bearings which require greasing shall be equipped with pressure type grease fittings. Bearing pins, bolts, nuts and other parts shall be adequately secured and locked to prevent loosening or change in adjustment due to repeated operation of the breaker and the mechanism.

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- h) The operating mechanism shall be such that failure of any auxiliary spring shall not prevent tripping and shall not lead to closing or tripping of circuit breaker. Failure of any auxiliary spring shall also not cause damage to the circuit breaker or endanger the operator.
- i) The contractor may note that the total break time of the breaker shall not be exceeded under any duty conditions specified such as with the combined variation of the trip coil voltage, pneumatic pressure etc. While furnishing the proof of the total break time of the complete circuit breaker, the contractor may specifically bring out the effect of non-simultaneity between same pole and different poles and show how it is covered in the guaranteed total break time.
- j) Mechanical indicators shall be provided on the breaker trucks to indicate OPEN / CLOSED conditions of the circuit breaker, and CHARGED / DISCHARGED conditions of the closing spring. An operation counter shall also be provided. These shall be visible without opening the breaker compartment door.
- k) All AC fuses shall be HRC cartridge type, conforming to IS: 2208 and suitable to mount on plugin type of fuse bases. Fuses shall be provided with visible operation indicators to show that they have operated. Insulated fuse pulling handle shall be supplied with each control cabinet.
- l) The rated control supply voltage shall be as mentioned elsewhere under Technical parameters or as per the design approved. The trip coil shall be so designed that it does not get energised when its healthiness is monitored by two indicating lamps (Red) and one trip coil supervision relay.
- m) While furnishing particulars regarding the D.C. component of the circuit breaker, the Contractor shall note that IEC-62271-100 requires that this value should correspond to the guaranteed minimum opening time under any condition of operation.
- n) The time taken for charging of closing spring shall not exceed 30 seconds. The spring charging shall take place automatically preferably after a closing operation. Breaker operation shall be independent of the spring charging motor which shall only charge the closing spring. Opening spring shall get charged automatically during closing operation. As long as power supply is available to the charging motor a continuous sequence of closing and opening operations shall be possible. One open -close- open operation of the circuit breaker shall be possible after failure of power supply to the motor. The initial temperature shall be as prevalent in the switchgear panel during full load operation with 50°C ambient air temperature. The motor shall be provided with short circuit protection.
- o) The critical current which gives the longest arc duration at lock out pressure of extinguishing medium and the duration shall be indicated. All the duty requirements specified above shall be provided with the support of adequate test reports which is to be furnished along with the bid.
- p) Motor windings shall be provided with class E insulation or better. The insulation shall be given tropical and fungicidal treatment for successful operation of the motor in a hot, humid and tropical climate.

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- q) Circuit breaker shall be provided with inter pole barriers of insulating materials.
- r) Circuit breaker shall be according to IEC/IS and shall be complete with the proper interlocking.
- s) Operating Mechanism:
 - i) The circuit breaker shall be operated by electrically spring charged mechanism. The operating mechanism shall be anti-pumping and trip free (as per the IEC definition) electrically and either mechanically or pneumatically under every method of closing. The mechanism of the breaker shall be such that the position of the breaker is maintained even after the leakage/rupture of the operating media and/or gas.
 - ii) The operating mechanism shall be such that the failure of any auxiliary spring will not prevent tripping and will not cause tripping or closing operation of the power operated closing devices. A mechanical indicator shall be provided to show open and close positions of the breaker. It shall be located in a position where it will be visible to a man standing on the ground with the mechanism housing door closed. An operation counter shall also be provided.
 - iii) The closing coil shall operate correctly at all values of voltage between 85% and 110% of the rated voltage. The shunt trip coils shall operate correctly under all operating conditions of the circuit breaker up to the rated breaking capacity of the circuit breaker and at all values of supply voltage between 70% and 110% of rated voltage. If additional elements are introduced in the trip coil circuit, then their successful operation for similar applications of outdoor breaker shall be clearly brought out in the bid.
 - iv) Working parts of the mechanism shall be made of corrosion resisting material. The bearings requiring greasing shall be equipped with pressure type grease fittings. Bearing pin, bolts, nuts and other parts shall be adequately pinned or locked to prevent the loosening or changing adjustment with the repeated operation of the breaker.
 - v) The operating mechanism shall normally be operated by remote electrical control. Electrical tripping shall be performed by a shunt trip coil. Provision shall also be made for local electrical control. The “Local / remote” selector switch and close & trip push buttons shall be provided in the breaker central control cabinet. Remote located push buttons and indicating lamps shall also be provided.
 - vi) Operating mechanism and all accessories shall be in the local control cabinet. A central control cabinet for the three poles of the breaker shall be provided along with the supply of necessary tubing, cables, etc.
- t) Fittings and Accessories:
 - i. The following is partial list of some of the major fittings and accessories to

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be furnished as integral part of the breakers. The number and exact location of these parts shall be indicated in the GTP & GA.

- Double compression type cable glands, lugs, ferrules, etc.
- Local/remote changeover switch
- Operation counter located in control unit or central control unit.
- Fuses, as required
- Relay/contactors
- Rating and diagram plate in accordance with IEC including year of manufacture, etc.
- Gauges for vacuum level, pneumatic/hydraulic pressure.
- Vacuum level monitor with alarm and lockout contacts

b) Routine Tests:

- ii. Routine tests as per IEC-62271-100 on the complete breaker/ pole along with its own operating mechanism and pole column shall be performed on all the circuit breakers.

iii. Site Tests:

All routine tests except the power frequency voltage dry withstand test on breaker shall be repeated on the completely assembled breaker at site during the time of commissioning.

12.1.10 Current Transformer

Current Ratio	As per system Requirement
Class of Insulation	Class E or better
Rated output	Adequate for the relays and devices connected, but not less than five (5) VA.
Accuracy class , Protection and Measurement	Class PS for differential & REF CTs; 5P20 for other protection CTs. Required Accuracy for metering is 0.2S for Incomers and Outgoers.

- a) The CTs shall have single primary of either ring type or hair pin type or bar type.
- b) Current transformer shall be mounted within the cubicles and shall comply with the requirements of relevant IEC/IS. It shall be used for protection and metering.
- c) All current and voltage transformers shall be completely encapsulated cast resin insulated type, suitable for continuous operation at the ambient temperature prevailing inside the switchgear enclosure, when the switchboard is operating at its rated load and the outside ambient temperature is 50°C. The class of

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insulation shall be Class E or better.

- d) The secondaries shall be totally encased in metallic shielding providing a uniform equi-potential surface for even electric field distribution.
- e) The lowest part of insulation assembly shall be properly secured to avoid any risk of damage due to transportation stresses.
- f) The CTs shall be provided with oil sight glass.
- g) Different ratios shall be achieved by secondary taps only, and primary reconnections shall not be accepted.
- h) The parameters of instrument transformers specified in this specification are tentative and shall be finalized by the Owner in due course duly considering the actual burden of various relays and other devices finally selected. In case the contractor finds that the specified ratings are not adequate for the relays and other devices offered by him, he shall offer instrument transformer of adequate ratings and shall bring out this fact clearly in his Techno commercial bid.
- i) Current transformers may be multi or single core and shall be located in the cable connection compartment.
- j) The CTs shall be suitable for high speed auto-reclosing.
- k) The CTs shall have a provision for taking oil samples from bottom of the CT without exposure to the atmosphere to carry out dissolved gas analysis periodically. The contractor shall give his recommendations for such analysis, i.e. frequency of test, norms of acceptance, quantity of oil to be withdrawn, and treatment of CT.
- l) The guaranteed burdens and accuracy class are to be intended as simultaneous for all cores.
- m) The instrument security factor at all ratios shall be less than five (5) for metering core. If any auxiliary CT/reactor is used, then all parameters specified shall be met treating auxiliary CTs/reactors as integral part of CT. The auxiliary CT/reactor shall preferably be in-built construction of the CT. In case it is separate, it shall be mounted in secondary terminal box.
- n) The secondary terminals shall be terminated on stud type suitable nos. of non-disconnecting and disconnecting terminal blocks inside the terminal box of degree of protection IP:55 at the bottom of CT.
- o) The CTs shall be suitable for horizontal transportation.
- p) The CT shall have provision for measurement of capacitance and tan delta.

12.1.11 Voltage Transformer

Rated Voltage Factor	1.2 continuous for all VTs, and 1.9 for 8 Hours for star connected VTs.

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Class of Insulation	Class E or better
Other parameters	BUS PT-0.5 Class, VA req. adequate for application. Line PT-0.5 Class for sync. / 3P for door interlocks, VA req. adequate for application.

- a) Voltage Transformer shall be mounted within the cubicles on a withdraw able trolley independent of the trolley for the circuit breaker and shall comply with the requirements of relevant IEC/IS. The potential transformer at bus bar shall be of two cores used for metering and protection / interlocks. The potential transformer at incoming bays shall be of two cores, one used for protection / interlocking and other formetering.
- b) Voltage transformers shall be electro-magnetic type and the electro-magnetic unit (EMU) shall comprise of compensating reactor, intermediate transformer, and protective and damping devices. The oil level indicator of EMU with danger level marking shall be clearly visible to maintenance personnel.
- c) All voltage transformers shall be single phase type. The bus VTs shall be housed in a separate panel on a truck so as to be fully withdraw able.
- d) All voltage transformers shall have suitable HRC current limiting fuses on both primary and secondary sides. In addition the fuses shall also be provided for protection and metering windings for connection to fuse monitoring scheme. The secondary terminals shall be terminated on stud type non- disconnecting terminal blocks via the fuse inside the terminal box of degree of protection IP: 55. The access to secondary terminals shall be without the danger of access to high voltage circuit.
- e) The damping device shall be permanently connected to one of the secondary winding and shall be capable of suppressing ferro-resonance oscillations.
- f) A protective surge arrester/spark gap shall preferably be provided to prevent break down of insulation by incoming surges and to limit the abnormal rise of terminal voltage of the shunt capacitor, tuning reactor, RF choke, etc. due to short circuit in transformer secondary. The details of this arrangement (or alternative arrangement) shall be furnished by Contractor for Owner's review. The protection cores shall not saturate at about 1.5 times the rated voltage for min. duration of 30 secs. The accuracy of metering core shall be maintained through the entire burden range upto 50VA or higher designed value, on all three windings without any adjustments during operations.

12.1.12 Surge Arrester:

The surge arrestors shall be provided for transformer feeders and shall be metal oxide, gapless type generally in accordance with IEC 60099-4 and IS 3070 and suitable for indoor duty. These shall be mounted within the switchgear cubicle between line and earth, preferably in the cable compartment. Surge arrester selected shall be suitable for un-earthed system and rating shall be in such a way

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that the value of steep-fronted switching transients causing over voltage at the switchgear terminals shall be limited to the requirements of switchgear. The Arresters shall be of hermetically sealed units. The Surge Arrestors shall be of heavy duty station class and gapless Metal Oxide type without any series or shunt gaps and shall be capable of discharging over-voltages occurring during switching of unloaded transformers, and long lines. Self contained discharge counters requiring no auxiliary or battery supply for operation shall be provided with necessary connection. Suitable leakage current meters should also be supplied within the same enclosure. The reading of millimeter and counters shall be visible through an inspection glass panels. The Arrestors shall conform to type tests

and shall be subjected to routine and acceptance test in accordance with IEC-60099-4.

12.1.13 Numerical Relay

The numerical relay shall have at least following features:

- a) The relay used in protection system shall be of the numerical, communicable, and plug-in type arranged in protection cubicles. All relays including all ancillary devices, such as interposing transformers, tripping matrix and relays, test facilities, power supply units, etc. with all circuits shall comply with IEC 60255 recommendations.
- b) All numeric relays provided shall be as per IEC 61850.
- c) All communications of protection system with the control system shall be based on universally accepted protocol namely IEC 60870-5-103,
- d) There shall be two RS485 ports one on front and the other on rear. The front port shall be used to connect the laptop locally for any change in settings/downloading the data etc. and the rear port shall be used to inter connect the relays,
- e) The relay shall have preferably front panel back lit display,
- f) The relay shall have self monitoring features,
- g) All major numerical relays shall have an inbuilt Disturbance Recorder (DR) and event recorder,
- h) There shall be separate recording of Over Current (OC), Earth Fault (EF), Over Voltage (OV) & Under Voltage (UV) faults. Individual fault identification and display shall be ensured in Reote Monitpring System for monitoring purpose.
- i) DR shall have at least 8 Analog and 16 Digital channels with a scan rate of minimum 1000 Hz. The output of DR should be available on COMTRADE (Common Format for Transient Data Exchange) format to enable replay on Numerical test kits. Software and hardware shall be provided for analyzing the

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records.

- j) The event recorder shall be capable of storing a minimum of 256 digital signals including time marker with a resolution/sampling frequency of one millisecond.

12.1.14 ACDB with manual rotary bypass changeover

- a) 3-phase, 50 Hz, 415V/Auxiliary voltage level ACDB to be provided.
- b) The ACDB shall have necessary protection devices, i.e. MCB/MCCB, ELCB, Surge Protection Devices, and Disconnectors/Isolators.
- c) The ACDB shall have manual rotary bypass changeover switch.
- d) All the electrical components shall be housed in IP 32 metal enclosure, if located indoors else shall be housed in IP 55 metal enclosure.
- e) The incoming and outgoing cables shall have proper cable gland arrangement for cable terminations.
- f) The rating of electrical protection systems installed in ACDB together with its design considerations/basis shall be submitted for approval of Owner.
- g) All ACDBs shall have suitable metering provision to record the net energy imported for auxiliary loads.
- h) Adequate no. of individual MCB panels/boards shall also be provided for power load distribution.

Proper design and calculations report pertaining to design and selection of components duly certified by Independent Chartered Electrical Engineer shall be submitted to EIC for approval prior to commencement of work at site. Certification from Independent Chartered Electrical Engineer for conformance to adherence of technical specifications laid out for ACDB(s) shall also be submitted.

The list of approved makes for the components to be used in ACDB shall comply to the makes given in **Annexure-3 of SCC Technical**.

12.2 INVERTER/POWER TRANSFORMER:

12.2.1 General:

Inverter/Power transformers shall be needed for stepping up inverter output voltage to existing HT feeder voltage as indicated in SLD

Inverter/Power Transformer shall be placed close to the inverter area and shall transform the inverter output voltage to end high voltage.

Inverter/Power transformer shall be Outdoor ONAN Type Transformer.

Appropriate neutral terminal should be provided for grounding. These transformers should follow relevant Indian standards or any other equivalent standards, and shall conform to Regulations of local Statutory Authority. Contractor shall build shed of suitable height and dimensions to be provided for each transformer and shall construct suitable chain link fencing around Transformer(s).

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Proper design and calculations report pertaining to design and selection of Transformer, duly certified by Independent Chartered Electrical Engineer shall be submitted to EIC for approval prior to commencement of work at site. Certification from Independent Chartered Electrical Engineer for conformance to adherence of technical specifications laid out for Transformer(s) shall also be submitted.

12.2.1.1 Technical Requirements:

- a) The contractor should furnish following details of transformer(s):
 - i) Rated Power and Temperature Rise
 - ii) Rated Voltage and Tapping (All tapping shall be Off-Circuit Tap Changer type)
 - iii) Impedance Voltage and Short Circuit Impedance
 - iv) Short Circuit Withstand Capability
 - v) Insulation levels
 - vi) Construction features of Core, Windings, Bushings, Marshalling box, Off-circuit tap changing gear
- b) The contractor should take care of design and manufacturing of minimizing noise and vibrations and to maintain it well below the limiting levels. Contractor should enclose with tender the details of appropriate certifications of the tests, carried out for efficient performance and safe operation of transformers.
- c) Transformers should be provided with separate galvanically isolated low-voltage windings for each inverter. These shall be of converter duty and suitable for operation with pulsed inverter.
- d) Drawing and manual: Following drawings and manuals should be submitted, in five copies, for approval of owner after awarding contract.

General arrangement of transformer showing

- i) Details of terminals
- ii) Conservator with its supports
- iii) Explosion vent/ pressure relief vent
- iv) Radiator with valves, air release and oil drain plugs
- v) Marshalling box
- vi) Disconnection chamber and cable box connection arrangement
- vii) Marshalling box wiring diagram
- viii) Rating & Diagram plate drawing

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- ix) Manufacturing schedule and test schedule
 x) Installation, operation and maintenance manual General technical requirements of transformers:

xi)

Transformer	Inverter Transformer(s)
Location/Utility	Outdoor
VA Rating & Quantity, Voltage Ratio (KV)	As per system requirement and SLD. Combined kVA rating, in case of multiple winding transformer shall be in accordance to NEMA TR 1.
Duty, Service	100% Continuous, Solar Inverter application and converter duty (Outdoor)
Winding	As per SLD requirement
Insulation	Uniform
Winding Connection Configuration	As per SLD and system/grid requirement
Vector Group & Neutral earthing	As per system requirement and SLD. Vector group selected shall be as per PCU manufacturer's recommendations and Sub-station connectivity requirement.
Efficiency	Minimum 97% Shall be maximum at 60% Loading, correspondingly Iron Losses & Copper Losses shall be designed.
Cooling	ONAN

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Tap Changer	As per system requirement and SLD
Permissible Temperature rise over an ambient of 50 deg C (irrespective of tap):	
Impedance at 75°C	As per IS 2026 No negative tolerance permissible. % Impedance voltage (HV to LV and LV to LV, in case of multiple winding transformer) shall be selected as per Inverter manufacturer recommendations to avoid malfunctioning & damage to Inverter transformer & PCU.
Air clearance	As per CBIP
Type of mounting	On wheels, mounted on rails

12.2.1.2 Codes and Standards:

Shall comply to all the relevant standards, but not limited to the following

Codes	Description
Transformers	
IS 2026/IEC 60076	Power Transformers
IS 6600	Guide for loading of Oil-immersed transformers
IS 3639	Specifications for fittings and accessories for Power Transformers
IS 3637	Specifications for gas operated relays
IS 10028	Code of practice for Selection, Installation and Maintenance of transformers
IEC 60551	Determination of transformer and reactor sound levels
IS 3202	Code of Practice for Climate Proofing of Electrical Equipment
Bushings	

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IS 2099	Specification for bushings for alternating voltages above 1000V
IS 3347	Dimensions for Porcelain Transformer Bushings for use in normal and lightly polluted atmospheres
Insulating Oil	
IEC 60296	Fluids for electrotechnical applications - Unused mineral insulating oils for transformers and switchgear
IS 335	New Insulating Oils - Specifications
Bushing CTs	
IS 2705	Current Transformers - Specifications
IEC 60185	Current transformers
Fittings and Accessories	
IS 3639	Specification for Fittings and accessories for Power Transformers
Other Relevant Codes/Acts/Guidelines	
Indian Electricity Act	
Indian Electricity Grid Code	
BEE Guideline	
CEA Notifications & CERC Guidelines	

The list of approved makes is given in **Annexure-3 of SCC Technical**.

12.2.1.3 General Construction:

Transformer shall be constructed in accordance to IS:2026 and IS:3639 or equivalent to any other international standard. Transformer shall be complete & functional in all respect and shall be in scope of supplier. The other important construction particulars shall be as below:

- a) Tank shall be double side welded construction & fabricated from tested quality low carbon steel of adequate thickness. After completion of welding, all joints shall be subjected to visual inspection. In case of any doubt, all the joints shall be tested by DP Test. Each tank shall be provided with Lifting Lugs suitable for lifting the equipment with oil.
- b) The transformers and all its accessories shall be designed to withstand without injury the thermal & mechanical effects of any external short circuit to earth & of short circuits at the terminals. The short circuit duration for conforming thermal limit shall be three seconds. The thermal ability to withstand short circuit for duration of 2 seconds shall be demonstrated by calculation. The calculation of dynamic ability to withstand short circuit shall also be submitted with the offer.
- c) The transformer shall be capable of being loaded continuously in accordance

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with IS:6600 up to loads of 110%. There shall be no limitation imposed by bushings, tap changer or any other accessory.

- d) The Transformer shall be capable of being operated without danger on any tapping, at the rated MVA, with voltage variation of $\pm 10\%$ corresponding to the assigned voltage of tapping.
- e) Transformer shall be capable of withstanding thermal & mechanical stress caused by symmetrical and asymmetrical faults due to external short circuits, on any winding.
- f) Exposed parts shall not leave pockets where water can collect.
- g) Internal design of the transformer shall ensure that air is not trapped in any location.
- h) Each step down auxiliary transformer shall be 3 phase, 50 Hz capacity and able to step down to 415V/auxiliary voltage level.
- i) Center line of transformer shall be marked on top plate.
- j) Materials in contact with oil shall be such as not to contribute to the formation of acid in oil. Surface in contact with oil shall not be galvanised or cadmium plated.
- k) The no-load losses specified above are maximum, without any positive tolerance. The offered Transformer exceeding this limit shall not be accepted against the tender.
- l) The contractor should take care of design and manufacturing of minimizing noise and vibrations and to maintain it well below the limiting levels.
- m) Contractor should enclose with tender the details of appropriate certifications of the tests, carried out for efficient performance and safe operation of transformers.
- n) All accessories and transformer tank shall be sand/ shot blasted and grounded to produce a smooth, clean surface, free from scale, grease and rust. After cleaning, the surfaces shall be given a phosphate coating followed by a coat of high quality primer.
- o) The Transformer tank and cover shall be fabricated from high grade low carbon plate steel of tested quality. The tank and the cover shall be of welded construction and there should be provision for lifting by crane.
- p) All joints shall be hot oil tight & no bulging shall take place while in service. All the oil tight joints shall be made with suitable flanges, treated cork or other approved type of packing.
- q) The main tank body excluding tap changer compartment and radiators shall be capable of withstanding vacuum of 500mm of hg.

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- r) The tank shall be designed to withstand mechanical shock during transportation, vacuum filling of oil.
- s) It shall also with stand the pressure for one hour corresponding to twice the normal head of oil or to the normal pressure plus 35KN/m² (5 Lbs/Inch²) whichever is lower, measured at the base of the tank.
- t) A double float type Buchholz relay with 'alarm' & 'trip' contacts conforming to IS: 3637 shall be provided. The oil connection from transformer tank to conservator vessel shall be arranged at rising angle of 6 to 9 degrees to horizontal up to the Buchholz relay and shall consist of suitable pipe of inside diameter (heavy gauge) as per IS: 3639. Two isolating GM valves of 50mm dia shall be provided for Buchholz relay on either side.
- u) Suitable Inspection hole(s) with welded flange(s) and bolted cover(s) shall be provided on the tank cover. The inspection hole(s) shall be of sufficient size to afford easy accessto the lower ends of the bushings, terminals etc.
- v) All bolted connections to the tank shall be fitted with suitable oil-tight gaskets which shall give satisfactory service under the operating conditions for complete life of the transformer if not opened for maintenance at site
- w) The transformer shall be provided with conventional single compartment conservator. The top of the conservator shall be connected to the atmosphere through indicating type cobalt free silica gel breather (in transparent enclosure). Silica gel shall be isolated fromatmosphere by an oil seal.
- x) Transformer shall have adequate capacity Conservator tank to accommodate oil preservation system and volumetric expansion of total transformer oil.
- y) Transformer shall have Oil Temperature Indicator and Winding temperature Indicator with accuracy class of $\pm 2^{\circ}\text{C}$.
- z) The radiators shall be detachable type, mounted on the tank with shut off valve at each point of connection to the tank, lifts, along with drain plug/valve at the bottom and air release plug at the top.
- aa) M. Box shall be of sheet steel, dust and vermin proof provided with proper lighting and thermostatically controlled space heaters. The degree of protection shall be IP 55. Marshalling Box of all transformers shall be preferably Tank Mounted. One dummy terminal block in between each trip wire terminal shall be provided. At least 20% spare terminals shall be provided on each panel. The gasket used shall be of neoprene rubber. Also Marshalling Box shall be at least 450 mm above ground level. Wiring scheme (TB details) shall be engraved in a stainless steel plate with viewable font size and the same shall be fixed inside the Marshalling Box door.
- bb) The maximum flux density in the core shall be limited to 1.5 Tesla in the core at rated condition and at principle tap. Maximum flux density in any part of the

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core and yokes of transformer at normal voltage and frequency shall be such that the flux density in over voltage condition (combined voltage and frequency at 110% of rated V/f) shall not exceed 1.7 Tesla.

- cc) The transformer shall be provided with four flanged bi-directional wheels & axle. These shall be designed not to deflect excessively to interfere with the movement of the transformer.
- dd) The transformer & all its accessories including CTs etc. shall be designed to withstand without injury the thermal & mechanical effects of any external short circuit to earth & of short circuits at the terminal of any winding for a period of 2 sec. The Contractor shall submit the short circuit withstand calculations.
- ee) Transformers shall withstand, without injurious heating, combined voltage & frequency fluctuations, which produce the following over fluxing condition:
 - 110 % - Continuous
 - 125% - for at least one minute
 - 140% - for at least five seconds
- ff) The other parameters of oil before filling in the transformer tank shall be limited to following:
 - Break down voltage: 70 kV at 2.5 mm gap
 - Moisture content: less than 5 ppm
 - Gas content: less than 0.1% by volume
- gg) Contractor to provide 150% voltage withstand capacity in time/cycle.
- hh) The space between the bottom of tank and mounting rail shall be maintained to minimum of 350 mm, for free air circulation.

12.2.1.4 Windings

- a) The contractor shall ensure that windings of all transformers are made in dust proof & conditioned atmosphere.
- b) The conductors shall be of electrolytic grade copper free from scales & burrs.
- c) The current density of the copper material shall not be more than 3.5- 3.8A/mm² for both LV and HV windings.
- d) The arrangement of windings must be such that there is good electrical and magnetic balance under all loading & short circuit conditions. Oil ducts shall be provided to ensure uniform temperature gradients and absence of hot spots. All similar coils shall be interchangeable.
- e) All windings of the transformers shall have uniform insulation. To avoid shrinkage during operation, windings shall be subjected to shrinkage treatment.

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The winding assembly should be full vacuum dried and then impregnated immediately in transformer oil.

- f) The material used in the insulation and assembly windings shall be insoluble, non- crystallite and chemically inactive in the hot transformer oil and shall not soften or otherwise, be affected under the operating conditions.
- g) Transformers shall be capable of withstanding dynamic & thermal forces, due to three phase symmetrical faults at the terminals, without considering any system impedance. The short circuit duration for conformity of thermal limit shall be three seconds. Current density of windings shall be stated. The calculations of Thermal stability and dynamic ability to withstand short circuit shall also be submitted with the offer.
- h) Special attention shall be given for the provision of adequate insulation and clearance between HV & LV windings. All clearance of widening & other live parts must be adequate, for the maximum voltage of operation, plus 10 %. The minimum required clearance of windings in oil shall be stated.
- i) The HV winding shall be interleaved / disc type. Disc winding shall be with the static end rings at both ends. The winding shall be suitable for chopped wave & full wave impulse voltage. The wave shape of the impulse voltage shall be in accordance with IS 2026 (Part III) & relevant IEC standard for high voltage Tests. LV winding shall be continuous disc type / Layer type.
- j) Contractor shall invariably indicate in the GTP, the cross sectional area of all windings with respect to the current density adopted.
- k) All threaded connections shall be provided with locking facilities. All leads from the winding shall be duly brazed for proper contact to the terminal board and bushings shall be rigidly supported to prevent injury from vibration.
- l) The guaranteed minimum IR value should be indicated in GTP. The measured IR value with 5kV motorized megger during acceptance test shall not be less than guaranteed minimum value.
- m) Tapping shall be so arranged as to preserve the magnetic balance of the transformer at all voltage ratio.

12.2.1.5 Core

- a) The transformer shall be of three legged core type with interleaved/step lap core joints. On no account, interleaved step down butt joints shall be offered. The core shall be bolt less & built of non-ageing, high grade, cold rolled, low loss super grain oriented silicon steel laminations, **prime grade** CRGO grade M4 or better, laminations having high permeability and low hysteresis loss and with hot oil proof insulation. The thickness of lamination shall be 0.27 mm or less. Surface insulation of laminations shall be rust resistant and have high interlaminar resistance. Insulation shall withstand annealing temperature as high as 850 ° C.

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Insulation shall be resistant to hot cooling medium. Laminations are not to be punched.

- b) Insulation shall withstand 2 kV rms for 1 minute in air between core to core-bolt & core to clamp plate.
- c) Contractor will offer the core for stage inspection and get approval from Owner during manufacturing stage. The contractor has to produce following documents at the time of stage inspection for confirmation of use of prime core materials.
 - Invoice of supplier
 - Mills approved test certificates
 - Packing list
 - Bill of lading
 - Bill of entry certificate by custom, if applicable
- d) The core shall be rigidly clamped to ensure adequate mechanical strength and to prevent vibration during operation. The clamping structure shall be so constructed that eddy currents will be minimum.
- e) The design of magnetic circuit shall be such as to avoid static discharges, development of short circuit paths within itself or to the earthed clamping structure and production of flux components at right angles to the plane of the laminations which may cause local heating.
- f) The core and the coil assembly shall be so fixed in the tank that shifting will not occur and cause any damage when the transformer is moved shifted, or during a short circuit.
- g) Adequate lifting lugs will be provided to enable the core & windings to be lifted.

12.2.1.6 Insulating oil

The Transformer oil shall be of predominantly naphtha based mineral type. The transformers and all associated oil-filled equipment shall be supplied along with the first filling of oil and ten (10) percent of total quantity of oil to be used for filling (based on quantity mentioned on the rating plate rounded off to full drum nos. on higher side) in non-returnable drums. The oil shall be free from moisture and have uniform quality throughout.

Oil characteristics

The oil shall be free from Polychlorinated Biphenyls (PCBs) and have uniform quality. The parameters of new oil at the time of despatch of oil from refinery/manufacturer works shall confirm to IS 335-1994, IEC 60296-2003 where ever applicable, considering stringent values in case of overlapping standard/ references. No inhibitor shall be used in oil.

The other parameters of oil before filling in the transformer tank shall be limited to following:

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- a) Break down voltage 70 kV at 2.5 mm gap
- b) Moisture content Less than 5 ppm
- c) Gas content Less than 0.1% by volume

12.2.1.7 Bushings

- a) 17.5kV bushing to be used for HV side of Inverter/Power Transformer and shall be oil filled condenser type & hermetically sealed. LV side bushings shall be 1.1 kV class solid porcelain. Suitably designed rating value of Bushing shall be selected for Auxiliary Transformer.
- b) Condenser type bushing shall be provided with Oil level glass, and Tap for Capacitance/ tan delta test.
- c) Bushing of identical ratings shall be interchangeable.
- d) No arcing horns to be provided on the bushings.
- e) Porcelain used in the manufacture shall be homogeneous, free from lamination, cavities & other flaws or imperfection that might effect the mechanical or dielectric quality and shall be thoroughly vitrified tough and impervious to moisture.
- f) Glaze of porcelain and busing shall be of uniform brown colour, free from blisters burrs& other defects.
- g) Clamps & fittings shall be hot dip galvanised steel.
- h) For neutral, the bushing of the same rating shall be used as those to be used for LV terminals.
- i) Power Transformer LV bushing palms shall be silver/tin plated.
- j) Special Adjustable co-ordinating gaps shall be provided as per relevant IS, on all bushing terminals and the gap setting shall be fixed with reference to the impulse strength of the windings.
- k) The contractor shall state the impulse flash over values of the bushings & the calibration with settings for coordinating gap shall be given for the arrangement of the terminals. All the required type test reports as per relevant IS stated above for the bushings to be used shall be

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submitted along with the offer or have to confirm to submit during detailed engineering.

12.2.1.8 Bushing CTs

Shall be of adequate rating for protection as required, WTI etc. All CTs (except WTI) shall be mounted in the turret of bushings; mounting inside the tank is not permitted. All CT terminals shall be provided as fixed type terminals on the M. Box to avoid any hazard due to loose connection leading to CT opening. In no circumstances Plug In type connectors shall be used for CT.

12.2.1.9 Valves

All valves upto and including 50 mm shall be of gun metal or of cast steel. Larger valves may be of gun metal or may have cast iron bodies with gun metal fittings. Sampling & drain valves should have zero leakage rate.

12.2.1.10 Gaskets

- a) Gasket shall be fitted with weather proof, hot oil resistant, rubberized cork gasket.
- b) If gasket is compressible, metallic stops shall be provided to prevent over compression.
- c) All the gaskets to be provided shall be of RC70C or RC80C grade. It shall not be older than one year. Necessary tests certificates from manufacturer shall be submitted along with acceptance test report.
- d) The gaskets shall not deteriorate during the life of transformer if not opened for maintenance at site. All joints flanged or welded associated with oil shall be such that no oil leakage or sweating occurs during the life of transformer. The quality of these joints is considered established, only if the joints do not exhibit any oil leakage or sweating for a continuous period of at least 3 months during the guarantee period. In case any sweating / leakage is observed, contractor shall rectify the same & establish for a further period of 3 months of the same. If it is not established during the guaranteed period, the guaranteed period shall be extended until the performance is established.

12.2.1.11 System and Transformer Neutral Earthing Arrangement

System Earthing and Transformer Neutral earthing shall be done as per system requirement and SLD. In case of solidly earthed neutral of Transformers, it shall be brought through insulated support from tank to the ground level at a convenient point with 2 nos. copper flat, for connection to ground network (as applicable). Neutral Grounding Resistors may be used based on design

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considerations.

12.2.1.12 Fittings

Standard fittings as described in IS: 2026 (latest issue) shall be ensured in addition to the following mentioned fittings to be provided with transformer:

- a) Main conservator shall have air cell type constant oil preservation system to prevent oxidation and contamination of oil due to contact with moisture.
- b) Conservator for main tank shall fitted with oil filling flange & cap, isolating valve, drain valve, 150mm magnetic oil level gauge with low level alarm potential freecontacts. Conservator shall be at right angle to the axis of HV bushing.
- c) Breather for conservators shall be positioned not more than 1200/1400 mm above rail top.
- d) Prismatic oil level gauge shall, also, be provided on conservator tank. The background shall be so painted that the oil level can be seen from ground level also. The three positions of oil level shall be indicated viz.
(i) Minimum (ii) Normal (iii) Maximum
- e) Minimum two Nos. of spring operated Pressure Relief Valves of minimum T6 size with alarm/trip contacts. Discharge of PRD shall be properly taken through pipes & directed away from the transformer /other equipment.
- f) Air release plug.
- g) Inspection openings and covers.
- h) Bushing with metal parts and gaskets to suit the termination arrangement.
- i) Cover lifting eyes, transformer lifting lugs, jacking pads, towing holes and core andwinding lifting lugs
- j) Protected type Mercury or alcohol in glass thermometer.
- k) Bottom and top filter valves with threaded male adapters, bottom Sampling valve & drain valve.
- l) Rating and diagram plates on transformers and auxiliary apparatus.
- m) Prismatic/ toughened glass oil gauge for transformers and tap changer Chamber.
- n) 150 mm dial type oil temperature indicator with alarm and trip contacts, maximumreading pointer & resetting device.

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- o) 150 mm dial type Winding temperature indicator with alarm and trip contacts, maximum reading pointer & resetting device.
- p) Flanged bi-directional wheels. (as applicable)
- q) Marshalling Box.
- r) Aircell in the conservator
- s) Drain valves/ plugs shall be provided in order that each section of pipe work can be drained independently. The Sludge valve at the bottom most point of tank is to be provided for easy flush out/removal of sludge during maintenance.
- t) Oil leak proof butterfly valves (positive operated) shall be provided to facilitate taking out any of the radiators without disturbing the transformer. Necessary gaskets in required nos. for fixing radiators and butterfly valve operating keys shall be provided.
- u) Terminal marking plates.
- v) Valves schedule plates.
- w) Equipment earthing - Four nos. of earthing pads each with four nos. of tapped holes (M 12 Bolts,) with M12 bolts, plain & spring washers suitable for connection of 50 x 6 mm GS earthing flats. These earthing pads should be provided one each on each side of transformer at centre.

The fittings listed above are only indicative and other fittings, which generally are required for satisfactory operation of the transformer, are deemed to be included.

Tests and Inspection

The Type Test & Routine test of the transformer shall be carried out in accordance with IS: 2026. In addition to this, tank Vacuum test, tank pressure test, and oil leakage test shall also be carried out as a type test in line with Central Board of Irrigation & Power norms. In case the contractor has conducted such specified type test(s) within the last ten years as on the date of bid opening, he may submit the type test reports to the owner for waiver of conductance of such type of test(s). These reports should be for the tests conducted on the equipments similar to those proposed to be supplied under this contract and the test(s) should have been conducted at an independent laboratory. In case the Contractor is not able to submit the report of the type test(s) conducted within the last ten years from the date of bid opening, or in case the type test report(s) are not found to be in conformity with the specifications, the Contractor shall conduct all such tests at an independent laboratory under this contract, free of cost to the Owner and submit the reports for approval.

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No-load test for the transformer shall also be carried out as part of Routine test and the acceptance criterion shall be as described above.

Tank pressure Test

Transformer tank of each type shall be subjected to a pressure corresponding to twice the normal head of oil or to the normal pressure plus 35 KN / sq. m whichever is lower, measured at the base of the tank & maintained for one hour.

Oil leakage test on assembled transformer

All tank & oil filled compartment shall be tested for oil tightness by being completely filled with oil of viscosity not greater than that of specified oil at the ambient temperature & applying pressure equal to the normal pressure plus 35 KN/sq. m measured at the base of the tank. The pressure shall be maintained for a period of not less than 24 hours during which time no sweating shall occur.

B POWER AND CONTROL CABLE:

1. General:

All the DC and AC cables shall be designed for outdoor application with a continuous ambient temperature of 50°C. They shall be sized for a voltage drop less than 2% for DC cables and 2% for AC cables. The size of each type of cable selected shall be based on minimum voltage drop. Due consideration shall be made for the de-rating of the cables with respect to the laying pattern in buried trenches / on cable trays, while sizing the cables. All cables shall be supplied in the single largest length to restrict the straight-through joints to the minimum number.

Proper design and calculations report pertaining to design and selection of Cable(s) shall be submitted to EIC for approval prior to commencement of work at site.

List of approved makes is given in Annexure-3 of SCC Technical.

2. Technical requirements:

1) General Requirement:

- a) Solar cables shall have Copper conductor and must have TUV certification.
- b) Only terminal cable joints shall be accepted. No cable joint to join two cable ends shall be accepted. All cable/wires shall be marked with good quality letter and number ferrules of proper sizes so that the cables can be identified easily.
- c) Cable terminations shall be made with suitable cable lugs & sockets etc., crimped properly and passed through brass compression type cable glands at the entry & exit point of the cubicles.
- d) The cables shall be adequately insulated for the voltage required and shall be suitably color coded for the required service. Bending radii for cables shall be as per manufacturer's recommendations and IS: 1255.

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- e) All cables should be tested at the site as per standard in front of owner's engineer present at the site. The Cables shall also confirm to IEC 60189 for test and measuring methods and they should be UV Protected. No cable should be left open.
- f) Data sheets of individual cable sizes shall be submitted for approval by Owner. Drum numbers and drum length details shall be submitted with each consignment.
- g) Cables must be selected so as to minimize the risk of earth faults and short-circuits. All exposed DC cables must be flexible single core and must satisfy the above criteria.
- h) All the cables of size 16 mm² or higher shall be armoured, for mechanical protection of sheath, insulation and conductor.
- i) Unarmoured cable wherever laid underground to be laid through MS (Mild steel) conduit.
- j) All data transmission cable shall be Optical Fibre cable.
- k) All AC cable (HT & LT side) specifications shall be for unearthed system.

2) DC CABLES:

- a) **DC/SOLAR CABLES (Interconnecting SPV MODULES and for SPV Modules to SMU):**
 - i) Cables used for inter-connecting SPV modules as well as Modules to SMU's shall conform to the requirements of TUV specification Pfg 1990/05.2012 standards & EN 50618 applicable for DC cable for photovoltaic system.
 - ii) These cables shall meet the fire resistance requirement as per TUV specification Pfg 1990/05.2012 standards & EN 50618 and shall be electron beam cured.
 - iii) DC/Solar cables shall be of 1500 Vdc rating, min. 4 mm² CU cable.
 - iv) Ambient temp. Range of the cable shall be from -40 deg. C to 85 Deg. C
 - v) The Cables used for (+) ve and (-)ve shall have distinct color identification.
 - vi) In addition to manufacturer's identification on cables as per TUV, following marking shall also be provided over outer sheath.
 - Cable size and voltage grade
 - Word 'FRLS' at every 5 metre
 - Sequential marking of length of the cable in metres at every one metre
 - vii) The Printing shall be progressive, automatic, in line and marking shall be legible and indelible.
 - viii) Type test, routine and acceptance tests requirements for these cables shall be as per TUV specification Pfg 1990/05.2012 standards & EN 50618.Charges of routine

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and acceptance tests shall be deemed to be included in the cable price. Sampling for acceptance tests will be as per IS 7098.

b) DC CABLES (SMU's TO INVERTER)

- i) Cables used between SMU's and Inverters shall be min. 1.1 kV (DC) grade, heavy duty, compacted copper conductor, XLPE insulated, PVC inner-sheathed, galvanized steel wire/strip armoured, fire/flame retardant, PVC outer sheathed conforming to IS: 7098 (Part-I).

TECHNICAL SPECIFICATIONS FOR DC-CABLE		
SL No.	Description	Cables
1	Type of cable	-
2	Standard applicable	EN60811 & Other relevant codes
3	Number of cores and cross sectional area	1C
4	Shape	Circular / shaped, compacted, stranded
5	Color	Black
6	Ambient Temperature:	-10°C ~ +60°C
7	Maximum Temperature at Conductor:	120°C (20000h)
8	Short Circuit Temperature:	200°C (at conductor max. 5sec)
9	temperature index	120°C
10	Elongation of Insulation and sheathing:	125%
11	Shrinkage	2% at 120°C
12	Fire Performance	According to IEC Standards
13	Conductor	Stranded Copper Conductor
14	Insulation	Cross linked Halogen Free & Flame Retardant Insulation
15	Oxygen index	Minimum 29%(As per ASTM D 2863)
16	Sheath	Cross linked Halogen Free & Flame Retardant Sheath in Black/Blue/Red Color
17	Ampacity	According to requirements for cables for

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		PV systems
18	Anticipated service life	Min 25Years

- ii) The maximum voltage drop of DC Cables (for the complete DC system) shall be limited to 2%. The cable shall be ozone-resistant according to EN50396, UV-resistant according to UNE-HD 605:2008 (HD605/A1) else the part of cable above ground and exposed to atmosphere shall be enclosed in proper conduit with sufficient measures to avoid any exposure to external environment. The cable shall be tested to last 25 years.

3) HT CABLES

- a) Approximately 0.9 km. of 2 nos. (i.e total of 1.8 kms) HT cable (as per requirement of Discom/Specifications laid out below), out of which one to be used as spare at time of fault shall be required for connection of HT power from solar plant to existing HT feeder. Both the ends of spare cable shall be properly sealed to prevent any moisture ingress or damage otherwise.
- b) Unless otherwise specified, the cables shall conform, in all respects, to IEC-60840 and IS:7098 with latest amendment or latest edition for cross linked polyethylene insulated PVC sheathed cable.
- c) Cables shall be Flame/Fire Retardant Low smoke (FRLS) type designed to withstand all mechanical, electrical and thermal stresses develop under steady state and transient operating conditions as specified elsewhere in this specification.
- d) The selection criterion for HT Cable shall be as per norms/specifications

4) LT CABLES

- e) In addition to plant LT cables, 1 no. LT cable is to be laid for approx. 0.9 kms from existing PMCC building to solar plant for Auxiliary supply.
- f) LT Power & control cables shall be of minimum 1100 volts grade XLPE / PVC insulated conforming to IS 1554 for utilization voltages less than equal to 415 V.
- g) All cables shall be Flame/Fire Retardant Low Smoke (FRLS) type designed to withstand all mechanical, electrical and thermal stresses developed under steady state and transient operating conditions as specified elsewhere in this specification.
- h) If cables are to be laid underground, laying shall be as per latest relevant IS code.
- i) Copper/aluminium conductor used in power cables shall have tensile strength as per relevant standards. Conductors shall be stranded.
- j) XLPE insulation shall be suitable for a continuous conductor temperature of 90 deg. C and short circuit conductor temperature of 250 deg C.

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- k) PVC insulation shall be suitable for continuous conductor temperature of 70 deg C and short circuit conductor temperature of 160 deg. C.
- l) In addition to manufacturer's identification on cables as per IS, following marking shall also be provided over outer sheath:
 - i) Cable size and voltage grade - To be embossed
 - ii) Word 'FRLS' at every 5 metre - To be embossed
 - iii) Screen Fault current __ _KA for __ _ Sec. (Value of current & time shall be indicated)
 - iv) Sequential marking of length of the cable in metres at every one metre. -To be embossed / printed
 - v) Voltage grade' to be printed/embossed at the interval of one meter-length. The identification, by printing or embossing shall be done only on the outer sheath.
- m) The embossing / printing shall be progressive, automatic, in line and marking shall be legible and indelible.
- n) All cables shall meet the fire resistance requirement as per IEEE - 383 with cable installations made in accordance with 'Flammability Test' and as per Category-B of IEC 332 Part -3
- o) Cable selection& sizing :
LT cables shall be sized based on the following considerations:
 - i) Rated current of the equipment
 - ii) Short circuit withstand capability
 - iii) Max permissible voltage drop of 2% for entire AC cables
- p) De rating Factors:
De rating factors for various conditions of installations including the following shall be considered while selecting the cable sizes:
 - i) Variation in ambient temperature for cables laid in air
 - ii) Grouping of cables
 - iii) Variation in ground temperature for buried cables.
- q) Cable lengths shall be considered in such that straight through cable joints are avoided. Cables shall be armoured type if laid directly buried.
- r) All acceptance and routine tests as per the specification and relevant standards shall be carried out. Charges for these shall be deemed to be included in the equipment price.

415 V CABLE TECHNICAL SPECIFICATION

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SL No.	Description	Cables
1	Type of cable	FRLS cables
2	Standard applicable	IS : 1554
3	Voltage designation of cables	1.1 kV
4	Number of cores and cross sectional area	As per Design finalized
5	Conductor	Copper / Aluminium
5.1	Maximum withstand temperature	
5.1.1	Normal condition	90°C
5.1.2	short circuit condition	250°C
5.2	Shape	Circular / shaped, compacted, stranded
6	Insulation	Suitable for 1.1 KV
6.1.0	Material & standard	PVC
6.2.0	Application	Extruded (Sleeve extrusion not permitted)
6.3.0	Volume resistivity	As per IS
7	Sheath	
7.1.0	Material & standard	PVC type ST2 (IS : 5831)
7.2.0	Application	Extruded
7.3.0	Color	Black
7.4.0	Whether FRLS	Yes
8	Characteristics of FRLS Sheath	
8.1.0	Oxygen index	Minimum 29%(As per ASTM D 2863)
8.2.0	Temperature index	Min 250°C(As per ASTM D 2863)
8.3.0	Smoke density	40% min., 60% max as per ASTM D 2843
8.4.0	Acid gas generation	Max 20% as per IEC-754-1
8.5.0	Flammability test	As per IEC : 332 Part III Cat B & Swedish Chimney test as per SS :

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		424 : 14 : 75, IEEE 383 / 74
9	Tolerance not exceed on	
9.1.0	Outer diameter	±2%
9.2.0	Eccentricity	10%
9.3.0	Ellipticity	2%
10	Standard drum length (power cables)	500 m ±5% unless otherwise specified.
11	Progressive sequential length marking to be provided on outer sheath	Yes @ 1 meter
12	Oxygen index	Minimum 29%(As per ASTM D2863)

- s) 1.1 KV Grade Control Cables shall have stranded copper conductor and shall be multicore PVC insulated, PVC inner sheathed, armoured / unarmoured, FRLS PVC outer sheathed conforming to IS: 1554. (Part-I).

5) Cable Ends

- a) Cable end terminations and joint kits shall comply with the latest version of the relevant IS standard.
- b) The cable ends shall be terminated with adequate size copper lugs and sockets etc., single/double compression cable glands. Cable glands shall be of robust construction capable of clamping cable and cable armour (for armoured cables) firmly without injury to insulation. The metallic glands shall be earthed at two locations. Suitable lock type crimping lugs shall be used for cable end terminations. Where cables are raising from ground, suitable PVC pipe guarding shall be provided for cable raising with sealing of the guarding PVC pipe including a suitable clamp.
- c) Data sheets of the joints and kits, shall be submitted for approval by Owner.

6) Cable trays (wherever applicable):

- a) Cable trays shall be ladder/perforated type as specified complete with matching fittings (like brackets, elbows, bends, reducers, tees, crosses, etc.), accessories (like side coupler plates, etc.) and hardware (like bolts, nuts, washers, G.I. strap, hook etc.) as

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required. Cable trays shall be ladder type for power & control cables and perforated for instrumentation cables.

- b) Cable trays, fittings, and accessories shall be fabricated out of rolled mild steel sheets free from flaws such as laminations, rolling marks, pitting etc. These (including hardware) shall be hot dip galvanized as per relevant IS.
- c) Cable trays shall have standard width of 150 mm, 300 mm, 600 mm & 900 mm and standard lengths of 2.5 meter. Thickness of mild steel sheets used for fabrication of cable trays and fittings shall be minimum 2 mm. The thickness of side coupler plates shall be minimum 3 mm.
- d) Cable trays shall be required for branching out few cables from main cable route. These shall be U- shaped, fabricated of mild steel sheets of minimum thickness 2 mm and shall be hot dip galvanized as per relevant IS. Troughs shall be of standard width of 50 mm & 75 mm with depth of 25 mm.

3. Codes and Standards:

The applicable codes and standards are as mentioned below

TUV specification 2 Pfg 1169/08.2007	DC cable for photovoltaic system
IS: 1554-I	PVC insulated(Heavy Duty) electric cables for working voltages upto and including 1100V
IS: 3961	Recommended current rating for cables
IS: 3975	Low carbon galvanized steel wires, formed wires and tapes for armouring of cables
IS: 5831	PVC insulation and sheath of electrical cables
IS: 7098(Part-I)	Cross linked polyethylene insulated PVC sheathed for working voltage upto and including 1100V
IS: 8130	Conductors for insulated electrical cables and flexible cords
IS: 10810	Methods of test for cables
IEC-754(Part-I)	Test on gases evolved during combustion of electric cables
IEC-332	Tests on electric cables under fire conditions. Part-3: Tests on bunched wires or cables (Category-B)

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IS : 10418	Specification for drums for electric cables.
ASTM-D -2843	Standard test method for density of smoke from the burning or decomposition of plastics.
ASTM-D-2863	Standard method for measuring the minimum oxygen concentration to support candle like combustion of plastics.
IEC-754 (Part-I)	Test on gases evolved during combustion of electric cables.
IEEE-383	Standard for type test of Class IE Electric Cables.

The list of approved makes is given in Annexure-3 of SCC Technical.

4. **Tests**

4.1 **Type Tests**

The cables offered should be type tested. Type test report should not be more than ten years old, reckoned from the date of bid opening, in respect of the following tests, carried out in accordance with relevant standards, from Govt./Govt. approved test house, and shall be submitted during Factory Acceptance Tests (FATs):

- i) Physical tests for insulation and outer sheath.
- ii) Bending test.
- iii) Di-electrical power factor test.
- iv) Heating cycle test followed by di-electrical power factor as a function of voltage and partial discharge test.
- v) Impulse withstand test.

The remaining type test report as per clause 3 of ISS-7098/IEC-871/IEC-60840 for HT Cables and as per IS 1554/IS 694/IEC 60332 for LT Cables shall be submitted by the contractor for successful establishment of Acceptance Tests. These type test reports shall be from Govt./ Govt. approved test house and shall not be more than ten years old, reckoned from the date of placement of order. The failure to do so will be considered as a breach of contract.

4.2 **Routine and Acceptance Tests**

All routine and acceptance tests shall be carried as per relevant standards, approved QAPs and Technical Specifications in the presence of Owner's representative/TPI.

5. **Marking**

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The marking on the drum shall have the following information: -

- a) Reference to Indian Standard & cable code.
- b) Name of the manufacturer & trade name.
- c) Nominal cross section area of conductor for the cables.
- d) Number of core.
- e) Sequential No. at each meter.
- f) Type of the cable & voltage for which it is suitable.
- g) Length of cable on the drum.
- h) Approximate gross weight.
- i) Net weight of the cable.
- j) Drum identification number.
- k) P.O. No. and date.
- l) Consignee's name with designation.
- m) Year of manufacture.

6. Drawings and Instruction Manual

The tenderer shall supply the following drawings during detailed engineering: -

- i) Detailed drawing of the cable showing conductor, screening insulation, Armoring, outer sheath etc.
- ii) Detailed drawing showing jointing of cable and sealing of end boxes.

Copies of instruction manuals for testing, installation, jointing operation and maintenance of cables shall also be submitted during detailed engineering.

7. Cable laying

Cable laying procedure shall be as per IS:1255. The Contractor shall prepare proper document for cable laying (DC, LT Power Cables) and submit for approval of Owner before starting the work of Cables at site.

For DC cable min. loop of 2 m. to be left on both termination ends for future use. Similarly for AC cables (HT&LT) loop of min. 4 m. to be left on both termination ends and on both ends of joints (wherever applicable).

While laying cables, effort should be made to maintain depth & keep clearances between cables / trenches for safety, to avoid electrical interference, for proper dissipation of heat as well as to avoid damage to other cables during fault in any cable. Following minimum gaps/depths/protection may be maintained in various cases.

- Minimum spacing between power cable trench & control cable trench: 200 mm

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- Minimum spacing between Instrumentation cable trench & any other cable trench: 300 mm
- Minimum inter axial spacing between two cables inside a trench : 200 mm
- When cables are laid in layers minimum clearance between two layers: 300 mm
- Minimum depth from ground level to top of cable for LT cables: 750 mm
- Minimum depth from ground level to top of cable for HT cable up to 33 KV: 1000 mm
- Minimum depth from ground level to top of cable for Road crossing: 1000 mm
- Minimum cushioning of sand layer at bottom of the trench should be : 150 mm
- Minimum cushioning of sand layer over the top of cable in topmost layer: 150 mm
- Minimum cushioning of sand layer between two layers of cables: 300 mm
- Protective covering over the topmost layer of the cable: One layer of brick/stone/tiles

Route marker to be provided along the cable route at an interval of not more than 50 M, at cable joint locations and wherever there is a change of directions. Separate route marker should be provided for all types (Power/ Control/Instrumentation) & voltage grade (HT/LT) of cables.

For identification, each underground cable should be fastened with Aluminum cable tag marker at interval of not more than 25 M, near the terminals, where coming over ground, both end of road crossings, when changing directions.

At road crossings, building entry/exit, paved areas cables should be laid through pipes or ducts. When a cable is laid through pipes/ducts there should be 50% free space for ease of laying and future maintenance. Both end of the pipes or ducts should be sealed. Pipes/ducts for LT, HT, Control & Instrumentation cables should be separate. In road crossings top of pipes should be at a depth of minimum 1 meter below the road level. Suitable cushioning as well as sand padding should be provided at the entry and exit point of the cable to avoid damage of the cable with sharp end of pipes/ducts. At entry/exit point of the building downward slope should be towards outside and both side should be sealed to avoid entry of water.

DC cables from modules are laid below the modules with the support of module structures. These cables should be properly supported all along its length and tied with

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non magnetic material at interval of not more than 300 mm. Cable should not be hanging anywhere.

During laying and while storing of cable drums all open ends of the cables should be immediately sealed to avoid ingress of moisture and damage of cable.

B SCADA:

1 G

General:

Contractor shall provide complete SCADA system with all accessories, auxiliaries and associated equipments and cables for the safe, efficient and reliable operation of entire solar plant and its auxiliary systems. Bidder shall include in his proposal all the Hardware, Software, Panels,

Power Supply, HMI, Laser Printer, Gateway, Networking equipment and associated Cable etc. needed for the completeness even if the same are not specifically appearing in these specifications. The SCADA shall record and report all necessary operational details, obtain and process data into information for the warranty agreements and allow monitoring in the plant and manual control. The SCADA will be optimised to allow remote interrogation and resetting of as many errors as possible consistent with industry standards for safety and machine integrity.

2 Technical Requirements:

- a) SCADA System shall have the provision to perform the following functions:
 - i) Real-time acquisition and display of data, status, alarms and trends
 - ii) Display of status of major equipments in Single Line Diagram (SLD) format
 - iii) Control of switchgears/Breakers and Inverters
 - iv) Display and storage of measured values
 - v) Display and storage of derived/calculated/integrated values
 - vi) Display and Storage of Alarm, Event and Trends
 - vii) Generate, store and retrieve user configurable periodic Reports
 - viii) Remote monitoring of essential parameters on the web using standard Modem
 - ix) Separate indication for protection relay status for Over Current, Earth Fault, Over Voltage, Under Voltage tripping to be provided in SCADA.

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- x) Synchronisation of SCADA clock with inverter clock.
- xi) Heat sink temperature & cabinet temperature values of inverter to be displayed in SCADA for each cabinet of a inverter.
- xii) Inverter cooling fan functional status to be displayed in SCADA.
- xiii) All alarms to be included in event logs.
- xiv) Display of percentage for Actual vs. predictive generation.
- b) The following real time data can be monitored
 - i) Grid summary
 - AC output voltage
 - KVA
 - Frequency
 - Exported power (kW)
 - ii) Inverter summary
 - AC output voltage
 - KVA
 - Frequency
 - Power Factor
 - Current
 - Exported power (kW)
 - iii) DC summary
 - DC voltage
 - Current
 - DC power input
 - iv) Site Summary (Field data) and other data
 - Insolation Data
 - Module temperature and ambient temperature
 - Wind speed
 - Grid outage
 - Auxiliary consumption separate for day and night hours.
- c) The above data can be logged and stored at pre-set intervals. These data can be displayed on local/remote P.C. A set of graphical display of these data can also be obtained. Summation logging and event logging are provided.
- d) SCADA shall have provision to control all the Breakers and Inverters.
- e) SCADA shall have provision to generate reports like: Daily plant performance report, Daily management report (performance summary), Monthly reports and Annual reports. Formats for each of the report to be finalised as per site requirements.
- f) The control system shall provide safe operation under all plant disturbances and on component failure so that under no condition the safety of plant, personnel or equipment is affected. Control system shall be designed to prevent abnormal swings due to loss of Control System power supply, failure of any Control System

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- component, open circuit/short circuit. On any of these failures the controlled equipment/parameter shall either remain in last position before failure or shall come to fully open/close or on/off state as required for the safety of plant/personnel/equipment and as finalized during detailed engineering. System shall be designed such that there will be no upset when Power is restored.
- g) The Control system shall be designed to operate in non-air conditioned area. However contractor shall provide a Package/Split AC of suitable capacity decided by load requirement in SCADA room.
 - h) Instrumentation will be provided for operation and control of the plant. Appropriate instruments will be installed at suitable locations to measure the following details
 - i) Insolation Data, wind data,
 - ii) Module and ambient temperature
 - iii) String level data like voltage and current
 - iv) Exported power (kW)
 - v) Frequency
 - vi) Power Factor
 - vii) Performance ratio
 - i) The SCADA shall be OPC version 2.05a compliant and implement OPC-DA 2.05a server as per the specification of OPC Foundation. All data should be accessible through this OPC server.
 - j) All necessary software required for implementation of control logic, operator station displays / logs, storage & retrieval and other functional requirement shall be provided. The programs shall include high level languages as far as possible. The contractor shall provide sufficient documentation and program listing so that it is possible for the Employer to carry out modification at a later date.
 - k) The Contractor shall provide all software required by the system for meeting the intent and functional/parametric requirements of the specification.
 - l) Industry standard operating system like WINDOWS (latest version) etc. to ensure openness and connectivity with other system in industry the following standard protocols shall be provided.
 - i) Modbus (TCP/IP, RTU, ASCII)
 - ii) Sub Station Protocol like IEC-61850
 - iii) Any other protocol on which the offered equipment (by Contractor) will communicate with SCADA
 - m) The system shall have user friendly programming language & graphic user interface.
 - n) Module cleaning alert feature based on regular internal analysis of the generation, radiation, alerts & other parameters to be provided into the Monitoring system.
 - o) Contractor shall provide the I/Os to be connected to each type of module at main control room/Inverter room for followings (included but not limited to):
 - 1. Analog Input Module

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- Ambient Temperature --- 02 Nos
 - Module Temperature ---- 01 Nos at each Inverter block
 - Meteorological Parameters (Wind Speed, GHI etc)
2. Binary Input Module
- All the LT incomer breaker and bus coupler breaker
 - All the breakers
3. Binary Output Module:
- All the LT incomer breaker and bus coupler breaker
 - All breakers
- p) DATA COMMUNICATION SYSTEM (DCS) :The Data Communication System shall include a redundant Main System Bus with hot back-up. Other applicable bus systems like cubicle bus, local bus, I/O bus etc shall be redundant except for backplane buses which can be non-redundant.
- q) The DCS shall have the following minimum features :
- i) Redundant communication controllers shall be provided to handle the communication between I/O Modules (including remote I/O) and PLCs and between PLCs and operator work station.
 - ii) The design shall be such as to minimize interruption of signals. It shall ensure that a single failure anywhere in the media shall cause no more than a single message to be disrupted and that message shall automatically be retransmitted. Any failure or physical removal of any station/module connected to the system bus shall not result in loss of any communication function to and from any other station/module.
 - iii) If the system bus requires a master bus controller philosophy, it shall employ redundant master bus controller with automatic switchover facility.
 - iv) Built-in diagnostics shall be provided for easy fault detection. Communication error detection and correction facility (ECC) shall be provided at all levels of communication. Failure of one bus and changeover to the standby system bus shall be automatic and completely bump less and the same shall be suitably alarmed/logged.
 - v) The design and installation of the system bus shall take care of the environmental conditions as applicable.
 - vi) Data transmitting speed shall be sufficient to meet the responses of the system in terms of displays, control etc. plus 25% spare capacity shall be available for future expansion.
 - vii) Fibre optic cables shall be employed.
 - viii) The Contractor shall furnish details regarding the communication system like communication protocol, bus utilization calculations etc.

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- r) Suitable Operator Interface Displays/Logs/Reports for control operation & monitoring shall be provided. The details shall be finalized during detailed Engg. Stage.
- s) The Stored data can be plotted after co-relating the site temperature and insolation, the power exported to grid and hence the benefits shall be evaluated in comparison with estimated data and the real time data. Flexible formatting system is possible for the data available so as to obtain the relevant graphic display.
- t) In addition to above, the system shall also have facility to store & retrieve important plant data for a very long duration (plant life) on portable long term storage media. These data will include any data from the database as well as processed/computed data based on various calculations/transformation. The retrieved data from long term storage media should be possible to be presented in form of alarms, logs, reports, etc.
- u) Contractor shall provide the UPS/DC Power supply of suitable rating to cater all the load requirements of SCADA system and its auxiliaries. The power backup for the entire system should be at least for 2 hours.
- v) All technical manuals, reference manuals, user's guide etc., in English required for modification/editing/addition/deletion of features in the software of the PLC System shall be furnished. The Contractor shall furnish a comprehensive list of all system/application software documentation after system organization for Employer's review and approval.
- w) Grid Failure Alert: In case of grid failure on the site, the SCADA should display alert of Power OFF & after grid supply resumes, an alert of Power ON should be generated to trace the Grid supply failures.
- x) Data acquisition system terminal /ports compatible to RS485 are provided in each inverter. A web logger combines all the pertinent data of each inverter along with field data such as solar radiation and module temperature.
- y) Full data backup facilities shall be kept based on CD-ROM or tape drives as appropriate.
- z) The SCADA computer will be installed in plant site office and will be fully protected against the expected environmental conditions.
- aa) The Local monitoring system shall include local control of the individual arrays/modules/ structures, group's arrays. System configuration shall allow for any number of user-defined groups of arrays/ panels.
- bb) Adequate provision shall be made for interlocks to prevent unsafe operation of the plant while site personnel are working on them and a "crew present switch" shall be provided to allow maintenance staff to disable remote access.
- cc) Any SCADA commands shall be ignored if there is a crew at the array. Any commands issued locally at array will override the SCADA system if there is a crew present. If there are no crew present, commands from the SCADA system shall override the current array setting. Current site events shall be clearly shown with event code, event description, response status and times.

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- dd) The SCADA shall be supplied with three sets of comprehensive, complete and up-to-date documentation relevant to all the hardware and software supplied.
- ee) All the values corresponding to above mentioned parameters shall be recorded with respect to independent system clock of SCADAime central time synchronization clock to which all the devices shall be synchronized.
- ff) Monitoring System shall generate GHI value and Generation value on instantaneous/average/integrated basis as required. The same shall be used to assess the system performance and to establish Performance Guarantee Test (PGT) of the system as described in the SCC. The field data shall be fed to the monitoring system through proper wiring/cabling, or through other communication medium as may be deemed fit.

a. Codes and Standards

Shall comply to all the relevant standards, but not limited to the following:

Codes	Description
IEC 61724	Photovoltaic System Performance Monitoring – Guidelines for measurement, data exchange and analysis

- b. System/software shall allow visualization, monitoring and service of the installation. The system shall be web enabled. It should be possible to access the system with any standard web browser like Internet Explorer, Google Chrome, Mozilla, Safari etc. & also on the mobile app suitable for Android & Apple based platforms. For this purpose, relevant software/ hardware shall be supplied by the Contractor. In addition to the web portal, it should also be possible to retrieve the data directly from the SCADA. The software for access/ visualization of data from SCADA should also be provided. Necessary executable files, if any, will be required to be given on a CD/any other storage device along with lifetime license (if applicable).
- c. Contractor shall ensure installation of internet lease line for SCADA accessibility at other IOCL locations. A complete and comprehensive SCADA report shall be made available to
 - i) know what is produced in real time
 - ii) have detailed analytics to understand if the power generated is 'as expected/designed', and
 - iii) Know any issues with field equipment and correct, through effective O&M.

- d. Contractor shall ensure remote accessibility of SCADA at IOCL CBPL Chittoor control room as per OWNER requirement in addition to local accessibility at MCR building.

Remote Monitoring System (RMS)/ Microprocessor based Data Logger System:

1. The plant parameters shall be measured using Microprocessor based Data Logger System or an equivalent system deployed to monitor the plant centrally and also to study the plant performance. All the parameters from different array/systems at various locations, individually and combined together, must come to the central system to provide a live and comprehensive view of the entire solar plant with continuous alert system. The remote monitoring system shall be capable to monitor and record at least 3 months data within the system and compatible to be viewed from anywhere through internet cloud network. The system shall be in accordance with IEC 61724. The Microprocessor based Data Logger system shall have spare capacity with provision of at least 25% expansion without any software or hardware up-gradation at Microprocessor based Data Logger system end and further licensing so that any future solar project can be integrated with the same system. The plant monitoring parameters shall include:
 - a) PV array energy production: Communicable multi-function energy meters logging the actual value of AC Voltage and Current & Energy generated (kWh) by the Solar system fed at the Captive Load Bus shall be made available. Voltage, Current and Energy output from individual Inverters shall also have to be provided.
 - b) Solar PV Plant Energy production: Total energy generation (AC) from Solar PV Power Plant as measured at energy meter installed in Solar PV Plant Captive Load Bus. This reading shall be treated as final energy generation from Solar PV Power Plant for evaluation of Performance Guarantee.
 - c) Solar Irradiance: One no. of mono crystalline Si-based Solar Reference Cell shall be provided, with its sensor mounted in the plane of the array. Readout shall be integrated with Remote Monitoring System. The reference cell must have an accuracy > 98%. Test certificate for the same shall be submitted. Reference Cell shall be capable to provide instantaneous irradiation (in W/m²) at an interval of every 1- minute. Reference Cell shall have communicable RS-485 port.
 - d) Percentage controller regulation value from Solar-Grid/DG Energy Management System shall be made available.
 - e) Electrical performance parameters: All the electrical parameters have to be provided in Microprocessor based Data Logger system. The performance logs from individual electrical equipments/devices have to be made available in Microprocessor based Data Logger system with a sampling time as given in the standards.
 - f) Storage of Data during no network: In case of internet / network failure the Datalogger should keep on logging the data from plant and should store it in its internal memory.

The stored / buffered data should be sent automatically to the cloud server in LIFO (Last in First Out) format once the Internet / network connectivity is established to recover the historical data.

- g) Data Log Report: Microprocessor based Data Logger system should be programmed to generate data log report on a daily, monthly and annual basis. All the key parameters necessary to evaluate the plant performance shall be integrated in this report after finalization of the same. All the values shall correspond to system clock time at the time of recording and in all the reports generated.
- h) Grid Failure Alert: In case of grid failure on the site, The Data Logger should send an alert of Power OFF & after grid supply resumes an alert of Power ON should be generated to trace the Grid supply failures.

- 2. All the values corresponding to above mentioned parameters shall be recorded with respect to independent system clock of Remote Monitoring System.
- 3. Monitoring System shall generate GHI value (from reference cell), Generation value (from the AC energy meter installed at switchgear feeder panel), and percentage controller regulation value (derived from Solar-Grid/DG Energy Management System) on instantaneous/average/integrated basis as required in the assessment procedure for Performance Guarantee Test and Yearly Performance Evaluation Test. The same shall be used to assess the system performance and to establish Performance Guarantee Test (PGT) of the system as described in the SCC. The controller regulation percentage based on the operational requirement of DG upon unavailability of Grid shall be fed to the monitoring system through proper wiring/cabling, or through other communication medium as may be deemed fit.
- 4. Technical Requirements:
 - a) Microprocessor based Data Logger system shall have the provision to perform the following functions:
 - Acquisition and display of data, status, and trends

- Minimum storage time for data in data logger memory shall be 1 month, before transfer of stored data to cloud memory/permanent storage device. Contractor to ensure transfer of data from data logger memory to cloud memory/permanent storage device.
 - Monitoring of all the parameters from Switchgears (especially numerical relays) and Inverters
 - Datalogger should have at least two independent relay outputs of 24V DC to take remote control actions via SMS
 - Display and storage of measured values at remote monitoring systems through internet cloud network
 - Display of percentage for Actual vs. predictive generation through internet cloud network
 - Display and storage of derived/calculated/integrated values
 - Display and Storage of events and trends
 - Generate, store and retrieve Event Reports from Inverters and Numerical Relays
 - Generate, store and retrieve user configurable Periodic Reports
 - System self-supervision
 - A LAN port for TCP / IP Modbus communication and/or for Internet connectivity should be provided.
 - A dedicated SIM slot for GPRS communication should be provided.
 - Maximum peak power of the Datalogger during GPRS connection should be 5W
 - Backup facility for data backup at every three months on CD-ROM/tapes/portable storage devices through cloud network
- b) SMS generation feature for at least 5 predefined contact numbers shall be made available on Plant Trip/any operational deviation.

- c) A graphical daily and monthly generation report as well as generation w.r.t. radiation shall be made available at cloud network. All the data shall be made available on internet cloud network provided along with the Data Logging System.
- d) The following data to be monitored:
 - Grid summary
 - ✓ AC output voltage
 - ✓ KVA
 - ✓ Frequency
 - Inverter summary
 - ✓ DC Energy Input (key parameter to be used for Plant Performance evaluation)
 - ✓ AC output voltage
 - ✓ KVA
 - ✓ Frequency
 - ✓ Power Factor
 - ✓ Current
 - DC summary
 - ✓ DC voltage
 - ✓ Current
 - ✓ DC power input
 - Site Summary (Field data) and other data
 - ✓ Solar Insolation Data
 - ✓ Performance Ratio
 - ✓ Capital Utilization Factor
 - Solar Power Plant generation
 - ✓ DC Energy Meter at Inverter Input
 - ✓ AC Energy Meter reading at Captive Load Bus
 - Battery Bank
 - ✓ Battery terminal voltage and current

✓ Ah meter reading

5. The Remote Monitoring System shall be selected after conformance by independent Chartered Electrical Engineer for adherence to specifications laid out in the Tender Document. A duly certified conformance certificate from Independent Chartered Electrical Engineer needs to be submitted before placement of purchase order.

6. Codes and Standards

Shall comply to all the relevant standards, but not limited to the following:

Codes	Description
IEC 61724	Photovoltaic System Performance Monitoring – Guidelines for measurement, data exchange and analysis

7. List of recommended makes is given in Annexure-3 of SCC Technical.
8. Data logging system/software shall allow visualization, monitoring and service of the installation. The data logger shall be web enabled. It should be possible to access the data logger with any standard web browser like Internet Explorer, Google Chrome, Mozilla, Safari etc. and for this purpose, relevant software/ hardware will be supplied by the successful bidder. In addition to the web portal, it should also be possible to retrieve the data directly from the data logger. The software for access/ visualization of data from data logger should also be provided. Necessary executable files, if any, will be required to be given on a CD/any other storage device along with lifetime license (if applicable).
9. Communication interface: The system should offer minimum no. of communicable ports (RS485 preferably) interface to facilitate monitoring of the system at local monitoring system for the proposed system and to cater any future expansion for 25% of the proposed capacity.
10. A internet /dongle service shall be ensured to communicate this Data Logger system through internet cloud network provided along with the Data Logging System. The data storage shall also be ensured in the system's internal memory space (as defined above, for minimum 3 months) which shall be able to capacitate access of data later due to any intermittent failure of internet access or any other technical constraint.
11. A complete and comprehensive "RMS monitoring solution" report shall be made available to –
- i) know what is produced in real time
 - ii) have detailed analytics to understand if the power generated is 'as expected/designed', and
 - iii) know any issues with field equipment and correct, through effective O&M.

12. Contractor shall ensure display of key Plant performance parameters from Remote Monitoring System at IOCL CBPL Chittoor control Room in addition to local monitoring system in MCR building. Contractor shall ensure supply of necessary hard wares, systems, and computers with minimum screen size of 21 inch (21”).
13. The UPS based AC Power supply of suitable rating to cater all the load requirements of Microprocessor based Data Logger system and its auxiliaries shall be provided. The power backup for the entire system should be at least for 30 minutes.

B EARTHING & LIGHTNING PROTECTION SYSTEM:

Proper design and calculations report pertaining to design and selection of Earthing & Lightning Protection System, shall be submitted to EIC for approval prior to commencement of work at site.

B.7.1 EARTHING:

1 General:

Earthings (or grounding) of panels/ support structures, transformers and all electrical installations shall be under the scope of contractor. Earth electrode shall be designed to withstand the maximum possible short circuit current. The work shall be executed, as per IS: 2309, IS 3043, or IEC 60364. Care shall be taken to protect electrical and electronic equipment within the control panel against any lightning/switching surges which are expected in electrical network. For this purpose the bidder shall provide suitable arrangement in the panels. The earthing system shall be designed with consideration of the earth resistivity of the project area. The earth resistivity values shall be measured prior to designing the earthing system and earth resistivity report to be shared with owner. Unless otherwise specified, earthing system shall be in accordance with IS: 3043 and IEEE 80, Indian Electricity Rules, Codes of practice and regulations existing in the location where the system is being installed. All metal casing/ shielding of the plant shall be thoroughly grounded in accordance with Indian Electricity Act/ IE rules. The step and touch potential for earthing should be as per IS 3043-1987.

2 Technical Requirements:

- a)** Four separate earthing system shall be provided, each for DC Circuits, AC Circuits, shall be earthed if required as per PV module manufacturer's recommendations. The Electronic Circuits and Lightning Protection System (LPS). DC side of each inverter earthing design for the same shall be submitted to EIC/Owner for final approval. Separate grid is to be formed for DC side earthing of inverters.

Towards this end, adequate number and appropriate size IS:3043 compliant earthing pits suitably calculated as per the design criterion or at least one each for AC circuit, DC circuit, Electronic circuit and lightning protection system, whichever is more shall be ensured. The complete earthing job including preparation of earthing pits and connection with the existing earth grid, if any, shall be ensured during the project execution.

- b)** For outdoor switchyard, earthing system network/earth mat shall be interconnected mesh of Mild Steel (MS) rods buried in ground. For other areas in the solar plant such as transformer yard, switchgear room the earthing system shall consist of minimum two parallel conductors, connected to the main earth grid network. The Contractor shall furnish the detailed design and calculations for Owner's approval. Contractor shall obtain all necessary statutory approvals for the system.

- c)** There will be separate earthing provision for:

- i) invertors/PCUs
- ii) Module Mounting Structure- two distinct earthing paths to be provided.
- iii) Two distinct earthing for Lightning Arrestor (A grid to be formed with three earth pits for each LA).
- iv) SCADA.

- d)** The earth conductors shall be free from pitting, laminations, rust, scale and other electrical, mechanical defects.

- e)** The material of the earthing conductors shall be as follows:

- i) Conductors above ground level - Galvanized steel or Copper Bonded Rod
- ii) Conductors buried in earth - Mild steel or Copper Bonded Rod

- iii) Earth electrodes - Mild/Galvanized steel rod or Copper Bonded Rod
- f) Combination of two dissimilar metals in earthing arrangement shall not be permitted for e.g. Copper and G.I. Specifically if copper earthing electrodes are used for earthing of Lightning Arrestors, GI strips for connecting earthing copper cable and electrode shall not be permitted.
 - g) Every alternate post of the switchyard fence shall be connected to earthing grid by one GS flat and gates by flexible lead to the earthed post. Portable tools, appliances and welding equipment shall be earthed by flexible insulated cable.
 - h) Each continuous laid lengths of cable tray shall be earthed at minimum two places by G.S. flats to earthing system, the distance between earthing points shall not exceed 30 meter. Wherever earth mat is not available, necessary connections shall be done by driving an earth electrode in the ground.
 - i) Connections between earth leads and equipment shall normally be of bolted type. Contact surfaces shall be thoroughly cleaned before connections. Equipment bolted connections after being tested and checked shall be painted with anti corrosive paint/compound.
 - j) Connections between equipment earthing leads and between main earthing conductors shall be of welded type as described in relevant standards by using suitable U-clamps or alike arrangement and utmost care taken in ensuring continuity all across the contact surface area. For rust protection the welds should be treated with red lead compound and afterwards thickly coated with bitumen compound. All welded connections shall be made by electric arc welding.
 - k) The welded joint needs to be painted with Cold GI paint (eg. Zinckote, etc.) according to the manufacturer's specification for paint thickness (16 mm rod minimum 75 microns, and 10 mm rods minimum 65 microns) applied either through spray mode or direct liquid application. In case the weld joints are coming in the portion buried under earth, an additional layer of Enamel paint needs to be applied on the weld joint.
 - l) Earth pit shall be constructed as per IS:3043. Electrodes shall be embedded below permanent moisture level. Earth pits shall be treated with salt and charcoal if average resistance of soil is more than 20 ohm meter. On completion of installation, continuity of earth conductors and efficiency of all bonds and joints shall be checked. Earth resistance

at earth terminations shall be measured and recorded. All equipment required for testing shall be furnished by contractor. In general industrial practice, the standard philosophy of providing redundancy by facilitation of two point contacts between structure and grid, or structure/equipment and earth pits (GEP or NEP), or structure and structure has to be ensured.

m) SOLAR ARRAY EARTHING

Each Module mounting structure (MMS), SPV Module frames, mounting arrangement for String Monitoring Boxes, Metallic Junction Boxes, Metal frames/Panel, Metallic Pipes of the solar array shall be effectively earthed by two separate and distinct connections to earthing system.

Number of earth pits in solar array shall be equivalent to no. of SMUs installed. All earth pits shall be interconnected through GI strip of size 50 X 6 mm. laid at depth of min. 600 mm. to form earthing grid. MMS table at the end of each row shall be connected to the grid. SMU SPD earthing shall be done directly to the nearest earth pit whereas SMU frame shall be connected to earthing grid through earth strips. Each MMS table shall be connected to adjoining table at two points, one through GI strip connecting MMS leg structures of adjoining tables and another through copper cable connecting aluminium frames of two modules of the adjoining tables.

Equipment and structure in the solar plant shall be earthed in compliance to the IS: 3043 (Code of Practice for Earthing) and Indian Electricity Rules/Acts.

- n) The Contractor shall furnish the detailed design and calculations for Owner's approval as per IEEE 80-2000 to determine the number of earth pit and size of earth mat conductor.
- o) Connection of riser to the structures shall be bolted or welded type. In case of bolted type arrangement, to ensure throughout connection, proper welding shall also be done at the contact surface areas. Portion of galvanised structure which undergoes welding at site shall be coated with two coats of cold galvanising and anti-corrosion paint afterwards. .
- p) Connections between equipment earthing leads and between main earthing conductors shall be of welded type. For rust protection, welds should be treated with red lead

compound and afterwards thickly coated with bitumen compound. All welded connections shall be made by electric arc welding.

- q) On completion of installation, continuity of earth conductors and efficiency of all bonds and joints shall be checked. Earth resistance at earth terminations shall be measured and recorded. All equipment required for testing shall be furnished by contractor.
- r) The earthing resistance must not exceed the limits generally in practice for such applications i.e. 1Ω .

3 Codes and Standards:

The applicable codes and standards are as mentioned below

<u>Codes</u>	<u>Description</u>
IS: 3043	Code of practice for Earthing.
IEEE: 80	IEEE guide for safety in AC substation grounding
IEEE: 142	Grounding of Industrial & commercial power systems
IS: 2309	Code of Practice for the protection of building and allied structures against lightning.
IEC 62305	Protection against Lightning
IS: 4736	Hot-dip Zinc coating for MS Tubes.
NFC 17-102	Lightning Protection with Early Streamer Air Termination Rod
Other Relevant Codes/Guidelines/Acts	
Indian Electricity Act & Indian Electricity Rules	

B.7.2 LIGHTNING PROTECTION SYSTEM:

1. General:

The entire PV plant and the electrical rooms shall be protected from lightning. Lightning protection system shall be in strict accordance with IS:2309 and IEC 62305. Lightning protection system shall comprise of air terminations, down conductors, test links, earth electrode etc. as per approved drawings.

Necessary design calculations shall be submitted to EIC for approval.

2. Technical Requirements:

- a) Down conductors shall be as short and straight as practical and shall follow a direct path to earth electrode. Each down conductor shall be provided with a test link at 1000 mm above ground level for testing but it shall be inaccessible for any sort of interference. No connections other than one direct to an earth electrode shall be made below a test point. All joints in the down conductors shall be welded type.
- b) Lightning conductors shall not pass through or run inside GI Conduits.
- c) LIGHTNING PROTECTION SYSTEM FOR SOLAR ARRAY:
 - i) Complete Solar Array with associated structure shall be protected from Direct Lightning Stroke.
 - ii) The Station Class Early Streamer Emission (ESE) technology Lighting Arrestor (LA) has to be designed as per applicable standards so that whole of the Solar PV Plant is protected. Design basis report has to be submitted prior to finalization of drawings for approval of Owner.
 - iii) The protection system will be based on early streamer emission lightning conductor air terminals. Multiple ESE type lightning arrestors should be installed and shall provide an umbrella protection against direct lightning strikes and shall cover entire area of the plant.
 - iv) ESE air terminal shall be type tested in any national/international approved lab for advance triggering time (ΔT) and lightning Impulse current test and type test report shall be submitted to Owner for approval.
 - v) Each ESE air terminal shall be provided with separate earthing termination and test link for equipotential bonding of lighting protection system as per OEM guidelines/NFC 17 -102. Each ESE air terminal shall be equipped with lightning stroke counter to be fixed at suitable height in serial on the down conductor.
 - vi) Number of earth pits to be provided as per manufacturer's recommendation however there shall be a grid of min. 3 earth pits for each L.A. Distinct connection should be made to all earth pits with copper cable through a junction box from the down conductor of LA.
 - vii) ESE air terminal shall be erected on isolated foundation as approved by Owner. If required, suitable guy wire shall be used to support the mast of ESE terminal against the wind.
 - viii) The Bidder shall submit the drawings and detailed specifications of the PV array lightning protection equipment.
 - ix) As far as possible, poles for installation of lightening arrestor need to be positioned to ensure minimum shadow on modules/array.

B INFRASTRUCTURE FOR ONLINE DATA SUBMISSION TO SLDC, IF REQUIRED AS PER REGULATIONS

Contractor shall install complete infrastructure for submission of online data to SLDC as per SLDC specification and requirements, if such requirement is stipulated in any regulations. Initial for the same will be in scope of contractor. It will be in contractor's scope to get the fixed cost of Internet connection arrangement infrastructure approved from SLDC and obtain completion certificate for the work. Recurring monthly internet charges will be paid by Owner.

B BATTERY BANK AND BATTERY CHARGER

Battery Bank and battery charger to be provided for DC supply to LT&HT switchgear, fire alarm panels, emergency lights, SCADA etc. Min. backup capacity of battery bank/battery charger for SCADA and fire alarm panels shall be 2 hrs. for each equipment. Batteries provided shall be as per approved make given in Annexure-3 of SCC Technical

C) CIVIL WORKS

Proper design and calculations report pertaining to design and selection of Civil Works, shall be submitted to EIC for approval prior to commencement of work at site..

All PCC work shall be of minimum M15 grade & RCC work of minimum M25 grade, unless otherwise specified.

1. TOPOGRAPHICAL SURVEY:

- a) The Detailed Topographical survey of the proposed site shall be done by the Contractor, shall be approved by the Owner. The demarcation of land based on Land Map of the project supplied by the Owner shall be done by fixing the boundary stones approved by Owner on the project boundary and in intermediate places if required.
- b) The boundary stones location shall be finalised in presence of representative of Owner. The study of the contours of the land shall be done by the Contractor based on the Detailed Topographical survey report. Based on the above study, the Contractor thereafter shall prepare a detailed PV array layout which shall be used by the Contractor for designing the general layout with clear demarcation showing boundary wall, boundary pillars, location of control room, array yard, approach road, internal roads and general drainage etc.

2. CONTOURING:

- a) Contractor shall carry out spot level surveying at an interval of an average 25 meters for contouring the area. Levels shall also be taken on all traverse stations and on salient points located at random over the area (ground points). Contours are to be interpolated at 0.5 M intervals after the above points are plotted. The contours shall not be just interpolated but properly surveyed on the ground so that features falling between the two successive levels are also picked up. Sufficient points properly distributed over the

entire area shall be located and levels taken so that accurate contouring can be done at places of sharp curvature or abrupt change in direction and elevation, points selected shall be close to each other. Salient points on ridge lines and valley lines, if any, shall also be measured. Transfer of levels shall always start from Main/Subsidiary stations whose levels are based on bench mark established in the survey area.

3. GEO-TECHNICAL INVESTIGATIONS AND TESTING:

- a) Geotechnical investigation for the scope of work shall be done by the bidder. The Bidder shall carry out geotechnical investigation for establishing the sub-surface conditions and to decide type of foundations for the structures envisaged, construction methods, any special requirements/treatment called for remedial measures for sub-soil/ foundations etc. in view of soft sub-soils, aggressive sub-soils and water, expansive/swelling soils etc. prior to commencement of detailed design/drawings. The Bidder shall obtain the approval from the Owner for the field and laboratory testing scheme proposed by him before undertaking the geotechnical investigation work. However, the same is provided only for reference purpose and the same shall not form the basis for structure/foundation design. Contractor shall conduct fresh geo- technical/soil investigation, as required before designing of systems.
- b) Field test shall include but not be limited to the following: Boreholes, Standard Penetration Test (SPT), collection of disturbed and undisturbed soil samples (UDS), Trial Pits (TP), collection of water samples, Soil Electrical Resistivity Test (ERT) etc.
- c) Minimum 1 No. of borehole of 5m depth shall be carried out in every 12.5 acres of land. Few ERT & TPs shall be carried out as per layout.
- d) The laboratory tests shall be conducted on soil, rock & water samples collected during field investigations in sufficient numbers as approved by Owner. Laboratory tests shall be carried out on disturbed and undisturbed soil samples for Grain Size Analysis, Hydrometer Analysis, Atterberg Limits, Triaxial Shear Tests (UU), Natural Moisture Content, Specific Gravity and Bulk Unit Weight, Consolidation Tests, Unconfined Compression Test, Free Swell Index, Shrinkage Limit, Swell Pressure Test, Chemical Analysis test on soil and water samples to determine the carbonates, sulphates, chlorides, nitrates, pH, organic matter and any other chemicals harmful to concrete and reinforcement/ steel. Laboratory tests on rock samples shall be carried out for Hardness, Specific Gravity, Unit Weight, Uniaxial Compressive Strength (in-situ & saturated), Slake Durability etc.
- e) On completion of all field and laboratory work, the Bidder shall submit a Geotechnical investigation report for Owner's approval. The Geotechnical investigation report shall contain field and laboratory observations/ data/ records,

analysis of results and recommendations on type of foundation for different type of structures envisaged for all the areas of work. Recommendations on treatment for soil and foundation, based on subsoil characteristics, soft soils, aggressive chemicals, expansive soils, etc. shall be made.

- f) Foundation system for various facilities shall be designed and adopted as per approved geotechnical investigation report.

4. SITE LEVELLING AND GRADING:

- a) Site levelling works involves the following works:

- i) All works related to site clearance including removal of bushes, trees, levelling, grading, finishing and other additional works shall be carried out by the Contractor. Mandatory permission/licenses/statutory clearances from Competent Authorities for site levelling activities like removal of trees and bushes, undertaking blasting related works, disposal of cutting material etc. shall be obtained by the contractor. Fulfilment of any mandatory requirement by the concerned authorities shall be ensured by the Contractor.
- ii) Site grading level shall be fixed with due reference to site drainage of the whole area, existing drainage pattern, maximum flood level and system requirements so as to prevent any water logging.

It shall be ensured that the drains developed across the solar plant area should have a gradient such a way that the drains are merged with to-be-built 3 nos. Storm Drain Water Recharge Pit, best suited by the Contractor considering the overall plant layout and designing. 3 nos. of Storm Drain Water Recharge Pit has to be built by the Contractor within the scope of this tender to accommodate all the water from drains, to cater maximum rainfall in the area and/or water from module cleaning activity. The complete site should have gradient towards Storm Drain Water Recharge Pit. Any existing gradient across the site shall be taken into consideration during Contouring to develop the final drain layout plan. The drain size should be sufficient to cater the peak drain water flow requirement and shall be submitted for approval of Owner.

- iii) Site levelling works/scheme shall match with the specific functional requirement of Solar PV optimum generation considering the full utilization of the plot area for the desired capacity. Site leveling to be carried out to ensure no water stagnation in the project area.
 - iv) Consideration from the boundary and fencing requirements.
- b) The slope protection measure shall be provided in case inter leveled patches level difference is more than 2.0m. Random rubble/boulder/stone pitching/concrete blocks etc. shall be provided for the slope protection for road side slope, storm water

ditches/drainage, embankment slopes, inter levelled patches slopes etc. as per design requirements.

- c) Based on the spot level, contour survey report and complete ensurance to meet above requirements, bidder can propose different site grade levels. The site levelling may be carried in patches/blocks. After performing the optimisation of levels from the detailed site survey by the Contractor, the final formation level of the plot at various areas shall be finalized. The area shall be suitably cut and filled to suit the layout requirement. The site levelling and grading scheme incorporating the above aspects shall be submitted to Owner for approval.

5. FENCING OF SWITCHYARD:

The fencing work required for electrical switchyard (consisting of Power Transformers, , and Energy Meters, if outdoor) shall be of chain link G.I. fencing wire in accordance to IS: 278 and CEIG requirement. It shall be of commercial type and conforming to IS: 226. M.S. angle posts shall confirm to IS: 226 and IS: 800. Switchyard fencing shall be provided with two gates, main gate & wicket gate. Separate earthing to be provided for switchyard fencing.

6. FOUNDATIONS:

The work shall comprise of design and construction of foundations for support structures, transformers, control room, etc. as per locations indicated on the final layout drawings. The foundation design shall suit the local soil conditions and the materials used viz. cement, reinforcement steel etc. shall conform to relevant standards. Contractor shall furnish the safe bearing capacity of soil, design calculations, and detailed construction drawing for the foundations to Owner before proceeding with the work. The Contractor shall mention the survival wind speed considered for design of foundations, which shall be in accordance with Technical Specifications.

7. CMCS/MCR:

The following structures shall be designed and provided by the bidder:

- a) **CMCS/MCR Building:** For the operation and maintenance of SPV Plant, one RCC type Central Monitoring and Control Station (CMCS) / Main Control Room (MCR) shall consist of the following:
 - Total dimension of MCR room shall not be less than 100 m² which include control room with SCADA & UPS, HT/LT switchgear room, room/partition for battery charger with batteries, room/space for other equipment necessary for plant, storage space for O&M materials, inverter room if indoor inverters are considered and toilet.

- Final Floor Level of MCR shall be 0.5 M above FGL.
- CMCS/MCR room shall be RCC roofed with provision of false ceiling.
- CMCS/MCR room shall have following subsections/partitions:
 - Air conditioned SCADA room with adequate space for UPS & operator seating.
Minimum gap of 1 m. to be left between any panel and walls of the room. SCADA room shall have adequate provision of computer table and chairs.
 - Battery area with partition shall have
 - Adequate ventilation and eye wash facility.
 - Acid resistant tiles on the floor and the walls. Tiles on the walls shall be upto 1 m. height above the top of battery.
 - All around battery gap of 1 m. shall be maintained from walls.
- CMCS/MCR shall have provision of two exits.
- Following min. gaps should be maintained for various equipments
 - - HT panel: Front side 2 m. back side 1.5 m.
 - LT panel: Front and back side both 1 m.
 - HT/ LT panel: Side gap: 1m.
 - Any equipment/panel when placed front to front gap of 2 m.
 - Inverter: Side gap should be 1 m. front side 2 m., back side: 1.5 m.
 - Top of all panel and roof beam bottom 1 m.
- Interior wall of MCR shall be painted with emulsion paint of reputed make and exterior walls shall be painted with weather proof paint with anti- fungal, anti-algal and DPUR properties of reputed make.
- Furniture shall be of Godrej Interio make.

- b) The layout, design and drawings for all RCC/PEB structure, etc. **and foundation** system shall be submitted for approval from Owner before start of works. The buildings and allied works shall be designed to meet national building code 2005 requirements.

Specification of RCC Building for CMCS/MCR:

- a) RCC works:

All RCC works shall be of minimum M25 grade design mix concrete as per IS 456 and the materials used viz. Cement, admixtures, reinforcement, steel etc. shall be as per relevant IS standards. In addition IS: 2502 Code of Practice for Bending and Fixing of Bars for concrete Reinforcement must be complied. Reinforcement shall be of high strength TMT Fe 500 conforming to IS: 1786. A minimum 100mm thick PCC of minimum M-15 grade design mix concrete shall be provided below RCC wherever PCC is laid over the ground. Proper and sufficient formwork/shuttering shall be provided as per IS: 456. Concrete for all RCC works shall be machine mixed. For this purpose, Contractor shall deploy mini batching plant having digitized recording system, which shall be calibrated with NABL/NPL traceable weights. The batching plant shall have the facility of obtaining the digitized output giving details of the various constituents (cement, aggregate, water, admixtures, fly ash etc.) in each batch of concrete being produced. Samples of concrete constituent materials and concrete shall be tested as per the provisions of technical specifications and field quality plan to be submitted by contractor.

- b) Masonry Work:

All brick work shall be using at least class designation 7.5 of approved quality as per IS 1077:1992, IS: 2212, IS: 3495. The cement mortar for brick masonry shall be in the ratio of 1 cement and 5 sand by weight. The cement mortar shall be machine mixed. Bricks required for masonry work shall be thoroughly soaked in clean water tank for approximately two hours before their actual use. Masonry work shall be kept moist on all the exposed faces for a period of seven days from the day of execution.

- c) Doors and windows:

Doors, windows and ventilators of air-conditioned areas, entrance lobby of all buildings (where ever provided), and all windows and ventilators of main plant and service building shall have, electro colour dyed (anodised with 15 micron coating thickness) aluminium framework with glazing. Each window of Control room should have venetian blinds. The doors frames shall be fabricated from 2.0 mm thick MS sheets and shall meet the general requirements of IS: 4351. Steel windows and ventilators shall be as per IS: 1361 and IS: 1038. All windows and ventilators on ground floor of all buildings shall be provided with suitable grill. Exhaust fans of industrial grade shall be provided for ventilation and all exhaust fan openings shall be covered by good quality louvers.

- d) Glazing:

All accessible ventilators and windows of all buildings shall be provided with min. 4mm thick float glass, plain or tinted for preventing solar radiations, unless otherwise

specified. For single glazed aluminium partitions and doors, float glass of 8mm or 10 mm thickness shall be used. All glazing work shall conform to IS: 1083 and IS: 3548.

e) Plastering:

All external surfaces shall have 18 mm cement plaster in two coats, under layer 12 mm thick cement plaster 1:5 and finished with the top layer 6 mm thick cement plaster 1:6 (cement: sand) with water proofing compound.

f) Flooring:

The Cement shall be ordinary Portland cement as per IS: 269. Flooring for all air conditioned areas and offices area shall be provided with vitrified ceramic tiles of size 600X600 mm of min 9 mm thickness, laid with 3 mm ground joints as per approved pattern, painted neatly with 3X4 mm stainless epoxy grout or equivalent. Flooring for stores, security cabin shall be of cement concrete flooring as per IS: 2571.

g) Roofing:

Roof of the C.R. Building shall consist of Cast-in-situ RCC slab treated with a water proofing system which shall be an integral cement based treatment conforming to CPWD specification (item no. 25.8 of DSR 1997). The roof of the building shall be water proof with top layer of china mosaic. The roof shall be designed for minimum superimposed load of 150 kg/m². For efficient disposal of rainwater, the runoff gradient for the roof shall not be less than 1:100 and the roof shall be provided with RCC water gutter, wherever required. If contractor plans to install weather monitoring station on CMCS/MCR roof, RCC thickness to be suitably designed.

h) Painting of walls and ceilings:

The paint shall be anti-fungal quality of reputed brand suitable for masonry surfaces for high rainfall zone. All painting on masonry or concrete surface shall preferably be applied by roller. If applied by brush then same shall be finished off with roller. For painting on concrete, masonry and plastered surface IS: 2395 shall be followed. All paints shall be of approved make including chemical resistant paint. Minimum 2 finishing coats of paint shall be applied over a coat of primer. For painting on steel work and ferrous metals, BS: 5493 and IS: 1477 shall be followed. The type of surface preparation, thickness and type of primer, intermediate and finishing paint shall be according to the painting system adopted. Ceiling of all rooms except Battery room shall be white washed. The ceiling of Battery room (if provided) shall be painted with acid resistant paint.

i) Plinth Protection:

Plinth protection shall be provided around all the buildings with Brickbats and PCC M20 of at least 150mm thickness & smoothly finished top surface.

j) Water Supply:

GI/CPVC pipes of Medium quality conforming to IS 1239 (Part I-1990) shall be used for all water supply and plumbing works. The Syntex or equivalent make PVC storage water

storage tank(s) of minimum 500 ltrs. capacity conforming to IS: 12701 shall be provided over the roof of the CMCS/MCR, complete with all fitting including float valve, stop cock etc.

k) Electrification of Building:

Electrification of Building shall be carried out as per IS 732-1989, IS 4648:1968 and other relevant standards. Cable used for the work to be of FRLS rating.

l) Plumbing and Sanitary:

All fittings, fastener, grating shall be chromium plated. Necessary plumbing lines shall be provided for control room building and Security cabin.

m) Stairs:

Bidder to construct concrete ladder/provide steel ladder with railings for accessibility of CMCS/MCR roof. Also, construction of access ladder/staircases for accessing rooftop solar plant, as per requirement would also be in bidder's scope.

n) False Ceiling:

The SCADA room shall be provided with false ceiling of 15 mm thick mineral fibre board, in tile form of size 600mm x 600mm, along with galvanised light gauge rolled form supporting system in double web construction pre painted with steel capping, of approved shade and colour, to give grid of maximum size of 1200x600 mm as per manufacturers details including supporting grid system, expansion fasteners for suspension arrangement from RCC, providing openings for AC ducts(if required), return air grills(if required), light fixtures, etc., all complete.

o) Lighting:

The lighting design of the buildings shall be carried out as per IS 3646-1992. All lighting in MCR and for street lights shall be LED type. The average illumination level of control room shall be 300 Lux with Mirror optics with anti-glare type or Decorative Mirror optics type of fixture. The building shall be provided with adequate light fittings, 5A/ 15A 1 phase sockets, fans etc. controlled by required ratings of MCBs and MCB DBs. All MCBs / Isolators shall be mounted inside the panel and a bakelite/fibre glass sheet shall be provided inside such that operating knobs project out of it for safe operation against accidental contact. Operating handle of incoming MCCB/isolator shall project out of door.

8. Switch yard civil works:

Switchyard civil works shall be performed by the Contractor as per the requirements/norms. However, it shall be ensured that switchyard equipments (such as transformers, etc.) are placed on a raised platform of min. 200 mm. above FGL (Finished Ground Level). In addition, plinth and foundation for structures, equipments as per the applicable standards shall be taken care of. Earth pit construction shall be of brick

masonry with MS chequered plate

/ precast RCC (1:2:4) cover. The fencing of the switchyard shall be with GI chain link of 1800 mm height with MS angle posts. HT Danger sign board should be placed outside switchyard area. Shed at suitable height to be provided for each transformer.

9. Cable Trenches:

Trenches shall be constructed in Reinforced Cement Concrete (RCC) of M-20 grade of wall thickness min 150 mm. Trench walls shall not foul with the foundations. Trenches in MCR and Inverter Room shall have a minimum depth of 1 M from FGL.

Outdoor Cable Trenches: RCC cable trenches shall be constructed in the switchyard and pre-cast RCC removable covers with lifting arrangement, edge protected with suitable galvanized angle iron designed to withstand self-weight of top slab + concentrated load of 150 kg at center of span on each panel. The top of trenches shall be kept at least 100 mm above the gravel level so that rain water does not enter the trench.

Indoor Cable Trenches: RCC indoor cable trenches shall be provided with 50X50X6 mm angles grouted on the top edge of the trench wall for holding minimum 7 mm thick mild steel checkered plate covers (600 mm in length except at ends & bends) with lifting arrangement. Angle or channels shall also be grouted at distances of 600 mm across the indoor cable trenches to support the checkered plates.

- a) Trench Drainage: The trench bed shall have a slope of approx. 1/500 along the run & 1/250 perpendicular to the run. In case straight length exceeds 30 m, suitable expansion joint shall be provided at appropriate distances. The expansion joint shall run through vertical wall and base of trench. All expansion joints shall be provided with approved quality PVC water stops. Suitable drainage at lowest point of the trench shall be provided.

10. Roads:

The contractor shall construct roads/pathways suitable for transporting the equipment, spares, and other maintenance machinery during O&M period. Construction of peripheral/service & internal approach roads, wherever necessary, shall be provided. **Internal Approach Roads** (from Plant Main Gate to MCR, Transformer Yard) and **Peripheral/Service Roads** (along the periphery of Solar Plant and roads connecting peripheral roads to MCR from all 4 sides) to be of WBM type. The road shall be designed as per applicable Indian Road Congress (IRC) class loading. The contractor shall provide Hume pipes, RCC tunnels at the crossing of roads with surface drainage, electrical cables, water lines or other buried services, wherever required. After award of work, the bidder shall provide detail drawing and specification of type of road/pathways, construction offered and length of the road. The roads should meet following minimum specifications

- a) Should connect all possible obligatory points

- b) Avoid big culverts

- c) Should have appropriate Camber/ gradient/ radius of curves/ super elevations
- d) Provision of turning areas
- e) Load bearing capacity of the road shall be in accordance with maximum weight of the single equipment/component to be installed/used in the plant.
- f) Internal Approach Road to be of min. 6 m. width.
- g) Peripheral/Service roads need to be of min. 3.5 m. width.
- h) All roads to be of WBM type.
- i) Lighting provision through short height garden lights with LED to be provided for internal approach roads.

11. Drainage System:

Surface drainage system shall be designed based on maximum hourly rainfall intensity and IRC specifications. The drainage scheme shall be designed considering the plot area and nearby catchment area contributing to the plot drains. Drainage scheme with 3 nos. storm drain water recharge pits which maintains the existing drainage pattern as far as possible is desired. A network of open drains shall be designed & provided to carry surface run off. The drains shall be trapezoidal or rectangle shape lined with concrete slabs/brick masonry/stone masonry/stone slabs. The minimum thickness of these lining shall be 250 mm for brick /stone masonry, or 150 mm for concrete slab.

Drains develop shall have minimum depth of 250 mm. Following drains are mandatory:

Drains on one side of peripheral road, drains on one side of internal approach road and drains around main control room. Provision of culverts and their design to be submitted separately. The road on the culvert portions of the drains shall be concrete road. Contractor shall also ensure that drainage from the project site's plot/drainage system does not discharge/encroach/flood in to any adjacent property. All drains i.e. existing

natural drains and planned drains need to be lined (strengthened through RCC). All Buildings shall be provided with plinth protection all around, sloped towards side drains. Plinth Protection shall be 150 mm thick PCC (M20) laid over compacted base. Side drains shall be stone masonry/brick masonry/concrete works of minimum 100mm thickness. The side drains shall be connected to area drains by either open drains or combination of open drains and underground pipes. Grade level shall be fixed with due reference to highest flood level of the receiving body of water. Laying of Hume pipe shall be in line with IS: 783.

It shall be ensured that the drains developed across the solar plant area should have a gradient such a way that the drains are merged with to-be-built 3 nos. Storm drain water Recharge Pit. 3 nos. of Storm Drain Water Recharge Pits has to be built by the Contractor within the scope of this tender to accommodate all the water from drains. Any existing gradient across the site shall be taken into consideration during Contouring to develop the final drain layout plan. The drain size should be sufficient to cater the peak drain water flow requirement and shall be submitted for approval of Owner.

12. Design Criteria:

All civil, structural and architectural work shall be designed, supplied and constructed as per latest editions of Indian Codes and Standards with addendums and supplements issued by BIS. Wherever Indian Standards are not available / formulated, applicable International Standards shall be followed. In case of ambiguity between codes, specifications and drawings, the matter would be brought to notice of the Engineer-In-Charge (EIC) and decision taken with mutual consultation.

The Contractor shall carry out a detailed soil testing and decide on various design parameters to adopt foundation design. No commercial implications for any variations in this regard during execution shall be entertained.

All structures and portions thereof shall be analyzed and designed to sustain wind speeds, various loads and combinations thereof, conforming to the latest revision of applicable Indian Standards, specifications, engineering practice and other technical requirements. All structures shall be designed to sustain worst combination of dead loads plus assigned live loads of equipment, wind, seismic, temperature or other loads it is being subjected to. Minimum factors of safety against overturning, sliding and hydrostatic uplift adopted for design shall be mentioned by the bidder.

Stability of structures shall be investigated for loading conditions during construction. However, factors of safety given in relevant standards and codes shall also be taken care of.

13. Foundation Dressing & Grouting For Equipment/ Equipment Bases:

The surfaces of foundations shall be dressed to bring the top surface of the foundations to the required level, prior to placement of equipment/equipment bases on the foundations. All the equipment/ equipment bases shall be grouted and finished as per these specifications unless otherwise recommended by the equipment manufacturer. The concrete foundation surfaces shall be properly prepared by chipping, grinding as required to bring the top of such foundation to the required level, to provide the necessary roughness for bondage and to assure enough bearing strength. The grout shall be high strength grout having a minimum characteristic compressive strength of 60 N/mm² at 28 days. The grout shall be chloride - free, cement based, free flowing, non metallic grout. Grout shall be of pre-mix variety so that only water needs to be added before use. The mixing of the grout shall conform to the recommendations of the manufacturer of the grout. Placing and finishing of grout shall be as per standard industry practices.

After the grout is set and cured, the Contractor shall check and verify the alignment of equipments, alignment of shafts of rotating machinery, the slopes of all bearing pedestals, centering of rotors with respect to their sealing bores, couplings, etc. as applicable and the like items to ensure that no displacement had taken place during grouting. The values recorded prior to grouting shall be used during such post grouting check- up and verifications. Such pre and post grout records of alignment details shall be maintained by the Contractor in a manner acceptable to the Owner.

14. Shuttering:

The works shall consist of supply, fabricating, placing and removing all temporary forms for shaping of concrete, together with all temporary construction required to support such forms. The Contractor shall be responsible for the correct dimensions, alignment, leveling, cleaning and oiling. All shuttering shall be approved by EIC but it will not dilute in any way Contractor's responsibility. Proper and sufficient shuttering shall be provided for the required period as per IS 456. Shuttering shall not be removed before the concrete is sufficiently set and hardened.

15. Steel Reinforcement:

The work shall consist of supplying, cutting, bending, placing and fixation of reinforcement bars of the grade, type and size specified on the drawings. Unless otherwise stated in this specification, the IS: 2402-1963 (reaffirmed 1990) shall be applied to this work. Reinforcement shall be high strength deformed bars grade Fe-415, Fe-500 as mentioned in the drawing, confirming to IS: 1786-1985 (reaffirmed 1990). The Contractor shall furnish test documents of steel reinforcements to be used in the works or get required tests done at an approved testing laboratory.

16. Material Specification:

All materials which may be used in the work shall be of standard quality manufactured by renowned concerns conforming to Indian Standards or equivalent having IS mark as

far as possible unless otherwise approved by Owner. For all work involving reinforced or plain concrete, cement and water conforming to standards IS: 456-1978 and IS: 269-1989 shall be used. Test procedures will also be based on these standards. All steel reinforcing works shall be done according to IS: 2502-1963. PVC piping shall conform to IS: 4985-1988.

D) General Requirements

1. INSPECTION AND TESTING

The bidder shall provide Quality Assurance Plan (QAP) for all the components/items/systems for approval of the Owner and the same should be adhered during manufacturing process. All items will be carefully inspected and tested during manufacture and approved prior to dispatch in accordance with the approved QAPs and applicable standards by the manufacturer. Contractor shall furnish the list of tests to be conducted in the presence of customer. Test certificates for i) Solar PV Modules ii) PCU(s)/Inverter(s) iii) Transformers iv) Switchgear vi) SMBs vii) Cables viii) Remote Monitoring System ix) Weather Monitoring Station, shall be submitted alongwith the invoices. For remaining equipments/items the supplier/contractor would maintain the records of test certificates. The same would be submitted as part of completion certificate.

Owner shall reserve the right to conduct Factory Acceptance Test (FAT) and Site Acceptance Test (SAT) through inspection of equipments/components, in-house record of stage inspection as well as finished product in line with the QAPs and relevant standards at the manufacturer's works/premises as well as at project site (as the case may be). If by the above inspection, the Owner/TPI (Third Party Inspector) rejects any equipment, the Contractor shall make good for such rejections either by replacement or modification/ repairs as may be necessary to the satisfaction of the Owner through establishment of successful tests, if required. Such replacements will also include the replacements or re-execution of such of those works of other Contractors and/or agencies, which might have got damaged or affected by the replacements or re-work done to the Contractor's work. The inspection and testing are necessarily required, but not limited to the following items only.

- a) All major/critical items (Solar PV Modules, MMS, Inverters/PCUs, AC & DC Switchgears, Switchyard Equipments, SMBs, Cables, and Transformers) shall be inspected and tested through third party inspection agencies listed in Annexure 5 of SCC Technical during manufacture and in assembled condition prior to dispatch in accordance with the standard practice/ approved QAP and applicable Standards at no cost to IOCL. Copies of test certificates for such inspections in triplicate shall be supplied before dispatch of the equipments.
- b) In case of imported components, the same may be inspected at the stock yard / warehouse of contractor / approved testing laboratory in presence of TPI and Owner

on sampling basis. However, Owner reserves the right to depute its representatives for plant inspection & prototype inspection at overseas works.

- c) After the award of work, the contractor shall furnish a complete list and details of all tests to be conducted on all major equipments.
- d) The bidder shall also furnish a schedule of inspection / testing atleast 7 days in advance so that Owner may associate his representative/TPI to witness the tests. The Contractor shall ensure submission of all relevant approved documents required for conducting inspection (such as approved QAP, GTP, Technical Specifications, etc.) along with Inspection Call Request. The Contractor shall also furnish copies of all test/inspection reports for records and reference of Owner.
- e) Contractor shall arrange and extend necessary cooperation for effectively carrying out inspection / testing. However, this shall not absolve the responsibility of the Contractor in providing the performance guarantee/warranty.
- f) Inspection shall be carried out on randomly selected samples as prescribed in the applicable standards/codes of all the major/critical items described above. For LT/ HT MCB manufacturers test certificate shall be submitted. All other items shall confirm to relevant international/national standards.
- g) The Scope of Work broadly includes review of manufacturing / fabrication procedures, QA/QC plans, review of Non Conformance Report (NCR) issued by the Contractor during fabrication stage, review of documents including Quality Assurance Plan during manufacturing/ fabrication activities.
- h) All the standard tests in accordance with the Standards adopted shall be carried out at the manufacturer's works/premises on all the major equipment and accessories so as to ensure efficient operation and satisfactory performance of all the component/parts for the intended life of Solar PV Power Plant.
- i) Any special test to be performed shall be mutually agreed upon between the Bidder and Owner.
- j) All equipment shall be further tested at site, wherever required, before commissioning.
- k) The work is subject to inspection at all times and at all places by Owner. The Contractor shall carry out all instructions given during inspection and shall ensure that the work is carried out according to the relevant codes of practice.
- l) Decision of Owner in regard to the quality of work and materials and performance to the specifications and drawings shall be final.
- m) If any item is not found conforming to standards during test/inspection, the same shall be replaced / rectified by Contractor without any cost to Owner and shall be re-offered for inspection.

2. PROTECTION AGAINST ENVIRONMENT

All materials, components and equipment shall function and work properly throughout the lifetime without deterioration due to the aggressive climate conditions. All exposed iron components should be galvanized. Hot dip galvanized/SS bolts and nuts should be used. Galvanization should conform to latest IS. The bidder shall have total responsibility for protecting works till it is finally taken over by the owner. No claim will be entertained by the owner or the representative of the owner for any damage or

loss to the bidder's works and the bidder shall be responsible for complete restoration of the damaged works to original conditions to comply with the specification and drawings. Should any such damage to the bidder's works occur because of any other agency/individual not being under his supervision or control, the bidder shall make his claim directly with the party concerned. The bidder shall not cause any delay in the repair of such damaged works because of any delay in the resolution of such disputes. The bidder shall proceed to repair the work immediately and no cause thereof will be assigned pending resolution of such disputes.

3. INFRASTRUCTURE DEVELOPMENT

All infrastructural development work shall be performed with respect to the following but not limited to:

- a) **Metering** Bidder shall provide two set of meter, one in plant side and one in sub station side. On both side, bidder shall install main and check meter. The bidder shall include grid code compliant, tri-vector electronic type-one energy meters to be installed at interconnecting point of grid One of the energy meters shall be worked/defined as main and other as check meter. The ABT complaint meter should also be installed as per SERC tariff order. The calibration and testing of energy meter shall be done as per the requirement of SEB (State Electricity Board). The accuracy class of such meter shall be 0.2. Also, Metering Panel to be supplied and installed as per DISCOM requirements.
- b) The meter shall be provided with remote monitoring option as per SLDC requirement, if any to transmit online data and need to be compatible with system installed for online data submission to SLDC.
- c) The meter shall be installed in covered place as per approved design by Owner and as per direction of EIC.
- d) Meter shall be suitable for synchronizing the built in clock of the meter by GPS device either through a synchronization pulse received from the synchronization equipment or through a remote PC synchronized to GPS clock.

All charges for testing and passing of the meter from relevant government agency shall be borne by the bidder. Owner shall assist bidder for necessary document as and when required and shall reimburse the Contractor against actual on production of receipt.

ABT complied energy meters shall have minimum technical specification as mentioned below:

- i) Shall be microprocessor based conforming to IEC 60687, IEC 62052-11, IEC 62053-22, IS 14697
- ii) Shall carry out measurement of active energy (both import and export), and reactive energy (import) by 3 phase power supply system
- e) Lighting - The bidder shall provide indoor and outdoor LED lighting system with adequate lux level for safe and reliable operation of the plant. Outdoor/peripheral lighting shall be LED lighting system provided at adequate height of the poles. LED lighting for internal fittings of adequate lux level to be ensured.
- f) All associated civil work like Control room, rest room with attached bath & kitchen for accommodation etc. for security, O&M & miscellaneous staff etc.
- g) All office furniture which include two executive table & chair, sofa (3+2) with centre table, 8 normal chairs, 2 computer table and other accessories of Good Quality for maintenance staff. Furniture shall be of Godrej Interio make.
- h) Water storage Tank, Sewage & Drainage System.
- i) Water treatment plant, if required, for cleaning of Solar PV Modules.

4. SUPPLY OF BALANCE EQUIPMENT AND ERECTION, TESTING AND COMMISSIONING

- a) This includes Design, Manufacture, and test at works, supply, installation, erection, testing & commissioning of following
 - i) Evacuation system related equipments/components/auxiliaries
 - ii) Point of commencement of supply
 - iii) VAR compensation system if applicable
 - iv) Cabling, lighting, earthing, miscellaneous accessories.
 - v) Erection, Testing & Commissioning of transformer and switchgear units.

Safety clearances

Relevant construction standards shall be referred to lay the power evacuation facility. Also, the standards of Local Statutory Authority/Central Authority should be taken into consideration.

VAR compensation system

Bidder to suggest VAR system and furnish detail description, if applicable.

Erection, testing and commissioning

Erection requirements

The installation shall be carried out by person(s) holding valid license(s) as required by the State Government Authorities. Any modification in the equipment or installation that

may be demanded by the inspecting authorities shall be carried out by the bidder at no additional cost to the Owner. In accordance with the specific installation instruction as per the manufacturers drawings/specifications or as directed by the Owner, the successful Bidder should unload, assemble, erect, install, test, commission and hand over all electrical equipments included in this contract, in timely manner.

Equipment erection

All the equipments shall be handled and erected as per the relevant codes of practice and manufacturer's drawings and instruction manuals.

Cable laying

The cables shall be adequately insulated for voltage required and shall be suitable colour coded for required service.

All cables shall be installed in accordance with the relevant standards and as per cable manufacturer's recommendations.

Open ends of cable shall be effectively sealed immediately after cutting to prevent ingress of moisture and to avoid other contamination.

Any damage to cable shall be reported immediately to Owner/EIC, who will advise for further action, and cable would be replaced or repaired, as required by bidder at his own cost.

LT and HT cable need not cross each other, at any point.

Testing

Cube test/ rebound hammer test should be carried out for, but not limited to, foundation, transformer platforms, control rooms. The locations shall be randomly selected by Owner for rebound hammer test and this test shall be provided at no additional cost to the Owner, if required.

Foundation of structures should be tested for static/ dynamic stresses/ strains. Cable schedule and cable layout drawings shall be finalized as per site specific conditions during the installation work and shall be approved by the Owner.

Any reworks arising on account of the remarks made by the statutory authorities shall be carried out by the Bidder at free of cost.

Testing of modules/ arrays/electrical equipment

The bidder should undertake following onsite pre-commissioning testing besides Factory Acceptance Test done at Manufacturer's premises, as per IEC standards, complete in all respect but not limited to following:

- a) Transformer
 - i) Measurement of winding resistance at all taps.
 - ii) Measurement of voltage ratio on all taps.

- iii) Vector group check
 - iv) Measurement of impedance voltage / short circuit impedance and load loss.
 - v) Measurement of no load loss and current.
 - vi) Measurement of insulation resistance.
 - vii) Operational tests to know the correction functioning of all devices associated with the transformer.
- b) Switchgear Units
 - viii) Insulation resistance test
 - ix) Contact resistance test
 - x) Check for pick-up voltage of operating coils.
 - xi) Operational checks for local/remote protective trip.
 - xii) Operation timing test: Closing time
 - xiii) Opening time
 - xiv) Pressure switch setting open, close checking.
 - xv) Functional checks on control circuit, auxiliary switch, ON/OFF indication limit switches, spring charge/remote trip indication, operation counter, heater / heater switch and illumination lamp.
 - xvi) Relay operation test and check on settings.
- b) Air/Vacuum Circuit Breaker
 - i) Check for completeness of installation.
 - ii) Insulation resistance test

All equipments furnished by the Contractor shall be complete in every respect, with all mountings, fittings, fixtures and standard accessories normally provided with such equipment and/or those needed for erection, completion and safe operation & maintenance of the equipment and for the safety of the operating personnel, as required by applicable codes, though they may not have been specifically detailed in the respective specifications, unless included in the list of exclusions.

All similar standard components /parts of similar standard equipment provided shall be interchangeable with one another.

5. SECURITY

The Contractor should have total responsibility for safety of all equipment and materials in his custody at stores, or lying loose, semi-assembled and/or erected by him at site.

PACKAGING AND TRANSPORTATION

All the equipment should be suitably protected, coated, covered or boxed and crated to prevent damage or deterioration during transit, handling and storage at site till the time of erection. While packing all the materials, the limitation from the point of view of the sizes of railway wagons available in India should be taken account of. The Contractor should be responsible for any loss or damage during transportation, handling and storage due to improper packing. The Owner's Inspector should have right to insist for completion of works in shops before dispatch of materials for transportation.

6. RATING PLATES, NAME PLATES & LABELS

Each main and auxiliary item of plant including instruments should have permanently attached to it in a conspicuous position, a rating plate of non- corrosive material upon which should be engraved manufacturer's name, equipment, type or serial number together with details of the ratings, service conditions under which the item of plant in question has been designed to operate, and such diagram plates as may be required by the Owner.

Such name plates or labels should be of white non-hygroscopic material with engraved black lettering or alternately, in the case of indoor circuit breakers, starters, etc. of transparent plastic material with suitably coloured lettering engraved on the back. The name plates should be suitably fixed on both front and rear sides.

Hanger/ support numbers should be marked on all pipe supports, anchors, hangers, snubbers and restraint assemblies. Each constant and variable spring support should also have stamped upon it the designed hot and cold load which it is intended to support. Suitable scale should also be provided to indicate load on support/hanger. Nameplates shall be as per best practices of the industry.

All such plates, instruction plates, etc. must be bilingual with Hindi inscription first, followed by English. Alternatively, two separate plates one with Hindi and the other with English inscriptions may be provided.

All segregated phases of conductors or bus ducts, indoor or outdoor, should be provided with coloured phase plates to clearly identify the phase of the system

7. DESIGN IMPROVEMENTS

The Owner or the Contractor may propose changes in the specification of the equipment or quality thereof and if the parties agree upon any such changes the specification shall be modified accordingly.

If any such agreed upon change is such that it affects the price and schedule of completion, the parties should agree in writing as to the extent of any changing the price and/or schedule of completion before the Contractor proceeds with the change. Following such agreement, the provision thereof, should be deemed to have been amended accordingly.

8. TECHNICAL CO-ORDINATION MEETING

The Contractor should organize and attend fortnightly Progress Review Meetings with

the Owner during the period of Contract at mutually agreed venues for review of progress & resolving technical clarifications, if any. The Contractor also need to attend such meetings at his own cost and fully co-operate with such persons and agencies involved during the discussions.

The Contractor must ensure availability of the concerned experts / consultants/ personnel who are empowered to take necessary decisions during these meetings. The Contractor must be equipped with necessary tools and facilities so that, if required, the drawings/documents can be resubmitted after incorporating necessary changes and approved during the meeting itself.

The Contractor should furnish Fortnightly Progress Report (FPR) to the Owner at most by 2nd and 16th of every month detailing out the progress achieved on all erection activities as compared to the schedules. If the 2nd and 16th date of any month is holiday, the Contractor shall ensure submission of MPR by the last working day before 2nd and 16th of that month. This shall be supplemented by printed colour photographs and video in VCD/DVD indicating various stages of erection and the progress of the work done at Site. The report should also indicate the reasons for the variance between the scheduled and actual progress and the action proposed for corrective measures, wherever necessary.

9. TECHNICAL SPECIFICATION OF TRANSMISSION SYSTEM

All the material and job specification must conform to the local electricity department regulations and code of standards and must be approved by the relevant competent authority and Owner.

10. OPERATION AND MAINTENANCE MANUAL

The Operation and Maintenance guidelines together with drawings (other than shop drawings) of the equipment, as completed, should have sufficient detail to enable the Owner to operate, maintain, dismantle, reassemble and adjust all parts of the equipment. They should provide a step by step procedure for all operations likely to be carried out during the life of the plant / equipment including, operation, maintenance, dismantling and repair including periodical activities. Each manual must also have to include a complete set of drawings together with performance/rating curves of the equipment and test certificates wherever applicable. The contract will not be considered to be completed for purposes for taking over until these manuals have been supplied to the Owner.

If after the commissioning and initial operation of the plant, the manuals require any kind of modification / additions / changes, the same shall be incorporated and the updated final instruction manuals shall be submitted to the Owner for records.

A separate section of the manual must be prepared for each size/ type of equipment and must contain a detailed description of construction and operation, together with all relevant pamphlets and drawings. The manuals shall include the following:

- a) List of all the spare parts along with their drawing and catalogues and procedure for ordering spares.
- b) Where applicable, fault location charts shall be included to facilitate finding the cause of mal-operation or break down.
- c) Detailed specifications relating to all the consumables including lubricant oils, greases, chemicals etc. required system/equipment/assembly/sub-assembly wise for the complete plant.
- d) On completion of erection, a complete list of equipment giving their location, and identification marks etc. should also be furnished to the Owner.

11. DEFECTS AND RECTIFICATIONS

The Owner may check bidder's work and verify whether the works are completed as per specifications and if any defects are found in the works, the bidder has to rectify those defects within the time schedule and on bidder's own costs, specified by the EIC. The successful bidder shall provide a warranty covering the rectification of any and all defects in the design of equipment, material and workmanship of equipment for a period of 60 months from the date of commissioning. The removal of control and instrument equipment in order to allow bench calibration, if required, and the re- installation of the said equipment after calibration shall also be included as a part of the work under these specifications.

Defects prior to taking over

If at any time before the work is taken over, EIC shall:

- c) Decide that any work done or materials used by the Contractor or any sub- Contractor is defective or not in accordance with the contract, or that the works or any portion thereof, are defective, or do not fulfil the requirements of contract (all such matters being hereinafter, called 'Defects' in this Clause).

AND

- d) As soon as reasonably practicable notice given to the Contractor in writing of the said decision specifying particulars of the defects alleged to exist or to have occurred, then the Contractor at his own expense and with all efforts shall make good the defects so specified.

In case the Contractor fails to do so, the Owner may take, at the cost and risk of the Contractor, such steps as in all circumstances be reasonable to make good such defects. The expenditure so incurred by the Owner will be recovered from the amount due to the Contractor. The decision of the EIC with regard to the amount to be recovered from the Contractor will be final and binding on the Contractor. As soon as the works have been completed in accordance with the contract and have passed the tests on completion, the EIC shall issue a certificate in which he shall certify the date on which the works have

been so completed and have passed the said tests and the Owner shall be deemed to have taken over the works on the date so certified.

Defects after taking over

- a) In order that the Contractor could obtain a completion certificate, he shall rectify any defect arising from the defective materials supplied by the Contractor or workmanship or any act or omission of the contract or that may have been noticed or developed after the works or group of the works has been taken over, the period allowed for carrying out such works will be normally 15 days. Normally it is expected that work will be completed within 15 Days. However in case of unforeseen /genuine delay EIC may take a call on this aspect whose decision will be final. If any defect shall not be remedied within period stipulated above, the Owner may proceed to do the work at Contractor's risk and expense and deduct from the final bill such amount as may be decided by the Owner.
- b) If by reason of any default on the part of the Contractor, a completion certificate has not been issued in respect of the works within one month after the date fixed by the Contractor for the completion of the work, the Owner shall be at liberty to use the works or any portion thereof in respect of which a completion certificate has not been issued , provided that the works or the portion thereof so used as aforesaid shall be afforded reasonable opportunity for completion of these works for the issue of completion certificate.
- c) All the aforesaid safeguards /rights provided for the Owner shall not prejudice its other rights/remedies elsewhere provided herein and/or under law.

12. ACCIDENT

Owner will not have any liability towards any loss or damage to the property or personnel of the bidder deployed for discharging the work under this contract. In case any accident occurs during the construction/ erection, operation & maintenance or other associated activities undertaken by the Contractor thereby causing any minor or major or fatal injury to his employees due to any reason, whatsoever, it shall be the responsibility of the Contractor to promptly inform the same to the Owner and also to all the authorities envisaged under the applicable laws.

13. CONFIDENTIALITY

The Bidder will not engage any persons other than those who are authorized by Owner for doing the work for the above contract. Any data recorded/taken from the plant will have proprietary right of Owner. Contractor should not share any data recovered/taken from the site with any other authority/consultant/personnel.

Bidder shall treat NIT documents and contents therein as private and confidential. If at any time during bid preparation, bidder decides to decline the invitation to bid; all documents must be immediately returned.

Note:

- Bidder (Contractor) shall not, without prior submission of his Bid to IOCL, make use of any document or information except for purposes of performing the contract.
- Any document supplied to the bidder(Contractor) in relation to the contract other copies) to IOCL on completion of Contractor's performance under the Contract than the Contract itself remain the property of IOCL and shall be returned (in all if so required by IOCL.

14. SECURITY SERVICES

The contractor has to arrange proper security system including deployment of security personnel at his own cost for the check vigil for the Solar Power Plant. Security staff per shift should be adequate in number and as required. The security staff may be organized to work on suitable shift system. Proper checking & recording of all incoming & outgoing materials, vehicles shall be maintained. Any occurrence of unlawful activities shall be informed to IOCL immediately. A monthly report shall be sent to Owner on the complete security aspects. Any loss or damage on account of security lapse shall be compensated by the bidder.

15. ORGANISATION CHART

The bidder shall furnish an organization chart for the proposed solar PV project with CV of manpower employed. The person responsible for reporting to owner shall be indicated by designation. Details of specialist manpower available with the company should be provided. During the course of project execution, it will responsibility of contractor to take prior approval of Owner for any change in organogram at any point of time. Escalation matric also to be provided with organogram.

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E) GENERAL SYSTEMS

1. WEATHER MONITORING STATION:

Weather Monitoring Station shall be provided to measure solar insolation, ambient temperature, module temperature, wind speed.

2. Fire Fighting system:

Fire Detection and protection system which include fire alarm system installation in Main Control building and placement of fire extinguishers.

3. Water washing arrangement for module:

- a) Bidder shall provide permanent arrangement for module washing by providing requisite pumps and pipes from the existing openwell which is about 0.9 kms from the plant
- b) The scope of work shall also include laying of CPVC pipes for each row of PV panels with sufficient nos. of manual isolating valves. Contractor shall also provide manual interconnecting valve to connect the water supply of one network to other to meet water requirement in case of outage of one pump
- c) The water used for module cleaning shall not have total hardness of more than 75 mg/L to prevent any scale formation. In case ground water/tap water available has hardness greater than 75 mg/L, water treatment/RO system to be installed.
- d) Bidder has to provide the single line diagram of water washing arrangement with location of pump and arrangement to ensure required water pressure at every outlet.
- e) Proper design calculations for Module Cleaning System, including pipe sizing and pressure value at discharge points shall be submitted for approval of EIC/Owner.

4. OPERATION AND MAINTENANCE:

The contractor shall perform comprehensive Operation and Maintenance (O&M) of the Solar Power Plant & power evacuation infrastructure for a period of four years after completion of one Year Inclusive O&M of Part-A. The scope of work includes, but not limited to, attending all repairs and maintenance jobs of the complete Solar Power Plant with whole Transmission network/Underground cable, plant switchyard, bay (upto metering cubicle) at GSS including supplying of materials. O&M shall be carried out as detailed in the job specification.

OPERATION AND MAINTENANCE SPECIFICATIONS

Bidder shall be responsible for all the required activities for successful running, optimum energy generation & maintenance of the plant, covering

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- i) Keeping the plant in operational mode so as to get optimum energy generation
- ii) Maintaining necessary spares at all point of time to ensure minimum plant outage and immediate restoration upon any malfunction. Indicative list of spares to be available with the Contractor any time but not restricted to the following is as below:
 - a. MC4 Connectors
 - b. MCCBs/MCB/AC & DC Fuses
 - c. String Monitoring Box(s)
 - d. Control Cards of each type for PCUs
 - e. SMB Surge Arrestor/MOV
 - f. WTI with contacts
 - g. OTI with contacts
 - h. Buchholz relay
 - i. Set of gasket for Transformer
 - j. MOG
 - k. HV / LV Bushing with metal parts
 - l. Circuit Breaker(s)
 - m. Voltage/Potential Transformer(s)
 - n. Current Transformer(s)
- iii) Regular maintenance of battery at periodic intervals
- iv) Monitoring, controlling, trouble shooting, maintaining of records and registers
- v) Supply of all spares, consumables and fixing/application of the same
- vi) Arranging equipments/instruments at his own cost as required from time to time for schedule and preventive maintenance, major overhauling of the project
- vii) Replacement of components/equipments, if required
- viii) General upkeep of all equipments, etc.
- ix) Submission of periodical reports to Owner about energy generation & operating conditions of the plant
- x) Continuous monitoring of performance of the plant and regular maintenance of the whole system including panels, outdoor kiosks, switchgear, equipments etc. for extracting and maintaining the maximum energy output from the plant
- xi) Regular cleaning of the module surfaces at pre-defined intervals as outlined in approved O&M plan
- xii) Continuous monitoring of plant performance through Remote Monitoring System
- xiii) Frequent checking and calibration of instruments
- xiv) Developing a system of cross checking instrument indications with each other to determine whether the instrument is faulty or there is an abnormal operating condition
- xv) Developing a well-documented system of analyzing indicated data to determine accurately what could be wrong
- xvi) Monitoring and maintaining performance through operations & maintenance records
- xvii) Coordination with various agencies, departments for continuous operation, maximum generation and energy

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certification

- xviii) Comply with applicable rules and regulations

A. MAINTENANCE

After taking over the activity of O&M for the power plant, the Operator shall be responsible for the operation and maintenance of the plant and shall perform all necessary services including applicable services listed (in brief) below:

- i) The Contractor shall formulate and get approved the preventive maintenance schedules and attend to the breakdowns keeping in view maximizing uptime and designed generation.
- ii) Regular periodic checks shall be carried out as a part of routine preventive maintenance.
- iii) Particular care shall be taken for outdoor equipment to prevent corrosion.
- iv) Cleaning of the components/equipments shall also be carried out at periodic intervals.
- v) Resistance of the earthing system as well as individual earth pits are to be measured and recorded quarterly. If the earth resistance is high(greater than 1 ohm in disconnected mode) , suitable action is to be taken to bring down the same.
- vi) The Contractor shall attend to any breakdown jobs as soon as possible for repair/replacement/adjustments and complete at the earliest working round the clock.
- vii) The Contractor shall immediately report the accidents, if any, to the EIC/Site-In-Charge & to all the concerned authorities as per prevailing law of the State, if required, showing the circumstances under which it happened and the extent of damage and / or injury caused. O&M

Contractor would be solely & fully responsible / liable to pay for any losses/damages/claims, etc. and Owner will be fully indemnified for such losses / claims.

- viii) The Contractor shall comply with the provisions of all relevant acts of Centre or State, if required.
- ix) Government Acts including payment of Wages Act 1936, Minimum Wages Act 1948, Employer's Liability Act 1938, Workmen's Compensation Act 1923, Industrial Dispute Act 1947, Maturity Benefit Act 1961, Mines Act 1952, Employees State Insurance Act 1948, Contract Labour (Regulations & Abolishment) Act 1970 or any modification thereof or any other law relating thereto and rules made there under from time to time.
- x) The Contractor shall at his own expense provide all amenities to his workmen as per applicable laws and rules.
- xi) The Contractor shall ensure that all safety measures are taken at the site to avoid accidents to his or his Co-Contractor's or Owner's Workmen.
- xii) If in the event of negligence or mal-operation by the Contractor's operator, any failure of equipment take place, then such equipment should be repaired / replaced by Contractor free of cost within a reasonable period of time.
- xiii) Establish robust preventive maintenance system to maximize up time and to ensure peak generation in peak periods.
- xiv) Careful logging of operation data/historical information from the Data Monitoring Systems, and periodically processing it to determine abnormal or slowly deteriorating conditions.
- xv) Careful control and supervision of operating conditions.
- xvi) Regulate routine maintenance work such as keeping equipment clean, preventive maintenance and checks of

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delicate ingredients of circuit breakers, junction boxes, module mismatches, Cleanliness of isolators to be ensured.

xvii) Repairs and replacements to ensure maximum uptime for the plant.

xviii) To undertake maintenance & repair of civil infrastructure like MCR, PEB, Drains, foundations etc. as and when required.

xix) Critical drawings like SLDs, Earthing Layout Diagram (showing earthing connections), shock treatment charts etc. to be displayed at appropriate locations.

B. GENERAL O&M

i) To maintain accurate and up-to-date operating logs, records and monthly reports regarding Operation & Maintenance of the facility.

ii) To perform or contract for and oversee the Performance of periodic overhauls or maintenance required for the facility in accordance with the recommendations of the original equipment manufacturer.

iii) To maintain and up-keep battery systems, control panels/switchgears, Inverters, and other solar PV systems/auxiliaries.

iv) Proper ventilation of battery systems to be ensured at all times.

v) To discharge obligations relating to retirement/ Superannuating benefits to employees (of the contractor) or any other benefit accruing to them in the nature of compensation, bonus /in addition to salary, etc. for the period of service with the Contractor.

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Quality Assurance

General Conditions to be complied for preparation of Quality Assurance Plan (QAP) of each equipment are enlisted below:

- a) In QAP various agencies to be designated in standard manner as detailed: Manufacturer / Main supplier (M), LSTK Contractor (C), Third Party (T) and IOCL (O).
- b) Inspection nomenclature for all QAPs: Perform (P), Verification (V), Witness (W), Test Report (TR)
- c) Orientation of all QAP must be same and identical.
- d) QAP should include and divided into sections like: Raw material check (BOM, supplier, quality of material with test certificate and chemical composition as required, etc.), In process check/inspection (by Third Party Inspector and report to be forwarded to Owner for verification before final inspection wherever required), Final Inspection (By TPI, and/or Owner), Documentation (Compliance certificate/ test certificates/ Drawings/ Manual etc. as per tender to be provided), Packaging and forwarding.
- e) All QAPs shall be approved before-hand from Owner.
- f) All major/critical items (Solar PV Modules, Inverters, SMBs, LT Switchgears, DC & AC cables) shall be inspected and tested through third party inspection agency.
- g) For material/equipment for which manufacturing is in separate lots such as Module Mounting Structure, Third Party Inspection (TPI) to be arranged for in-process and final inspection of each lot.
- h) Owner at his discretion can demand for type test for any equipment at authorized laboratory for which separate payment against invoice will be made.
- i) The Contractor shall submit detailed QAP within 15 days of the placement of Purchase Orders for approval of Owner in accordance with the relevant standards and codes. The Contractor shall ensure finalization of comprehensive QAP for all the equipments along with Manufacturer before submission of QAPs for approval.

Quality assurance and inspection for civil works

Introduction

This part of the specification covers the sampling, testing and quality assurance requirement (including construction tolerances and acceptance criteria) for all civil and structural works covered in this specification.

This part of the technical specification shall be read in conjunction with other parts of the technical specifications, general technical requirements & erection conditions of the contract which covers common QA requirements. Wherever IS code or standards have been referred, they shall be the latest revisions.

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The rate for respective items of work or price shall include the cost for all works, activities, equipment, instrument, personnel, material etc. whatsoever associated to comply with sampling, testing and quality assurance requirement including construction tolerances and acceptance criteria and as specified in subsequent clauses of this part of the technical specifications. The QA and QC activities in all respects as specified in the technical specifications/ drawings / data sheets / quality plans / contract documents shall be carried out at no extra cost to the owner.

The contractor shall prepare detailed construction and erection methodology scheme which shall be compatible to the requirements of the desired progress of work execution, quality measures, prior approvals if any and the same shall be got approved by the Owner. If required, work methodology may be revised/ reviewed at every stage of execution of work at site to suit the site conditions by the contractor at no extra cost to the owner.

QA and QC manpower

The contractor shall nominate one overall QA coordinator for the contract detailing the name, designation, contact details and address at the time of post bid discussions. All correspondence related to Quality Assurance shall be addressed by the contractor's QA coordinator to Owner. Owner shall address all correspondence related to Quality issues to the contractor's QA coordinator. The contractor's QA coordinator shall be responsible for co-ordination of Quality activities between various divisions of the contractor and their sub-vendors on one hand & with Owner on the other hand.

The contractor shall appoint a dedicated, experienced and competent QA&QC In-Charge at site, preferably directly reporting to the Project Manager, supported as necessary by experienced personnel, to ensure the effective implementation of the approved QAP. The contractor shall finalize and submit a deployment schedule of QA&QC personnel along with their details to Owner for approval/ acceptance and further shall ensure their availability well before the start of the concern activity.

Sampling and testing of construction materials

The method of sampling for testing of construction materials and work / job samples shall be as per the relevant IS / standards / codes and in line with the requirements of the technical specifications / quality plans. All samples shall be jointly drawn, signed and sealed wherever required, by the contractor and the engineer or his authorized representative.

The contractor shall carry out testing in accordance with the relevant IS / standards / codes and in line with the requirements of the technical specifications / quality plans. Where no specific testing procedure is mentioned, the tests shall be carried out as per the best prevalent engineering practices and to the directions of the Owner. All testing shall be done in the presence of the Owner or his authorized representative in a NABL accredited / Govt. Laboratory acceptable to client. This includes all IITs, NCB, CSMRS, reputed government / autonomous laboratories / organizations, NITs and other reputed testing laboratories. The test samples for such test shall be jointly selected and sealed by the Owner and thereafter these

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shall be sent to the concerned laboratory through the covering letter signed by Owner's representative. The test report along with the recommendations shall be obtained from the laboratories without delay and submitted to client.

Purchase and service

Structural steel supply if in the scope of the contractor shall be procured from main steel producers like SAIL, TISCO, IISCO, RINL, Essar Steel, Ispat Industries, JSW Steel, Lloyds Steel, Jindal Steel & Power. In case of non-availability of some of the sections with main steel producers, the contractor may propose to procure the sections from the re-rollers of the main steel producers, the name of such re-rollers will have to be cleared by Owner for which details such as BIS approval, main steel producer's approval, past experience for production of sections of specified material, details of machines plants testing facilities etc., confirmation that the process control and manufacturing of steel sections by re-rollers shall be same as that of main steel producers, that billets for re-rolling will be sourced from main steel producers only shall be furnished with regards to re-roller.

Even after clearance of re-rollers, induction of billets with identified and correlated Mill test certificates (TC's) in the process of re-rolling, sampling of steel, quality checks thereof and stamping of final product for further identification and correlation with TC's prior to dispatch shall be the responsibility of the contractor and these shall be performed in presence of the authorized representative of the main Contractor.

Reinforcement steel supply if in the scope of the contractor shall be procured from main steel producers like SAIL, TISCO, IISCO, RINL, Essar Steel, Ispat Industries, JSW Steel, Lloyds Steel, Jindal Steel & Power, Jai Balaji Industries Ltd, Durgapur (for 8-40mm reinforcement steel) and mill test certificates (TC) is to be obtained and submitted to client for co- relation. In case any size /diameter specified is not available with main steel producers and are proposed to be supplied from the conversion agent of the main steel producer the name of such conversion agent / re-roller shall have to be approved by Owner for which details such as BIS approval, Main steel producer's approval, Past experience for production of sections of specified material, details of machines, plants testing facilities etc., and confirmation that the process control and manufacturing of steel sections by re-rollers is the same as that of main steel producers, that billets for re-rolling are sourced from main steel producers only shall be furnished with regards to re-roller.

Field Quality Plan

Well before the start of the work, the contractor shall prepare and submit the Field Quality Plans (FQP) and obtain approval of Owner, which shall detail out for all the works, equipments, services, quality practices and procedures etc. in line with the requirement of the technical specifications to be followed by the contractor at site. This FQP shall cover for all the items / activities covered in the contract / schedule of items required, right from material procurement to completion of the work at site. Field Quality Plan shall cover following alongwith other details:

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- a) Civil work quality parameters.
- b) Placement details of equipment on foundations, inside inverter room/control room.
- c) Cable laying norms along with marker intervals & length of cable loop to be left.
- d) Details of cable laying between modules to SMB, SMB to inverter, inverter to LT Panel.
- e) Procedure to be followed to maintain accuracy of alignment & level for module mounting structure.
- f) Number of equipment (total station, concrete mixtures, drilling machine, cube test machine etc.) to be made available at site to ensure work completion as per schedule.
- g) Any other procedure required to ensure quality work.

Material dispatch and receipt at site

After successful inspection of equipment/material by Owner/TPI, contractor can dispatch material to site depending on adequate storage facility, availability of unloading manpower and other factors. Following modalities to be complied for material dispatch and receipt at site:

- a) Material Dispatch:
 - i) Contractor shall notify Owner of the date of each shipment from the works and expected date of arrival at the site.
 - For Indigenous materials - The shipping documents shall be sent to the Owner within 3 three days from the date of shipment.
 - For imported materials – The shipping documents shall be sent to the Owner within 10 days from the date of shipment.
 - ii) Contractor will track the shipments and Owner shall be kept informed.
 - iii) Shipment status report from Contractor- weekly basis.
- b) Material Receipt:
 - i) On arrival of the material at site, Contractor shall give written notice thereof to Owner to inspect the materials, and shall keep in readiness for inspection, the materials, shipping documents, relevant tests results, reports and certificates.
 - ii) CERTIFICATE OF VERIFICATION AND GOOD CONDITION jointly by Owner, Contractor. Formats for the same to be developed by Contractor and to be approved from Owner. Following needs to be ensured:

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- Satisfaction that the material received is in conformity with the material requirements of the Bill of Materials
 - Tallying with description given in the shipping documents/packing list details
 - Contractor's invoices would be matched with respect to Serial numbers, tally sheets, Condition of material received (Damaged, partly damaged) etc.
 - Contractor would prepare Material Receipt Note for accepted materials (formats to be developed by Contractor and approved by Owner). Material Receipt Note would be duly verified and certified by Owner.
- c) Record Keeping of Material:
- i) Material Register (to be maintained by Contractor with each entry verified & checked by the Owner's representative): Two separate register as detailed below would be maintained.
- Register of Major items supplied by contractor as per the Purchase order (Eg - PV Modules, Inverter, Transformer, MMS, Cables etc.).
 - Register of other materials such as Cement, Steel, Stone & aggregates, etc. with details of the day to day receipt, issue, and stock (with brand name) of major items like steel, cement supplied by contractor.

K. K. K.
(K. K. K.
Om, Chittoor)

ANNEXURES - TECHNICAL

T#1

Exceptions & Deviations

Bidder may stipulate here exceptions and deviations to Bidding Document, if considered unavoidable, for technical clauses.

S. No.	Bid Volume No., Chapter No., Page No. of Bid Document	Clause No.	Description of Clause	Deviation proposed by Bidder

Bidder to note that this Annexure has been included in the Bidding document solely for the convenience of the Bidder so as to facilitate them to list out the deviations/ exceptions both of technical and commercial nature from/ to the bidding document. Owner will not recognize any deviations/ exception(s), which is not listed in this format.

(Signature & Seal of the Tenderer)

DECLARATION BY THE TENDERER

We _____ (Name of the Tenderer) hereby represent that we have gone through and understood the Bid Documents (including but not limited to), the Technical Requirements and that our Bid has been prepared accordingly in compliance with the requirements stipulated in the said documents.

We are submitting Bid Documents Part - I: Techno Commercial and Part II: Price Bid, as part of our Bid duly signed and stamped on each page in token of our acceptance and shall form part of our bid. In the event of award of contract to us, all the parts shall be considered for constitution of Contract Agreement.

SIGNED FOR AND ON BEHALF OF TENDERER(S)

Name of the Tenderer:

**Seal & Signature of the
Tenderer:**

Date:

NOTE: This Declaration should be signed by the Tenderer's Authorised Representative who is signing the Bid.

T#3

Details of Specific Experience Meeting Evaluation (Technical) Criteria

Bidder shall furnish their experience details with reference to the work, which pre-qualify them in line with technical criteria mentioned in Special Instructions to Tenderers of tender document.

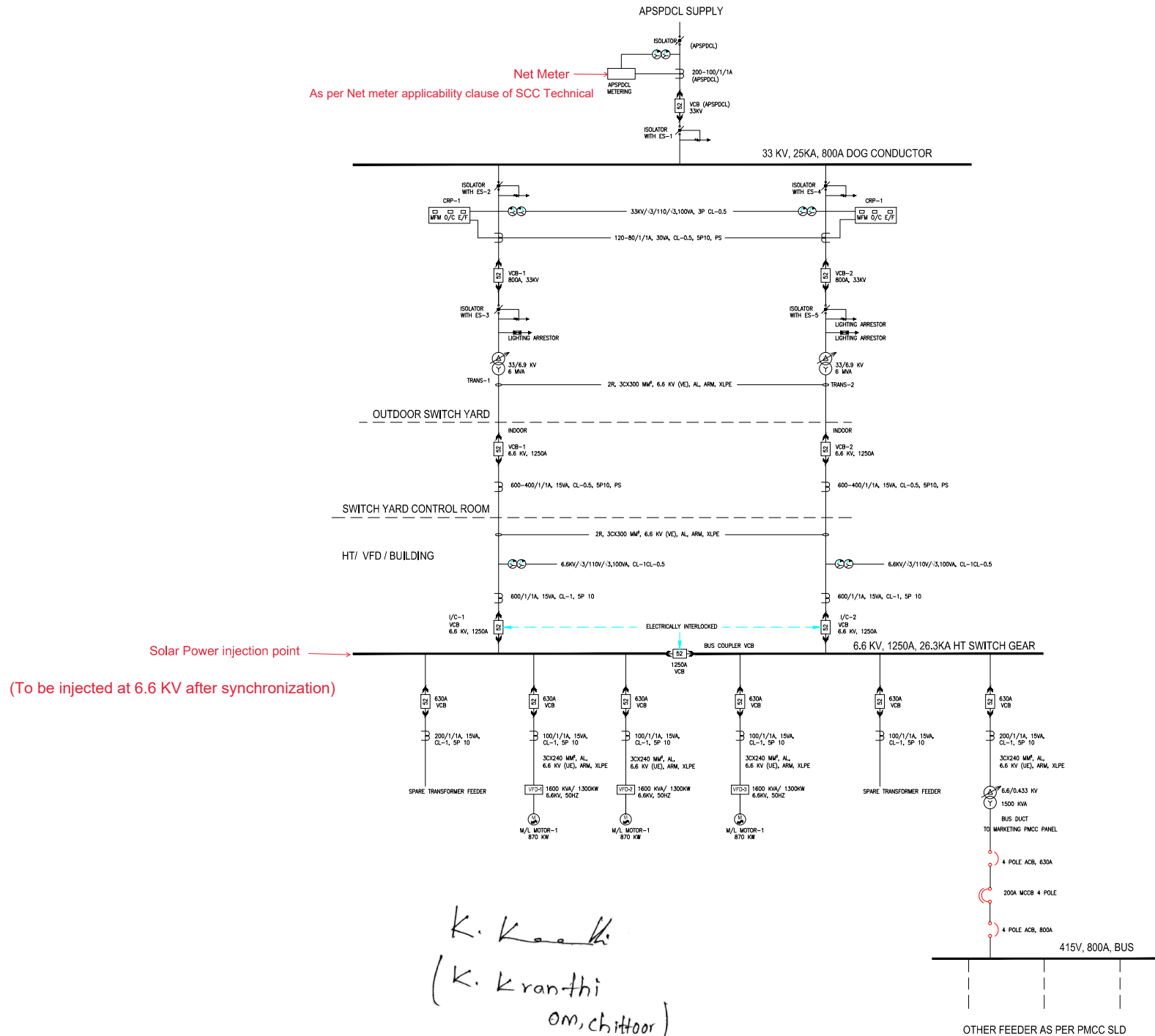
S No	Description	Details
1.	Name of the Work	
2.	Work Order Number	
3.	Work Order Date	
4.	Work Completion Date	
5.	Work Order Copy Attached (Yes/No)	
6.	Completion Certificate Number	
7.	Completion Certificate Date	
8.	Completion Certificate Attached (Yes/No)	

Note(s):

1. Bids not mentioning the Specific Experience meeting Evaluation Criteria AND/OR Bidders not meeting the Specific Experience meeting Evaluation Criteria are liable to be rejected.

(Signature & Seal of the Tenderer)

Annexure-1



NOTES:

1. GENERAL BOARD DETAILS:

- a) HT SYSTEM: 6.6 KV $\pm$ 10%, 50 Hz $\pm$ 3%
- b) LT SYSTEM: 415V $\pm$ 10%, 50 Hz $\pm$ 3%, NEUTRAL GROUNDED.
- c) PANELS ARE INDOOR, SINGLE/DOUBLE FRONT TYPE.
- d) CABLE ENTRIES ARE FROM BOTTOM.
- e) SWITCHBOARD HAS PROVISION FOR EXTENSION AT BOTH ENDS

2. GENERAL FEEDER DETAILS:

- a) ALL FEEDERS ARE FULLY DRAW-OUT TYPE WITH FULLY IN, TEST AND ISOLATED POSITIONS.
- b) FOR DETAILS OF HT/LT PANELS/COMPONENTS PLEASE REFER THE FOLLOWING VENDOR'S DRAWINGS.
 - i) FOR SWITCH YARD HT PANEL : M/S CROMPTON GREAVES
 - ii) FOR HT PANEL : M/S JYOTI
 - iii) FOR LT PMCC M/S BCH

LEGEND:-

	VACUUM CIRCUIT BREAKER
	LIGHTNING ARRESTOR
	ISOLATOR
	ISOLATOR WITH EARTH SWITCH
	AIR CIRCUIT BREAKER
	POTENTIAL TRANSFORMER
	CURRENT TRANSFORMERS
	TRANSFORMER WITH OLTC
	MCCB
	3 PHASE AC MOTOR
	VARIABLE FREQUENCY DRIVE

AS BUILT

AB	10/03/04	DDS						AS BUILT
NO.	DATE	INI.	SIG.	INI.	SIG.	INI.	SIG.	
REVISION		DRAWN		CHECKED		APPROVED		SUBJECT OF REVISION


इंडियन ऑयल कॉर्पोरेशन लिमिटेड (पाइपलाइन्स)
INDIAN OIL CORPORATION LIMITED (PIPELINES)

Jaihind PROJECTS LTD
5th FLOOR, SHANTI ARCADE, 132 Ft. RING ROAD, Nr. SAPTAK PARTY PLOT,
NAVRANGPURA, AHMEDABAD-380013

CHENNAI – BANGALORE PIPELINE AUGMENTATION PROJECT

ELECTRICAL SINGLE LINE DIAGRAM FOR CHITTOOR PUMP STATION

REV	DWG. NO.	SCALE	SIZE	SHEET
AB	IOCL-JPL-SLD-ELE-002	1:1	A2	1 OF 1

Tentative site for solar plant

Legend

 Tentative site for solar plant (Area: approx 3 acres)



Tentative site for solar plant (Area: approx 3 acres)

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Annexure-2

PERFORMANCE GUARANTEE TEST / YEARLY PERFORMANCE EVALUATION

“Performance Ratio (PR)” is defined as below:

$$\text{Performance Ratio (PR) of a plant for a period of time} = \frac{\text{Energy generated (kWh)}}{\text{Irradiance (kWh/m}^2\text{) x Active area of PV module (m}^2\text{) x PV module efficiency}}$$

The Performance Guarantee Test (PGT) will be performed upon fulfilment of conditions given in Clause 2 of this Annexure and will include tests described under Clause 3 of this Annexure.

The Yearly Performance Evaluation Test shall be done in the last quarter of every year during execution of 1-Year Inclusive O&M of Part-A as well as during the execution of Part-B of the contract as described in Clause 3 of SCC. The Yearly Performance Evaluation Test shall include tests described under Clause 3 of this Annexure.

1. DEFINITIONS

- 1.1. H_t – Integrated total irradiation (in kWh/m²) measured at the plane of modules during each 5-minute interval by 1 no. Class-II integrating pyranometer installed
- 1.2. $E_{GEN,t}$ – Electric energy generated from Solar Power Project (in kWh) during each 5-minute interval measured by energy check meter installed at Project Switchyard
- 1.3. J_t – Average solar irradiance (in W/m²) measured at the plane of modules during each 5-minute interval by 1 no. Class-II integrating pyranometer installed
- 1.4. G_{STC} – Standard irradiance i.e. 1000W/m²
- 1.5. P_N – Total installed PV capacity (W_p), where P_N varies as below during the PGT/various Yearly Performance Evaluation Tests as per the deration value of the Solar PV Modules as specified in Clause 3.6 on Page-14 of Chapter-5:

	Value of P_N
P – Total installed capacity of Solar PV Modules (in W_p)	
For PGT : P_0	97.5% of P
For Yearly Performance Evaluation Test during 1-Year Inclusive O&M as per Part-A of Clause 3 of SCC : P_1	96.8% of P

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For Yearly Performance Evaluation Test during 1 st year of O&M as per Part-B of Clause 3.2 of SCC : P₂	96.1% of P
For Yearly Performance Evaluation Test during 2 nd year of O&M as per Part-B of Clause 3.2 of SCC : P₃	95.4% of P
For Yearly Performance Evaluation Test during 3 rd year of O&M as per Part-B of Clause 3.2 of SCC : P₄	94.7% of P
For Yearly Performance Evaluation Test during 4 th year of O&M as per Part-B of Clause 3.2 of SCC : P₅	94.0% of P

Where, subscript ‘t’ used above is the count of 5-minute interval for recording of integrated/average/net values of parameters defined above. There will be such 4320 nos. of 5-minute intervals (288 intervals in a day x 15 days) during the Performance Test Period (PTP), i.e. t ranges from 1 to 4320.

2. CONDITIONS TO PROCEED WITH PGT

The PGT will be executed after fulfilment of following conditions:

- 2.1. Commissioning of the entire PV Plant shall be achieved.
- 2.2. The Monitoring System shall be completely installed and under operation with all the sensors calibrated.
- 2.3. The Contractor shall undertake to submit all the technical documentation requested by IOCL as mentioned in the sections of tender document.
- 2.4. Only qualified personnel from the Contractor or personnel from other companies appointed by the Contractor, with suitable skill in electrical equipments, measurement shall be allowed to perform the prescribed inspections.
- 2.5. Before inspection, the area subject to inspection has to be cleaned and any installation that could hinder any functional tests shall be removed.
- 2.6. The 5-minute duration, t, as defined in Clause 1 should be same for 1.1, 1.2, 1.3 and 1.4 and the recorded parameters by different measuring instruments as described in the respective clauses shall be available through Remote Monitoring System with synchronised time stamping.

3. PROCEDURE AND CALCULATION

The PGT/Yearly Performance Evaluation Test shall be carried out during a **15-day** period (referred to as **the Performance Test Period – PTP**).

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- 3.1. **Total Reference Energy during PTP** shall be calculated through the method given below:

$$E_{Ref} = \frac{P_N}{G_{STC}} \times \sum_{t=1}^{4320} H_t$$

For calculation purposes, when $J_t < 200 \text{ W/m}^2$, H_t shall be taken as zero, i.e. such values of H_t shall be rejected (not considered in above summation).

- 3.2. **Total Energy Generated from solar** during PTP shall be calculated through the formula:

$$E_{GEN} = \sum_{t=1}^{4320} E_{GEN,t}$$

For calculation purposes, when $J_t < 200 \text{ W/m}^2$, $E_{GEN,t}$ shall be taken as zero, i.e. such values of $E_{GEN,t}$ shall be rejected (not considered in above summation).

- 3.3. The **Performance Ratio** during PTP shall be calculated through the formula:

$$PR = \frac{E_{GEN}}{E_{Ref}}$$

There should be at least 1440 nos. of non-zero readings of H_t and $E_{GEN,t}$ considering the above mentioned condition on availability of J_t . If the required numbers of readings are not available, then the duration of PGT shall be extended beyond 15-days to have at least 1440 nos. of non-zero readings of H_t and $E_{GEN,t}$.

- 3.4. In order to consider the Performance Guarantee Test positively passed, the following condition must be satisfied:

$$PR \geq 78\%$$

- 3.5. In order to consider the Yearly Performance Evaluation Test positively passed, the following condition must be satisfied:

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PR $\geq$ 78% or PR last established during PGT/Yearly Performance Evaluation, whichever is low.

Energy losses attributable to following events shall not be considered for performance guarantee evaluation:

- Shut-downs caused by factors not controlled by the Contractor or it's subcontractors
- Force Majeure
- Vandalism or theft.
- Modifications at the site or its surroundings due to factors out of control of the Contractor (i.e. shadowing due to new installations on the site or next to the site, etc).

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Annexure-3

LIST OF APPROVED MAKES

S. No.	Description of material	Make
1	SPV Module	Updated Approved List of Models and Manufacturers available in the MNRE (Ministry of New & Renewable Energy) Website as per prevalent policy.
2	Inverter/PCU	ABB/ TMEIC/SMA/ KACO/ Hitachi Hirel/ Schneider/ Bonfiglioli/ General Electric/ Delta/ Fronius or equivalent
3	Cables	Polycab/KEI/Ravin/Lapp/Leoni/Siechem
4	String Monitoring Box(s)	Trinity Touch/Statcon/CAPE/ABB
5	Connectors	Lumberg/Bizlink/Multi Contact/COYO
6	Fuse, MCB, MCCB, Terminal Block, ELCB	ABB/Schneider/L&T/Mitsubishi/Bussman/Ferraz
7	HT/Inverter Transformers	Voltamp/ Schneider (Areva)/EMCO/CG/ABB/Bharat Bijlee/BHEL or Equivalent Make
8	SCADA System	GE/L&T/iPlon/ABB/Rockwell or Equivalent Make
9	Switchgear	ABB/Areva (Schneider)/C&S/L&T/CG/Siemens/Jyoti
10	RMU PANELS	ABB/SCHNEIDER/L&T/Siemens/CG/Jyoti or BRPL / State Electricity Authority approved make
11	CT/PT	Mehru/CGL/ Alstom or BRPL / State Electricity Authority approved make
12	Battery	Exide/ Amaraja/ HBL/ Luminous/ Southern batteries/ Okaya/ Su-kam/ Base Cop./ Evolute/ True Power
13	Lightning Arrestor ESE	LPI/Ellipse/Indelec/Erico or Equivalent Make
14	Isolators	CG/Danke/Ambit/SMC/ABB or BRPL / State Electricity Authority approved make
15	LA	Elpro/ABB/CGL/ or BRPL / State Electricity Authority approved make
16	Trivector Meters	Secure meters/ L&T or BRPL / State Electricity Authority

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		approved make
17	Module Mounting Structure	Approval of Make by Owner shall be based on past experience of OEM and Factory inspection of OEM for having adequate infrastructure for quality production of material

For Solar PV Module, Inverter/PCU, Cables, SMBs, Transformers, Switchgear, RMU Panel, For Solar PV Module, Inverter/PCU, Cables, SMBs, Switchgear, CTs/PTs, Batteries and MMS, the OEM must have a manufacturing with testing facility in India.

If Contractor chooses equipment/system/components of an equivalent make, Contractor shall submit for IOCL approval a conformance certificate generated/certified from any of the Third Party Inspection Agency/Laboratory (list given in Annexure-5) certifying that the selected model of a particular make is compliant to the specifications outlined for that particular equipment/system/components in this Tender Document, before placement of Purchase Order for that equipment/system/components to an equivalent make manufacturer.

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Annexure-4

LIST OF MANDATORY SPARES

Sl. No.	Item Description	Units*
1	Solar PV Modules	0.5% of total population, rounded up to higher integer

*the quantity of mandatory spares to be provided by the bidder shall be the specified percentage (%) of the total population required to meet the specification requirements. In case the quantity of mandatory spares so calculated happen to be a fraction the same shall be rounded off to next higher whole number.

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Annexure 5

List of TPI Agencies

1. M/s ABS Industrial Verification (India) Pvt Ltd,
2. M/s Projects and Development India Ltd
3. M/s TUV SUD South Asia Pvt Ltd
4. M/s IR Class and Solutions Pvt Ltd
5. M/s VCS Quality Services Pvt Ltd
6. M/s TUV Rheinland India Pvt Ltd
7. M/s Certification Engineers International Ltd
8. M/s Rites Ltd
9. M/s TUV India Pvt Ltd
10. M/s Moody International India Pvt Ltd
11. DNV GL Business Assurance India Pvt Ltd
12. Tata Projects Ltd
13. RINA Services S.P.A
14. Vincotte International Indian Assessment Services Pvt Ltd
15. Quality Evaluation And Systems Team India Pvt Ltd
16. Lloyds Register Asia
17. SGS India Pvt Ltd

ANNEXURES - COMMERCIAL

COMMERCIAL ANNEXURES

Annexure No.	Description
Annexure-1	Tender forwarding letter
Annexure-2	Exception and Deviations
Annexure-3	Statement of Credentials
Annexure-5	Calculation for Net Worth
Annexure-6	Proforma for Bank Guarantee in lieu of Earnest Money Deposit (EMD)
Annexure-7	Proforma for Bank Guarantee in lieu of Initial Security Deposit/ Security Deposit
~~Annexure-8~~	~~GST (Goods & Service Tax) Details~~
~~(IP-A & IP-B)~~	~~Integrity Pact Agreement Formats (IP-A & IP-B)~~
Annexure-9	Declaration of Black Listing/ Holiday Listing
Annexure-10	Undertaking on letterhead regarding bidder sharing border with India and for tenders involving possibility of subcontractor
Annexure-11	"Form of Tender" for commercial bid
Annexure-12	"Form of Tender" for price bid
Annexure-13	Information regarding the bidder
Annexure-14	Declaration of relationship with directors of IOCL
Annexure-15	Declaration on proceedings under Insolvency and Bankruptcy Code, 2016
Annexure-16	Undertaking in support of not being under liquidation
Annexure-17	Undertaking for non-engagement of child labour
Annexure-18	Safety Declaration
Annexure-19	Format for giving consent and bank details
Annexure-20	Proforma of Indemnity Bond to be submitted by Contractor along with request for issuance of Completion Certificate
Annexure-21	Proforma of No Claim/ No Due Certificate
Annexure-23 & 23A	Purchase preference declaration and Undertaking by bidder for applicability of PPP-MII order
Annexure-24	Certificate by Statutory Auditor of Bidder towards Mandatory Minimum LC
Annexure-25	Information to be furnished by contractor to EIC under MSME order 2012.

COMMERCIAL MASTER INDEX

S. No.	LIST OF SUPPORTING DOCUMENTS (COMMERCIAL)	COPY ATTACHED (PLEASE TICK ✓ MARK)
1.	EMD - As per Clause 29.1.0 of Special Instructions to Tenderers	
2.	Whether Proof of submission of EMD provided through e-mail at the email ID mentioned in the detailed NIT so as to reach the tender issuing/ submission authority on or before the bid submission date. (Refer Detailed NIT and clause 29.1.3 of SIT	
3.	Notarized/ Attested copy of Power of Attorney for the Authorized Signatory who is having valid Digital Signature Certificate (DSC) and participated in e-tendering	
4.	Please attach copies of Articles of Association, Memorandum of Understanding and Certificate of Incorporation in case of Limited Company/ Proprietary Firm/ Partnership Firm/JV.	
5.	MOU in case bidding entity is consortium/ Unincorporated JV / Wholly owned Indian Subsidiary (Refer clause 7.0.0 of SIT-Commercial)	
6.	Copies of audited balance sheets for last 3 Financial years (as per Clause 30.1.1 of SIT-Commercial)	
7.	Copies of Work Order and Completion Certificate, supporting the qualification criteria (Technical & Commercial)	
8.	Copy of PF Code No. Certificate	
9.	Copy of PAN Card issued by Income Tax Authority	
10.	Tender Forwarding Letter (Annexure-1)	
11.	Exception and Deviations (Annexure-2)	
12.	Statement of Credentials (Annexure-3)	
13.	Calculation for Net Worth (Annexure-5)	
14.	Proforma for Bank Guarantee in lieu of Earnest Money Deposit (EMD) (Annexure-6)	
15.	Proforma for Bank Guarantee in lieu of Initial Security Deposit/ Security Deposit (Annexure-7)	
16.	GST (Goods & Service Tax) Details (Annexure-8)	
17.	Integrity Pact Agreement Formats (IP-A & IP-B)	
18.	Declaration of Black Listing/ Holiday Listing(Annexure-9)	
19.	Certificate regarding restriction of Bidder from the country sharing border with India (Annexure-10)	
20.	"Form of Tender" for commercial bid (Annexure-11)	
21.	"Form of Tender" for price bid (Annexure-12)	
22.	Information regarding the bidder (Annexure-13)	
23.	Declaration of relationship with directors of IOCL (Annexure-14)	
24.	Declaration on proceedings under Insolvency and Bankruptcy Code, 2016 (Annexure-15)	
25.	Undertaking in support of not being under liquidation (Annexure-16)	
26.	Undertaking for non-engagement of child labour (Annexure-17)	

S. No.	LIST OF SUPPORTING DOCUMENTS (COMMERCIAL)	COPY ATTACHED (PLEASE TICK ✓ MARK)
27.	Safety Declaration (Annexure-18)	
28.	Format for giving consent and bank details along with cancelled cheque copy (Annexure-19)	
29.	Purchase preference declaration (Annexure-23) and Undertaking by bidder for applicability of PPP-MII order (Annexure-23A)	
30.	Certification by the Statutory Auditor /Cost Auditor/Practising cost accountant/Practising Chartered Accountant of the bidder with UDIN (Annexure-24)	

(Seal & Signature of the tenderer)



ANNEXURE-1

TENDER FORWARDING LETTER
(To be filled in by the tendering party in official letter head)

Indian Oil Corporation Ltd. (Pipelines Division)
Southern Region Pipelines
House of Four Frames, 6/13
Wheat Croft Road, Nungambakkam-Chennai

Name of Work:

Name of Work:

Dear Sir,

We confirm that we have quoted the rates in the tender considering Inter-alia the

1. Tender Document(s)
2. Additional Document(s) if any
3. BoQ Document (Price Bid Format)
4. Corrigendum (if any)
5. Pre Bid Meeting Minutes (if any)

We _____ (Name of the Tenderer) hereby certify that we have fully read and thoroughly understood the tender requirements and accept all terms and conditions of the tender including all corrigendum/addendum issued, if any. Our offer is in confirmation to all the terms and conditions of the tender including all corrigendum/addendum, if any and minutes of the pre-bid meeting. In the event our offer is found acceptable and contract is awarded to us, the complete tender document shall be considered for constitution of Contract Agreement.

We also confirm that we have quoted for all items of BoQ/SOR.

We have pleasure in making our TECHNO-COMMERCIAL PROPOSAL in accordance with your BID requirements (except deviation as per **Annexure-2**) for your consideration.

Moreover we have also undergone through **Clause No. 7.0.0 of SIT (Section B Commercial)** and hereby declare that we are submitting our bid as

S. No.	Bidding Entity	Please put tick mark against ONE box ONLY out of the following options.
1.	Sole Bidder: Individual (Proprietary)/ Partnership/ Company/ An incorporated Joint Venture Company	☐
3	Wholly owned Indian subsidiary of a Foreign or Indian company on the strength of its parent	☐ If Yes than please also fill



S. No.	Bidding Entity	Please put tick mark against ONE box ONLY out of the following options.
	company	Parent Company:-

NOTE: We have fully read Commercial Annexure and fully comply

(Seal and signature of the bidder)

ANNEXURE-2

FORMAT FOR TENDERER'S EXCEPTIONS / DEVIATIONS

S. No.	Ref chapter/ Page No.	Tender Document		Subject	Deviation / Exception
		Cl. No.	Para No.		
(1)	(2)	(3)	(4)	(5)	(6)

(SEAL & SIGNATURE OF THE TENDERER)

Any clarifications / deviation / exception appearing elsewhere in the tenderer's offer shall not be considered. Failure to clearly define tender exceptions may be cause for Tender rejection.



ANNEXURE-3

STATEMENT OF CREDENTIALS

(To be filled by the tenderer)

NOTE:

1. Incorrect/ false declaration will result in disqualification.
2. Necessary supporting documents to be enclosed.
3. Corporation reserves the right to assess the tenderer's capacity and capability if necessary by visiting/ inspecting recently executed / under execution of works.

(A)

1. NAME AND CORRESPONDENCE ADDRESS OF THE TENDERER

PERMANENT ADDRESS OF THE TENDERER

2. TELEPHONE NO. _____
MOBILE NO. _____

3. NAME OF CONTACT PERSON(s):

4. NAME OF THE AUTHORIZED SIGNATORY:

5. e-mail ID:

(B) TYPE OF BUSINESS ENTITY:-

(Pl. provide the required applicable details as under)

1. DATE / YEAR OF ESTABLISHMENT OF THE FIRM / COMPANY:

2. SOLE PROPRIETORSHIP: - _____
(Give Name of the Proprietor)

OR

3. PARTNERSHIP FIRM:-

(Give names of the Partners and enclose scan copy of Partnership deed)
CIN No. (If applicable)

I	Names of Partners: A. B. C.
II	Authorized Signatory: A. B. C.

OR

4. PRIVATE OR PUBLIC LIMITED COMPANY?

CIN no. (If applicable)

(Upload list of Directors and copy of Certificate of Incorporation)

I	Names of Directors: A. B. C.
II	Authorized Signatory: A. B. C.

Details of Completed Work Orders of minimum value as per Pre- qualification criteria (PQC) during last seven Years as specified in PQC of the tender:

Sl. No	Particulars	WO-1	WO-2	WO-3
A	Party's Name to whom executed, Clear Postal Address, Telephone/Fax Nos. and E-Mail Address.			
B	Work Order (WO) Details-			
	WO Reference No.			
	WO Date			
	WO Value (Rs. in Lakh)			
C	Detail of works & Location			
D	Date of completion of work			
E	Completion certificate reference No. and date			
F	Completion Value of Work, as per Completion certificate			



Note:

A. Tenderer should upload copy of the above-referred work orders and completion certificates/proof of payment as applicable

B. Enclose a separate statement, if space is not sufficient.

(D) Annual Turnover (as per Signed and Audited Balance Sheet including P&L account) in following last THREE financial years:

S No	Financial Year	Value in Rs Lakh
1	2020-21	
2	2021-22	
3	2022-23	

Note: Tenderer should upload copy of signed and audited Balance Sheet including P&L account as proof of turnover.

(E) INCOME TAX DETAILS:

PAN No.

TAN No.

Income Tax Returns Acknowledgement Filed for last three Assessment Years (i.e. corresponding financial years):

Assessment Year	Date	ACKNOWLEDGEMENT NO.
2021-22		
2022-23		
2023-24		

Note: Tenderer should upload copy of the Acknowledgement of Income Tax Return filed.

(F) TAX CERTIFICATE:

PARTICULARS	REGISTRATION NUMBER	DATE	VALID UPTO
GST Identification No			

Note: Tenderer should upload copies of above Tax Registration Certificates.
Tenderer is also required to necessarily fill in the following details.

(G) Mode of EMD (Online EMD):

i. If paid Online:

	AMOUNT Rs.
Transaction Detail (IOC SAP PRN Number)	



OR

iii. EMD Exemption Detail:
MSE/ NSIC Details:

Category (MSE / NSIC)	MSE/NSIC/ Certificate no.	MSE/NSIC/ No. Valid upto (If Applicable)	Tendered Work is covered in Certificate (Yes/No)

Central Govt./ State Govt. PSU, IOCL JV:
(Strike out whichever is not applicable)

Name of Central Govt./ State PSU / JV of IOCL	State whether Central Govt./ State PSU, IOCL JV	CIN

Note: EMD Exemption declaration document to be uploaded.

(I) PAN Card No. _____

(Tenderer is required to upload copy of PAN card)



ANNEXURE-6

**BANK GUARANTEE IN LIEU OF
EARNEST MONEY DEPOSIT**

BG NO:
DATED:
VALID UPTO:

To,

Indian Oil Corporation Ltd. (Pipelines Division)
Southern Region Pipelines
House of Four Frames, 6/13
Wheat Croft Road, Nungambakkam-Chennai

Dear Sirs,

In consideration of Indian Oil Corporation Limited (Pipelines Division) (hereinafter called "the Corporation" which expression shall include its successors and assigns), having agreed inter alia to consider the tender of (Name of the Tenderer) having its Head Office/ Registered Office at (Address of the Tenderer) (hereinafter called the "Tenderer" which expression shall include its successors and assigns), for the work of (Name of the Project/Work) at (Location) to be awarded under Tender No upon the Tenderer furnishing an undertaking from the Bank as hereinafter appearing in lieu of cash deposit of the Earnest Money.

We (Name of the Bank), a Bank constituted/Registered under the Act, having our Head Office/ Registered Office at (hereinafter called the "Bank" which expression shall include its successors and assigns), at the request of the Tenderer and with the intent to bind the Bank and its successors and assigns do hereby unconditionally and irrevocably undertake to pay the Corporation at New Delhi forthwith on first demand without protest or demur or proof or satisfaction or condition and without reference to the Tenderer, all sums payable by the Tenderer as and by way of Earnest Money to the Corporation, upto an aggregate limit of (Amount in figures and words)

:-

AND THE BANK DOT H HEREBY FURTHER AGREES AS FOLLOWS:

1. This Guarantee/Undertaking shall be a continuing guarantee and shall remain in full force and effect for all claims or demands made by the Corporation on the Bank until the Corporation discharges this Guarantee/Undertaking subject, however, that the Corporation shall have no claims under this Guarantee/Undertaking after the midnight of _____ or any written extension(s) thereof.

PROVIDED that if the aforesaid work tendered for or any part thereof shall be awarded to the Tenderer on or before the said date, whether on the basis of accompanying tender or any other basis, then the validity of this guarantee/undertaking shall stand automatically extended for all claims and demands made by the Corporation for further three months.

2. The Corporation shall have the fullest liberty without reference to the Bank and without affecting in any way the liability of the Bank under this Guarantee/Undertaking at any time and/or from time to time any wise to postpone and/or vary any of the powers, rights, and obligations exercisable by the Corporation against the Tenderer and either to enforce or to forbear from enforcing all or any of the terms and conditions of or governing the said Tender and/or any contract consequent upon any award of work or the said Earnest Money Deposit or the securities available to the Corporation or any of them and the Bank shall not be released from its liability under these Presents and the liability of the Bank hereunder shall remain in full force and effect notwithstanding any exercise by the Corporation of the liberty with reference to any or all the matters aforesaid or by reason of any other act, matter or thing whatsoever which under law relating to the sureties or otherwise which could, but for this provision have the effect of releasing the Bank from all or any of its obligations hereunder or any part thereof, and the Bank specifically waives any and all contrary rights whatsoever.
3. It shall not be necessary for the Corporation to proceed against the Tenderer before proceeding against the Bank and the Guarantee/Undertaking herein contained shall be enforceable against the Bank as principal debtor notwithstanding the existence of any other undertaking or security for any indebtedness of the Tenderer to the Corporation and notwithstanding that any such security shall at the time when claim is made against the Bank or proceedings taken against the Bank hereunder, be outstanding or unrealised.
4. The amount stated by the Corporation in any demand, claim or notice made with reference to this guarantee shall as between the Bank and the Corporation for the purpose of these Presents be conclusive of the amount payable by the Bank to the Corporation hereunder.
5. The liability of the Bank to the Corporation under this Guarantee/Undertaking shall remain in full force and effect notwithstanding the existence of any difference or dispute between the Tenderer and the Corporation, the Tenderer and the Bank and/or the Bank and the Corporation or otherwise howsoever touching these Presents or the liability of the Tenderer to the Corporation, and notwithstanding the existence of any instructions or purported instructions by the Tenderer or any other person to the Bank not to pay or for any cause withhold or defer payment to the Corporation under these Presents, with the intent that notwithstanding the existing of such difference, dispute or instructions, the Bank shall be and remain liable to make payment to the Corporation in terms thereof.
6. This Guarantee/Undertaking shall not be determined or affected by the liquidation or winding up or dissolution or change of constitution or insolvency of the Tenderer or any change in the legal constitution of the Bank or the Corporation.
7. Without prejudice to any other mode of service, a demand or claim or other communication may be transmitted by the Corporation to the Bank either by post or by fax. If transmitted by fax, the transmission shall be complete as soon as acknowledged by bank.
8. Notwithstanding anything contained herein:
 - (i) The Bank's liability under this guarantee/undertaking shall not exceed (Amount in figures & words)
 - (ii) This guarantee/undertaking shall remain in force upto and any extension(s) thereof; and



(iii) The Bank shall be released and discharged from all liability under this guarantee/undertaking unless a written claim or demand is issued to the Bank on or before or the date of expiry of any extension(s) thereof if this guarantee/undertaking has been extended.

The Bank doth hereby declare that Shri _____ who is authorised to sign this Guarantee/Undertaking on behalf of the Bank and to bind the Bank thereby.

This _____ day of _____ 20____ .

Yours faithfully

Signature: _____

Name & Designation: _____

Name of Issuing Branch: _____

Complete Postal Address of Issuing Branch: _____

Telephone No. _____

Fax No. _____

Email Address of the BG issuing Bank Officer/Bank ranch _____

IFSC Code of the Branch: _____



ANNEXURE-7

INDIAN OIL CORPORATION LIMITED
PIPELINES DIVISION
FORM OF BANK GUARANTEE
IN LIEU OF SECURITY DEPOSIT/ INITIAL SECURITY DEPOSIT

BG NO: _____

DATED: _____

VALID UPTO: _____

To,
Indian Oil Corporation Ltd. (Pipelines Division)
Southern Region Pipelines
House of Four Frames, 6/13
Wheat Croft Road, Nungambakkam-Chennai

Dear Sirs,

In consideration of Indian Oil Corporation Limited (Pipelines Division) (hereinafter called "the Corporation" which expression shall include its successors and assigns), having awarded certain work for and relative to _____ (Name of the Project/Work) to _____ (Name and address of the Contractor) (hereinafter called "the Contractor" which expression shall include its successors and assigns), upon certain terms and conditions inter-alia mentioned in the Corporation's Letter of Acceptance No. _____ dated _____ read with the relative Tender Documents (hereinafter collectively called "the Contract", which expression shall include any formal contract entered into between the Corporation and the Contractor in supersession of the said Letter of Acceptance and all amendments and/ or modifications in the contract) inclusive of the condition that the Corporation may accept a Bank Guarantee/ Undertaking of a Scheduled Bank in India in lieu of Cash Deposit of the Initial Security Deposit as provided for in General Conditions of Contract forming part of the said Tender Documents:

We _____ (Name of the Bank), a body registered/constituted under the _____ Act, having our Registered Office/ Head Office at _____ (hereinafter called "the Bank" which expression shall include its successors and assigns), at the request of the Contractor and with the intent to bind the Bank and its successors and assigns, do hereby unconditionally and irrevocably undertake to pay to the Corporation at New Delhi forthwith on first demand without protest or demur or proof or satisfaction and without reference to the contractor up to an aggregate limit of Rs. (Rupees _____ only).

AND the Bank doth hereby further agrees as follows:

- (i) This Guarantee/ Undertaking shall be a continuing guarantee and shall remain valid and irrevocable for all claims of the Corporation upon the Bank made up to the midnight of provided that the Bank shall upon the written request of the Corporation made upon the Bank at any time within 6 (six) months from the said date extend the validity of the Bank Guarantee by a further 6 (six) months so as to enable claims to be made under this Guarantee by a

further 6 (six) months from the said date with the intent that the validity of this Guarantee shall automatically stand extended by a further 6 (six) months upon such request by the Corporation.

- (ii) The Corporation shall have the fullest liberty without reference to the Bank and without affecting in any way the liability of the Bank under this Guarantee/ Undertaking, at any time and/ or from time to time to amend or vary the Contract and/ or any of the terms and conditions thereof or relative to the said Initial Security Deposit or to extend time for performance of the said Contract in whole or part or to postpone for any time and/ or from time to time any of the obligations of the Contractor and/ or the powers or remedies exercisable by the Corporation against the Contractor and either to enforce or forbear from enforcing any of the terms and conditions of or governing the said Contract or the said Initial Security Deposit or the securities available to the Corporation or any of them and the Bank shall not be released from its liability under these presents and the liability of the Bank hereunder shall remain in full force and effect notwithstanding any exercise by the Corporation of the liberty with reference to any or all the matters aforesaid or by reason of time being given to the Contractor or any other forbearance, act or omission on the part of the Contractor or of any indulgence by the Corporation to the Contractors or of any other act, matter or thing whatsoever which under the law relating to sureties or otherwise which could but for the provision have the effect of releasing the Bank from its liability hereunder or any part thereof and the Bank hereby specifically waives any and all contrary rights whatsoever.
- (iii) The obligations of the Bank to the Corporation hereunder shall be as principal to principal and shall be wholly independent of the contract and it shall not be necessary for the Corporation to proceed against the Contractor before proceeding against the Bank and the Guarantee/ Undertaking herein contained shall be enforceable against the Bank notwithstanding the existence of any other Guarantee/ undertaking or security for any indebtedness of the Contractor to the Corporation (including relative to the said Security Deposit) and notwithstanding that any such undertaking or security shall at the time when claim is made against the Bank or proceedings taken against the Bank hereunder, be outstanding or unrealized.
- (iv) The amount stated by the Corporation in any demand, claim or notice made with reference to this guarantee shall as between the Bank and the Corporation for the purpose of these presents be conclusive of the amount payable by the Bank to the Corporation hereunder.
- (v) The liability of the Bank to the Corporation under this Guarantee/ undertaking shall remain in full force and effect notwithstanding the existence of any difference or dispute between the Contractor and the Corporation, the Contractor and the Bank and/ or the Bank and the Corporation or otherwise howsoever touching or affecting these presents for the liability of the Contractor to the Corporation, and notwithstanding the existence of any instructions or purported instructions by the Contractor or any other person to the Bank not to pay or for any cause withhold or defer payment to the Corporation under these presents, with the



intent that notwithstanding the existence of such difference, dispute or instruction, the Bank shall be and remain liable to make payment to the Corporation in terms hereof.

- (vi) The Bank shall not revoke this undertaking during its currency except with the previous consent of the Corporation in writing and also agrees that any change in the constitution of the Contractor or the Bank or the Corporation shall not discharge the Bank's liability hereunder.
- (vii) Without prejudice to any other mode of service, a demand or claim or other communication may be transmitted by fax. If transmitted by fax, the transmission shall be complete as soon as acknowledged by bank.
- (viii) Notwithstanding anything contained herein:
- (a) The Bank's liability under this guarantee/undertaking shall not exceed (Amount in figures & words);
- (b) This guarantee/ undertaking shall remain in force up to and any extension(s) thereof; and
- (c) The Bank shall be released and discharged from all liability under this guarantee/ undertaking unless a written claim or demand is issued to the Bank on or before _____ or the date of expiry of any extension(s) thereof if this guarantee/undertaking has been extended.
- (ix) The Bank doth hereby declare that Shri _____ (Name of the person signing on behalf of the Bank) who is _____ (his designation), is authorized to sign this undertaking on behalf of the Bank and to bind the Bank hereby.

Dated this day of _____ 20_____.

Yours faithfully,

Signature:

Name & Designation:

Name of Issuing Branch:

Complete Postal Address of Issuing Branch: _____

Telephone No. _____

Fax No. _____

Email Address of the BG issuing Bank

Officer/ Bank Branch _____

IFSC Code of the Branch: _____



Integrity Pact Agreement (IP-A)

Covering Letter required to be signed and submitted by the tenderer

Ref:

Dated:

To,

Indian Oil Corporation Limited

Sub: Submission of Offer for Tender no. _____ for _____

Dear Sir,

The Bidder acknowledges that Indian Oil Corporation Limited (IOCL) has signed the MOU with Transparency International India for the adoption of the Integrity Pact Program and stands committed to following the principles thereof as enumerated in the Integrity Agreement enclosed with the tender document.

The Bidder agrees that the Notice Inviting Tender (NIT) is an invitation to offer made on the condition that the Bidder will sign the enclosed Integrity Agreement, which is an integral part of tender documents, failing which the tenderer will stand disqualified from the tendering process. The Bidder acknowledges that the Bid would be kept open in its original form without variation or modification for a period of _____ days (state the number of days from the last date for the receipt of tenders stated in the NIT) AND THE MAKING OF THE BID SHALL BE REGARDED AS AN UNCONDITIONAL AND ABSOLUTE ACCEPTANCE of this condition of the NIT. _____

Bidder confirms acceptance and compliance with the Integrity Agreement in letter and spirit and further agrees that execution of the said Integrity Agreement shall be separate and distinct from the main contract, which will come into existence when bid is finally accepted by IOCL. The Bidder acknowledges and accepts the duration of the Integrity Agreement, which shall be in line with Article 8 of the enclosed Integrity Agreement.



Bidder acknowledges that in the event of Bidder's failure to sign and accept the Integrity Agreement, while submitting the Bid, IOCL shall have unqualified, absolute and unfettered right to disqualify the tenderer and reject the Bid in accordance with the terms and conditions of the tender.

Yours faithfully,

(Duly authorized Signatory of the Bidder)

(Note - One copy of this letter along with the Integrity Agreement duly signed must be returned alongwith offer).



Integrity Pact Agreement (IP-B)

To be executed on plain paper and submitted along with Technical Bid/Tender documents. To be signed by the bidder and same signatory competent/authorised to sign the relevant contract on behalf of IOCL (Pipelines Division)

Tender No.:

INTEGRITY AGREEMENT

This Integrity Agreement is made at _____ on this _____ day of ___, 200

Between

Indian Oil Corporation Limited, a company duly incorporated and validly existing under the provisions of Companies Act, 1956 and having its registered office at Indian Oil Bhavan, 9, Ali Yavar Jung Marg, Bandra (East), Mumbai 400051 (hereinafter referred as the 'Principal/Owner', which expression shall unless repugnant to the meaning or context hereof include its successors and permitted assigns)

And

..... (name and address of the Individual/firm/Company/consortium members through
— (mention details of duly authorized signatory).hereinafter referred as the
"Bidder/Contractor" and which expression shall unless repugnant to the meaning or context hereof include its successors and permitted assigns)

Preamble

WHEREAS the Principal/Owner has floated a tender (Tender No.:) (hereinafter referred to as "Tender") and intends to award, under laid down organizational procedures, contract/s purchase order/work order for (name of contract/order) or items covered under the tender hereinafter referred to as the "Contract".

AND WHEREAS the Principal/Owner values full compliance with all relevant laws of the land, rules, regulations, economic use of resources and of fairness/transparency in its relation with its Bidder(s) and Contractor(s).

AND WHEREAS, in order to achieve these goals, the Principal/Owner has appointed Independent External Monitors (IEMs), to monitor the Tender process and the execution of the Contract for compliance with the principles as laid down in this Agreement.

AND WHEREAS to meet the purpose aforesaid both the parties have agreed to enter into this Integrity Agreement (hereinafter referred to as "Integrity Pact" or "Pact"), the terms and conditions of which shall also be read as integral part and parcel of the Tender documents and Contract between the parties. NOW, THEREFORE, in consideration of mutual covenants contained in this Pact, the parties hereby agree as follows and this Pact witnesseth as under:

Article 1: Commitment of the Principal/Owner

- 1) The Principal/Owner commits itself to take all measures necessary to prevent corruption and to observe the following principles:
 - a) No employee of the Principal/Owner, personally or through any of his/her family members, will in connection with the Tender, or the execution of Contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.
 - b) The Principal/Owner will, during the Tender process treat all Bidder(s) with equity and reason. The Principal/Owner will, in particular, before and during the Tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential / additional information through which the Bidder(s) could obtain an advantage in relation to the Tender process or the Contract execution.
 - c) The Principal/Owner shall endeavour to exclude from the Tender process any person, whose conduct in the past has been of biased nature.
- 2) If the Principal/Owner obtains information on the conduct of any of its employees which is a criminal offence under the Indian Penal Code (IPC) /Prevention of Corruption Act, 1988 (PC Act) or is in violation of the principles herein mentioned or if there be a substantive suspicion in this regard, the Principal/Owner will inform the Chief Vigilance Officer and in addition can also initiate disciplinary actions as per its internal laid down policies and procedures.

Article 2: Commitments of the Bidder(s)/Contractor(s)

- 1) The Bidder(s)/Contractor(s) commit himself to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the Tender process and during the Contract execution:
 - a) The Bidder(s)/Contractor(s) will not, directly or through any other person or firm, offer, promise or give to any of the Principal/Owner's employees involved in the Tender process or execution of the Contract or to any third person any material or other benefit which he/she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the Tender process or during the execution of the Contract.
 - b) The Bidder(s)/Contractor(s) will not enter with other Bidder(s) into any undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to cartelize in the bidding process.
 - c) The Bidder(s)/Contractor(s) will not commit any offence under the relevant IPC/PC Act. Further the Bidder(s)/Contractor(s) will not use improperly, (for the purpose of competition or personal gain), or pass on to others, any information or document provided by the Principal/Owner as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.
 - d) The Bidder(s)/Contractor(s) of foreign origin shall disclose the names and addresses of agents/representatives in India, if any. Similarly Bidder(s)/Contractor(s) of Indian Nationality shall disclose names and addresses of foreign agents/representatives, if any. In a tender, either the Indian agent on behalf of the Principal/OEM or Principal/OEM itself can bid but both cannot bid simultaneously for the same item/product in the same tender. Further, if an agent submits bid on behalf of the Principal/OEM, the same agent shall not submit a bid on behalf of another Principal/OEM in the same tender for the same item/product. Copy of CVC guidelines dated 13/01/2012 is annexed hereto as **Annexure A**.
 - e) The Bidder(s)/Contractor(s) will, when presenting his bid, disclose (with each tender as per Proforma enclosed) any and all payments he has made, is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the Contract.
- 2) The Bidder(s)/Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.

Article 3: Disqualification from Tender Process and Exclusion from Future Contracts

1. If the Bidder(s)/ Contractor(s), either before award or during execution of Contract has committed a transgression through a violation of Article 2 above or in any other form, such as to put his reliability or credibility in question, the Principal/Owner is entitled to disqualify the Bidder(s)/ Contractor(s) from the Tender process or terminate the Contract, if already executed or exclude the Bidder/ Contractor from future contract award processes. The imposition and duration of the exclusion will be determined by the severity of transgression and determined by the Principal/Owner. Such exclusion may be for a period of 1 year to 3 years as per the procedure prescribed in the guidelines for holiday listing of the Principal/Owner.
2. The Bidder/ Contractor accepts and undertakes to respect and uphold the Principal/Owner's absolute right to resort to and impose such exclusion.
3. Apart from the above, the Principal/Owner may take action for banning of business dealings/holiday listing of the Bidder/Contractor as deemed fit by the Principal/Owner.

Article 4-Consequences of Breach

Without prejudice to any rights that may be available to the Principal/Owner under law or the Contract or its established policies and laid down procedures, the Principal/Owner shall have the following rights in case of breach of this Integrity Pact by the Bidder(/ Contractor(s):

- 1) **Forfeiture of EMD/Security Deposit:** If the Principal/Owner has disqualified the Bidder(s) from the Tender process prior to the award of the Contract or terminated the Contract or has accrued the right to terminate the Contract according to Article 3, the Principal/Owner apart from exercising any legal rights that may have accrued to the Principal/Owner, may in its considered opinion forfeit the Earnest Money Deposit/ Bid-Security amount of the Bidder/Contractor.
- 2) **Criminal Liability:** If the Principal/Owner obtains knowledge of conduct of a Bidder or Contractor, or of an employee or a representative or an associate of a Bidder or Contractor which constitutes corruption within the meaning of PC Act, or if the Principal/Owner has substantive suspicion in this regard, the Principal/Owner will inform the same to the Chief Vigilance Officer.

Article 5- Previous Transgression

- 1) The Bidder declares that no previous transgressions occurred in the last 3 years with any other Company in any country confirming to the anti-corruption approach or with any other Public Sector Enterprise in India that could justify his exclusion from the Tender process.

- 2) If the Bidder makes incorrect statement on this subject, he can be disqualified from the Tender process or action can be taken for banning of business dealings/holiday listing of the Bidder/Contractor as deemed fit by the Principal/Owner.
- 3) If the Bidder/Contractor can prove that he has resorted \recouped the damage caused by him and has installed a suitable corruption prevention system, the Principal/Owner may, at its own discretion, as per laid down organizational procedures, revoke the exclusion prematurely.

Article 6- Equal Treatment of all Bidders/Contractors/Subcontractors

- 1) The Bidder(s)/Contractor(s) has to undertake from all Subcontractors a commitment in conformity with this Integrity Pact. It shall be the responsibility of the Principal Contractor to ensure adoption of/conformity to IP by the Sub-Contractor. The Bidder/Contractor shall be responsible for any violation(s) of the principles laid down in this agreement/Pact by any of its Sub-contractors/ Sub-vendors.
- 2) The Principal/Owner will enter into Pacts on identical terms as this one with all Bidders and Contractors.
- 3) The Principal/Owner will disqualify Bidders, who do not submit, the duly signed Pact, between the Principal/Owner and the bidder, along with the Tender or violate its provisions at any stage of the Tender process, from the Tender process.

Article 7 -Independent External Monitors (IEMs)

- 1) The Principal/Owner has appointed competent and credible Independent External Monitor(s) (IEMs) for this Pact. The task of the Monitors is to review independently and objectively, whether and to what extent the parties comply with the obligations under this Pact.
- 2) The IEMs are not subject to instructions by the representatives of the parties and perform their functions neutrally and independently. They report to the Chairman, Indian Oil Corporation Limited.
- 3) The Bidder(s)/Contractor(s) accepts that the IEMs have the right to access, without restriction, to all Project documentation of the Principal/Owner including that provided by the Contractor, as and when required. The Contractor will also grant the IEMs, upon their request and demonstration of valid interest, unrestricted and unconditional access to his or any of his sub-Contractor's project documentation. The IEMs are under contractual obligation to treat the information and documents of the Bidder(s)/Contractor(s)/Subcontractor(s) with confidentiality. For this purpose, IEMs are required to sign Non-Disclosure Agreement along with Declaration of No Conflict of Interest at

the time of appointment as IEMs. However, the documents/records/information having National Security implications and those documents which have been classified as Secret/Top Secret are not to be disclosed.

- 4) As soon as the IEMs notice, or believe to notice, a violation of this Pact, they will so inform the Management of the Principal/Owner and request the Management to discontinue or take corrective action, or to take other relevant action. The IEMs can in this regard submit non-binding recommendations.
- 5) The IEMs will submit a written report to the Chairman, Indian Oil Corporation Limited within thirty days from the date of reference or intimation to them by the Principal/Owner and, should the occasion arise, submit proposals for correcting problematic situations.
- 6) If the IEMs have reported to the Chairman, Indian Oil Corporation Limited a substantiated suspicion of an offence under the relevant IPC/PC Act, and the Chairman, IOCL has not, within reasonable time, taken visible action to proceed against such offence or reported it to the Chief Vigilance Officer, the IEMs may also transmit the information directly to the Central Vigilance Commissioner.

Article 8- Duration of the Pact

This Pact begins when both the parties have legally signed it. It expires for the Contractor 12 months after the completion of work under the Contract, or till the continuation of defect liability period, whichever is more and for all other Bidders, till the Contract has been awarded.

If any claim is made/lodged during the time, the same shall be binding and continue to be valid despite the lapse of this Pact as specified above, unless it is discharged/determined by the Chairman, IOCL.

Article 9-Other Provisions

- 1) This Pact is subject to Indian law, place of performance and jurisdiction is the Head Office/Head Quarters of the Division of the Principal/Owner, who has floated the Tender.
- 2) Changes and supplements need to be made in writing. Side agreements have not been made.
- 3) If the Bidder is a Partnership Firm, IP is required to be signed by all the Partners. If the Bidder is a Consortium/ Unincorporated Joint Venture/ Association of Persons, formed solely for the purpose of executing the tendered project, this Pact must be signed by all the Partners/ members of such Consortium/Unincorporated Joint Ventures/ Association of Persons. In case Bidder is a Company, including Joint Venture Company, the Pact must be signed by a representative of the Company duly authorized by board resolution.

- 4) Should one or several provisions of this Pact turn out to be invalid, the remainder of this Pact remains valid. In this case, the parties will strive to come to an agreement to their original intentions.
- 5) Any dispute or difference arising between the parties with regard to the terms of this Agreement/Pact, any action taken by the Owner/Principal in accordance with this Agreement/Pact or interpretation thereof shall not be subject to arbitration.

Article 10- LEGAL AND PRIOR RIGHTS

All rights and remedies of the parties hereto shall be in addition to all the other legal rights and remedies belonging to such parties under the Contract and/or law and the same shall be deemed to be cumulative and not alternative to such legal rights and remedies aforesaid. For the sake of brevity, both the Parties agree that this Pact will have precedence over the Tender/Contract documents with regard to any of the provisions covered under this Pact.

IN WITNESS WHEREOF the parties have signed and executed this Pact at the place and date first above mentioned in the presence of following witnesses:

(For and on behalf of Principal/Owner)

(For and on behalf of Bidder/Contractor)

WITNESSES:

1.
_____ (signature, name and address)

2.
_____ (signature, name and address)

Note: In case of Purchase Orders wherein formal agreements are not signed references to witnesses may be deleted from the last part of the Agreement

(FORMAT TO BE SUBMITTED ON BIDDER'S LETTERHEAD, AS THE CASE MAY BE)

ANNEXURE-9

PROFORMA OF DECLARATION OF BLACK LISTING/ HOLIDAY LISTING

(a) In the case of a Proprietary Concern:

I hereby declare that neither I in my personal name or in the name of my Proprietary concern M/s_____ which is submitting the accompanying Bid//Tender nor any other concern in which I am proprietor nor any partnership firm in which I am involved as a Partner are presently on any black list or holiday list declared by Indian Oil Corporation Ltd. or by Ministry of Petroleum and Natural Gas (MOPNG) nor any inquiry is pending by Indian Oil Corporation Ltd. Or MOPNG, in respect of any corrupt or fraudulent practice(s) against me or any other of my proprietorship concern(s) or against any partnership firm(s) in which I am or was at the relevant time involved as a partner, except as indicated below:

Is there any blacklisting or holiday listing, and /or pending inquiry:

YES/NO (Select one option)

Details in case of blacklisting or holiday listing, and /or pending inquiry: To be attached if selected YES

It is understood that if this declaration is found to be false in any particular, Indian Oil Corporation Ltd. Shall have the right to reject my/our bid, and if the bid has resulted in a contract, the contract is liable to be terminated without prejudice to any other right or remedy (including black listing or holiday listing) available to Indian Oil Corporation Ltd

(b) In the case of a Partnership Firm:

We hereby declare that neither we, M/s_____, submitting the accompanying Bid/Tender nor any partner involved in the said firm either in his individual capacity or as proprietor or partner of any other firm or concern presently are placed on any blacklist or holiday list declared by Indian Oil Corporation Ltd. or by Ministry of Petroleum and Natural Gas (MOPNG)nor any pending inquiry is pending by Indian Oil Corporation Ltd. Or MOPNG in respect of corrupt or fraudulence practice(s) against us or any partner or any partner or any other concern or firm of which he is proprietor or partner, except as indicated below:

Is there any blacklisting or holiday listing, and /or pending inquiry :

YES/NO (Select one option)

Details in case of blacklisting or holiday listing, and /or pending inquiry: To be attached if selected YES

It is understood that if this declaration is found to be false in any particular, Indian Oil Corporation Ltd. Shall have the right to reject my/our bid, and if the bid has resulted in a contract,



the contract is liable to be terminated without prejudice to any other right or remedy (including black listing or holiday listing) available to Indian Oil Corporation Ltd

(c) In the case of Company:

We hereby declare that neither we are presently placed on any holiday list or black list declared by Indian Oil Corporation Ltd. by Ministry of Petroleum and Natural Gas (MOPNG) nor any inquiry is pending by Indian Oil Corporation Ltd or by MOPNG in respect of corrupt or fraudulent practice(s), except as indicated below:

Is there any blacklisting or holiday listing, and /or pending inquiry:
YES/NO (Select one option)

Details in case of blacklisting or holiday listing, and /or pending inquiry: To be attached if selected YES

It is understood that if this declaration is found to be false in any particular, Indian Oil Corporation Ltd. Shall have the right to reject my/our bid, and if the bid has resulted in a contract, the contract is liable to be terminated without prejudice to any other right or remedy (including black listing or holiday listing) available to Indian Oil Corporation Ltd.

(d) In the case of Consortium/Unincorporated JV:

We hereby declare that none of the members of the consortium are presently placed on any holiday list or black list declared by Indian Oil Corporation Ltd. by Ministry of Petroleum and Natural Gas (MOPNG) nor any inquiry is pending by Indian Oil Corporation Ltd or by MOPNG in respect of corrupt or fraudulent practice(s), except as indicated below:

Is there any blacklisting or holiday listing, and /or pending inquiry:
YES/NO (Select one option)

Details in case of blacklisting or holiday listing, and /or pending inquiry: To be attached if selected YES

It is understood that if this declaration is found to be false in any particular, Indian Oil Corporation Ltd. Shall have the right to reject my/our bid, and if the bid has resulted in a contract, the contract is liable to be terminated without prejudice to any other right or remedy (including black listing or holiday listing) available to Indian Oil Corporation Ltd.

Place:

Signature of Bidder

Date:

Name of Signatory



UNDERTAKING ON LETTERHEAD

To,

Indian Oil Corporation Ltd. (Pipelines Division)
Southern Region Pipelines
House of Four Frames, 6/13
Wheat Croft Road, Nungambakkam-Chennai

Name of the Work:

Tender No:

Dear Sir

We have read the clause regarding Provisions for Procurement from a Bidder which shares a land border with India, we certify that, bidder M/s_____ (*Name of Bidder*) is:

- i) Not from such a country []
- ii) If from such a country, has been registered []

with the Competent Authority.
(Evidence of valid registration by the
Competent Authority shall be attached)

*(Bidder is to tick appropriate option (☐ or *x*) above).*

We hereby certify that bidder M/s_____ (*Name of Bidder*) fulfills all requirements in this regard and is eligible to be considered against the tender.

We further certify that bidder M/s_____ (*Name of Bidder*) will not sub-contract any work to an agency from such countries unless such agency is registered with the Competent Authority.

Place:
Date:

[Signature of Authorized Signatory of Bidder]
Name:
Designation:
Seal:



ANNEXURE-11

FORM OF TENDER

(To be filled up by the Tenderer)

For Commercial Bid

Serial No.

Date:

From

To

Indian Oil Corporation Ltd. (Pipelines Division)
Southern Region Pipelines
House of Four Frames, 6/13
Wheat Croft Road, Nungambakkam-Chennai

Tender No.

Dear Sirs,

Having examined the Tender Documents consisting of the Tender Notice, General Instructions to Tenderers, General Conditions of Contract, Special Instructions to Tenderers, Special Conditions of Contract, Specifications, Plans (Exhibits _____ to _____), Drawings (Exhibits _____ to _____) Time Schedule, Form of Contract, Form of Schedule of Rates, and Addendum(a) to the Tender Documents, and having understood the provisions of the said Tender Documents and having thoroughly studied the requirements of Indian Oil Corporation Ltd. relative to the work tendered for in connection with the _____ (Name of the Refinery/Project) and having conducted a thorough study of the job site(s) involved, the site conditions, soil conditions, the climatic conditions, labour, power, water, material and equipment availability, the transport and communication facilities, the availability and suitability of borrow areas, the availability of land for right of way and temporary office accommodation and quarters and all other facilities and things whatsoever necessary for or relative to the formulation of the tender or the performance of work, I/we hereby submit my/our tender offer for the performance of proposed work in accordance with the terms and conditions and within the time mentioned in the Tender Documents.

In consideration of the sum of Rupee 1/- (Rupee one) only paid to me/us by Indian Oil Corporation Ltd., by adjustment in the price of Tender Documents, I/We further undertake to keep my/our this tender offer open for a period of not less than 4 (four) months from the scheduled date of opening of Tenders as specified in the General Instructions to Tenderers forming part of the Tender Documents.

I/We hereby further state that I/We/None of us (in the case of partnership firm) and none of our Directors (in the case of a Company) was/were employed as Directors of Indian Oil Corporation Ltd., during the period of 2 (two) years immediately preceding the date hereof OR I/We hereby declare that I/Mr. _____ one of our partners (in the case of partnership firm/Directors in the case of a Company) was employed as a Director in Indian Oil Corporation Ltd., during the period



of 2 (two) years immediately preceding the date hereof and that I/Shri _____
have/has obtained previous permission of Indian Oil Corporation Ltd. to make this tender.
I/We have annexed to this Bid the following documents:

- (i) Schedule of Rates in the prescribed form.
- (ii) Original Power of Attorney or other proof of authority of the person who has signed the Tender OR copy of Power of Attorney attested by a Gazetted Officer or a Notary Public in proof of the authority of the person who has signed the Tender.
- (iii) Original Income-tax Clearance Certificate OR copy of Income-Tax Clearance Certificate duly attested by a Gazetted Officer/Notary Public.
- (iv) Information regarding tenderer in the form annexed to the Form of Tender.
- (v) Information regarding experience of the tenderer in the performance of work of a comparable nature in the form annexed to the Form of Tender.
- (vi) Information regarding construction organization and equipment in the form annexed to the Form of Tender.
- (vii) Solvency Certificate from a Nationalized/Scheduled Bank.
- (viii) Set of Tender Documents, as issued duly signed.
- (ix) Additional Documents as listed below.

I/We hereby undertake that the statements made herein/information given in the Annexures referred to above are true in all respects and that in the event of any such statement or information being found to be incorrect in any particular, the same may be construed to be a misrepresentation entitling Indian Oil Corporation Ltd. to avoid any resultant contract.

I/We further undertake as and when called upon by Indian Oil Corporation Ltd. to produce, for its inspection, original(s) of the document(s) of which copies have been annexed hereto.

I/We confirm having deposited Earnest Money of Rs. _____ (Rupees _____) as detailed hereunder (Strike off whichever is not applicable)

(Signature(s) of the Tenderer(s))

Name & Designation of
authorized person
signing the Tender on behalf of
the Tenderer (s)

Full Name and address of the Bidder(s)

Witness :

Signature :

Name :

Occupation :

Name & Designation of authorized
person signing the Tender on



इंडियन ऑयल कॉर्पोरेशन लिमिटेड / Indian Oil Corporation Limited
पाइपलाइन्स प्रभाग / Pipelines Division
दक्षिणी क्षेत्र पाइपलाइन्स, चेन्नै / Southern Region Pipelines, Chennai

behalf of the Tenderer (s)

Full Name and address of the Bidder(s)

Witness :

Signature :

Name :

Occupation :



FORM OF TENDER
(To be filled up by the Tenderer)

For Price Bid

Serial No.

Date:

From

To

Indian Oil Corporation Ltd. (Pipelines Division)
Southern Region Pipelines
House of Four Frames, 6/13
Wheat Croft Road, Nungambakkam-Chennai

Dear Sirs,

Having examined the Tender Documents consisting of the Short Tender Notice, General Instructions to Tenderers, General Conditions of Contract, Special Instructions to Tenderers, Special Conditions of Contract, Specifications, Plans (Exhibits _____ to _____), Drawings (Exhibits _____ to _____) Time Schedule, Form of Contract, Form of Tender, Form of Schedule of Rates, and Addendum(a) to the Tender Documents, and having understood the provisions of the said Tender Documents and having thoroughly studied the requirements of Indian Oil Corporation Ltd. relative to the work tendered for in connection with the _____ (Name of the Project) and having conducted a thorough study of the job site(s) involved, the site conditions, soil conditions, the climatic conditions, labour, power, water, material and equipment availability, the transport and communication facilities, the availability and suitability of borrow areas, the availability of land for right of way and temporary office accommodation and quarters and all other facilities and things whatsoever necessary for or relative to the formulation of the tender of the performance of work, I/we hereby submit my/our tender offer for the performance of proposed work in accordance with the terms and conditions and within the time mentioned in the Bid Documents at the rate(s) quoted by me/us in the accompanying Schedule of Rates based on the Form of Schedule(s) of Rates included within the Tender Documents and arrived at a total contract value of USD/INR <quoted in price bid> based on an application of the rates tendered in the accompanying Schedule(s) of Rates to the relative quantities indicated in the Form Schedule(s) of Rates forming part of the Tender Documents.

If the work or any part thereof is awarded to me/us, I/ We undertake to perform the work in accordance with the Contract Documents as defined in the Form of Contract forming part of the Tender Documents and accept the terms and conditions of Contract as laid down therein and undertake within 10 (ten) days of receipt of acceptance of Tender to pay to and/or deposit with the Accounts Officer, _____ (Name of the Project) Indian Oil Corporation Ltd. (Pipelines Division) a sum which together with the amount of earnest money deposited by me/us in terms hereof, shall make 2 ½% (two and one-half percent) of total contract value as specified in the Acceptance of Tender for the purpose



of security deposit, by any one or more of the modes of payments specified in this behalf in the General Conditions of Contract, and to commence work at each job site(s) involved within 10 (ten) days of handing over the job site or any part thereof to me/us, and to sign the formal Contract in the terms of the form of contract forming part of Tender Documents, within 10 (ten) days of receipt of Letter of Acceptance from and on behalf of Indian Oil Corporation Ltd., in this behalf failing which Indian Oil Corporation Ltd., shall be at liberty, without reference to me/us and without prejudice to any of its rights or remedies, to terminate the Contract and/or to forfeit the earnest money deposited in terms hereof.

In consideration of the sum of Rupee 1/- (Rupee one) only paid to me/us by Indian Oil Corporation Ltd., by adjustment in the price of Tender Documents, I/We further undertake to keep my/our this tender offer open for a period of not less than 4 (four) months from the scheduled date of opening of Tenders as specified in the General Instructions to Tenderer forming part of the Tender Documents.

I/We have annexed to this Bid the following documents:

- (i) Schedule of Rates in the prescribed Form.
- (ii) Original Power of Attorney or other proof of authority of the person who has signed the Tender OR copy of Power of Attorney or other authority duly certified by a Gazetted Officer or a Notary Public in proof of authority of the person who has signed the Tender.

I/We hereby undertake that the statements made herein/information given in the Annexures referred to above are true in all respects and that in the event of any such statement or information being found to be incorrect in any particular, the same may be construed to be a misrepresentation entitling Indian Oil Corporation Ltd. to avoid any resultant contract.

I/We further undertake as and when called upon by Indian Oil Corporation Ltd. to produce, for its inspection, original(s) of the document(s) of which copies have been annexed hereto.

(Signature(s) of the Tenderer(s))

Name & Designation of
authorized person

signing the Tender on behalf of
the Tenderer (s)

Full Name and address of the Bidder(s)

Witness :

Signature :

Name :

Occupation :

**INFORMATION ABOUT TENDERER
(To be furnished with Tender)**

1. In case of Individual

- 1.1 Name of Business:
- 1.2 Whether his business is registered:
- 1.3 Date of Commencement of business:
- 1.4 Whether he pays Income Tax over Rs.10,000/- per year:
- 1.5 Whether he is a Director or is related to any Director of IOC present or retired within the past 2 years:
- 1.6 Permanent Account Number:
- 1.7 What are his profits/losses for the past 3 (three) years with a copy of Balance Sheet and Profit & Loss Account for the past 3 (three) years with a copy of the audited balance sheets and Profit & Loss account for the past 3 (three) years:
- 1.8 What are his concurrent job commitments:
- 1.9 How does he propose to finance the work if awarded to him :

2. In case of Partnership

- 2.1 Name of Partners:
- 2.2 Whether the partnership is registered:
- 2.3 Date of establishment of firm:
- 2.4 If each of the partner of the firm pays Income tax over Rs. 10,000/- a year and if not, which of them pays the same:
- 2.5 Whether any partner of the firm is a Director or is related to any Director of IOC, present or retired within the past 2 years.
- 2.6 Permanent Account Number:
- 2.7 What are the firm's profits/losses for the past 3 (three) years with a copy of Balance Sheet and Profit & Loss Account for the past 3 (three) years:
- 2.8 What are the firm's concurrent job commitments:
- 2.9 How does the firm propose to finance the work if awarded to him:

3. In case of Limited Company or Company Limited by Guarantees:

- 3.1 Amount of paid up capital:
- 3.2 Name of Directors:
- 3.3 Date of Registration of Company:
- 3.4 Copies of the Balance Sheet of the company of the last two years:
- 3.5 Whether any of the Directors of the Company is a Director or is related to any Director of IOC, present or within the past 2 years:
- 3.6 Permanent Account Number
- 3.7 What are the Company's profits/losses for the past 3 (three) years with a copy of the audited Balance Sheet for the past 3 (three) years:
- 3.8 What are the company's concurrent job commitments:
- 3.9 How does the Company propose to finance the work if awarded to it:

Signature of Tenderer

ANNEXURE-14

DECLARATION OF RELATIONSHIP WITH DIRECTORS OF IOCL

The Tenderer shall declare the following information in exhaustive details:-

S. No.	Description	Remarks
i)	Whether proprietor is a Director or is related to any Director of IOC present or retired within the past 2 years.	
ii)	Whether any partner or member of the firm is a Director or is related to any Director of IOC present or retired within the last two years.	
iii)	Whether any of the Directors of the Company is a Director or is related to any Director of IOC present or retired within past two years.	

Note:

- Bidder to mention **Yes/ No** for relevant bidding entity, e.g. Proprietorship firm should fill in against sl. no. (i); Partnership firm should fill against sl. no.(ii) and Company should fill against sl. no. (iii)

LIST OF DIRECTORS

The list of board of directors are available in our website at
<http://www.iocl.com/AboutUs/Profile.aspx>



Declaration on proceedings under Insolvency and Bankruptcy Code, 2016

Tender No.:

Name of Work:

Bidder's name:

I/ We hereby declare that I/We, M/s_____, declare that

- (i) I/We am / are not undergoing insolvency resolution process or liquidation or bankruptcy proceeding as on date.
- (ii) I/We am / are undergoing insolvency resolution process or liquidation or bankruptcy proceeding as on date as per the details mentioned below. (attached detail with technical bid)

Note: Strike out which is not applicable.

It is understood that if this declaration is found to be false, Indian Oil Corporation limited shall have the right to reject my/ our bid, and forfeit the EMD, if the bid has resulted in a Contract, the contract will be liable for termination without prejudice to any other right or remedy (including black listing or holiday listing available to Indian Oil Corporation Limited).

Place:

Date:

Signature of Bidder

Name of Signatory



Annexure-16

Undertaking in support of not under liquidation (On Letter Head)

We hereby confirm that we are not under liquidation, and there is no court receivership or similar proceedings against us.

If there is any change in status prior to the award of work, the same shall be promptly informed by us to IOC. We understand that Failure to do so will result in bids not being considered for evaluation.

Signature of Tenderer
Name & Address of the Tenderer



Name of Work:

Tender No.:

UNDERTAKING FOR NON-ENGAGEMENT OF CHILD LABOUR

I/We hereby declare that:

- a) We are committed to elimination of child labour in all its forms.
- b) Neither we nor any of our nominated sub-contractor(s) are engaging Child Labour in any of our work(s) in terms of the provisions of The Child Labour (Prohibition and Regulation) Act, 1986 and other applicable laws.
- c) We as well as our nominated sub-contractor(s) undertake to fully comply with provisions of The Child Labour (Prohibition and Regulation) Act, 1986 and other applicable labour laws, in case the work is awarded to us.
- d) It is understood that if I/We, either before award or during execution of Contract, commit a transgression through a violation of Article b/c above or in any other form, such as to put my/our reliability or credibility in question, the Owner is entitled to disqualify us from the Tender process or terminate the Contract, if already executed or exclude me/us from future contract award processes. The imposition and duration of the exclusion will be determined by the severity of transgression and determined by the Owner. Such exclusion may be for a period of 1 year to 3 years as per the procedure prescribed in the guidelines for holiday listing of the Owner.
- e) I/We accept and undertake to respect and uphold the Owner's absolute right to resort to and impose such exclusion.

Place:

Signature of Bidder:

Date:

Name of Signatory:



SAFETY DECLARATION

I/We hereby declare and confirm that;

1. I/we shall strictly adhere to safety standards stipulated in the Safety Practices during construction stipulated in the Oil Industry Safety Directorate (OISD) without exception.
2. I/we shall provide, without any exception, safety helmets & safety shoes to all our employees/workmen/ labourers working at IOC locations (Terminals, Pump Station, Tanks Farms or any other location not specified here) for the purpose of rendering services to the Corporation under the subject Contract
3. I/ We shall provide, without any exception, Safety Belts to all our workmen/ labourers working at heights (Including building roof top, canopy roof top etc) for the purpose of rendering services to the Corporation under the subject Contract
4. I/We shall take safe height working permit for working at heights.
5. I/We shall be solely responsible for any accident resulting from unsafe practices or due to non-adherence to safety standard stipulated by the OISD. Any injury / loss of life resulting from the above shall be solely at our risk & cost and we shall bear and pay solely and absolutely all costs, charges and expenses including legal charges incurred in this connection.
6. That the Corporation is not bound to be responsible, legally or otherwise, for any acts and/or consequences of unsafe practices during execution of works during the pendency of the contract.
7. **I/We have gone through the guidelines to PPE attached with this tender and shall comply with them.**
8. The person signing this declaration is the authorized signatory.

Signature:

Name:

Address:

Date:



ANNEXURE-19

FORMAT FOR GIVING CONSENT AND BANK DETAILS
ON LETTERHEAD

Date:

To,
Indian Oil Corporation Ltd. (Pipelines Division)
Southern Region Pipelines
House of Four Frames, 6/13
Wheat Croft Road, Nungambakkam-Chennai

Dear Sir,

We hereby agree to accept henceforth all the payment of our bills through direct credit to our below mentioned Bank account through Internet banking.

1	Beneficiary's Name	
2	Bank Name	
3	Branch Name	
4	Address of the Branch	
5	STD code & phone No. of Branch	
6	Branch Code	
7	9 Digit MICR code of Branch as appearing on the cheque (copy of cancelled cheque may be enclosed)*	
8	Bank Account No	
9	Account Type (SB/CA/CC)	
10	PAN no.	
11	Branch IFSC code	
12	E mail Address of the Vendor	
13	Mobile Telephone No. of Vendor	

* Please attach a blank cancelled cheque or photocopy of a cheque issued by your bank relating to your above account for verifying the accuracy of the 9 digit MICR code.

I/We, hereby declare that the particulars given above are correct and complete.

(Signature of authorized person with seal)

Encl: As above.



ANNEXURE-20

The following needs to be submitted to the EIC for obtaining completion certificate.

**PROFORMA OF INDEMNITY BOND TO BE SUBMITTED BY CONTRACTOR NON-JUDICIAL
STAMP PAPER OF APPROPRIATE VALUE ALONG WITH REQUEST FOR ISSUANCE OF
COMPLETION CERTIFICATE**

This indemnity bond is executed on this ____ at ____ by ____ hereinafter referred to as 'Indemnifier' which expression shall, unless repugnant to the context or meaning thereof, include its successors, administrators, authorized representatives and assignees, having its address at ____.

In favour of

Indian Oil Corporation Limited (hereinafter referred to as 'indemnified') which expression shall, unless repugnant to the context include its successors and assignees, having its Corporate Office at 3079/3, J B Tito Marg, Sadiq Nagar, New Delhi - 110049.

WHEREAS; the indemnifier has been awarded the contract of.....vide.....
(Hereinafter referred to as Contract)

WHEREAS; the indemnifier declares that the work was completed on.....

WHEREAS the indemnifier under the contract, is inter alia bound by Clause No. 5.5.2.0 of the General Conditions of contract forming the part of contract signed by him with the indemnified.

WHEREAS Indemnifier in pursuant to Clause No. 5.5.2.0 (ix) of General Conditions of Contract, declares that he has cleared all dues, in totality of the following -

1. Labour/Piece Rate Workers
2. Sub - contractors
3. Suppliers
4. Vendors
5. Income Tax
6. Sales Tax
7. Octroi and Service Tax
8. Excise and Customs
9. Provident Fund
10. ESI and Royalties



AND WHEREAS the indemnifier has applied for issuance of completion certificate along with all the documents required under Clause No. 5.5.2.0 of General Conditions of Contract.

NOW THIS INDENTURE WITNESSETH that in the event the completion certificate is issued by the Indemnified to the Indemnifier.

Then, the Indemnifier shall and will keep the said Indemnified fully and effectively and irrevocably indemnified from and against all claims, demands, actions, suits and/or proceedings that maybe made or taken by any person, body or authority claiming any interest whatsoever in respect of the amount which has to be paid to the indemnifier.

Further, the said Indemnifier shall and will keep the said Indemnified fully and effectively and irrevocably indemnified from and against all claims, demands, actions, suits and/or proceedings that maybe made or taken by any Third party such as any person, body or authority claiming any amount or interest either against the indemnified directly or indirectly on account of the third party claiming to have remained unpaid by the indemnifier for any work whatsoever undertaken by such third party upon instructions from the Indemnifier.

Further, the said Indemnifier shall and will keep the Indemnified fully and effectively and irrevocably indemnified from and against all loss or damage that maybe caused to and or costs, charges, claims or expenses that may be suffered or incurred by the said Indemnified on account of any of the declarations as given by the indemnifier (in terms of Clause No. 5.5.2.0 (ix) of General Conditions of Contract) being untrue in totality or in part thereof:

It is expressly agreed that this indemnity is independent of any other indemnity, guarantee, etc provided by the indemnifier otherwise under the contract.

Shri _____ who has signed this indemnity bond is duly authorised to sign this indemnity bond and to confer the authorities herein conferred for and on behalf of the Contractor.

Signed By:

(Indemnifier Name)
Authorized Representative

Place:



Date:

WITNESSES:

1.

2.

Note:

- i. This indemnity bond is to be stamped for the aggregate value of stamp duty payable on an indemnity bond in the State in which it is executed.
- ii. This indemnity bond is to be signed on behalf of the Contractor by a Director or other officer either authorized by the Board to execute this indemnity bond or generally authorized to execute contracts and powers of attorney on behalf of the Contractor.
- iii. The signature of this indemnity bond is to be Notarial Attested.



ANNEXURE-21

The following No claim no due certificate needs to be signed and submitted to the EIC for payment of Final bill after obtaining completion certificate.

No claim/No due certificate

Dated:

Name of Department:

Name of the work:

Name of the contractor:

SAP LOA No.:

No Claim certificate

Certified that I/We have discharged our entire obligation under abolition of Contract Labour Act,1970 and I/We would indemnify the owner if there is any demand against the corporation on our account.

I/we certify that I/We have no further claim than those given in the final bill and I/We accept the payment as full and final settlement of all My/Our claim.

Sign of Contractor

No Due Certificate

Certified that there is nothing due from this agency on account of T&P articles materials, electricity etc., and that the work has been completed as per specification of contract and/or except where reduced rates proposed (Strike which is not applicable).

Site Engg

Manager

Sr Manager

Chief Manager
Engineer-in-Charge

ANNEXURE-23

UNDERTAKING BY BIDDER FOR PURCHASE PREFERENCE

To,
Indian Oil Corporation Ltd. (Pipelines Division)
Southern Region Pipelines
House of Four Frames, 6/13
Wheat Croft Road, Nungambakkam-Chennai

Dear Sir,

We, M/s _____ (Name of the bidder) hereby confirm that following option on purchase preference is to be considered in the subject tender (Please read the notes mentioned below, before filling the format):

Policy	(Tick in appropriate box)	Remarks
Purchase preference to MSEs	MSE registered and eligible for purchase preference under MSME order 2012. (Yes/No)	Udyam registration no:
Purchase Preference linked with latest "Public Procurement Preference to Make in India, Order 2017 "	Class-I - Supplier ☐ Class-II - Supplier ☐	_____ % Local content

Notes:

- Bidder to note that only class-I and Class-II supplier are eligible to participate in tender.
- Bidder shall be eligible for Purchase Preference under PPP-MII order if bidder is meeting required LC for availing the benefit as per PPP-MII order 2017 and subsequent amendments.
- The above preference under PPP-MII order shall be extended after submission of **Annexure 24** and its acceptance by IOCL (if applicable in tender)
- Purchase preference to MSEs under MSME order, 2012 is **also applicable /not applicable** as per tender terms..
- In case both Purchase preference to MSEs under MSME order and PPP-MII Order 2017 are applicable as per tender terms, their Concurrent application shall be as per guidelines mentioned in OM no F.1/4/2021-PPD dated 18.05.2023 from Dept. of expenditure, Ministry of finance.
- Declaration of % age of local content is mandatory.



We further confirm that in case we fail to meet the minimum local content, IOCL may take action as per provisions of tender document.

Place:

[Signature of Authorized Signatory of Bidder

Date:

Name: Designation:

Seal:

(Name of Bidder)

DECLARATION
(To Be Submitted On Company's Letterhead)

To,

Indian Oil Corporation Ltd. (Pipelines Division)
Southern Region Pipelines
House of Four Frames, 6/13
Wheat Croft Road, Nungambakkam-Chennai

Name of Work:

Tender No.

I....., Son/ Daughter of....., do solemnly affirm and state as under:

1. That I am the..... «Designation of the authorized signatory» of and I am duly authorized to furnish this undertaking declaration on behalf of.....
2. That the Company is fully aware of the provisions of latest PPP-MII Order 2017.
3. We hereby confirm that our offer is achieving the _____% Local content as per of the PPP-MII order 2017 and subsequent amendments.
4. I confirm that I am aware of the implication of the above undertaking and our liability on account of wrong declaration.

(Authorized signatory of Bidder)

Certification by the Statutory Auditor /Cost Auditor/Practising cost accountant/Practising Chartered Accountant of the bidder

We....., a CA firm having our registered office address.....and certificate number.....certify that we are statutory auditor..... of the Company M/s..... having it registered office at.....

OR

We , a CA firm having our registered office address.....and certificate number..... certify that statutory auditor is not mandatory for the company M/s....., having its registered office at.....as per prevailing law and we are practicing Chartered Accountant, not being an employee I Director and not having any interest in the company.

We have understood the provisions of Public Procurement (Preference to Make in India), Order 2017 and subsequent amendments.

We hereby certify that offer is achieving the _____% local content as per the latest PPP-MII Order 2017 and subsequent amendments.

Name of Statutory auditor/ Audit Firm
Date

Signature of Authorized Signatory
Name: Designation: Seal:
Membership
No. UDIN No

Annexure-25

Information to be furnished by contractor to EIC under MSME order 2012.

Name of Work:

Tender No.

Successful Bidder(s) against the subject tender who is not a Micro or Small Enterprise (MSE) as per the Micro, Small and Medium Enterprises Development Act, 2006 (MSMED Act 2006) and Micro, Small and Medium enterprises order- 2012, will have to furnish the following information to the Engineer-in-Charge upon award of work, in case they are sourcing any material/ services from any MSE sub-vendor(s) against the PO.

S. No.	Name of the MSE sub vendor(s)	Item(s) for which order(s) placed	Value of the order(s) (Rs.)	Whether MSE is SC/ST (Y/N)

In case no material/ service is outsourced from MSE sub vendor(s), a certificate / declaration in this regard shall be submitted to the Engineer-in-Charge by the vendor as under:

Certificate

We certify that no material/ service has been outsourced from any Micro or Small Enterprise (MSE) as per the Micro, Small & Medium Enterprises Development Act, 2006 (MSMED Act 2006), against Purchase Order No.: dated placed on us by M/s Indian Oil Corporation Limited, Pipelines Division.

Date:

Place:

(Signature of Competent Authority with Company Seal)

VENDOR INVOICE MANAGEMENT

Communication to Vendors

VENDOR INVOICE MANAGEMENT

Communication to Vendors

Dear Vendors,

Indian Oil has been keeping its systems updated with latest developments and newest technologies to efficiently add to the delight of our partner vendors. Many digitalization steps have been taken in the past and have been successfully implemented with the continuous support of partners.

We are introducing Vendor Invoice Management system for centralized processing of invoices for supply of goods and services with an intent to further expedite the payment process. A centralized query management system including self-help is also being introduced for convenience of the vendors on tracking details related to payments.

A. Invoice Management System

With effect from **01.07.2023**, **original copy of invoice** raised on **this office** against SAP PO shall be submitted in the following manner: -

1. **Digitally signed original invoice** can be submitted by registering into vendor portal in which case no hard copy is required to be sent. Vendors are encouraged to use vendor portal for expeditious settlement of their invoice.

The link to the vendor portal is

<https://apps.indianoil.in/vim>

Help Manual of portal for use by vendors is attached herewith.

2. **Alternatively**, originally signed invoice in physical form can be sent to the following address: -

Indian Oil Corporation Limited
IBM Tower, 2nd Floor,
A 26, Rani Ramgarh Road,
Block A, Industrial Area,
Sector 62, NOIDA,
Uttar Pradesh.

Only Original Invoice along with supporting invoices for any reimbursement like freight & inspection bills should be sent to the above address. The documents like **Inspection Release Note, Test Certificate, Bank Guarantee** etc. in original should continue to be submitted to the **Office** of supply or service.

Invoice raised against orders **other than SAP PO** should continue be submitted to the **office** of supply of goods and services

To achieve the full benefit of the newly introduced system, you are requested to note the following changes in Invoicing and submission of the same: -

1. **Invoice Requirement - Physical**

Digitally signed invoice uploaded through Vendor Portal is preferred.

However, where vendor submits the physical copy of the invoice, following points may be ensured: -

- It should not be handwritten invoice.
- It should be in English language only.
- It should not be photocopy.
- It should not be carbon copy.
- It should not be Dot Matrix Print copy.
- Invoice should not be damaged or tampered and should always be preserved in original state.
- Writing of comments, remarks etc. on the Invoice may be avoided.

Needless to mention, invoice must be in the name of Indian Oil Corporation Limited.

2. Invoice Requirement - Content

- Mention PO Number on Invoice where invoice is raised against SAP Order
- Where SAP Order not issued, vendor should mention details of IOCL Officer like email on whose order work has been executed
- Invoice should be in line with Order conditions
- Invoice should comply with applicable GST provisions including HSN/SAC Code
- Ensure that the address in Invoice is correctly mentioned as per Order including Company Code & Plant Code available on Order
- In case where Vendor knows its SAP Vendor Code with Indian Oil, the same should also be captured on the body of Invoice

3. Price Reduction on account of Delay

- Raise invoice after effecting Price Reduction on account of Delay in Invoice, wherever applicable.
- In case where request for time extension has been submitted but not approved by EIC, invoice still should be raised by reduced amount.
- Subsequently, Vendor can issue Debit Note when time extension is granted after raising of invoice.
- This process will eliminate the requirement of credit note for GST accounting and consequential delay in processing payment of the entire amount due to complication of GST input credit.

4. Other Requirements

- Ensure that Bank Guarantee, wherever applicable, has been submitted at local office of the place of supply/ service as per required format
- Ensure submission of all the documents at local office of the place of supply/ service in line with conditions of the contract

B. Query Management System

For expeditious resolution of queries from the vendors, Round the clock Self-help tool (BOT), Webform, Dedicated Email and 9 to 5 Helpdesk have been introduced, details of which are as under: -

Email	VIMHelpdesk@indianoil.in
Helpdesk Phone	+91 120 6730555
Self-help ChatBot	www.gs.im/in/62ab1e374af1d



IndianOil

manthan
Value from Knowledge

User Manual - Vendor Portal of VIM **(Vendor Invoice Management)**

Corporate Information System Department

Indian Oil Corporation Limited
Corporate Business Technology Centre
Plot No 83, Sector 18, Gurgaon 122001
Haryana

Version 1.0
Release date: 05.07.2022

eVIDIT Portal for Vendor Invoice Management

eVIDIT Portal means Vendor invoice Digital Transformation Portal. The Portal is created to enable vendor to submit its' digitally signed invoice into IOCL's Centralized Vendor Invoice Management System as well as view invoice status.

Every vendor must be registered on eVIDIT portal before submitting any bill. Portal can be accessed on below mentioned address.

<https://apps.indianoil.in/vim>

(I)-Background:

On its journey towards digital transformation, Indian Oil has been making efforts to leverage technology for its internal business solutions as well adding value for the stakeholders. As a part of this journey, a major shift towards automated Vendor Invoice Management is under realization. This project is aimed towards ease of business for Indian Oil Vendors.

Currently Vendors have been submitting invoices at the Indian Oil offices spread all over India and have been interacting with respective offices for the status update on payments. For this purpose, a state-of-the-art innovative solution are being implemented to automate the process of Vendor Payments. This would enable faster payment and one stop resolution for all Bill related queries. After its implementation the process of Bill submission, Bill Processing and release of Payment would be centralized.

Vendors have been provided with options of Bill Submission:

1. By sending the bill physically to the Bill Processing center
2. Online submission and of digitally signed invoices (along with supporting documents in PDF format) through eVIDIT Portal.

(II)-About eVIDIT Portal:

A Portal has been developed to enable the IOCL Vendors to submit their Digitally signed Invoices without any manual intervention. The portal also has the option to check the status of invoices submitted and retrieve the payment details.

To manage multiple users for the same vendor, The portal has been designed to provide two level access to Vendors i.e.:

1. **Vendor Administrator**: To begin with, Vendor can register with this portal with the 10-digit vendor code. Vendor Administrator would be created through this initial process and the role for the administrator would be to:
 - a. Create Vendor Users (as mentioned below in point 2)
 - b. Upload Public Keys for digital signatures to be used in Invoices.
2. **Vendor Sub User**: Multiple Vendor Sub Users can be created for the same Vendor, by the Vendor Administrator. The major role of Sub user would be to upload, submit and query Bills.

Pl. note, as this portal is being rolled out in different phases, the bill submission and query to this portal will be available only for locations of Indian Oil live on this portal. For other locations, Bill Tracking System may be used.

(III)-Registration on eVIDIT Portal:

Every vendor must be registered in Vendor portal before submitting any bill. First, Vendor shall register itself as Vendor Administrator.

The screenshot shows the 'New Vendor Sign Up' form on the eVIDIT Portal. The form is titled 'New Vendor Sign Up' and is located on a page with an orange header bar. The header bar contains navigation links: 'Home', 'New Registration' (highlighted in yellow), 'Need Help', and 'Contact Us'. The form itself is white and contains the following fields and elements:

- Enter Vendor Code:** A text input field with a red border and a red number '1' to its left.
- Enter Vendor Phone No. (SAP Registered):** A text input field with a red border and a red number '2' to its left.
- Enter Vendor Email(SAP Registered):** A text input field with a red border and a red number '3' to its left.
- Captcha:** A captcha image showing the text '4 y c a e n' with a refresh icon to its right.
- Type the text above:** A text input field for the captcha.
- Verify:** An orange button with the text 'Verify'.

- He/she has to enter his/her 10 digits (including two zeros in the beginning) vendor code.
- Mobile number as per SAP vendor master.
- Vendor email id as per SAP vendor master.

- After entering all inputs, click on 'Verify'.
- On clicking 'Verify', OTP will send on vendor's updated mobile no and email id.
- Input both the OTPs in requisite field and click on 'submit'

[Home](#) [New Registration](#) [Need Help](#)

New Vendor Sign Up

Enter Vendor Code ✓

Enter Vendor Phone No.(SAP Registered) ✓

Enter Vendor Email(SAP Registered) ✓

k u x 3 m t ↻

✓

- OTP received on registered mobile no

Verification



Please enter OTP sent on

Time left: 04:55

Cancel

Submit

OTP is valid for 5 minutes. If you do not receive it, please retry after 5 minutes

- OTP received on registered email

Verification



Please enter OTP sent on
xxxxxxxxx@gmail.com
Time left: 09:13

OTP is valid for 10 minutes. If you do not receive it, please retry after 5 minutes

- After entering both OTP, registration process will be completed and default user ID & password will be send on SAP registered email id.

Summary



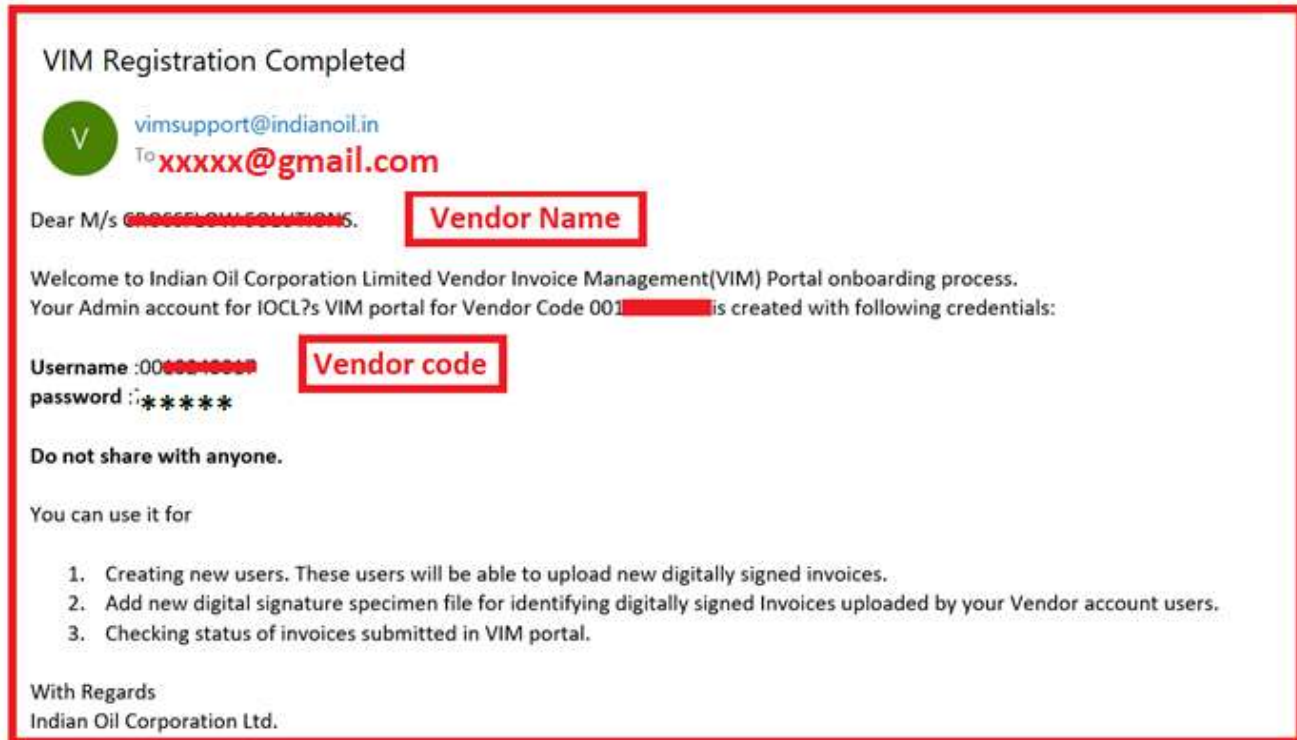
Vendor Code	00XXXXXXXXXX
Vendor Name	CXXXXXXXXXX
Vendor email	xxxxxxx@gmail.com
Vendor phone	XXXXXXXXXX

The registration process is complete

- Your default username and password is sent to your SAP registered Mail Id
- Incase of not recieveing mail withing 24 Hrs, kindly contact admin

Ok

- Vendor will get the mail also on completion of registration.



- Vendor can log in into the portal by giving vendor code with **initial two zeros** and initial password received on registered email.

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Enter Vendor Code

00 [REDACTED] ✓

Enter Username

00 [REDACTED] ✓

Enter password

..... ✓

t p p 3 b u C

tpp3bu ✓

Login

Forgot Password

- Vendor can create the new password by giving received password on email in "Old password" field.

Please Create A New Password

Old password

New password

👁

Confirm new password

👁

3 s x d x c ↺

Type the text above

Close

Submit

- Vendor should change his/her password by entering initial password and by following the rules for password.

Please Create A New Password

Old password

..... ✓

New password

..... !

Enter a strong password with atleast 1 lowercase, 1 uppercase and 1 special case character

Confirm new password

| !

This is a mandatory field

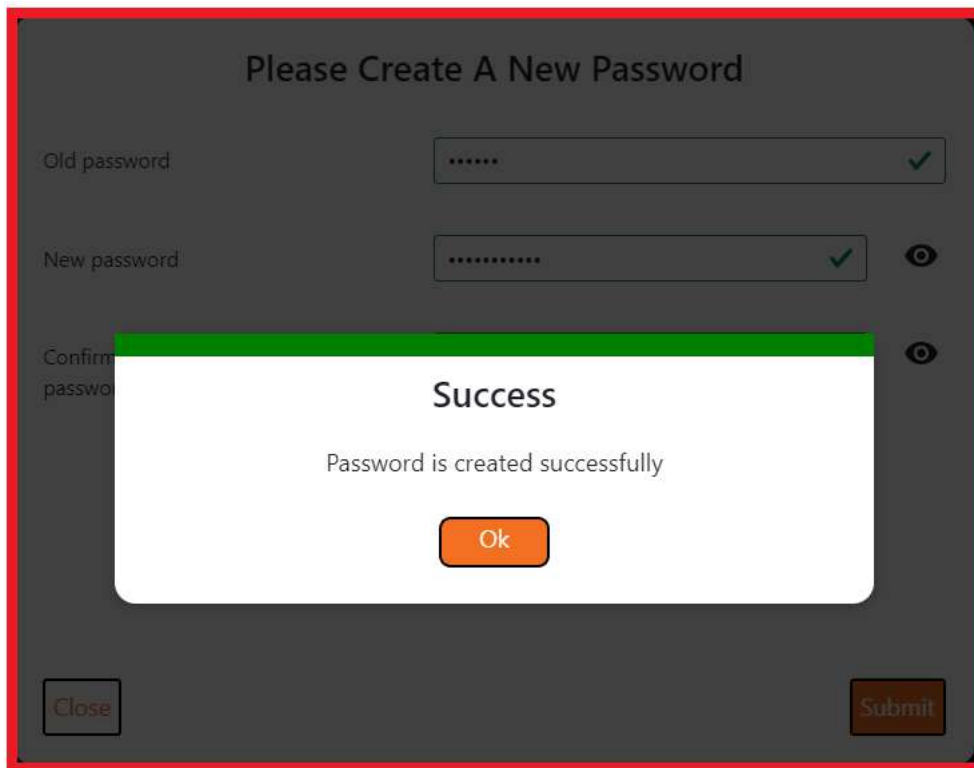
q k f g 7 5 C

Type the text above

Close

Submit

- Password will be reset.



The image shows a web form titled "Please Create A New Password". It contains three input fields: "Old password", "New password", and "Confirm password". Each field has a green checkmark icon to its right, indicating successful validation. To the right of the "New password" and "Confirm password" fields are eye icons for toggling password visibility. A white modal box with a green header bar is centered over the form, displaying the text "Success" and "Password is created successfully", with an "Ok" button below. At the bottom left of the form is a "Close" button, and at the bottom right is a "Submit" button.

- Now he/she can log in to the portal by giving new password.



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Enter Vendor Code

00 [redacted] ✓

Enter Username

01 [redacted] ✓

Enter password

***** ✓

5 k r r q m c

5krrqm ✓

Login

Forgot Password

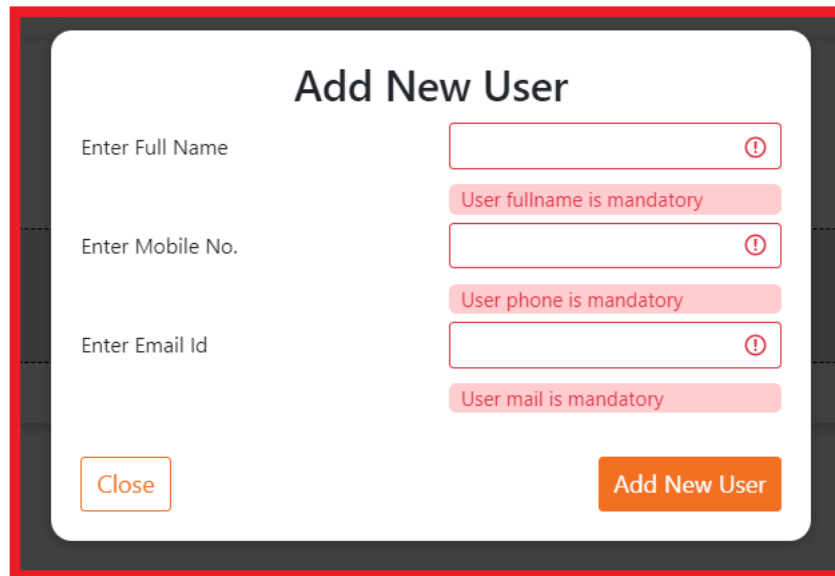
- Vendor can check his/her profile after entering into portal. Following fields will appear in portal.

The screenshot shows the 'e-VIDIT Portal' interface. On the left is a dark blue sidebar with a 'Welcome' message, a user icon, and a menu with options: 'My Profile', 'Service Request', 'User management', 'Digital Signature', 'Reports', and 'Logout'. The main content area has an orange header bar and a white box titled 'User Profile'. This box contains the following fields: 'Full Name' (redacted), 'Username' (00[redacted]), 'User Phone' (979[redacted]), 'User Email' (xxxxxxx@gmail.com), and 'Address' (redacted, with 'PUNE' visible below it).

- Vendor can not submit the bill until he/she creates the sub user for portal login.

The screenshot shows the 'e-VIDIT Portal' interface with the 'User Management' section selected in the sidebar. The main content area has an orange header bar and a white box titled 'User Management'. In the top right corner of this box is an 'Add' button. Below the title is a large grey box with the text 'User list is empty'.

- He/She has to create user by clicking on 'Add' and giving mandatory information.

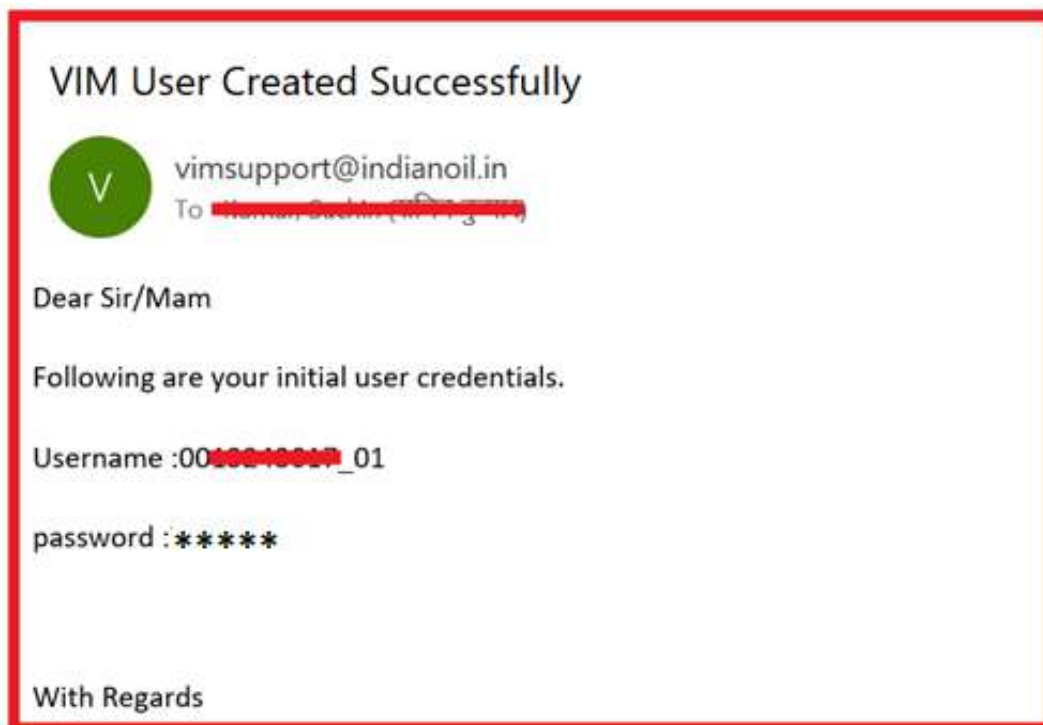


The image shows a web form titled "Add New User". It contains three input fields: "Enter Full Name", "Enter Mobile No.", and "Enter Email Id". Each field has a red border and a red exclamation mark icon on the right, indicating a mandatory field error. Below each field is a red error message: "User fullname is mandatory", "User phone is mandatory", and "User mail is mandatory". At the bottom left is a "Close" button and at the bottom right is an "Add New User" button.

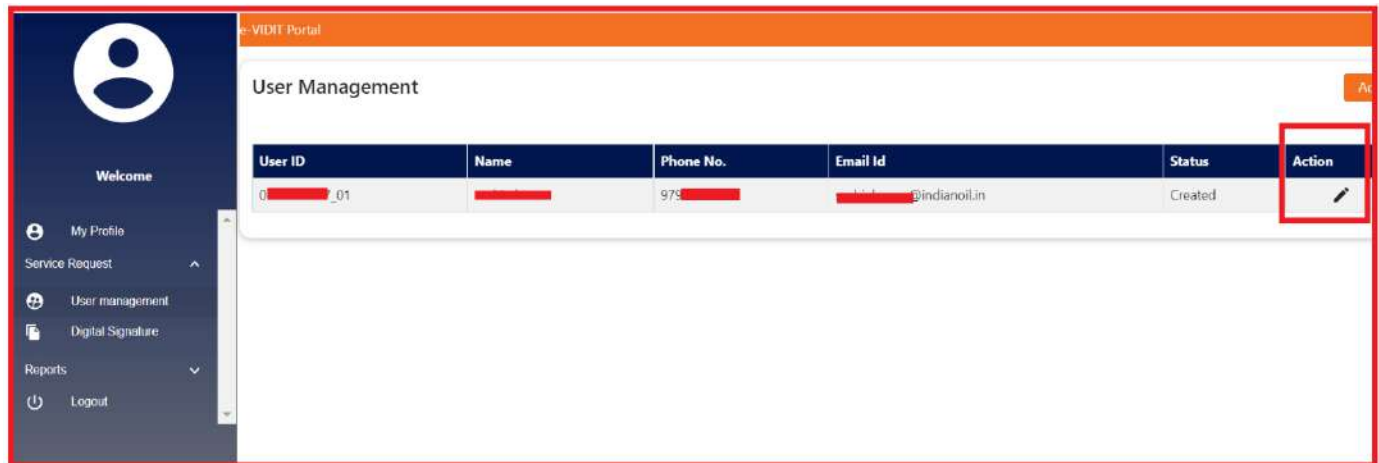


The image shows the same "Add New User" form, but now the fields are filled with data and have green checkmarks on the right, indicating successful validation. The "Enter Full Name" field contains "supriyadipr@gmail.com", the "Enter Mobile No." field contains "9795 1234567890", and the "Enter Email Id" field contains "supriyadipr@gmail.com". The "Close" and "Add New User" buttons are still present at the bottom.

- After creation of sub user, an email will sent on email id mentioned at the time creation of Sub user.



- Vendor can see and edit/inactivate his/her all sub user profile in 'user management' tab.



- For submission of digital invoices, vendor has to add 'Public key' of all Digital Signatures and IOCL VIM center will accept Digital invoices which are digitally signed through these digital signatures only.



Add New Digital Signature

Choose digital certificate

Upload

Close

Add New Digital Signature

- After adding digital signature, it will start appearing in vendor's profile with the name of digital signature owner, its validity and status.

Add New Digital Signature

Digital signed certificate.cer ✓

Upload

Close

Add New Digital Signature

Success

Digital signature added successfully

Ok



e-VIDIT Portal						
Digital Signature					Upload Public Key	
Subject Name	Issuer Name	Serial No.	Valid From	Valid Till	Status	Action
XXXXXXXXXXXXXXXXXXXXA	PentaSign CA 2014	85XXXXXXXXXXXX0057	10/02/2022 10:53:15	10/02/2024 10:53:15	Active	

➤ Now sub user can log in to his/her profile for submission of invoices.



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Enter Vendor Code

00  

Enter Username

00  01 

Enter password

***** 

b c t s 5 s 

bct5s 

Login

Forgot Password



e-VIDIT Portal

Welcome

My Profile

Invoice

Add New Invoice

View Pending Invoices

Reports

Logout

User Profile

Full Name [Redacted]

Username 0010000001_01

User Phone 9793554999

User Email [Redacted]@il.in

Address
LEVEL IV, REGUS BANER,
PRABHAVEE TECH PARK BANER,
PUNE

- Information as given in screen shot below, are required for submission of an invoice. Following things must be noted carefully before entering details of an invoice:
- Invoice Type (Invoice/Credit note/debit note) can be selected from drop down list.
 - Invoice amount must be ended with “.00” where there is no decimal.
 - PO no must be selected from drop down list.
 - Extended search is available in Location/Plant code field. System will check this location from SAP.
 - IOCL GSTIN will be captured as per location code/plant code.
 - Vendor GSTIN as per SAP vendor master.
 - In case of NPO invoices, it must be ensured that only email_id of IOCL officer shall be used as “Requester Email id” at the time of adding New Invoice by Sub User.

PO Invoice submission Screen

Add New Invoice

1 Bill Details 2 Attach Documents 3 Review

Select Doc Type: ☒ PO ☐ ONPO

Select Invoice type:

Invoice Number:
Invoice Date:
Invoice Amount:
Invoice Currency:

Select PO Number:
Location code/Plant code:
IOCL GSTN:
Vendor GSTN:

Remarks:

Next

Add New Invoice

1 Bill Details 2 Attach Documents 3 Review

Select Doc Type: ☒ PO ☐ ONPO

Select Invoice type:

Invoice Number:
Invoice Date:
Invoice Amount:
Invoice Currency:

Select PO Number:
Location code/Plant code:
IOCL GSTN:
Vendor GSTN:

Remarks:

Next

NPO Invoice submission Screen

The screenshot displays the 'Add New Invoice' interface within the e-VIDIT Portal. The interface is divided into three main steps: 1. Bill Details, 2. Attach Documents, and 3. Review. The 'Bill Details' step is currently active. It includes a 'Select Doc Type' section with radio buttons for 'OPO' and 'NPO'. Below this is a 'Select invoice type' dropdown menu set to 'Invoice'. The form contains several input fields: 'Invoice Number' (123), 'Invoice Date' (01-06-2022), 'Invoice Amount' (100.00), 'Invoice Currency' (INR), 'Enter requester mail id' (INDILIN), 'Location code/Plant code' (1100), 'IOCL GSTN' (0123456789), and 'Vendor GSTN' (1234567890). A 'Remarks' field contains the text 'NPO Bill'. A green checkmark is visible in the bottom right corner of the form area, and an orange 'Next' button is located at the bottom right of the screen.

- On clicking “Next”, PDF invoice and supporting documents can be attached by clicking “Upload File” button. Invoice in PDF format must be Digitally signed and should be matched with the Active public key certificate/s uploaded by Vendor Administrator. Each uploaded file can have a maximum file size of 10 MB. For an invoice, total file size including attachments, cannot be exceed 50 MBs for multiple files. If invoice and supporting documents are part of same file, then the invoice should precede the supporting documents. They can also be attached as different PDF files. **Following should be complied while uploading an invoice: -**

- It should not be handwritten invoice.
- It should be in English language only.
- It should not be photocopy.
- It should not be carbon copy.
- It should not be Dot Matrix Print copy.

e-VIDIT Portal

Add New Invoice

1 Bill Details
2 Attach Documents
3 Review

1/5 MB

Upload

New documents

Main Invoice Flag	File Name	File Type	File Size	Action
☒	Main Invoice.pdf		0.37 MB	
☐	Supporting Doc-1.pdf		0.37 MB	
☐	Supporting Doc-2.pdf		0.37 MB	

Back Next

- Vendor can check the details before submission and save it as Draft. Saved as Draft invoice can be deleted and edited before submission. Once submitted for processing, no changes can be made.

Add New Invoice

✓ Bill Details
✓ Attach Documents
3 Review

Document Type	PO	Invoice Type	Invoice
Reference Invoice Number	NA	Reference Invoice Date	NA
Invoice Number	asdf	Invoice Date	2022-03-01
Invoice Amount	100.00	Invoice Currency	INR
PO Number	0026723648	Requester Mail ID	NA
Remarks	ddfd	Location Code	1101
IOCL GSTN	07AAAC11681G1ZR	Vendor GSTN	27ADNPG8171C1ZI

New documents

Main Invoice Flag	File Name	File Type	File Size
☒	Main invoice.pdf		0.31 MB

Back
Save As Draft

- After clicking on 'save as draft', system will take 5 minutes to make this invoice ready for submission.

✓ Bill Details
✓ Attach Documents

Reference Invoice Number: NA

Invoice Number: asdf

Invoice Amount:

PO Number:

Remarks:

IOCL GSTN:

Reference Invoice Date:

Invoice Date:

Currency:

Requester Mail ID:

Location Code:

GSTN:

New documents

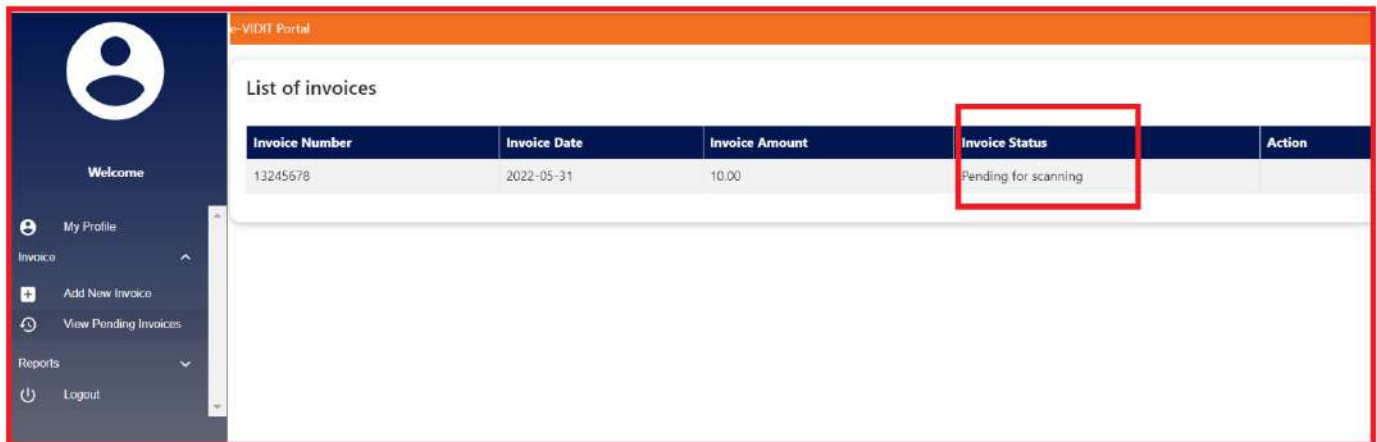
Main Invoice Flag	File Name	File Type
☒	Main invoice.pdf	

Success

Invoice saved successfully ,Pl. check status after 5 minutes for submission

Ok

- After submission of bill details on portal, invoices will be scanned (for detection of any virus).



VIDIT Portal

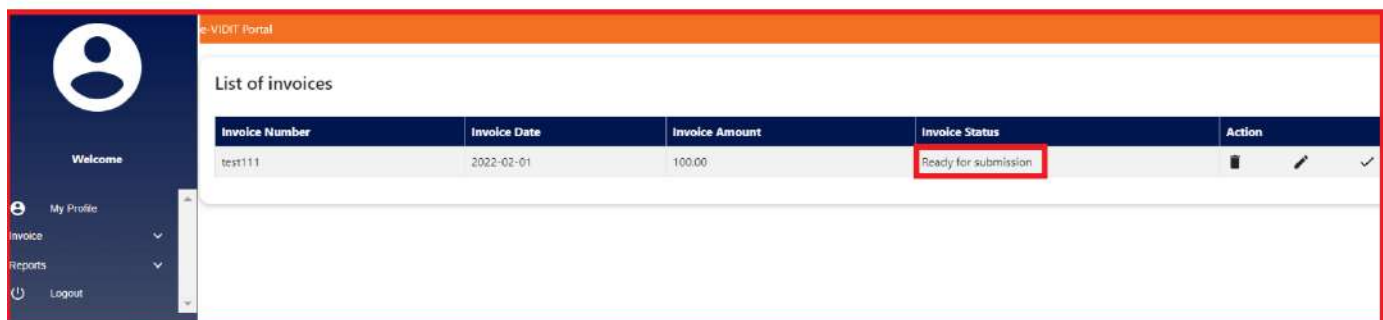
List of invoices

Invoice Number	Invoice Date	Invoice Amount	Invoice Status	Action
13245678	2022-05-31	10.00	Pending for scanning	

Left sidebar menu:

- Welcome
- My Profile
- Invoice
 - Add New Invoice
 - View Pending Invoices
- Reports
- Logout

- After scanning done successfully, vendor can upload the digital copy of invoice. It will take approx. 5 minutes to check. Vendor has to wait for at least 5 minutes. At the time of invoice submission, It must be specified that this is main invoice or supporting documents by clicking on check box dedicatedly available for this..



VIDIT Portal

List of invoices

Invoice Number	Invoice Date	Invoice Amount	Invoice Status	Action
test111	2022-02-01	100.00	Ready for submission	  

Left sidebar menu:

- Welcome
- My Profile
- Invoice
- Reports
- Logout

- If any malicious thing found in the attachment, system will not allow to submit the bill.

If file is ok, then he/she can submit the bill.

List of invoices

Invoice Number	Invoice Date	Invoice Amount	Invoice Status
test111	2022-02-01	100.00	Ready for submission

Are you sure ?

Do you want to submit? Please note once submitted cannot be edited

- After submission, a reference number will pop up.

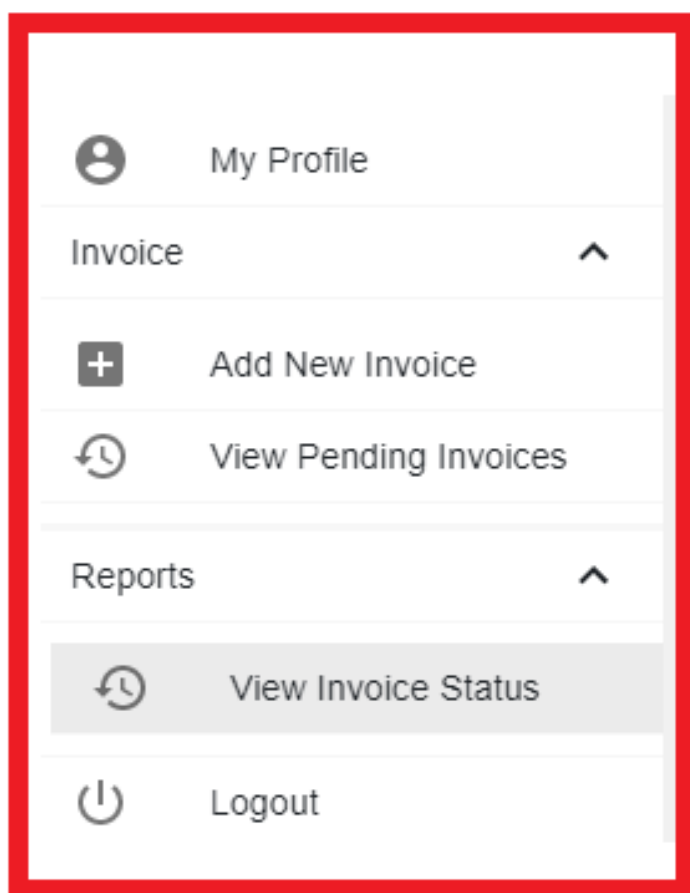
Success

Invoice submitted successfully with reference number 000000004778

- Invoice Query:

To check the status of Invoices submitted through eVIDIT Portal as well as submitted manually to centralised Service Centre , The status may be checked under option :**View Invoice status**.The Bill status along with Payment Details would be shown on the screen and can be downloaded in Excel Format.

Pl note that Invoices submitted to Centrised Service Centre only would be available for query in this portal. For the Invoices submitted prior to Implementation of this portal and for IOCL locations, not live on this portal , Bill Traking portal may be used , if applicable.



- Vendor can raise the query based on multiple parameters like Invoice number and Invoice date, Invoice creation date and PO.

Welcome

My Profile

Invoice

Reports

View Invoice Status

Logout

e-VIDIT Portal

Vendor payment status report

Search criteria

Invoice Date

dd-mm-yyyy

Invoice Creation Date

dd-mm-yyyy

Invoice no.

PO Number

SEARCH

DP Id	Bill no.	Bill dt.	PO Number	Bank A/C	IFSC	Amount paid	Withholding tax	Other deductions	Status	UTR
000000001031	DFDDIAD	2021-08-23				1000.00	0	0	Liability created	
000000002516	123-677/899	2021-10-17	0026236333			0	0	0	Processing in VIM	
000000002551	BGEPL/20-21/018	2021-09-30	0004040400			0	0	0	Processing in VIM	
000000002543	1234567800	2021-12-15	0004040400			0	0	0	Processing in VIM	
000000002594	0010101010	2021-09-30	0026236333			0	0	0	Processing in VIM	
000000002595	ABDBDGG	2020-09-30	0026236333			0	0	0	Processing in VIM	
000000002554	BGEPL/20-21/011	2020-09-30	0004040400			0	0	0	Processing in VIM	
000000002472	REWIT/27B1	2021-11-26	0026408517			0	0	0	Processing in VIM	
000000002235	INVDHFKSHDF-213	2021-11-09				0	0	0	Processing in VIM	
000000002234	INVDHFKSHDF-212	2021-11-09				0	0	0	Processing in VIM	
000000002233	INVDHFKSHDF-212	2021-11-09				0	0	0	Processing in VIM	
000000000048	123	2021-02-17	0013015969			0	0	0	Processing in VIM	

Download

*****End*****



Input required to check invoice status in chatbot

PO Invoices

- Enter 8 Vendor # (Eight digits)
- Enter 8 PO# (Eight digits)
- Select the year (Jan To Dec)

Non-PO Invoices

- Enter Vendor #
- Enter Invoice #
- Enter Date YYYYMMDD

Note – Process will remain same to check status for Non – PO invoice , only invoice date and invoice number to be enter instead of PO#

Step 1: Copy paste link on IE or Firefox or Chrome - <https://apps.indianoil.in/vim/resources/out/index.html>

Step 2: Click on “ Chat Bot”

eVidit | Home | New Registration | Chat Bot | Need Help | Contact Us

FROM THE FERTILE FIELDS TO THE STARRY SKIES.

PEHLE INDIAN PHIR OIL

IndianOil
The Energy Of India

Enter Vendor Code

Enter User Code

Enter password

q p a m e d

Type the text above

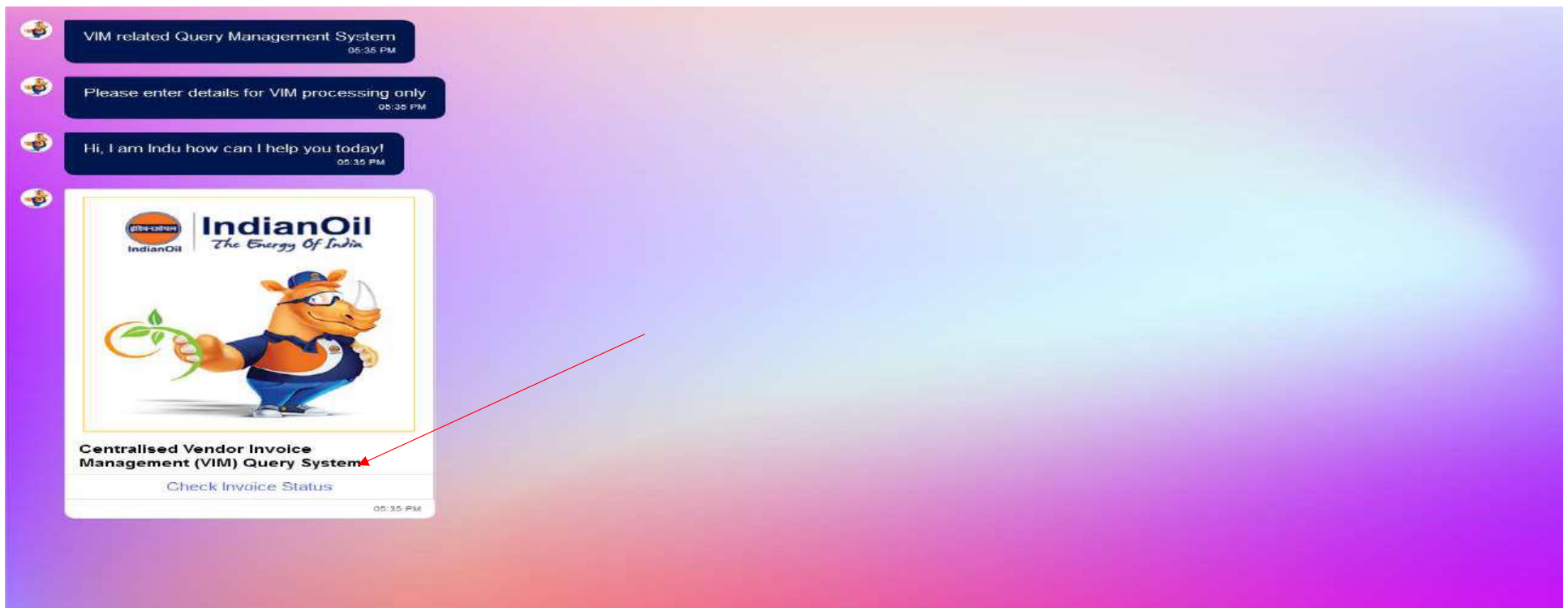
Login | Forgot Password

Design and develop by COIS, Copyright © Indian Oil Corporation Ltd

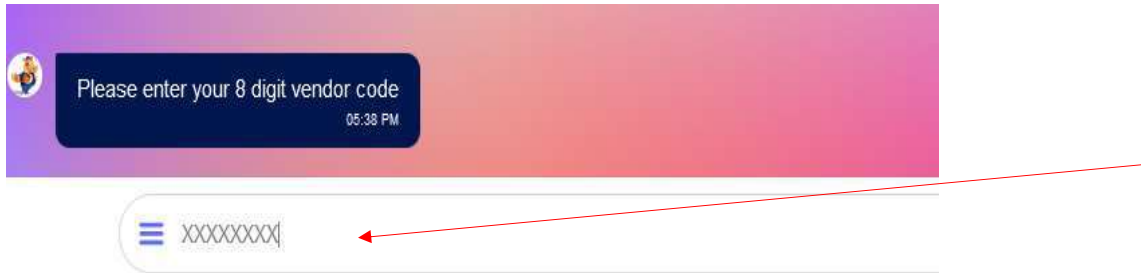
OR

Step 1: Copy paste link on IE or Firefox or Chrome - www.gs.im/in/62ab1e374af1d

Step 2: Click on “ Check invoice status”

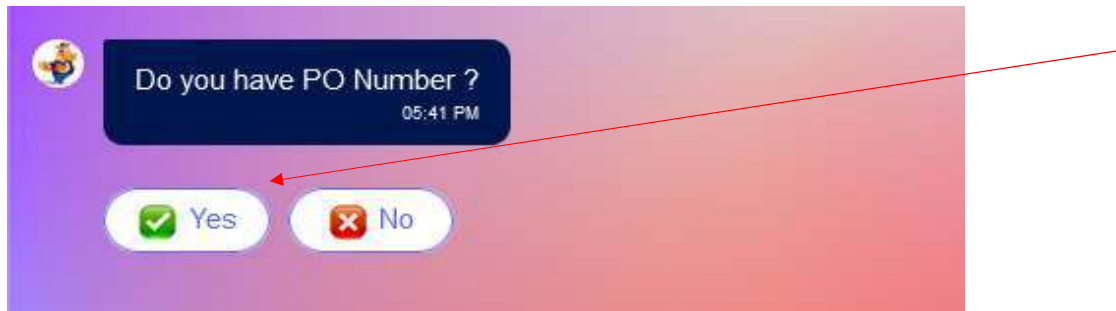


Step 3: Enter Vendor # (Eight digits) and press “Enter” button



The screenshot shows a mobile app interface with a purple-to-pink gradient background. At the top, there is a dark blue message bubble with a small cartoon character icon on the left. The text inside the bubble says "Please enter your 8 digit vendor code" and "05:38 PM" is written in smaller text below it. Below the message bubble, there is a white input field with a blue hamburger menu icon on the left and the text "xxxxxxxx" inside. A red arrow points from the right side of the input field towards the right edge of the image.

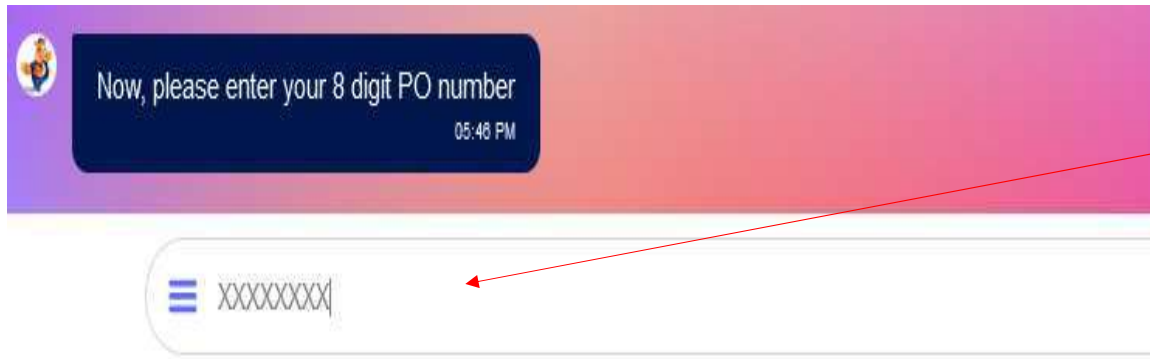
Step 4: After submitting vendor code then below screen will appear seeking for PO# availability (Select “Yes” for PO invoice)



The screenshot shows a mobile app interface with a purple-to-pink gradient background. At the top, there is a dark blue message bubble with a small cartoon character icon on the left. The text inside the bubble says "Do you have PO Number ?" and "05:41 PM" is written in smaller text below it. Below the message bubble, there are two buttons: a green button with a white checkmark icon and the text "Yes", and a red button with a white 'X' icon and the text "No". A red arrow points from the right side of the "Yes" button towards the right edge of the image.

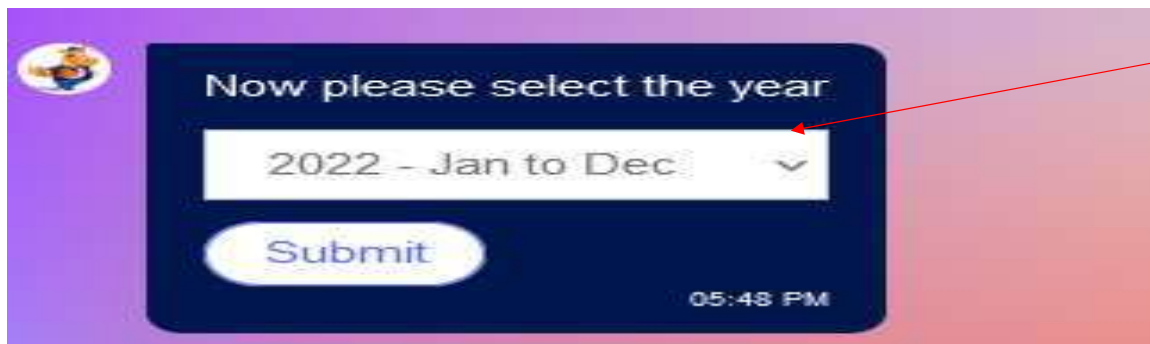
Note: For Non-PO invoice click on “No” button and enter invoice number and invoice date

Step 5: Enter eight digits valid PO number and press “Enter” button



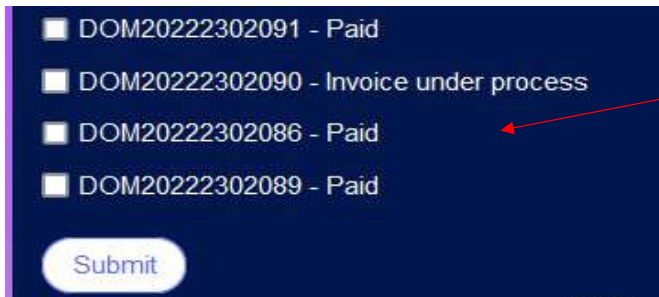
A screenshot of a chat interface. At the top, a dark blue message bubble contains the text "Now, please enter your 8 digit PO number" and a timestamp "05:48 PM". Below the bubble is a white input field with a blue hamburger menu icon on the left and a red arrow pointing to it from the right. The input field contains eight "X" characters. The background is a gradient of purple and pink.

Step 6: Select the relevant year of the invoice from drop down click on “Submit” button



A screenshot of a chat interface. A dark blue message bubble contains the text "Now please select the year". Below the text is a white dropdown menu showing "2022 - Jan to Dec" with a downward arrow. Below the dropdown is a white "Submit" button. A red arrow points from the right to the dropdown menu. A timestamp "05:48 PM" is at the bottom right of the bubble. The background is a gradient of purple and pink.

Step 7: Invoice details will appear against respective PO #



DOM20222302091 - Paid

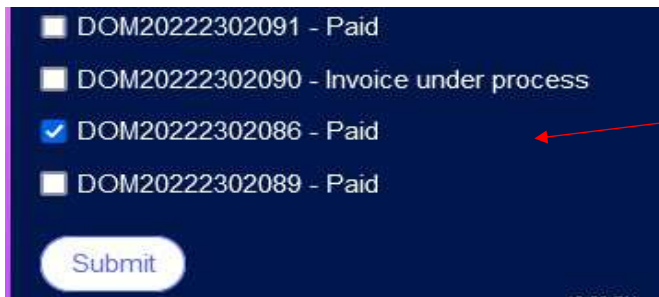
DOM20222302090 - Invoice under process

DOM20222302086 - Paid

DOM20222302089 - Paid

Submit

Step 8: To check details of “ Paid” invoice – select invoice number and click on “Submit” button
Invoice under process – Invoice is not posted yet and is in progress



DOM20222302091 - Paid

DOM20222302090 - Invoice under process

☒ DOM20222302086 - Paid

DOM20222302089 - Paid

Submit

Step 9: Below screen will appear for paid invoice – To check more details for “Other deductions “ click on “ Deductions details “ option



Invoice Details

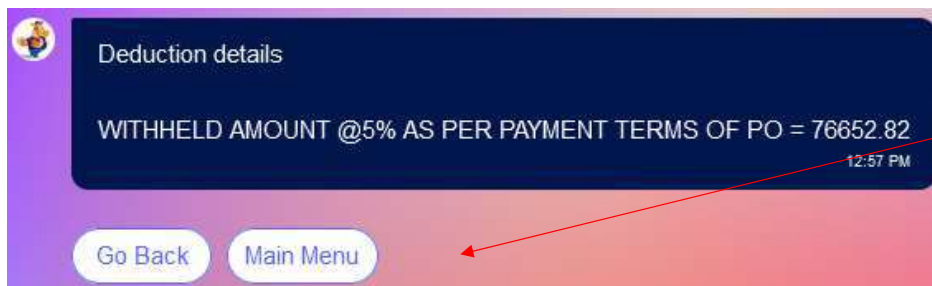
Invoice No. = DOM20222302086
Invoice Date = 21-Aug-2022
Gross Amount = 1809006.00
Invoice Status = Paid
IT TDS = 1533.06
GST TDS = 30661.12
Other Deductions = 76652.82
Other Statutory Deduction = 0
Net Amount = 1700159.00
Bank A/C No. = 310XXXXX338
UTR Number = CTU0850848
Payment Date = 29-Sep-2022

[Deduction Details](#)

[Go Back](#)

[Main Menu](#)

Step10: Details will appear as per below screen and click on “Go Back” button

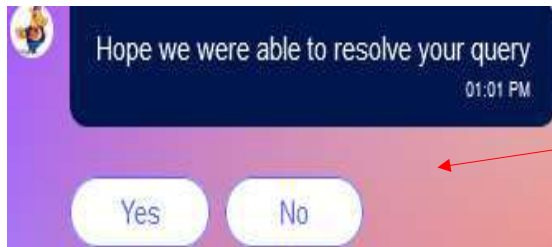


Deduction details

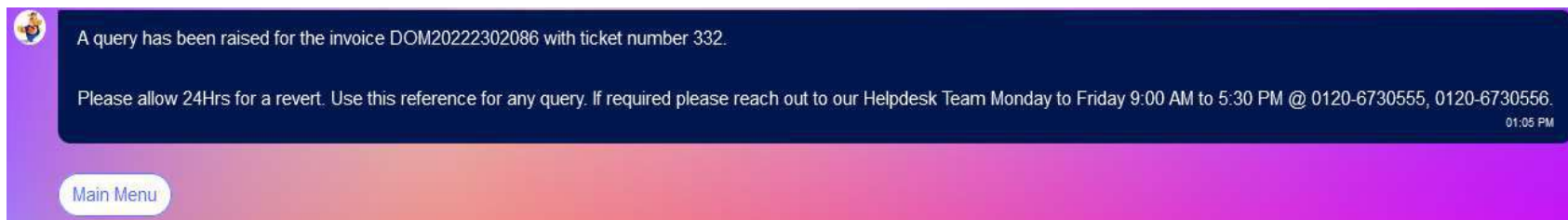
WITHHELD AMOUNT @5% AS PER PAYMENT TERMS OF PO = 76652.82
12:57 PM

[Go Back](#) [Main Menu](#)

Step 11: Below screen would appear asking for if query resolved – **Select “ Yes” or “No”**



Step 12: If “ No” is selected then below screen will appear , showing ticket raised for the query and wait 24 hours to get reply from helpdesk team or vendor can reach out to helpdesk team with provided contact number



Thanks



IndianOil

INDIAN OIL CORPORATION LIMITED

(SOUTHERN REGION PIPELINES)

TENDER NO.: SRPL23C095

**TENDER DOCUMENT
FOR**

**Engineering, Procurement, Construction (EPC)
inclusive of 1-Year Comprehensive Operation &
Maintenance (O&M) of 1 MWp Solar Power Project at
SRPL Chittoor and its further Comprehensive O&M for
4 Years**

VOLUME (II OF II)

SCHEDULE OF RATES

Issued by

**Deputy General Manager (M&C)
Southern Region Pipelines
Indian Oil Corporation Ltd.
(Pipelines Division)
House of Four Frames 6/13,
Wheat Croft Road Nungambakkam,
Chennai – 600034**

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Letter Inviting Tender

Vendor No.: M/S	Tender No.: SRPL23C095 RFQ No.: RFQ Dt. 29.02.2024 Quotation Deadline: 31.03.2024
Tel No. Tel No. Fax	Rs.FIVE CRORE EIGHTY-FIVE LAC FIFTY-NINE THOUSAND NINE HUNDRED SIXTY-FOUR & PAISE TWENTY-SIX ONLY SINGLE BID [] TWO BID []

Subject:

Name of Work: Engineering, Procurement, Construction (EPC) inclusive of 1-Year Comprehensive Operation & Maintenance (O&M) of 1 MWp Solar Power Project at SRPL Chittoor and its further Comprehensive O &M for 4 Years

Tender No. SRPL23C095

PREAMBLE TO SOR

1. This preamble is an integral part of the Schedule of Rates and any definition and explanation given herein shall have as much force as though they are incorporated into the description of the items themselves in the Schedule of Rates.
2. Unless otherwise specifically stated in the contract, all work under the contract shall be covered and paid for in accordance with the items and relative rates mentioned in the Schedule of Rates.
3. The expressions used in the Schedule of Rates are only selected abbreviations desired to give a general indication of the work covered by the item, and it is intended that each item shall encompass the entire work and operations involved in the job to the performance of work as envisaged in terms of the contract documents and shall include all operations, auxiliary, ancillary or incidental to or in connection therewith and all other matters, risks and cost whatsoever provided for

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under the Schedule of Rates. It is, therefore, necessary that the Contractor should read and construe the Schedule of Rates with reference to the contract documents as a whole for proper description/ undertaking of the work(s), responsibilities & duties, obligations and liabilities covered by each item of the Schedule of Rates, on the understanding that the items in the Schedule of Rates cover the entire work under the Contract split under different heads for the purpose of convenience in computing the payment due to the Contractor.

4. The description given under the items of work in the Schedule of Rates shall be deemed to include, wherever applicable, mobilisation, labour equipments, materials, cartage, hoisting, setting, fitting and fixing in position of all materials and equipments, disposal of wastages (including dewatering, desludging and allied operations at any stage of the work) and all other labours and operations necessary whether specifically stated/ implied or not, for the full and entire execution and completion of the relative works in all respects according to the contract. Cost of materials under the scope of Contractor's supply & all other consumables/inputs required for carrying out the works & for permanent incorporation in the works for which rates are quoted in the "Schedule of Rates" shall be inclusive of all duties, taxes (excluding goods & services tax), octroi etc. as applicable.

5. The description given under the items of work in the Schedule of Rates shall be deemed to include the relative provisions in the specifications, drawings and other contract documents for the execution of the works in accordance therewith and the instructions of the Engineer-in-Charge and/ or Site Engineer.

6. The amplifications detailed in the description of the items of works in the Schedule of Rates and those in the specifications regarding the all inclusive nature and coverage of rates are only indicative and are by no means exhaustive. The rates quoted against each item of work in the Schedule of Rates shall be for the complete works covering details not only enumerated thereon, but all works of allied nature required for completion of the job according to drawings, specifications and instructions of the Engineer-in-Charge, whether or not they are specifically stated or implied.

7. Without prejudice to any other right(s) the Owner may have under the Contract, the Owner reserves the right to operate any and all items of works appearing in the Schedule of Rates whether quantities are indicated or not against any particular item/ items of work.

LEGENDS USED IN SCHEDULE OF RATES:

EA : Each

SU: Service Unit

Nos/No. : Numbers

M/m : Meter

KM/km : Kilo Meter

mm : Mili Meter

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Sq.M./M2 : Square meter
Sq.mm./mm2 : Square mili meter
Cu.M/M3 : Cubic meters
Kgs : Kilograms
LS : Lumpsum
TO : Tonne/metric tonne
DRM: Drum
H: Hour
D: Day

(SEAL & SIGNATURE OF THE TENDERER)

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Service Required for Plant: 92AA ,CBPL - CHITTOOR

O.Lev.	Item No	Unit	Rate
Sr.No.	Item Description		

RFQ ITEM NO.00010 EPC for 1 MW Solar- Supply

00010	1.000 LS	32,724,860.00	32,724,860.00
EPC for 1 MW Solar- Supply		Rs.THREE CRORE TWENTY-SEVEN LAC TWENTY-FOUR THOUSAND EIGHT HUNDRED SIXTY ONLY	Rs.THREE CRORE TWENTY-SEVEN LAC TWENTY-FOUR THOUSAND EIGHT HUNDRED SIXTY ONLY

RFQ ITEM NO.00020 EPC for 1 MW Solar- Service

00010	1.000 SU	14,024,940.00	14,024,940.00
EPC for 1 MW Solar- Service		Rs.ONE CRORE FORTY LAC TWENTY-FOUR THOUSAND NINE HUNDRED FORTY ONLY	Rs.ONE CRORE FORTY LAC TWENTY-FOUR THOUSAND NINE HUNDRED FORTY ONLY

RFQ ITEM NO.00030 1 Year-Inclusive Comprehensive O&M

00010	1.000 SU	855,367.89	855,367.89
1 Year-Inclusive Comprehensive O&M		Rs.EIGHT LAC FIFTY-FIVE THOUSAND THREE HUNDRED SIXTY-SEVEN & PAISE EIGHTY-NINE ONLY	Rs.EIGHT LAC FIFTY-FIVE THOUSAND THREE HUNDRED SIXTY-SEVEN & PAISE EIGHTY-NINE ONLY

RFQ ITEM NO.00040 Comprehensive O&M for further 4 years

00010	1.000 SU	3,685,896.40	3,685,896.40
Comprehensive O&M for further 4 years		Rs.THIRTY-SIX LAC EIGHTY-FIVE THOUSAND EIGHT HUNDRED NINETY-SIX & PAISE FORTY ONLY	Rs.THIRTY-SIX LAC EIGHTY-FIVE THOUSAND EIGHT HUNDRED NINETY-SIX & PAISE FORTY ONLY

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% Above _____

%Below _____

At Par

(Contractor to quote only one percentage for all items of SOR in figures and words.)

If the bidder is registered with NSIC under Ministry of Micro, Small and Medium enterprises, then, the bidder shall enclose the copy of the recent valid NSIC certificate without fail. The details of the same are to be mentioned in this page.

Signature of the Issuing Authority

Signature and Stamp of Tenderer